

FINAL

**CORRECTIVE ACTION PLAN - PART A REPORT
FOR
UNDERGROUND STORAGE TANK 79
FACILITY ID #9-089026
BUILDING 1224
FORT STEWART, GEORGIA**

Prepared for:

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

Prepared by:

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October 1999

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List of Abbreviations and Acronyms

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

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

CORRECTIVE ACTION PLAN PART A

Facility Name: UST 79, Building 1224 Street Address: Wilson Ave between Divarty Rd & W. 6th St.

Facility ID: 9-089026 City: Fort Stewart County: Liberty Zip Code: 31314

Latitude: 32° 16' 08" Longitude: 82° 05' 12"

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) 767-2010

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: Thomas C. Fry

Date: 10/29/99

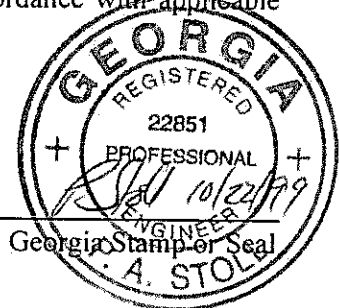
B. Registered Professional Engineer or Professional Geologist Certification

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

Name: Patricia A. Stoll

Signature: Patricia A. Stoll

Date: 10/22/99



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 79 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 79.

B. Free Product Removal

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

Free Product Detected?

YES _____ NO X

If Yes, please summarize free product recovery efforts.

Continuing free product recovery proposed?

YES _____ NO X

If yes, please indicate the method and frequency of removal.

C. Tank History

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

CURRENT UST SYSTEMS (if applicable)

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

FORMER UST SYSTEMS (if applicable)

<u>Tank ID Number</u>	<u>Capacity (gal)</u>	<u>Substance Stored</u>	<u>Date Removed</u>
79	1000	used oil	7/18/96

D. Initial Site Characterization

(Figure 1: Vicinity/Location Map)

(Figure 2: Site Plan)

1. Regulated Substance Released (gasoline, diesel, used oil, etc.): used 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 18, 1996. After removing the tank, one groundwater sample was collected from the tank pit (Figure 7). Benzene was present in sample TK79-GW at a concentration of 130 µg/L, which is above the MCL of 5 µg/L. Toluene, ethylbenzene, and xylenes were also present in the groundwater sample but did not exceed their respective MCLs. No soil samples were collected during tank removal activities.

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 79 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:

 2700 feet

ii. Nearest down-gradient public water supply located within:

 2700 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

 2500 feet

ii. Nearest down-gradient surface water located within

 5000 feet

iii. Nearest storm or sanitary sewer located within:

 110 feet

iv. Depth to bottom of sewer at a point nearest the plume

 4.0 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 thirteen 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 ☒ NO ☐
If yes, indicate highest concentrations in soil along with locations and depths detected.

During the CAP-Part A investigation in November 1998, benzene was detected in boring 84-06 at a depth of 0.7 – 2.2 feet BGS at a concentration of 0.009 mg/kg. In February 1999, benzene was detected in boring 84-10 at concentrations of 0.374J mg/kg and 0.224J mg/kg at depths of 1.1 – 2.0 feet BGS and 2.0 – 4.0 feet BGS, respectively. These sample locations are located 50 to 70 feet upgradient of the former tank pit and located directly beneath the concrete of the motorpool and above the water table. This area of contamination is most likely due to an oil leak associated with armored personnel carriers located within the motorpool and is not associated with the former tank and its operations.

- ii. ATLs calculated? YES ☐ NO ☒
If yes, present ATLs.

- iii. If ATL's calculated, is soil contamination above ATL's? YES ☐ NO ☐ N/A ☒

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

Provide a brief discussion of groundwater sampling.

At each borehole location, except the vertical profile boring, one groundwater sample was collected from the temporary piezometer screened from ground surface to approximately 5.0 feet below the water table. At the vertical profile location (84-05), groundwater samples were collected every 5 feet below the water table until several groundwater sample intervals indicated a headspace gas measurement of zero. Chemical parameters for groundwater samples submitted for laboratory analysis included BTEX and PAH. Refer to Attachment A for complete documentation of the technical approach used to collect groundwater samples.

- i. Groundwater contamination above MCLs? YES ☒ NO ☐
ii. Groundwater contamination above In-Stream Water Quality Standards? YES ☒ NO ☐

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

In 1996, the closure sample from the tank pit contained benzene at a concentration of 130 µg/L. During the CAP-Part A investigation in May 1998, benzene was present in borings 84-01 and 84-03 at concentrations of 5.8J µg/L and 52.6 µg/L, respectively. These two borings were located around the perimeter of the former tank pit and the greaserack.

In November 1998 and February 1999, the investigation was extended to include additional sampling in an effort to determine extent. Benzene was detected in boring 84-10 at a concentration of 32.4 µg/L; however, this is the boring that is located upgradient of the tank pit and contains soil contamination that is not related to the tank operations. Refer to Attachment C for supplemental information on risk screening and fate and transport modeling.

- 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):* 7.80 – 12.74 (Table 4: Groundwater Elevations)
b. *Groundwater Flow Direction:* northwest (Figure 6: Potentiometric Surface Map)
c. *Hydraulic Gradient* 0.0038 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 79 on July 18, 1996. The UST piping was drained into the tank, and all used oil was removed using a vacuum truck and/or compressor-driven barrel vacuum device. A backhoe was used to excavate down to the tank top. All lines were capped except the fill and vent. After the tank atmosphere was tested with a combustible gas indicator, all accessible tank openings were capped, and the tanks were lifted from the excavation pit. The ancillary piping was removed to the greaserack, and both ends were grouted in place.

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

Check one: *No UST removal performed*

Returned to UST excavation

Excavated soils treated or disposal off site

X

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

All contaminated soil removed during the entire project (i.e., all USTs removed under contract with ACE, to include clean and non-clean closures) was tested in accordance with the disposal facility requirements and transported to Kedesh, Inc., Highway 84, Ludowici, GA, 31316. The Closure Report was not submitted to GA EPD because review of the closure analytical data indicated that a CAP-Part A would be required (i.e., per requirements of GUST-9, Item 15, page 12, dated August 1995). However, all pertinent information (i.e., copies of analytical data, manifests and maps) are provided in this CAP-Part A report. Disposal manifests for the UST 79 site were submitted to GAEPD USTMP in September 1998 with the UST 207A (Facility ID #9-089039) Closure Report response to comments correspondence (Perez 1998). Approximately 38.6 tons of contaminated soil was excavated from the site.

7. Site Ranking:

3100 (based on CAP-Part A soil and closure
groundwater data)

Environmental Site Sensitivity Score: 850 (based on CAP-Part A soil and groundwater data)
(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 X

b. Monitoring Only (if applicable)
(provide justification)

N/A

Benzene was detected in three soil samples during the CAP-Part A investigation in excess of applicable GUST soil threshold levels (i.e., Table A Column 2); however, the samples were located 50 to 70 feet upgradient of the former tank pit and directly beneath the concrete of the motorpool. This soil contamination is not considered to be related to the former tank and/or associated operations. Benzene was detected in four groundwater samples from four temporary wells at concentrations above its MCL, with the highest concentration being 52.6 µg/L. Fate and transport modeling results of the CAP-Part A data indicate that benzene will not reach the downgradient receptors at detectable concentrations. The horizontal and vertical extent of contamination due to tank operations was determined during the CAP-Part A.

c. CAP-B (if applicable)
(provide justification)

N/A X

III. MONITORING ONLY PLAN (if applicable):

N/A _____

A. Monitoring points

Five shallow monitoring wells will be installed as part of the long-term monitoring as shown in Figure 8. The shallow wells will be screened across the water table with 3 to 5 feet of screen above the water table in order to detect the presence of free product. All monitoring wells will be completed flush with the ground surface. Boring logs and well construction diagrams will be provided in the First Annual Monitoring Only Report.

B. Period/Frequency of monitoring and reporting

Groundwater monitoring will be completed on a semiannual basis and the results will be summarized in an annual monitoring only report submitted to GA EPD. Monitoring will continue for a period of up to two years, for a total of up to four sampling events.

C. Monitoring Parameters

One groundwater sample will be collected from each of the four monitoring wells and analyzed for BTEX.

D. Milestone Schedule

Monitoring well installation will be conducted pending the availability of FY2000 funding. A milestone schedule will be provided to GA EPD upon availability of funds and approval of the monitoring only plan.

E. Scenarios for site closure or CAP-Part B

The monitoring system will be evaluated annually. A recommendation for no further action required will be made if benzene concentrations remain below the predicted two-year maximum concentrations that will be presented in the monitoring only report.

IV. SITE INVESTIGATION PLAN (if applicable):

N/A X

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

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

1. Soil

N/A X

2. Groundwater

a. Free Product

N/A X

b. Dissolved phase

N/A X

3. Surface Water

N/A X

B. Proposed Investigation of Vadose Zone And Aquifer Characteristics:

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

V. PUBLIC NOTICE

(Figure 9. Tax Map)

(Appendix XI: Copies of public notification letters & certified return receipts or newspaper notice if approved)

UST 79 is located within the confines of Fort Stewart Military Reservation, a federal facility. The U.S. Government owns all of the property contiguous to the site. The Fort Stewart Directorate of Public Works (DPW) has complied with the public notice requirements defined by Georgia Environmental Protection Division (GA EPD) guidance by publishing an announcement in the *Savannah Morning News* on June 27 and July 4, 1999.

VI. CLAIM FOR REIMBURSEMENT (for GUST Trust Fund sites only):

N/A X

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

Fort Stewart is a federally owned facility and has funded the investigation for the UST 79, Building 1224, Facility ID #9-089026, using Department of Defense Environmental Restoration Account Funds. Application for Georgia Underground Storage Tank Trust Fund reimbursement is not being pursued at this time.

APPENDIX I

REPORT FIGURES

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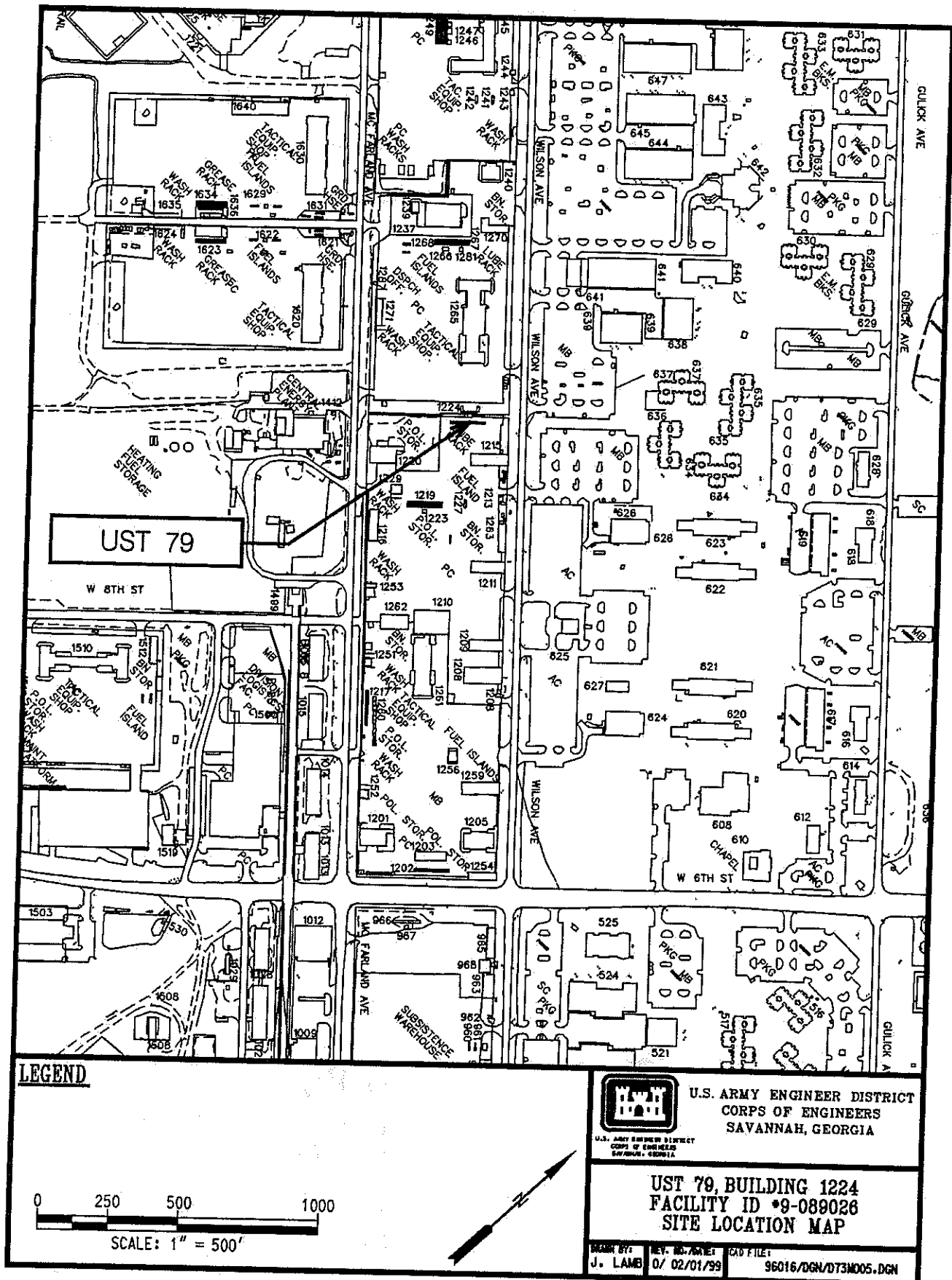


Figure 1. Location Map of UST 79, Fort Stewart, Liberty County, Georgia

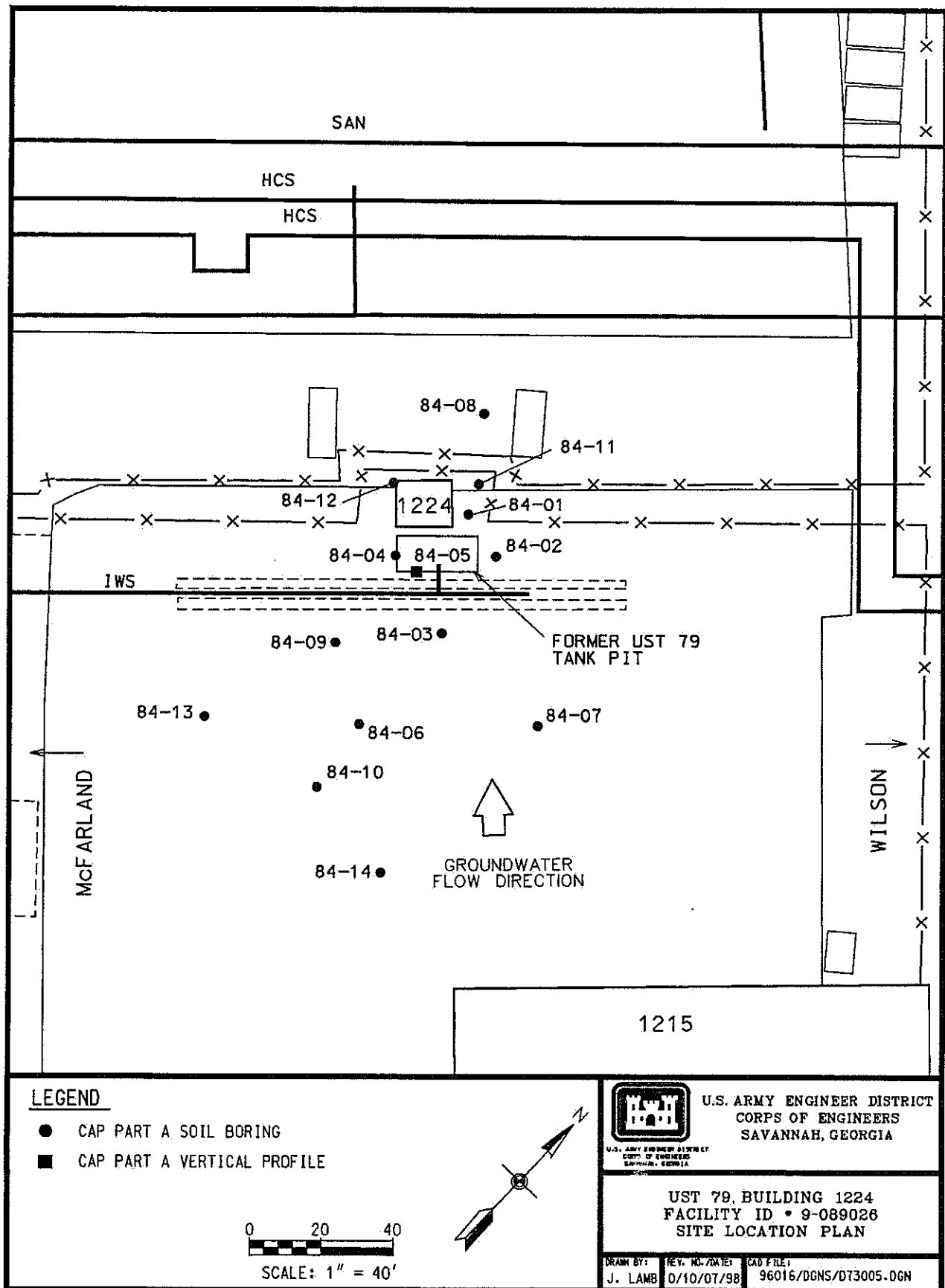


Figure 2. Site Plan for the UST 79 Site Investigation

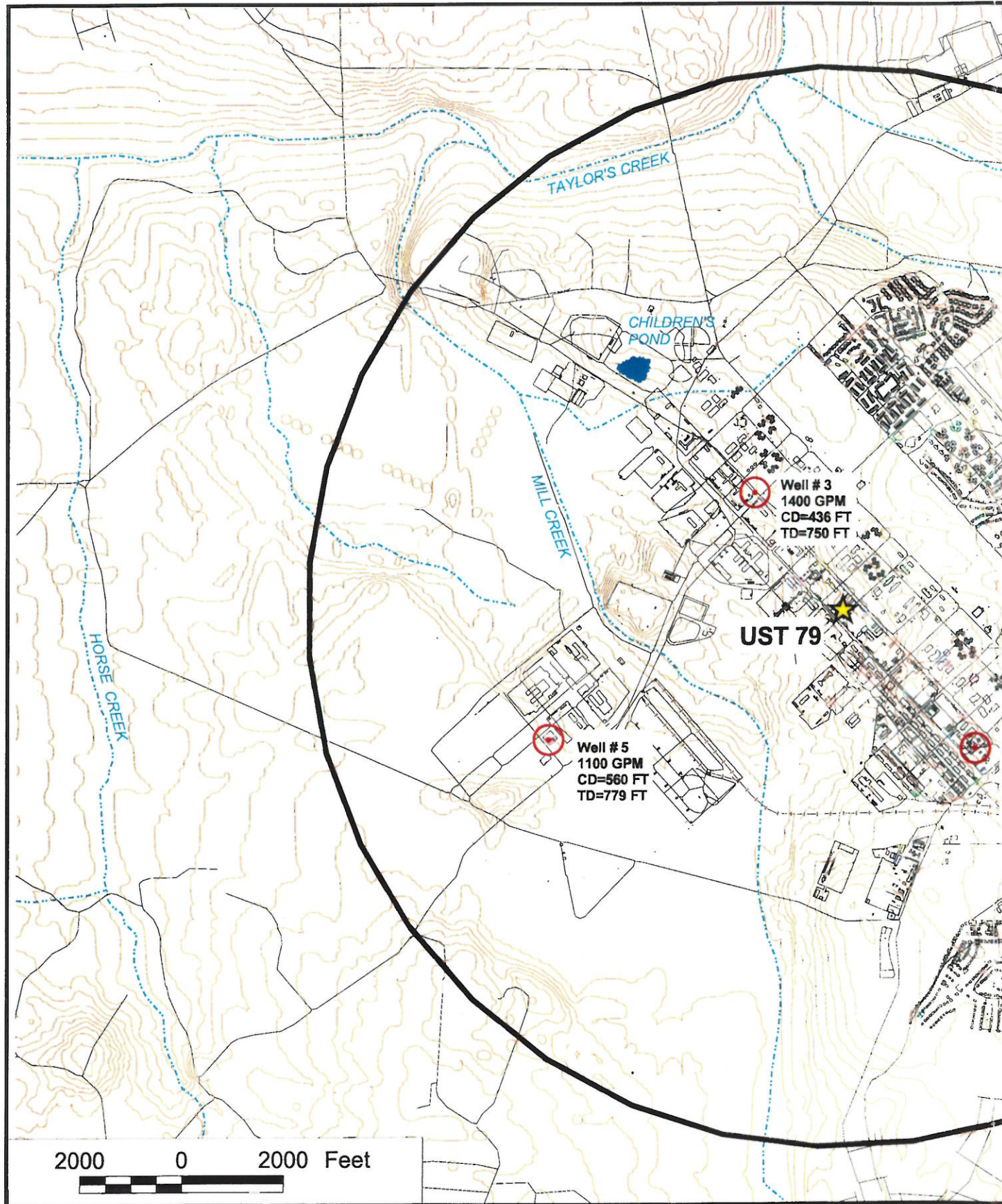


Figure 3. Map Showing Public and Private Water Bodies at Fort Stewart, Lib

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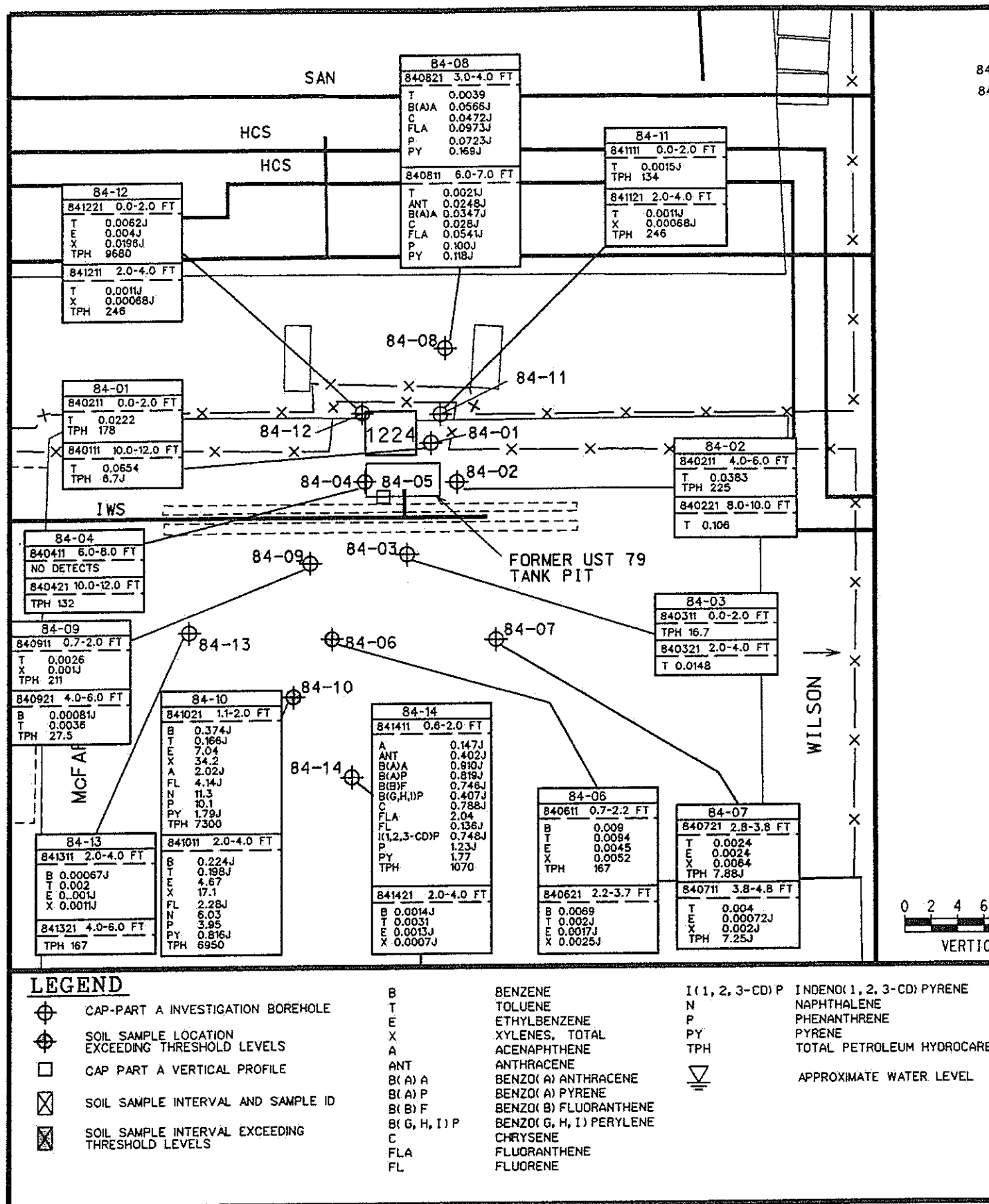


Figure 4. Soil Qual

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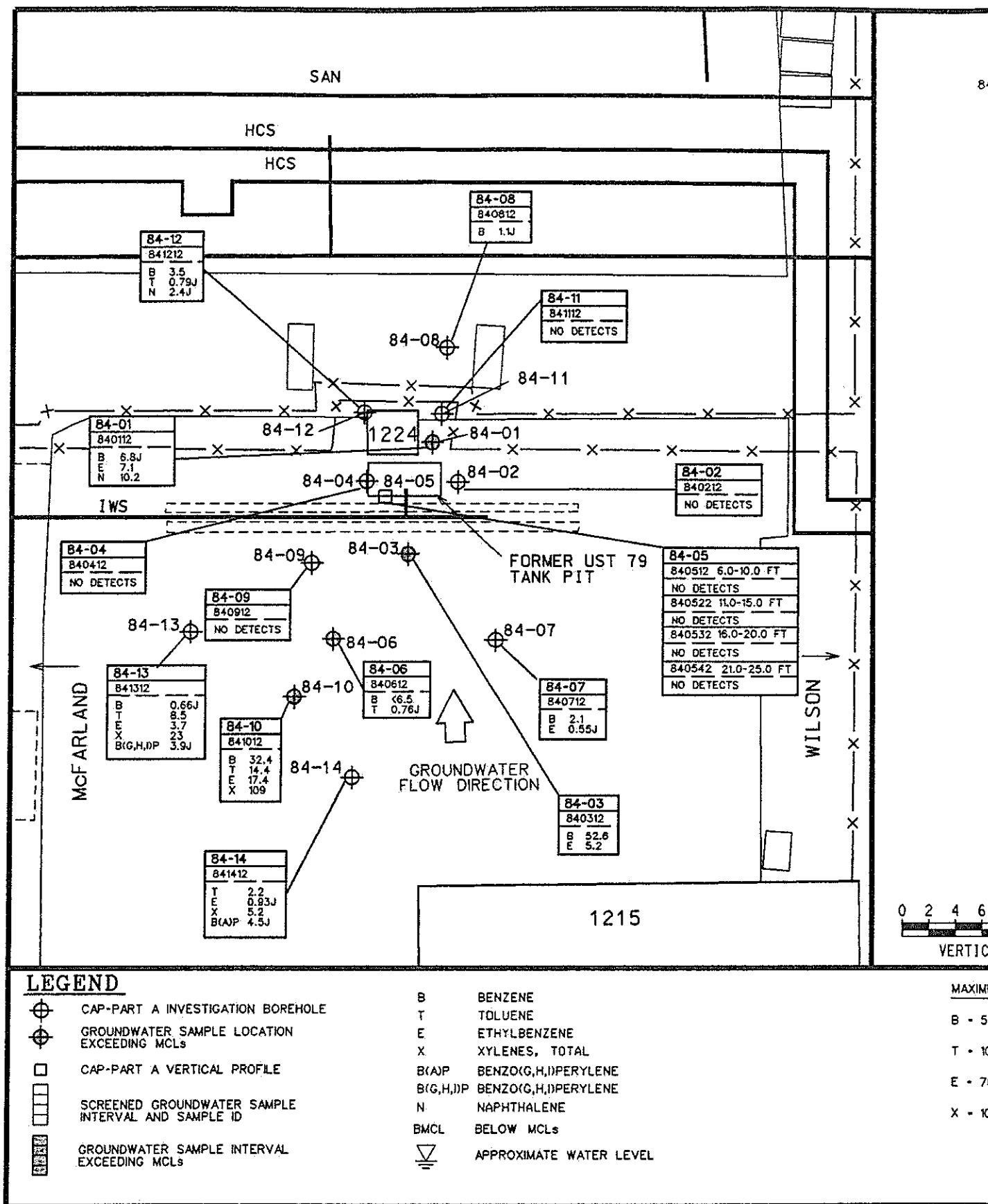


Figure 5. Groundw

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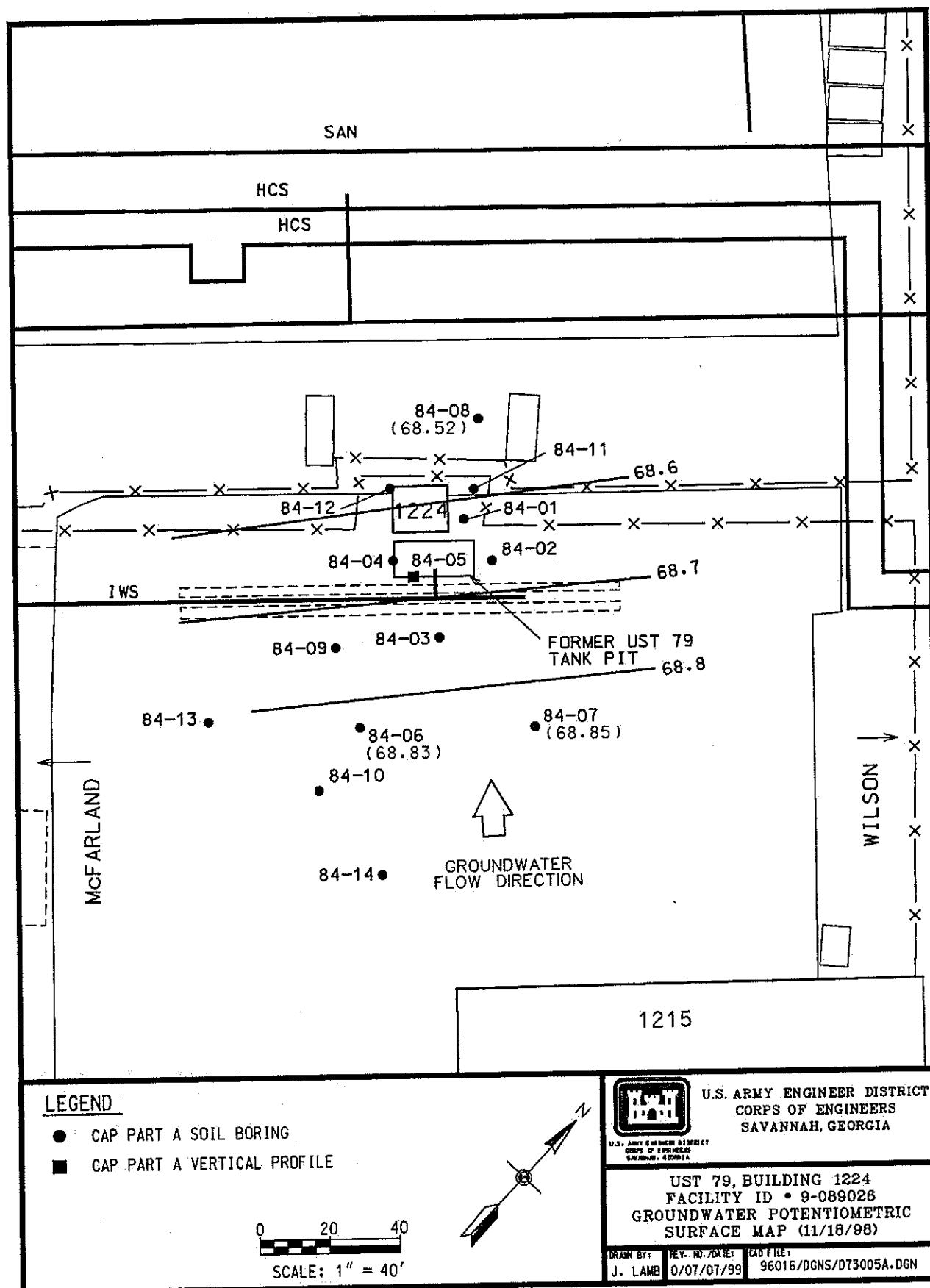


Figure 6. Potentiometric Surface Map of the UST 79 Site (11/18/98)

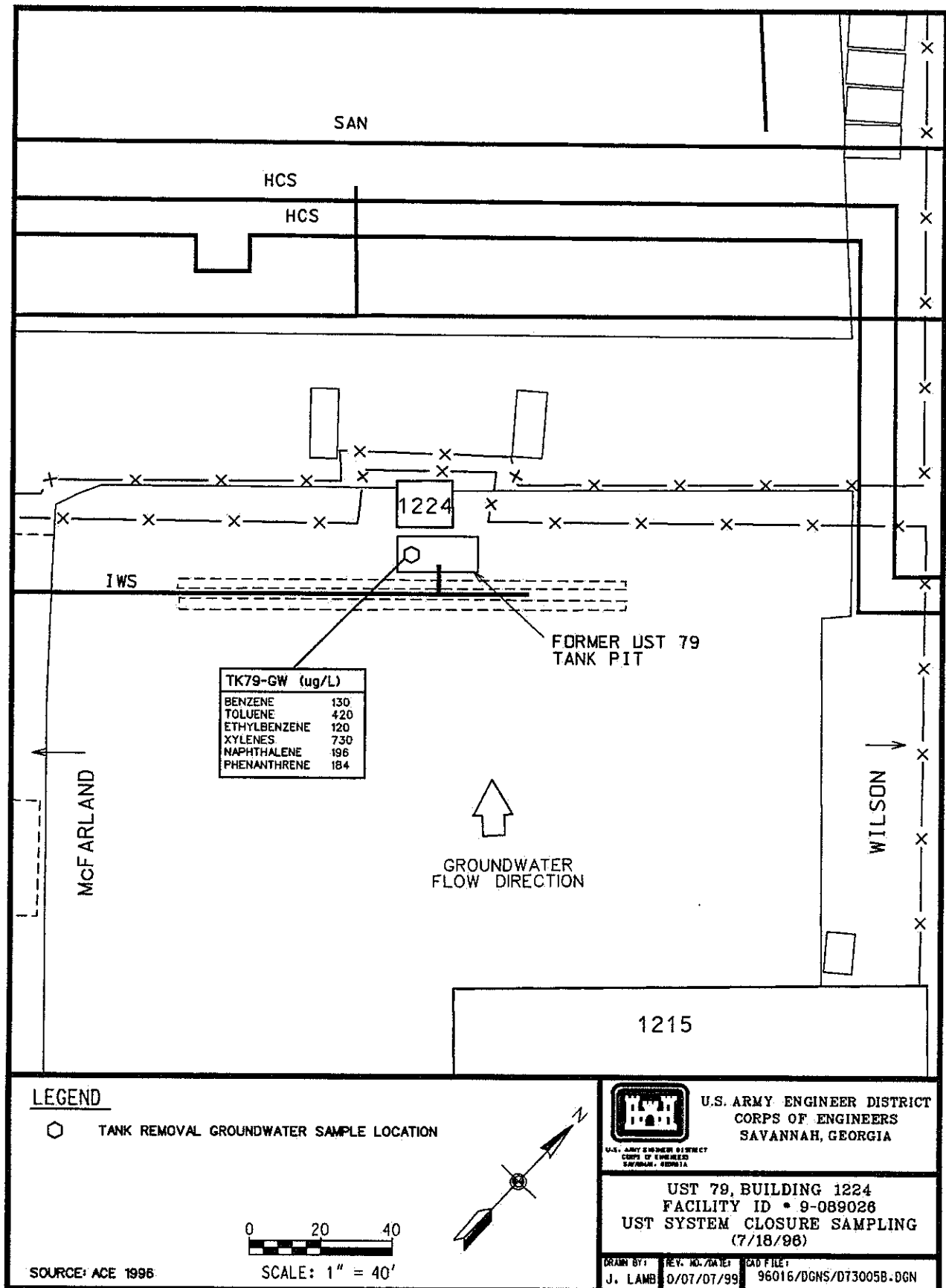


Figure 7. UST System Closure Sampling Locations at the UST 79 Site

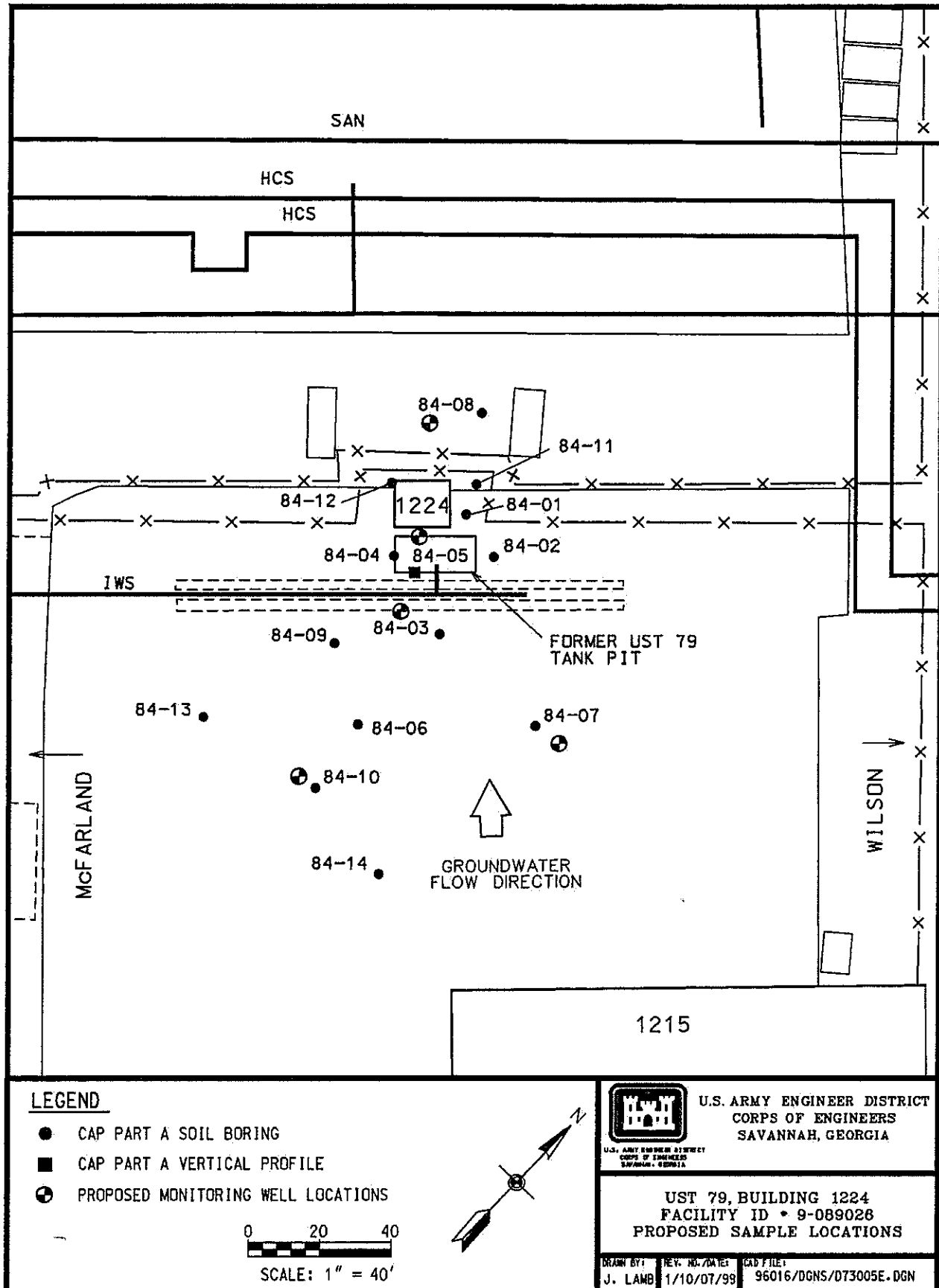


Figure 8. Proposed Additional Boring/Monitoring Well Locations

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

Figure 9. Tax Map

APPENDIX II

REPORT TABLES

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TABLE 1: FREE PRODUCT REMOVAL

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

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

NOTE:
AMSL Above mean sea level.

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

Sample Location	Sample ID	Depth (ft BGS)	Date Sampled	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH (mg/kg)
84-01	840111	10.0 - 12.0	06/27/98	0.0024 U	0.0654 =	0.0024 U	0.0072 U	0.0654	6.7 J
84-01	840121	0.0 - 2.0	06/27/98	0.0022 U	0.0222 =	0.0022 U	0.0066 U	0.0222	178 =
84-02	840211	4.0 - 6.0	06/27/98	0.0022 U	0.0383 =	0.0022 U	0.0065 U	0.0383	225 =
84-02	840221	8.0 - 10.0	06/27/98	0.0025 U	0.106 =	0.0025 U	0.0075 U	0.106	3.09 U
84-03	840311	0.0 - 2.0	06/27/98	0.0022 U	0.0022 U	0.0022 U	0.0064 UJ	ND	16.7 =
84-03	840321	2.0 - 4.0	06/27/98	0.0022 U	0.0148 =	0.0022 U	0.0067 U	0.0148	9.96 U
84-04	840411	6.0 - 8.0	06/27/98	0.0023 U	0.0023 U	0.0023 UJ	0.0069 UJ	ND	4.58 U
84-04	840421	10.0 - 12.0	06/27/98	0.0023 U	0.0023 U	0.0023 U	0.0068 U	ND	132 =
84-06	840611	0.7 - 2.2	11/13/98	0.009 =	0.0094 =	0.0045 =	0.0052 =	0.0281	167 =
84-06	840621	2.2 - 3.7	11/13/98	0.0069 =	0.002 J	0.0017 J	0.0025 J	0.0131	1.5* U
84-07	840711	3.8 - 4.8	11/12/98	0.0022 U	0.004 =	0.00072 J	0.002 J	0.00672	7.25 J
84-07	840721	2.8 - 3.8	11/12/98	0.0022 U	0.0024 =	0.0024 =	0.0064 =	0.0112	7.88 J
84-08	840811	6.0 - 7.0	11/13/98	0.0024 U	0.0021 J	0.0024 U	0.0035 U	0.0021	7.67 U
84-08	840821	3.0 - 4.0	11/13/98	0.0022 U	0.0039 =	0.0022 U	0.0033 U	0.0039	1.1* U
84-09	840911	0.7 - 2.0	02/17/99	0.0021 U	0.0026 =	0.0021 U	0.001 J	0.0036	211 =
84-09	840921	4.0 - 6.0	02/17/99	0.00081 J	0.0036 =	0.0021 U	0.0032 U	0.00441	27.5 =
84-10	841011	2.0 - 4.0	02/17/99	0.224 J	0.198 J	4.67 =	17.1 =	22.192	6950 =
84-10	841021	1.1 - 2.0	02/17/99	0.374 J	0.166 J	7.04 =	34.2 =	41.78	7300 =
84-11	841121	0.0 - 2.0	02/17/99	0.0034 U	0.0015 J	0.0034 U	0.005 U	0.0015	134 =
84-12	841211	2.0 - 4.0	02/17/99	0.0022 U	0.0011 J	0.0022 U	0.00068 J	0.00178	246 =
84-12	841221	0.0 - 2.0	02/17/99	0.002 UJ	0.0062 J	0.004 J	0.0196 J	0.0298	9680 =
84-13	841311	2.0 - 4.0	02/20/99	0.00067 J	0.002 =	0.001 J	0.0011 J	0.00477	6.58 U
84-13	841321	4.0 - 6.0	02/20/99	0.0019 U	0.0019 U	0.0019 U	0.0028 U	ND	167 =
84-14	841411	2.0 - 4.0	02/20/99	0.0014 J	0.0031 =	0.0013 J	0.0007 J	0.0065	8.53 U
84-14	841421	0.6 - 2.0	02/20/99	0.002 U	0.002 U	0.002 U	0.003 U	ND	1070 =
Applicable Standards ¹				0.008	6	10	700	NRC	NRC

NOTES:

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

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

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

* Result is TPH-diesel range organics

BGS Below ground surface

BTEX Benzene, toluene, ethylbenzene, and xylene

ND Not detected

NRC No regulatory criteria

TPH Total petroleum hydrocarbon

Laboratory Qualifiers

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

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

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

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

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

Sample Location	Sample ID	Depth (ft BGS)	Date Sampled	Detected PAH Compounds (mg/kg)											Total PAHs (mg/kg)		
				Acenaphthene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene		Phenanthrene	Pyrene
84-01	840111	10 - 12	06/27/98														ND
84-01	840121	0 - 2	06/27/98														ND
84-02	840211	4 - 6	06/27/98														ND
84-02	840221	8 - 10	06/27/98														ND
84-03	840311	0 - 2	06/27/98														ND
84-03	840321	2 - 4	06/27/98														ND
84-04	840411	6 - 8	06/27/98														ND
84-04	840421	10 - 12	06/27/98														ND
84-06	840611	0.7 - 2.2	11/13/98														ND
84-06	840621	2.2 - 3.7	11/13/98														ND
84-07	840711	3.8 - 4.8	11/12/98														ND
84-07	840721	2.8 - 3.8	11/12/98														ND
84-08	840811	6 - 7	11/13/98		0.0248J	0.0347J			0.028J		0.0541J				0.100J	0.118J	ND
84-08	840821	3 - 4	11/13/98			0.0566			0.0472J		0.0973J				0.0723J	0.169J	0.3596
84-09	840911	0.7 - 2	02/17/99														0.4424
84-09	840921	4 - 6	02/17/99														ND
84-10	841011	2 - 4	02/17/99														ND
84-10	841021	1.1 - 2	02/17/99	2.02J							2.28J		6.03=	3.95=	0.816J		13.076
84-11	841121	0 - 2	02/17/99								4.14J		11.3=	10.1=	1.79J		29.35
84-12	841211	2 - 4	02/17/99														ND
84-12	841221	0 - 2	02/17/99														ND
84-13	841311	2 - 4	02/20/99														ND
84-13	841321	4 - 6	02/20/99														ND
84-14	841411	2 - 4	02/20/99														ND
84-14	841421	0.6 - 2	02/20/99	0.147J	0.402J	0.910J	0.819J	0.746J	0.407J	0.788J	2.04=	0.136J	0.748J		1.23J	1.77=	10.143
Applicable Standards ¹				NRC	NRC	NRC	NRC	NRC	NRC	NRC	NRC	NRC	NRC	NRC	NRC	NRC	NRC

NOTES:

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

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

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

BGS Below ground surface

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

NRC No regulatory criteria

PAH Polynuclear aromatic hydrocarbon

Laboratory Qualifiers

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

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

Sample Location	Sample ID	Screened Interval (ft BGS)	Date Sampled	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	Total BTEX (ug/L)
84-01	840112	2.0 - 12.0	06/27/98	6.8 J	2 U	7.1 =	6 U	13.9
84-02	840212	1.0 - 11.0	06/27/98	2 U	2 U	2 U	6 U	ND
84-03	840312	0.0 - 10.0	06/27/98	52.6 =	2 U	5.2 =	6 U	57.8
84-04	840412	2.0 - 12.0	06/27/98	2 U	2 U	2 U	6 U	ND
84-05	840512	6.0 - 10.0	06/27/98	2 U	2 U	2 U	6 U	ND
84-05	840522	11.0 - 15.0	06/27/98	2 U	2 U	2 U	6 U	ND
84-05	840532	16.0 - 20.0	06/27/98	2 U	2 U	2 U	6 U	ND
84-05	840542	21.0 - 25.0	06/27/98	2 U	2 U	2 U	6 UJ	ND
84-06	840612	0.0 - 9.0	11/13/98	6.5 U	0.76 J	2 U	3 U	.76
84-07	840712	0.0 - 9.8	11/12/98	2.1 =	2 U	0.55 J	3 U	2.65
84-08	840812	0.0 - 9.5	11/13/98	1.1 J	2 U	2 U	3 U	1.1
84-09	840912	0.0 - 10.5	02/17/99	2 U	2 U	2 U	6 U	ND
84-10	841012	0.0 - 10.0	02/17/99	32.4 =	14.4 =	17.4 =	109 =	173.2
84-11	841112	0.0 - 10.5	02/17/99	2 U	2 U	2 U	6 U	ND
84-12	841212	0.0 - 10.0	02/17/99	3.5 =	0.79 J	2 U	6 U	4.29
84-13	841312	0.0 - 9.2	02/20/99	0.66 J	8.5 =	3.7 =	23 =	35.86
84-14	841412	0.0 - 11.0	02/20/99	2 U	2.2 =	0.93 J	5.2 =	8.33
Applicable Standards ¹				5	1000	700	10000	NRC

NOTE:

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

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

¹ U.S. Environmental Protection Agency maximum contaminant level

BTEX Benzene, toluene, ethylbenzene, and xylene

BGS Below ground surface

ND Not detected

NRC No regulatory criteria

Laboratory Qualifiers

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

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

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

= Indicates the compound was detected at the concentration reported.

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

Sample Location	Sample ID	Screened Interval (ft BGS)	Date Sampled	Detected PAH Compounds (ug/L)							Total PAHs (ug/L)
				Benzo(a)pyrene	Benzo(g,h,i)perylene	Naphthalene					
84-01	840112	2.0 - 12.0	06/27/98			10.2 =					10.2
84-02	840212	1.0 - 11.0	06/27/98								ND
84-03	840312	0.0 - 10.0	06/27/98								ND
84-04	840412	2.0 - 12.0	06/27/98								ND
84-05	840512	6.0 - 10.0	06/27/98								ND
84-05	840522	11.0 - 15.0	06/27/98								ND
84-05	840532	16.0 - 20.0	06/27/98								ND
84-05	840542	21.0 - 25.0	06/27/98								ND
84-06	840612	0.0 - 9.0	11/13/98								ND
84-07	840712	0.0 - 9.8	11/12/98								ND
84-08	840812	0.0 - 9.5	11/13/98								ND
84-09	840912	0.0 - 10.5	02/17/99								ND
84-10	841012	0.0 - 10.0	02/17/99								ND
84-11	841112	0.0 - 10.5	02/17/99								ND
84-12	841212	0.0 - 10.0	02/17/99			2.4 J					2.4
84-13	841312	0.0 - 9.2	02/20/99		3.9 J						3.9
84-14	841412	0.0 - 11.0	02/20/99	4.5 J							4.5
Applicable Standards ¹				NRC	NRC	NRC					NRC

NOTE:

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

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

¹ U.S. Environmental Protection Agency maximum contaminant level

BGS Below ground surface

ND Not detected (refer to Appendix 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 above the reported sample quantitation limit.

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

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

= Indicates the compound was detected at the concentration reported.

TABLE 4: GROUNDWATER ELEVATIONS

Well Number	Date Measured	Ground Surface Elev. (ft MSL)	Top of Casing Elev. (ft MSL)	Depth of Screened Interval (ft BGS)	Depth of Free Product (ft BTOC)	Water Depth (ft BTOC)	Product Thickness (ft)	Specific Gravity Adjustment	Corrected Groundwater Elev. (ft MSL)
84-01	07/21/98	77.15	81.77	2.0 - 12.0	N/A	12.74	N/A	N/A	69.03
84-02	07/21/98	77.67	76.92	1.0 - 11.0	N/A	7.81	N/A	N/A	69.11
84-03	07/21/98	76.97	76.92	0.0 - 10.0	N/A	7.80	N/A	N/A	69.12
84-04	07/21/98	76.94	79.76	2.0 - 12.0	N/A	10.71	N/A	N/A	69.05
84-06	11/18/98	76.69	77.75	0.0 - 9.0	N/A	8.92	N/A	N/A	68.83
84-07	11/18/98	76.92	80.53	0.0 - 9.8	N/A	11.68	N/A	N/A	68.85
84-08	11/18/98	77.24	77.61	0.0 - 9.5	N/A	9.09	N/A	N/A	68.52

NOTE:

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

TABLE 5a: UST SYSTEM CLOSURE¹ - SOIL ANALYTICAL RESULTS
(VOLATILE ORGANIC COMPOUNDS)

Sample Location	Depth (ft BGS)	Date Sampled	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH (mg/kg)
			No soil samples were collected.					
Applicable Standards ²			0.008	6	10	700	NRC	NRC

TABLE 5b: UST SYSTEM CLOSURE¹ - SOIL ANALYTICAL RESULTS
(POLYNUCLEAR AROMATIC HYDROCARBONS)

Sample Location	Depth (ft BGS)	Date Sampled	Detected PAH Compounds (mg/kg)				Total PAHs (mg/kg)
			No soil samples were collected.				
Applicable Standards ²			NRC				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

TPH Total petroleum hydrocarbons

Laboratory Qualifiers

- U Indicates 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 the value for the compound is an estimated value.
= Indicates the compound was detected at the concentration reported.

**TABLE 6a: UST SYSTEM CLOSURE¹ - GROUNDWATER ANALYTICAL RESULTS
(VOLATILE ORGANIC COMPOUNDS)**

Sample Location	Depth (ft BGS)	Date Sampled	Benzene (ug/L)	Toluene (ug/L)	Ethyl – benzene (ug/L)	Xylenes (ug/L)	Total BTEX (ug/L)
TK79-GW	unknown	7/18/96	130 =	420 =	120 =	730 =	1400
Applicable Standards ²			5	1,000	700	10,000	NRC

**TABLE 6b: UST SYSTEM CLOSURE¹ - GROUNDWATER ANALYTICAL RESULTS
(POLYNUCLEAR ANALYTICAL RESULTS)**

Sample Location	Depth (ft BGS)	Date Sampled	Detected PAH Compounds (ug/L)						Total PAHs (ug/L)
			Naphthalene	Phenanthrene					
TK79-GW	unknown	7/18/96	196 =	184 =					380
Applicable Standards ²			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
 PAH Polynuclear aromatic hydrocarbons

Laboratory Qualifiers

- U Indicates 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 the value for the compound is an estimated value.
 = Indicates the compound was detected at the concentration reported.

APPENDIX III

WATER RESOURCES SURVEY DOCUMENTATION

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WATER RESOURCES SURVEY DOCUMENTATION

1.0 LOCAL WATER RESOURCES

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

1.1 WATER SUPPLY WELL SURVEY

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

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

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

1.2 SURFACE WATER BODIES

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

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

- the storm and sanitary sewers adjacent to the investigation sites.

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

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

Typically, surface water run-off from the UST site moves over the existing concrete and asphalt cover to the Fort Stewart storm water drainage system. Because 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 79 SITE

A field potential receptor survey was conducted for the UST 79 site in June 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 79 Site

The UST 79 site is located approximately 2700 feet west (upgradient) of Well #3. Therefore, the UST 79 site is classified as being located greater than 500 feet to a withdrawal point. There are no public or non-public supply wells that are located downgradient of the site within a 2-mile radius.

2.2 Surface Water Bodies Near the UST 79 Site

At the closest point to the site and in the direction of groundwater flow, Mill Creek is located approximately 2500 feet southwest of the site. In the direction of groundwater flow, a tributary to Mill Creek is located approximately 5000 feet northwest of the site. Based on the distances between the UST and the nearest surface water body, the site is classified as being located greater than 500 feet to a downgradient surface water body.

2.3 Underground Utility Lines Near the UST 79 Site

In the direction of groundwater flow a sanitary sewer and a storm drain are located about 110 feet and 200 feet, respectively, northwest of the site. The invert elevation of these lines are estimated to be approximately 3 to 4 feet BGS, which is above the water table. An industrial wastewater line is located approximately 10 feet southeast (upgradient) of the former tank pit. The invert depth of this line is 6.75 feet BGS, which is within one foot of the water table.



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: 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 transferred 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.	COMMENTS, ACTIONS, DATES Review list of permitted drinking water supply wells for proximity to Fort Stewart CAP Part A and B sites.
DISTRIBUTION: Melanie Little (Fort Stewart DPW) Central Records (SAIC) Project File (SAIC)	

APPENDIX IV

SOIL BORING LOGS

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HTRW DRILLING LOG

HOLE NUMBER 84-01

PROJECT: Fort Stewart USTs

INSPECTOR M. Vest

SHEET 1 OF 2

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	1	Silty SAND, fine grained, non-plastic, low density, damp, very dark grayish brown (10YR 3/2)	37.5 ppm		Soil Sample 840121	Ran 4.0, Rec 4.0
	2	Same as above except color grading to dark gray (10YR 4/1)				
	3		16.0 ppm			
	4	No Recovery				Ran 4.0, Rec. 4.0
	5	Same as above 1.5' to 3.4' BGS and moist	12.0 ppm			
	6	Same as above except black (10YR 3/1)				
	7	Same as above except dark reddish brown (5YR 3/4) and moist	11.4 ppm			Wet below = 8.0 FT BGS Ran 4.0, Rec. 4.0
	8	to wet				
	9		6.0 ppm			
	10	SILT with some fine grained sand, non-plastic, loose to low density, wet, dark brown (7.5YR 3/3)				

HTRW DRILLING LOG						HOLE NUMBER 84-01
PROJECT: Fort Stewart USTs			INSPECTOR M. Vest		SHEET 2 OF 2	
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		Same as above				
	11	silty SAND, fine grained, loose to low density, non-plastic, wet, brown (7.5YR4/4)	5.5ppm		Soil Sample 840111	
	12					End of drilling at 12.0 FT BGS Set piezometer
	13					Collected GROUNDWATER SAMPLE 84012 FROM TEMPORARY PIEZOMETER SCREENED FROM 2.0 TO 12.0 FT BGS
	14					
	15					
	16					
	17					
	18					
	19					
	20					

HTRW DRILLING LOG						HOLE NUMBER 84-02
PROJECT: Fort Stewart USTs			INSPECTOR M. Vest		SHEET 1 OF 2	
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	1	SILT, with fine to medium grained sand, non-plastic, loose to medium density, dry, dark gray (10YR 4/1)	7.2 ppm			Ran 4.0, Rec. 4.0
	2	Occasional gravels up to 1/2" diameter and various shades of grays and browns mottled throughout				
	3		21.2 ppm			
	4					Ran 4.0 Rec. 4.0
	5		40.6 ppm		Soil Sample 840211	
	6	grades to moist with depth				
	7	Same as above except wet	36.4 ppm			▼ Wet below 6.0 FT BGS
	8					Ran 3.0, Rec 3.0
	9	Same as above except less of gravel and coarse grained sand depth	14.3 ppm		Soil Sample 840221	
	10	SILT, with some fine grained sand, non-plastic, loose, wet, strong brown (7.5 YR 4/6)				

HTRW DRILLING LOG						HOLE NUMBER 84-02
PROJECT: Fort Stewart USTs			INSPECTOR M. Vest		SHEET 2 OF 2	
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		Same as above	5.6ppm			
	11					End of drilling at 11.0 FT BGS Set piezometer
	12					Collected GROUNDWATER SAMPLE 840212 FROM TEMPORARY PIEZOMETER SCREENED FROM 1.0 TO 11.0 FT BGS
	13					
	14					
	15					
	16					
	17					
	18					
	19					
	20					

HTRW DRILLING LOG						HOLE NUMBER 84-03
PROJECT: Fort Stewart USTs			INSPECTOR M. Vest			SHEET 1 OF 1
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	1	silty SAND, fine grained, low to medium density, non-plastic, damp, olive gray (5Y4/2)	3.2 ppm		Soil Sample 840311	Ran 4.0, Rec. 4.0
	2					
	3	Same as above except moist to wet increasing with depth	6.3 ppm		Soil Sample 840321	Ran 4.0, Rec. 4.0
	4					
	5		5.5 ppm			
	6	Same as above except saturated and black (5YR2.5/1)				 Wet below 5.5 FT BGS
	7		5.1 ppm			
	8	as above except wet and color grading to very dark brown (10YR2/2)				
	9	Shelby Tube	N/A	Soil Sample 840331		Collected groundwater sample 840312 from temporary piezometer screened at 0.0 to 10.0 FT BGS End of drilling at 10.0 FT BGS Set piezometer
	10					

HTRW DRILLING LOG						HOLE NUMBER 4.04
PROJECT: Fort Stewart USTs			INSPECTOR M. Vest			SHEET 1 OF 2
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	1	Silty SAND, fine grained, loose to medium density, non-plastic, damp, dark grayish brown (10YR 4/2)	4.0ppm			Ran 4.0, Rec. 4.0
	2					
	3		3.8ppm			
	4					Ran 4.0, Rec. 4.0
	5	Same as above except high to medium density and moist	5.0ppm			
	6					
	7		2.2ppm		Soil Sample 1140411	
	8					Ran 4.0, Rec. 1.0
	9	No Recovery	N/A			
	10					

HTRW DRILLING LOG						HOLE NUMBER 84-04
PROJECT: Fort Stewart USTs			INSPECTOR M. Vest		SHEET 2 OF 2	
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	11	No Recovery				
	12	silty SAND, fine to medium grained, loose to low density, non-plastic, moist very dark brown (OYR2/2)	6.2 ppm		Soil Sample 840421	End of drilling at 12.0 FT BGS Set piezometer
	13					COLLECTED GROUNDWATER SAMPLE 840412 FROM TEMPORARY PIEZOMETER SCREENED FROM 2.0 TO 12.0 FT BGS
	14					
	15					
	16					
	17					
	18					
	19					
	20					

HTRW DRILLING LOG						HOLE NUMBER 84-05
PROJECT: Fort Stewart USTs			INSPECTOR L. Mercado			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)
		Vertical profile borehole for the purpose of collecting groundwater samples. No soil was collected for lithologic description				
	2					
	4					
	6					
	8		80.0ppm		Groundwater Sample 840512	PUSHED TO 10.0 FT BGS AND PULLED BACK TO 6.0 FT BGS TO EXPOSE SCREEN
	10					
	12		7.8ppm		Groundwater Sample 840522	PUSHED TO 15.0 FT BGS AND PULLED BACK TO 11.0 FT BGS TO EXPOSE SCREEN
	14					
	16					
	18		0.0ppm		Groundwater Sample 840532	PUSHED TO 20.0 FT BGS AND PULLED BACK TO 16.0 FT BGS TO EXPOSE SCREEN
	20					

HTRW DRILLING LOG						HOLE NUMBER 84-05
PROJECT: Fort Stewart USTs			INSPECTOR L. Mercado			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)
		Vertical profile borehole for the purpose of collecting groundwater samples. No soil was collected for lithologic description				
	22		0.0ppm		Groundwater Sample 840542	PUSHED TO 25.0 FT BGS AND PULLED BACK TO 21.0 FT BGS TO EXPOSE SCREEN
	24					
	26	END OF DRILLING AT 25.0 FT				
	28					
	30					
	32					
	34					
	36					
	38					
	40					

HTRW DRILLING LOG						HOLE NUMBER 84-06
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	SAND (SP), fine to medium grained, subrounded, dark gray	19.1 ppm		Soil Sample 840611	
	2					
	3		15.8 ppm		Soil Sample 840621	
	4					7 wet below 4.2 ft BGS
	5					
	6	silty SAND (SM), fine to medium grained, subrounded, wet, black				
	7					
	8					COLLECTED GROUNDWATER SAMPLE 840612 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 9.0 FT BGS
	9					END OF DRILLING AT 9.0 FT BGS AND SET TEMPORARY PIEZOMETER
	10					

HTRW DRILLING LOG						HOLE NUMBER 84-07
PROJECT: Fort Stewart USTs			INSPECTOR J. Shiflet		SHEET 1 OF 1	
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		CONCRETE				
	1	SAND (SP), fine to medium grained, dark gray to black				
	2					
	3		11.5 ppm		Soil Sample 840721	
	4		17.0 ppm		Soil Sample 840711	
	5					WET BELOW 5.2 FT BGS
	6					
	7					
	8					
	9					COLLECTED GROUNDWATER SAMPLE 840712 FROM TEMPORARY PIEZOMETER SCREENED AT 0.0 TO 9.8 FT BGS
	10					END OF DRILLING AT 9.8 FT BGS AND SET TEMPORARY PIEZOMETER

HTRW DRILLING LOG

HOLE NUMBER 84-08

PROJECT: Fort Stewart USTs

INSPECTOR J. Shiflet

SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	1	SAND (SW), fine to coarse grained, some gravel, gray to dark gray				
	2	SAND (SP), fine to medium grained, subrounded, some silt, black to dark gray				
	3					
	4		11.0 ppm		Soil Sample 840821	
	5	silty SAND (SM), fine to coarse grained, moist, black to dark brown				
	6					
	7		25.0 ppm		Soil Sample 840811	
	8					∇ wet below 7.5 ft BGS COLLECTED GROUNDWATER SAMPLE 840812 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 9.5 FT BGS
	9					
	10					END OF DRILLING AT 10.0 FT BGS AND SET

TEMPORARY PIEZOMETER

HTRW DRILLING LOG						HOLE NUMBER 84-09
PROJECT: Fort Stewart USTs			INSPECTOR K. Ledbetter			SHEET 1 OF 1
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		CONCRETE				
	1	sandy SILT (ML), 20% fine grained sand, soft, dry, very dark gray (10YR 3/1), grading to brown (10YR 2 3/2)	8.1 ppm		Soil Sample 840911	
	2					
	3		8.5 ppm			
	4					
	5		13.6 ppm		Soil Sample 840921	
	6					WET BELOW 5.8 FT BGS
	7					
	8					
	9					COLLECTED GROUNDWATER SAMPLE 840912 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 10.5 FT BGS
	10					PUSHED TO 10.5 FT BGS AND SET TEMPORARY PIEZOMETER

HTRW DRILLING LOG						HOLE NUMBER 84-10
PROJECT: Fort Stewart USTs			INSPECTOR K. Ledbetter		SHEET 1 OF 1	
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		CONCRETE				
	1					
	2	silty SAND (SM), 15% silt, fine grained, soft, moist, dark brown (10 YR 3/3) grading to pale brown (10 YR 6/3)	244 ppm		Soil Sample 841021	
	3		180 ppm		Soil Sample 841011	
	4					
	5		193 ppm			WET BELOW 4.6 FT BGS
	6					
	7					
	8					COLLECTED GROUNDWATER SAMPLE 841012 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 10.0 FT BGS
	9					
	10					PUSHED TO 10.0 FT BGS TO SET TEMPORARY PIEZOMETER

HTRW DRILLING LOG

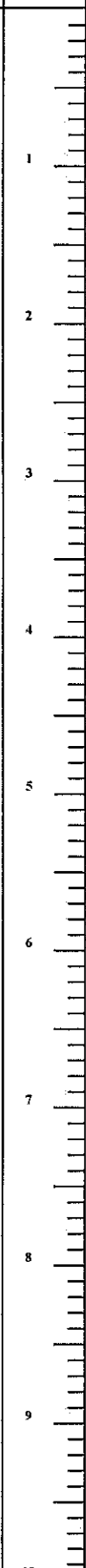
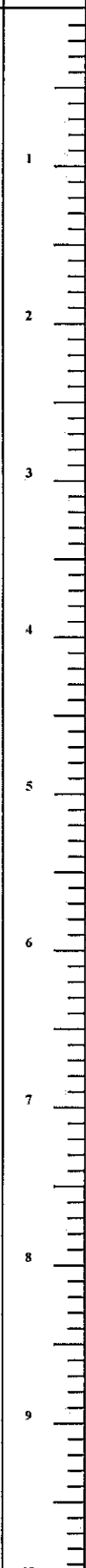
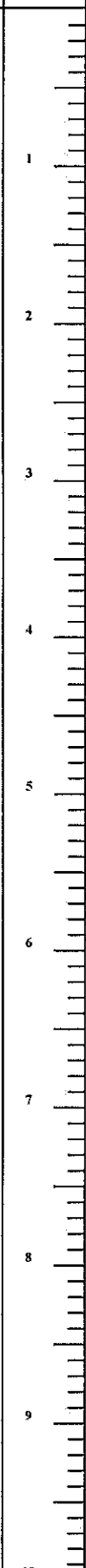
HOLE NUMBER 84-11

PROJECT: Fort Stewart USTs

INSPECTOR K. Ledbetter

SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	1	Silty SAND (SM), 30% silt, fine grained, soft, moist, brown (10 YR 4/3)	2.6 ppm		Soil Sample 841121	
	2					
	3		N/A			WET BELOW 2.2 FT BGS
	4					
	5					
	6					
	7					COLLECTED GROUNDWATER SAMPLE 841112 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 10.0 FT BGS.
	8					
	9					
	10					PUSHED TO 10.5 FT BGS TO SET TEMPORARY PIEZOMETER

HTRW DRILLING LOG						HOLE NUMBER 84-12
PROJECT: Fort Stewart USTs			INSPECTOR K. Ledbetter		SHEET 1 OF 1	
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	1	silty SAND (sm), 25% silt, fine to medium grained, subrounded, soft, dry, brown (10 YR 4/3)	4.2 ppm		Soil Sample 841221	
	2					
	3		2.4 ppm		Soil Sample 841211	
	4					
	5					
	6					
	7					
	8					
	9					
	10					

WET BELOW
2.6 FT BGS

COLLECTED GROUNDWATER
SAMPLE 841212 FROM
TEMPORARY PIEZOMETER
SCREENED FROM 0.0 TO
10.0 FT BGS

PUSHED TO 10.0 FT BGS
TO SET TEMPORARY
PIEZOMETER

HTRW DRILLING LOG

HOLE NUMBER 84-13

PROJECT: Fort Stewart USTs

INSPECTOR K. Ledbetter

SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		CONCRETE				
	1	Silty SAND (Sm), 15% silt, fine to medium grained, subrounded, soft, dry, brown (10YR 5/3)	5.9 ppm			
	2					
	3		5.6 ppm		Soil Sample 841311	
	4					
	5		12 ppm		Soil Sample 841321	
	6					
	7					
	8					COLLECTED GROUNDWATER SAMPLE 841312 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 9.2 FT BGS
	9					PUSHED TO 9.2 FT BGS TO SET TEMPORARY PIEZOMETER
	10					

HTRW DRILLING LOG						HOLE NUMBER 84-14
PROJECT: Fort Stewart USTs			INSPECTOR K. Ledbetter			SHEET 1 OF 1
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		CONCRETE				
	1	silty SAND (sm), 15% silt, fine to medium grained, subrounded, dry, soft, brown (10YR4/3)	22.9 ppm		Soil Sample 841421	
	2					
	3	sandy SILT (ML), 10% fine sand, soft, moist, brown (10YR3/3)	9.0 ppm		Soil Sample 841411	
	4					
	5					
	6					
	7					
	8					
	9					
	10					

WET BELOW
4.3 FT BGS

COLLECTED GROUNDWATER
SAMPLE 841412 FROM
TEMPORARY PIEZOMETER
SCREENED FROM 0.0
TO 11.0 FT BGS

PUSHED TO 11.0 FT BGS
TO SET TEMPORARY
PIEZOMETER

APPENDIX V
SOIL LABORATORY REPORTS

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TABLE V-A. Summary of Soil Analytical Results

Station:	GA UST	84-01	84-01	84-02	84-02	84-03
Sample ID:	Soil	840111	840121	840211	840221	840311
Sample Interval (ft BGS):	Threshold	10.0 - 12.0	0.0 - 2.0	4.0 - 6.0	8.0 - 10.0	0.0 - 2.0
Collection Date:	Levels ¹	27-Jun-98	27-Jun-98	27-Jun-98	27-Jun-98	27-Jun-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
VOLATILE ORGANIC COMPOUNDS						
Benzene	0.008	0.0024 U	0.0022 U	0.0022 U	0.0025 U	0.0022 U
Toluene	6	0.0654 =	0.0222 =	0.0383 =	0.106 =	0.0022 U
Ethylbenzene	10	0.0024 U	0.0022 U	0.0022 U	0.0025 U	0.0022 U
Xylenes, Total	700	0.0072 U	0.0066 U	0.0065 U	0.0075 U	0.0064 UJ
POLYNUCLEAR AROMATIC HYDROCARBONS						
2-Chloronaphthalene	NRC	0.402 U	1.46 U	1.45 U	0.417 U	0.358 U
Acenaphthene	NRC	0.402 U	1.46 U	1.45 U	0.417 U	0.358 U
Acenaphthylene	NRC	0.402 U	1.46 U	1.45 U	0.417 U	0.358 U
Anthracene	NRC	0.402 U	1.46 U	1.45 U	0.417 U	0.358 U
Benzo(a)anthracene	NRC	0.402 U	1.46 U	1.45 U	0.417 U	0.358 U
Benzo(a)pyrene	NRC	0.402 U	1.46 U	1.45 U	0.417 U	0.358 U
Benzo(b)fluoranthene	NRC	0.402 U	1.46 U	1.45 U	0.417 U	0.358 U
Benzo(g,h,i)perylene	NRC	0.402 U	1.46 U	1.45 U	0.417 U	0.358 U
Benzo(k)fluoranthene	NRC	0.402 U	1.46 U	1.45 U	0.417 U	0.358 U
Chrysene	NRC	0.402 U	1.46 U	1.45 U	0.417 U	0.358 U
Dibenzo(a,h)anthracene	NRC	0.402 U	1.46 U	1.45 U	0.417 U	0.358 U
Fluoranthene	NRC	0.402 U	1.46 U	1.45 U	0.417 U	0.358 U
Fluorene	NRC	0.402 U	1.46 U	1.45 U	0.417 U	0.358 U
Indeno(1,2,3-cd)pyrene	NRC	0.402 U	1.46 U	1.45 U	0.417 U	0.358 U
Naphthalene	NRC	0.402 U	1.46 U	1.45 U	0.417 U	0.358 U
Phenanthrene	NRC	0.402 U	1.46 U	1.45 U	0.417 U	0.358 U
Pyrene	NRC	0.402 U	1.46 U	1.45 U	0.417 U	0.358 U
OTHER ANALYTES						
Lead	NRC		11 =		4.2 =	
Total Organic Carbon	NRC					
TPH-Diesel Range Organics	NRC					
Total Petroleum Hydrocarbons	NRC	6.7 J	178 =	225 =	3.09 U	16.7 =

NOTE:

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

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

Analytical data for QA/QC samples 840123 (duplicate), 840425 (equipment rinse), 840623 (duplicate), 840913 (duplicate), and 841025 (equipment rinse) are contained within this appendix but are not summarized in this table.

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

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

Bold values exceed soil threshold levels

NRC No regulatory criteria

Laboratory Qualifiers

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

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

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

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

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

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

Station:	GA UST	84-03	84-04	84-04	84-06	84-06
Sample ID:	Soil	840321	840411	840421	840611	840621
Sample Interval (ft BGS):	Threshold	2.0 - 4.0	6.0 - 8.0	10.0 - 12.0	0.7 - 2.2	2.2 - 3.7
Collection Date:	Levels ¹	27-Jun-98	27-Jun-98	27-Jun-98	13-Nov-98	13-Nov-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
VOLATILE ORGANIC COMPOUNDS						
Benzene	0.008	0.0022 U	0.0023 U	0.0023 U	0.009 =	0.0069 =
Toluene	6	0.0148 =	0.0023 U	0.0023 U	0.0094 =	0.002 J
Ethylbenzene	10	0.0022 U	0.0023 UJ	0.0023 U	0.0045 =	0.0017 J
Xylenes, Total	700	0.0067 U	0.0069 UJ	0.0068 U	0.0052 =	0.0025 J
POLYNUCLEAR AROMATIC HYDROCARBONS						
2-Chloronaphthalene	NRC	0.37 U	0.383 U	0.379 U	1.43 U	0.362 U
Acenaphthene	NRC	0.37 U	0.383 U	0.379 U	1.43 U	0.362 U
Acenaphthylene	NRC	0.37 U	0.383 U	0.379 U	1.43 U	0.362 U
Anthracene	NRC	0.37 U	0.383 U	0.379 U	1.43 U	0.362 U
Benzo(a)anthracene	NRC	0.37 U	0.383 U	0.379 U	1.43 U	0.362 U
Benzo(a)pyrene	NRC	0.37 U	0.383 U	0.379 U	1.43 U	0.362 U
Benzo(b)fluoranthene	NRC	0.37 U	0.383 U	0.379 U	1.43 U	0.362 U
Benzo(g,h,i)perylene	NRC	0.37 U	0.383 U	0.379 U	1.43 U	0.362 U
Benzo(k)fluoranthene	NRC	0.37 U	0.383 U	0.379 U	1.43 U	0.362 U
Chrysene	NRC	0.37 U	0.383 U	0.379 U	1.43 U	0.362 U
Dibenzo(a,h)anthracene	NRC	0.37 U	0.383 U	0.379 U	1.43 U	0.362 U
Fluoranthene	NRC	0.37 U	0.383 U	0.379 U	1.43 U	0.362 U
Fluorene	NRC	0.37 U	0.383 U	0.379 U	1.43 U	0.362 U
Indeno(1,2,3-cd)pyrene	NRC	0.37 U	0.383 U	0.379 U	1.43 U	0.362 U
Naphthalene	NRC	0.37 U	0.383 U	0.379 U	1.43 U	0.362 U
Phenanthrene	NRC	0.37 U	0.383 U	0.379 U	1.43 U	0.362 U
Pyrene	NRC	0.37 U	0.383 U	0.379 U	1.43 U	0.362 U
OTHER ANALYTES						
Lead	NRC	2.9 =	5.4 =			0.91 =
Total Organic Carbon	NRC	4030 =				
TPH-Diesel Range Organics	NRC					1.5 U
Total Petroleum Hydrocarbons	NRC	9.96 U	4.58 U	132 =	167 =	

NOTE:

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

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

Analytical data for QA/QC samples 840123 (duplicate), 840425 (equipment rinsate), 840623 (duplicate), 840913 (duplicate), and 841025 (equipment rinsate) are contained within this appendix but are not summarized in this table.

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

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

Bold values exceed soil threshold levels

NRC No regulatory criteria

Laboratory Qualifiers

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

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

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

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

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

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

Station:	GA UST	84-07	84-07	84-08	84-08	84-09
Sample ID:	Soil	840711	840721	840811	840821	840911
Sample Interval (ft BGS):	Threshold	3.8 - 4.8	2.8 - 3.8	6.0 - 7.0	3.0 - 4.0	0.7 - 2.0
Collection Date:	Levels ¹	12-Nov-98	12-Nov-98	13-Nov-98	13-Nov-98	17-Feb-99
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
<i>VOLATILE ORGANIC COMPOUNDS</i>						
Benzene	0.008	0.0022 U	0.0022 U	0.0024 U	0.0022 U	0.0021 U
Toluene	6	0.004 =	0.0024 =	0.0021 J	0.0039 =	0.0026 =
Ethylbenzene	10	0.00072 J	0.0024 =	0.0024 U	0.0022 U	0.0021 U
Xylenes, Total	700	0.002 J	0.0064 =	0.0035 U	0.0033 U	0.001 J
<i>POLYNUCLEAR AROMATIC HYDROCARBONS</i>						
2-Chloronaphthalene	NRC	0.374 U	0.366 U	0.392 U	0.370 U	0.741 U
Acenaphthene	NRC	0.374 U	0.366 U	0.392 U	0.370 U	0.741 U
Acenaphthylene	NRC	0.374 U	0.366 U	0.392 U	0.370 U	0.741 U
Anthracene	NRC	0.374 U	0.366 U	0.0248 J	0.370 U	0.741 U
Benzo(a)anthracene	NRC	0.374 U	0.366 U	0.0347 J	0.0566 J	0.741 U
Benzo(a)pyrene	NRC	0.374 U	0.366 U	0.392 U	0.370 U	0.741 U
Benzo(b)fluoranthene	NRC	0.374 U	0.366 U	0.392 U	0.370 U	0.741 U
Benzo(g,h,i)perylene	NRC	0.374 U	0.366 U	0.392 U	0.370 U	0.741 U
Benzo(k)fluoranthene	NRC	0.374 U	0.366 U	0.392 U	0.370 U	0.741 U
Chrysene	NRC	0.374 U	0.366 U	0.028 J	0.0472 J	0.741 U
Dibenzo(a,h)anthracene	NRC	0.374 U	0.366 U	0.392 U	0.370 U	0.741 U
Fluoranthene	NRC	0.374 U	0.366 U	0.0541 J	0.0973 J	0.741 U
Fluorene	NRC	0.374 U	0.366 U	0.392 U	0.370 U	0.741 U
Indeno(1,2,3-cd)pyrene	NRC	0.374 U	0.366 U	0.392 U	0.370 U	0.741 U
Naphthalene	NRC	0.374 U	0.366 U	0.392 U	0.370 U	0.741 U
Phenanthrene	NRC	0.374 U	0.366 U	0.100 J	0.0723 J	0.741 U
Pyrene	NRC	0.374 U	0.366 U	0.118 J	0.169 J	0.741 U
<i>OTHER ANALYTES</i>						
Lead	NRC		1.3 =		3.9 =	
Total Organic Carbon	NRC					
TPH-Diesel Range Organics	NRC				1.1 U	
Total Petroleum Hydrocarbons	NRC	7.25 J	7.88 J	7.67 U		211 =

NOTE:

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

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

Analytical data for QA/QC samples 840123 (duplicate), 840425 (equipment rinsate), 840623 (duplicate), 840913 (duplicate), and 841025 (equipment rinsate) are contained within this appendix but are not summarized in this table.

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

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

Bold values exceed soil threshold levels

NRC No regulatory criteria

Laboratory Qualifiers

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

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

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

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

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

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

Station:	GA UST	84-09	84-10	84-10	84-11	84-12
Sample ID:	Soil	840921	841011	841021	841121	841211
Sample Interval (ft BGS):	Threshold	4.0 - 6.0	2.0 - 4.0	1.1 - 2.0	0.0 - 2.0	2.0 - 4.0
Collection Date:	Levels ¹	17-Feb-99	17-Feb-99	17-Feb-99	17-Feb-99	17-Feb-99
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
VOLATILE ORGANIC COMPOUNDS						
Benzene	0.008	0.00081 J	0.224 J	0.374 J	0.0034 U	0.0022 U
Toluene	6	0.0036 =	0.198 J	0.166 J	0.0015 J	0.0011 J
Ethylbenzene	10	0.0021 U	4.67 =	7.04 =	0.0034 U	0.0022 U
Xylenes, Total	700	0.0032 U	17.1 =	34.2 =	0.005 U	0.00068 J
POLYNUCLEAR AROMATIC HYDROCARBONS						
2-Chloronaphthalene	NRC	0.370 U	3.51 U	7.58 U	7.33 U	0.725 U
Acenaphthene	NRC	0.370 U	3.51 U	2.02 J	7.33 U	0.725 U
Acenaphthylene	NRC	0.370 U	3.51 U	7.58 U	7.33 U	0.725 U
Anthracene	NRC	0.370 U	3.51 U	7.58 U	7.33 U	0.725 U
Benzo(a)anthracene	NRC	0.370 U	3.51 U	7.58 U	7.33 U	0.725 U
Benzo(a)pyrene	NRC	0.370 U	3.51 U	7.58 U	7.33 U	0.725 U
Benzo(b)fluoranthene	NRC	0.370 U	3.51 U	7.58 U	7.33 U	0.725 U
Benzo(g,h,i)perylene	NRC	0.370 U	3.51 U	7.58 U	7.33 U	0.725 U
Benzo(k)fluoranthene	NRC	0.370 U	3.51 U	7.58 U	7.33 U	0.725 U
Chrysene	NRC	0.370 U	3.51 U	7.58 U	7.33 U	0.725 U
Dibenzo(a,h)anthracene	NRC	0.370 U	3.51 U	7.58 U	7.33 U	0.725 U
Fluoranthene	NRC	0.370 U	3.51 U	7.58 U	7.33 U	0.725 U
Fluorene	NRC	0.370 U	2.28 J	4.14 J	7.33 U	0.725 U
Indeno(1,2,3-cd)pyrene	NRC	0.370 U	3.51 U	7.58 U	7.33 U	0.725 U
Naphthalene	NRC	0.370 U	6.03 =	11.3 =	7.33 U	0.725 U
Phenanthrene	NRC	0.370 U	3.95 =	10.1 =	7.33 U	0.725 U
Pyrene	NRC	0.370 U	0.816 J	1.79 J	7.33 U	0.725 U
OTHER ANALYTES						
Lead	NRC	2.7 =		2.8 =	26.6 =	
Total Organic Carbon	NRC					
TPH-Diesel Range Organics	NRC					
Total Petroleum Hydrocarbons	NRC	27.5 =	6950 =	7300 =	134 =	246 =

NOTE:

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

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

Analytical data for QA/QC samples 840123 (duplicate), 840425 (equipment rinsate), 840623 (duplicate), 840913 (duplicate), and 841025 (equipment rinsate) are contained within this appendix but are not summarized in this table.

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

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

Bold values exceed soil threshold levels

NRC No regulatory criteria

Laboratory Qualifiers

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

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

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

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

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

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

Station:	GA UST	84-12	84-13	84-13	84-14	84-14
Sample ID:	Soil	841221	841311	841321	841411	841421
Sample Interval (ft BGS):	Threshold	0.0 - 2.0	2.0 - 4.0	4.0 - 6.0	2.0 - 4.0	0.6 - 2.0
Collection Date:	Levels ¹	17-Feb-99	20-Feb-99	20-Feb-99	20-Feb-99	20-Feb-99
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
VOLATILE ORGANIC COMPOUNDS						
Benzene	0.008	0.002 UJ	0.00067 J	0.0019 U	0.0014 J	0.002 U
Toluene	6	0.0062 J	0.002 =	0.0019 U	0.0031 =	0.002 U
Ethylbenzene	10	0.004 J	0.001 J	0.0019 U	0.0013 J	0.002 U
Xylenes, Total	700	0.0196 J	0.0011 J	0.0028 U	0.0007 J	0.003 U
POLYNUCLEAR AROMATIC HYDROCARBONS						
2-Chloronaphthalene	NRC	3.62 U	0.362 U	1.45 U	0.370 U	1.45 U
Acenaphthene	NRC	3.62 U	0.362 U	1.45 U	0.370 U	0.147 J
Acenaphthylene	NRC	3.62 U	0.362 U	1.45 U	0.370 U	1.45 U
Anthracene	NRC	3.62 U	0.362 U	1.45 U	0.370 U	0.402 J
Benzo(a)anthracene	NRC	3.62 U	0.362 U	1.45 U	0.370 U	0.910 J
Benzo(a)pyrene	NRC	3.62 U	0.362 U	1.45 U	0.370 U	0.819 J
Benzo(b)fluoranthene	NRC	3.62 U	0.362 U	1.45 U	0.370 U	0.746 J
Benzo(g,h,i)perylene	NRC	3.62 U	0.362 U	1.45 U	0.370 U	0.407 J
Benzo(k)fluoranthene	NRC	3.62 U	0.362 U	1.45 U	0.370 U	1.45 U
Chrysene	NRC	3.62 U	0.362 U	1.45 U	0.370 U	0.788 J
Dibenzo(a,h)anthracene	NRC	3.62 U	0.362 U	1.45 U	0.370 U	1.45 U
Fluoranthene	NRC	3.62 U	0.362 U	1.45 U	0.370 U	2.04 =
Fluorene	NRC	3.62 U	0.362 U	1.45 U	0.370 U	0.136 J
Indeno(1,2,3-cd)pyrene	NRC	3.62 U	0.362 U	1.45 U	0.370 U	0.748 J
Naphthalene	NRC	3.62 U	0.362 U	1.45 U	0.370 U	1.45 U
Phenanthrene	NRC	3.62 U	0.362 U	1.45 U	0.370 U	1.23 J
Pyrene	NRC	3.62 U	0.362 U	1.45 U	0.370 U	1.77 =
OTHER ANALYTES						
Lead	NRC	91.2 =		6 =		12 =
Total Organic Carbon	NRC					
TPH-Diesel Range Organics	NRC					
Total Petroleum Hydrocarbons	NRC	9680 =	6.58 U	167 =	8.53 U	1070 =

NOTE:

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

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

Analytical data for QA/QC samples 840123 (duplicate), 840425 (equipment rinsate), 840623 (duplicate), 840913 (duplicate), and 841025 (equipment rinsate) are contained within this appendix but are not summarized in this table.

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

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

Bold values exceed soil threshold levels

NRC No regulatory criteria

Laboratory Qualifiers

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

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

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

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

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

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DATA VALIDATION

COPY

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840111

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA

Case No.: NA

SAS No.: NA

SDG No.: FS4A10S

Matrix: (soil/water) SOIL

Lab Sample ID: 9806843-16

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

Lab File ID: 2P3028

Level: (low/med) LOW

Date Received: 06/29/98

% Moisture: not dec. 17

Date Analyzed: 07/02/98

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

Dilution Factor: 1.0

Soil Extract Volume: _____ (ml)

Soil Aliquot Volume: _____ (uL)

CAS NO.

COMPOUND

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

Q

71-43-2-----Benzene	2.4	U	U
108-88-3-----Toluene	65.4		
100-41-4-----Ethylbenzene	2.4	U	U
1330-20-7-----Xylenes (total)	7.2	U	U

LW
8-14-98

FORM I VOA

DATA VALIDATION

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840111

Lab Name: GENERAL ENGINEERING LABOR Contract: NA
 Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A10S
 Matrix: (soil/water) SOIL Lab Sample ID: 9806843-16
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7B508
 Level: (low/med) LOW Date Received: 06/29/98
 % Moisture: 17 decanted: (Y/N) N Date Extracted: 07/01/98
 Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 07/10/98
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	
91-20-3	-----naphthalene	402	U
91-58-7	-----2-chloronaphthalene	402	U
208-96-8	-----acenaphthylene	402	U
83-32-9	-----acenaphthene	402	U
86-73-7	-----fluorene	402	U
85-01-8	-----phenanthrene	402	U
120-12-7	-----anthracene	402	U
206-44-0	-----fluoranthene	402	U
129-00-0	-----pyrene	402	U
56-55-3	-----benzo (a) anthracene	402	U
218-01-9	-----chrysene	402	U
205-99-2	-----benzo (b) fluoranthene	402	U
207-08-9	-----benzo (k) fluoranthene	402	U
50-32-8	-----benzo (a) pyrene	402	U
193-39-5	-----indeno (1,2,3-cd) pyrene	402	U
53-70-3	-----dibenz (a,h) anthracene	402	U
191-24-2	-----benzo (g,h,i) perylene	402	U

 LW
 8-14-98

FORM I SV-1

OLM03.0

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins
Project Description: CAP-Part A for UST Sites (Task Order No. 8)

cc: SAIC00598

Report Date: July 14, 1998

Page 1 of 1

Sample ID : 840111
Lab ID : 9806843-16
Matrix : Soil
Date Collected : 06/27/98
Date Received : 06/29/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	6.70	238 <i>J</i>	12.0	mg/kg	1.0	AAT	07/10/98	1030	125813	1

anal 8/17/99

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 _____

LA
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840121

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) SOIL

Lab Sample ID: 9806844-15

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

Lab File ID: 2P3022

Level: (low/med) LOW

Date Received: 06/29/98

% Moisture: not dec. 9

Date Analyzed: 07/02/98

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

Dilution Factor: 1.0

Soil Extract Volume: (ml)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
71-43-2-----	Benzene	2.2	U
108-88-3-----	Toluene	22.2	U
100-41-4-----	Ethylbenzene	2.2	U
1330-20-7-----	Xylenes (total)	6.6	U

LW
8-06-98

FORM I VOA

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840121

Lab Name: GENERAL ENGINEERING LABOR Contract: NA
 Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A11S
 Matrix: (soil/water) SOIL Lab Sample ID: 9806844-15
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4B510
 Level: (low/med) LOW Date Received: 06/29/98
 % Moisture: 9 decanted: (Y/N) N Date Extracted: 07/06/98
 Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 07/10/98
 Injection Volume: 1.0 (uL) Dilution Factor: 4.0
 GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q
91-20-3	naphthalene	1460	U	U ↓
91-58-7	2-chloronaphthalene	1460	U	
209-96-8	acenaphthylene	1460	U	
83-32-9	acenaphthene	1460	U	
86-73-7	fluorene	1460	U	
85-01-8	phenanthrene	1460	U	
120-12-7	anthracene	1460	U	
206-44-0	fluoranthene	1460	U	
129-00-0	pyrene	1460	U	
56-55-3	benzo (a) anthracene	1460	U	
218-01-9	chrysene	1460	U	
205-99-2	benzo (b) fluoranthene	1460	U	
207-08-9	benzo (k) fluoranthene	1460	U	
50-32-8	benzo (a) pyrene	1460	U	
193-39-5	indeno (1,2,3-cd) pyrene	1460	U	
53-70-3	dibenz (a,h) anthracene	1460	U	
191-24-2	benzo (g,h,i) perylene	1460	U	

LW
8-10-98

FORM I SV-1

OLM03.0

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins
Project Description: CAP-Part A for UST Sites (Task Order No. 8)

cc: SAIC00598

Report Date: July 14, 1998

Page 1 of 1

Sample ID : 840121
Lab ID : 9806844-15
Matrix : Soil
Date Collected : 06/27/98
Date Received : 06/29/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		178	4.36	22.0	mg/kg	2.0	JLP	07/09/98	1100	125709	1 =

M = Method

Method-Description

M 1

EPA 418.1 Modified

20
8-21-98

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

U indicates that the analyte was not detected at a concentration greater than the detection limit.

* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Valerie Davis at (803) 769-7391.

Reviewed By



DATA V-15 Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4A11S

0087

Method Type: Total Metals

Sample ID: 9806844-15 -

Client ID: 840121

Contract: SAIC00598

Lab Code: GEL

Case No.:

SAS No.:

Matrix: SOIL

Date Received: 6/29/98

Level: LOW

% Solids: 91.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	11.0	mg/kg			P	0.16	TJA61 Trace ICPAES	980630-1

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

DUPLICATE
EPA SAMPLE NO.

840123

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

SDG No.: FS4A11S

Matrix: (soil/water) SOIL

Lab Sample ID: 9806844-14

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

Lab File ID: 2P3036

Level: (low/med) LOW

Date Received: 06/29/98

% Moisture: not dec. 8

Date Analyzed: 07/02/98

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

Dilution Factor: 1.0

Soil Extract Volume: (mL)

Soil Aliquot Volume: (uL)

CAS NO.

COMPOUND

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

Q

71-43-2-----Benzene	2.2	U
108-88-3-----Toluene	2.2	U
100-41-4-----Ethylbenzene	2.2	U
1330-20-7-----Xylenes (total)	6.5	U

UJ C14
UJ C14

LW
8-06-98

FORM I VOA

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

DUPLICATE
EPA SAMPLE NO.

840123

Lab Name: GENERAL ENGINEERING LABOR Contract: NA
Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A11S
Matrix: (soil/water) SOIL Lab Sample ID: 9806844-14
Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4B509
Level: (low/med) LOW Date Received: 06/29/98
% Moisture: 8 decanted: (Y/N) N Date Extracted: 07/06/98
Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 07/10/98
Injection Volume: 1.0 (uL) Dilution Factor: 4.0
GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q
91-20-3	naphthalene	1450	U	U ↓
91-58-7	2-chloronaphthalene	1450	U	
209-96-8	acenaphthylene	1450	U	
83-32-9	acenaphthene	1450	U	
86-73-7	fluorene	1450	U	
85-01-8	phenanthrene	1450	U	
120-12-7	anthracene	1450	U	
206-44-0	fluoranthene	1450	U	
129-00-0	pyrene	1450	U	
56-55-3	benzo (a) anthracene	1450	U	
218-01-9	chrysene	1450	U	
205-99-2	benzo (b) Fluoranthene	1450	U	
207-08-9	benzo (k) fluoranthene	1450	U	
50-32-8	benzo (a) pyrene	1450	U	
193-39-5	indeno (1,2,3-cd) pyrene	1450	U	
53-70-3	dibenz (a,h) anthracene	1450	U	
191-24-2	benzo (g,h,i) perylene	1450	U	

LW
8-10-98

FORM I SV-1

OLM03.0

DATA VALIDATION COPY

DUPLICATE

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins
Project Description: CAP-Part A for UST Sites (Task Order No. 8)

cc: SAIC00598

Report Date: July 14, 1998

Page 1 of 1

Sample ID : 840123
Lab ID : 9806844-14
Matrix : Soil
Date Collected : 06/27/98
Date Received : 06/29/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		330	10.8	54.5	mg/kg	5.0	JLP	07/09/98	1100	125709	1 =

M = Method	Method-Description
M 1	EPA 418.1 Modified

LLJ
8-21-98

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

U indicates that the analyte was not detected at a concentration greater than the detection limit.

* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Valerie Davis at (803) 769-7391.

Reviewed By



DATA VALIDATION
COPY

Sample ID: 9806844-14

Client ID: 840123

Contract: SAIC00598

Lab Code: GEL

Case No.:

SAS No.:

Matrix: SOIL

Date Received: 6/29/98

Level: LOW

% Solids: 92.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	19.7	mg/kg			P	0.15	TJA61 Trace ICPAES	980630-1

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

DATA VALIDATION COPY

1A VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840211

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

SDG No.: FS4A10S

Matrix: (soil/water) SOIL

Lab Sample ID: 9806843-07

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

Lab File ID: 2P3034

Level: (low/med) LOW

Date Received: 06/29/98

% Moisture: not dec. 8

Date Analyzed: 07/02/98

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

Dilution Factor: 1.0

Soil Extract Volume: (ml)

Soil Aliquot Volume: (uL)

CAS NO.

COMPOUND

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

Q

71-43-2-----Benzene	2.2	U	U C C U
108-88-3-----Toluene	38.3		
100-41-4-----Ethylbenzene	2.2	U	
1330-20-7-----Xylenes (total)	6.5	U	

LW
8-14-98

FORM I VOA

DATA VALIDATION
COPY

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840211

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

SDG No.: FS4A10S

Matrix: (soil/water) SOIL

Lab Sample ID: 9806843-07

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

Lab File ID: 7B416

Level: (low/med) LOW

Date Received: 06/29/98

% Moisture: 8 decanted: (Y/N) N

Date Extracted: 07/01/98

Concentrated Extract Volume: 1.00 (mL)

Date Analyzed: 07/09/98

Injection Volume: 1.0 (uL)

Dilution Factor: 4.0

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

CAS NO.

COMPOUND

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

Q

91-20-3	-----naphthalene	1450	U
91-58-7	-----2-chloronaphthalene	1450	U
208-96-8	-----acenaphthylene	1450	U
83-32-9	-----acenaphthene	1450	U
86-73-7	-----fluorene	1450	U
85-01-8	-----phenanthrene	1450	U
120-12-7	-----anthracene	1450	U
206-44-0	-----fluoranthene	1450	U
129-00-0	-----pyrene	1450	U
56-55-3	-----benzo (a) anthracene	1450	U
218-01-9	-----chrysene	1450	U
205-99-2	-----benzo (b) fluoranthene	1450	U
207-08-9	-----benzo (k) fluoranthene	1450	U
50-32-8	-----benzo (a) pyrene	1450	U
193-39-5	-----indeno (1,2,3-cd) pyrene	1450	U
53-70-3	-----dibenz (a,h) anthracene	1450	U
191-24-2	-----benzo (g,h,i) perylene	1450	U

LW
8-14-98

FORM I SV-1

OLM03.0

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins
Project Description: CAP-Part A for UST Sites (Task Order No. 8)

cc: SAIC00598

Report Date: July 14, 1998

Page 1 of 1

Sample ID : 840211
Lab ID : 9806843-07
Matrix : Soil
Date Collected : 06/27/98
Date Received : 06/29/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		225	==	4.32	21.8	mg/kg	2.0	JLP	06/30/98	1600	125127 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 (803) 769-7391.

Reviewed By



9806843-07

VOLATILE ORGANICS ANALYSIS DATA SHEET

DEA SAMPLE NO.

840221

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) SOIL

Lab Sample ID: 9806844-02

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

Lab File ID: 2P306

Level: (low/med) LOW

Date Received: 06/29/98

% Moisture: not dec. 20

Date Analyzed: 07/01/98

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

Dilution Factor: 1.0

Soil Extract Volume: _____ (ml)

Soil Aliquot Volume: _____ (uL)

CAS NO.

COMPOUND

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

Q

71-43-2-----Benzene	2.5	U	U = U U
108-88-3-----Toluene	106		
100-41-4-----Ethylbenzene	2.5	U	
1330-20-7-----Xylenes (total)	7.5	U	

LW
8-06-98

FORM I VOA

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840221

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) SOIL Lab Sample ID: 9806844-02

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4B415

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

% Moisture: 20 decanted: (Y/N) N Date Extracted: 07/06/98

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

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

91-20-3	naphthalene	417	U
91-58-7	2-chloronaphthalene	417	U
209-96-8	acenaphthylene	417	U
83-32-9	acenaphthene	417	U
86-73-7	fluorene	417	U
85-01-8	phenanthrene	417	U
120-12-7	anthracene	417	U
206-44-0	fluoranthene	417	U
129-00-0	pyrene	417	U
56-55-3	benzo (a) anthracene	417	U
218-01-9	chrysene	417	U
205-99-2	benzo (b) fluoranthene	417	U
207-08-9	benzo (k) fluoranthene	417	U
50-32-8	benzo (a) pyrene	417	U
193-39-5	indeno (1,2,3-cd) pyrene	417	U
53-70-3	dibenz (a,h) anthracene	417	U
191-24-2	benzo (g,h,i) perylene	417	U

LW
8-10-98

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: July 14, 1998

Page 1 of 1

Sample ID : 840221
Lab ID : 9806844-02
Matrix : Soil
Date Collected : 06/27/98
Date Received : 06/29/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	3.09	2.48	12.5	mg/kg	1.0	JLP	07/09/98	1100	125709 1	U Fol, F06

M = Method	Method-Description
M1	EPA 418.1 Modified

LW
8-21-98

Notes:

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any questions to your Project Manager, Valerie Davis at (803) 769-7391.

Reviewed By



Form 1: Inorganic Analyses Data Sheet

SDG No. ES7A118

DATA VALIDATION

Method Type: Total Metals

Sample ID: 9806844-02

Client ID: 840221

Contract: SAIC00598

Lab Code: GEL

Case No.:

SAS No.:

Matrix: SOIL

Date Received: 6/29/98

Level: LOW

% Solids: 80.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	4.2	mg/kg			P	0.18	TJA61 Trace ICPAES	980630-1

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

DATA VALIDATION

COPY

1A VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840311

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) SOIL Lab Sample ID: 9806843-09

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2P3013

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

% Moisture: not dec. 7 Date Analyzed: 07/01/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q
71-43-2-----	Benzene	2.2	U	U U U U C14
108-88-3-----	Toluene	2.2	U	
100-41-4-----	Ethylbenzene	2.2	U	
1330-20-7-----	Xylenes (total)	6.4	U	

6W
8-14-98

FORM I VOA

DATA VALIDATION

COPY

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840311

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

SDG No.: FS4A10S

Matrix: (soil/water) SOIL

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

Lab Sample ID: 9806843-09

Level: (low/med) LOW

Lab File ID: 7B418

% Moisture: 7 decanted: (Y/N) N

Date Received: 06/29/98

Concentrated Extract Volume: 1.00 (mL)

Date Extracted: 07/01/98

Injection Volume: 1.0 (uL)

Date Analyzed: 07/10/98

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

Dilution Factor: 1.0

CAS NO.

COMPOUND

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

Q

91-20-3-----	naphthalene	358	U
91-58-7-----	2-chloronaphthalene	358	U
208-96-8-----	acenaphthylene	358	U
83-32-9-----	acenaphthene	358	U
86-73-7-----	fluorene	358	U
85-01-8-----	phenanthrene	358	U
120-12-7-----	anthracene	358	U
206-44-0-----	fluoranthene	358	U
129-00-0-----	pyrene	358	U
56-55-3-----	benzo (a) anthracene	358	U
218-01-9-----	chrysene	358	U
205-99-2-----	benzo (b) fluoranthene	358	U
207-08-9-----	benzo (k) fluoranthene	358	U
50-32-8-----	benzo (a) pyrene	358	U
193-39-5-----	indeno (1,2,3-cd) pyrene	358	U
53-70-3-----	dibenz (a,h) anthracene	358	U
191-24-2-----	benzo (g,h,i) perylene	358	U

LW

8-14-98

FORM I SV-1

OLM03.0

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins
Project Description: CAP-Part A for UST Sites (Task Order No. 8)

cc: SAIC00598

Report Date: July 14, 1998

Page 1 of 1

Sample ID : 840311
Lab ID : 9806843-09
Matrix : Soil
Date Collected : 06/27/98
Date Received : 06/29/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		16.7	==	2.14	10.8	mg/kg	1.0	JLP	06/30/98	1600	125127 1

M = Method

Method-Description

M 1

EPA 418.1 Modified

Notes:

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Reviewed By



VOLATILE ORGANICS ANALYSIS DATA SHEET

REF SAMPLE NO.

840321

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

SDG No.: FS4A11S

Matrix: (soil/water) SOIL

Lab Sample ID: 9806844-12

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

Lab File ID: 2P3019

Level: (low/med) LOW

Date Received: 06/29/98

% Moisture: not dec. 10

Date Analyzed: 07/02/98

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

Dilution Factor: 1.0

Soil Extract Volume: (ml)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	UG/KG	
71-43-2-----	Benzene	2.2	U	U U U U
108-88-3-----	Toluene	14.8	U	
100-41-4-----	Ethylbenzene	2.2	U	
1330-20-7-----	Xylenes (total)	6.7	U	

LW
8-66-98

FORM I VOA

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840321

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) SOIL Lab Sample ID: 9806844-12

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4B507

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

% Moisture: 10 decanted: (Y/N) N Date Extracted: 07/06/98

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

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

91-20-3	-----naphthalene	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

LW
8-10-98

DATA VALIDATION
COPY

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins
Project Description: CAP-Part A for UST Sites (Task Order No. 8)

cc: SAIC00598

Report Date: July 14, 1998

Page 1 of 1

Sample ID : 840321
Lab ID : 9806844-12
Matrix : Soil
Date Collected : 06/27/98
Date Received : 06/29/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	9.96	2.20	11.1	mg/kg	1.0	JLP	07/09/98	1100	125709 1	U
TOTAL ORGANIC CARBON (TOC)		4030	24.1	100	mg/kg	1.0	LS	07/09/98	1534	125629 2	=

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

LW
8-21-98

Notes:

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any questions to your Project Manager, Valerie Davis at (803) 769-7391.

Reviewed By



DATA VALIDATION

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4A11S

COPY

Method Type: Total Metals

Sample ID: 9806844-12

Client ID: 840321

Contract: SAIC00598

Lab Code: GEL

Case No.:

SAS No.:

Matrix: SOIL

Date Received: 6/29/98

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			P	0.15	TJA61 Trace ICPAES	980630-1

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840411

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) SOIL Lab Sample ID: 9806844-07

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2P3031

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

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

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q
71-43-2-----	Benzene	2.3	U	U
108-88-3-----	Toluene	2.3	U	U
100-41-4-----	Ethylbenzene	2.3	U	UJ C14
1330-20-7-----	Xylenes (total)	6.9	U	UJ C14

LW
8-06-98

FORM I VOA

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840411

Lab Name: GENERAL ENGINEERING LABOR Contract: NA
 Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A11S
 Matrix: (soil/water) SOIL Lab Sample ID: 9806844-07
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4B420
 Level: (low/med) LOW Date Received: 06/29/98
 % Moisture: 13 decanted: (Y/N) N Date Extracted: 07/06/98
 Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 07/10/98
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	-----naphthalene	383 U	U ↓
91-58-7	-----2-chloronaphthalene	383 U	
209-96-8	-----acenaphthylene	383 U	
83-32-9	-----acenaphthene	383 U	
86-73-7	-----fluorene	383 U	
85-01-8	-----phenanthrene	383 U	
120-12-7	-----anthracene	383 U	
206-44-0	-----fluoranthene	383 U	
129-00-0	-----pyrene	383 U	
56-55-3	-----benzo (a) anthracene	383 U	
218-01-9	-----chrysene	383 U	
205-99-2	-----benzo (b) fluoranthene	383 U	
207-08-9	-----benzo (k) fluoranthene	383 U	
50-32-8	-----benzo (a) pyrene	383 U	
193-39-5	-----indeno (1,2,3-cd) pyrene	383 U	
53-70-3	-----dibenz (a,h) anthracene	383 U	
191-24-2	-----benzo (g,h,i) perylene	383 U	

LW
8-10-98

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: July 14, 1998

Page 1 of 1

Sample ID : 840411
Lab ID : 9806844-07
Matrix : Soil
Date Collected : 06/27/98
Date Received : 06/29/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	4.58	2.28	11.5	mg/kg	1.0	JLP	07/09/98	1100	125709 1	U

M = Method	Method-Description
M 1	EPA 418.1 Modified

LW
8-21-98

Notes:

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Reviewed By



DATA VALIDATION

COPY

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4A11S

Method Type: Total Metals

Sample ID: 9806844-07

Client ID: 840411

Contract: SAIC00598

Lab Code: GEL

Case No.:

SAS No.:

Matrix: SOIL

Date Received: 6/29/98

Level: LOW

% Solids: 87.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	5.4	mg/kg			P	0.17	TJA61 Trace ICPAES	980630-1

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

DATA VALIDATION
COPY

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840421

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

SDG No.: FS4A10S

Matrix: (soil/water) SOIL

Lab Sample ID: 9806843-14

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

Lab File ID: 2P3035

Level: (low/med) LOW

Date Received: 06/29/98

% Moisture: not dec. 12

Date Analyzed: 07/02/98

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

Dilution Factor: 1.0

Soil Extract Volume: (ml)

Soil Aliquot Volume: (uL)

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

LW
8-14-98

FORM I VOA

DATA VALIDATION

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840421

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

SDG No.: FS4A10S

Matrix: (soil/water) SOIL

Lab Sample ID: 9806843-14

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

Lab File ID: 7B423

Level: (low/med) LOW

Date Received: 06/29/98

% Moisture: 12 decanted: (Y/N) N

Date Extracted: 07/01/98

Concentrated Extract Volume: 1.00 (mL)

Date Analyzed: 07/10/98

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

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

CAS NO.

COMPOUND

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

Q

91-20-3	-----naphthalene	379	U
91-58-7	-----2-chloronaphthalene	379	U
208-96-8	-----acenaphthylene	379	U
83-32-9	-----acenaphthene	379	U
86-73-7	-----fluorene	379	U
85-01-8	-----phenanthrene	379	U
120-12-7	-----anthracene	379	U
206-44-0	-----fluoranthene	379	U
129-00-0	-----pyrene	379	U
56-55-3	-----benzo (a) anthracene	379	U
218-01-9	-----chrysene	379	U
205-99-2	-----benzo (b) fluoranthene	379	U
207-08-9	-----benzo (k) fluoranthene	379	U
50-32-8	-----benzo (a) pyrene	379	U
193-39-5	-----indeno (1,2,3-cd) pyrene	379	U
53-70-3	-----dibenz (a,h) anthracene	379	U
191-24-2	-----benzo (g,h,i) perylene	379	U

LW
8-14-98

FORM I SV-1

OLM03.0

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins
Project Description: CAP-Part A for UST Sites (Task Order No. 8)

cc: SAIC00598

Report Date: July 14, 1998

Page 1 of 1

Sample ID : 840421
Lab ID : 9806843-14
Matrix : Soil
Date Collected : 06/27/98
Date Received : 06/29/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		132	==	2.26	-11.4	mg/kg	1.0	JLP	06/30/98	1600	125127 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

DATA VALIDATION

COPY

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

RINSATE
EPA SAMPLE NO.

840425

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA

Case No.: NA

SAS No.: NA

SDG No.: FS4A13W

Matrix: (soil/water) WATER

Lab Sample ID: 9806848-07

Sample wt/vol: 10.00 (g/ml) ML

Lab File ID: 2P5014

Level: (low/med) LOW

Date Received: 06/29/98

% Moisture: not dec. _____

Date Analyzed: 07/03/98

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

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

71-43-2-----	Benzene	2.0	U
108-88-3-----	Toluene	2.0	U
100-41-4-----	Ethylbenzene	2.0	U
1330-20-7-----	Xylenes (total)	6.0	U

C
↓LW
7-30-98

FORM I VOA

DATA VALIDATION

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
0071RINSTATE
EPA SAMPLE NO.

840425

Lab Name: GENERAL ENGINEERING LABOR Contract: NA
 Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A07W
 Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9806840-13
 Sample wt/vol: 500.0 (g/mL) ML Lab File ID: 7C121
 Level: (low/med) LOW Date Received: 06/29/98
 % Moisture: _____ decanted: (Y/N) _____ Date Extracted: 06/30/98
 Concentrated Extract Volume: 0.50 (mL) Date Analyzed: 07/14/98
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: 7.0

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

91-20-3	-----naphthalene	10.0	U
91-58-7	-----2-chloronaphthalene	10.0	U
208-96-8	-----acenaphthylene	10.0	U
83-32-9	-----acenaphthene	10.0	U
86-73-7	-----fluorene	10.0	U
85-01-8	-----phenanthrene	10.0	U
120-12-7	-----anthracene	10.0	U
206-44-0	-----fluoranthene	10.0	U
129-00-0	-----pyrene	10.0	U
56-55-3	-----benzo (a) anthracene	10.0	U
218-01-9	-----chrysene	10.0	U
205-99-2	-----benzo (b) fluoranthene	10.0	U
207-08-9	-----benzo (k) fluoranthene	10.0	U
50-32-8	-----benzo (a) pyrene	10.0	U
193-39-5	-----indeno (1,2,3-cd) pyrene	10.0	U
53-70-3	-----dibenz (a,h) anthracene	10.0	U
191-24-2	-----benzo (g,h,i) perylene	10.0	U

LW
8-20-98

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)

PRIVATE

cc: SAIC00598

Report Date: July 07, 1998

Page 1 of 1

Sample ID : 840425
Lab ID : 9806840-13
Matrix : Water
Date Collected : 06/27/98
Date Received : 06/29/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	U	0.0730	0.197	1.00	mg/l	1.0	JLP	07/01/98	1615	125167	1 U

M = Method	Method-Description
M 1	EPA 418.1

26
8-21-98

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

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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



9806840-13

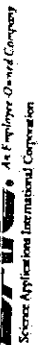


CHAIN OF CUSTODY RECORD

COC NO.: GAQ/7

CHAIN OF CUSTODY RECORD

V-45



CHAIN OF CUSTODY RECORD

COC NO.: GA018

CHAIN OF CUSTODY RECORD

V-46

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840611

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-07

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 7J527

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

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

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
---------	----------	---	---

71-43-2-----benzene	9.0		
108-88-3-----toluene	9.4		
100-41-4-----ethylbenzene	4.5		
1330-20-7-----xylenes (total)	5.2		

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840611

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ES6008S

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-07

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7V115

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

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

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

Injection Volume: 1.0 (uL) Dilution Factor: 4.0

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

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

91-20-3-----	naphthalene	1430	U
91-58-7-----	2-chloronaphthalene	1430	U
208-96-8-----	acenaphthylene	1430	U
83-32-9-----	acenaphthene	1430	U
86-73-7-----	fluorene	1430	U
85-01-8-----	phenanthrene	1430	U
120-12-7-----	anthracene	1430	U
206-44-0-----	fluoranthene	1430	U
129-00-0-----	pyrene	1430	U
56-55-3-----	benzo(a)anthracene	1430	U
218-01-9-----	chrysene	1430	U
205-99-2-----	benzo(b)fluoranthene	1430	U
207-08-9-----	benzo(k)fluoranthene	1430	U
50-32-8-----	benzo(a)pyrene	1430	U
193-39-5-----	indeno(1,2,3-cd)pyrene	1430	U
53-70-3-----	dibenz(a,h)anthracene	1430	U
191-24-2-----	benzo(g,h,i)perylene	1430	U

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 03, 1998

Page 1 of 1

Sample ID : 840611
Lab ID : 9811477-07
Matrix : Soil
Date Collected : 11/13/98
Date Received : 11/14/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		167 =	5.33	10.8	mg/kg	1.0	AAT	11/30/98	1000	136808	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:

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

Reviewed By



1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840621

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-11

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 7J531

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

% Moisture: not dec. 8 Date Analyzed: 11/21/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	UG/KG	
71-43-2-----	benzene	6.9		
108-88-3-----	toluene	2.0	J	
100-41-4-----	ethylbenzene	1.7	J	
1330-20-7-----	xylene (total)	2.5	J	

99911

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840621

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-11

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7V119

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

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

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

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
---------	----------	---	---

91-20-3	-----naphthalene	362	U
91-58-7	-----2-chloronaphthalene	362	U
208-96-8	-----acenaphthylene	362	U
83-32-9	-----acenaphthene	362	U
86-73-7	-----fluorene	362	U
85-01-8	-----phenanthrene	362	U
120-12-7	-----anthracene	362	U
206-44-0	-----fluoranthene	362	U
129-00-0	-----pyrene	362	U
56-55-3	-----benzo (a) anthracene	362	U
218-01-9	-----chrysene	362	U
205-99-2	-----benzo (b) fluoranthene	362	U
207-08-9	-----benzo (k) fluoranthene	362	U
50-32-8	-----benzo (a) pyrene	362	U
193-39-5	-----indeno (1,2,3-cd) pyrene	362	U
53-70-3	-----dibenz (a,h) anthracene	362	U
191-24-2	-----benzo (g,h,i) perylene	362	U

FORM I SV-1

OLM03.0

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

840621

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-11

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 11D1027

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

% Moisture: 8 decanted: (Y/N) N Date Extracted: 11/20/98

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

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG		Q
-----Diesel Range Organics		1.5	B	UF01,F07

FORM I SV

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS6008S

Method Type: Total Metals

Sample ID: 9811477-11

Client ID: 840621

Contract: SAIC01498

Lab Code: GEL

Case No.:

SAS No.:

Matrix: SOIL

Date Received: 11/14/98

Level: LOW

% Solids: 92.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	0.91	mg/kg	=		P	0.16	TJA61 Trace ICPAES	981124-1

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

DUPLICATE
EPA SAMPLE NO.

840623

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-14

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 7J534

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

% Moisture: not dec. 6 Date Analyzed: 11/21/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
---------	----------	---	---

71-43-2-----benzene	9.7		
108-88-3-----toluene	7.4		
100-41-4-----ethylbenzene	4.7		
1330-20-7-----xylenes (total)	5.6		

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

DUPLICATE
EPA SAMPLE NO.

840623

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-14

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7V122

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

% Moisture: 6 decanted: (Y/N) N Date Extracted: 11/18/98

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

Injection Volume: 1.0 (uL) Dilution Factor: 4.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	UG/KG	
91-20-3	-----naphthalene	1420	U	U ↓
91-58-7	-----2-chloronaphthalene	1420	U	
208-96-8	-----acenaphthylene	1420	U	
83-32-9	-----acenaphthene	1420	U	
86-73-7	-----fluorene	1420	U	
85-01-8	-----phenanthrene	1420	U	
120-12-7	-----anthracene	1420	U	
206-44-0	-----fluoranthene	1420	U	
129-00-0	-----pyrene	1420	U	
56-55-3	-----benzo(a)anthracene	1420	U	
218-01-9	-----chrysene	1420	U	
205-99-2	-----benzo(b)fluoranthene	1420	U	
207-08-9	-----benzo(k)fluoranthene	1420	U	
50-32-8	-----benzo(a)pyrene	1420	U	
193-39-5	-----indeno(1,2,3-cd)pyrene	1420	U	
53-70-3	-----dibenz(a,h)anthracene	1420	U	
191-24-2	-----benzo(g,h,i)perylene	1420	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

DUPLICATE

cc: SAIC01498

Report Date: December 03, 1998

Page 1 of 1

Sample ID : 840623
Lab ID : 9811477-14
Matrix : Soil
Date Collected : 11/13/98
Date Received : 11/14/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		328	=	65.8	133	mg/kg	13.	AAT	11/30/98	1000	136808 1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:

The qualifiers in this report are defined as follows:

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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.: FS6008S

Method Type: Total Metals

Sample ID: 9811477-14

Client ID: 840623

Contract: SAIC01498

Lab Code: GEL

Case No.:

SAS No.:

Matrix: SOIL

Date Received: 11/14/98

Level: LOW

% Solids: 94.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	5.2	mg/kg	=		P	0.15	TJA61 Trace ICPAES	981124-1

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840711

Lab Name:

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: FS6006S

Matrix: (soil/water) SOIL

Lab Sample ID: 9811470-13

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: 7J505

Level: (low/med) LOW

Date Received: 11/13/98

% Moisture: not dec. 11

Date Analyzed: 11/20/98

GC Column: DB-624 ID: 0.25 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (ml)

Soil Aliquot Volume: _____ (uL)

CAS NO.

COMPOUND

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

Q

71-43-2-----benzene	2.2	U	0.55
108-88-3-----toluene	4.0		
100-41-4-----ethylbenzene	0.72	J	
1330-20-7-----xylenes (total)	2.0	J	

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840711

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) SOIL Lab Sample ID: 9811470-13

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4U521

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

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

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 11/21/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

91-20-3-----	naphthalene	374	U
91-58-7-----	2-chloronaphthalene	374	U
209-96-8-----	acenaphthylene	374	U
83-32-9-----	acenaphthene	374	U
86-73-7-----	fluorene	374	U
85-01-8-----	phenanthrene	374	U
120-12-7-----	anthracene	374	U
206-44-0-----	fluoranthene	374	U
129-00-0-----	pyrene	374	U
56-55-3-----	benzo(a)anthracene	374	U
218-01-9-----	chrysene	374	U
205-99-2-----	benzo(b)fluoranthene	374	U
207-08-9-----	benzo(k)fluoranthene	374	U
50-32-8-----	benzo(a)pyrene	374	U
193-39-5-----	indeno(1,2,3-cd)pyrene	374	U
53-70-3-----	dibenz(a,h)anthracene	374	U
191-24-2-----	benzo(g,h,i)perylene	374	U

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: SAJC01498

Report Date: December 04, 1998

Page 1 of 1

Sample ID : 840711
Lab ID : 9811470-13
Matrix : Soil
Date Collected : 11/12/98
Date Received : 11/13/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	7.25	5.56	11.2	mg/kg	1.0	AAT	11/30/98	1000	136808	1 J

M - Method	Method-Description
M 1	EPA 418.1 Modified

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

U indicates that the analyte was not detected at a concentration greater than the detection limit.

* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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

Reviewed By

Valerie Davis

DATA VALIDATION
COPY



0811470.13

1A

840721

Contract:

Case No. :

SAS No. :

SDG No.: FS6006S

Matrix: (soil/water) SOIL

Lab Sample ID: 9811470-15

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: 7J420

Level: (low/med) LOW

Date Received: 11/13/98

% Moisture: not dec. 9

Date Analyzed: 11/19/98

GC Column: DB-624 ID: 0.25 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (ml)

Soil Aliquot Volume: _____ (uL)

CAS NO.

COMPOUND

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

Q

71-43-2-----benzene	2.2	U
108-88-3-----toluene	2.4	
100-41-4-----ethylbenzene	2.4	
1330-20-7-----xylenes (total)	6.4	

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840721

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) SOIL Lab Sample ID: 9811470-15

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4V204

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

% Moisture: 9 decanted: (Y/N) N Date Extracted: 11/17/98

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

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

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

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 : 840721
Lab ID : 9811470-15
Matrix : Soil
Date Collected : 11/12/98
Date Received : 11/13/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	7.88	5.45	11.0	mg/kg	1.0	AAT	11/30/98	1000	136808	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

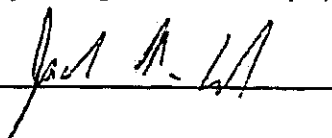
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

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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



0011470-15

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS6006S

Method Type: Total Metals

Sample ID: 9811470-15

Client ID: 840721

Contract: SAIC01498

Lab Code: GEL

Case No.:

SAS No.:

Matrix: SOIL

Date Received: 11/13/98

Level: LOW

% Solids: 91.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	1.3	mg/kg			P	0.16	TJA61 Trace2 ICPAES	981117-1

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

9811470-15

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840811

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-08

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 7J528

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

% Moisture: not dec. 15 Date Analyzed: 11/20/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
---------	----------	---	---

71-43-2-----benzene	2.4	U	cccc
108-88-3-----toluene	2.1	J	
100-41-4-----ethylbenzene	2.4	U	
1330-20-7-----xylenes (total)	3.5	U	

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840811

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-08

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7V116

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

% Moisture: 15 decanted: (Y/N) N Date Extracted: 11/18/98

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

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	-----naphthalene	392	U
91-58-7	-----2-chloronaphthalene	392	U
208-96-8	-----acenaphthylene	392	U
83-32-9	-----acenaphthene	392	U
86-73-7	-----fluorene	392	U
85-01-8	-----phenanthrene	100	J
120-12-7	-----anthracene	24.8	J
206-44-0	-----fluoranthene	54.1	J
129-00-0	-----pyrene	118	J
56-55-3	-----benzo (a) anthracene	34.7	J
218-01-9	-----chrysene	28.0	J
205-99-2	-----benzo (b) fluoranthene	392	U
207-08-9	-----benzo (k) fluoranthene	392	U
50-32-8	-----benzo (a) pyrene	392	U
193-39-5	-----indeno (1,2,3-cd) pyrene	392	U
53-70-3	-----dibenz (a,h) anthracene	392	U
191-24-2	-----benzo (g,h,i) perylene	392	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

cc: SAIC01498

Report Date: December 03, 1998

Page 1 of 1

Sample ID : 840811
Lab ID : 9811477-08
Matrix : Soil
Date Collected : 11/13/98
Date Received : 11/14/98
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	7.67 UFD1, F06	5.82	11.8	mg/kg	1.0	AAT	11/30/98	1000	136808	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:

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

Reviewed By



9811477-08

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840821

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-13

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 7J533

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

% Moisture: not dec. 10 Date Analyzed: 11/21/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	UG/KG	
71-43-2-----	benzene	2.2	U	U U U U
108-88-3-----	toluene	3.9		
100-41-4-----	ethylbenzene	2.2	U	
1330-20-7-----	xylenes (total)	3.3	U	

FORM I VOA

OLM03.0

EPA SAMPLE NO.

840821

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

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

CAS NO.

COMPOUND

Q

91-20-3-----naphthalene	370	U
91-58-7-----2-chloronaphthalene	370	U
208-96-8-----acenaphthylene	370	U
83-32-9-----acenaphthene	370	U
86-73-7-----fluorene	370	U
85-01-8-----phenanthrene	72.3	J
120-12-7-----anthracene	370	U
206-44-0-----fluoranthene	97.3	J
129-00-0-----pyrene	169	J
56-55-3-----benzo (a) anthracene	56.6	J
218-01-9-----chrysene	47.2	J
205-99-2-----benzo (b) fluoranthene	370	U
207-08-9-----benzo (k) fluoranthene	370	U
50-32-8-----benzo (a) pyrene	370	U
193-39-5-----indeno (1,2,3-cd) pyrene	370	U
53-70-3-----dibenz (a,h) anthracene	370	U
191-24-2-----benzo (g,h,i) perylene	370	U

FORM I SV-1

OLM03.0

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

840821

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-13

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 11D1029

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

% Moisture: 10 decanted: (Y/N) N Date Extracted: 11/20/98

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

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) MG/KG Q

-----Diesel Range Organics	1.1	JB
----------------------------	-----	----

UF01,F06

FORM I SV

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS6008S

Method Type: Total Metals

Sample ID: 9811477-13

Client ID: 840821

Contract: SAIC01498

Lab Code: GEL

Case No.:

SAS No.:

Matrix: SOIL

Date Received: 11/14/98

Level: LOW

% Solids: 90.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	3.9	mg/kg			P	0.16	TJA61 Trace ICPAES	981124-1

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840911

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA02S

Matrix: (soil/water) SOIL Lab Sample ID: 9902751-04

Sample wt/vol: 5.2 (g/mL) G Lab File ID: 1W514

Level: (low/med) LOW Date Received: 02/18/99

% Moisture: not dec. 10 Date Analyzed: 02/19/99

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
---------	----------	---	---

71-43-2-----benzene	2.1	U	J U U U
108-88-3-----toluene	2.6	U	
100-41-4-----ethylbenzene	2.1	U	
75-71-8-----xylenes (total)	1.0	J	

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840911

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA02S

Matrix: (soil/water) SOIL Lab Sample ID: 9902751-04

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 8J309

Level: (low/med) LOW Date Received: 02/18/99

% Moisture: 10 decanted: (Y/N) N Date Extracted: 02/19/99

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

Injection Volume: 1.0 (uL) Dilution Factor: 2.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
---------	----------	---	---

91-20-3-----	naphthalene	741	U
91-58-7-----	2-chloronaphthalene	741	U
208-96-8-----	acenaphthylene	741	U
83-32-9-----	acenaphthene	741	U
86-73-7-----	fluorene	741	U
85-01-8-----	phenanthrene	741	U
120-12-7-----	anthracene	741	U
206-44-0-----	fluoranthene	741	U
129-00-0-----	pyrene	741	U
56-55-3-----	benzo (a) anthracene	741	U
218-01-9-----	chrysene	741	U
205-99-2-----	benzo (b) fluoranthene	741	U
207-08-9-----	benzo (k) fluoranthene	741	U
50-32-8-----	benzo (a) pyrene	741	U
193-39-5-----	indeno (1,2,3-cd) pyrene	741	U
53-70-3-----	dibenz (a,h) anthracene	741	U
191-24-2-----	benzo (g,h,i) perylene	741	U

FORM I SV-1

OLM03.0

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

cc: SAIC00299

Report Date: March 12, 1999

Page 1 of 1

Sample ID : 840911
Lab ID : 9902751-04
Matrix : Soil
Date Collected : 02/17/99
Date Received : 02/18/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		211	—	11.0	22.2	mg/kg	1.0	AAT	03/11/99	1200	144327 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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* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Reviewed By

Just A. Carl



1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

DUPLICATE
EPA SAMPLE NO.

840913

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA02S

Matrix: (soil/water) SOIL Lab Sample ID: 9902751-05

Sample wt/vol: 5.3 (g/mL) G Lab File ID: 1W515

Level: (low/med) LOW Date Received: 02/18/99

% Moisture: not dec. 10 Date Analyzed: 02/19/99

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	UG/KG	
71-43-2-----	benzene	2.1	U	444c
108-88-3-----	toluene	1.3	J	
100-41-4-----	ethylbenzene	2.1	U	
75-71-8-----	xylene (total)	0.88	J	

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

DUPLICATE
EPA SAMPLE NO.

840913

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA02S

Matrix: (soil/water) SOIL Lab Sample ID: 9902751-05

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 8J310

Level: (low/med) LOW Date Received: 02/18/99

% Moisture: 10 decanted: (Y/N) N Date Extracted: 02/19/99

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

Injection Volume: 1.0 (uL) Dilution Factor: 2.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
---------	----------	---	---

91-20-3-----	naphthalene	741	U
91-58-7-----	2-chloronaphthalene	741	U
208-96-8-----	acenaphthylene	741	U
83-32-9-----	acenaphthene	741	U
86-73-7-----	fluorene	741	U
85-01-8-----	phenanthrene	741	U
120-12-7-----	anthracene	741	U
206-44-0-----	fluoranthene	741	U
129-00-0-----	pyrene	741	U
56-55-3-----	benzo (a) anthracene	741	U
218-01-9-----	chrysene	741	U
205-99-2-----	benzo (b) fluoranthene	741	U
207-08-9-----	benzo (k) fluoranthene	741	U
50-32-8-----	benzo (a) pyrene	741	U
193-39-5-----	indeno (1,2,3-cd) pyrene	741	U
53-70-3-----	dibenz (a,h) anthracene	741	U
191-24-2-----	benzo (g,h,i) perylene	741	U

FORM I SV-1

OLM03.0

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

cc: SAIC00299

Report Date: March 12, 1999

Page 1 of 1

Sample ID : 840913
Lab ID : 9902751-05
Matrix : Soil
Date Collected : 02/17/99
Date Received : 02/18/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		257	==	11.0	22.2	mg/kg	1.0	AAT	03/11/99	1200	144327 1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:

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any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Reviewed By

Janet A. Grant



1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840921

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA02S

Matrix: (soil/water) SOIL Lab Sample ID: 9902751-11

Sample wt/vol: 5.2 (g/mL) G Lab File ID: 1X109

Level: (low/med) LOW Date Received: 02/18/99

% Moisture: not dec. 10 Date Analyzed: 02/22/99

GC Column: DB-624 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	0.81	J	0.015
108-88-3-----toluene	3.6		
100-41-4-----ethylbenzene	2.1	U	
75-71-8-----xylenes (total)	3.2	U	

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840921

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA02S

Matrix: (soil/water) SOIL Lab Sample ID: 9902751-11

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 8J316

Level: (low/med) LOW Date Received: 02/18/99

% Moisture: 10 decanted: (Y/N) N Date Extracted: 02/19/99

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 03/04/99

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
---------	----------	---	---

91-20-3-----	naphthalene	370	U
91-58-7-----	2-chloronaphthalene	370	U
208-96-8-----	acenaphthylene	370	U
83-32-9-----	acenaphthene	370	U
86-73-7-----	fluorene	370	U
85-01-8-----	phenanthrene	370	U
120-12-7-----	anthracene	370	U
206-44-0-----	fluoranthene	370	U
129-00-0-----	pyrene	370	U
56-55-3-----	benzo (a) anthracene	370	U
218-01-9-----	chrysene	370	U
205-99-2-----	benzo (b) fluoranthene	370	U
207-08-9-----	benzo (k) fluoranthene	370	U
50-32-8-----	benzo (a) pyrene	370	U
193-39-5-----	indeno (1,2,3-cd) pyrene	370	U
53-70-3-----	dibenz (a,h) anthracene	370	U
191-24-2-----	benzo (g,h,i) perylene	370	U

FORM I SV-1

OLM03.0

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

cc: SAIC00299

Report Date: March 12, 1999

Page 1 of 1

Sample ID : 840921
Lab ID : 9902751-11
Matrix : Soil
Date Collected : 02/17/99
Date Received : 02/18/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		27.5	—	11.0	22.2	mg/kg	1.0	AAT	03/11/99	1200	144327

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

Janet A. Lord



9902751 11*

Form 1: Inorganic Analyses Data Sheet

SDG No.: FSA02S

Method Type: Total Metals

Sample ID: 9902751-11

Client ID: 840921

Contract: SAJC00299

Lab Code: GEL

Case No.:

SAS No.:

Matrix: SOIL

Date Received: 2/18/99

Level: LOW

% Solids: 90.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	2.7	mg/kg	=		P	0.14	TJA61 Trace ICPAES	990303-1

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841011

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA02S

Matrix: (soil/water) SOIL Lab Sample ID: 9902751-06

Sample wt/vol: 3.4 (g/mL) G Lab File ID: 1X114

Level: (low/med) MED Date Received: 02/18/99

% Moisture: not dec. 5 Date Analyzed: 02/22/99

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

Soil Extract Volume: 10 (ml) Soil Aliquot Volume: 50 (uL)

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

71-43-2-----benzene	224	J	J J J J
108-88-3-----toluene	198	J	
100-41-4-----ethylbenzene	4670		
75-71-8-----xylenes (total)	17100		

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841011

Lab Name: GENERAL ENGINEERING LABOR Contract: NA
 Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA02S
 Matrix: (soil/water) SOIL Lab Sample ID: 9902751-06
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: 8J311
 Level: (low/med) LOW Date Received: 02/18/99
 % Moisture: 5 decanted: (Y/N) N Date Extracted: 02/19/99
 Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 03/03/99
 Injection Volume: 1.0 (uL) Dilution Factor: 10.0
 GPC Cleanup: (Y/N) N pH: 7.0

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

91-20-3-----	naphthalene	6030	
91-58-7-----	2-chloronaphthalene	3510	U
208-96-8-----	acenaphthylene	3510	U
83-32-9-----	acenaphthene	3510	U
86-73-7-----	fluorene	2280	J
85-01-8-----	phenanthrene	3950	
120-12-7-----	anthracene	3510	U
206-44-0-----	fluoranthene	3510	U
129-00-0-----	pyrene	816	J
56-55-3-----	benzo(a)anthracene	3510	U
218-01-9-----	chrysene	3510	U
205-99-2-----	benzo(b)fluoranthene	3510	U
207-08-9-----	benzo(k)fluoranthene	3510	U
50-32-8-----	benzo(a)pyrene	3510	U
193-39-5-----	indeno(1,2,3-cd)pyrene	3510	U
53-70-3-----	dibenz(a,h)anthracene	3510	U
191-24-2-----	benzo(g,h,i)perylene	3510	U

"C" = 100 ug/Kg

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

cc: SAIC00299

Report Date: March 12, 1999

Page 1 of 1

Sample ID : 841011
Lab ID : 9902751-06
Matrix : Soil
Date Collected : 02/17/99
Date Received : 02/18/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M	
General Chemistry												
Total Rec. Petro. Hydrocarbons		6950	>	521	1050	mg/kg	50	AAT	03/11/99	1200	144327	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

Janet H. Lind



1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841021

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA02S

Matrix: (soil/water) SOIL Lab Sample ID: 9902751-12

Sample wt/vol: 5.4 (g/mL) G Lab File ID: 1X205

Level: (low/med) MED Date Received: 02/18/99

% Moisture: not dec. 12 Date Analyzed: 02/23/99

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

Soil Extract Volume: 10 (mL) Soil Aliquot Volume: 50 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
---------	----------	---	---

71-43-2-----benzene	374	J	11591
108-88-3-----toluene	166	J	
100-41-4-----ethylbenzene	7040		
75-71-8-----xylenes (total)	34200		

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841021

Lab Name: GENERAL ENGINEERING LABOR Contract: NA
 Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA02S
 Matrix: (soil/water) SOIL Lab Sample ID: 9902751-12
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: 8K103
 Level: (low/med) LOW Date Received: 02/18/99
 % Moisture: 12 decanted: (Y/N) N Date Extracted: 02/19/99
 Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 03/08/99
 Injection Volume: 1.0 (uL) Dilution Factor: 20.0
 GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	-----naphthalene	11300	
91-58-7	-----2-chloronaphthalene	7580	U
208-96-8	-----acenaphthylene	7580	U
83-32-9	-----acenaphthene	2020	J
86-73-7	-----fluorene	4140	J
85-01-8	-----phenanthrene	10100	
120-12-7	-----anthracene	7580	U
206-44-0	-----fluoranthene	7580	U
129-00-0	-----pyrene	1790	J
56-55-3	-----benzo(a)anthracene	7580	U
218-01-9	-----chrysene	7580	U
205-99-2	-----benzo(b)fluoranthene	7580	U
207-08-9	-----benzo(k)fluoranthene	7580	U
50-32-8	-----benzo(a)pyrene	7580	U
193-39-5	-----indeno(1,2,3-cd)pyrene	7580	U
53-70-3	-----dibenz(a,h)anthracene	7580	U
191-24-2	-----benzo(g,h,i)perylene	7580	U

11300 7580 7580 2020 4140 10100 7580 7580 1790 7580 7580 7580 7580 7580 7580

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

cc: SAIC00299

Report Date: March 12, 1999

Page 1 of 1

Sample ID : 841021
Lab ID : 9902751-12
Matrix : Soil
Date Collected : 02/17/99
Date Received : 02/18/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		7300	=	562	1140	mg/kg	50.	AAT	03/11/99	1200	144327 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.

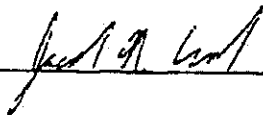
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

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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.: FSA02S

Method Type: Total Metals

Sample ID: 9902751-12

Client ID: 841021

Contract: SAIC00299

Lab Code: GEL

Case No.:

SAS No.:

Matrix: SOIL

Date Received: 2/18/99

Level: LOW

% Solids: 88.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	2.8	mg/kg	=		P	0.15	TJA61 Trace ICPAES	990303-1

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

RINSATE
EPA SAMPLE NO.

841025

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSB03W

Matrix: (soil/water) WATER Lab Sample ID: 9902754-04

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1X416

Level: (low/med) LOW Date Received: 02/18/99

% Moisture: not dec. _____ Date Analyzed: 02/25/99

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	UG/L	
71-43-2-----	benzene	2.0	U	U ↓
108-88-3-----	toluene	2.0	U	
100-41-4-----	ethylbenzene	2.0	U	
75-71-8-----	xylene (total)	6.0	U	

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

RINSTATE
EPA SAMPLE NO.

841025

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA01W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9902750-07

Sample wt/vol: 870.0 (g/mL) ML Lab File ID: 8I703

Level: (low/med) LOW Date Received: 02/18/99

% Moisture: _____ decanted: (Y/N) _____ Date Extracted: 02/19/99

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 02/28/99

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
91-20-3	-----naphthalene	11.5	U	U ↓
91-58-7	-----2-chloronaphthalene	11.5	U	
208-96-8	-----acenaphthylene	11.5	U	
83-32-9	-----acenaphthene	11.5	U	
86-73-7	-----fluorene	11.5	U	
85-01-8	-----phenanthrene	11.5	U	
120-12-7	-----anthracene	11.5	U	
206-44-0	-----fluoranthene	11.5	U	
129-00-0	-----pyrene	11.5	U	
56-55-3	-----benzo (a) anthracene	11.5	U	
218-01-9	-----chrysene	11.5	U	
205-99-2	-----benzo (b) fluoranthene	11.5	U	
207-08-9	-----benzo (k) fluoranthene	11.5	U	
50-32-8	-----benzo (a) pyrene	11.5	U	
193-39-5	-----indeno (1,2,3-cd) pyrene	11.5	U	
53-70-3	-----dibenz (a,h) anthracene	11.5	U	
191-24-2	-----benzo (g,h,i) perylene	11.5	U	

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

cc: SAIC00299

Report Date: March 11, 1999

Page 1 of 1

Sample ID : 841025
Lab ID : 9902750-07
Matrix : Water
Date Collected : 02/17/99
Date Received : 02/18/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	U	0.199	0.277	1.00	mg/l	1.0	AAT	03/10/99	1600	144329	1

M = Method

Method-Description

M 1

EPA 418.1

Notes:

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

Reviewed By

DATA VALIDATION
COPY



1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841121

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA02S

Matrix: (soil/water) SOIL Lab Sample ID: 9902751-13

Sample wt/vol: 3.3 (g/mL) G Lab File ID: 1X110

Level: (low/med) LOW Date Received: 02/18/99

% Moisture: not dec. 9 Date Analyzed: 02/22/99

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	UG/KG	
71-43-2-----	benzene	3.4	U	J J J J
108-88-3-----	toluene	1.5	J	
100-41-4-----	ethylbenzene	3.4	U	
75-71-8-----	xylene (total)	5.0	U	

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841121

Lab Name: GENERAL ENGINEERING LABOR Contract: NA
 Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA02S
 Matrix: (soil/water) SOIL Lab Sample ID: 9902751-13
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: 8J317
 Level: (low/med) LOW Date Received: 02/18/99
 % Moisture: 9 decanted: (Y/N) N Date Extracted: 02/19/99
 Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 03/04/99
 Injection Volume: 1.0 (uL) Dilution Factor: 20.0
 GPC Cleanup: (Y/N) N pH: 7.0

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

91-20-3-----	naphthalene	7330	U
91-58-7-----	2-chloronaphthalene	7330	U
208-96-8-----	acenaphthylene	7330	U
83-32-9-----	acenaphthene	7330	U
86-73-7-----	fluorene	7330	U
85-01-8-----	phenanthrene	7330	U
120-12-7-----	anthracene	7330	U
206-44-0-----	fluoranthene	7330	U
129-00-0-----	pyrene	7330	U
56-55-3-----	benzo(a)anthracene	7330	U
218-01-9-----	chrysene	7330	U
205-99-2-----	benzo(b)fluoranthene	7330	U
207-08-9-----	benzo(k)fluoranthene	7330	U
50-32-8-----	benzo(a)pyrene	7330	U
193-39-5-----	indeno(1,2,3-cd)pyrene	7330	U
53-70-3-----	dibenz(a,h)anthracene	7330	U
191-24-2-----	benzo(g,h,i)perylene	7330	U

FORM I SV-1

OLM03.0

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

cc: SAIC00299

Report Date: March 12, 1999

Page 1 of 1

Sample ID : 841121
Lab ID : 9902751-13
Matrix : Soil
Date Collected : 02/17/99
Date Received : 02/18/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		134	==	10.9	22.0	mg/kg	1.0	AAT	03/11/99	1200	144327 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.

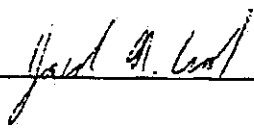
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

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.

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Reviewed By



Form 1: Inorganic Analyses Data Sheet

SDG No.: FSA02S

Method Type: Total Metals

Sample ID: 9902751-13

Client ID: 841121

Contract: SAIC00299

Lab Code: GEL

Case No.:

SAS No.:

Matrix: SOIL

Date Received: 2/18/99

Level: LOW

% Solids: 91.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	26.6	mg/kg	=		P	0.15	TJA61 Trace ICPAES	990303-1

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841211

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA02S

Matrix: (soil/water) SOIL Lab Sample ID: 9902751-07

Sample wt/vol: 4.8 (g/mL) G Lab File ID: 1W516

Level: (low/med) LOW Date Received: 02/18/99

% Moisture: not dec. 8 Date Analyzed: 02/19/99

GC Column: DB-624 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	check
108-88-3-----toluene	1.1	J	
100-41-4-----ethylbenzene	2.2	U	
75-71-8-----xylenes (total)	0.68	J	

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841211

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA02S

Matrix: (soil/water) SOIL Lab Sample ID: 9902751-07

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 8J312

Level: (low/med) LOW Date Received: 02/18/99

% Moisture: 8 decanted: (Y/N) N Date Extracted: 02/19/99

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

Injection Volume: 1.0 (uL) Dilution Factor: 2.0

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

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

91-20-3	naphthalene	725	U
91-58-7	2-chloronaphthalene	725	U
208-96-8	acenaphthylene	725	U
83-32-9	acenaphthene	725	U
86-73-7	fluorene	725	U
85-01-8	phenanthrene	725	U
120-12-7	anthracene	725	U
206-44-0	fluoranthene	725	U
129-00-0	pyrene	725	U
56-55-3	benzo (a) anthracene	725	U
218-01-9	chrysene	725	U
205-99-2	benzo (b) fluoranthene	725	U
207-08-9	benzo (k) fluoranthene	725	U
50-32-8	benzo (a) pyrene	725	U
193-39-5	indeno (1,2,3-cd) pyrene	725	U
53-70-3	dibenz (a,h) anthracene	725	U
191-24-2	benzo (g,h,i) perylene	725	U

FORM I SV-1

OLM03.0

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

cc: SAIC00299

Report Date: March 12, 1999

Page 1 of 1

Sample ID : 841211
Lab ID : 9902751-07
Matrix : Soil
Date Collected : 02/17/99
Date Received : 02/18/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		246	=	10.8	21.7	mg/kg	1.0	AAT	03/11/99	1200	144327 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.

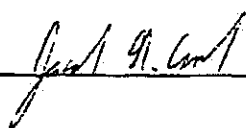
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

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Reviewed By



1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841221RA

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA02S

Matrix: (soil/water) SOIL Lab Sample ID: 9902751-14

Sample wt/vol: 5.4 (g/mL) G Lab File ID: 1X112

Level: (low/med) LOW Date Received: 02/18/99

% Moisture: not dec. 8 Date Analyzed: 02/22/99

GC Column: DB-624 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	2.0	U	US KØ1
108-88-3-----toluene	6.2		↓
100-41-4-----ethylbenzene	4.0		↓
75-71-8-----xylenes (total)	19.6		↓

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841221

Lab Name: GENERAL ENGINEERING LABOR Contract: NA
 Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA02S
 Matrix: (soil/water) SOIL Lab Sample ID: 9902751-14
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: 8J505
 Level: (low/med) LOW Date Received: 02/18/99
 % Moisture: 8 decanted: (Y/N) N Date Extracted: 02/19/99
 Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 03/05/99
 Injection Volume: 1.0 (uL) Dilution Factor: 10.0
 GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q
91-20-3	-----naphthalene	3620	U	U ↓
91-58-7	-----2-chloronaphthalene	3620	U	
208-96-8	-----acenaphthylene	3620	U	
83-32-9	-----acenaphthene	3620	U	
86-73-7	-----fluorene	3620	U	
85-01-8	-----phenanthrene	3620	U	
120-12-7	-----anthracene	3620	U	
206-44-0	-----fluoranthene	3620	U	
129-00-0	-----pyrene	3620	U	
56-55-3	-----benzo (a) anthracene	3620	U	
218-01-9	-----chrysene	3620	U	
205-99-2	-----benzo (b) fluoranthene	3620	U	
207-08-9	-----benzo (k) fluoranthene	3620	U	
50-32-8	-----benzo (a) pyrene	3620	U	
193-39-5	-----indeno (1,2,3-cd) pyrene	3620	U	
53-70-3	-----dibenz (a,h) anthracene	3620	U	
191-24-2	-----benzo (g,h,i) perylene	3620	U	

FORM I SV-1

OLM03.0

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

cc: SAIC00299

Report Date: March 12, 1999

Page 1 of 1

Sample ID : 841221
Lab ID : 9902751-14
Matrix : Soil
Date Collected : 02/17/99
Date Received : 02/18/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		9680	—	538	1090	mg/kg	50.	AAT	03/11/99	1200	144327 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.

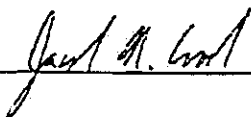
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

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



9902751-14

Form 1: Inorganic Analyses Data Sheet

SDG No.: FSA02S

Method Type: Total Metals

Sample ID: 9902751-14

Client ID: 841221

Contract: SAJC00299

Lab Code: GEL

Case No.:

SAS No.:

Matrix: SOIL

Date Received: 2/18/99

Level: LOW

% Solids: 92.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	91.2	mg/kg	=		P	0.15	TJA61 Trace ICPAES	990303-1

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841311

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA08S

Matrix: (soil/water) SOIL Lab Sample ID: 9902818-03

Sample wt/vol: 5.4 (g/mL) G Lab File ID: 2Y316

Level: (low/med) LOW Date Received: 02/21/99

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

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (ml) DATA VALUATION COPY Soil Aliquot Volume: _____ (uL)

CAS NO.

COMPOUND

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

Q

71-43-2-----benzene	0.67	J
108-88-3-----toluene	2.0	
100-41-4-----ethylbenzene	1.0	J
1330-20-7-----xylenes (total)	1.1	J

5445

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841311

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA08S

Matrix: (soil/water) SOIL Lab Sample ID: 9902818-03

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7I416

Level: (low/med) LOW Date Received: 02/21/99

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

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 02/25/99

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

91-20-3-----	naphthalene	362	U
91-58-7-----	2-chloronaphthalene	362	U
208-96-8-----	acenaphthylene	362	U
83-32-9-----	acenaphthene	362	U
86-73-7-----	fluorene	362	U
85-01-8-----	phenanthrene	362	U
120-12-7-----	anthracene	362	U
206-44-0-----	fluoranthene	362	U
129-00-0-----	pyrene	362	U
56-55-3-----	benzo (a) anthracene	362	U
218-01-9-----	chrysene	362	U
205-99-2-----	benzo (b) fluoranthene	362	U
207-08-9-----	benzo (k) fluoranthene	362	U
50-32-8-----	benzo (a) pyrene	362	U
193-39-5-----	indeno (1,2,3-cd) pyrene	362	U
53-70-3-----	dibenz (a,h) anthracene	362	U
191-24-2-----	benzo (g,h,i) perylene	362	U

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

cc: SAIC00299

Report Date: March 15, 1999

Page 1 of 1

Sample ID : 841311
Lab ID : 9902818-03
Matrix : Soil
Date Collected : 02/20/99
Date Received : 02/22/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	U	6.58	U	10.8	21.7	mg/kg	1.0	AAT	03/12/99	1600	144493 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

John A. Galt



1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841321

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: PSA08S

Matrix: (soil/water) SOIL Lab Sample ID: 9902818-05

Sample wt/vol: 5.8 (g/mL) G Lab File ID: 2Y433

Level: (low/med) LOW Date Received: 02/21/99

% Moisture: not dec. 8 Date Analyzed: 03/05/99

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	UG/KG	
71-43-2-----	benzene	1.9	U	↓
108-88-3-----	toluene	1.9	U	
100-41-4-----	ethylbenzene	1.9	U	
1330-20-7-----	xylene (total)	2.8	U	

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841321

Lab Name: GENERAL ENGINEERING LABOR Contract: NA
 Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA08S
 Matrix: (soil/water) SOIL Lab Sample ID: 9902818-05
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7I418
 Level: (low/med) LOW Date Received: 02/21/99
 % Moisture: 8 decanted: (Y/N) N Date Extracted: 02/24/99
 Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 02/25/99
 Injection Volume: 1.0 (uL) Dilution Factor: 4.0
 GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q
91-20-3	-----naphthalene	1450	U	U ↓
91-58-7	-----2-chloronaphthalene	1450	U	
208-96-8	-----acenaphthylene	1450	U	
83-32-9	-----acenaphthene	1450	U	
86-73-7	-----fluorene	1450	U	
85-01-8	-----phenanthrene	1450	U	
120-12-7	-----anthracene	1450	U	
206-44-0	-----fluoranthene	1450	U	
129-00-0	-----pyrene	1450	U	
56-55-3	-----benzo (a) anthracene	1450	U	
218-01-9	-----chrysene	1450	U	
205-99-2	-----benzo (b) fluoranthene	1450	U	
207-08-9	-----benzo (k) fluoranthene	1450	U	
50-32-8	-----benzo (a) pyrene	1450	U	
193-39-5	-----indeno (1,2,3-cd) pyrene	1450	U	
53-70-3	-----dibenz (a,h) anthracene	1450	U	
191-24-2	-----benzo (g,h,i) perylene	1450	U	

FORM I SV-1

OLM03.0

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

DATA - 1/10/01
COPY

cc: SAIC00299

Report Date: March 15, 1999

Page 1 of 1

Sample ID : 841321
Lab ID : 9902818-05
Matrix : Soil
Date Collected : 02/20/99
Date Received : 02/22/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		167	10.8	21.7	mg/kg	1.0	AAT	03/12/99	1600	144493	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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* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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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

John M. LA



Form 1: Inorganic Analyses Data Sheet

SDG No.: FSA08S

Method Type: Total Metals

Sample ID: 9902818-05

Client ID: 841321

Contract: SAIC00299

Lab Code: GEL

Case No.:

SAS No.:

Matrix: SOIL

Date Received: 2/21/99

Level: LOW

% Solids: 92.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	6.0	mg/kg	=		P	0.14	TJA61 Trace2 ICPAES	990303-1

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

DATA VALIDATION
COPY

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841411

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA08S

Matrix: (soil/water) SOIL Lab Sample ID: 9902818-04

Sample wt/vol: 5.2 (g/mL) G Lab File ID: 2Y317

Level: (low/med) LOW Date Received: 02/21/99

* Moisture: not dec. 10 Date Analyzed: 03/03/99

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q
---------	----------	---	--	---

71-43-2-----	benzene	1.4	J	J J J J
108-88-3-----	toluene	3.1		
100-41-4-----	ethylbenzene	1.3	J	
1330-20-7-----	xylenes (total)	0.70	J	

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841411

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA08S

Matrix: (soil/water) SOIL Lab Sample ID: 9902818-04

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7I417

Level: (low/med) LOW Date Received: 02/21/99

% Moisture: 10 decanted: (Y/N) N Date Extracted: 02/24/99

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 02/25/99

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

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

FORM I SV-1

OLM03.0

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

DATA VERIFICATION
COPY

cc: SAIC00299

Report Date: March 15, 1999

Page 1 of 1

Sample ID : 841411
Lab ID : 9902818-04
Matrix : Soil
Date Collected : 02/20/99
Date Received : 02/22/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	U	8.53	U	11.0	22.2	mg/kg	1.0	AAT	03/12/99	1600	144493 1

M = Method

Method-Description

M 1

EPA 418.1 Modified

Notes:

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This data report has been prepared and reviewed
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any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Reviewed By

John M. W.



1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841421

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA08S

Matrix: (soil/water) SOIL Lab Sample ID: 9902818-06

Sample wt/vol: 5.5 (g/mL) G Lab File ID: 2Y434

Level: (low/med) LOW Date Received: 02/21/99

% Moisture: not dec. 8 Date Analyzed: 03/05/99

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
---------	----------	---	---

71-43-2-----benzene		2.0	U
108-88-3-----toluene		2.0	U
100-41-4-----ethylbenzene		2.0	U
1330-20-7-----xylenes (total)		3.0	U

FORM I VOA

OLM03.0

1B

841421

Lab Code: NA

Case No. : NA

SAS No. : NA

SDG No.: FSA08S

Matrix: (soil/water) SOIL

Lab Sample ID: 9902818-06

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

Lab File ID: 7I419

Level: (low/med) LOW

Date Received: 02/21/99

‡ Moisture: 8 decanted: (Y/N) N

Date Extracted:02/24/99

Concentrated Extract Volume: 1.00 (mL)

Date Analyzed: 02/26/99

Injection Volume: 1.0 (uL)

Dilution Factor: 4.0

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

CAS NO.

COMPOUND

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

0

91-20-3-----naphthalene	1450	U
91-58-7-----2-chloronaphthalene	1450	U
208-96-8-----acenaphthylene	1450	U
83-32-9-----acenaphthene	147	J
86-73-7-----fluorene	136	J
85-01-8-----phenanthrene	1230	J
120-12-7-----anthracene	402	J
206-44-0-----fluoranthene	2040	
129-00-0-----pyrene	1770	
56-55-3-----benzo (a) anthracene	910	J
218-01-9-----chrysene	788	J
205-99-2-----benzo (b) fluoranthene	746	J
207-08-9-----benzo (k) fluoranthene	1450	U
50-32-8-----benzo (a) pyrene	819	J
193-39-5-----indeno (1,2,3-cd) pyrene	748	J
53-70-3-----dibenz (a,h) anthracene	1450	U
191-24-2-----benzo (g,h,i) perylene	407	J

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

DATA COLLECTION

cc: SAIC00299

Report Date: March 15, 1999

Page 1 of 1

Sample ID : 841421
Lab ID : 9902818-06
Matrix : Soil
Date Collected : 02/20/99
Date Received : 02/22/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		1070	108	217	mg/kg	10	AAT	03/12/99	1600	144493	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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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

Just A. LI



Form 1: Inorganic Analyses Data Sheet

SDG No.: FSA08S

Method Type: Total Metals

Sample ID: 9902818-06

Client ID: 841421

Contract: SAJC00299

Lab Code: GEL

Case No.:

SAS No.:

Matrix: SOIL

Date Received: 2/21/99

Level: LOW

% Solids: 92.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	12.0	mg/kg	=		P	0.15	TJA61 Trace2 ICPAES	990303-1

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

DATA VALIDATION
COPY



SAIC
Science Applications International Corporation
An Employee-Owned Company

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

1012

CHAIN OF CUSTODY RECORD

COC NO.: D03510

PROJECT NAME: Fort Stewart CAP Part A UST Investigations				REQUESTED PARAMETERS												LABORATORY NAME: General Engineering Laboratory	
PROJECT NUMBER: 01-0331-04-1593-220																LABORATORY ADDRESS: 2040 Savage Road Charleston, SC 29417	
PROJECT MANAGER: Patty Stoll																PHONE NO: (803) 556-8171	
Sampler (Signature) <i>James J. Anderson</i>				OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS 9902814-01 7*24 HR. TURN 12													
Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	GRO	PAH, TPH	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	Oil & Grease	Total Phenols	pH	VOC	No. of Bottles/Vials		
D03501	2/20/99	1500	water												7		
161112	2/20/99	1600		Z											2		
161212	2/20/99	1530		Z											2		
762212	2/20/99	930		Z											2		
800812	2/20/99	1400		Z											2		
800824	2/20/99	1400		Z											2		
841312	2/20/99	1720		Z											2		
841412	2/20/99	1800		Z											2		
TR0004	2/20/99	745	↓	Z											2		
161221	2/20/99	1510	Soil	1											3		
161121	2/20/99	1550		1											3		
841311	2/20/99	1652		1											2		
841411	2/20/99	1745	↓	1											2		
RELINQUISHED BY: <i>James J. Anderson</i>				Date/Time 2/21/99				RECEIVED BY: <i>Shawna</i>				Date/Time 2/22/99				TOTAL NUMBER OF CONTAINERS: Cooler ID: # 93058 Cooler Temperature: 4°C FEDEX NUMBER:	
COMPANY NAME: SAIC								RELINQUISHED BY: <i>Shawna</i>				Date/Time 2/21/99					
COMPANY NAME: <i>SAIC</i>								RELINQUISHED BY: <i>Shawna</i>				Date/Time 2/21/99					
RELINQUISHED BY: <i>Shawna</i>				Date/Time 2/21/99				RECEIVED BY: <i>Shawna</i>				Date/Time 2/21/99					
COMPANY NAME: <i>SAIC</i>								RELINQUISHED BY: <i>Shawna</i>				Date/Time 2/21/99					

CHAIN OF CUSTODY RECORD

COC NO.: D0351Z

PROJECT NAME: Fort Stewart CAP Part A UST Investigations				REQUESTED PARAMETERS														LABORATORY NAME: General Engineering Laboratory							
PROJECT NUMBER: 01-0331-04-1593-220																		LABORATORY ADDRESS: 2040 Savage Road Charleston, SC 29417							
PROJECT MANAGER: Patty Stoll																		PHONE NO: (803) 556 8171							
Sampler (Signature) <i>Patty Stoll</i>				OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS																					
Sample ID				Date Collected		Time Collected		Matrix																	
040311				2/21/99		1545		Soil																9902838 - 01	
021021				2/21/99		1235																		-02	
000921				2/21/99		1440																		03	
000921				2/21/99		1040																		-01	
061021				2/21/99		915																		-05	
021011				2/21/99		1240																		06	
060911				2/21/99		1020																		01	
061011				2/21/99		920																		08	
000911				2/21/99		1445																		09	
070111				2/22/99		825		↓																10	
041412				2/20/99		1600		Water																9902839 - 01	
070112				2/22/99		845		↓																02	
530512				2/19/99		1800		↓																03	
REINQUISHED BY: <i>Patty Stoll</i>				Date/Time 2/22/99		RECEIVED BY: <i>Patty Stoll</i>		Date/Time 2/22/99		TOTAL NUMBER OF CONTAINERS: #444/140		Cooler ID: #444/140		Cooler Temperature: #444/140		FEDEX NUMBER:									
COMPANY NAME: SATC				1145		COMPANY NAME: SATC		1145		Date/Time 2/22/99		Date/Time 2/22/99		Date/Time 2/22/99		Date/Time 2/22/99									
RECEIVED BY: <i>Patty Stoll</i>				2/22/99		REINQUISHED BY: <i>Patty Stoll</i>		2/22/99		Date/Time 2/22/99		Date/Time 2/22/99		Date/Time 2/22/99		Date/Time 2/22/99									
COMPANY NAME: SATC				1145		COMPANY NAME: SATC		1145		Date/Time 2/22/99		Date/Time 2/22/99		Date/Time 2/22/99		Date/Time 2/22/99									
REINQUISHED BY: <i>Patty Stoll</i>				2/22/99		RECEIVED BY: <i>Patty Stoll</i>		2/22/99		Date/Time 2/22/99		Date/Time 2/22/99		Date/Time 2/22/99		Date/Time 2/22/99									
COMPANY NAME: SATC				1530		COMPANY NAME: SATC		1530		Date/Time 2/22/99		Date/Time 2/22/99		Date/Time 2/22/99		Date/Time 2/22/99									

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202

COC NO.: DOB510

CHAIN OF CUSTODY RECORD

PROJECT NAME: Fort Stewart CAP Part A UST Investigations PROJECT NUMBER: 01-0331-04-1593-220 PROJECT MANAGER: Patty Stoll				Requested Parameters												LABORATORY NAME: General Engineering Laboratory							
Sampler (Signature) <i>James Summey</i>				(Printed Name) James Summey				LABORATORY ADDRESS: 2040 Savage Road Charleston, SC 29417												PHONE NO: (803) 556-8171			
Sample ID 841321				Date Collected 2/20/99		Time Collected 1655		Matrix Soil		OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS 9902818-05 3 20												No. of Bottles/Vials: 2	
Sample ID 841421				Date Collected 2/20/99		Time Collected 1740		Matrix Soil		PAH, TPH, Lead PAH, DRO, Lead, TOC												No. of Bottles/Vials: 2	
Sample ID 841521				Date Collected 2/20/99		Time Collected 1800		Matrix Soil		PAH, TPH, Lead PAH, DRO, Lead, TOC												No. of Bottles/Vials: 2	
Sample ID 841621				Date Collected 2/20/99		Time Collected 1815		Matrix Soil		PAH, TPH, Lead PAH, DRO, Lead, TOC												No. of Bottles/Vials: 2	
Sample ID 841721				Date Collected 2/20/99		Time Collected 1830		Matrix Soil		PAH, TPH, Lead PAH, DRO, Lead, TOC												No. of Bottles/Vials: 2	
Sample ID 841821				Date Collected 2/20/99		Time Collected 1845		Matrix Soil		PAH, TPH, Lead PAH, DRO, Lead, TOC												No. of Bottles/Vials: 2	
Sample ID 841921				Date Collected 2/20/99		Time Collected 1900		Matrix Soil		PAH, TPH, Lead PAH, DRO, Lead, TOC												No. of Bottles/Vials: 2	
Sample ID 842021				Date Collected 2/20/99		Time Collected 1915		Matrix Soil		PAH, TPH, Lead PAH, DRO, Lead, TOC												No. of Bottles/Vials: 2	
Sample ID 842121				Date Collected 2/20/99		Time Collected 1930		Matrix Soil		PAH, TPH, Lead PAH, DRO, Lead, TOC												No. of Bottles/Vials: 2	
Sample ID 842221				Date Collected 2/20/99		Time Collected 1945		Matrix Soil		PAH, TPH, Lead PAH, DRO, Lead, TOC												No. of Bottles/Vials: 2	
Sample ID 842321				Date Collected 2/20/99		Time Collected 2000		Matrix Soil		PAH, TPH, Lead PAH, DRO, Lead, TOC												No. of Bottles/Vials: 2	
Sample ID 842421				Date Collected 2/20/99		Time Collected 2015		Matrix Soil		PAH, TPH, Lead PAH, DRO, Lead, TOC												No. of Bottles/Vials: 2	
Sample ID 842521				Date Collected 2/20/99		Time Collected 2030		Matrix Soil		PAH, TPH, Lead PAH, DRO, Lead, TOC												No. of Bottles/Vials: 2	
Sample ID 842621				Date Collected 2/20/99		Time Collected 2045		Matrix Soil		PAH, TPH, Lead PAH, DRO, Lead, TOC												No. of Bottles/Vials: 2	
Sample ID 842721				Date Collected 2/20/99		Time Collected 2100		Matrix Soil		PAH, TPH, Lead PAH, DRO, Lead, TOC												No. of Bottles/Vials: 2	
Sample ID 842821				Date Collected 2/20/99		Time Collected 2115		Matrix Soil		PAH, TPH, Lead PAH, DRO, Lead, TOC												No. of Bottles/Vials: 2	
Sample ID 842921				Date Col																			



CHAIN OF CUSTODY RECORD

COC NO.: DOB509

CHAIN OF CUSTODY RECORD

[illegible]

PROJECT NAME: CAP-Part B UST Investigations				PROJECT NUMBER: 01-0331-04-1593-200				PROJECT MANAGER: Patty Stoll				LABORATORY NAME: General Engineering Laboratory			
PROJECT MANAGER: Patty Stoll				PROJECT NUMBER: 01-0331-04-1593-200				PROJECT NAME: CAP-Part B UST Investigations				LABORATORY NAME: General Engineering Laboratory			
PROJECT MANAGER: Patty Stoll				PROJECT NUMBER: 01-0331-04-1593-200				PROJECT NAME: CAP-Part B UST Investigations				LABORATORY NAME: General Engineering Laboratory			
Sampler (Signature) <i>Laura Lumley</i> (Printed Name) Laura Lumley				Date Collected 2/17/98 2/17/98 2/17/98 2/17/98 2/17/98				Time Collected 1610 1520 1430 1430 745				Matrix water 			
Sample ID 841112 841012 620912 620914 TB0001				Date Collected 2/17/98 2/17/98 2/17/98 2/17/98 2/17/98				Time Collected 1610 1520 1430 1430 745				Matrix water 			
PAH, DRO, Lead, TOC PAH, TPH PAH, TPH, Lead, TOC Disolved Iron				PAH, DRO GFO PAH BTEX				PAH, DRO, Lead, TOC PAH, TPH PAH, TPH, Lead, TOC Disolved Iron				No. of Bottles/Vials: 2 2 2 2 2			
OVA SCREENING OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS 9902754-05 26 07 08 09				PHONE NO: (803) 556-8171 LABORATORY ADDRESS: 2040 Savage Road Charleston, SC 29417				LABORATORY NAME: General Engineering Laboratory				REQUESTED PARAMETERS			
RECEIVED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1145				RECEIVED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1730			
RELINQUISHED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1145				RELINQUISHED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1730			
RECEIVED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1145				RECEIVED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1730			
RELINQUISHED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1145				RELINQUISHED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1730			
RECEIVED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1145				RECEIVED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1730			
RELINQUISHED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1145				RELINQUISHED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1730			
RECEIVED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1145				RECEIVED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1730			
RELINQUISHED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1145				RELINQUISHED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1730			
RECEIVED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1145				RECEIVED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1730			
RELINQUISHED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1145				RELINQUISHED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1730			
RECEIVED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1145				RECEIVED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1730			
RELINQUISHED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1145				RELINQUISHED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1730			
RECEIVED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1145				RECEIVED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1730			
RELINQUISHED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1145				RELINQUISHED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1730			
RECEIVED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1145				RECEIVED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1730			
RELINQUISHED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1145				RELINQUISHED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1730			
RECEIVED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1145				RECEIVED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1730			
RELINQUISHED BY: <i>Laura Lumley</i> COMPANY NAME: SATY				Date/Time 2/18/99 1145				RELINQUISHED BY: <i>Laura Lumley</i> COMPANY NAME: SATY							

CHAIN OF CUSTODY RECORD

COC NO.: **D03503**

PROJECT NAME: CAP-Part B UST Investigations				REQUESTED PARAMETERS												LABORATORY NAME: General Engineering Laboratory					
PROJECT NUMBER: 01-0331-04-1593-200																LABORATORY ADDRESS: 2040 Savage Road Charleston, SC 29417					
PROJECT MANAGER: Patty Stoll																PHONE NO: (803) 556-8171					
Sampler (Signature) <i>Laura Lumley</i>				OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS																	
Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	GRO	PAH, DRO	PAH, DRO, Lead, TOC	PAH, TPH	PAH, TPH, Lead, TOC	Dissolved Iron	No. of Bottles/ Vials:									
761921	2/17/99	1115	Soil	1	1	1	1	1	1	1	1	3	9902752-14								
761323	2/17/99	1715		1	1	1	1	1	1	1	1	3	-15								
421211	2/17/99	1515		1	1	1	1	1	1	1	1	3	-16								
762423	2/17/99	1515		1	1	1	1	1	1	1	1	3	-17								
141311	2/17/99	1353		1	1	1	1	1	1	1	1	2	-18								
141313	2/17/99	1353		1	1	1	1	1	1	1	1	2	-19								
141411	2/17/99	1510		1	1	1	1	1	1	1	1	2	-20								
141321	2/17/99	1355		1	1	1	1	1	1	1	1	2	9902753-01								
141421	2/17/99	1521	↓	1	1	1	1	1	1	1	1	2	↓ -02								
620612	2/17/99	1230	water	2	2	2	2	2	2	2	2	2	9902754-01								
840912	2/17/99	1040		2	2	2	2	2	2	2	2	2	↓ -02								
841212	2/17/99	1700		2	2	2	2	2	2	2	2	2	↓ -03								
841025	2/17/99	1730	↓	2	2	2	2	2	2	2	2	2	↓ -04								
RELINQUISHED BY: <i>Laura Lumley</i>				Date/Time 2/18/99		TOTAL NUMBER OF CONTAINERS: Cooler ID: # 675										Cooler Temperature: 4°C					
COMPANY NAME: SATC				145												FEDEX NUMBER:					
RECEIVED BY: <i>John Lockhart</i>				Date/Time 2/18/99																	
COMPANY NAME: SATC				1145																	
RELINQUISHED BY: <i>John Lockhart</i>				Date/Time 2/18/99																	
COMPANY NAME: SATC				1730																	

$$\frac{N}{\omega}$$

COC NO.: DOB502

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CHAIN OF CUSTODY RECORD

COC NO.: D03502

PROJECT NAME: Fort Stewart CAP Part A UST Investigations				REQUESTED PARAMETERS												LABORATORY NAME: General Engineering Laboratory					
PROJECT NUMBER: 01-0331-04-1593-220				No. of Bottles/Vials												LABORATORY ADDRESS: 2040 Savage Road Charleston, SC 29417					
PROJECT MANAGER: Patty Stoll				PAH, TPH, Lead												PHONE NO: (803) 556-8171					
Sampler (Signature) <i>Patty Stoll</i>				PAH, DRO, Lead, TOC												OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS					
Sample ID				Date Collected		Time Collected		Matrix		No. of Bottles/Vials											
841025				2/17/99		1730		Water		3											
841212				2/17/99		1700		Water		2											
D80001				2/16/99		1500		Soil		1											
620811				2/17/99		1130		Soil		2											
620911				2/17/99		1310		Soil		2											
640911				2/17/99		930		Soil		2											
640913				2/17/99		930		Soil		2											
841011				2/17/99		1745		Soil		2											
841211				2/17/99		1545		Soil		2											
620821				2/17/99		1140		Soil		2											
620823				2/17/99		1140		Soil		2											
620921				2/17/99		1325		Soil		2											
840921				2/17/99		950		Soil		2											
RELINQUISHED BY: <i>Patty Stoll</i>				Date/Time 2/16/99		RECEIVED BY: <i>Patty Stoll</i>		Date/Time 2/18/99		TOTAL NUMBER OF CONTAINERS: Cooler ID: #38											
COMPANY NAME: SAIC				1143		COMPANY NAME: SAIC		1730		Cooler Temperature: 4°C											
RECEIVED BY: <i>Patty Stoll</i>				Date/Time 2/18/99		RELINQUISHED BY: <i>Patty Stoll</i>		Date/Time 2/18/99		FEDEX NUMBER:											
COMPANY NAME: SAIC				1143		COMPANY NAME: SAIC		1730													
RELINQUISHED BY: <i>Patty Stoll</i>				Date/Time 2/18/99		RECEIVED BY: <i>Patty Stoll</i>		Date/Time 2/18/99													
COMPANY NAME: SAIC				1730		COMPANY NAME: SAIC		1730													



CHAIN OF CUSTODY RECORD

COC NO.: D03501

CHAIN OF CUSTODY RECORD

V-127

PERMEABILITY TEST ANALYSIS (ASTM D5084)

Project : Fort Stewart
 Location of Project : CAP Part A
 Description of Soil : Dark Brown Silty Sand

Job # : 98068
 Date of Testing: 7/31-8/3/98
 Tested by: BV-CA
 Boring # :
 Sample # : 840331
 Sample Depth : 8-10 ft.

Sample Type (Undisturbed or Remolded)
 Standard Proctor:

Maximum Dry Density: pcf
 Optimum Moisture Content: %

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

Sample Permeation:

De-Aired Water
 % Saturation: 100 %
 Cell Pressure: 55 psi
 Lower Pressure: 51 psi
 Upper Pressure: 50 psi
 Gradient: 13.03

Sample Dimensions		
	Before	After
Length (cm)	5.40	5.90
Diameter (cm)	4.70	4.80
Water Content (%)	25.4	25.0
Weight (g)	279.8	320.5

Constant Head Calculation:

$$K = [V(t_1, t_2) LR_T] / [P_B A t] \text{ (cm/sec)}$$

$V(t_1, t_2)$ = Volume of flow from t_1 to t_2 (cm³)

L = Length of Sample = 5.40 cm

A = Area of Sample = 17.35 cm²

t = $t_2 - t_1$ (sec)

P_B = Bias Pressure = 1 psi x 70.37 cm/psi (cm - H₂O) 70.37 cm

R_T = Temperature correction = 0.931

t_2 (sec)	t_1 (sec)	$(t_2 - t_1)$ (sec)	V (cm ³)	$[LR_T] / [P_B A]$ (cm ³)	K (cm/sec)
60	55	5	0.1	4.12E-03	8.24E-05
65	60	5	0.1	4.12E-03	8.24E-05
70	65	5	0.1	4.12E-03	8.24E-05
75	70	5	0.1	4.12E-03	8.24E-05

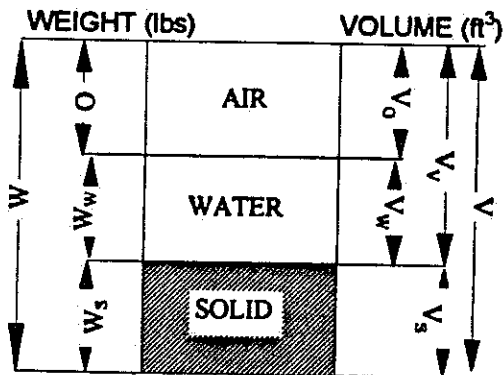
$$K_{avg} = \underline{8.24E-05 \text{ cm/sec}}$$

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SPECIFIC GRAVITY AND POROSITY

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

JOB NO.: 98068
 SAMPLE NO: 840331
 DEPTH OF SAMPLE: 8-10 ft.
 DATE OF TESTING: 8/3/98



$$\begin{aligned} W &= 0.61700 \\ W_w &= W - W_s = 0.12484 \\ W_s &= Y_d \cdot V = 0.4922 \\ V &= 0.00509 \\ V_w &= W_w / Y_w = 0.0020 \\ V_s &= W_s / G_s \cdot Y_w = 0.0032 \\ V_g &= V - (V_s + V_w) = -0.00009 \\ V_v &= V_g + V_w = 0.0019 \end{aligned}$$

MEASUREMENTS OF TUBE/CAN

HEIGHT= 8.3 cm
 DIAMETER= 4.7 cm

WT. OF TUBE/CAN + WET SOIL= 430.00 g
 WEIGHT OF TUBE/CAN= 150.13 g
 WEIGHT OF WET SOIL= 279.87 g
 W = 0.617 lb

CALCULATED VOLUME OF TUBE/CAN

$$\begin{aligned} V &= 144.00 \text{ cm}^3 \\ &= 0.00509 \text{ ft}^3 \end{aligned}$$

MOISTURE CONTENT

$M_{cws} = 51.10 \text{ g}$ $M_c = 10.92 \text{ g}$
 $M_{cds} = 42.97 \text{ g}$ $M_s = 32.05 \text{ g}$
 $M_w = 8.13 \text{ g}$ $w = 25.4 \%$

Wet Density, $Y_m = W / V$

Dry Density, $Y_d = W_s / V$ or $Y_d = Y_m / (1 + w)$	
<u>double check</u>	$Y_d = Y_m / (1 + w)$
$Y_d = W_s / V$	$Y_m = 121.31 \text{ lbs/ft}^3$
$Y_d = 96.76 \text{ lbs/ft}^3$	$Y_d = 96.76 \text{ lbs/ft}^3$

$$\begin{aligned} \text{Void Ratio, } e &= V_v / V_s \\ e &= 0.6000 \end{aligned}$$

$$\begin{aligned} \text{Porosity, } n &= V_v / V \\ n &= 0.38 \end{aligned}$$

$$\text{Specific Gravity} = 2.48$$

$$\begin{aligned} \text{Degree of Saturation, } S &= V_w / V_v \\ S &= 1.0484 \end{aligned}$$

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GRAIN SIZE ANALYSIS-SIEVE (ASTM D422)

Project FT. Stewart Job No. 93040
 Location of Project Py Part A Sample No. H 840331
 Description of Soil Dr Brown Silty Sand Depth of Sample _____ Boring No. _____
 Tested By FB Date of Testing 8/3/98

Sample preparation procedures outlined in ASTM D421 and D2217.

Nominal diameter of largest particle
 No. 10 sieve
 No. 4 sieve
 3/4 in.

Approximate minimum Wt. of sample, g
 200
 500
 1500

Weight of sample used, M_w = _____ g

M_{cu}	M_{ud}	M_c <u>PI</u>	M_w	M_s	w %	M_{ss}	M_s
		138.09					148.94

Sieve analysis and grain shape

Sieve no.	Diam. (mm)	Wt. retained	% retained	Σ % retained	% passing
3"					
2"					
1 1/2"					
3/4"					
3/8"					
#4					
#10		1.79	1.202	1.202	98.80
#20		29.77	19.99	21.19	78.81
#40		32.54	21.85	23.12	76.88
#60		19.96	13.40	36.52	63.48
#140		50.74	34.07	70.59	29.41
#200		2.20	1.48	72.07	27.93
pan		2.95	1.98	74.05	25.95

% retained = (Wt. retained/ W_s) · 100

% passing = 100 - Σ % retained.

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APPENDIX VI

ALTERNATE THRESHOLD LEVEL (ATL)
CALCULATIONS

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The maximum benzene concentration in soil was 0.324J mg/kg, but the sample location was directly beneath the concrete of the motorpool and above the water table at a distance of 70 feet upgradient of the former tank pit. The soil contamination in the area of boring 84-10 is believed to be a result of motorpool operations and not as a result of the tank operations. Thus, alternate threshold levels were not calculated. Fate and transport modeling predicted the benzene concentration due to leaching of soil contamination to groundwater. The predicted the maximum benzene concentration was estimated to be 253 µg/L, based on leaching of soil contamination to groundwater without biodegradation in the soil, which results in an ACL of 5750 µg/L. The predicted maximum benzene concentration was estimated to be 131 µg/L, based on leaching of soil contamination to groundwater with biodegradation in the soil, which results in an ACL of 5955 µg/L. The results of fate and transport modeling are presented in Attachment C.

The maximum benzene concentration in groundwater during the closure activities was 130 µg/L in the UST 79 tank pit. The maximum benzene concentration in groundwater during the CAP-Part A investigation was 52.6 µg/L in May 1998. The modeling of benzene estimated dilution attenuation factors (DAFs) of infinity for the sanitary sewer, storm drain, and tributary to Mill Creek; thus, no alternate concentration limits were calculated. The results of fate and transport modeling are presented in Attachment C.

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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 79 site for the determination of free product. Refer to Figure 5 (Appendix I) for locations and screened intervals.

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APPENDIX VIII

GROUNDWATER LABORATORY RESULTS

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TABLE VIII-A. Summary of Groundwater Analytical Results

Station:		In Stream	84-01	84-02	84-03	84-04	84-05	84-05
Sample ID:	Federal	Water	840112	840212	840312	840412	840512	840522
Screened Interval (ft BGS)	SDWA	Quality	2.0 - 12.0	1.0 - 11.0	0.0 - 10.0	2.0 - 12.0	6.0 - 10.0	11.0 - 15.0
Collection Date:	MCLs ¹	Standards ²	27-Jun-98	27-Jun-98	27-Jun-98	27-Jun-98	27-Jun-98	27-Jun-98
Units:	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
VOLATILE ORGANIC COMPOUNDS								
Benzene	5	71.28	6.8 J	2 U	52.6 =	2 U	2 U	2 U
Toluene	1000	200000	2 U	2 U	2 U	2 U	2 U	2 U
Ethylbenzene	700	28718	7.1 =	2 U	5.2 =	2 U	2 U	2 U
Xylenes, Total	10000	NRC	6 U	6 U	6 U	6 U	6 U	6 U
POLYNUCLEAR AROMATIC HYDROCARBONS								
2-Chloronaphthalene	NRC	NRC	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthene	NRC	NRC	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	NRC	NRC	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	NRC	110000	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	NRC	0.0311	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	0.2	0.0311	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	NRC	NRC	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	NRC	NRC	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	NRC	0.0311	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	NRC	0.0311	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene	NRC	0.0311	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	NRC	370	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	NRC	14000	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	NRC	0.0311	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	NRC	NRC	10.2 =	10 U	10 U	10 U	10 U	10 U
Phenanthrene	NRC	NRC	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	NRC	11000	10 U	10 U	10 U	10 U	10 U	10 U

NOTES:

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

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

Analytical data for the UST closure is summarized in Appendix II and is included at the end of this appendix but not summarized in this table.

Analytical data for QA/QC sample 840514 (duplicate) are contained within this appendix but are not summarized in this table.

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

¹ U.S. Environmental Protection Agency 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 above the reported quantitation limit.
- UJ Indicates that the compound was not detected above an approximated sample quantitation limit.
- J Indicates the value for the compound is an estimated value.
- = Indicates the compound was detected at the concentration reported.

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

Station:		In Stream	84-05	84-05	84-06	84-07	84-08	84-09
Sample ID:	Federal	Water	840532	840542	840612	840712	840812	840912
Screened Interval (ft BGS)	SDWA	Quality	16.0 - 20.0	21.0 - 25.0	0.0 - 9.0	0.0 - 9.8	0.0 - 9.5	0.0 - 10.5
Collection Date:	MCLs ¹	Standards ²	27-Jun-98	27-Jun-98	13-Nov-98	12-Nov-98	13-Nov-98	17-Feb-99
Units:	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
<i>VOLATILE ORGANIC COMPOUNDS</i>								
Benzene	5	71.28	2 U	2 U	6.5 U	2.1 =	1.1 J	2 U
Toluene	1000	200000	2 U	2 U	0.76 J	2 U	2 U	2 U
Ethylbenzene	700	28718	2 U	2 U	2 U	0.55 J	2 U	2 U
Xylenes, Total	10000	NRC	6 U	6 UJ	3 U	3 U	3 U	6 U
<i>POLYNUCLEAR AROMATIC HYDROCARBONS</i>								
2-Chloronaphthalene	NRC	NRC	10 U	10 U	15.6 U	12.3 U	14.3 U	11.1 U
Acenaphthene	NRC	NRC	10 U	10 U	15.6 U	12.3 U	14.3 U	11.1 U
Acenaphthylene	NRC	NRC	10 U	10 U	15.6 U	12.3 U	14.3 U	11.1 U
Anthracene	NRC	110000	10 U	10 U	15.6 U	12.3 U	14.3 U	11.1 U
Benzo(a)anthracene	NRC	0.0311	10 U	10 U	15.6 U	12.3 U	14.3 U	11.1 U
Benzo(a)pyrene	0.2	0.0311	10 U	10 U	15.6 U	12.3 U	14.3 U	11.1 U
Benzo(b)fluoranthene	NRC	NRC	10 U	10 U	15.6 U	12.3 U	14.3 U	11.1 U
Benzo(g,h,i)perylene	NRC	NRC	10 U	10 U	15.6 U	12.3 U	14.3 U	11.1 U
Benzo(k)fluoranthene	NRC	0.0311	10 U	10 U	15.6 U	12.3 U	14.3 U	11.1 U
Chrysene	NRC	0.0311	10 U	10 U	15.6 U	12.3 U	14.3 U	11.1 U
Dibenzo(a,h)anthracene	NRC	0.0311	10 U	10 U	15.6 U	12.3 U	14.3 U	11.1 U
Fluoranthene	NRC	370	10 U	10 U	15.6 U	12.3 U	14.3 U	11.1 U
Fluorene	NRC	14000	10 U	10 U	15.6 U	12.3 U	14.3 U	11.1 U
Indeno(1,2,3-cd)pyrene	NRC	0.0311	10 U	10 U	15.6 U	12.3 U	14.3 U	11.1 U
Naphthalene	NRC	NRC	10 U	10 U	15.6 U	12.3 U	14.3 U	11.1 U
Phenanthrene	NRC	NRC	10 U	10 U	15.6 U	12.3 U	14.3 U	11.1 U
Pyrene	NRC	11000	10 U	10 U	15.6 U	12.3 U	14.3 U	11.1 U

NOTES:

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

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

Analytical data for the UST closure is summarized in Appendix II and is included at the end of this appendix but not summarized in this table.

Analytical data for QA/QC sample 840514 (duplicate) are contained within this appendix but are not summarized in this table.

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

¹ U.S. Environmental Protection Agency 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 above the reported quantitation limit.

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

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

= Indicates the compound was detected at the concentration reported.

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

Station:		In Stream	84-10	84-11	84-12	84-13	84-14
Sample ID:	Federal	Water	841012	841112	841212	841312	841412
Screened Interval (ft BGS)	SDWA	Quality	0.0 - 10.0	0.0 - 10.5	0.0 - 10.0	0.0 - 9.2	0.0 - 11.0
Collection Date:	MCLs ¹	Standards ²	17-Feb-99	17-Feb-99	17-Feb-99	20-Feb-99	20-Feb-99
Units:	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
VOLATILE ORGANIC COMPOUNDS							
Benzene	5	71.28	32.4 =	2 U	3.5 =	0.66 J	2 U
Toluene	1000	200000	14.4 =	2 U	0.79 J	8.5 =	2.2 =
Ethylbenzene	700	28718	17.4 =	2 U	2 U	3.7 =	0.93 J
Xylenes, Total	10000	NRC	109 =	6 U	6 U	23 =	5.2 =
POLYNUCLEAR AROMATIC HYDROCARBONS							
2-Chloronaphthalene	NRC	NRC	10.3 U	11.9 U	12.2 U	12.5 UJ	46 U
Acenaphthene	NRC	NRC	10.3 U	11.9 U	12.2 U	12.5 UJ	46 U
Acenaphthylene	NRC	NRC	10.3 U	11.9 U	12.2 U	12.5 UJ	46 U
Anthracene	NRC	110000	10.3 U	11.9 U	12.2 U	12.5 UJ	46 U
Benzo(a)anthracene	NRC	0.0311	10.3 U	11.9 U	12.2 U	12.5 UJ	46 U
Benzo(a)pyrene	0.2	0.0311	10.3 U	11.9 U	12.2 U	12.5 UJ	4.5 J
Benzo(b)fluoranthene	NRC	NRC	10.3 U	11.9 U	12.2 U	12.5 UJ	46 U
Benzo(g,h,i)perylene	NRC	NRC	10.3 U	11.9 U	12.2 U	3.9 J	46 U
Benzo(k)fluoranthene	NRC	0.0311	10.3 U	11.9 U	12.2 U	12.5 UJ	46 U
Chrysene	NRC	0.0311	10.3 U	11.9 U	12.2 U	12.5 UJ	46 U
Dibenzo(a,h)anthracene	NRC	0.0311	10.3 U	11.9 U	12.2 U	12.5 UJ	46 U
Fluoranthene	NRC	370	10.3 U	11.9 U	12.2 U	12.5 UJ	46 U
Fluorene	NRC	14000	10.3 U	11.9 U	12.2 U	12.5 UJ	46 U
Indeno(1,2,3-cd)pyrene	NRC	0.0311	10.3 U	11.9 U	12.2 U	12.5 UJ	46 U
Naphthalene	NRC	NRC	10.3 U	11.9 U	2.4 J	12.5 UJ	46 U
Phenanthrene	NRC	NRC	10.3 U	11.9 U	12.2 U	12.5 UJ	46 U
Pyrene	NRC	11000	10.3 U	11.9 U	12.2 U	12.5 UJ	46 U

NOTES:

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

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

Analytical data for the UST closure is summarized in Appendix II and is included at the end of this appendix but not summarized in this table.

Analytical data for QA/QC sample 840514 (duplicate) are contained within this appendix, but are not summarized in this table.

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

¹ U.S. Environmental Protection Agency 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 above the reported quantitation limit.
- 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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DATA VALIDATION

1A
COPY VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840112

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA

Case No.: NA

SAS No.: NA

SDG No.: FS4A13W

Matrix: (soil/water) WATER

Lab Sample ID: 9806848-06

Sample wt/vol: 10.00 (g/ml) ML

Lab File ID: 2P5013

Level: (low/med) LOW

Date Received: 06/29/98

% Moisture: not dec. _____

Date Analyzed: 07/03/98

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

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q	
71-43-2-----	Benzene	6.8	P		C H C H M o B
108-88-3-----	Toluene	2.0	U		
100-41-4-----	Ethylbenzene	7.1			
1330-20-7-----	Xylenes (total)	6.0	U		

LW
7-30-98

FORM I VOA

DATA VALIDATION

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840112

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A08W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9806841-07

Sample wt/vol: 500.0 (g/mL) ML Lab File ID: 2C218

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

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

Concentrated Extract Volume: 0.50 (mL) Date Analyzed: 07/14/98

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	10.2	
91-58-7	-----2-chloronaphthalene	10.0	U
209-96-8	-----acenaphthylene	10.0	U
83-32-9	-----acenaphthene	10.0	U
86-73-7	-----fluorene	10.0	U
85-01-8	-----phenanthrene	10.0	U
120-12-7	-----anthracene	10.0	U
206-44-0	-----fluoranthene	10.0	U
129-00-0	-----pyrene	10.0	U
56-55-3	-----benzo(a)anthracene	10.0	U
218-01-9	-----chrysene	10.0	U
205-99-2	-----benzo(b)fluoranthene	10.0	U
207-08-9	-----benzo(k)fluoranthene	10.0	U
50-32-8	-----benzo(a)pyrene	10.0	U
193-39-5	-----indeno(1,2,3-cd)pyrene	10.0	U
53-70-3	-----dibenz(a,h)anthracene	10.0	U
191-24-2	-----benzo(g,h,i)perylene	10.0	U

FORM I SV-1

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840212

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) WATER Lab Sample ID: 9806848-08

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2Q106

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

% Moisture: not dec. _____ Date Analyzed: 07/06/98

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:		Q
		(ug/L or ug/Kg)	UG/L	
71-43-2-----	Benzene	2.0	U	U ↓
108-88-3-----	Toluene	2.0	U	
100-41-4-----	Ethylbenzene	2.0	U	
1330-20-7-----	Xylenes (total)	6.0	U	

LW
7-30-98

FORM I VOA

DATA VALIDATION SEMI-VOLATILE ORGANICS ANALYSIS DATA SHEET COPY

1B

EPA SAMPLE NO.

840212

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A08W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9806841-05

Sample wt/vol: 500.0 (g/mL) ML Lab File ID: 2C216

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

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

Concentrated Extract Volume: 0.50 (mL) Date Analyzed: 07/14/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	-----naphthalene	10.0	U
91-58-7	-----2-chloronaphthalene	10.0	U
209-96-8	-----acenaphthylene	10.0	U
83-32-9	-----acenaphthene	10.0	U
86-73-7	-----fluorene	10.0	U
85-01-8	-----phenanthrene	10.0	U
120-12-7	-----anthracene	10.0	U
206-44-0	-----fluoranthene	10.0	U
129-00-0	-----pyrene	10.0	U
56-55-3	-----benzo(a)anthracene	10.0	U
218-01-9	-----chrysene	10.0	U
205-99-2	-----benzo(b)fluoranthene	10.0	U
207-08-9	-----benzo(k)fluoranthene	10.0	U
50-32-8	-----benzo(a)pyrene	10.0	U
193-39-5	-----indeno(1,2,3-cd)pyrene	10.0	U
53-70-3	-----dibenz(a,h)anthracene	10.0	U
191-24-2	-----benzo(g,h,i)perylene	10.0	U

FORM I SV-1

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DATA VALIDATION

COPY

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840312

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) WATER

Lab Sample ID: 9806848-03

Sample wt/vol: 10.00 (g/ml) ML

Lab File ID: 2P508

Level: (low/med) LOW

Date Received: 06/29/98

% Moisture: not dec. _____

Date Analyzed: 07/03/98

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

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

71-43-2-----	Benzene	52.6	
108-88-3-----	Toluene	2.0	U
100-41-4-----	Ethylbenzene	5.2	
1330-20-7-----	Xylenes (total)	6.0	U

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7-28-98

FORM I VOA

DATA VALIDATION SEMI-VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

COPY

840312

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

SDG No.: FS4A07W

Matrix: (soil/water) GROUNDH2O

Lab Sample ID: 9806840-11

Sample wt/vol: 500.0 (g/mL) ML

Lab File ID: 7C119

Level: (low/med) LOW

Date Received: 06/29/98

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

Date Extracted: 06/30/98

Concentrated Extract Volume: 0.50 (mL)

Date Analyzed: 07/13/98

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

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

CAS NO.

COMPOUND

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

Q

91-20-3	naphthalene	10.0	U
91-58-7	2-chloronaphthalene	10.0	U
208-96-8	acenaphthylene	10.0	U
83-32-9	acenaphthene	10.0	U
86-73-7	fluorene	10.0	U
85-01-8	phenanthrene	10.0	U
120-12-7	anthracene	10.0	U
206-44-0	fluoranthene	10.0	U
129-00-0	pyrene	10.0	U
56-55-3	benzo (a) anthracene	10.0	U
218-01-9	chrysene	10.0	U
205-99-2	benzo (b) fluoranthene	10.0	U
207-08-9	benzo (k) fluoranthene	10.0	U
50-32-8	benzo (a) pyrene	10.0	U
193-39-5	indeno (1,2,3-cd) pyrene	10.0	U
53-70-3	dibenz (a,h) anthracene	10.0	U
191-24-2	benzo (g,h,i) perylene	10.0	U

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8-20-98

FORM I SV-1

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DATA VALIDATION VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

COPY

840412

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) WATER Lab Sample ID: 9806848-04

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2P509

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

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

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

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

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

71-43-2-----Benzene	2.0	U	U ↓
108-88-3-----Toluene	2.0	U	
100-41-4-----Ethylbenzene	2.0	U	
1330-20-7-----Xylenes (total)	6.0	U	

LW
7-30-98

FORM I VOA

DATA VALIDATION

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840412

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA

Case No.: NA

SAS No.: NA

SDG No.: FS4A08W

Matrix: (soil/water) GROUNDH2O

Lab Sample ID: 9806841-06

Sample wt/vol: 500.0 (g/mL) ML

Lab File ID: 2C217

Level: (low/med) LOW

Date Received: 06/29/98

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

Date Extracted: 06/30/98

Concentrated Extract Volume: 0.50 (mL)

Date Analyzed: 07/14/98

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	-----naphthalene	10.0	U
91-58-7	-----2-chloronaphthalene	10.0	U
209-96-8	-----acenaphthylene	10.0	U
83-32-9	-----acenaphthene	10.0	U
86-73-7	-----fluorene	10.0	U
85-01-8	-----phenanthrene	10.0	U
120-12-7	-----anthracene	10.0	U
206-44-0	-----fluoranthene	10.0	U
129-00-0	-----pyrene	10.0	U
56-55-3	-----benzo (a) anthracene	10.0	U
218-01-9	-----chrysene	10.0	U
205-99-2	-----benzo (b) fluoranthene	10.0	U
207-08-9	-----benzo (k) fluoranthene	10.0	U
50-32-8	-----benzo (a) pyrene	10.0	U
193-39-5	-----indeno (1,2,3-cd) pyrene	10.0	U
53-70-3	-----dibenz (a,h) anthracene	10.0	U
191-24-2	-----benzo (g,h,i) perylene	10.0	U

FORM I SV-1

OLM03.0

DATA VALIDATION
COPY

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840512

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA

Case No.: NA

SAS No.: NA

SDG No.: FS4A13W

Matrix: (soil/water) WATER

Lab Sample ID: 9806848-01

Sample wt/vol: 10.00 (g/ml) ML

Lab File ID: 2P506

Level: (low/med) LOW

Date Received: 06/29/98

% Moisture: not dec. _____

Date Analyzed: 07/03/98

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

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
71-43-2-----	Benzene	2.0	U	U ↓
108-88-3-----	Toluene	2.0	U	
100-41-4-----	Ethylbenzene	2.0	U	
1330-20-7-----	Xylenes (total)	6.0	U	

LW
7-30-98

FORM I VOA

DATA VALIDATION COPY

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840512

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA

Case No.: NA

SAS No.: NA

SDG No.: FS4A08W

Matrix: (soil/water) GROUNDH2O

Lab Sample ID: 9806841-01

Sample wt/vol: 500.0 (g/mL) ML

Lab File ID: 2C212

Level: (low/med) LOW

Date Received: 06/29/98

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

Date Extracted: 06/30/98

Concentrated Extract Volume: 0.50 (mL)

Date Analyzed: 07/14/98

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

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

CAS NO.

COMPOUND

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

Q

91-20-3-----	naphthalene	10.0	U
91-58-7-----	2-chloronaphthalene	10.0	U
209-96-8-----	acenaphthylene	10.0	U
83-32-9-----	acenaphthene	10.0	U
86-73-7-----	fluorene	10.0	U
85-01-8-----	phenanthrene	10.0	U
120-12-7-----	anthracene	10.0	U
206-44-0-----	fluoranthene	10.0	U
129-00-0-----	pyrene	10.0	U
56-55-3-----	benzo (a) anthracene	10.0	U
218-01-9-----	chrysene	10.0	U
205-99-2-----	benzo (b) fluoranthene	10.0	U
207-08-9-----	benzo (k) fluoranthene	10.0	U
50-32-8-----	benzo (a) pyrene	10.0	U
193-39-5-----	indeno (1,2,3-cd) pyrene	10.0	U
53-70-3-----	dibenz (a,h) anthracene	10.0	U
191-24-2-----	benzo (g,h,i) perylene	10.0	U

U
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FORM I SV-1

OLM03.0

DATA VALIDATION
COPY

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

DUPLICATE
EPA SAMPLE NO.

840514

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) WATER Lab Sample ID: 9806848-10

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2P5018

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

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

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	UG/L	
71-43-2-----	Benzene	2.0	U	U ↓
108-88-3-----	Toluene	2.0	U	
100-41-4-----	Ethylbenzene	2.0	U	
1330-20-7-----	Xylenes (total)	6.0	U	

LW
7-30-98

FORM I VOA

DATA SHEET
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
COPY

1B

DUPLICATE
EPA SAMPLE NO.

840514

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A08W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9806841-02

Sample wt/vol: 500.0 (g/mL) ML Lab File ID: 2C213

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

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

Concentrated Extract Volume: 0.50 (mL) Date Analyzed: 07/14/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

91-20-3-----	naphthalene	10.0	U
91-58-7-----	2-chloronaphthalene	10.0	U
209-96-8-----	acenaphthylene	10.0	U
83-32-9-----	acenaphthene	10.0	U
86-73-7-----	fluorene	10.0	U
85-01-8-----	phenanthrene	10.0	U
120-12-7-----	anthracene	10.0	U
206-44-0-----	fluoranthene	10.0	U
129-00-0-----	pyrene	10.0	U
56-55-3-----	benzo (a) anthracene	10.0	U
218-01-9-----	chrysene	10.0	U
205-99-2-----	benzo (b) fluoranthene	10.0	U
207-08-9-----	benzo (k) fluoranthene	10.0	U
50-32-8-----	benzo (a) pyrene	10.0	U
193-39-5-----	indeno (1,2,3-cd) pyrene	10.0	U
53-70-3-----	dibenz (a,h) anthracene	10.0	U
191-24-2-----	benzo (g,h,i) perylene	10.0	U

FORM I SV-1

OLM03.0

DATA VALIDATION

1A
COPY VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840522

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) WATER Lab Sample ID: 9806848-02

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2P507

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

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

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

71-43-2-----Benzene	2.0	U	U ↓
108-88-3-----Toluene	2.0	U	
100-41-4-----Ethylbenzene	2.0	U	
1330-20-7-----Xylenes (total)	6.0	U	

LW
7.30-98

FORM I VOA

DATA SHEET

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840522

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A08W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9806841-03

Sample wt/vol: 500.0 (g/mL) ML Lab File ID: 2C214

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

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

Concentrated Extract Volume: 0.50 (mL) Date Analyzed: 07/14/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

91-20-3-----	naphthalene	10.0	U
91-58-7-----	2-chloronaphthalene	10.0	U
209-96-8-----	acenaphthylene	10.0	U
83-32-9-----	acenaphthene	10.0	U
86-73-7-----	fluorene	10.0	U
85-01-8-----	phenanthrene	10.0	U
120-12-7-----	anthracene	10.0	U
206-44-0-----	fluoranthene	10.0	U
129-00-0-----	pyrene	10.0	U
56-55-3-----	benzo (a) anthracene	10.0	U
218-01-9-----	chrysene	10.0	U
205-99-2-----	benzo (b) fluoranthene	10.0	U
207-08-9-----	benzo (k) fluoranthene	10.0	U
50-32-8-----	benzo (a) pyrene	10.0	U
193-39-5-----	indeno (1,2,3-cd) pyrene	10.0	U
53-70-3-----	dibenz (a,h) anthracene	10.0	U
191-24-2-----	benzo (g,h,i) perylene	10.0	U

FORM I SV-1

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DATA VALIDATION
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840532

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

SDG No.: FS4A13W

Matrix: (soil/water) WATER

Lab Sample ID: 9806848-09

Sample wt/vol: 10.00 (g/ml) ML

Lab File ID: 2P5017

Level: (low/med) LOW

Date Received: 06/29/98

% Moisture: not dec. _____

Date Analyzed: 07/03/98

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

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO.

COMPOUND

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

Q

71-43-2-----Benzene	2.0	U
108-88-3-----Toluene	2.0	U
100-41-4-----Ethylbenzene	2.0	U
1330-20-7-----Xylenes (total)	6.0	U

U
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LW
7-30-98

FORM I VOA

DATA VALIDATION

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

840532

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA

Case No.: NA

SAS No.: NA

SDG No.: FS4A08W

Matrix: (soil/water) GROUNDH2O

Lab Sample ID: 9806841-08

Sample wt/vol: 500.0 (g/mL) ML

Lab File ID: 2C219

Level: (low/med) LOW

Date Received: 06/29/98

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

Date Extracted: 06/30/98

Concentrated Extract Volume: 0.50 (mL)

Date Analyzed: 07/14/98

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

91-20-3	-----naphthalene	10.0	U
91-58-7	-----2-chloronaphthalene	10.0	U
209-96-8	-----acenaphthylene	10.0	U
83-32-9	-----acenaphthene	10.0	U
86-73-7	-----fluorene	10.0	U
85-01-8	-----phenanthrene	10.0	U
120-12-7	-----anthracene	10.0	U
206-44-0	-----fluoranthene	10.0	U
129-00-0	-----pyrene	10.0	U
56-55-3	-----benzo (a) anthracene	10.0	U
218-01-9	-----chrysene	10.0	U
205-99-2	-----benzo (b) fluoranthene	10.0	U
207-08-9	-----benzo (k) fluoranthene	10.0	U
50-32-8	-----benzo (a) pyrene	10.0	U
193-39-5	-----indeno (1,2,3-cd) pyrene	10.0	U
53-70-3	-----dibenz (a,h) anthracene	10.0	U
191-24-2	-----benzo (g,h,i) perylene	10.0	U

FORM I SV-1

OLM03.0

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840542

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) WATER Lab Sample ID: 9806849-05

Sample wt/vol: 10.00 (g/ml) ML DATA VALIDATION Lab File ID: 2Q1018

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

% Moisture: not dec. Date Analyzed: 07/06/98

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

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

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

71-43-2-----	Benzene	2.0	U
108-88-3-----	Toluene	2.0	U
100-41-4-----	Ethylbenzene	2.0	U
1330-20-7-----	Xylenes (total)	6.0	U

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8-18-98

FORM I VOA

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840542

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A08W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9806841-04

Sample wt/vol: 500.0 (g/mL) ML Lab File ID: 2C215

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

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

Concentrated Extract Volume: 0.50 (mL) Date Analyzed: 07/14/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

91-20-3-----	naphthalene	10.0	U
91-58-7-----	2-chloronaphthalene	10.0	U
209-96-8-----	acenaphthylene	10.0	U
83-32-9-----	acenaphthene	10.0	U
86-73-7-----	fluorene	10.0	U
85-01-8-----	phenanthrene	10.0	U
120-12-7-----	anthracene	10.0	U
206-44-0-----	fluoranthene	10.0	U
129-00-0-----	pyrene	10.0	U
56-55-3-----	benzo (a) anthracene	10.0	U
218-01-9-----	chrysene	10.0	U
205-99-2-----	benzo (b) fluoranthene	10.0	U
207-08-9-----	benzo (k) fluoranthene	10.0	U
50-32-8-----	benzo (a) pyrene	10.0	U
193-39-5-----	indeno (1,2,3-cd) pyrene	10.0	U
53-70-3-----	dibenz (a,h) anthracene	10.0	U
191-24-2-----	benzo (g,h,i) perylene	10.0	U

FORM I SV-1

OLM03.0



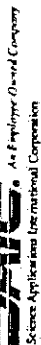
Science Applications International Corporation
An Employee-Owned Company

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

CHAIN OF CUSTODY RECORD

COC NO.: GA012

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)				REQUESTED PARAMETERS												LABORATORY NAME: General Engineering Laboratory	
PROJECT NUMBER: 01-0331-04-9805-210																LABORATORY ADDRESS: 2040 Savage Road Charleston, SC 29417	
PROJECT MANAGER: Patty Stoll																PHONE NO: (803) 556-8171	
Sampler (Signature) <i>Laura Lumbley</i>																OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS 33640.2	
Sample ID	Date Collected	Time Collected	Matrix	PAH, TPH	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC									No. of Bottles/ Vials
340425	6/27/98	1115	water	4												4	
460312	6/28/98	1500		2												2	
460512	6/28/98	1110		2												2	
460532	6/28/98	1215		2												2	
460522	6/28/98	1150		2												2	
460514	6/28/98	1110	↓	1												1	
<i>6/29/98</i>																	
RELINQUISHED BY: <i>Patty Stoll</i>				RECEIVED BY: <i>Lionel Franco</i>				Date/Time: <i>6/29/98</i>				TOTAL NUMBER OF CONTAINERS: 13				Cooler Temperature: 40°	
COMPANY NAME: SAIL				COMPANY NAME: GEL								Cooler ID: # 035				FEDEX NUMBER:	
RECEIVED BY: <i>Pat Kothke</i>				RELINQUISHED BY:				Date/Time: <i>6/29/98</i>									
COMPANY NAME: <i>GEL</i>				COMPANY NAME:													
RELINQUISHED BY: <i>Pat Kothke</i>				RECEIVED BY:				Date/Time: <i>6/29/98</i>									
COMPANY NAME: <i>GEL</i>				COMPANY NAME:													



CHAIN OF CUSTODY RECORD

COC NO.: GA012

CHAIN OF CUSTODY RECORD

VIII-28



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

CHAIN OF CUSTODY RECORD

COC NO.: GA014

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

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

PROJECT MANAGER: Petty Stoll

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

Sample ID	Date Collected	Time Collected	Matrix
840212	6/27/98	1425	water
840412	6/27/98	1215	
840112	6/27/98	1330	
840532	6/27/98	1555	
930210	6/27/98	1345	
930112	6/27/98	1730	
930412	6/27/98	1555	↓

REQUESTED PARAMETERS

PAH, TPH	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/Vials
2	2	2	2	2	2	2
2	2	2	2	2	2	2
2	2	2	2	2	2	2
2	2	2	2	2	2	2
2	2	2	2	2	2	2
2	2	2	2	2	2	2
1	1	1	1	1	1	1

LABORATORY NAME:
General Engineering Laboratory

LABORATORY ADDRESS:
2040 Savage Road
Charleston, SC 29417

PHONE NO: (803) 556-8171

OBSERVATIONS, COMMENTS,
SPECIAL INSTRUCTIONS

330011

9806841-05

06

07

08

09

10

RELINQUISHED BY: *James D. Dumas*

COMPANY NAME:

Date/Time

4/29/98

RECEIVED BY:

James D. Dumas

COMPANY NAME:

Date/Time

6/29/98

TOTAL NUMBER OF CONTAINERS:

13

Cooler Temperature:

40C

FEDEX NUMBER:

Date/Time

1645

Cooler ID:

547

RELINQUISHED BY:

James D. Dumas

COMPANY NAME:

Date/Time

1215

TOTAL NUMBER OF CONTAINERS:

13

Cooler Temperature:

40C

FEDEX NUMBER:

Date/Time

1645

Cooler ID:

547



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

CHAIN OF CUSTODY RECORD

COC NO.: GA018

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)				REQUESTED PARAMETERS										LABORATORY NAME: General Engineering Laboratory	
PROJECT NUMBER: 01-0331-04-9805-210														LABORATORY ADDRESS: 2040 Savage Road Charleston, SC 29417	
PROJECT MANAGER: Patty Stoll														PHONE NO: (803) 556-8171	
Sampler (Signature) <i>James Lumber</i>				(Printed Name) James Lumber										OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS	
Sample ID	Date Collected	Time Collected	Matrix	PAH, TPH	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials						
930502	6/27/98	1220	water	2						2	9806843-13	350461			
930514	6/27/98	945		2						2	-14				
930532	6/27/98	1030		2						2	-15				
930512	6/27/98	945		2						2	-16				
830112	6/26/98	1745		2						2	-17				
870312	6/26/98	1750		2						2	-18				
930522	6/27/98	1030		2						2	-19				
830312	6/26/98	1735		2						2	-20				
830114	6/26/98	1745		2						2	9806849-01	350461			
930312	6/28/98	1030		2						2	-02				
930412	6/27/98	1555		2						2	-03				
930112	6/27/98	1730		2						2	-04				
840542	6/27/98	1630		2						2	-05				

RELINQUISHED BY: <i>James Lumber</i>	DATE/TIME 6/29/98	RECEIVED BY: <i>James Lumber</i>	DATE/TIME 6/29/98	TOTAL NUMBER OF CONTAINERS: Cooler ID: #580	COOLER TEMPERATURE: 40C
COMPANY NAME: <i>SAIC</i>		COMPANY NAME: <i>SAIC</i>			
RELINQUISHED BY: <i>James Lumber</i>	DATE/TIME 6/29/98	RELINQUISHED BY: <i>James Lumber</i>	DATE/TIME 6/29/98		
COMPANY NAME: <i>SAIC</i>		COMPANY NAME: <i>SAIC</i>			
RELINQUISHED BY: <i>James Lumber</i>	DATE/TIME 6/29/98	RELINQUISHED BY: <i>James Lumber</i>	DATE/TIME 6/29/98		
COMPANY NAME: <i>SAIC</i>		COMPANY NAME: <i>SAIC</i>			

CHAI, F CUSTODY RECORD

COC NO.: 6.018

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

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

PROJECT MANAGER: Patty Stoll

Sampler (Signature) *Laura Kumley* (Printed Name)

Sample ID	Date Collected	Time Collected	Matrix
930212	6/27/98	1355	water
840512	6/27/98	1500	
840522	6/27/98	1520	
840312	6/27/98	1100	
840412	6/27/98	1215	
830212	6/26/98	1920	
840112	6/27/98	1330	
840425	6/27/98	1115	
840212	6/27/98	1425	
840532	6/27/98	1555	
840514	6/27/98	1500	
860312	6/24/98	1500	
880552	6/24/98	1320	

REQUESTED PARAMETERS

PAH	BTEX	PAH, TPH	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
							2	9806846-20 33645.1
							2	9806848-01 33646.1
							2	-02
							2	-03
							2	-04
							2	-05
							2	-06
							2	-07
							2	-08
							2	-09
							2	-10
							2	-11
							2	-12

RECEIVED BY: *Laura Kumley* DATE/TIME: 6/29/98
 COMPANY NAME: SAIC
 RECEIVED BY: *SAIC* DATE/TIME: 12/15
 COMPANY NAME: SAIC
 RECEIVED BY: *SAIC* DATE/TIME: 6/29/98
 COMPANY NAME: SAIC
 RECEIVED BY: *SAIC* DATE/TIME: 12/15
 COMPANY NAME: SAIC

RECEIVED BY: *Laura Kumley* DATE/TIME: 6/29/98
 COMPANY NAME: SAIC
 RECEIVED BY: *SAIC* DATE/TIME: 12/15
 COMPANY NAME: SAIC
 RECEIVED BY: *SAIC* DATE/TIME: 6/29/98
 COMPANY NAME: SAIC
 RECEIVED BY: *SAIC* DATE/TIME: 12/15
 COMPANY NAME: SAIC

RECEIVED BY: *Laura Kumley* DATE/TIME: 6/29/98
 COMPANY NAME: SAIC
 RECEIVED BY: *SAIC* DATE/TIME: 12/15
 COMPANY NAME: SAIC
 RECEIVED BY: *SAIC* DATE/TIME: 6/29/98
 COMPANY NAME: SAIC
 RECEIVED BY: *SAIC* DATE/TIME: 12/15
 COMPANY NAME: SAIC

LABORATORY NAME: General Engineering Laboratory
 LABORATORY ADDRESS: 2040 Savage Road, Charleston, SC 29417
 PHONE NO: (803) 556-8171
 OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS: 9806846-20 33645.1, 9806848-01 33646.1, -02, -03, -04, -05, -06, -07, -08, -09, -10, -11, -12

RECEIVED BY: *Laura Kumley* DATE/TIME: 6/29/98
 COMPANY NAME: SAIC
 RECEIVED BY: *SAIC* DATE/TIME: 12/15
 COMPANY NAME: SAIC
 RECEIVED BY: *SAIC* DATE/TIME: 6/29/98
 COMPANY NAME: SAIC
 RECEIVED BY: *SAIC* DATE/TIME: 12/15
 COMPANY NAME: SAIC

RECEIVED BY: *Laura Kumley* DATE/TIME: 6/29/98
 COMPANY NAME: SAIC
 RECEIVED BY: *SAIC* DATE/TIME: 12/15
 COMPANY NAME: SAIC
 RECEIVED BY: *SAIC* DATE/TIME: 6/29/98
 COMPANY NAME: SAIC
 RECEIVED BY: *SAIC* DATE/TIME: 12/15
 COMPANY NAME: SAIC

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840612

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6009W

Matrix: (soil/water) WATER Lab Sample ID: 9811478-12

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7J554

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

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

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
71-43-2-----	benzene	6.5	B	0 F01, F07 J U U
108-88-3-----	toluene	0.76	J	
100-41-4-----	ethylbenzene	2.0	U	
1330-20-7-----	xylene (total)	3.0	U	

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840612

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6007W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811476-10

Sample wt/vol: 640.0 (g/mL) ML Lab File ID: 8US16

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

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

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

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

91-20-3-----	naphthalene	15.6	U
91-58-7-----	2-chloronaphthalene	15.6	U
208-96-8-----	acenaphthylene	15.6	U
83-32-9-----	acenaphthene	15.6	U
86-73-7-----	fluorene	15.6	U
85-01-8-----	phenanthrene	15.6	U
120-12-7-----	anthracene	15.6	U
206-44-0-----	fluoranthene	15.6	U
129-00-0-----	pyrene	15.6	U
56-55-3-----	benzo (a) anthracene	15.6	U
218-01-9-----	chrysene	15.6	U
205-99-2-----	benzo (b) fluoranthene	15.6	U
207-08-9-----	benzo (k) fluoranthene	15.6	U
50-32-8-----	benzo (a) pyrene	15.6	U
193-39-5-----	indeno (1,2,3-cd) pyrene	15.6	U
53-70-3-----	dibenz (a,h) anthracene	15.6	U
191-24-2-----	benzo (g,h,i) perylene	15.6	U

FORM I SV-1

OLM03.0

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840712

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) WATER Lab Sample ID: 9811468-12

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 1J510

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

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

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

71-43-2-----benzene	2.1		
108-88-3-----toluene	2.0		U
100-41-4-----ethylbenzene	0.55		J
78-93-3-----xylenes (total)	3.0 1.2		JB

11/8/99

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840712

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

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

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811467-14

Sample wt/vol: 810.0 (g/mL) ML Lab File ID: 7U520

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

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

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

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

91-20-3-----	naphthalene	12.3	U
91-58-7-----	2-chloronaphthalene	12.3	U
208-96-8-----	acenaphthylene	12.3	U
83-32-9-----	acenaphthene	12.3	U
86-73-7-----	fluorene	12.3	U
85-01-8-----	phenanthrene	12.3	U
120-12-7-----	anthracene	12.3	U
206-44-0-----	fluoranthene	12.3	U
129-00-0-----	pyrene	12.3	U
56-55-3-----	benzo (a) anthracene	12.3	U
218-01-9-----	chrysene	12.3	U
205-99-2-----	benzo (b) fluoranthene	12.3	U
207-08-9-----	benzo (k) fluoranthene	12.3	U
50-32-8-----	benzo (a) pyrene	12.3	U
193-39-5-----	indeno (1,2,3-cd) pyrene	12.3	U
53-70-3-----	dibenz (a,h) anthracene	12.3	U
191-24-2-----	benzo (g,h,i) perylene	12.3	U

FORM I SV-1

OLM03.0

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840812

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6009W

Matrix: (soil/water) WATER Lab Sample ID: 9811478-10

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7J713

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

% Moisture: not dec. _____ Date Analyzed: 11/22/98

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	UG/L	
71-43-2-----	benzene	1.1	J	J U U U ↓
108-88-3-----	toluene	2.0	U	
100-41-4-----	ethylbenzene	2.0	U	
1330-20-7-----	xylene (total)	3.0	U	

FORM I VOA

OLM03.0

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840812

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6007W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811476-09

Sample wt/vol: 700.0 (g/mL) ML Lab File ID: 8U515

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

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

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

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO.

COMPOUND

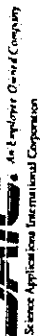
CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Q

91-20-3-----	naphthalene	14.3	U
91-58-7-----	2-chloronaphthalene	14.3	U
208-96-8-----	acenaphthylene	14.3	U
83-32-9-----	acenaphthene	14.3	U
86-73-7-----	fluorene	14.3	U
85-01-8-----	phenanthrene	14.3	U
120-12-7-----	anthracene	14.3	U
206-44-0-----	fluoranthene	14.3	U
129-00-0-----	pyrene	14.3	U
56-55-3-----	benzo (a) anthracene	14.3	U
218-01-9-----	chrysene	14.3	U
205-99-2-----	benzo (b) fluoranthene	14.3	U
207-08-9-----	benzo (k) fluoranthene	14.3	U
50-32-8-----	benzo (a) pyrene	14.3	U
193-39-5-----	indeno (1,2,3-cd) pyrene	14.3	U
53-70-3-----	dibenz (a,h) anthracene	14.3	U
191-24-2-----	benzo (g,h,i) perylene	14.3	U

FORM I SV-1

OLM03.0



CHAIN OF CUSTODY RECORD

COC NO.: GAØØØØ

CHAIN OF CUSTODY RECORD

NOTE: Cooler Receipt Checklist indicates a cooler temperature of $4^{\circ}\text{--}5^{\circ}\text{C}$ upon arrival at the laboratory.



SAIC An Employee Owned Company
Science Applications International Corporation

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

CHAIN OF CUSTODY RECORD

COC NO.: GA008

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-9805-220

PROJECT MANAGER: Patty Stoll

Sampler (Signature)

(Printed Name)

Laura Lumley

Sample ID	Date Collected	Time Collected	Matrix
680612	11/13/98	1615	water
920814	11/13/98	950	
840812	11/13/98	1045	
840612	11/13/98	915	
800712	11/13/98	1215	
680612	11/13/98	1550	

REQUESTED PARAMETERS

PAH, GRO	PAH, TPH	PAH, DRO, Lead	PAH, TPH, Lead	PAH, DRO, Lead, TOC	PAH, TPH, Lead, TOC	No. of Bottles/ Vials
BTEX						
PAH						
Z						2
Z						2
Z						2
Z						2
Z						2
Z						2
Z						2

LABORATORY NAME:
General Engineering Laboratory

LABORATORY ADDRESS:
2040 Savage Road
Charleston, SC 29417

PHONE NO: (803) 556-8171

OBSERVATIONS, COMMENTS,
SPECIAL INSTRUCTIONS

9811476-07
-08
-09
-10
-11
-12

RELINQUISHED BY:

SAIC

Date/Time

11/14/98

RECEIVED BY:

SAIC

Date/Time

11/14/98

RELINQUISHED BY:

SAIC

Date/Time

1330

RELINQUISHED BY:

SAIC

Date/Time

1330

RELINQUISHED BY:

SAIC

Date/Time

1330

RELINQUISHED BY:

SAIC

Date/Time

1330

TOTAL NUMBER OF CONTAINERS: 12

Cooler ID:

#725

Cooler Temperature:

FEDEX NUMBER:

NOTE: Cooler Receipt Checklist indicates a cooler temperature of 3°-5° upon arrival at the laboratory.



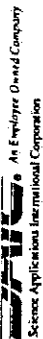
32

CHAIN OF CUSTODY RECORD

COC NO.: GA 010

PROJECT NUMBER: 01-0331-04-9805-220						LABORATORY NAME: General Engineering Laboratory							
PROJECT MANAGER: Patty Stoll						LABORATORY ADDRESS: 2040 Savage Road Charleston, SC 29417							
Sampler (Signature) <i>Laura Lumley</i>						PHONE NO: (803) 556-8171							
Sample ID	Date Collected	Time Collected	Mix/Jx	BTEX	PAH	BTEX, GRO	PAH, TPH	PAH, DRO, Lead	PAH, TPH, Lead	PAH, DRO, Lead, TOC	PAH, TPH, Lead, TOC	No. of Bottles/Vials	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
840623	"/13/98	915	Spi	1					1			Z	9811477-14
860721	"/13/98	1745	↓	1					1			Z	-15
800621	"/13/98	1615		1					1			Z	-16
680642	"/13/98	1745	water	2								Z	9811478-01
680632	"/13/98	1640		2								Z	02
810712	"/13/98	1745		2								Z	-03
160912	"/13/98	1600		2								Z	04
680622	"/13/98	1615		2								Z	-05
680612	"/13/98	1550		2								Z	-06
110842	"/13/98	1500		2								Z	-07
920812	"/13/98	950		2								Z	-08
800612	"/13/98	1615		2								Z	-09
840812	"/13/98	1835	↓	2								Z	-10
RELINQUISHED BY: <i>Laura Lumley</i>						RECEIVED BY: <i>[Signature]</i>						TOTAL NUMBER OF CONTAINERS:	
COMPANY NAME: SAIC						COMPANY NAME: [Signature]						Cooler ID: #712	
DATE/TIME: 11/14/98						DATE/TIME: 11/14/98						Cooler Temperature: FEDEX NUMBER:	
RECEIVED BY: <i>Carol Landel</i>						RELINQUISHED BY: [Signature]							
COMPANY NAME: General Engineering						COMPANY NAME: [Signature]							
RELINQUISHED BY: <i>Carol Landel</i>						RECEIVED BY: [Signature]							
COMPANY NAME: General Engineering						COMPANY NAME: [Signature]							

NOTE: Cooler Receipt Checklist indicates a cooler temp. of 3°-5°C upon arrival at the laboratory.

[illegible]

CHAIN OF CUSTODY RECORD

COC NO.: GAΦ1Φ

[illegible]

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840912

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSB03W

Matrix: (soil/water) WATER Lab Sample ID: 9902754-02

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1X414

Level: (low/med) LOW Date Received: 02/18/99

% Moisture: not dec. Date Analyzed: 02/25/99

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

71-43-2-----benzene	2.0	U	↓
108-88-3-----toluene	2.0	U	
100-41-4-----ethylbenzene	2.0	U	
75-71-8-----xylenes (total)	6.0	U	

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

840912

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA01W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9902750-03

Sample wt/vol: 900.0 (g/mL) ML Lab File ID: 8I620

Level: (low/med) LOW Date Received: 02/18/99

% Moisture: _____ decanted: (Y/N) _____ Date Extracted: 02/19/99

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 02/27/99

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	-----naphthalene	11.1	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

FORM I SV-1

OLM03.0

DATE RECEIVED
GCE

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841012

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSB03W

Matrix: (soil/water) WATER Lab Sample ID: 9902754-06

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1X516

Level: (low/med) LOW Date Received: 02/18/99

% Moisture: not dec. _____ Date Analyzed: 02/26/99

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

71-43-2-----benzene	32.4		
108-88-3-----toluene	14.4		
100-41-4-----ethylbenzene	17.4		
75-71-8-----xylenes (total)	109		

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841012

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA01W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9902750-01

Sample wt/vol: 970.0 (g/mL) ML Lab File ID: 8J307

Level: (low/med) LOW Date Received: 02/18/99

% Moisture: _____ decanted: (Y/N) _____ Date Extracted: 02/19/99

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

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

USE

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

91-20-3-----	naphthalene	10.3	U
91-58-7-----	2-chloronaphthalene	10.3	U
208-96-8-----	acenaphthylene	10.3	U
83-32-9-----	acenaphthene	10.3	U
86-73-7-----	fluorene	10.3	U
85-01-8-----	phenanthrene	10.3	U
120-12-7-----	anthracene	10.3	U
206-44-0-----	fluoranthene	10.3	U
129-00-0-----	pyrene	10.3	U
56-55-3-----	benzo (a) anthracene	10.3	U
218-01-9-----	chrysene	10.3	U
205-99-2-----	benzo (b) fluoranthene	10.3	U
207-08-9-----	benzo (k) fluoranthene	10.3	U
50-32-8-----	benzo (a) pyrene	10.3	U
193-39-5-----	indeno (1,2,3-cd) pyrene	10.3	U
53-70-3-----	dibenz (a,h) anthracene	10.3	U
191-24-2-----	benzo (g,h,i) perylene	10.3	U

U
↓

FORM I SV-1

OLM03.0

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841112

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSB03W

Matrix: (soil/water) WATER Lab Sample ID: 9902754-05

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1X417

Level: (low/med) LOW Date Received: 02/18/99

% Moisture: not dec. Date Analyzed: 02/25/99

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

71-43-2-----	benzene	2.0	U
108-88-3-----	toluene	2.0	U
100-41-4-----	ethylbenzene	2.0	U
75-71-8-----	xylene (total)	6.0	U

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841112

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA01W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9902750-02

Sample wt/vol: 840.0 (g/mL) ML Lab File ID: 8I619

Level: (low/med) LOW Date Received: 02/18/99

% Moisture: _____ decanted: (Y/N) _____ Date Extracted: 02/19/99

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 02/27/99

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

91-20-3-----	naphthalene	11.9	U
91-58-7-----	2-chloronaphthalene	11.9	U
208-96-8-----	acenaphthylene	11.9	U
83-32-9-----	acenaphthene	11.9	U
86-73-7-----	fluorene	11.9	U
85-01-8-----	phenanthrene	11.9	U
120-12-7-----	anthracene	11.9	U
206-44-0-----	fluoranthene	11.9	U
129-00-0-----	pyrene	11.9	U
56-55-3-----	benzo (a) anthracene	11.9	U
218-01-9-----	chrysene	11.9	U
205-99-2-----	benzo (b) fluoranthene	11.9	U
207-08-9-----	benzo (k) fluoranthene	11.9	U
50-32-8-----	benzo (a) pyrene	11.9	U
193-39-5-----	indeno (1,2,3-cd) pyrene	11.9	U
53-70-3-----	dibenz (a,h) anthracene	11.9	U
191-24-2-----	benzo (g,h,i) perylene	11.9	U

FORM I SV-1

OLM03.0

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841212

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSB03W

Matrix: (soil/water) WATER Lab Sample ID: 9902754-03

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1X415

Level: (low/med) LOW Date Received: 02/18/99

% Moisture: not dec. Date Analyzed: 02/25/99

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

71-43-2-----	benzene	3.5	
108-88-3-----	toluene	0.79	J
100-41-4-----	ethylbenzene	2.0	U
75-71-8-----	xylene (total)	6.0	U

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841212

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA01W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9902750-08

Sample wt/vol: 820.0 (g/mL) ML Lab File ID: 8I704

Level: (low/med) LOW Date Received: 02/18/99

% Moisture: _____ decanted: (Y/N) _____ Date Extracted: 02/19/99

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 02/28/99

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

91-20-3-----	naphthalene	2.4	J
91-58-7-----	2-chloronaphthalene	12.2	U
208-96-8-----	acenaphthylene	12.2	U
83-32-9-----	acenaphthene	12.2	U
86-73-7-----	fluorene	12.2	U
85-01-8-----	phenanthrene	12.2	U
120-12-7-----	anthracene	12.2	U
206-44-0-----	fluoranthene	12.2	U
129-00-0-----	pyrene	12.2	U
56-55-3-----	benzo (a) anthracene	12.2	U
218-01-9-----	chrysene	12.2	U
205-99-2-----	benzo (b) fluoranthene	12.2	U
207-08-9-----	benzo (k) fluoranthene	12.2	U
50-32-8-----	benzo (a) pyrene	12.2	U
193-39-5-----	indeno (1,2,3-cd) pyrene	12.2	U
53-70-3-----	dibenz (a,h) anthracene	12.2	U
191-24-2-----	benzo (g,h,i) perylene	12.2	U

FORM I SV-1

OLM03.0

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DATA VALIDATION

841312

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA07W

Matrix: (soil/water) WATER Lab Sample ID: 9902817-06

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1Y413

Level: (low/med) LOW Date Received: 02/21/99

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

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

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

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

71-43-2-----benzene	0.66	J	119 ↓
108-88-3-----toluene	8.5		
100-41-4-----ethylbenzene	3.7		
75-71-8-----xylenes (total)	23.0		

FORM I VOA

OLM03.0

EPA SAMPLE NO.

841312

Lab Code: NA

Case No.: NA

SAS No.: NA

SDG No.: FSA07W

Lab Sample ID: 9902817-09

Sample wt/vol: 800.0 (g/mL) ML

Lab File ID: 8K114

Level: (low/med) LOW

Date Received: 02/21/99

% Moisture: _____ decanted: (Y/N) _____ Date Extracted: 03/08/99

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 03/09/99

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

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

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

Q

91-20-3-----	naphthalene	12.5	U
91-58-7-----	2-chloronaphthalene	12.5	U
208-96-8-----	acenaphthylene	12.5	U
83-32-9-----	acenaphthene	12.5	U
86-73-7-----	fluorene	12.5	U
85-01-8-----	phenanthrene	12.5	U
120-12-7-----	anthracene	12.5	U
206-44-0-----	fluoranthene	12.5	U
129-00-0-----	pyrene	12.5	U
56-55-3-----	benzo(a)anthracene	12.5	U
218-01-9-----	chrysene	12.5	U
205-99-2-----	benzo(b)fluoranthene	12.5	U
207-08-9-----	benzo(k)fluoranthene	12.5	U
50-32-8-----	benzo(a)pyrene	12.5	U
193-39-5-----	indeno(1,2,3-cd)pyrene	12.5	U
53-70-3-----	dibenz(a,h)anthracene	12.5	U
191-24-2-----	benzo(g,h,i)perylene	3.9	J

$US A \partial 1$
 $\downarrow$
 $US P O 2, A \partial 1$
 $\downarrow$
 $US A \partial 1$
 $\downarrow$
 J

FORM I SV-1

OLM03.0

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DATA VALIDATION

841412

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA07W

Matrix: (soil/water) WATER Lab Sample ID: 9902817-07

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1Y414

Level: (low/med) LOW Date Received: 02/21/99

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

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

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

CAS NO.

COMPOUND

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

Q

71-43-2-----benzene	2.0	U	U
108-88-3-----toluene	2.2		U
100-41-4-----ethylbenzene	0.93	J	U
75-71-8-----xylenes (total)	5.2		U

FORM I VOA

OLM03.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841412

Lab Name: GENERAL ENGINEERING LABOR Contract: NA
 Lab Code: NA Case No.: NA SAS No.: NA SDG No.: PSA10W
 Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9902839-01
 Sample wt/vol: 870.0 (g/mL) ML Lab File ID: 7I709
 Level: (low/med) LOW Date Received: 02/22/99
 % Moisture: _____ decanted: (Y/N) _____ Date Extracted: 02/24/99
 Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 02/28/99
 Injection Volume: 1.0 (uL) Dilution Factor: 4.0
 GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	-----naphthalene	46.0	U
91-58-7	-----2-chloronaphthalene	46.0	U
208-96-8	-----acenaphthylene	46.0	U
83-32-9	-----acenaphthene	46.0	U
86-73-7	-----fluorene	46.0	U
85-01-8	-----phenanthrene	46.0	U
120-12-7	-----anthracene	46.0	U
206-44-0	-----fluoranthene	46.0	U
129-00-0	-----pyrene	46.0	U
56-55-3	-----benzo (a) anthracene	46.0	U
218-01-9	-----chrysene	46.0	U
205-99-2	-----benzo (b) fluoranthene	46.0	U
207-08-9	-----benzo (k) fluoranthene	46.0	U
50-32-8	-----benzo (a) pyrene	4.5	J
193-39-5	-----indeno (1,2,3-cd) pyrene	46.0	U
53-70-3	-----dibenz (a,h) anthracene	46.0	U
191-24-2	-----benzo (g,h,i) perylene	46.0	U

FORM I SV-1

OLM03.0

**GROUNDWATER ANALYTICAL DATA
OBTAINED DURING UST 79
CLOSURE ACTIVITIES
(July 1996)**

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ECOSYS

LABORATORY SERVICES

ANALYTICAL REPORT

1412 Oakbrook Drive
Suite 105
Norcross, Georgia 30093
Phone (770) 368-0636
Fax (770) 368-0806

USACE-SAD
Blaisdell Willis
611 South Cobb Drive
Marietta, GA 30060
P: 919-5270 F: 919-4977

Client Code 29112130
Ledger Number 107984
P.O. Number
Date Received 07/24/96
Time Received 10:31
Reporting Date 08/12/96

Lab Sample ID AB36325
Project # 4024
Project Name FT. STEWART
Sampling Date/Time 07/18/96 16:05

Client Site # 29566
Client Sample # TK79-GW

METHOD	ANALYTE	TEST CODE	RESULT	MDL	UNITS	Dilution Factor	CAS #	ANALYST	DATE OF ANALYSIS
Sample Comment This sample contains 0.2% TOTAL SOLIDS. Results are reported on a wet weight basis.									
SEMI (GC/MS) WATER									
					Prep Date 08/01/96		Batch 0801960004		
8270B	PHENOL	\$06113	Below MDL	100	ug/L	10.0	108-95-2	GC	08/01/96
B	BIS(2-CHLOROETHYL) ETHER	\$06113	Below MDL	100	ug/L	10.0	111-44-4	GC	08/01/96
8270B	2-CHLOROPHENOL	\$06113	Below MDL	100	ug/L	10.0	95-57-8	GC	08/01/96
8270B	1,3-DICHLOROBENZENE	\$06113	Below MDL	100	ug/L	10.0	541-73-1	GC	08/01/96
8270B	1,4-DICHLOROBENZENE	\$06113	Below MDL	100	ug/L	10.0	106-46-7	GC	08/01/96
8270B	1,2-DICHLOROBENZENE	\$06113	Below MDL	100	ug/L	10.0	95-50-1	GC	08/01/96
8270B	BIS(2-CHLOROISOPROPYL) ETHER	\$06113	Below MDL	100	ug/L	10.0	108-60-1	GC	08/01/96
8270B	2-METHYLPHENOL	\$06113	Below MDL	100	ug/L	10.0	95-48-7	GC	08/01/96
8270B	4-METHYLPHENOL	\$06113	Below MDL	100	ug/L	10.0	105-44-5	GC	08/01/96
8270B	N-NITROSODI-N-PROPYLAMINE	\$06113	Below MDL	100	ug/L	10.0	621-64-7	GC	08/01/96
8270B	HEXACHLOROETHANE	\$06113	Below MDL	100	ug/L	10.0	67-72-1	GC	08/01/96
8270B	NITROBENZENE	\$06113	Below MDL	100	ug/L	10.0	98-95-3	GC	08/01/96
8270B	ISOPHORONE	\$06113	Below MDL	100	ug/L	10.0	78-59-1	GC	08/01/96
8270B	2-NITROPHENOL	\$06113	Below MDL	200	ug/L	10.0	88-75-5	GC	08/01/96
8270B	2,4-DIMETHYLPHENOL	\$06113	Below MDL	100	ug/L	10.0	105-67-9	GC	08/01/96
8270B	BIS(2-CHLOROETHOXY)METHANE	\$06113	Below MDL	100	ug/L	10.0	111-91-1	GC	08/01/96
8270B	2,4-DICHLOROPHENOL	\$06113	Below MDL	100	ug/L	10.0	120-83-2	GC	08/01/96
8270B	1,2,4-TRICHLOROBENZENE	\$06113	Below MDL	100	ug/L	10.0	120-82-1	GC	08/01/96
8270B	NAPHTHALENE	\$06113	196	100	ug/L	10.0	91-20-3	GC	08/01/96
8270B	4-CHLOROANILINE	\$06113	Below MDL	100	ug/L	10.0	106-47-8	GC	08/01/96
8270B	HEXACHLOROBUTADIENE	\$06113	Below MDL	100	ug/L	10.0	87-68-3	GC	08/01/96
8270B	4-CHLORO-3-METHYLPHENOL	\$06113	Below MDL	100	ug/L	10.0	59-50-7	GC	08/01/96
8270B	2-METHYLNAPHTHALENE	\$06113	803	100	ug/L	10.0	91-57-6	GC	08/01/96
7B	HEXACHLOROCYCLOPENTADIENE	\$06113	Below MDL	100	ug/L	10.0	77-47-4	GC	08/01/96
JB	2,4,6-TRICHLOROPHENOL	\$06113	Below MDL	100	ug/L	10.0	88-06-2	GC	08/01/96
8270B	2,4,5-TRICHLOROPHENOL	\$06113	Below MDL	100	ug/L	10.0	95-95-4	GC	08/01/96
8270B	2-CHLORONAPHTHALENE	\$06113	Below MDL	100	ug/L	10.0	91-58-7	GC	08/01/96

Lab Sample ID AB36325
 Project # 4024
 Project Name FT. STEWART
 Sampling Date/Time 07/18/96 16:05

Client Site # 29566
 Client Sample # TK79-GW

METHOD	ANALYTE	TEST CODE	RESULT	MDL	UNITS	Dilution Factor	CAS #	ANALYST	DATE
Sample Comment This sample contains 0.2% TOTAL SOLIDS. Results are reported on a wet weight basis.									
SEMI (GC/MS) WATER									
				Prep Date 08/01/96			Batch 0801960004		
8270B	2-NITROANILINE	\$06113	Below MDL	100	ug/L	10.0	88-74-4	GC	08/01/96
8270B	DIMETHYL PHTHALATE	\$06113	Below MDL	100	ug/L	10.0	131-11-3	GC	08/01/96
8270B	ACENAPHTHYLENE	\$06113	Below MDL	100	ug/L	10.0	208-96-8	GC	08/01/96
8270B	2,6-DINITROTOLUENE	\$06113	Below MDL	100	ug/L	10.0	606-20-2	GC	08/01/96
8270B	3-NITROANILINE	\$06113	Below MDL	100	ug/L	10.0	99-09-2	GC	08/01/96
8270B	ACENAPHTHENE	\$06113	Below MDL	100	ug/L	10.0	83-32-9	GC	08/01/96
8270B	2,4-DINITROPHENOL	\$06113	Below MDL	500	ug/L	10.0	51-28-5	GC	08/01/96
8270B	4-NITROPHENOL	\$06113	Below MDL	500	ug/L	10.0	100-02-7	GC	08/01/96
8270B	DIBENZOFURAN	\$06113	Below MDL	100	ug/L	10.0	132-64-9	GC	08/01/96
8270B	2,4-DINITROTOLUENE	\$06113	Below MDL	100	ug/L	10.0	121-14-2	GC	08/01/96
8270B	DIETHYL PHTHALATE	\$06113	Below MDL	100	ug/L	10.0	84-66-2	GC	08/01/96
8270B	4-CHLOROPHENYL PHENYL ETHER	\$06113	Below MDL	100	ug/L	10.0	7005-72-3	GC	08/01/96
8270B	FLUORENE	\$06113	Below MDL	100	ug/L	10.0	86-73-7	GC	08/01/96
8270B	4-NITROANILINE	\$06113	Below MDL	100	ug/L	10.0	100-01-6	GC	08/01/96
8270B	2-METHYL-4,6-DINITROPHENOL	\$06113	Below MDL	500	ug/L	10.0	534-52-1	GC	08/01/96
8270B	N-NITROSODIPHENYLAMINE	\$06113	Below MDL	100	ug/L	10.0	86-30-6	GC	08/01/96
8270B	4-BROMOPHENYL PHENYL ETHER	\$06113	Below MDL	100	ug/L	10.0	101-55-3	GC	08/01/96
8270B	HEXACHLOROBENZENE	\$06113	Below MDL	100	ug/L	10.0	118-74-1	GC	08/01/96
8270B	PENTACHLOROPHENOL	\$06113	Below MDL	500	ug/L	10.0	87-86-5	GC	08/01/96
8270B	PHENANTHRENE	\$06113	184	100	ug/L	10.0	85-01-8	GC	08/01/96
8270B	ANTHRACENE	\$06113	Below MDL	100	ug/L	10.0	120-12-7	GC	08/01/96
8270B	DI-N-BUTYL PHTHALATE	\$06113	Below MDL	100	ug/L	10.0	84-74-2	GC	08/01/96
8270B	FLUORANTHENE	\$06113	Below MDL	100	ug/L	10.0	206-44-0	GC	08/01/96
8270B	PYRENE	\$06113	Below MDL	100	ug/L	10.0	129-00-0	GC	08/01/96
8270B	BUTYL BENZYL PHTHALATE	\$06113	Below MDL	100	ug/L	10.0	85-68-7	GC	08/01/96
8270B	3,3'-DICHLORO BENZIDINE	\$06113	Below MDL	100	ug/L	10.0	91-94-1	GC	08/01/96
8270B	BENZO(A)ANTHRACENE	\$06113	Below MDL	100	ug/L	10.0	56-55-3	GC	08/01/96
8270B	BIS(2-ETHYLHEXYL) PHTHALATE	\$06113	Below MDL	200	ug/L	10.0	117-81-7	GC	08/01/96
8270B	CHRYSENE	\$06113	Below MDL	100	ug/L	10.0	218-01-9	GC	08/01/96
8270B	DI-N-OCTYL PHTHALATE	\$06113	Below MDL	100	ug/L	10.0	117-84-0	GC	08/01/96
8270B	BENZO(B)FLUORANTHENE	\$06113	Below MDL	100	ug/L	10.0	205-99-2	GC	08/01/96
8270B	BENZO(K)FLUORANTHENE	\$06113	Below MDL	100	ug/L	10.0	207-08-9	GC	08/01/96
8270B	BENZO(A)PYRENE	\$06113	Below MDL	100	ug/L	10.0	50-32-8	GC	08/01/96
8270B	INDENO(1,2,3-CD)PYRENE	\$06113	Below MDL	100	ug/L	10.0	193-39-5	GC	08/01/96
8270B	DIBENZO(A,H)ANTHRACENE	\$06113	Below MDL	100	ug/L	10.0	53-70-3	GC	08/01/96
8270B	BENZO(G,H,I)PERYLENE	\$06113	Below MDL	100	ug/L	10.0	191-24-2	GC	08/01/96
8270B	2-FLUOROPHENOL (SURR)	\$06113	38	%	REC	1.0	367-12-4	GC	08/01/96
8270B	PHENOL-D5 (SURR)	\$06113	25	%	REC	1.0	13127-88-3	GC	08/01/96
8270B	NITROBENZENE-D5 (SURR)	\$06113	76	%	REC	1.0	4165-60-0	GC	08/01/96
8270B	2-FLUOROBIPHENYL (SURR)	\$06113	74	%	REC	1.0	321-60-8	GC	08/01/96
8270B	2,4,6-TRIBROMOPHENOL (SURR)	\$06113	119	%	REC	1.0	118-79-6	GC	08/01/96
8270B	TERPHENYL-D14 (SURR)	\$06113	120	%	REC	1.0	1718-51-0	GC	08/01/96
8270B	CARBAZOLE	\$06113	Below MDL	100	ug/L	10.0	86-74-8	GC	08/01/96
BTX (GC) WATER									
				Prep Date 08/01/96			Batch 073096BS		

Lab Sample ID AB36325
 Project # 4024
 Project Name FT. STEWART
 Sampling Date/Time 07/18/96 16:05

Client Site # 29566
 Client Sample # TK79-GW

METHOD	ANALYTE	TEST CODE	RESULT	MDL	UNITS	Dilution Factor	CAS #	ANALYST	DATE OF ANALYSIS
Sample Comment This sample contains 0.2% TOTAL SOLIDS. Results are reported on a wet weight basis.									
BTEX (GC) WATER									
					Prep Date 08/01/96		Batch 073096BS		
8020A	BENZENE	\$08106	130	10	ug/L	10.0	71-43-2	DTA	08/01/96
8020A	TOLUENE	\$08106	420	10	ug/L	10.0	108-88-8	DTA	08/01/96
8020A	ETHYLBENZENE	\$08106	120	10	ug/L	10.0	100-41-4	DTA	08/01/96
8020A	XYLENES (TOTAL)	\$08106	730	10	ug/L	10.0	1330-20-7	DTA	08/01/96
8020A	A,A,A-TRIFLUOROTOLUENE (SURR)	\$08106	106	%	REC	1.0	98-08-8	DTA	08/01/96
8020A	4-BROMOFLUOROBENZENE (SURR)	\$08106	107	%	REC	1.0	460-00-4	DTA	08/01/96
8020A	CHLOROBENZENE	\$08106	Below MDL	10	ug/L	10.0	108-90-7	DTA	08/01/96
8020A	1,2-DICHLOROBENZENE	\$08106	Below MDL	10	ug/L	10.0	95-50-1	DTA	08/01/96
8020A	1,3-DICHLOROBENZENE	\$08106	Below MDL	10	ug/L	10.0	541-73-1	DTA	08/01/96
8020A	1,4-DICHLOROBENZENE	\$08106	Below MDL	10	ug/L	10.0	106-46-7	DTA	08/01/96
8020A	TERT-METHYLBUTYL ETHER	\$08106	110	10	ug/L	10.0	1634-04-4	DTA	08/01/96
					Prep Date 07/25/96		Batch 072596		
160.3	% TOTAL SOLID SOIL (N/C)	09099	0.2	0.1	%	1.0		NM	07/25/96

Lab Sample ID AB36326
 Project # 4024
 Project Name FT. STEWART
 Sampling Date/Time 07/18/96 16:20

Client Site # 29567
 Client Sample # TRIP BLANK

METHOD	ANALYTE	TEST CODE	RESULT	MDL	UNITS	Dilution Factor	CAS #	ANALYST	DATE OF ANALYSIS
BTEX (GC) WATER									
					Prep Date 08/01/96		Batch 073096BS		
8020A	BENZENE	\$08106	Below MDL	1.0	ug/L	1.0	71-43-2	DTA	08/01/96
8020A	TOLUENE	\$08106	Below MDL	1.0	ug/L	1.0	108-88-8	DTA	08/01/96
8020A	ETHYLBENZENE	\$08106	Below MDL	1.0	ug/L	1.0	100-41-4	DTA	08/01/96
8020A	XYLENES (TOTAL)	\$08106	Below MDL	1.0	ug/L	1.0	1330-20-7	DTA	08/01/96
8020A	A,A,A-TRIFLUOROTOLUENE (SURR)	\$08106	100	%	REC	1.0	98-08-8	DTA	08/01/96
8020A	4-BROMOFLUOROBENZENE (SURR)	\$08106	102	%	REC	1.0	460-00-4	DTA	08/01/96
8020A	CHLOROBENZENE	\$08106	Below MDL	1.0	ug/L	1.0	108-90-7	DTA	08/01/96
8020A	1,2-DICHLOROBENZENE	\$08106	Below MDL	1.0	ug/L	1.0	95-50-1	DTA	08/01/96
8020A	1,3-DICHLOROBENZENE	\$08106	Below MDL	1.0	ug/L	1.0	541-73-1	DTA	08/01/96
8020A	1,4-DICHLOROBENZENE	\$08106	Below MDL	1.0	ug/L	1.0	106-46-7	DTA	08/01/96
8020A	TERT-METHYLBUTYL ETHER	\$08106	Below MDL	1.0	ug/L	1.0	1634-04-4	DTA	08/01/96

6/12/2016

16749

**ANDERSON COLUMBIA
ENVIRONMENTAL, INC.
CHIEF OF CUSTODY RECORD**

Page 7 of 7

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(26 # 73910

APPENDIX IX

**EXCAVATION OF CONTAMINATED SOIL
AND SUPPORTING MANIFESTS**

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All contaminated soil removed during the entire project (i.e., all USTs removed under contract with ACE, to include clean and non-clean closures) was tested in accordance with the disposal facility requirements and transported to Kedesh, Inc., Highway 84, Ludowici, GA, 31316. The Closure Report was not submitted to GA EPD because review of the closure analytical data indicated that a CAP-Part A would be required (i.e., per requirements of GUST-9, Item 15, page 12, dated August 1995). However, all pertinent information (i.e., copies of analytical data, manifests and maps) are provided in this CAP-Part A report. Disposal manifests for the UST 79 site were submitted to GAEPD USTMP in September 1998 with the UST 207A (Facility ID #9-089039) Closure Report response to comments correspondence (Perez 1998). Approximately 38.6 tons of contaminated soil was excavated from the site.

I certify that the above information is true and accurate.

Name: Thomas C. Fry

Title: Acting Chief, ENRD

Signature: Thomas C. Fry

Date: 10/29/99

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DEPARTMENT OF THE ARMY
HEADQUARTERS, 3D INFANTRY DIVISION (MECHANIZED) AND FORT STEWART
Directorate of Public Works
1557 Frank Cochran Drive
Fort Stewart, Georgia 31314-4928

M.L.

SEP 15 1998

REPLY TO
ATTENTION OF

Directorate of Public Works

CERTIFIED MAIL

E-098-024-167

Georgia Department of Natural Resources
Environmental Protection Division
Underground Storage Tank Management Program
Attention: Mr. William Logan, Environmental Specialist
4244 International Parkway, Suite 104
Atlanta, Georgia 30354

Dear Mr. Logan:

Fort Stewart is pleased to receive the Georgia Environmental Protection Division's correspondence dated August 14, 1998, in reference to the Closure Report submitted for Fort Stewart's former Underground Storage Tank (UST) #207A, Building 230, Facility Identification Number 9089039. As requested in that correspondence, the April 3, 1998 Closure Report Addendum should be amended to include the enclosed manifests for Anderson Columbia Environmental Delivery Order 101, which are provided for your use and convenience. These manifests include additional UST sites (as shown on the attached list). A total of 45 USTs were removed under this delivery order. In addition, this delivery order removed dispensing islands (note included on the provided list) from another 22 sites, for a total of 67 sites as noted in the Closure Report Addendum.

If you have any questions or comments, please contact Ms. Melanie Little or Ms. Tressa Rutland, Directorate of Public Works, Environmental Branch, at (405) 364-8461 or (912) 767-7919, respectively.

Sincerely,

for *Hale F. Kiefer*
Ovidio E. Perez
Colonel, U.S. Army
Director, Public Works

Enclosure

FORT STEWART UST Removal List for FY 1996

Anderson Columbia Delivery Order #101

<u>TANK #</u>	<u>LOCATION</u>	<u>SIZE</u>	<u>FACILITY ID #</u>
2	Bldg 1840: Diesel	25,000	9-089065
3	Bldg 1850: Mogas	5,000	9-089065
4	Bldg 1840: Waste Oil	2,500	9-089065
4A	Bldg 1840: Waste Oil	1,000	9-089065
5	Bldg 1824: Mogas	6,000	9-089066
6	Bldg 1824: Diesel	25,000	9-089066
22	Bldg 1720: Waste Oil	2,000	9-089011
24	Bldg 1720: Waste Oil	2,000	9-089011
28B	Bldg 1720: Waste Oil	2,000	9-089011
38	Bldg 1510/13: Waste Oil	1,000	9-089109
41	Bldg 1542: Waste Oil	1,000	9-089145
45	Bldg 1172: Waste Oil	500	9-089054
56	Bldg 1056: Waste Oil	2,000	9-089116
65	Bldg 927: Mogas	10,000	9-089091
66	Bldg 967: Diesel	10,000	9-089091
71	Bldg 1203: Waste Oil	1,000	9-089022
71A	Bldg 1260: Waste Oil	1,000	9-089023
74	Bldg 1280: Waste Oil	2,500	9-089072
79	Bldg 1224: Waste Oil	1,000	9-089026
87	Bldg 1245: Diesel	5,000	9-089073
88	Bldg 1245: Diesel	5,000	9-089073
93	Bldg 1330: Waste Oil	2,500	9-089112
94	Bldg 1320/23: Waste Oil	1,000	9-089076
94B	Bldg 1339: Waste Oil	1,000	9-089110
94C	Bldg 1339A: Waste Oil	1,000	9-089110
100A	Bldg 1349: Waste Oil	1,000	9-089080
100B	Bldg 1350: Waste Oil	1,000	9-089081
201A	Bldg 260: Waste Oil	1,000	9-089043
201B	Bldg 260: Waste Oil	1,000	9-089043
207	Bldg 232: Waste Oil	500	9-089038
207A	Bldg 230: Waste Oil	2,500	9-089039
214	Bldg 1503: Waste Oil	550	9-089015
215	Bldg 1503: Waste Oil	500	9-089015
216	Bldg 4502: Waste Oil	1,000	9-089060
224	Bldg 4528: Waste Oil	1,000	9-089063
225	Bldg 4529: Waste Oil	1,000	9-089090
238	Bldg 4586: Waste Oil	1,000	9-089044
241	Bldg 241: Waste Oil	2,000	9-089041
242	Bldg 241: Waste Oil	1,000	9-089041
243	Bldg 241: Waste Oil	1,000	9-089041
244	Bldg 241: Waste Oil	1,000	9-089041
261	Bldg 430 (AAFES):Waste Oil	500	9-089118
115	Bldg 15003 Em. Gen: Diesel	250	9-054005
118	Bldg 1239 Em. Gen: Diesel	1,000	9-089070
123	Bldg 933 Em. Gen: Diesel	1,000	9-089092

REYNOLDS CONSTRUCTION COMPANY

Highway 84 • P. O. Box 749
Ludowici, Georgia 31316
Office (912) 368-7488 • Plant (912) 876-8085

Date _____ 19____ Load No. 18
Customer Triple "R" Mgt. Description RRS
Project Number RRR 104
Location Ft. Stewart County Liberty

38420 lb Net

21260 lb Tare

59680 lb+ Gross

01:12 PM AU 12 96

Chub
Signature of Weigher

TONS:

19.21

TOTAL TONS:

368.15

TRUCKER

Hendrix

TRUCK NO.

43

DRIVER

Shemie Grubbs

TICKET NO.

58842

VIP-1518-HV

NON-HAZARDOUS WASTE MANIFEST		Manifest Document No. 09019	1. Page 1 of 1	
2. Generator's Name and Mailing Address Ft. Stewart Hinesville, GA 31313				
3. Generator's Phone (912) 234-6579				
4. Transporter 1 Company Name Hendricks Hauling				
5. Transporter 2 Company Name				
6. Designated Facility Name and Site Address c/o Triple R Management, Inc. Reynolds Constr Co. Rt. 84 Ludowici, GA 31316			A. Transporter's Phone	
			B. Transporter's Phone 912-427-6758	
			C. Facility's Phone 912-756-3655	
7. Waste Shipping Name and Description			8. Containers	
			No.	Type
a. Petroleum Contaminated Soil			1	TT
b.				
c.				
d.				
D. Additional Descriptions for Materials Listed Above			E. Handling Codes for Wastes Listed Above	
11. Special Handling Instructions and Additional Information 8101 Tank # 79				
12. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.				
Printed/Typed Name Tom C. Fry		Signature Tom C. Fry		Month Day Year 10/06/96
13. Transporter 1 Acknowledgement of Receipt of Materials				
Printed/Typed Name Sherrie A. Cribb		Signature Sherrie A. Cribb		Month Day Year 10/01/96
14. Transporter 2 Acknowledgement of Receipt of Materials				
Printed/Typed Name Steve Charles Pruitt		Signature Charles Pruitt		Month Day Year 10/01/96
15. Discrepancy Indication Space				
16. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.				
Printed/Typed Name		Signature		Month Day Year

GENERATOR

TRANSPORTER

FACILITY

IX-8

ORIGINAL - RETURN TO GENERATOR

REYNOLDS CONSTRUCTION COMPANY

Highway 84 • P. O. Box 749

Ludowici, Georgia 31316

Office (912) 368-7488 • Plant (912) 876-8085

Date 12 19 19 Load No. 1819
Customer Triple 'R' Mgt Description PCS
Project Number RRR 104
Location Stewart County Liberty

38780 lb Net

21260 lb Tare

60040 lb+ Gross

01:44 PM AU 12 96

Signature of Weigher Chels

TONS:

17.39

TOTAL TONS:

588.54
388.54

TRUCKER

DRIVER

TRUCK NO.

TICKET NO.

49

58843

VIP-1518-HV

NON-HAZARDOUS WASTE MANIFEST		Manifest Document No. 00020	1. Page 1 of 1
2. Generator's Name and Mailing Address Ft. Stewart Hinesville, GA 31313			
3. Generator's Phone (912) 234-6579			
4. Transporter 1 Company Name Hendricks Hauling			
5. Transporter 2 Company Name			
6. Designated Facility Name and Site Address Triple R Management, INC. Reynolds Constr Co. Rt. 84 C/O Ludowici, GA 31316		A. Transporter's Phone B. Transporter's Phone 912-427-6758 C. Facility's Phone 912-756-3655	
7. Waste Shipping Name and Description		8. Containers	9. Total Quantity
		No.	Type
a. Petroleum Contaminated Soil		1	TT
b.			
c.			
d.			
D. Additional Descriptions for Materials Listed Above		E. Handling Codes for Wastes Listed Above	
11. Special Handling Instructions and Additional Information 8101 Tank # 79			
12. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste			
Printed/Typed Name Tom C. Fry		Signature Tom C. Fry	
13. Transporter 1 Acknowledgement of Receipt of Materials		Month Day Year 08 06 96	
Printed/Typed Name Gregory A. Johnson		Signature Gregory A. Johnson	
14. Transporter 2 Acknowledgement of Receipt of Materials		Month Day Year 08 02 96	
Printed/Typed Name		Signature	
15. Discrepancy Indication Space		Month Day Year	
16. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.			
Printed/Typed Name		Signature	
		Month Day Year 08 12 96	

IX-10

ORIGINAL - RETURN TO GENERATOR

APPENDIX X
SITE RANKING FORM

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Based on 10 years of historical leaking underground fuel tank case studies by the California Environmental Protection Department (CA EPD 1995), it has been determined that the geometry of a groundwater contamination plume from a UST leak tends to change slowly with time. In general, the length of the plume changes slowly, rarely exceed 250 feet, and tends to stabilize at a relatively short distance from the source of the contaminant release. The mass of the plume tends to decrease more rapidly than the plume length decreases. Active remediation may help reduce benzene concentrations in a groundwater plume; however, a significant reduction in benzene concentrations can occur with time, even without active remediation.

During this case analysis by the California Environmental Protection Department, the proposed plume life cycle consisted of four phases as described in Table 1. Using this methodology for the UST sites at Fort Stewart CAP-Part A investigations, the USTs fall into the Phase III category because the active source of contamination has been removed from the site. As a result the mass of the groundwater plume is being reduced by passive bioremediation.

At the UST 79 site, the groundwater plume mass is being reduced through passive bioremediation, so the plume's length is slowly decreasing while the mass is rapidly decreasing. Due to the passive bioremediation taking place at the UST 79 site and the life cycle phase of the site, Fort Stewart believes that the CAP-Part A analytical results are more indicative of present site conditions and should be used in the decision making process in lieu of the UST closure analytical results. However, for your use and convenience, the environmental site ranking scores have been presented in this appendix, based on both closure groundwater data and CAP-Part A groundwater with the CAP-Part A soil data, because there were no soil samples collected during closure activities.

Table 1. Summary of the phases of a UST groundwater plume life cycle

Life Cycle Stage	Characteristics
Phase I	• an active fuel hydrocarbon source is present • free product is in contact with the groundwater • fuel hydrocarbons dissolve into the groundwater • dissolved fuel hydrocarbons are transported down gradient • growth phase of the groundwater plume
Phase II	• a zone of fuel hydrocarbon passive bioremediation is established • the fuel hydrocarbon mass contributed to the plume from the active source is removed in the passive bioremediation zone • removal is due to the digestion of fuel hydrocarbons by subsurface microorganisms • the groundwater plume stops growing
Phase III	• the active source is depleted or removed • the length of groundwater plume slowly decreases • the contaminant mass decreases rapidly due to either active or passive remediation, or both • fuel hydrocarbons sorbed onto the soil particulates tend to inhibit changes in the plume length because as the groundwater concentrations of fuel hydrocarbons decrease, the soils will desorb fuel hydrocarbons slowly back into the groundwater
Phase IV	• considered an "exhausted plume" • the plume mass reaches a relatively low residual mass • insignificant temporal changes in length and mass • average plume concentrations not significantly greater than 1 µg/L • passive bioremediation will continue at a slower rate because the fuel hydrocarbon food source has been diminished • active remediation is not cost effective at this point.

Source: CA EPD 1995

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SITE RANKING FORM

Facility Name: UST 79, Building 1224

Ranked by: S. Stoller

County: Liberty Facility ID #: 9-089026

Date Ranked: 8/9/99

SOIL CONTAMINATION (based on CAP-Part A soil data)

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. 50) + (B. 10) = (60) x (C. 10) = (D. 600)

GROUNDWATER CONTAMINATION (based on CAP-Part A groundwater data)

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

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

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

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

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

Facility Name: UST 79, Building 1224 County: Liberty Facility ID #: 9-089026

POTENTIAL RECEPTORS (MUST BE FIELD-VERIFIED)

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

H. Public Water Supply

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

* ☒ > 2 mi = 0

For lower susceptibility areas only:

- ☐ >1 mi = 0

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

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

I. Non-Public Water Supply

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

☒ >½ mi = 0

For lower susceptibility areas only:

- ☐ >¼ mi = 0

J. Distance from nearest Contaminant Plume boundary to downgradient Surface Waters OR UTILITY TRENCHES & VAULTS (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) × (L. 50) = M. 250

(M. 250) + (D. 600) = N. 850

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. 850) × (P. 1) = (850) + (Q. 0)

= 850 (based on CAP-Part A soil data and CAP-Part A groundwater data)
ENVIRONMENTAL SENSITIVITY SCORE

SITE RANKING FORM

Facility Name: UST 79, Building 1224

Ranked by: S. Stoller

County: Liberty Facility ID #: 9-089026

Date Ranked: 8/9/99

SOIL CONTAMINATION (based on CAP-Part A soil data)

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. 50) + (B. 10) = (60) x (C. 10) = (D. 600)

GROUNDWATER CONTAMINATION (based on closure groundwater data)

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

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

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

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

Fill in the blanks: (E. 0) + (F. 50) = (G. 50)

Facility Name: UST 79, Building 1224 County: Liberty Facility ID #: 9-089026

POTENTIAL RECEPTORS (MUST BE FIELD-VERIFIED)

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

H. Public Water Supply

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

- * ☒ > 2 mi = 0
For lower susceptibility areas only:
☐ >1 mi = 0

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

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

I. Non-Public Water Supply

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

- ☒ >½ mi = 0
For lower susceptibility areas only:
☐ >¼ mi = 0

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

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

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

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

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

(G. 50) x (L. 50) = M. 2500

(M. 2500) + (D. 600) = N. 3100

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. 3100) x (P. 1) = (3100) + (Q. 0)

= 3100 (based on CAP-Part A soil data and closure groundwater data)
ENVIRONMENTAL SENSITIVITY SCORE

ADDITIONAL GEOLOGIC AND HYDROLOGIC DATA

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

1.0 REGIONAL AND LOCAL GEOLOGY

Fort Stewart is located within the coastal plain physiographic province. This province is typified by nine southeastward dipping strata that increase in thickness from 0 feet at the fall line located approximately 150 miles inland from the Atlantic coast, to approximately 4,200 feet at the coast. State geologic records describe a probable petroleum exploration well (the No. 1 Jelks-Rogers) located in the region as encountering crystalline basement rocks at a depth of 4254 feet BGS. This well provides the most complete record for Cretaceous, Tertiary, and Quaternary sedimentary strata in the region.

The Cretaceous section was found to be approximately 1970 feet thick and dominated by clastics. The Tertiary section was found to be approximately 2170 feet thick and dominated by limestone with a 175-foot-thick cap of dark green phosphatic clay. This clay is regionally extensive and is known as the Hawthorn Group. The interval from approximately 110 feet to the surface is Quaternary in age and composed primarily of sand with interbeds of clay or silt. This section is undifferentiated into separate formations (Herrick and Vochis 1963).

State geologic records contain information regarding a well drilled in October 1942, 1.8 miles north of Flemington at Liberty Field of Camp Stewart (now known as Fort Stewart). This well is believed to be an artesian well located approximately one-quarter mile north of the runway at Wright Army Airfield within the Fort Stewart Military Reservation. The log for this well describes a 410-foot section, the lowermost 110 feet of which consisted predominantly of limestone sediments, above which 245 feet of dark green phosphatic clay typical of the Hawthorn Group was encountered. The uppermost portion of the section was found to be Quaternary-age interbedded sands and clays. The top 15 feet of these sediments were described as sandy clay (Herrick and Vochis 1963).

The surface soil located throughout the Fort Stewart garrison area consists of Stilson loamy sand. The surface layer of this soil is typically dark grayish-brown loamy sand measuring approximately 6 inches in depth. The surface layer is underlain by material consisting of pale yellow loamy sand and extends to a depth of approximately 29 inches. The subsoil is dominantly sandy clay loam and extends to a depth of 72 inches or more (Herrick and Vochis 1963).

2.0 REGIONAL AND LOCAL HYDROGEOLOGY

The hydrogeology in the vicinity of Fort Stewart is dominated by two aquifers referred to as the Principal Artesian and the surficial aquifers. The Principal Artesian aquifer is the lowermost hydrologic unit and is regionally extensive from South Carolina through Georgia, Alabama, and most of Florida. Known elsewhere as the Floridan, this aquifer is composed primarily of Tertiary-age limestone, including the

Bug Island Formation, the Ocala Group, and the Suwannee Limestone. These formations are approximately 800 feet thick, and groundwater from this aquifer is used primarily for drinking water (Arora 1984).

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

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

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

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

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

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

APPENDIX XI
PUBLIC NOTIFICATION

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

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

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

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

That he has reviewed the regular editions of the Savannah Morning News/Savannah Evening Press, published on 6-27, 1999, 7-4, 1999, , 1999, , 1999, and finds that the following Advertisement, to-wit:

015 Miscellaneous Notices

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

The Georgia EPD (GEPD) has required Fort Stewart Directorate of Public Works to prepare a Corrective Action Plan Part-A to investigate and/or clean up contamination at the underground storage tank sites listed at the end of this notification. These plans will be submitted to the GEPD on or before September 30, 1999. If you want

to examine a copy of one or more of the plans, please contact Commander, 3rd Infantry Division (Mechanized) and Fort Stewart, attn: DPW ENRD ENV. Br. (T. Rutland), 1557 Frank Cochran, Fort Stewart, Ga. 31314-4928. A copy will be mailed at a nominal fee. Comments to the plan will be accepted until October 31, 1999, and should be directed to GEPD at 404-342-2687. Following is the mailing address: GEPD USTAMP, 4244 International Parkway, Suite 104, Atlanta, Ga. 30354. Fort Stewart CAP - Part A and Part B Underground Storage Tank Sites: UST; ~~Ballistics~~ Facility IDs 2 & 3, 184a, 9-089065 5 & 6, 184a, 9-089066

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

appeared in each of said editions.

Lynnette Tuck
(Deponent)

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

Julie D. Ray
Notary Public, Chatham County, Georgia

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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 79, Building 1224, Facility ID #9-089026, using Department of Defense Environmental Restoration Account Funds. Application for Georgia Underground Storage Tank Trust Fund reimbursement is not being pursued at this time.

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ATTACHMENT A
TECHNICAL APPROACH

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TECHNICAL APPROACH

1.0 INTRODUCTION

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

2.0 FIELD ACTIVITIES

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

2.1 Subsurface Soil Sampling

2.1.1 Geoprobe Drilling

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

2.1.2 Sample Collection

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

During the May and June 1998 sampling events, 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 CoreTM samplers. The samplers were locked into an En Core T-Handle. Using the T-Handle, the sampler was pushed into the soil until the coring body of the sampler was full. Once the samplers were filled, caps were locked onto them insuring that no

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

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

2.2 Groundwater Sampling

2.2.1 Groundwater Collection

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

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

Groundwater samples were collected using a peristaltic pump or a 0.75-inch diameter stainless steel bailer. The portion of the sample designated for volatile organic analysis was poured into laboratory sample containers first, followed by pouring the remaining sample portion into containers designated for other types of chemical analyses. Sample containers designated for volatile organic analysis were filled so that no headspace was present in the containers.

2.2.2 Field Measurements

Groundwater field measurements performed during the project included measurement of static groundwater level, pH, specific conductance, and temperature. Measurement of groundwater levels in soil boreholes was accomplished through the installation of temporary PVC piezometers. A summary of the procedures and criteria to be used for groundwater sample field measurements is presented in the following sections.

Static Groundwater Level

Static groundwater level measurements were made using an electronic water level indicator. Initially, the indicator probe was lowered into each temporary piezometer casing until the alarm sounded and/or the indicator light illuminated. The probe was withdrawn several feet and slowly lowered again until the groundwater surface was contacted as noted by the alarm and/or indicator light. Water level measurements were estimated to the nearest 0.01 foot based on the difference between the nearest probe cord mark to the top of the piezometer casing.

The distance between the top of casing and the surrounding ground surface was taken into account in measuring the water level to within 0.01 foot. The static water level measurement procedure was repeated two or three times to ensure that the water level measurements were consistent (plus or minus 0.01 foot). If this was the case, then the first measured level was recorded as the depth to groundwater. If this was not the case, the procedure was repeated until consistent readings were obtained from three consecutive measurements.

pH, Specific Conductance, and Temperature

The pH, specific conductance, and temperature measurements were recorded for groundwater during groundwater sampling. The pH, temperature, and conductivity measurements were made using a combination meter designed to measure these parameters. A portion of each groundwater sample was retrieved from the PowerPunch sampler and poured into the collection cup. With the combination meter set in the pH mode, the meter electrode was swirled at a slow constant rate within the sample until the meter reading reached equilibrium. The sample pH was recorded to the nearest 0.1 pH unit. The pH measurement procedure was repeated, using a new sample each time, until the pH measurements were consistent (less than 0.2 pH units variation).

Upon completion of the pH measurement, conductivity and temperature measurements were made on a groundwater sample collected in the same manner as described above. With the combination meter set in the conductivity mode, the meter electrode was swirled at a slow constant rate within the sample until the meter reading reached equilibrium. Concurrently, a temperature probe was placed into the sample and allowed to reach equilibrium. The sample conductivity was recorded to the nearest 10 mmhos/cm and the temperature to the nearest 0.1° C. All recorded conductivity values were converted to conductance at 25° C. The conductivity and temperature measurement procedure was repeated a minimum of three times using a new sample each time, until the measurements were 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 drilling 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 were decontaminated once they arrived on site and the geoprobe sampling equipment was decontaminated after completion of each soil borehole. The equipment was decontaminated by removing the caked soil material from the exterior of equipment using a rod and/or brush, steam cleaning the interior and exterior of equipment, allowing the equipment to air dry as long as possible, and wrapping or covering the equipment in plastic.

2.6.2 Sampling Equipment

Decontamination of equipment used for soil sampling and collection of groundwater samples was conducted at the temporary decontamination area. Nondedicated equipment was decontaminated after each use. The sampling equipment was washed with potable water and phosphate-free detergent using various types of brushes required to remove particulate matter and surface films, followed by a potable water rinse, American Society for Testing and Materials (ASTM) Type I or equivalent water rinse, isopropyl alcohol rinse, ASTM Type I or equivalent water rinse, allowed to air dry, and wrapped in plastic or aluminum foil.

In addition to the sampling equipment, field measurement instruments were also decontaminated between uses. Only those portions of each instrument that come into contact with potentially contaminated environmental media were decontaminated. Because of the delicate nature of these instruments, the decontamination procedure only involved initial rinsing of the instrument probes with ASTM Type I or equivalent water.

2.7 Documentation of Field Activities

All information pertinent to sampling activities, including instrument calibration data, was recorded in field logbooks. The logbooks were bound and the pages consecutively numbered. Entries in the logbooks were made in black permanent ink and included, at a minimum, a description of all activities, individuals involved in drilling and sampling activities, date and time of drilling and sampling, weather conditions, any problems encountered, and all field measurements.

Sufficient information was recorded in the logbooks to permit reconstruction of all sampling activities. For a detailed description of all field documentation, see section 4.5 of Attachment IV of the Work Plan.

3.0 SAMPLE HANDLING AND ANALYSIS

3.1 Analytical Program

Soil samples were screened for the presence of volatile vapors using a MiniRae organic vapor analyzer (PID). The MiniRae was calibrated daily using 100 parts per million (ppm) isobutylene. The headspace of each sample was measured approximately 15 minutes after collection.

For sites where the UST had contained waste oil, soil samples were analyzed for BTEX by method SW846-8020, PAH by method SW846-8270, TPH by method SW846-9073, and lead by method SW846-6010/7000, during the May and June 1998 field effort. Beginning in November 1998, BTEX was analyzed using method SW846-5035/8260B, while the analyses for the other contaminants remained the same. Groundwater samples were analyzed for BTEX by method SW846-8260 and PAH by method SW 846-8270. All samples were sent to General Engineering Laboratories, Charleston, South Carolina.

For sites where the UST had contained gasoline or diesel, soil samples were analyzed for BTEX by method SW846-8020, PAH by method SW846-8270, TPH by method SW846-8015 (modified), and lead by method SW846-6010/7000. Groundwater samples were analyzed for BTEX by method SW846-8260 and PAH by method SW 846-8270. TPH analysis included both gasoline range organics (GRO) and diesel range organics (DRO). Beginning in November 1998, soil samples were analyzed for BTEX using method SW846-5035/8260B. All samples were sent to General Engineering Laboratories, Charleston, South Carolina.

Duplicate samples of soil and groundwater were collected throughout the project and represented approximately 10 percent of the total sample population. Rinsate blanks were collected to determine whether the sampling equipment was causing cross-contamination of the samples and represented approximately 5 percent of the total sample population. Duplicates and rinsates were submitted to General Engineering Laboratories, Charleston, South Carolina.

3.2 Sample Containers, Preservation, and Holding Times

The soil sample containers, preservatives, and holding times are summarized in Table A-1. The groundwater sample containers, preservatives, and holding times are summarized in Table A-2.

3.3 Sampling Packaging and Shipment

Each sample container was labeled, taped shut with electrical tape (except those containing samples designated for volatile organic analysis), and an initialed/dated custody seal was placed over the lid. Each sample bottle was placed into a separate plastic bag and sealed. The samples were placed upright in thermally insulated rigid-body coolers and surrounded by vermiculite to prevent breakage during shipment. In addition, samples were cooled to approximately 4° C with wet ice. These measures were taken to slow the decomposition and volatilization of contaminants during shipping and handling. The sample coolers were shipped to the analytical laboratory via courier service provided by the laboratory.

Table A-1. Summary of Sample Containers, Preservation Techniques, and Holding Times for Soil Samples Collected During the Site Investigation

Analyte Group	Container	Minimum Sample Size	Preservative	Holding Time
BTEX/TPH-GRO	1 – 4 oz jar with Teflon®-lined cap (no headspace)	20 g	Cool, 4°C	14 d
BTEX (beginning 11/98)	3 – En Core™ Samplers	15 g	Cool, 0°C	48 hrs
TPH-GRO (beginning 11/98)	1 – 4 oz jar with Teflon®-lined cap (no headspace)	20 g	Cool, 4°C	14 d
PAHs	1 – 8 oz jar with Teflon®-lined cap	90 g	Cool, 4°C	14 d (extraction) 40 d (analysis)
TPH-DRO	use same container as PAHs	90 g	Cool, 4°C	14 d (extraction) 40 d (analysis)
TPH	use same container as PAHs	90 g	Cool, 4°C	14 d (extraction) 40 d (analysis)
Metals (lead)	use same container as PAHs	20 g	Cool, 4°C	180 d

Table A-2. Summary of Sample Containers, Preservation Techniques, and Holding Times for Groundwater Samples Collected During the Site Investigation

Analyte Group	Container	Minimum Sample Size	Preservative	Holding Time
BTEX	2 – 40 mL glass vials with Teflon®-lined septum (no headspace)	40 mL	Cool, 4°C HCl to pH < 2	14 d
PAHs	2 – 1L amber glass bottle with Teflon®-lined lid	1000 mL	Cool, 4°C	7 d (extraction) 40 d (analysis)

ATTACHMENT B

REFERENCES

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- Perez, Ovidio E., 1998. Letter to William Logan (Georgia Department of Natural Resources, Environmental Protection Division, Underground Storage Tank Management Program) September 15, 1998.

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ATTACHMENT C
SUPPLEMENTAL INFORMATION

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1. RISK-BASED CORRECTIVE ACTION

A risk-based approach was used to aid in the decision making process to determine the need for further action at the UST 79 site. Due to the nature of the contamination (petroleum hydrocarbon contamination of groundwater), the risk-based approach was limited to human health concerns. Ecological risk concerns are negligible because of the lack of habitat available for ecological receptors as a result of the 10 to 12 inches of concrete overlying the majority of the site.

The methods for assessing human health concerns for the site were derived from GUST CAP-Part B guidance (GA EPD 1995) and recent GA EPD guidance (GA EPD 1996). These were supplemented by the additional guidance documents on risk assessment methods referenced in this section. In general, the risk-based corrective action approach is performed in two steps:

1. Results were screened against readily available regulatory levels and risk-based screening levels to identify chemicals of potential concern (COPCs).
2. Site-specific ACLs were developed for COPCs using the results of the fate and transport modeling and identified receptor locations.

The following sections present the conceptual model of the exposure setting and potential receptors as well as the general methodology employed to perform the screening for COPCs and the development of ACLs.

1.1 Potential receptor survey

The exposure assessment identifies any potentially complete pathways between the contaminant source and potential receptors. This involves identifying potential current and future receptors, release mechanisms through which contamination might come into contact with the receptors, and the routes of exposure through which the receptors might be exposed.

The UST 79 site is located within Fort Stewart, an active military installation, and within an access-controlled fence of a secured motorpool. The land use at the site is currently military industrial. In the direction of groundwater flow, a sanitary sewer and a storm drain are located approximately 110 feet and 200 feet, respectively, northwest of the site and a tributary to Mill Creek is located approximately 5000 feet northwest of the site. An industrial waterwater line is located approximately 10 feet southeast (upgradient) of the site.

No connection between site contamination and current off-site receptors has been identified. Site contamination may migrate to the surficial aquifer. The Hawthorn Group separates the surficial aquifer from the deep drinking water aquifer, the Floridan aquifer, which is approximately 90 feet of clay. There appears to be no vertical migration from the surficial aquifer to the Floridan aquifer. Well #3 is located approximately 2700 feet downgradient of the UST 79 site. However, the Hawthorn Group, a thick and highly effective confining unit, separates the water supply well from the surficial aquifer.

No current on-site receptors have been identified for the site. Potential future on-site receptors might include industrial workers and military residents.

Potential future on-site industrial receptors may come in direct contact with site soil contamination during construction or excavation activities. No near-term on-site receptors are likely to come into contact with groundwater, unless the surficial aquifer discharges into the drainage ditch.

1.2 Screening for Chemicals of Potential Concern

1.2.1 Screening Methodology

The purpose of a risk evaluation screen is to identify the COPCs and areas of concern at a site and possibly to identify sites for which no further action is needed. The first step in the risk process uses screening levels that are readily obtainable and that, due to their conservative nature, can be used with a high degree of confidence to indicate sites for which no further action is required.

An American Society of Testing and Materials (ASTM) (ASTM 1995) Tier 1-type risk evaluation process will be applied to the data collected for the UST 79 site to identify any COPCs and media for which no further action is needed. The risk evaluation screen involves the steps listed below.

- Identify potential migration and exposure pathways associated with the site, and identify potential exposure scenarios that should be used to select screening levels.
- Identify risk-based screening levels and regulatory based screening levels for each contaminant.
- Compare site-related concentrations to screening levels to determine if any potential COPCs exist at the site.
- Compare detection limits to screening levels to identify potential false negative screening results.

The screening levels for the UST 79 site data have been taken from the following sources based on GA EPD guidance (GA EPD 1996):

- federal MCLs (EPA 1989),
- GUST Soil Threshold Levels (i.e., Table A, Column 2),
- soil screening levels developed by the U.S. Environmental Protection Agency (EPA) (EPA 1996a), and
- soil and groundwater risk-based concentrations developed by EPA Region 3 (EPA 1996b).

These values reflect screening levels based on a combination of regulatory screening levels (i.e., MCLs and GUST soil threshold levels), and calculated risk-based values (i.e., EPA Region 3 risk-based concentrations).

Screening levels inherently incorporate assumptions about land use. In identifying COPCs, it is generally accepted that screening levels will reflect any potential future land uses, and thus, they usually reflect a conservative residential use scenario (EPA 1991; EPA 1996a; ASTM 1995). Based on GA EPD guidance, risk-based screening levels reflect residential land use for groundwater and industrial land use for deep soils (GA EPD 1996).

Default residential exposure scenarios for groundwater assume that use of the land could someday be residential and that the following exposures could occur:

- ingestion of groundwater and

- inhalation of volatiles during showering.

The default industrial exposure assumptions for deep soils assume that the following exposures could occur:

- incidental ingestion of soil and
- inhalation of volatiles and dust.

EPA's *Soil Screening Guidance* (EPA 1996a) provides two options for selecting soil values that address protection of groundwater. One value assumes no contaminant dilution or attenuation would occur between the soil and groundwater; a second value assumes a 20-fold dilution attenuation factor (DAF). A DAF of 20 was used to develop soil screening values protective of groundwater at the UST 79 site.

If ARAR- or risk-based values are not available, it generally means that (1) the chemical is not considered to be toxic except perhaps at extremely high concentrations (e.g., aluminum, sodium); (2) the dose-response data do not indicate a toxic effect; or (3) EPA is currently reviewing toxicity information, and no reference dose or cancer slope factor is currently available.

1.2.2 Screening Results

The risk screening process is a systematic screening of sample results to identify site-related COPCs. Constituent concentrations below risk- or regulatory-based screening levels are not considered COPCs and are not evaluated further. Table C-1 presents the results of the risk-based screening for the Part A SI soil data. Table C-2 presents the results of the risk-based screening for the Part A SI groundwater data.

Benzene was detected above the GUST soil threshold level for soil data collected for the Part A SI. However, the sample locations (84-06 and 84-10) associated with these constituents are located 50 to 70 feet upgradient of the former tank pit based on observed groundwater flow direction during the CAP-Part A investigation, which will be confirmed during the CAP-Part B investigation. Ethylbenzene, toluene, xylenes, acenaphthene, anthracene, benzo(a)anthracene, chrysene, fluoranthene, fluorene, naphthalene phenanthrene, pyrene, and lead were detected below screening levels during the Part A sampling. TPH was also detected, but there are no screening levels for TPH. Benzene was selected as a COPC for UST 79 site soils.

Detection limits for benzo(a)anthracene, benzo(a)pyrene, and dibenzo(a,h)anthracene exceeded risk-based screening levels for soils in nine samples. No COPCs for soils were selected for the site based on the detection limit screening.

Benzene was detected in three temporary wells at concentrations above screening levels. The concentrations were 6.8J $\mu\text{g/L}$ (well 84-01), 52.6 $\mu\text{g/L}$ (well 84-03), and 32.4 $\mu\text{g/L}$ (well 84-10). These results exceeded the risk-based screening level for benzene of 0.36 $\mu\text{g/L}$ and the federal MCL for benzene of 5 $\mu\text{g/L}$. Ethylbenzene, toluene, xylenes, and naphthalene were detected below screening values during the Part A SI. Benzo(a)pyrene was estimated in one sample above the screening value; however, the risk-based values for this compound is below analytically achievable levels. Benzo(g,h,i)perylene was estimated in one sample, but there are no risk-based screening values for this compound. Benzene was selected as a COPC for the UST 79 site groundwater.

Detection limits for several PAHs exceeded risk-based screening levels for the Part A groundwater data. For these constituents, risk-based values represent values below analytically achievable levels. The

detection limits for one PAH, benzo(a)pyrene, also exceeded the federal MCL of 0.2 µg/L by two to three orders of magnitude. No additional COPCs were selected for groundwater based on the detection limit screening.

1.3 Site-Specific Levels

Detections exceeding the conservative generic screening levels are considered COPCs. ACLs are developed, when appropriate, for the COPCs using site-specific information from the fate and transport modeling and available regulatory screening levels. When regulatory screening levels were not available, then ACLs were developed based on risk-based levels. No risk-based ACLs were developed for the UST 79 site.

1.3.1 Alternate Threshold Levels

The CAP-Part A data were screened against risk- and regulatory-based screening levels. The maximum soil concentrations at this site are above the water table and located 50 to 70 feet upgradient of the former tank pit. Exposure to these concentrations would most likely occur through contact with leached contaminants in the groundwater. Therefore, ATLs were not developed, leaching of soil contamination to groundwater was utilized to determine the maximum concentration of the contaminants in the groundwater at the source. These maximum concentrations were then used to develop ACLs in Section 1.3.2.

1.3.2 Alternative Concentration Limits

Benzene was identified as a COPC for groundwater at the site. Benzene was modeled to three potential downgradient locations where a receptor may come in contact with migrating site contamination. These three locations included a sanitary sewer 110 feet downgradient, a storm drain 200 feet downgradient, and a tributary to Mill Creek 5000 feet downgradient from the site. Fate and transport modeling of the CAP-Part A groundwater contamination was used to develop site-specific dilution attenuation factors (DAF) between the source and the receptor locations (see 1.3.3.2 below). Modeling results for the three receptors estimated a DAF for benzene of infinity for each receptor based on CAP-Part A groundwater contamination. An infinite DAF indicates that contamination will never reach these locations, thus no ACLs were developed for the sanitary sewer, the storm drain, and the tributary to Mill Creek.

Fate and transport modeling of soil contamination from boring 84-10 leaching to groundwater was used to develop a second set of site-specific DAFs between the second source and receptor locations. The receptor locations for second source (i.e., in the vicinity of 84-10) include an industrial wastewater line 60 feet downgradient, a sanitary sewer 180 feet downgradient, a storm drain 280 feet downgradient, and a tributary to Mill Creek 5070 feet downgradient from the site. Modeling results for these receptors estimated a DAF for benzene of infinity for the sanitary sewer, the storm drain, and the tributary to Mill Creek based on leaching of soil contamination to groundwater both with and without biodegradation. The DAF for benzene at the industrial wastewater line was 1150 (without biodegradation) and 1191 (with biodegradation). The MCL for benzene is 5 µg/L. Adjusting this regulatory level using the site-specific DAF identified for the potential migration of contamination from boring 84-10 to the industrial wastewater line results in an ACL for benzene of 5750 µg/L (i.e., $1150 \times 5 \text{ µg/L}$) assuming no biodegradation is taking place and 5995 µg/L (i.e., $1191 \times 5 \text{ µg/L}$) assuming that biodegradation does take place.

1.3.3 Fate and transport model

1.3.3.1 Model Selection

There are two sources of contamination at the UST 79 site. One source is the location of the former tank pit and the other is in the vicinity of boring 84-10 that is located upgradient of the former tank and is probably related to motorpool activities and not tank operations. Each source of contamination was modeled separately using the models discussed below.

Site-specific DAFs between the two sources and the receptor locations were developed. The DAF is a numerical value that represents the attempt to mathematically quantify the natural physical, chemical, and biological processes (e.g., advection-dispersion, sorption-retardation, biodegradation, volatilization) that result in the decrease of a chemical concentration in an environmental medium. In simple terms, the DAF is the ratio of chemical concentration at the source (or the point of origin) to the concentration at the exposure point. The DAFs reflect the natural attenuation concepts outlined in the ASTM's Risk Based Corrective Action (RBCA) protocol (ASTM 1995).

Fate and transport models are used as tools for developing DAFs. The application of fate and transport models at any release site must ensure that the modeling results are protective of human health and the environment. Therefore, the selection process of a predictive model at a release site must consider its performance, characteristics, and applicability to the site being considered. The following characteristics were considered before selecting an appropriate model for Fort Stewart:

- the model provides conservative predictions,
- the model is technically sound,
- the model is a public-domain model or is readily available,
- the model has received adequate peer review,
- the model has been applied to other similar sites, and
- the model is easy to use.

The Analytical Transient 1-, 2-, 3-Dimensional Model (AT123D) meets all of the above criteria, and was selected for performing fate and transport analysis for this site. AT123D is a well-known and commonly used analytical groundwater pollutant fate and transport model. It computes the spatial-temporal concentration distribution of chemicals in the aquifer system and predicts the transient spread of a chemical plume through a groundwater aquifer. The fate and transport processes accounted for in AT123D are advection, dispersion, adsorption/retardation, and decay. This model can be used as a tool for estimating the dissolved concentration of a chemical in one, two, or three dimensions in the groundwater, resulting from a mass release (either continuous or instant or depleting source) over a source area (i.e., point, line, area, or volume source).

SESOIL is used to simulate the vertical transport of contaminants from the source areas down through the vadose zone to the shallow groundwater (water table). SESOIL is an acronym for Seasonal Soil compartment model and is a one-dimensional, vertical transport code for the unsaturated soil zone, and is designed to simultaneously model water transport, and pollutant fate. The program was originally developed by EPA (1984) and has been extensively modified to enhance its capabilities (Hetrick et al. 1989, Hetrick et al. 1986, and Hetrick and Travis 1988).

The SESOIL defines the "soil compartment" as a soil column extending from the ground surface through the unsaturated zone to the water table. Processes simulated in SESOIL include both the hydrologic

cycle, and pollutant cycle, each of which are separate sub-module in the SESOIL code. The hydrologic cycle includes rainfall, surface runoff, infiltration, soil water content, evapotranspiration, and groundwater recharge. The pollutant cycle includes convective transport, volatilization, adsorption/desorption, and degradation/decay. A contaminant in SESOIL can partition in up to four phases (liquid, adsorbed, air, and pure).

SESOIL is well recognized and accepted by the scientific community utilizing soil-chemical fate models. Some of the attributes of SESOIL that make it particularly attractive and suitable for the vadose zone soil leaching at this site are as follows:

- SESOIL has been extensively validated and shown to work under a number of scenarios. It has also been used for similar applications in other parts of the country and is capable of providing the information required from this study (Bonazountas, Wagner, and Goodwin 1982; Wagner et al. 1986; Hetrick 1984; Watson and Brown 1985; Hetrick et al. 1986; Melancol, Pollard, and Hern 1986; Hetrick and Travis 1988; Hetrick et al. 1989; Hetrick, Luxmoore, and Tharp 1993).
- SESOIL has the advantage of fewer input requirements and faster run times than more complex unsaturated zone models, while still maintaining considerable resolution of the pollutant front in both time and space.
- The model can be divided into as few as two layers and as many as four layers, with as many as 10 sub-layers in each of the layers. This compartmental nature of the model allows for user-specified tailoring to suit a particular site.

1.3.3.2 Fate and Transport Results

The maximum soil concentrations at this site are above the water table (i.e., in the vadose zone). Therefore, leaching to groundwater by the percolating rain water was modeled using SESOIL. The SESOIL predicted maximum concentration in the leachate at the water table interface was used as the source concentration for groundwater. Lateral migration to the receptors was performed using the Analytical Transient 1-, 2-, 3-Dimensional Model (AT123D). The model was calibrated by matching the maximum concentration at the source and assuming steady state conditions. For lateral migration, two separate AT123D models were developed:

- migration of the existing plume in the groundwater based on the maximum observed concentration in the groundwater (i.e., 52.6 µg/L) near the tank pit and
- lateral migration based on SESOIL predicted maximum concentration in groundwater at boring 84-10, 70 ft upgradient of the tank pit.

Site specific geotechnical information was collected during the CAP-Part A investigation and is presented in Table C-3. Potential receptors are an industrial wastewater line, a sanitary sewer, a storm drain, and a tributary to Mill Creek.

Vertical migration of the contaminant plume through the confining unit to the Principal Artesian aquifer is improbable. The confining unit has a vertical hydraulic conductivity on the order of 10^{-8} cm/sec and ranges from 15 to 90 feet in thickness. Assuming a vertical gradient of 1.0 ft/ft and an effective porosity of 0.06 (Mills et al. 1985) for the confining unit, the groundwater travel time is estimated to be 87 years. However, benzene will not travel at the same speed as water because of retardation due to adsorption. The retardation factor for benzene through the confining unit is 5.05. Therefore, the travel time for benzene

through the confining unit (15 feet thick) is greater than 400 years (i.e., $87 \text{ years} \times 5.05 = 439 \text{ years}$). The surficial aquifer in which the contaminant plume is located is not used as a source of drinking water.

The fate and transport modeling results of the maximum observed CAP-Part A groundwater contamination are provided in Table C-4 and Section 1.5. Three potential downgradient locations at which a receptor might encounter migrating groundwater contamination were modeled. These locations include a sanitary sewer located 110 feet downgradient, a storm drain located 200 feet downgradient, and a tributary to Mill Creek located 5000 feet downgradient. These are the nearest possible locations at which a receptor might encounter migrating groundwater contamination due to a possible hydraulic connection between the groundwater and utility or the creek. Contaminant fate and transport simulations were performed to predict the maximum concentrations at these receptor locations over a simulation period of 100 years. The modeling results indicate that due to dilution attenuation, benzene contamination will not reach the underground utilities or tributary to Mill Creek at detectable concentrations. Therefore, utilities and surface water will not be impacted at concentrations above MCLs by the current site conditions at the UST 79 site, Facility ID #: 9-089026.

Based on modeling results of the observed CAP-Part A groundwater contamination, the estimated DAF for benzene at each of the receptors is infinity indicating that the predicted concentrations at this receptor is zero. Simulations were not performed to predict the maximum concentrations of benzene over a simulation period of two years because there are no permanent monitoring wells at the site to confirm the model predictions. This simulation will be performed during the long-term monitoring.

The fate and transport modeling results of the lateral migration based on SESOIL predicted maximum concentrations in groundwater (i.e., $253 \mu\text{g/L}$ without biodegradation and $131 \mu\text{g/L}$ with biodegradation) at boring 84-10 are provided in Tables C-5 and C-6 and in Section 1.5. Four potential downgradient locations at which a receptor might encounter migrating groundwater contamination were modeled. These locations include an industrial wastewater line located 60 feet downgradient, a sanitary sewer located 180 feet downgradient, a storm drain located 270 feet downgradient, and a tributary to Mill Creek located 5070 feet downgradient. These are the nearest possible locations at which a receptor might encounter migrating groundwater contamination due to a possible hydraulic connection between the groundwater and utility or the creek. Contaminant fate and transport simulations were performed to predict the maximum concentrations at these receptor locations over a simulation period of 100 years. The modeling results indicate that due to dilution attenuation, benzene contamination will not reach the sanitary sewer, the storm drain, or the tributary to Mill Creek at detectable concentrations. However, benzene contamination may reach the industrial wastewater line at concentrations less than $0.5 \mu\text{g/L}$. Therefore, utilities and surface water will not be impacted at concentrations above MCLs by the current site conditions at the UST 79 site, Facility ID #: 9-089026.

Based on modeling results for the SESOIL predicted maximum concentration in groundwater, the estimated DAF for benzene at the industrial wastewater line is 1150 (i.e. $253 \mu\text{g/L} \div 0.22 \mu\text{g/L}$) assuming that no biodegradation of the contaminant occurs and 1191 (i.e. $131 \mu\text{g/L} \div 0.11 \mu\text{g/L}$) assuming that biodegradation occurs and the DAF for benzene at the drainage ditch is 96,500 (i.e., $44.4 \mu\text{g/L} \div 0.00046 \mu\text{g/L}$). The DAFs for the other receptor locations are infinity indicating that the predicted concentrations at the receptor is zero. Simulations were not performed to predict the maximum concentrations of benzene over a simulation period of two years because there are no permanent monitoring wells at the site to confirm the model predictions. This simulation will be performed during the long-term monitoring.

1.4 Conclusions and recommendations

The conclusions below are based on a fate and transport modeling assuming a continuous source of contamination of infinite duration at the site based on the maximum observed CAP-Part A benzene concentration (i.e. 52.6 µg/L) and the SESOIL maximum predicted benzene concentration (i.e. 253 µg/L) based on soil concentrations during the CAP-Part A investigation.

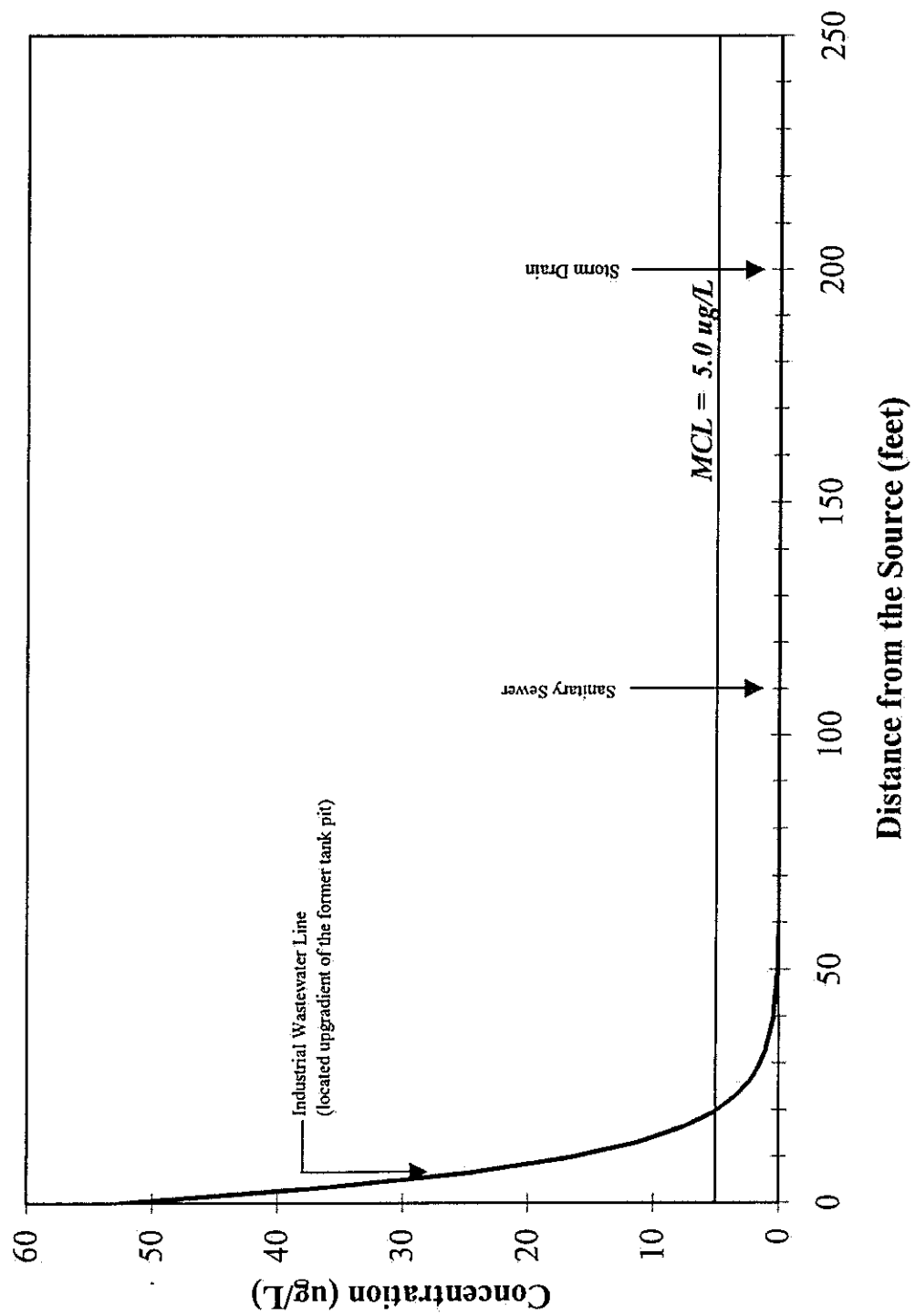
- Risk-based screening results show that benzene concentrations in groundwater exceed the initial screening levels.
- No ACLs were calculated based on the maximum observed CAP-Part A benzene concentration.
- Benzene concentrations in groundwater do not exceed the ACL of 5750 µg/L based on the SESOIL maximum predicted benzene concentration at the industrial wastewater line.
- The horizontal and vertical extent of soil and groundwater contamination due to tank operations was determined during the CAP-Part A investigation.
- Fate and transport modeling of benzene indicates that contamination does not exceed MCLs at the conservatively defined downgradient receptors from the source near boring 84-10 or the former tank pit.

Considering the site characteristics, a monitoring only plan is recommended to confirm that natural attenuation is taking place at the site.

1.5 Fate and Transport Model Output Results

Following are the data for fate and transport modeling.

Figure C-1. AT123D modeled maximum concentration of benzene in the groundwater
versus downgradient distance from the source (UST 79)



Modeling Results for the maximum observed CAP-Part A groundwater concentration

Ft Stewart UST 79 Benzene (Tank Pit)

NO. OF POINTS IN X-DIRECTION	9
NO. OF POINTS IN Y-DIRECTION	5
NO. OF POINTS IN Z-DIRECTION	1
NO. OF ROOTS: NO. OF SERIES TERMS	400
NO. OF BEGINNING TIME STEP	145
NO. OF ENDING TIME STEP	360
NO. OF TIME INTERVALS FOR PRINTED OUT SOLUTION	12
INSTANTANEOUS SOURCE CONTROL = 0 FOR INSTANT SOURCE	1
SOURCE CONDITION CONTROL = 0 FOR STEADY SOURCE	0
INTERMITTENT OUTPUT CONTROL = 0 NO SUCH OUTPUT	1
CASE CONTROL =1 THERMAL, = 2 FOR CHEMICAL, = 3 RAD	2
AQUIFER DEPTH, = 0.0 FOR INFINITE DEEP (METERS) ...	0.9450E+01
AQUIFER WIDTH, = 0.0 FOR INFINITE WIDE (METERS) ...	0.0000E+00
BEGIN POINT OF X-SOURCE LOCATION (METERS)	-0.3700E+01
END POINT OF X-SOURCE LOCATION (METERS)	0.0000E+00
BEGIN POINT OF Y-SOURCE LOCATION (METERS)	-0.6100E+01
END POINT OF Y-SOURCE LOCATION (METERS)	0.6100E+01
BEGIN POINT OF Z-SOURCE LOCATION (METERS)	0.0000E+00
END POINT OF Z-SOURCE LOCATION (METERS)	0.2000E+01
POROSITY	0.2000E+00
HYDRAULIC CONDUCTIVITY (METER/HOUR)	0.7200E-02
HYDRAULIC GRADIENT	0.3800E-02
LONGITUDINAL DISPERSIVITY (METER)	0.5000E+01
LATERAL DISPERSIVITY (METER)	0.1500E+01
VERTICAL DISPERSIVITY (METER)	0.5000E+00
DISTRIBUTION COEFFICIENT, KD (M**3/KG)	0.3264E-03
HEAT EXCHANGE COEFFICIENT (KCAL/HR-M**2-DEGREE C)..	0.0000E+00
MOLECULAR DIFFUSION MULTIPLY BY POROSITY (M**2/HR)	0.3530E-05
DECAY CONSTANT (PER HOUR)	0.4015E-04
BULK DENSITY OF THE SOIL (KG/M**3)	0.1540E+04
ACCURACY TOLERANCE FOR REACHING STEADY STATE	0.1000E-02
DENSITY OF WATER (KG/M**3)	0.1000E+04
TIME INTERVAL SIZE FOR THE DESIRED SOLUTION (HR) ..	0.7300E+03
DISCHARGE TIME (HR)	0.8760E+06
WASTE RELEASE RATE (KCAL/HR), (KG/HR), OR (CI/HR) .	0.3243E-06
RETARDATION FACTOR	0.3513E+01
RETARDED DARCY VELOCITY (M/HR)	0.3894E-04
RETARDED LONGITUDINAL DISPERSION COEF. (M**2/HR) ..	0.1997E-03
RETARDED LATERAL DISPERSION COEFFICIENT (M**2/HR) .	0.6343E-04
RETARDED VERTICAL DISPERSION COEFFICIENT (M**2/HR).	0.2449E-04

LIST OF Z-EIGENVALUES

0.3324E+00	0.6649E+00	0.9973E+00	0.1330E+01	0.1662E+01	0.1995E+01	0.2327E+01	0.2660E+01	0.2992E+01	0.3324E+01
0.3657E+01	0.3989E+01	0.4322E+01	0.4654E+01	0.4987E+01	0.5319E+01	0.5652E+01	0.5984E+01	0.6316E+01	0.6649E+01
0.6981E+01	0.7314E+01	0.7646E+01	0.7979E+01	0.8311E+01	0.8644E+01	0.8977E+01	0.9308E+01	0.9641E+01	0.9973E+01
0.1031E+02	0.1064E+02	0.1097E+02	0.1130E+02	0.1164E+02	0.1197E+02	0.1230E+02	0.1263E+02	0.1297E+02	0.1330E+02
0.1363E+02	0.1396E+02	0.1430E+02	0.1463E+02	0.1496E+02	0.1529E+02	0.1562E+02	0.1596E+02	0.1629E+02	0.1662E+02
0.1695E+02	0.1729E+02	0.1762E+02	0.1795E+02	0.1828E+02	0.1862E+02	0.1895E+02	0.1928E+02	0.1961E+02	0.1995E+02
0.2028E+02	0.2061E+02	0.2094E+02	0.2128E+02	0.2161E+02	0.2194E+02	0.2227E+02	0.2261E+02	0.2294E+02	0.2327E+02
0.2360E+02	0.2394E+02	0.2427E+02	0.2460E+02	0.2493E+02	0.2527E+02	0.2560E+02	0.2593E+02	0.2626E+02	0.2660E+02
0.2693E+02	0.2726E+02	0.2759E+02	0.2793E+02	0.2826E+02	0.2859E+02	0.2892E+02	0.2926E+02	0.2959E+02	0.2992E+02
0.3025E+02	0.3058E+02	0.3092E+02	0.3125E+02	0.3158E+02	0.3191E+02	0.3225E+02	0.3258E+02	0.3291E+02	0.3324E+02
0.3358E+02	0.3391E+02	0.3424E+02	0.3457E+02	0.3491E+02	0.3524E+02	0.3557E+02	0.3590E+02	0.3624E+02	0.3657E+02
0.3690E+02	0.3723E+02	0.3757E+02	0.3790E+02	0.3823E+02	0.3856E+02	0.3890E+02	0.3923E+02	0.3956E+02	0.3989E+02
0.4023E+02	0.4056E+02	0.4089E+02	0.4122E+02	0.4156E+02	0.4189E+02	0.4222E+02	0.4255E+02	0.4289E+02	0.4322E+02
0.4355E+02	0.4388E+02	0.4422E+02	0.4455E+02	0.4488E+02	0.4521E+02	0.4554E+02	0.4588E+02	0.4621E+02	0.4654E+02
0.4687E+02	0.4721E+02	0.4754E+02	0.4787E+02	0.4820E+02	0.4854E+02	0.4887E+02	0.4920E+02	0.4953E+02	0.4987E+02
0.5020E+02	0.5053E+02	0.5086E+02	0.5120E+02	0.5153E+02	0.5186E+02	0.5219E+02	0.5253E+02	0.5286E+02	0.5319E+02
0.5352E+02	0.5386E+02	0.5419E+02	0.5452E+02	0.5485E+02	0.5519E+02	0.5552E+02	0.5585E+02	0.5618E+02	0.5652E+02
0.5685E+02	0.5718E+02	0.5751E+02	0.5785E+02	0.5818E+02	0.5851E+02	0.5884E+02	0.5917E+02	0.5951E+02	0.5984E+02
0.6017E+02	0.6050E+02	0.6084E+02	0.6117E+02	0.6150E+02	0.6183E+02	0.6217E+02	0.6250E+02	0.6283E+02	0.6316E+02
0.6350E+02	0.6383E+02	0.6416E+02	0.6449E+02	0.6483E+02	0.6516E+02	0.6549E+02	0.6582E+02	0.6616E+02	0.6649E+02
0.6682E+02	0.6715E+02	0.6749E+02	0.6782E+02	0.6815E+02	0.6848E+02	0.6882E+02	0.6915E+02	0.6948E+02	0.6981E+02
0.7015E+02	0.7048E+02	0.7081E+02	0.7114E+02	0.7148E+02	0.7181E+02	0.7214E+02	0.7247E+02	0.7281E+02	0.7314E+02
0.7347E+02	0.7380E+02	0.7413E+02	0.7447E+02	0.7480E+02	0.7513E+02	0.7546E+02	0.7580E+02	0.7613E+02	0.7646E+02
0.7679E+02	0.7713E+02	0.7746E+02	0.7779E+02	0.7812E+02	0.7846E+02	0.7879E+02	0.7912E+02	0.7945E+02	0.7979E+02
0.8012E+02	0.8045E+02	0.8078E+02	0.8112E+02	0.8145E+02	0.8178E+02	0.8211E+02	0.8245E+02	0.8278E+02	0.8311E+02
0.8344E+02	0.8378E+02	0.8411E+02	0.8444E+02	0.8477E+02	0.8511E+02	0.8544E+02	0.8577E+02	0.8610E+02	0.8644E+02
0.8677E+02	0.8710E+02	0.8743E+02	0.8777E+02	0.8810E+02	0.8843E+02</				

LIST OF Z-COEFFICIENTS

[illegible]

0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00
0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00
0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00
0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00
0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00
LIST OF ZS-SERIES									
0.1856E+01	0.1461E+01	0.9139E+00	0.3486E+00	-0.1094E+00	-0.3759E+00	-0.4290E+00	-0.3089E+00	-0.9851E-01	0.1076E+00
0.2345E+00	0.2487E+00	0.1629E+00	0.2494E-01	-0.1046E+00	-0.1761E+00	-0.1686E+00	-0.9414E-01	0.1052E-01	0.1005E+00
0.1411E+00	0.1206E+00	0.5280E-01	-0.3093E-01	-0.9530E-01	-0.1157E+00	-0.8710E-01	-0.2477E-01	0.4345E-01	0.8923E-01
0.9527E-01	0.6161E-01	0.4543E-02	-0.5105E-01	-0.8233E-01	-0.7778E-01	-0.4123E-01	0.1050E-01	0.5521E-01	0.7476E-01
0.6228E-01	0.2450E-01	-0.2173E-01	-0.5680E-01	-0.6666E-01	-0.4830E-01	-0.1059E-01	0.2997E-01	0.5637E-01	0.5817E-01
0.3561E-01	-0.9618E-03	-0.3575E-01	-0.5431E-01	-0.4947E-01	-0.2411E-01	0.1046E-01	0.3945E-01	0.5094E-01	0.4071E-01
0.1375E-01	-0.1810E-01	-0.4135E-01	-0.4653E-01	-0.3204E-01	-0.4538E-02	0.2404E-01	0.4169E-01	0.4132E-01	0.2361E-01
-0.3517E-02	-0.2842E-01	-0.4069E-01	-0.3554E-01	-0.1558E-01	0.1040E-01	0.3134E-01	0.3855E-01	0.2937E-01	0.8062E-02
-0.1611E-01	-0.3292E-01	-0.3546E-01	-0.2302E-01	-0.1176E-02	0.2065E-01	0.3328E-01	0.3161E-01	0.1665E-01	-0.4982E-02
-0.2404E-01	-0.3256E-01	-0.2717E-01	-0.1044E-01	0.1033E-01	0.2632E-01	0.3088E-01	0.2233E-01	0.4528E-02	-0.1482E-01
-0.2754E-01	-0.2839E-01	-0.1724E-01	0.9616E-03	0.1841E-01	0.2777E-01	0.2523E-01	0.1208E-01	-0.5917E-02	-0.2109E-01
-0.2709E-01	-0.2154E-01	-0.6996E-02	0.1025E-01	0.2287E-01	0.2561E-01	0.1749E-01	0.2116E-02	-0.1389E-01	-0.2376E-01
-0.2343E-01	-0.1320E-01	0.2435E-02	0.1679E-01	0.2382E-01	0.2067E-01	0.8836E-02	-0.6553E-02	-0.1893E-01	-0.2312E-01
-0.1747E-01	-0.4515E-02	0.1015E-01	0.2031E-01	0.2172E-01	0.1393E-01	0.3647E-03	-0.1316E-01	-0.2093E-01	-0.1973E-01
-0.1020E-01	0.3505E-02	0.1554E-01	0.2083E-01	0.1724E-01	0.6399E-02	-0.6999E-02	-0.1725E-01	-0.2007E-01	-0.1436E-01
-0.2641E-02	0.1004E-01	0.1830E-01	0.1871E-01	0.1120E-01	-0.9613E-03	-0.1256E-01	-0.1869E-01	-0.1683E-01	-0.7874E-02
0.4309E-02	0.1452E-01	0.1845E-01	0.1453E-01	0.4498E-02	-0.7315E-02	-0.1589E-01	-0.1763E-01	-0.1189E-01	-0.1175E-02
0.9909E-02	0.1667E-01	0.1629E-01	0.9014E-02	-0.1996E-02	-0.1204E-01	-0.1686E-01	-0.1449E-01	-0.6009E-02	0.4926E-02
0.1365E-01	0.1650E-01	0.1232E-01	0.2972E-02	-0.7538E-02	-0.1474E-01	-0.1562E-01	-0.9871E-02	0.2074E-06	0.9768E-02
0.1529E-01	0.1428E-01	0.7225E-02	-0.2820E-02	-0.1157E-01	-0.1532E-01	-0.1254E-01	-0.4478E-02	0.5405E-02	0.1290E-01
0.1485E-01	0.1049E-01	0.1720E-02	-0.7689E-02	-0.1375E-01	-0.1392E-01	-0.8186E-02	0.9611E-03	0.9613E-02	0.1411E-01
0.1258E-01	0.5728E-02	-0.3485E-02	-0.1113E-01	-0.1399E-01	-0.1089E-01	-0.3197E-02	0.5780E-02	0.1222E-01	0.1342E-01
0.8921E-02	0.6751E-03	-0.7783E-02	-0.1286E-01	-0.1244E-01	-0.6750E-02	0.1757E-02	0.9445E-02	0.1306E-01	0.1110E-01
0.4454E-02	-0.4027E-02	-0.1073E-01	-0.1282E-01	-0.9455E-02	-0.2109E-02	0.6070E-02	0.1161E-01	0.1217E-01	0.7568E-02
-0.2077E-03	-0.7831E-02	-0.1207E-01	-0.1115E-01	-0.5510E-02	0.2423E-02	0.9264E-02	0.1212E-01	0.9808E-02	0.3355E-02
-0.4471E-02	-0.1034E-01	-0.1177E-01	-0.8198E-02	-0.1174E-02	0.6293E-02	0.1103E-01	0.1105E-01	0.6382E-02	-0.9607E-03
-0.7839E-02	-0.1134E-01	-0.9999E-02	-0.4426E-02	0.2984E-02	0.9071E-02	0.1126E-01	0.8658E-02	0.2397E-02	-0.4834E-02
-0.9960E-02	-0.1082E-01	-0.7082E-02	-0.3646E-03	0.6459E-02	0.1049E-01	0.1004E-01	0.5332E-02	-0.1607E-02	-0.7814E-02
-0.1066E-01	-0.8960E-02	-0.3469E-02	0.3457E-02	0.8866E-02	0.1047E-01	0.7623E-02	0.1556E-02	-0.5129E-02	-0.9591E-02
-0.9950E-02	-0.6083E-02	0.3415E-03	0.6577E-02	0.9977E-02	0.9119E-02	0.4394E-02	-0.2164E-02	-0.7760E-02	-0.1002E-01
-0.8016E-02	-0.2618E-02	0.3856E-02	0.8650E-02	0.9740E-02	0.6686E-02	0.8131E-03	-0.5367E-02	-0.9228E-02	-0.9145E-02
-0.5180E-02	0.9602E-03	0.6653E-02	0.9484E-02	0.8270E-02	0.3551E-02	-0.2646E-02	-0.7680E-02	-0.9421E-02	-0.7150E-02
-0.1857E-02	0.4193E-02	0.8424E-02	0.9051E-02	0.5830E-02	0.1531E-03	-0.5554E-02	-0.8868E-02	-0.8395E-02	-0.4359E-02
0.1504E-02	0.6693E-02	0.9008E-02	0.7483E-02	0.2789E-02	-0.3062E-02	-0.7578E-02	-0.8848E-02	-0.6352E-02	-0.1173E-02
0.4474E-02	0.8187E-02	0.8401E-02	0.5045E-02	-0.4348E-03	-0.5698E-02	-0.8511E-02	-0.7692E-02	-0.3610E-02	0.1982E-02
0.6700E-02	0.8545E-02	0.6749E-02	0.2097E-02	-0.3421E-02	-0.7454E-02	-0.8298E-02	-0.5612E-02	-0.5565E-03	0.4707E-02
0.7942E-02	0.7784E-02	0.4321E-02	-0.9596E-03	-0.5803E-02	-0.8155E-02	-0.7029E-02	-0.2923E-02	0.2403E-02	0.6679E-02
0.8094E-02	0.6063E-02	0.1466E-02	-0.3729E-02	-0.7312E-02	-0.7769E-02	-0.4923E-02	0.2074E-06	0.4897E-02	0.7687E-02
0.7196E-02	0.3650E-02	-0.1428E-02	-0.5874E-02	-0.7800E-02	-0.6402E-02	-0.2291E-02	0.2773E-02	0.6632E-02	0.7653E-02
0.5417E-02	0.8906E-03	-0.3991E-02	-0.7152E-02	-0.7258E-02	-0.4279E-02	0.5036E-03	0.5048E-02	0.7424E-02	0.6634E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.0000E+00 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

	0.	1.	2.	3.	4.	5.	6.	7.	20.
5.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
4.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
3.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
2.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
0.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1051E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

	0.	1.	2.	3.	4.	5.	6.	7.	20.
5.	0.433E-01	0.285E-01	0.186E-01	0.122E-01	0.801E-02	0.527E-02	0.347E-02	0.229E-02	0.546E-05
4.	0.492E-01	0.331E-01	0.219E-01	0.145E-01	0.955E-02	0.629E-02	0.414E-02	0.272E-02	0.638E-05
3.	0.515E-01	0.351E-01	0.235E-01	0.157E-01	0.104E-01	0.692E-02	0.458E-02	0.302E-02	0.713E-05
2.	0.523E-01	0.359E-01	0.242E-01	0.162E-01	0.109E-01	0.724E-02	0.481E-02	0.319E-02	0.766E-05
0.	0.527E-01	0.363E-01	0.245E-01	0.165E-01	0.111E-01	0.743E-02	0.496E-02	0.330E-02	0.808E-05

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1139E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	1.	2.	3.	X	4.	5.	6.	7.	20.
5.	0.434E-01	0.285E-01	0.186E-01	0.122E-01	0.805E-02	0.532E-02	0.351E-02	0.232E-02	0.691E-05	
4.	0.492E-01	0.332E-01	0.220E-01	0.145E-01	0.960E-02	0.634E-02	0.419E-02	0.277E-02	0.806E-05	
3.	0.515E-01	0.351E-01	0.236E-01	0.157E-01	0.105E-01	0.697E-02	0.463E-02	0.307E-02	0.900E-05	
2.	0.524E-01	0.359E-01	0.242E-01	0.163E-01	0.109E-01	0.730E-02	0.487E-02	0.324E-02	0.967E-05	
0.	0.528E-01	0.363E-01	0.246E-01	0.166E-01	0.112E-01	0.749E-02	0.502E-02	0.335E-02	0.102E-04	

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1226E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	1.	2.	3.	X	4.	5.	6.	7.	20.
5.	0.434E-01	0.286E-01	0.187E-01	0.123E-01	0.808E-02	0.535E-02	0.354E-02	0.235E-02	0.829E-05	
4.	0.493E-01	0.332E-01	0.220E-01	0.146E-01	0.963E-02	0.638E-02	0.422E-02	0.280E-02	0.965E-05	
3.	0.516E-01	0.352E-01	0.236E-01	0.158E-01	0.105E-01	0.701E-02	0.466E-02	0.310E-02	0.108E-04	
2.	0.524E-01	0.360E-01	0.243E-01	0.163E-01	0.110E-01	0.734E-02	0.491E-02	0.327E-02	0.116E-04	
0.	0.528E-01	0.364E-01	0.246E-01	0.166E-01	0.112E-01	0.753E-02	0.506E-02	0.339E-02	0.122E-04	

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1314E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	1.	2.	3.	X	4.	5.	6.	7.	20.
5.	0.434E-01	0.286E-01	0.187E-01	0.123E-01	0.810E-02	0.536E-02	0.356E-02	0.237E-02	0.953E-05	
4.	0.493E-01	0.332E-01	0.220E-01	0.146E-01	0.966E-02	0.640E-02	0.424E-02	0.281E-02	0.111E-04	
3.	0.516E-01	0.352E-01	0.236E-01	0.158E-01	0.105E-01	0.703E-02	0.468E-02	0.312E-02	0.123E-04	
2.	0.525E-01	0.360E-01	0.243E-01	0.164E-01	0.110E-01	0.737E-02	0.493E-02	0.330E-02	0.133E-04	
0.	0.529E-01	0.364E-01	0.247E-01	0.167E-01	0.112E-01	0.756E-02	0.508E-02	0.341E-02	0.140E-04	

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1402E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	1.	2.	3.	X	4.	5.	6.	7.	20.
5.	0.434E-01	0.286E-01	0.187E-01	0.123E-01	0.812E-02	0.538E-02	0.357E-02	0.238E-02	0.106E-04	
4.	0.493E-01	0.332E-01	0.220E-01	0.146E-01	0.967E-02	0.641E-02	0.426E-02	0.283E-02	0.123E-04	
3.	0.516E-01	0.352E-01	0.236E-01	0.158E-01	0.106E-01	0.705E-02	0.470E-02	0.313E-02	0.137E-04	
2.	0.525E-01	0.360E-01	0.243E-01	0.164E-01	0.110E-01	0.738E-02	0.495E-02	0.331E-02	0.147E-04	
0.	0.529E-01	0.364E-01	0.247E-01	0.167E-01	0.113E-01	0.758E-02	0.510E-02	0.343E-02	0.155E-04	

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1489E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	1.	2.	3.	X	4.	5.	6.	7.	20.
5.	0.434E-01	0.286E-01	0.187E-01	0.123E-01	0.812E-02	0.539E-02	0.358E-02	0.238E-02	0.115E-04	
4.	0.493E-01	0.332E-01	0.221E-01	0.146E-01	0.968E-02	0.642E-02	0.427E-02	0.284E-02	0.133E-04	
3.	0.516E-01	0.352E-01	0.236E-01	0.158E-01	0.106E-01	0.706E-02	0.471E-02	0.314E-02	0.148E-04	
2.	0.525E-01	0.360E-01	0.243E-01	0.164E-01	0.110E-01	0.739E-02	0.496E-02	0.332E-02	0.159E-04	
0.	0.529E-01	0.364E-01	0.247E-01	0.167E-01	0.113E-01	0.759E-02	0.511E-02	0.344E-02	0.168E-04	

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1577E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	1.	2.	3.	X	4.	5.	6.	7.	20.
5.	0.434E-01	0.286E-01	0.187E-01	0.123E-01	0.813E-02	0.539E-02	0.359E-02	0.239E-02	0.123E-04	
4.	0.493E-01	0.333E-01	0.221E-01	0.146E-01	0.969E-02	0.643E-02	0.427E-02	0.284E-02	0.142E-04	
3.	0.516E-01	0.352E-01	0.237E-01	0.158E-01	0.106E-01	0.706E-02	0.472E-02	0.315E-02	0.158E-04	
2.	0.525E-01	0.360E-01	0.244E-01	0.164E-01	0.110E-01	0.740E-02	0.497E-02	0.333E-02	0.169E-04	
0.	0.529E-01	0.364E-01	0.247E-01	0.167E-01	0.113E-01	0.760E-02	0.512E-02	0.345E-02	0.179E-04	

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1664E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

		X								
Y	0.	1.	2.	3.	4.	5.	6.	7.	20.	
5.	0.434E-01	0.286E-01	0.187E-01	0.123E-01	0.813E-02	0.539E-02	0.359E-02	0.239E-02	0.129E-04	
4.	0.493E-01	0.333E-01	0.221E-01	0.146E-01	0.969E-02	0.643E-02	0.428E-02	0.285E-02	0.149E-04	
3.	0.516E-01	0.352E-01	0.237E-01	0.158E-01	0.106E-01	0.707E-02	0.472E-02	0.315E-02	0.165E-04	
2.	0.525E-01	0.360E-01	0.244E-01	0.164E-01	0.110E-01	0.741E-02	0.497E-02	0.333E-02	0.177E-04	
0.	0.529E-01	0.364E-01	0.247E-01	0.167E-01	0.113E-01	0.760E-02	0.512E-02	0.345E-02	0.187E-04	

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1752E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

		X								
Y	0.	1.	2.	3.	4.	5.	6.	7.	20.	
5.	0.434E-01	0.286E-01	0.187E-01	0.123E-01	0.814E-02	0.540E-02	0.359E-02	0.240E-02	0.133E-04	
4.	0.493E-01	0.333E-01	0.221E-01	0.146E-01	0.969E-02	0.644E-02	0.428E-02	0.285E-02	0.154E-04	
3.	0.516E-01	0.352E-01	0.237E-01	0.158E-01	0.106E-01	0.707E-02	0.472E-02	0.316E-02	0.171E-04	
2.	0.525E-01	0.361E-01	0.244E-01	0.164E-01	0.110E-01	0.741E-02	0.497E-02	0.334E-02	0.184E-04	
0.	0.529E-01	0.364E-01	0.247E-01	0.167E-01	0.113E-01	0.761E-02	0.513E-02	0.345E-02	0.194E-04	

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1840E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

		X								
Y	0.	1.	2.	3.	4.	5.	6.	7.	20.	
5.	0.434E-01	0.286E-01	0.187E-01	0.123E-01	0.814E-02	0.540E-02	0.359E-02	0.240E-02	0.137E-04	
4.	0.493E-01	0.333E-01	0.221E-01	0.146E-01	0.970E-02	0.644E-02	0.428E-02	0.285E-02	0.158E-04	
3.	0.516E-01	0.352E-01	0.237E-01	0.158E-01	0.106E-01	0.707E-02	0.473E-02	0.316E-02	0.175E-04	
2.	0.525E-01	0.361E-01	0.244E-01	0.164E-01	0.110E-01	0.741E-02	0.498E-02	0.334E-02	0.188E-04	
0.	0.529E-01	0.364E-01	0.247E-01	0.167E-01	0.113E-01	0.761E-02	0.513E-02	0.346E-02	0.199E-04	

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1927E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

		X								
Y	0.	1.	2.	3.	4.	5.	6.	7.	20.	
5.	0.434E-01	0.286E-01	0.187E-01	0.123E-01	0.814E-02	0.540E-02	0.359E-02	0.240E-02	0.140E-04	
4.	0.493E-01	0.333E-01	0.221E-01	0.146E-01	0.970E-02	0.644E-02	0.428E-02	0.285E-02	0.161E-04	
3.	0.516E-01	0.352E-01	0.237E-01	0.158E-01	0.106E-01	0.708E-02	0.473E-02	0.316E-02	0.179E-04	
2.	0.525E-01	0.361E-01	0.244E-01	0.164E-01	0.110E-01	0.741E-02	0.498E-02	0.334E-02	0.192E-04	
0.	0.529E-01	0.364E-01	0.247E-01	0.167E-01	0.113E-01	0.761E-02	0.513E-02	0.346E-02	0.203E-04	

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.2015E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

		X								
Y	0.	1.	2.	3.	4.	5.	6.	7.	20.	
5.	0.434E-01	0.286E-01	0.187E-01	0.123E-01	0.814E-02	0.540E-02	0.359E-02	0.240E-02	0.142E-04	
4.	0.493E-01	0.333E-01	0.221E-01	0.146E-01	0.970E-02	0.644E-02	0.428E-02	0.285E-02	0.164E-04	
3.	0.516E-01	0.352E-01	0.237E-01	0.158E-01	0.106E-01	0.708E-02	0.473E-02	0.316E-02	0.181E-04	
2.	0.525E-01	0.361E-01	0.244E-01	0.164E-01	0.110E-01	0.741E-02	0.498E-02	0.334E-02	0.195E-04	
0.	0.529E-01	0.364E-01	0.247E-01	0.167E-01	0.113E-01	0.761E-02	0.513E-02	0.346E-02	0.205E-04	

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.2102E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

		X								
Y	0.	1.	2.	3.	4.	5.	6.	7.	20.	
5.	0.434E-01	0.286E-01	0.187E-01	0.123E-01	0.814E-02	0.540E-02	0.360E-02	0.240E-02	0.144E-04	
4.	0.493E-01	0.333E-01	0.221E-01	0.146E-01	0.970E-02	0.644E-02	0.428E-02	0.285E-02	0.165E-04	
3.	0.516E-01	0.352E-01	0.237E-01	0.158E-01	0.106E-01	0.708E-02	0.473E-02	0.316E-02	0.183E-04	
2.	0.525E-01	0.361E-01	0.244E-01	0.164E-01	0.110E-01	0.741E-02	0.498E-02	0.334E-02	0.197E-04	
0.	0.529E-01	0.364E-01	0.247E-01	0.167E-01	0.113E-01	0.761E-02	0.513E-02	0.346E-02	0.208E-04	

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.2190E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

	X									
Y	0.	1.	2.	3.	4.	5.	6.	7.	20.	
5.	0.434E-01	0.286E-01	0.187E-01	0.123E-01	0.814E-02	0.540E-02	0.360E-02	0.240E-02	0.145E-04	
4.	0.493E-01	0.333E-01	0.221E-01	0.146E-01	0.970E-02	0.644E-02	0.428E-02	0.285E-02	0.167E-04	
3.	0.516E-01	0.352E-01	0.237E-01	0.158E-01	0.106E-01	0.708E-02	0.473E-02	0.316E-02	0.185E-04	
2.	0.525E-01	0.361E-01	0.244E-01	0.164E-01	0.110E-01	0.742E-02	0.498E-02	0.334E-02	0.198E-04	
0.	0.529E-01	0.364E-01	0.247E-01	0.167E-01	0.113E-01	0.761E-02	0.513E-02	0.346E-02	0.209E-04	

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.2278E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

	X									
Y	0.	1.	2.	3.	4.	5.	6.	7.	20.	
5.	0.434E-01	0.286E-01	0.187E-01	0.123E-01	0.814E-02	0.540E-02	0.360E-02	0.240E-02	0.146E-04	
4.	0.493E-01	0.333E-01	0.221E-01	0.146E-01	0.970E-02	0.644E-02	0.428E-02	0.285E-02	0.168E-04	
3.	0.516E-01	0.352E-01	0.237E-01	0.158E-01	0.106E-01	0.708E-02	0.473E-02	0.316E-02	0.186E-04	
2.	0.525E-01	0.361E-01	0.244E-01	0.164E-01	0.110E-01	0.742E-02	0.498E-02	0.334E-02	0.199E-04	
0.	0.529E-01	0.364E-01	0.247E-01	0.167E-01	0.113E-01	0.761E-02	0.513E-02	0.346E-02	0.210E-04	

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.2365E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

	X									
Y	0.	1.	2.	3.	4.	5.	6.	7.	20.	
5.	0.434E-01	0.286E-01	0.187E-01	0.123E-01	0.814E-02	0.540E-02	0.360E-02	0.240E-02	0.146E-04	
4.	0.493E-01	0.333E-01	0.221E-01	0.146E-01	0.970E-02	0.644E-02	0.428E-02	0.286E-02	0.168E-04	
3.	0.516E-01	0.352E-01	0.237E-01	0.158E-01	0.106E-01	0.708E-02	0.473E-02	0.316E-02	0.187E-04	
2.	0.525E-01	0.361E-01	0.244E-01	0.164E-01	0.110E-01	0.742E-02	0.498E-02	0.334E-02	0.200E-04	
0.	0.529E-01	0.364E-01	0.247E-01	0.167E-01	0.113E-01	0.761E-02	0.513E-02	0.346E-02	0.211E-04	

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.2453E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

	X									
Y	0.	1.	2.	3.	4.	5.	6.	7.	20.	
5.	0.434E-01	0.286E-01	0.187E-01	0.123E-01	0.814E-02	0.540E-02	0.360E-02	0.240E-02	0.147E-04	
4.	0.493E-01	0.333E-01	0.221E-01	0.146E-01	0.970E-02	0.644E-02	0.428E-02	0.286E-02	0.169E-04	
3.	0.516E-01	0.352E-01	0.237E-01	0.158E-01	0.106E-01	0.708E-02	0.473E-02	0.316E-02	0.187E-04	
2.	0.525E-01	0.361E-01	0.244E-01	0.164E-01	0.110E-01	0.742E-02	0.498E-02	0.334E-02	0.201E-04	
0.	0.529E-01	0.364E-01	0.247E-01	0.167E-01	0.113E-01	0.761E-02	0.513E-02	0.346E-02	0.212E-04	

STEADY STATE SOLUTION HAS NOT BEEN REACHED BEFORE FINAL SIMULATING TIME

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.2540E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

	X									
Y	0.	1.	2.	3.	4.	5.	6.	7.	20.	
5.	0.434E-01	0.286E-01	0.187E-01	0.123E-01	0.814E-02	0.540E-02	0.360E-02	0.240E-02	0.147E-04	
4.	0.493E-01	0.333E-01	0.221E-01	0.146E-01	0.970E-02	0.644E-02	0.428E-02	0.286E-02	0.169E-04	
3.	0.516E-01	0.352E-01	0.237E-01	0.158E-01	0.106E-01	0.708E-02	0.473E-02	0.316E-02	0.188E-04	
2.	0.525E-01	0.361E-01	0.244E-01	0.164E-01	0.110E-01	0.742E-02	0.498E-02	0.334E-02	0.201E-04	
0.	0.529E-01	0.364E-01	0.247E-01	0.167E-01	0.113E-01	0.761E-02	0.513E-02	0.346E-02	0.212E-04	

Figure C-2. SESOIL predicted concentration of benzene in the groundwater based on soil leaching from the soils at boring 84-10 (without biodegradation in the soil)

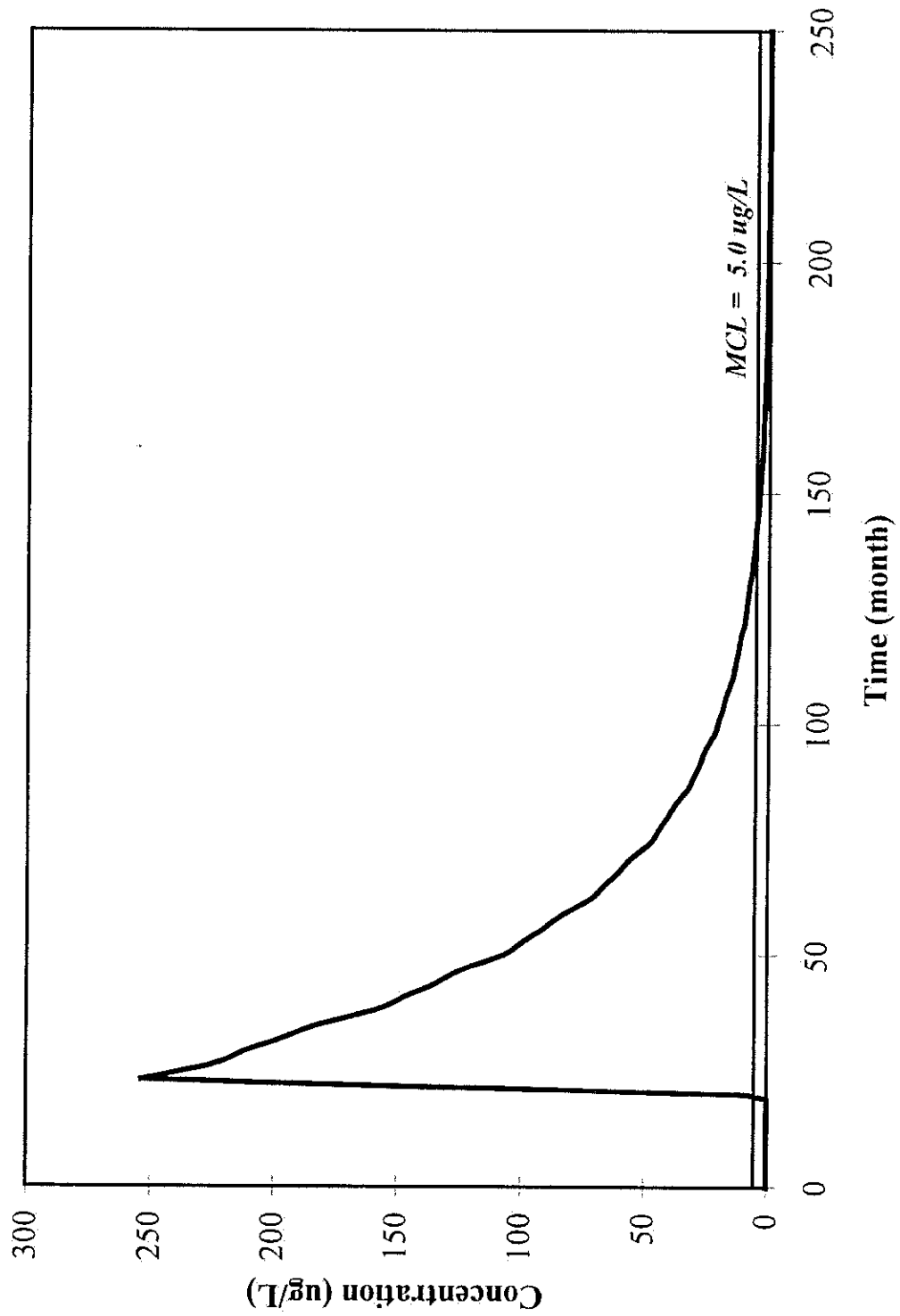
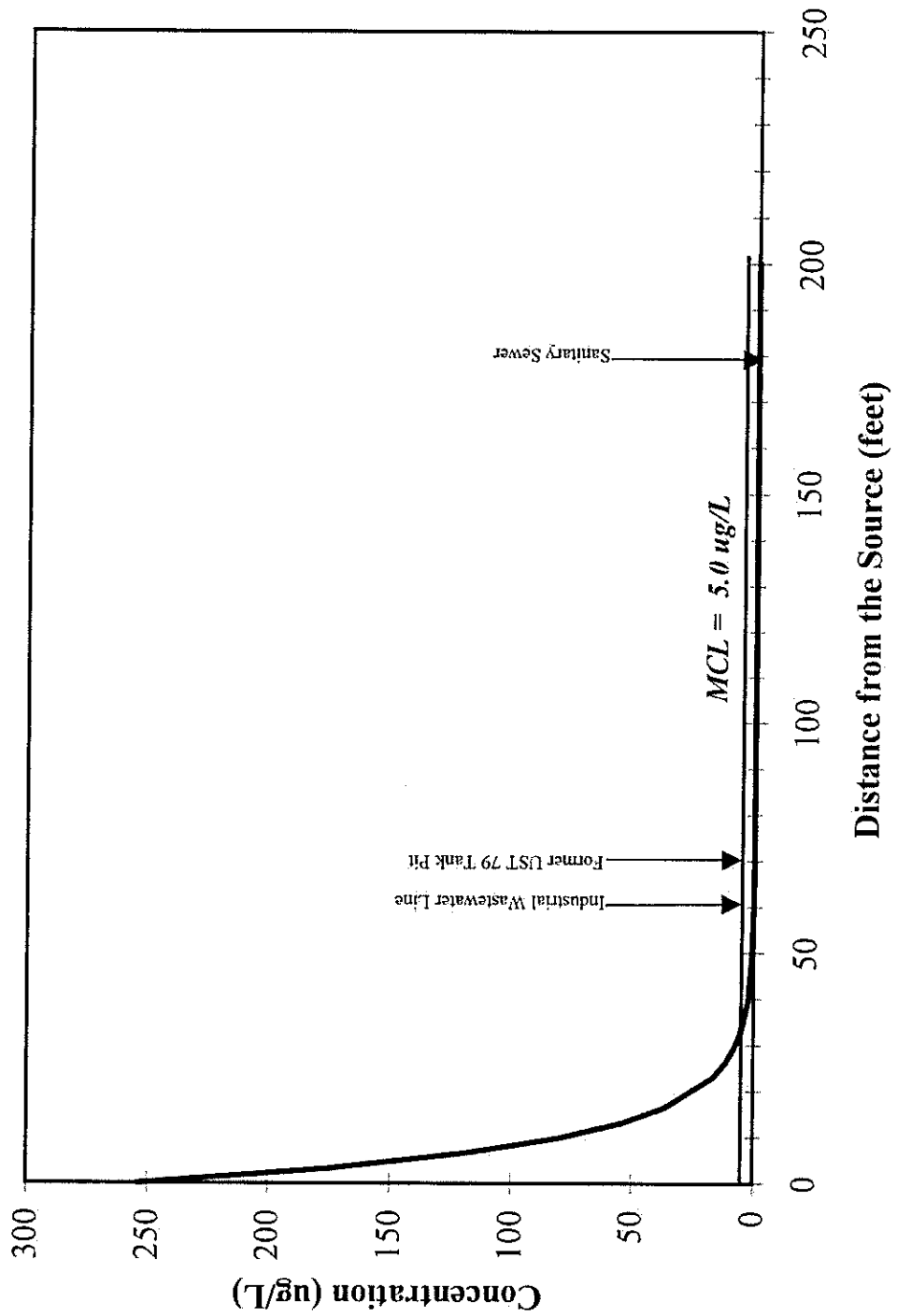


Figure C-3. AT123D modeled maximum concentration of benzene in the groundwater based on SESOIL modeling of soil contamination in boring 84-10 versus downgradient distance from the source (without biodegradation in the soil)



Modeling Results for the SESOIL maximum predicted groundwater concentration based on soil concentrations in boring 84-10 without biodegradation of benzene in the soil

Ft Stewart UST 79 Benzene (Boring 84-10), no biodegradation

NO. OF POINTS IN X-DIRECTION	9
NO. OF POINTS IN Y-DIRECTION	5
NO. OF POINTS IN Z-DIRECTION	1
NO. OF ROOTS: NO. OF SERIES TERMS	400
NO. OF BEGINNING TIME STEP	145
NO. OF ENDING TIME STEP	360
NO. OF TIME INTERVALS FOR PRINTED OUT SOLUTION	12
INSTANTANEOUS SOURCE CONTROL = 0 FOR INSTANT SOURCE	1
SOURCE CONDITION CONTROL = 0 FOR STEADY SOURCE	0
INTERMITTENT OUTPUT CONTROL = 0 NO SUCH OUTPUT	1
CASE CONTROL =1 THERMAL, = 2 FOR CHEMICAL, = 3 RAD	2
AQUIFER DEPTH, = 0.0 FOR INFINITE DEEP (METERS) ...	0.9450E+01
AQUIFER WIDTH, = 0.0 FOR INFINITE WIDE (METERS) ...	0.0000E+00
BEGIN POINT OF X-SOURCE LOCATION (METERS)	-0.3700E+01
END POINT OF X-SOURCE LOCATION (METERS)	0.0000E+00
BEGIN POINT OF Y-SOURCE LOCATION (METERS)	-0.6100E+01
END POINT OF Y-SOURCE LOCATION (METERS)	0.6100E+01
BEGIN POINT OF Z-SOURCE LOCATION (METERS)	0.0000E+00
END POINT OF Z-SOURCE LOCATION (METERS)	0.2000E+01
POROSITY	0.2000E+00
HYDRAULIC CONDUCTIVITY (METER/HOUR)	0.7200E-02
HYDRAULIC GRADIENT	0.3800E-02
LONGITUDINAL DISPERSIVITY (METER)	0.5000E+01
LATERAL DISPERSIVITY (METER)	0.1500E+01
VERTICAL DISPERSIVITY (METER)	0.5000E+00
DISTRIBUTION COEFFICIENT, KD (M**3/KG)	0.3264E-03
HEAT EXCHANGE COEFFICIENT (KCAL/HR-M**2-DEGREE C)..	0.0000E+00
MOLECULAR DIFFUSION MULTIPLY BY POROSITY (M**2/HR)	0.3530E-05
DECAY CONSTANT (PER HOUR)	0.4015E-04
BULK DENSITY OF THE SOIL (KG/M**3)	0.1540E+04
ACCURACY TOLERANCE FOR REACHING STEADY STATE	0.1000E-02
DENSITY OF WATER (KG/M**3)	0.1000E+04
TIME INTERVAL SIZE FOR THE DESIRED SOLUTION (HR) ..	0.7300E+03
DISCHARGE TIME (HR)	0.8760E+06
WASTE RELEASE RATE (KCAL/HR), (KG/HR), OR (CI/HR) .	0.8015E-06
RETARDATION FACTOR	0.3513E+01
RETARDED DARCY VELOCITY (M/HR)	0.3894E-04
RETARDED LONGITUDINAL DISPERSION COEF. (M**2/HR) ..	0.1997E-03
RETARDED LATERAL DISPERSION COEFFICIENT (M**2/HR) .	0.6343E-04
RETARDED VERTICAL DISPERSION COEFFICIENT (M**2/HR).	0.2449E-04

0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00
0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00
0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00
0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00
0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00

LIST OF ZS-SERIES

0.1856E+01	0.1461E+01	0.9139E+00	0.3486E+00	-0.1094E+00	-0.3759E+00	-0.4290E+00	-0.3089E+00	-0.9851E-01	0.1076E+00
0.2345E+00	0.2487E+00	0.1629E+00	0.2494E-01	-0.1046E+00	-0.1761E+00	-0.1686E+00	-0.9414E-01	0.1052E-01	0.1005E+00
0.1411E+00	0.1206E+00	0.5280E-01	-0.3093E-01	-0.9530E-01	-0.1157E+00	-0.8710E-01	-0.2477E-01	0.4345E-01	0.8923E-01
0.9527E-01	0.6161E-01	0.4543E-02	-0.5105E-01	-0.8233E-01	-0.7778E-01	-0.4123E-01	0.1050E-01	0.5521E-01	0.7476E-01
0.6228E-01	0.2450E-01	-0.2173E-01	-0.5680E-01	-0.6666E-01	-0.4830E-01	-0.1059E-01	0.2997E-01	0.5637E-01	0.5817E-01
0.3561E-01	-0.9618E-03	-0.3575E-01	-0.5431E-01	-0.4947E-01	-0.2411E-01	0.1046E-01	0.3945E-01	0.5094E-01	0.4071E-01
0.1375E-01	-0.1810E-01	-0.4135E-01	-0.4653E-01	-0.3204E-01	-0.4538E-02	0.2404E-01	0.4169E-01	0.4132E-01	0.2361E-01
-0.3517E-02	-0.2842E-01	-0.4069E-01	-0.3554E-01	-0.1558E-01	0.1040E-01	0.3134E-01	0.3855E-01	0.2937E-01	0.8062E-02
-0.1611E-01	-0.3292E-01	-0.3546E-01	-0.2302E-01	-0.1176E-02	0.2065E-01	0.3328E-01	0.3161E-01	0.1665E-01	-0.4982E-02
-0.2404E-01	-0.3256E-01	-0.2717E-01	-0.1044E-01	0.1033E-01	0.2632E-01	0.3088E-01	0.2233E-01	0.4528E-02	-0.1482E-01
-0.2754E-01	-0.2839E-01	-0.1724E-01	0.9616E-03	0.1841E-01	0.2777E-01	0.2523E-01	0.1208E-01	-0.5917E-02	-0.2109E-01
-0.2709E-01	-0.2154E-01	-0.6996E-02	0.1025E-01	0.2287E-01	0.2561E-01	0.1749E-01	0.2116E-02	-0.1389E-01	-0.2376E-01
-0.2343E-01	-0.1320E-01	0.2435E-02	0.1679E-01	0.2382E-01	0.2067E-01	0.8836E-02	-0.6553E-02	-0.1893E-01	-0.2312E-01
-0.1747E-01	-0.4515E-02	0.1015E-01	0.2031E-01	0.2172E-01	0.1393E-01	0.3647E-03	-0.1316E-01	-0.2093E-01	-0.1973E-01
-0.1020E-01	0.3505E-02	0.1554E-01	0.2083E-01	0.1724E-01	0.6399E-02	-0.6999E-02	-0.1725E-01	-0.2007E-01	-0.1436E-01
-0.2641E-02	0.1004E-01	0.1830E-01	0.1871E-01	0.1120E-01	-0.9613E-03	-0.1256E-01	-0.1869E-01	-0.1683E-01	-0.7874E-02
0.4309E-02	0.1452E-01	0.1845E-01	0.1453E-01	0.4498E-02	-0.7315E-02	-0.1589E-01	-0.1763E-01	-0.1189E-01	-0.1175E-02
0.9909E-02	0.1667E-01	0.1629E-01	0.9014E-02	-0.1996E-02	-0.1204E-01	-0.1686E-01	-0.1449E-01	-0.6009E-02	-0.4926E-02
0.1365E-01	0.1650E-01	0.1232E-01	0.2972E-02	-0.7538E-02	-0.1474E-01	-0.1562E-01	-0.9871E-02	0.2074E-06	0.9768E-02
0.1529E-01	0.1428E-01	0.7225E-02	-0.2820E-02	-0.1157E-01	-0.1532E-01	-0.1254E-01	-0.4478E-02	0.5405E-02	0.1290E-01
0.1485E-01	0.1049E-01	0.1720E-02	-0.7689E-02	-0.1375E-01	-0.1392E-01	-0.8186E-02	0.9611E-03	0.9613E-02	0.1411E-01
0.1258E-01	0.5728E-02	-0.3485E-02	-0.1113E-01	-0.1399E-01	-0.1089E-01	-0.3197E-02	0.5780E-02	0.1222E-01	0.1342E-01
0.8921E-02	0.6751E-03	-0.7783E-02	-0.1286E-01	-0.1244E-01	-0.6750E-02	0.1757E-02	0.9445E-02	0.1306E-01	0.1110E-01
0.4454E-02	-0.4027E-02	-0.1073E-01	-0.1282E-01	-0.9455E-02	-0.2109E-02	0.6070E-02	0.1161E-01	0.1217E-01	0.7568E-02
-0.2077E-03	-0.7831E-02	-0.1207E-01	-0.1115E-01	-0.5510E-02	0.2423E-02	0.9264E-02	0.1212E-01	0.9808E-02	0.3355E-02
-0.4471E-02	-0.1034E-01	-0.1177E-01	-0.8198E-02	-0.1174E-02	0.6293E-02	0.1103E-01	0.1105E-01	0.6382E-02	-0.9607E-03
-0.7839E-02	-0.1134E-01	-0.9999E-02	-0.4426E-02	0.2984E-02	0.9071E-02	0.1126E-01	0.9658E-02	0.2397E-02	-0.4834E-02
-0.9960E-02	-0.1082E-01	-0.7082E-02	-0.3646E-03	0.6459E-02	0.1049E-01	0.1004E-01	0.5332E-02	-0.1607E-02	-0.7814E-02
-0.1066E-01	-0.8960E-02	-0.3469E-02	0.3457E-02	0.8866E-02	0.1047E-01	0.7623E-02	0.1556E-02	-0.5129E-02	-0.9591E-02
-0.9950E-02	-0.6083E-02	0.3415E-03	0.6577E-02	0.9977E-02	0.9119E-02	0.4394E-02	-0.2164E-02	-0.7760E-02	-0.1002E-01
-0.8016E-02	-0.2618E-02	0.3856E-02	0.8650E-02	0.9740E-02	0.6686E-02	0.8131E-03	-0.5367E-02	-0.9228E-02	-0.9145E-02
-0.5180E-02	0.9602E-03	0.6653E-02	0.9484E-02	0.8270E-02	0.3551E-02	-0.2646E-02	-0.7680E-02	-0.9421E-02	-0.7150E-02
-0.1857E-02	0.4193E-02	0.8424E-02	0.9051E-02	0.5830E-02	0.1531E-03	-0.5554E-02	-0.8868E-02	-0.8395E-02	-0.4359E-02
0.1504E-02	0.6693E-02	0.9008E-02	0.7483E-02	0.2789E-02	-0.3062E-02	-0.7578E-02	-0.8848E-02	-0.6352E-02	-0.1173E-02
0.4474E-02	0.8187E-02	0.8401E-02	0.5045E-02	-0.4348E-03	-0.5698E-02	-0.8511E-02	-0.7692E-02	-0.3610E-02	0.1982E-02
0.6700E-02	0.8545E-02	0.6749E-02	0.2097E-02	-0.3421E-02	-0.7454E-02	-0.8298E-02	-0.5612E-02	-0.5565E-03	0.4707E-02
0.7942E-02	0.7784E-02	0.4321E-02	-0.9596E-03	-0.5803E-02	-0.8155E-02	-0.7029E-02	-0.2923E-02	0.2403E-02	0.6679E-02
0.8094E-02	0.6063E-02	0.1466E-02	-0.3729E-02	-0.7312E-02	-0.7769E-02	-0.4923E-02	0.2074E-06	0.4897E-02	0.7687E-02
0.7196E-02	0.3650E-02	-0.1428E-02	-0.5874E-02	-0.7800E-02	-0.6402E-02	-0.2291E-02	0.2773E-02	0.6632E-02	0.7653E-02
0.5417E-02	0.8906E-03	-0.3991E-02	-0.7152E-02	-0.7258E-02	-0.4279E-02	0.5036E-03	0.5048E-02	0.7424E-02	0.6634E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.0000E+00 HRS

(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)

Z = 0.00

Y	0.	2.	5.	7.	10.	12.	15.	18.	20.
5.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
4.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
3.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
2.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
0.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1051E+06 HRS

(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)

Z = 0.00

Y	0.	2.	5.	7.	10.	12.	15.	18.	20.
5.	0.107E+00	0.459E-01	0.130E-01	0.565E-02	0.159E-02	0.663E-03	0.168E-03	0.386E-04	0.135E-04
4.	0.122E+00	0.542E-01	0.156E-01	0.673E-02	0.188E-02	0.783E-03	0.198E-03	0.452E-04	0.158E-04
3.	0.127E+00	0.581E-01	0.171E-01	0.746E-02	0.210E-02	0.874E-03	0.221E-03	0.505E-04	0.176E-04
2.	0.129E+00	0.598E-01	0.179E-01	0.788E-02	0.223E-02	0.935E-03	0.237E-03	0.543E-04	0.189E-04
0.	0.130E+00	0.606E-01	0.184E-01	0.815E-02	0.233E-02	0.979E-03	0.249E-03	0.572E-04	0.200E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1139E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.107E+00	0.461E-01	0.131E-01	0.574E-02	0.165E-02	0.704E-03	0.188E-03	0.461E-04	0.171E-04
4.	0.122E+00	0.543E-01	0.157E-01	0.684E-02	0.195E-02	0.830E-03	0.220E-03	0.539E-04	0.199E-04
3.	0.127E+00	0.582E-01	0.172E-01	0.758E-02	0.217E-02	0.927E-03	0.246E-03	0.602E-04	0.222E-04
2.	0.130E+00	0.599E-01	0.180E-01	0.801E-02	0.232E-02	0.991E-03	0.264E-03	0.647E-04	0.239E-04
0.	0.130E+00	0.608E-01	0.185E-01	0.828E-02	0.242E-02	0.104E-02	0.278E-03	0.682E-04	0.252E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1226E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.107E+00	0.461E-01	0.132E-01	0.580E-02	0.169E-02	0.734E-03	0.203E-03	0.528E-04	0.205E-04
4.	0.122E+00	0.544E-01	0.158E-01	0.691E-02	0.200E-02	0.865E-03	0.238E-03	0.616E-04	0.238E-04
3.	0.127E+00	0.583E-01	0.173E-01	0.766E-02	0.223E-02	0.966E-03	0.266E-03	0.687E-04	0.266E-04
2.	0.130E+00	0.600E-01	0.181E-01	0.809E-02	0.237E-02	0.103E-02	0.285E-03	0.738E-04	0.286E-04
0.	0.131E+00	0.609E-01	0.186E-01	0.837E-02	0.248E-02	0.108E-02	0.300E-03	0.779E-04	0.302E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1314E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.107E+00	0.462E-01	0.133E-01	0.585E-02	0.172E-02	0.757E-03	0.216E-03	0.585E-04	0.236E-04
4.	0.122E+00	0.544E-01	0.158E-01	0.696E-02	0.203E-02	0.891E-03	0.252E-03	0.681E-04	0.274E-04
3.	0.127E+00	0.584E-01	0.174E-01	0.771E-02	0.227E-02	0.994E-03	0.282E-03	0.759E-04	0.305E-04
2.	0.130E+00	0.601E-01	0.182E-01	0.815E-02	0.242E-02	0.106E-02	0.302E-03	0.816E-04	0.328E-04
0.	0.131E+00	0.610E-01	0.187E-01	0.843E-02	0.252E-02	0.112E-02	0.318E-03	0.860E-04	0.346E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1402E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.107E+00	0.462E-01	0.133E-01	0.587E-02	0.174E-02	0.773E-03	0.225E-03	0.632E-04	0.262E-04
4.	0.122E+00	0.545E-01	0.158E-01	0.699E-02	0.206E-02	0.910E-03	0.263E-03	0.735E-04	0.304E-04
3.	0.128E+00	0.584E-01	0.174E-01	0.774E-02	0.229E-02	0.102E-02	0.294E-03	0.818E-04	0.339E-04
2.	0.130E+00	0.601E-01	0.182E-01	0.819E-02	0.245E-02	0.109E-02	0.315E-03	0.879E-04	0.364E-04
0.	0.131E+00	0.610E-01	0.187E-01	0.847E-02	0.255E-02	0.114E-02	0.332E-03	0.927E-04	0.384E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1489E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.107E+00	0.462E-01	0.133E-01	0.589E-02	0.176E-02	0.785E-03	0.232E-03	0.669E-04	0.285E-04
4.	0.122E+00	0.545E-01	0.159E-01	0.701E-02	0.208E-02	0.924E-03	0.272E-03	0.777E-04	0.330E-04
3.	0.128E+00	0.584E-01	0.174E-01	0.777E-02	0.231E-02	0.103E-02	0.303E-03	0.866E-04	0.367E-04
2.	0.130E+00	0.602E-01	0.183E-01	0.821E-02	0.247E-02	0.110E-02	0.325E-03	0.930E-04	0.394E-04
0.	0.131E+00	0.610E-01	0.188E-01	0.850E-02	0.258E-02	0.116E-02	0.342E-03	0.981E-04	0.416E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1577E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.107E+00	0.462E-01	0.133E-01	0.591E-02	0.177E-02	0.794E-03	0.238E-03	0.699E-04	0.303E-04
4.	0.122E+00	0.545E-01	0.159E-01	0.703E-02	0.209E-02	0.933E-03	0.278E-03	0.811E-04	0.351E-04
3.	0.128E+00	0.585E-01	0.175E-01	0.779E-02	0.233E-02	0.104E-02	0.309E-03	0.903E-04	0.390E-04
2.	0.130E+00	0.602E-01	0.183E-01	0.823E-02	0.248E-02	0.111E-02	0.332E-03	0.970E-04	0.419E-04
0.	0.131E+00	0.610E-01	0.188E-01	0.852E-02	0.259E-02	0.117E-02	0.350E-03	0.102E-03	0.442E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1664E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.107E+00	0.463E-01	0.133E-01	0.592E-02	0.177E-02	0.800E-03	0.242E-03	0.722E-04	0.318E-04
4.	0.122E+00	0.545E-01	0.159E-01	0.704E-02	0.210E-02	0.940E-03	0.282E-03	0.837E-04	0.367E-04
3.	0.128E+00	0.585E-01	0.175E-01	0.780E-02	0.234E-02	0.105E-02	0.314E-03	0.931E-04	0.408E-04
2.	0.130E+00	0.602E-01	0.183E-01	0.824E-02	0.249E-02	0.112E-02	0.337E-03	0.100E-03	0.438E-04
0.	0.131E+00	0.611E-01	0.188E-01	0.853E-02	0.260E-02	0.118E-02	0.355E-03	0.105E-03	0.463E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1752E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.107E+00	0.463E-01	0.133E-01	0.592E-02	0.178E-02	0.804E-03	0.245E-03	0.740E-04	0.330E-04
4.	0.122E+00	0.545E-01	0.159E-01	0.704E-02	0.210E-02	0.945E-03	0.285E-03	0.857E-04	0.381E-04
3.	0.128E+00	0.585E-01	0.175E-01	0.780E-02	0.234E-02	0.105E-02	0.318E-03	0.953E-04	0.423E-04
2.	0.130E+00	0.602E-01	0.183E-01	0.825E-02	0.250E-02	0.113E-02	0.341E-03	0.102E-03	0.454E-04
0.	0.131E+00	0.611E-01	0.188E-01	0.854E-02	0.261E-02	0.118E-02	0.359E-03	0.108E-03	0.479E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1840E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.107E+00	0.463E-01	0.133E-01	0.593E-02	0.178E-02	0.807E-03	0.247E-03	0.753E-04	0.339E-04
4.	0.122E+00	0.545E-01	0.159E-01	0.705E-02	0.211E-02	0.948E-03	0.288E-03	0.872E-04	0.391E-04
3.	0.128E+00	0.585E-01	0.175E-01	0.781E-02	0.235E-02	0.106E-02	0.321E-03	0.969E-04	0.434E-04
2.	0.130E+00	0.602E-01	0.183E-01	0.825E-02	0.250E-02	0.113E-02	0.344E-03	0.104E-03	0.465E-04
0.	0.131E+00	0.611E-01	0.188E-01	0.854E-02	0.261E-02	0.119E-02	0.362E-03	0.110E-03	0.491E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1927E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.107E+00	0.463E-01	0.133E-01	0.593E-02	0.179E-02	0.809E-03	0.248E-03	0.763E-04	0.346E-04
4.	0.122E+00	0.545E-01	0.159E-01	0.705E-02	0.211E-02	0.950E-03	0.290E-03	0.883E-04	0.398E-04
3.	0.128E+00	0.585E-01	0.175E-01	0.781E-02	0.235E-02	0.106E-02	0.323E-03	0.982E-04	0.442E-04
2.	0.130E+00	0.602E-01	0.183E-01	0.826E-02	0.250E-02	0.113E-02	0.346E-03	0.105E-03	0.474E-04
0.	0.131E+00	0.611E-01	0.188E-01	0.855E-02	0.262E-02	0.119E-02	0.364E-03	0.111E-03	0.501E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.2015E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.107E+00	0.463E-01	0.133E-01	0.593E-02	0.179E-02	0.811E-03	0.250E-03	0.770E-04	0.351E-04
4.	0.122E+00	0.545E-01	0.159E-01	0.705E-02	0.211E-02	0.952E-03	0.291E-03	0.891E-04	0.404E-04
3.	0.128E+00	0.585E-01	0.175E-01	0.781E-02	0.235E-02	0.106E-02	0.324E-03	0.990E-04	0.449E-04
2.	0.130E+00	0.602E-01	0.183E-01	0.826E-02	0.251E-02	0.114E-02	0.347E-03	0.106E-03	0.481E-04
0.	0.131E+00	0.611E-01	0.188E-01	0.855E-02	0.262E-02	0.119E-02	0.366E-03	0.112E-03	0.508E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.2102E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.107E+00	0.463E-01	0.133E-01	0.593E-02	0.179E-02	0.812E-03	0.250E-03	0.776E-04	0.355E-04
4.	0.122E+00	0.545E-01	0.159E-01	0.705E-02	0.211E-02	0.953E-03	0.292E-03	0.897E-04	0.409E-04
3.	0.128E+00	0.585E-01	0.175E-01	0.782E-02	0.235E-02	0.106E-02	0.325E-03	0.997E-04	0.453E-04
2.	0.130E+00	0.602E-01	0.183E-01	0.826E-02	0.251E-02	0.114E-02	0.348E-03	0.107E-03	0.486E-04
0.	0.131E+00	0.611E-01	0.188E-01	0.855E-02	0.262E-02	0.119E-02	0.367E-03	0.113E-03	0.513E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.2190E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.107E+00	0.463E-01	0.134E-01	0.593E-02	0.179E-02	0.812E-03	0.251E-03	0.779E-04	0.358E-04
4.	0.122E+00	0.545E-01	0.159E-01	0.706E-02	0.211E-02	0.954E-03	0.292E-03	0.902E-04	0.412E-04
3.	0.128E+00	0.585E-01	0.175E-01	0.782E-02	0.235E-02	0.106E-02	0.325E-03	0.100E-03	0.457E-04
2.	0.130E+00	0.602E-01	0.183E-01	0.826E-02	0.251E-02	0.114E-02	0.349E-03	0.107E-03	0.490E-04
0.	0.131E+00	0.611E-01	0.188E-01	0.855E-02	0.262E-02	0.119E-02	0.367E-03	0.113E-03	0.517E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.2278E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.107E+00	0.463E-01	0.134E-01	0.593E-02	0.179E-02	0.813E-03	0.251E-03	0.782E-04	0.360E-04
4.	0.122E+00	0.545E-01	0.159E-01	0.706E-02	0.211E-02	0.955E-03	0.293E-03	0.905E-04	0.414E-04
3.	0.128E+00	0.585E-01	0.175E-01	0.782E-02	0.235E-02	0.106E-02	0.326E-03	0.101E-03	0.459E-04
2.	0.130E+00	0.602E-01	0.183E-01	0.826E-02	0.251E-02	0.114E-02	0.350E-03	0.108E-03	0.493E-04
0.	0.131E+00	0.611E-01	0.188E-01	0.855E-02	0.262E-02	0.119E-02	0.368E-03	0.114E-03	0.520E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.2365E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.107E+00	0.463E-01	0.134E-01	0.593E-02	0.179E-02	0.813E-03	0.252E-03	0.784E-04	0.362E-04
4.	0.122E+00	0.545E-01	0.159E-01	0.706E-02	0.211E-02	0.955E-03	0.293E-03	0.907E-04	0.416E-04
3.	0.128E+00	0.585E-01	0.175E-01	0.782E-02	0.235E-02	0.106E-02	0.326E-03	0.101E-03	0.461E-04
2.	0.130E+00	0.602E-01	0.183E-01	0.826E-02	0.251E-02	0.114E-02	0.350E-03	0.108E-03	0.495E-04
0.	0.131E+00	0.611E-01	0.188E-01	0.855E-02	0.262E-02	0.119E-02	0.368E-03	0.114E-03	0.522E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.2453E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.107E+00	0.463E-01	0.134E-01	0.593E-02	0.179E-02	0.813E-03	0.252E-03	0.786E-04	0.363E-04
4.	0.122E+00	0.545E-01	0.159E-01	0.706E-02	0.211E-02	0.955E-03	0.293E-03	0.909E-04	0.417E-04
3.	0.128E+00	0.585E-01	0.175E-01	0.782E-02	0.235E-02	0.106E-02	0.326E-03	0.101E-03	0.463E-04
2.	0.130E+00	0.602E-01	0.183E-01	0.826E-02	0.251E-02	0.114E-02	0.350E-03	0.108E-03	0.496E-04
0.	0.131E+00	0.611E-01	0.188E-01	0.855E-02	0.262E-02	0.119E-02	0.369E-03	0.114E-03	0.523E-04

STEADY STATE SOLUTION HAS NOT BEEN REACHED BEFORE FINAL SIMULATING TIME

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.2540E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.107E+00	0.463E-01	0.134E-01	0.593E-02	0.179E-02	0.814E-03	0.252E-03	0.787E-04	0.364E-04
4.	0.122E+00	0.545E-01	0.159E-01	0.706E-02	0.211E-02	0.955E-03	0.293E-03	0.910E-04	0.418E-04
3.	0.128E+00	0.585E-01	0.175E-01	0.782E-02	0.235E-02	0.106E-02	0.327E-03	0.101E-03	0.464E-04
2.	0.130E+00	0.602E-01	0.183E-01	0.826E-02	0.251E-02	0.114E-02	0.350E-03	0.108E-03	0.497E-04
0.	0.131E+00	0.611E-01	0.188E-01	0.855E-02	0.262E-02	0.119E-02	0.369E-03	0.114E-03	0.525E-04

Figure C-4. SESOIL predicted concentration of benzene in the groundwater based on soil leaching from the soils at boring 84-10 (with biodegradation in the soil)

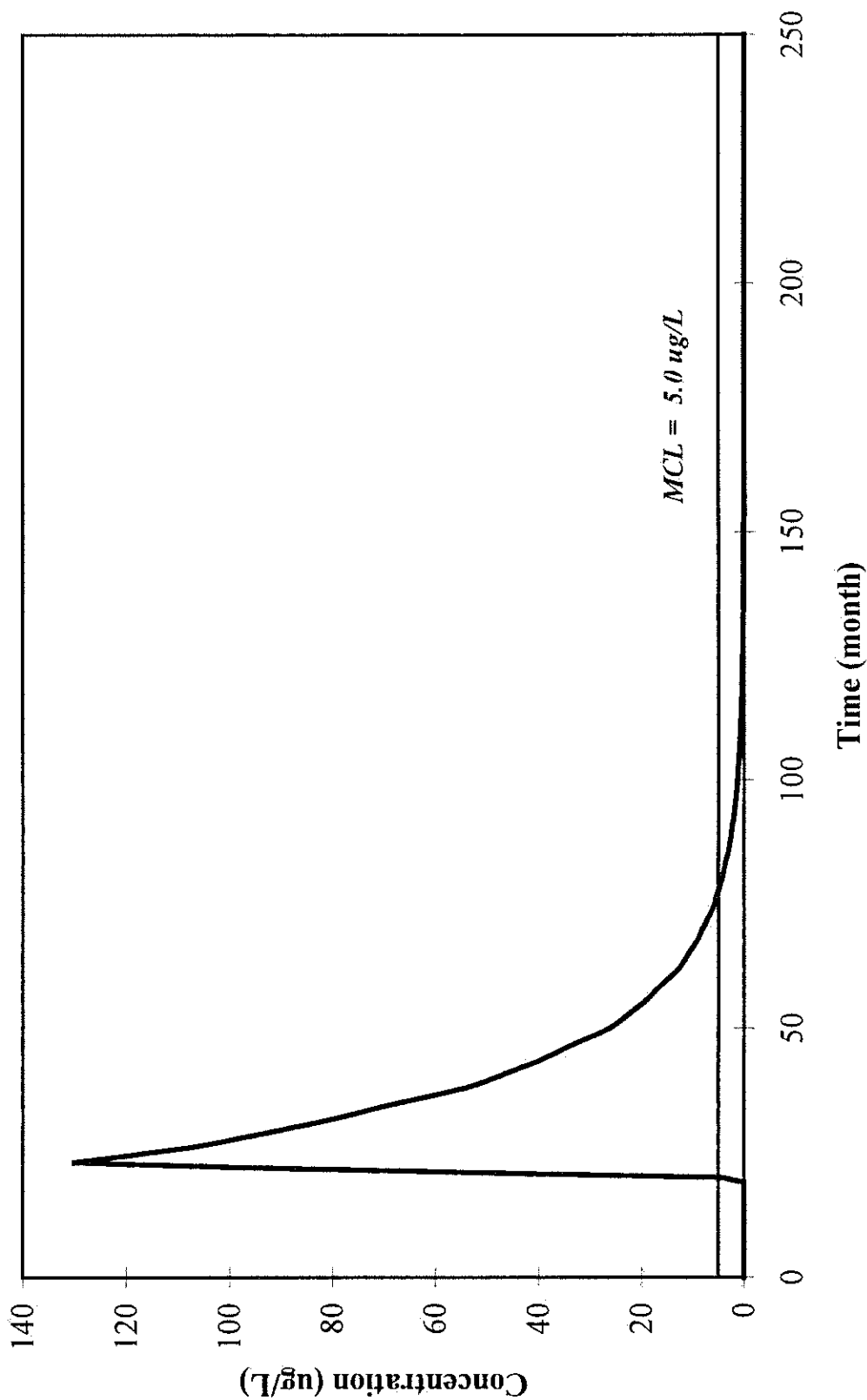
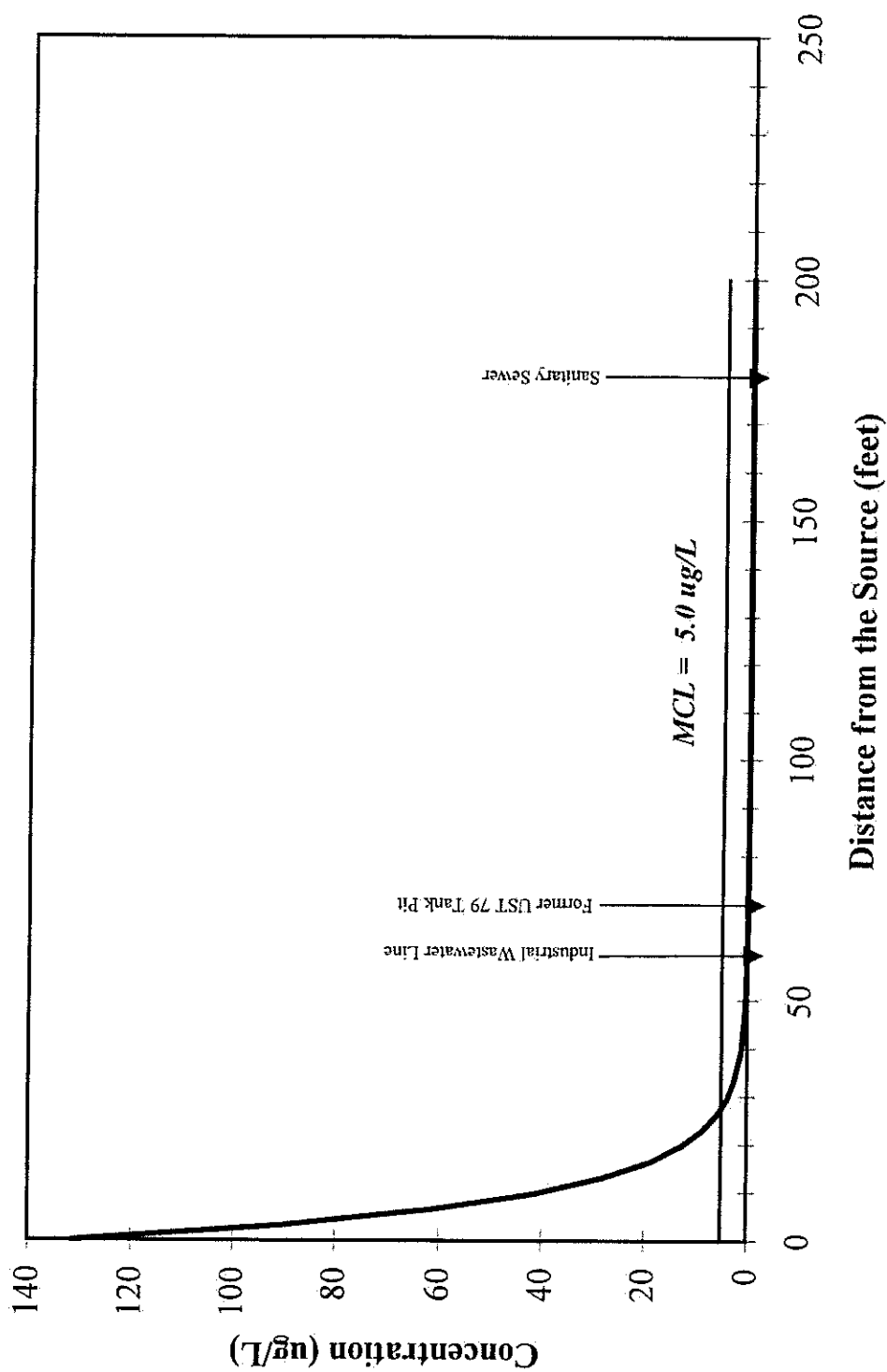


Figure C-5. AT123D modeled maximum concentration of benzene in the groundwater based on SESOIL modeling of soil contamination in boring 84-10 versus downgradient distance from the source (with biodegradation in the soil)



Modeling Results for the SESOIL maximum predicted groundwater concentration based on soil concentrations in boring 84-10 with biodegradation of benzene in the soil

Fort Stewart, UST 79, Benzene (Boring 84-10) with biodegradation

NO. OF POINTS IN X-DIRECTION	9
NO. OF POINTS IN Y-DIRECTION	5
NO. OF POINTS IN Z-DIRECTION	1
NO. OF ROOTS: NO. OF SERIES TERMS	400
NO. OF BEGINNING TIME STEP	145
NO. OF ENDING TIME STEP	360
NO. OF TIME INTERVALS FOR PRINTED OUT SOLUTION	12
INSTANTANEOUS SOURCE CONTROL = 0 FOR INSTANT SOURCE	1
SOURCE CONDITION CONTROL = 0 FOR STEADY SOURCE	0
INTERMITTENT OUTPUT CONTROL = 0 NO SUCH OUTPUT	1
CASE CONTROL =1 THERMAL, = 2 FOR CHEMICAL, = 3 RAD	2
AQUIFER DEPTH, = 0.0 FOR INFINITE DEEP (METERS) ...	0.9450E+01
AQUIFER WIDTH, = 0.0 FOR INFINITE WIDE (METERS) ...	0.0000E+00
BEGIN POINT OF X-SOURCE LOCATION (METERS)	-0.3700E+01
END POINT OF X-SOURCE LOCATION (METERS)	0.0000E+00
BEGIN POINT OF Y-SOURCE LOCATION (METERS)	-0.6100E+01
END POINT OF Y-SOURCE LOCATION (METERS)	0.6100E+01
BEGIN POINT OF Z-SOURCE LOCATION (METERS)	0.0000E+00
END POINT OF Z-SOURCE LOCATION (METERS)	0.2000E+01
POROSITY	0.2000E+00
HYDRAULIC CONDUCTIVITY (METER/HOUR)	0.7200E-02
HYDRAULIC GRADIENT	0.3800E-02
LONGITUDINAL DISPERSIVITY (METER)	0.5000E+01
LATERAL DISPERSIVITY (METER)	0.1500E+01
VERTICAL DISPERSIVITY (METER)	0.5000E+00
DISTRIBUTION COEFFICIENT, KD (M**3/KG)	0.3264E-03
HEAT EXCHANGE COEFFICIENT (KCAL/HR-M**2-DEGREE C) ..	0.0000E+00
MOLECULAR DIFFUSION MULTIPLY BY POROSITY (M**2/HR)	0.3530E-05
DECAY CONSTANT (PER HOUR)	0.4015E-04
BULK DENSITY OF THE SOIL (KG/M**3)	0.1540E+04
ACCURACY TOLERANCE FOR REACHING STEADY STATE	0.1000E-02
DENSITY OF WATER (KG/M**3)	0.1000E+04
TIME INTERVAL SIZE FOR THE DESIRED SOLUTION (HR) ..	0.7300E+03
DISCHARGE TIME (HR)	0.8760E+06
WASTE RELEASE RATE (KCAL/HR), (KG/HR), OR (CI/HR) .	0.1548E-05
RETARDATION FACTOR	0.3513E+01
RETARDED DARCY VELOCITY (M/HR)	0.3894E-04
RETARDED LONGITUDINAL DISPERSION COEF. (M**2/HR) ..	0.1997E-03
RETARDED LATERAL DISPERSION COEFFICIENT (M**2/HR) .	0.6343E-04
RETARDED VERTICAL DISPERSION COEFFICIENT (M**2/HR) .	0.2449E-04

LIST OF Z-EIGENVALUES

0.3324E+00	0.6649E+00	0.9973E+00	0.1330E+01	0.1662E+01	0.1995E+01	0.2327E+01	0.2660E+01	0.2992E+01	0.3324E+01
0.3657E+01	0.3989E+01	0.4322E+01	0.4654E+01	0.4987E+01	0.5319E+01	0.5652E+01	0.5984E+01	0.6316E+01	0.6649E+01
0.6981E+01	0.7314E+01	0.7646E+01	0.7979E+01	0.8311E+01	0.8644E+01	0.8976E+01	0.9308E+01	0.9641E+01	0.9973E+01
0.1031E+02	0.1064E+02	0.1097E+02	0.1130E+02	0.1164E+02	0.1197E+02	0.1230E+02	0.1263E+02	0.1297E+02	0.1330E+02
0.1363E+02	0.1396E+02	0.1430E+02	0.1463E+02	0.1496E+02	0.1529E+02	0.1562E+02	0.1596E+02	0.1629E+02	0.1662E+02
0.1695E+02	0.1729E+02	0.1762E+02	0.1795E+02	0.1828E+02	0.1862E+02	0.1895E+02	0.1928E+02	0.1961E+02	0.1995E+02
0.2028E+02	0.2061E+02	0.2094E+02	0.2128E+02	0.2161E+02	0.2194E+02	0.2227E+02	0.2261E+02	0.2294E+02	0.2327E+02
0.2360E+02	0.2394E+02	0.2427E+02	0.2460E+02	0.2493E+02	0.2527E+02	0.2560E+02	0.2593E+02	0.2626E+02	0.2660E+02
0.2693E+02	0.2726E+02	0.2759E+02	0.2793E+02	0.2826E+02	0.2859E+02	0.2892E+02	0.2926E+02	0.2959E+02	0.2992E+02
0.3025E+02	0.3058E+02	0.3092E+02	0.3125E+02	0.3158E+02	0.3191E+02	0.3225E+02	0.3258E+02	0.3291E+02	0.3324E+02
0.3358E+02	0.3391E+02	0.3424E+02	0.3457E+02	0.3491E+02	0.3524E+02	0.3557E+02	0.3590E+02	0.3624E+02	0.3657E+02
0.3690E+02	0.3723E+02	0.3757E+02	0.3790E+02	0.3823E+02	0.3856E+02	0.3890E+02	0.3923E+02	0.3956E+02	0.3989E+02
0.4023E+02	0.4056E+02	0.4089E+02	0.4122E+02	0.4156E+02	0.4189E+02	0.4222E+02	0.4255E+02	0.4289E+02	0.4322E+02
0.4355E+02	0.4388E+02	0.4422E+02	0.4455E+02	0.4488E+02	0.4521E+02	0.4554E+02	0.4588E+02	0.4621E+02	0.4654E+02
0.4687E+02	0.4721E+02	0.4754E+02	0.4787E+02	0.4820E+02	0.4854E+02	0.4887E+02	0.4920E+02	0.4953E+02	0.4987E+02
0.5020E+02	0.5053E+02	0.5086E+02	0.5120E+02	0.5153E+02	0.5186E+02	0.5219E+02	0.5253E+02	0.5286E+02	0.5319E+02
0.5352E+02	0.5386E+02	0.5419E+02	0.5452E+02	0.5485E+02	0.5519E+02	0.5552E+02	0.5585E+02	0.5618E+02	0.5652E+02
0.5685E+02	0.5718E+02	0.5751E+02	0.5785E+02	0.5818E+02	0.5851E+02	0.5884E+02	0.5917E+02	0.5951E+02	0.5984E+02
0.6017E+02	0.6050E+02	0.6084E+02	0.6117E+02	0.6150E+02	0.6183E+02	0.6217E+02	0.6250E+02	0.6283E+02	0.6316E+02
0.6350E+02	0.6383E+02	0.6416E+02	0.6449E+02	0.6483E+02	0.6516E+02	0.6549E+02	0.6582E+02	0.6616E+02	0.6649E+02
0.6682E+02	0.6715E+02	0.6749E+02	0.6782E+02	0.6815E+02	0.6848E+02	0.6882E+02	0.6915E+02	0.6948E+02	0.6981E+02
0.7015E+02	0.7048E+02	0.7081E+02	0.7114E+02	0.7148E+02	0.7181E+02	0.7214E+02	0.7247E+02	0.7281E+02	0.7314E+02
0.7347E+02	0.7380E+02	0.7413E+02	0.7447E+02	0.7480E+02	0.7513E+02	0.7546E+02	0.7580E+02	0.7613E+02	0.7646E+02
0.7679E+02	0.7713E+02	0.7746E+02	0.7779E+02	0.7812E+02	0.7846E+02	0.7879E+02	0.7912E+02	0.7945E+02	0.7979E+02
0.8012E+02	0.8045E+02	0.8078E+02	0.8112E+02	0.8145E+02	0.8178E+02	0.8211E+02	0.8245E+02	0.8278E+02	0.8311E+02
0.8344E+02	0.8378E+02	0.8411E+02	0.8444E+02	0.8477E+02	0.8511E+02	0.8544E+02	0.8577E+02	0.8610E+02	0.8644E+02
0.8677E+02	0.8710E+02	0.8743E+02	0.8777E+02	0.8810E+02	0.8843E+02</				

LIST OF Z-COEFFICIENTS

[illegible]

0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00
0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00
0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00
0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00	0.2116E+00

LIST OF ZS-SERIES

0.1856E+01	0.1461E+01	0.9139E+00	0.3486E+00	-0.1094E+00	-0.3759E+00	-0.4290E+00	-0.3089E+00	-0.9851E-01	0.1076E+00
0.2345E+00	0.2487E+00	0.1629E+00	0.2494E-01	-0.1046E+00	-0.1761E+00	-0.1686E+00	-0.9414E-01	0.1052E-01	0.1005E+00
0.1411E+00	0.1206E+00	0.5280E-01	-0.3093E-01	-0.9530E-01	-0.1157E+00	-0.8710E-01	-0.2477E-01	0.4345E-01	0.8923E-01
0.9527E-01	0.6161E-01	0.4543E-02	-0.5105E-01	-0.8233E-01	-0.7778E-01	-0.4123E-01	0.1050E-01	0.5521E-01	0.7476E-01
0.6228E-01	0.2450E-01	-0.2173E-01	-0.5680E-01	-0.6666E-01	-0.4830E-01	-0.1059E-01	0.2997E-01	0.5637E-01	0.5817E-01
0.3561E-01	-0.9618E-03	-0.3575E-01	-0.5431E-01	-0.4947E-01	-0.2411E-01	0.1046E-01	0.3945E-01	0.5094E-01	0.4071E-01
0.1375E-01	-0.1810E-01	-0.4135E-01	-0.4653E-01	-0.3204E-01	-0.4538E-02	0.2404E-01	0.4169E-01	0.4132E-01	0.2361E-01
-0.3517E-02	-0.2842E-01	-0.4069E-01	-0.3554E-01	-0.1558E-01	0.1040E-01	0.3134E-01	0.3855E-01	0.2937E-01	0.8062E-02
-0.1611E-01	-0.3292E-01	-0.3546E-01	-0.2302E-01	-0.1176E-02	0.2065E-01	0.3328E-01	0.3161E-01	0.1665E-01	-0.4982E-02
-0.2404E-01	-0.3256E-01	-0.2717E-01	-0.1044E-01	0.1033E-01	0.2632E-01	0.3088E-01	0.2233E-01	0.4528E-02	-0.1482E-01
-0.2754E-01	-0.2839E-01	-0.1724E-01	0.9616E-03	0.1841E-01	0.2777E-01	0.2523E-01	0.1208E-01	-0.5917E-02	-0.2109E-01
-0.2709E-01	-0.2154E-01	-0.6996E-02	0.1025E-01	0.2287E-01	0.2561E-01	0.1749E-01	0.2116E-02	-0.1389E-01	-0.2376E-01
-0.2343E-01	-0.1320E-01	0.2435E-02	0.1679E-01	0.2382E-01	0.2067E-01	0.8836E-02	-0.6553E-02	-0.1893E-01	-0.2312E-01
-0.1747E-01	-0.4515E-02	0.1015E-01	0.2031E-01	0.2172E-01	0.1393E-01	0.3647E-03	-0.1316E-01	-0.2093E-01	-0.1973E-01
-0.1020E-01	0.3505E-02	0.1554E-01	0.2083E-01	0.1724E-01	0.6399E-02	-0.6999E-02	-0.1725E-01	-0.2007E-01	-0.1436E-01
-0.2641E-02	0.1004E-01	0.1830E-01	0.1871E-01	0.1120E-01	-0.9613E-03	-0.1256E-01	-0.1869E-01	-0.1683E-01	-0.7874E-02
0.4309E-02	0.1452E-01	0.1845E-01	0.1453E-01	0.4498E-02	-0.7315E-02	-0.1589E-01	-0.1763E-01	-0.1189E-01	-0.1175E-02
0.9909E-02	0.1667E-01	0.1629E-01	0.9014E-02	-0.1996E-02	-0.1204E-01	-0.1686E-01	-0.1449E-01	-0.6009E-02	0.4926E-02
0.1365E-01	0.1650E-01	0.1232E-01	0.2972E-02	-0.7538E-02	-0.1474E-01	-0.1562E-01	-0.9871E-02	0.2074E-06	0.9768E-02
0.1529E-01	0.1428E-01	0.7225E-02	-0.2820E-02	-0.1157E-01	-0.1532E-01	-0.1254E-01	-0.4478E-02	0.5405E-02	0.1290E-01
0.1485E-01	0.1049E-01	0.1720E-02	-0.7689E-02	-0.1375E-01	-0.1392E-01	-0.8186E-02	0.9611E-03	0.9613E-02	0.1411E-01
0.1258E-01	0.5728E-02	-0.3485E-02	-0.1113E-01	-0.1399E-01	-0.1089E-01	-0.3197E-02	0.5780E-02	0.1222E-01	0.1342E-01
0.8921E-02	0.6751E-03	-0.7783E-02	-0.1286E-01	-0.1244E-01	-0.6750E-02	0.1757E-02	0.9445E-02	0.1306E-01	0.1110E-01
0.4454E-02	-0.4027E-02	-0.1073E-01	-0.1282E-01	-0.9455E-02	-0.2109E-02	0.6070E-02	0.1161E-01	0.1217E-01	0.7568E-02
-0.2077E-03	-0.7831E-02	-0.1207E-01	-0.1115E-01	-0.5510E-02	0.2423E-02	0.9264E-02	0.1212E-01	0.9808E-02	0.3355E-02
-0.4471E-02	-0.1034E-01	-0.1177E-01	-0.8198E-02	-0.1174E-02	0.6293E-02	0.1103E-01	0.1105E-01	0.6382E-02	-0.9607E-03
-0.7839E-02	-0.1134E-01	-0.9999E-02	-0.4426E-02	0.2984E-02	0.9071E-02	0.1126E-01	0.8658E-02	0.2397E-02	-0.4834E-02
-0.9960E-02	-0.1082E-01	-0.7082E-02	-0.3646E-03	0.6459E-02	0.1049E-01	0.1004E-01	0.5332E-02	-0.1607E-02	-0.7814E-02
-0.1066E-01	-0.8960E-02	-0.3469E-02	0.3457E-02	0.8866E-02	0.1047E-01	0.7623E-02	0.1556E-02	-0.5129E-02	-0.9591E-02
-0.9950E-02	-0.6083E-02	0.3415E-03	0.6577E-02	0.9977E-02	0.9119E-02	0.4394E-02	-0.2164E-02	-0.7760E-02	-0.1002E-01
-0.8016E-02	-0.2618E-02	0.3856E-02	0.8650E-02	0.9740E-02	0.6686E-02	0.8131E-03	-0.5367E-02	-0.9228E-02	-0.9145E-02
-0.5180E-02	0.9602E-03	0.6653E-02	0.9484E-02	0.8270E-02	0.3551E-02	-0.2646E-02	-0.7680E-02	-0.9421E-02	-0.7150E-02
-0.1857E-02	0.4193E-02	0.8424E-02	0.9051E-02	0.5830E-02	0.1531E-03	-0.5554E-02	-0.8868E-02	-0.8395E-02	-0.4359E-02
0.1504E-02	0.6693E-02	0.9008E-02	0.7483E-02	0.2789E-02	-0.3062E-02	-0.7578E-02	-0.8848E-02	-0.6352E-02	-0.1173E-02
0.4474E-02	0.8187E-02	0.8401E-02	0.5045E-02	-0.4348E-03	-0.5698E-02	-0.8511E-02	-0.7692E-02	-0.3610E-02	0.1982E-02
0.6700E-02	0.8545E-02	0.6749E-02	0.2097E-02	-0.3421E-02	-0.7454E-02	-0.8298E-02	-0.5612E-02	-0.5565E-03	0.4707E-02
0.7942E-02	0.7784E-02	0.4321E-02	-0.9596E-03	-0.5803E-02	-0.8155E-02	-0.7029E-02	-0.2923E-02	0.2403E-02	0.6679E-02
0.8094E-02	0.6063E-02	0.1466E-02	-0.3729E-02	-0.7312E-02	-0.7769E-02	-0.4923E-02	0.2074E-06	0.4897E-02	0.7687E-02
0.7196E-02	0.3650E-02	-0.1428E-02	-0.5874E-02	-0.7800E-02	-0.6402E-02	-0.2291E-02	0.2773E-02	0.6632E-02	0.7653E-02
0.5417E-02	0.8906E-03	-0.3991E-02	-0.7152E-02	-0.7258E-02	-0.4279E-02	0.5036E-03	0.5048E-02	0.7424E-02	0.6634E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.0000E+00 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	10.	12.	15.	18.	20.
5.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
4.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
3.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
2.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
0.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1051E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	10.	12.	15.	18.	20.
5.	0.207E+00	0.887E-01	0.252E-01	0.109E-01	0.306E-02	0.128E-02	0.325E-03	0.745E-04	0.260E-04
4.	0.235E+00	0.105E+00	0.300E-01	0.130E-01	0.363E-02	0.151E-02	0.382E-03	0.873E-04	0.305E-04
3.	0.246E+00	0.112E+00	0.330E-01	0.144E-01	0.405E-02	0.169E-02	0.427E-03	0.975E-04	0.340E-04
2.	0.250E+00	0.115E+00	0.346E-01	0.152E-01	0.431E-02	0.181E-02	0.458E-03	0.105E-03	0.366E-04
0.	0.252E+00	0.117E+00	0.355E-01	0.157E-01	0.450E-02	0.189E-02	0.481E-03	0.110E-03	0.386E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1139E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1139E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.207E+00	0.889E-01	0.254E-01	0.111E-01	0.318E-02	0.136E-02	0.362E-03	0.891E-04	0.330E-04
4.	0.235E+00	0.105E+00	0.303E-01	0.132E-01	0.376E-02	0.160E-02	0.425E-03	0.104E-03	0.385E-04
3.	0.246E+00	0.112E+00	0.333E-01	0.146E-01	0.420E-02	0.179E-02	0.475E-03	0.116E-03	0.429E-04
2.	0.250E+00	0.116E+00	0.348E-01	0.155E-01	0.447E-02	0.191E-02	0.510E-03	0.125E-03	0.462E-04
0.	0.252E+00	0.117E+00	0.358E-01	0.160E-01	0.467E-02	0.200E-02	0.536E-03	0.132E-03	0.487E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1226E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.207E+00	0.891E-01	0.255E-01	0.112E-01	0.326E-02	0.142E-02	0.393E-03	0.102E-03	0.396E-04
4.	0.235E+00	0.105E+00	0.304E-01	0.133E-01	0.386E-02	0.167E-02	0.460E-03	0.119E-03	0.460E-04
3.	0.246E+00	0.113E+00	0.334E-01	0.148E-01	0.430E-02	0.186E-02	0.514E-03	0.133E-03	0.513E-04
2.	0.250E+00	0.116E+00	0.350E-01	0.156E-01	0.459E-02	0.199E-02	0.551E-03	0.143E-03	0.552E-04
0.	0.252E+00	0.118E+00	0.360E-01	0.162E-01	0.479E-02	0.209E-02	0.580E-03	0.150E-03	0.583E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1314E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.207E+00	0.892E-01	0.256E-01	0.113E-01	0.332E-02	0.146E-02	0.417E-03	0.113E-03	0.455E-04
4.	0.235E+00	0.105E+00	0.305E-01	0.134E-01	0.393E-02	0.172E-02	0.487E-03	0.132E-03	0.528E-04
3.	0.246E+00	0.113E+00	0.336E-01	0.149E-01	0.438E-02	0.192E-02	0.544E-03	0.147E-03	0.589E-04
2.	0.250E+00	0.116E+00	0.352E-01	0.157E-01	0.467E-02	0.205E-02	0.584E-03	0.158E-03	0.633E-04
0.	0.252E+00	0.118E+00	0.361E-01	0.163E-01	0.487E-02	0.215E-02	0.614E-03	0.166E-03	0.668E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1402E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.207E+00	0.892E-01	0.257E-01	0.113E-01	0.336E-02	0.149E-02	0.435E-03	0.122E-03	0.507E-04
4.	0.235E+00	0.105E+00	0.306E-01	0.135E-01	0.398E-02	0.176E-02	0.509E-03	0.142E-03	0.587E-04
3.	0.246E+00	0.113E+00	0.336E-01	0.150E-01	0.443E-02	0.196E-02	0.567E-03	0.158E-03	0.654E-04
2.	0.250E+00	0.116E+00	0.352E-01	0.158E-01	0.472E-02	0.210E-02	0.609E-03	0.170E-03	0.703E-04
0.	0.252E+00	0.118E+00	0.362E-01	0.164E-01	0.493E-02	0.220E-02	0.641E-03	0.179E-03	0.742E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1489E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.207E+00	0.893E-01	0.257E-01	0.114E-01	0.339E-02	0.152E-02	0.449E-03	0.129E-03	0.550E-04
4.	0.235E+00	0.105E+00	0.307E-01	0.135E-01	0.401E-02	0.178E-02	0.524E-03	0.150E-03	0.637E-04
3.	0.246E+00	0.113E+00	0.337E-01	0.150E-01	0.447E-02	0.199E-02	0.585E-03	0.167E-03	0.708E-04
2.	0.251E+00	0.116E+00	0.353E-01	0.159E-01	0.476E-02	0.213E-02	0.627E-03	0.180E-03	0.761E-04
0.	0.252E+00	0.118E+00	0.362E-01	0.164E-01	0.497E-02	0.223E-02	0.660E-03	0.189E-03	0.803E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1577E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.207E+00	0.893E-01	0.257E-01	0.114E-01	0.341E-02	0.153E-02	0.459E-03	0.135E-03	0.586E-04
4.	0.235E+00	0.105E+00	0.307E-01	0.136E-01	0.403E-02	0.180E-02	0.536E-03	0.157E-03	0.677E-04
3.	0.246E+00	0.113E+00	0.337E-01	0.150E-01	0.449E-02	0.201E-02	0.598E-03	0.174E-03	0.753E-04
2.	0.251E+00	0.116E+00	0.353E-01	0.159E-01	0.479E-02	0.215E-02	0.641E-03	0.187E-03	0.808E-04
0.	0.252E+00	0.118E+00	0.363E-01	0.164E-01	0.500E-02	0.225E-02	0.675E-03	0.198E-03	0.853E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1664E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.207E+00	0.893E-01	0.258E-01	0.114E-01	0.343E-02	0.154E-02	0.467E-03	0.139E-03	0.614E-04
4.	0.235E+00	0.105E+00	0.307E-01	0.136E-01	0.405E-02	0.182E-02	0.545E-03	0.162E-03	0.709E-04
3.	0.246E+00	0.113E+00	0.337E-01	0.151E-01	0.451E-02	0.202E-02	0.607E-03	0.180E-03	0.788E-04
2.	0.251E+00	0.116E+00	0.354E-01	0.159E-01	0.481E-02	0.217E-02	0.651E-03	0.193E-03	0.846E-04
0.	0.253E+00	0.118E+00	0.363E-01	0.165E-01	0.502E-02	0.227E-02	0.686E-03	0.204E-03	0.893E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1752E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.207E+00	0.893E-01	0.258E-01	0.114E-01	0.344E-02	0.155E-02	0.473E-03	0.143E-03	0.637E-04
4.	0.235E+00	0.105E+00	0.307E-01	0.136E-01	0.406E-02	0.182E-02	0.551E-03	0.166E-03	0.735E-04
3.	0.246E+00	0.113E+00	0.338E-01	0.151E-01	0.452E-02	0.203E-02	0.614E-03	0.184E-03	0.816E-04
2.	0.251E+00	0.116E+00	0.354E-01	0.159E-01	0.482E-02	0.218E-02	0.659E-03	0.198E-03	0.876E-04
0.	0.253E+00	0.118E+00	0.363E-01	0.165E-01	0.504E-02	0.228E-02	0.694E-03	0.208E-03	0.925E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1840E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.207E+00	0.893E-01	0.258E-01	0.114E-01	0.344E-02	0.156E-02	0.477E-03	0.145E-03	0.654E-04
4.	0.235E+00	0.105E+00	0.307E-01	0.136E-01	0.407E-02	0.183E-02	0.556E-03	0.168E-03	0.754E-04
3.	0.246E+00	0.113E+00	0.338E-01	0.151E-01	0.453E-02	0.204E-02	0.619E-03	0.187E-03	0.838E-04
2.	0.251E+00	0.116E+00	0.354E-01	0.159E-01	0.483E-02	0.218E-02	0.664E-03	0.201E-03	0.899E-04
0.	0.253E+00	0.118E+00	0.363E-01	0.165E-01	0.504E-02	0.229E-02	0.699E-03	0.212E-03	0.949E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1927E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.207E+00	0.894E-01	0.258E-01	0.114E-01	0.345E-02	0.156E-02	0.480E-03	0.147E-03	0.668E-04
4.	0.235E+00	0.105E+00	0.307E-01	0.136E-01	0.407E-02	0.184E-02	0.559E-03	0.171E-03	0.770E-04
3.	0.246E+00	0.113E+00	0.338E-01	0.151E-01	0.454E-02	0.205E-02	0.623E-03	0.190E-03	0.854E-04
2.	0.251E+00	0.116E+00	0.354E-01	0.159E-01	0.484E-02	0.219E-02	0.668E-03	0.203E-03	0.916E-04
0.	0.253E+00	0.118E+00	0.363E-01	0.165E-01	0.505E-02	0.230E-02	0.703E-03	0.215E-03	0.967E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.2015E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.207E+00	0.894E-01	0.258E-01	0.115E-01	0.345E-02	0.157E-02	0.482E-03	0.149E-03	0.678E-04
4.	0.235E+00	0.105E+00	0.307E-01	0.136E-01	0.408E-02	0.184E-02	0.562E-03	0.172E-03	0.781E-04
3.	0.246E+00	0.113E+00	0.338E-01	0.151E-01	0.454E-02	0.205E-02	0.625E-03	0.191E-03	0.866E-04
2.	0.251E+00	0.116E+00	0.354E-01	0.160E-01	0.484E-02	0.219E-02	0.671E-03	0.205E-03	0.929E-04
0.	0.253E+00	0.118E+00	0.363E-01	0.165E-01	0.506E-02	0.230E-02	0.706E-03	0.216E-03	0.981E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.2102E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.207E+00	0.894E-01	0.258E-01	0.115E-01	0.345E-02	0.157E-02	0.483E-03	0.150E-03	0.685E-04
4.	0.235E+00	0.105E+00	0.307E-01	0.136E-01	0.408E-02	0.184E-02	0.563E-03	0.173E-03	0.789E-04
3.	0.246E+00	0.113E+00	0.338E-01	0.151E-01	0.454E-02	0.205E-02	0.627E-03	0.193E-03	0.875E-04
2.	0.251E+00	0.116E+00	0.354E-01	0.160E-01	0.484E-02	0.220E-02	0.673E-03	0.207E-03	0.939E-04
0.	0.253E+00	0.118E+00	0.363E-01	0.165E-01	0.506E-02	0.230E-02	0.708E-03	0.218E-03	0.991E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.2190E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.207E+00	0.894E-01	0.258E-01	0.115E-01	0.346E-02	0.157E-02	0.484E-03	0.151E-03	0.691E-04
4.	0.235E+00	0.105E+00	0.307E-01	0.136E-01	0.408E-02	0.184E-02	0.564E-03	0.174E-03	0.796E-04
3.	0.246E+00	0.113E+00	0.338E-01	0.151E-01	0.454E-02	0.205E-02	0.629E-03	0.193E-03	0.882E-04
2.	0.251E+00	0.116E+00	0.354E-01	0.160E-01	0.485E-02	0.220E-02	0.674E-03	0.208E-03	0.946E-04
0.	0.253E+00	0.118E+00	0.363E-01	0.165E-01	0.506E-02	0.230E-02	0.710E-03	0.219E-03	0.998E-04

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.2278E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.207E+00	0.894E-01	0.258E-01	0.115E-01	0.346E-02	0.157E-02	0.485E-03	0.151E-03	0.695E-04
4.	0.235E+00	0.105E+00	0.307E-01	0.136E-01	0.408E-02	0.184E-02	0.565E-03	0.175E-03	0.800E-04
3.	0.246E+00	0.113E+00	0.338E-01	0.151E-01	0.455E-02	0.205E-02	0.629E-03	0.194E-03	0.887E-04
2.	0.251E+00	0.116E+00	0.354E-01	0.160E-01	0.485E-02	0.220E-02	0.675E-03	0.208E-03	0.952E-04
0.	0.253E+00	0.118E+00	0.363E-01	0.165E-01	0.506E-02	0.231E-02	0.711E-03	0.220E-03	0.100E-03

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.2365E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.207E+00	0.894E-01	0.258E-01	0.115E-01	0.346E-02	0.157E-02	0.486E-03	0.151E-03	0.698E-04
4.	0.235E+00	0.105E+00	0.307E-01	0.136E-01	0.408E-02	0.184E-02	0.566E-03	0.175E-03	0.804E-04
3.	0.246E+00	0.113E+00	0.338E-01	0.151E-01	0.455E-02	0.206E-02	0.630E-03	0.195E-03	0.891E-04
2.	0.251E+00	0.116E+00	0.354E-01	0.160E-01	0.485E-02	0.220E-02	0.676E-03	0.209E-03	0.956E-04
0.	0.253E+00	0.118E+00	0.363E-01	0.165E-01	0.506E-02	0.231E-02	0.711E-03	0.220E-03	0.101E-03

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.2453E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.207E+00	0.894E-01	0.258E-01	0.115E-01	0.346E-02	0.157E-02	0.486E-03	0.152E-03	0.700E-04
4.	0.235E+00	0.105E+00	0.307E-01	0.136E-01	0.408E-02	0.184E-02	0.566E-03	0.175E-03	0.806E-04
3.	0.246E+00	0.113E+00	0.338E-01	0.151E-01	0.455E-02	0.206E-02	0.631E-03	0.195E-03	0.894E-04
2.	0.251E+00	0.116E+00	0.354E-01	0.160E-01	0.485E-02	0.220E-02	0.676E-03	0.209E-03	0.958E-04
0.	0.253E+00	0.118E+00	0.363E-01	0.165E-01	0.506E-02	0.231E-02	0.712E-03	0.221E-03	0.101E-03

STEADY STATE SOLUTION HAS NOT BEEN REACHED BEFORE FINAL SIMULATING TIME

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.2540E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.3264E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	0.	2.	5.	7.	X 10.	12.	15.	18.	20.
5.	0.207E+00	0.894E-01	0.258E-01	0.115E-01	0.346E-02	0.157E-02	0.486E-03	0.152E-03	0.702E-04
4.	0.235E+00	0.105E+00	0.307E-01	0.136E-01	0.408E-02	0.185E-02	0.567E-03	0.176E-03	0.808E-04
3.	0.246E+00	0.113E+00	0.338E-01	0.151E-01	0.455E-02	0.206E-02	0.631E-03	0.195E-03	0.896E-04
2.	0.251E+00	0.116E+00	0.354E-01	0.160E-01	0.485E-02	0.220E-02	0.677E-03	0.209E-03	0.960E-04
0.	0.253E+00	0.118E+00	0.363E-01	0.165E-01	0.506E-02	0.231E-02	0.712E-03	0.221E-03	0.101E-03

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Table C-1. Comparison of Fort Stewart CAP-Part A UST 79 Soil Results to Screening Levels

Station: Sample ID: Sample Interval (ft BGS): Collection Date:	Screening Levels			84-01 (ug/kg)	84-01 (ug/kg)	84-01 (ug/kg)	84-02 (ug/kg)	84-02 (ug/kg)	84-02 (ug/kg)	84-03 (ug/kg)	84-03 (ug/kg)	84-04 (ug/kg)	
	GA UST Soil Threshold Level ^a (ug/kg)	Risk-based Screening Level ^b (ug/kg)	Leaching to Groundwater ^c (ug/kg)										
VOLATILE ORGANIC COMPOUNDS													
Benzene	8	200000	30	2.4 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.3 U	
Toluene	6000	410000000	13000	65.4 =	22.2 =	38.3 =	106 =	2.2 U	14.8 =	2.3 U	2.3 U	2.3 U	
Ethylbenzene	10000	200000000	12000	2.4 U	2.2 U	2.2 U	2.5 U	2.2 U	2.2 U	2.2 U	2.2 U	2.3 U	
Xylenes, Total ^d	700000	1000000000	190000	7.2 U	6.6 U	6.5 U	7.5 U	6.4 U	6.7 U	6.9 U	6.9 U	6.9 U	
POLYNUCLEAR AROMATIC HYDROCARBONS													
2-Chloronaphthalene	N/A ^e	82000000	84000	402 U	1460 U	1450 U	417 U	358 U	370 U	370 U	383 U	383 U	
Acenaphthene	N/A ^e	120000000	570000	402 U	1460 U	1450 U	417 U	358 U	370 U	370 U	383 U	383 U	
Acenaphthylene	N/A ^e	61000000	4200000	402 U	1460 U	1450 U	417 U	358 U	370 U	370 U	383 U	383 U	
Anthracene	N/A ^e	610000000	12000000	402 U	1460 U	1450 U	417 U	358 U	370 U	370 U	383 U	383 U	
Benzo(a)anthracene	N/A ^e	7800	2000	402 U	1460 U	1450 U	417 U	358 U	370 U	370 U	383 U	383 U	
Benzo(a)pyrene	N/A ^e	780	8000	402 U	1460 U	1450 U	417 U	358 U	370 U	370 U	383 U	383 U	
Benzo(b)fluoranthene	N/A ^e	7800	5000	402 U	1460 U	1450 U	417 U	358 U	370 U	370 U	383 U	383 U	
Benzo(g,h,i)perylene	N/A ^e	--	--	402 U	1460 U	1450 U	417 U	358 U	370 U	370 U	383 U	383 U	
Benzo(k)fluoranthene	N/A ^e	78000	49000	402 U	1460 U	1450 U	417 U	358 U	370 U	370 U	383 U	383 U	
Chrysene	N/A ^e	780000	160000	402 U	1460 U	1450 U	417 U	358 U	370 U	370 U	383 U	383 U	
Dibenzo(a,h)anthracene	N/A ^e	780	2000	402 U	1460 U	1450 U	417 U	358 U	370 U	370 U	383 U	383 U	
Fluoranthene	N/A ^e	82000000	4300000	402 U	1460 U	1450 U	417 U	358 U	370 U	370 U	383 U	383 U	
Fluorene	N/A ^e	82000000	560000	402 U	1460 U	1450 U	417 U	358 U	370 U	370 U	383 U	383 U	
Indeno(1,2,3-cd)pyrene	N/A ^e	7800	14000	402 U	1460 U	1450 U	417 U	358 U	370 U	370 U	383 U	383 U	
Naphthalene	N/A ^e	82000000	84000	402 U	1460 U	1450 U	417 U	358 U	370 U	370 U	383 U	383 U	
Phenanthrene	N/A ^e	61000000	4200000	402 U	1460 U	1450 U	417 U	358 U	370 U	370 U	383 U	383 U	
Pyrene	N/A ^e	61000000	4200000	402 U	1460 U	1450 U	417 U	358 U	370 U	370 U	383 U	383 U	
OTHER ANALYTES													
Lead	--	5000000	--	6700 J	11000 =	4200 =	2900 =	5400 =					
Total Organic Carbon	--	--	--										
TPH-Diesel Range Organics	--	--	--	6700 J	178000 =	225000 =	3090 U	16700 =	9960 U	4580 U			
Total Petroleum Hydrocarbons	--	--	--										

^a Average or higher groundwater pollution susceptibility area (where public water supply is within 2.0 mi.).

^b Protective of soil exposure during Industrial Land Use.

^c Protective of groundwater ingestion. Used a dilution attenuation factor of 20.

^d Values based on naphthalene as a surrogate chemical.

^e Not applicable. The screening level exceeds the expected soil concentration under free product condition.

^f Values based on pyrene as a surrogate chemical.

Italicized values indicate results exceeding risk-based screening levels.

Underlined values indicate results exceeding leaching to groundwater screening levels.

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

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

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

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

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

Bold values indicate results exceeding Georgia UST action levels.

Table C-1. Comparison of Fort Stewart CAP-Part A UST 79 Soil Results to Screening Levels (continued)

Station: Sample ID: Sample Interval (ft BGS): Collection Date: Units:	Screening Levels		Leaching to Groundwater ^c (ug/kg)	84-04 (ug/kg)	84-06 (ug/kg)	84-06 (ug/kg)	84-07 (ug/kg)	84-07 (ug/kg)	84-08 (ug/kg)	84-08 (ug/kg)
	GA UST	Risk-based								
	Soil Threshold Level ^a (ug/kg)	Screening Level ^b (ug/kg)								
VOLATILE ORGANIC COMPOUNDS										
Benzene	8	200000	30	2.3 U	9 =	6.9 =	2.2 U	2.2 U	2.4 U	2.2 U
Toluene	6000	410000000	13000	2.3 U	9.4 =	2 J	4 =	2.4 =	2.1 J	3.9 =
Ethylbenzene	10000	200000000	12000	2.3 U	4.5 =	1.7 J	0.72 J	2.4 =	2.4 U	2.2 U
Xylenes, Total	700000	1000000000	190000	6.8 U	5.2 =	2.5 J	2 J	6.4 =	3.5 U	3.3 U
POLYNUCLEAR AROMATIC HYDROCARBONS										
2-Chloronaphthalene	N/A ^c	82000000	84000	379 U	1430 U	362 U	374 U	366 U	392 U	370 U
Acenaphthene	N/A ^c	120000000	570000	379 U	1430 U	362 U	374 U	366 U	392 U	370 U
Acenaphthylene	N/A ^c	61000000	4200000	379 U	1430 U	362 U	374 U	366 U	392 U	370 U
Anthracene	N/A ^c	610000000	12000000	379 U	1430 U	362 U	374 U	366 U	24.8 J	370 U
Benzo(a)anthracene	N/A ^c	7800	2000	379 U	1430 U	362 U	374 U	366 U	34.7 J	56.6 J
Benzo(a)pyrene	N/A ^c	780	8000	379 U	1430 U	362 U	374 U	366 U	392 U	370 U
Benzo(b)fluoranthene	N/A ^c	7800	5000	379 U	1430 U	362 U	374 U	366 U	392 U	370 U
Benzo(g,h,i)perylene	N/A ^c	--	--	379 U	1430 U	362 U	374 U	366 U	392 U	370 U
Benzo(k)fluoranthene	N/A ^c	78000	49000	379 U	1430 U	362 U	374 U	366 U	392 U	370 U
Chrysene	N/A ^c	780000	160000	379 U	1430 U	362 U	374 U	366 U	28 J	47.2 J
Dibenzo(a,h)anthracene	N/A ^c	780	2000	379 U	1430 U	362 U	374 U	366 U	392 U	370 U
Fluoranthene	N/A ^c	82000000	4300000	379 U	1430 U	362 U	374 U	366 U	54.1 J	97.3 J
Fluorene	N/A ^c	82000000	560000	379 U	1430 U	362 U	374 U	366 U	392 U	370 U
Indeno(1,2,3-cd)pyrene	N/A ^c	7800	14000	379 U	1430 U	362 U	374 U	366 U	392 U	370 U
Naphthalene	N/A ^c	82000000	84000	379 U	1430 U	362 U	374 U	366 U	392 U	370 U
Phenanthrene	N/A ^c	61000000	4200000	379 U	1430 U	362 U	374 U	366 U	100 J	72.3 J
Pyrene	N/A ^c	61000000	4200000	379 U	1430 U	362 U	374 U	366 U	118 J	169 J
OTHER ANALYTES										
Lead	--	5000000	--			910 =		1300 =		3900 =
Total Organic Carbon	--	--	--							
TPH-Diesel Range Organics	--	--	--			1500 U				1100 U
Total Petroleum Hydrocarbons	--	--	--	132000 =	167000 =		7250 J	7880 J	7670 U	

^a Average or higher groundwater pollution susceptibility area (where public water supply is within 2.0 mi.).

^b Protective of soil exposure during Industrial Land Use.

^c Protective of groundwater ingestion. Used a dilution attenuation factor of 20.

^d Values based on naphthalene as a surrogate chemical.

^e Not applicable. The screening level exceeds the expected soil concentration under free product condition.

^f Values based on pyrene as a surrogate chemical.

Italicized values indicate results exceeding risk-based screening levels.

Underlined values indicate results exceeding leaching to groundwater screening levels.

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

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

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

Bold values indicate results exceeding Georgia UST action levels.

Table C-1. Comparison of Fort Stewart CAP-Part A UST 79 Soil Results to Screening Levels (continued)

Station:	Screening Levels				84-09	84-09	84-10	84-10	84-11	84-12
Sample ID:	GA UST	Risk-based	Leaching to		840911	840921	841011	841021	841121	841211
Sample Interval (ft BGS):	Soil Threshold	Screening	Groundwater ^c		0.7 - 2.0	4.0 - 6.0	2.0 - 4.0	1.1 - 2.0	0.0 - 2.0	2.0 - 4.0
Collection Date:	Level ^a	Level ^b			17-Feb-99	17-Feb-99	17-Feb-99	17-Feb-99	17-Feb-99	17-Feb-99
Units:	(ug/kg)	(ug/kg)	(ug/kg)		(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
VOLATILE ORGANIC COMPOUNDS										
Benzene	8	200000	30		2.1 U	0.81 J	224 J	374 J	3.4 U	2.2 U
Toluene	6000	410000000	13000		2.6 =	3.6 =	198 J	166 J	1.5 J	1.1 J
Ethylbenzene	10000	200000000	12000		2.1 U	2.1 U	4670 =	7040 =	3.4 U	2.2 U
Xylenes, Total	700000	1000000000	190000		1 J	3.2 U	17100 =	34200 =	5 U	0.68 J
POLYNUCLEAR AROMATIC HYDROCARBONS										
2-Chloronaphthalene	N/A ^e	82000000	84000		741 U	370 U	3510 U	7580 U	7330 U	725 U
Acenaphthene	N/A ^e	120000000	570000		741 U	370 U	3510 U	2020 J	7330 U	725 U
Acenaphthylene	N/A ^e	61000000	4200000		741 U	370 U	3510 U	7580 U	7330 U	725 U
Anthracene	N/A ^e	610000000	12000000		741 U	370 U	3510 U	7580 U	7330 U	725 U
Benzo(a)anthracene	N/A ^e	7800	2000		741 U	370 U	3510 U	7580 U	7330 U	725 U
Benzo(a)pyrene	N/A ^e	780	8000		741 U	370 U	3510 U	7580 U	7330 U	725 U
Benzo(b)fluoranthene	N/A ^e	7800	5000		741 U	370 U	3510 U	7580 U	7330 U	725 U
Benzo(g,h,i)perylene	N/A ^e	--	--		741 U	370 U	3510 U	7580 U	7330 U	725 U
Benzo(k)fluoranthene	N/A ^e	78000	49000		741 U	370 U	3510 U	7580 U	7330 U	725 U
Chrysene	N/A ^e	780000	160000		741 U	370 U	3510 U	7580 U	7330 U	725 U
Dibenzo(a,h)anthracene	N/A ^e	780	2000		741 U	370 U	3510 U	7580 U	7330 U	725 U
Fluoranthene	N/A ^e	82000000	4300000		741 U	370 U	3510 U	7580 U	7330 U	725 U
Fluorene	N/A ^e	82000000	560000		741 U	370 U	3510 U	7580 U	7330 U	725 U
Indeno(1,2,3-cd)pyrene	N/A ^e	7800	14000		741 U	370 U	3510 U	4140 J	7330 U	725 U
Naphthalene	N/A ^e	82000000	84000		741 U	370 U	6030 =	11300 =	7330 U	725 U
Phenanthrene	N/A ^e	61000000	4200000		741 U	370 U	3950 =	10100 =	7330 U	725 U
Pyrene	N/A ^e	61000000	4200000		741 U	370 U	816 J	1790 J	7330 U	725 U
OTHER ANALYTES										
Lead	--	5000000	--			2700 =		2800 =	26600 =	
Total Organic Carbon	--	--	--							
TPH-Diesel Range Organics	--	--	--							
Total Petroleum Hydrocarbons	--	--	--		211000 =	27500 =	6950000 =	7300000 =	134000 =	246000 =

^a Average or higher groundwater pollution susceptibility area (where public water supply is within 2.0 mi.).

^b Protective of soil exposure during Industrial Land Use.

^c Protective of groundwater ingestion. Used a dilution attenuation factor of 20.

^d Values based on naphthalene as a surrogate chemical.

^e Not applicable. The screening level exceeds the expected soil concentration under free product condition.

^f Values based on pyrene as a surrogate chemical.

Italicized values indicate results exceeding risk-based screening levels.

Underlined values indicate results exceeding leaching to groundwater screening levels.

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

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

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

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

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

Bold values indicate results exceeding Georgia UST action levels.

Table C-1. Comparison of Fort Stewart CAP-Part A UST 79 Soil Results to Screening Levels (continued)

Station:	Screening Levels				84-12	84-13	84-13	84-14	84-14
	Sample ID:	GA UST	Risk-based	Leaching to					
Sample Interval (ft BGS):	Soil Threshold	Level ^b	Screening	Groundwater ^c	84-12	84-13	84-13	84-14	84-14
Collection Date:	Level ^b	(ug/kg)	Level ^b	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
Units:	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
VOLATILE ORGANIC COMPOUNDS									
Benzene	8	20000	30		2 UJ	0.67 J	1.9 U	1.4 J	2 U
Toluene	6000	41000000	13000		6.2 J	2 =	1.9 U	3.1 =	2 U
Ethylbenzene	10000	200000000	12000		4 J	1 J	1.9 U	1.3 J	2 U
Xylenes, Total	700000	1000000000	190000		19.6 J	1.1 J	2.8 U	0.7 J	3 U
POLYNUCLEAR AROMATIC HYDROCARBONS									
2-Chloronaphthalene	N/A ^e	82000000	84000		3620 U	362 U	1450 U	370 U	1450 U
Acenaphthene	N/A ^e	120000000	570000		3620 U	362 U	1450 U	370 U	147 J
Acenaphthylene	N/A ^e	61000000	420000		3620 U	362 U	1450 U	370 U	1450 U
Anthracene	N/A ^e	610000000	12000000		3620 U	362 U	1450 U	370 U	402 J
Benzo(a)anthracene	N/A ^e	7800	2000		3620 U	362 U	1450 U	370 U	910 J
Benzo(a)pyrene	N/A ^e	780	8000		3620 U	362 U	1450 U	370 U	819 J
Benzo(b)fluoranthene	N/A ^e	7800	5000		3620 U	362 U	1450 U	370 U	746 J
Benzo(g,h,i)perylene	N/A ^e	--	--		3620 U	362 U	1450 U	370 U	407 J
Benzo(k)fluoranthene	N/A ^e	78000	49000		3620 U	362 U	1450 U	370 U	1450 U
Chrysene	N/A ^e	780000	160000		3620 U	362 U	1450 U	370 U	788 J
Dibenzo(a,h)anthracene	N/A ^e	780	2000		3620 U	362 U	1450 U	370 U	1450 U
Fluoranthene	N/A ^e	82000000	4300000		3620 U	362 U	1450 U	370 U	2040 =
Fluorene	N/A ^e	82000000	560000		3620 U	362 U	1450 U	370 U	136 J
Indeno(1,2,3-cd)pyrene	N/A ^e	7800	14000		3620 U	362 U	1450 U	370 U	748 J
Naphthalene	N/A ^e	82000000	84000		3620 U	362 U	1450 U	370 U	1450 U
Phenanthrene	N/A ^e	61000000	420000		3620 U	362 U	1450 U	370 U	1230 J
Pyrene	N/A ^e	61000000	420000		3620 U	362 U	1450 U	370 U	1770 =
OTHER ANALYTES									
Lead	--	5000000	--		91200 =		6000 =		12000 =
Total Organic Carbon	--	--	--						
TPH-Diesel Range Organics	--	--	--						
Total Petroleum Hydrocarbons	--	--	--		9680000 =	6580 U	167000 =	8530 U	1070000 =

^a Average or higher groundwater pollution susceptibility area (where public water supply is within 2.0 mi.).

^b Protective of soil exposure during Industrial Land Use.

^c Protective of groundwater ingestion. Used a dilution attenuation factor of 20.

^d Values based on naphthalene as a surrogate chemical.

^e Not applicable. The screening level exceeds the expected soil concentration under free product condition.

^f Values based on pyrene as a surrogate chemical.

Bold values indicate results exceeding Georgia UST action levels.

Italicized values indicate results exceeding risk-based screening levels.

Underlined values indicate results exceeding leaching to groundwater screening levels.

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

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

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

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

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

Table C-2. Comparison of Fort Stewart CAP-Part A UST 79 Groundwater Results to Screening Levels

Station:	Screening Levels		84-01	84-02	84-03	84-04	84-05	84-05	84-05	84-05	84-06
	Federal	Risk-based*									
Sample ID:	SDWA	MCLs	84-01	84-02	84-03	84-04	84-05	84-05	84-05	84-05	84-06
Screened Interval (ft BGS)			840112	840212	840312	840412	840512	840522	840532	840542	840612
Collection Date:			2.0 - 12.0	1.0 - 11.0	0.0 - 10.0	2.0 - 12.0	6.0 - 10.0	11.0 - 15.0	16.0 - 20.0	21.0 - 25.0	0.0 - 9.0
Units:	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
VOLATILE ORGANIC COMPOUNDS											
Benzene	5	0.36	6.8 J	2 U	52.6 =	2 U	2 U	2 U	2 U	2 U	6.5 U
Toluene	1000	750	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.76 J
Ethylbenzene	700	1300	7.1 =	2 U	5.2 =	2 U	2 U	2 U	2 U	2 U	2 U
Xylenes, Total	10000	12000	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	3 U
POLYNUCLEAR AROMATIC HYDROCARBONS											
2-Chloronaphthalene		1500	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	15.6 U
Acenaphthene		2200	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	15.6 U
Acenaphthylene		1100	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	15.6 U
Anthracene		11000	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	15.6 U
Benzo(a)anthracene		0.092	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	15.6 U
Benzo(a)pyrene	0.2	0.0092	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	15.6 U
Benzo(b)fluoranthene		0.092	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	15.6 U
Benzo(g,h,i)perylene		0.92	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	15.6 U
Benzo(k)fluoranthene		9.2	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	15.6 U
Chrysene		0.0092	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	15.6 U
Dibenzo(a,h)anthracene		1500	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	15.6 U
Fluoranthene		1500	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	15.6 U
Fluorene		0.092	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	15.6 U
Indeno(1,2,3-cd)pyrene		1500	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	15.6 U
Naphthalene		1100	10.2 =	10 U	10 U	10 U	10 U	10 U	10 U	10 U	15.6 U
Phenanthrene		1100	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	15.6 U
Pyrene		1100	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	15.6 U

^a Protective of tap water ingestion by a resident.
^b Values based on naphthalene as a surrogate chemical.
^c Values based on pyrene as a surrogate chemical.
 Bold values indicate results exceeding Federal Safe Drinking Water Act Maximum Contaminant Levels.
 Underlined values indicate results exceeding risk-based screening levels.

U Indicates that the compound was not detected above the reported sample quantitation limit.
 J Indicates that the value for the compound was an estimated value.
 UJ Indicates that the sample was not detected above an approximate sample quantitation limit.
 R Indicates that the sample results are unusable and the presence or absence of the compound could not be verified.
 = Indicates that the compound was detected at the concentration reported.

Table C-2. Comparison of Fort Stewart CAP-Part A UST 79 Groundwater Results to Screening Levels (continued)

Station:	Screening Levels		84-07	84-08	84-09	84-10	84-11	84-12	84-13	84-14
	Sample ID:	Federal								
	Screened Interval (ft BGS)	SDWA								
	Collection Date:	MCLs								
Units:	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
VOLATILE ORGANIC COMPOUNDS										
Benzene	5	0.36	2.1	1.1	2	32.4	2	3.5	0.66	2
Toluene	1000	750	2	2	2	14.4	2	0.79	8.5	2.2
Ethylbenzene	700	1300	0.55	2	2	17.4	2	2	3.7	0.93
Xylenes, Total	10000	12000	3.0	3	6	109	6	6	23	5.2
POLYNUCLEAR AROMATIC HYDROCARBONS										
2-Chloronaphthalene	1500		12.3	14.3	11.1	10.3	11.9	12.2	12.5	46
Acenaphthene	2200		12.3	14.3	11.1	10.3	11.9	12.2	12.5	46
Acenaphthylene	1100		12.3	14.3	11.1	10.3	11.9	12.2	12.5	46
Anthracene	11000		12.3	14.3	11.1	10.3	11.9	12.2	12.5	46
Benzo(a)anthracene	0.092		12.3	14.3	11.1	10.3	11.9	12.2	12.5	46
Benzo(a)pyrene	0.0092	0.2	12.3	14.3	11.1	10.3	11.9	12.2	12.5	4.5
Benzo(b)fluoranthene	0.092		12.3	14.3	11.1	10.3	11.9	12.2	12.5	46
Benzo(g,h,i)perylene			12.3	14.3	11.1	10.3	11.9	12.2	12.5	46
Benzo(k)fluoranthene			12.3	14.3	11.1	10.3	11.9	12.2	12.5	46
Chrysene	0.92		12.3	14.3	11.1	10.3	11.9	12.2	12.5	46
Dibenz(a,h)anthracene	9.2		12.3	14.3	11.1	10.3	11.9	12.2	12.5	46
Fluoranthene	0.0092		12.3	14.3	11.1	10.3	11.9	12.2	12.5	46
Fluorene	1500		12.3	14.3	11.1	10.3	11.9	12.2	12.5	46
Indeno(1,2,3-cd)pyrene	1500		12.3	14.3	11.1	10.3	11.9	12.2	12.5	46
Naphthalene	0.092		12.3	14.3	11.1	10.3	11.9	12.2	12.5	46
Phenanthrene	1500		12.3	14.3	11.1	10.3	11.9	12.2	12.5	46
Pyrene	1100		12.3	14.3	11.1	10.3	11.9	12.2	12.5	46

^a Protective of tap water ingestion by a resident.
^b Values based on naphthalene as a surrogate chemical.
^c Values based on pyrene as a surrogate chemical.
 Bold values indicate results exceeding Federal Safe Drinking Water Act Maximum Contaminant Levels.
 Underlined values indicate results exceeding risk-based screening levels.

U Indicates that the compound was not detected above the reported sample quantitation limit.
 J Indicates that the value for the compound was an estimated value.
 UJ Indicates that the sample was not detected above an approximate sample quantitation limit.
 R Indicates that the sample results are unusable and the presence or absence of the compound could not be verified.
 = Indicates that the compound was detected at the concentration reported.

Table C-3. Summary of Geotechnical Results for the UST 79 Site

Site	UST 79
Boring	84-03
Sample ID	840331
Sample Depth Interval (ft BGS)	8.0 – 10.0
Grain Size Analysis - % Fines	26
Grain Size Analysis - % Sand	72
Grain Size Analysis - % Gravel	2
Liquid Limit	NP
Plastic Limit	NP
Plasticity Index	NP
Moisture Content (%)	25.4
Permeability	8.24×10^{-5}
Porosity	0.38
Specific Gravity	2.48
NP = nonplastic	

**Table C-4. Natural Attenuation Modeling Results for the UST 79 Site
(Maximum Observed CAP-Part A Groundwater Concentration)**

Distance from the source (ft)	Distance from the source (m)	Predicted Maximum Conc. In Groundwater (ug/L)
0.0	0.0	52.6
3.3	1.0	36.4
6.6	2.0	24.7
9.8	3.0	16.7
13.1	4.0	11.3
16.4	5.0	7.61
19.7	6.0	5.13
23.0	7.0	3.46
26.2	8.0	2.33
29.5	9.0	1.57
32.8	10.0	1.06
39.4	12.0	0.48
49.2	15.0	0.15
59.1	18.0	0.05
65.6	20.0	0.02
200.0	61.0	0
5000.0	1524.0	0

Table C-5. Natural Attenuation modeling results for UST 79 Site
(Maximum groundwater concentration is based on SESOIL modeling of
soil contamination at boring 84-10 without biodegradation of benzene in the soil)

Distance from the source (ft)	Distance from the source (m)	Predicted Maximum Conc. In Groundwater (ug/L)
0.0	0.0	253
3.3	1.0	174
6.6	2.0	118
9.8	3.0	79.8
13.1	4.0	53.9
16.4	5.0	36.3
23.0	7.0	16.5
26.2	8.0	11.1
29.5	9.0	7.51
32.8	10.0	5.06
39.4	12.0	2.31
49.2	15.0	0.712
59.1	18.0	0.22
65.6	20.0	0.1
82.0	25.0	0.015
200.0	61.0	0
5000.0	1524.0	0

**Table C-6. Natural Attenuation modeling results for UST 79 Site
(Maximum groundwater concentration is based on SESOIL modeling of
soil contamination at boring 84-10 with biodegradation of benzene in the soil)**

Distance from the source (ft)	Distance from the source (m)	Predicted Maximum Conc. In Groundwater (ug/L)
0.0	0.0	131
3.3	1.0	90.1
6.6	2.0	61.1
9.8	3.0	41.3
13.1	4.0	27.9
16.4	5.0	18.8
19.7	6.0	12.7
23.0	7.0	8.55
26.2	8.0	5.76
29.5	9.0	3.89
32.8	10.0	2.62
39.4	12.0	1.19
49.2	15.0	0.37
59.1	18.0	0.11
65.6	20.0	0.053
82.0	25.0	0.007
200.0	61.0	0
5000.0	1524.0	0

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