FINAL

FIRST ANNUAL MONITORING ONLY REPORT
FOR
UNDERGROUND STORAGE TANK 79
FACILITY ID #9-089026
BUILDING 1224

FORT STEWART, GEORGIA

Prepared for:

U.S. Army Corps of Engineers - Savannah District
and
Fort Stewart Directorate of Public Works
Under Contract Number DACA21-95-D-0022
Delivery Order 0061

Prepared by:

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

October 2000

TABLE OF CONTENTS

List of Abbreviations and Acronyms

ACL	alternate concentration limit
BGS	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CAP	Corrective Action Plan
DAF	dilution attenuation factor
GA EPD	Georgia Environmental Protection Division
IWQS	In-Stream Water Quality Standard
NFAR	no further action required
SESOIL	Seasonal Soil Compartment
UST	underground storage tank
USTMP	Underground Storage Tank Management Program

MONITORING ONLY REPORT

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

For Period Covering: January 2000 to October 2000

Facility Name: UST 79, Building 1224 Street Address: Wilson Avenue between Divarty Road & West 6th St.

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

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

Submitted by UST Owner/Operator:		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

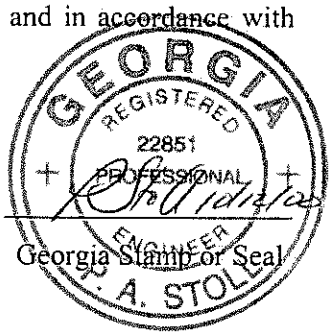
I. REGISTERED PROFESSIONAL ENGINEER OR PROFESSIONAL GEOLOGIST CERTIFICATION

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

Name: Patricia A. Stoll

Signature: Patricia A. Stoll

Date: 10/12/00



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 Tank (UST) 79, Facility ID #9-089026, was located near Building 1224 at Fort Stewart, Georgia. The tank and piping were excavated and removed on July 18, 1996. Science Applications International Corporation performed a Corrective Action Plan (CAP)-Part A investigation in 1998 and 1999 to determine the extent of petroleum contamination at the site. One vertical-profile boring and 13 temporary piezometers were installed during the investigation. The CAP-Part A Report (SAIC 1999) was submitted in August 1999 and recommended monitoring only at the site. As recommended in the Monitoring Only Plan, five shallow monitoring wells (84-15 through 84-19) were installed as part of the first semiannual sampling event in January 2000, and groundwater was sampled for benzene, toluene, ethylbenzene, and xylenes (BTEX).

The fate and transport modeling performed as part of the CAP-Part A investigation (SAIC 1999) utilized a continuous source of contamination. The results are summarized in Attachment A of this document. It was not necessary to revise the fate and transport modeling results as a result of the semiannual monitoring events in January 2000 and June 2000.

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 benzene concentrations during the January 2000 and June 2000 sampling events have continued to decrease and have been below the In-Stream Water Quality Standard (IWQS); therefore, a no-further-action-required (NFAR) status is being recommended for the site.

III. ACTIVITIES AND ASSESSMENT OF EXISTING CONDITIONS

A. Potentiometric Data:

(Appendix I, Figure 2: 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-northwest, and the groundwater gradient was approximately 0.0048 foot/foot.

During the second semiannual sampling event in June 2000, groundwater elevations were measured in all of the monitoring wells to determine the groundwater flow direction. In June 2000, the groundwater flow direction was toward the west, and the groundwater gradient was approximately 0.0071 foot/foot.

B. Analytical Data:

(Appendix I, Figure 3: 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 84-15, 84-16, 84-17, 84-18, and 84-19 were sampled for BTEX. Analytical results from the first sampling event showed estimated concentrations near or below the analytical reporting limits or no detectable BTEX concentrations in wells 84-16, 84-17, and 84-18. BTEX compounds were present in wells 84-15 and 84-19. However, none of the constituents exceeded its respective IWQS. Benzene was detected at concentrations of 15.8 µg/L in well 84-15, 0.18J µg/L in well 84-16, 1.4J µg/L in well 84-17, 1.0 µg/L in well 84-18, and 9.3J µg/L in well 84-19, all of which are below the IWQS of 71.28 µg/L. Figure 4 shows the variation in benzene concentrations in groundwater for all the wells.

During the second semiannual sampling event in June 2000, monitoring wells 84-15, 84-16, 84-17, 84-18, and 84-19 were sampled for BTEX. Analytical results from the second sampling event showed estimated concentrations near or below the analytical reporting limits or no detectable BTEX concentrations in wells 84-16, 84-17, and 84-18. BTEX compounds were present in wells 84-15 and 84-19. However, none of the constituents exceeded its respective IWQS. Benzene was detected at concentrations of 12.1 µg/L in well 84-15 and 4.4 µg/L in well 84-19, both of which are below the IWQS of 71.28 µg/L. Figure 4 shows the variation in benzene concentrations in groundwater for all the wells.

As recommended in the CAP-Part A Report (SAIC 1999), polynuclear aromatic hydrocarbon analysis was not recommended 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:	850 (CAP-Part A Report)
(April 1999 version of the Site Ranking Form was used for 2000 scores.)	850 (Jan. 2000 – First Semiannual Monitoring Event)
	850 (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 the Georgia Environmental Protection Division (GA EPD) Underground Storage Tank Management Program (USTMP) assign Facility ID #9-089026 an 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 was submitted to GA EPD USTMP in October 1999.

- The site score for each of the last two rounds of semiannual groundwater sampling has been 850; however, 600 points of the site score are due to soil contamination in boring 84-10 that is not related to the former tank operations. The portion of the site ranking score associated with the groundwater contamination is 250, 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, U.S. Army Corps of Engineers, and SAIC representatives).

- The fate and transport modeling conducted during the CAP-Part A Report (SAIC 1999), which used a continuous source of contamination and is summarized in Attachment A, indicated that benzene will never reach the nearest potential preferential pathway (i.e., a industrial wastewater line) 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 CAP-Part A investigation in May 1999 and the semiannual monitoring events in January and June 2000.

- The closest surface water bodies are a drainage ditch and Mill Creek, located at 800 feet and 2,500 feet, respectively, downgradient from the site.

- Natural attenuation has continued to take place at the site, as shown by the decreasing benzene concentrations.

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 UST 79 site, Building 1224, Facility ID #9-089026, 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

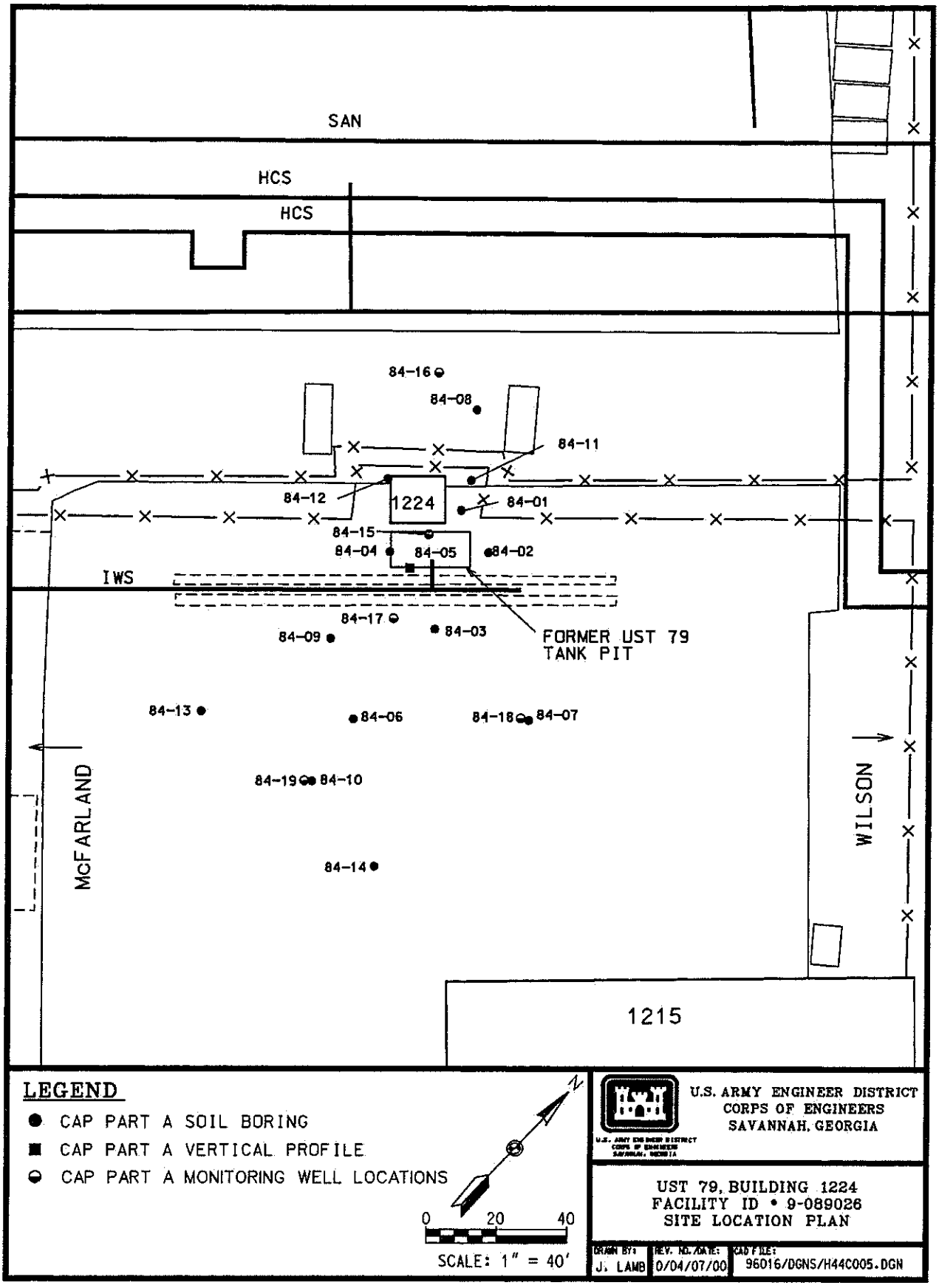


Figure 1. Location Map of UST 79 at Fort Stewart, Liberty County, Georgia

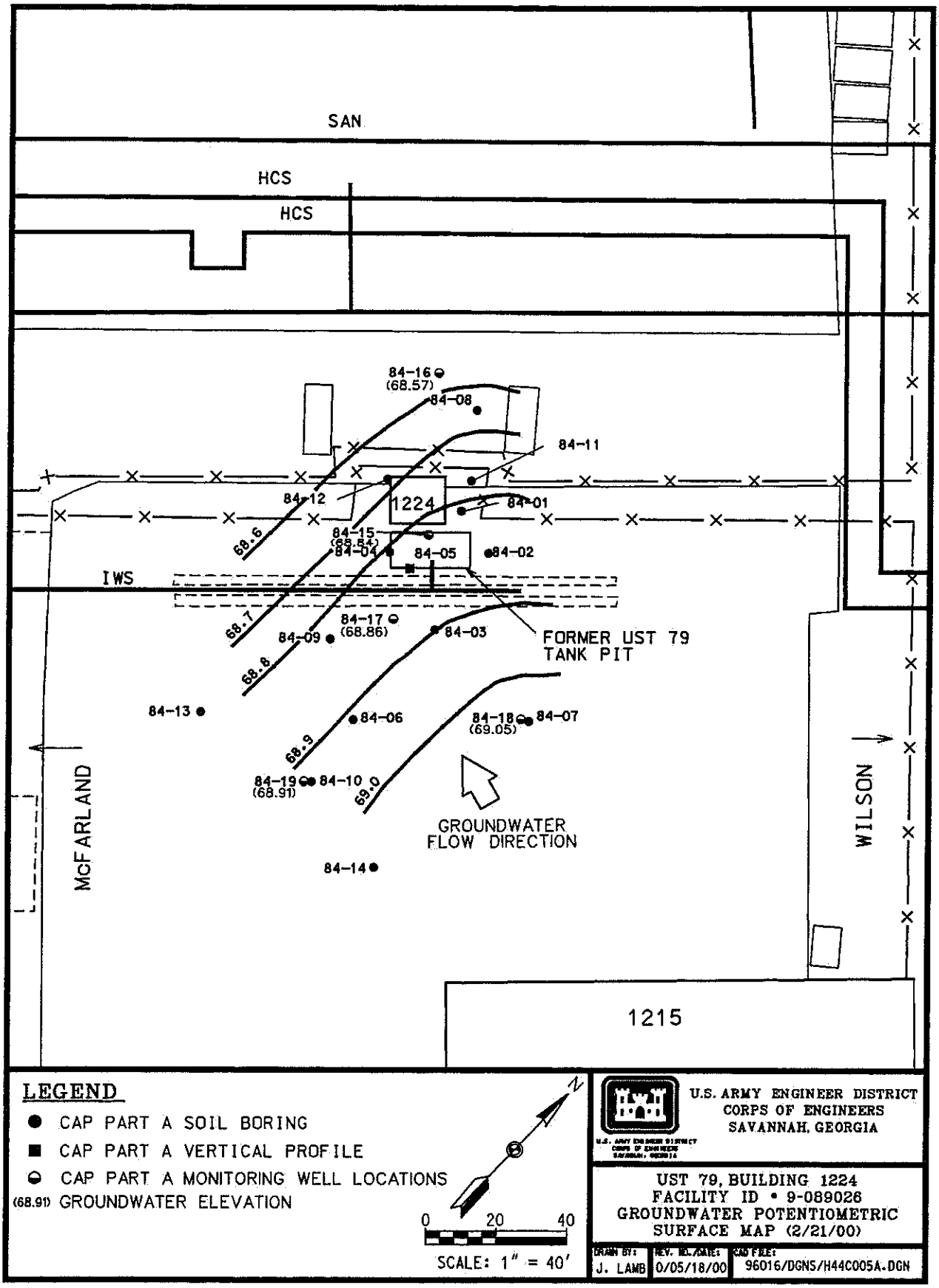


Figure 2a. Potentiometric Surface Map of the UST 79 Site (February 2000)

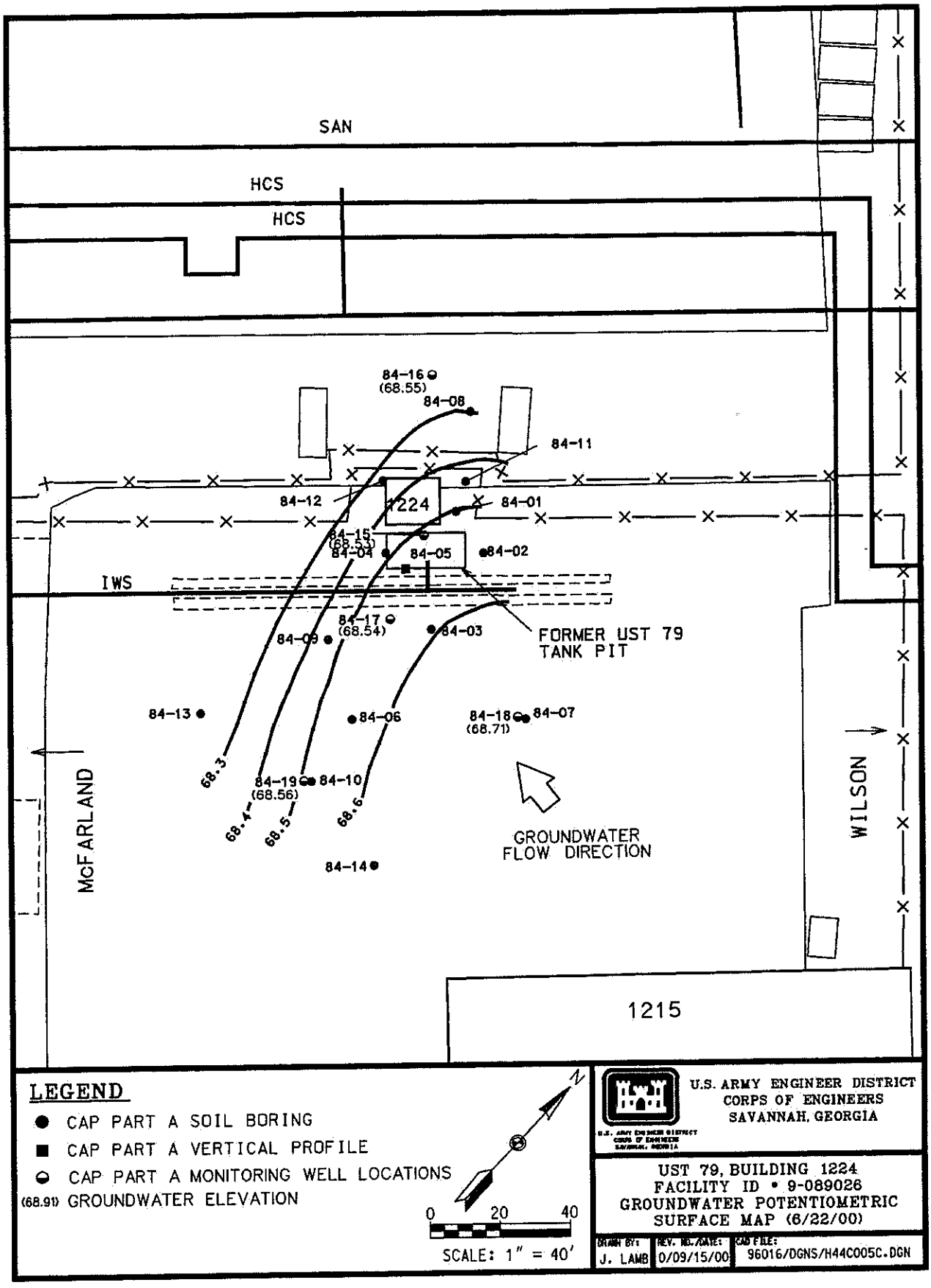


Figure 2b. Potentiometric Surface Map of the UST 79 Site (June 2000)

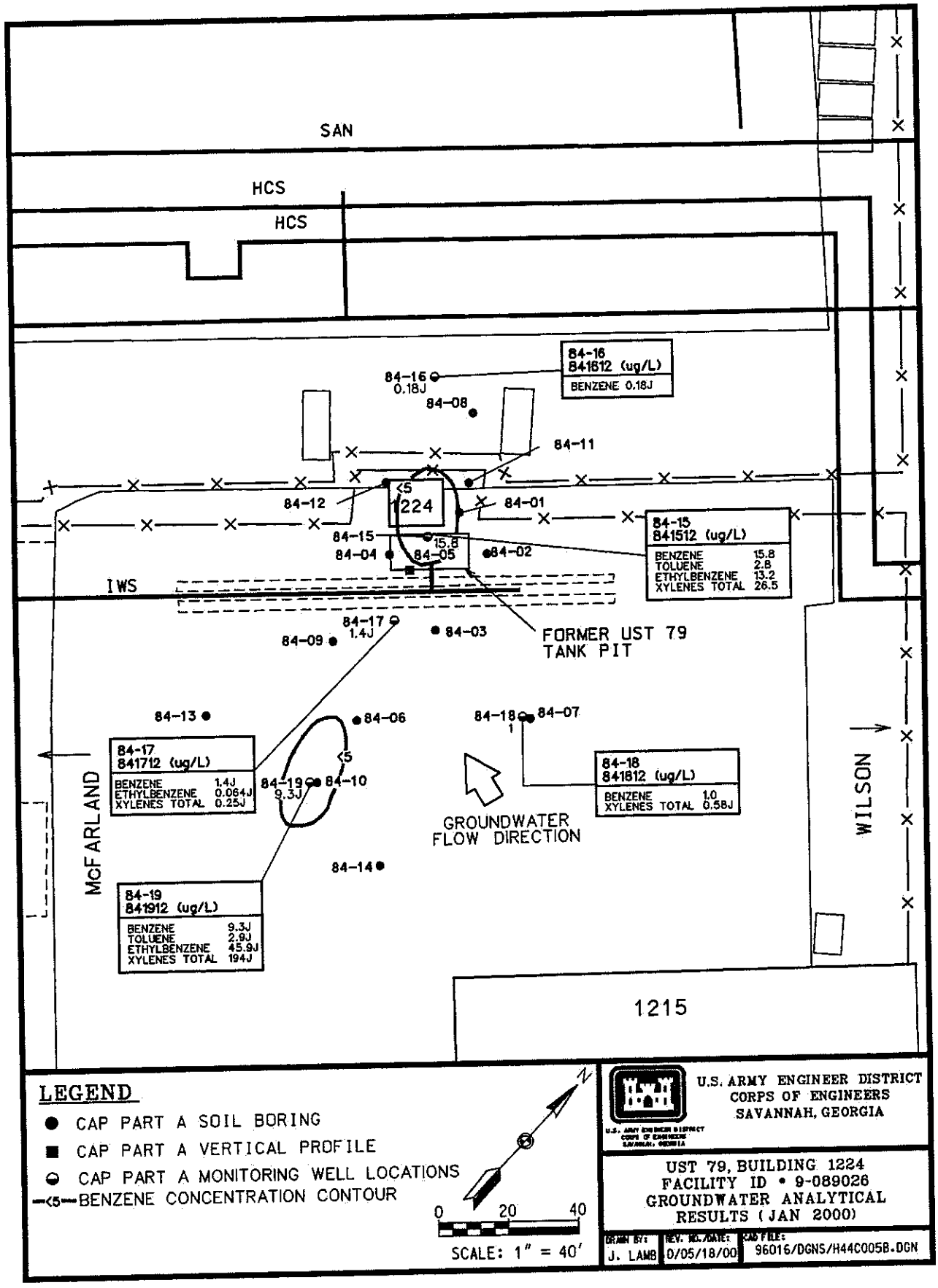


Figure 3a. Groundwater Quality Map for the UST 79 Site (January 2000)

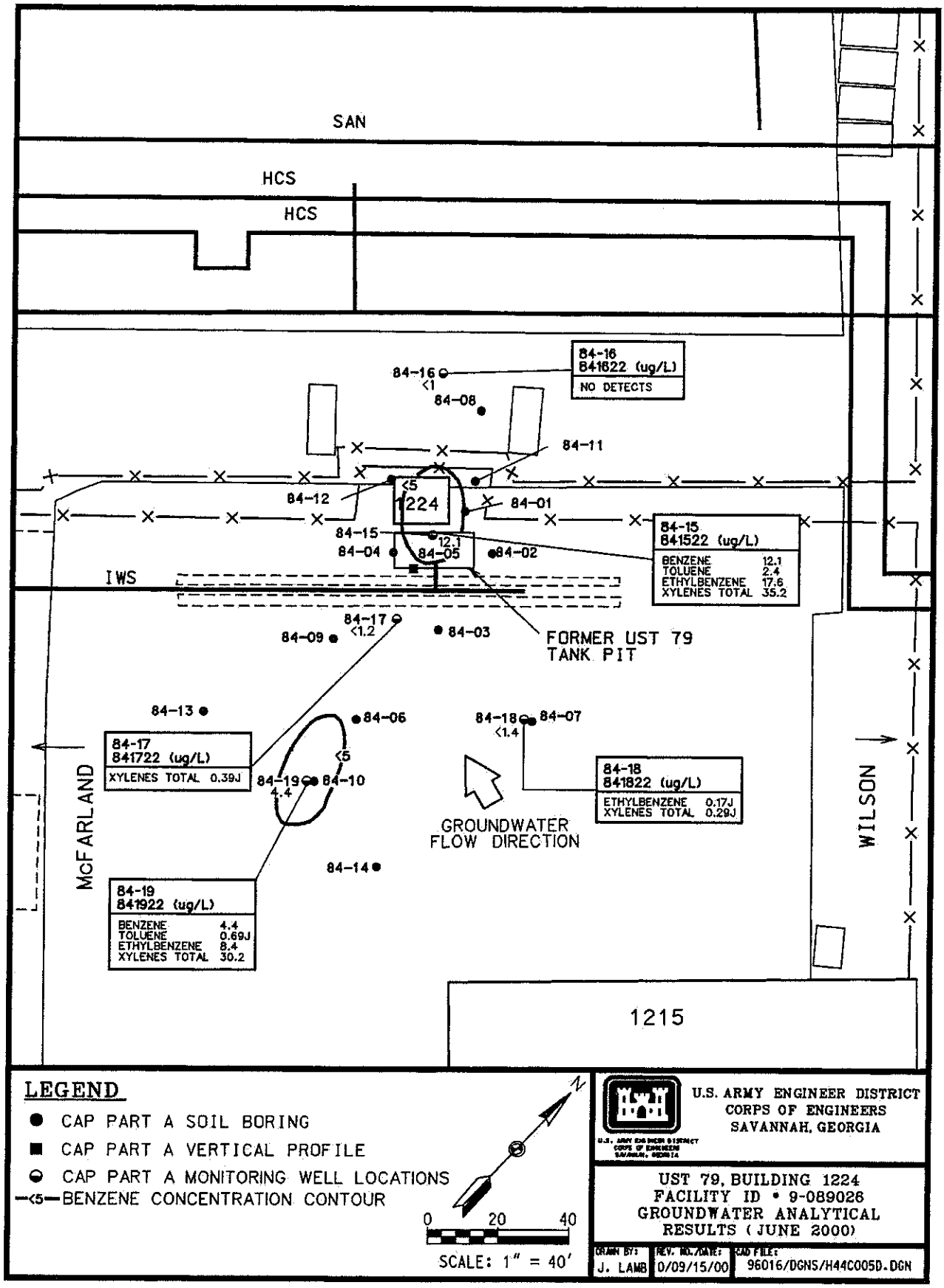


Figure 3b. Groundwater Quality Map for the UST 79 Site (June 2000)

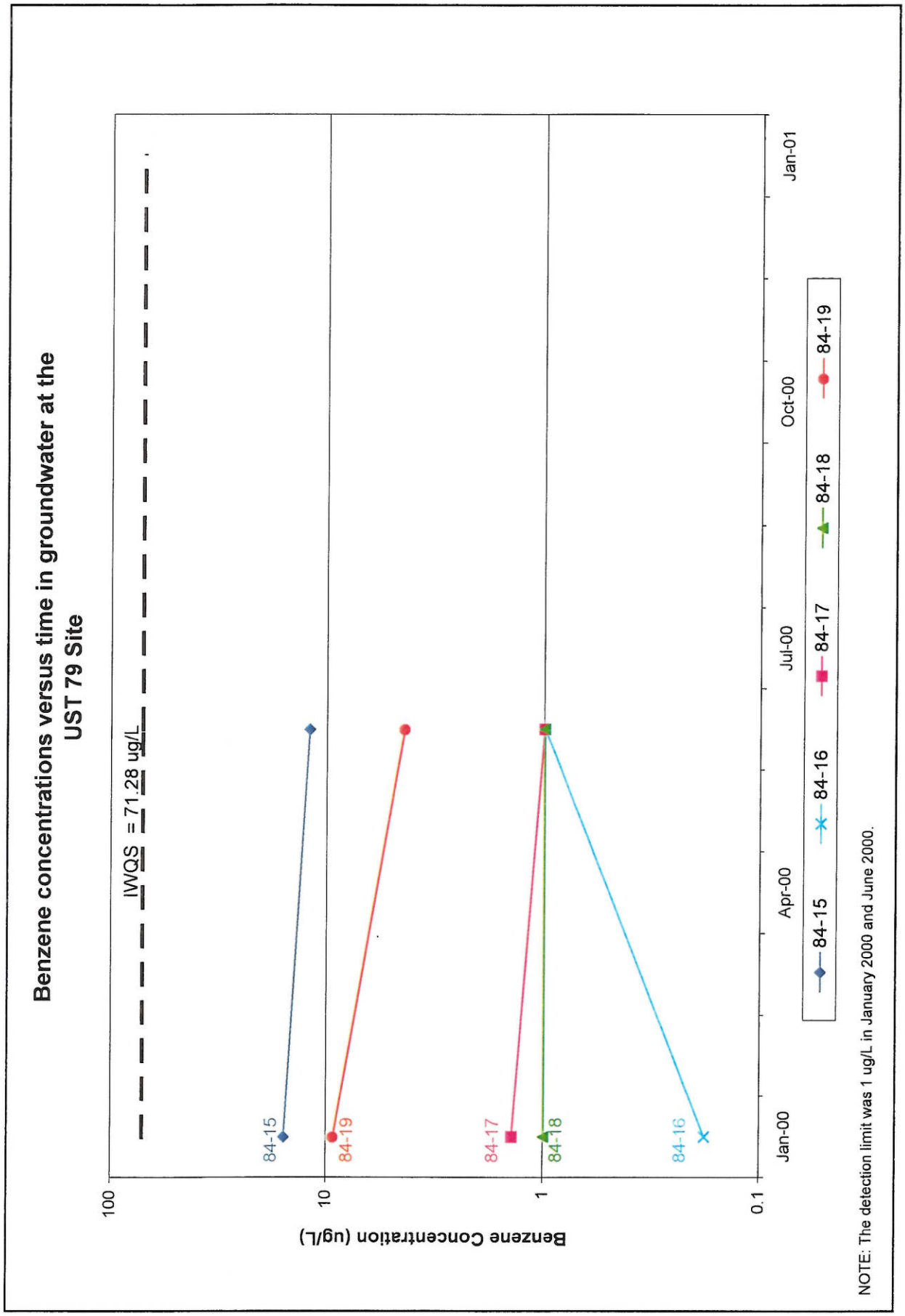


Figure 4. Trend of Contaminant Concentrations for the UST 79 Site

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					
84-15	2/21/00	76.93	2.7 – 12.7	8.09	68.84
84-16	2/21/00	76.75	3.2 – 13.2	8.18	68.57
84-17	2/21/00	76.60	3.3 – 12.3	7.74	68.86
84-18	2/21/00	76.61	2.6 – 12.6	7.56	69.05
84-19	2/21/00	76.06	3.5 – 9.5	7.15	68.91
Second Semiannual Monitoring Event – June 2000					
84-15	6/22/00	76.93	2.7 – 12.7	8.40	68.53
84-16	6/22/00	76.75	3.2 – 13.2	8.50	68.25
84-17	6/22/00	76.60	3.3 – 12.3	8.06	68.54
84-18	6/22/00	76.61	2.6 – 12.6	7.90	68.71
84-19	6/22/00	76.06	3.5 – 9.5	7.50	68.56

NOTES:
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								
84-15	841512	1/18/00	15.8 =	2.8 =	13.2 =	26.5 =	58.3	NA
84-16	841612	1/19/00	0.18 J	1 U	1 U	3 U	0.18	NA
84-17	841712	1/16/00	1.4 J	1 UJ	0.064 J	0.25 J	1.714	NA
84-18	841812	1/19/00	1 =	1 U	1 U	0.58 J	1.58	NA
84-19	841912	1/16/00	9.3 J	2.9 J	45.9 J	194 J	252.1	NA
Second Semiannual Monitoring Event – June 2000								
84-15	841522	6/22/00	12.1 =	2.4 =	17.6 =	35.2 =	67.3	NA
84-16	841622	6/22/00	1.0 U	1.0 U	1.0 U	3.0 U	ND	NA
84-17	841722	6/22/00	1.2 U	1.0 U	1.0 U	0.39 J	0.39	NA
84-18	841822	6/22/00	1.4 U	1.0 U	0.17 J	0.29 J	0.46	NA
84-19	841922	6/22/00	4.4 =	0.69 J	8.4 =	30.2 =	43.69	NA
In-Stream Water Quality Standard (GA EPD Chapter 391-3-6)			72.18	200,000	28,718	NRC	NRC	NRC
Alternate Concentration Limit			5,750	–	–	–	–	–

NOTE:

Bold values exceed IWQSs.

Italic values exceed alternate concentration limits.

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 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. 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								
84-15	1/18/00	12.8	2.7 – 12.7	¾" PVC	680850.3	825276.8	77.23	76.93
84-16	1/19/00	13.3	3.2 – 13.2	¾" PVC	680885.1	825247.5	77.22	76.75
84-17	1/16/00	12.4	3.3 – 12.3	¾" PVC	680826.2	825285.9	76.91	76.60
84-18	1/16/00	12.7	2.6 – 12.6	¾" PVC	680830.5	825331.7	76.91	76.61
84-19	1/16/00	9.6	3.5 – 9.5	¾" PVC	680775.6	825299.3	76.35	76.06

NOTES:
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.

841512

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB012W

Matrix: (soil/water) WATER Lab Sample ID: 20767001

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 2T123

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

% Moisture: not dec. _____ Date Analyzed: 01/24/00

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	15.8	
108-88-3	Toluene	2.8	
100-41-4	Ethylbenzene	13.2	
107-02-8	Xylenes (total)	26.5	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841612

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: 20844005

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5T218

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		0.18	J	J
108-88-3	Toluene	1.0	~~0.27~~	J	U FD4, FD6
100-41-4	Ethylbenzene		1.0	U	U
1330-20-7	Xylenes (total)		3.0	U	U

FORM I VOA

OLM03.0

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841712

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB005W

Matrix: (soil/water) WATER Lab Sample ID: 20661013

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5T124

Level: (low/med) LOW Date Received: 01/17/00

% Moisture: not dec. ________ Date Analyzed: 01/24/00

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	1.4		J A03
108-88-3	Toluene	~~0.39~~ 1.0	J	UJ, F04, F06
100-41-4	Ethylbenzene	0.064	J	J
1330-20-7	Xylenes (total)	0.25	J	J

FORM I VOA 0LM03.0

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841812

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: 20844006

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 5T219

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		=
108-88-3	Toluene	1.0	~~0.48~~	J	U FD4, FD6
100-41-4	Ethylbenzene	1.0	~~0.34~~	JB	U FD1, FD6
1330-20-7	Xylenes (total)		0.58	J	J

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841912

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB005W

Matrix: (soil/water) WATER Lab Sample ID: 20661015

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5T211

Level: (low/med) LOW Date Received: 01/17/00

% 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	9.3	J A03
108-88-3	Toluene	2.9	, F04, F08
100-41-4	Ethylbenzene	45.9	
1330-20-7	Xylenes (total)	194	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841916

Lab Name: GENERAL ENGINEERING LABOR Contract: N/A

Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: FSAB005W

Matrix: (soil/water) WATER Lab Sample ID: 20661014

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5T205

Level: (low/med) LOW Date Received: 01/17/00

% 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 ~~0.64~~	J	U FO4, FOL
100-41-4	Ethylbenzene	1.0	U	U
1330-20-7	Xylenes (total)	3.0	U	U

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

1 of 2

CHAIN OF CUSTODY RECORD

COC NO.: D05504

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
370562	1/16/00	0955	water	2							2		20606010
630812	1/15/00	1200		2							2		011
631012	1/15/00	1500		2							2		012
841712	1/16/00	1710		2							2		013
841916	1/16/00	1443		2							2		014
841912	1/16/00	1500		2							2		015
751112	1/16/00	1725		2							2		016
801212	1/16/00	1215		2							2		017
801112	1/16/00	1300		2							2		018
TB5503	1/15/00	0745		2							2		019
TB5504	1/16/00	0745		2							2		020
751011	1/16/00	1525	Soil	1		1					2		20657003

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	1/17/00 1145	[illegible]	1/17/00 1525
COMPANY NAME: SAIC		COMPANY NAME: GEL	
RELINQUISHED BY: [illegible]	Date/Time 1-17-00 1145	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	
RELINQUISHED BY: [illegible]	Date/Time 1-17-00 1525	RECEIVED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 56

Cooler ID: #843

Cooler Temperature: 4°C

FEDEX NUMBER:

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.: D05508

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

OJECT NUMBER: 01-1624-04-2352.200

OJECT MANAGER: Patty Stoll

ıpler (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

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		2						2	4		20765001
980212	1/18/00	1355			2						2	4		20765002
980312	1/18/00	1255			2						2	4		20765003
980412	1/18/00	1435			2						2	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: Laura Lumley	Date/Time 1/19/00 1215	RECEIVED BY: D. FRANCIS	Date/Time 1/19/00 1700	TOTAL NUMBER OF CONTAINERS:	Cooler Temperature: 4°C
IPANY NAME: SAIC		COMPANY NAME: GEL		Cooler ID: #12	FEDEX NUMBER:
EIVED BY:	Date/Time 1-19-00 1215	RELINQUISHED BY:	Date/Time		
IPANY NAME: GEL		COMPANY NAME:			
INQUISHED BY:	Date/Time 1-19-00 1700	RECEIVED BY:	Date/Time		
IPANY NAME: GEL		COMPANY NAME:			

III-10

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 Road, 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	0850	Soil	1		1		1				3		008
														20850001

RELINQUISHED BY: Laura Lumley | Date/Time: 1/20/00 | RECEIVED BY: [signature] | Date/Time: 1/20/00 1430

COMPANY NAME: SAIC | COMPANY NAME: GEL

RECEIVED BY: Katherine C. B. | 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:

SECOND SEMIANNUAL MONITORING EVENT

JUNE 2000

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841522

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: 27387013

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5P210

Level: (low/med) LOW Date Received: 06/23/00

% Moisture: not dec. _____ Date Analyzed: 06/27/00

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	12.1	B	= F01, F08
108-88-3	Toluene	2.4		=
100-41-4	Ethylbenzene	17.6		=
1330-20-7	Xylenes (total)	35.2		=

DATA VALIDATION COPY

58

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841622

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: 27387014

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5P121

Level: (low/med) LOW Date Received: 06/23/00

% 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 ~~0.17~~	JB- —	U FD1, FD6
108-88-3	Toluene	1.0	U	U
100-41-4	Ethylbenzene	1.0	U	
1330-20-7	Xylenes (total)	3.0	U	

KMP 9/12/00

DUPLICATE

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841624

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: 27387012

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5P119

Level: (low/med) LOW Date Received: 06/23/00

% 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	~~0.17~~	JB —	U F01, F06
108-88-3	Toluene		1.0	U	U
100-41-4	Ethylbenzene		1.0	U	
1330-20-7	Xylenes (total)		3.0	U	

KMP 8/2/00

62

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841722

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: 27387015

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5P122

Level: (low/med) LOW Date Received: 06/23/00

% 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	1.2	B	U F01, F07
108-88-3	Toluene	1.0	U	U
100-41-4	Ethylbenzene	1.0	U	U
1330-20-7	Xylenes (total)	0.39	J	J

64

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841822

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: 27387016

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5P123

Level: (low/med) LOW Date Received: 06/23/00

% 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	1.4	B	U F01,F07
108-88-3	Toluene	1.0	U	U
100-41-4	Ethylbenzene	0.17	J	J
1330-20-7	Xylenes (total)	0.29	J	J

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

841922

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: 27387017

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 5P124

Level: (low/med) LOW Date Received: 06/23/00

% 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	4.4	B	= FD1, FD8
108-88-3	Toluene	0.69	J	
100-41-4	Ethylbenzene	8.4		
1330-20-7	Xylenes (total)	30.2		

Science Applications International Corporation — An Employee-Owned Company

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

CHAIN OF CUSTODY RECORD

COC NO.: GLTM16

PROJECT NAME: Fort Stewart CAP B LTM

PROJECT NUMBER: 01-1624-04-2725-200

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: (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
841624	6/22/00	1250	water	2				2		27387 012
841522	6/22/00	1120		2				2		013
841622	6/22/00	1250		2				2		014
841722	6/22/00	1110		2				2		015
841822	6/22/00	1130		2				2		016
841922	6/23/00	1155		2				2		017
TB5510	6/22/00	0400	↓	2				2		018

REQUESTED PARAMETERS

Laura Lumley 6/23/00

TOTAL NUMBER OF CONTAINERS: 14

Cooler Temperature: 3°c

Cooler ID: #230

FEDEX NUMBER:

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	6/23/00 1709	Patricia Power	6/23/00 14:30
COMPANY NAME: SAIC		COMPANY NAME: GEL	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
	6/23/00		
COMPANY NAME: GEL		COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
	6/23/00 1430		
COMPANY NAME: GEL		COMPANY NAME:	

111-19

200067HZ

APPENDIX IV

SITE RANKING FORMS

FIRST SEMIANNUAL MONITORING EVENT

JANUARY/FEBRUARY 2000

SITE RANKING FORM

Facility Name: UST 79, Building 1224 **Ranked by:** S. Stoller

County: Liberty **Facility ID #:** 9-089026 **Date Ranked:** 5/24/2000

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

* *CAP-Part A sample 841021 (1999)*

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 841021 (1999)*

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

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

Fill in the blanks: **(A. 50) + (B. 10) = (60) x (C. 10) = (D. 600)**

GROUNDWATER CONTAMINATION

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 841512 (January 2000)*

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

Facility Name: UST 79, Building 1224 **County:** Liberty **Facility ID #:** 9-089026

POTENTIAL RECEPTORS (MUST BE FIELD-VERIFIED)

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

H. Public Water Supply

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

For lower susceptibility areas only:

☐	>1 mi	= 0

I. Non-Public Water Supply

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

For lower susceptibility areas only:

☐	>¼ mi	= 0

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

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

J. Distance from nearest Contaminant Plume boundary to downgradient Surface Waters **OR UTILITY TRENCHES & 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. 600) = N. 850

P. **SUSCEPTIBILITY AREA MULTIPLIER**

☐ If site is located in a Low Ground-Water Pollution Susceptibility Area = 0.5

☒ All other sites = 1

Q. **EXPLOSION HAZARD**

Have any explosive petroleum vapors, possibly originating from this release, been detected in any subsurface structure (e.g., utility trenches, basements, vaults, crawl spaces, etc.)?

☐ Yes = 200,000

☒ No = 0

Fill in the blanks: (N. 850) x (P. 1) = (850) + (Q. 0)

= 850 (January 2000 - First Semiannual Sampling Event)
ENVIRONMENTAL SENSITIVITY SCORE

SECOND SEMIANNUAL MONITORING EVENT

JUNE 2000

SITE RANKING FORM

Facility Name: UST 79, Building 1224 **Ranked by:** S. Stoller

County: Liberty **Facility ID #:** 9-089026 **Date Ranked:** 9/18/2000

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

* *CAP-Part A sample 841021 (1999)*

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 841021 (1999)*

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

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

Fill in the blanks: **(A. 50) + (B. 10) = (60) x (C. 10) = (D. 600)**

GROUNDWATER CONTAMINATION

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 841522 (June 2000)*

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

Facility Name: UST 79, Building 1224 **County:** Liberty **Facility ID #:** 9-089026

POTENTIAL RECEPTORS (MUST BE FIELD-VERIFIED)

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

H. Public Water Supply

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

For lower susceptibility areas only:

☐	>1 mi	= 0

I. Non-Public Water Supply

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

For lower susceptibility areas only:

☐	>¼ mi	= 0

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

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

J. Distance from nearest Contaminant Plume boundary to downgradient Surface Waters **OR UTILITY TRENCHES & 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. 600) = N. 850

P. **SUSCEPTIBILITY AREA MULTIPLIER**

☐ If site is located in a Low Ground-Water Pollution Susceptibility Area = 0.5

☒ All other sites = 1

Q. **EXPLOSION HAZARD**

Have any explosive petroleum vapors, possibly originating from this release, been detected in any subsurface structure (e.g., utility trenches, basements, vaults, crawl spaces, etc.)?

☐ Yes = 200,000

☒ No = 0

Fill in the blanks: (N. 850) x (P. 1) = (850) + (Q. 0)

= 850 (June 2000 - Second Semiannual Sampling Event)
ENVIRONMENTAL SENSITIVITY SCORE

APPENDIX V

REIMBURSEMENT APPLICATION

Fort Stewart is a federally owned facility and has funded the investigation for the UST 79 site, Building 1224, Facility ID #9-089026, 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 CAP-Part A Report (SAIC 1999) was based on the assumption of a continuous source of contamination of infinite duration at the site. The maximum soil concentrations at the site were above the water table in boring 84-10, which is located upgradient of the former tank pit; thus, leaching to groundwater by percolating rainwater was modeled using the Seasonal Soil Compartment (SESOIL) Model, which resulted in a maximum predicted benzene concentration in groundwater of 253 µg/L in June 1998. In addition, there was also a groundwater plume emanating from the former tank pit with a maximum observed benzene concentration in groundwater of 52.6 µg/L in temporary piezometer 84-03 in June 1998. In summary, the Analytical Transient 1-, 2-, 3-Dimensional Model was used to model contaminant migration of two sources to four potential downgradient receptors: an industrial wastewater line located approximately 60 feet northwest of boring 84-10, a sanitary sewer located approximately 180 feet northwest of boring 84-10, a drainage ditch located approximately 800 feet west of the site, and Mill Creek located approximately 2,500 feet west of the site. The modeling results indicated that, due to dilution attenuation, benzene would not reach the sanitary sewer, drainage ditch, or Mill Creek at detectable concentrations. Benzene might reach the industrial wastewater line, but at concentrations less than 0.5 µg/L.

Based on modeling results, the estimated dilution attenuation factors (DAFs) for benzene were 1,150 for the industrial wastewater line and infinity for the sanitary sewer, drainage ditch, and Mill Creek, indicating that the predicted concentrations at these three receptors are zero. During the CAP-Part A, 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. It was not necessary to revise the fate and transport modeling results as a result of the semiannual monitoring events in January 2000 and June 2000.

Benzene was identified as a contaminant of potential concern during the risk screening performed as part of the CAP-Part A investigation. An alternate concentration limit (ACL) of 5,750 µg/L was developed for benzene based on the DAF for the industrial wastewater line and the maximum contaminant level. The IWQS could be used as the regulatory level in the calculation of the ACL because the surficial aquifer is not a drinking water aquifer, and the most likely receptor for the surficial aquifer is a surface water body. However, the ACL would increase with the use of the IWQS.

A.2 FATE AND TRANSPORT MODELING CONCLUSIONS

The conclusion below is based on a fate and transport model that assumes a continuous source of contamination of infinite duration at the site based on the SESOIL maximum predicted benzene concentration (i.e., 253 µg/L) in groundwater at the source during the CAP-Part A investigation.

- Benzene concentrations in groundwater do not exceed the IWQS 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 industrial wastewater line, sanitary sewer, drainage ditch, or Mill Creek at concentrations above the IWQS.

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 R.C. Vochis, 1963. *Subsurface Geology of the Georgia Coastal Plain*, Georgia Geologic Survey Information Circular 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 UST 79, Facility ID #9-089026, Building 1224, Fort Stewart, Georgia*, August.

SAIC 2000. *First Semiannual Monitoring Only Report for UST 79, Facility ID #9-089026, Building 1224, Fort Stewart, Georgia*, June.

ATTACHMENT C

BORING LOGS AND WELL CONSTRUCTION DIAGRAMS

HTRW DRILLING LOG

HOLE NUMBER 84-15

PROJECT: Fort Stewart USTs | INSPECTOR J. Celeste | SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0	CONCRETE				
	1	Clayey SAND(SC), fine grained, soft, reddish brown w/ red, yellow, white mottling (2.5 YR 5/4)				
	2					
	3	NO RECOVERY				
	4					
	4	Clayey SAND(SC), fine grained, soft, reddish brown w/ red, yellow, white mottling (2.5 YR 5/4)				
	5	Silty SAND(SM), fine grained, soft, moist, very dark grayish brown (10 YR 3/2)				
	6					
	6	SAND(SW), fine grained w/ some silt, soft and moist, very dark grayish brown (10 YR 3/2)				▽ wet below 6.5 FT BGS
	7					
	7	NO RECOVERY				
	8					
	8	SAND(SW), fine grained w/ some silt, soft and moist, very dark grayish brown (10 YR 3/2)				COLLECTED GROUNDWATER SAMPLE 841512 FROM MONITORING POINT
	9					
	9	Silty SAND(SM), fine grained, soft to firm, wet, yellowish brown (10 YR 5/4)				PUSHED TO 13.0 FT BGS TO SET 3/4" MONITORING POINT SCREENED FROM 2.7 TO 12.7 FT BGS
	10					

HTRW DRILLING LOG

HOLE NUMBER 84-16

PROJECT: Fort Stewart USTs | INSPECTOR J. Celeste | 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)
		SAND (SW), fine grained, some gravel, very soft, gray (10 YR 6/1)				
	1	SAND (SW) fine to medium grained, some silt, soft, very dark brown (10 YR 7/2)				
	2					
	3	SAND (SW), fine to medium grained, some silt, soft, light brownish gray (10 YR 6/2)				
	4	NO RECOVERY				
		SAND (SW), fine to medium grained, some silt, soft, light brownish gray (10 YR 6/2)				
	5	Silty SAND (SM), fine grained, soft and moist, dark reddish brown, (2.5 YR 3/3)				
	6					
	7					▽ wet below 7.5 FT BGS
	8	Silty SAND (SM), fine grained, soft and wet, reddish brown, (5YR 4/3)				
	9					
	10					

HTRW DRILLING LOG

HOLE NUMBER 84-16

PROJECT: Fort Stewart USTs | INSPECTOR J. Celeste | SHEET 2 OF 2

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	11	Silty SAND (SM), fine grained, soft and wet, yellowish red (5 YR 5/6)				
	12					PUSHED TO 13.3 FT BGS TO SET 3/4" MONITORING POINT SCREENED FROM 3.2 TO 13.2 FT BGS
	13					
	14					COLLECTED GROUNDWATER SAMPLE 841612 FROM MONITORING POINT
	15					
	16					
	17					
	18					
	19					
	20					

HTRW DRILLING LOG

HOLE NUMBER 84-17

PROJECT: Fort Stewart USTs | INSPECTOR J. Celeste | 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 grained, soft to very soft, dark brown, (7.5 YR 3/2)				
	2					
	3					
	4	NO RECOVERY				
		Silty SAND (SM), fine grained, soft to moist, gray, (7.5 YR 5/2)				
	5					▽ wet below 5.0 ft BGS
	6	Silty SAND (SM), fine grained, soft to firm, wet, black, (7.5 YR 2.5/1)				
	7					
	8					PUSHED TO 12.5 FT BGS
						TO SET 3/4" MONITORING POINT SCREENED FROM 3.3 TO 12.3 FT BGS
	9					COLLECTED GROUNDWATER SAMPLE 841712 FROM MONITORING POINT
	10					

HTRW DRILLING LOG

HOLE NUMBER 84-18

PROJECT: Fort Stewart USTs | INSPECTOR J. Celeste | 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 w/ SILT (SP-SM), fine grained, very soft, gray, (7.5 YR 6/1)				
		Silty SAND (SM), fine grained, soft, brown, (7.5 YR 4/2)				
	2					
	3					
		Silty SAND (SM), fine grained, soft to very soft, gray (7.5 YR 6/1)				
	4	NO RECOVERY				
		Silty SAND (SM), fine grained, soft to very soft, gray, moist to wet (7.5 YR 6/1)				
	5					▽ = Wet below 5.0 ft BGS
		Silty SAND (SM), fine grained, soft to firm, wet, black, (7.5 YR 2.5/1)				
	6					
	7	NO RECOVERY				COLLECTED GROUNDWATER SAMPLE 841812 FROM MONITORING POINT
	8					
	9					PUSHED TO 13.0 FT BGS TO SET 3/4" MONITORING POINT SCREENED FROM 2.6 TO 12.6 FT BGS
	10					

HTRW DRILLING LOG

HOLE NUMBER 84-19

PROJECT: Fort Stewart USTs | INSPECTOR J. Celeste | SHEET 1 OF 1

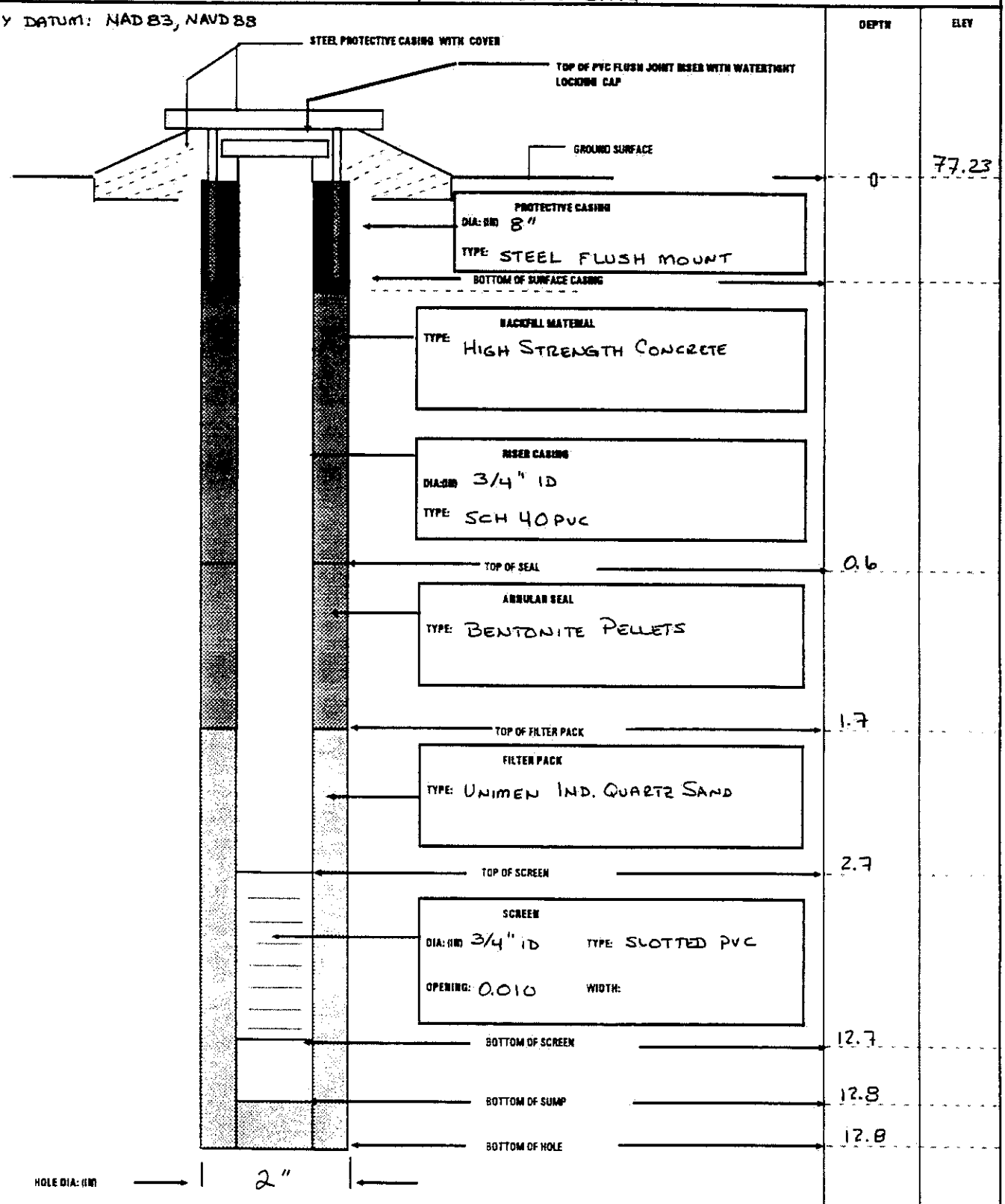
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		CONCRETE				
	1	SAND (SC), fine grained, some clay, soft to firm, very dark brown (2.5 Y 2.5/2)				
	2					
	3	Silty SAND (SM), fine grained, soft to very soft, light gray (2.5 Y 7/1)				
	4	NO RECOVERY				
	5	Silty SAND (SM), fine grained, soft, moist to wet, light gray to gray (2.5 Y 7/1 to 5/1)				▽ wet below 5.0 ft BGS
	6					
	7	Silty SAND (SM), fine grained, soft to firm, wet, black (2.5 Y 2.5/1)				
	8	NO RECOVERY				
	9	Silty SAND (SM), fine grained, soft to firm, wet, black, (2.5 Y 2.5/1)				COLLECTED GROUNDWATER SAMPLE 841912 FROM MONITORING POINT
		SAND (SW), firm grained, some silt, soft and wet (2.5 Y 4/2)				DRILLED TO 9.6 FT BGS
	10					TO SET 3/4" MONITORING POINT SCREENED FROM 3.5 TO 9.5 FT BGS

MONITORING WELL

PROJECT: UST 79

WELL NUMBER: 84-15	**BEGIN:** 1/18/00	**END:** 1/18/00
COORDINATES: N: 6808 SD.3 E: 825276.8	**REFERENCE POINT:** TOP OF CASING	**ELEVATION:** 76.93

SURVEY DATUM: NAD 83, NAVD 88

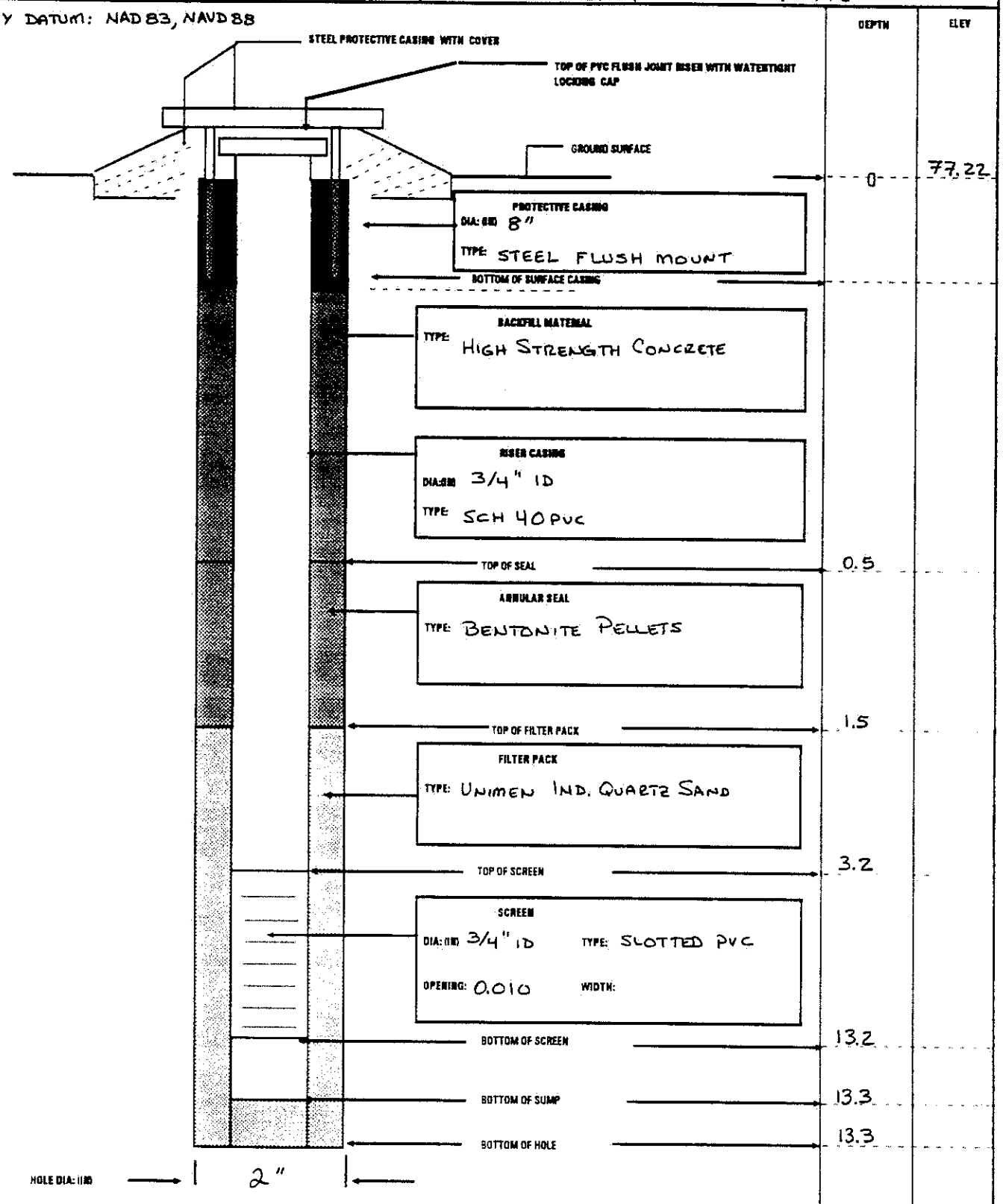


MONITORING WELL

PROJECT: UST 79

WELL NUMBER: 84-16	**BEGIN:** 1/19/00	**END:** 1/19/00
COORDINATES: N: 680885.1 E: 825247.5	**REFERENCE POINT:** TOP OF CASING	**ELEVATION:** 76.75

SURVEY DATUM: NAD 83, NAVD 88

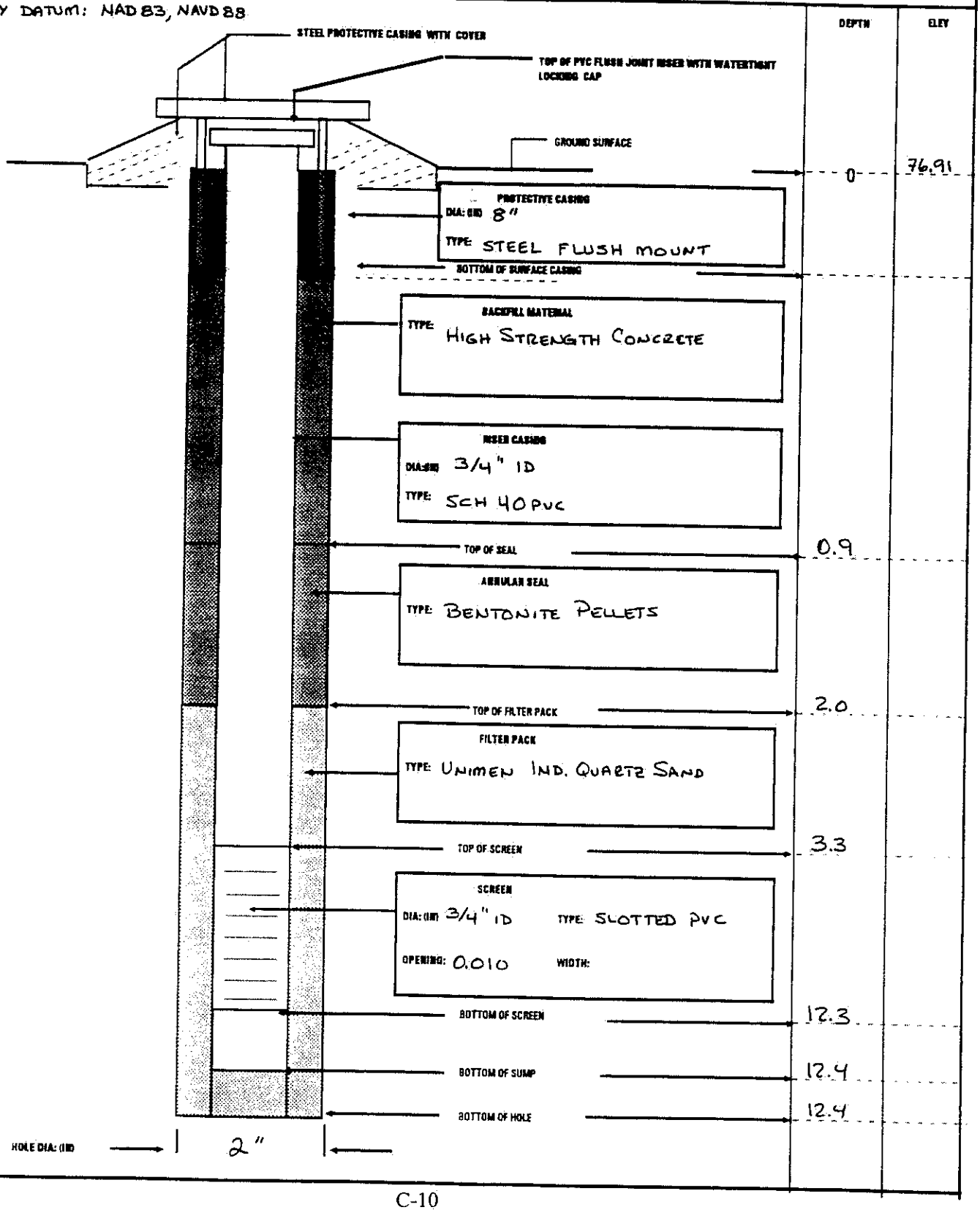


MONITORING WELL

PROJECT: UST 79

WELL NUMBER: 84-17	**BEGIN:** 1/16/00	**END:** 1/16/00
COORDINATES: N: 680826.2 E: 825285.9	**REFERENCE POINT:** TOP OF CASING	**ELEVATION:** 76.60

SURVEY DATUM: NAD 83, NAVD 88

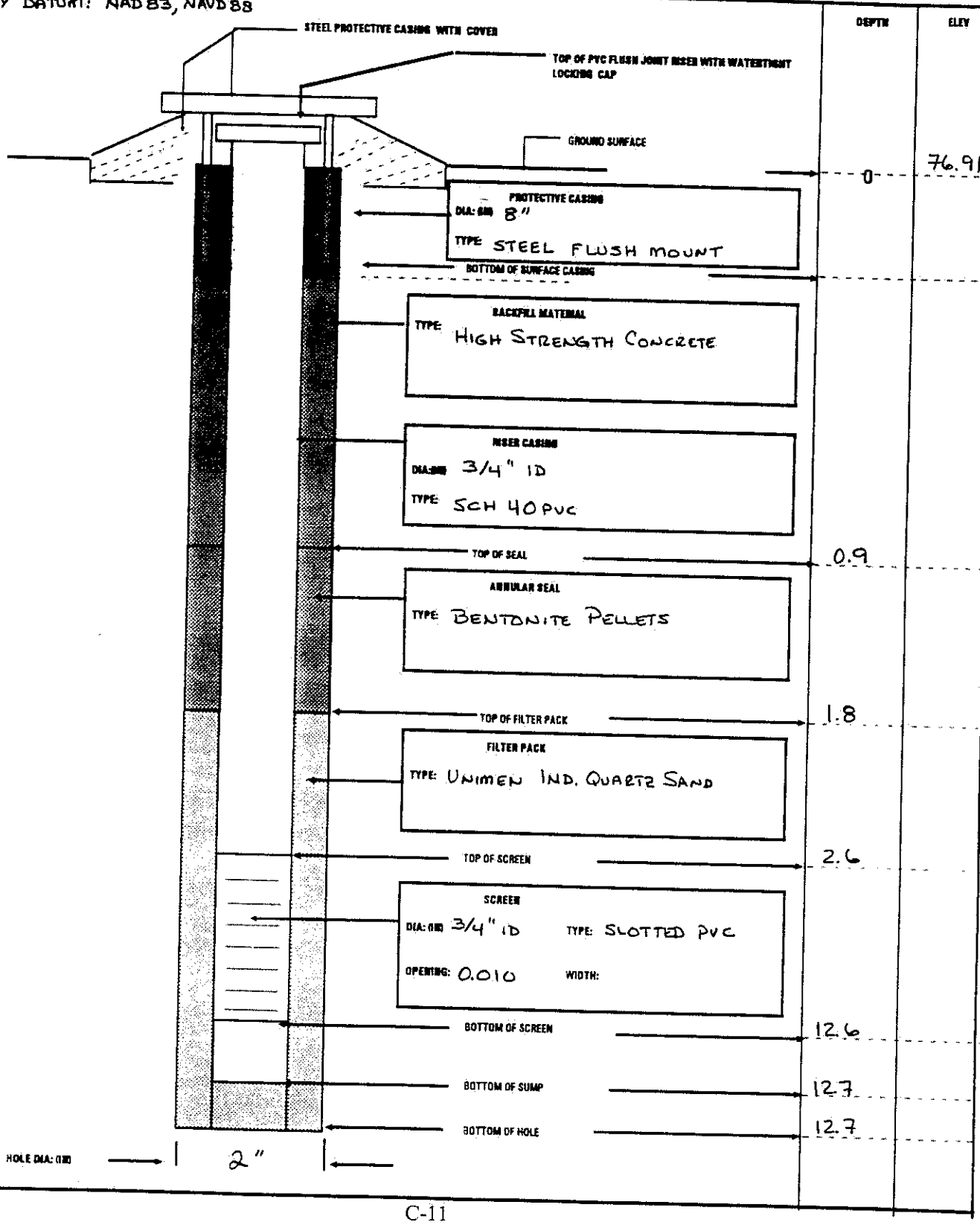


MONITORING WELL

PROJECT: UST 79

WELL NUMBER: 84-18	**BEGIN:** 1/16/00	**END:** 1/16/00
COORDINATES: N: 680830.5 E: 825331.7	**REFERENCE POINT:** TOP OF CASING	**ELEVATION:** 76.61

SURVEY DATUM: NAD 83, NAVD 88

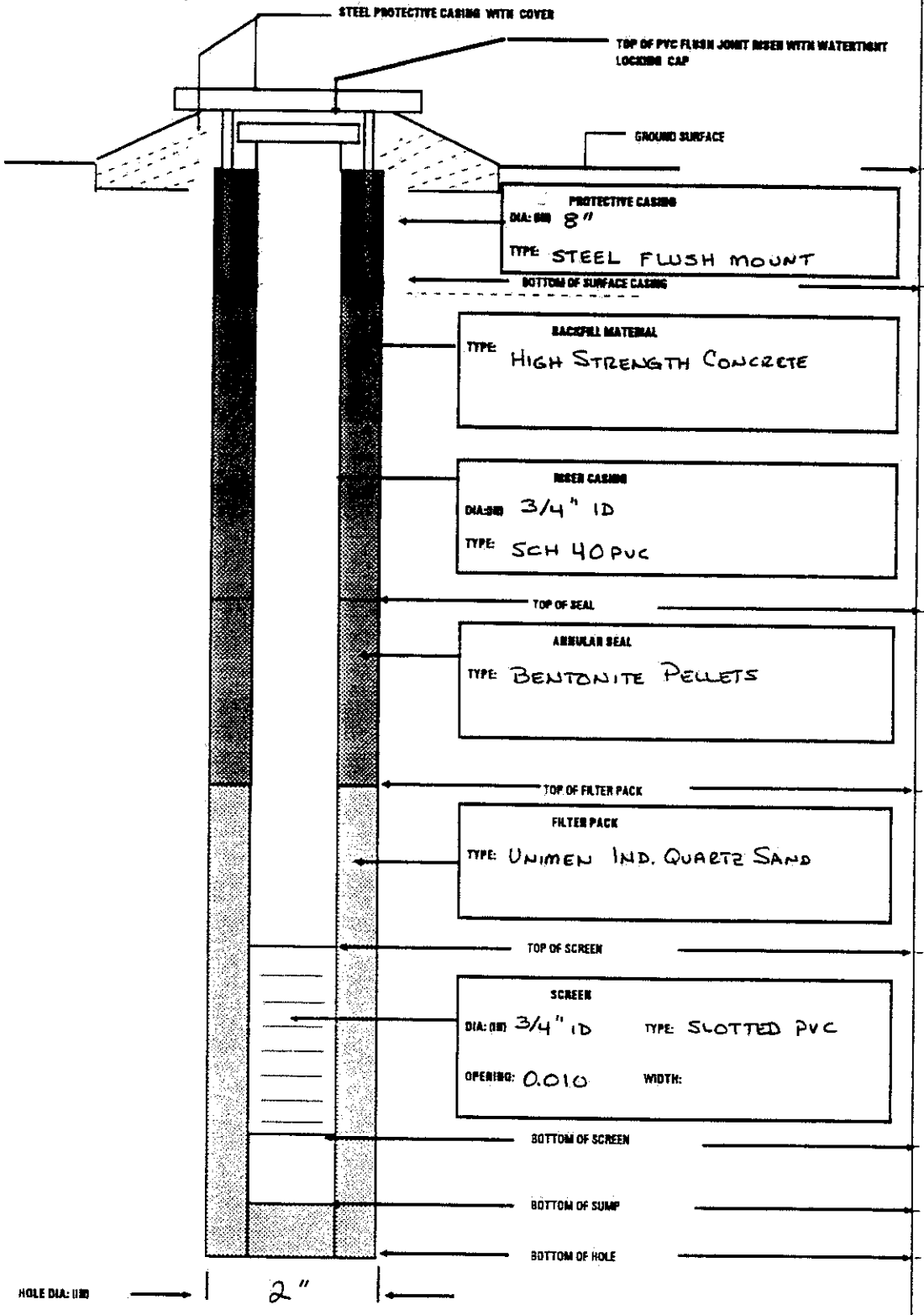


MONITORING WELL

PROJECT: UST 79

WELL NUMBER: 84-19	**BEGIN:** 1/16/00	**END:** 1/16/00
COORDINATES: N: 680775.6 E: 825299.3	**REFERENCE POINT:** TOP OF CASING	**ELEVATION:** 76.06

SURVEY DATUM: NAD 83, NAVD 88



DEPTH	ELEV
0	76.35
0.9	
2.0	
3.5	
9.5	
9.6	
9.6	