FINAL

CORRECTIVE ACTION PLAN - PART A REPORT
FOR
UNDERGROUND STORAGE TANK 94
FACILITY ID #9-089076
BUILDING 1320/33
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

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June 1999

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List of Abbreviations and Acronyms

ACE	Anderson Columbia Environmental, Inc.
ACL	alternate concentration limits
AMSL	above mean sea level
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

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CORRECTIVE ACTION PLAN PART A

Facility Name: UST 94, Bldg 1320/33 Street Address: McFarland Ave. and W. 15th Street

Facility ID: 9-089076 City: Fort Stewart County: Liberty Zip Code: 31314

Latitude: 32°15'47" Longitude: 82°04'51"

Submitted by UST Owner/Operator:
Name: Thomas C. Fry/ Environmental Branch
Company: U.S. Army/HQ 3d, Inf. Div (Mech)
Address: DPW ENRD ENV. Br. (Fry)
1557 Frank Cochran Drive
City: Fort Stewart State: GA
Zip Code: 31314-4928
Telephone: (912) 767-1078

Prepared by Consultant/Contractor:
Name: Patricia A. Stoll
Company: SAIC
Address: P.O. Box 2502
City: Oak Ridge State: TN
Zip Code: 37831
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: _____ Date: _____

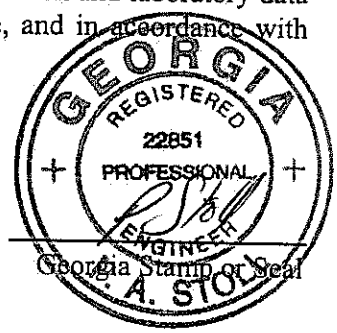
B. Registered Professional Engineer or Professional Geologist Certification

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

Name: Patricia A. Stoll

Signature: Patricia A. Stoll

Date: 6/18/99



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 94 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 94.

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.

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C. Tank History

List current and former USTs 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
94	1000	waste oil	7/29/96

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.

Anderson Columbia Environmental, Inc. (ACE) initiated characterization of petroleum-related contamination at the site during UST system closure activities on July 29, 1996. After removal of the tank, one soil sample was collected from the tank pit (Figure 7). No BTEX or PAH compounds were detected in the soil sample (TK94-S1). No groundwater samples were collected during the tank removal. The piping system was not investigated during the tank removal activities in 1996. The Closure Report for UST 94 was submitted to GA EPD USTMP in December 1996 and review comments were received by Fort Stewart in March 1998. The piping system was investigated in May 1998 and an Addendum to the Closure Report was submitted to GA EPD USTMP in September 1998 that summarized the sampling of the piping associated with former UST 94.

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 94 and ancillary piping as configured during operation 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:* 550 *feet*
ii. *Nearest down-gradient public water supply located within:* >10,560 *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* 3200 *feet*
ii. *Nearest down-gradient surface water located within* 3200 *feet*
iii. *Nearest storm or sanitary sewer located within:* 10 *feet*
iv. *Depth to bottom of sewer at a point nearest the plume* 1.9 *feet*

4. Impacted Environmental Media

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

Provide a brief discussion of soil sampling.

Continuous soil cores were collected at 1.5- or 2.0-foot intervals during the installation of six 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 sample interval where the highest vapor concentration was recorded, and the other from the deepest sample interval with the lowest concentration. If organic vapors were not detected, one sample was collected from the sample interval nearest the midpoint of the boring, and the other from the sample interval located immediately above the water table. Refer to Attachment A for complete documentation of the technical approach implemented during this investigation.

i. Soil contamination above applicable threshold levels?

YES X NO _____

If yes, indicate highest concentrations in soil along with locations and depths detected.

During the CAP-Part A investigation in May 1998, the benzene detection limit (0.0116 mg/kg) in 69-01 was elevated above the soil threshold level. In November 1998, the investigation was extended to confirm the absence of contamination north of 69-01 and benzene was not detected above soil threshold levels in the two additional borings (i.e., 69-05 and 69-06).

ii. ATLs calculated? YES _____ NO X

If yes, present ATLs.

iii. If ATLs calculated, is soil contamination above ATLs?

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 one groundwater sample was collected from the temporary piezometer screened across the water table. 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 _____ NO X

If yes, indicate highest concentrations in groundwater along with the locations.

During the CAP-Part A investigation in May 1998, the benzene detection limit (5.3 µg/L) in 69-01 was elevated above the MCL. In November 1998, the investigation was extended to confirm the absence of contamination north of 69-01 and benzene was not detected above MCLs in the two additional borings.

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):* 1.13 – 4.64 *(Table 4: Groundwater Elevations)*
b. *Groundwater Flow Direction:* southeast *(Figure 6: Potentiometric Surface Map)*
c. *Hydraulic Gradient* 0.0028 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 94 on July 29, 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 left in place.

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

No contaminated soil was excavated from the site.

7. Site Ranking:
Environmental Site Sensitivity Score: 260
(Appendix X: Site Ranking Form)

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

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

There is no soil contamination in excess of applicable GUST soil threshold levels (i.e. Table A, Column 2). In May 1998, an elevated benzene detection limit (0.0116 mg/kg) was observed above the soil threshold level in one soil sample. However, in November 1998, benzene was not detected in borings 69-05 and 69-06 (north to northeast of 69-01).

In May 1998, an elevated benzene detection limit (5.3 µg/L) was observed above the MCL in one groundwater sample. However, in November 1998, the estimated benzene concentration in the 69-06 (north of 69-01) was 0.57 µg/L and is below the MCL. Benzene was not detected in 69-05.

GA EPD USTMP assigned former UST 94 a "No Further Action Required" status in correspondence dated January 11, 1999, based on the additional sampling and analytical results provided in the Closure Report Addendum submitted in September 1998. The CAP-Part A Report was prepared since additional sampling was conducted in November 1998 to confirm the extent of contamination.

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

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

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 NA X

3. Surface Water N/A X

B. Proposed Investigation of Vadose Zone And Aquifer Characteristics:

No further investigation is proposed at this site; thus no additional data are required.

V. PUBLIC NOTICE

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

UST 94 is located within the confines of Fort Stewart Military Reservation, a federal facility. The U.S. Government owns all of the property contiguous to the site. The Fort Stewart Directorate of Public Works (DPW) has complied with the public notice requirements defined by Georgia Environmental Protection Division (GA EPD) guidance by publishing an announcement in the *Savannah Morning News* on July 19 and 26, 1998. The public notice referred to Building 1328, which is adjacent to the former tank but is not consistent with the report and registration of Buildings 1320/33.

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 94 site, Buildings 1320/33, Facility ID #9-089076, using Environmental Restoration Account Funds. Application for Georgia Underground Storage Tank Trust Fund reimbursement is not being pursued at this time.

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APPENDIX I

REPORT FIGURES

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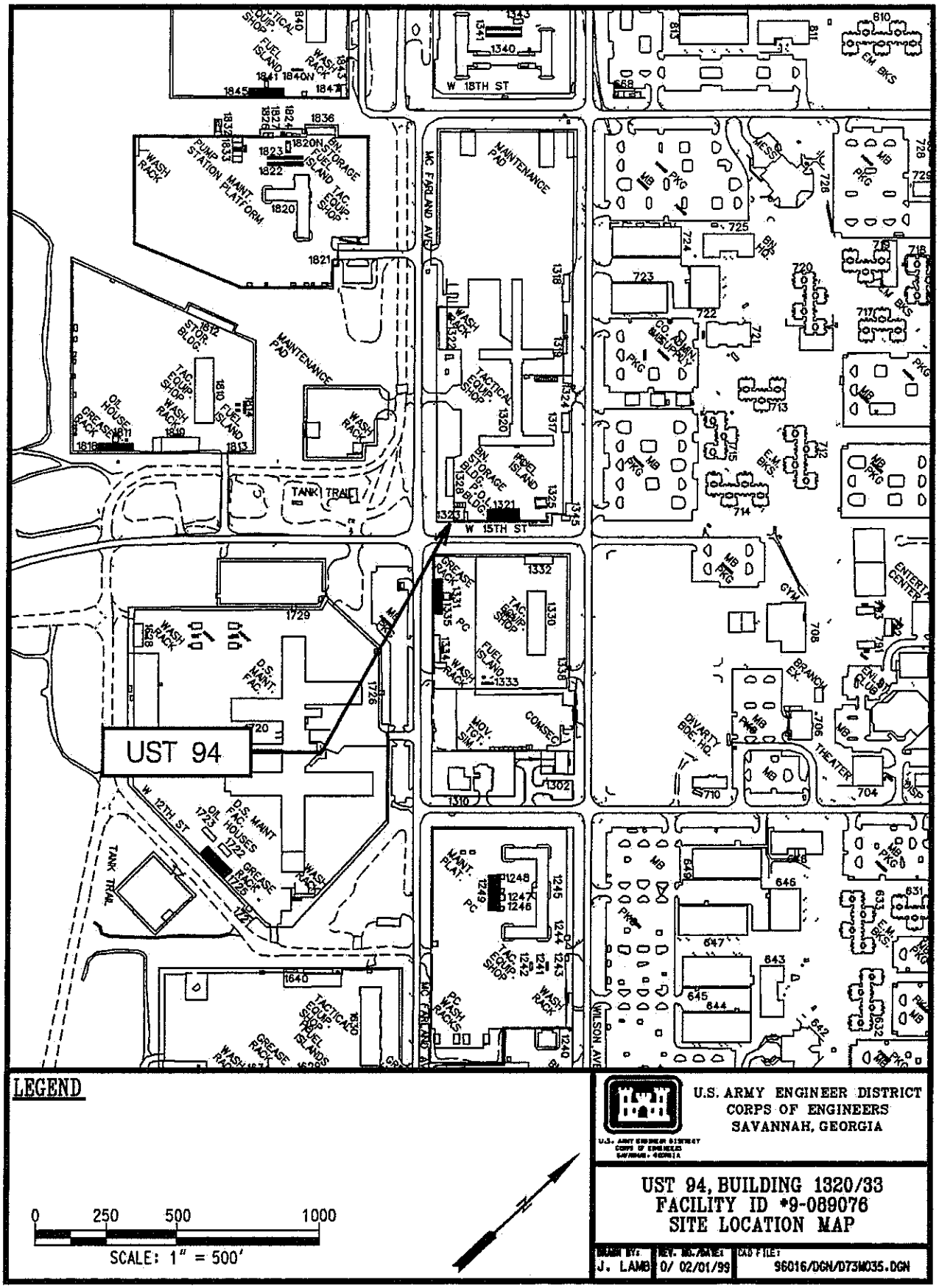

Figure 1. Location Map of UST 94, Fort Stewart, Liberty County, Georgia

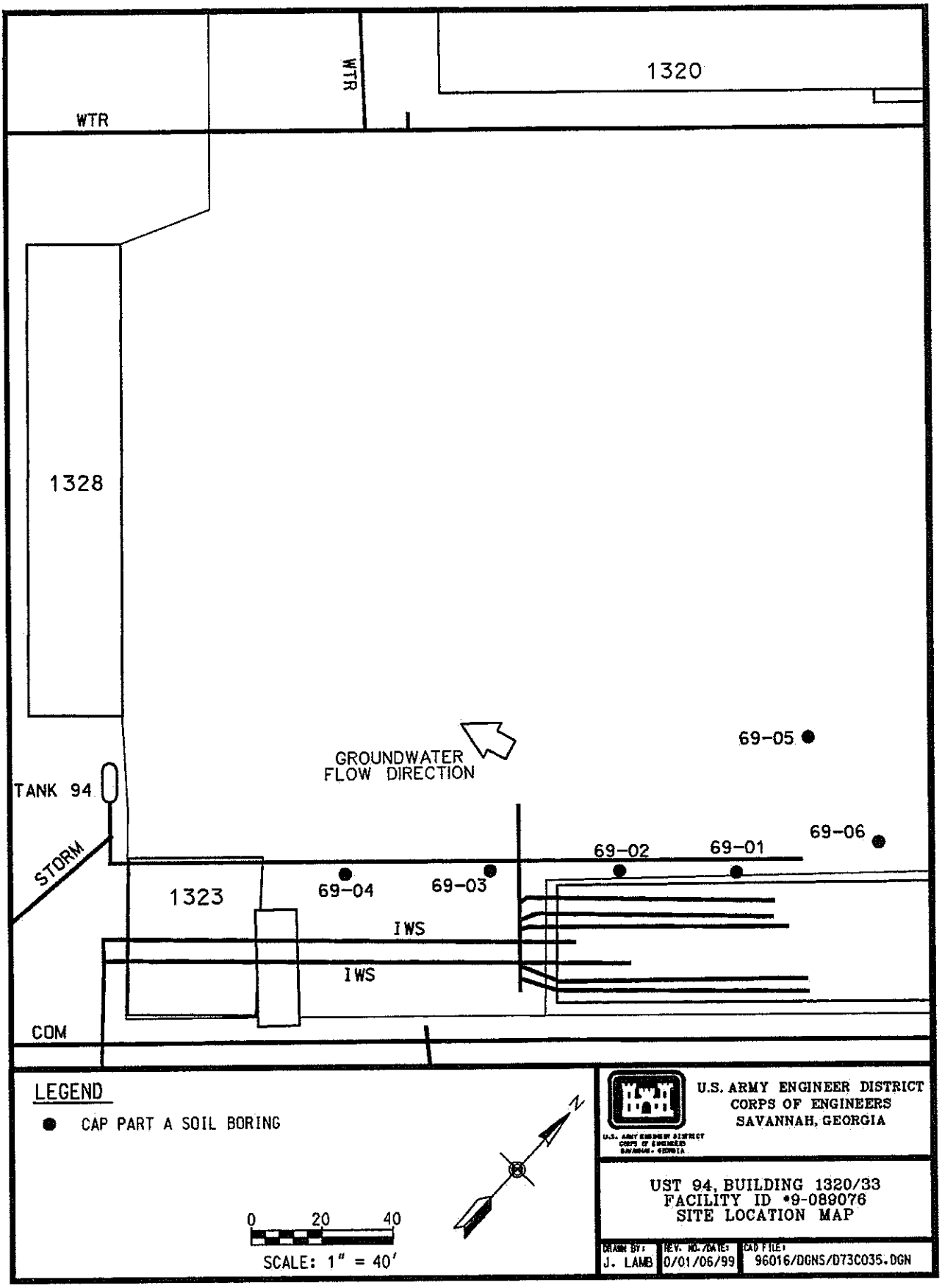

Figure 2. Site Plan for the UST 94 Site Investigation

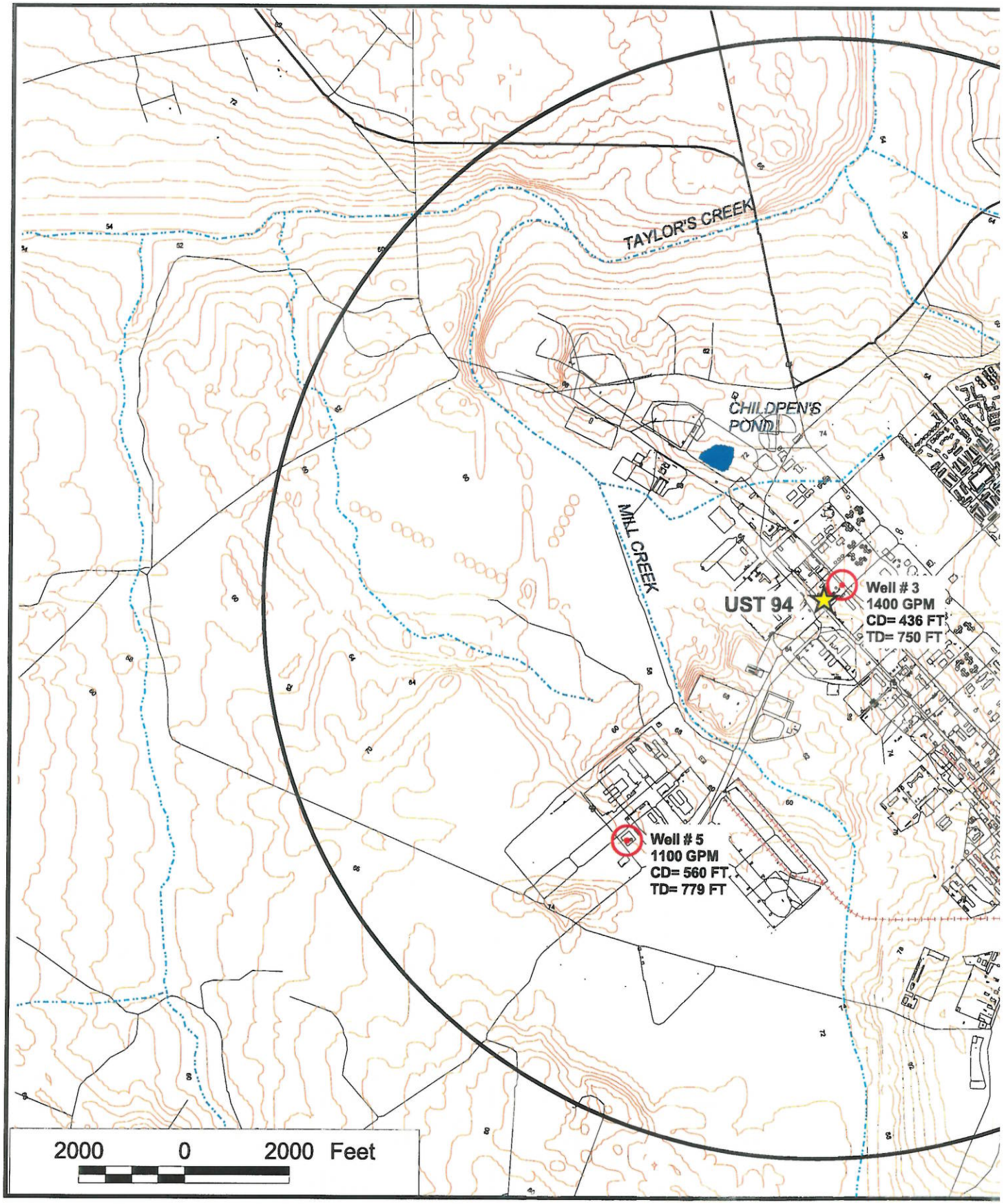

Figure 3. Map Showing Public and Private Drinking Water Sour
Bodies at Fort Stewart, Liberty County, Geor

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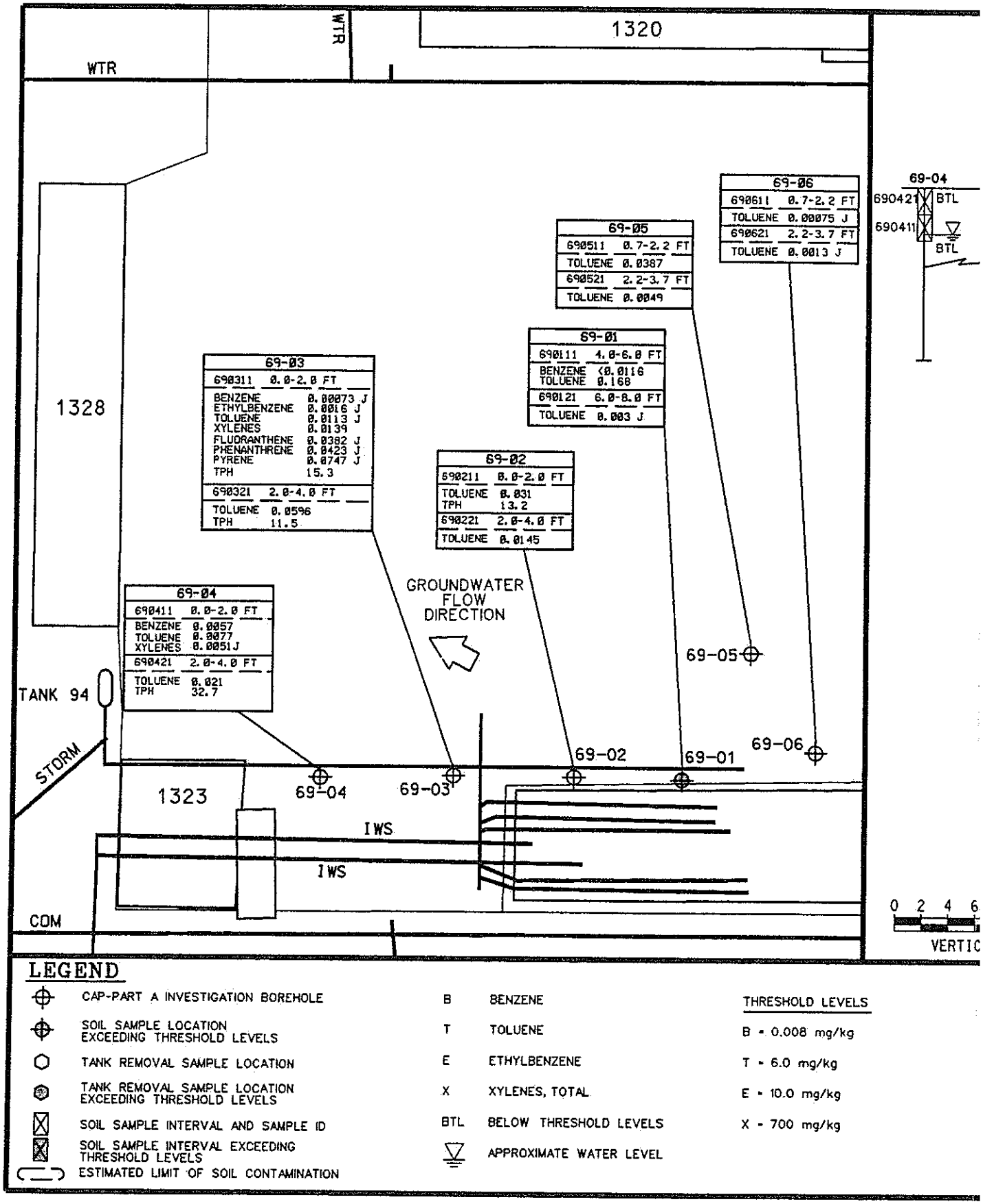

LEGEND

- CAP-PART A INVESTIGATION BOREHOLE
- SOIL SAMPLE LOCATION EXCEEDING THRESHOLD LEVELS
- TANK REMOVAL SAMPLE LOCATION
- TANK REMOVAL SAMPLE LOCATION EXCEEDING THRESHOLD LEVELS
- SOIL SAMPLE INTERVAL AND SAMPLE ID
- SOIL SAMPLE INTERVAL EXCEEDING THRESHOLD LEVELS
- ESTIMATED LIMIT OF SOIL CONTAMINATION

B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	XYLENES, TOTAL
BTL	BELOW THRESHOLD LEVELS
	APPROXIMATE WATER LEVEL

THRESHOLD LEVELS

B = 0.008 mg/kg

T = 6.0 mg/kg

E = 10.0 mg/kg

X = 700 mg/kg

Figure 4. Soil Quality

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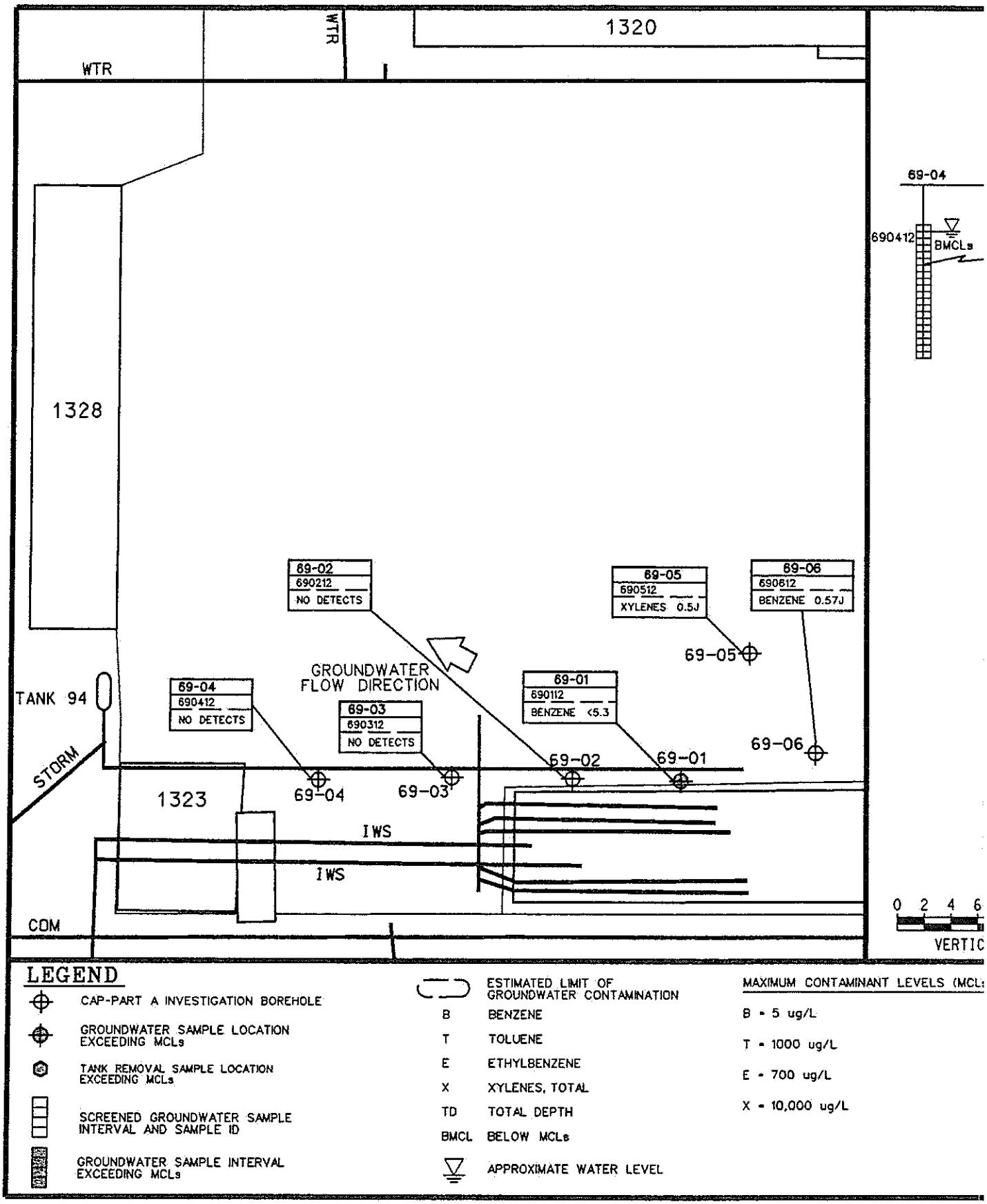

Figure 5. Groundwater Quality M

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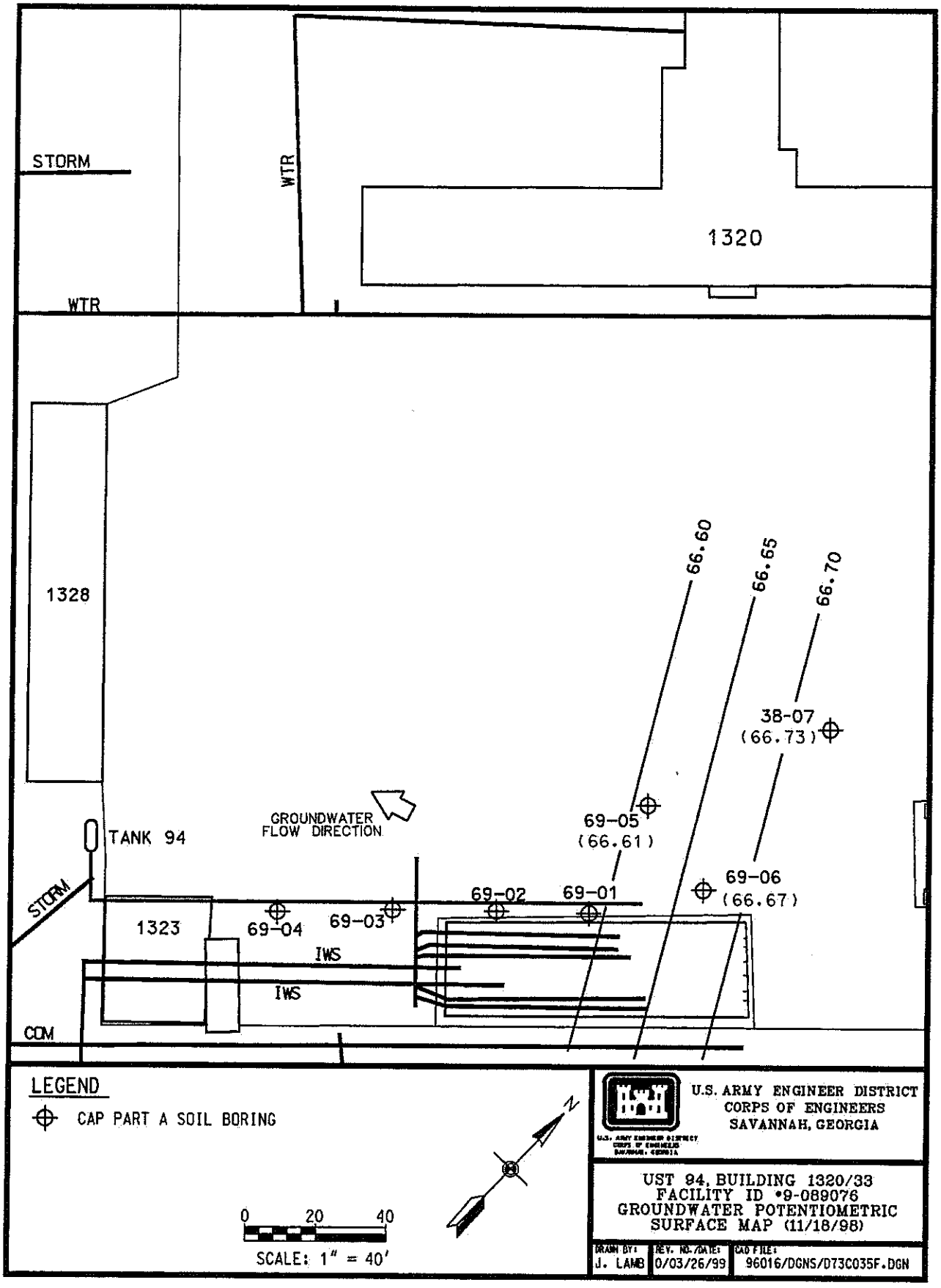

Figure 6. Potentiometric Surface Map of the UST 94 Site

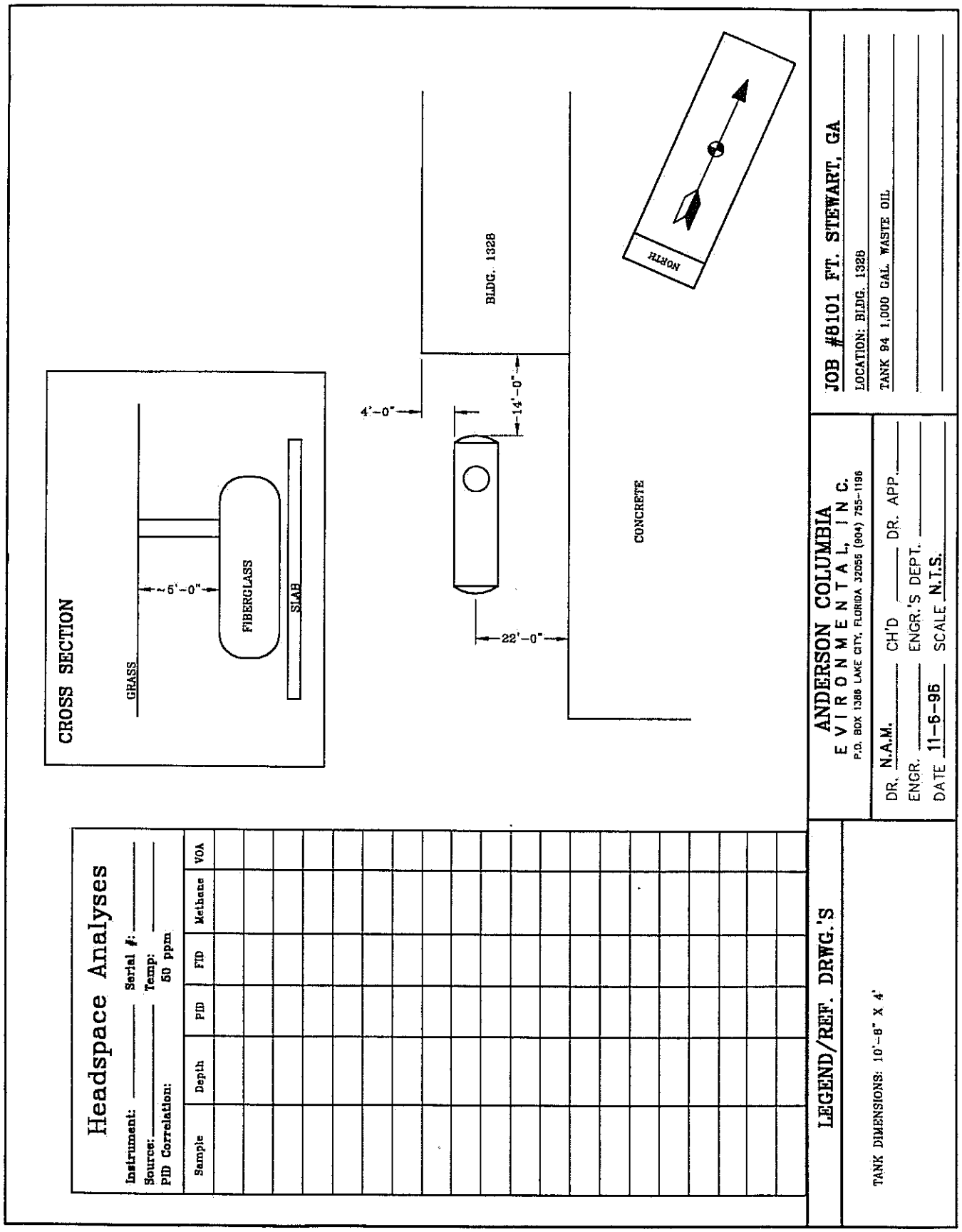

Figure 7. UST System Closure Sampling Locations at the UST 94 Site

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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

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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)
69-01	690111	4.0 - 6.0	09-May-98	0.0116 U	0.168 =	0.0116 U	0.0349 U	0.0168	11.6 U
69-01	690121	6.0 - 8.0	09-May-98	0.0024 U	0.003 J	0.0024 U	0.0073 U	0.003	2.29 U
69-02	690211	0.0 - 2.0	09-May-98	0.0022 U	0.031 =	0.0022 U	0.0065 U	0.031	13.2 =
69-02	690221	2.0 - 4.0	09-May-98	0.0024 U	0.0145 =	0.0024 U	0.007 U	0.0145	11.8 U
69-03	690311	0.0 - 2.0	09-May-98	0.00073 J	0.0113 J	0.0016 J	0.0139 =	0.02753	15.3 =
69-03	690321	2.0 - 4.0	09-May-98	0.0022 U	0.0596 =	0.0022 U	0.0067 U	0.0596	11.5 =
69-04	690411	0.0 - 2.0	10-May-98	0.0057 =	0.0077 =	0.0023 U	0.0051 J	0.0185	20.6 U
69-04	690421	2.0 - 4.0	10-May-98	0.0022 U	0.021 =	0.0022 U	0.0066 U	0.021	32.7 =
69-05	690511	0.7 - 2.2	17-Nov-98	0.0023 U	0.0387 =	0.0023 U	0.0034 U	0.0387	6.51 U
69-05	690521	2.2 - 3.7	17-Nov-98	0.0022 U	0.0049 =	0.0022 U	0.0033 U	0.0049	5.16 U
69-06	690611	0.7 - 2.2	17-Nov-98	0.0022 U	0.00075 J	0.0022 U	0.0032 U	0.00075	6.15 U
69-06	690621	2.2 - 3.7	17-Nov-98	0.0022 U	0.0013 J	0.0022 U	0.0033 U	0.0013	13.7 U
Applicable Standards[1]				0.008	10	6	700	NRC	NRC

NOTES:

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

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

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

BGS Below ground surface

BTEX Benzene, toluene, ethylbenzene, and xylene

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.

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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)
				Fluoranthene	Phenanthrene	Pyrene					
69-01	690111	4.0 - 6.0	09-May-98								ND
69-01	690121	6.0 - 8.0	09-May-98								ND
69-02	690211	0.0 - 2.0	09-May-98								ND
69-02	690221	2.0 - 4.0	09-May-98								ND
69-03	690311	0.0 - 2.0	09-May-98	0.0382 J	0.0423 J	0.0747 J					0.1552
69-03	690321	2.0 - 4.0	09-May-98								ND
69-04	690411	0.0 - 2.0	10-May-98								ND
69-04	690421	2.0 - 4.0	10-May-98								ND
69-05	690511	0.7 - 2.2	17-Nov-98								ND
69-05	690521	2.2 - 3.7	17-Nov-98								ND
69-06	690611	0.7 - 2.2	17-Nov-98								ND
69-06	690621	2.2 - 3.7	17-Nov-98								ND
Applicable Standards[1]				NRC	NRC	NRC	NRC	NRC	NRC	NRC	NRC

NOTES:

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

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

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

Laboratory Qualifiers

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

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

Sample Location	Sample ID	Depth (ft BGS)	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethyl - benzene (µg/L)	Xylenes (µg/L)	Total BTEX (µg/L)
69-01	690112	4.0 - 14.0	09-May-98	5.3 U	3.8 U	4 UJ	6.0 U	ND
69-02	690212	2.0 - 12.0	09-May-98	2 U	2 U	2 U	6 U	ND
69-03	690312	1.0 - 11.0	09-May-98	2 U	2 U	2 U	6 U	ND
69-04	690412	3.0 - 13.0	10-May-98	2 U	2 U	2 U	6 U	ND
69-05	690512	0.0 - 18.3	17-Nov-98	2 U	2 U	2 U	0.5 J	0.5
69-06	690612	0.0 - 18.8	17-Nov-98	0.57 J	2 U	2 U	3 U	0.57
Applicable Standards[1]				5	1000	700	10000	NRC

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

Sample Location	Sample ID	Depth (ft BGS)	Date Sampled	Detected PAH Compounds (µg/L)				Total PAH (µg/L)
69-01	690112	4.0 - 14.0	09-May-98					ND
69-02	690212	2.0 - 12.0	09-May-98					ND
69-03	690312	1.0 - 11.0	09-May-98					ND
69-04	690412	3.0 - 13.0	10-May-98					ND
69-05	690512	0.0 - 18.3	17-Nov-98					ND
69-06	690612	0.0 - 18.8	17-Nov-98					ND
Applicable Standards[1]				NRC	NRC	NRC		NRC

NOTE:

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

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

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

BTEX Benzene, toluene, ethylbenzene, and xylene

BGS Below ground surface

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

NRC No regulatory criteria

PAH Polynuclear aromatic hydrocarbon

Laboratory Qualifiers

U Indicates 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

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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)
69-01	5/10/98	68.84	68.54	4.0 – 14.0	N/A	1.28	N/A	N/A	67.26
69-02	5/10/98	68.75	68.33	2.0 – 12.0	N/A	1.19	N/A	N/A	67.14
69-03	5/10/98	68.74	68.42	1.0 – 11.0	N/A	1.13	N/A	N/A	67.29
69-04	5/10/98	68.54	68.14	3.0 – 13.0	N/A	1.40	N/A	N/A	66.74
69-05	11/18/98	69.19	71.25	0.0 – 18.3	N/A	4.64	N/A	N/A	66.61
69-06	11/18/98	68.94	70.99	0.0 – 18.8	N/A	4.32	N/A	N/A	66.67
38-07	11/18/98	N/A	69.29	4.0 – 14.0	N/A	2.56	N/A	N/A	66.73

NOTE:
Well 38-07 is associated with the USTs 95 – 97 site.
MSL Mean sea level
BGS Below ground surface
BTOC Below top of casing
N/A Not applicable

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

Sample Location	Depth (ft BGS)	Date Sampled	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH (mg/kg)
TK94-S1	unknown	7/29/96	0.0011 U	0.0011 U	0.0011 U	0.0011 U	ND	5.7 U
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)
TK94-S1	unknown	7/29/96					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
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

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

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

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

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

NOTE:

1	Underground storage tank system closure performed by Anderson Columbia Environmental, Inc. (1996)
2	U.S. Environmental Protection Agency maximum contaminant levels
BGS	Below ground surface
BTEX	Benzene, toluene, ethylbenzene, and xylene
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

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APPENDIX III

WATER RESOURCES SURVEY DOCUMENTATION

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WATER RESOURCES SURVEY DOCUMENTATION

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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 mile 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 Floridian) 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 mile 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 94 SITE

A field potential receptor survey was conducted for the UST 94 site in November 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 94 Site

The UST 94 site is located approximately 550 feet southeast (downgradient) of the Well #3. Therefore, the UST 94 site is classified as being located greater than 500 feet to a withdrawal point. No public or non-public supply wells are located downgradient of the site within a 2-mile radius.

2.2 Surface Water Bodies Near the UST 94 Site

At the closest point to the site, Mill Creek is located approximately 3200 feet southeast and downgradient of the UST 94 site. In the direction of groundwater flow, a drainage ditch is located approximately 150 feet west of the UST 94 site. Based on the distances between the UST and the nearest surface water body, the site is classified as being located less than 500 feet to a downgradient surface water body.

2.3 Underground Utility Lines Near the UST 94 Site

A catch basin for a storm drain line is located about 10 feet southeast of the former tank pit. The rim elevation is 68.50 feet AMSL and the invert elevation is 66.60 feet AMSL, resulting in an invert depth of 1.9 feet BGS. However, the low contaminant concentrations at this site are located along the piping associated with the former tank that is approximately 180 feet northeast of the catch basin. This storm drain is not impacted by low levels of contamination at the site. In addition, there are several industrial

waste water lines located upgradient of the piping system associated with the former tank. The invert elevations of these lines are unknown, but due to the shallow groundwater at the site, the pipe invert may be in the vicinity of the water table. The low contaminant concentrations are downgradient of these lines, thus the lines are probably not impacted by the low levels of contamination at the site.

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)

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APPENDIX IV

SOIL BORING LOGS

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HTRW DRILLING LOG

HOLE NUMBER 09-01

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

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ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0–1	Silty SAND, medium grained, soft, moist dark gray (10YR 4/1)				
	1–2	mottling yellowish brown (10YR5/6)	7.6ppm			
	2–3					
	3–4	Sandy CLAY, soft, moist, gray (10YR6/1)	7.7ppm			
	4–5					
	5–6	Sandy CLAY, stiff, moist, gray (10YR 6/1)	8.0ppm		Soil Sample 690111	
	6–7					
	7–8		7.0ppm		Soil Sample 690121	▼ Wet below 8.0FT BGS
	8–9	Silty CLAY, with some fine sands, stiff, wet, brownish yellow (10YR 6/6)				Pushed to 14.0FT Set piezometer
	9–10					COLLECTED GROUNDWATER SAMPLE 690112 FROM TEMPORARY PIEZOMETER SCREENED FROM 4.0FT TO 14.0FT BGS

HTRW DRILLING LOG

HOLE NUMBER 69-02

PROJECT: Fort Stewart USTs | INSPECTOR H. Brown | 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)
	1–4	Silty SAND, medium grained, soft, moist, dark gray (10YR4/1)	8.7 ppm		Soil Sample 690211	
	3–4		8.1 ppm		Soil Sample 690221	▼ Wet below = 3.5 FT BGS
	4–8	Sandy CLAY, firm, moist, gray (10YR5/1)				
	8–10	Clayey SAND, medium grained, firm, wet, yellow (10YR7/8) mottled with red (2.5YR4/6)				

HTRW DRILLING LOG

HOLE NUMBER 69-02

PROJECT: Fort Stewart USTs | INSPECTOR H. Brown | SHEET 2 OF 2

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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, with less red mottling				
	12	SAND with clay, fine to medium grained, firm, wet brownish yellow (10YR 6/8)				End of drilling at 12.0 FT BGS Set piezometer COLLECTED GROUNDWATER SAMPLE 690212 FROM TEMPORARY PIEZOMETER SCREENED FROM 2.0 TO 12.0 FT BGS
	13					
	14					
	15					
	16					
	17					
	18					
	19					
	20					

HTRW DRILLING LOG

HOLE NUMBER 69-03

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

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0–1	Silty SAND, medium grained, soft, moist, dark gray (10YR4/1)	7.1ppm		Soil Sample 690311	
	1–2	color grading to black (10YR2/1)				
	2–3		6.8ppm		Soil Sample 690321	
	3–4	color grading to dark grayish brown (10YR4/2)				
	4–5		6.7ppm			
	5–6					▼ Wet below 6.0FT BGS
	6–7	Sandy CLAY, firm, wet, grayish brown (10YR5/2)	6.5ppm			
	7–8	color grading to gray (10YR5/1)				
	8–9	color grading to light gray (2.5Y7/1)				COLLECTED GROUNDWATER SAMPLE 690312 FROM TEMPORARY PIEZOMETER SCREENED FROM 1.0 TO 11.0FTBGS Pushed to 11.0FT Set piezometer
	9–10	mottling light brownish gray (2.5Y6/6)				

HTRW DRILLING LOG

HOLE NUMBER 69-04

PROJECT: Fort Stewart USTs | INSPECTOR H. Brown | SHEET 1 OF 2

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ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	1	Silty SAND, medium grained, soft, moist, dark gray (10YR4/1)	13.7ppm		Soil Sample 690421	
	2					
	3	Color grading to black (10YR2/1)	16.2ppm		Soil Sample 690411	▼ Wet below 3.5 FT BGS
	4					
	5	Silty SAND, medium grained, soft, wet olive yellow (2.5Y6/4)				
		Color grading to gray (2.5Y6/1)				
	6	Color grading to light gray (2.5Y7/1)				
	7	Sandy CLAY, firm, wet, gray (2.5Y6/1)				
		Color grading to gray (2.5Y5/1)				
	8	Silty SAND, medium to coarse grained, soft, wet black (2.5Y2.5/1)				
	9	Sandy CLAY, firm, wet, gray, (2.5Y5/1)				
	10	Color grading to brownish yellow (10YR6/8)				

HTRW DRILLING LOG

HOLE NUMBER 69-04

PROJECT: Fort Stewart USTs | INSPECTOR H. Brown | 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	Silty SAND, medium to coarse grained, soft, wet, Yellowish brown (2.5Y6/4)				COLLECTED GROUNDWATER SAMPLE 690412 FROM TEMPORARY PIEZOMETER SCREENED FROM 3.0 FT TO 13.0 FT BGS.
	13	Sandy CLAY, firm, wet, grayish brown (2.5Y5/2)				End of drilling at 13.5 FT BGS Set piezometer
	14					
	15					
	16					
	17					
	18					
	19					
	20					

HTRW DRILLING LOG

HOLE NUMBER 69-05

PROJECT: Fort Stewart USTs

INSPECTOR J. Shiflet

SHEET 1 OF 1

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ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		CONCRETE				
	1–2	silty SAND(SM), fine to medium grained, moist to saturated, dark gray/gray to orange to tan	155.0 ppm		Soil Sample 690511	
	3		157.0 ppm		Soil Sample 690521	
	4					▽ Wet below 3.8 ft BGS
	7	clayey SAND(SC), fine grained, gray to orange to tan				
	8					COLLECTED GROUNDWATER SAMPLE 690512 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 18.3 FT BGS
	9					
	10					END OF DRILLING AT 18.3 FT BGS AND SET TEMPORARY PIEZOMETER

HTRW DRILLING LOG

HOLE NUMBER 69-06

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)
		CONCRETE				
	1	Silty SAND(SM), fine to medium grained, moist to saturated, dark gray to orangish brown	165.0 ppm		Soil Sample 690621	
	2					
	3		76.6 ppm		Soil Sample 690611	▽ wet below 3.3 ft BGS
	4					
	5	Clayey SAND(SC), fine grained, gray				
	6					
	7	Clayey SAND(SC), fine grained, some silt, firm, mottled orange to tan				
	8					COLLECTED GROUNDWATER SAMPLE 690612 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 18.8 FT BGS.
	9					
	10					END OF DRILLING AT 18.8 FT BGS AND 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:		69-01	69-01	69-02	69-02
Sample ID:	Georgia UST	690111	690121	690211	690221
Sample Interval (ft BGS):	Corrective Action	4.0 - 6.0	6.0 - 8.0	0.0 - 2.0	2.0 - 4.0
Collection Date:	Levels for Soil[1]	09-May-98	09-May-98	09-May-98	09-May-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Volatile Organic Compounds					
Benzene	0.008	**0.0116 U**	0.0024 U	0.0022 U	0.0024 U
Toluene	10	0.168 =	0.003 J	0.031 =	0.0145 =
Ethylbenzene	6	0.0116 U	0.0024 U	0.0022 U	0.0024 U
Xylenes, Total	700	0.0349 U	0.0073 U	0.0065 U	0.007 U
Polynuclear Aromatic Hydrocarbons					
2-Chloronaphthalene	NRC	0.388 U	0.406 U	0.362 U	0.384 U
Acenaphthene	NRC	0.388 U	0.406 U	0.362 U	0.384 U
Acenaphthylene	NRC	0.388 U	0.406 U	0.362 U	0.384 U
Anthracene	NRC	0.388 U	0.406 U	0.362 U	0.384 U
Benzo(*a*)anthracene	NRC	0.388 U	0.406 U	0.362 U	0.384 U
Benzo(*a*)pyrene	NRC	0.388 U	0.406 U	0.362 U	0.384 U
Benzo(*b*)fluoranthene	NRC	0.388 U	0.406 U	0.362 U	0.384 U
Benzo(*g,h,i*)perylene	NRC	0.388 U	0.406 U	0.362 U	0.384 U
Benzo(*k*)fluoranthene	NRC	0.388 U	0.406 U	0.362 U	0.384 U
Chrysene	NRC	0.388 U	0.406 U	0.362 U	0.384 U
Dibenzo(*a,h*)anthracene	NRC	0.388 U	0.406 U	0.362 U	0.384 U
Fluoranthene	NRC	0.388 U	0.406 U	0.362 U	0.384 U
Fluorene	NRC	0.388 U	0.406 U	0.362 U	0.384 U
Indeno(*1,2,3-cd*)pyrene	NRC	0.388 U	0.406 U	0.362 U	0.384 U
Naphthalene	NRC	0.388 U	0.406 U	0.362 U	0.384 U
Phenanthrene	NRC	0.388 U	0.406 U	0.362 U	0.384 U
Pyrene	NRC	0.388 U	0.406 U	0.362 U	0.384 U
Other Analytes					
Lead	NRC		6.2 J		3.3 J
Total Petroleum Hydrocarbons	NRC	11.6 U	2.29 U	13.2 =	11.8 U

NOTE:

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

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

Analytical data for UST closure were submitted in the November 1996 Closure Report and are summarized in Appendix II.

Analytical data for sample 690623, a duplicate, is presented in this appendix, but not summarized in this table.

[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:		69-03	69-03	69-04	69-04
Sample ID:	Georgia UST	690311	690321	690411	690421
Sample Interval (ft BGS):	Corrective Action	0.0 - 2.0	2.0 - 4.0	0.0 - 2.0	2.0 - 4.0
Collection Date:	Levels for Soil[1]	09-May-98	09-May-98	10-May-98	10-May-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Volatile Organic Compounds					
Benzene	0.008	0.00073 J	0.0022 U	0.0057 =	0.0022 U
Toluene	10	0.0113 J	0.0596 =	0.0077 =	0.021 =
Ethylbenzene	6	0.0016 J	0.0022 U	0.0023 U	0.0022 U
Xylenes, Total	700	0.0139 =	0.0067 U	0.0051 J	0.0066 U
Polynuclear Aromatic Hydrocarbons					
2-Chloronaphthalene	NRC	0.362 U	0.361 U	0.379 U	0.361 U
Acenaphthene	NRC	0.362 U	0.361 U	0.379 U	0.361 U
Acenaphthylene	NRC	0.362 U	0.361 U	0.379 U	0.361 UJ
Anthracene	NRC	0.362 U	0.361 U	0.379 U	0.361 U
Benzo(*a*)anthracene	NRC	0.362 U	0.361 U	0.379 U	0.361 U
Benzo(*a*)pyrene	NRC	0.362 U	0.361 U	0.379 U	0.361 U
Benzo(*b*)fluoranthene	NRC	0.362 U	0.361 U	0.379 U	0.361 U
Benzo(*g,h,i*)perylene	NRC	0.362 U	0.361 U	0.379 U	0.361 U
Benzo(*k*)fluoranthene	NRC	0.362 U	0.361 U	0.379 U	0.361 U
Chrysene	NRC	0.362 U	0.361 U	0.379 U	0.361 U
Dibenzo(*a,h*)anthracene	NRC	0.362 U	0.361 U	0.379 U	0.361 U
Fluoranthene	NRC	0.0382 J	0.361 U	0.379 U	0.361 U
Fluorene	NRC	0.362 U	0.361 U	0.379 U	0.361 U
Indeno(*1,2,3-cd*)pyrene	NRC	0.362 U	0.361 U	0.379 U	0.361 U
Naphthalene	NRC	0.362 U	0.361 U	0.379 U	0.361 U
Phenanthrene	NRC	0.0423 J	0.361 U	0.379 U	0.361 U
Pyrene	NRC	0.0747 J	0.361 U	0.379 U	0.361 U
Other Analytes					
Lead	NRC		2.9 J		2.3 =
Total Petroleum Hydrocarbons	NRC	15.3 =	11.5 =	20.6 U	32.7 =

NOTE:

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

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

Analytical data for UST closure were submitted in the November 1996 Closure Report and are summarized in Appendix II.

Analytical data for sample 690623, a duplicate, is presented in this appendix, but not summarized in this table.

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

Station:		69-05	69-05	69-06	69-06
Sample ID:	Georgia UST	690511	690521	690611	690621
Sample Interval (ft BGS):	Corrective Action	0.7 - 2.2	2.2 - 3.7	0.7 - 2.2	2.2 - 3.7
Collection Date:	Levels for Soil[1]	17-Nov-98	17-Nov-98	17-Nov-98	17-Nov-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Volatile Organic Compounds					
Benzene	0.008	0.0023 U	0.0022 U	0.0022 U	0.0022 U
Toluene	10	0.0387 =	0.0049 =	0.00075 J	0.0013 J
Ethylbenzene	6	0.0023 U	0.0022 U	0.0022 U	0.0022 U
Xylenes, Total	700	0.0034 U	0.0033 U	0.0032 U	0.0033 U
Polynuclear Aromatic Hydrocarbons					
2-Chloronaphthalene	NRC	0.379 U	0.370 U	0.358 U	0.366 U
Acenaphthene	NRC	0.379 U	0.370 U	0.358 U	0.366 U
Acenaphthylene	NRC	0.379 U	0.370 U	0.358 U	0.366 U
Anthracene	NRC	0.379 U	0.370 U	0.358 U	0.366 U
Benzo(*a*)anthracene	NRC	0.379 U	0.370 U	0.358 U	0.366 U
Benzo(*a*)pyrene	NRC	0.379 U	0.370 U	0.358 U	0.366 U
Benzo(*b*)fluoranthene	NRC	0.379 U	0.370 U	0.358 U	0.366 U
Benzo(*g,h,i*)perylene	NRC	0.379 U	0.370 U	0.358 U	0.366 U
Benzo(*k*)fluoranthene	NRC	0.379 U	0.370 U	0.358 U	0.366 U
Chrysene	NRC	0.379 U	0.370 U	0.358 U	0.366 U
Dibenzo(*a,h*)anthracene	NRC	0.379 U	0.370 U	0.358 U	0.366 U
Fluoranthene	NRC	0.379 U	0.370 U	0.358 U	0.366 U
Fluorene	NRC	0.379 U	0.370 U	0.358 U	0.366 U
Indeno(*1,2,3-cd*)pyrene	NRC	0.379 U	0.370 U	0.358 U	0.366 U
Naphthalene	NRC	0.379 U	0.370 U	0.358 U	0.366 U
Phenanthrene	NRC	0.379 U	0.370 U	0.358 U	0.366 U
Pyrene	NRC	0.379 U	0.370 U	0.358 U	0.366 U
Other Analytes					
Lead	NRC		2.5 =		1.7 =
Total Petroleum Hydrocarbons	NRC	6.51 U	5.16 U	6.15 U	13.7 U

NOTE:

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

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

Analytical data for UST closure were submitted in the November 1996 Closure Report and are summarized in Appendix II.

Analytical data for sample 690623, a duplicate, is presented in this appendix, but not summarized in this table.

[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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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 65

690111DL

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4005S

Matrix: (soil/water) SOIL Lab Sample ID: 9805294-14

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I5024

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 14 Date Analyzed: 05/15/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 5.0

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	11.6	U	U
108-88-3	Toluene	168	D	=
100-41-4	Ethylbenzene	11.6	U	U
1330-20-7	Xylenes (total)	34.9	U	U

DATA VALIDATION COPY

use

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

690111

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4005S

Matrix: (soil/water) SOIL Lab Sample ID: 9805294-14

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 2T333

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: 14 decanted: (Y/N) N Date Extracted: 05/12/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/14/98

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	388	U
91-58-7	2-chloronaphthalene	388	U
209-96-8	acenaphthylene	388	U
83-32-9	acenaphthene	388	U
86-73-7	fluorene	388	U
85-01-8	phenanthrene	388	U
120-12-7	anthracene	388	U
206-44-0	fluoranthene	388	U
129-00-0	pyrene	388	U
56-55-3	benzo(a)anthracene	388	U
218-01-9	chrysene	388	U
205-99-2	benzo(b)fluoranthene	388	U
207-08-9	benzo(k)fluoranthene	388	U
50-32-8	benzo(a)pyrene	388	U
193-39-5	indeno(1,2,3-cd)pyrene	388	U
53-70-3	dibenz(a,h)anthracene	388	U
191-24-2	benzo(g,h,i)perylene	388	U

U

F240055

67

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: June 01, 1998

Sample ID	: 690111
Lab ID	: 9805294-14
Matrix	: Soil
Date Collected	: 05/09/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	~~2.77~~ 11.6 U F01, F06	2.30	11.6	mg/kg	1.0	JLP	05/13/98	1100	122011	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 (803) 769-7391.

Reviewed By

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

690121

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4006S

Matrix: (soil/water) SOIL Lab Sample ID: 9805295-07

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I5016

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 18 Date Analyzed: 05/15/98

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	3.0	P	J
100-41-4	Ethylbenzene	2.4	U	U
1330-20-7	Xylenes (total)	7.3	U	U

M08

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FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 69

690121

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4006S

Matrix: (soil/water) SOIL Lab Sample ID: 9805295-07

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 2T531

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: 18 decanted: (Y/N) N Date Extracted: 05/14/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/16/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

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

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CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	406	U
91-58-7	2-chloronaphthalene	406	U
209-96-8	acenaphthylene	406	U
83-32-9	acenaphthene	406	U
86-73-7	fluorene	406	U
85-01-8	phenanthrene	406	U
120-12-7	anthracene	406	U
206-44-0	fluoranthene	406	U
129-00-0	pyrene	406	U
56-55-3	benzo(a)anthracene	406	U
218-01-9	chrysene	406	U
205-99-2	benzo(b)fluoranthene	406	U
207-08-9	benzo(k)fluoranthene	406	U
50-32-8	benzo(a)pyrene	406	U
193-39-5	indeno(1,2,3-cd)pyrene	406	U
53-70-3	dibenz(a,h)anthracene	406	U
191-24-2	benzo(g,h,i)perylene	406	U

U

FORM I SV-1

OLM03.0

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: May 20, 1998

Sample ID	: 690121
Lab ID	: 9805295-07
Matrix	: Soil
Date Collected	: 05/09/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	U	2.29 U	2.42	12.2	mg/kg	1.0	JLP	05/13/98	1100	122011	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 (803) 769-7391.

Reviewed By

9805295-07

Form 1: Inorganic Analyses Data Sheet

DATA VALIDATION COPY

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SDG No.: FS4006S

Method Type: Total Metals

Sample ID: 9805295-07

Client ID: 690121

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

Matrix: SOIL Date Received: 5/11/98 Level: LOW

% Solids: 82.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	6.2	mg/kg	J	P Q2	P	0.12	TJA61 Trace ICPAES	980514a-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

690211

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4006S

Matrix: (soil/water) SOIL Lab Sample ID: 9805295-04

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I5010

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 8 Date Analyzed: 05/15/98

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	31.0		=
100-41-4	Ethylbenzene	2.2	U	U
1330-20-7	Xylenes (total)	6.5	U	U

DATA VALIDATION COPY

FORM I VOA

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

690211

73

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4006S

Matrix: (soil/water) SOIL Lab Sample ID: 9805295-04

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 2T528

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: 8 decanted: (Y/N) N Date Extracted: 05/14/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/16/98

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	362	U
91-58-7	2-chloronaphthalene	362	U
209-96-8	acenaphthylene	362	U
83-32-9	acenaphthene	362	U
86-73-7	fluorene	362	U
85-01-8	phenanthrene	362	U
120-12-7	anthracene	362	U
206-44-0	fluoranthene	362	U
129-00-0	pyrene	362	U
56-55-3	benzo(a)anthracene	362	U
218-01-9	chrysene	362	U
205-99-2	benzo(b)fluoranthene	362	U
207-08-9	benzo(k)fluoranthene	362	U
50-32-8	benzo(a)pyrene	362	U
193-39-5	indeno(1,2,3-cd)pyrene	362	U
53-70-3	dibenz(a,h)anthracene	362	U
191-24-2	benzo(g,h,i)perylene	362	U

U

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: May 20, 1998

Sample ID	: 690211
Lab ID	: 9805295-04
Matrix	: Soil
Date Collected	: 05/09/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		13.2 =	2.16	10.9	mg/kg	1.0	JLP	05/13/98	1100	122011	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 (803) 769-7391.

Reviewed By

9805295-04

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 75

690221

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4006S

Matrix: (soil/water) SOIL Lab Sample ID: 9805295-09

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I4032

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 15 Date Analyzed: 05/15/98

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	14.5		
100-41-4	Ethylbenzene	2.4	U	U
1330-20-7	Xylenes (total)	7.0	U	U

DATA VALIDATION COPY

FORM I VOA

SEMIVOLATILE ORGANICS 1B ANALYSIS DATA SHEET

EPA SAMPLE NO.

690221

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4006S

Matrix: (soil/water) SOIL Lab Sample ID: 9805295-09

Sample wt/vol: 30.6 (g/mL) G Lab File ID: 2T533

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: 15 decanted: (Y/N) N Date Extracted: 05/14/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 05/16/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.6

DATA VALIDATION COPY

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	384	U
91-58-7	2-chloronaphthalene	384	U
209-96-8	acenaphthylene	384	U
83-32-9	acenaphthene	384	U
86-73-7	fluorene	384	U
85-01-8	phenanthrene	384	U
120-12-7	anthracene	384	U
206-44-0	fluoranthene	384	U
129-00-0	pyrene	384	U
56-55-3	benzo(a)anthracene	384	U
218-01-9	chrysene	384	U
205-99-2	benzo(b)fluoranthene	384	U
207-08-9	benzo(k)fluoranthene	384	U
50-32-8	benzo(a)pyrene	384	U
193-39-5	indeno(1,2,3-cd)pyrene	384	U
53-70-3	dibenz(a,h)anthracene	384	U
191-24-2	benzo(g,h,i)perylene	384	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 (Task Order No. 8)

cc: SAIC00598 Report Date: May 20, 1998 Page 1 of 1

Sample ID	: 690221
Lab ID	: 9805295-09
Matrix	: Soil
Date Collected	: 05/09/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	11.8 ~~2.58~~ UJ-F01, F06,	2.34	11.8	mg/kg	1.0	JLP	05/13/98	1100	122011	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 (803) 769-7391.

Reviewed By

9805295-09

Form 1: Inorganic Analyses Data Sheet DATA VALIDATION COPY

SDG No.: FS4006S

Method Type: Total Metals

Sample ID: 9805295-09 | Client ID: 690221

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

Matrix: SOIL | Date Received: 5/11/98 | Level: LOW

% Solids: 85.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	3.3	mg/kg	5	P Q2	P	0.11	TJA61 Trace ICPAES	980514a-1

Color Before: | Clarity Before: | Texture:

Color After: | Clarity After: | Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 79

690311

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4006S

Matrix: (soil/water) SOIL Lab Sample ID: 9805295-05

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I609

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 8 Date Analyzed: 05/16/98

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	0.73	J	J
108-88-3	Toluene	11.3	P	J MØ8
100-41-4	Ethylbenzene	1.6	J	J
1330-20-7	Xylenes (total)	13.9		=

DATA VALIDATION COPY

COPY

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

690311

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4006S

Matrix: (soil/water) SOIL Lab Sample ID: 9805295-05

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 2T529

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: 8 decanted: (Y/N) N Date Extracted: 05/14/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 05/16/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

DATA VALIDATION COPY

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION	Q	
91-20-3	naphthalene	362	U	U
91-58-7	2-chloronaphthalene	362	U	↓
209-96-8	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	42.3	J	J
206-44-0	fluoranthene	362	U	U
129-00-0	pyrene	38.2	J	J
56-55-3	benzo(a)anthracene	74.7	J	J
218-01-9	chrysene	362	U	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 I SV-1 OLM03.0

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: May 20, 1998

Sample ID	: 690311
Lab ID	: 9805295-05
Matrix	: Soil
Date Collected	: 05/09/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		15.3	F01, F08, 2.16	10.9	mg/kg	1.0	JLP	05/13/98	1100	122011	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
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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 (803) 769-7391.

Reviewed By

9805295_05

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

690321

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4006S

Matrix: (soil/water) SOIL Lab Sample ID: 9805295-08

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I4031

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 10 Date Analyzed: 05/15/98

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	59.6		=
100-41-4	Ethylbenzene	2.2	U	U
1330-20-7	Xylenes (total)	6.7	U	U

DATA VALIDATION
COPY

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 83

690321

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4006S

Matrix: (soil/water) SOIL Lab Sample ID: 9805295-08

Sample wt/vol: 30.8 (g/mL) G Lab File ID: 2T532

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: 10 decanted: (Y/N) N Date Extracted: 05/14/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/16/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 9

DATA VALIDATION COPY

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	361	U
91-58-7	2-chloronaphthalene	361	U
209-96-8	acenaphthylene	361	U
83-32-9	acenaphthene	361	U
86-73-7	fluorene	361	U
85-01-8	phenanthrene	361	U
120-12-7	anthracene	361	U
206-44-0	fluoranthene	361	U
129-00-0	pyrene	361	U
56-55-3	benzo(a)anthracene	361	U
218-01-9	chrysene	361	U
205-99-2	benzo(b)fluoranthene	361	U
207-08-9	benzo(k)fluoranthene	361	U
50-32-8	benzo(a)pyrene	361	U
193-39-5	indeno(1,2,3-cd)pyrene	361	U
53-70-3	dibenz(a,h)anthracene	361	U
191-24-2	benzo(g,h,i)perylene	361	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 (Task Order No. 8)

cc: SAIC00598 Report Date: May 20, 1998

Sample ID	: 690321
Lab ID	: 9805295-08
Matrix	: Soil
Date Collected	: 05/09/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		11.5 F01,F08,	2.20	11.1	mg/kg	1.0	JLP	05/13/98	1100	122011	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
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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

Form 1: Inorganic Analyses Data Sheet

DATA VALIDATION COPY

85

SDG No.: FS4006S

Method Type: Total Metals

Sample ID: 9805295-08

Client ID: 690321

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

Matrix: SOIL Date Received: 5/11/98 Level: LOW

% Solids: 90.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	2.9	mg/kg	J	P B2	P	0.10	TJA61 Trace ICPAES	980514a-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

590411

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4005S

Matrix: (soil/water) SOIL Lab Sample ID: 9805294-18

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I5016

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 12 Date Analyzed: 05/15/98

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	5.7	
108-88-3	Toluene	7.7	
100-41-4	Ethylbenzene	2.3	U
1330-20-7	Xylenes (total)	5.1	J

UJ J

DATA VALIDATION COPY

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 87

690411

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4005S

Matrix: (soil/water) SOIL Lab Sample ID: 9805294-18

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 2T337

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: 12 decanted: (Y/N) N Date Extracted: 05/12/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/14/98

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
209-96-8	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

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: June 01, 1998

Sample ID	: 690411
Lab ID	: 9805294-18
Matrix	: Soil
Date Collected	: 05/10/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		20.6 U FØ1, FØ7	2.26	11.4	mg/kg	1.0	JLP	05/15/98	1100	122290	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
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Reviewed By

9805294-18

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 89

690421

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4004S

Matrix: (soil/water) SOIL Lab Sample ID: 9805292-14

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2I3028

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. 9 Date Analyzed: 05/13/98

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	21.0		=
100-41-4	Ethylbenzene	2.2	U	U
1330-20-7	Xylenes (total)	6.6	U	U

DATA VALIDATION
COPY

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

690421

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4004S

Matrix: (soil/water) SOIL Lab Sample ID: 9805292-14

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 4T303

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: 9 decanted: (Y/N) N Date Extracted: 05/12/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/13/98

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	361	U
91-58-7	2-chloronaphthalene	361	U
208-96-8	acenaphthylene	361	U
83-32-9	acenaphthene	361	U
86-73-7	fluorene	361	U
85-01-8	phenanthrene	361	U
120-12-7	anthracene	361	U
206-44-0	fluoranthene	361	U
129-00-0	pyrene	361	U
56-55-3	benzo(a)anthracene	361	U
218-01-9	chrysene	361	U
205-99-2	benzo(b)fluoranthene	361	U
207-08-9	benzo(k)fluoranthene	361	U
50-32-8	benzo(a)pyrene	361	U
193-39-5	indeno(1,2,3-cd)pyrene	361	U
53-70-3	dibenz(a,h)anthracene	361	U
191-24-2	benzo(g,h,i)perylene	361	U

U
↓
UJ C05
U

91

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: May 20, 1998

Sample ID	: 690421
Lab ID	: 9805292-14
Matrix	: Soil
Date Collected	: 05/10/98
Date Received	: 05/11/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		32.7 = F01, F08	2.18	11.0	mg/kg	1.0	JLP	05/15/98	1100	122290	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
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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).
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Reviewed By

9805292-14

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4004S

Method Type: Total Metals

Sample ID: 9805292-14

Client ID: 690421

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

Matrix: SOIL Date Received: 5/11/98 Level: LOW

% Solids: 91.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	2.3	mg/kg	=		P	0.10	TJA61 Trace ICPAES	980517-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

DATA VALIDATION COPY

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

2012

CHAIN OF CUSTODY RECORD

COC NO.: GAB013

PROJECT NAME: Fort Stewart New CAP Part A UST Investigation 9305

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

PROJECT MANAGER: Patty Stoll

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

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
730121	5/10/98	1120	Soil	1							1		1	2	
690421	5/10/98	915		1							1		1	2	
760421	5/8/98	1320					1		1					2	
900721	5/8/98	1205					1		1					2	
900521	5/8/98	945					1		1					2	
900621	5/8/98	1040					1		1					2	
760311	5/8/98	1600					1	1						2	
900711	5/8/98	1155					1	1						2	
900511	5/8/98	945					1	1						2	
900611	5/8/98	1050					1	1						2	
750421	5/8/98	1625					1						1	2	
760321	5/8/98	1610					1						1	2	
760921	5/9/98	1455					1						1	2	

REQUESTED PARAMETERS: PAH, DRO, Lead, TOC

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	5/11/98		
COMPANY NAME: SAIC	1130	COMPANY NAME:	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME:	5-11-98 1130	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 50

Cooler Temperature: 4°C

Cooler ID: #165

FEDEX NUMBER:

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

1 of 2

CHAIN OF CUSTODY RECORD

COC NO.: GAB014

PROJECT NAME: Fort Stewart New CAP Part A UST Investigation 9305

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

PROJECT MANAGER: Patty Stoll

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

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
760811	5/9/96	1655	Soil				1	1					2	
750211	5/6/96	1900					1	1					2	
750411	5/6/96	1650					1	1					2	
770211	5/8/96	1725					1	1					2	
770411	5/8/96	1555					1	1					2	
750221	5/6/96	1905					1		1				2	
770421	5/8/96	1615					1		1				2	
770221	5/8/96	1735					1		1				2	
690111	5/9/96	1540		1						1			2	
640221	5/9/96	1500		1							1		2	
730521	5/9/96	915		1						1			2	
730531	5/9/96	935		1						1			2	
690411	5/10/96	910		1						1			2	

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS:	Cooler Temperature: 4°C
Laura Lumley	5/11/96				
COMPANY NAME: SAIC	1130	COMPANY NAME:		Cooler ID: #131	FEDEX NUMBER:
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL	1130	COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:		COMPANY NAME:			

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

2 of 2

CHAIN OF CUSTODY RECORD

COC NO.: GAB014

PROJECT NAME: Fort Stewart New CAP Part A UST Investigation 7605

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

PROJECT MANAGER: Patty Stoll

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

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:
730581	5/9/96	1457	Soil	1						1			2
730561	5/9/96	1350		1						1			2
730551	5/9/96	1015		1						1			2
730571	5/9/96	1452		1						1			2
730541	5/9/96	1000		1						1			2
690211	5/9/96	1640		1						1			2
690311	5/9/96	1610		1						1			2
640111	5/9/96	1415		1						1			2
690121	5/9/96	1545		1							1		2
690321	5/9/96	1615		1							1		2
690221	5/9/96	1645		1							1		2
640121	5/9/96	1415		1							1		2
730511	5/9/96	910		1							1		2

REQUESTED PARAMETERS

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	5/11/96		
COMPANY NAME: SAIC	1130	COMPANY NAME:	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
	5/11-96		
COMPANY NAME: GEC	1130	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 52

Cooler Temperature: 4°C

Cooler ID: #131

FEDEX NUMBER:

V-37

95

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

690511

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-08

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 8L114

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: not dec. 12 Date Analyzed: 11/30/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
71-43-2	benzene	2.3	U	U
108-88-3	toluene	38.7		=
100-41-4	ethylbenzene	2.3	U	U
1330-20-7	xylenes (total)	3.4	U	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

690511

97

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-08

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4V315

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: 12 decanted: (Y/N) N Date Extracted:11/19/98

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/KG	Q
91-20-3	naphthalene	379	U
91-58-7	2-chloronaphthalene	379	U
209-96-8	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

DATA VALIDATED COPY

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

cc: SAIC01498 Report Date: December 04, 1998 Page 1 of 1

Sample ID	: 690511
Lab ID	: 9811627-08
Matrix	: Soil
Date Collected	: 11/17/98
Date Received	: 11/18/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	6.51 U F01, F06	5.62	11.4	mg/kg	1.0	AAT	12/02/98	0900	136981	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

DATA VALIDATION COPY

299

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

690521

99

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-14

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 8L139

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: not dec. 10 Date Analyzed: 12/01/98

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	4.9		
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.

690521

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-14

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4V321

Level: (low/med) LOW Date Received: 11/18/98

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

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/26/98

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

101

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	: 690521
Lab ID	: 9811627-14
Matrix	: Soil
Date Collected	: 11/17/98
Date Received	: 11/18/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry												
Total Rec. Petro. Hydrocarbons	U	5.16	U	5.50	11.1	mg/kg	1.0	AAT	12/02/98	0900	136981	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

305

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS6019S

Method Type: Total Metals

Sample ID: 9811627-14

Client ID: 690521

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

Matrix: SOIL Date Received: 11/18/98 Level: LOW

% Solids: 90.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	2.5	mg/kg			P	0.15	TJA61 Trace2 ICPAES	981202-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

690611

103

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-09

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 8L115

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: not dec. 7 Date Analyzed: 11/30/98

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	0.75	J	J
100-41-4	ethylbenzene	2.2	U	U
1330-20-7	xylenes (total)	3.2	U	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

690611

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-09

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4V316

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: 7 decanted: (Y/N) N Date Extracted:11/19/98

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/KG	Q
91-20-3	naphthalene	358	U
91-58-7	2-chloronaphthalene	358	U
209-96-8	acenaphthylene	358	U
83-32-9	acenaphthene	358	U
86-73-7	fluorene	358	U
85-01-8	phenanthrene	358	U
120-12-7	anthracene	358	U
206-44-0	fluoranthene	358	U
129-00-0	pyrene	358	U
56-55-3	benzo(a)anthracene	358	U
218-01-9	chrysene	358	U
205-99-2	benzo(b)fluoranthene	358	U
207-08-9	benzo(k)fluoranthene	358	U
50-32-8	benzo(a)pyrene	358	U
193-39-5	indeno(1,2,3-cd)pyrene	358	U
53-70-3	dibenz(a,h)anthracene	358	U
191-24-2	benzo(g,h,i)perylene	358	U

105

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	: 690611
Lab ID	: 9811627-09
Matrix	: Soil
Date Collected	: 11/17/98
Date Received	: 11/18/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	6.15 U F01,F06	5.33	10.8	mg/kg	1.0	AAT	12/02/98	0900	136981	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

300

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

690621

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-19

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 8L208

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: not dec. 9 Date Analyzed: 12/01/98

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	1.3	J	J
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.

690621

107

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-19

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4W211

Level: (low/med) LOW Date Received: 11/18/98

% 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
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

DATA VALIDATION COPY

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

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: January 12, 1999

Sample ID	: 690621
Lab ID	: 9811627-19
Matrix	: Soil
Date Collected	: 11/17/98
Date Received	: 11/18/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		13.7 U FD1, FD7	5.45	11.0	mg/kg	1.0	AAT	12/02/98	0900	136981	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 (843) 769-7391.

Valerie S Davis

Reviewed By

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29414
(843) 556-8171 • Fax (843) 766-1178

Printed on recycled paper.

9811627-19

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS6019S

Method Type: Total Metals

109

Sample ID: 9811627-19

Client ID: 690621

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

Matrix: SOIL Date Received: 11/18/98 Level: LOW

% Solids: 91.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	1.7	mg/kg			P	0.16	TJA61 Trace2 ICPAES	981202-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

690623

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-16

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 8L135

Level: (low/med) LOW Date Received: 11/18/98

% Moisture: not dec. 9 Date Analyzed: 12/01/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
71-43-2	benzene	2.2	U
108-88-3	toluene	2.2	U
100-41-4	ethylbenzene	2.2	U
1330-20-7	xylenes (total)	3.3	U

U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

690623

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6019S

Matrix: (soil/water) SOIL Lab Sample ID: 9811627-16

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4W208

Level: (low/med) LOW Date Received: 11/18/98

% 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
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

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	: 690623
Lab ID	: 9811627-16
Matrix	: Soil
Date Collected	: 11/17/98
Date Received	: 11/18/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	6.08 U F01, F06	5.45	11.0	mg/kg	1.0	AAT	12/02/98	0900	136981	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
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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).
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standard operating procedures. Please direct
any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Reviewed By

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS6019S

Method Type: Total Metals

113

Sample ID: 9811627-16

Client ID: 690623

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

Matrix: SOIL Date Received: 11/18/98 Level: LOW

% Solids: 91.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run	
7439-92-1	Lead	3.0	mg/kg			P	0.16	TJA61 Trace2 ICPAES	981202-I	=

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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

1 of 2

CHAIN OF CUSTODY RECORD

COC NO.: GA020

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
TBA036	11/17/98	745	water	2									2	9811626-11
741014	11/17/98	1330		2									2	-12
740912	11/17/98	1145		2	2								4	-13
740916	11/17/98	1145		2	2								4	-14
740612	11/17/98	1045		2									2	-15
740712	11/17/98	945		2									2	-16
741012	11/17/98	1330		2									2	-17
690512	11/17/98	1600		2									2	-18
690612	11/17/98	1630		2									2	-19
740611	11/17/98	1045	Soil	1				1					2	9811627-07
690511	11/17/98	1600		1				1					2	-08
690611	11/17/98	1630		1				1					2	-09
741011	11/17/98	1330		1				1					2	-10

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS:	Cooler Temperature:
Laura Lumley	11/18/98	BIONNE FRANCIS	11/18/98		
COMPANY NAME: SAIC	1245	COMPANY NAME:	1600	Cooler ID: #714	FEDEX NUMBER:
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time		
COMPANY NAME:	1245	COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:	1600	COMPANY NAME:			

NOTE: Cooler Receipt Checklist indicates a cooler temperature of 3°4°C upon arrival at the laboratory.

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2 of 2

CHAIN OF CUSTODY RECORD

COC NO.: 6A020

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
740911	11/17/98	1145	Soil	1				1					2	9811627-11
740721	11/17/98	945		1				1					2	-12
740621	11/17/98	1045		1						1			2	-13
690521	11/17/98	1600		1						1			2	-14
740711	11/17/98	945		1						1			2	-15
690623	11/17/98	1630		1						1			2	-16
741021	11/17/98	1330		1						1			2	-17
740921	11/17/98	1145		1						1			2	-18
690621	11/17/98	1630		1						1			2	-19

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	11/18/98	DIONNE FRANCIS	11/18/98
COMPANY NAME: SAIC	1245	COMPANY NAME: GEL	1600
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME:	11-18-98 1245	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:	11-18-98 1600	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 48

Cooler ID: #714

Cooler Temperature: 3°-4°C

FEDEX NUMBER:

NOTE: Cooler Receipt Checklist indicates a cooler temperature of 3°-4°C upon arrival at the laboratory.

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APPENDIX VI

ALTERNATE THRESHOLD LEVEL (ATL) CALCULATIONS

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The contaminant concentrations in soil did not exceed their respective soil threshold levels except for an elevated detection limit of 0.0116 mg/kg in sample 690111; thus, no alternate threshold levels were calculated. The maximum benzene concentration in groundwater was an elevated detection limit of 5.3 µg/L in May 1998 and there were no concentrations above MCLs in November 1998; thus, no alternate concentration limits were calculated for groundwater.

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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 94 site for the determination of free product. Refer to Figures 4 and 5 (Appendix I) for locations and screened intervals.

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APPENDIX VIII

GROUNDWATER LABORATORY RESULTS

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TABLE VIII-A. Summary of Groundwater Analytical Results

Station:			69-01	69-02	69-03
Sample ID:		In Stream	690112	690212	690312
Screened Interval (ft BGS)	Federal	Water Quality	4.0 - 14.0	2.0 - 12.0	1.0 - 11.0
Collection Date:	SDWA MCLs[1]	Standards[2]	09-May-98	09-May-98	09-May-98
Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
VOLATILE ORGANIC COMPOUNDS					
Benzene	5	71.28	**5.3 U**	2 U	2 U
Toluene	1,000	200,000	3.8 U	2 U	2 U
Ethylbenzene	700	28,718	4 UJ	2 U	2 U
Xylenes, Total	10,000	NRC	6.0 U	6 U	6 U
POLYNUCLEAR AROMATIC HYDROCARBONS					
2-Chloronaphthalene	NRC	NRC	11 U	10.5 U	11.1 U
Acenaphthene	NRC	NRC	11 U	10.5 U	11.1 U
Acenaphthylene	NRC	NRC	11 U	10.5 U	11.1 U
Anthracene	NRC	110,000	11 U	10.5 U	11.1 U
Benzo(*a*)anthracene	NRC	0.0311	11 U	10.5 U	11.1 U
Benzo(*a*)pyrene	0.2	0.0311	11 U	10.5 U	11.1 U
Benzo(*b*)fluoranthene	NRC	NRC	11 U	10.5 U	11.1 U
Benzo(*g,h,i*)perylene	NRC	NRC	11 U	10.5 U	11.1 U
Benzo(*k*)fluoranthene	NRC	0.0311	11 U	10.5 U	11.1 U
Chrysene	NRC	0.0311	11 U	10.5 U	11.1 U
Dibenzo(*a,h*)anthracene	NRC	0.0311	11 U	10.5 U	11.1 U
Fluoranthene	NRC	370	11 U	10.5 U	11.1 U
Fluorene	NRC	14,000	11 U	10.5 U	11.1 U
Indeno(*1,2,3-cd*)pyrene	NRC	0.0311	11 U	10.5 U	11.1 U
Naphthalene	NRC	NRC	11 U	10.5 U	11.1 U
Phenanthrene	NRC	NRC	11 U	10.5 U	11.1 U
Pyrene	NRC	11,000	11 U	10.5 U	11.1 U

NOTES:

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

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

[1] U.S. Environmental Protection Agency Safe Drinking Water Act Maximum Contaminant Level

[2] GA EPD water quality standards (Chapter 391-3-6.03)

Bold values exceed MCLs

Laboratory Qualifiers

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

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

Station:			69-04	69-05	69-06
Sample ID:		In Stream	690412	690512	690612
Screened Interval (ft BGS)	Federal	Water Quality	3.0 - 13.0	0.0 - 18.3	0.0 - 18.8
Collection Date:	SDWA MCLs[1]	Standards[2]	10-May-98	17-Nov-98	17-Nov-98
Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
VOLATILE ORGANIC COMPOUNDS					
Benzene	5	71.28	2 U	2 U	0.57 J
Toluene	1,000	200,000	2 U	2 U	2 U
Ethylbenzene	700	28,718	2 U	2 U	2 U
Xylenes, Total	10,000	NRC	6 U	0.5 J	3 U
POLYNUCLEAR AROMATIC HYDROCARBONS					
2-Chloronaphthalene	NRC	NRC	10.5 U	10.8 U	11.6 U
Acenaphthene	NRC	NRC	10.5 U	10.8 U	11.6 U
Acenaphthylene	NRC	NRC	10.5 U	10.8 U	11.6 U
Anthracene	NRC	110,000	10.5 U	10.8 U	11.6 U
Benzo(*a*)anthracene	NRC	0.0311	10.5 U	10.8 U	11.6 U
Benzo(*a*)pyrene	0.2	0.0311	10.5 U	10.8 U	11.6 U
Benzo(*b*)fluoranthene	NRC	NRC	10.5 U	10.8 U	11.6 U
Benzo(*g,h,i*)perylene	NRC	NRC	10.5 U	10.8 U	11.6 U
Benzo(*k*)fluoranthene	NRC	0.0311	10.5 U	10.8 U	11.6 U
Chrysene	NRC	0.0311	10.5 U	10.8 U	11.6 U
Dibenzo(*a,h*)anthracene	NRC	0.0311	10.5 U	10.8 U	11.6 U
Fluoranthene	NRC	370	10.5 U	10.8 U	11.6 U
Fluorene	NRC	14,000	10.5 U	10.8 U	11.6 U
Indeno(*1,2,3-cd*)pyrene	NRC	0.0311	10.5 U	10.8 U	11.6 U
Naphthalene	NRC	NRC	10.5 U	10.8 U	11.6 U
Phenanthrene	NRC	NRC	10.5 U	10.8 U	11.6 U
Pyrene	NRC	11,000	10.5 U	10.8 U	11.6 U

NOTES:

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

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

[1] U.S. Environmental Protection Agency Safe Drinking Water Act Maximum Contaminant Level

[2] GA EPD water quality standards (Chapter 391-3-6.03)

Bold values exceed MCLs

Laboratory Qualifiers

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

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 129

690112

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4014W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805308-06

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2J2015

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. _____ Date Analyzed: 05/19/98

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	5.3	U	F04, F07
108-88-3	Toluene	3.8	U	F04, F07
100-41-4	Ethylbenzene	4.0	P UJ	F04, F07, M08
1330-20-7	Xylenes (total)	6.0 ~~1.7~~	J UJ	F04, F06

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

690112

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4011W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805303-05

Sample wt/vol: 910.0 (g/mL) ML Lab File ID: 4T411

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: _____ decanted: (Y/N) Date Extracted: 05/12/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/14/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

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	11.0	U
91-58-7	2-chloronaphthalene	11.0	U
208-96-8	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

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 13

690212

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4013W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805307-17

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2J1052

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. _____ Date Analyzed: 05/20/98

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

Soil Extract Volume:_____(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

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

690212

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4011W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805303-06

Sample wt/vol: 950.0 (g/mL) ML Lab File ID: 4T412

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: _____ decanted: (Y/N) Date Extracted: 05/12/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/14/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

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	10.5	U
91-58-7	2-chloronaphthalene	10.5	U
208-96-8	acenaphthylene	10.5	U
83-32-9	acenaphthene	10.5	U
86-73-7	fluorene	10.5	U
85-01-8	phenanthrene	10.5	U
120-12-7	anthracene	10.5	U
206-44-0	fluoranthene	10.5	U
129-00-0	pyrene	10.5	U
56-55-3	benzo(a)anthracene	10.5	U
218-01-9	chrysene	10.5	U
205-99-2	benzo(b)fluoranthene	10.5	U
207-08-9	benzo(k)fluoranthene	10.5	U
50-32-8	benzo(a)pyrene	10.5	U
193-39-5	indeno(1,2,3-cd)pyrene	10.5	U
53-70-3	dibenz(a,h)anthracene	10.5	U
191-24-2	benzo(g,h,i)perylene	10.5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

133

690312

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4014W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805308-08

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2J2017

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. _____ Date Analyzed: 05/19/98

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

U

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

690312

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4011W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805303-13

Sample wt/vol: 900.0 (g/mL) ML Lab File ID: 4T419

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: _____ decanted: (Y/N) _____ Date Extracted: 05/12/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/15/98

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/L	Q
91-20-3	naphthalene	11.1	U
91-58-7	2-chloronaphthalene	11.1	U
208-96-8	acenaphthylene	11.1	U
83-32-9	acenaphthene	11.1	U
86-73-7	fluorene	11.1	U
85-01-8	phenanthrene	11.1	U
120-12-7	anthracene	11.1	U
206-44-0	fluoranthene	11.1	U
129-00-0	pyrene	11.1	U
56-55-3	benzo(a)anthracene	11.1	U
218-01-9	chrysene	11.1	U
205-99-2	benzo(b)fluoranthene	11.1	U
207-08-9	benzo(k)fluoranthene	11.1	U
50-32-8	benzo(a)pyrene	11.1	U
193-39-5	indeno(1,2,3-cd)pyrene	11.1	U
53-70-3	dibenz(a,h)anthracene	11.1	U
191-24-2	benzo(g,h,i)perylene	11.1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

690412 | 35

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4013W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805307-19

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2J1046

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: not dec. _____ Date Analyzed: 05/20/98

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

Soil Extract Volume:_____(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

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

690412

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4011W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805303-09

Sample wt/vol: 950.0 (g/mL) ML Lab File ID: 4T415

Level: (low/med) LOW Date Received: 05/11/98

% Moisture: _____ decanted: (Y/N) Date Extracted: 05/12/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 05/14/98

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/L	Q
91-20-3	naphthalene	10.5	U
91-58-7	2-chloronaphthalene	10.5	U
208-96-8	acenaphthylene	10.5	U
83-32-9	acenaphthene	10.5	U
86-73-7	fluorene	10.5	U
85-01-8	phenanthrene	10.5	U
120-12-7	anthracene	10.5	U
206-44-0	fluoranthene	10.5	U
129-00-0	pyrene	10.5	U
56-55-3	benzo(a)anthracene	10.5	U
218-01-9	chrysene	10.5	U
205-99-2	benzo(b)fluoranthene	10.5	U
207-08-9	benzo(k)fluoranthene	10.5	U
50-32-8	benzo(a)pyrene	10.5	U
193-39-5	indeno(1,2,3-cd)pyrene	10.5	U
53-70-3	dibenz(a,h)anthracene	10.5	U
191-24-2	benzo(g,h,i)perylene	10.5	U

CC

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CHAIN OF CUSTODY RECORD

COC NO.: GAB 004

PROJECT NAME: Fort Stewart New CAP Part A UST Investigation 9605

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

PROJECT MANAGER: Patty Stoll

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

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
770412	5/8/96	1730	water		2								2	
640212	5/9/96	1530			2								2	
760532	5/8/96	1645			2								2	
760522	5/8/96	1745			2								2	
580214	5/10/96	1150			2								2	
760712	5/9/96	1840			2								2	
690112	5/9/96	1600			2								2	

5/11/96

RELINQUISHED BY: Laura Lumley	Date/Time 5/11/96 1130	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 13	Cooler Temperature: 4°C
COMPANY NAME: SAIC		COMPANY NAME:		Cooler ID: ~~16~~ 469	FEDEX NUMBER:
RECEIVED BY:	Date/Time 5-11-96 1130	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL		COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:		COMPANY NAME:			

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CHAIN OF CUSTODY RECORD

COC NO.: GAB049

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

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:
770412	5/8/96	1730	water		1								1
640112	5/9/96	1445			1								1
690212	5/9/96	1700			2								2
760612	5/9/96	1750			2								2
760812	5/9/96	1930			2								2
690412	5/10/96	945			2								2
730212	5/10/96	1325			2								2
760912	5/10/96	1345			1								1
	5/11/96												

REQUESTED PARAMETERS

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

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	5/11/96		
COMPANY NAME: SAIC	1130	COMPANY NAME:	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
	5-11-96		
COMPANY NAME: GEL	1130	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 13
Cooler ID: 549
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.: GAB010

PROJECT NAME: Fort Stewart New CAP Part A UST Investigation 9305
PROJECT NUMBER: 01-0331-04-9305-200
PROJECT MANAGER: Patty Stoll
Sampler (Signature) (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	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
730312	5/10/98	1445	water		1								1	
590112	5/10/98	1040			2								2	
600112	5/10/98	1555			2								2	
690312	5/9/98	1620			2								2	
730112	5/10/98	1135			2								2	
560212	5/10/98	1150			2								2	
730416	5/10/98	1430			2								2	

5/11/98

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 13	Cooler Temperature: 4°C
Laura Dunlap	5/11/98			Cooler ID: #508	FEDEX NUMBER:
COMPANY NAME: SAIC	1130	COMPANY NAME:			
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL	5-11-98 1130	COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:		COMPANY NAME:			

VIII-15

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1045

CHAIN OF CUSTODY RECORD

COC NO.: SAIC016

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

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

PROJECT MANAGER: Patty Stoll

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

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
710416	5/10/96	1600	water	2									2	Unpreserved
780125	5/10/96	1900		2									2	
760125	5/10/96	1735					2						2	
710412	5/10/96	1605		2									2	
760112	5/10/96	1705		2									2	Unpreserved
760712	5/10/96	1200		2									2	
760112	5/10/96	1215		2									2	
730416	5/10/96	1430		2									2	
730312	5/10/96	1445		2									2	
730212	5/10/96	1525		2									2	
690212	5/1/96	1700		2									2	
760214	5/10/96	1130		2									2	
710112	5/10/96	945	↓	2									2	Unpreserved

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS:	Cooler Temperature: 4°C
COMPANY NAME: SAIC	5/11/96 1130	COMPANY NAME:		Cooler ID: # 388	FEDEX NUMBER:
RECEIVED BY:	Date/Time 5/11/96	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEC	1130	COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:		COMPANY NAME:			

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3015

CHAIN OF CUSTODY RECORD

COC NO.: GA3012

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

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

PROJECT MANAGER: Patty Stoll

Sampler (Signature) Laura Lumsden (Printed Name) Laura Lumsden

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:
610112	5/1/96	1600	water	2									2
750416	5/6/96	1630		2									2
690312	5/9/96	1600		2									2
700512	5/6/96	940		2									2
660214	5/8/96	935		2									2
750312	5/10/96	1945		2									2
660112	5/8/96	935		2									2
700612	5/8/96	1115		2									2
660212	5/6/96	955		2									2
750225	5/8/96	1400					2						2
TBA005	5/6/96	745		2									2
TBA007	5/9/96	745		2									2
TBA008	5/10/96	745	↓	2									2

REQUESTED PARAMETERS

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumsden	5/11/96		
COMPANY NAME: SAIC	1130	COMPANY NAME:	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL	5/11/96 1130	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

Cooler Temperature: 4/0C

Cooler ID: # 3888

FEDEX NUMBER:

VIII-17

4/1

DATA VALIDATION COPY

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

690512

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6018W

Matrix: (soil/water) WATER Lab Sample ID: 9811626-18

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 1K318

Level: (low/med) LOW Date Received: 11/18/98

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

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	benzene	2.0	U
108-88-3	toluene	2.0	U
100-41-4	ethylbenzene	2.0	U
78-93-3	xylenes (total)	0.50	J

FORM I VOA OLM03.0

18:04 GEN ENGINEERING TEL:803-852-5812 P. 010

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 143

690512

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6018W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811626-08

Sample wt/vol: 930.0 (g/mL) ML Lab File ID: 4V113

Level: (low/med) LOW Date Received: 11/18/98

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

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

Injection Volume: 1.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	10.8	U
91-58-7	2-chlorcnaphthalene	10.8	U
209-96-8	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

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

690612

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6018W

Matrix: (soil/water) WATER Lab Sample ID: 9811626-19

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 1K319

Level: (low/med) LOW Date Received: 11/18/98

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

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	benzene	0.57	J	J
108-88-3	toluene	2.0	U	U
100-41-4	ethylbenzene	2.0	U	
78-93-3	xylenes (total)	3.0	U	

DATA VALIDATION COPY

FORM I VOA OLM03.0

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

690612 45

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6018W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811626-06

Sample wt/vol: 860.0 (g/mL) ML Lab File ID: 4V111

Level: (low/med) LOW Date Received: 11/18/98

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

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

Injection Volume: 1.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	11.6	U
91-58-7	2-chloronaphthalene	11.6	U
209-96-8	acenaphthylene	11.6	U
83-32-9	acenaphthene	11.6	U
86-73-7	fluorene	11.6	U
85-01-8	phenanthrene	11.6	U
120-12-7	anthracene	11.6	U
206-44-0	fluoranthene	11.6	U
129-00-0	pyrene	11.6	U
56-55-3	benzo(a)anthracene	11.6	U
218-01-9	chrysene	11.6	U
205-99-2	benzo(b)fluoranthene	11.6	U
207-08-9	benzo(k)fluoranthene	11.6	U
50-32-8	benzo(a)pyrene	11.6	U
193-39-5	indeno(1,2,3-cd)pyrene	11.6	U
53-70-3	dibenz(a,h)anthracene	11.6	U
191-24-2	benzo(g,h,i)perylene	11.6	U

U

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CHAIN OF CUSTODY RECORD

COC NO.: GA019

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
741014	11/17/98	1330	water		Z								Z	9811626-05
690612	11/17/98	1630			Z								Z	-06
741012	11/17/98	1330			Z								Z	-07
690512	11/17/98	1500			Z								Z	-08
740612	11/17/98	1045			Z								Z	-09
740712	11/17/98	945			Z								Z	-10

11/17/98

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	11/18/98 1245	DIONNE FRANCIS	11/18/98 1600
COMPANY NAME: SAIC		COMPANY NAME: GEL	
RECEIVED BY:	Date/Time 11-18-98 1245	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	
RELINQUISHED BY:	Date/Time 11-18-98 1600	RECEIVED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

Cooler ID: # 715

Cooler Temperature:

FEDEX NUMBER:

NOTE: Cooler Receipt Checklist indicates a cooler temperature of 3°-4°C upon arrival at the laboratory.

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1 of 2

CHAIN OF CUSTODY RECORD

COC NO.: GA020

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
TBA036	11/17/98	745	water	2									2	9811626-11
741014	11/17/98	1330		2									2	-12
740912	11/17/98	1145		2	2								4	-13
740916	11/17/98	1145		2	2								4	-14
740612	11/17/98	1045		2									2	-15
740712	11/17/98	945		2									2	-16
741012	11/17/98	1330		2									2	-17
690512	11/17/98	1600		2									2	-18
690612	11/17/98	1630		2									2	-19
740611	11/17/98	1045	Soil	1				1					2	9811627-07
690511	11/17/98	1600		1				1					2	-08
690611	11/17/98	1630		1				1					2	-09
741011	11/17/98	1330		1				1					2	-10

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	11/18/98	Bionne Francis	11/18/98
COMPANY NAME: SAIC	1245	COMPANY NAME: GEL	1600
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL	11/18/98 1245	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME: GEL	11/18/98 1600	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

Cooler ID: #714

Cooler Temperature:

FEDEX NUMBER:

NOTE: Cooler Receipt Checklist indicates a cooler temperature of 30-40°C upon arrival at the laboratory.

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APPENDIX IX

CONTAMINATED SOIL DISPOSAL MANIFESTS

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As indicated in the Closure Report for UST 94 submitted to GA EPD in December 1996, no contaminated soil was removed from the site, thus there are no manifests.

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APPENDIX X

SITE RANKING FORM

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SITE RANKING FORM

Facility Name: UST 94, Building 1320/33 **Ranked by:** S. Stoller

County: Liberty **Facility ID #:** 9-089076 **Date Ranked:** 4/15/99

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SOIL CONTAMINATION

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

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

B. Total Benzene -
Maximum Concentration found on the site

☐	≤0.005 mg/kg	=	0
☒	>0.005 - .05 mg/kg	=	1
☐	>0.05 - 1 mg/kg	=	10
☐	>1 - 10 mg/kg	=	25
☐	>10 - 50 mg/kg	=	40
☐	>50 mg/kg	=	50

C. Depth to Groundwater
(bls = below land surface)

☐	>50' bls	=	1
☐	>25' - 50' bls	=	2
☐	>10' - 25' bls	=	5
☒	≤10' bls	=	10

Fill in the blanks: (A. 0) + (B. 1) = (1) x (C. 10) = (D. 10)

GROUNDWATER CONTAMINATION

E. Free Product (Nonaqueous-phase liquid hydrocarbons; See Guidelines For definition of "sheen").

☒	No free product =	0
☐	Sheen - 1/8" =	250
☐	>1/8" - 6" =	500
☐	>6" - 1ft. =	1,000
☐	For every additional inch, add another 100 points =	1,000 +

F. Dissolved Benzene -
Maximum Concentration at the site
(One well must be located at the source of the release.)

☐	≤5 µg/L	= 0
* ☒	>5 - 100 µg/L	= 5
☐	>100 - 1,000 µg/L	= 50
☐	>1,000 - 10,000 µg/L	= 100
☐	>10,000 µg/L	= 250

* Based on an elevated detection limit of 5.3 µg/L in one sample

Fill in the blanks: (E. 0) + (F. 5) = (G. 5)

Facility Name: UST 94, Building 1320/33 County: Liberty Facility ID #: 9-089076

POTENTIAL RECEPTORS (MUST BE FIELD-VERIFIED)

Distance from nearest contaminant plume boundary to the nearest downgradient and hydraulically connected Point of Withdrawal for water supply. **If the point of withdrawal is not hydraulically connected, evidence as outlined in the CAP-A guidance document MUST be presented to substantiate this claim.**

H. Public Water Supply

☐	Impacted	= 2000
☐	≤500'	= 500
☐	>500' - ¼ mi	= 25
☐	¼ mi - 1 mi	= 10
☐	>1 mi - 2 mi	= 2
* ☒	> 2 mi	= 0

For lower susceptibility areas only:

☐	>1 mi	= 0

Note: If site is in lower susceptibility area, do not use the shaded areas.

*For justification that withdrawal point is not hydraulically connected, see attached text.

I. Non-Public Water Supply

☐	Impacted	= 1000
☐	≤100'	= 500
☐	>100' - 500'	= 25
☐	>500' - ¼ mi	= 5
☐	>¼ - ½ mi	= 2
☒	>½ mi	= 0

For lower susceptibility areas only:

☐	>¼ mi	= 0

J. Distance from nearest Contaminant P ume boundary to downgradient Surface Waters **OR UTILITY TRENCHES & VAULT** (a utility trench may be omitted from ranking if its invert elevation is more than 5 feet above the water table)

☐	Impacted	= 500
☒	≤500'	= 50
☐	>500' - 1,000'	= 5
☐	>1,000'	= 1

K. Distance from any Free Product to basements and crawl spaces

☐	Impacted	= 500
☐	<500'	= 50
☐	>500' - 1,000'	= 5
☒	>1,000' or no free product.	= 0

Fill in the blanks: (H. 0) + (I. 0) + (J. 50) + (K. 0) = L. 50

(G. 5) x (L. 50) = M. 25

(M. 25) + (D. 10) = N. 26

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. 260) x (P. 1) = (260) + (Q. 0)

= 260
ENVIRONMENTAL SENSITIVITY SCORE

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ADDITIONAL GEOLOGIC AND HYDROLOGIC DATA

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ADDITIONAL GEOLOGIC AND HYDROLOGIC DATA

The following information is presented to provide supplemental information to Section II.D.5 of the CAP-Part A form and Item H of the Site Ranking Form and provides detailed information relating to the geologic and hydrogeologic conditions at Fort Stewart, which supports Fort Stewart's determination that the water withdrawal point(s) located at Fort Stewart is (are) not hydraulically connected to the surficial aquifer.

1.0 REGIONAL AND LOCAL GEOLOGY

Fort Stewart is located within the coastal plain physiographic province. This province is typified by nine southeastward dipping strata that increase in thickness from 0 feet at the fall line located approximately 350 miles inland from the Atlantic coast, to approximately 4,200 feet at the coast. State geologic records describe a probable petroleum exploration well (the No. 1 Jelks-Rogers) located in the region as encountering crystalline basement rocks at a depth of 4,254 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 1,970 feet thick and dominated by clastics. The Tertiary section was found to be approximately 2,170 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 (Metcalf & Eddy 1996).

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 (Metcalf & Eddy 1996).

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 (Metcalf & Eddy 1996).

2.0 REGIONAL AND LOCAL HYDROGEOLOGY

The hydrogeology in the vicinity of Fort Stewart is dominated by two aquifers referred to as the Principal Artesian and the surficial aquifers. The Principal Artesian aquifer is the lowermost hydrologic unit and is regionally extensive from South Carolina through Georgia, Alabama, and most of Florida. Known elsewhere as the Floridan, this aquifer is composed primarily of Tertiary-age limestone, including the Bug Island Formation, the Ocala Group, and the Suwannee Limestone. These formations are approximately 800 feet thick, and groundwater from this aquifer is used primarily for drinking water (Arora 1984).

The uppermost hydrologic unit is the surficial aquifer, which consists of widely varying amounts of sand and clay ranging from 55 to 150 feet in thickness. This aquifer is primarily used for domestic lawn and agricultural irrigation. The top of the water table ranges from approximately 2 to 10 feet BGS (Geraghty and Miller 1993). The base of the aquifer corresponds to the top of the underlying dense clay of the Hawthorn Group. The Hawthorn Group was not encountered during drilling at this site but is believed to be located at 40 to 50 feet BGS; thus, the effective aquifer thickness would be approximately 35 to 45 feet. Soil surveys for Liberty and Long Counties describe the occurrence of a perched water table within the Stilson loamy sands present within Fort Stewart (Looper 1980).

The confining layer for the Principal Artesian aquifer is the phosphatic clay of the Hawthorn Group and ranges in thickness from 15 to 90 feet. The vertical hydraulic conductivity of this confining unit is on the order of 10^{-8} cm/sec. There are minor occurrences of aquifer material within the Hawthorn Group; however, they have limited utilization (Miller 1990). The Hawthorn Group has been divided into three formations: Coosawhatchie Formation, Markshead Formation, and the Parachula Formation, which are listed from youngest to oldest.

The Coosawhatchie Formation is composed predominantly of clay but also has sandy clay, argillaceous sand, and phosphorite units. The formation is approximately 170 feet thick in the Savannah Georgia area. This unit disconformably overlies the Markshead Formation and is distinguished from the underlying unit by dark phosphatic clays or phosphorite in the lower part and fine-grained sand in the upper part.

The Markshead Formation is approximately 70 feet thick in the Savannah Georgia area and consists of light-colored phosphatic, slightly dolomitic, argillaceous sand to fine-grained sandy clay with scattered beds of dolostone and limestone.

The Parachula Formation consists of sand, clay, limestone, and dolomite, and is approximately 10 feet thick in the Savannah Georgia area. The Parachula Formation generally overlies the Suwannee Limestone in Georgia.

Groundwater encountered at all the UST investigation sites is part of the Surficial Aquifer system. Based on the fact that all public and non-public water supply wells draw water from the Principal (Floridan) Aquifer, and that the Hawthorn confining unit separates the Principal Aquifer from the Surficial Aquifer, it is concluded that there is no hydraulic interconnection between the Surficial Aquifer (and associated groundwater plumes, if applicable) located beneath former UST sites and identified water supply withdrawal points at Fort Stewart.

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APPENDIX XI

COPIES OF PUBLIC NOTIFICATION LETTERS AND CERTIFIED RECEIPTS OR NEWSPAPER NOTICE

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STATE OF GEORGIA
CHATHAM COUNTY

Affidavit of Publication
___Savannah Morning News
___Savannah Evening Press

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Personnally appeared before me, Joan T. Jenkins, to me known, who being sworn, deposes and says:

That he is the Classified Adv Supv of Southeastern Newspapers Corporation, a Georgia corporation, doing business in Chatham County, Georgia, under the trade name of Savannah Morning News/Savannah Evening Press, a daily newspaper published in said county;

That he is authorized to make affidavits of publication on behalf of said published corporation;

That said newspaper is of general circulation in said county and in the area adjacent thereto;

That he has reviewed the regular editions of the Savannah Morning News/Savannah Evening Press, published on 7-19, 1998, 7-26, 1998, _____, 1998, _____, 1998, and finds that the following Advertisement, to-wit:

PUBLIC NOTICE
Notification of Corrective Action Plan, Underground Storage Tank Releases, Fort Stewart Garrison Area, Fort Stewart, Georgia

The United States Army Corps of Engineers and Fort Stewart Directorate of Public Works have prepared a Corrective Action Plan (CAP) - Part A and Part B reports to assess the environmental impact of diesel, gasoline, or waste oil releases from numerous underground storage tanks (USTs) located at the above referenced property. These reports will be submitted to the Georgia Environmental Protection Division after September 30, 1998. A listing of the UST sites for which CAP - Part A and Part B reports have been prepared is presented at the end of this notification.

The Georgia rules for UST management require notification of the public most directly affected by the plans. If you would like a copy of any of the plans, please contact:

Commander, 3rd Infantry Division (Mechanized) and Fort Stewart/Hunter Army Airfield (IT Richardi, Building 1139, Fort Stewart, Georgia 31314-5000

A copy of each requested plan will be mailed for a nominal copying and shipping fee.

To make comments on any of the plans, or to examine the Georgia Environmental Protection Division's files, contact the Corrective Action Unit, Underground Storage Tank Management Program, Environmental Protection Division of 404-362-2687. The Underground Storage Tank Management Program will accept comments on the CAP - Part A and Part B reports up to 30 days after submittal to the Georgia Environmental Protection Division. Following is their mailing address: Corrective Action Unit, Underground Storage Tank Management Program, 4244 International Parkway, Suite 100, Atlanta, Georgia 30354

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

Tank Number / Facility ID / Building
242, 9-089041, 241
244, 9-089041, 241
28B, 9-089011, 1720
91B, 9-089110, 1339
1008, 9-089081, 1350
214, 9-089015, 1503
215, 9-089015, 1503
123, 9-089092, 833
106, 9-089022, 4923
111, 9-089070, 1239
36, 9-089016, 1512
94, 9-089076, 1228
4, 9-089055, 1840
5 and 6, 9-089066, 1824
52, 9-089050, 1002
X, 9-, 10650I
1, 9-089064, 1842
18, 9-089011, 1720
20, 9-089011, 1720
28A, 9-08901A, 1720
30-35, 9-089028, 1621
202-204, 9-089045, 241
261, 9-089118, 430
225, 9-089090, 4529
122, 9-089082, 7705
257-260, 9-089037, 430
2 and 3, 9-089065, 1840
87 and 88, 9-089073, 1245
48 and 49, 9-089054, 1175
226 and 227, 9-089042, 4530

appeared in each of said editions.

Joan T. Jenkins
(Deponent)

Sworn to and subscribed before me this 28 day of July, 1998.

Lillie D. Lang
Notary Public, Chatham County, Georgia

LILLIE D. LANG
Notary Public, Chatham County, Ga.
My Commission Expires Apr. 8, 2001

Form 121 rev.

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APPENDIX XII

GUST TRUST FUND REIMBURSEMENT APPLICATION AND CLAIM FOR REIMBURSEMENT

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Fort Stewart is a federally owned facility and has funded the investigation for the UST 94, Building 1320/33, Facility ID #9-089076, using Environmental Restoration Account Funds. Application for Georgia Underground Storage Tank Trust Fund reimbursement is not being pursued at this time.

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ATTACHMENT A

TECHNICAL APPROACH

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TECHNICAL APPROACH

1.0 INTRODUCTION

The overall objective of this project is to provide the engineering services required to produce Corrective Action Plans (CAPs) for the subject UST sites. These reports will conform to the site closure requirements of a CAP-Part A for sites in Georgia. The field investigations necessary to support the report preparation included the installation of temporary piezometers, soil borings, and associated sampling of soil and groundwater. Upon completion of the field investigations, a CAP-Part A will be prepared to meet GA EPD, Fort Stewart, and the USACE-Savannah requirements.

2.0 FIELD ACTIVITIES

The following sections detail the methodologies used for geoprobe drilling, sampling, and piezometer installation. A geologist from SAIC was on site at all times during operations. No drilling activities were undertaken until all utility clearances and permits had been obtained from Fort Stewart's utility personnel.

2.1 Subsurface Soil Sampling

2.1.1 Geoprobe Drilling

The geoprobe method was used during the project for collecting soil samples. During all geoprobe drilling, soil samples were collected continuously on 4.0-foot centers from the ground surface to the bottom of the borehole. The total depth of each borehole was dictated by the depth where the water table was encountered.

2.1.2 Sample Collection

Soil samples for chemical analyses were collected from boreholes using 4.0-foot macro-core samplers. Upon retrieval of the sampling device, the soil core was split into two 2.0-foot sections using a stainless steel knife. A portion of each 2.0-foot section was collected for possible laboratory analysis. The remaining portion of each 2.0-foot section was used for field measurements.

During the May and June 1998 sampling events, samples designated for possible laboratory analysis were collected from the section using a stainless steel spoon. The spoon was run lengthwise down the core to collect a sample representative of the entire core section. The portion of the sample designated for volatile organic analyses was placed into laboratory sample containers first, followed by placement of the remaining portion of the sample into the containers designated for other types of analyses. Sample containers designated for volatile organic analyses were filled so that minimal headspace was present in the containers. Headspace gas concentration measurements were made using a field organic vapor meter (OVM). Initially, soil from each 2.0-foot interval was placed into a glass jar, leaving some air space, and covered with aluminum foil to create an air-tight seal. The sample was allowed to volatilize for a minimum of 15 minutes. The sealed jar was punctured with the OVM probe and headspace gas drawn until the meter reading was stable. The concentration of the headspace gas was recorded to the nearest 0.1 part per million.

Due to a change in the state regulations governing sample analysis, the collection of samples designated for volatile organic analyses was modified beginning with the November 1998 field effort. Soil samples designated for volatile organic analyses were collected using En Core™ samplers. The samplers were locked into an En Core T-Handle. Using the T-Handle, the sampler was pushed into the soil until the coring body of the sampler was full. Once the samplers were filled, caps were locked onto them insuring that no

headspace was present. The samplers were then removed from the handle and placed in an En Core zipper bag. Three encore samples are collected from each section 2.0-foot section.

Immediately after collection of each sample and completion of bottle label information, each potential analytical sample container was placed into an ice-filled cooler to ensure preservation. A clean split-barrel sampling device was used to collect soil core from each interval of the project boreholes. Information regarding the criteria for selection of soil samples for off-site shipment to a laboratory for chemical analysis is presented in Section 3.1.3 of the project Work Plan. Soil samples, which were not selected for laboratory analysis, were disposed of as investigation-derived waste (IDW).

2.2 Groundwater Sampling

2.2.1 Groundwater Collection

Groundwater samples from geoprobe boreholes installed during Preliminary Groundwater and CAP-Part A investigations were collected using a geoprobe sampler or from temporary piezometers. The geoprobe sampler is a probe that allows the collection of a groundwater sample from a discrete undisturbed depth interval in a soil boring. Temporary piezometers were constructed of 1.0-inch inside diameter (ID) polyvinyl chloride (PVC) casing with a 5-foot or 10-foot screened interval. These piezometers were installed in the open borehole following completion of all drilling activities.

Each soil borehole was advanced to the top of the water table using direct push methods. For each borehole, the geoprobe sampler was lowered to the bottom of the borehole and driven through the undisturbed soil to a depth of approximately 3.0 feet below the water table. The outer casing of the geoprobe sampler was retracted to expose the screen and allow groundwater to enter the chamber. In cases where the geoprobe sampler could not be driven or where groundwater recovery through the geoprobe sampler was poor, the groundwater sample was collected through the temporary piezometer.

Groundwater samples were collected using a peristaltic pump or a 0.75-inch diameter stainless steel bailer. The portion of the sample designated for volatile organic analysis was poured into laboratory sample containers first, followed by pouring 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.

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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.

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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 (OVA). 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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