FINAL

CORRECTIVE ACTION PLAN - PART A REPORT
FOR
UNDERGROUND STORAGE TANK 93
FACILITY ID #9-089112
BUILDING 1330
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 0055

Prepared by:

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

September 2000

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Attachments

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List of Abbreviations and Acronyms

ACE	Anderson Columbia Environmental, Inc.
ACL	alternate concentration limits
AMSL	above mean sea level
ARAR	applicable, relevant, and appropriate requirement
ASTM	American Society for Testing and Materials
ATL	alternate threshold level
BGS	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylene
BTOC	below top of casing
CAP	Corrective Action Plan
COCs	chemicals of concern
COPC	chemical of potential 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
GUST	Georgia Underground Storage Tank
HQ	hazard quotient
ID	inside diameter
IDW	investigation-derived waste
IWQS	In-Stream Water Quality Standard
MCL	maximum contaminant level
MSL	mean sea level
NFAR	No Further Action Required
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
STL	Soil Threshold Level
TPH	total petroleum hydrocarbon
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
UST	underground storage tank
USTMP	Underground Storage Tank Management Program
VOC	volatile organic compound

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CORRECTIVE ACTION PLAN PART A

Facility Name: UST 93, Building 1330 Street Address: Wilson Avenue and W. 15th Street

Facility ID: 9-089112 City: Fort Stewart County: Liberty Zip Code: 31314

Latitude: 31° 52′ 31″ Longitude: 81° 37′ 37″

Submitted by UST Owner/Operator:		Prepared by Consultant/Contractor:	
Name:	Thomas C. Fry/ Environmental Branch	Name:	Patricia A. Stoll
Company:	U.S. Army/HQ 3d, Inf. Div (Mech)	Company:	SAIC
Address:	Directorate of Public Works, Bldg 1137	Address:	P.O. Box 2502
	1550 Frank Cochran Drive		
City:	Fort Stewart State: GA	City:	Oak Ridge State: TN
Zip Code:	31314-4927	Zip Code:	37831

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: 09/28/00

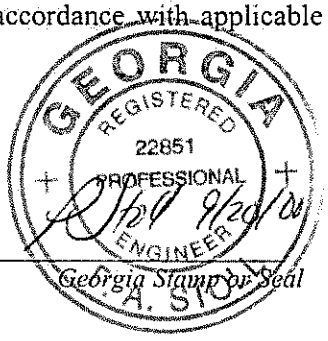
B. Registered Professional Engineer or Professional Geologist Certification

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 Stoll

Signature: Patricia A. Stoll

Date: 9/20/00



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 93 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 93.

B. Free Product Removal

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

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

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

C. Tank History

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

CURRENT UST SYSTEMS (if applicable)

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

FORMER UST SYSTEMS (if applicable)

Tank ID Number	Capacity (gal)	Substance Stored	Date Removed
93	2500	used oil	7/23/96

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 23, 1996. After removing the tank, one soil sample was collected from the tank pit (Figure 7). TPH was present in sample TK93-S1 at a concentration of 63 mg/kg. BTEX and PAH constituents were not present in the sample.

As requested by GA EPD USTMP, Fort Stewart submitted additional site maps and a completed GUST-29 in the Closure Report Addendum #1 dated April 1998. Due to the elevated TPH concentration, GA EPD USTMP requested that Fort Stewart resample the site. Resampling was conducted in April 1999, and the information was submitted to GA EPD USTMP in the Closure Report Addendum #2 dated May 1999. Addendum #2 documented cis-1,2-dichloroethene, tetrachloroethene, and trichloroethene in the groundwater (Figure 7) and recommended preparation and submittal of a CAP-Part A with full VOC analysis of all groundwater samples in order to confirm or deny the presence of these constituents.

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 93 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:*	400	*feet*
ii. *Nearest down-gradient public water supply located within:*	5700	*feet*
iii. *Nearest non-public water supply located within:*	>10,560	*feet*
iv. *Nearest down-gradient non-public water supply located within:*	>10,560	*feet*

c. *Surface Water Bodies and sewers:*

i. *Nearest surface water located within*	3000	*feet*
ii. *Nearest down-gradient surface water located within*	3000	*feet*
iii. *Nearest storm or sanitary sewer located within:*	100	*feet*
iv. *Depth to bottom of sewer at a point nearest the plume*	4.1	*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.

In January 2000, continuous soil cores were collected at 2.0-foot intervals during the installation of five boreholes. Field headspace gas analyses were performed on each sample to determine the organic vapor concentration. One soil sample was selected from each borehole for laboratory chemical analysis of VOCs, PAHs, and TPH. In boreholes where organic vapors were detected, one sample was collected from the sample interval where the highest vapor concentration was recorded. If organic vapors were not detected, one sample was collected from the sample interval located immediately above the water table. Refer to Attachment A for complete documentation of the technical approach implemented during this investigation.

i. *Soil contamination above applicable threshold levels?* YES X NO ____

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

During the CAP-Part A investigation in January 2000, benzene was detected in boring 98-03 at a depth of 8.0 – 10.0 feet BGS at a concentration of 0.0094 mg/kg. This sample location was outside the former tank pit in the vicinity of the ancillary piping. However, the sample depth is below the water table.

During the closure activities in 1996, BTEX and PAH constituents were not detected in the soil sample collected from the base of the former tank pit.

ii. *ATLs calculated?* YES X NO ____

If yes, present ATLs.

Benzene was detected in one soil sample, located below the water table, at a concentration of 0.0094 mg/kg which exceeded the STL of 0.005 mg/kg. An ATL of 0.0115 mg/kg for benzene in soil was calculated as shown in Appendix VI. The detected benzene concentration of 0.0094 mg/kg is less than the proposed ATL; therefore, further investigation and/or remediation of the site soil is not required.

iii. *If ATL's calculated, is soil contamination above ATL's?*

YES ____ NO X 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 (98-05), 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 VOCs (as per the recommendation contained in the Closure Report Addendum #2) and PAHs. Refer to Attachment A for complete documentation of the technical approach used to collect groundwater samples.

i. *Groundwater contamination above MCLs?* YES ____ NO X

ii. *Groundwater contamination above In-Stream Water Quality Standards?*

YES ____ NO X

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

In January 2000, benzene was estimated in one sample from the vertical profile boring (98-05) at a concentration of 0.18J µg/L. This was the only sampling location where benzene was detected in groundwater. Refer to Attachment C for supplemental information on risk screening.

No groundwater samples were collected from the tank pit during the closure activities in 1996. In 1999, a groundwater sample was collected from location UST93-1 and contained 51.8 µg/L of cis-1,2-dichloroethene, 124 µg/L of tetrachloroethene, and 20.7 µg/L of trichloroethene. Well 98-04 and vertical profile 98-05 were located adjacent to this sample location and did not contain these consitutents in January 2000. Acetone, chloroform and carbon disulfide were detected at low concentrations (Figure 5).

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):* 3.00 – 6.50 *(Table 4: Groundwater Elevations)*
b. *Groundwater Flow Direction:* southwest *(Figure 6: Potentiometric Surface Map)*
c. *Hydraulic Gradient* 0.081 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 93 on July 23, 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 building 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). Approximately 58.21 tons of contaminated soil were excavated from the site.

7. Site Ranking:

Environmental Site Sensitivity Score: 10

(Appendix X: Site Ranking Form)

8. Conclusions and Recommendations

Complete applicable section below, one section only

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

(provide justification)

Fort Stewart respectfully requests that GA EPD, USTMP assign Facility ID #9-089112 a "No Further Action Required" (NFAR) status for the following reasons:

- The CAP-Part A site ranking score is 10, which GA EPD, USTMP representatives have indicated is an acceptable score for requesting an NFAR status (i.e., January 27, 1999, meeting between GA EPD, Fort Stewart, USACE, and SAIC representatives).
- Benzene in groundwater was estimated in one sample at a concentration below the analytical reporting limit.
- Benzene in soil was detected in one sample at a concentration of 0.0094 mg/kg from a sample interval located below the water table and the concentration is below the ATL of 0.0115 mg/kg.
- The closest surface water body is Mill Creek located at 3000 feet downgradient from the site.

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

(provide justification)

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

(provide justification)

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

A. Monitoring points

B. Period/Frequency of monitoring and reporting

C. Monitoring Parameters

D. Milestone Schedule

E. Scenarios for site closure or CAP-Part B

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

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

1. Soil N/A X

2. Groundwater

a. Free Product N/A X

b. Dissolved phase N/A X

3. Surface Water N/A X

B. Proposed Investigation of Vadose Zone And Aquifer Characteristics:

V. PUBLIC NOTICE

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

UST 93 is located within the confines of Fort Stewart Military Reservation, a federal facility. The U.S. Government owns all of the property contiguous to the site. The Fort Stewart Directorate of Public Works (DPW) has complied with the public notice requirements defined by Georgia Environmental Protection Division (GA EPD) guidance by publishing an announcement in the *Savannah Morning News* on July 16 and 23, 2000.

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 93, Building 1330, Facility ID #9-089112, 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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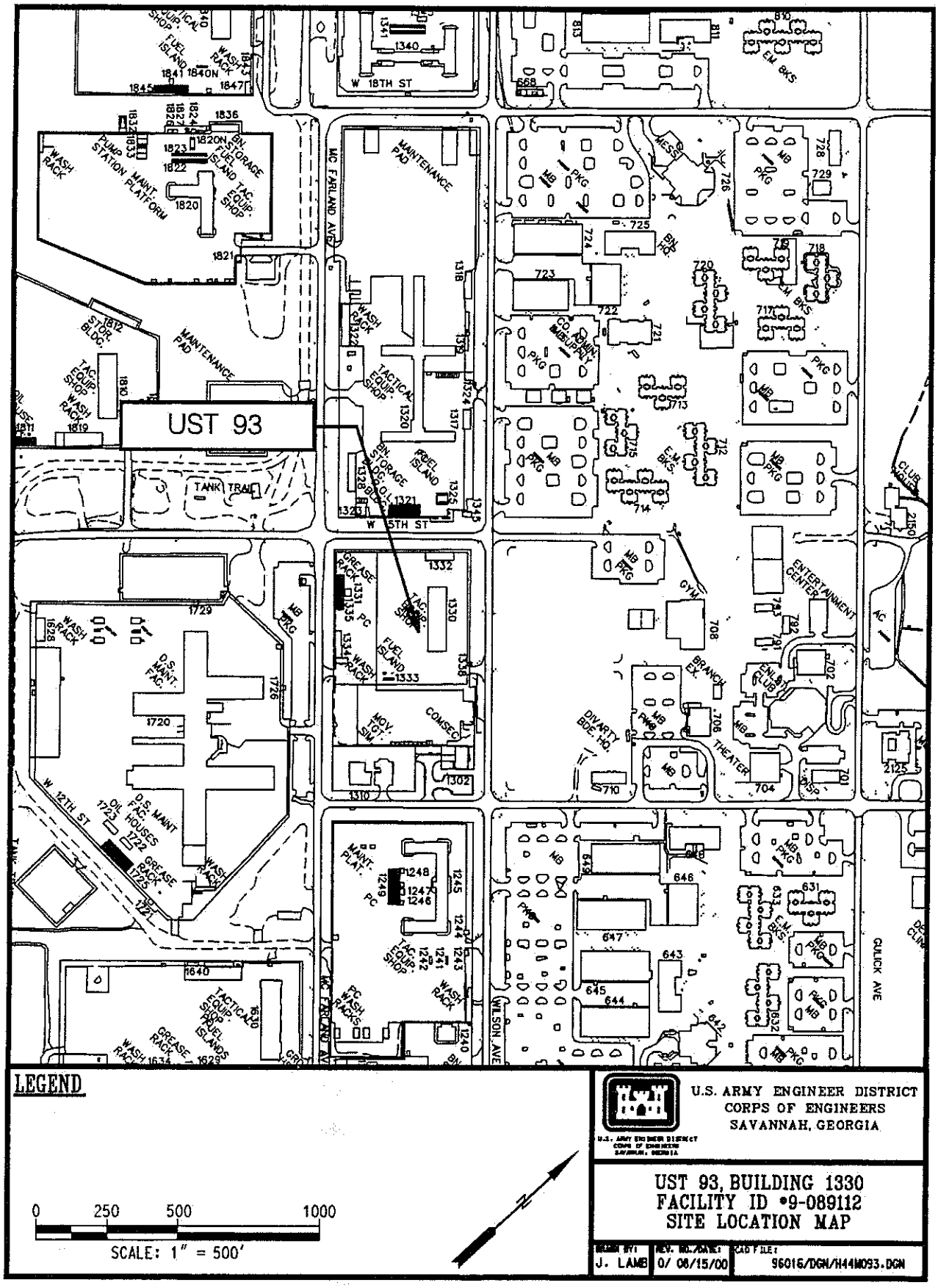

Figure 1. Location Map of UST 93, Fort Stewart, Liberty County, Georgia

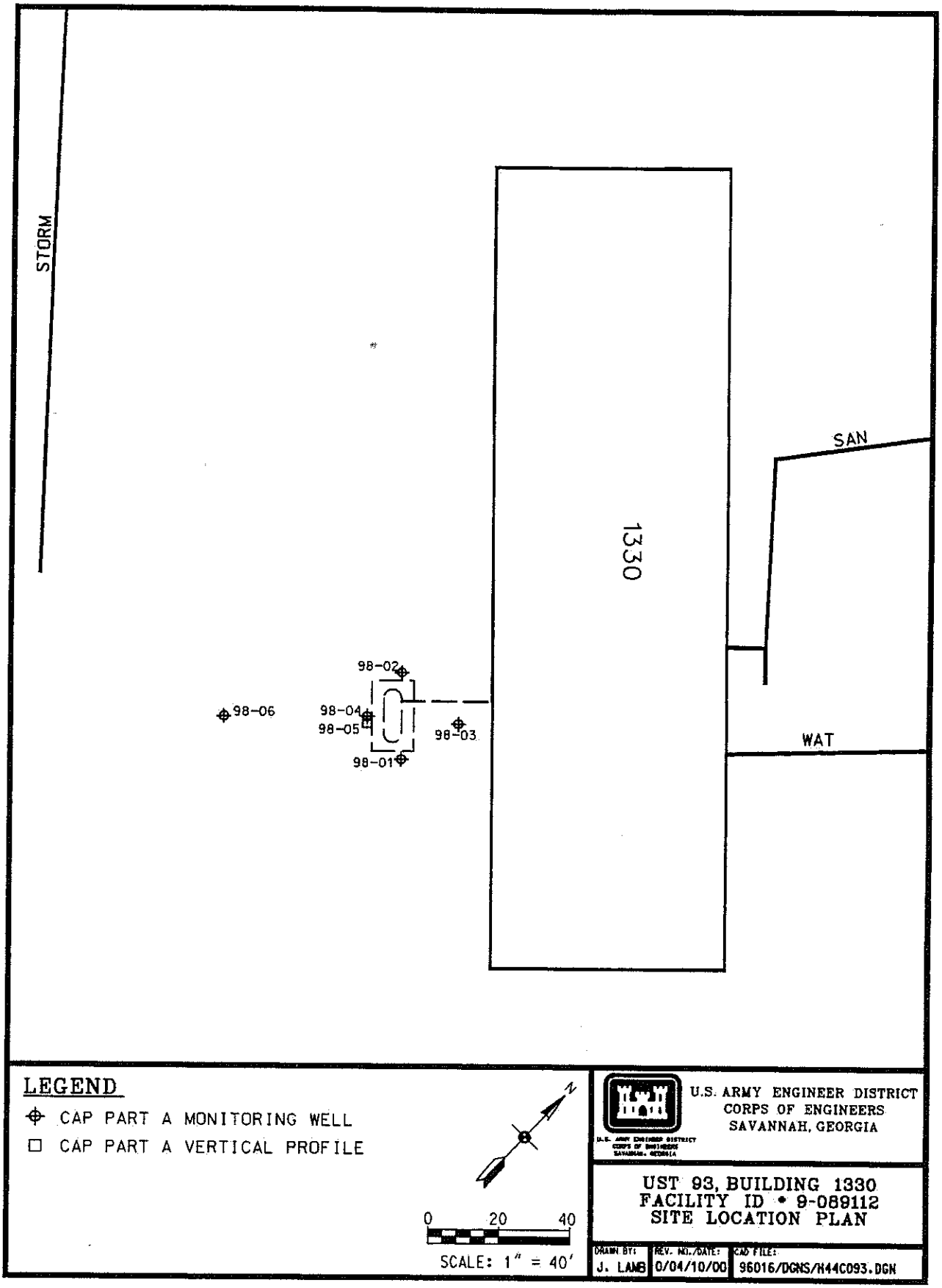

Figure 2. Site Plan for the UST 93 Site Investigation

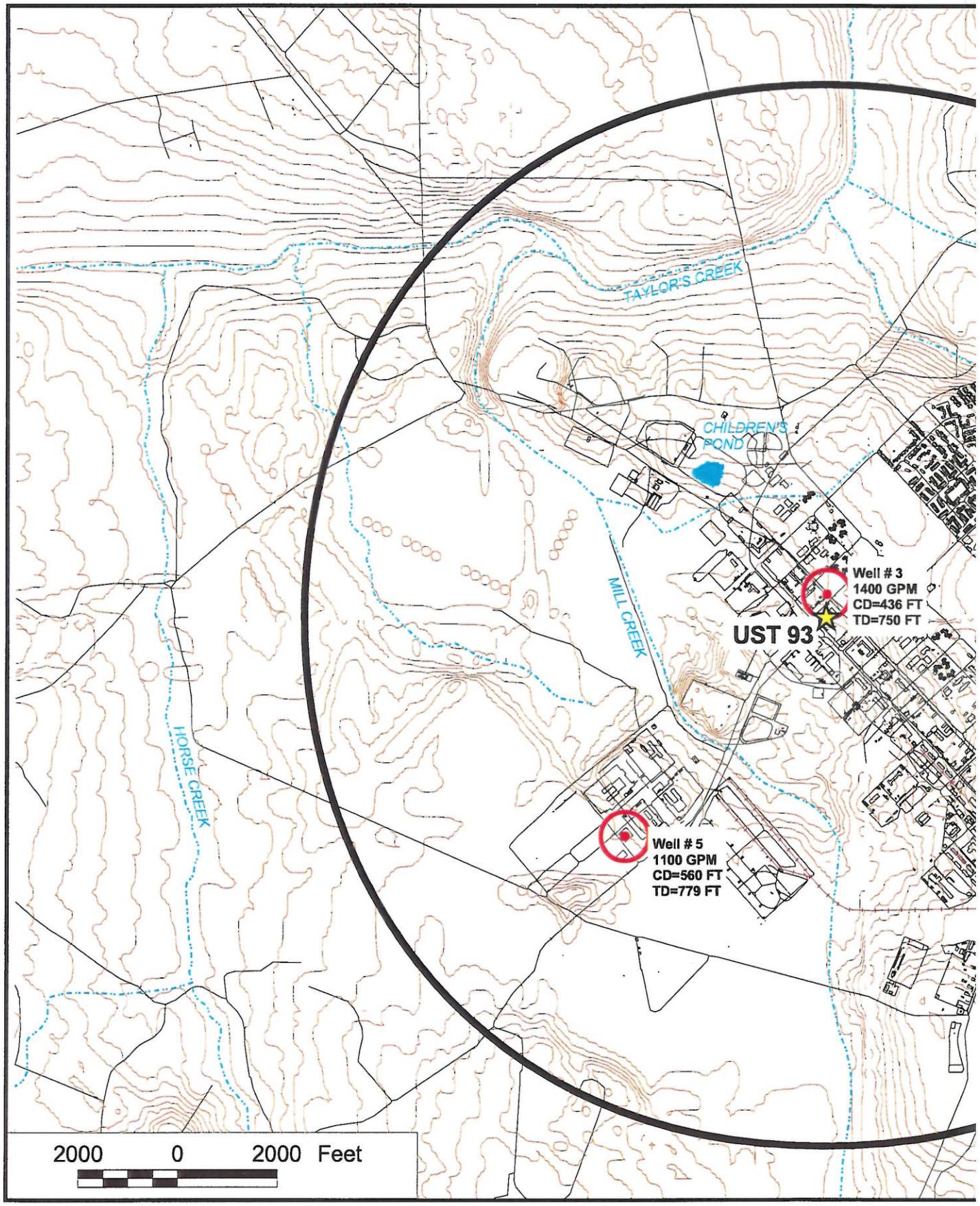

Figure 3. Map Showing Public and Private Dr
Bodies at Fort Stewart, Lil

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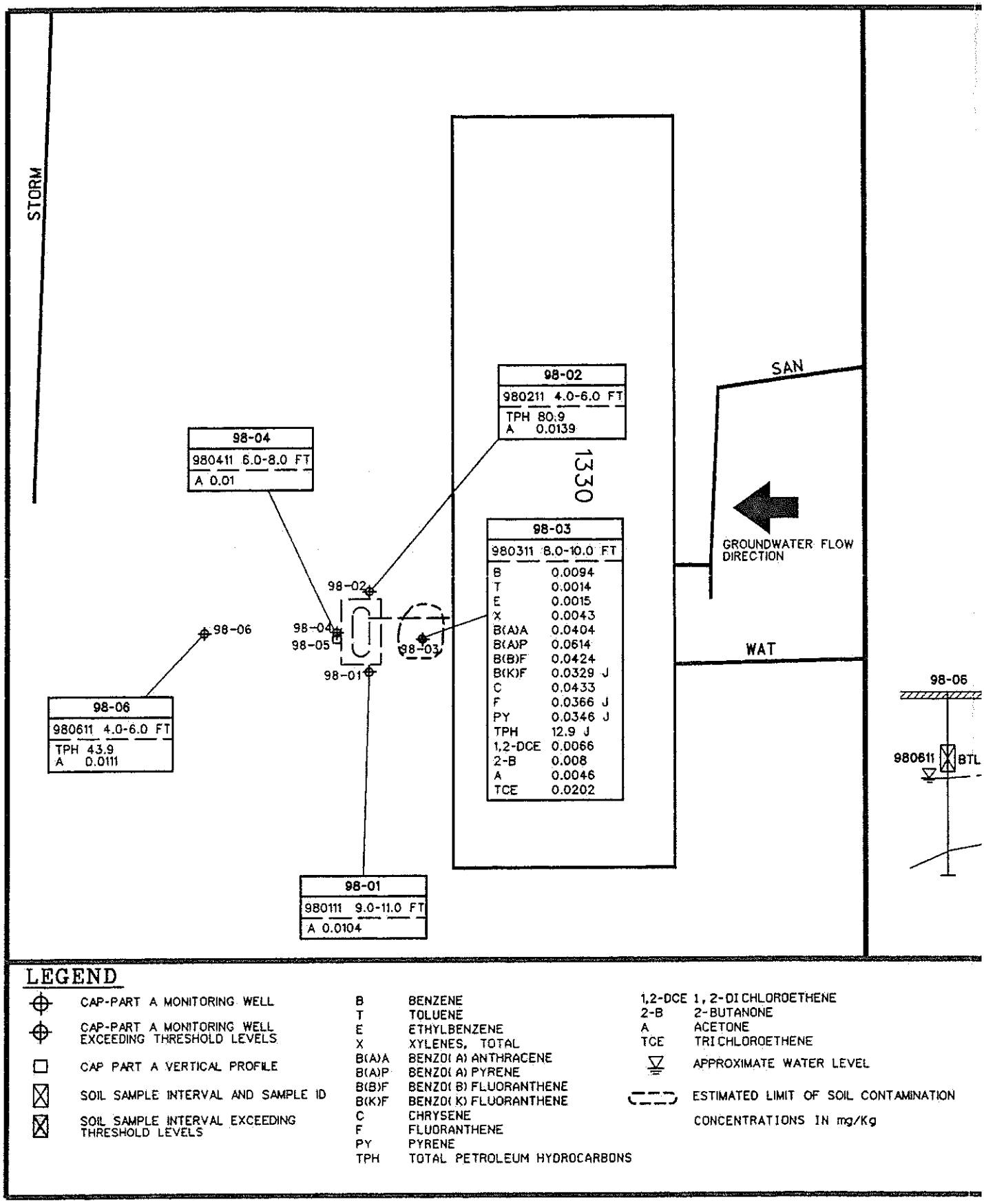

LEGEND

- CAP-PART A MONITORING WELL
- CAP-PART A MONITORING WELL EXCEEDING THRESHOLD LEVELS
- CAP PART A VERTICAL PROFILE
- SOIL SAMPLE INTERVAL AND SAMPLE ID
- SOIL SAMPLE INTERVAL EXCEEDING THRESHOLD LEVELS

B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	XYLENES, TOTAL
B(A)A	BENZO(A) ANTHRACENE
B(A)P	BENZO(A) PYRENE
B(B)F	BENZO(B) FLUORANTHENE
B(K)F	BENZO(K) FLUORANTHENE
C	CHRYSENE
F	FLUORANTHENE
PY	PYRENE
TPH	TOTAL PETROLEUM HYDROCARBONS
1,2-DCE	1, 2-DI CHLOROETHENE
2-B	2-BUTANONE
A	ACETONE
TCE	TRICHLOROETHENE

- APPROXIMATE WATER LEVEL
- ESTIMATED LIMIT OF SOIL CONTAMINATION

CONCENTRATIONS IN mg/Kg

Figure 4. Soil Quality

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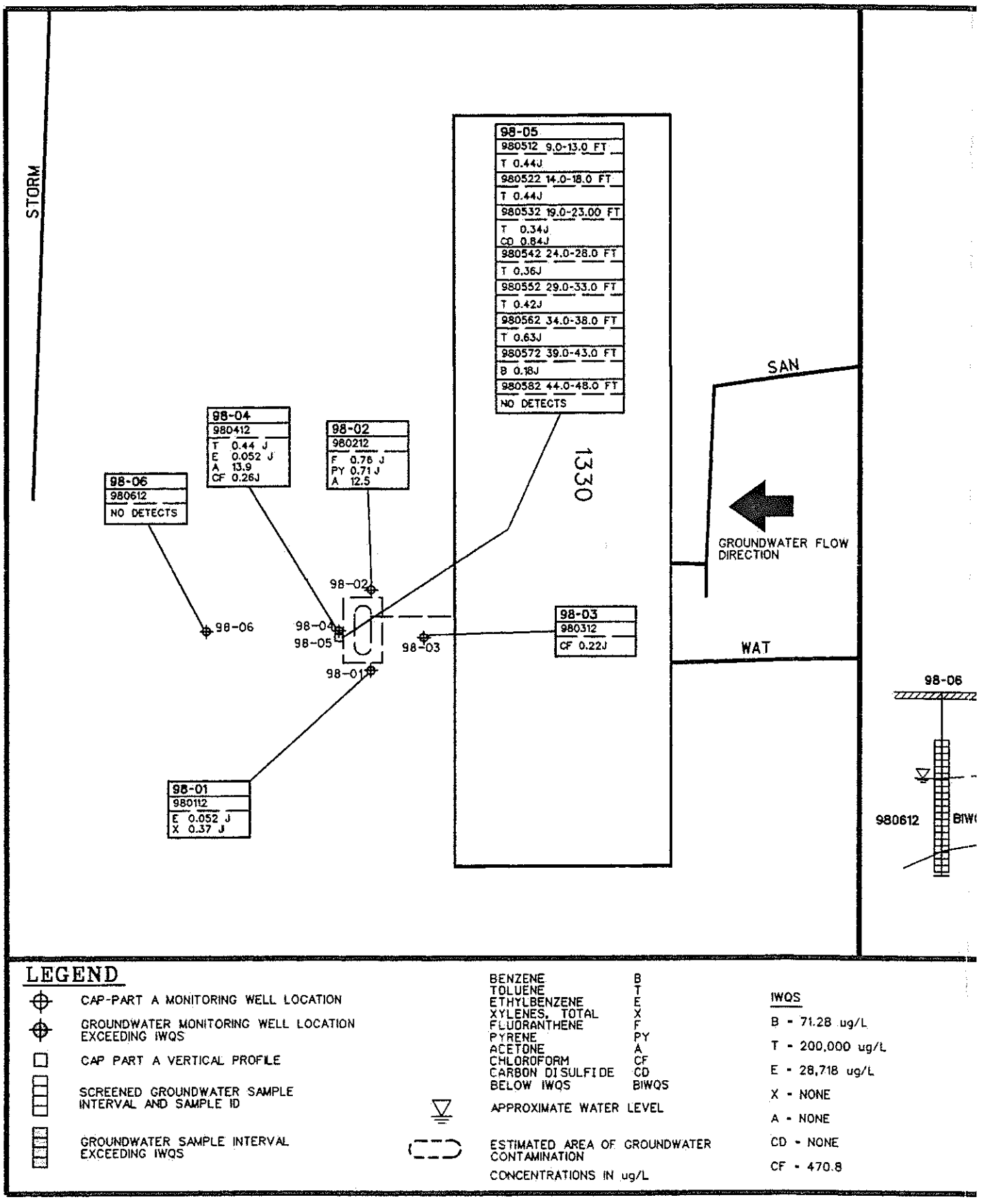

Figure 5. Groundwater Qua

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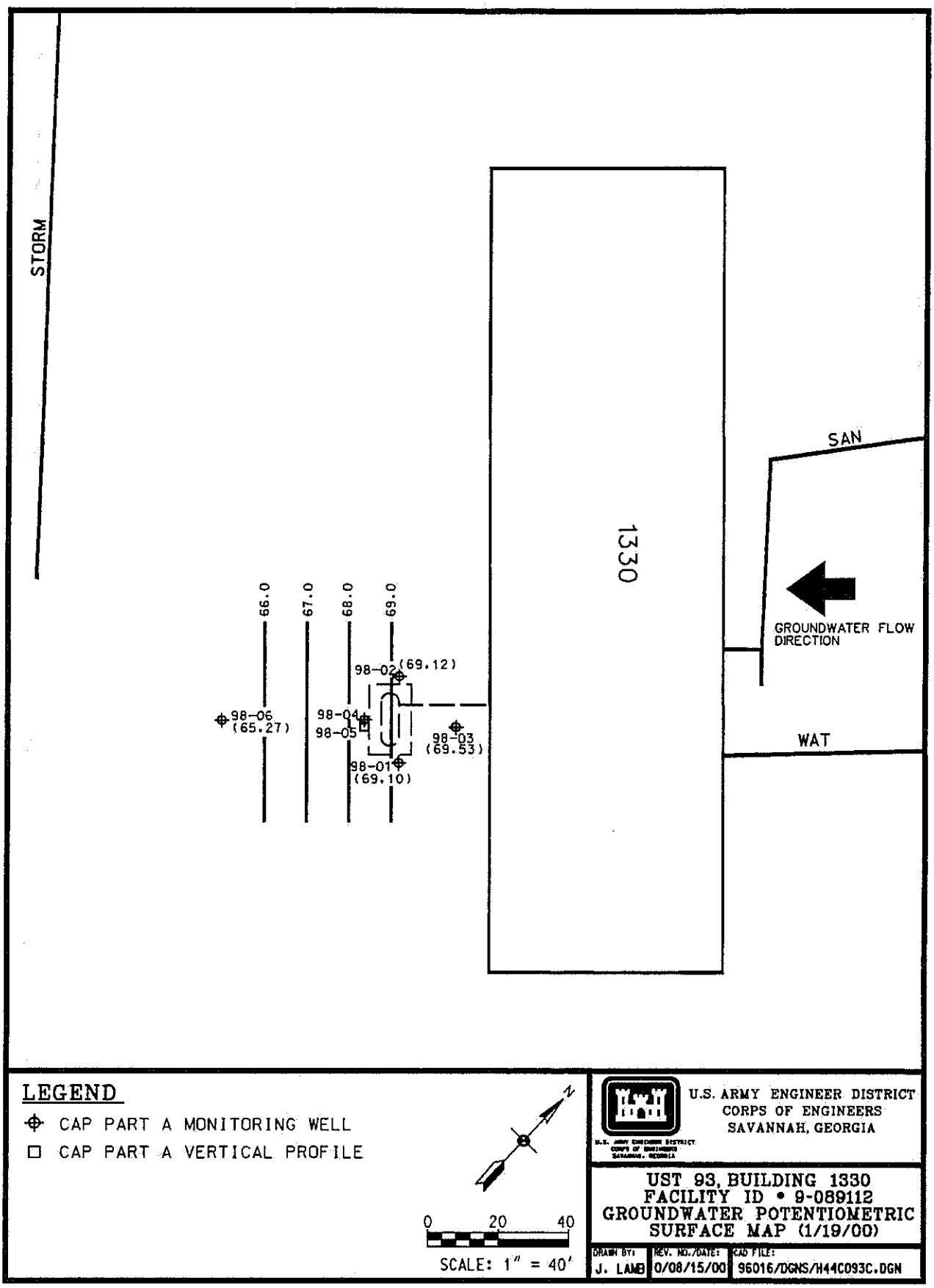

Figure 6. Potentiometric Surface Map of the UST 93 Site (1/19/00)

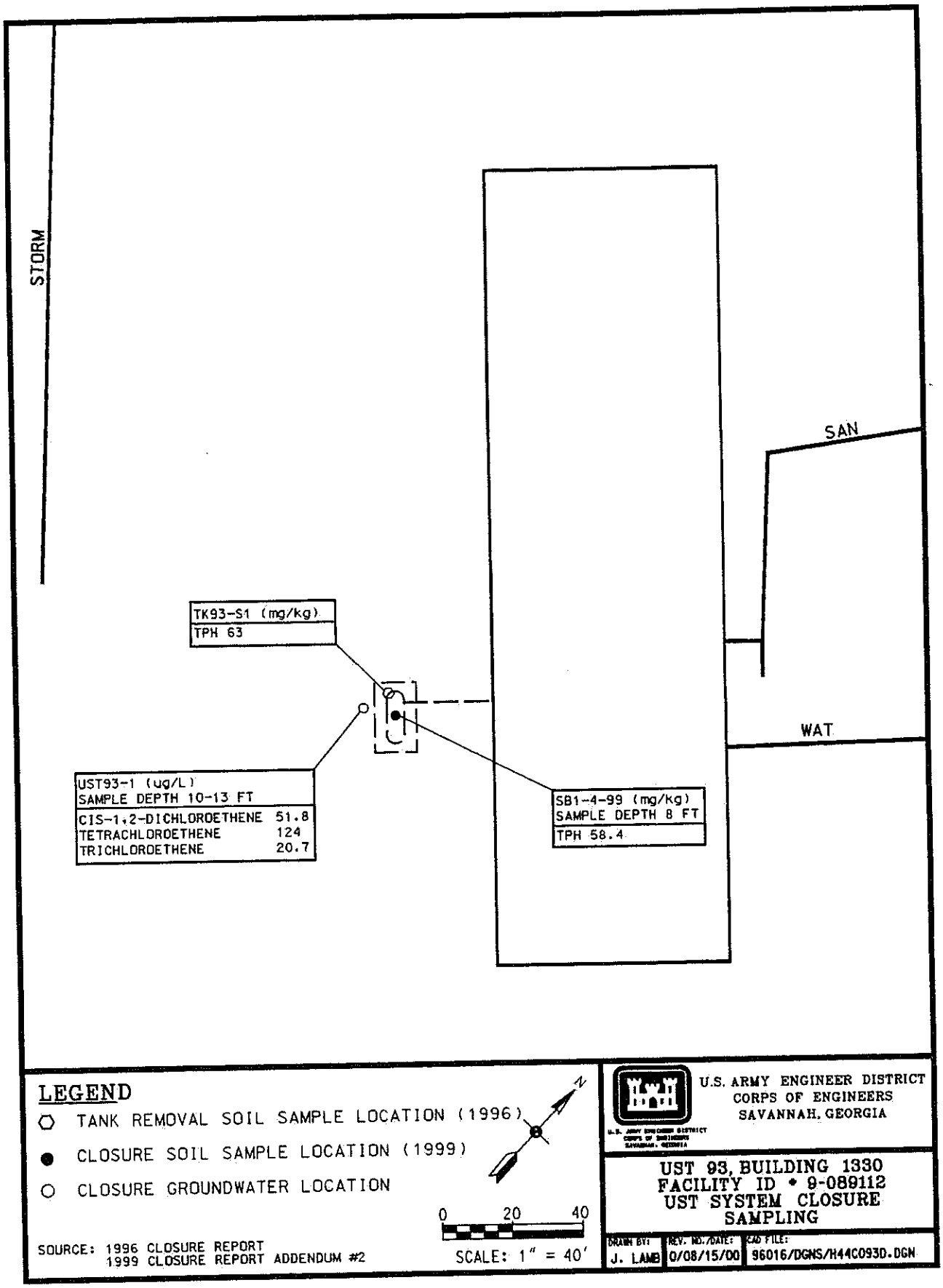

Figure 7. UST System Closure Sampling Locations at the UST 93 Site

There are no proposed boring locations for this site.

Figure 8. Proposed Additional Boring/Monitoring Well Locations

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

Figure 9. Tax Map

APPENDIX II

REPORT TABLES

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TABLE 1: FREE PRODUCT REMOVAL

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

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

NOTE:
AMSL Above mean sea level

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

Sample Location	Sample ID	Depth (ft BGS)	Date Sampled	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH (mg/kg)
98-01	980111	9.0 - 11.0	01/18/00	0.00096 U	0.00096 U	0.00096 U	0.0029 U	ND	2.22 U
98-02	980211	4.0 - 6.0	01/18/00	0.00094 U	0.00094 U	0.00094 U	0.0028 U	ND	80.9 =
98-03	980311	8.0 - 10.0	01/18/00	**0.0094** =	0.0014 =	0.0015 =	0.0043 =	0.0166	12.9 J
98-04	980411	6.0 - 8.0	01/18/00	0.00096 U	0.00096 U	0.00096 U	0.0029 U	ND	1.08 U
98-06	980611	4.0 - 6.0	01/19/00	0.00094 U	0.00094 U	0.00094 U	0.0028 U	ND	43.9 =
GUST Soil Threshold Levels (Table A, Column 1)				0.005	0.40	0.37	20	NRC	NRC
Alternate Threshold Levels				0.0115	—	—	—	—	—

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

Sample Location	Sample ID	Depth (ft BGS)	Date Sampled	Detected PAH Compounds (mg/kg)							Total PAHs (mg/kg)
				Benzo(a) anthracene	Benzo(a)pyrene	Benzo(b) fluoranthene	Benzo(k) fluoranthene	Chrysene	Fluoranthene	Pyrene	
98-01	980111	9.0 - 11.0	01/18/00								ND
98-02	980211	4.0 - 6.0	01/18/00								ND
98-03	980311	8.0 - 10.0	01/18/00	0.0404 =	0.0614 =	0.0424 =	0.0329 J	0.0433 =	0.0366 J	0.0346 J	0.2926
98-04	980411	6.0 - 8.0	01/18/00								ND
98-06	980611	4.0 - 6.0	01/19/00								ND
GUST Soil Threshold Levels (Table A, Column 1)				NRC	0.660	0.820	1.60	0.660	NRC	NRC	NRC
Alternate Threshold Levels				—	—	—	—	—	—	—	—

NOTES:

The soil samples were analyzed for the full suite of VOCs. A complete summary is provided in Appendix V, Table V-A.
Bold values exceed STLs.
Italic values exceed ATLs.

BGS Below ground surface
BTEX Benzene, toluene, ethylbenzene, and xylenes
ND Not detected
NRC No regulatory criteria
PAH Polynuclear aromatic hydrocarbon
TPH Total petroleum hydrocarbons

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 (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	Total BTEX (µg/L)
98-01	980112	3.6 - 13.6	01/18/00	1 U	1 U	0.052 J	0.37 J	0.422
98-02	980212	1.8 - 11.8	01/18/00	1 U	1 U	1 U	3 U	ND
98-03	980312	3.5 - 13.5	01/18/00	1 U	1 U	1 U	3 U	ND
98-04	980412	1.8 - 11.8	01/18/00	1 U	0.44 J	0.052 J	3 U	0.492
98-05	980512	9.0 - 13.0	01/17/00	1 U	0.44 J	1 U	3 U	0.44
98-05	980522	14.0 - 18.0	01/17/00	1 U	0.47 J	1 U	3 U	0.47
98-05	980532	19.0 - 23.0	01/17/00	1 U	0.34 J	1 U	3 U	0.34
98-05	980542	24.0 - 28.0	01/17/00	1 U	0.36 J	1 U	3 U	0.36
98-05	980552	29.0 - 33.0	01/17/00	1 U	0.42 J	1 U	3 U	0.42
98-05	980562	34.0 - 38.0	01/17/00	1 U	0.63 J	1 U	3 U	0.63
98-05	980572	39.0 - 43.0	01/17/00	0.18 J	1 U	1 U	3 U	0.18
98-05	980582	44.0 - 48.0	01/17/00	1 U	1 U	1 U	3 U	ND
98-06	980612	3.6 - 13.6	01/19/00	1 U	1 U	1 U	3 U	ND
In-Stream Water Quality Standards (Chapter 391-3-6)				71.28	200,000	28,718	—	—
Alternate Concentration Limits				—	—	—	—	—

NOTES:

The groundwater samples were analyzed for the full suite of VOCs. A complete summary is provided in Appendix VIII, Table VIII-A.

Bold values exceed IWQSs.

Italic values exceed ACLs.

BTEX Benzene, toluene, ethylbenzene, and xylenes
BGS Below ground surface
ND Not detected
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 is an estimated value.
= Indicates that 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 (µg/L)						Total PAHs (µg/L)
				Fluoranthene	Pyrene					
98-01	980112	3.6 - 13.6	01/18/00							
98-02	980212	1.8 - 11.8	01/18/00	0.76 J	0.71 J					ND
98-03	980312	3.5 - 13.5	01/18/00							ND
98-04	980412	1.8 - 11.8	01/18/00							ND
98-05	980512	9.0 - 13.0	01/17/00							ND
98-05	980522	14.0 - 18.0	01/17/00							ND
98-05	980532	19.0 - 23.0	01/17/00							ND
98-05	980542	24.0 - 28.0	01/17/00							ND
98-05	980552	29.0 - 33.0	01/17/00							ND
98-05	980562	34.0 - 38.0	01/17/00							ND
98-05	980572	39.0 - 43.0	01/17/00							[a]
98-05	980582	44.0 - 48.0	01/17/00							[a]
98-06	980612	3.6 - 13.6	01/19/00							ND
In-Stream Water Quality Standards (Chapter 391-3-6)				370	11,000					NRC
Alternate Concentration Limits				—	—	—	—	—	—	—

NOTES:

[a] Insufficient sample volume; thus, the sample was not analyzed for PAHs.

Bold values exceed IWQSs.

Italic values exceed ACLs.

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 is an estimated value.

= Indicates that 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)
98-01	01/19/00	72.49	72.21	3.6 – 13.6	N/A	3.11	N/A	N/A	69.10
98-02	01/19/00	72.45	72.12	1.8 – 11.8	N/A	3.00	N/A	N/A	69.12
98-03	01/19/00	72.84	72.55	3.5 – 13.5	N/A	3.02	N/A	N/A	69.53
98-06	01/19/00	72.02	71.77	3.6 – 13.6	N/A	6.50	N/A	N/A	65.27

NOTES:

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

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

Sample Location	Depth (ft BGS)	Date Sampled	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH (mg/kg)
8101-TK93-S1	~9.5	7/23/96	0.0012 U	0.0012 U	0.0012 U	0.0012 U	ND	63 =
SB1-4-99	8.0	4/26/99	ND	ND	ND	ND	ND	58.4
GUST Soil Threshold Levels (Table A, Column 1)			0.005	0.40	0.37	20	NRC	NRC

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

Sample Location	Depth (ft BGS)	Date Sampled	Detected PAH Compounds (mg/kg)				Total PAHs (mg/kg)
8101-TK93-S1	~9.5	7/23/96					ND
SB1-4-99	8.0	4/26/99					NA
GUST Soil Threshold Levels (Table A, Column 1)							NRC

NOTES:

[a] Underground storage tank system closure performed by Anderson Columbia Environmental, Inc. (1996).
BGS Below ground surface
BTEX Benzene, toluene, ethylbenzene, and xylenes
NA Not analyzed
ND Not detected
NRC No regulatory criteria
PAH Polynuclear aromatic hydrocarbon
TPH Total petroleum hydrocarbons

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 is an estimated value.
= Indicates that the compound was detected at the concentration reported.

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

Sample Location	Depth (ft BGS)	Date Sampled	cis-1,2-Dichloroethene (µg/L)	Tetrachloro-ethene (µg/L)	Trichloroethene (µg/L)	Total VOCs (µg/L)
UST93-1	10-13	4/30/99	51.8 =	**124** =	20.7 =	196.5
In-Stream Water Quality Standards (Chapter 391-3-6)			NRC	8.85	80.7	—

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

Sample Location	Depth (ft BGS)	Date Sampled	Detected PAH Compounds (µg/L)							Total PAHs (µg/L)
UST93-1	10-13	4/30/99								ND
In-Stream Water Quality Standards (Chapter 391-3-6)										—

NOTES:

Bold values exceed IWQSs.

[a] Underground storage tank system closure performed by Anderson Columbia Environmental, Inc. (1996)
BGS Below ground surface
BTEX Benzene, toluene, ethylbenzene, and xylenes
ND Not detected
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 is an estimated value.
= Indicates that the compound was detected at the concentration reported.

Table 7. Well Construction Details

Boring/Well Number	Date Installed	Boring Depth (ft BGS)	Screened Interval (ft BGS)	Type of Completion	Coordinates (NAD83)		Elevation (NAVD88)	
					Northing	Easting	Ground Surface	Top of Casing
CAP-Part A Investigation - 2000								
98-01	01/18/00	14.0	3.6 – 13.6	¾" PVC	682481.94	823664.33	72.49	72.21
98-02	01/18/00	12.0	1.8 – 11.8	¾" PVC	682499.88	823647.50	72.45	72.12
98-03	01/18/00	15.0	3.5 – 13.5	¾" PVC	682500.35	823669.17	72.84	72.55
98-04	01/18/00	12.0	—	soil boring	682483.99	823648.86	72.27	—
98-05	01/17/00	48.0	—	vertical profile	682482.61	823650.18	72.27	—
98-06	01/19/00	13.9	3.6 – 13.6	¾" PVC	682456.12	823619.55	72.02	71.77

NOTES:

Soil boring 98-04 was not converted to a 3/4-inch monitoring point due to a 1.0-foot void in the soil directly beneath the concrete at that boring location that prevented grouting of the well casing.

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:

- Determine if 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, Taylor's Creek, Peacock Creek, Children's Pond, and two unnamed ponds. Mill Creek extends along the western side of the garrison area and flows into Taylor's Creek, located approximately 0.75 miles northwest of the garrison area. Taylor's 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, Taylor's Creek, and Peacock Creek all have natural streambeds and exhibit perennial flow.

Children'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 Children'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 93 SITE

A field potential receptor survey was conducted for the UST 93 site in January 2000. 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 93 Site

The UST 93 site is located approximately 400 feet south (downgradient) of Well #3. Therefore, the UST 93 site is classified as being located less than 500 feet to a withdrawal point. In the direction of groundwater flow, Well #5 is located approximately 5700 feet south west of the UST 93 site. No non-public supply wells are located downgradient of the site within a 2-mile radius.

2.2 Surface Water Bodies Near the UST 93 Site

At the closest point to the site and in the direction of groundwater flow, Mill Creek is located approximately 3000 feet southwest of the site. Based on the distances between the UST and the nearest surface water body, the site is classified as being located greater than 500 feet to a downgradient surface water body.

2.3 Underground Utility Lines Near the UST 93 Site

A storm drain is located about 100 feet west of the site. The invert elevation of this line is approximately 4.1 feet BGS, which is above the water table.

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.4: 1600 gpm, CD = 464 ft, TD = 802 ft Well No.5: 1100 gpm, CD = 560 ft, TD = 779 ft Well No.6A: 500 gpm, CD = 374 ft, TD = 508 ft Well No.6B: 500 gpm, CD = 393 ft, TD = 600 ft Evans Well: 190 gpm, CD = 404 ft, TD = 600 ft Camp Oliver Well: 400 gpm, CD = 451 ft, TD = 706 ft	COMMENTS, ACTIONS, DATES Incorporate new pumping rate data into the CAP-Part A and Part B reports prepared for Fort Stewart
DISTRIBUTION: Melanie Little (Fort Stewart DPW) Central Records (SAIC) Project File (SAIC)	

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 Liberty County Supply Wells for Water Resources Survey	
DISCUSSION: During a telephone conversation with GA DNR regarding drinking water wells in Liberty County, it was suggested that I contact Mr. Jeff Barnes. After being transferred to Mr. 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 Part 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 98-01

PROJECT: Fort Stewart USTs | INSPECTOR P. Ucot | SHEET 1 OF 2

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		CONCRETE				
	1	Silty SAND (SM), some clay and gravel, moist, very loose, very dark gray (10 YR 3/1)	1.3 ppm			
	2					
	3		1.6 ppm			
	4					
	5		1.3 ppm			
	6	Clayey SAND (SC), medium to coarse grained, medium dense, moist, gray (10 YR 5/1)				
	7	CLAY (CL), some sand, moist, stiff, moderately plastic, dark gray (10 YR 4/1)	2.0 ppm			
	8					▽ wet below 8.0 ft BGS
	9	Clayey SAND (SC), medium to coarse grained, wet, loose, dark gray (10 YR 4/1)	3.7 ppm		Soil Sample 980111	
	10					

HTRW DRILLING LOG

HOLE NUMBER 98-01

PROJECT: Fort Stewart USTs

INSPECTOR P. Ucot

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				Soil Sample 980111	COLLECTED GROUNDWATER SAMPLE 980112 FROM MONITORING POINT
	12					PUSHED TO 14.0 FT BGS TO SET 3/4" MONITORING POINT SCREENED FROM 3.6 TO 13.6 FT BGS
	13					
	14					
	15					
	16					
	17					
	18					
	19					
	20					

HTRW DRILLING LOG

HOLE NUMBER 98-02

PROJECT: Fort Stewart USTs | INSPECTOR P. Lucot | SHEET 1 OF 2

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		CONCRETE				
	1	SAND (SM), fine to medium grained, some silt, very loose, moist, brown (10YR 5/3)	0.0 ppm			
	2					
	3					
	4	Silty SAND (SM), fine to medium grained, medium dense, moist, very dark brown (10YR 2/2)	0.0 ppm		Soil Sample 980211	
	5					
	6	SAND (SW), fine to coarse grained, medium dense, poorly sorted, wet. light yellowish brown (10YR 6/4)	N/A			▽ wet below = 6.0 FT BGS
	7					
	8					
	9					
	10					

HTRW DRILLING LOG

HOLE NUMBER 98-02

PROJECT: Fort Stewart USTs | INSPECTOR P. Licot | 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	Sandy CLAY (CL), very fine grained, slightly plastic moist to wet, gray (10 YR 5/1)	N/A			COLLECTED GROUNDWATER SAMPLE 980212 FROM MONITORING POINT
	12					DRILLED TO 12.8 FT BGS TO SET 3/4" MONITORING POINT SCREENED FROM 1.8 TO 11.8 FT BGS
	13					
	14					
	15					
	16					
	17					
	18					
	19					
	20					

HTRW DRILLING LOG

HOLE NUMBER 98-03

PROJECT: Fort Stewart USTs | INSPECTOR P. Lucot | SHEET 1 OF 2

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		CONCRETE				
	1	Silty SAND (SM), fine to medium grained, moist, loose, very dark grayish brown (10 YR 3/2)	0.0 ppm			
	2					
	3		0.0 ppm			
	4	SAND (SM), fine to medium grained, some silt, moist, very loose, very dark gray (10 YR 3/1)				
	5		0.0 ppm			
	6	Sandy CLAY (CL), fine to medium grained, stiff to very stiff, moist, moderate plasticity, dark gray (10 YR 4/1)				
	7		0.0 ppm			
	8					
	9		0.0 ppm		Soil Sample QB0311	
	10					

HTRW DRILLING LOG

HOLE NUMBER 98-03

PROJECT: Fort Stewart USTs | INSPECTOR P. Ulicot | 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)
	10	Clayey SAND (SC), fine grained, wet, loose, gray (10YR 6/1)				▽ wet below 10.2 ft BGS
	11					
	12					
	13					COLLECTED GROUNDWATER SAMPLE 988312 FROM MONITORING POINT
	14	CLAY (CL), fine grained, some sand, very stiff, moist, moderately plastic, greenish gray (10GY 6/1)				
	15					DRILLED TO 15.0 FT BGS TO SET 3/4" MONITORING POINT SCREENED FROM 3.5 TO 13.5 FT BGS
	16					
	17					
	18					
	19					
	20					

HTRW DRILLING LOG

HOLE NUMBER 98-04

PROJECT: Fort Stewart USTs

INSPECTOR P. Lucot

SHEET 1 OF 2

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		CONCRETE				
	1	VOID				
	2	Silty SAND (SM), fine grained, organic silt, very soft, moist, very dark brown (10YR 2/2)	0.0 ppm			
	3	Sandy CLAY (CL), fine to medium grained, very soft, slightly plastic, moist, very dark gray (10YR 3/1)	0.0 ppm			
	4					
	5		0.0 ppm			
	6					
	7	CLAY (CH), stiff to very stiff very plastic, moist, light gray (N 7/1)	N/A		Soil Sample 980411	
	8	SAND (SW), fine to coarse grained, medium dense, poorly sorted, wet, light yellowish brown (10YR 6/4)				▽ wet below 8.0 ft BGS
	9					
	10					

HTRW DRILLING LOG

HOLE NUMBER 98104

PROJECT: Fort Stewart USTs | INSPECTOR P. Lucot | 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	Sandy CLAY (CL), fine to very fine grained, slightly plastic, moist, gray (10YR5/1)				COLLECTED GROUNDWATER SAMPLE 980412 FROM MONITORING POINT
	12					DRILLED TO 12.0' FT BGS TO SET 3/4" MONITORING POINT SCREENED FROM 1.8 TO 11.8 FT BGS
	13					Monitoring point could not be completed as a permanent monitoring point due to void beneath the concrete
	14					
	15					
	16					
	17					
	18					
	19					
	20					

HTRW DRILLING LOG

HOLE NUMBER 98-05

PROJECT: Fort Stewart USTs | INSPECTOR P. Wcot | SHEET 1 OF

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0	Vertical profile borehole for the purpose of collecting groundwater samples. No soil was collected for lithlogic description.				
	2					
	4					
	6					
	8					
	10				Groundwater Sample 980512	
	12					
	14				Groundwater Sample 980522	
	16					
	18					
	20					

HTRW DRILLING LOG

HOLE NUMBER 98-05

PROJECT: Fort Stewart USTs | INSPECTOR P. Lucot | SHEET 2 OF 3

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
	22	Vertical profile borehole for the purpose of collecting groundwater samples. No soil was collected for lithlogic description.			Groundwater Sample 980532	
	24					
	26				Groundwater Sample 980542	
	28					
	30				Ground water Sample 980552	
	32					
	34					
	36				Groundwater Sample 980562	
	38					
	40					

HTRW DRILLING LOG

HOLE NUMBER 98-05

PROJECT: Fort Stewart USTs | INSPECTOR P. Lucot | SHEET 3 OF 3

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
	42	Vertical profile borehole for the purpose of collecting groundwater samples. No soil was collected for lithlogic description.			Groundwater Sample 980572	Insufficient sample volume for PAH analysis
	44					
	46				Groundwater Sample 980582	Insufficient sample volume for PAH analysis
	48					
	50					
	52					
	54					
	56					
	58					
	60					

HTRW DRILLING LOG

HOLE NUMBER 98-806

PROJECT: Fort Stewart UST's | INSPECTOR P. Lucot | SHEET 1 OF 1

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		CONCRETE				
	1	Silty SAND (SM), fine to medium grained, medium dense, moist, very dark brown (10YR 2/2	0.4 ppm			
	2					
	3	ORGANIC SILT (OL/OH), some fine sand, loose, moist, black (10YR 2/1)	9.1 ppm			
	4	Clayey SAND (SC), fine to coarse grained, loose to medium dense, moist, gray (10YR 6/1)				
	5		58.6 ppm		Soil Sample 980611	
	6					
	7					▽ wet below 6.9 ft BGS
	8					PUSHED TO 13.9 FT BGS TO SET 3/4" MONITORING POINT SCREENED FROM 3.6 TO 13.6 FT BGS
	9					COLLECTED GROUNDWATER SAMPLE 980612 FROM MONITORING POINT
	10					

APPENDIX V

SOIL LABORATORY REPORTS

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TABLE V-A. Summary of Soil Analytical Results

Station:	GUST	98-01	98-02	98-03	98-04	98-06
Sample ID:	Soil	980111	980211	980311	980411	980611
Sample Interval (ft BGS)	Threshold	9.0 - 11.0	4.0 - 6.0	8.0 - 10.0	6.0 - 8.0	4.0 - 6.0
Sample Date:	Levels	18-Jan-00	18-Jan-00	18-Jan-00	18-Jan-00	19-Jan-00
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
BTEX COMPOUNDS						
Benzene	0.005	0.00096 U	0.00094 U	0.0094 =	0.00096 U	0.00094 U
Toluene	0.37	0.00096 U	0.00094 U	0.0014 =	0.00096 U	0.00094 U
Ethylbenzene	0.40	0.00096 U	0.00094 U	0.0015 =	0.00096 U	0.00094 U
Xylenes, Total	20	0.0029 U	0.0028 U	0.0043 =	0.0029 U	0.0028 U
VOLATILE ORGANIC COMPOUNDS						
1,1,1-Trichloroethane	NRC	0.00096 U	0.00094 U	0.00086 U	0.00096 U	0.00094 U
1,1,2,2-Tetrachloroethane	NRC	0.00096 U	0.00094 U	0.00086 U	0.00096 U	0.00094 U
1,1,2-Trichloroethane	NRC	0.00096 U	0.00094 U	0.00086 U	0.00096 U	0.00094 U
1,1-Dichloroethane	NRC	0.00096 U	0.00094 U	0.00086 U	0.00096 U	0.00094 U
1,1-Dichloroethene	NRC	0.00096 U	0.00094 U	0.00086 U	0.00096 U	0.00094 U
1,2-Dichloroethane	NRC	0.00096 U	0.00094 U	0.00086 U	0.00096 U	0.00094 U
1,2-Dichloroethene	NRC	0.0019 U	0.0019 U	0.0066 =	0.0019 U	0.0019 U
1,2-Dichloropropane	NRC	0.00096 U	0.00094 U	0.00086 U	0.00096 U	0.00094 U
1,3-cis-Dichloropropene	NRC	0.00096 U	0.00094 U	0.00086 U	0.00096 U	0.00094 U
1,3-trans-Dichloropropene	NRC	0.00096 U	0.00094 U	0.00086 U	0.00096 U	0.00094 U
2-Butanone	NRC	0.0048 U	0.0047 U	0.0080 =	0.0048 U	0.0047 U
2-Hexanone	NRC	0.0048 U	0.0047 U	0.0043 U	0.0048 U	0.0047 U
4-Methyl-2-pentanone	NRC	0.0048 U	0.0047 U	0.0043 U	0.0048 U	0.0047 U
Acetone	NRC	0.0104 =	0.0139 =	0.0046 =	0.0100 =	0.0111 =
Bromodichloromethane	NRC	0.00096 U	0.00094 U	0.00086 U	0.00096 U	0.00094 U
Bromoform	NRC	0.00096 U	0.00094 U	0.00086 U	0.00096 U	0.00094 U
Bromomethane	NRC	0.00096 U	0.00094 U	0.00086 U	0.00096 U	0.00094 U
Carbon Disulfide	NRC	0.0048 U	0.0047 U	0.0043 U	0.0048 U	0.00098 J
Carbon Tetrachloride	NRC	0.00096 U	0.00094 U	0.00086 U	0.00096 U	0.00094 U
Chlorobenzene	NRC	0.00096 U	0.00094 U	0.00086 U	0.00096 U	0.00094 U
Chloroethane	NRC	0.00096 U	0.00094 U	0.00086 U	0.00096 U	0.00094 U
Chloroform	NRC	0.00096 U	0.00094 U	0.00086 U	0.00096 U	0.00094 U
Chloromethane	NRC	0.00096 U	0.00094 U	0.00086 U	0.00096 U	0.00094 U
Dibromochloromethane	NRC	0.00096 U	0.00094 U	0.00086 U	0.00096 U	0.00094 U
Methylene Chloride	NRC	0.0048 U	0.0047 U	0.0043 U	0.0048 U	0.0047 U
Styrene	NRC	0.00096 U	0.00094 U	0.00086 U	0.00096 U	0.00094 U
Tetrachloroethene	NRC	0.00096 U	0.00094 U	0.00086 U	0.00096 U	0.00094 U
Trichloroethene	NRC	0.00096 U	0.00094 U	0.0202 =	0.00096 U	0.00094 U
Vinyl Chloride	NRC	0.00096 U	0.00094 U	0.00086 U	0.00096 U	0.00094 U

NOTES:

	Georgia Department of Natural Resources Applicable Soil Threshold Levels (Table A, Column 2)
NRC	No regulatory criteria

Laboratory Qualifiers

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

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

Station:	GUST	98-01	98-02	98-03	98-04	98-06
Sample ID:	Soil	980111	980211	980311	980411	980611
Sample Interval (ft BGS)	Threshold	9.0 - 11.0	4.0 - 6.0	8.0 - 10.0	6.0 - 8.0	4.0 - 6.0
Sample Date:	Levels	18-Jan-00	18-Jan-00	18-Jan-00	18-Jan-00	19-Jan-00
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
POLYNUCLEAR AROMATIC HYDROCARBONS						
2-Chloronaphthalene	NRC	0.0407 U	0.0413 U	0.0377 U	0.0418 U	0.0394 U
Acenaphthene	NRC	0.0407 U	0.0413 U	0.0377 U	0.0418 U	0.0394 U
Acenaphthylene	NRC	0.0407 U	0.0413 U	0.0377 U	0.0418 U	0.0394 U
Anthracene	NRC	0.0407 U	0.0413 U	0.0377 U	0.0418 U	0.0394 U
Benzo(a)anthracene	NRC	0.0407 U	0.0413 U	0.0404 =	0.0418 U	0.0394 U
Benzo(a)pyrene	0.660	0.0407 U	0.0413 U	0.0614 =	0.0418 U	0.0394 U
Benzo(b)fluoranthene	0.820	0.0407 U	0.0413 U	0.0424 =	0.0418 U	0.0394 U
Benzo(g,h,i)perylene	NRC	0.0407 U	0.0413 U	0.0377 U	0.0418 U	0.0394 U
Benzo(k)fluoranthene	1.60	0.0407 U	0.0413 U	0.0329 J	0.0418 U	0.0394 U
Chrysene	0.660	0.0407 U	0.0413 U	0.0433 =	0.0418 U	0.0394 U
Dibenzo(a,h)anthracene	1.50	0.0407 U	0.0413 U	0.0377 U	0.0418 U	0.0394 U
Fluoranthene	NRC	0.0407 U	0.0413 U	0.0366 J	0.0418 U	0.0394 U
Fluorene	NRC	0.0407 U	0.0413 U	0.0377 U	0.0418 U	0.0394 U
Indeno(1,2,3-cd)pyrene	0.660	0.0407 U	0.0413 U	0.0377 U	0.0418 U	0.0394 U
Naphthalene	NRC	0.0407 U	0.0413 U	0.0377 U	0.0418 U	0.0394 U
Phenanthrene	NRC	0.0407 U	0.0413 U	0.0377 U	0.0418 U	0.0394 U
Pyrene	NRC	0.0407 U	0.0413 U	0.0346 J	0.0418 U	0.0394 U
OTHER ANALYTES						
Lead	NRC	10.6 =	0.73 U	3.71 =	12.1 =	5.82 =
Total Petroleum Hydrocarbons	NRC	2.22 U	80.9 =	12.9 J	1.08 U	43.9 =

NOTES:

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

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.

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980111

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB013S

Matrix: (scil/water) SOIL Lab Sample ID: 20769002

Sample wt/vol: 6.3 (g/mL) G Lab File ID: 1S519

Level: (low/med) LOW Date Received: 01/19/00

% Moisture: not dec. 18 Date Analyzed: 01/21/00

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/KG	Q
74-87-3	Chloromethane	0.96	U
75-01-4	Vinyl chloride	0.96	U
74-83-9	Bromomethane	0.96	U
75-00-3	Chloroethane	0.96	U
75-35-4	1,1-Dichloroethylene	0.96	U
67-64-1	Acetone	10.4	
75-15-0	Carbon disulfide	4.8	U
75-09-2	Methylene chloride	4.8	U
75-34-3	1,1-Dichloroethane	0.96	U
78-93-3	2-Butanone	4.8	U
540-59-0	1,2-Dichloroethylene(total)	1.9	U
67-66-3	Chloroform	0.96	U
71-55-6	1,1,1-Trichloroethane	0.96	U
56-23-5	Carbon tetrachloride	0.96	U
107-06-2	1,2-Dichloroethane	0.96	U
71-43-2	Benzene	0.96	U
79-01-6	Trichloroethylene	0.96	U
78-87-5	1,2-Dichloropropane	0.96	U
75-27-4	Bromodichloromethane	0.96	U
10061-01-5	cis-1,3-Dichloropropylene	0.96	U
108-10-1	4-Methyl-2-pentanone	4.8	U
108-88-3	Toluene	0.96	U
10061-02-6	trans-1,3-Dichloropropylene	0.96	U
79-00-5	1,1,2-Trichloroethane	0.96	U
591-78-6	2-Hexanone	4.8	U
127-18-4	Tetrachloroethylene	0.96	U
124-48-1	Dibromochloromethane	0.96	U
108-90-7	Chlorobenzene	0.96	U
100-41-4	Ethylbenzene	0.96	U
1330-20-7	Xylenes (total)	2.9	U
100-42-5	Styrene	0.96	U
75-25-2	Bromoform	0.96	U
79-34-5	1,1,2,2-Tetrachloroethane	0.96	U

U U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980111

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB013S

Matrix: (soil/water) SOIL Lab Sample ID: 20769002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 8C515

Level: (low/med) LOW Date Received: 01/19/00

% Moisture: 18 decanted: (Y/N) N Date Extracted: 01/20/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/21/00

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	40.7	U
91-58-7	2-Chloronaphthalene	40.7	U
208-96-8	Acenaphthylene	40.7	U
83-32-9	Acenaphthene	40.7	U
86-73-7	Fluorene	40.7	U
85-01-8	Phenanthrene	40.7	U
120-12-7	Anthracene	40.7	U
206-44-0	Fluoranthene	40.7	U
129-00-0	Pyrene	40.7	U
56-55-3	Benzo(a)anthracene	40.7	U
218-01-9	Chrysene	40.7	U
205-99-2	Benzo(b)fluoranthene	40.7	U
207-08-9	Benzo(k)fluoranthene	40.7	U
50-32-8	Benzo(a)pyrene	40.7	U
193-39-5	Indeno(1,2,3-cd)pyrene	40.7	U
53-70-3	Dibenz(a,h)anthracene	40.7	U
191-24-2	Benzo(g,h,i)perylene	40.7	U

U

INORGANIC ANALYSIS DATA PACKAGE

SDG No.: FSAB013S Method Type: SW 846

Sample ID: 20769002 Client ID: 980111

Contract: SAIC028 Lab Code: Case No.: SAS No.:

Matrix: SOIL Date Received: 1/19/2000 Level: LOW % Solids: 81.90

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	10.6	mg/kg	=		P	0.13	TJA61 Trace ICP1	13100

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

VALIDATION COPY

Certificate of Analysis

Company : SAIC
Address : 800 Oak Ridge Turnpike
Oak Ridge, TN 37831

Report Date: February 7, 2000

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

Client Sample ID:	980111	Project:	SAIC00200
Sample ID:	20769002	Client ID:	SAIC028
Matrix:	Soil		
Collect Date:	18-JAN-00		
Receive Date:	19-JAN-00		
Collector:	Client		
Moisture:	18.1%		

Parameter	Qualifier	Result		DL	RL	Units	DF	AnalystDate	Time	Batch
Fourier Transform IR Federal										
EPA 418.1 Modified TPH by IR										
Total Petroleum Hydrocarbons	U	2.22	U	12.1	10	mg/kg	1	MS1 02/01/00	1500	9719

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

H Holding time exceeded

J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.

R Indicates that a quality control analyte recovery is outside of specified acceptance criteria.

U Indicates the compound was analyzed for but not detected above the detection limit

The above sample is reported on a dry weight basis.
This data report has been prepared and reviewed in accordance with General Engineering Laboratories, Inc. standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis at 843-556-8171 Ext. 4485.

Reviewed by

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980211

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB013S

Matrix: (soil/water) SOIL Lab Sample ID: 20769004

Sample wt/vol: 6.5 (g/mL) G Lab File ID: 1S521

Level: (low/med) LOW Date Received: 01/19/00

% Moisture: not dec. 19 Date Analyzed: 01/21/00

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/KG	Q
74-87-3	Chloromethane	0.94	U
75-01-4	Vinyl chloride	0.94	U
74-83-9	Bromomethane	0.94	U
75-00-3	Chloroethane	0.94	U
75-35-4	1,1-Dichloroethylene	0.94	U
67-64-1	Acetone	13.9	
75-15-0	Carbon disulfide	4.7	U
75-09-2	Methylene chloride	4.7	U
75-34-3	1,1-Dichloroethane	0.94	U
78-93-3	2-Butanone	4.7	U
540-59-0	1,2-Dichloroethylene(total)	1.9	U
67-66-3	Chloroform	0.94	U
71-55-6	1,1,1-Trichloroethane	0.94	U
56-23-5	Carbon tetrachloride	0.94	U
107-06-2	1,2-Dichloroethane	0.94	U
71-43-2	Benzene	0.94	U
79-01-6	Trichloroethylene	0.94	U
78-87-5	1,2-Dichloropropane	0.94	U
75-27-4	Bromodichloromethane	0.94	U
10061-01-5	cis-1,3-Dichloropropylene	0.94	U
108-10-1	4-Methyl-2-pentanone	4.7	U
108-88-3	Toluene	0.94	U
10061-02-6	trans-1,3-Dichloropropylene	0.94	U
79-00-5	1,1,2-Trichloroethane	0.94	U
591-78-6	2-Hexanone	4.7	U
127-18-4	Tetrachloroethylene	0.94	U
124-48-1	Dibromochloromethane	0.94	U
108-90-7	Chlorobenzene	0.94	U
100-41-4	Ethylbenzene	0.94	U
1330-20-7	Xylenes (total)	2.8	U
100-42-5	Styrene	0.94	U
75-25-2	Bromoform	0.94	U
79-34-5	1,1,2,2-Tetrachloroethane	0.94	U

U = U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980211

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB013S

Matrix: (soil/water) SOIL Lab Sample ID: 20769004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 8C517

Level: (low/med) LOW Date Received: 01/19/00

% Moisture: 19 decanted: (Y/N) N Date Extracted: 01/20/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/21/00

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	41.3	U
91-58-7	2-Chloronaphthalene	41.3	U
208-96-8	Acenaphthylene	41.3	U
83-32-9	Acenaphthene	41.3	U
86-73-7	Fluorene	41.3	U
85-01-8	Phenanthrene	41.3	U
120-12-7	Anthracene	41.3	U
206-44-0	Fluoranthene	41.3	U
129-00-0	Pyrene	41.3	U
56-55-3	Benzo(a)anthracene	41.3	U
218-01-9	Chrysene	41.3	U
205-99-2	Benzo(b)fluoranthene	41.3	U
207-08-9	Benzo(k)fluoranthene	41.3	U
50-32-8	Benzo(a)pyrene	41.3	U
193-39-5	Indeno(1,2,3-cd)pyrene	41.3	U
53-70-3	Dibenz(a,h)anthracene	41.3	U
191-24-2	Benzo(g,h,i)perylene	41.3	U

U

INORGANIC ANALYSIS DATA PACKAGE

SDG No.: FSAB013S

Method Type: SW 846

Sample ID: 20769004

Client ID: 980211

Contract: SAIC02S

Lab Code:

Case No.:

SAS No.:

Matrix: SOIL

Date Received: 1/19/2000

Level: LOW

% Solids: 80.10

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	0.73	mg/kg	U	F01,F07	P	0.13	TJA61 Trace ICP1	13100

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

DATA VALIDATION COPY

Certificate of Analysis

Company : SAIC
Address : 800 Oak Ridge Turnpike
Oak Ridge, TN 37831

Report Date: February 7, 2000

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

Client Sample ID:	980211
Sample ID:	20769004
Matrix:	Soil
Collect Date:	18-JAN-00
Receive Date:	19-JAN-00
Collector:	Client
Moisture:	19.3%

Project: SAIC00200
Client ID: SAIC02S

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch
Fourier Transform IR Federal									
EPA 418.1 Modified TPH by IR									
Total Petroleum Hydrocarbons		30.9 =	12.3	10	mg/kg	1	MS1 02/01/00	1500	9719

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

H Holding time exceeded

J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.

R Indicates that a quality control analyte recovery is outside of specified acceptance criteria.

U Indicates the compound was analyzed for but not detected above the detection limit

The above sample is reported on a dry weight basis.
This data report has been prepared and reviewed in accordance with General Engineering Laboratories, Inc. standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis at 843-556-8171 Ext. 4485.

Reviewed by

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980311

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB013S

Matrix: (soil/water) SOIL Lab Sample ID: 20769005

Sample wt/vol: 6.5 (g/mL) G Lab File ID: 1S607

Level: (low/med) LOW Date Received: 01/19/00

% Moisture: not dec. 12 Date Analyzed: 01/22/00

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/KG	Q
74-87-3	Chloromethane	0.86	U
75-01-4	Vinyl chloride	0.86	U
74-83-9	Bromomethane	0.86	U
75-00-3	Chloroethane	0.86	U
75-35-4	1,1-Dichloroethylene	0.86	U
67-64-1	Acetone	4.6	
75-15-0	Carbon disulfide	4.3	U
75-09-2	Methylene chloride	4.3	U
75-34-3	1,1-Dichloroethane	0.86	U
78-93-3	2-Butanone	8.0	
540-59-0	1,2-Dichloroethylene(total)	6.6	
67-66-3	Chloroform	0.86	U
71-55-6	1,1,1-Trichloroethane	0.86	U
56-23-5	Carbon tetrachloride	0.86	U
107-06-2	1,2-Dichloroethane	0.86	U
71-43-2	Benzene	9.4	
79-01-6	Trichloroethylene	20.2	
78-87-5	1,2-Dichloropropane	0.86	U
75-27-4	Bromodichloromethane	0.86	U
10061-01-5	cis-1,3-Dichloropropylene	0.86	U
108-10-1	4-Methyl-2-pentanone	4.3	U
108-88-3	Toluene	1.4	
10061-02-6	trans-1,3-Dichloropropylene	0.86	U
79-00-5	1,1,2-Trichloroethane	0.86	U
591-78-6	2-Hexanone	4.3	U
127-18-4	Tetrachloroethylene	0.86	U
124-48-1	Dibromochloromethane	0.86	U
108-90-7	Chlorobenzene	0.86	U
100-41-4	Ethylbenzene	1.5	
1330-20-7	Xylenes (total)	4.3	
100-42-5	Styrene	0.86	U
75-25-2	Bromoform	0.86	U
79-34-5	1,1,2,2-Tetrachloroethane	0.86	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980311

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB013S

Matrix: (soil/water) SOIL Lab Sample ID: 20769005

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 8C518

Level: (low/med) LOW Date Received: 01/19/00

% Moisture: 12 decanted: (Y/N) N Date Extracted: 01/20/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/21/00

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	37.7	U
91-58-7	2-Chloronaphthalene	37.7	U
208-96-8	Acenaphthylene	37.7	U
83-32-9	Acenaphthene	37.7	U
86-73-7	Fluorene	37.7	U
85-01-8	Phenanthrene	37.7	U
120-12-7	Anthracene	37.7	U
206-44-0	Fluoranthene	36.6	J
129-00-0	Pyrene	34.6	J
56-55-3	Benzo(a)anthracene	40.4	
218-01-9	Chrysene	43.3	
205-99-2	Benzo(b)fluoranthene	42.4	
207-08-9	Benzo(k)fluoranthene	32.9	J
50-32-8	Benzo(a)pyrene	61.4	
193-39-5	Indeno(1,2,3-cd)pyrene	37.7	U
53-70-3	Dibenz(a,h)anthracene	37.7	U
191-24-2	Benzo(g,h,i)perylene	37.7	U

U = 9 = 4 = 4 = U

INORGANIC ANALYSIS DATA PACKAGE

)G No.: FSAB013S Method Type: SW846

Sample ID: 20769005 Client ID: 980311

Contract: SAIC028 Lab Code: Case No.: SAS No.:

Matrix: SOIL Date Received: 1/19/2000 Level: LOW % Solids: 88.50

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	3.71	mg/kg	=		P	0.12	TJA61 Trace ICP1	13100

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

DATA VALIDATION COPY

Certificate of Analysis

Company : SAIC
Address : 800 Oak Ridge Turnpike
Oak Ridge, TN 37831

Report Date: February 7, 2000

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

Client Sample ID:	980311	Project:	SAIC00200
Sample ID:	20769005	Client ID:	SAIC028
Matrix:	Soil		
Collect Date:	18-JAN-00		
Receive Date:	19-JAN-00		
Collector:	Client		
Moisture:	11.5%		

Parameter	Qualifier	Result		DL	RL	Units	DF	AnalystDate	Time	Batch
Fourier Transform IR Federal										
EPA 418.1 Modified TPH by IR										
Total Petroleum Hydrocarbons	J	12.9	J	11.2	10	mg/kg	1	MS1 02/01/00	1500	9719

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

H Holding time exceeded

J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.

R Indicates that a quality control analyte recovery is outside of specified acceptance criteria.

U Indicates the compound was analyzed for but not detected above the detection limit

The above sample is reported on a dry weight basis.
This data report has been prepared and reviewed in accordance with General Engineering Laboratories, Inc. standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis at 843-556-8171 Ext. 4485.

Reviewed by

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980411

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB013S

Matrix: (soil/water) SOIL Lab Sample ID: 20769003

Sample wt/vol: 6.5 (g/mL) G Lab File ID: 1S606

Level: (low/med) LOW Date Received: 01/19/00

% Moisture: not dec. 20 Date Analyzed: 01/22/00

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/KG	Q
74-87-3	Chloromethane	0.96	U
75-01-4	Vinyl chloride	0.96	U
74-83-9	Bromomethane	0.96	U
75-00-3	Chloroethane	0.96	U
75-35-4	1,1-Dichloroethylene	0.96	U
67-64-1	Acetone	10.0	
75-15-0	Carbon disulfide	4.8	U
75-09-2	Methylene chloride	4.8	U
75-34-3	1,1-Dichloroethane	0.96	U
78-93-3	2-Butanone	4.8	U
540-59-0	1,2-Dichloroethylene(total)	1.9	U
67-66-3	Chloroform	0.96	U
71-55-6	1,1,1-Trichloroethane	0.96	U
56-23-5	Carbon tetrachloride	0.96	U
107-06-2	1,2-Dichloroethane	0.96	U
71-43-2	Benzene	0.96	U
79-01-6	Trichloroethylene	0.96	U
78-87-5	1,2-Dichloropropane	0.96	U
75-27-4	Bromodichloromethane	0.96	U
10061-01-5	cis-1,3-Dichloropropylene	0.96	U
108-10-1	4-Methyl-2-pentanone	4.8	U
108-88-3	Toluene	0.96	U
10061-02-6	trans-1,3-Dichloropropylene	0.96	U
79-00-5	1,1,2-Trichloroethane	0.96	U
591-78-6	2-Hexanone	4.8	U
127-18-4	Tetrachloroethylene	0.96	U
124-48-1	Dibromochloromethane	0.96	U
108-90-7	Chlorobenzene	0.96	U
100-41-4	Ethylbenzene	0.96	U
1330-20-7	Xylenes (total)	2.9	U
100-42-5	Styrene	0.96	U
75-25-2	Bromoform	0.96	U
79-34-5	1,1,2,2-Tetrachloroethane	0.96	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980411

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB013S

Matrix: (soil/water) SOIL Lab Sample ID: 20769003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 8C516

Level: (low/med) LOW Date Received: 01/19/00

% Moisture: 20 decanted: (Y/N) N Date Extracted:01/20/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/21/00

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	41.8	U
91-58-7	2-Chloronaphthalene	41.8	U
208-96-8	Acenaphthylene	41.8	U
83-32-9	Acenaphthene	41.8	U
86-73-7	Fluorene	41.8	U
85-01-8	Phenanthrene	41.8	U
120-12-7	Anthracene	41.8	U
206-44-0	Fluoranthene	41.8	U
129-00-0	Pyrene	41.8	U
56-55-3	Benzo(a)anthracene	41.8	U
218-01-9	Chrysene	41.8	U
205-99-2	Benzo(b)fluoranthene	41.8	U
207-08-9	Benzo(k)fluoranthene	41.8	U
50-32-8	Benzo(a)pyrene	41.8	U
193-39-5	Indeno(1,2,3-cd)pyrene	41.8	U
53-70-3	Dibenz(a,h)anthracene	41.8	U
191-24-2	Benzo(g,h,i)perylene	41.8	U

INORGANIC ANALYSIS DATA PACKAGE

SDG No.: FSA30135 Method Type: SW 846

Sample ID: 20769003 Client ID: 980411

Contract: SAIC028 Lab Code: Case No.: SAS No.:

Matrix: SOIL Date Received: 1/19/2000 Level: LOW % Solids: 79.70

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	12.1	mg/kg	=		P	0.13	TJA61 Trace ICP1	13100

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

DATA VALIDATION COPY

Certificate of Analysis

Company : SAIC
Address : 800 Oak Ridge Turnpike
Oak Ridge, TN 37831

Report Date: February 7, 2000

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

Client Sample ID:	980411
Sample ID:	20769003
Matrix:	Soil
Collect Date:	18-JAN-00
Receive Date:	19-JAN-00
Collector:	Client
Moisture:	20.3%

Project: SAIC00200
Client ID: SAIC028

Parameter	Qualifier	Result		DL	RL	Units	DF	AnalystDate	Time	Batch
Fourier Transform IR Federal										
EPA 418.1 Modified TPH by IR										
Total Petroleum Hydrocarbons	U	1.08	4	12.4	10	mg/kg	1	MS1 02/01/00	1500	9719

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

H Holding time exceeded

J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.

R Indicates that a quality control analyte recovery is outside of specified acceptance criteria.

U Indicates the compound was analyzed for but not detected above the detection limit

The above sample is reported on a dry weight basis.
This data report has been prepared and reviewed in accordance with General Engineering Laboratories, Inc. standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis at 843-556-8171 Ext. 4485.

Reviewed by

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980611

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB013S

Matrix: (soil/water) SOIL Lab Sample ID: 20769001

Sample wt/vol: 6.3 (g/mL) G Lab File ID: 1S518

Level: (low/med) LOW Date Received: 01/19/00

% Moisture: not dec. 15 Date Analyzed: 01/21/00

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/KG	Q
74-87-3	Chloromethane	0.94	U
75-01-4	Vinyl chloride	0.94	U
74-83-9	Bromomethane	0.94	U
75-00-3	Chloroethane	0.94	U
75-35-4	1,1-Dichloroethylene	0.94	U
67-64-1	Acetone	11.1	
75-15-0	Carbon disulfide	0.98	U
75-09-2	Methylene chloride	4.7	U
75-34-3	1,1-Dichloroethane	0.94	U
78-93-3	2-Butanone	4.7	U
540-59-0	1,2-Dichloroethylene(total)	1.9	U
67-66-3	Chloroform	0.94	U
71-55-6	1,1,1-Trichloroethane	0.94	U
56-23-5	Carbon tetrachloride	0.94	U
107-06-2	1,2-Dichloroethane	0.94	U
71-43-2	Benzene	0.94	U
79-01-6	Trichloroethylene	0.94	U
78-87-5	1,2-Dichloropropane	0.94	U
75-27-4	Bromodichloromethane	0.94	U
10061-01-5	cis-1,3-Dichloropropylene	0.94	U
108-10-1	4-Methyl-2-pentanone	4.7	U
108-88-3	Toluene	0.94	U
10061-02-6	trans-1,3-Dichloropropylene	0.94	U
79-00-5	1,1,2-Trichloroethane	0.94	U
591-78-6	2-Hexanone	4.7	U
127-18-4	Tetrachloroethylene	0.94	U
124-48-1	Dibromochloromethane	0.94	U
108-90-7	Chlorobenzene	0.94	U
100-41-4	Ethylbenzene	0.94	U
1330-20-7	Xylenes (total)	2.8	U
100-42-5	Styrene	0.94	U
75-25-2	Bromoform	0.94	U
79-34-5	1,1,2,2-Tetrachloroethane	0.94	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980611

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB013S

Matrix: (soil/water) SOIL Lab Sample ID: 20769001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 8C514

Level: (low/med) LOW Date Received: 01/19/00

% Moisture: 15 decanted: (Y/N) N Date Extracted:01/20/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/21/00

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	39.4	U
91-58-7	2-Chloronaphthalene	39.4	U
208-96-8	Acenaphthylene	39.4	U
83-32-9	Acenaphthene	39.4	U
86-73-7	Fluorene	39.4	U
85-01-8	Phenanthrene	39.4	U
120-12-7	Anthracene	39.4	U
206-44-0	Fluoranthene	39.4	U
129-00-0	Pyrene	39.4	U
56-55-3	Benzo(a)anthracene	39.4	U
218-01-9	Chrysene	39.4	U
205-99-2	Benzo(b)fluoranthene	39.4	U
207-08-9	Benzo(k)fluoranthene	39.4	U
50-32-8	Benzo(a)pyrene	39.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	39.4	U
53-70-3	Dibenz(a,h)anthracene	39.4	U
191-24-2	Benzo(g,h,i)perylene	39.4	U

U

TOTAL METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

SDG No.: FSAB013S Method Type: SW 846

Sample ID: 20769001 Client ID: 980611

Contract: SAIC023 Lab Code: Case No.: SAS No.:

Matrix: SOIL Date Received: 1/19/2000 Level: LOW % Solids: 84.60

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	5.82	mg/kg	=		P	0.12	TJA61 Trace ICP1	13100

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

DATA VALI...
COP

Certificate of Analysis

Company : SAIC
Address : 800 Oak Ridge Turnpike
Oak Ridge, TN 37831

Report Date: February 7, 2000

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

Client Sample ID: 980611
Sample ID: 20769001
Matrix: Soil
Collect Date: 18-JAN-00
Receive Date: 19-JAN-00
Collector: Client
Moisture: 15.4%

Project: SAIC00200
Client ID: SAIC028

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch
Fourier Transform IR Federal									
EPA 418.1 Modified TPH by IR									
Total Petroleum Hydrocarbons		43.9 =	11.7	10	mg/kg	1	MS1 02/01/00	1500	9719

Notes:
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H Holding time exceeded

J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.

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Reviewed by

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

2 of 2

CHAIN OF CUSTODY RECORD

COC NO.: D055(08)

PROJECT NAME: Ft. Stewart USTs D.O. #55

PROJECT NUMBER: 01-1624-04-2352-200

PROJECT MANAGER: Patty Stoll

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

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Road, Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	PAH, Lead	Dissolved Iron	TPH	TCLP BTEX	TCLP Lead	VOC	No. of Bottles/ Vials	OVA SCREENING	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
TB55Ø6	1/18/00	0745	water								X	2		20765005
980611	1/18/00	1525	soil			X		X			X	3		20769001
980111	1/18/00	0925	↓			X		X			X	3		002
980411	1/18/00	1410				X		X			X	3		003
980211	1/18/00	1230				X		X			X	3		004
980311	1/18/00	1115	↓			X		X			X	3		005

1/19/00

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	1/19/00 1215	A Travers	1/19/00 1700
COMPANY NAME: SAIC		COMPANY NAME: GEL	
RECEIVED BY:	Date/Time 1-19-00 1215	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	
RELINQUISHED BY:	Date/Time 1/19/00 1700	RECEIVED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 5

Cooler ID: #12

Cooler Temperature: 4°C

FEDEX NUMBER:

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APPENDIX VI

ALTERNATE THRESHOLD LEVEL (ATL) CALCULATIONS

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1.0 ALTERNATE CONCENTRATION LIMITS

No BTEX or PAH constituents were selected as COPCs for groundwater at the site. The concentrations in groundwater do not exceed the applicable IWQS, thus fate and transport modeling was not conducted and no groundwater ACLs were developed for the site.

2.0 ALTERNATE THRESHOLD LEVELS

Benzene was selected as a COPC for soil the site based on one soil sample. The one soil sample with a benzene concentration of 0.0094 mg/kg, which is above its STL of 0.005 mg/kg, was located below the water table. There were no elevated benzene concentrations in the vadose zone above the water table that could leach to groundwater. Due to the lack of groundwater contamination and soil contamination in the vadose soil, fate and transport modeling was not conducted. In order to calculate an ATL for benzene in soil, the most conservative scenario was considered and the dilution attenuation factor was assumed to be 1.0. As shown in Table VI-A, the ATL for benzene in soil was calculated to be 0.0115 mg/kg.

Table VI-A. Alternate Threshold Levels for Contaminants in Soil

Constituent	K_{oc} (mL/g)	f_{cs}	C_{std} (mg/L)	DAF_w	Calculated ATL (mg/kg)
Benzene	81	0.002	0.07128	1	0.0115

ATL = $(K_{oc})(f_{cs})(C_{std})(DAF_w)$

where: K_{oc} = organic carbon partitioning coefficient (GUST CAP-Part A Guidance, Appendix I, Table 1)
f_{cs} = fractional organic carbon content (EPA default value)
C_{std} = applicable water quality standard (IWQS)
DAF_w = dilution attenuation factor for the lateral migration of groundwater

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APPENDIX VII

MONITORING WELL DETAILS

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MONITORING WELL

PROJECT: UST 93

DELIVERY ORDER NO:

WELL NUMBER: 98-01

BEGIN: 1/18/00

END: 1/18/00

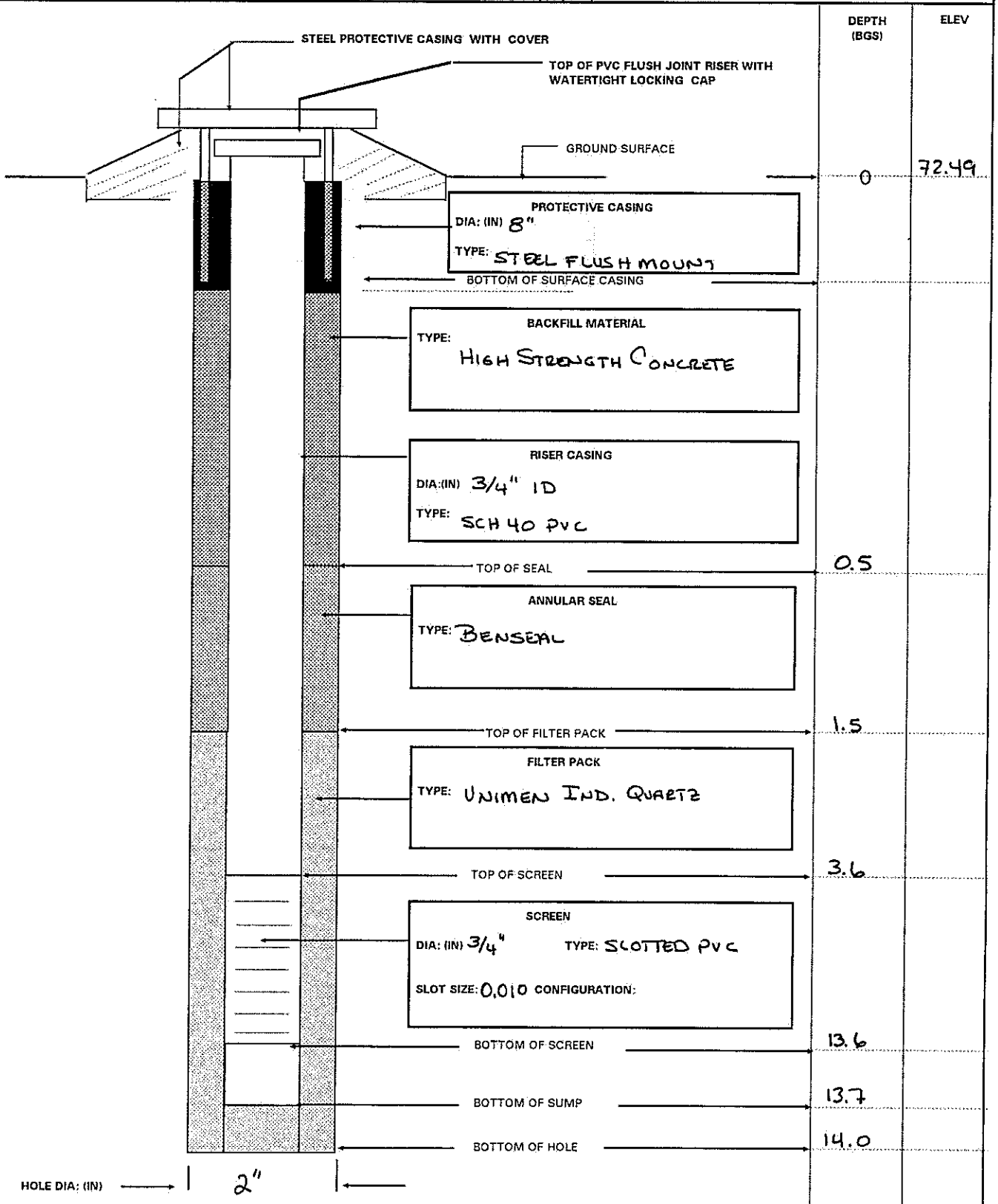
COORDINATES: N: 682481.94
E: 823664.33

DATUM/UNITS: NAD83

REFERENCE POINT: TOP OF CASING

ELEVATION: 72.21

DATUM/UNITS: NAVD88



MONITORING WELL
DELIVERY ORDER NO:

PROJECT: UST 93

WELL NUMBER: 98-02

BEGIN: 1/18/00

END: 1/18/00

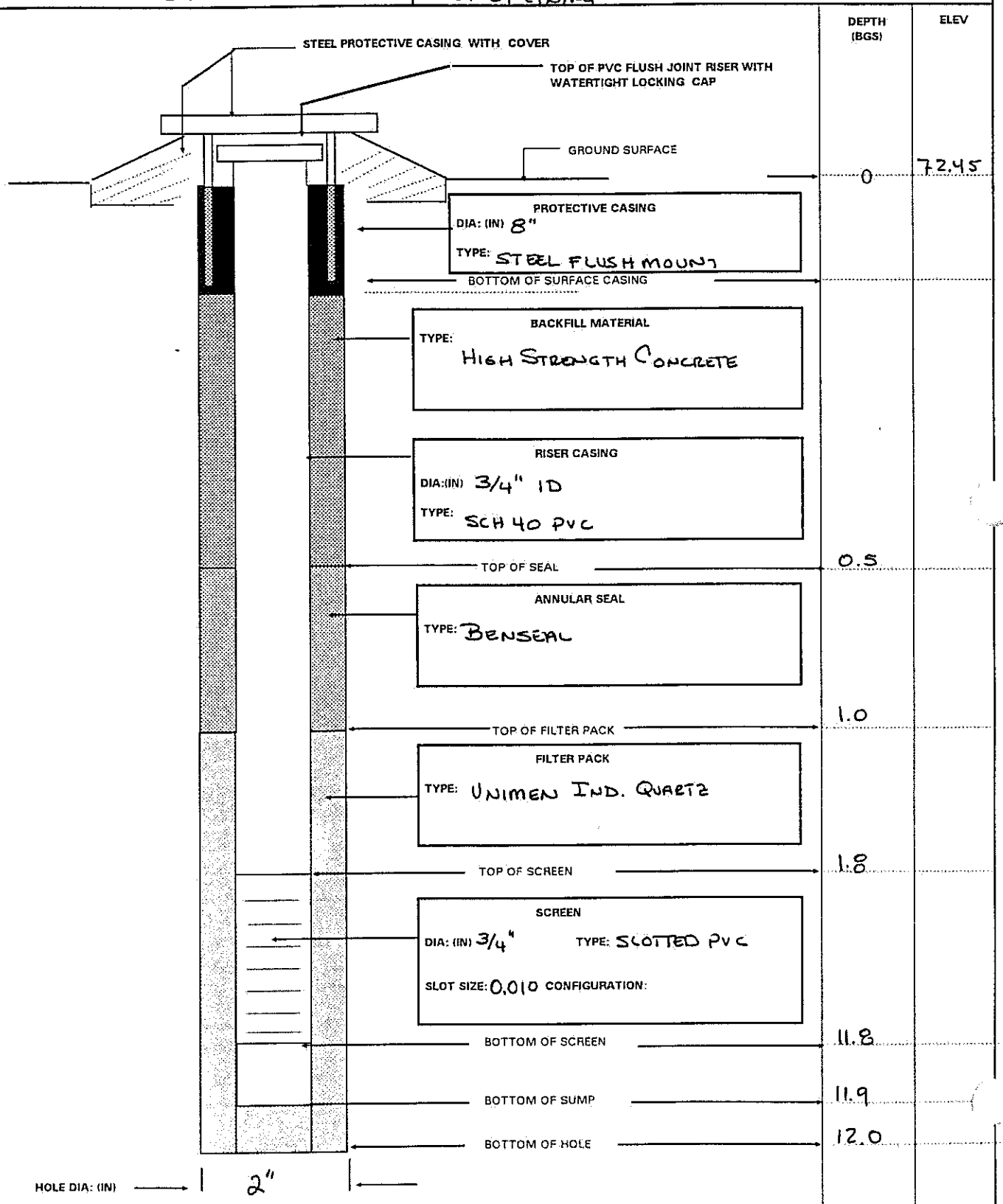
COORDINATES: N: 682499.88
E: 823647.50

DATUM/UNITS: NAD83

REFERENCE POINT: Top of Casing

ELEVATION: 72.12

DATUM/UNITS: NAVD88



MONITORING WELL

PROJECT: UST 93

DELIVERY ORDER NO:

WELL NUMBER: 98-03

BEGIN: 1/18/00

END: 1/18/00

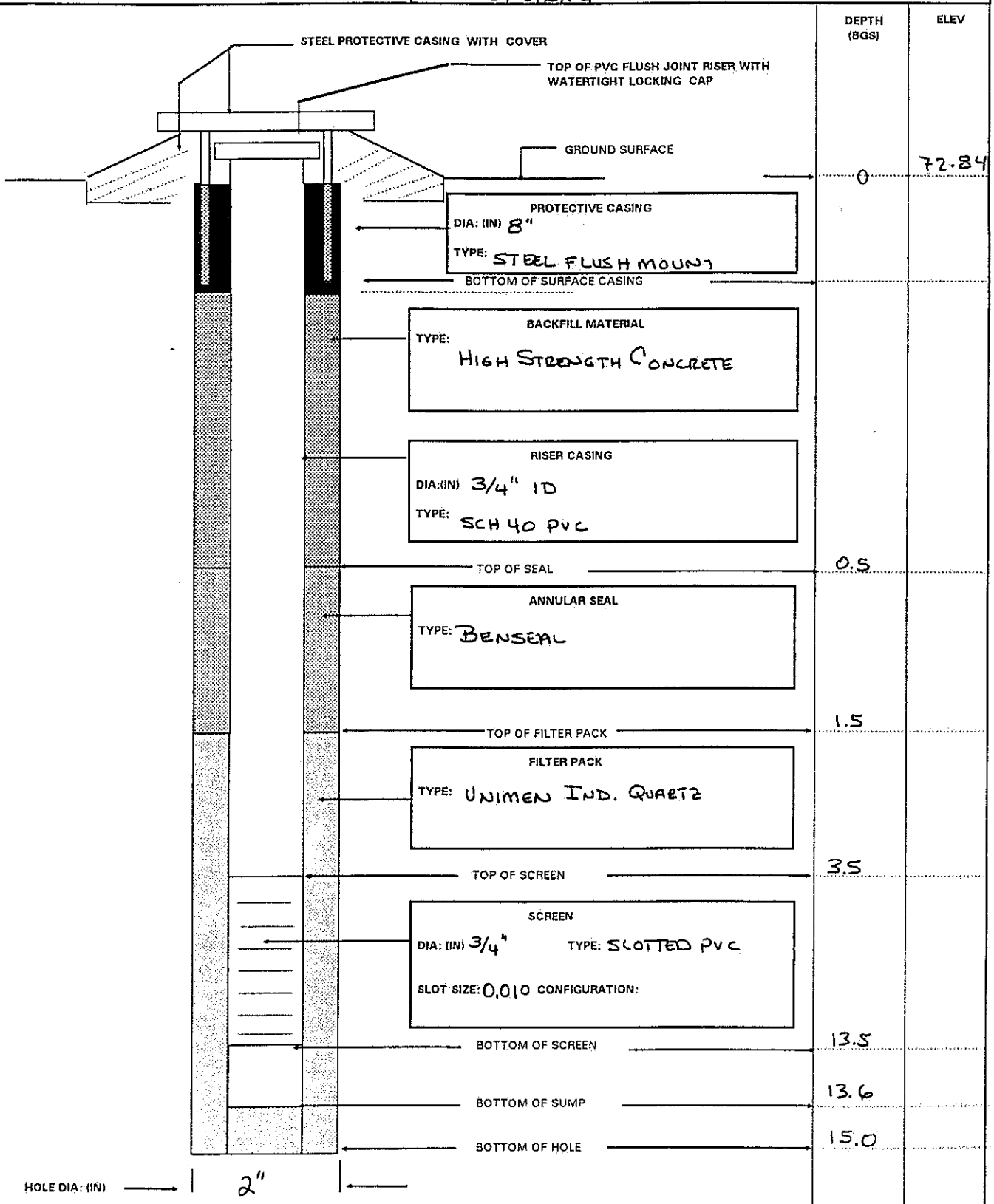
COORDINATES: N: 682500.35
E: 823669.17

DATUM/UNITS: NAD83

REFERENCE POINT: Top of Casing

ELEVATION: 72.55

DATUM/UNITS: NAVD88



MONITORING WELL

PROJECT: UST 93

DELIVERY ORDER NO:

WELL NUMBER: 98-06

BEGIN: 1/19/00

END: 1/19/00

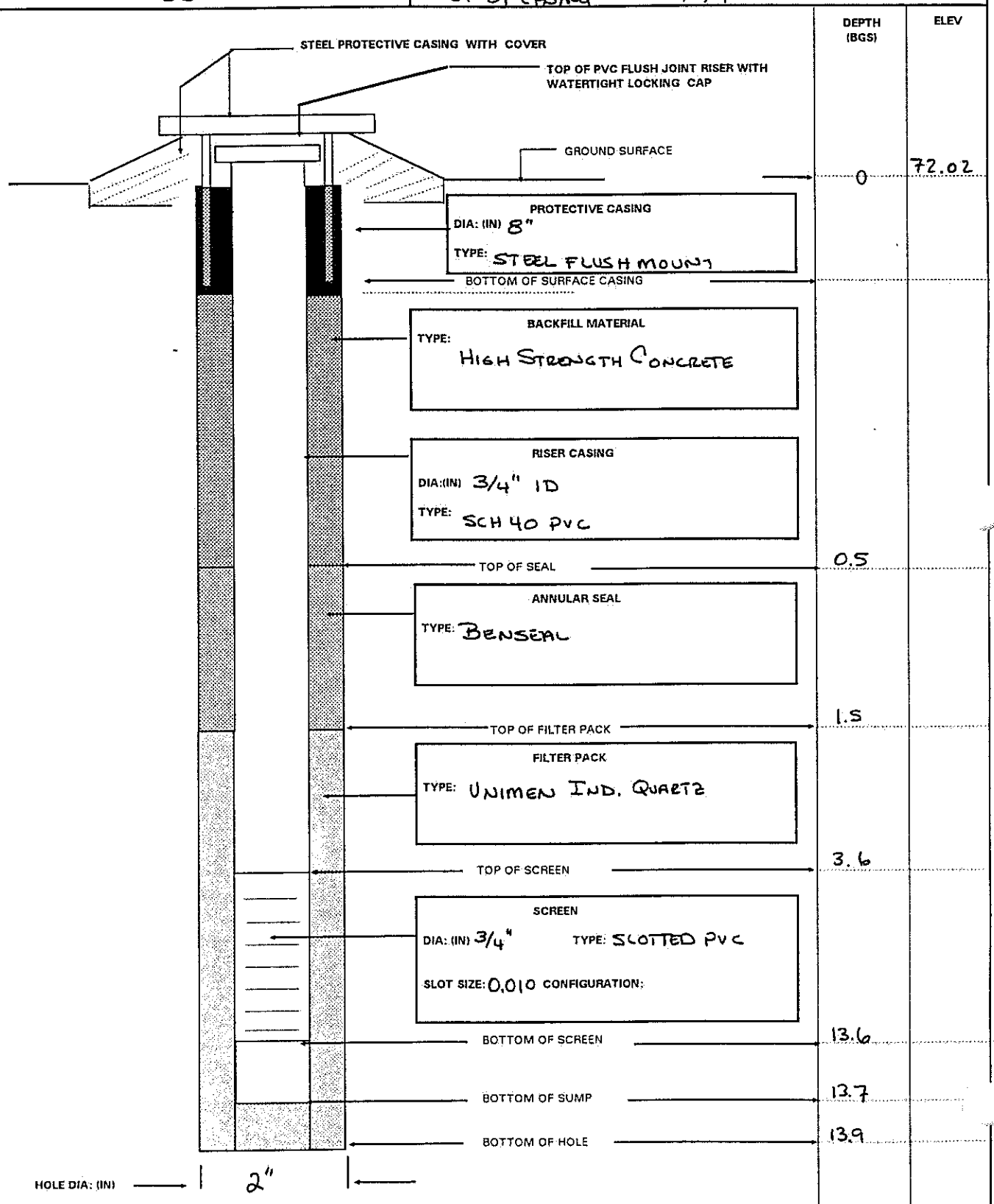
COORDINATES: N: 682456.12
E: 823619.55

DATUM/UNITS: NAD83

REFERENCE POINT: Top of Casing

ELEVATION: 71.77

DATUM/UNITS: NAVD88



APPENDIX VIII

GROUNDWATER LABORATORY RESULTS

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TABLE VIII-A. Summary of Groundwater Analytical Results

Station:		In-Stream	98-01	98-02	98-03	98-04	98-05	98-05	98-05
Sample ID:		Water	980112	980212	980312	980412	980512	980522	980532
Screened Interval (ft BGS)	Federal	Quality	3.6 - 13.6	1.8 - 11.8	3.5 - 13.5	1.8 - 11.8	9.0 - 13.0	14.0 - 18.0	19.0 - 23.0
Sample Date:	MCL[a]	Standard[b]	1/18/00	1/18/00	1/18/00	1/18/00	1/17/00	1/17/00	1/17/00
Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
BTEX COMPOUNDS									
Benzene	5	71.28	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	1,000	200,000	1 U	1 U	1 U	0.44 J	0.44 J	0.47 J	0.34 J
Ethylbenzene	700	28,718	0.052 J	1 U	1 U	0.052 J	1 U	1 U	1 U
Xylenes, Total	10,000	NRC	0.37 J	3 U	3 U	3 U	3 U	3 U	3 U
VOLATILE ORGANIC COMPOUNDS									
1,1,1-Trichloroethane	200	NRC	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	NRC	10.8	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	5	41.99	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	NRC	NRC	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	7	3.2	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	5	98.6	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethene	NRC	NRC	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,2-Dichloropropane	NRC	NRC	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-cis-Dichloropropene	NRC	1,700	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-trans-Dichloropropene	NRC	1,700	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	NRC	NRC	5.6 U	9.2 U	5 U	19.2 U	5 U	5 U	5 U
2-Hexanone	NRC	NRC	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	NRC	NRC	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	NRC	NRC	5 U	12.5 =	5 U	13.9 =	5 U	5 U	5 U
Bromodichloromethane	NRC	NRC	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	NRC	360	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	NRC	NRC	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Disulfide	NRC	NRC	5 U	5 U	5 U	5 U	1 J	5 U	0.84 J
Carbon Tetrachloride	5	4.42	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	100	21,000	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	NRC	NRC	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	NRC	470.8	1 U	1 U	0.22 J	0.26 J	1 U	1 U	1 U
Chloromethane	NRC	NRC	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	NRC	NRC	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	NRC	NRC	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	100	NRC	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	5	8.85	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	5	80.7	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl Chloride	2	525	1 U	1 U	1 U	1 U	1 U	1 U	1 U

NOTES:

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

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

[c] BTEX analysis requested on chain of custody instead of full suite of VOCs.

[d] Insufficient sample volume for PAH analysis.

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	98-01	98-02	98-03	98-04	98-05	98-05	98-05
Sample ID:		Water	980112	980212	980312	980412	980512	980522	980532
Screened Interval (ft BGS)	Federal	Quality	3.6 - 13.6	1.8 - 11.8	3.5 - 13.5	1.8 - 11.8	9.0 - 13.0	14.0 - 18.0	19.0 - 23.0
Sample Date:	MCL[a]	Standard[b]	1/18/00	1/18/00	1/18/00	1/18/00	1/17/00	1/17/00	1/17/00
Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
POLYNUCLEAR AROMATIC HYDROCARBONS									
2-Chloronaphthalene	NRC	NRC	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Acenaphthene	NRC	NRC	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Acenaphthylene	NRC	NRC	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Anthracene	NRC	110,000	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Benzo(a)anthracene	NRC	0.0311	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Benzo(a)pyrene	0.2	0.0311	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Benzo(b)fluoranthene	NRC	NRC	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Benzo(g,h,i)perylene	NRC	NRC	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Benzo(k)fluoranthene	NRC	0.0311	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Chrysene	NRC	0.0311	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Dibenzo(a,h)anthracene	NRC	0.0311	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Fluoranthene	NRC	370	1 U	0.76 J	1 UJ	1 U	1 U	1 U	1.2 UJ
Fluorene	NRC	14,000	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Indeno(1,2,3-cd)pyrene	NRC	0.0311	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Naphthalene	NRC	NRC	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Phenanthrene	NRC	NRC	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Pyrene	NRC	11,000	1 U	0.71 J	1 UJ	1 U	1 U	1 U	1.2 UJ

NOTES:

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

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

[c] BTEX analysis requested on chain of custody instead of full suite of VOCs.

[d] Insufficient sample volume for PAH analysis.

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	98-05	98-05	98-05	98-05	98-05	98-06
Sample ID:		Water	980542	980552	980562	980572	980582	980612
Screened Interval (ft BGS)	Federal	Quality	24.0 - 28.0	29.0 - 33.0	34.0 - 38.0	39.0 - 43.0	44.0 - 48.0	3.6 - 13.6
Sample Date:	MCL[a]	Standard[b]	1/17/00	1/17/00	1/17/00	1/17/00	1/17/00	1/17/00
Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
BTEX COMPOUNDS								
Benzene	5	71.28	1 U	1 U	1 U	0.18 J	1 U	1 U
Toluene	1,000	200,000	0.36 J	0.42 J	0.63 J	1 U	1 U	1 U
Ethylbenzene	700	28,718	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes, Total	10,000	NRC	3 U	3 U	3 U	3 U	3 U	3 U
VOLATILE ORGANIC COMPOUNDS								
1,1,1-Trichloroethane	200	NRC	1 U	1 U	1 U	1 U	1 U	[c]
1,1,2,2-Tetrachloroethane	NRC	10.8	1 U	1 U	1 U	1 U	1 U	[c]
1,1,2-Trichloroethane	5	41.99	1 U	1 U	1 U	1 U	1 U	[c]
1,1-Dichloroethane	NRC	NRC	1 U	1 U	1 U	1 U	1 U	[c]
1,1-Dichloroethene	7	3.2	1 U	1 U	1 U	1 U	1 U	[c]
1,2-Dichloroethane	5	98.6	1 U	1 U	1 U	1 U	1 U	[c]
1,2-Dichloroethene	NRC	NRC	2 U	2 U	2 U	2 U	2 U	[c]
1,2-Dichloropropane	NRC	NRC	1 U	1 U	1 U	1 U	1 U	[c]
1,3-cis-Dichloropropene	NRC	1,700	1 U	1 U	1 U	1 U	1 U	[c]
1,3-trans-Dichloropropene	NRC	1,700	1 U	1 U	1 U	1 U	1 U	[c]
2-Butanone	NRC	NRC	5 U	5 U	5 U	5 U	5 U	[c]
2-Hexanone	NRC	NRC	5 U	5 U	5 U	5 U	5 U	[c]
4-Methyl-2-pentanone	NRC	NRC	5 U	5 U	5 U	5 U	5 U	[c]
Acetone	NRC	NRC	5 U	5 U	5 U	9.9 U	7.9 U	[c]
Bromodichloromethane	NRC	NRC	1 U	1 U	1 U	1 U	1 U	[c]
Bromoform	NRC	360	1 U	1 U	1 U	1 U	1 U	[c]
Bromomethane	NRC	NRC	1 U	1 U	1 U	1 U	1 U	[c]
Carbon Disulfide	NRC	NRC	5 U	5 U	5 U	5 U	5 U	[c]
Carbon Tetrachloride	5	4.42	1 U	1 U	1 U	1 U	1 U	[c]
Chlorobenzene	100	21,000	1 U	1 U	1 U	1 U	1 U	[c]
Chloroethane	NRC	NRC	1 U	1 U	1 U	1 U	1 U	[c]
Chloroform	NRC	470.8	1 U	1 U	1 U	1 U	1 U	[c]
Chloromethane	NRC	NRC	1 U	1 U	1 U	1 U	1 U	[c]
Dibromochloromethane	NRC	NRC	1 U	1 U	1 U	1 U	1 U	[c]
Methylene Chloride	NRC	NRC	5 U	5 U	5 U	5 U	5 U	[c]
Styrene	100	NRC	1 U	1 U	1 U	1 U	1 U	[c]
Tetrachloroethene	5	8.85	1 U	1 U	1 U	1 U	1 U	[c]
Trichloroethene	5	80.7	1 U	1 U	1 U	1 U	1 U	[c]
Vinyl Chloride	2	525	1 U	1 U	1 U	1 U	1 U	[c]

NOTES:

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

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

[c] BTEX analysis requested on chain of custody instead of full suite of VOCs.

[d] Insufficient sample volume for PAH analysis.

Laboratory Qualifiers

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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	98-05	98-05	98-05	98-05	98-05	98-06
Sample ID:		Water	980542	980552	980562	980572	980582	980612
Screened Interval (ft BGS)	Federal	Quality	24.0 - 28.0	29.0 - 33.0	34.0 - 38.0	39.0 - 43.0	44.0 - 48.0	3.6 - 13.6
Sample Date:	MCL[a]	Standard[b]	1/17/00	1/17/00	1/17/00	1/17/00	1/17/00	1/17/00
Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
POLYNUCLEAR AROMATIC HYDROCARBONS								
2-Chloronaphthalene	NRC	NRC	1 U	1 U	1 U	[d]	[d]	1 U
Acenaphthene	NRC	NRC	1 U	1 U	1 U	[d]	[d]	1 U
Acenaphthylene	NRC	NRC	1 U	1 U	1 U	[d]	[d]	1 U
Anthracene	NRC	110,000	1 U	1 U	1 U	[d]	[d]	1 U
Benzo(a)anthracene	NRC	0.0311	1 U	1 U	1 U	[d]	[d]	1 U
Benzo(a)pyrene	0.2	0.0311	1 U	1 U	1 U	[d]	[d]	1 U
Benzo(b)fluoranthene	NRC	NRC	1 U	1 U	1 U	[d]	[d]	1 U
Benzo(g,h,i)perylene	NRC	NRC	1 U	1 U	1 U	[d]	[d]	1 U
Benzo(k)fluoranthene	NRC	0.0311	1 U	1 U	1 U	[d]	[d]	1 U
Chrysene	NRC	0.0311	1 U	1 U	1 U	[d]	[d]	1 U
Dibenzo(a,h)anthracene	NRC	0.0311	1 U	1 U	1 U	[d]	[d]	1 U
Fluoranthene	NRC	370	1 U	1 U	1 U	[d]	[d]	1 U
Fluorene	NRC	14,000	1 U	1 U	1 U	[d]	[d]	1 U
Indeno(1,2,3-cd)pyrene	NRC	0.0311	1 U	1 U	1 U	[d]	[d]	1 U
Naphthalene	NRC	NRC	1 U	1 U	1 U	[d]	[d]	1 U
Phenanthrene	NRC	NRC	1 U	1 U	1 U	[d]	[d]	1 U
Pyrene	NRC	11,000	1 U	1 U	1 U	[d]	[d]	1 U

NOTES:

[a] U.S. Environmental Protection Agency Safe Drinking Water Act Maximum Contaminant Level
[b] GA EPD water quality standards (Chapter 391-3-6.03)
[c] BTEX analysis requested on chain of custody instead of full suite of VOCs.
[d] Insufficient sample volume for PAH analysis.

Laboratory Qualifiers

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UJ Indicates that the compound was not detected above an approximated sample quantitation limit.
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= Indicates the compound was detected at the concentration reported.

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980112

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB011W

Matrix: (soil/water) WATER Lab Sample ID: 20765001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1S609

Level: (low/med) LOW Date Received: 01/19/00

% Moisture: not dec. _____ Date Analyzed: 01/22/00

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	
74-87-3	Chloromethane		1.0	U	U
75-01-4	Vinyl chloride		1.0	U	
74-83-9	Bromomethane		1.0	U	
75-00-3	Chloroethane		1.0	U	
75-35-4	1,1-Dichloroethylene		1.0	U	
67-64-1	Acetone	5	~~2.2~~	JB	U FO1, FO1
75-15-0	Carbon disulfide		5.0	U	
75-09-2	Methylene chloride		5.0	U	U
75-34-3	1,1-Dichloroethane	AMM 3/22/00	1.0	U	
78-93-3	2-Butanone		5.6	B	U FO1, FO7
540-59-0	1,2-Dichloroethylene(total)		2.0	U	U
67-66-3	Chloroform		1.0	U	
71-55-6	1,1,1-Trichloroethane		1.0	U	
56-23-5	Carbon tetrachloride		1.0	U	
107-06-2	1,2-Dichloroethane		1.0	U	
71-43-2	Benzene		1.0	U	
79-01-6	Trichloroethylene		1.0	U	
78-87-5	1,2-Dichloropropane		1.0	U	
75-27-4	Bromodichloromethane		1.0	U	
10061-01-5	cis-1,3-Dichloropropylene		1.0	U	
108-10-1	4-Methyl-2-pentanone		5.0	U	
108-88-3	Toluene		1.0	U	
10061-02-6	trans-1,3-Dichloropropylene		1.0	U	
79-00-5	1,1,2-Trichloroethane		1.0	U	
591-78-6	2-Hexanone		5.0	U	
127-18-4	Tetrachloroethylene		1.0	U	
124-48-1	Dibromochloromethane		1.0	U	
108-90-7	Chlorobenzene		1.0	U	
100-41-4	Ethylbenzene		0.052	J	J
1330-20-7	Xylenes (total)		0.37	J	J
100-42-5	Styrene		1.0	U	U
75-25-2	Bromoform		1.0	U	
79-34-5	1,1,2,2-Tetrachloroethane		1.0	U	

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980112

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB011W

Matrix: (soil/water) WATER Lab Sample ID: 20765001

Sample wt/vol: 500.0 (g/mL) ML Lab File ID: 5D111

Level: (low/med) LOW Date Received: 01/19/00

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/21/00

Concentrated Extract Volume: 0.50(mL) Date Analyzed: 01/24/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	1.0	U
91-58-7	2-Chloronaphthalene	1.0	U
208-96-8	Acenaphthylene	1.0	U
83-32-9	Acenaphthene	1.0	U
86-73-7	Fluorene	1.0	U
85-01-8	Phenanthrene	1.0	U
120-12-7	Anthracene	1.0	U
206-44-0	Fluoranthene	1.0	U
129-00-0	Pyrene	1.0	U
56-55-3	Benzo(a)anthracene	1.0	U
218-01-9	Chrysene	1.0	U
205-99-2	Benzo(b)fluoranthene	1.0	U
207-08-9	Benzo(k)fluoranthene	1.0	U
50-32-8	Benzo(a)pyrene	1.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	U
53-70-3	Dibenz(a,h)anthracene	1.0	U
191-24-2	Benzo(g,h,i)perylene	1.0	U

U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980212

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB011W

Matrix: (soil/water) WATER Lab Sample ID: 20765002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1S610

Level: (low/med) LOW Date Received: 01/19/00

% Moisture: not dec. _____ Date Analyzed: 01/22/00

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
74-87-3	Chloromethane	1.0	U	U
75-01-4	Vinyl chloride	1.0	U	
74-83-9	Bromomethane	1.0	U	
75-00-3	Chloroethane	1.0	U	
75-35-4	1,1-Dichloroethylene	1.0	U	
67-64-1	Acetone	12.5	B	= F01, F08
75-15-0	Carbon disulfide	5.0	U	U
75-09-2	Methylene chloride	5.0	U	
75-34-3	1,1-Dichloroethane	1.0	U	
78-93-3	2-Butanone	9.2	B	U F01, F07
540-59-0	1,2-Dichloroethylene(total)	2.0	U	U
67-66-3	Chloroform	1.0	U	
71-55-6	1,1,1-Trichloroethane	1.0	U	
56-23-5	Carbon tetrachloride	1.0	U	
107-06-2	1,2-Dichloroethane	1.0	U	
71-43-2	Benzene	1.0	U	
79-01-6	Trichloroethylene	1.0	U	
78-87-5	1,2-Dichloropropane	1.0	U	
75-27-4	Bromodichloromethane	1.0	U	
10061-01-5	cis-1,3-Dichloropropylene	1.0	U	
108-10-1	4-Methyl-2-pentanone	5.0	U	
108-88-3	Toluene	1.0	U	
10061-02-6	trans-1,3-Dichloropropylene	1.0	U	
79-00-5	1,1,2-Trichloroethane	1.0	U	
591-78-6	2-Hexanone	5.0	U	
127-18-4	Tetrachloroethylene	1.0	U	
124-48-1	Dibromochloromethane	1.0	U	
108-90-7	Chlorobenzene	1.0	U	
100-41-4	Ethylbenzene	1.0	U	
1330-20-7	Xylenes (total)	3.0	U	
100-42-5	Styrene	1.0	U	
75-25-2	Bromoform	1.0	U	
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980212

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB011W

Matrix: (soil/water) WATER Lab Sample ID: 20765002

Sample wt/vol: 950.0 (g/mL) ML Lab File ID: 5D112

Level: (low/med) LOW Date Received: 01/19/00

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/21/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/24/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	1.0	U
91-58-7	2-Chloronaphthalene	1.0	U
208-96-8	Acenaphthylene	1.0	U
83-32-9	Acenaphthene	1.0	U
86-73-7	Fluorene	1.0	U
85-01-8	Phenanthrene	1.0	U
120-12-7	Anthracene	1.0	U
206-44-0	Fluoranthene	0.76	J
129-00-0	Pyrene	0.71	J
56-55-3	Benzo(a)anthracene	1.0	U
218-01-9	Chrysene	1.0	U
205-99-2	Benzo(b)fluoranthene	1.0	U
207-08-9	Benzo(k)fluoranthene	1.0	U
50-32-8	Benzo(a)pyrene	1.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	U
53-70-3	Dibenz(a,h)anthracene	1.0	U
191-24-2	Benzo(g,h,i)perylene	1.0	U

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980312

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB011W

Matrix: (soil/water) WATER Lab Sample ID: 20765003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1S611

Level: (low/med) LOW Date Received: 01/19/00

% Moisture: not dec. _____ Date Analyzed: 01/22/00

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	
74-87-3	Chloromethane		1.0	U	U
75-01-4	Vinyl chloride		1.0	U	U
74-83-9	Bromomethane		1.0	U	U
75-00-3	Chloroethane		1.0	U	U
75-35-4	1,1-Dichloroethylene		1.0	U	U
67-64-1	Acetone	5	~~1.8~~	JB	U FD1, FD6
75-15-0	Carbon disulfide		5.0	U	U
75-09-2	Methylene chloride	MMP 1/20/00	5.0	U	U
75-34-3	1,1-Dichloroethane		1.0	U	U
78-93-3	2-Butanone	5	~~2.3~~	JB	U FD1, FD6
540-59-0	1,2-Dichloroethylene(total)		2.0	U	U
67-66-3	Chloroform		0.22	J	U
71-55-6	1,1,1-Trichloroethane		1.0	U	U
56-23-5	Carbon tetrachloride		1.0	U	
107-06-2	1,2-Dichloroethane		1.0	U	
71-43-2	Benzene		1.0	U	
79-01-6	Trichloroethylene		1.0	U	
78-87-5	1,2-Dichloropropane		1.0	U	
75-27-4	Bromodichloromethane		1.0	U	
10061-01-5	cis-1,3-Dichloropropylene		1.0	U	
108-10-1	4-Methyl-2-pentanone		5.0	U	
108-88-3	Toluene		1.0	U	
10061-02-6	trans-1,3-Dichloropropylene		1.0	U	
79-00-5	1,1,2-Trichloroethane		1.0	U	
591-78-6	2-Hexanone		5.0	U	
127-18-4	Tetrachloroethylene		1.0	U	
124-48-1	Dibromochloromethane		1.0	U	
108-90-7	Chlorobenzene		1.0	U	
100-41-4	Ethylbenzene		1.0	U	
1330-20-7	Xylenes (total)		3.0	U	
100-42-5	Styrene		1.0	U	
75-25-2	Bromoform		1.0	U	
79-34-5	1,1,2,2-Tetrachloroethane		1.0	U	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980312

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB011W

Matrix: (soil/water) WATER Lab Sample ID: 20765003

Sample wt/vol: 500.0 (g/mL) ML Lab File ID: 5D113

Level: (low/med) LOW Date Received: 01/19/00

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/21/00

Concentrated Extract Volume: 0.50(mL) Date Analyzed: 01/24/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	1.0	U
91-58-7	2-Chloronaphthalene	1.0	U
208-96-8	Acenaphthylene	1.0	U
83-32-9	Acenaphthene	1.0	U
86-73-7	Fluorene	1.0	U
85-01-8	Phenanthrene	1.0	U
120-12-7	Anthracene	1.0	U
206-44-0	Fluoranthene	1.0	U
129-00-0	Pyrene	1.0	U
56-55-3	Benzo(a)anthracene	1.0	U
218-01-9	Chrysene	1.0	U
205-99-2	Benzo(b)fluoranthene	1.0	U
207-08-9	Benzo(k)fluoranthene	1.0	U
50-32-8	Benzo(a)pyrene	1.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	U
53-70-3	Dibenz(a,h)anthracene	1.0	U
191-24-2	Benzo(g,h,i)perylene	1.0	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980412

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB011W

Matrix: (soil/water) WATER Lab Sample ID: 20765004

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1S612

Level: (low/med) LOW Date Received: 01/19/00

% Moisture: not dec. _____ Date Analyzed: 01/22/00

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	
74-87-3	Chloromethane	1.0	U	U
75-01-4	Vinyl chloride	1.0	U	
74-83-9	Bromomethane	1.0	U	
75-00-3	Chloroethane	1.0	U	
75-35-4	1,1-Dichloroethylene	1.0	U	
67-64-1	Acetone	13.9	B	=F01,F08
75-15-0	Carbon disulfide	5.0	U	U
75-09-2	Methylene chloride	5.0	U	
75-34-3	1,1-Dichloroethane	1.0	U	
78-93-3	2-Butanone	19.2	B	F01,F07
540-59-0	1,2-Dichloroethylene(total)	2.0	U	U
67-66-3	Chloroform	0.26	J	
71-55-6	1,1,1-Trichloroethane	1.0	U	
56-23-5	Carbon tetrachloride	1.0	U	
107-06-2	1,2-Dichloroethane	1.0	U	
71-43-2	Benzene	1.0	U	
79-01-6	Trichloroethylene	1.0	U	
78-87-5	1,2-Dichloropropane	1.0	U	
75-27-4	Bromodichloromethane	1.0	U	
10061-01-5	cis-1,3-Dichloropropylene	1.0	U	
108-10-1	4-Methyl-2-pentanone	5.0	U	U
108-88-3	Toluene	0.44	J	
10061-02-6	trans-1,3-Dichloropropylene	1.0	U	
79-00-5	1,1,2-Trichloroethane	1.0	U	
591-78-6	2-Hexanone	5.0	U	U
127-18-4	Tetrachloroethylene	1.0	U	
124-48-1	Dibromochloromethane	1.0	U	
108-90-7	Chlorobenzene	1.0	U	
100-41-4	Ethylbenzene	0.052	J	
1330-20-7	Xylenes (total)	3.0	U	U
100-42-5	Styrene	1.0	U	
75-25-2	Bromoform	1.0	U	
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980412

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB011W

Matrix: (soil/water) WATER Lab Sample ID: 20765004

Sample wt/vol: 990.0 (g/mL) ML Lab File ID: 5D114

Level: (low/med) LOW Date Received: 01/19/00

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/21/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/24/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	1.0	U
91-58-7	2-Chloronaphthalene	1.0	U
208-96-8	Acenaphthylene	1.0	U
83-32-9	Acenaphthene	1.0	U
86-73-7	Fluorene	1.0	U
85-01-8	Phenanthrene	1.0	U
120-12-7	Anthracene	1.0	U
206-44-0	Fluoranthene	1.0	U
129-00-0	Pyrene	1.0	U
56-55-3	Benzo(a)anthracene	1.0	U
218-01-9	Chrysene	1.0	U
205-99-2	Benzo(b)fluoranthene	1.0	U
207-08-9	Benzo(k)fluoranthene	1.0	U
50-32-8	Benzo(a)pyrene	1.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	U
53-70-3	Dibenz(a,h)anthracene	1.0	U
191-24-2	Benzo(g,h,i)perylene	1.0	U

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980512

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB010W

Matrix: (soil/water) WATER Lab Sample ID: 20705001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1S314

Level: (low/med) LOW Date Received: 01/18/00

% Moisture: not dec. _____ Date Analyzed: 01/19/00

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
74-87-3	Chloromethane		1.0	U
75-01-4	Vinyl chloride		1.0	U
74-83-9	Bromomethane		1.0	U
75-00-3	Chloroethane		1.0	U
75-35-4	1,1-Dichloroethylene		1.0	U
67-64-1	Acetone	5	~~2.6~~	JB
75-15-0	Carbon disulfide		1.0	J
75-09-2	Methylene chloride		5.0	U
75-34-3	1,1-Dichloroethane		1.0	U
78-93-3	2-Butanone		5.0	U
540-59-0	1,2-Dichloroethylene(total)		2.0	J
67-66-3	Chloroform		1.0	U
71-55-6	1,1,1-Trichloroethane		1.0	U
56-23-5	Carbon tetrachloride		1.0	U
107-06-2	1,2-Dichloroethane		1.0	U
71-43-2	Benzene		1.0	U
79-01-6	Trichloroethylene		1.0	U
78-87-5	1,2-Dichloropropane		1.0	U
75-27-4	Bromodichloromethane		1.0	U
10061-01-5	cis-1,3-Dichloropropylene		1.0	U
108-10-1	4-Methyl-2-pentanone		5.0	U
108-88-3	Toluene		0.44	J
10061-02-6	trans-1,3-Dichloropropylene		1.0	U
79-00-5	1,1,2-Trichloroethane		1.0	U
591-78-6	2-Hexanone		5.0	U
127-18-4	Tetrachloroethylene		1.0	U
124-48-1	Dibromochloromethane		1.0	U
108-90-7	Chlorobenzene		1.0	U
100-41-4	Ethylbenzene		1.0	U
1330-20-7	Xylenes (total)		3.0	U
100-42-5	Styrene		1.0	U
75-25-2	Bromoform		1.0	U
79-34-5	1,1,2,2-Tetrachloroethane		1.0	U

NMR 3/24/00

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J C

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DATA VALIDATION COPY

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980512

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB009W

Matrix: (soil/water) WATER Lab Sample ID: 20703020

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 5C419

Level: (low/med) LOW Date Received: 01/18/00

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/19/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/20/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
91-20-3	Naphthalene	1.0	U	U
91-58-7	2-Chloronaphthalene	1.0	U	
208-96-8	Acenaphthylene	1.0	U	
83-32-9	Acenaphthene	1.0	U	
86-73-7	Fluorene	1.0	U	
85-01-8	Phenanthrene	1.0	U	
120-12-7	Anthracene	1.0	U	
206-44-0	Fluoranthene	1.0	U	
129-00-0	Pyrene	1.0	U	
56-55-3	Benzo(a)anthracene	1.0	U	
218-01-9	Chrysene	1.0	U	
205-99-2	Benzo(b)fluoranthene	1.0	U	
207-08-9	Benzo(k)fluoranthene	1.0	U	
50-32-8	Benzo(a)pyrene	1.0	U	
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	U	
53-70-3	Dibenz(a,h)anthracene	1.0	U	
191-24-2	Benzo(g,h,i)perylene	1.0	U	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980522

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB010W

Matrix: (soil/water) WATER Lab Sample ID: 20705004

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1S317

Level: (low/med) LOW Date Received: 01/18/00

% Moisture: not dec. _____ Date Analyzed: 01/19/00

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
74-87-3	Chloromethane		1.0	U
75-01-4	Vinyl chloride		1.0	U
74-83-9	Bromomethane		1.0	U
75-00-3	Chloroethane		1.0	U
75-35-4	1,1-Dichloroethylene		1.0	U
67-64-1	Acetone	5.0	~~0.82~~	JB
75-15-0	Carbon disulfide		5.0	U
75-09-2	Methylene chloride		5.0	U
75-34-3	1,1-Dichloroethane		1.0	U
78-93-3	2-Butanone		5.0	U
540-59-0	1,2-Dichloroethylene(total)		2.0	U
67-66-3	Chloroform		1.0	U
71-55-6	1,1,1-Trichloroethane		1.0	U
56-23-5	Carbon tetrachloride		1.0	U
107-06-2	1,2-Dichloroethane		1.0	U
71-43-2	Benzene		1.0	U
79-01-6	Trichloroethylene		1.0	U
78-87-5	1,2-Dichloropropane		1.0	U
75-27-4	Bromodichloromethane		1.0	U
10061-01-5	cis-1,3-Dichloropropylene		1.0	U
108-10-1	4-Methyl-2-pentanone		5.0	U
108-88-3	Toluene		0.47	J
10061-02-6	trans-1,3-Dichloropropylene		1.0	U
79-00-5	1,1,2-Trichloroethane		1.0	U
591-78-6	2-Hexanone		5.0	U
127-18-4	Tetrachloroethylene		1.0	U
124-48-1	Dibromochloromethane		1.0	U
108-90-7	Chlorobenzene		1.0	U
100-41-4	Ethylbenzene	1.0	~~0.14~~	JB
1330-20-7	Xylenes (total)		3.0	U
100-42-5	Styrene		1.0	U
75-25-2	Bromoform		1.0	U
79-34-5	1,1,2,2-Tetrachloroethane		1.0	U

MMP 3/20/00

U FD1,FD6

U

J

U FD1,FD6

FORM I VOA

OLM03.0

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980522RE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB009W

Matrix: (soil/water) WATER Lab Sample ID: 20703019

Sample wt/vol: 990.0 (g/mL) ML Lab File ID: 5C712

Level: (low/med) LOW Date Received: 01/18/00

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/21/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/23/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.0

USE

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
91-20-3	Naphthalene	1.0	U	U
91-58-7	2-Chloronaphthalene	1.0	U	
208-96-8	Acenaphthylene	1.0	U	
83-32-9	Acenaphthene	1.0	U	
86-73-7	Fluorene	1.0	U	
85-01-8	Phenanthrene	1.0	U	
120-12-7	Anthracene	1.0	U	
206-44-0	Fluoranthene	1.0	U	
129-00-0	Pyrene	1.0	U	
56-55-3	Benzo(a)anthracene	1.0	U	
218-01-9	Chrysene	1.0	U	
205-99-2	Benzo(b)fluoranthene	1.0	U	
207-08-9	Benzo(k)fluoranthene	1.0	U	
50-32-8	Benzo(a)pyrene	1.0	U	
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	U	
53-70-3	Dibenz(a,h)anthracene	1.0	U	
191-24-2	Benzo(g,h,i)perylene	1.0	U	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980532

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB010W

Matrix: (soil/water) WATER Lab Sample ID: 20705005

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1S318

Level: (low/med) LOW Date Received: 01/18/00

% Moisture: not dec. _____ Date Analyzed: 01/19/00

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
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-35-4	1,1-Dichloroethylene	1.0	U
67-64-1	Acetone	5 ~~1.1~~	JB
75-15-0	Carbon disulfide	0.84	J
75-09-2	Methylene chloride	5.0	U
75-34-3	1,1-Dichloroethane	1.0	U
78-93-3	2-Butanone	5.0	U
540-59-0	1,2-Dichloroethylene(total)	2.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
71-43-2	Benzene	1.0	U
79-01-6	Trichloroethylene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-5	cis-1,3-Dichloropropylene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	0.34	J
10061-02-6	trans-1,3-Dichloropropylene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
591-78-6	2-Hexanone	5.0	U
127-18-4	Tetrachloroethylene	1.0	U
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	3.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U

MMP 3/24/00

U U FD1, FD2 J U U U

FORM I VOA OLM03.0

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980532

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB009W

Matrix: (soil/water) WATER Lab Sample ID: 20703018

Sample wt/vol: 860.0 (g/mL) ML Lab File ID: 5C417

Level: (low/med) LOW Date Received: 01/18/00

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/19/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/20/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	1.2	U
91-58-7	2-Chloronaphthalene	1.2	U
208-96-8	Acenaphthylene	1.2	U
83-32-9	Acenaphthene	1.2	U
86-73-7	Fluorene	1.2	U
85-01-8	Phenanthrene	1.2	U
120-12-7	Anthracene	1.2	U
206-44-0	Fluoranthene	1.2	U
129-00-0	Pyrene	1.2	U
56-55-3	Benzo(a)anthracene	1.2	U
218-01-9	Chrysene	1.2	U
205-99-2	Benzo(b)fluoranthene	1.2	U
207-08-9	Benzo(k)fluoranthene	1.2	U
50-32-8	Benzo(a)pyrene	1.2	U
193-39-5	Indeno(1,2,3-cd)pyrene	1.2	U
53-70-3	Dibenz(a,h)anthracene	1.2	U
191-24-2	Benzo(g,h,i)perylene	1.2	U

US GPZ

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980542

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB010W

Matrix: (soil/water) WATER Lab Sample ID: 20705006

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1S319

Level: (low/med) LOW Date Received: 01/18/00

% Moisture: not dec. _____ Date Analyzed: 01/19/00

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	
74-87-3	Chloromethane		1.0	U	U
75-01-4	Vinyl chloride		1.0	U	
74-83-9	Bromomethane		1.0	U	
75-00-3	Chloroethane		1.0	U	
75-35-4	1,1-Dichloroethylene		1.0	U	
67-64-1	Acetone	5	~~0.66~~	JB	U FO1,FO2
75-15-0	Carbon disulfide		5.0	U	U
75-09-2	Methylene chloride		5.0	U	
75-34-3	1,1-Dichloroethane		1.0	U	
78-93-3	2-Butanone		5.0	U	
540-59-0	1,2-Dichloroethylene(total)		2.0	U	
67-66-3	Chloroform	MPP 3to10	1.0	U	
71-55-6	1,1,1-Trichloroethane		1.0	U	
56-23-5	Carbon tetrachloride		1.0	U	
107-06-2	1,2-Dichloroethane		1.0	U	
71-43-2	Benzene		1.0	U	
79-01-6	Trichloroethylene		1.0	U	
78-87-5	1,2-Dichloropropane		1.0	U	
75-27-4	Bromodichloromethane		1.0	U	
10061-01-5	cis-1,3-Dichloropropylene		1.0	U	
108-10-1	4-Methyl-2-pentanone		5.0	U	
108-88-3	Toluene		0.36	J	J
10061-02-6	trans-1,3-Dichloropropylene		1.0	U	U
79-00-5	1,1,2-Trichloroethane		1.0	U	
591-78-6	2-Hexanone		5.0	U	
127-18-4	Tetrachloroethylene		1.0	U	
124-48-1	Dibromochloromethane		1.0	U	
108-90-7	Chlorobenzene		1.0	U	
100-41-4	Ethylbenzene	1	~~0.11~~	JB	U FO1,FO6
1330-20-7	Xylenes (total)		3.0	U	U
100-42-5	Styrene		1.0	U	
75-25-2	Bromoform		1.0	U	
79-34-5	1,1,2,2-Tetrachloroethane		1.0	U	

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980542RE

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB009W

Matrix: (soil/water) WATER Lab Sample ID: 20703017

Sample wt/vol: 990.0 (g/mL) ML Lab File ID: SC710

Level: (low/med) LOW Date Received: 01/18/00

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/21/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/23/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 8.0

USR

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	1.0	U
91-58-7	2-Chloronaphthalene	1.0	U
208-96-8	Acenaphthylene	1.0	U
83-32-9	Acenaphthene	1.0	U
86-73-7	Fluorene	1.0	U
85-01-8	Phenanthrene	1.0	U
120-12-7	Anthracene	1.0	U
206-44-0	Fluoranthene	1.0	U
129-00-0	Pyrene	1.0	U
56-55-3	Benzo(a)anthracene	1.0	U
218-01-9	Chrysene	1.0	U
205-99-2	Benzo(b)fluoranthene	1.0	U
207-08-9	Benzo(k)fluoranthene	1.0	U
50-32-8	Benzo(a)pyrene	1.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	U
53-70-3	Dibenz(a,h)anthracene	1.0	U
191-24-2	Benzo(g,h,i)perylene	1.0	U

U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980552

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB010W

Matrix: (soil/water) WATER Lab Sample ID: 20705007

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1S320

Level: (low/med) LOW Date Received: 01/18/00

% Moisture: not dec. _____ Date Analyzed: 01/19/00

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	
74-87-3	Chloromethane		1.0	U	U
75-01-4	Vinyl chloride		1.0	U	U
74-83-9	Bromomethane		1.0	U	U
75-00-3	Chloroethane		1.0	U	U
75-35-4	1,1-Dichloroethylene		1.0	U	U
67-64-1	Acetone	5	~~1.7~~	JB	U FD1, FD6
75-15-0	Carbon disulfide		5.0	U	U
75-09-2	Methylene chloride		5.0	U	U
75-34-3	1,1-Dichloroethane		1.0	U	U
78-93-3	2-Butanone		5.0	U	U
540-59-0	1,2-Dichloroethylene(total)		2.0	U	U
67-66-3	Chloroform		1.0	U	U
71-55-6	1,1,1-Trichloroethane		1.0	U	U
56-23-5	Carbon tetrachloride		1.0	U	U
107-06-2	1,2-Dichloroethane		1.0	U	U
71-43-2	Benzene		1.0	U	U
79-01-6	Trichloroethylene		1.0	U	U
78-87-5	1,2-Dichloropropane		1.0	U	U
75-27-4	Bromodichloromethane		1.0	U	U
10061-01-5	cis-1,3-Dichloropropylene		1.0	U	U
108-10-1	4-Methyl-2-pentanone		5.0	U	U
108-88-3	Toluene		0.42	J	J
10061-02-6	trans-1,3-Dichloropropylene		1.0	U	U
79-00-5	1,1,2-Trichloroethane		1.0	U	U
591-78-6	2-Hexanone		5.0	U	U
127-18-4	Tetrachloroethylene		1.0	U	U
124-48-1	Dibromochloromethane		1.0	U	U
108-90-7	Chlorobenzene		1.0	U	U
100-41-4	Ethylbenzene		1.0	U	U
1330-20-7	Xylenes (total)		3.0	U	U
100-42-5	Styrene		1.0	U	U
75-25-2	Bromoform		1.0	U	U
79-34-5	1,1,2,2-Tetrachloroethane		1.0	U	U

NMP 3/20/00

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980552

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB009W

Matrix: (soil/water) WATER Lab Sample ID: 20703016

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 5C415

Level: (low/med) LOW Date Received: 01/18/00

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/19/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/20/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	1.0	U
91-58-7	2-Chloronaphthalene	1.0	U
208-96-8	Acenaphthylene	1.0	U
83-32-9	Acenaphthene	1.0	U
86-73-7	Fluorene	1.0	U
85-01-8	Phenanthrene	1.0	U
120-12-7	Anthracene	1.0	U
206-44-0	Fluoranthene	1.0	U
129-00-0	Pyrene	1.0	U
56-55-3	Benzo(a)anthracene	1.0	U
218-01-9	Chrysene	1.0	U
205-99-2	Benzo(b)fluoranthene	1.0	U
207-08-9	Benzo(k)fluoranthene	1.0	U
50-32-8	Benzo(a)pyrene	1.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	U
53-70-3	Dibenz(a,h)anthracene	1.0	U
191-24-2	Benzo(g,h,i)perylene	1.0	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980562

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB010W

Matrix: (soil/water) WATER Lab Sample ID: 20705002

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1S315

Level: (low/med) LOW Date Received: 01/18/00

% Moisture: not dec. _____ Date Analyzed: 01/19/00

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
74-87-3	Chloromethane		1.0	U
75-01-4	Vinyl chloride		1.0	U
74-83-9	Bromomethane		1.0	U
75-00-3	Chloroethane		1.0	U
75-35-4	1,1-Dichloroethylene		1.0	U
67-64-1	Acetone	5	~~1.1~~	JB
75-15-0	Carbon disulfide		5.0	U
75-09-2	Methylene chloride		5.0	U
75-34-3	1,1-Dichloroethane		1.0	U
78-93-3	2-Butanone		5.0	U
540-59-0	1,2-Dichloroethylene(total)		2.0	U
67-66-3	Chloroform		1.0	U
71-55-6	1,1,1-Trichloroethane		1.0	U
56-23-5	Carbon tetrachloride		1.0	U
107-06-2	1,2-Dichloroethane		1.0	U
71-43-2	Benzene		1.0	U
79-01-6	Trichloroethylene		1.0	U
78-87-5	1,2-Dichloropropane		1.0	U
75-27-4	Bromodichloromethane		1.0	U
10061-01-5	cis-1,3-Dichloropropylene		1.0	U
108-10-1	4-Methyl-2-pentanone		5.0	U
108-88-3	Toluene		0.63	J
10061-02-6	trans-1,3-Dichloropropylene		1.0	U
79-00-5	1,1,2-Trichloroethane		1.0	U
591-78-6	2-Hexanone		5.0	U
127-18-4	Tetrachloroethylene		1.0	U
124-48-1	Dibromochloromethane		1.0	U
108-90-7	Chlorobenzene		1.0	U
100-41-4	Ethylbenzene	1.0	~~0.15~~	JB
1330-20-7	Xylenes (total)		3.0	U
100-42-5	Styrene		1.0	U
75-25-2	Bromoform		1.0	U
79-34-5	1,1,2,2-Tetrachloroethane		1.0	U

U

U FD1, FD6

U

J

U

U FD1, FD6

U

MYKP 3/20/00

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980562

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB009W

Matrix: (soil/water) WATER Lab Sample ID: 20703015

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 5C414

Level: (low/med) LOW Date Received: 01/18/00

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/19/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/20/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 5.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	1.0	U
91-58-7	2-Chloronaphthalene	1.0	U
208-96-8	Acenaphthylene	1.0	U
83-32-9	Acenaphthene	1.0	U
86-73-7	Fluorene	1.0	U
85-01-8	Phenanthrene	1.0	U
120-12-7	Anthracene	1.0	U
206-44-0	Fluoranthene	1.0	U
129-00-0	Pyrene	1.0	U
56-55-3	Benzo(a)anthracene	1.0	U
218-01-9	Chrysene	1.0	U
205-99-2	Benzo(b)fluoranthene	1.0	U
207-08-9	Benzo(k)fluoranthene	1.0	U
50-32-8	Benzo(a)pyrene	1.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	U
53-70-3	Dibenz(a,h)anthracene	1.0	U
191-24-2	Benzo(g,h,i)perylene	1.0	U

U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980572

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB010W

Matrix: (soil/water) WATER Lab Sample ID: 20705003

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1S316

Level: (low/med) LOW Date Received: 01/18/00

% Moisture: not dec. _____ Date Analyzed: 01/19/00

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
74-87-3	Chloromethane	1.0	U	U
75-01-4	Vinyl chloride	1.0	U	
74-83-9	Bromomethane	1.0	U	
75-00-3	Chloroethane	1.0	U	
75-35-4	1,1-Dichloroethylene	1.0	U	
67-64-1	Acetone	9.9	B	U FB4, FB7
75-15-0	Carbon disulfide	5.0	U	U
75-09-2	Methylene chloride	5.0	U	
75-34-3	1,1-Dichloroethane	1.0	U	
78-93-3	2-Butanone	5 ~~3.7~~	J	U FB4, FBL
540-59-0	1,2-Dichloroethylene(total)	2.0	U	U
67-66-3	Chloroform	1.0	U	
71-55-6	1,1,1-Trichloroethane	1.0	U	
56-23-5	Carbon tetrachloride	1.0	U	
107-06-2	1,2-Dichloroethane	1.0	U	
71-43-2	Benzene	0.18	J	J
79-01-6	Trichloroethylene	1.0	U	U
78-87-5	1,2-Dichloropropane	1.0	U	
75-27-4	Bromodichloromethane	1.0	U	
10061-01-5	cis-1,3-Dichloropropylene	1.0	U	
108-10-1	4-Methyl-2-pentanone	5.0	U	
108-88-3	Toluene	1.0	U	
10061-02-6	trans-1,3-Dichloropropylene	1.0	U	
79-00-5	1,1,2-Trichloroethane	1.0	U	
591-78-6	2-Hexanone	5.0	U	
127-18-4	Tetrachloroethylene	1.0	U	
124-48-1	Dibromochloromethane	1.0	U	
108-90-7	Chlorobenzene	1.0	U	
100-41-4	Ethylbenzene	1.0 ~~0.11~~	JB	U FB1, FBL
1330-20-7	Xylenes (total)	3.0	U	U
100-42-5	Styrene	1.0	U	
75-25-2	Bromoform	1.0	U	
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	

MMP 3/20/00

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980582

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB010W

Matrix: (soil/water) WATER Lab Sample ID: 20705008

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1S321

Level: (low/med) LOW Date Received: 01/18/00

% Moisture: not dec. _____ Date Analyzed: 01/19/00

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
74-87-3	Chloromethane	1.0	U	U
75-01-4	Vinyl chloride	1.0	U	
74-83-9	Bromomethane	1.0	U	
75-00-3	Chloroethane	1.0	U	
75-35-4	1,1-Dichloroethylene	1.0	U	
67-64-1	Acetone	7.9	B	U FD4, FD7
75-15-0	Carbon disulfide	5.0	U	U
75-09-2	Methylene chloride	5.0	U	
75-34-3	1,1-Dichloroethane	1.0	U	
78-93-3	2-Butanone	5 ~~3.1~~	J	U FD4, FD6
540-59-0	1,2-Dichloroethylene(total)	2.0	U	U
67-66-3	Chloroform	1.0	U	
71-55-6	1,1,1-Trichloroethane	1.0	U	
56-23-5	Carbon tetrachloride	1.0	U	
107-06-2	1,2-Dichloroethane	1.0	U	
71-43-2	Benzene	1.0	U	
79-01-6	Trichloroethylene	1.0	U	
78-87-5	1,2-Dichloropropane	1.0	U	
75-27-4	Bromodichloromethane	1.0	U	
10061-01-5	cis-1,3-Dichloropropylene	1.0	U	
108-10-1	4-Methyl-2-pentanone	5.0	U	
108-88-3	Toluene	1.0	U	
10061-02-6	trans-1,3-Dichloropropylene	1.0	U	
79-00-5	1,1,2-Trichloroethane	1.0	U	
591-78-6	2-Hexanone	5.0	U	
127-18-4	Tetrachloroethylene	1.0	U	
124-48-1	Dibromochloromethane	1.0	U	
108-90-7	Chlorobenzene	1.0	U	
100-41-4	Ethylbenzene	1.0 ~~0.077~~	JB	U FD1, FD6
1330-20-7	Xylenes (total)	3.0	U	U
100-42-5	Styrene	1.0	U	
75-25-2	Bromoform	1.0	U	
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	

FORM I VOA OLM03.0

DATA VALIDATION COPY

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NC.

980612

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB014W

Matrix: (soil/water) WATER Lab Sample ID: 20844001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5T214

Level: (low/med) LOW Date Received: 01/20/00

% Moisture: not dec. _____ Date Analyzed: 01/25/00

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
71-43-2	Benzene	1.0	U	U
108-88-3	Toluene	1.0 ~~0.30~~	J	U F04, F06
100-41-4	Ethylbenzene	1.0	U	U
1330-20-7	Xylenes (total)	3.0	U	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

980612

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB014W

Matrix: (soil/water) WATER Lab Sample ID: 20844001

Sample wt/vol: 970.0 (g/mL) ML Lab File ID: 5D121

Level: (low/med) LOW Date Received: 01/20/00

% Moisture: _____ decanted: (Y/N)___ Date Extracted:01/21/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/24/00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	1.0	U
91-58-7	2-Chloronaphthalene	1.0	U
208-96-8	Acenaphthylene	1.0	U
83-32-9	Acenaphthene	1.0	U
86-73-7	Fluorene	1.0	U
85-01-8	Phenanthrene	1.0	U
120-12-7	Anthracene	1.0	U
206-44-0	Fluoranthene	1.0	U
129-00-0	Pyrene	1.0	U
56-55-3	Benzo(a)anthracene	1.0	U
218-01-9	Chrysene	1.0	U
205-99-2	Benzo(b)fluoranthene	1.0	U
207-08-9	Benzo(k)fluoranthene	1.0	U
50-32-8	Benzo(a)pyrene	1.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	U
53-70-3	Dibenz(a,h)anthracene	1.0	U
191-24-2	Benzo(g,h,i)perylene	1.0	U

U

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

CHAIN OF CUSTODY RECORD

COC NO.: 10555 (05

PROJECT NAME: Ft. Stewart USTs D.O. #55

PROJECT NUMBER: 01-1624-04-2352-200

PROJECT MANAGER: Patty Stoll

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

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	PAH, Lead	Dissolved iron	TPH	TCLP BTEX	TCLP Lead	No. of Bottles/ Vials	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
980562	1/17/00	1420	water		N						2		20703015
980552	1/17/00	1350			N						2		016
980542	1/17/00	1240			N						2		017
980532	1/17/00	1215			N						2		018
980522	1/17/00	1150			N						2		019
980512	1/17/00	1100			N						2		020

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	1/18/00 1121		1/18/00 1407
COMPANY NAME: SAIC		COMPANY NAME: GEL	
RECEIVED BY:	Date/Time 1-18-00 1121	RELINQUISHED BY:	Date/Time
COMPANY NAME: G.E.L		COMPANY NAME:	
RELINQUISHED BY:	Date/Time 1-18-00 1407	RECEIVED BY:	Date/Time
COMPANY NAME: G.E.L		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 12

Cooler ID: #8604

Cooler Temperature: 4°C

FEDEX NUMBER:

VIII-31

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

207

CHAIN OF CUSTODY RECORD

COC NO.: D055507

PROJECT NAME: Ft. Stewart USTs D.O. #55

PROJECT NUMBER: 01-1624-04-2352-200

PROJECT MANAGER: Patty Stoll

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

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	PAH, Lead	Dissolved Iron	TPH	TCLP BTEX	TCLP Lead	VOC	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
631112	1/17/00	1520	water	2							2	2		20703007
630912	1/17/00	1515		2							2	2		008
980512	1/17/00	1100									2	2		20705001
980562	1/17/00	1420									2	2		002
980572	1/17/00	1550									2	2		003
980522	1/17/00	1150									2	2		004
980532	1/17/00	1215									2	2		005
980542	1/17/00	1240									2	2		006
980552	1/17/00	1350									2	2		007
980582	1/17/00	1700									2	2		008
TB5505	1/17/00	0745	↓								2	2		009

1/18/00

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	1/18/00		
COMPANY NAME: SAIC	1121	COMPANY NAME:	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
	1-18-00		
COMPANY NAME: S.E.C.	1121	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
	1-18-00		
COMPANY NAME: S.E.C.	1407	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 105

Cooler Temperature: 4°C

Cooler ID: #760

FEDEX NUMBER:

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

1 of 2

CHAIN OF CUSTODY RECORD

COC NO.: D055108

OJECT NAME: Ft. Stewart USTs D.O. #55

OJECT NUMBER: 01-1624-04-2352-200

OJECT MANAGER: Patty Stoll

ıpler (Signature) (Printed Name) Laura Lumley

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	PAH, Lead	Dissolved Iron	TPH	TCLP BTEX	TCLP Lead	VOC	No. of Bottles/ Vials	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
980112	1/18/00	1000	water		N						N	4		20765001
980212	1/18/00	1355			N						N	4		20765002
980312	1/18/00	1255			N						N	4		20765003
980412	1/18/00	1435			N						N	4		20765004
841512	1/18/00	1710		2								2		20767001
431012	1/18/00	1000		2								2		002
431014	1/18/00	1006		2								2		003
430912	1/18/00	0910		2								2		004
551212	1/18/00	1455		2								2		005
551112	1/18/00	1440		2								2		006
551012	1/18/00	1205		2								2		007
551014	1/18/00	1205		2								2		008
550912	1/18/00	1550	↓	2								2		009

INQUISHED BY:	Date/Time 1/19/00	RECEIVED BY: FRANCIS	Date/Time 1/19/00	TOTAL NUMBER OF CONTAINERS:	Cooler Temperature: 4°C
IPANY NAME: SAIC	1215	COMPANY NAME: GEL	1700	Cooler ID: #12	FEDEX NUMBER:
EIVED BY:	Date/Time 1-19-00	RELINQUISHED BY:	Date/Time		
IPANY NAME:	1215	COMPANY NAME:			
NQUISHED BY:	Date/Time 1-19-00	RECEIVED BY:	Date/Time		
IPANY NAME: GEL	1700	COMPANY NAME:			

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

CHAIN OF CUSTODY RECORD

COC NO.: D05509

PROJECT NAME: Ft. Stewart USTs D.O. #55

PROJECT NUMBER: 01-1624-04-2352-200

PROJECT MANAGER: Patty Stoll

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

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	PAH, Lead	Dissolved Iron	TPH - DRO	TCLP BTEX	TCLP Lead	VOC	No. of Bottles/ Vials	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
980612	1/19/00	1015	water	2	2							4		20844001
990112	1/19/00	0910		2	2							4		002
220612	1/19/00	1400		2	2							4		003
220814	1/19/00	1400		2								2		004
841612	1/19/00	0936		2								2		005
841812	1/19/00	1130		2								2		006
TB5507	1/19/00	0745		2								2		007
990111	1/19/00	0950	Soil	1	1			1				3		008
														20850001

2000 105

VIII-34

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	1/20/00	[illegible]	1/20/00 1430
COMPANY NAME: SAIC		COMPANY NAME: GEL	
RECEIVED BY: Katherine C. Bi	Date/Time 1/20/00 11:36	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 23

Cooler ID: #2

Cooler Temperature: 4°C

FEDEX NUMBER:

APPENDIX IX

CONTAMINATED SOIL DISPOSAL 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) is provided in this CAP-Part A report. Approximately 58.21 tons of contaminated soil were excavated from the site.

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93

REYNOLDS CONSTRUCTION COMPANY
Highway 84 • P. O. Box 749
Ludowici, Georgia 31316
Office (912) 368-7488 • Plant (912) 876-8085

Date _____ 19___ Load No. 24

Triple "R" Night — Pcs
Customer — Description

RRR-1011
Project Number

Ft. Stewart — Liberty
Location — County

37740 lb Net.
21300 lb Tare
59040 lb+ Gross
01:59 PM AU 12 96

Signature of Weigher

TONS: 18.87 TOTAL TONS: 428.98

John Dry — 46
TRUCKER — TRUCK NO.

E Parks
DRIVER — TICKET NO. 58845

VIP-1518-HV

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST

Manifest Document No. 0002C

1. Page 1 of 1

GENERATOR

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.~~
C/O Reynolds Constr Co.
Rt. 84
Ludowici, GA 31316

A. Transporter's Phone
B. Transporter's Phone ~~912-427-6750~~
C. Facility's Phone 912-756-3655

7. Waste Shipping Name and Description	8. Containers No.	Type	9. Total Quantity	10. Unit Wt/Vol
a. Petroleum Contaminated Soil	1	TT	18.00	CY
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 # 93

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: 08 Day: 06 Year: 96

TRANSPORTER

13. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Timothy A Parks — Signature: Timothy A Parks — Month: 8 Day: 12 Year: 96

14. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name — Signature — Month — Day — Year

FACILITY

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: 08 Day: 12 Year: 96

ORIGINAL – RETURN TO GENERATOR

93

REYNOLDS CONSTRUCTION COMPANY
Highway 84 • P. O. Box 749
Ludowici, Georgia 31316
Office (912) 368-7488 • Plant (912) 876-8085

Date _____ 19__ Load No. 231

Triple "R" Mgmt. Pcs

Customer Description

RRR 104

Project Number

Ft. Stewart Liberty

Location County

39220 lb Net
21400 lb Tare
60620 lb+ Gross
02:13 PM AU 12 96

Signature of Weigher

TONS: 19.61 TOTAL TONS: 485.48

Hendrix 50

TRUCKER TRUCK NO.

DRIVER TICKET NO. 58848

VIP-1518-HV

30

Please print or type.
Form designed for use on elite (12-pitch) typewriter.

NON-HAZARDOUS WASTE MANIFEST

Manifest Document No. 000155

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.
c/o 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.	8. Containers Type	9. Total Quantity	10. Unit Wt/Vol
a. Petroleum Contaminated Soil	1	TT	18.00	CY
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 # 93

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: 05 | Day: 06 | Year: 96

13. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: S Pope | Signature: Shawn Pope | Month: 5 | Day: 6 | Year: 96

14. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name: CHARLES RUITT | Signature: Charles Ruitt | Month: | Day: | Year:

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: 08 | Day: 12 | Year: 9

GENERATOR

TRANSPORTER

FACILITY

ORIGINAL – RETURN TO GENERATOR

93

REYNOLDS CONSTRUCTION COMPANY
Highway 84 • P. O. Box 749
Ludowici, Georgia 31316
Office (912) 368-7488 • Plant (912) 876-8085

Date _____ 19___ Load No. 25

Triple "R" Mgmt — Pea S
Customer — Description

RRR - 1041
Project Number

Ft Stewart — Liberty
Location — County

39460 lb Net
21080 lb Tare
60540 lb+ Gross
02:20 PM AU 12 96

Signature of Weigher

TONS: 19.73 TOTAL TONS: 505.21

Hendrix — 60
TRUCKER — TRUCK NO.

Russell Douglas — 58849
DRIVER — TICKET NO.

VIP-1518-HV

Please print or type
(Form designed for use on elite (12-pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

Manifest Document No. 000111

1. Page 1 of 1

GENERATOR

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 K Management, Inc.
c/o 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.	8. Containers Type	9. Total Quantity	10. Unit Wt/Vol
a. Petroleum Contaminated Soil	1	TT	18.00	CY
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 # 93

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	Signature	Month	Day	Year
Tom C. Fry	Tom C. Fry	05	06	96

TRANSPORTER

13. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Russell Samples	Russell Samples	05	12	96

14. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

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
		05	12	96

ORIGINAL – RETURN TO GENERATOR

APPENDIX X

SITE RANKING FORM

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SITE RANKING FORM

Facility Name: UST 93, Building 1330 **Ranked by:** S. Stoller

County: Liberty **Facility ID #:** 9-089112 **Date Ranked:** 8/4/00

SOIL CONTAMINATION

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

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

* *CAP-Part A sample 980311 (2000)*

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

* *CAP-Part A sample 980311 (2000)*

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

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

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

GROUNDWATER CONTAMINATION

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

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

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

* ☒	≤5 µg/L	= 0
☐	>5 - 100 µg/L	= 5
☐	>100 - 1,000 µg/L	= 50
☐	>1,000 - 10,000 µg/L	= 500
☐	>10,000 µg/L	= 1500

* *Sample 980572 (2000)*

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

Facility Name: UST 93, Building 1330 **County:** Liberty **Facility ID #:** 9-089112

POTENTIAL RECEPTORS (MUST BE FIELD-VERIFIED)

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

H. Public Water Supply

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

For lower susceptibility areas only:

☐	>1 mi	= 0

I. Non-Public Water Supply

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

For lower susceptibility areas only:

☐	>¼ mi	= 0

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

* For justification that withdrawal point is not hydraulically connected, see page X-5.

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'	= 2

* *Underground storm drain located ~100 feet downgradient*

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. 0) x (L. 50) = M. 0

(M. 0) + (D. 10) = N. 10

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. 10) x (P. 1) = (10) + (Q. 0)

= 10
ENVIRONMENTAL SENSITIVITY SCORE

ADDITIONAL GEOLOGIC AND HYDROLOGIC DATA

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

1.0 REGIONAL AND LOCAL GEOLOGY

Fort Stewart is located within the coastal plain physiographic province. This province is typified by nine southeastward dipping strata that increase in thickness from 0 feet at the fall line located approximately 150 miles inland from the Atlantic coast, to approximately 4,200 feet at the coast. State geologic records describe a probable petroleum exploration well (the No. 1 Jelks-Rogers) located in the region as encountering crystalline basement rocks at a depth of 4254 feet BGS. This well provides the most complete record for Cretaceous, Tertiary, and Quaternary sedimentary strata in the region.

The Cretaceous section was found to be approximately 1970 feet thick and dominated by clastics. The Tertiary section was found to be approximately 2170 feet thick and dominated by limestone with a 175-foot-thick cap of dark green phosphatic clay. This clay is regionally extensive and is known as the Hawthorn Group. The interval from approximately 110 feet to the surface is Quaternary in age and composed primarily of sand with interbeds of clay or silt. This section is undifferentiated into separate formations (Herrick and Vochis 1963).

State geologic records contain information regarding a well drilled in October 1942, 1.8 miles north of Flemington at Liberty Field of Camp Stewart (now known as Fort Stewart). This well is believed to be an artesian well located approximately one-quarter mile north of the runway at Wright Army Airfield within the Fort Stewart Military Reservation. The log for this well describes a 410-foot section, the lowermost 110 feet of which consisted predominantly of limestone sediments, above which 245 feet of dark green phosphatic clay typical of the Hawthorn Group was encountered. The uppermost portion of the section was found to be Quaternary-age interbedded sands and clays. The top 15 feet of these sediments were described as sandy clay (Herrick and Vochis 1963).

The surface soil located throughout the Fort Stewart garrison area consists of Stilson loamy sand. The surface layer of this soil is typically dark grayish-brown loamy sand measuring approximately 6 inches in depth. The surface layer is underlain by material consisting of pale yellow loamy sand and extends to a depth of approximately 29 inches. The subsoil is dominantly sandy clay loam and extends to a depth of 72 inches or more (Herrick and Vochis 1963).

2.0 REGIONAL AND LOCAL HYDROGEOLOGY

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

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

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

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

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

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

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

APPENDIX XI

COPIES OF PUBLIC NOTIFICATION LETTERS AND CERTIFIED RECEIPTS OR NEWSPAPER NOTICE

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AFFIDAVIT OF PUBLICATION
SAVANNAH MORNING NEWS

STATE OF GEORGIA
CHATHAM COUNTY

Personally appeared before me, JOAN T. JENKINS. to me known, who being sworn, deposes and says:

That she/he is the CLASSIFIED ADV. SUPV of Southeastern Newspaper Corporation. a Georgia corporation, doing business in Chatham County, Georgia under the trade name of Savannah Morning News, a daily newspaper published in said county;

That she/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, published

on 7-16, 2000, 7-23 2000,

, 2000, ,2000,

and finds that the following advertisement, to-wit:

015 Miscellaneous Notices

PUBLIC NOTICE
Notification of Corrective Action Plan Underground Storage Tank Releases

FORT STEWART, Georgia

The Georgia EPD (GEPD) has required Fort Stewart Directorate of Public Works to prepare Corrective Action Plans Part A or Part B 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 November 30, 2000. If you want to examine a copy of one or more of the plans, please contact: Environmental Branch (Attn: T. Rutland), Directorate of Public Works, Bldg. 1137, HQS 3D IN DIV (MECH) and Fort Stewart, 1550 Frank Cochran Dr., Fort Stewart, Ga. 31314-4927. A copy will be mailed at a nominal fee.

Comments to the plan will be accepted until December 31, 2000, and should be directed to GEPD at 404-362-2687. Following is the mailing address:

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

Fort Stewart, Part A or Part B Underground Storage Tank Sites
Site; Facility ID#; Building
61, 9-089104, 1161
15 and 16, 9-089012, 1721
93, 9-089112, 1130
36 and 37, 9-089016, 1510
100B, 9-089081, 1350
5 and 6, 9-089066, 1824

Joan T. Jenkins
(Deponent)

Appeared in each of said editions.

Sworn to and subscribed
Before me this 24 day
of July, 2000

Lillie D. Lang

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

Notary Public, Chatham County, Ga.

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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 93, Building 1330, Facility ID #9-089112, 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.

Soil samples designated for volatile organic analyses were collected using En Core™ samplers. The samplers were locked into an En Core T-Handle. Using the T-Handle, the sampler was pushed into the soil until the coring body of the sampler was full. Once the samplers were filled, caps were locked onto them insuring that no headspace was present. The samplers were then removed from the handle and placed in an En Core zipper bag. Three encore samples are collected from each section 2.0-foot section.

Soil samples designated for possible laboratory analysis, other than volatile organic 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. 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.

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 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 teflon 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 Piezometer Installation

Following the collection of the groundwater sample, a ¾-inch inside diameter PVC piezometer, with a 10-foot screened section, was installed in the borehole to prevent the borehole from collapsing. These piezometers were completed as monitoring wells.

2.4 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.

2.5 Decontamination Procedures

2.5.1 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.

2.5.2 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.

2.6 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 or VOCs	3 – En Core™ Samplers	15 g	Cool, 0°C	48 hrs
TPH-GRO	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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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 93 site. Due to the nature of the contamination (petroleum hydrocarbon contamination of soil), 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, if necessary, 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 93 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 storm drain is located approximately 100 feet west of the site and Mill Creek is located approximately 3000 feet west 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 400 feet upgradient of the UST 93 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 93 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 93 site data have been taken from the following sources based on GA EPD guidance (GA EPD 1996):

- federal IWQS (GA EPD1998),
- GUST Soil Threshold Levels (i.e., Table A, Column 1),
- 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., IWQS 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 93 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.

Five soil samples were collected during the CAP-Part A investigation. Benzene was detected in soil at a concentration above its STL. Toluene, ethylbenzene, xylenes, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, fluoranthene, and pyrene were detected in one sample, but at concentrations below the risk-based and leaching to groundwater screening criteria. As a result, benzene was identified as a COPC for soil at the UST 93 site.

None of the detection limits exceeded the various screening criteria, thus no COPCs for soils were selected for the site based on the detection limit screening.

Thirteen groundwater samples were collected during the CAP-Part A investigation. Benzene was detected in three temporary wells at concentrations above screening levels. Benzene, toluene, ethylbenzene, xylenes, fluoranthene, and pyrene were estimated below the analytical reporting limit of 1 µg/L. The estimated concentrations were below their respective IWQS and risk-based screening criteria. As a result, no COPCs were selected for the UST 93 site groundwater.

Detection limits for benzene and several PAHs exceeded risk-based screening levels for the CAP-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.

1.2.3 Fate and transport model

Fate and transport modeling was not conducted as part of the CAP-Part A investigation due to the lack of groundwater contamination and soil contamination in the vadose zone.

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 93 site.

1.3.1 Alternate Threshold Levels

Benzene was selected as a COPC for soil the site base on one soil sample. The one soil sample with a benzene concentration of 0.0094 mg/kg was located below the water table. There were no elevated benzene concentrations in the vadose zone above the water table that could leach to groundwater. Due to the lack of groundwater contamination and soil contamination in the vadose soil, fate and transport modeling was not conducted. In order to calculate an ATL for benzene in soil, the most conservative scenario was considered and the dilution attenuation factor was assumed to be 1.0. As shown in Appendix VI, the ATL for benzene in soil was calculated to be 0.0115 mg/kg.

1.3.2 Alternative Concentration Limits

No BTEX or PAH constituents were selected as COPCs for groundwater at the site. The concentrations in groundwater do not exceed the applicable IWQS, thus fate and transport modeling was not conducted and no groundwater ACLs were developed for the site.

1.4 Conclusions and recommendations

The conclusions below are based on the risk screening results based on the soil and groundwater concentrations observed during the CAP-Part A investigation.

- Free product was not observed during the CAP-Part A investigation.
- The horizontal and vertical extent of soil and groundwater contamination due to tank operations was determined during the CAP-Part A investigation.
- BTEX and PAH concentrations in groundwater do not exceed the analytical reporting limit of 1 µg/L.
- Risk-based screening results show that BTEX and PAH concentrations in groundwater do not exceed the initial screening levels; therefore, no ACLs were calculated.
- Risk-based screening results show that benzene concentrations in soil below the water table exceed the STL, but not the risk-based or leaching to groundwater screening levels. However, the benzene concentration does not exceed the ATL of 0.0115 mg/kg.
- Fate and transport modeling of benzene was not conducted due to the lack of groundwater contamination and soil contamination in the vadose zone.

Considering the site characteristics, no-further-action-required status for the site.

1.5 References

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Table C-1. Comparison of Fort Stewart CAP-Part A UST 93 Soil Results to Screening Levels

Station:	Screening Levels			98-01	98-02	98-03	98-04	98-06
Sample ID:	GUST	Risk-based		980111	980211	980311	980411	980611
Sample Interval (ft BGS)	Soil Threshold	Screening	Leaching to	9.0 - 11.0	4.0 - 6.0	8.0 - 10.0	6.0 - 8.0	4.0 - 6.0
Sample Date:	Level[a]	Level[b]	Groundwater[c]	18-Jan-00	18-Jan-00	18-Jan-00	18-Jan-00	19-Jan-00
Units:	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)
VOLATILE ORGANIC COMPOUNDS								
Benzene	5	197,400	30	0.96 U	0.94 U	**9.4** =	0.96 U	0.94 U
Toluene	370	408,800,000	12000	0.96 U	0.94 U	1.4 =	0.96 U	0.94 U
Ethylbenzene	400	204,400,000	13000	0.96 U	0.94 U	1.5 =	0.96 U	0.94 U
Xylenes, Total	20,000	4,088,000,000	190000	2.9 U	2.8 U	4.3 =	2.9 U	2.8 U
POLYNUCLEAR AROMATIC HYDROCARBONS								
2-Chloronaphthalene[d]	N/A[e]	40,880,000	84000	40.7 U	41.3 U	37.7 U	41.8 U	39.4 U
Acenaphthene	N/A[e]	12,264,000	570000	40.7 U	41.3 U	37.7 U	41.8 U	39.4 U
Acenaphthylene	N/A[e]	61,320,000	4200000	40.7 U	41.3 U	37.7 U	41.8 U	39.4 U
Anthracene	N/A[e]	613,200,000	12000000	40.7 U	41.3 U	37.7 U	41.8 U	39.4 U
Benzo(a)anthracene	N/A[e]	7,840	2000	40.7 U	41.3 U	40.4 =	41.8 U	39.4 U
Benzo(a)pyrene	N/A[e]	784	8000	40.7 U	41.3 U	61.4 =	41.8 U	39.4 U
Benzo(b)fluoranthene	N/A[e]	7,840	5000	40.7 U	41.3 U	42.4 =	41.8 U	39.4 U
Benzo(g,h,i)perylene	N/A[e]	--	--	40.7 U	41.3 U	37.7 U	41.8 U	39.4 U
Benzo(k)fluoranthene	N/A[e]	78,400	49000	40.7 U	41.3 U	32.9 J	41.8 U	39.4 U
Chrysene	N/A[e]	784,000	160000	40.7 U	41.3 U	43.3 =	41.8 U	39.4 U
Dibenzo(a,h)anthracene	N/A[e]	784	2000	40.7 U	41.3 U	37.7 U	41.8 U	39.4 U
Fluoranthene	N/A[e]	81,760,000	4300000	40.7 U	41.3 U	36.6 J	41.8 U	39.4 U
Fluorene	N/A[e]	81,760,000	560000	40.7 U	41.3 U	37.7 U	41.8 U	39.4 U
Indeno(1,2,3-cd)pyrene	N/A[e]	7,840	14000	40.7 U	41.3 U	37.7 U	41.8 U	39.4 U
Naphthalene	N/A[e]	40,880,000	84000	40.7 U	41.3 U	37.7 U	41.8 U	39.4 U
Phenanthrene[f]	N/A[e]	61,320,000	4200000	40.7 U	41.3 U	37.7 U	41.8 U	39.4 U
Pyrene	N/A[e]	61,320,000	4200000	40.7 U	41.3 U	34.6 J	41.8 U	39.4 U
OTHER ANALYTES								
Total Petroleum Hydrocarbons	--	--	--	2220 U	80900 =	12900 J	1080 U	43900 =

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

Table C-2. Comparison of Fort Stewart CAP-Part A UST 93 Groundwater Results to Screening Levels

Station:	Screening Levels		98-01	98-02	98-03	98-04	98-05	98-05	98-05
Sample ID:	In-Stream		980112	980212	980312	980412	980512	980522	980532
Screened Interval (ft BGS)	Water Quality		3.6 - 13.6	1.8 - 11.8	3.5 - 13.5	1.8 - 11.8	9.0 - 13.0	14.0 - 18.0	19.0 - 23.0
Sample Date:	Standards	Risk-based[a]	18-Jan-00	18-Jan-00	18-Jan-00	18-Jan-00	17-Jan-00	17-Jan-00	17-Jan-00
Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
VOLATILE ORGANIC COMPOUNDS									
Benzene	71.28	0.36	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	200,000	750	1 U	1 U	1 U	0.44 J	0.44 J	0.47 J	0.34 J
Ethylbenzene	28,718	1,300	0.052 J	1 U	1 U	0.052 J	1 U	1 U	1 U
Xylenes, Total	-	12,000	0.37 J	3 U	3 U	3 U	3 U	3 U	3 U
POLYNUCLEAR AROMATIC HYDROCARBONS									
2-Chloronaphthalene[b]	-	6.5	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Acenaphthene	-	365	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Acenaphthylene[c]	-	182.5	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Anthracene	110,000	182.5	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Benzo(a)anthracene	0.0311	0.092	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Benzo(a)pyrene	0.0311	0.0092	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Benzo(b)fluoranthene	-	0.092	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Benzo(g,h,i)perylene	-	-	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Benzo(k)fluoranthene	0.0311	0.92	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Chrysene	0.0311	9.2	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Dibenzo(a,h)anthracene	0.0311	0.0092	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Fluoranthene	370	1,460	1 U	0.76 J	1 UJ	1 U	1 U	1 U	1.2 UJ
Fluorene	14,000	243	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Indeno(1,2,3-cd)pyrene	0.0311	0.092	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Naphthalene	-	6.5	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Phenanthrene[c]	-	182.5	1 U	1 U	1 UJ	1 U	1 U	1 U	1.2 UJ
Pyrene	11,000	182.5	1 U	0.71 J	1 UJ	1 U	1 U	1 U	1.2 UJ

[a] Protective of tap water ingestion by a resident.
[b] Values based on naphthalene as a surrogate chemical.
[c] Values based on pyrene as a surrogate chemical.
Bold values indicate results exceeding Georgia In-Stream Water Quality Standards.
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.
= Indicates that the compound was detected at the concentration reported.

Table C-2. Comparison of Fort Stewart CAP-Part A UST 93 Groundwater Results to Screening Levels (continued)

Station:	Screening Levels		98-05	98-05	98-05	98-05	98-05	98-06
Sample ID:	In-Stream		980542	980552	980562	980572	980582	980612
Screened Interval (ft BGS)	Water Quality		24.0 - 28.0	29.0 - 33.0	34.0 - 38.0	39.0 - 43.0	44.0 - 48.0	3.6 - 13.6
Sample Date:	Standards	Risk-based[a]	17-Jan-00	17-Jan-00	17-Jan-00	17-Jan-00	17-Jan-00	19-Jan-00
Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
VOLATILE ORGANIC COMPOUNDS								
Benzene	71.28	0.36	1 U	1 U	1 U	0.18 J	1 U	1 U
Toluene	200,000	750	0.36 J	0.42 J	0.63 J	1 U	1 U	1 U
Ethylbenzene	28,718	1,300	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes, Total	-	12,000	3 U	3 U	3 U	3 U	3 U	3 U
POLYNUCLEAR AROMATIC HYDROCARBONS								
2-Chloronaphthalene[b]	-	6.5	1 U	1 U	1 U	*	*	1 U
Acenaphthene	-	365	1 U	1 U	1 U	*	*	1 U
Acenaphthylene[c]	-	182.5	1 U	1 U	1 U	*	*	1 U
Anthracene	110,000	182.5	1 U	1 U	1 U	*	*	1 U
Benzo(a)anthracene	0.0311	0.092	1 U	1 U	1 U	*	*	1 U
Benzo(a)pyrene	0.0311	0.0092	1 U	1 U	1 U	*	*	1 U
Benzo(b)fluoranthene	-	0.092	1 U	1 U	1 U	*	*	1 U
Benzo(g,h,i)perylene	-	-	1 U	1 U	1 U	*	*	1 U
Benzo(k)fluoranthene	0.0311	0.92	1 U	1 U	1 U	*	*	1 U
Chrysene	0.0311	9.2	1 U	1 U	1 U	*	*	1 U
Dibenzo(a,h)anthracene	0.0311	0.0092	1 U	1 U	1 U	*	*	1 U
Fluoranthene	370	1,460	1 U	1 U	1 U	*	*	1 U
Fluorene	14,000	243	1 U	1 U	1 U	*	*	1 U
Indeno(1,2,3-cd)pyrene	0.0311	0.092	1 U	1 U	1 U	*	*	1 U
Naphthalene	-	6.5	1 U	1 U	1 U	*	*	1 U
Phenanthrene[c]	-	182.5	1 U	1 U	1 U	*	*	1 U
Pyrene	11,000	182.5	1 U	1 U	1 U	*	*	1 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.
* Insufficient sample volume for PAH analysis.
Bold values indicate results exceeding Georgia In-Stream Water Quality Standards.

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