FINAL

FIRST ANNUAL MONITORING ONLY REPORT
FOR
UNDERGROUND STORAGE TANKS 2 & 3
FACILITY ID #9-089065
BUILDING 1840
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 0061

Prepared by:

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

November 2000

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List of Abbreviations and Acronyms

ACL	alternate concentration limit
AMSL	above mean sea level
BGS	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
BTOC	below top of casing
CAP	Corrective Action Plan
DAF	dilution attenuation factor
GA EPD	Georgia Environmental Protection Division
IWQS	In-Stream Water Quality Standard
ND	not detected
NFAR	No Further Action Required
NRC	no regulatory criteria
PAH	polynuclear aromatic hydrocarbon
SAIC	Science Applications International Corporation
USACE	U.S. Army Corps of Engineers
UST	underground storage tank
USTMP	Underground Storage Tank Management Program

MONITORING ONLY REPORT

Submittal Date: November 2000 Monitoring Report Number: 1st Annual

For Period Covering: January 2000 to November 2000

Facility Name: USTs 2 & 3, Building 1840 Street Address: McFarland Avenue and West 18th Street

Facility ID: 9-089065 City: Fort Stewart County: Liberty Zip Code: 31314

Latitude: 32° 15′ 83″ Longitude: 82° 04′ 43″

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
Telephone:	(912) 767-2010	Telephone:	(865) 481-8792

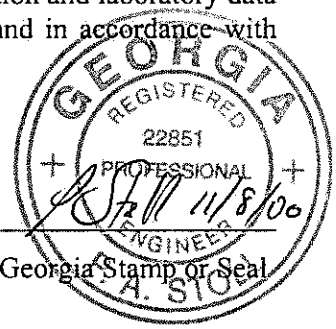
I. REGISTERED PROFESSIONAL ENGINEER OR PROFESSIONAL GEOLOGIST CERTIFICATION

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

Name: Patricia A. Stoll

Signature: P A Stoll

Date: 11/8/00



Georgia Stamp or Seal

II. PROJECT SUMMARY

(Appendix I, Figure 1: Site Location Map)

Provide a brief description or explanation of the site and a brief chronology of environmental events leading up to this report.

Former underground storage tanks (USTs) 2 & 3, Facility ID #9-089065, were located near Building 1840 at Fort Stewart, Georgia. The tanks and piping were excavated and removed on August 13, 1996. Science Applications International Corporation (SAIC) performed a Corrective Action Plan (CAP)-Part A investigation in 1998 to determine the extent of petroleum contamination at the site. One vertical profile boring and seven temporary piezometers were installed during the investigation. The CAP-Part A Report (SAIC 1999) recommending monitoring only at the site was submitted in August 1999 and approved by Georgia Environmental Protection Division (GA EPD) Underground Storage Tank Management Program (USTMP) in correspondence dated January 25, 2000 (Logan 2000). As recommended in the Monitoring Only Plan, six shallow monitoring wells (77-09 through 77-14) were installed as part of the first semiannual sampling event and sampled for benzene, toluene, ethylbenzene, and xylenes (BTEX). In addition, two soil samples were collected from 77-09, located between the former tank pits and the dispenser island. The analytical results from the soil samples will supercede the previous soil analytical data in the site ranking form. Boring logs and well construction diagrams are located in Attachment C.

The fate and transport modeling performed as part of the CAP-Part A Report (SAIC 1999) reflected a continuous source of contamination. The results are summarized in Attachment A of this document. As a result of the semiannual monitoring events in January 2000 and July 2000, it was not necessary to revise the fate and transport model.

The purpose of the semiannual monitoring, summarized in this report, is to confirm the results of the fate and transport modeling and that natural attenuation is taking place at the site. The measured benzene concentrations have been below the In-Stream Water Quality Standard (IWQS) 71.28 and the alternate concentration limit (ACL) of 71.28 µg/L for the last two semiannual sampling events (i.e., since January 2000 when the monitoring only started). Therefore, no-further-action-required status is being recommended for the site.

III. ACTIVITIES AND ASSESSMENT OF EXISTING CONDITIONS

A. Potentiometric Data:

(Appendix I, Figures 2a and 2b: Potentiometric Surface Map)
(Appendix II, Table 1: Groundwater Elevations)

Discuss groundwater flow at this site and implications for this project.

During the first semiannual sampling event in January/February 2000, groundwater elevations were measured in all of the monitoring wells to determine the groundwater flow direction. In February 2000, the groundwater flow direction was toward the west and the groundwater gradient was approximately 0.0059 ft/ft.

During the second semiannual sampling event in June/July 2000, groundwater elevations were measured in all of the monitoring wells to determine the groundwater flow direction. In July 2000, the groundwater flow direction was toward the east and the groundwater gradient was approximately 0.0025 ft/ft.

B. Analytical Data:

(Appendix I, Figures 3a and 3b: Groundwater Quality Map)
(Appendix I, Figure 4: Trend of Contaminant Concentrations)
(Appendix II, Table 2, Groundwater Analytical Results)
(Appendix III, Laboratory Analytical Results)

Discuss groundwater analysis results, trend of contaminant concentrations, and implications for this project.

During the first semiannual sampling event in January 2000, monitoring wells 77-09, 77-10, 77-11, 77-12, 77-13, and 77-14 were sampled for BTEX. Analytical results from the first sampling event showed estimated concentrations below the analytical reporting limits or no detectable BTEX concentrations in wells 77-09, 77-10, 77-12, 77-13, and 77-14. BTEX compounds were present in well 77-11. However, none of the constituents exceeded its IWQS. Benzene was detected at 0.28J µg/L in well 77-09, 0.55J µg/L in well 77-10, and 13.7 µg/L in well 77-11. The benzene concentrations in wells 77-09, 77-10, 77-11 are below the IWQS of 71.28 µg/L. Figure 4 shows the variation in benzene concentrations in groundwater for all the wells.

Two soil samples were collected from well 77-09 in January 2000. The soil samples were collected at the interval with the highest headspace readings and the interval at the soil/water interface, and analyzed for BTEX and polynuclear aromatic hydrocarbons (PAHs). The analytical results are presented in Table 3. These analytical results will supercede the previous soil data utilized in the site ranking form.

During the second semiannual sampling event in June 2000, monitoring wells 77-09, 77-10, 77-11, 77-12, 77-13, and 77-14 were sampled for BTEX. Analytical results from the second sampling event showed estimated concentrations below the analytical reporting limits or no detectable BTEX concentrations in the six wells sampled (i.e., 77-09, 77-10, 77-11, 77-12, 77-13, and 77-14). Benzene was estimated at 0.92J µg/L in well 77-13. Benzene was not present in wells 77-09, 77-10, 77-11, 77-12, and 77-14. Figure 4 shows the variation in benzene concentrations in groundwater for all the wells.

As recommended in the CAP-Part A Report (SAIC 1999), PAH analysis was not performed as part of the Monitoring Only Plan for the site.

IV. SITE RANKING (Note: re-rank site after each monitoring event)
(Appendix IV: Site Ranking Form)

Environmental Site Sensitivity Score:	2750 (CAP-Part A Report)
(April 1999 version of the Site Ranking Form was used for January 2000 score)	250 (Jan. 2000 – First Semiannual Monitoring Event)
	0 (June 2000 – Second Semiannual Monitoring Event)

V. CONCLUSIONS/RECOMMENDATIONS

Provide justification of no-further-action-required recommendation or briefly discuss future monitoring plans for this site.

Fort Stewart respectfully requests that GA EPD, USTMP assign Facility ID #9-089065 a "No Further Action Required" (NFAR) status for the following reasons:

- The Monitoring Only Plan was conducted in accordance with Section III of the CAP-Part A Report (SAIC 1999) and as approved by the GA EPD USTMP in correspondence January 25, 2000 (Logan 2000).
- The site scores for the last two rounds of semiannual groundwater sampling were 250 and 0, which GA EPD USTMP representatives have indicated are acceptable scores for requesting an NFAR status (i.e., January 27, 1999 meeting between GA EPD, Fort Stewart, U. S. Army Corps of Engineers, and SAIC representatives).
- The fate and transport model conducted during the CAP-Part A Report (SAIC 1999), which uses a continuous source of contamination and is summarized in Attachment A, indicates that benzene will never reach the nearest potential preferential pathway (i.e., a storm drain) at a concentration above the IWQS of 71.28 µg/L.
- The benzene concentrations in all wells were below the IWQS of 71.28 µg/L during the two semiannual monitoring events from January 2000 to June 2000.
- The closest surface water bodies are a drainage ditch and Mill Creek located at 650 feet and 1,200 feet, respectively, northwest of the site.
- Natural attenuation has continued to take place at the site as indicated by the decreasing benzene concentrations, which are less than 1 µg/L.

The monitoring only program at this site will be discontinued.

VI. REIMBURSEMENT

Attached _____ N/A __X__

(Appendix V: Reimbursement Application)

Fort Stewart is a federally owned facility and has funded the investigation for the USTs 2 & 3 site, Building 1840, Facility ID #9-089065, using U.S. 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

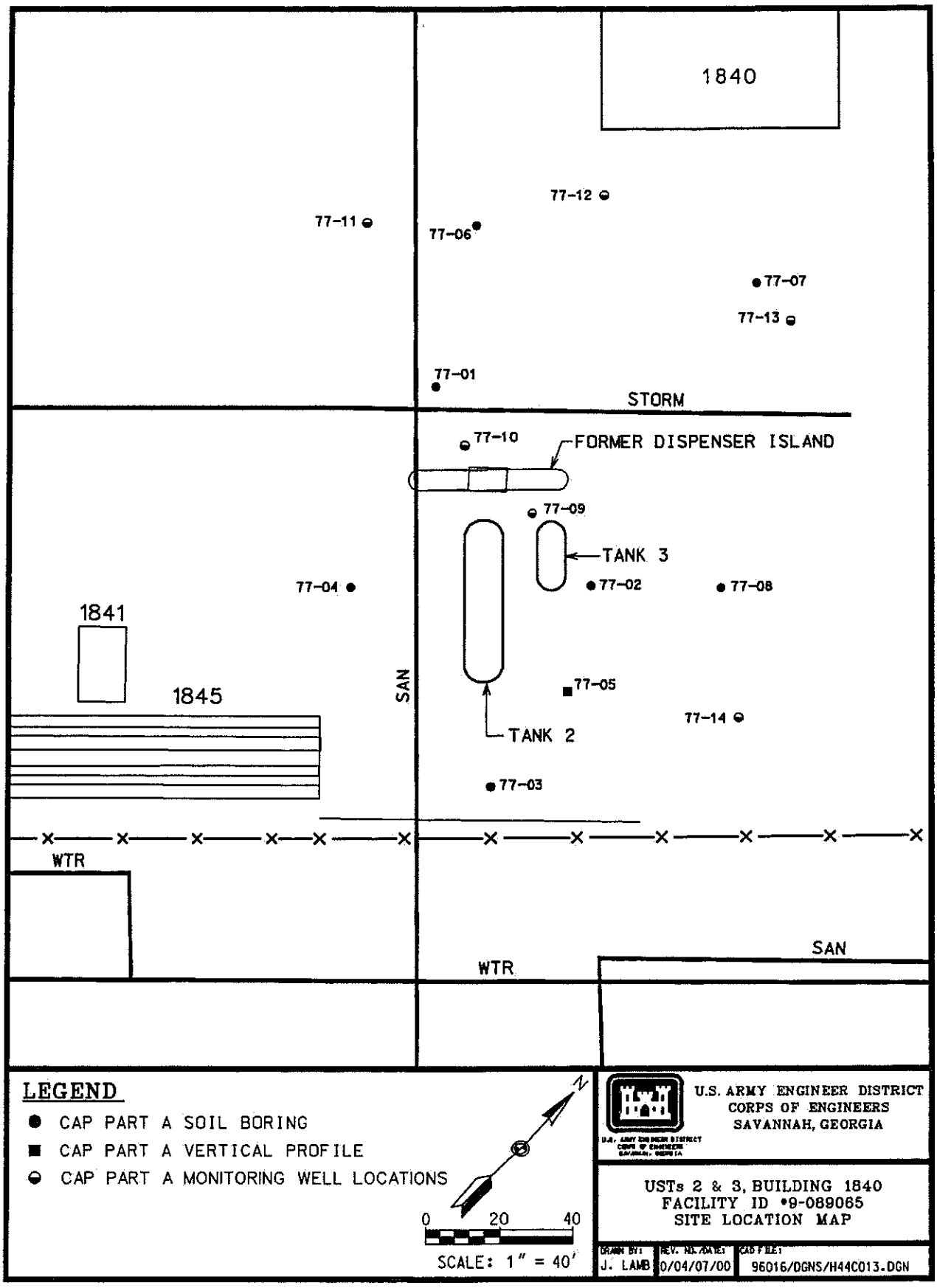


Figure 1. Location Map of USTs 2 & 3 at Fort Stewart, Liberty County, Georgia

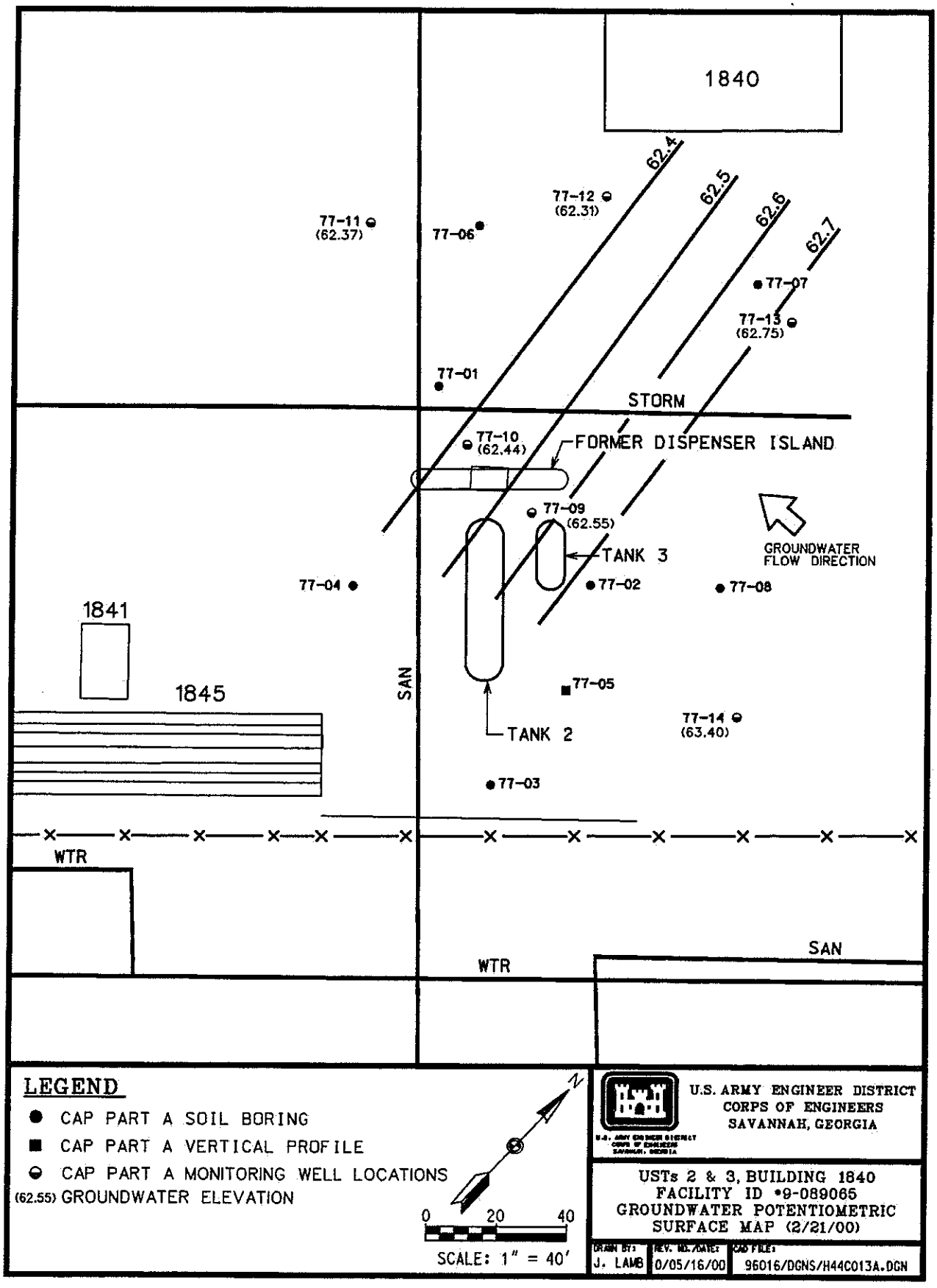


Figure 2a. Potentiometric Surface Map of the USTs 2 & 3 Site (February 2000)

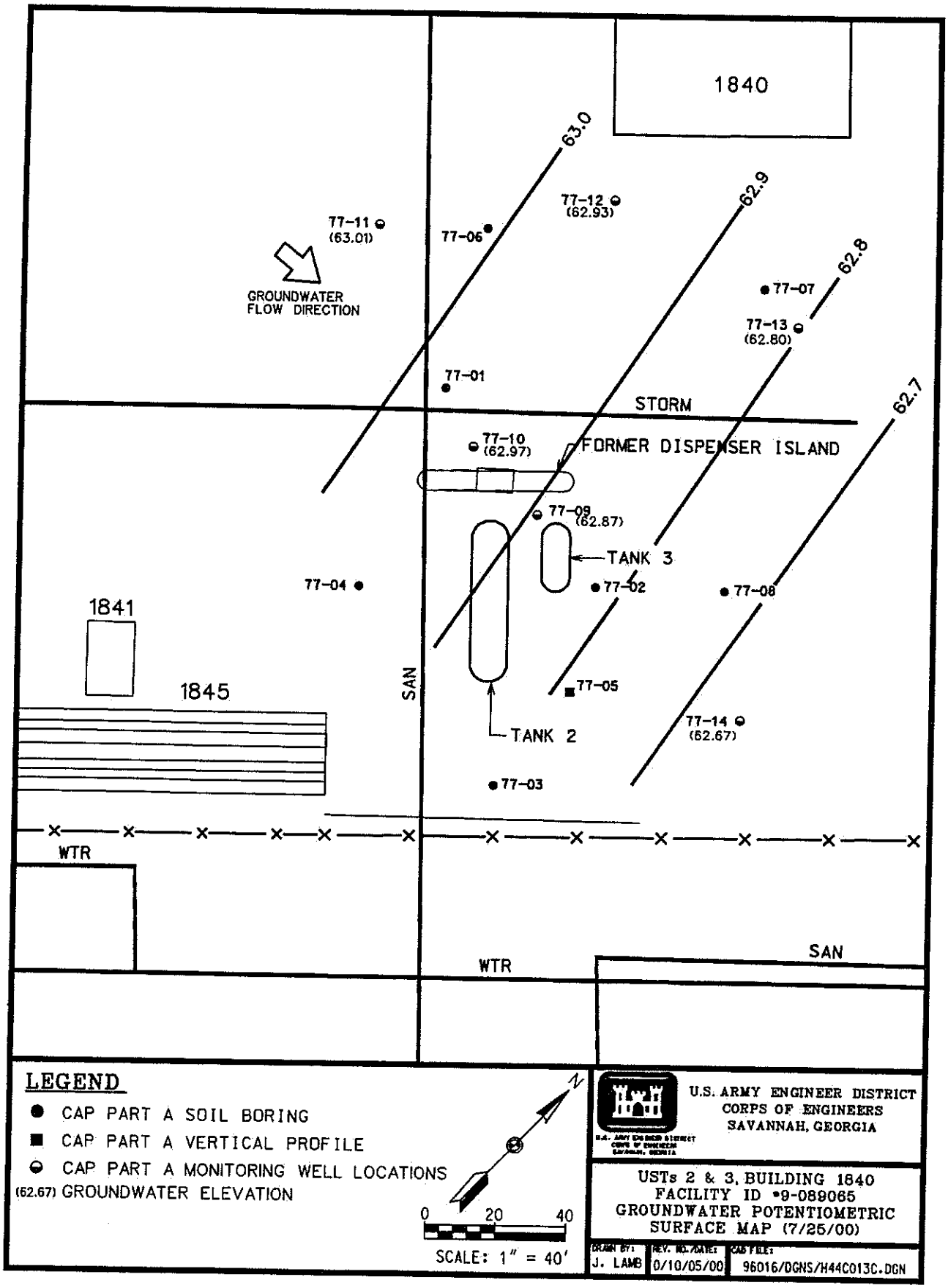


Figure 2b. Potentiometric Surface Map of the USTs 2 & 3 Site (July 2000)

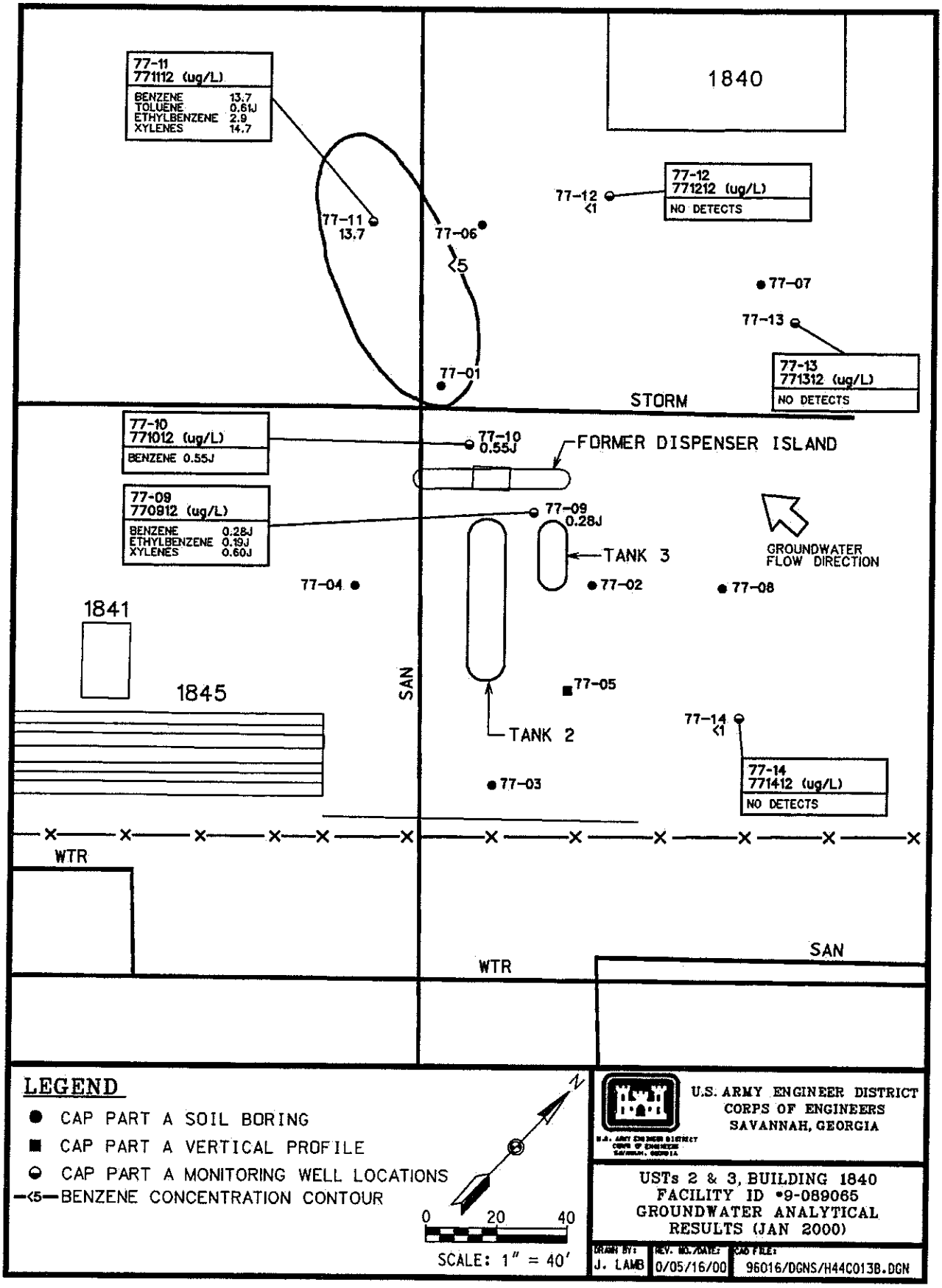


Figure 3a. Groundwater Quality Map for the USTs 2 & 3 Site (January 2000)

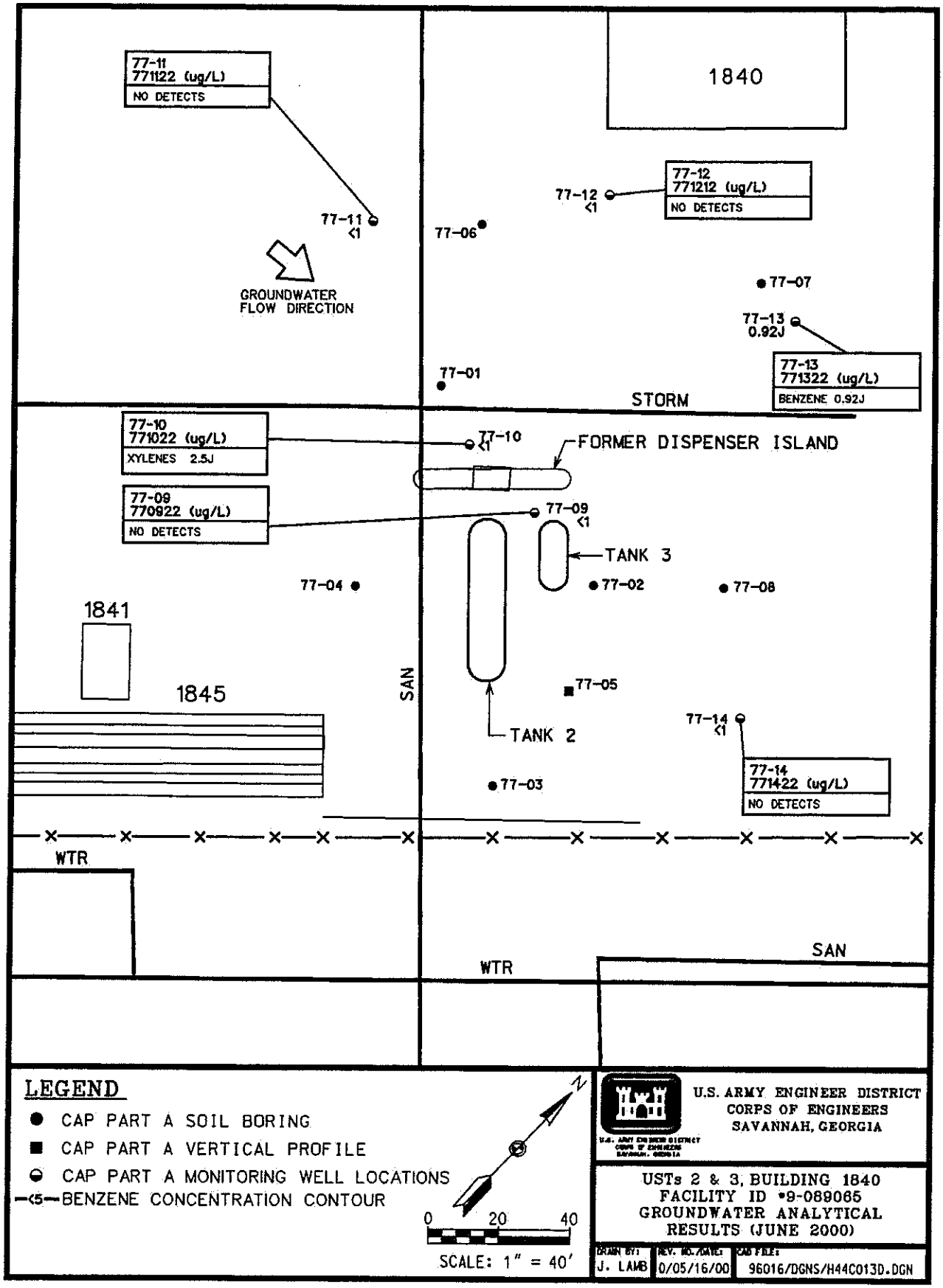


Figure 3b. Groundwater Quality Map for the USTs 2 & 3 Site (June 2000)

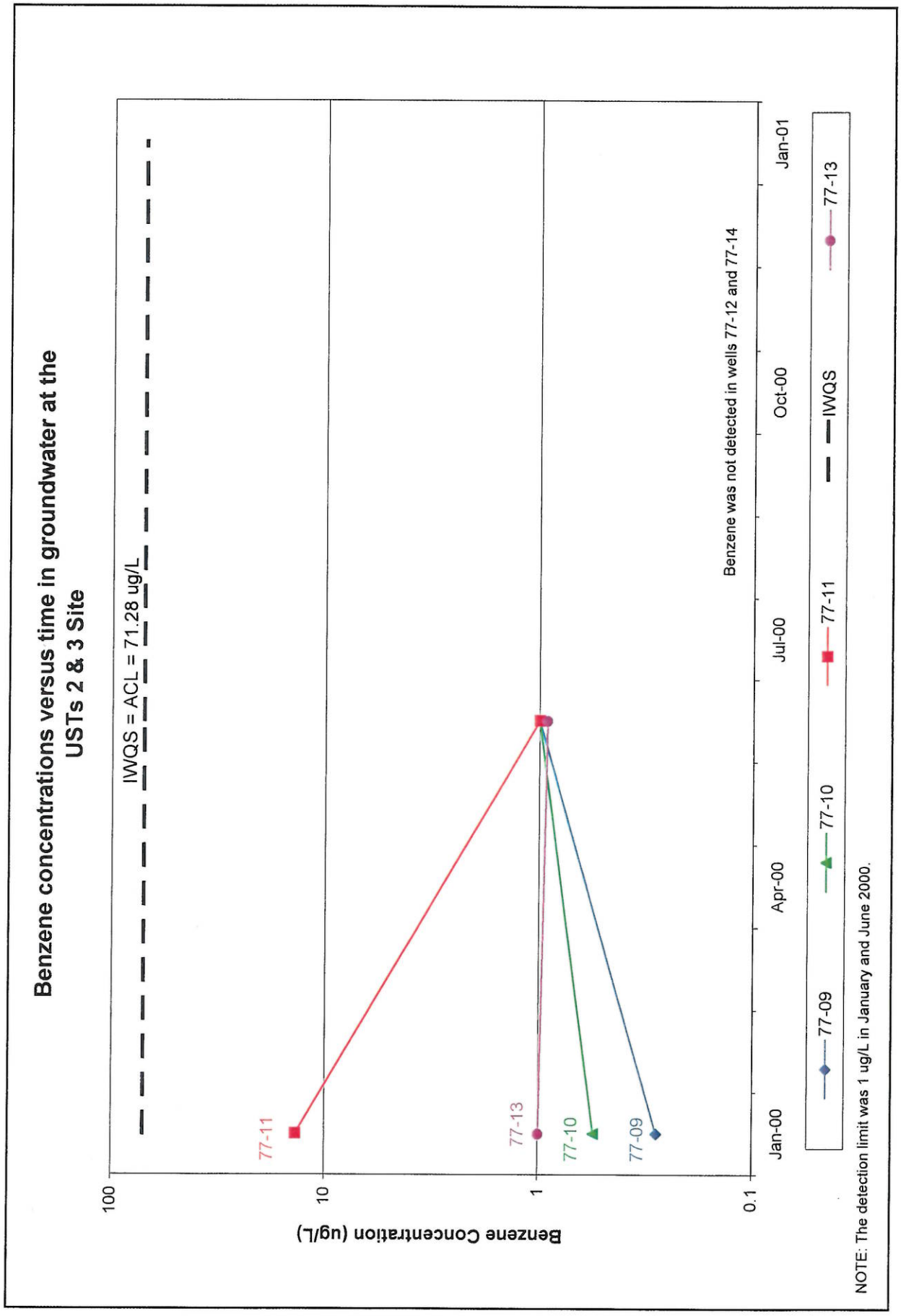


Figure 4. Trend of Contaminant Concentrations for the USTs 2 & 3 Site

APPENDIX II

REPORT TABLES

Table 1. Groundwater Elevations

Well Number	Date of Measurement	Top of Casing Elevation (feet AMSL)	Screened Interval (feet BGS)	Water Depth (feet BTOC)	Groundwater Elevation (feet AMSL)
First Semiannual Monitoring Event – January/February 2000					
77-09	02/21/00	67.52	2.9 – 12.9	4.97	62.55
77-10	02/21/00	67.45	4.7 – 14.7	5.01	62.44
77-11	02/21/00	67.53	2.7 – 12.7	5.16	62.37
77-12	02/21/00	67.54	2.6 – 12.6	5.23	62.31
77-13	02/21/00	67.40	2.7 – 12.7	4.65	62.75
77-14	02/21/00	67.62	4.8 – 14.8	4.22	63.40
Second Semiannual Monitoring Event – June/July 2000					
77-09	07/25/00	67.52	2.9 – 12.9	4.65	62.87
77-10	07/25/00	67.45	4.7 – 14.7	4.48	62.97
77-11	07/25/00	67.53	2.7 – 12.7	4.52	63.01
77-12	07/25/00	67.54	2.6 – 12.6	4.61	62.93
77-13	07/25/00	67.40	2.7 – 12.7	4.60	62.80
77-14	07/25/00	67.62	4.8 – 14.8	4.95	62.67

AMSL Above mean sea level
BGS Below ground surface
BTOC Below top of casing

Table 2. Groundwater Analytical Results

Sample Location	Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	Total BTEX (µg/L)	Total PAH (µg/L)
First Semiannual Monitoring Event – January/February 2000								
77-09	770912	1/13/00	0.28 J	1 U	0.19 J	0.60 J	1.07	NA
77-10	771012	1/13/00	0.55 J	1 U	1 U	3 U	0.55	NA
77-11	771112	1/13/00	13.7 =	0.61 J	2.9 =	14.7 =	31.91	NA
77-12	771212	1/13/00	1 U	1 U	1 U	3 U	ND	NA
77-13	771312	1/13/00	1 U	1 U	1 U	3 U	ND	NA
77-14	771412	1/13/00	1 U	1 U	1 U	3 U	ND	NA
Second Semiannual Monitoring Event – June/July 2000								
77-09	770922	6/21/00	1.0 U	1.0 U	1.0 U	3.0 U	ND	NA
77-10	771022	6/21/00	1.0 U	1.0 U	1.0 U	2.5 J	2.5	NA
77-11	771122	6/21/00	1.0 U	1.0 U	1.0 U	3.0 U	ND	NA
77-12	771222	6/21/00	1.0 U	1.0 U	1.0 U	3.0 U	ND	NA
77-13	771322	6/21/00	0.92 J	1.0 U	1.0 U	3.0 U	0.92	NA
77-14	771422	6/21/00	1.0 U	1.0 U	1.0 U	3.0 U	ND	NA
In-Stream Water Quality Standard (GA EPD Chapter 391-3-6)			~~72.18~~ 71.28 gm	200,000	28,718	NRC	NRC	NRC
Alternate Concentration Limit			~~72.18~~ 71.28 gm	–	–	–	–	–

NOTE:

Bold values exceed IWQS
Italic values exceed ACLs
BTEX Benzene, toluene, ethylbenzene, and xylenes
NA Not analyzed, PAH compounds were not required as part of the monitoring only plan.
ND Not detected
NRC No regulatory criteria
PAH Polynuclear aromatic hydrocarbon

Laboratory Qualifiers

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

Table 3. Soil Analytical Results

Sample Location	Sample ID	Sample Depth (ft BGS)	Date Sampled	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	Total PAH (mg/kg)
First Semiannual Monitoring Event – January/February 2000									
77-09	770911	4.0 – 6.0	1/13/00	0.0010 U	0.0010 U	0.0023 =	0.0089 =	0.0112	0.0218
77-09	770921	0.0 – 2.0	1/13/00	0.0013 =	0.00097 =	0.0434 =	0.0319 =	0.0776	ND
GUST Soil Threshold Levels (Table A, Column 2)				0.008	6.0	10.0	700.0	NRC	NRC

NOTE:

BTEX Benzene, toluene, ethylbenzene, and xylene
BGS Below ground surface
ND Not detected, the detection limit for PAH compounds was 0.035 mg/kg
NRC No regulatory criteria
PAH Polynuclear aromatic hydrocarbon

Laboratory Qualifiers

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

Table 4. 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
First Semiannual Monitoring Event – January/February 2000								
77-09	1/13/00	13.2	2.9 – 12.9	¾" PVC	683398.5	821731.1	67.79	67.52
77-10	1/13/00	15.0	4.7 – 14.7	¾" PVC	683399.8	821704.6	67.71	67.45
77-11	1/13/00	13.0	2.7 – 12.7	¾" PVC	683426.3	821641.4	67.69	67.53
77-12	1/13/00	12.9	2.6 – 12.6	¾" PVC	683477.7	821684.7	67.81	67.54
77-13	1/13/00	13.0	2.7 – 12.7	¾" PVC	683488.3	821747.4	67.60	67.40
77-14	1/13/00	15.9	4.8 – 14.8	¾" PVC	683396.5	821813.7	67.89	67.62

BGS Below ground surface
PVC polyvinyl chloride

APPENDIX III

LABORATORY ANALYTICAL RESULTS

FIRST SEMIANNUAL MONITORING EVENT

JANUARY/FEBURARY 2000

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

770911

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB003S

Matrix: (soil/water) SOIL Lab Sample ID: 20657001

Sample wt/vol: 5.6 (g/mL) G Lab File ID: 2S507

Level: (low/med) LOW Date Received: 01/14/00

% Moisture: not dec. 12 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	
71-43-2	Benzene	1.0	U	U
108-88-3	Toluene	1.0	U	U
100-41-4	Ethylbenzene	2.3		=
107-02-8	Xylenes (total)	8.9		=

DATA VALIDATION COPY

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

770911

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB003S

Matrix: (soil/water) SOIL Lab Sample ID: 20657001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7C220

Level: (low/med) LOW Date Received: 01/14/00

% Moisture: 12 decanted: (Y/N) N Date Extracted:01/18/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/19/00

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	21.8	J
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	37.7	U
129-00-0	Pyrene	37.7	U
56-55-3	Benzo(a)anthracene	37.7	U
218-01-9	Chrysene	37.7	U
205-99-2	Benzo(b)fluoranthene	37.7	U
207-08-9	Benzo(k)fluoranthene	37.7	U
50-32-8	Benzo(a)pyrene	37.7	U
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

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

2 of 2

CHAIN OF CUSTODY RECORD

COC NO.: D05501

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	No. of Bottles/ Vials	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
01012	1/13/00	1300	water	2							2		206560015 DUP
TB5501	1/13/00	0745	↓	2							2		
770911	1/13/00	1410	Soil	1		1					2		206570001 DUP
770921	1/13/00	1355	Soil	1		1					2		

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	1/14/00 1200	D. Harris	1/14/00 1450
COMPANY NAME: SAIC		COMPANY NAME: GEL	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
GEL	1-14-00 1250	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
GEL	1-14-00 1450	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 14

Cooler ID: #847

Cooler Temperature: 4°

FEDEX NUMBER:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

770912

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB001W

Matrix: (soil/water) WATER Lab Sample ID: 206553-04

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: SS419

Level: (low/med) LOW Date Received: 01/14/00

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

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	0.28	J
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	0.19	J
1330-20-7	Xylenes (total)	0.60	J

DATA V
C

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

770921

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB003S

Matrix: (soil/water) SOIL Lab Sample ID: 20657002

Sample wt/vol: 6.1 (g/mL) G Lab File ID: 2S50S

Level: (low/med) LOW Date Received: 01/14/00

% Moisture: not dec. 16 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
71-43-2	Benzene	1.3	
108-88-3	Toluene	0.97	
100-41-4	Ethylbenzene	43.4	
107-02-8	Xylenes (total)	31.9	

DATA VALIDATION COPY

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

770921

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB003S

Matrix: (soil/water) SOIL Lab Sample ID: 20657002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7C221

Level: (low/med) LOW Date Received: 01/14/00

% Moisture: 16 decanted: (Y/N) N Date Extracted: 01/18/00

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 01/19/00

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

TOTAL METALS

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

SDG No.: FSAB003S Method Type: SW-846

Sample ID: 20657002 Client ID: 770921

Contract: SAIC00200 Lab Code: GEL Case No.: SAS No.:

Matrix: SOIL Date Received: 1/14/00 Level: LOW % Solids: 84.50

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	0.40	mg/kg			P	0.13	TJA61 Trace ICP2	12300

CL F01/F07

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

771012

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB001W

Matrix: (soil/water) WATER Lab Sample ID: 20655005

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5S420

Level: (low/med) LOW Date Received: 01/14/00

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

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

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

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CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	Benzene	0.55	J	J
108-88-3	Toluene	1.0	U	U
100-41-4	Ethylbenzene	1.0	U	↓
1330-20-7	Xylenes (total)	3.0	U	↓

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DATA ...

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

771014

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB001W

Matrix: (soil/water) WATER Lab Sample ID: 20655006

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5S421

Level: (low/med) LOW Date Received: 01/14/00

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

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	0.54	J
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	3.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

771112

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB001W

Matrix: (soil/water) WATER Lab Sample ID: 20655014

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5S510

Level: (low/med) LOW Date Received: 01/14/00 5

% Moisture: not dec. _____ 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/L	Q	
71-43-2	Benzene	13.7		=
108-88-3	Toluene	0.61	J	=
100-41-4	Ethylbenzene	2.9	B	= FB1, FB8
1330-20-7	Xylenes (total)	14.7		=

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

771212

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB01W

Matrix: (soil/water) WATER Lab Sample ID: 20655015

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 55511

Level: (low/med) LOW Date Received: 01/15/00

% Moisture: not dec. _____ 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/L	Q
71-43-2	Benzene	1.0	U
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	3.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

771312

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB001W

Matrix: (soil/water) WATER Lab Sample ID: 20655007

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5S506

Level: (low/med) LOW Date Received: 01/14/00

% Moisture: not dec. _____ 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/L	Q
71-43-2	Benzene	1.0	U
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0 ~~0.078~~	JB
1330-20-7	Xylenes (total)	3.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

771412

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB001W

Matrix: (soil/water) WATER Lab Sample ID: 20655012

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5S508

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

% Moisture: not dec. _____ 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/L		Q
71-43-2	Benzene	1.0	U	U
108-88-3	Toluene	1.0	U	
100-41-4	Ethylbenzene	1.0	U	
1330-20-7	Xylenes (total)	3.0	U	

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

1062

CHAIN OF CUSTODY RECORD

COC NO.: D0554

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
220712	1/13/00	1005	water	2	2						4	20656001	20656001
220912	1/13/00	1245		2	2						4	002	002
161412	1/13/00	1450		2	2						5	003	003
161312	1/13/00	1540		2	2						5	004	004
801014	1/13/00	1720		2							2		20655001
801312	1/13/00	1635		2							2		002
801012	1/13/00	1720		2							2		003
770912	1/13/00	1440		2							2		004
771012	1/13/00	1550		2							2		005
771014	1/13/00	1550		2							2		006
771312	1/13/00	1720		2							2		007
010612	1/13/00	1035		2							2		008
010912	1/13/00	1325		2							2		009

RELINQUISHED BY: Laura Lumley	Date/Time 1/14/00 1200	RECEIVED BY: Diane Franco	Date/Time 1/14/00 1450	TOTAL NUMBER OF CONTAINERS:	Cooler Temperature: 4°C
COMPANY NAME: SAIC		COMPANY NAME: GEL		Cooler ID: # 847	FEDEX NUMBER:
RECEIVED BY:	Date/Time 1-14-00 1200	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL		COMPANY NAME:			
RELINQUISHED BY:	Date/Time 1-14-00 1458	RECEIVED BY:	Date/Time		
COMPANY NAME: GEL		COMPANY NAME:			

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CHAIN OF CUSTODY RECORD

COC NO.: D0550 3

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

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

PROJECT MANAGER: Patty Stoll

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

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	REQUESTED PARAMETERS: BTEX	PAH	PAH, Lead	Dissolved Iron	TPH	TCLP BTEX	TCLP Lead	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
TB5502	1/14/00	0800	water	2							2		20655010
751212	1/14/00	1525		2							2		011
771412	1/14/00	1155		2							2		012
751312	1/14/00	1720		2							2		013
771112	1/14/00	0940		2							2		014
771212	1/14/00	1030		2							2		015
600916	1/14/00	1736		2							2		016
600912	1/14/00	1741		2							2		017
601012	1/14/00	1540		2							2		018
600812	1/14/00	1645		2							2		019
430812	1/14/00	1155	↓	2							2		020

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 22	Cooler Temperature: 4°C
Laura Lumley	1/15/00	Dionne Franco			
COMPANY NAME: SAIC	1130	COMPANY NAME: GEL	1/15/00 1350	Cooler ID: #24	FEDEX NUMBER:
RECEIVED BY: Amy C Jamison	Date/Time 1/15/00	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL	1730	COMPANY NAME:			
RELINQUISHED BY: Amy Jamison	Date/Time 1/15/00	RECEIVED BY:	Date/Time		
COMPANY NAME: GEL	1350	COMPANY NAME:			

III-17

03

SECOND SEMIANNUAL MONITORING EVENT

JUNE/JULY 2000

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

770922

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSBLTM10W

Matrix: (soil/water) WATER Lab Sample ID: 27385015

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 8P318

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: not dec. _____ Date Analyzed: 06/28/00

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
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	3.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

771022

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSBLTM10W

Matrix: (soil/water) WATER Lab Sample ID: 27385016

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 8P319

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: not dec. _____ Date Analyzed: 06/28/00

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
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	2.5	J

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

771122

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSBLEM10W

Matrix: (soil/water) WATER Lab Sample ID: 27385017

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 8P306

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: not dec. _____ Date Analyzed: 06/28/00

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	U	
100-41-4	Ethylbenzene	1.0	U	
1330-20-7	Xylenes (total)	3.0	U	

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

771222

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSELTM10W

Matrix: (soil/water) WATER Lab Sample ID: 27385018

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 8P307

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: not dec. _____ Date Analyzed: 06/28/00

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
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	3.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

771322

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSBLTM10W

Matrix: (soil/water) WATER Lab Sample ID: 27385019

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 8P308

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: not dec. _____ Date Analyzed: 06/28/00

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	0.92	J
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	3.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

771324

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSBLTM11W

Matrix: (soil/water) WATER Lab Sample ID: 27387001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5P109

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: not dec. _____ Date Analyzed: 06/26/00

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 ~~0.26~~	JB. —	U FOI, FOL
108-88-3	Toluene	1.0	U	U
100-41-4	Ethylbenzene	1.0	U	
1330-20-7	Xylenes (total)	3.0	U	

MMP 8/1/00

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

771422

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSBLTM10W

Matrix: (soil/water) WATER Lab Sample ID: 27385020

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 8P309

Level: (low/med) LOW Date Received: 06/22/00

% Moisture: not dec. _____ Date Analyzed: 06/28/00

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
108-88-3	Toluene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylenes (total)	3.0	U

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2 of 2

CHAIN OF CUSTODY RECORD

COC NO.: GLTM15

[PROJ]ECT NAME: Fort Stewart CAP B LTM

[PROJ]ECT NUMBER: 01-1624-04-2725-200

[PROJ]ECT 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: (843) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	BTEX, GRO	PAH, DRO	No. of Bottles/ Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
601022	6/21/00	1820	water	2				2		27385014
770922	6/21/00	1450	↓	2				2		015
771022	6/21/00	1525	↓	2				2		016
771122	6/21/00	1540	↓	2				2		017
771222	6/21/00	1510	↓	2				2		018
771322	6/21/00	1600	↓	2				2		019
771422	6/21/00	1430	↓	2				2		020
771324	6/21/00	1600	↓	2				2		27387001
TB5509	6/21/00	0600	↓	2				2		002

6/22/00 (initials)

1 of 2 / 2 of 2

[RELIN]QUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 46	Cooler Temperature: 4.2
Laura Lumley; [COMP]ANY NAME: SAIC	6/22/00 1130	[signature]; COMPANY NAME: BCL	6/22/00 1430	Cooler ID: #803	FEDEX NUMBER:
[RECEI]VED BY: [signature]; [COMP]ANY NAME: BCL	6/22/00 1130	RELINQUISHED BY: ; COMPANY NAME:	Date/Time		
[RELIN]QUISHED BY: [signature]; [COMP]ANY NAME: BCL	6-22-00 1430	RECEIVED BY: ; COMPANY NAME:	Date/Time		

8

APPENDIX IV

SITE RANKING FORMS

FIRST SEMIANNUAL MONITORING EVENT

JANUARY/FEBRUARY 2000

SITE RANKING FORM

Facility Name: USTs 2 & 3, Building 1840 **Ranked by:** S. Stoller

County: Liberty **Facility ID #:** 9-089065 **Date Ranked:** 5/9/2000

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

* *LTM sample 770911*

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

* *LTM sample 770921*

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

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

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

GROUNDWATER CONTAMINATION

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

☒	No free product	=	0
☐	Sheen - 1/8"	=	250
☐	>1/8" - 6"	=	500
☐	>6" - 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

* *LTM sample 771112 @ 13.7 µg/L (Jan 2000)*

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

Facility Name: USTs 2 & 3, Building 1840 **County:** Liberty **Facility ID #:** 9-089065

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	= 10
* ☒	> 2 mi	= 0

For lower susceptibility areas only:

☐	>1 mi	= 0

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

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

I. Non-Public Water Supply

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

For lower susceptibility areas only:

☐	>¼ mi	= 0

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

☐	Impacted	= 500
☒	≤500'	= 50
☐	>500' - 1,000'	= 5
☐	>1,000'	= 2

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

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

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

(G. 5) x (L. 50) = **M.** 250

(M. 250) + (D. 0) = **N.** 250

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. 250) x (P. 1) = (250) + (Q. 0)

= 250 (January 2000 - First Semiannual Monitoring Event)
ENVIRONMENTAL SENSITIVITY SCORE

SECOND SEMIANNUAL MONITORING EVENT

JUNE/JULY 2000

SITE RANKING FORM

Facility Name: USTs 2 & 3, Building 1840 **Ranked by:** S. Stoller

County: Liberty **Facility ID #:** 9-089065 **Date Ranked:** 10/4/2000

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

* *LTM sample 770911*

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

* *LTM sample 770921*

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

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

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

GROUNDWATER CONTAMINATION

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

☒	No free product	=	0
☐	Sheen - 1/8"	=	250
☐	>1/8" - 6"	=	500
☐	>6" - 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

* *LTM sample 77132 @ 0.92J µg/L (June 2000)*

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

Facility Name: USTs 2 & 3, Building 1840 **County:** Liberty **Facility ID #:** 9-089065

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	= 10
* ☒	> 2 mi	= 0

For lower susceptibility areas only:

☐	>1 mi	= 0

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

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

I. Non-Public Water Supply

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

For lower susceptibility areas only:

☐	>¼ mi	= 0

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

☐	Impacted	= 500
☒	≤500'	= 50
☐	>500' - 1,000'	= 5
☐	>1,000'	= 2

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. 0) = N. 0

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

= 0 (June 2000 - Second Semiannual Monitoring Event)
ENVIRONMENTAL SENSITIVITY SCORE

OTHER GEOLOGIC AND HYDROLOGIC DATA

The following information is presented to provide supplemental information to Item H of the Site Ranking Form and provides detailed information relating to the geologic and hydrogeologic conditions at Fort Stewart to support determinations of groundwater flow pathway(s) or direction(s) and contaminant transport.

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 4,254 feet below ground surface (BGS). This well provides the most complete record for Cretaceous, Tertiary, and Quaternary sedimentary strata in the region.

The Cretaceous section was found to be approximately 1,970 feet thick and dominated by clastics. The Tertiary section was found to be approximately 2,170 feet thick and dominated by limestone with a 175-foot-thick cap of dark green phosphatic clay. This clay is regionally extensive and is known as the Hawthorn Group. The interval from approximately 110 feet to the surface is Quaternary in age and composed primarily of sand with interbeds of clay or silt. This section is undifferentiated into separate formations (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 underground storage tank investigation sites is part of the Surficial Aquifer system. Based on the fact that all public and nonpublic 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 underground storage tank sites and identified water supply withdrawal points at Fort Stewart.

APPENDIX V

REIMBURSEMENT APPLICATION

Fort Stewart is a federally owned facility and has funded the investigation for the USTs 2 & 3 site, Building 1840, Facility ID #9-089065, using U.S. Department of Defense Environmental Restoration Account Funds. Application for Georgia Underground Storage Tank Trust Fund reimbursement is not being pursued at this time.

ATTACHMENT A

SUMMARY OF FATE AND TRANSPORT MODELING RESULTS

A.1. FATE AND TRANSPORT MODELING

The fate and transport modeling that was performed as part of the Corrective Action Plan (CAP)-Part A Report (SAIC 1999) is based on the assumption of a continuous source of contamination of infinite duration at the site based on the maximum predicted benzene concentration in groundwater (i.e., 44.4 µg/L at well 77-01 in May 1998). The maximum concentration of benzene in soil at the site occurrs at or below the water table; thus, equilibrium contaminant partitioning between sorbed and aqueous phases (i.e. 0.0172 mg/kg in soil corresponds to 44.4 µg/L in groundwater) were utilized to determine the maximum concentration of soil contaminants predicted to be in the groundwater at the source. In summary, the Analytical Transient 1-, 2-, 3-Dimensional Model was used to model contaminant migration to three potential downgradient receptors: an underground storm drain located approximately 15 feet northwest of the former dispenser island, a drainage ditch located approximately 650 feet northwest of the site, and Mill Creek located approximately 1,200 feet northwest of the site. The modeling results indicated that, due to dilution attenuation, benzene would not reach the drainage ditch at concentrations above the In-Stream Water Quality Standard (IWQS) or Mill Creek at detectable concentrations.

Based on modeling results, the estimated dilution attenuation factor (DAF) for benzene was 1.0 at the storm drain; 96,500 at the drainage ditch; and infinity at Mill Creek. Simulations of a 2-year period were not performed to predict the maximum concentrations of benzene in the downgradient wells that will be used for long-term monitoring because permanent wells did not exist at the site. As a result of the semiannual monitoring events in January 2000 and June 2000, it was not necessary to revise the fate and transport modeling. Benzene was not detected above the analytical reporting limit in June 2000, thus simulations over a 2-year period were not necessary.

The alternate concentration limits (ACLs) for the site were developed for each chemical of potential concern listed in the CAP-Part A Report (SAIC 1999). The ACLs are determined based on the regulatory level for each compound and the fate and transport modeling DAF. The ACLs are presented in Table A-1.

Table A-1. ACLs for the Underground Storage Tanks 2 & 3 Site

Contaminant	IWQS (µg/L)	DAF[1] (storm drain)	ACL[2] (µg/L)
Benzene	71.28	1	71.28

[1] DAF = Maximum observed concentration ÷ predicted concentration at the receptor
= 44.4 ÷ 44.4 = 1 at the storm drain

[2] ACL = IWQS x DAF

1.1 FATE AND TRANSPORT MODELING CONCLUSIONS

The conclusions below are based on a fate and transport model that assumes a continuous source of contamination of infinite duration at the site based on the maximum predicted benzene concentration (i.e. 44.4 µg/L) in groundwater at the source during the CAP-Part A investigations.

- Benzene concentrations in groundwater do not exceed the IWQS and ACL of 71.28 µg/L in any of the wells at the site, indicating that the benzene concentrations at the site are not high enough to reach the storm drain or drainage ditch above IWQS.

- Observed concentrations of benzene in groundwater indicate that the storm drain is not acting as a preferential pathway.

ATTACHMENT B

REFERENCES

REFERENCES

Arora, Ram 1984. *Hydrologic Evaluation for Underground Injection Control in the Coastal Plain of Georgia,* Department of Natural Resources, Environmental Protection Division, Georgia Geological Survey.

Geraghty and Miller 1993. *RCRA Facility Investigation Work Plan, Fort Stewart, Georgia.*

Herrick, S.M. and Vochis, R.C. 1963. *Subsurface Geology of the Georgia Coastal Plain*, Georgia Geologic Survey Information Circular 25.

Logan, William E. 2000. Letter to Ovidio Perez (Fort Stewart Directorate of Public Works, Environmental Brance), January 25.

Looper, Edward E. 1980. *Soil Survey of Liberty and Long Counties, Georgia*, U.S. Department of Agriculture, Soil Conservation Service.

Miller, James A. 1990. *Groundwater Atlas of the United States*, U.S. Department of the Interior, U.S. Geological Survey, Hydrologic Inventory Atlas 730G.

SAIC (Science Applications International Corporation) 1999. *CAP-Part A Report for USTs 2 & 3, Facility ID #9-089065, Building 1840, Fort Stewart, Georgia*, August.

SAIC 2000. *First Semiannual Monitoring Only Report for USTs 2 & 3, Facility ID #9-089065, Building 1840, Fort Stewart, Georgia*, May.

ATTACHMENT C

BORING LOGS AND WELL CONSTRUCTION DIAGRAMS

HTRW DRILLING LOG

HOLE NUMBER 77-09

PROJECT: Fort Stewart USTs

INSPECTOR Paul 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	Clayey SAND (SC), medium to coarse grained, medium stiff, nonplastic, moist, subrounded, red (10 R 4/6)	14.7 ppm		Soil Sample 770921	
	2					
	3		6.9 ppm		N/A	
	4	Silty SAND (SM), fine to medium grained, some clay, moist, dense, black (10 YR 2/1)				
	5	SAND (SW), medium to coarse grained, some silt, moist to wet, loose, gray (10 YR 6/1)	3.4 ppm		Soil Sample 770911	▽ wet below = 5.5 FT BGS
	6					
	7					
	8					PUSHED TO 13.2 FT BGS TO SET 3/4" MONITORING POINT SCREENED FROM 2.9 TO 12.9 FT BGS
	9					COLLECTED GROUNDWATER SAMPLE 770912 FROM MONITORING POINT
	10					

HTRW DRILLING LOG

HOLE NUMBER 77-10

PROJECT: Fort Stewart USTs

INSPECTOR Paul 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, some clay, moist, dense, black (10 YR 2/1)	54.6ppm			
	2	SILT (ML), some sand, very fine grained, medium dense, non-plastic, moist, light brownish gray (10 YR 6/2)				
	3	Sandy ORGANIC SILT (OL/OH), fine to medium grained, moist, very dense, very dark brown (10 YR 2/2)	9.8ppm			
	4					
	5	SAND (SM), some silt, fine grained, moist, loose, yellowish brown (10 YR 5/4)	2.3ppm			
	6					
	7		1.9 ppm			
	8					
	9		2.0 ppm			
	10	CLAY (CH), some sand, fine grained, moist, moderately plastic, stiff, very dark gray (10 YR 3/1)				

HTRW DRILLING LOG

PROJECT: Fort Stewart USTs | INSPECTOR Paul Lucot | HOLE NUMBER 77-16 | 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	SAND(sm), some silt, wet, loose, pale brown (10YR6/3)				▽ wet below = 10.9 FT BGS
	12					PUSHED TO 15.0 FT BGS TO SET 3/4" MONITORING POINT SCREENED FROM 4.7 TO 14.7 FT BGS
	13					COLLECTED GROUNDWATER SAMPLE 771012 FROM MONITORING POINT
	14					
	15					
	16					
	17					
	18					
	19					
	20					

HTRW DRILLING LOG

HOLE NUMBER 77-11

PROJECT: Fort Stewart USTs

INSPECTOR Paul 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	SILT (ML), some sand, fine grained, medium dense, moist, non-plastic, pale brown (10 YR 6/3)	0.0 ppm			
	2	SAND (SM), some silt, medium grained, moist, loose, very pale brown (10 YR 7/3)				
	3		0.7 ppm			
	4	Sandy ORGANIC SILT (OL/OH), fine to medium grained sand, dense, moist to wet, very dark brown (10 YR 2/2)				
	5		0.4 ppm			
	6					▽ Wet below 5.7 FT BGS
	7		2.7 ppm			
	8	CLAY (CH), some sand, stiff, moderately plastic, very dark gray (10 YR 3/1)				COLLECTED GROUNDWATER SAMPLE 771112 FROM MONITORING POINT
	9					
	10					PUSHED TO 13.0 FT BGS TO SET 3/4" MONITORING POINT SCREENED FROM 2.7 TO 12.7 FT BGS

HTRW DRILLING LOG

HOLE NUMBER 77-12

PROJECT: Fort Stewart USTs

INSPECTOR Paul Ucot

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	SILT (ML), some very fine grained sand, medium dense, nonplastic, moist, pale brown (10 YR 6/3)	0.4 ppm			
	2	SAND (SM) some silt, medium grained, moist, dense, dark gray (10 YR 4/1)				
	3		1.0 ppm			
	4					
		Sandy ORGANIC SILT (OL/OH), fine to medium grained, moist, dense, very dark brown (10 YR 2/2)				
	5	SAND (SM), some silt, fine grained, loose, wet, yellowish brown (10 YR 5/4)	2.3 ppm			
	6					
			N/A			▽ wet below 6.7 FT BGS
	7					
	8					PUSHED TO 12.9 FT BGS TO SET 3/4" MONITORING POINT SCREENED FROM 2.6 TO 12.6 FT BGS
	9					COLLECTED GROUNDWATER SAMPLE 771212 FROM MONITORING POINT
	10					

HTRW DRILLING LOG

HOLE NUMBER 77-13

PROJECT: Fort Stewart USTs | INSPECTOR Paul 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	SAND (SP), medium to coarse grained, traces of silt, moist, loose, brown (10 YR 5/3)				
	2					
	3	SILT (ML), some very fine grained sand, dense, nonplastic, moist, light yellowish brown (10 YR 6/4)				
	4	Sandy ORGANIC SILT (OL/OH), fine to medium grained, very dense, moist, very dark brown (10 YR 2/2)				
	5					
	6	SAND (SM), some silt, fine grained, loose, moist, yellowish brown (10 YR 5/4)				
	7	CLAY (CH), some sand, moist, moderately plastic, very dark gray (10 YR 3/1)				
	8					PUSHED TO 13.0 FT BGS TO SET 3/4" MONITORING POINT SCREENED FROM 2.7 TO 12.7 FT BGS
	9					COLLECTED GROUNDWATER SAMPLE 771312 FROM MONITORING POINT
	10					

HTRW DRILLING LOG

HOLE NUMBER 77-14

PROJECT: Fort Stewart USTs | INSPECTOR Paul Lucot | SHEET 1 OF 1

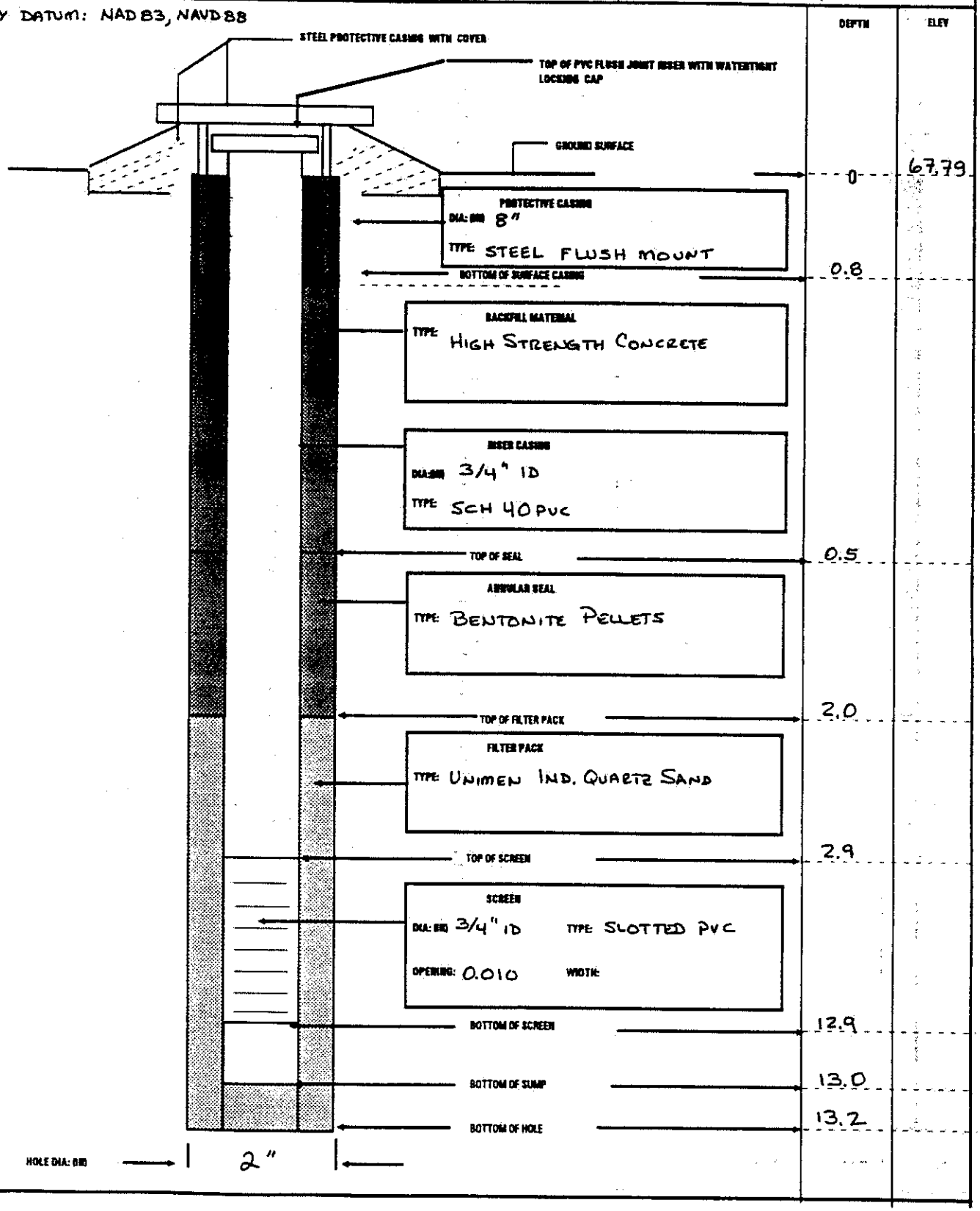
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		CONCRETE				
	1	SILT (ML), some sand, fine grained, medium dense, nonplastic, moist, pale brown (10YR 6/3)	5.7 ppm			
	2	SAND (SP), medium to coarse grained, very loose, moist, subrounded, very pale brown (10YR 7/2)				
	3	Sandy ORGANIC SILT (OL/OH), fine to medium grained, very dense, nonplastic, moist, black (5Y 2.5/1)	5.1 ppm			
	4					
	5		5.4 ppm			
	6					
	7		3.8 ppm			▽ Wet below 7.4 ft BGS
	8	CLAY (CH), some fine grained sand, stiff, very plastic, wet, brown (10YR 4/3)				COLLECTED GROUNDWATER SAMPLE 71412 FROM MONITORING POINT
	9					PUSHED TO 15.1 FT BGS TO SET 3/4" MONITORING POINT SCREENED FROM 4.8 TO 14.8 FT BGS
	10					

MONITORING WELL

PROJECT: USTs 2 & 3

WELL NUMBER: 77-09	**BEGIN:** 1/13/00	**END:** 1/13/00
COORDINATES: N: 683398.5 E: 821731.1	**REFERENCE POINT:** TOP OF CASING	**ELEVATION:** 67.52

SURVEY DATUM: NAD 83, NAVD 88

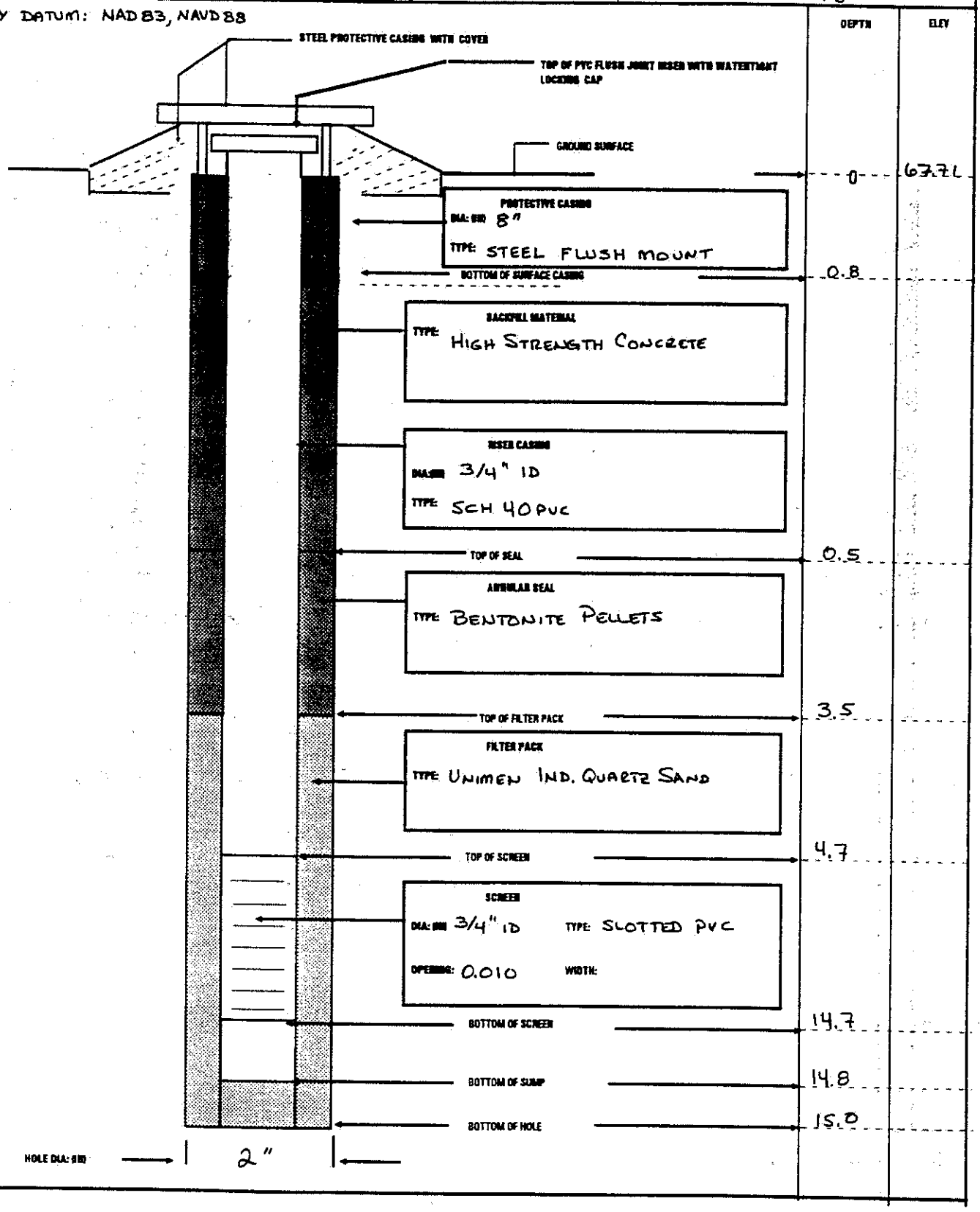


MONITORING WELL

PROJECT: USTs 2&3

WELL NUMBER: 77-10	**BEGIN:** 1/13/00	**END:** 1/13/00
COORDINATES: N: 683399.8 E: 821704.6	**REFERENCE POINT:** TOP OF CASING	**ELEVATION:** 67.45

SURVEY DATUM: NAD 83, NAVD 88

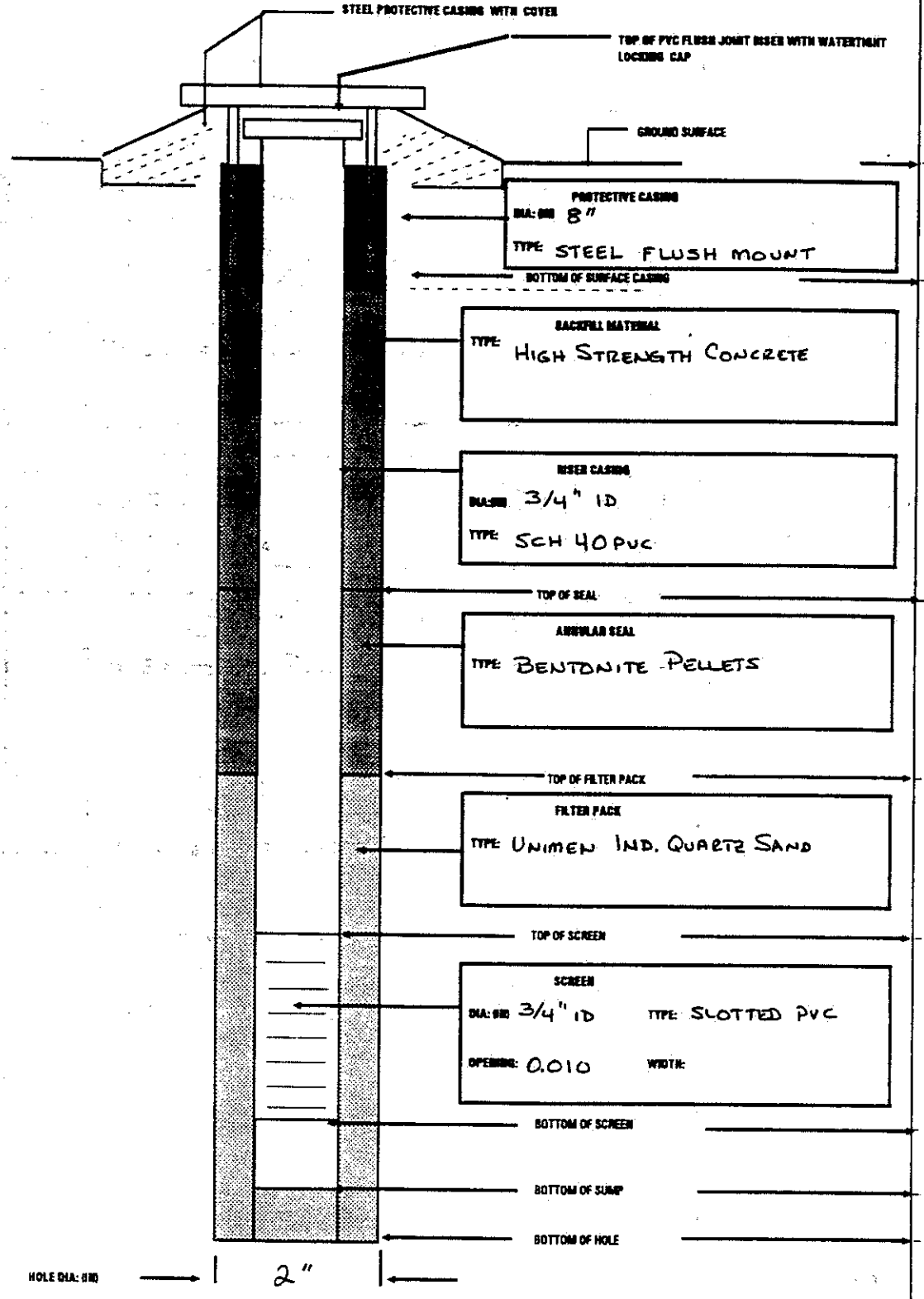


MONITORING WELL

PROJECT: USTs 2+3

WELL NUMBER: 77-11	**BEGIN:** 1/14/00	**END:** 1/14/00
COORDINATES: N: 683426.3 E: 821641.4	**REFERENCE POINT:** TOP OF CASING	**ELEVATION:** 67.53

SURVEY DATUM: NAD 83, NAVD 88



MONITORING WELL

PROJECT: USTs 2 & 3

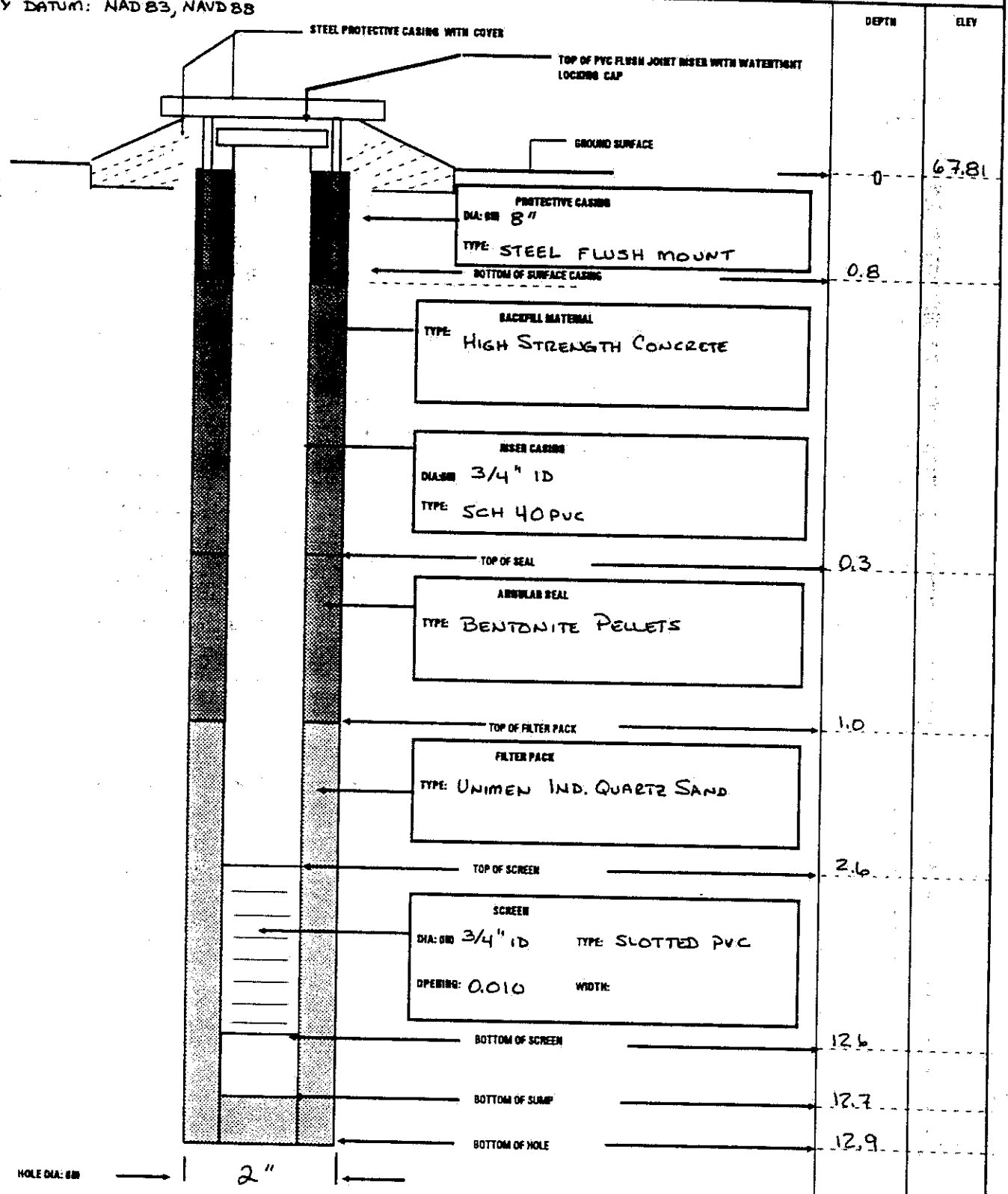
WELL NUMBER: 77-12

BEGIN: 1/14/00 **END:** 1/14/00

COORDINATES: N: 683477.7
E: 821684.7

REFERENCE POINT: TOP OF CASING **ELEVATION:** 67.54

SURVEY DATUM: NAD 83, NAVD 88

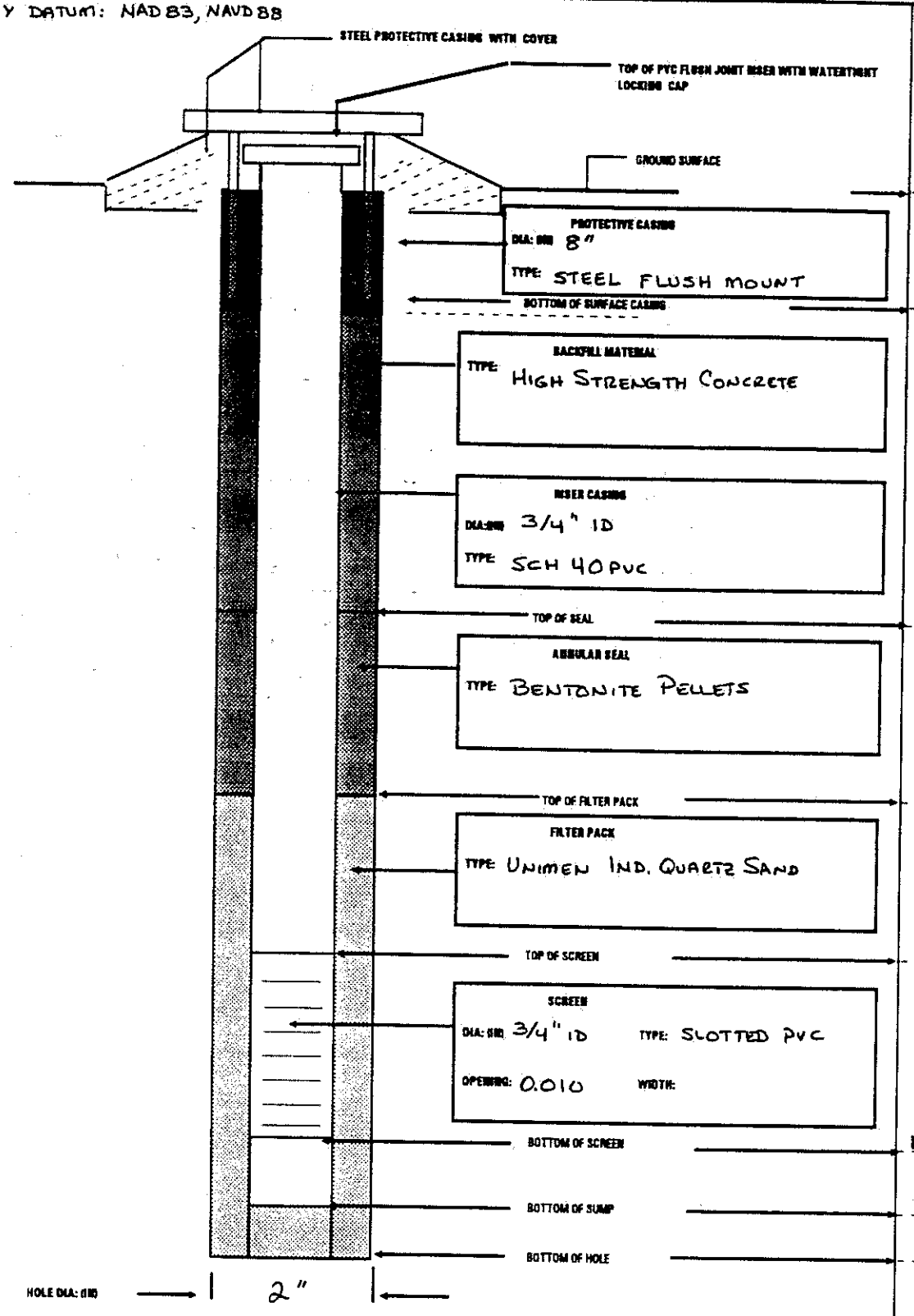


MONITORING WELL

PROJECT: USTs 2 & 3

WELL NUMBER: 77-13	**BEGIN:** 1/13/00	**END:** 1/13/00
COORDINATES: N: 683488.3 E: 821747.4	**REFERENCE POINT:** TOP OF CASING	**ELEVATION:** 67.40

SURVEY DATUM: NAD 83, NAVD 88



	DEPTH	ELEV
GROUND SURFACE	0	67.60
BOTTOM OF SURFACE CASING	0.8	
TOP OF SEAL	0.3	
TOP OF FILTER PACK	1.0	
TOP OF SCREEN	2.7	
BOTTOM OF SCREEN	12.7	
BOTTOM OF SUMP	12.8	
BOTTOM OF HOLE	13.0	

MONITORING WELL

PROJECT: USTs 2 & 3

WELL NUMBER: 77-14	**BEGIN:** 1/14/00	**END:** 1/14/00
COORDINATES: N: 683396.5 E: 821813.7	**REFERENCE POINT:** TOP OF CASING	**ELEVATION:** 67.62

SURVEY DATUM: NAD 83, NAVD 88