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TECHNICAL MEMORANDUM FOR GROUNDWATER EVALUATION AND AIR SPARGING PILOT STUDY AT BUILDING 193 WITH TRANSMITTAL LETTER MCRD PARRIS ISLAND SC
2/13/1997
BECHTEL

Bechtel

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FEB 13 1997

Commanding Officer
Southern Division
Naval Facilities Engineering Command
Attn: Scott A. Glass, Code 18610
P.O. Box 190010
North Charleston, SC 29419-9010

SUBJECT: Bechtel Job No. 22567
Department of the Navy Contract No. N62467-93-D-0936
DO#0048, RESULTS FOR WELL INSTALLATION AND AIR SPARGING PILOT TEST, DRY CLEANER SITE, MCRD, PARRIS ISLAND, SC
Subject Code: 5100/145

Dear Mr. Glass:

Enclosed is a technical memo which compiles and describes the results obtained from the December 1996 field effort. As you are well aware, the effort consisted of installation of eight pairs of monitoring wells, sampling those wells along with contaminated soil to the east of the dry cleaners, and conducting an air sparging pilot test to the north of the dry cleaners in a non-contaminated area.

The results and conclusions hopefully have been worded to be self-explanatory; however, if you need clarification or further discussion, please call me at (423)220-2167 or Roy Hoekstra at (423)220-2271.

Sincerely,

Karen S. Atchley
Project Manager

KSA:dcm:LR1097
Enclosures: As stated

cc: Allison Humphris, EPA Region IV
Don Hargrove, SCDHEC
Susan Peterson, SCDHEC
Tim Harrington, MCRD
Mark Speranza, Brown & Root Environmental
Glenn Wagner, Brown & Root Environmental

01.03.00.000

DEPARTMENT OF THE NAVY

SOUTHERN DIVISION

TECHNICAL MEMORANDUM

FOR

GROUNDWATER EVALUATION AND AIR SPARGING PILOT STUDY

AT

BUILDING 193, PARRIS ISLAND, SOUTH CAROLINA

0		Issued for Use	RS	–	Peh	KRA
REV	DATE	REASON FOR REVISION	BY	EGS	PE	PM
		Groundwater Evaluation And Air Sparging Pilot Study - Bldg. 193 - Parris Island, SC	JOB NO. 22567			
			Memorandum TM-145-001			REV. 0

1.0 INTRODUCTION

The Marine Corps Recruit Depot (MCRD), Parris Island, South Carolina is an active recruit basic training facility. The Morale, Welfare and Recreation (MWR) Dry Cleaning Facility is one of the many support activities that operates at the MCRD. Past practices and spills of the dry cleaning solvent tetrachloroethylene (PCE) at the dry cleaning facility have resulted in the contamination of the groundwater underlying the facility. Bechtel Environmental Inc. (BEI) conducted a site investigation of the groundwater during June 1996 to determine the extent of the contaminants at the site. Direct push technology and a field GC were used for this effort to provide screening information about the extent of the plume. The results of this screening effort are contained in the report "June 1996 Phase Two Sampling Effort" Chron 000041.

The results of the screening effort were used to plan a full scale field investigation that included the following elements:

- Installation of a well monitoring network.
- Analytical sampling to establish baseline soil and groundwater contamination.
- Operation of an air sparging pilot study.
- Split spoon sampling during well installation to determine geological stratigraphy.

The entire scope of work for this effort is detailed in "Technical Memorandum for Well Installation and Air Sparging Pilot Test" (Chron 00060). This field effort was conducted during December 1996.

2.0 AIR SPARGING PILOT STUDY

The Air Sparging Pilot Study was conducted on the north side of the site, upgradient of the plume of contaminated groundwater. The main purpose for the study was to determine:

- If air sparging could be effective through the layer of fine sands and silts located about seven feet below grade.
- If air sparging would be an applicable technology for this site.
- Design parameters for a full scale system.

The study was a success. Attachment 1 contains the Air Sparging Pilot Test Results with a complete description of procedures, data collected, conclusions and recommendations.

3.0 WELL INSTALLATION

Sixteen wells were installed at the site at eight locations. At each location, a shallow well was installed to a depth of seven feet and a deep well was installed to a depth of 14 feet. Attachment 2 contains the following data:

- Borehole logs,
- Well construction logs

- Geotechnical testing results.

Figure 1 shows the locations of the wells installed for the monitoring well network.

3.1 Site Geology

The deep wells at each location were continuously split spoon sampled during borehole drilling to provide information on the subsurface geology at the site. A geological section transect map was developed from this data and is attached as Figure 2. Figures 3 and 4 are of the Generalized Geological Sections 'A-A' and 'B-B'.

3.2 Site Hydrogeology

Water levels were collected from the installed monitoring wells. Two groundwater flow direction maps were prepared using the water level data. One was prepared using the deep well water levels (Figure 5) and one was prepared using the shallow well water levels (Figure 6). The general flow direction on both maps is toward the southeast with a gradient of 0.003 ft/ft. This flow direction is consistent with the extent of contamination at the site.

4.0 ANALYTICAL RESULTS

4.1 Groundwater Sample Results

Groundwater samples were collected from each monitoring well and sent to an offsite laboratory for analysis. These samples were analyzed for VOCs, chloride, sulfate and nitrate. Figure 7 shows the sampling results and the extent of the solvent contamination at the site. The results from this phase of the investigation correlated closely with the results from the direct push sampling. The complete analysis results are included in Attachment 3.

Groundwater samples were collected from each monitoring well and analyzed on site for ferrous iron using a Hach test kit. The levels of iron detected were much lower than those previously detected during the direct push effort. The direct push method samples were very turbid and this may have contributed to the elevated iron results. The iron results from the onsite testing are included in Attachment 3.

4.2 Soil Sampling Results

Soil samples were collected from the 1'-3' interval and the 5'-7' during borehole drilling of monitoring wells 193-6MW-D, 193-7MW-D and 193-8MW-D. These three wells are in the center of the plume of contaminated groundwater. The results are included in Table 1. The soil results indicate that the soil is not greatly impacted by the dry cleaning solvents.

5.0 SITE SURVEY

A site survey was performed to determine the elevations and locations of the monitoring wells. A copy of the site survey is included as Attachment 4.

TABLE 1
SOIL SAMPLING RESULTS

Well and Sample ID Number	Contaminant (ppb)					Sample interval
	PCE	TCE	cis 1,2-DCE	trans 1,2-DCE	vinyl chloride	
193-7MW-D PI16196	2J	0.8J	0.9J	nd	nd	5'-7'
193-7MW-D PI16197	32	6	3J	nd	nd	1'-3'
193-8MW-D PI16199	30	5J	3J	nd	nd	1'-3'
193-8MW-D PI16200	1100E	80	22J	nd	nd	5'-7'
193-6MW-D PI16202	1J	1J	nd	nd	nd	1'-3'
193-6MW-D PI16203	nd	nd	nd	nd	nd	5'-7'
Composite PI16204	69	21	3J	nd	nd	composite 3 drums

J Indicates presence of analyte between DL (Detect Limit) and RL (Report Limit)

E Indicates concentrations exceed the calibration range of the GC/MS instrument for that specific analysis

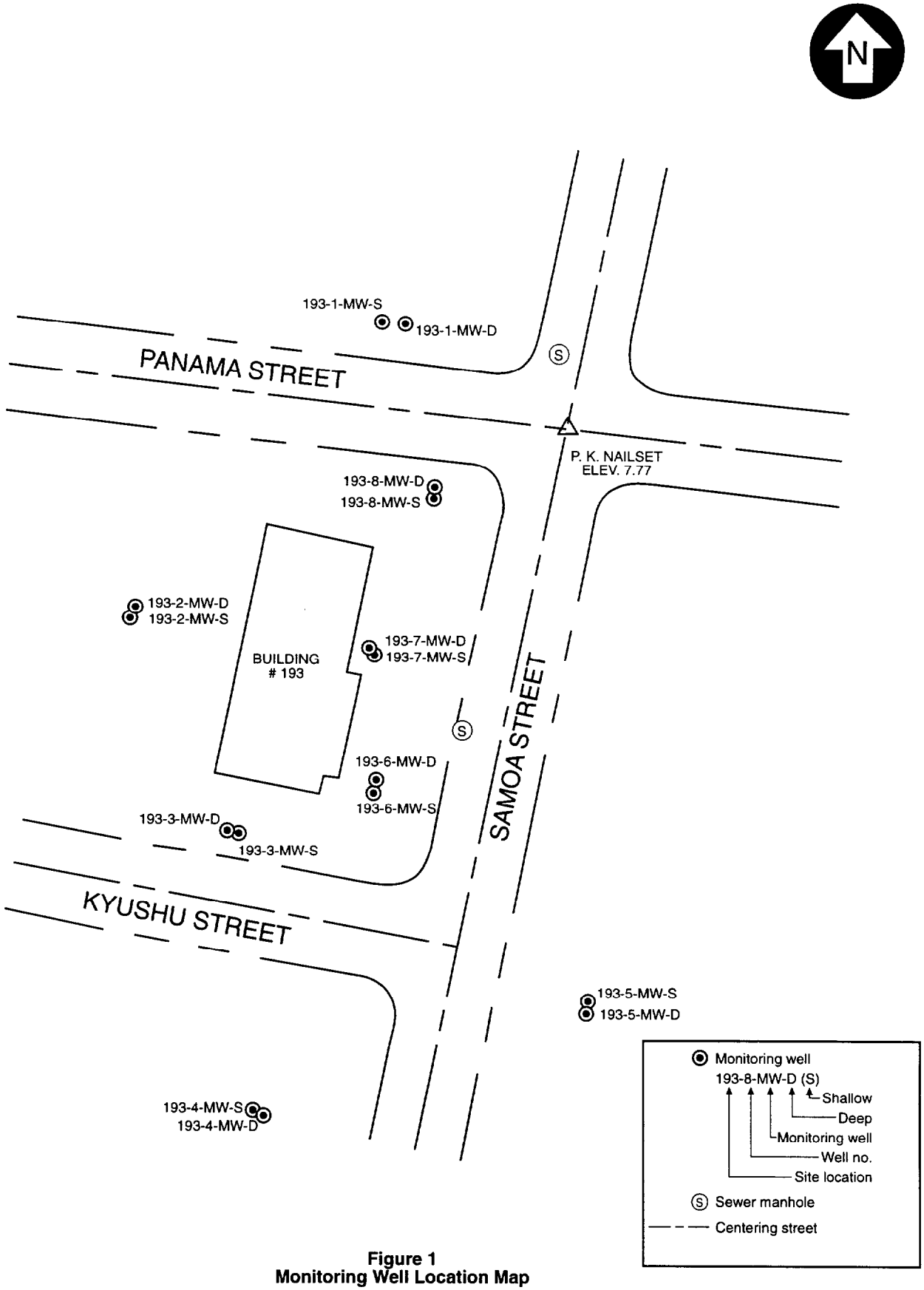

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Figure 1
Monitoring Well Location Map

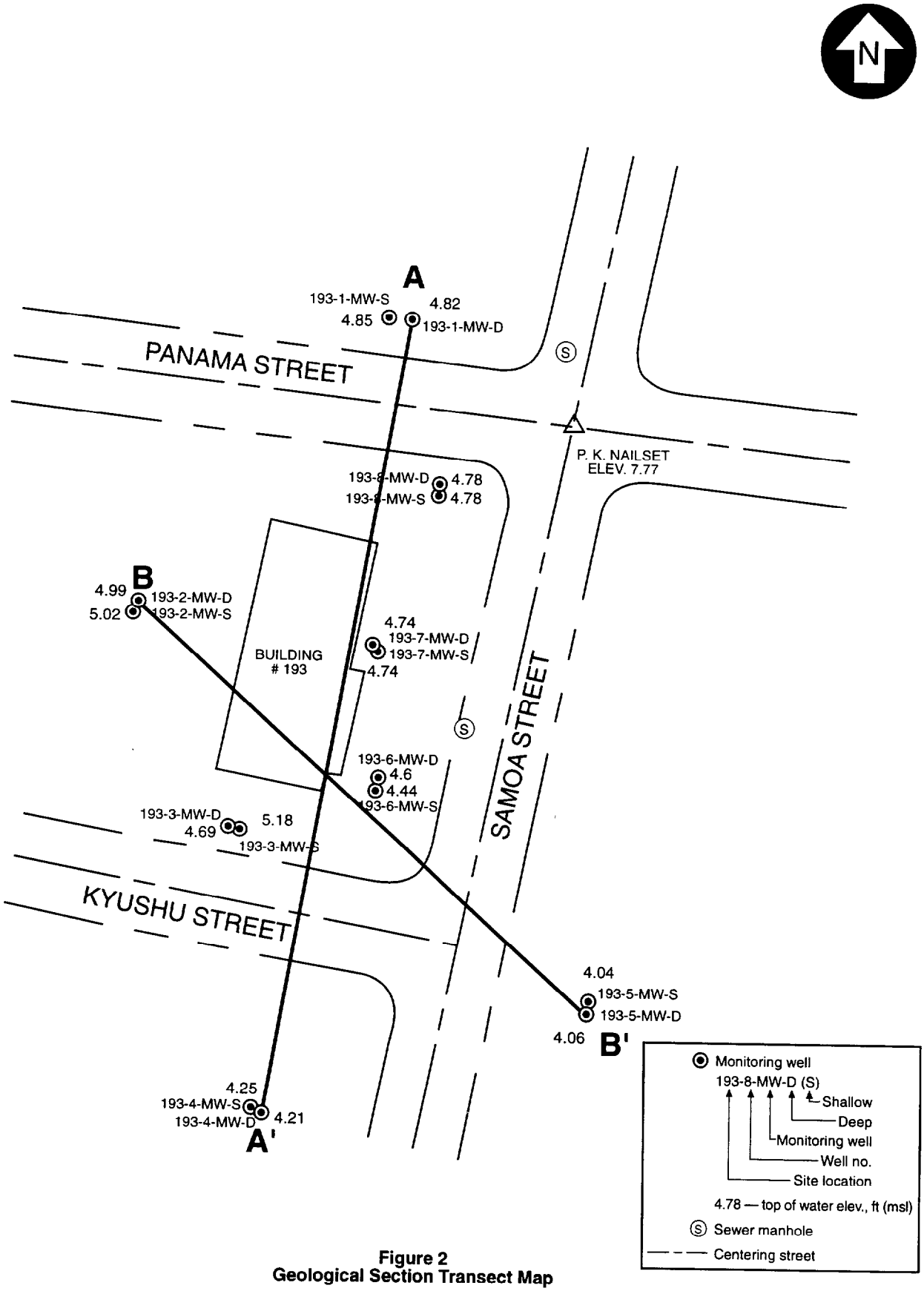

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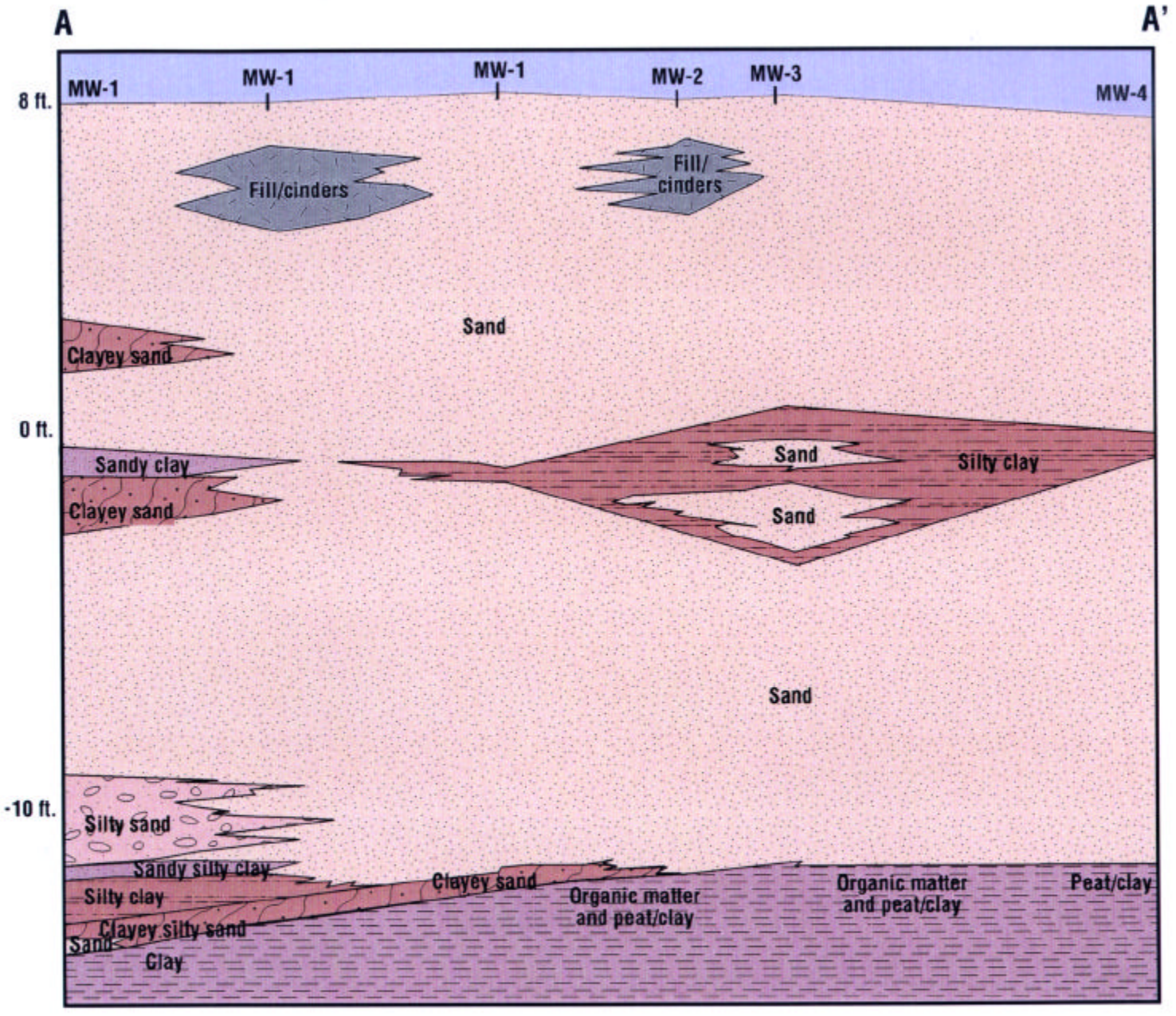
Figure 2
Geological Section Transect Map



Vertical scale: 1" = 4'
Horizontal scale: 1" = 75'

Figure 3
Generalized Geological Section of Site 193 "Dry Cleaners"; A - A'

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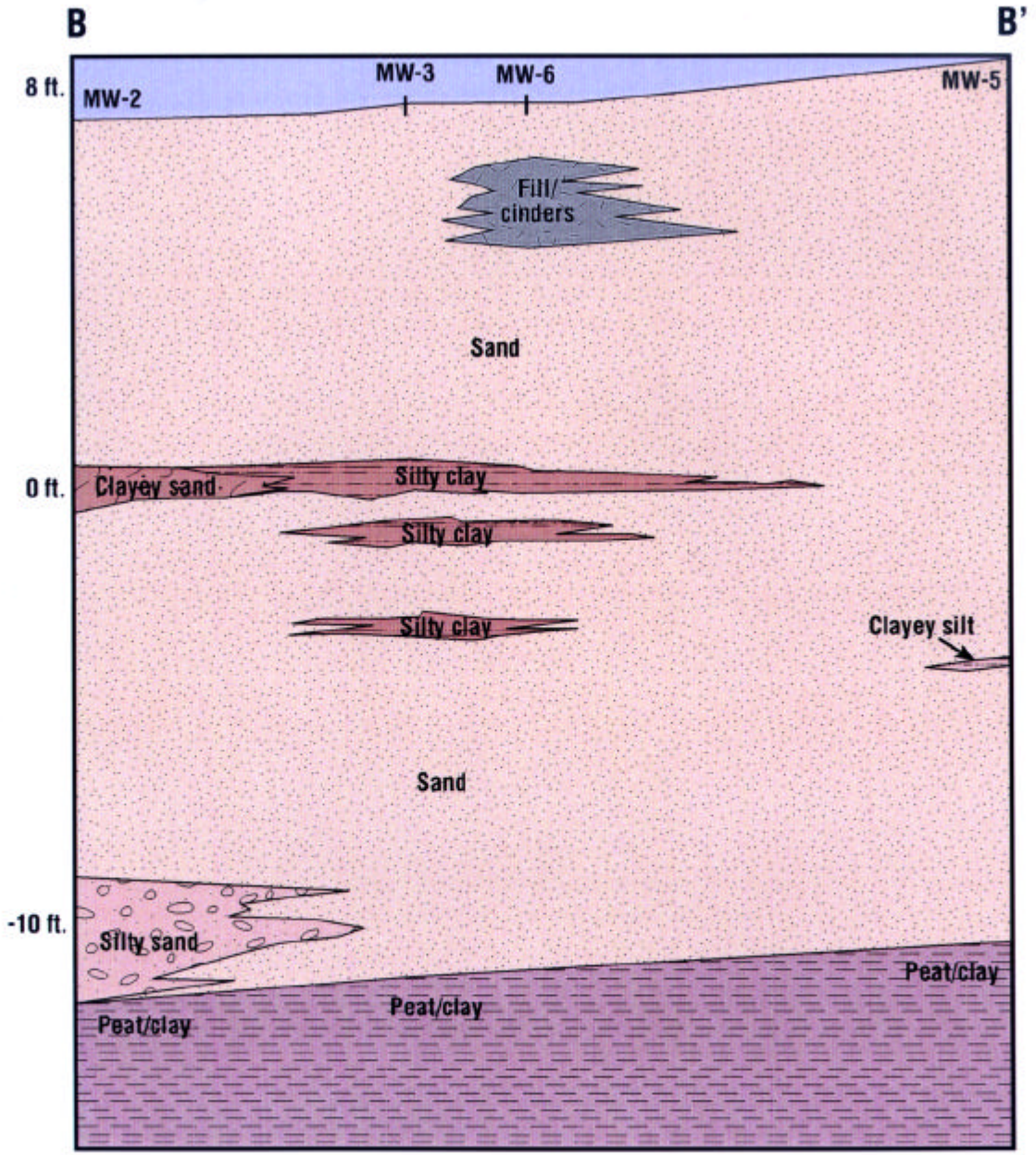

Vertical scale: 1" = 4'
Horizontal scale: 1" = 75'

Figure 4
Generalized Geological Section of Site 193 "Dry Cleaners"; B - B'

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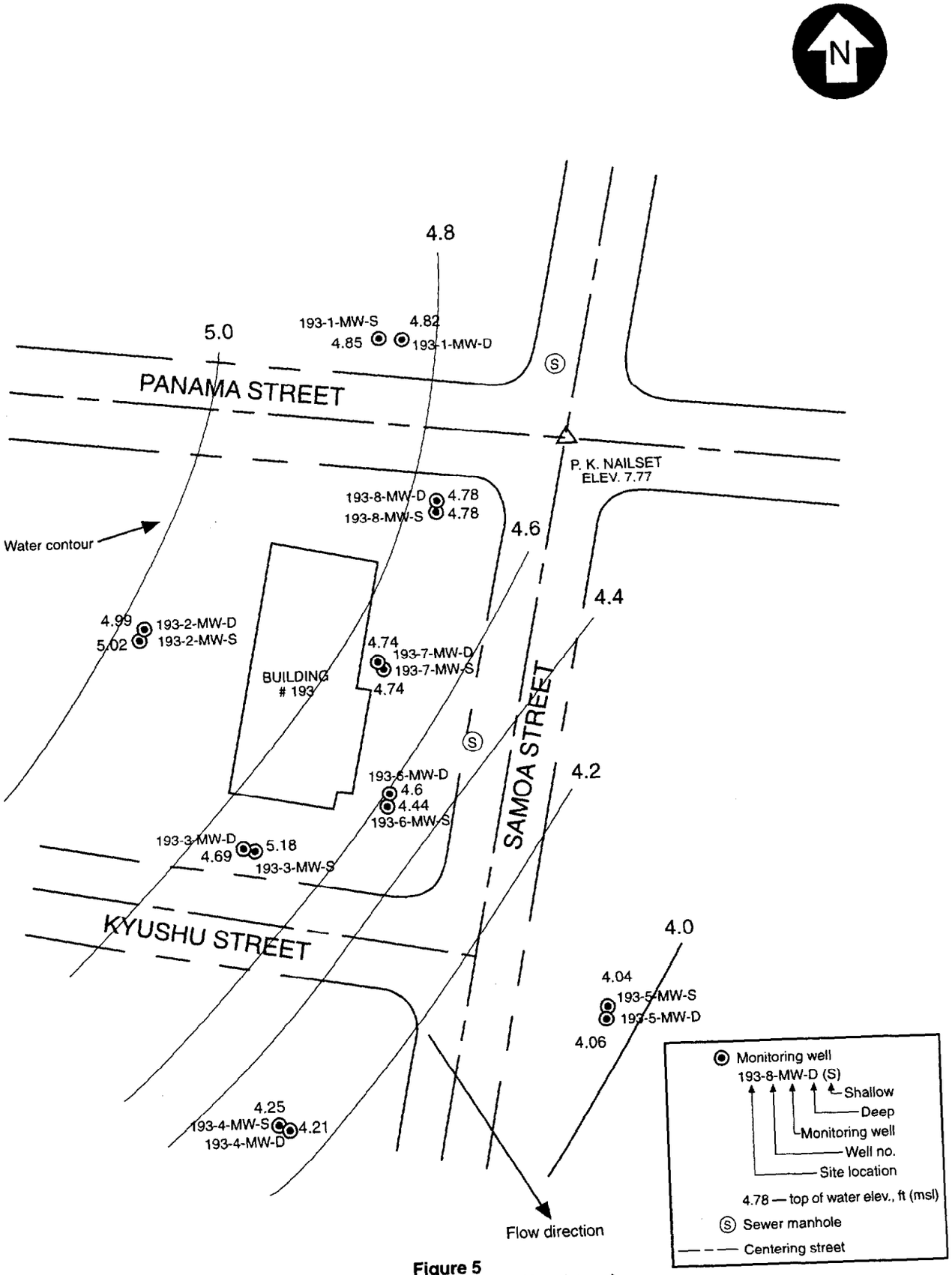

Figure 5
Groundwater Flow Direction Map (Deep)

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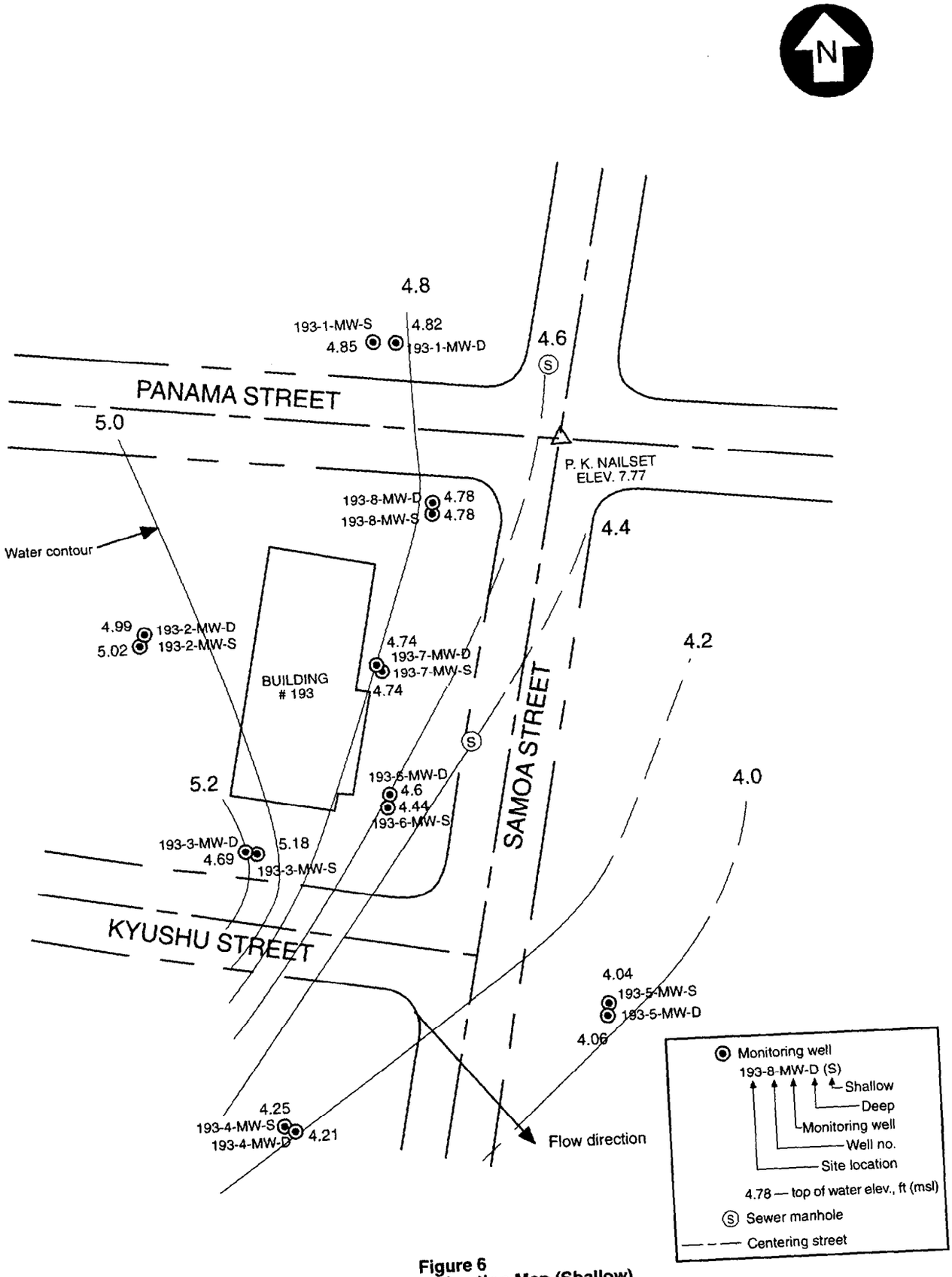

Figure 6
Groundwater Flow Direction Map (Shallow)

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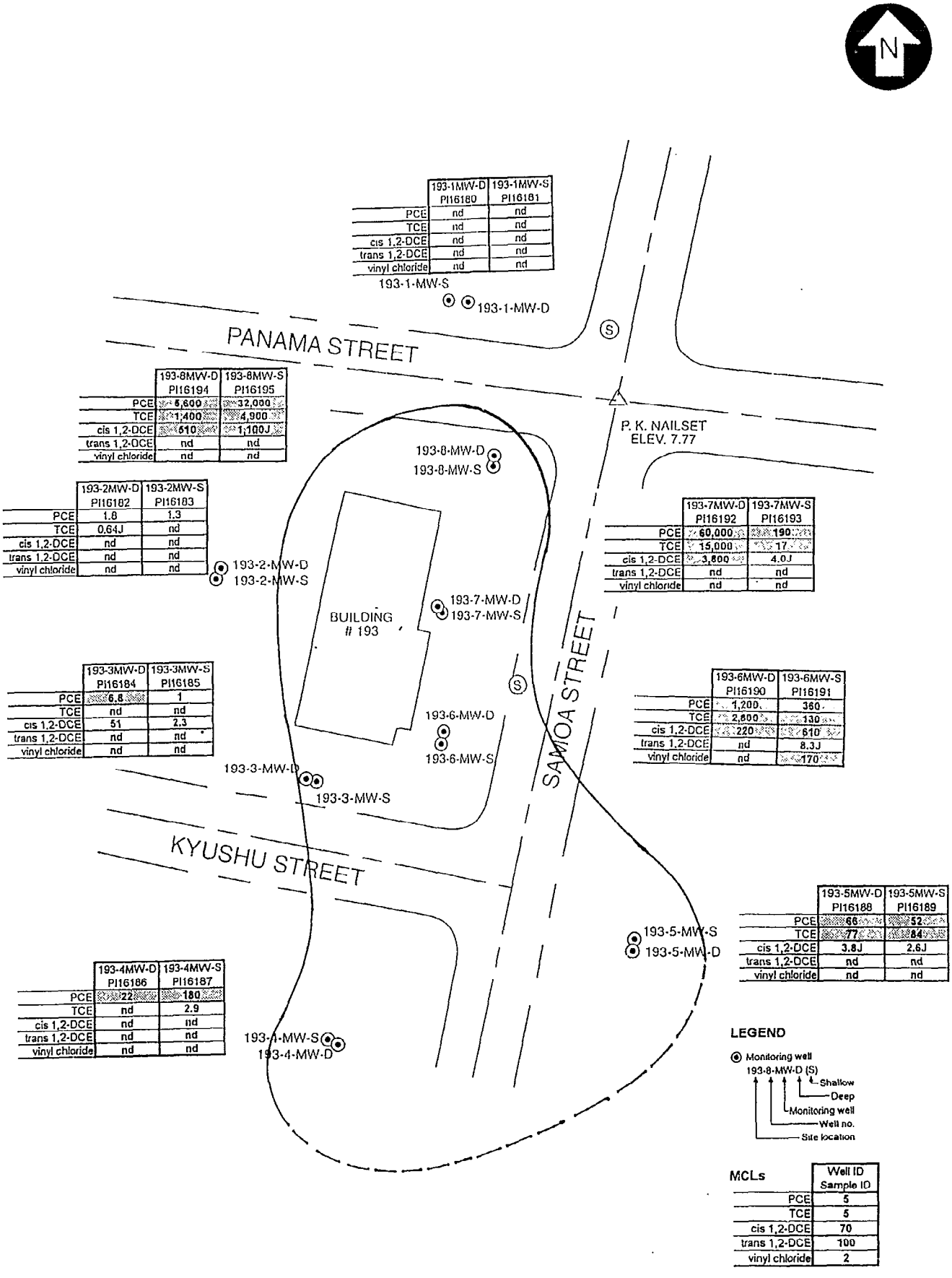

	193-1MW-D PI16180	193-1MW-S PI16181
PCE	nd	nd
TCE	nd	nd
cis 1,2-DCE	nd	nd
trans 1,2-DCE	nd	nd
vinyl chloride	nd	nd

	193-8MW-D PI16194	193-8MW-S PI16195
PCE	5,600	32,000
TCE	1,400	4,900
cis 1,2-DCE	610	1,100J
trans 1,2-DCE	nd	nd
vinyl chloride	nd	nd

	193-2MW-D PI16182	193-2MW-S PI16183
PCE	1.8	1.3
TCE	0.64J	nd
cis 1,2-DCE	nd	nd
trans 1,2-DCE	nd	nd
vinyl chloride	nd	nd

	193-7MW-D PI16192	193-7MW-S PI16193
PCE	60,000	190
TCE	15,000	17
cis 1,2-DCE	3,800	4.0J
trans 1,2-DCE	nd	nd
vinyl chloride	nd	nd

	193-3MW-D PI16184	193-3MW-S PI16185
PCE	6.8	1
TCE	nd	nd
cis 1,2-DCE	51	2.3
trans 1,2-DCE	nd	nd
vinyl chloride	nd	nd

	193-6MW-D PI16190	193-6MW-S PI16191
PCE	1,200	360
TCE	2,800	130
cis 1,2-DCE	220	610
trans 1,2-DCE	nd	8.3J
vinyl chloride	nd	170

	193-5MW-D PI16188	193-5MW-S PI16189
PCE	66	52
TCE	77	84
cis 1,2-DCE	3.8J	2.6J
trans 1,2-DCE	nd	nd
vinyl chloride	nd	nd

	193-4MW-D PI16186	193-4MW-S PI16187
PCE	22	180
TCE	nd	2.9
cis 1,2-DCE	nd	nd
trans 1,2-DCE	nd	nd
vinyl chloride	nd	nd

MCLs	Well ID Sample ID
PCE	5
TCE	5
cis 1,2-DCE	70
trans 1,2-DCE	100
vinyl chloride	2

All detections above MCLs are shaded.

—— > MCLs

Figure 7.
Groundwater Analytical Results (ppb)

Summary Report For
Air Sparging Pilot Test

Dry Cleaner Site
MCRD
Parris Island

Navy RAC Southern Division
Contract No. N62467-93-D-0936

Bechtel Environmental, Inc.
Oak Ridge, Tennessee

Job No. 22567

February 1997

1.0 INTRODUCTION

The Marine Corps Recruit Depot (MCRD), Parris Island, South Carolina, is an active recruit basic training facility. During the summer of 1996, groundwater samples were collected at the Dry Cleaner Facility at Parris Island with direct push technology and analyzed with a field GC. Results of these tests indicated that a plume of PCE, trichloroethene (TCE), and 1,2 dichloroethene (1,2 DCE) contaminated groundwater exists with concentrations exceeding the regulatory limits. Based on this information, Southern Division, Naval Facilities Engineering Command made a decision to conduct an interim removal action to contain the contaminated plume of groundwater.

The objectives of the interim action at this facility are:

- containment of the plume
- treatment of the excessively contaminated groundwater at the center of the plume
- establishment of parameters to monitor natural attenuation at the edges of the plume, if natural attenuation is selected as a final remedy.

Field activities were conducted in June and December of 1996 to determine the extent of the contamination at the site and to establish a well network to monitor plume migration. In addition, an air sparging pilot study was conducted in December 1996 to determine the viability of this technology and to develop operating parameters. This report provides a summary of the air sparging pilot study results, conclusions and recommendations.

2.0 AIR SPARGING PILOT STUDY

The purpose of the this pilot study is to establish the following to be used in the system design / installation:

- Determine if air sparging is a viable option
- Radius of influence of the air sparging well and
- Optimum air injection rate and pressure at the sparging well.

2.1 SYSTEM DESCRIPTION

The air sparging pilot system operated at the Parris Island site consisted of the following components:

- One sparging well and five observation wells (including one monitoring well)
- An air compressor and air filter
- Valves, gages, and flow meters for controlling and monitoring the system
- Pressure transducers, datalogger, and air sampling equipment
- Peristaltic pump for collecting groundwater samples
- Helium tracer gas cylinder and controls

See Figure 1 for details of the air sparging pilot system.

2.1.1 Description of Air Sparging and Observation Wells

The air sparging well used for the pilot study was monitoring well MW-1D. This well was located north of the dry cleaning building, upgradient of the plume of contaminated groundwater in a clean area. This well

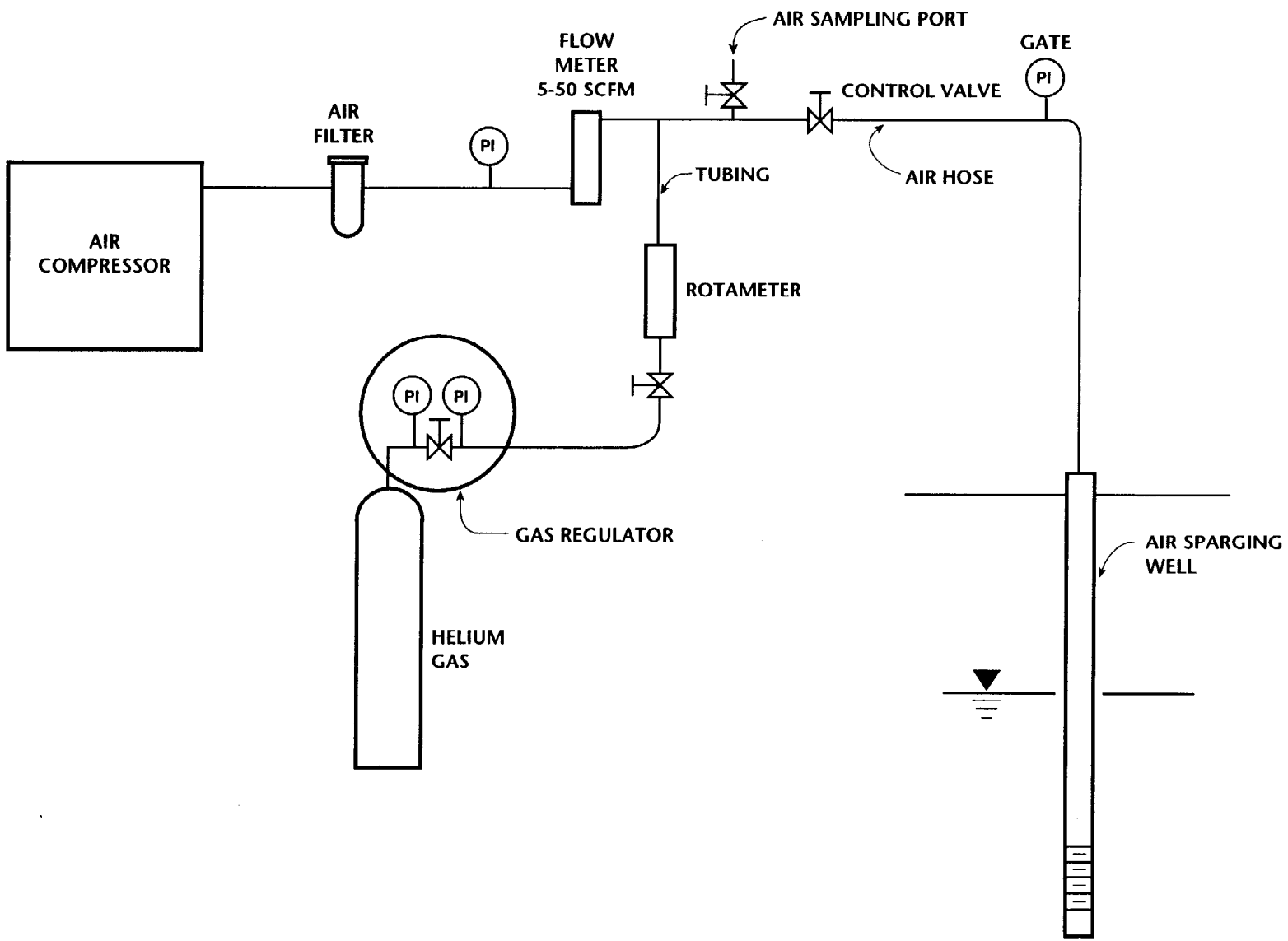

FIGURE 1. AIR SPARGING SYSTEM

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was installed 14 feet deep with a two feet long well screen. Five observation wells were installed to monitor the pilot study. See Figure 2 for the location of the wells. MW-1S was a seven foot deep well installed two feet south of MW-1D. Two well clusters of two wells each were installed at 10 and 20 feet distances from the sparging well. Each well cluster had a shallow deep and well of 7 feet and 14 feet. These wells were constructed as shown on Figure 3.

2.1.2 Air Compressor and Associated Equipment

The air compressor providing the air for the pilot study was capable of generating air flows in the ranges of 5 to 30 scfm with accompanying pressures of 5 to 10 psi. The air flow was monitored by a pressure indicator and a flow meter. The total flow was controlled by a gate valve. The compressed air was filtered to remove particulates and oil prior to injection of air into the sparging well.

2.1.3 Tracer Gas

Helium was used as a tracer gas for this pilot study. Helium was added to the air stream at a 5% concentration. A helium detector was used to monitor for the presence the helium in the monitoring wells.

2.1.4 System Operation

The pilot system was operated three consecutive days at varying air flow rates and pressures. The system was operated about 4 hours each day. Flow rates, pressures, and operation times were adjusted in the field as appropriate.

Three sets of data were collected during the pilot test. The first test was conducted at an air flow rate of 3.0 scfm and the second test was conducted at 1.8 scfm. During the third day a stepped test was performed. The initial air flow rate was set at 2.0 scfm and was run for approximately one hour. Then the air flow rate was stepped up to 3 scfm and operated for one hour. Finally, the air flow rate was increased to 4 scfm and run for an additional one hour. Helium was injected during the first two tests. The following data were collected during the operation.

- Water level changes in the wells were measured and recorded before, during and after system operation. Data was collected using a data-logger and transducers in each well.
- Groundwater samples were collected and analyzed for dissolved oxygen levels. These levels were measured before startup and at regular intervals until after the system was shutdown.
- Helium detections in the wells.

The field monitoring data are presented in Appendix C.

2.1.5 Planned vs Actual Implementation

Some of the planned activities for the pilot study had to be modified to match field conditions. The pilot study was designed with redundant data collection activities, so that the inability to collect some of the planned data would not jeopardize the results. Air pressure changes, oxygen concentration changes and carbon dioxide concentrations changes of the vadose zone were not measured in the observation wells. This data could not be collected because the water table was much higher than anticipated and the top of the well screens had to be set below the water table.

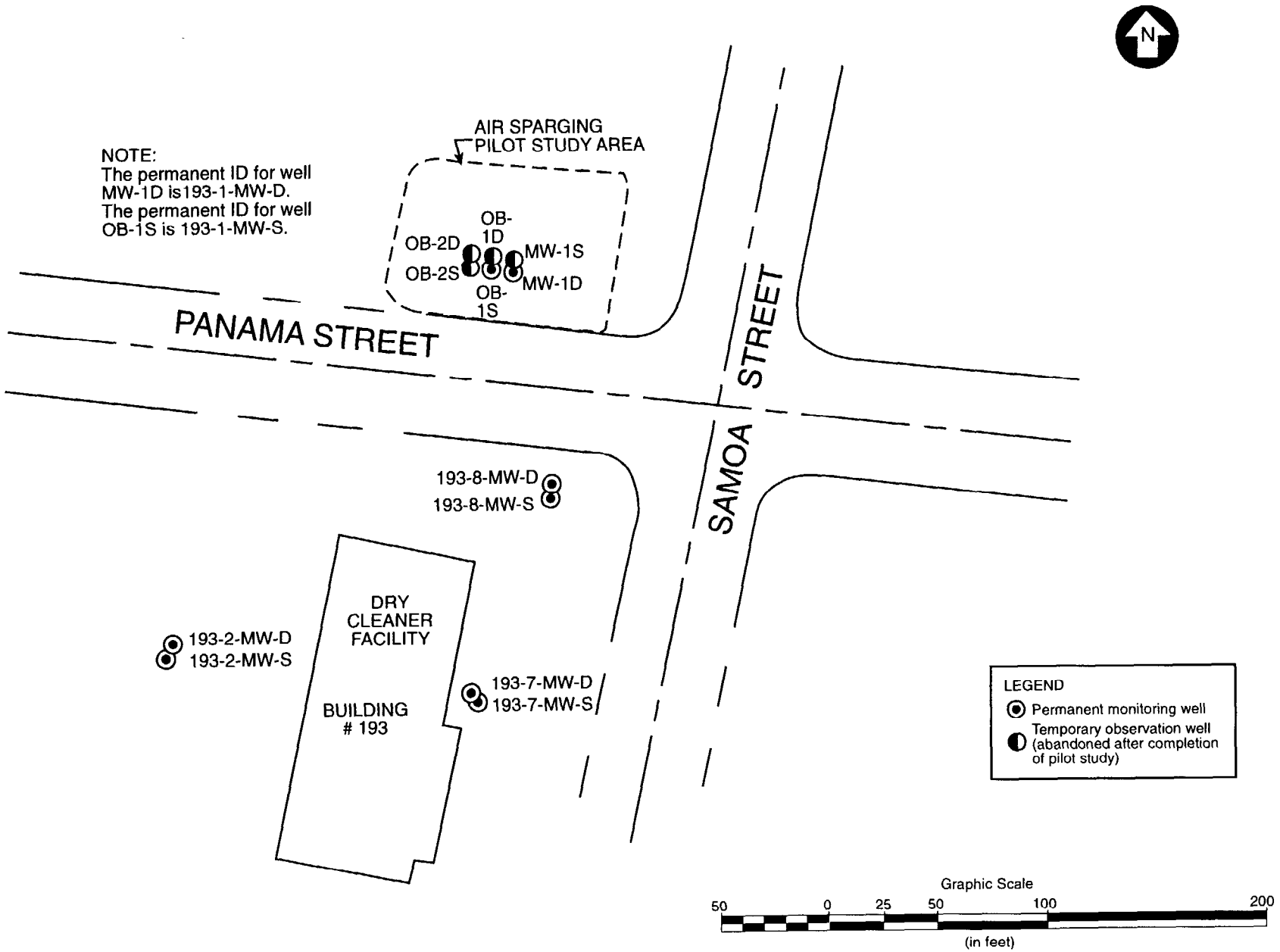

FIGURE 2. AIR SPARGING PILOT STUDY LOCATION MAP

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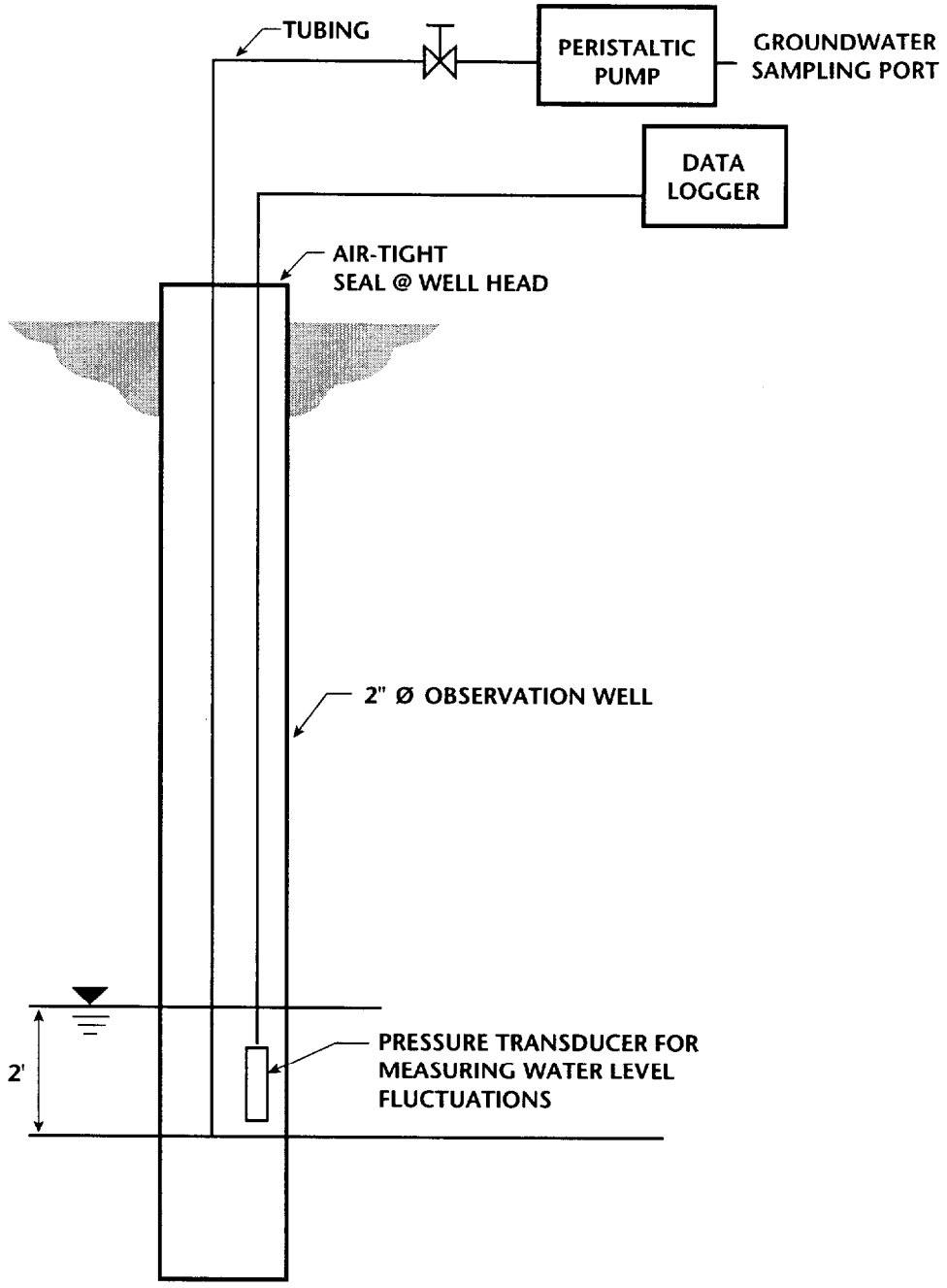

FIGURE 3. AIR SPARGING OBSERVATION WELL MONITORING DETAILS

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The injection rates of air into the sparging well were less than anticipated. Test #1 was run at an initial flow rate of 5 scfm. This injection rate forced groundwater out of observation well OB-1D. Therefore, the rate was reduced to 3 scfm shortly after Test #1 was started.

Water levels were to be monitored in all five observation wells. The data transducer that was in monitoring well OB-1 deep malfunctioned during the pilot study. Therefore, no data was collected in the data logger in this well.

3.0 DATA EVALUATION AND CONCLUSIONS

3.1 WATER LEVEL DATA

Water levels data collected during the pilot test are presented in Appendix A as Tables A1, A2, and A3 and the corresponding Figures A1 through A5 as follows.

Test #	Air Flow Rate scfm	Table #	Figure #
1	3	A1	A1 & A2
2	1.8	A2	A3
3	2, 3, & 4	A3	A4 & A5

Water levels registered in the data logger and the calculated (actual) water levels are presented in the same tables. As seen from the figures, the water levels increased immediately after turning the sparger on, increasing slowly for few more minutes, dropping off slowly after that, and then leveled off until shut down. The water level dropped off immediately as soon as the sparger was shut down and leveling off to reach the normal level. These trends were observed for all flow rates in all wells. Such a trend of immediate raise, leveling off at steady state, and immediate drop was also observed during the third test when the air flow rates were stepped (Figure A5).

Aeration of the water column was observed in OB-1S and OB-1D. Air bubbles were observed in these two wells during air sparging. Bubbles were not observed in OB-2S or OB-2D. However, care should be taken so that air flow rate does not exceed 3 or 4 scfm during full-scale remediation since at high air flow rates, there is the potential of raising the water level above the ground surface.

In general, the increase in water levels ranged from 1 ft to 5 ft depending upon the air flow rate, distance of the observation well, and the depth of the well. The only deep well (for which data logger records were available) registered the highest increase in water level indicating that air sparging was effective even at a distance of 20 ft. This increase in water level in the deep well rather than in shallow well in response to air injection in deep well demonstrates the soil permeability is higher in the lateral direction than in the vertical direction.

3.2 DISSOLVED OXYGEN LEVEL DATA

Dissolved oxygen data were manually collected for air flow rates 3 scfm and 1.8 scfm. Dissolved oxygen data are presented in Appendix B as Tables B1 and B2 and the corresponding charts are presented as Figures B1 and B2.

The air sparging technology does not require increase in dissolved oxygen concentrations during remediation for it to be effective. However, dissolved oxygen levels measured during the pilot test serve as a good indicator of how well the groundwater is being sparged. The oxygen level data in combination with the change in water levels due to sparging will be used to determine design parameters (such as radius of influence) for the sparge wells.

Prior to operation of the pilot system for Test #1, the dissolved oxygen in OB1-S was 3.2 mg/ L. As seen in Figure B2, after air sparging was started, there was a drop in dissolved oxygen in OB1-S followed by a steady increase in the dissolved oxygen level. For OB1-D, the dissolved oxygen was as low as 0.75 mg/L and steadily increased to a high of 3.9 mg/L. The data also indicates that the ***rate of increase in dissolved oxygen*** at OB1-D is higher than that at OB1-S for the obvious reason that air sparging is done at 14 ft in the deep well. Similar higher ***rate of increase in dissolved oxygen*** was observed for the flow rate at 1.8 scfm in Test #2.

Both the farthest observation wells (OB2-S and OB2-D) registered low dissolved oxygen levels prior to system operation. While there was a slight increase in dissolved oxygen in OB2-S, there was a drop in dissolved oxygen levels in OB2-D. The highest ***increase in water level*** as registered in OB2-D, is not reflected in dissolved oxygen. During air sparging, the injected air tends to travel at approximately 45° to the horizontal as documented by several researchers. For this reason, the air sparging might not have sufficiently oxygenated the groundwater in the farthest wells, especially Well OB-2D.

3.3 HELIUM DETECTIONS

Helium was detected in all the wells. These detections were only used as an indicator of where the sparged air was going. The detections were much higher at OB-1S and OB-1D than they were at OB-2S and OB-2D.

3.4 CONCLUSIONS AND RECOMMENDATIONS

- The pilot test conducted at the site provided adequate information to support the design of an air sparging system.
- The air sparging was effective through the layer of finer material at the 7 foot depth.
- Air flow rates of 2 to 3 scfm should be adequate. The system should be designed for a capacity of 5 scfm per well. Air flow rate can be adjusted as required during system startup.
- It is observed that air sparging affected the water table levels even at a distance of 20 ft. However, dissolved oxygen levels in wells at 20 ft distance from the sparge well indicate that sufficient oxygenation does not occur in those wells.
- Considering the increase in water levels and dissolved oxygen data, a radius of influence of 15 ft is recommended.

APPENDIX A

Table A1

AIR SPARGING PILOT TEST, WATER LEVELS

DRY CLEANER SITE, PARRIS ISLAND, SC

TEST #1/ Air Flow Rate = 3 scfm

Observed Water Levels in the wells						Actual Water Levels in the Wells				
Time	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Time	MW-1S	OB-1S	OB-2S	OB-2D
0	-4.092	6.475	10.91	6.993	5.591	0	0	0	0	0
10	-4.092	6.477	10.905	6.996	5.587	10	0	0.002	0.003	-0.004
20	-4.104	6.488	10.905	6.989	5.589	20	0.012	0.013	-0.004	-0.002
30	-4.111	6.501	10.91	6.993	5.591	30	0.019	0.026	0	0
40	-4.117	6.512	10.907	6.805	5.587	40	0.025	0.037	-0.188	-0.004
50	-4.063	6.341	10.901	6.875	5.578	50	-0.029	-0.134	-0.118	-0.013
60	-4.117	6.215	10.77	6.893	5.58	60	0.025	-0.26	-0.1	-0.011
70	-3.303	6.398	10.892	6.891	5.571	70	-0.789	-0.077	-0.102	-0.02
80	-3.237	6.263	10.875	6.858	5.484	80	-0.855	-0.212	-0.135	-0.107
90	-3.278	6.414	10.901	6.727	5.573	90	-0.814	-0.061	-0.266	-0.018
100	-3.373	6.444	10.901	6.847	5.576	100	-0.719	-0.031	-0.146	-0.015
110	-3.486	6.457	10.91	6.882	5.589	110	-0.606	-0.018	-0.111	-0.002
120	-3.578	6.466	10.916	6.897	5.598	120	-0.514	-0.009	-0.096	0.007
130	-3.666	6.471	10.923	6.906	5.606	130	-0.426	-0.004	-0.087	0.015
140	-3.726	6.475	10.92	6.91	5.606	140	-0.366	0	-0.083	0.015
150	-3.786	6.479	10.925	6.915	5.606	150	-0.306	0.004	-0.078	0.015
160	-3.824	6.481	10.925	6.915	5.608	160	-0.268	0.006	-0.078	0.017
170	-3.855	6.484	10.927	6.917	5.606	170	-0.237	0.009	-0.076	0.015
180	-6.945	6.915	13.808	7.162	6.65	180	2.853	0.44	0.169	1.059
190	-7.121	7.606	13.716	7.532	7.21	190	3.029	1.131	0.539	1.619
200	-7.371	7.56	13.804	7.656	7.369	200	3.279	1.085	0.663	1.778
210	-7.491	7.799	13.506	7.672	7.365	210	3.399	1.324	0.679	1.774
220	-7.431	7.998	13.465	8.063	7.472	220	3.339	1.523	1.07	1.881
230	-7.434	7.947	13.303	8.149	7.407	230	3.342	1.472	1.156	1.816
240	-7.402	7.932	13.246	8.044	7.35	240	3.31	1.457	1.051	1.759
250	-7.399	7.759	13.235	8.192	7.354	250	3.307	1.284	1.199	1.763
260	-7.402	7.785	13.165	8.162	7.332	260	3.31	1.31	1.169	1.741
270	-7.061	7.831	13.406	8.105	7.31	270	2.969	1.356	1.112	1.719
280	-7.099	7.785	13.229	8.07	7.267	280	3.007	1.31	1.077	1.676
290	-6.506	7.488	12.321	7.965	6.742	290	2.414	1.013	0.972	1.151
300	-6.468	7.459	12.203	7.663	6.431	300	2.376	0.984	0.67	0.84
310	-6.345	7.389	11.979	7.735	6.459	310	2.253	0.914	0.742	0.868
320	-6.383	7.247	12.052	7.735	6.453	320	2.291	0.772	0.742	0.862
330	-6.405	7.258	12.043	7.733	6.451	330	2.313	0.783	0.74	0.86
340	-6.427	7.26	12.043	7.722	6.44	340	2.335	0.785	0.729	0.849
350	-6.427	7.271	12.012	7.715	6.418	350	2.335	0.796	0.722	0.827
360	-6.417	7.28	11.99	7.624	6.398	360	2.325	0.805	0.631	0.807
370	-6.402	7.114	11.798	7.604	6.328	370	2.31	0.639	0.611	0.737
380	-6.405	7.133	11.894	7.643	6.333	380	2.313	0.658	0.65	0.742
390	-6.411	7.129	11.881	7.648	6.319	390	2.319	0.654	0.655	0.728
400	-6.417	7.147	11.868	7.641	6.308	400	2.325	0.672	0.648	0.717
410	-6.424	7.131	11.868	7.195	6.225	410	2.332	0.656	0.202	0.634
420	-6.433	7.022	11.859	7.553	6.278	420	2.341	0.547	0.56	0.687
430	-4.423	6.304	8.779	7.219	5.103	430	0.331	-0.171	0.226	-0.488
440	-4.032	6.005	7.674	6.821	4.012	440	-0.06	-0.47	-0.172	-1.579
450	-3.972	6.035	8.243	6.783	4.128	450	-0.12	-0.44	-0.21	-1.463

Due to mechanical/ electrical problems associated with the transducer data log, OB-1D data is not presented in this table.

Figure A1
Air Sparging Pilot Test Well Data, Parris, Island, SC
Test #1 / Air Flow Rate = 3 scfm

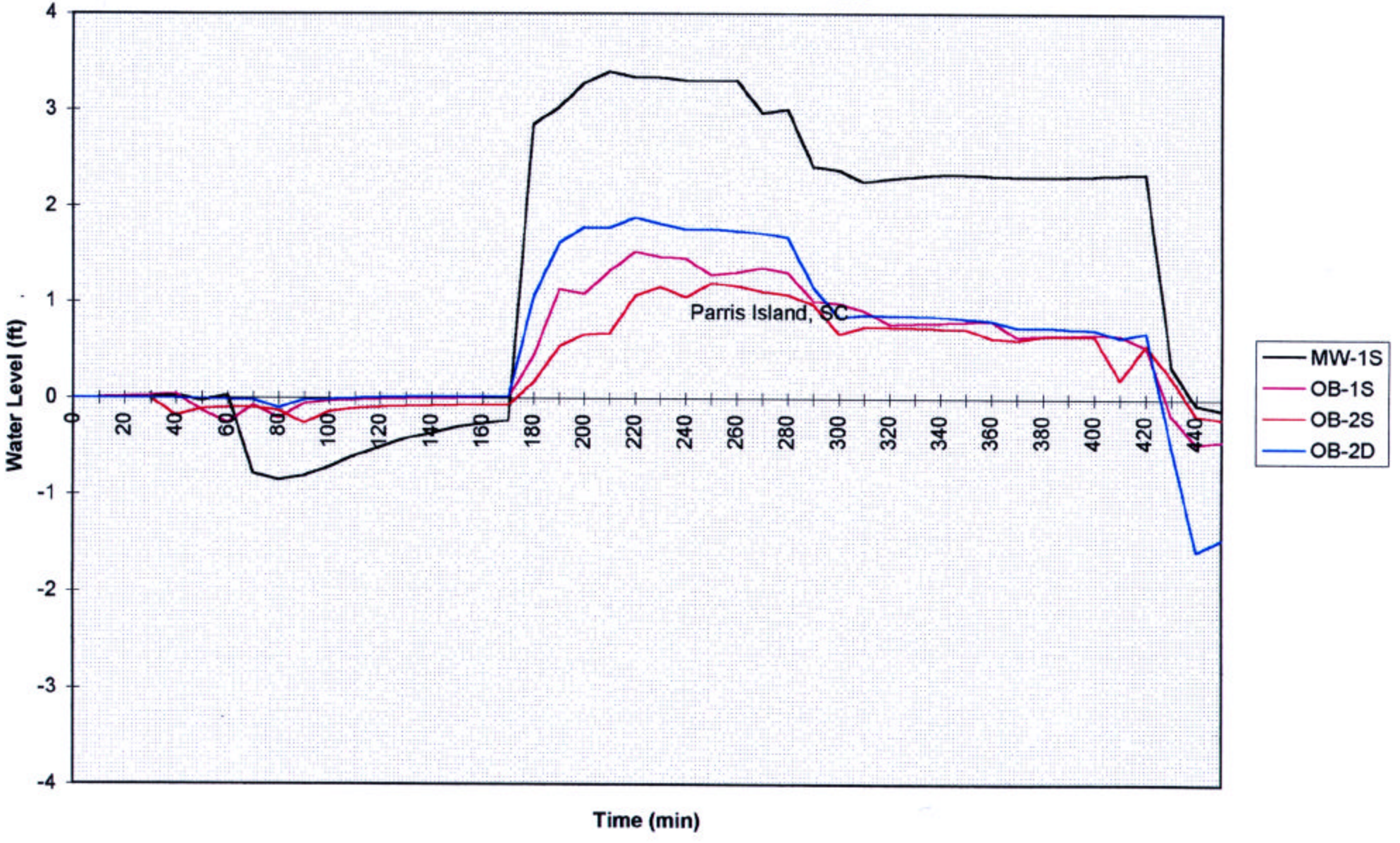


Figure A2
Air Sparging Pilot Test Well Data, Parris, Island, SC
Test #1 - Air Flow Rate = 3 scfm

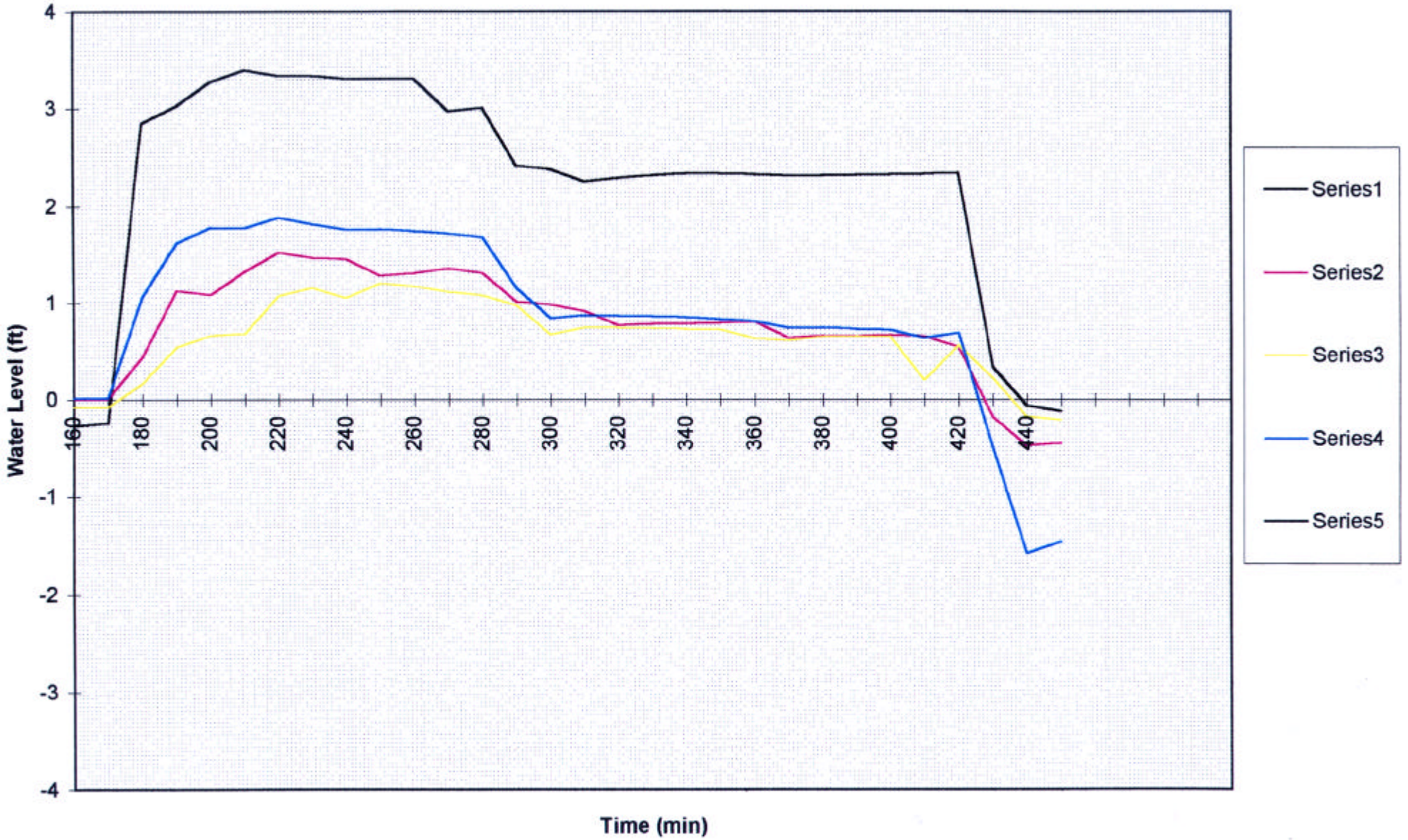


Table A2

Air Spaging Pilot Test Data

Parris Island, SC

Test #2 / Air Flow Rate = 1.8 scfm

Observed Water Levels in the Wells						Actual Water Levels in the Wells				
Time min	unit 1	unit 2	unit 3	unit 4	unit 5	Time min	MW-1S	OB-1S	OB-2S	OB-2D
0	-6.143	-5.674	-15.671	-6.658	-3.686	0	0	0	0	0
5	-6.744	-5.553	-15.691	-6.653	-3.681	5	0.601	-0.121	-0.005	-0.005
10	-6.749	-5.674	-15.616	-6.275	-3.625	10	0.606	0	-0.383	-0.061
15	-5.856	-5.709	-15.646	-6.421	-3.353	15	-0.287	0.035	-0.237	-0.333
20	-6.007	-5.735	-15.686	-6.477	-3.61	20	-0.136	0.061	-0.181	-0.076
25	-7.96	-6.885	-21	-6.714	-5.124	25	1.817	1.211	0.056	1.438
30	-8.51	-7.678	-22.106	-7.249	-6.37	30	2.367	2.004	0.591	2.684
35	-8.677	-7.673	-21.868	-7.698	-6.769	35	2.534	1.999	1.04	3.083
40	-8.778	-8.233	-21.727	-7.985	-6.88	40	2.635	2.559	1.327	3.194
45	-8.818	-7.799	-21.47	-8.223	-6.89	45	2.675	2.125	1.565	3.204
50	-8.828	-8.359	-21.238	-8.389	-6.869	50	2.685	2.685	1.731	3.183
55	-8.843	-8.187	-20.874	-8.551	-6.809	55	2.7	2.513	1.893	3.123
60	-8.843	-8.202	-20.708	-7.879	-6.713	60	2.7	2.528	1.221	3.027
65	-8.838	-8.152	-20.46	-8.021	-6.536	65	2.695	2.478	1.363	2.85
70	-8.833	-8.117	-20.309	-8.096	-6.587	70	2.69	2.443	1.438	2.901
75	-8.833	-8.091	-20.132	-8.107	-6.536	75	2.69	2.417	1.449	2.85
80	-8.828	-7.496	-19.941	-8.152	-6.446	80	2.685	1.822	1.494	2.76
85	-8.833	-7.9	-19.754	-7.461	-6.33	85	2.69	2.226	0.803	2.644
90	-8.828	-7.905	-19.628	-7.622	-6.123	90	2.685	2.231	0.964	2.437
95	-8.838	-7.874	-19.522	-7.673	-6.183	95	2.695	2.2	1.015	2.497
100	-8.838	-7.819	-19.396	-7.718	-6.138	100	2.695	2.145	1.06	2.452
105	-8.838	-7.789	-19.29	-7.758	-6.082	105	2.695	2.115	1.1	2.396
110	-8.858	-7.647	-18.957	-7.819	-6.022	110	2.715	1.973	1.161	2.336
115	-8.869	-7.642	-19.062	-7.304	-5.936	115	2.726	1.968	0.646	2.25
120	-8.874	-7.662	-18.967	-7.96	-5.336	120	2.731	1.988	1.302	1.65
125	-8.869	-7.678	-18.876	-8.036	-5.785	125	2.726	2.004	1.378	2.099
130	-8.858	-7.627	-18.719	-8.026	-5.759	130	2.715	1.953	1.368	2.073
135	-8.858	-7.587	-18.618	-8.021	-5.699	135	2.715	1.913	1.363	2.013
140	-8.848	-7.128	-18.482	-8.086	-5.613	140	2.705	1.454	1.428	1.927
145	-8.848	-7.324	-18.427	-7.309	-4.599	145	2.705	1.65	0.651	0.913
150	-8.848	-7.345	-18.346	-7.334	-5.346	150	2.705	1.671	0.676	1.66
155	-8.848	-7.35	-18.275	-7.38	-5.457	155	2.705	1.676	0.722	1.771
160	-8.848	-7.329	-18.215	-7.451	-5.426	160	2.705	1.655	0.793	1.74
165	-8.843	-7.299	-18.154	-7.491	-5.391	165	2.7	1.625	0.833	1.705
170	-8.838	-7.294	-18.089	-7.551	-5.346	170	2.695	1.62	0.893	1.66
175	-8.838	-7.128	-17.882	-7.587	-5.295	175	2.695	1.454	0.929	1.609
180	-8.838	-7.198	-17.952	-7.395	-4.503	180	2.695	1.524	0.737	0.817
185	-8.843	-7.203	-17.917	-7.466	-5.169	185	2.7	1.529	0.808	1.483
190	-8.838	-7.254	-17.877	-7.496	-5.189	190	2.695	1.58	0.838	1.503
195	-8.838	-7.188	-17.841	-7.562	-5.174	195	2.695	1.514	0.904	1.488
200	-8.843	-7.218	-17.776	-7.597	-5.144	200	2.7	1.544	0.939	1.458
205	-8.843	-6.724	-17.725	-7.632	-5.149	205	2.7	1.05	0.974	1.463
210	-8.843	-7.027	-17.639	-7.657	-5.068	210	2.7	1.353	0.999	1.382
215	-8.843	-7.062	-17.614	-7.38	-4.564	215	2.7	1.388	0.722	0.878
220	-8.838	-7.128	-17.604	-7.43	-4.972	220	2.695	1.454	0.772	1.286
225	-8.828	-7.148	-17.569	-7.481	-4.998	225	2.685	1.474	0.823	1.312
230	-8.848	-6.26	-17.543	-7.526	-5.023	230	2.705	0.586	0.868	1.337
235	-8.858	-6.87	-17.463	-7.122	-4.427	235	2.715	1.196	0.464	0.741
240	-8.869	-6.996	-17.443	-7.203	-4.811	240	2.726	1.322	0.545	1.125
245	-8.864	-7.017	-17.422	-7.319	-4.902	245	2.721	1.343	0.661	1.216
250	-8.864	-7.037	-17.407	-7.365	-4.892	250	2.721	1.363	0.707	1.206
255	-8.874	-7.052	-17.382	-7.425	-4.887	255	2.731	1.378	0.767	1.201
260	-8.879	-6.603	-17.367	-7.486	-4.866	260	2.736	0.929	0.828	1.18
265	-8.889	-6.774	-17.276	-6.905	-3.761	265	2.746	1.1	0.247	0.075
270	-8.081	-5.851	-13.865	-6.991	-3.56	270	1.938	0.177	0.333	-0.126
275	-7.264	-4.589	-8.944	-6.936	-1.561	275	1.121	-1.085	0.278	-2.125
280	-7.032	-4.115	-7.43	-6.583	-0.012	280	0.889	-1.559	-0.075	-3.674
285	-6.875	-4.029	-7.264	-6.532	-0.007	285	0.732	-1.645	-0.126	-3.679
290	-6.784	-4.039	-7.289	-5.715	-0.038	290	0.641	-1.635	-0.943	-3.648
295	-6.714	-4.085	-7.385	-5.538	-0.033	295	0.571	-1.589	-1.12	-3.653
300	-6.668	-4.155	-8.107	-5.533	-0.038	300	0.525	-1.519	-1.125	-3.648
305	-6.648	-4.216	-8.773	-5.533	-0.038	305	0.505	-1.458	-1.125	-3.648
310	-6.633	-4.276	-9.383	-4.907	-0.038	310	0.49	-1.398	-1.751	-3.648
315	-6.623	-4.342	-9.959	-4.927	-0.108	315	0.48	-1.332	-1.731	-3.578
320	-6.613	-4.418	-10.494	-4.927	-0.361	320	0.47	-1.256	-1.731	-3.325
325	-6.608	-4.488	-11.003	-4.937	-0.613	325	0.465	-1.186	-1.721	-3.073

Due to mechanical/ electronic problem associated with the transducer data log, OB1-D is not presented in this table and the chart.

Figure A3
Air Sparging Pilot Test Well Data, Parris, Island, SC
Test #2 - Air Flow Rate = 1.8 scfm

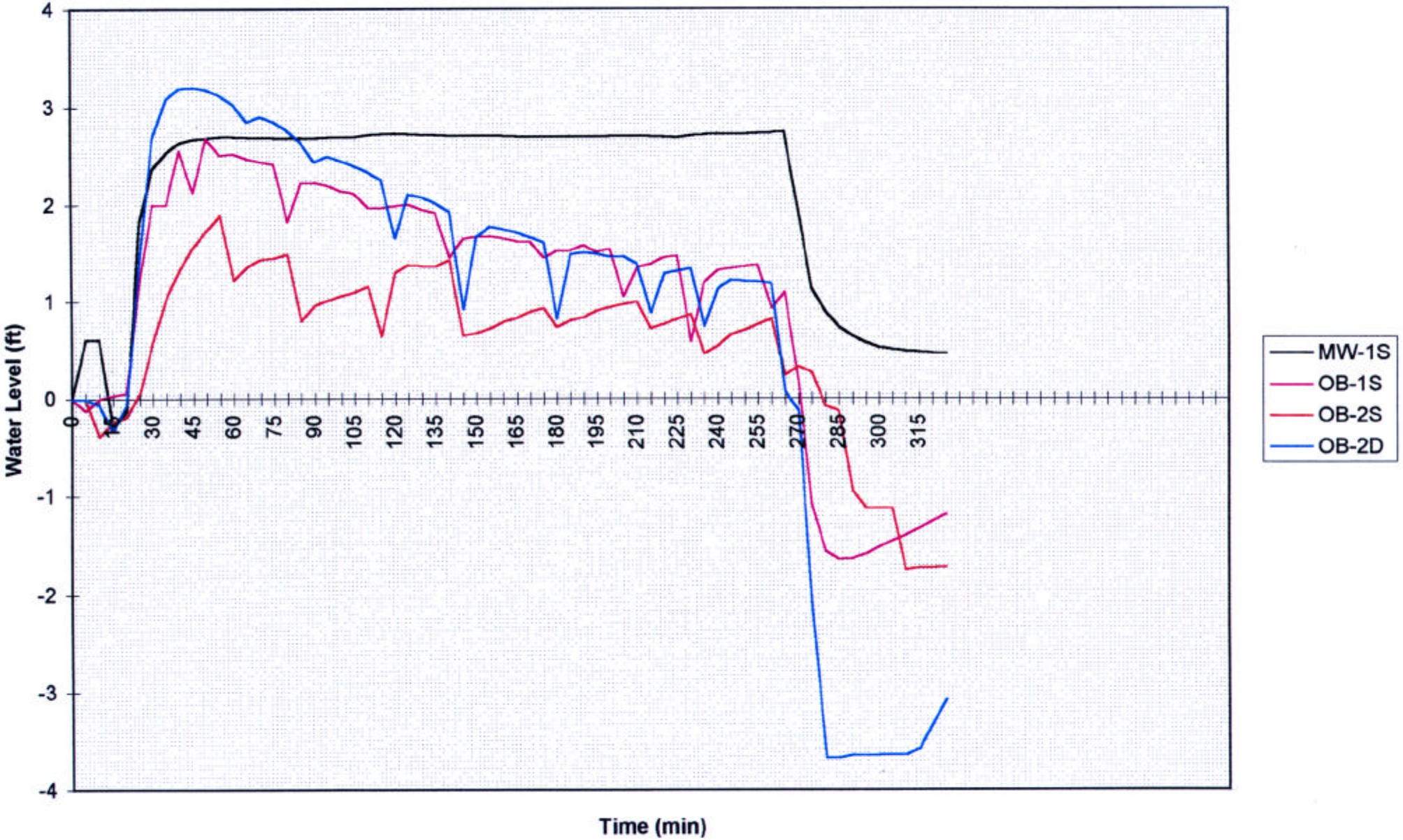


Table A3

AIR SPARGING PILOT TEST, WATER LEVELS

DRY CLEANER SITE, PARRIS ISLAND, SC

TEST #3/ Air Flow Rate = 2, 3, &4 scfms (As Noted)

	Observed Water Levels in the Wells								Actual Water Levels in the Wells			
Time min	Input 1	Input 2	Input 3	Input 4	Input 5	Air Flow scfm	Time min	MW-1S	OB-1S	OB-2S	OB-2D
0	-5.553	-6.154	*-15.641*	-6.497	-3.61	2	0	0	0	0	0
5	-5.568	-6.159	*-15.646*	-6.497	-3.63	2	5	0.015	0.005	0	0.02
10	-5.583	-6.159	*-15.646*	-6.497	-3.63	2	10	0.03	0.005	0	0.02
15	-6.022	-6.477	*-18.598*	-6.532	-4.089	2	15	0.469	0.323	0.035	0.479
20	-6.633	-7.92	*-21.899*	-6.749	-5.971	2	20	1.08	1.766	0.252	2.361
25	-6.951	-8.213	*0.053*	-6.956	-6.723	2	25	1.398	2.059	0.459	3.113
30	-6.991	-8.52	*0.179*	-7.067	-6.996	2	30	1.438	2.366	0.57	3.386
35	-6.996	-8.641	*0.189*	-7.223	-7.056	2	35	1.443	2.487	0.726	3.446
40	-7.006	-8.626	*0.113*	-7.385	-7.036	2	40	1.453	2.472	0.888	3.426
45	-7.022	-8.702	*0.088*	-7.562	-6.991	2	45	1.469	2.548	1.065	3.381
50	-7.032	-8.727	*0.083*	-7.869	-6.945	2	50	1.479	2.573	1.372	3.335
55	-7.042	-8.687	*0.078*	-8.061	-6.895	3	55	1.489	2.533	1.564	3.285
60	-7.052	-8.742	*0.078*	-8.157	-6.824	3	60	1.499	2.588	1.66	3.214
65	-7.057	-8.707	*0.078*	-8.223	-6.753	3	65	1.504	2.553	1.726	3.143
70	-7.067	-8.571	*0.068*	-8.228	-6.567	3	70	1.514	2.417	1.731	2.957
75	-7.072	-8.48	*0.068*	-8.218	-6.39	3	75	1.519	2.326	1.721	2.78
80	-7.087	-8.52	*0.063*	-8.243	-6.365	3	80	1.534	2.366	1.746	2.755
85	-7.339	-8.853	*0.037*	-8.308	-7.132	3	85	1.786	2.699	1.811	3.522
90	-7.44	-8.919	*0.012*	-8.566	-7.359	3	90	1.887	2.765	2.069	3.749
95	-7.496	-8.985	*-0.042*	-8.788	-7.47	3	95	1.943	2.831	2.291	3.86
100	-7.521	-8.647	*-0.204*	-8.904	-7.47	3	100	1.968	2.493	2.407	3.86
105	-7.541	-8.662	*-0.38*	-9.035	-7.399	3	105	1.988	2.508	2.538	3.789
110	-7.556	-8.692	*-0.481*	-9.171	-7.339	3	110	2.003	2.538	2.674	3.729
115	-7.562	-8.647	*-0.537*	-9.368	-7.273	3	115	2.009	2.493	2.871	3.663
120	-7.567	-8.641	*-0.567*	-9.504	-7.223	3	120	2.014	2.487	3.007	3.613
125	-7.577	-8.611	*-0.491*	-9.479	-7.203	3	125	2.024	2.457	2.982	3.593
130	-7.592	-8.53	*-0.507*	-9.424	-6.991	4	130	2.039	2.376	2.927	3.381
135	-7.607	-8.53	*-0.507*	-9.398	-6.986	4	135	2.054	2.376	2.901	3.376
140	-7.819	-9.02	*-0.517*	-9.575	-7.778	4	140	2.266	2.866	3.078	4.168
145	-7.925	-9.212	*-0.426*	-9.923	-8.297	4	145	2.372	3.058	3.426	4.687
150	-7.99	-9.287	*-0.436*	-10.166	-8.454	4	150	2.437	3.133	3.669	4.844
155	-7.996	-9.192	*-0.446*	-10.115	-8.197	4	155	2.443	3.038	3.618	4.587
160	-8.006	-9.065	*-0.466*	-10.176	-8.186	4	160	2.453	2.911	3.679	4.576
165	-8.021	-9.086	*-0.486*	-10.065	-7.929	4	165	2.468	2.932	3.568	4.319
170	-8.026	-9.081	*-0.507*	-10.085	-8.202	4	170	2.473	2.927	3.588	4.592
175	-8.046	-9.086	*-0.491*	-10.166	-8.252	4	175	2.493	2.932	3.669	4.642
180	-8.061	-9.055	*-0.496*	-10.166	-8.222	4	180	2.508	2.901	3.669	4.612
185	-8.081	-9.04	*-0.456*	-10.155	-8.171	4	185	2.528	2.886	3.658	4.561
190	-8.096	-9.045	*-0.542*	-10.135	-8.171	System Shut-	190	2.543	2.891	3.638	4.561
195	-8.102	-9.01	*-0.512*	-10.191	-8.232	down	195	2.549	2.856	3.694	4.622
200	-7.657	-6.89	*-0.446*	-9.06	-5.346		200	2.104	0.736	2.563	1.736
205	-6.704	-5.588	*-0.219*	-7.143	-2.071		205	1.151	-0.566	0.646	-1.539
210	-6.663	-5.038	*0.123*	-6.688	-0.285		210	1.11	-1.116	0.191	-3.325
215	-6.658	-4.741	*0.477*	-6.694	-0.063		215	1.105	-1.413	0.197	-3.547
220	-6.663	-4.544	*0.048*	-6.694	-0.063		220	1.11	-1.61	0.197	-3.547
225	-6.678	-4.392	*0.048*	-6.032	-0.058		225	1.125	-1.762	-0.465	-3.552
230	-6.688	-4.296	*0.048*	-5.442	-0.058		230	1.135	-1.858	-1.055	-3.552
235	-6.709	-4.271	*0.053*	-5.432	-0.058		235	1.156	-1.883	-1.065	-3.552
240	-6.724	-4.276	*0.058*	-4.746	-0.058		240	1.171	-1.878	-1.751	-3.552
245	-6.734	-4.296	*0.053*	-4.488	-0.058		245	1.181	-1.858	-2.009	-3.552
250	-6.744	-4.307	*0.058*	-4.508	-0.058		250	1.191	-1.847	-1.989	-3.552
255	-6.759	-4.322	*0.063*	-4.534	-0.053		255	1.206	-1.832	-1.963	-3.557
260	-6.774	-4.367	*0.058*	-4.559	-0.058		260	1.221	-1.787	-1.938	-3.552
265	-6.779	-4.418	*0.063*	-4.579	-0.053		265	1.226	-1.736	-1.918	-3.557
270	-6.789	-4.473	*0.058*	-3.953	-0.27		270	1.236	-1.681	-2.544	-3.34
275	-6.794	-4.539	*0.058*	-3.984	-0.477		275	1.241	-1.615	-2.513	-3.133

Due to mechanical/ electronic problem associated with the transducer data log, OB1-D is not presented in this table and the chart.

Figure A4
Air Sparging Pilot Test Well Data, Parris, Island, SC
Test #3- Air Flow Rate = As indicated

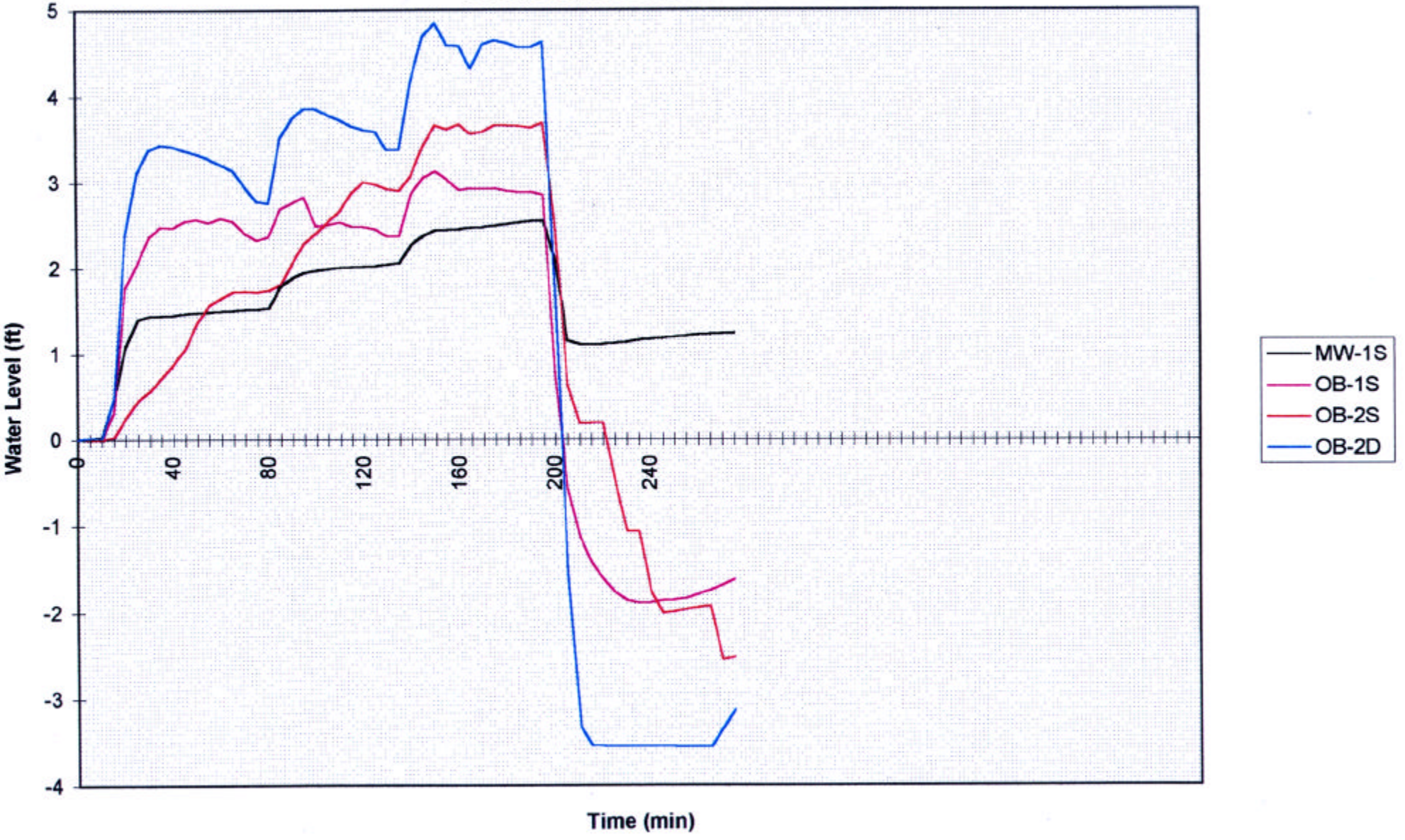
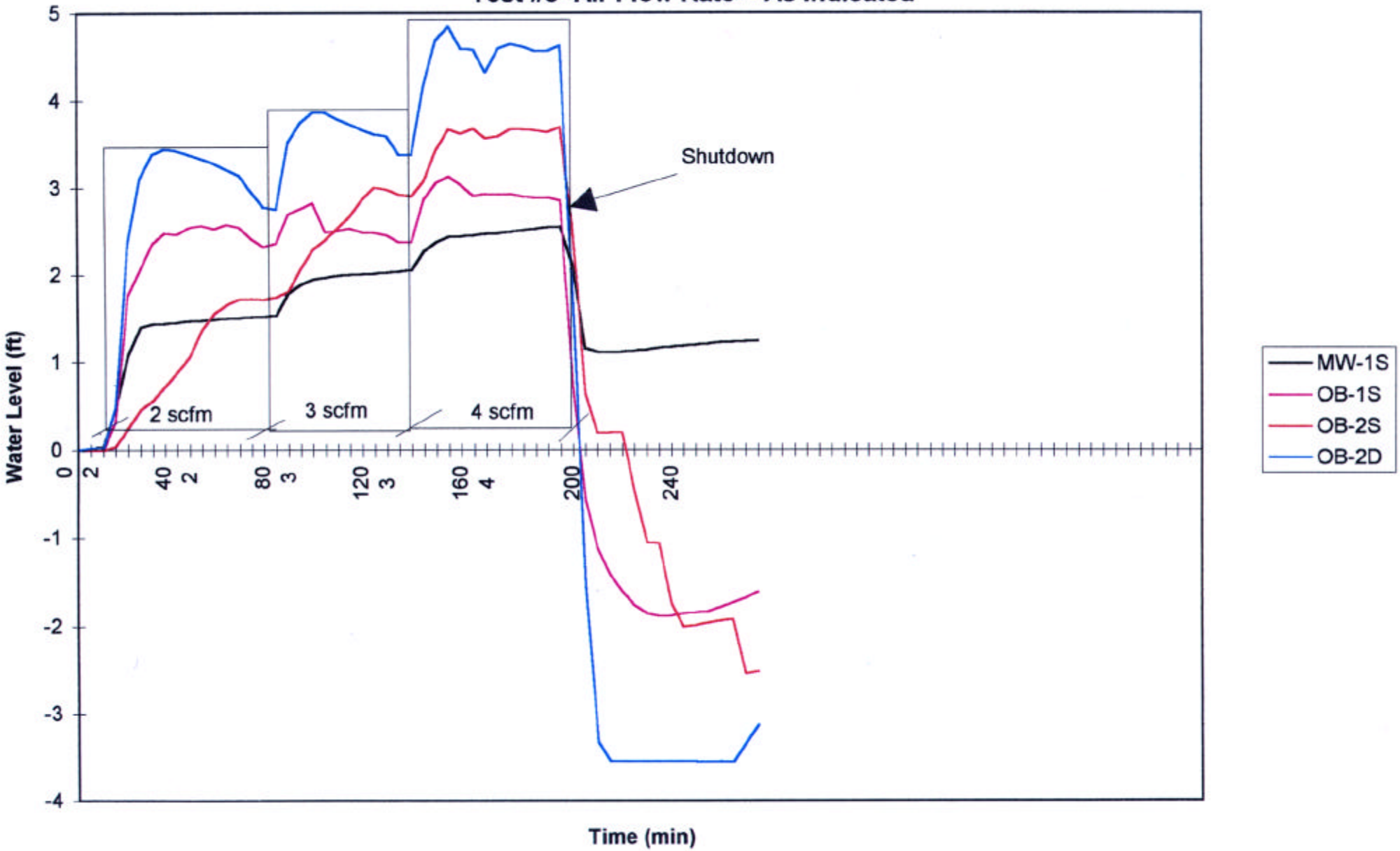


Figure A5
Air Sparging Pilot Test Well Data, Parris, Island, SC
Test #3- Air Flow Rate = As indicated



APPENDIX B

Table B1

Air Sparging Pilot Test

Parris Island, SC

Dissolved Oxygen Levels mg/L

Date: December 13,1996 | Test #1 | Airflow Rate 3 scfm

Time hrs	Time min	OB1-S	OB1-D	OB2-S	OB1-D
11:00	0				
11:05	5		0.75		
11:10	10				0.95
11:15	15	3.20			
11:20	20				
11:25	25			1.09	
11:30	30				
11:35	35				
11:40	40				
11:45	45				
11:50	50				
11:55	55				
12:00	60				
12:05	65				
12:10	70				
12:15	75				
12:20	80				
12:25	85				
12:30	90				
12:35	95				
12:40	100				
12:45	105				
12:50	110				
12:55	115				
13:00	120				
13:05	125				
13:10	130		1.00		
13:15	135				
13:20	140	2.45		0.66	
13:25	145				1.15
13:30	150				
13:35	155				
13:40	160				
13:45	165				
13:50	170				
13:55	175				1.50
14:00	180			0.22	
14:05	185				
14:10	190				
14:15	195		1.32		
14:20	200				
14:25	205				
14:30	210				
14:35	215				
14:40	220				
14:45	225				
14:50	230				
14:55	235			0.3	
15:00	240				
15:05	245	2.35			0.88
15:10	250				
15:15	255				
15:20	260				
15:25	265				
15:30	270				
15:35	275				
15:40	280				
15:45	285				
15:50	290				
15:55	295			0.75	
16:00	300				0.8
16:05	305	3.50			
16:10	310				
16:15	315		1.58		
16:20	320				
16:25	325				
16:30	330				
16:35	335				
16:40	340				
16:45	345				
16:50	350			1.00	
16:55	355	4.15			1.10
17:00	360		3.90		

Figure B1
Air Sparging Pilot Test, Parris Island, SC
Test #1; Air Flow Rate 3 scfm

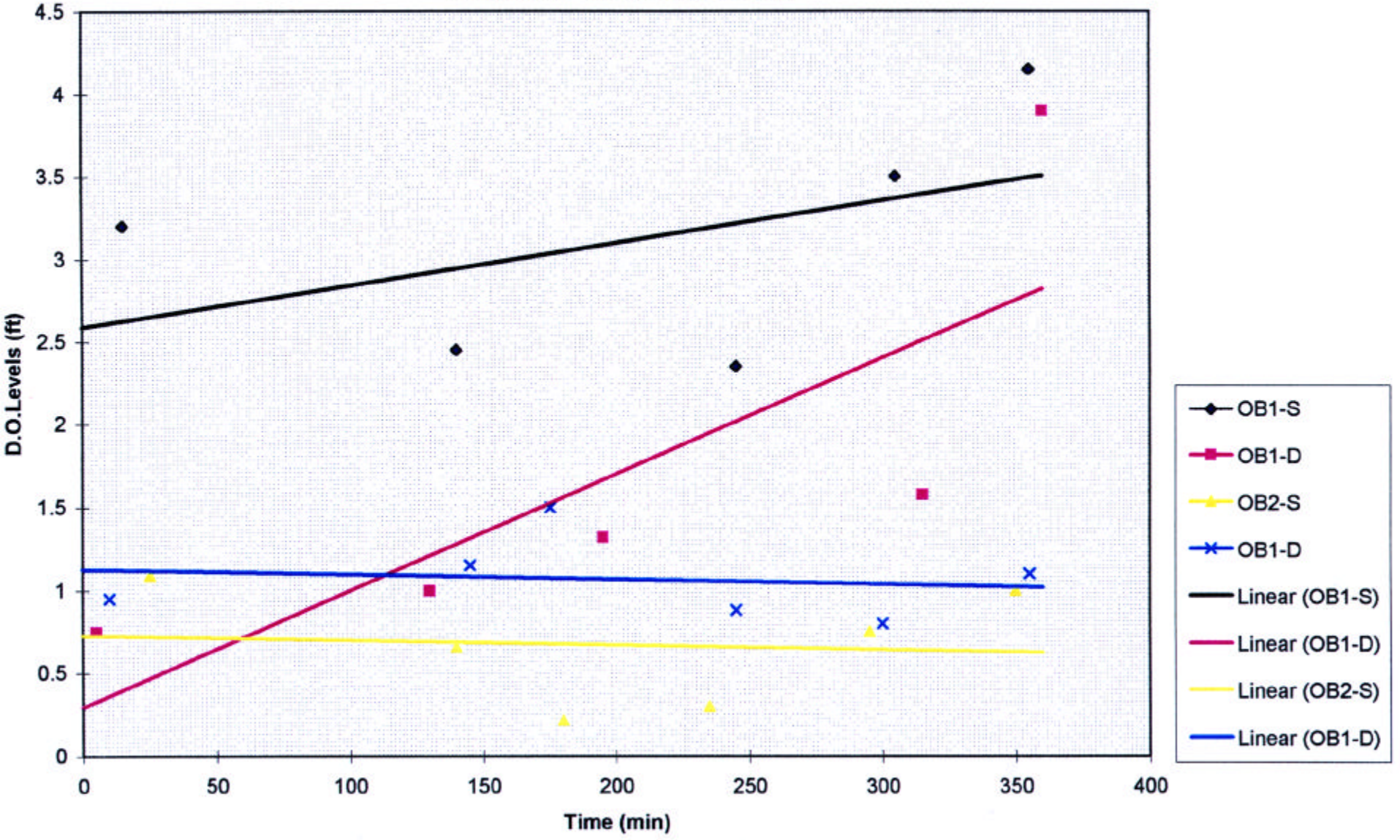


Table B2

Air Sparging Pilot Test

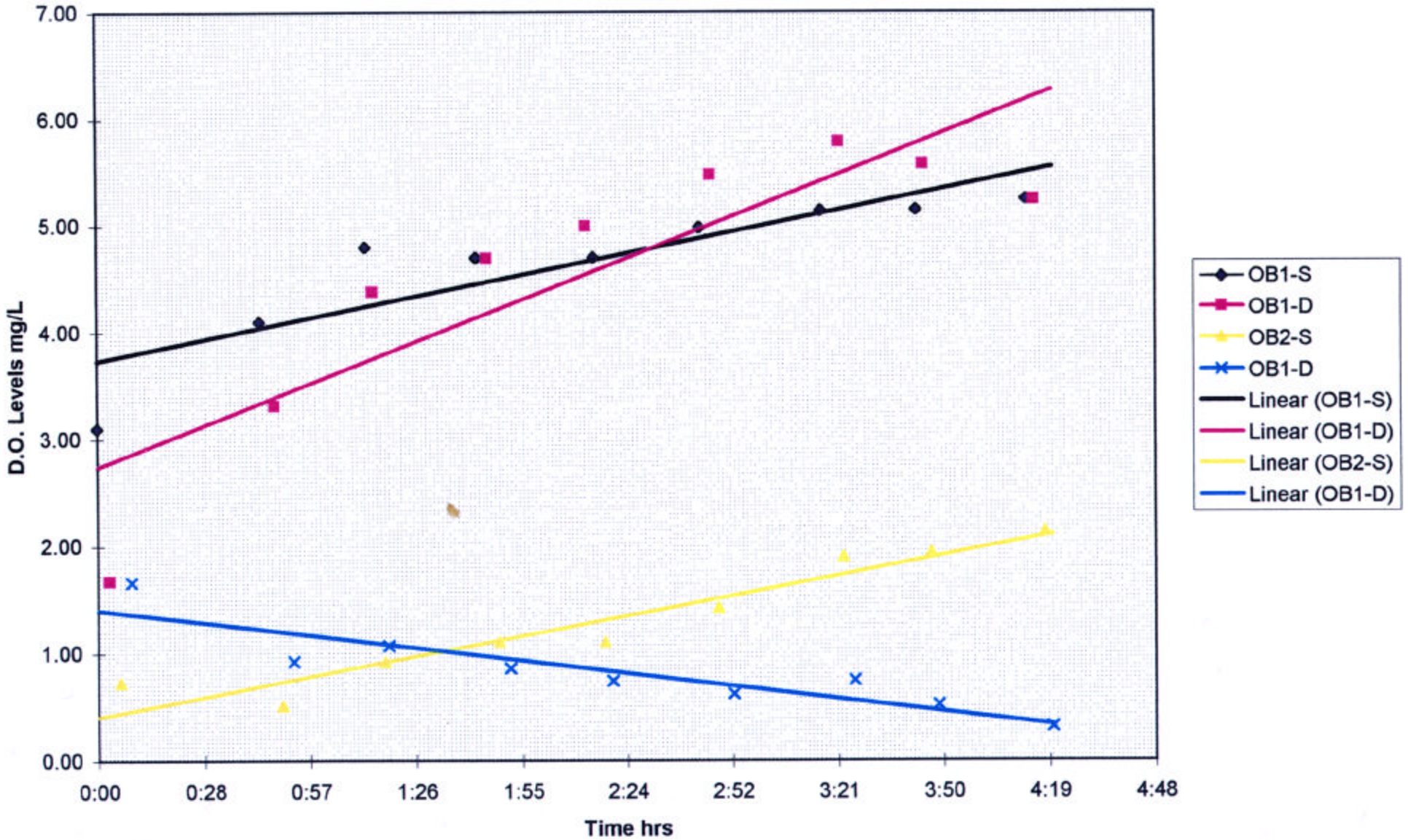
Parris Island, SC

Dissolved Oxygen Levels mg/L

Date: December 14, 1996 | Test #2 | Airflow Rate 1.8 scf

Time hrs	Time hrs	OB1-S	OB1-D	OB2-S	OB1-D
9:47	0:00	3.10			
9:50	0:03		1.68		
9:53	0:06			0.73	
9:56	0:09				1.67
10:31	0:44	4.10			
10:35	0:48		3.32		
10:37	0:50			0.52	
10:40	0:53				0.93
11:00	1:13	4.80			
11:02	1:15		4.39		
11:05	1:18			0.92	
11:06	1:19				1.08
11:30	1:43	4.70			
11:33	1:46		4.70		
11:36	1:49			1.11	
11:39	1:52				0.87
12:00	2:13		5.00		
12:02	2:15	4.70			
12:05	2:18			1.11	
12:07	2:20				0.75
12:31	2:44	4.98			
12:34	2:47		5.48		
12:36	2:49			1.43	
12:40	2:53				0.63
13:04	3:17	5.14			
13:09	3:22		5.79		
13:10	3:23			1.90	
13:13	3:26				0.76
13:30	3:43	5.15			
13:32	3:45		5.58		
13:34	3:47			1.94	
13:36	3:49				0.53
14:00	4:13	5.25			
14:02	4:15		5.25		
14:05	4:18			2.14	
14:07	4:20				0.33

Figure B2
Air Sparging Pilot Test, Parris Island, SC
Test # 2; Air Flow Rate 1.8 scfm



bhlg

BOREHOLE LOG

Project Name: Parris Island, SC, MCRD		Borehole No.: 193-1-MW
Project Number: 22567-145	Elevation: 7.81 ft msl	
Location: Bld 193, Dry Cleaners	Date Started: 12/11/96	Date Completed: 12/11/96
Driller: Brian Cornell	Total Depth (ft): 20.0	
Equipment: Mobile B-57	Depth to Bedrock (ft): None	
Drilling Method: Hollow Stem Auger	Hole Diameter (in): 10	
Drilling Fluid: None	Depth to Water (ft): 3.0	
Completion: Completed as Monitoring Well See Well Construction Logs for details	Logged By: P. Linley	Posthole to 4ft BGL

Depth (ft)	Description	Sample Number	Sample Type	% Recovery	Blow Count	Comments
	0-5ft: **SAND**: *(SP)*, gry blk (N2) to lt brn gry (5YR6/1) to gry org (10YR7/4) to dk yel org (10YR6/6), fine, unconsld, mod well sort, subang to subrd, moist to v moist w/depth.	1	SS	80		2/3/3/5
		2	SS	70		5/6/5/4
5	5-6ft: **CLAYEY SAND**: *(SC)*, med lt gry (N6) v fine to fine, mod sort, unconsld, subang to subrd, v moist.	3	SS	90		3/2/2/4
	6-8ft: **SAND**: *(SP)*, lt gry (N7) to gry org (10YR7/4) to dk yel org (10YR6/6) to lt brn (5YR5/6) to med lt gry (N6), fine, mod well sort, unconsld, subang to subrd, wet at 7.5ft.	4	SS	100		5/6/3/2
		5	SS	100		2/2/1/2
10	8ft: **SANDY CLAY**: *(CL)*, med gry (N5), v fine to fine, unconsld, mod well sort, subang to subrd, v moist to wet.	6	SS	100		6/11/5/3
	8-10ft: **CLAYEY SAND**: *(SC)*, dk yel org (10YR6/6) to pale yel brn (10YR6/2) to med lt gry (N6), v fine to fine, unconsld, mod poor sort, subang to subrd, v moist to wet, @ 8.5-9ft fine sand lense.	7	SS	100		2/1/2/1
15		8	SS	100		2/2/1/1
	10-15.5ft: **SAND**: *(SP)*, dk yel org (10YR6/6) to gry org (10YR 7/4) to lt gry (N7) to v lt gry (N8), fine, unconsld, mod well sort, subang to subrd, wet @ 11.5ft, minor silt frac 10%.	9	SS	100		2/1/1/2
	15.5-17.7ft: **SILTY SAND**: *(SM)*, med dk gry (N4) to v pale org (10YR8/2) to gry org (10YR7/4) to med dk gry (N4), v fine to fine, unconsld, mod sort, subang to subrd, v moist.	10	SS	100		3/2/4/2
20						
	17.7-18ft: **SANDY SILTY CLAY**: *(CL)*					
	18-19ft: **SILTY CLAY**: *(CL)*, pale yel org (10YR6/2), v fine to fine, mod sort, unconsld, subang to subrd, v moist.					
25	19-19.3ft: **CLAYEY SILTY SAND**: *(SM/SC)*					
	19.3-19.7ft: **SAND**: *(SP)*, pink gry (5 YR8/1) to v lt gry (N8)					
	19.7-20ft: **SANDY SILTY CLAY**: *(CL)*, med dk gry (N4)					
	20ft: **PEAT**: *(Pt)*, dusky yel brn (10YR2/2) to brn blk (5YR2/1)					
30						

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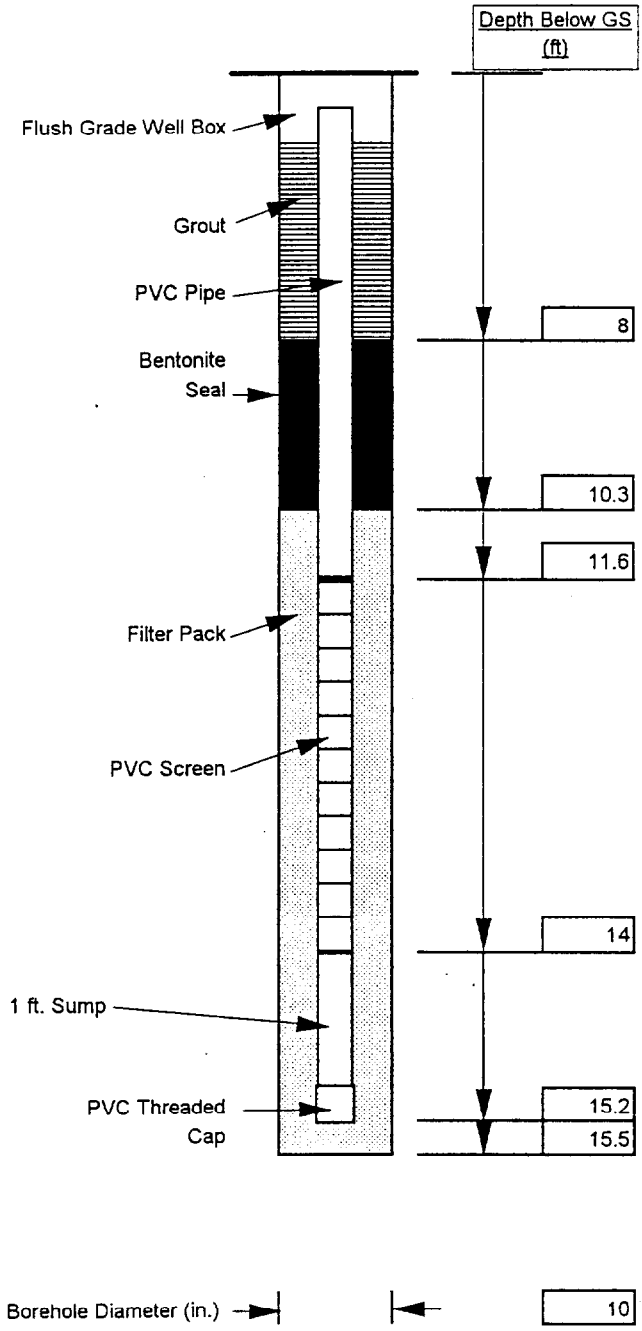
WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-1-MW-D
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/11/96	Coordinates:	N 187454.710
Drilling Equipment:	Mobile B-57	Date Completed:	12/11/96		E 2099308.355
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.57 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	12.3

Backfill

Type	Grout Seal
Length (ft)	8
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	2.3
Placement	Pour

Filter Pack

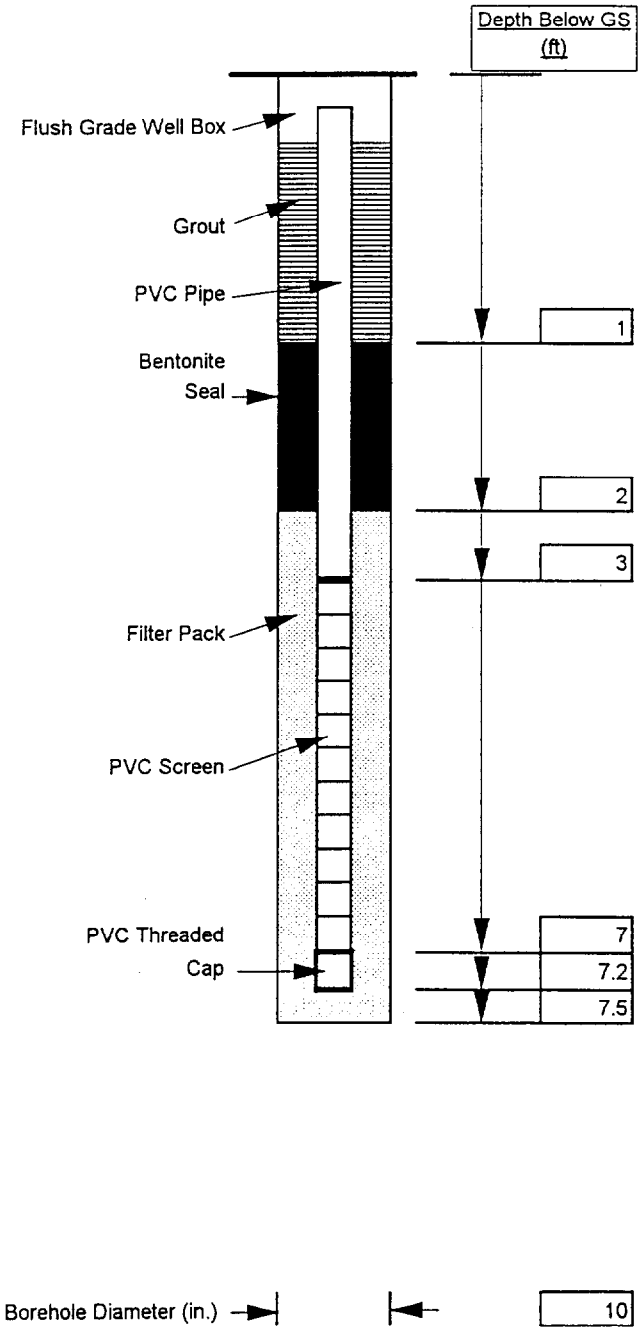
Type	20/30
Length (ft)	5.2
Placement	Pour
Amount Placed	162.5 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	2.4
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-1-MW-S
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/11/96	Coordinates:	N 187455.597
Drilling Equipment:	Mobile B-57	Date Completed:	12/11/96		E 2099298.879
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.6 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	4

Backfill

Type	Grout Seal
Length (ft)	N/A
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	1
Placement	Pour

Filter Pack

Type	20/30
Length (ft)	5.5
Placement	Pour
Amount Placed	325 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	4
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

bhlg

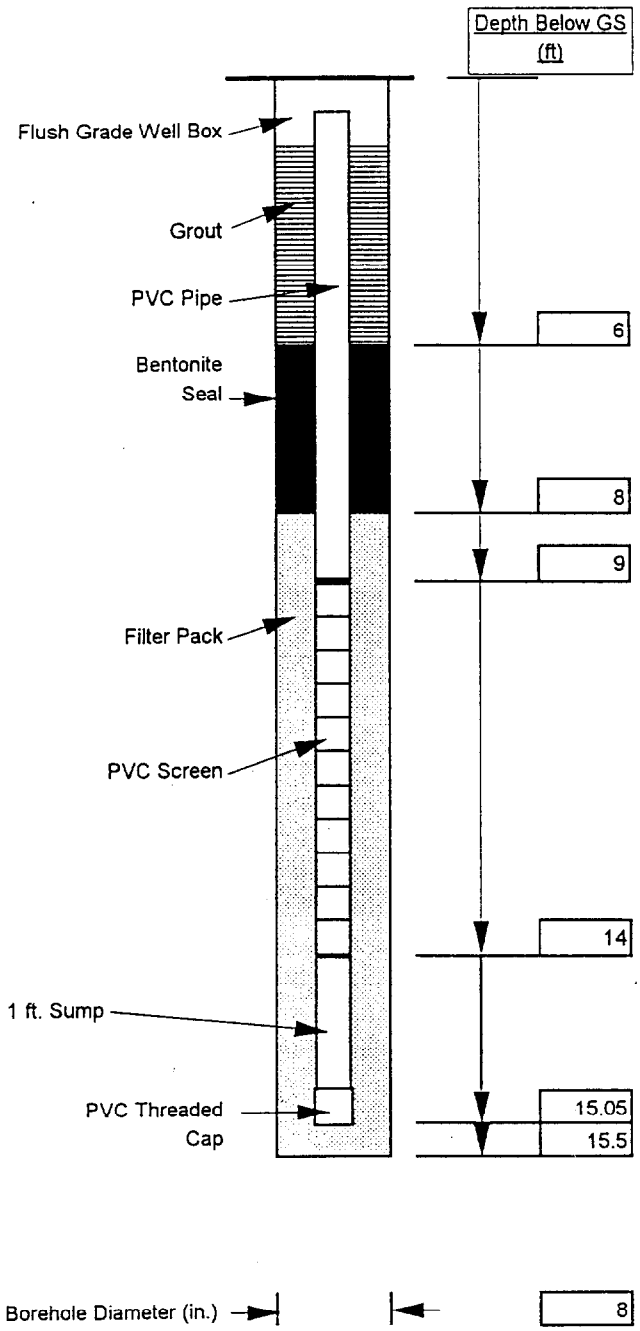
BOREHOLE LOG

Project Name: Parris Island, SC, MCRD		*Borehole No.: 193-2-MW*
Project Number: 22567-145	*Elevation:* 7.45 ft msl	
Location: Bldg 193, Dry Cleaners	*Date Started: 12/12/96*	*Date Completed: 12/12/96*
Driller: Brian Cornell	*Total Depth (ft): 18.0*	
Equipment: Mobile B-57	*Depth to Bedrock (ft): None*	
Drilling Method: Hollow Stem Auger	*Hole Diameter (in): 8*	
Drilling Fluid: None	*Depth to Water (ft): 3.0*	
Completion: Completed as Monitoring Well See Well Construction Logs for details	*Logged By: P. Linley*	*Posthole to 4ft BGL*

Depth (ft)	Description	Sample Number	Sample Type	% Recovery	Blow Count	Comments
	0-7ft: **SAND**: *(SP)*, pale yel brn (10YR6/2) to dk gry (N3) to brn gry (5YR4/1) to lt brn gry (5YR6/1) to dk yel org (10YR6/6) fine, unconsld, mod well sort, subang to subrd, moist to v moist, wet at 6ft.	1	SS	40		3/4
5		2	SS	90		9/8/6/7
	7-7.8ft: **CLAYEY SAND**: *(SC)*, lt gry (N7), v fine to fine, mod sort, subang to subrd, unconsld, wet.	3	SS	100		4/3/3/3
	7.8-15.3ft: **SAND**: *(SP)*, dk yel org (10YR6/6) to med lt gry (N6)	4	SS	100		2/3/6/4
10	to v lt gry (N8) to pale brn (5YR5/2) to med dk gry (N4) to dk gry (N3), fine, mod sort, subang to subrd, unconsld, wet to saturated, minor silt frac	5	SS	100		4/3/3/2
		6	SS	100		3/3/3/2
15		7	SS	100		2/2/2/1
	15.3-18ft: **SILTY SAND**: *(SM)*, med dk gry (N4) to dk gry (N3) to pale brn (5YR5/2) to pale yel brn (10YR6/2) @ 17ft lt gry (N7) at 17.6ft med dk gry (N4) to dk gry (N3) - clay frac increased to 20%, saturated, note organic matter (wood & roots) at	8	SS	100		1/2/3/3
20	17.8ft: **PEAT**: *(Pt)*, dusky yel brn (10YR2/2) to brn blk (5YR2/1)					
25						
30						

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-2-MW-D
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/14/96	Coordinates:	N 187341.197
Drilling Equipment:	Mobile B-57	Date Completed:	12/14/96		E 2099201.966
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.23 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	10

Backfill

Type	Grout Seal
Length (ft)	6
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	2
Placement	Pour

Filter Pack

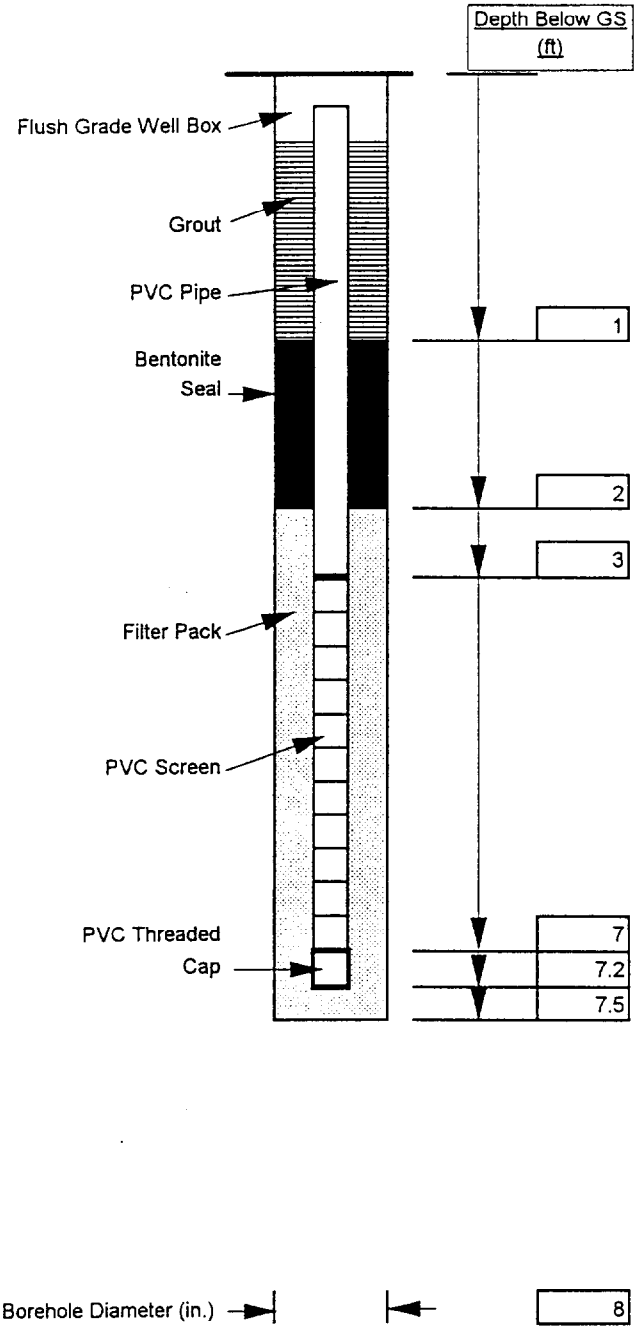
Type	20/30
Length (ft)	7.5
Placement	Pour
Amount Placed	150 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	5
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-2-MW-S
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/14/96	Coordinates:	N 187345.032
Drilling Equipment:	Mobile B-57	Date Completed:	12/14/96		E 2099203.731
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.11 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	5

Backfill

Type	Grout Seal
Length (ft)	N/A
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	1
Placement	Pour

Filter Pack

Type	20/30
Length (ft)	5.5
Placement	Pour
Amount Placed	150 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	4
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

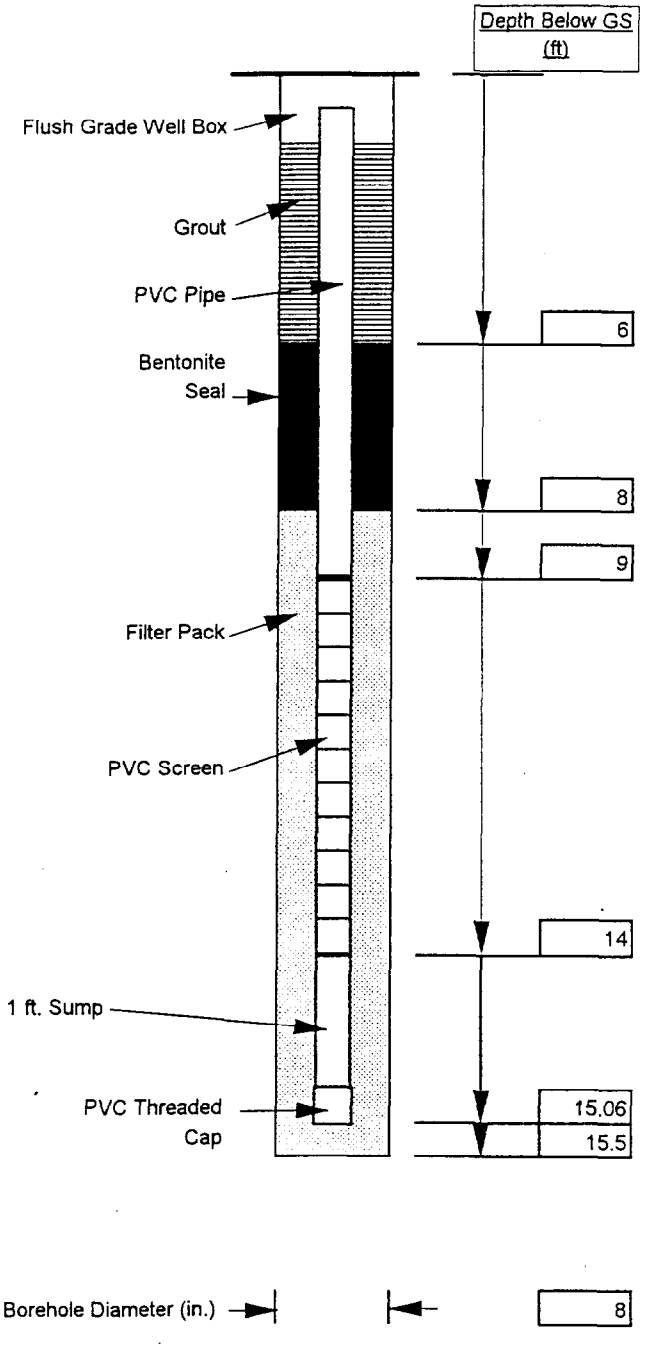
BOREHOLE LOG

Project Name: Parris Island, SC, MCRD		Borehole No.: 193-3-MW
Project Number: 22567-145	Elevation: 7.78 ft msl	
Location: Bldg 193, Dry Cleaners	Date Started: 12/12/96	Date Completed: 12/12/96
Driller: Brian Cornell	Total Depth (ft): 18.0	
Equipment: Moblie B-57	Depth to Bedrock (ft): None	
Drilling Method: Hollow Stem Auger	Hole Diameter (in): 8	
Drilling Fluid: None	Depth to Water (ft): 3.0	
Completion: Completed as Monitoring Well See Well Construction Logs for details	Logged By: P. Linley	Posthole to 4ft BGL

Depth (ft)	Description	Sample Number	Sample Type	% Recovery	Blow Count	Comments
	0-7.3ft: SAND: *(SP)*, gry blk (N2) to brn gry (5YR4/1) to med lt gry (N6) to med dk gry (N4), fine, unconsld, mod well sort, subang to subrd, v lt gry (N8), wet at 3ft, minor silt frac 10%	1	SS	25		1/5
		2	SS	75		4/4/4/5
5		3	SS	100		2/1/0/1
	7.3-8ft: SILTY CLAY: *(CL)*, med gry (N5), v fine, unconsld, mod well sort, subang to subrd, wet.	4	SS	100		1/0/2/7
	8-10ft: SILTY CLAY/SAND: *(SM)*, lt gry (N6), v fine, unconsld, mod sort, subang to subrd, wet.	5	SS	100		5/14/23/25
10	10-17.8ft: SAND: *(SP)*, pale yel brn (10YR6/2) to mod yel brn (10YR5/4) to pale brn (5YR5/2) to lt gry (N7) to v lt gry (N8) to lt olive gry (5Y5/2) to dk yel org (10YR6/6) to lt brn (5YR5/6) to white (N9) to med dk gry (N4) to dk gry (N3), fine, unconsld, mod well sort, subang to subrd, wet, silt frac 10%.	6	SS	100		10/4/5/5
		7	SS	100		3/3/2/2
15	10.6-10.7ft SILTY CLAY: lt gry (N7) lense.	8	SS	100		2/1/3/7
	17.8-18ft: SILTY CLAY: *(CL)*:, dk gry (N3) note ogranic matter (peat) w/in sample, v fine, semiconsld, mod sort, wet.					
20						
25						
30						

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-3-MW-D
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/13/96	Coordinates:	N 187258.713
Drilling Equipment:	Mobile B-57	Date Completed:	12/13/96		E 2099239.820
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.57 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	10

Backfill

Type	Grout Seal
Length (ft)	6
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	2
Placement	Pour

Filter Pack

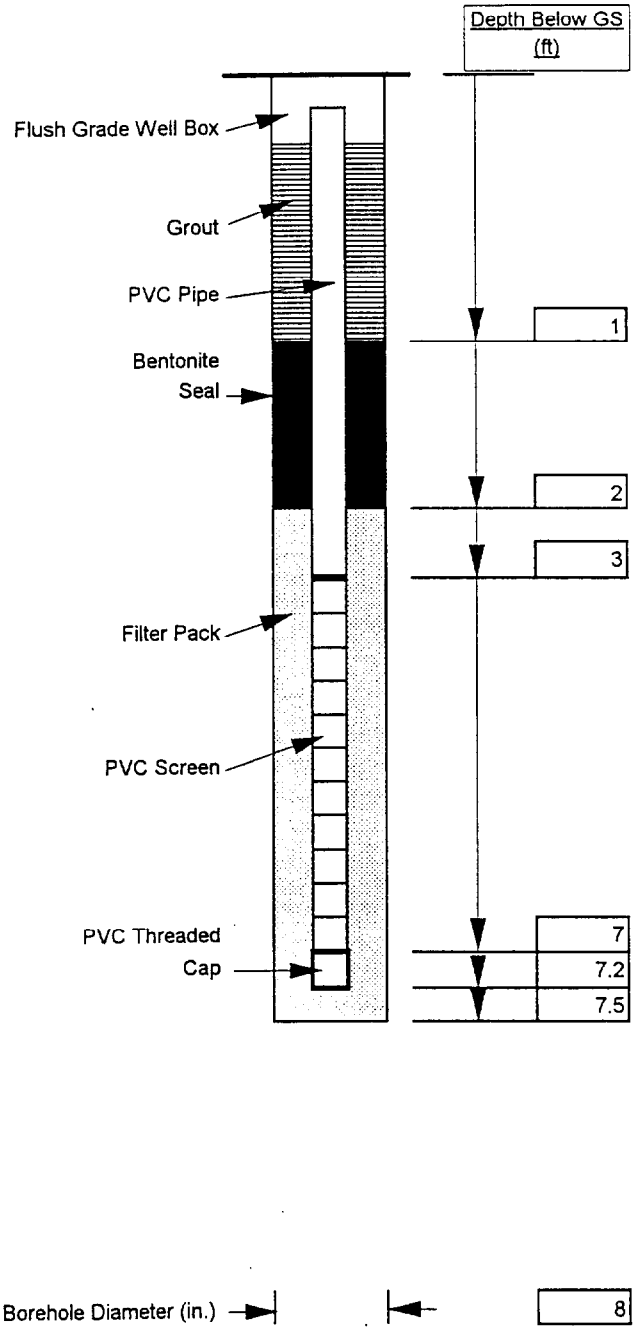
Type	20/30
Length (ft)	7.5
Placement	Pour
Amount Placed	150 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	5
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-3-MW-S
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/13/96	Coordinates:	N 187257.657
Drilling Equipment:	Mobile B-57	Date Completed:	12/13/96		E 2099244.001
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.6 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	4.7

Backfill

Type	Grout Seal
Length (ft)	N/A
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	1
Placement	Pour

Filter Pack

Type	20/30
Length (ft)	5.5
Placement	Pour
Amount Placed	150 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	4
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

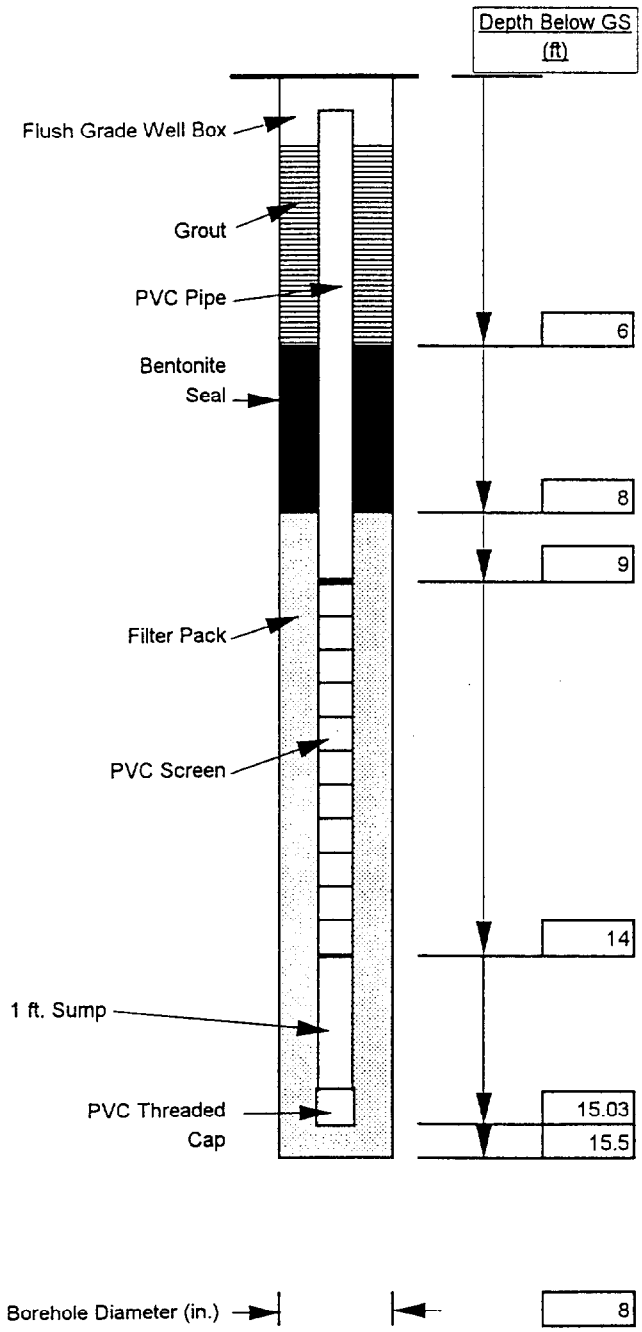
BOREHOLE LOG

Project Name: Parris Island, SC, MCRD		*Borehole No.: 193-4-MW*
Project Number: 22567-145	*Elevation:* 7.14 ft msl	
Location: Bldg 193, Dry Cleaners	*Date Started: 12/12/96*	*Date Completed: 12/12/96*
Driller: Brian Cornell	*Total Depth (ft): 18.0*	
Equipment: Mobile B-57	*Depth to Bedrock (ft): None*	
Drilling Method: Hollow Stem Auger	*Hole Diameter (in): 8*	
Drilling Fluid: None	*Depth to Water (ft): 3.0*	
Completion: Completed as Monitoring Well See Well Construction Logs for details	*Logged By: P. Linley*	*Posthole to 4ft BGL*

Depth (ft)	Description	Sample Number	Sample Type	% Recovery	Blow Count	Comments
	0-7.2ft: **SAND**: *(SP)*, gry blk (N2) to med lt gry (N6) to dk yel org (10YR6/6) to brn gry (5YR4/1) to lt brn (5YR5/6), fine, mod well sort, unconsld, subang to subrd, wet at 3ft, silt frac 15%.					
		1	SS	50		2/5
5		2	SS	70		2/2/3/6
	7.2-7.9ft: **SILTY CLAY**: *(CL)*, lt gry (N7), v fine to fine, mod sort, unconsld, subang to subrd, wet.	3	SS	70		5/1/1/2
	7.9-17.2ft: **SAND**: *(SP)*, lt gry (N7) to v lt gry (N8) to white (N9)	4	SS	60		5/7/11/15
10	to med gry (N5) to gry org (10YR7/4) to pale yel brn (10YR6/2) to med dk gry (N4) to dk gry (N3), fine, unconsld, mod well sort, subang to subrd, silt frac 10-15%, wet to saturated	5	SS	75		5/8/7/6
		6	SS	100		1/2/2/3
15		7	SS	100		1/2/1/2
	17.2-18ft: **CLAY**: *(CL)*, med dk gry (N4) to dk gry (N3), v fine semiconsld, mod well sort, v moist to wet.	8	SS	100		1/3/4/6
	17.4ft: **PEAT**: *(Pt)*, dusky yel brn (10YR2/2) to brn blk (5YR2/1)					
20						
25						
30						

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-MW-4D
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/12/96	Coordinates:	N 187149.280
Drilling Equipment:	Mobile B-57	Date Completed:	12/12/96		E 2099253.080
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	6.93 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	10

Backfill

Type	Grout Seal
Length (ft)	6
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	2
Placement	Pour

Filter Pack

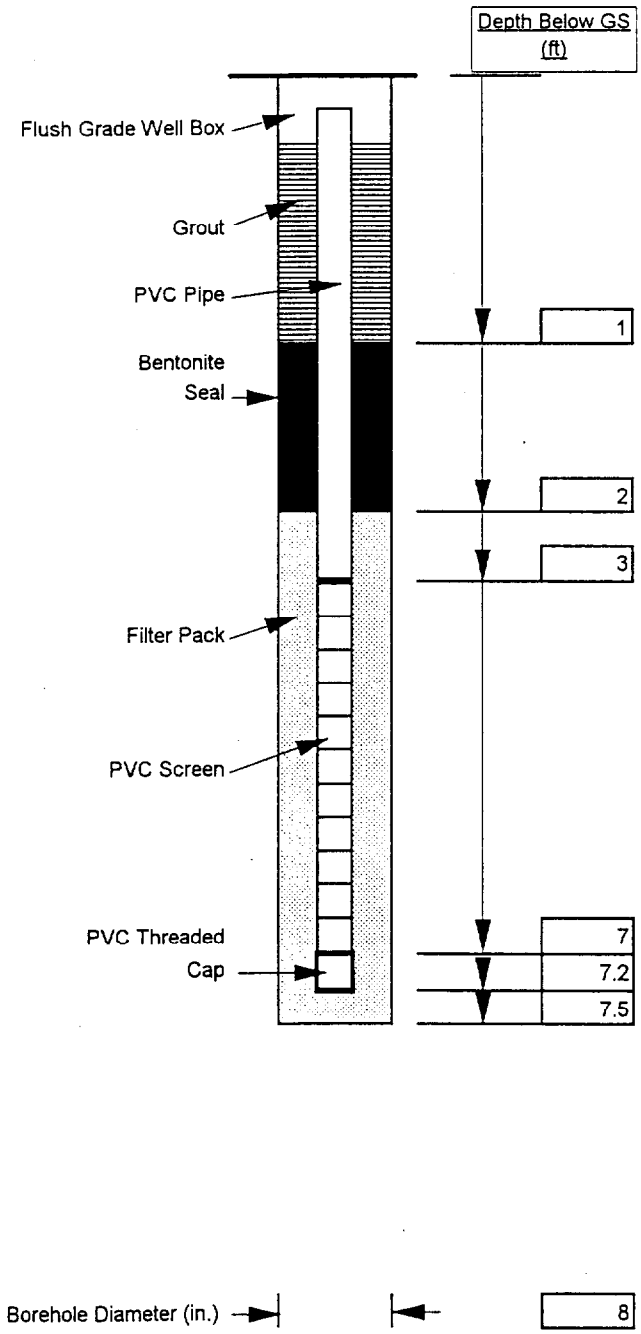
Type	20/30
Length (ft)	7.5
Placement	Pour
Amount Placed	150 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	5
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-4-MW-S
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/12/96	Coordinates:	N 187150.910
Drilling Equipment:	Mobile B-57	Date Completed:	12/12/96		E 2099249.096
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	6.98 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	4.7

Backfill

Type	Grout Seal
Length (ft)	N/A
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	1
Placement	Pour

Filter Pack

Type	20/30
Length (ft)	5.5
Placement	Pour
Amount Placed	162.5 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	4
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

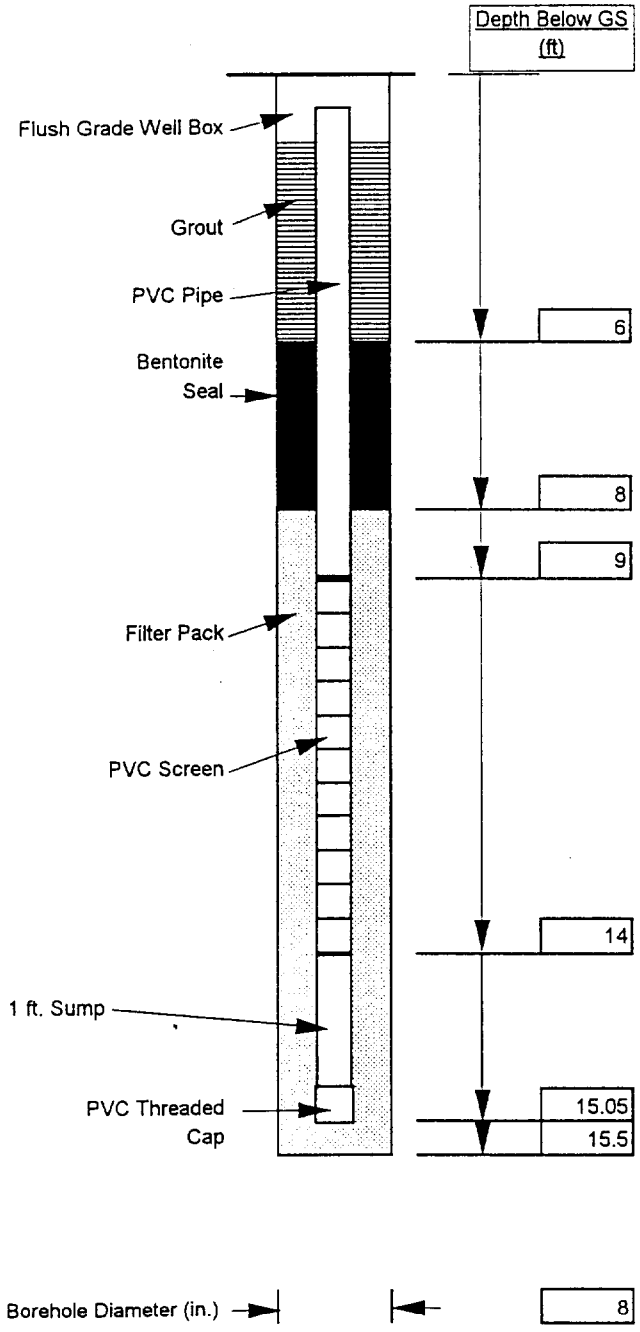
BOREHOLE LOG

Project Name: Parris Island, SC, MCRD		*Borehole No.: 193-5-MW*
Project Number: 22567-145	*Elevation:* 8.64 ft msl	
Location: Bldg 193, Dry Cleaners	*Date Started: 12/13/96*	*Date Completed: 12/13/96*
Driller: Brian Cornell	*Total Depth (ft): 18.0*	
Equipment: Mobile B-57	*Depth to Bedrock (ft): None*	
Drilling Method: Hollow Stem Auger	*Hole Diameter (in): 8*	
Drilling Fluid: None	*Depth to Water (ft): 4.0*	
Completion: Completed as Monitoring Well See Well Construction Logs for details	*Logged By: P. Linley*	*Posthole to 4ft BGL*

Depth (ft)	Description	Sample Number	Sample Type	% Recovery	Blow Count	Comments
	0-12ft: **SAND**: *(SP)*, pale brn (5YR5/2) to gry blk (N2) to lt brn gry (5YR6/1) to v lt gry (N8) to lt gry (N7) to med lt gry (N6), fine, unconsld, mod well sort, subang to subrd, wet at 3ft, silt frac 10-15%.	1	SS	60		2/1/4/5
5		2	SS	80		5/5/7/9
		3	SS	95		8/8/4/3
10		4	SS	100		1/2/1/1
	12ft: **CLAYEY SILT**: *(ML)*, dk gry (N3), v fine, unconsld, mod sort, subang to subrd, wet.	5	SS	100		2/2/4/4
	12-17.8ft: **SAND**: *(SP)*, lt brn gry (5YR6/1) to v lt gry (N8), fine unconsld, mod sort, subang to subrd, wet, silt and clay frac	6	SS	100		2/2/2/2
15	increasing w/depth, 13.5-14ft dk gry (N3).	7	SS	100		2/2/2/4
	17.8-18ft: **PEAT**: *(Pt)*, dusky brn (5YR2/2)					
20						
25						
30						

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-5-MW-D
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/13/96	Coordinates:	N 187187.346
Drilling Equipment:	Mobile B-57	Date Completed:	12/13/96		E 2099376.763
Drilling Method:	HSA	Depth to Water:	4ft bgl		
Drilling Fluid:	None	Elevation:	8.26 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	10

Backfill

Type	Grout Seal
Length (ft)	6
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	2
Placement	Pour

Filter Pack

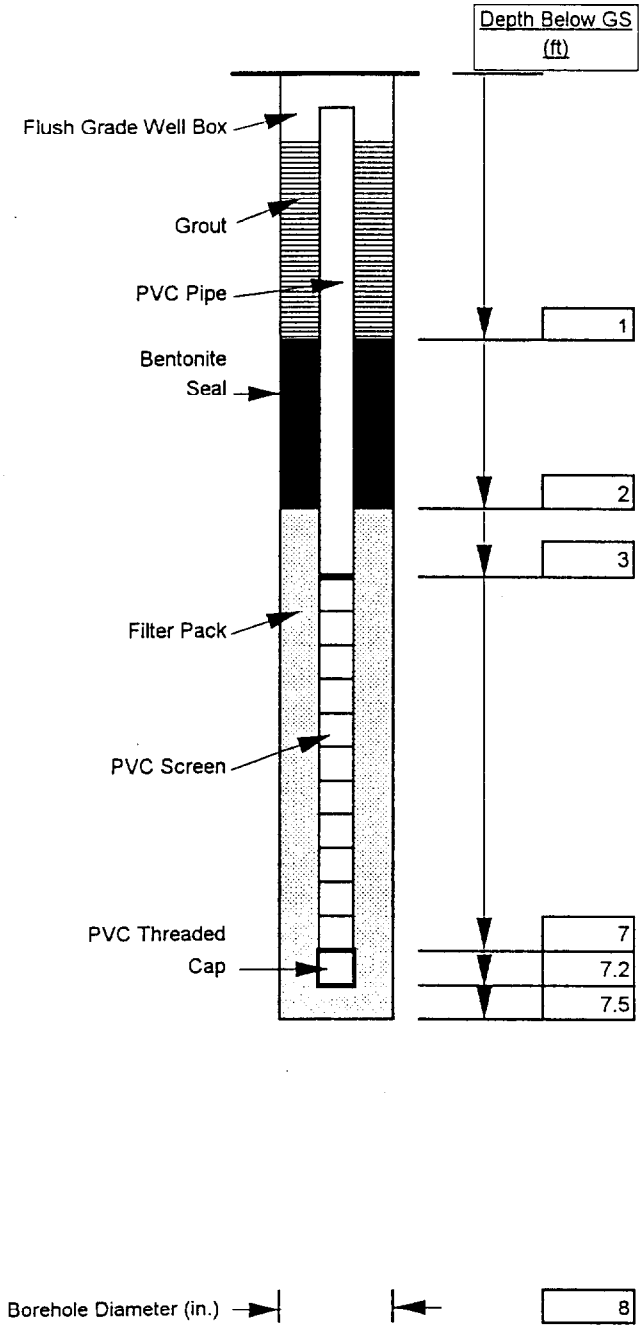
Type	20/30
Length (ft)	7.5
Placement	Pour
Amount Placed	200 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	5
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-5-MW-S
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/13/96	Coordinates:	N 187192.220
Drilling Equipment:	Mobile B-57	Date Completed:	12/13/96		E 2099377.309
Drilling Method:	HSA	Depth to Water:	4ft bgl		
Drilling Fluid:	None	Elevation:	8.6 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	4.7

Backfill

Type	Grout Seal
Length (ft)	N/A
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	1
Placement	Pour

Filter Pack

Type	20/30
Length (ft)	5.5
Placement	Pour
Amount Placed	150 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	4
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

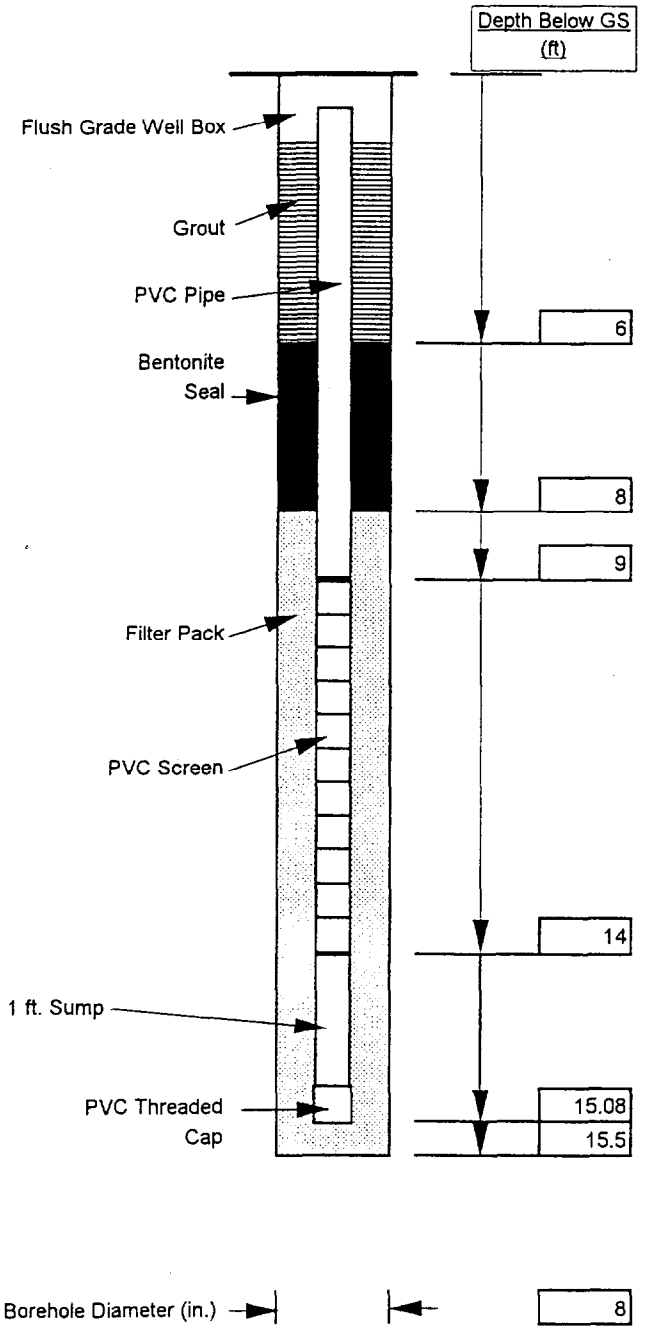
BOREHOLE LOG

Project Name: Parris Island, SC, MCRD		*Borehole No.: 193-6-MW*
Project Number: 22567-145	*Elevation:* 7.76 ft msl	
Location: Bldg 193, Dry Cleaners	*Date Started: 12/16/96*	*Date Completed: 12/16/96*
Driller: Brian Cornell	*Total Depth (ft): 15.5*	
Equipment: Mobile B-57	*Depth to Bedrock (ft): None*	
Drilling Method: Hollow Stem Auger	*Hole Diameter (in): 8*	
Drilling Fluid: None	*Depth to Water (ft): 3.0*	
Completion: Completed as Monitoring Well See Well Construction Logs for details	*Logged By: P. Linley*	*Posthole 1ft BGL*

Depth (ft)	Description	Sample Number	Sample Type	% Recovery	Blow Count	Comments
	0-4.2ft **SAND**: *(SP)*, Fill/slag/cinders; dusky yel brn (10YR2/2) to pale yel brn (10YR6/2) to olive gry (5Y4/1), fine, unconsld, mod well sort, subang to subrd, wet at 3ft.	1	SS	75		Split spoon from 1-7ft analytical sample (1-3ft bgl)
	4.2-5ft: **CLAYEY SAND**: *(SC)*, med gry (N5), v fine to fine, mod sort, unconsld, subang to subrd, saturated, silt frac 15%.	2	SS	100		N/A
5	5-15.5ft: **SAND**: *(SP)*, grn gry (5G6/1) to dk yel brn (10YR6/6) to med lt gry (N6), to lt gry (N7), fine, unconsld, mod sort, sub-ang to subrd, saturated, silt frac 10-15%; 8ft lt olive gry (5Y5/2) 12ft cuttings soupy; 15ft lt olive gry (5Y6/1) to med gry (N5).	3	SS	65		8/8/8/6 analytical sample (5-7ft bgl)
10						
15						
20						
25						
30						

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-6-MW-D
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/16/96	Coordinates:	N 187277.268
Drilling Equipment:	Mobile B-57	Date Completed:	12/16/96		E 2099296.248
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.52 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	10

Backfill

Type	Grout Seal
Length (ft)	6
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	2
Placement	Pour

Filter Pack

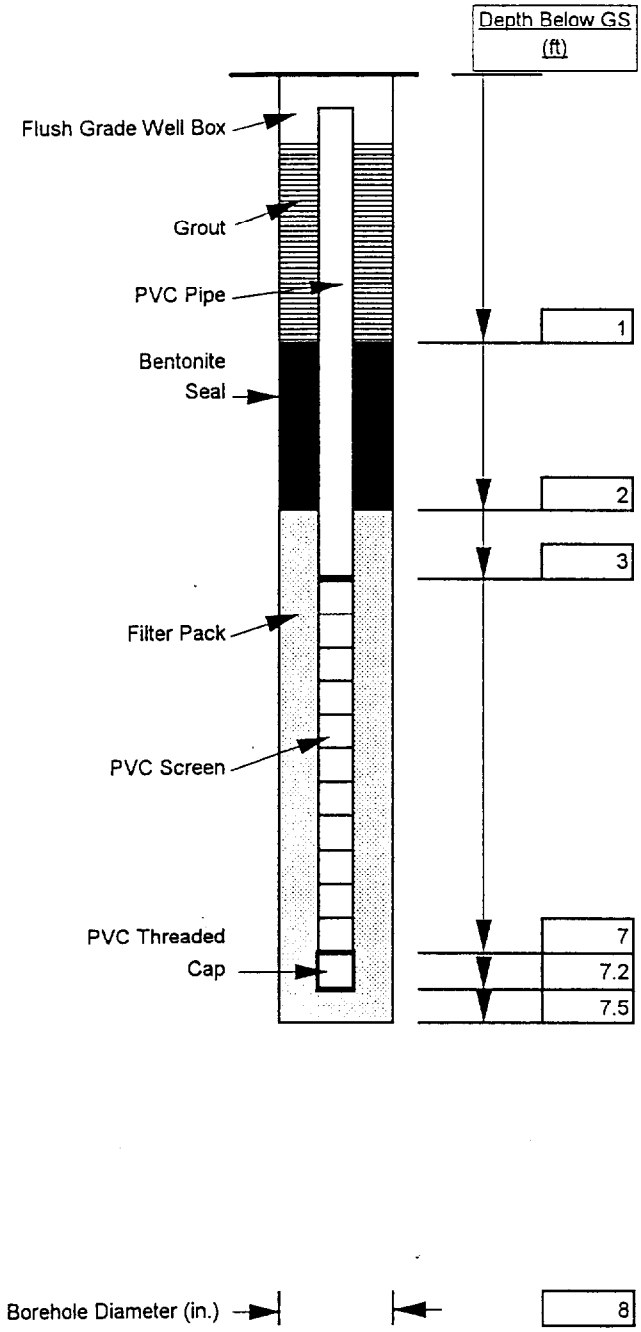
Type	20/30
Length (ft)	7.5
Placement	Pour
Amount Placed	125 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	5
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-6-MW-S
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/16/96	Coordinates:	N 187273.011
Drilling Equipment:	Mobile B-57	Date Completed:	12/16/96		E 2099295.097
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.61 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	5

Backfill

Type	Grout Seal
Length (ft)	N/A
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	1
Placement	Pour

Filter Pack

Type	20/30
Length (ft)	5.5
Placement	Pour
Amount Placed	150 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	4
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

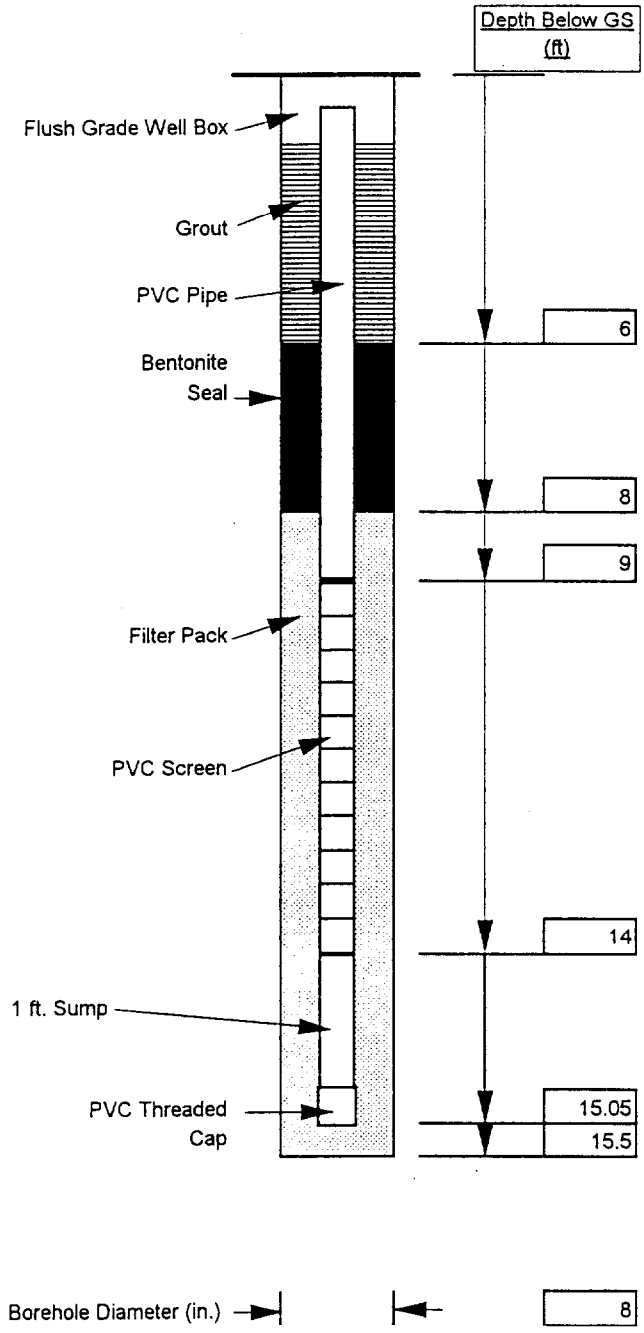
BOREHOLE LOG

Project Name: Parris Island, SC, MCRD		*Borehole No.: 193-7-MW*
Project Number: 22567-145	*Elevation:* 7.95 ft msl	
Location: Bldg 193, Dry Cleaners	*Date Started: 12/16/96*	*Date Completed:12/16/96*
Driller: Brian Cornell	*Total Depth (ft): 19.0*	
Equipment: Mobile B-57	*Depth to Bedrock (ft): None*	
Drilling Method: Hollow Stem Auger	*Hole Diameter (in): 8*	
Drilling Fluid: None	*Depth to Water (ft): 3.0*	
Completion: Completed as Monitoring Well See Well Construction Logs for details	*Logged By: P. Linley*	*Posthole to 1ft BGL*

Depth (ft)	Description	Sample Number	Sample Type	% Recovery	Blow Count	Comments
	0-8.8ft: **SAND**: *(SP)*, gry brn (5YR3/2) to dusky brn (5YR2/2) to lt olive brn (5Y5/6) to lt gry (N7) to brn blk (5YR2/1) to dk yel org (10YR6/6) to pale yel org (10YR8/6), fine, unconsld, mod well sort, subang to subrd, wet at 3ft, silt frac to 15%.	1	SS	75		N/A analytical sample
		2	SS	60		2/4/2/2
5		3	SS	70		6/7/8/7 analytical sample
		4	SS	80		7/2/2/1
	8.8-9ft: **SILTY CLAY**: *(CL)*, med lt gry (N6) v fine, unconsld, mod sort, subang to subrd, wet.	5	SS	100		10/20/20/20
10	9-18.5ft: **SAND**: *(SP)*, brn gry (5YR4/1) to dk yel org (10YR6/6) to v lt gry (N8) to pale yel org (10YR8/6) to gry org (10YR7/4) to pink gry (5YR8/1) to med gry (N5) to white (N9) to med lt gry (N6), fine, mod well sort, unconsld, subang to subrd, wet to saturated, silt frac 10-15%.	6	SS	100		10/3/3/4
		7	SS	100		2/2/1/2
15		8	SS	100		2/2/3/4
		9	SS	100		2/2/1/4 analytical sample (TOC)
	18.5-19ft: **CLAYEY SAND**: *(SC)*, med gry (N5) wet, organic layer at 18.8ft brn blk (5YR2/1) to dusky brn (5YR2/2), moist.					
20						
25						
30						

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-7-MW-D
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/16/96	Coordinates:	N 187328.810
Drilling Equipment:	Mobile B-57	Date Completed:	12/16/96		E 2099293.569
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.72 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	10

Backfill

Type	Grout Seal
Length (ft)	6
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	2
Placement	Pour

Filter Pack

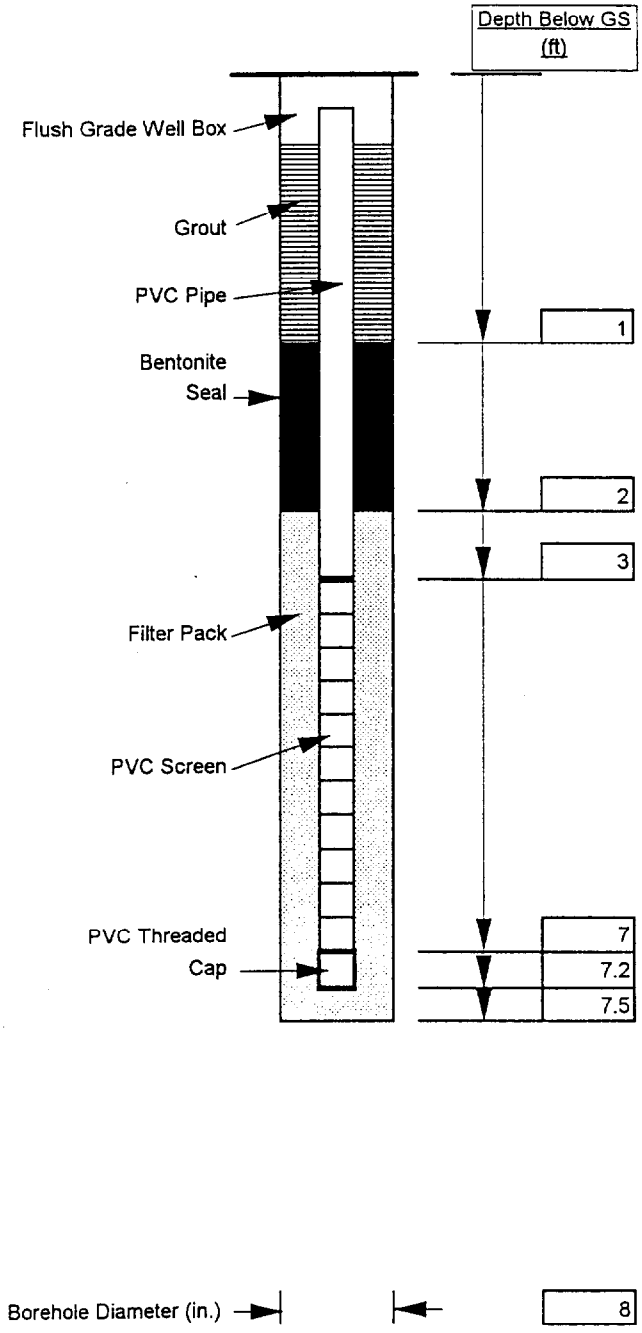
Type	20/30
Length (ft)	7.5
Placement	Pour
Amount Placed	150 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	5
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-7-MW-S
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/16/96	Coordinates:	N 187326.652
Drilling Equipment:	Mobile B-57	Date Completed:	12/16/96		E 2099295.775
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.68 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	5

Backfill

Type	Grout Seal
Length (ft)	N/A
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	1
Placement	Pour

Filter Pack

Type	20/30
Length (ft)	5.5
Placement	Pour
Amount Placed	150 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	4
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

bhlg

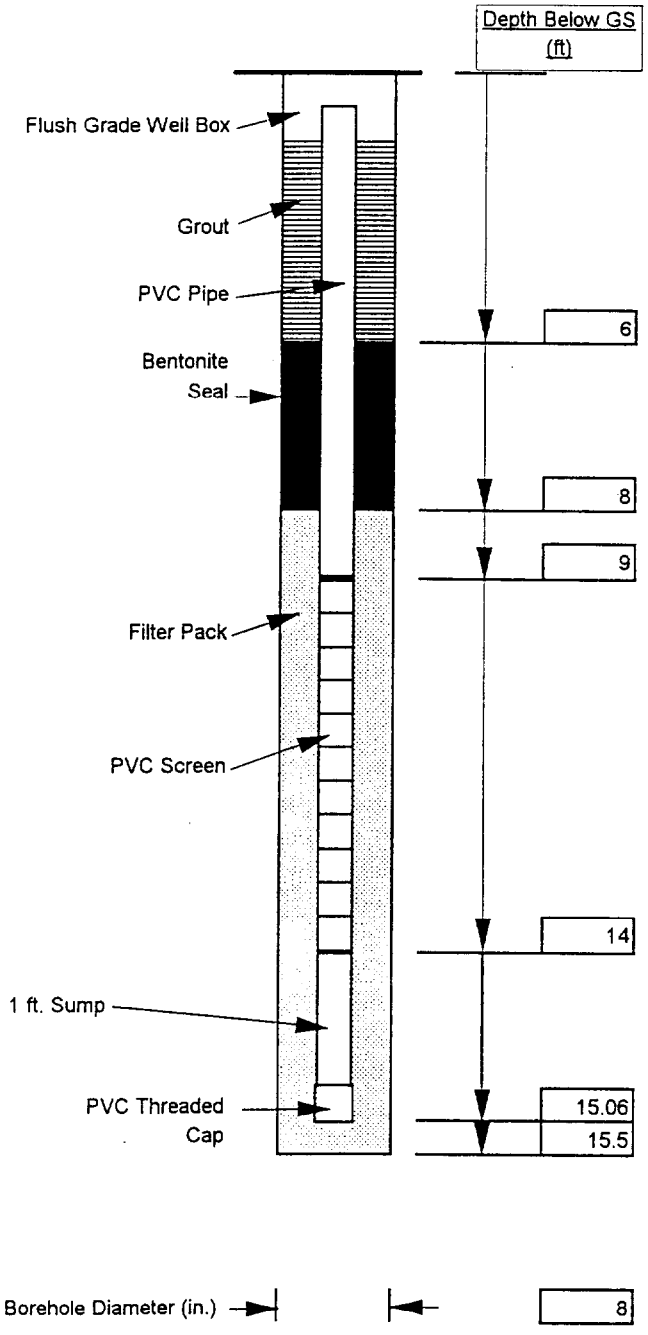
BOREHOLE LOG

Project Name: Parris Island, SC, MCRD		*Borehole No.: 193-MW-8*
Project Number: 22567-145	*Elevation:* 7.77 ft msl	
Location: Bldg 193, Dry Cleaners	*Date Started: 12/16/96*	*Date Completed:12/16/96*
Driller: Brian Cornell	*Total Depth (ft): 15.5*	
Equipment: Mobile B-57	*Depth to Bedrock (ft): None*	
Drilling Method: Hollow Stem Auger	*Hole Diameter (in): 8*	
Drilling Fluid: None	*Depth to Water (ft): 3.0*	
Completion: Completed as Monitoring Well See Well Construction Logs for details	*Logged By: P. Linley*	*Posthole to 1ft BGL*

Depth (ft)	Description	Sample Number	Sample Type	% Recovery	Blow Count	Comments
	0-15.5ft: SAND: *(SP)*, dusky yel brn (10YR2/2) to blk (N1) to brn gry (5YR4/1) to dk yel org (10YR6/6) to mod yel brn (10YR 5/4) to pink gry (5YR8/1) to med dk gry (N4) to yel gry (5Y7/2) fine, unconsld, mod sort, subang to subrd, upper 1.5ft gvl frac 25% to 2.5" dia., 1-3ft poorly sorted - fine to coarse grained (slag/cinders layer), 3ft wet to saturated, 15ft silt & clay frac increasing w/depth to 10-15% each.	1	SS	80		Split spoon from 1-7ft N/A analytical sample
		2	SS	70		N/A
5		3	SS	90		2/5/7/7 analytical sample
10						
15						
20						
25						
30						

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-MW-8D
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/16/96	Coordinates:	N 187391.271
Drilling Equipment:	Mobile B-57	Date Completed:	12/16/96		E 2099319.322
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.53 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	10

Backfill

Type	Grout Seal
Length (ft)	6
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	2
Placement	Pour

Filter Pack

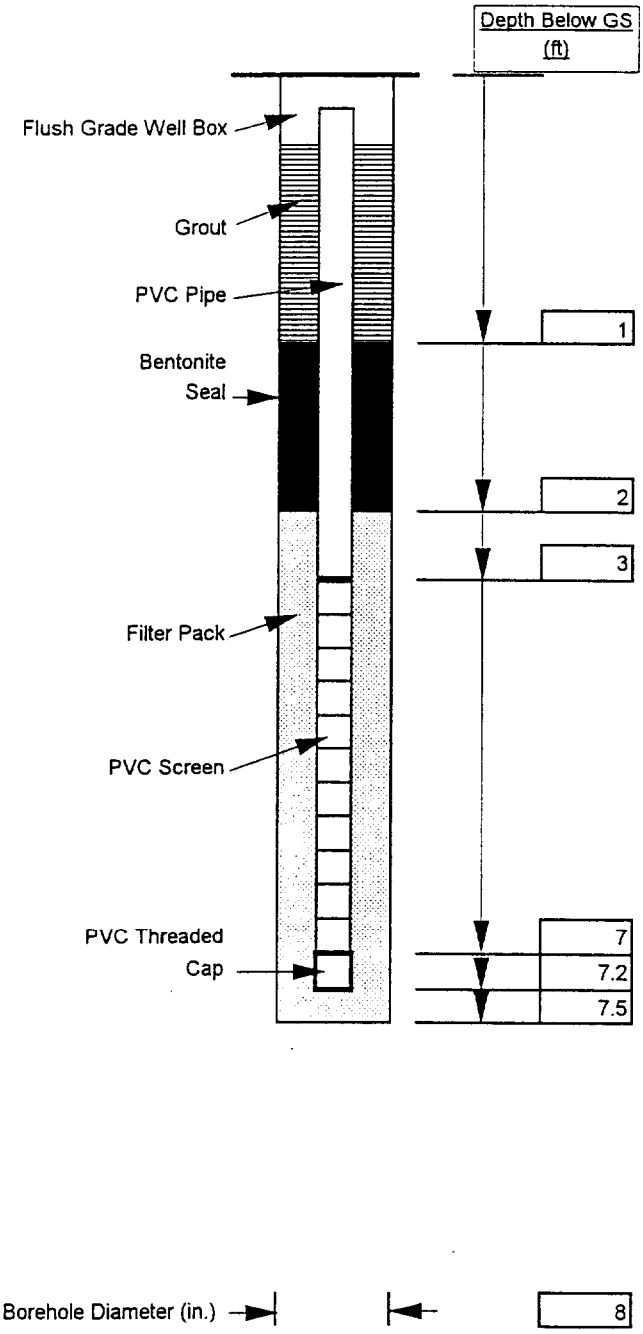
Type	20/30
Length (ft)	7.5
Placement	Pour
Amount Placed	137.5 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	5
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-8-MW-S
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/16/96	Coordinates:	N 187387.149
Drilling Equipment:	Mobile B-57	Date Completed:	12/16/96		E 2099318.846
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.60 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	5

Backfill

Type	Grout Seal
Length (ft)	N/A
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	1
Placement	Pour

Filter Pack

Type	20/30
Length (ft)	5.5
Placement	Pour
Amount Placed	150 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	4
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

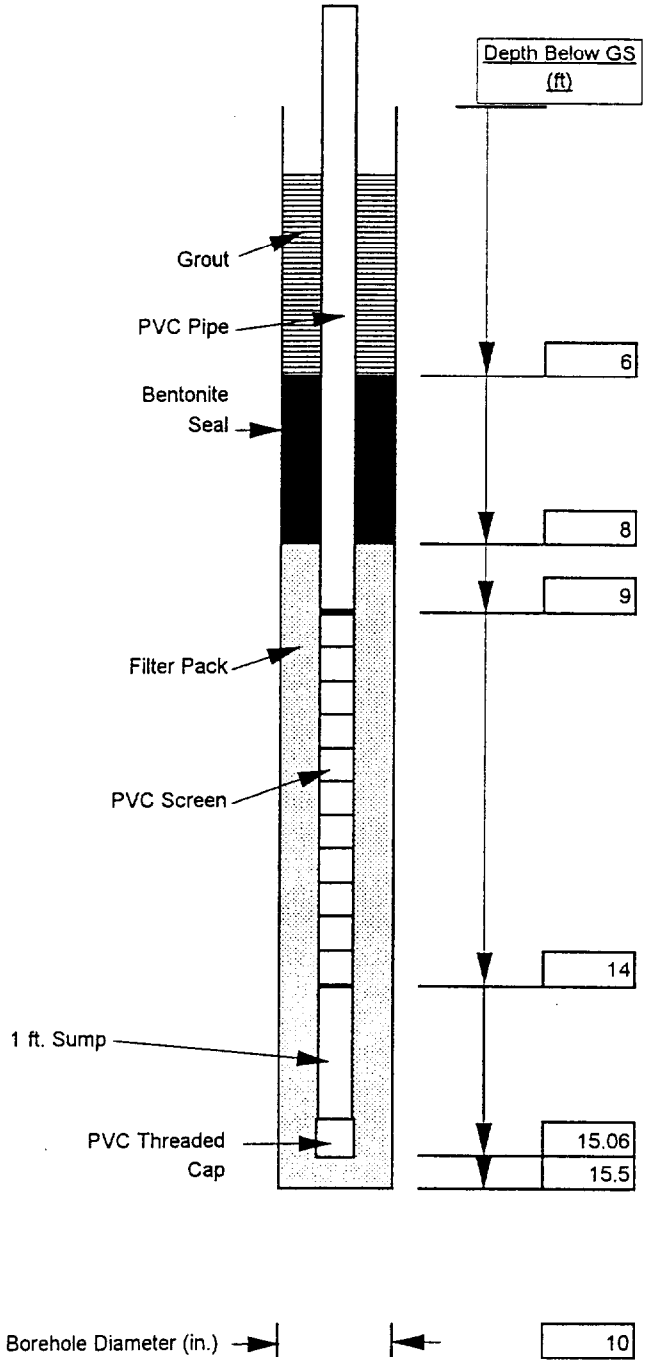
BOREHOLE LOG

Project Name: Parris Island, SC, MCRD		*Borehole No.:193-1-TMW*
Project Number: 22567-145	*Elevation:* 7.81ft msl	
Location: Bldg 193, Dry Cleaners	*Date Started:* 12/11/96	*Date Completed: 12/11/96*
Driller: Brian Cornell	*Total Depth (ft):* 15.5	
Equipment: Mobile B-57	*Depth to Bedrock (ft):* None	
Drilling Method: Hollow Stem Auger	*Hole Diameter (in):* 10	
Drilling Fluid: None	*Depth to Water (ft):* 3.0	
Completion: Completed as Monitoring Well See Well Construction Logs for details	*Logged By:* P. Linley	Temporary well; removed & plugged immediately after permeability test.

Depth (ft)	Description	Sample Number	Sample Type	% Recovery	Blow Count	Comments
	0-8ft: **SAND**: *(SP)*, dusky brn (5YR2/2), fine, unconsld, mod well sort, subang to subrd, gvl frac 3% to 3/8" dia. 3ft: lt brn gry (5YR6/1) to gry org (10YR7/4).					No samples collected during drilling operations, borehole logged based on cuttings.
5	5-8ft: **CLAYEY SAND**: *(SC)*, dk yel org (10YR6/6), v fine to fine, unconsld, mod sort, subang to subrd, wet.					
	8-15.5ft: **SILTY SAND**: *(SM)*, gry org (10YR7/4), v fine to fine unconsld, mod sort, subang to subrd, wet.					
10	10ft: dk yel org (10YR6/6) to lt brn (5YR5/6).					
	12ft: lt gry (N7) to med dk gry (N4), saturated.					
15						
20						
25						
30						

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-1-TMW-D
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/11/96	Coordinates:	N187456.710E2099300.355
Drilling Equipment:	B-57	Date Completed:	12/11/96	Temporary well; removed and plugged immediately after permeability test was completed.	
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.57ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	10

Backfill

Type	Grout Seal
Length (ft)	6
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	2
Placement	Pour

Filter Pack

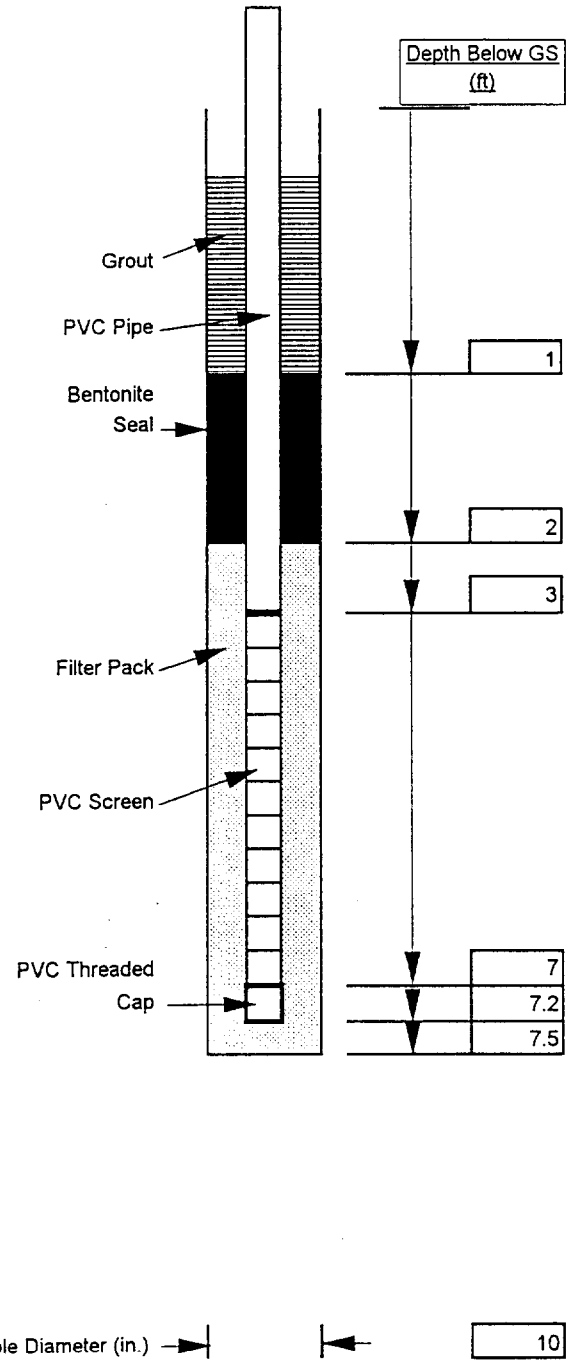
Type	20/30
Length (ft)	7.5
Placement	Pour
Amount Placed	275 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	5
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-1-TMW-S
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/11/96	Coordinates:	N187454.710E2099300.355
Drilling Equipment:	Mobile B-57	Date Completed:	12/11/96	Temporary well; removed and plugged immediately after permeability test was completed.	
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.57ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	4.9

Backfill

Type	Grout Seal
Length (ft)	N/A
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	1
Placement	Pour

Filter Pack

Type	20/30
Length (ft)	5.5
Placement	Pour
Amount Placed	325 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	4
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

bhlg

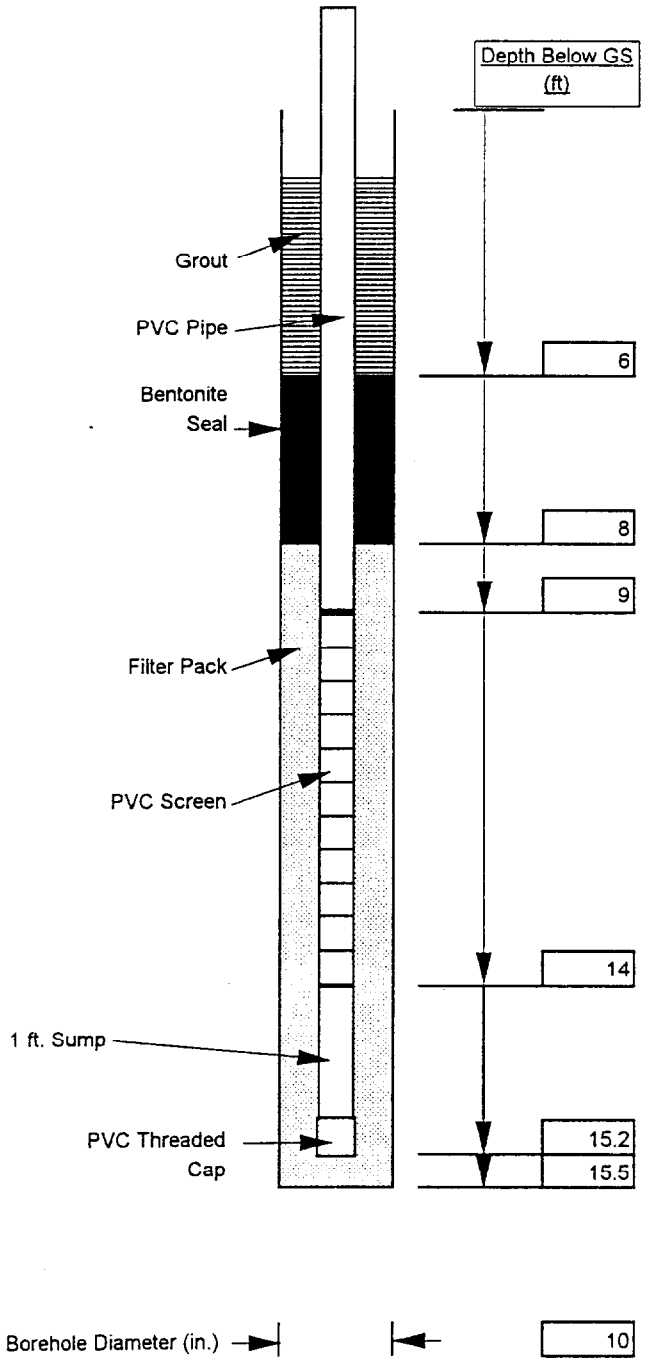
BOREHOLE LOG

Project Name: Parris Island, SC, MCRD		*Borehole No.:193-2-TMW*
Project Number: 22567-145	*Elevation: 7.57ft msl*	
Location: Bldg 193, Dry Cleaners	*Date Started: 12/11/96*	*Date Completed: 12/11/96*
Driller: Brian Cornell	*Total Depth (ft): 14.0*	
Equipment: Mobile B-57	*Depth to Bedrock (ft): None*	
Drilling Method: Hollow Stem Auger	*Hole Diameter (in): 10*	
Drilling Fluid: None	*Depth to Water (ft): 3.0*	
Completion: Completed as Monitoring Well See Well Construction Logs for details	*Logged By: P. Linley*	Temporary well; removed & plugged immediately after permeability test.

Depth (ft)	Description	Sample Number	Sample Type	% Recovery	Blow Count	Comments
	0-2ft: **SAND**: *(SP)*, med dk gry (N4) to dk gry (N3), fine, unconsld, mod well sort, subang to subrd.	1	SS	25		2/3/4/4
	2-4ft: **SAND**: *(SP)*, as above, @ 3ft wet, dk yel org (10YR6/6) to pale yel brn (10YR6/2) to pink gry (5YR8/1)	2	SS	100		4/3/3/3
5	4-6ft: **SAND**: *(SP)*, as above, pale yel brn (10YR6/2) to lt gry (N7), wet	3	SS	100		2/3/4/5
	6-8ft: **SAND**: *(SP)*, as above, lt gry (N7) w/ lt brn (5YR5/6) banding throughout, wet.	4	SS	100		3/1/1/2
	8-10ft: **SAND**: *(SP)*, as above, wet, minor clay frac 15%.	5	SS	100		2/2/5/12
10	10-12ft: **SAND**: *(SP)*, as above, bottom 4-inches med dk gry (N4), saturated.	6	SS	100		2/1/0/1
	12-14ft: **SAND**: *(SP)*, as above, v lt gry (N8) to med gry (N5), silt frac 10%.	7	SS	100		2/1/2/1
15						
20						
25						
30						

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-2-TMW-D
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/11/96	Coordinates:	N187457.710E2099288.355
Drilling Equipment:	Mobile B-57	Date Completed:	12/11/96	Temporary well; removed and plugged immediately after permeability test was completed.	
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.57ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	9.75

Backfill

Type	Grout Seal
Length (ft)	6
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	2
Placement	Pour

Filter Pack

Type	20/30
Length (ft)	7.5
Placement	Pour
Amount Placed	250 lbs

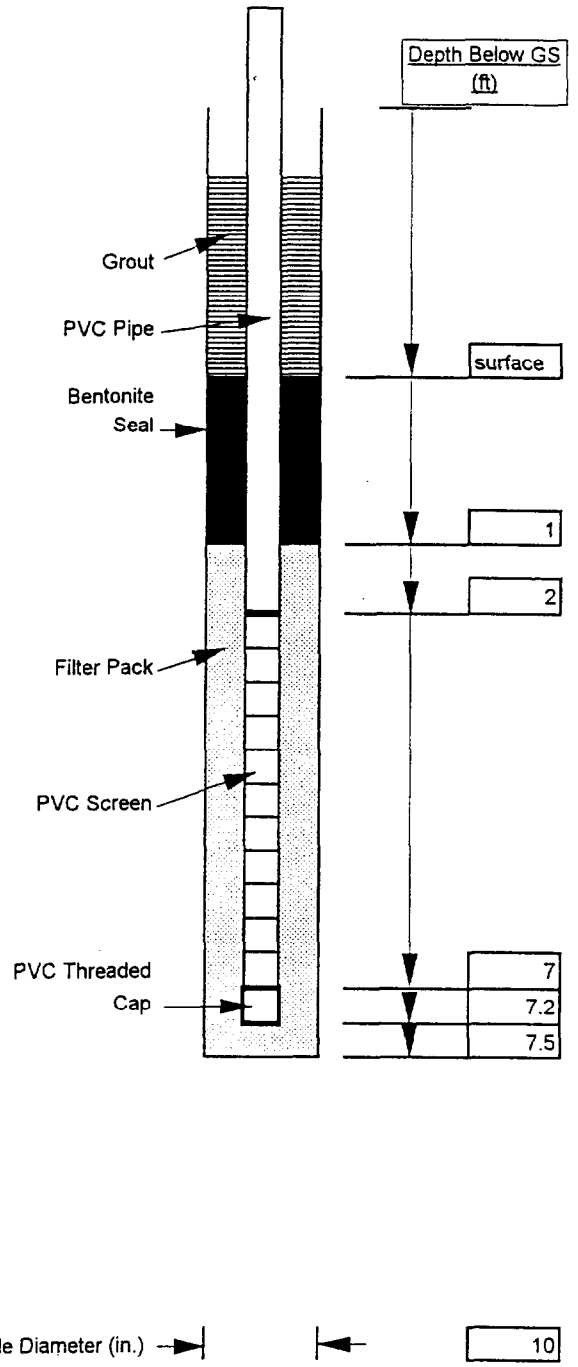
Screen

Type	Schedule 40 PVC
Length (ft)	5
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

000071

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-2-TMW-S
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/11/96	Coordinates:	N187454.710 E2099288.355
Drilling Equipment:	Mobile B-57	Date Completed:	12/11/96	Temporary well; removed and plugged immediately after permeability test was completed.	
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.57ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	4.8

Backfill

Type	Grout Seal
Length (ft)	N/A
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	1
Placement	Pour

Filter Pack

Type	20/30
Length (ft)	6.5
Placement	Pour
Amount Placed	300 lbs

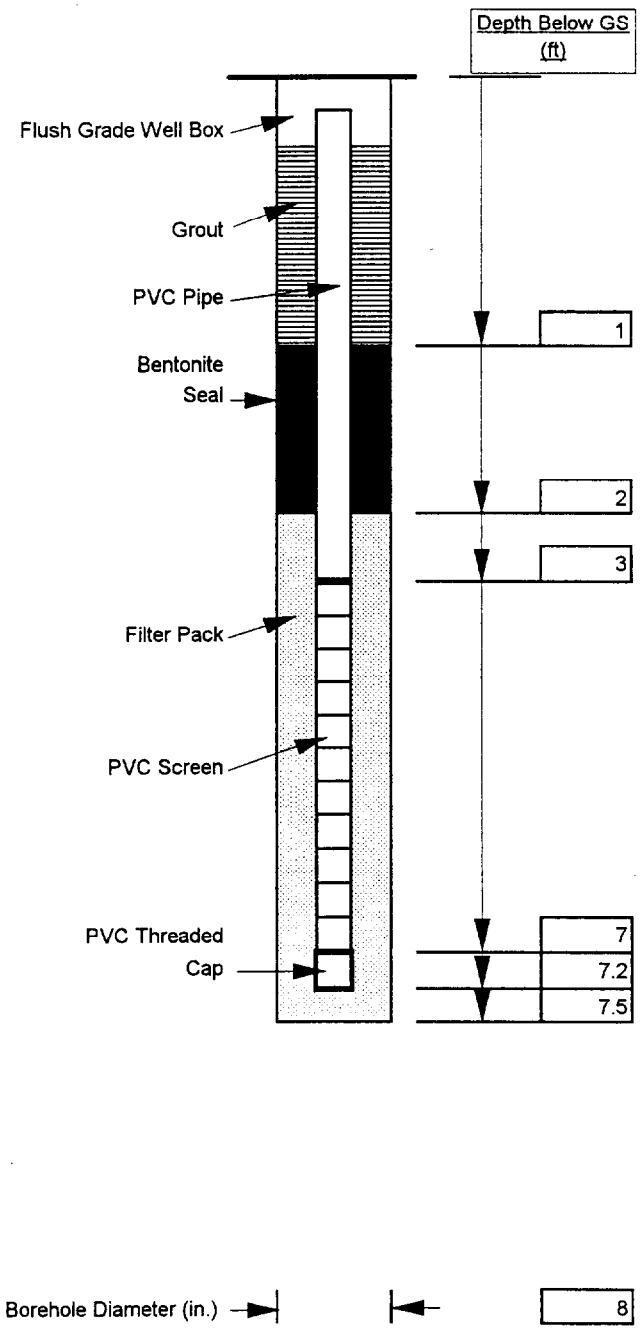
Screen

Type	Schedule 40 PVC
Length (ft)	5
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

000075

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-8-MW-S
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/16/96	Coordinates:	N 187387.149
Drilling Equipment:	Mobile B-57	Date Completed:	12/16/96		E 2099318.846
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.60 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	2.83

Backfill

Type	Grout Seal
Length (ft)	N/A
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	1
Placement	Pour

Filter Pack

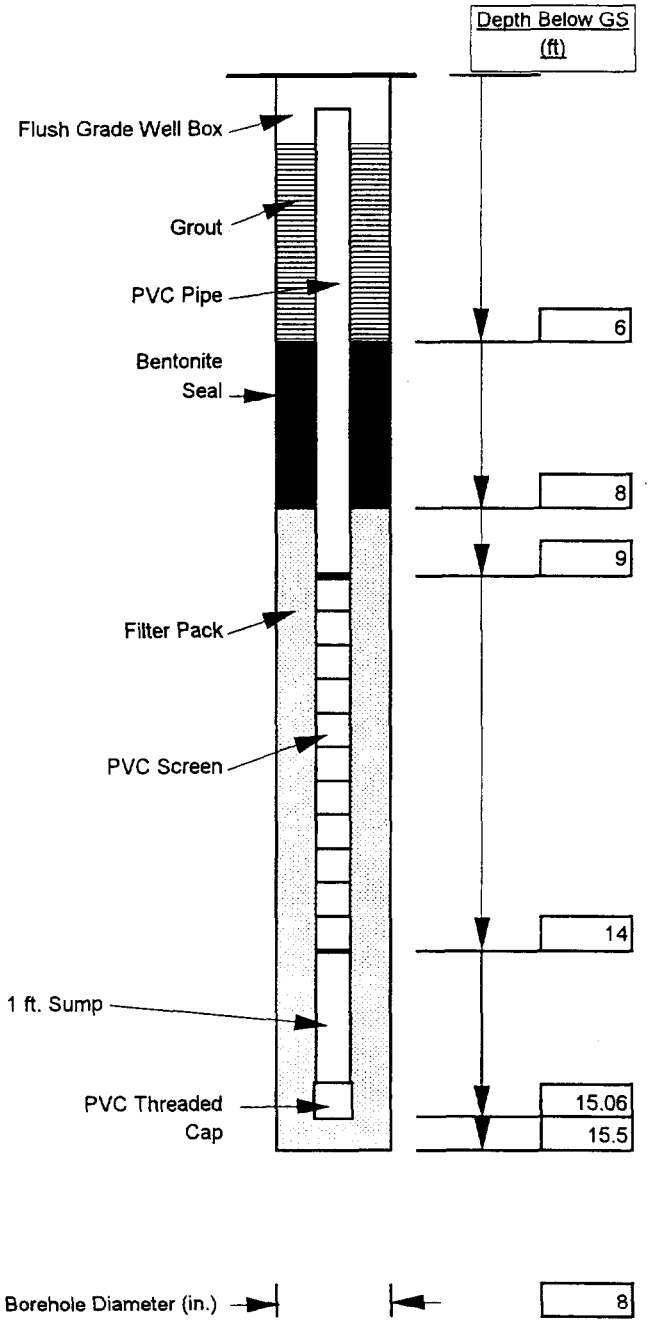
Type	20/30
Length (ft)	5.5
Placement	Pour
Amount Placed	150 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	4
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-MW-8D
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/16/96	Coordinates:	N 187391.271
Drilling Equipment:	Mobile B-57	Date Completed:	12/16/96		E 2099319.322
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.53 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	8.76

Backfill

Type	Grout Seal
Length (ft)	6
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	2
Placement	Pour

Filter Pack

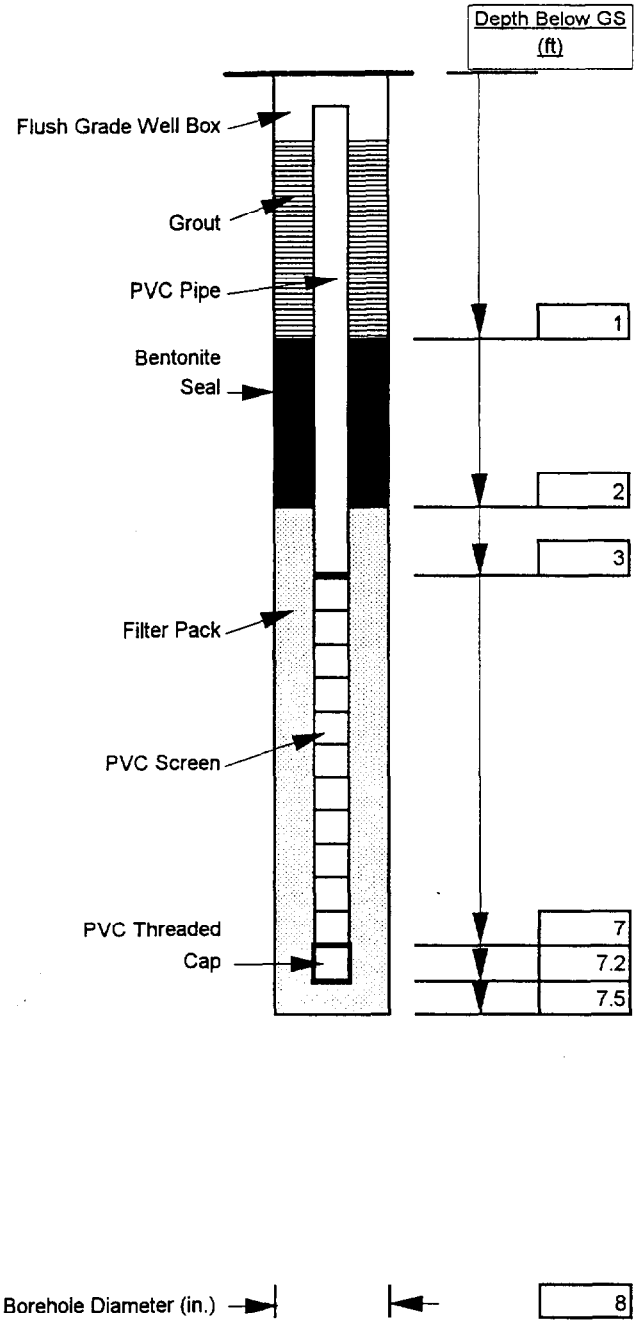
Type	20/30
Length (ft)	7.5
Placement	Pour
Amount Placed	137.5 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	5
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-7-MW-S
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/16/96	Coordinates:	N 187326.652
Drilling Equipment:	Mobile B-57	Date Completed:	12/16/96		E 2099295.775
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.68 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	2.73

Backfill

Type	Grout Seal
Length (ft)	N/A
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	1
Placement	Pour

Filter Pack

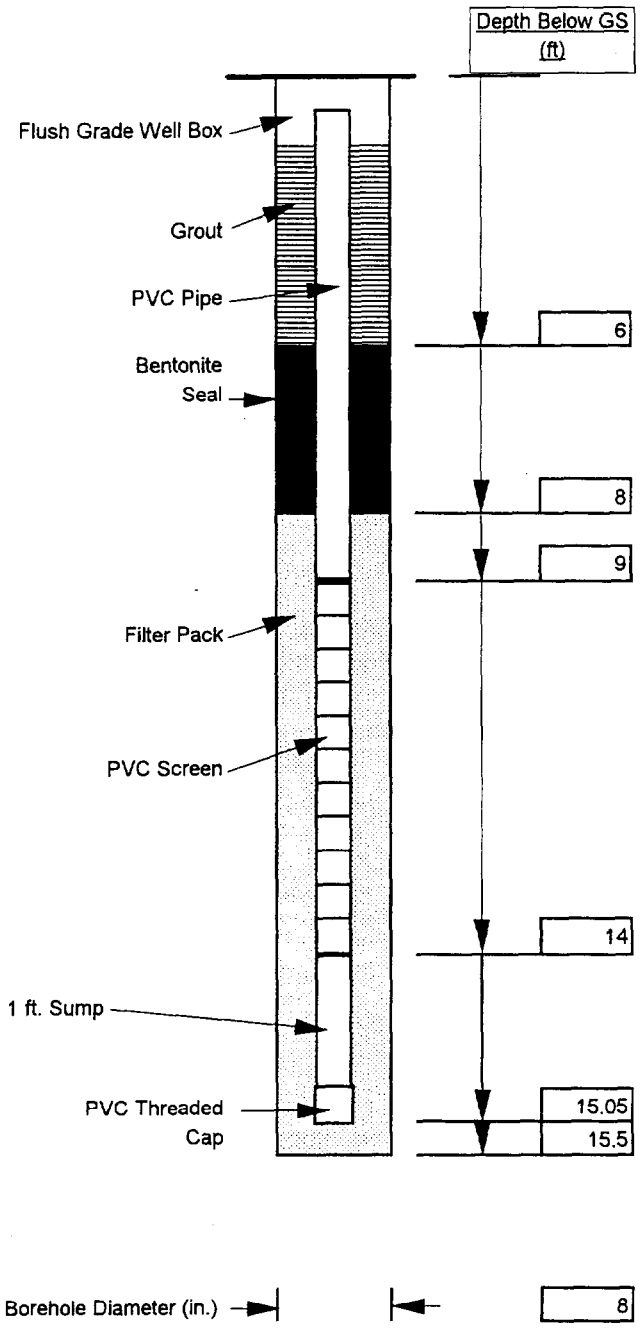
Type	20/30
Length (ft)	5.5
Placement	Pour
Amount Placed	150 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	4
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-7-MW-D
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/16/96	Coordinates:	N 187328.810
Drilling Equipment:	Mobile B-57	Date Completed:	12/16/96		E 2099293.569
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.72 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	8.77

Backfill

Type	Grout Seal
Length (ft)	6
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	2
Placement	Pour

Filter Pack

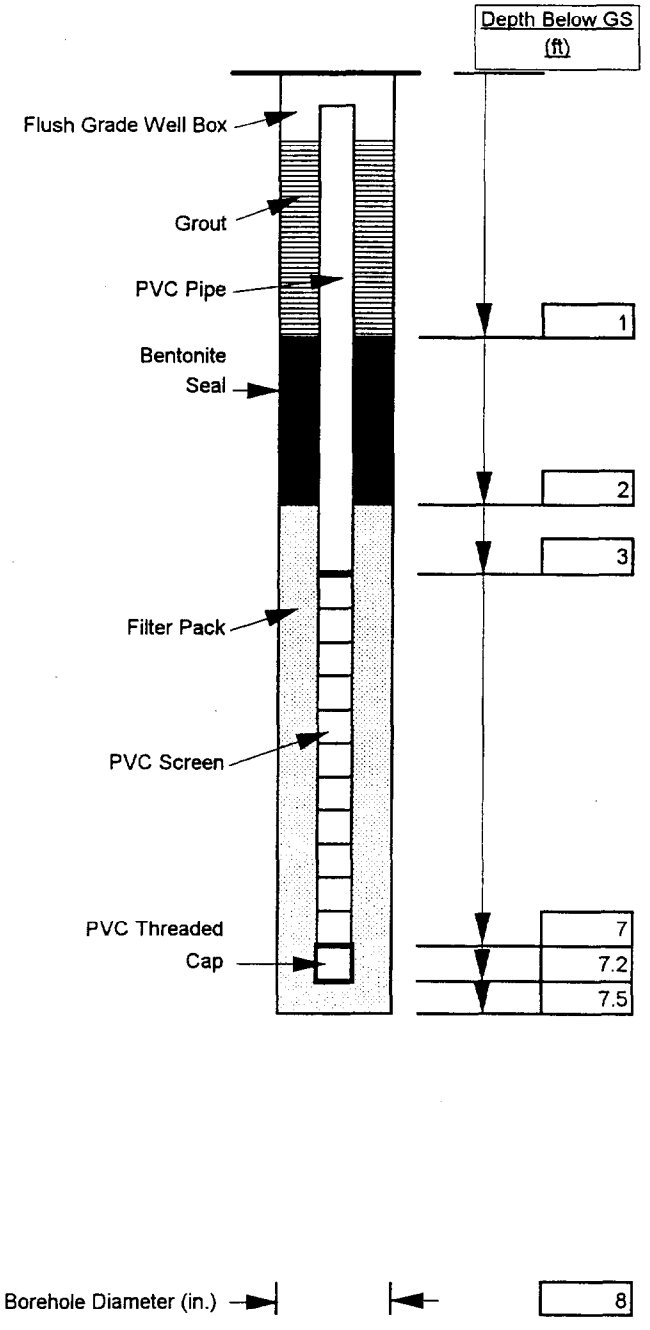
Type	20/30
Length (ft)	7.5
Placement	Pour
Amount Placed	150 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	5
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-6-MW-S
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/16/96	Coordinates:	N 187273.011
Drilling Equipment:	Mobile B-57	Date Completed:	12/16/96		E 2099295.097
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.61 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	2.85

Backfill

Type	Grout Seal
Length (ft)	N/A
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	1
Placement	Pour

Filter Pack

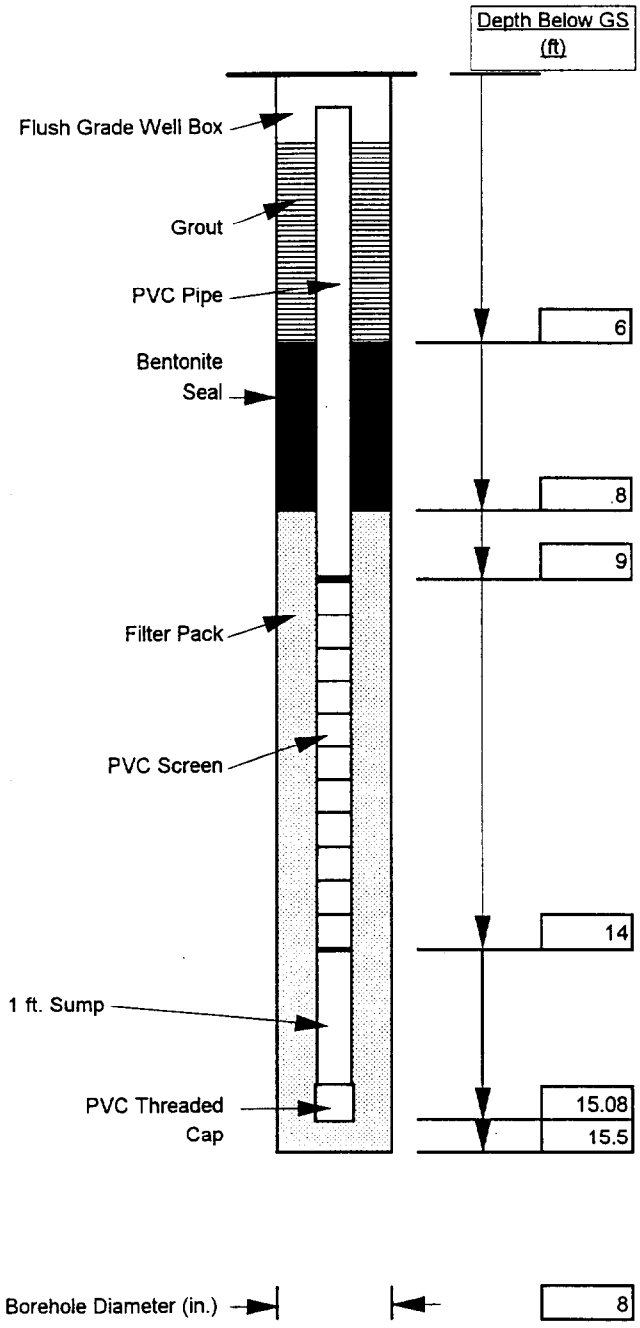
Type	20/30
Length (ft)	5.5
Placement	Pour
Amount Placed	150 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	4
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-6-MW-D
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/16/96	Coordinates:	N 187277.268
Drilling Equipment:	Mobile B-57	Date Completed:	12/16/96		E 2099296.248
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.52 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	8.76

Backfill

Type	Grout Seal
Length (ft)	6
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	2
Placement	Pour

Filter Pack

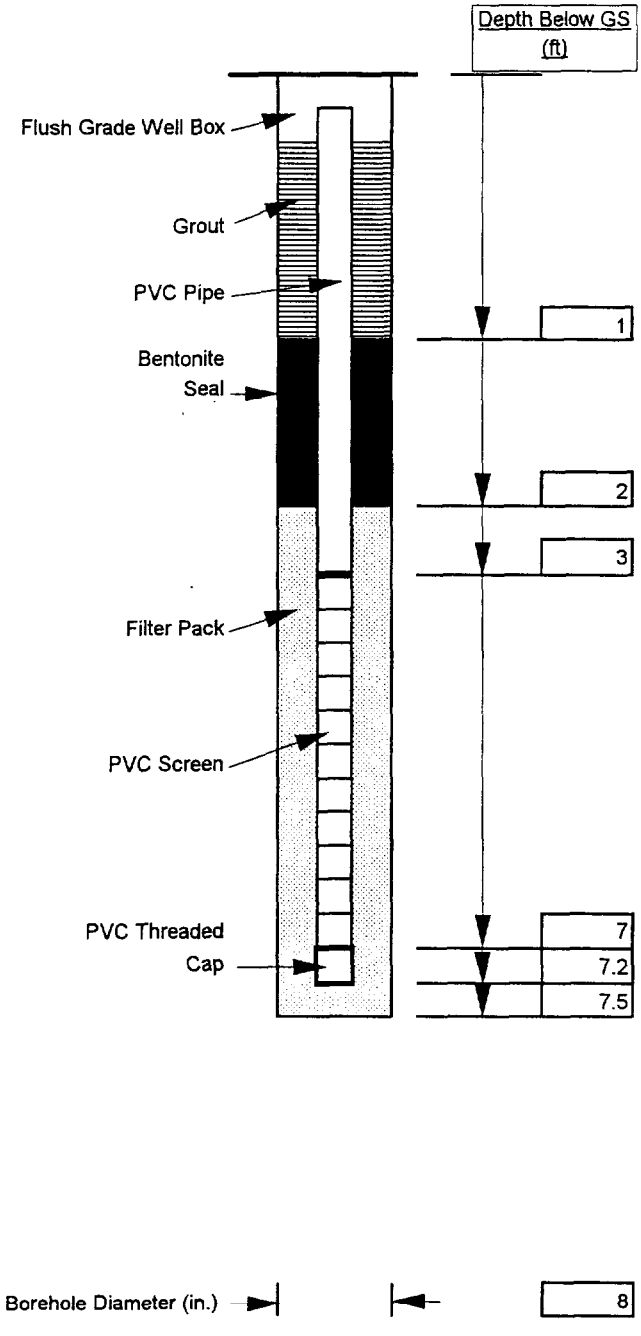
Type	20/30
Length (ft)	7.5
Placement	Pour
Amount Placed	125 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	5
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-5-MW-S
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/13/96	Coordinates:	N 187192.220
Drilling Equipment:	Mobile B-57	Date Completed:	12/13/96		E 2099377.309
Drilling Method:	HSA	Depth to Water:	4ft bgl		
Drilling Fluid:	None	Elevation:	8.6 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	2.96

Backfill

Type	Grout Seal
Length (ft)	N/A
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	1
Placement	Pour

Filter Pack

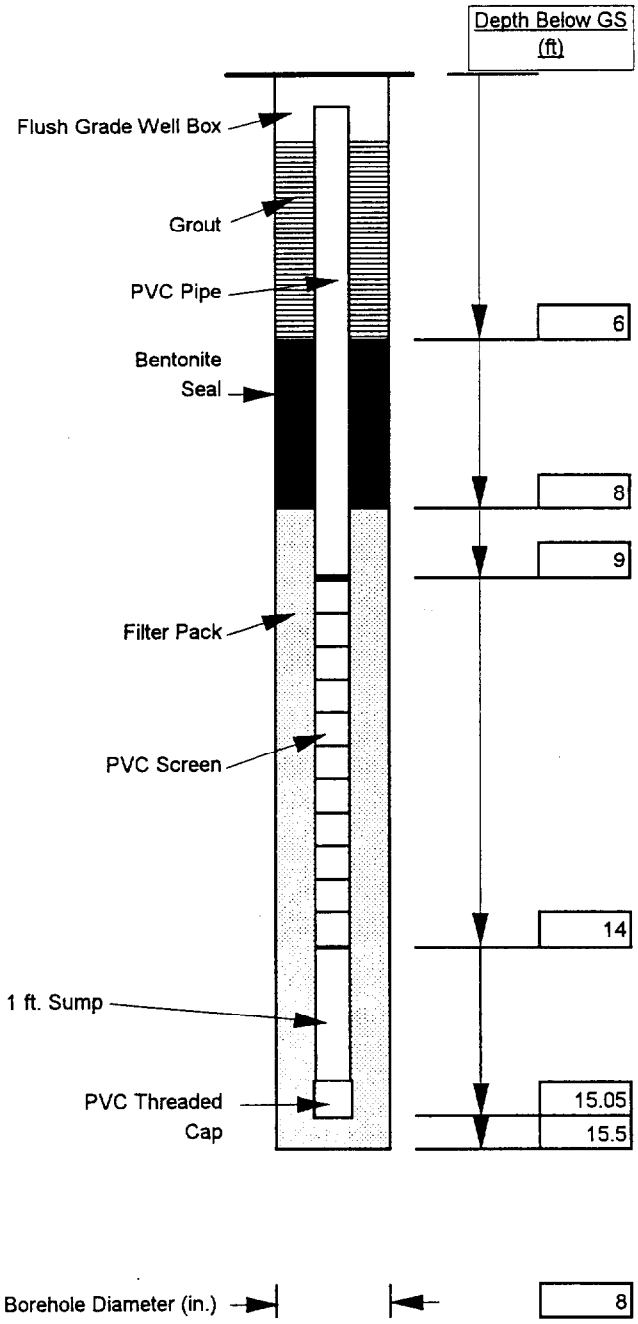
Type	20/30
Length (ft)	5.5
Placement	Pour
Amount Placed	150 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	4
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-5-MW-D
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/13/96	Coordinates:	N 187187.346
Drilling Equipment:	Mobile B-57	Date Completed:	12/13/96		E 2099376.763
Drilling Method:	HSA	Depth to Water:	4ft bgl		
Drilling Fluid:	None	Elevation:	8.26 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	8.62

Backfill

Type	Grout Seal
Length (ft)	6
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	2
Placement	Pour

Filter Pack

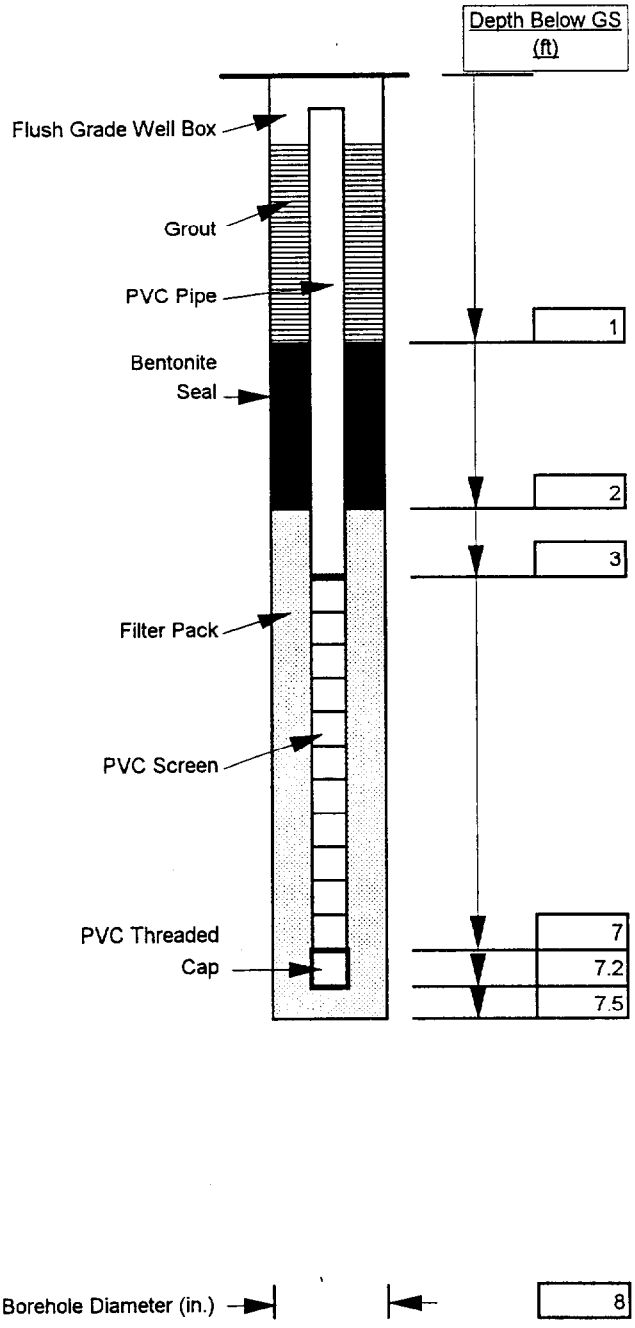
Type	20/30
Length (ft)	7.5
Placement	Pour
Amount Placed	200 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	5
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-4-MW-S
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/12/96	Coordinates:	N 187150.910
Drilling Equipment:	Mobile B-57	Date Completed:	12/12/96		E 2099249.096
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	6.98 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	2.84

Backfill

Type	Grout Seal
Length (ft)	N/A
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	1
Placement	Pour

Filter Pack

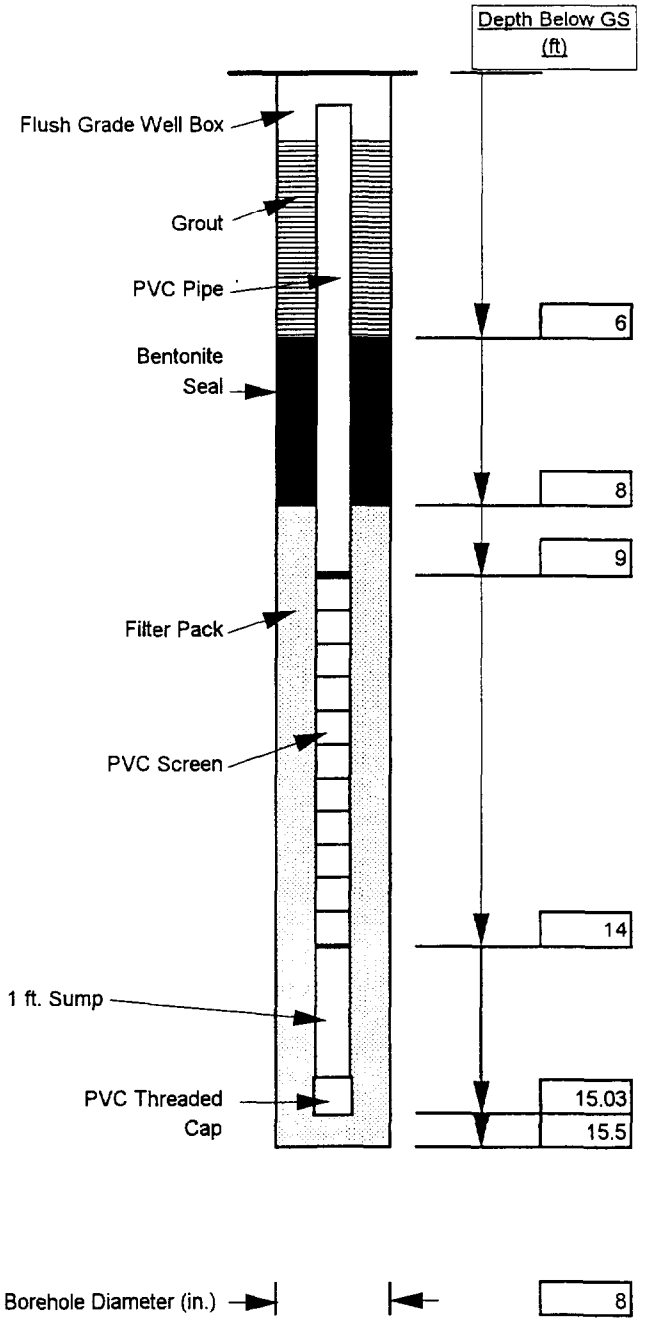
Type	20/30
Length (ft)	5.5
Placement	Pour
Amount Placed	162.5 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	4
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-MW-4D
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/12/96	Coordinates:	N 187149.280
Drilling Equipment:	Mobile B-57	Date Completed:	12/12/96		E 2099253.080
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	6.93 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	8.79

Backfill

Type	Grout Seal
Length (ft)	6
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	2
Placement	Pour

Filter Pack

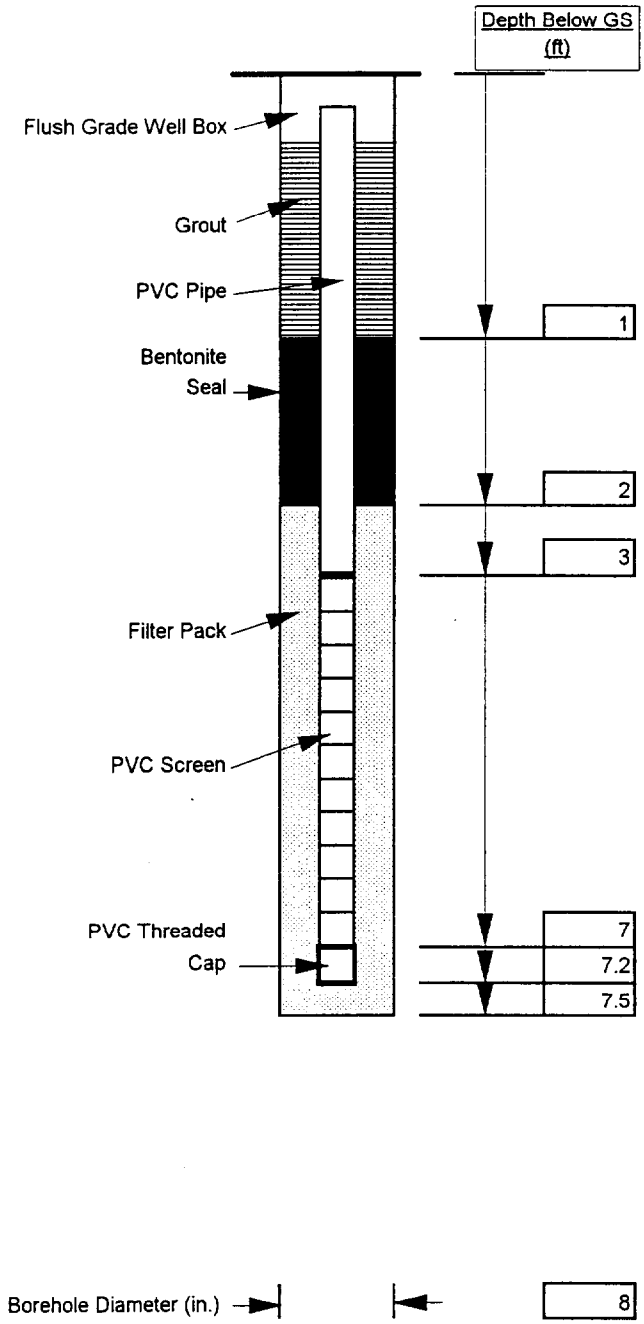
Type	20/30
Length (ft)	7.5
Placement	Pour
Amount Placed	150 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	5
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-3-MW-S
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/13/96	Coordinates:	N 187257.657
Drilling Equipment:	Mobile B-57	Date Completed:	12/13/96		E 2099244.001
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.6 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	2.82

Backfill

Type	Grout Seal
Length (ft)	N/A
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	1
Placement	Pour

Filter Pack

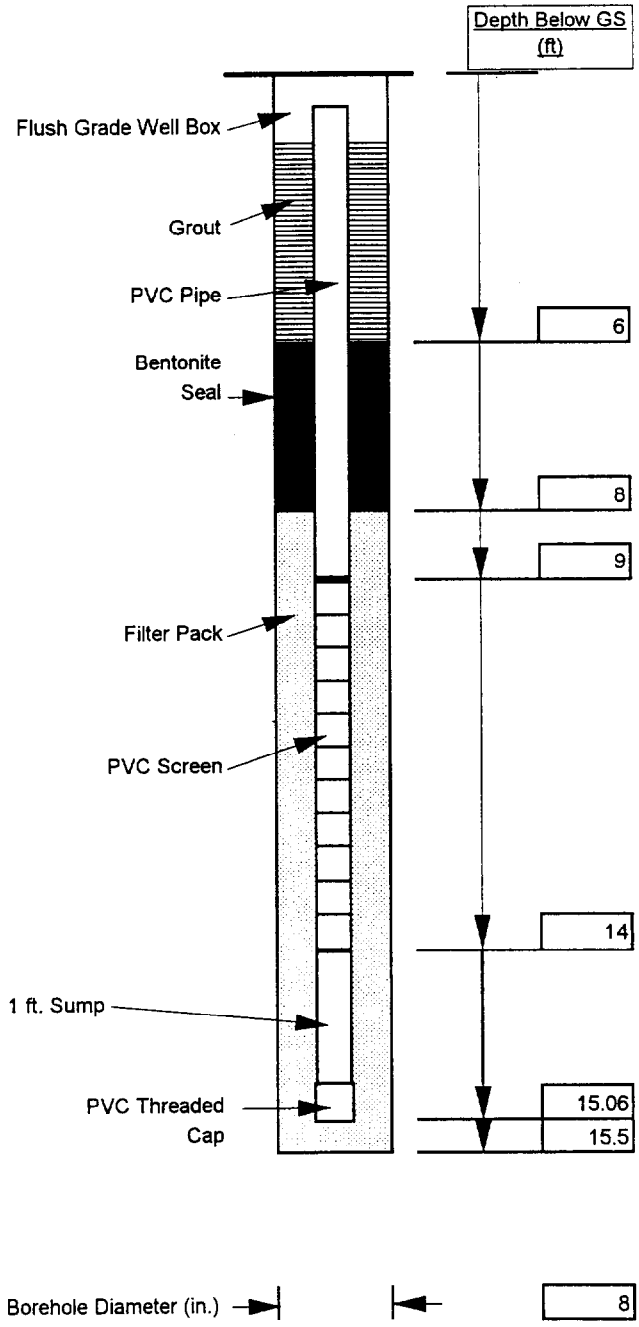
Type	20/30
Length (ft)	5.5
Placement	Pour
Amount Placed	150 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	4
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-3-MW-D
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/13/96	Coordinates:	N 187258.713
Drilling Equipment:	Mobile B-57	Date Completed:	12/13/96		E 2099239.820
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.57 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	8.79

Backfill

Type	Grout Seal
Length (ft)	6
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	2
Placement	Pour

Filter Pack

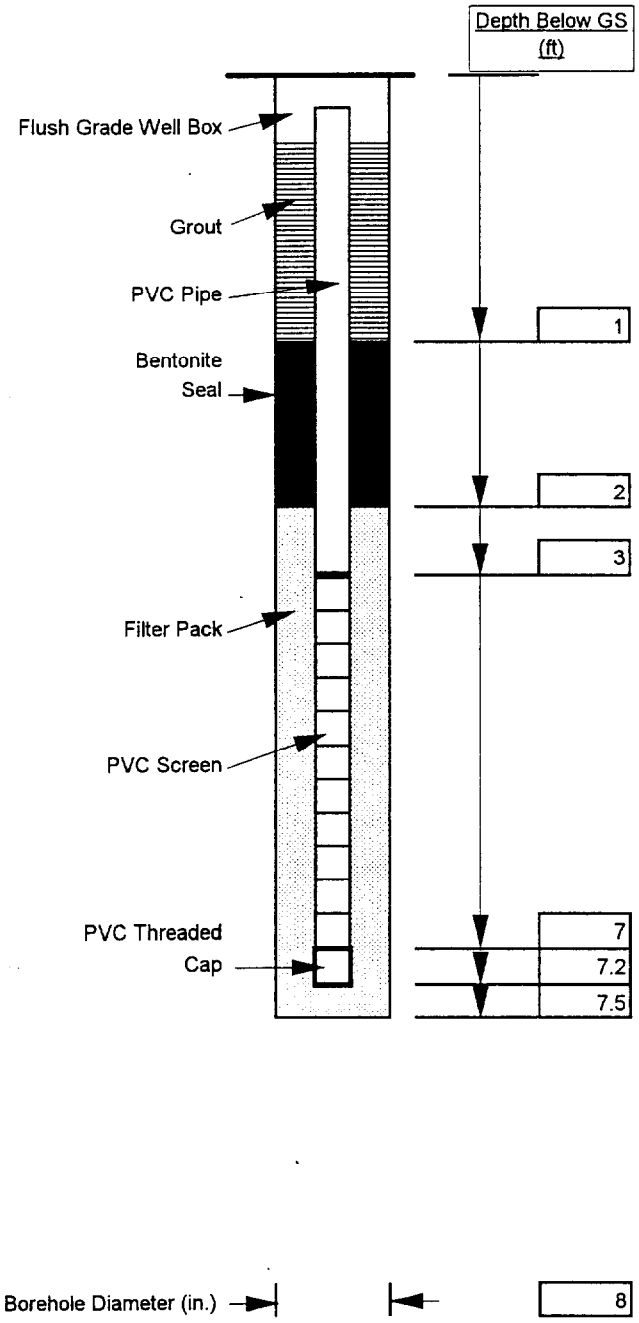
Type	20/30
Length (ft)	7.5
Placement	Pour
Amount Placed	150 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	5
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-2-MW-S
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/14/96	Coordinates:	N 187345.032
Drilling Equipment:	Mobile B-57	Date Completed:	12/14/96		E 2099203.731
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.11 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	2.66

Backfill

Type	Grout Seal
Length (ft)	N/A
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	1
Placement	Pour

Filter Pack

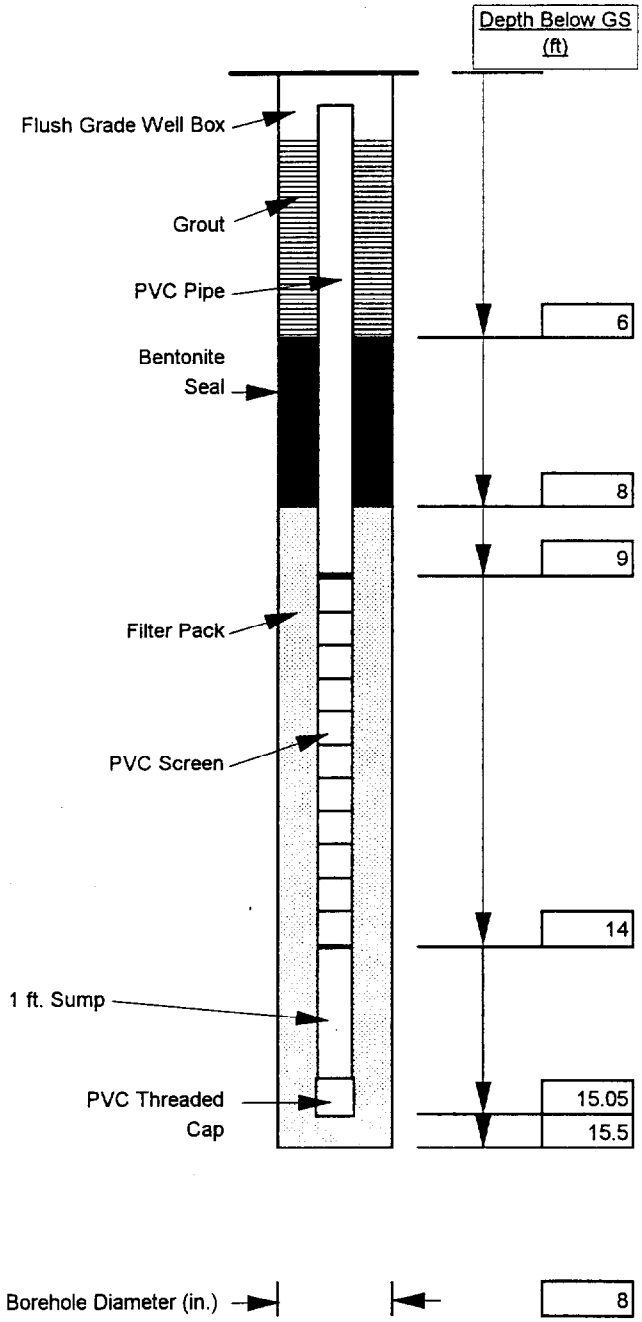
Type	20/30
Length (ft)	5.5
Placement	Pour
Amount Placed	150 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	4
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-2-MW-D
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/14/96	Coordinates:	N 187341.197
Drilling Equipment:	Mobile B-57	Date Completed:	12/14/96		E 2099201.966
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.23 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	8.78

Backfill

Type	Grout Seal
Length (ft)	6
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	2
Placement	Pour

Filter Pack

Type	20/30
Length (ft)	7.5
Placement	Pour
Amount Placed	150 lbs

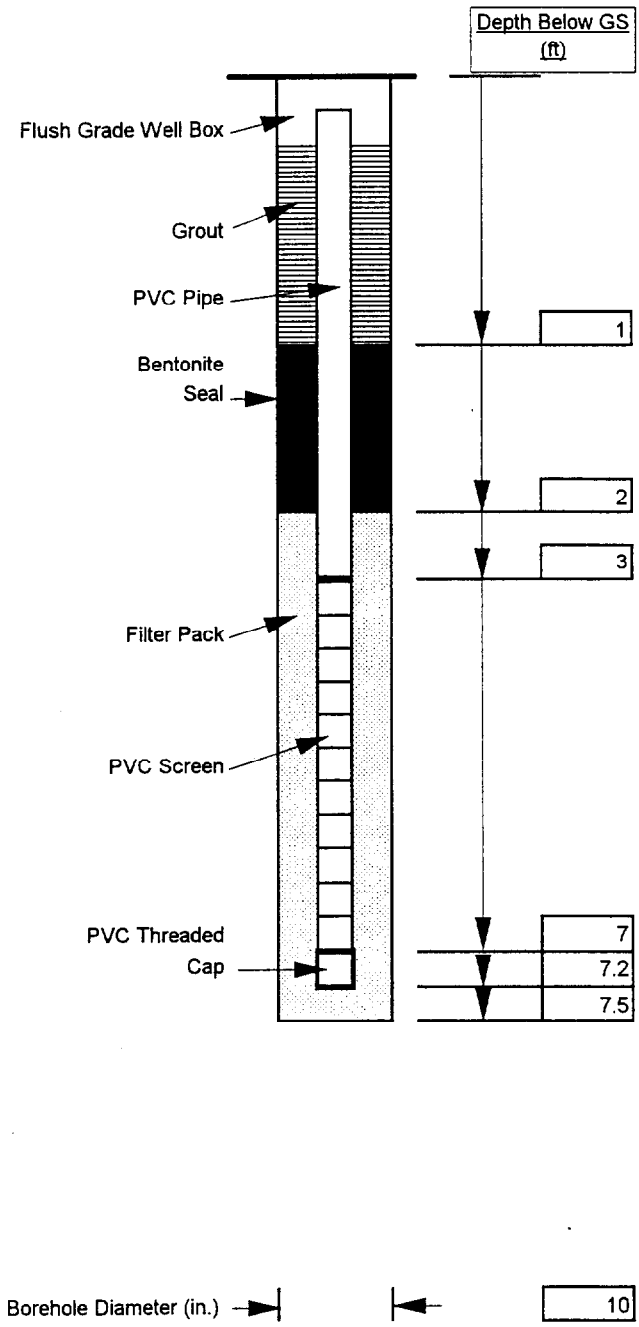
Screen

Type	Schedule 40 PVC
Length (ft)	5
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

000075

WELL CONSTRUCTION LOG

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-1-MW-S
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/11/96	Coordinates:	N 187455.597
Drilling Equipment:	Mobile B-57	Date Completed:	12/11/96		E 2099298.879
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.6 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	2.79

Backfill

Type	Grout Seal
Length (ft)	N/A
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	1
Placement	Pour

Filter Pack

Type	20/30
Length (ft)	5.5
Placement	Pour
Amount Placed	325 lbs

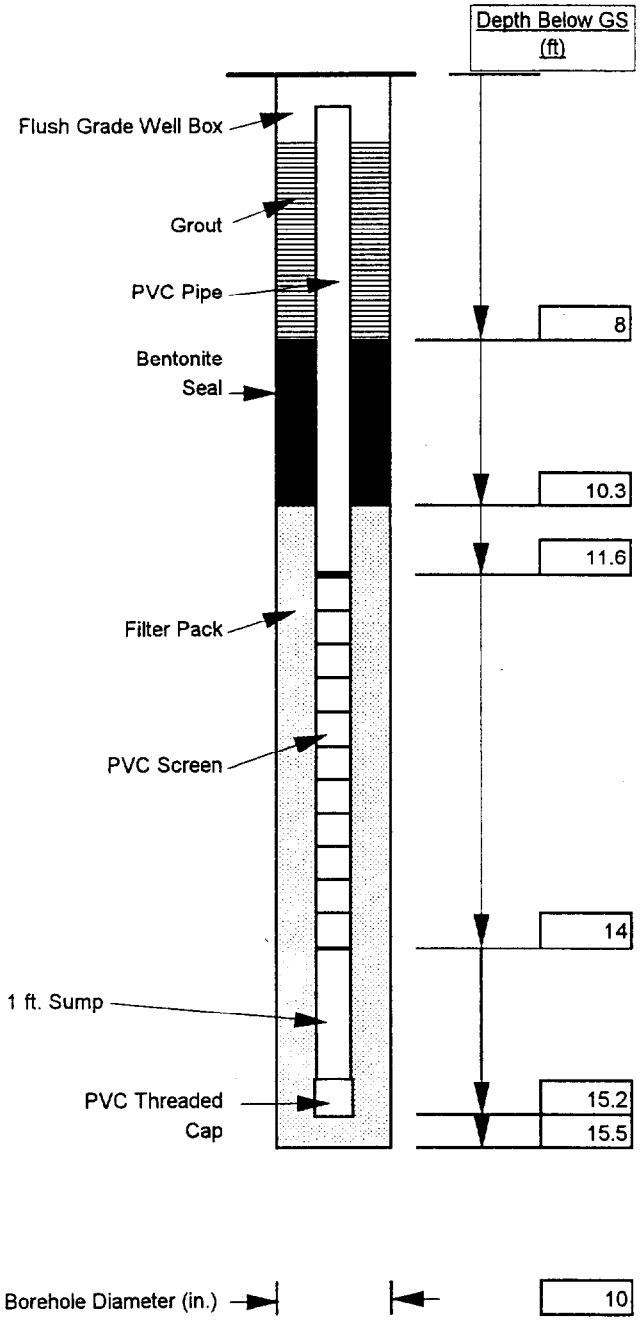
Screen

Type	Schedule 40 PVC
Length (ft)	4
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

WELL CONSTRUCTION LOG

000075

MCRD Parris Island	Site: Dry Cleaners Bld 193			Well No.:	193-1-MW-D
Drilling Company:	Environmental Drilling Inc.	Project No.:	22567-145	Logged By:	P. Linley
Driller:	Brian Cornell	Date Started:	12/11/96	Coordinates:	N 187454.710
Drilling Equipment:	Mobile B-57	Date Completed:	12/11/96		E 2099308.355
Drilling Method:	HSA	Depth to Water:	3ft bgl		
Drilling Fluid:	None	Elevation:	7.57 ft msl		



MATERIALS

Riser Pipe

Type	Schedule 40 PVC
Diameter (in.)	2
Length (ft)	11.36

Backfill

Type	Grout Seal
Length (ft)	8
Placement	Tremie

Seal

Type	Bentonite Pellets
Length (ft)	2.3
Placement	Pour

Filter Pack

Type	20/30
Length (ft)	5.2
Placement	Pour
Amount Placed	162.5 lbs

Screen

Type	Schedule 40 PVC
Length (ft)	2.4
Diameter (in.)	2
Slot Size (in.)	0.01
Slot Type	Machine Slotted

000067

SOIL ANALYSIS TEST PROGRAM

FINAL REPORT

CORE LABORATORIES

CORE LABORATORIES

SOIL ANALYSIS TEST PROGRAM

FINAL REPORT

Performed for:

BECHTEL ENVIRONMENTAL, INC.
151 LAFAYETTE DRIVE, P.O. BOX 350
OAKRIDGE, TENNESSEE 37831-0350

January 7, 1997

Performed by:

CORE LABORATORIES, INC.
Rock Properties Laboratory
Dallas Advanced Technology Center
1875 Monetary Drive
Carrollton, Texas 75006

File: DAL-96497

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CORE LAB

PETROLEUM SERVICES

January 7, 1996

Bechtel Environmental, Inc.
151 Lafayette Drive, P.O. Box 350
Oakridge, Tennessee 37831-0350

Attention: Ms. Karen Atchley

Subject: Final Report
Soil Analysis Test Program
File: DAL-96497

Dear Ms. Atchley:

A testing program to determine intrinsic permeability, air permeability, bulk density, water content, and particle size distribution has been completed for Bechtel. This study was authorized by Ms. Atchley by delivery of the sample on December 13, 1996. Final results of all testing are presented herein.

One sample of soil identified as " 193-MW-4 5'-7' " was received on December 13, 1996. Two companion 1-inch diameter horizontal core plugs were punched from the supplied soil sample and labeled as Sample 1 and Sample 2. In addition, remnant core material from the same interval was removed and labeled as Sample 3. Subsequent sample preparation is described on Page ii.

Permeability to liquid was determined on Sample 1 as outlined on Page iii. The liquid permeability value for the sample was 5.87E-13 cm^2. The permeability to air, measured using a steady-state permeameter, was 3.47E+02 millidarcys. Bulk density (2.01 g/cm^3) and moisture content (0.437 cm^3/cm^3) were determined on Sample 2 as described on Page iv. Particle size distribution was determined on the section labeled Sample 3 as described on Page v. A summary of test results is presented on Page 1 and 2. Permeability to liquid and hydraulic conductivity calculations follow on Pages 3 and 4. ASTM procedures and testing methods are listed on page 5.

Thank you for this opportunity to be of service to Bechtel. Please contact us if you have any questions concerning the enclosed information, or if we may be of any additional service.

Very truly yours,

Wade Williams

Wade Williams
Rock Properties Laboratory
Dallas Advanced Technical Center

3 copies: Addressee

Core Laboratories, Inc.
1875 Monetary Lane, Carrollton, Texas 75006-7012, (214) 466-2673, Telex 163166, CORDAL UT, Fax (214) 323-3930

Bechtel
File: DAL-96497

PROJECT PARTICIPANTS

Particle Size Distribution	Robert Lee Robert Lee
Limited Site Assessment Analyses Final Report Preparation	Wade Williams Wade Williams
Final Review	Melanie F. Dunn Melanie F. Dunn

EXPERIMENTAL PROCEDURES

Sample Preparation

1. Upon receipt, the suite of samples was assigned job number DAL-96497 for laboratory tracking.

2. Samples 1 and 2 were trimmed to right cylinders approximately 1-inch in length. Each sample was then placed in a 1-inch diameter metal sleeve with 120 mesh and 60 mesh stainless steel screens installed on the top and bottom. The samples were then weighed to the nearest 0.001 gm. Corrected weights were obtained by subtracting the weights of the mounting materials.

3. Samples 1 and 2 were designated for testing as follows:

   - Sample 1: permeability tests
   - Sample 2: moisture content and bulk density tests

4. Sample 3 was submitted for Particle Size determinations, see page v.

5. A chain of custody (COC) form was prepared for each sample. All pertinent data relating to the sample was recorded on this form which accompanied the sample throughout testing.

6. The length and diameter of Sample 1 and 2 were measured to the nearest 0.001 cm using digital calipers and recorded on the COC form. Cross-sectional area were calculated as follows:

$$L = (l - C_1)$$
$$A = ((D - C_2)/2)^2 * pi$$

where:
- l = Gross sample length, cm
- L = Corrected sample length, cm
- A = Cross-sectional area, cm^2
- D = Gross sample diameter, cm
- pi = 3.14159
- C_1 = Metal sleeve and screen length correction, cm
- C_2 = Metal sleeve diameter correction, cm

Permeability to Liquid Measurement

1. Sample 1 was briefly evacuated of air, saturated with tap water, and weighed. The weight was recorded on the COC sheet. The plug was installed in a hydrostatic coreholder and 100 psi net confining stress was applied.

2. Tap water, which had been previously evacuated of air, was injected at a constant upstream pressure. Differential pressure was monitored using a Validyne transducer calibrated, prior to use, using a dead weight tester. Pressure readings are accurate to plus or minus 0.5 percent of the full scale value. Tap water viscosity was measured with a calibrated Canon-Fenske glass capillary viscometer. Tap water density was determined using a pycnometer.

3. The produced rate was monitored as a function of time using a class A pipette until the relative percent difference in incremental produced rate (measured over a two hour period) was less than 10 percent over a 24 hour period.

4a. Permeability to liquid in millidarcys was calculated from the observed data using the following equation (Darcy's law):

$$K = (C_1 * C_2 * \mu * V L) / (P * A * T)$$

where:
- K = permeability to liquid, millidarcys
- C_1 = constant, psi/atm
- C_2 = constant, millidarcys/darcy
- μ = viscosity of liquid, centipoise
- V = incremental produced volume, ml
- L = length, cm
- P = differential pressure, psi
- A = cross-sectional area, cm^2
- T = incremental time, sec

4b. Permeability in cm^2 was calculated from this value using the conversion factor:

$$cm^2 = \text{millidarcys} \times 9.869E\text{-}12$$

5a. Hydraulic conductivity in meters per second was calculated from the observed data using the following equation:

$$k = (V * L) / (A * T * P)$$

where:
- k = Hydraulic conductivity, m/sec
- V = Incremental produced volume, m^3
- L = Length, m
- P = Differential pressure, m H_2O
- A = Cross-sectional area, m^2
- T = Incremental time, sec

5b. Hydraulic conductivity in meters per year was calculated from this value using the conversion factor:

$$\text{meters per year} = \text{meters per sec} * 31{,}536{,}600$$

6. The sample was then submitted for air permeability determination.

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Bulk Density and Moisture Content Determination

1. Bulk density and moisture content were determined on Sample 2.

2. Bulk density is defined to be the sample weight divided by the sample bulk volume and is presented in grams per cubic centimeter.

3. Bulk volume was calculated from the corrected length and area of the samples determined in the sample preparation step as follows:

$$BV = L * A$$

where:
BV = Bulk volume, cc
L = Length, cm
A = Area, cm^2

4. Bulk density was calculated from the bulk volume and the corrected weight of the sample (see sample preparation) as follows:

$$BD = W_{sample} / BV$$

where:
BD = Bulk density, grams/cc
BV = Bulk volume, cc
W_{sample} = Sample weight, grams

5. The sample was dried to a constant weight in a vacuum oven at 220°F. The weight difference was used to calculate the fluid saturated pore volume as follows:

$$SV = (W_{saturated} - W_{dry}) / \rho_{fluid}$$

where:
SV = Fluid saturated volume, cc
$W_{saturated}$ = Saturated weight, grams
W_{dry} = Dry weight, grams
ρ_{fluid} = Saturant fluid density, grams/cc

6. Moisture content was calculated by the following equation:

$$MC = SV / BV$$

where:
MC = Moisture content, cc/cc
SV = Fluid saturated volume, cc
BV = Bulk volume, cc

Particle Size Analysis

The selected samples were cleaned, dried, and separated in two portions. A dry sieve analysis was conducted on one portion of each sample to define the larger grain sizes (> 20 microns) while laser particles sieve analysis was performed on the remaining portion of each sample to categorize the particles below 20 microns.

Laser particle size analysis was performed using the Coulter LS 130 laser particle size analyzer. The LS series measures particle size by measuring the amount of light scattered by the particle in different directions by means of a Fourier lens. The diffraction detector system consists of 126 photodiode detectors in three sets. These are low angle (mainly for large particles), mid-angle (average particles), and high-angle (small particles).

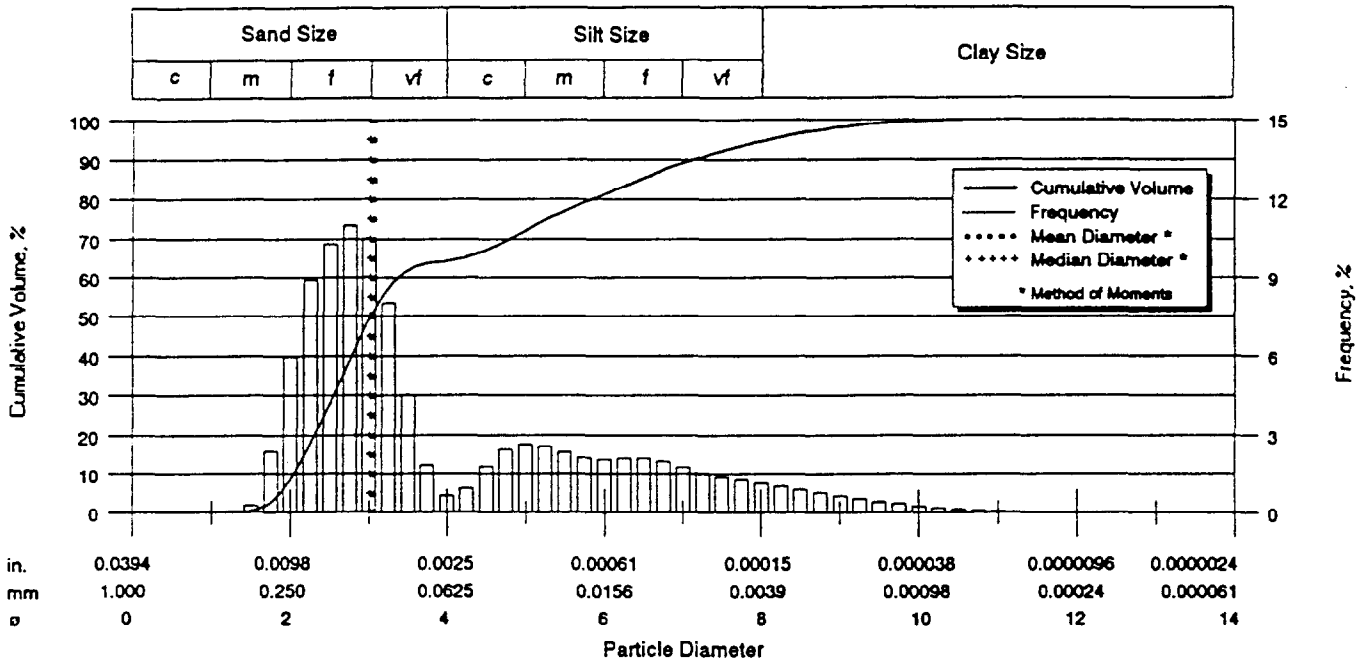
Additionally, the LS 130's Polarization Intensity Differential Scattering Assembly utilizes polarized light to provide the primary sized information for particles in the 0.1 to 0.4 micron range and enhances the resolution of the particle sized distributions of up to 1 micron. Measured particle range is 0.1 to 800 microns with a repeatability of <1% about mean size (repeat runs of same sample).

The dry sieve and laser particle size measurements then were combined to obtain the overall sample distribution.

LASER PARTICLE SIZE ANALYSIS

Bechtel

File: DAL-96497



Particle Size Distribution

	Diameter [U.S. Sieve]	[in]	[mm]	[phi]	Volume, % [Inc.]	[Cum.]
Coarse Sand	20	0.0331	0.84	0.25	0.00	0.00
	25	0.0280	0.71	0.50	0.00	0.00
	30	0.0232	0.59	0.75	0.00	0.00
	35	0.0197	0.50	1.00	0.00	0.00
Medium Sand	40	0.0165	0.42	1.25	0.00	0.00
	45	0.0138	0.35	1.50	0.28	0.28
	50	0.0118	0.30	1.75	2.36	2.64
	60	0.0098	0.25	2.00	5.98	8.62
Fine Sand	70	0.0083	0.210	2.25	8.90	17.52
	80	0.0070	0.177	2.50	10.31	27.83
	100	0.0059	0.149	2.75	11.01	38.84
	120	0.0049	0.125	3.00	10.52	49.36
Very Fine Sand	140	0.0041	0.105	3.25	8.01	57.37
	170	0.0035	0.088	3.50	4.52	61.89
	200	0.0029	0.074	3.75	1.81	63.70
	230	0.0025	0.063	4.00	0.69	64.39
Silt	270	0.0021	0.053	4.25	0.93	65.32
	325	0.0017	0.044	4.50	1.80	67.12
	400	0.0015	0.037	4.75	2.42	69.54
	450	0.0012	0.031	5.00	2.66	72.20
	500	0.0010	0.025	5.32	3.25	75.45
	635	0.0008	0.020	5.64	2.87	78.32
		0.00061	0.0156	6.00	2.97	81.29
		0.00031	0.0078	7.00	7.92	89.21
		0.00015	0.0039	8.00	5.36	94.57
Clay		0.000079	0.0020	9.00	3.41	97.98
		0.000039	0.00098	10.0	1.57	99.55
		0.000019	0.00049	11.0	0.41	99.96
		0.0000094	0.00024	12.0	0.04	100.00
		0.0000047	0.00012	13.0	0.00	100.00
		0.0000039	0.00010	13.3	0.00	100.00

Sorting Statistics

Parameter	[Moment]	[Trask]	[Inman]	[Folk]
Mean, in	0.0047	0.0027	0.0020	0.0027
Mean, mm	0.1195	0.0692	0.0520	0.0694
Mean, phi	3.0649	3.8529	4.2657	3.8493
Median, in	0.0048	0.0048	0.0048	0.0048
Median, mm	0.1236	0.1236	0.1236	0.1236
Median, phi	3.0162	3.0166	3.0166	3.0166
Std Deviation, in	0.0035	0.0141	0.0094	0.0099
Std Deviation, mm	0.0900	0.3603	0.2403	0.2548
Std Deviation, phi	3.4736	1.4725	2.0573	1.9727
Skewness	0.3030	1.4095	0.9567	0.6195
Kurtosis	-0.8960	0.2794	0.5143	0.8986
Mode, mm	0.1525			
95% Confidence	0.1018			
Limits, mm	0.1371			
Variance, mm2	0.0081			
Coef. of Variance, %	75.35			

Percentiles [volume, %]	Particle Diameter [in]	[mm]	[phi]
5	0.0107	0.2737	1.8695
10	0.0095	0.2431	2.0402
16	0.0084	0.2164	2.2084
25	0.0072	0.1853	2.4321
50	0.0048	0.1236	3.0166
75	0.0010	0.0258	5.2737
84	0.0005	0.0125	6.3230
90	0.0003	0.0072	7.1252
95	0.0001	0.0036	8.1003

Core Laboratories

SUMMARY OF SOILS TEST PROGRAM RESULTS

Bechtel

File: DAL-96497

Sample I.D.	Permeability to Liquid,		Hydraulic Conductivity,		Permeability to Air,	Moisture Content,	Bulk Density,
	millidarcys	cm^2	m/sec	m/year	millidarcys	cc/cc	g/cc
193-MW-4 5'-7'	5.94E-02	5.87E-13	5.93E-10	1.87E-02	3.47E+02	0.437	2.01

Core Laboratories

SUMMARY OF PERMEABILITY TO LIQUID TEST RESULTS

Fluid: Tap Water

Bechtel

File: DAL-96497

Sample I.D.	Length, cm	Area, cm²	Viscosity, cp	Differential Pressure, psi	Incremental Volume, ml	Incremental Time, sec	Permeability to Liquid, millidarcys	Permeability to Liquid, cm²
193-MW-4 5'-7'	2.98	4.99	0.97	50.0	4.29	12300.	5.94E-02	5.87E-13

Core Laboratories

SUMMARY OF HYDRAULIC CONDUCTIVITY CALCULATIONS

Fluid: Tap Water

Bechtel

File: DAL-96497

Sample I.D.	Length, m	Area, m^2	Viscosity, cp	Differential Pressure, m H2O	Quantity of Flow, m^3	Incremental Time, sec	Hydraulic Conductivity, m/sec	Hydraulic Conductivity, m/year
193-MW-4 5'-7'	2.98E-02	4.99E-04	9.70E-01	3.52E+01	4.29E-06	1.23E+04	5.93E-10	1.87E-02

Core Laboratories

SITE ASSESSMENT TESTING METHODS

Bechtel

File: DAL-96497

Test Description	Procedure
Moisture Content	ASTM D2216
Particle Size Analysis	ASTM D422
Intrinsic Permeability	ASTM D5084
Bulk Density	Gravimetric and Volumetric Determination
Air Permeability	Steady-State Air Pemeameter

Sample ID/Location
Cross Reference Index

Sample ID	Station ID	Sample Matrix	Parameters
PI1618001	193-1MW-D	WATER	VOCs
PI1618101	193-1MW-S	WATER	VOCs
PI1618201	193-2MW-D	WATER	VOCs
PI1618303	193-2MW-S	WATER	VOCs
PI1618403	193-3MW-D	WATER	VOCs
PI1618503	193-3MW-S	WATER	VOCs
PI1618601	193-4MW-D	WATER	VOCs
PI1618701	193-4MW-S	WATER	VOCs
PI1618803	193-5MW-D	WATER	VOCs
PI1618902	193-5MW-S	WATER	VOCs
PI1618004	193-1MW-D	WATER	Chloride, Sulfate, Nitrate
PI1618104	193-1MW-S	WATER	Chloride, Sulfate, Nitrate
PI1618204	193-2MW-D	WATER	Chloride, Sulfate, Nitrate
PI1618304	193-2MW-S	WATER	Chloride, Sulfate, Nitrate
PI1618404	193-3MW-D	WATER	Chloride, Sulfate, Nitrate
PI1618504	193-3MW-S	WATER	Chloride, Sulfate, Nitrate
PI1618604	193-4MW-D	WATER	Chloride, Sulfate, Nitrate
PI1618704	193-4MW-S	WATER	Chloride, Sulfate, Nitrate
PI1618804	193-5MW-D	WATER	Chloride, Sulfate, Nitrate
PI1618904	193-5MW-S	WATER	Chloride, Sulfate, Nitrate
PI1619601	193-7MW-D 5'-7'	SOIL	TOCs
PI1619701	193-7MW-D 1'-3'	SOIL	TOCs
PI1619801	193-7MW-D 17'-19'	SOIL	TOCs
PI1619901	193-8MW-D 1'-3'	SOIL	TOCs
PI1620001	193-8MW-D 5'-7'	SOIL	TOCs
PI1619004	193-6MW-D	WATER	Chloride, Sulfate, Nitrate
PI1619104	193-6MW-S	WATER	Chloride, Sulfate, Nitrate
PI1619204	193-7MW-D	WATER	Chloride, Sulfate, Nitrate
PI1619304	193-7MW-S	WATER	Chloride, Sulfate, Nitrate
PI1619404	193-8MW-D	WATER	Chloride, Sulfate, Nitrate
PI1619504	193-8MW-S	WATER	Chloride, Sulfate, Nitrate
PI1620201	193-6MW-D 1'-3'	SOIL	TOCs
PI1620301	193-6MW-D 5'-7'	SOIL	TOCs
PI1619602	193-7MW-D 5'-7'	SOIL	VOCs
PI1619702	193-7MW-D 1'-3'	SOIL	VOCs
PI1619902	193-8MW-D 1'-3'	SOIL	VOCs
PI1620002	193-8MW-D 5'-7'	SOIL	VOCs
PI1620101	Trip Blank	WATER	VOCs
PI1619001	193-6MW-D	WATER	VOCs
PI1619101	193-6MW-S	WATER	VOCs
PI1619201	193-7MW-D	WATER	VOCs
PI1619301	193-7MW-S	WATER	VOCs
PI1619401	193-8MW-D	WATER	VOCs
PI1619501	193-8MW-S	WATER	VOCs
PI1620202	193-6MW-D	SOIL	VOCs
PI1620302	193-6MW-D	SOIL	VOCs
PI1620402	Composite drill spoils	SOIL	VOCs
PI1620501	Trip Blank	WATER	VOCs

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1618001

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI.009 SAS No.: SDG No.: 63098

Matrix: (soil/water) WATER Lab Sample ID: 321628

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321628V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/17/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
67-64-1	Acetone	21	
75-15-0	Carbon Disulfide	1.0	U
75-09-2	Methylene Chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
540-59-0	1,2-Dichloroethene (total)	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone	120	
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylene (total)	1.0	U
100-42-5	Styrene	1.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1618001

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI.009 SAS No.: SDG No.: 63098

Matrix: (soil/water) WATER Lab Sample ID: 321628

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321628V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/17/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1618101

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI.009 SAS No.: SDG No.: 63098

Matrix: (soil/water) WATER Lab Sample ID: 321631

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321631V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/17/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
67-64-1	Acetone	9.5	
75-15-0	Carbon Disulfide	1.0	U
75-09-2	Methylene Chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
540-59-0	1,2-Dichloroethene (total)	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylene (total)	1.0	U
100-42-5	Styrene	1.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1618101

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI.009 SAS No.: SDG No.: 63098

Matrix: (soil/water) WATER Lab Sample ID: 321631

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321631V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/17/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1618201

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI.009 SAS No.: SDG No.: 63098

Matrix: (soil/water) WATER Lab Sample ID: 321634

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321634V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/17/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon Disulfide	1.0	U
75-09-2	Methylene Chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
540-59-0	1,2-Dichloroethene (total)	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	0.64	J
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	1.8	
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylene (total)	1.0	U
100-42-5	Styrene	1.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1618201

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI.009 SAS No.: SDG No.: 63098

Matrix: (soil/water) WATER Lab Sample ID: 321634

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321634V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/17/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1618303

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI.009 SAS No.: SDG No.: 63098

Matrix: (soil/water) WATER Lab Sample ID: 321639

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321639V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/18/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon Disulfide	1.0	U
75-09-2	Methylene Chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
540-59-0	1,2-Dichloroethene (total)	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	1.3	
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylene (total)	1.0	U
100-42-5	Styrene	1.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1618303

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI.009 SAS No.: SDG No.: 63098

Matrix: (soil/water) WATER Lab Sample ID: 321639

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321639V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/18/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1618403

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI.009 SAS No.: SDG No.: 63098

Matrix: (soil/water) WATER Lab Sample ID: 321642

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321642DV

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/18/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 2.6

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	2.6	U
75-01-4	Vinyl Chloride	2.6	U
74-83-9	Bromomethane	2.6	U
75-00-3	Chloroethane	2.6	U
75-35-4	1,1-Dichloroethene	2.6	U
67-64-1	Acetone	13	U
75-15-0	Carbon Disulfide	2.6	U
75-09-2	Methylene Chloride	2.6	U
156-60-5	trans-1,2-Dichloroethene	2.6	U
540-59-0	1,2-Dichloroethene (total)	54	
75-34-3	1,1-Dichloroethane	2.6	U
156-59-2	cis-1,2-Dichloroethene	51	
78-93-3	2-Butanone	13	U
67-66-3	Chloroform	2.6	U
71-55-6	1,1,1-Trichloroethane	2.6	U
56-23-5	Carbon Tetrachloride	2.6	U
71-43-2	Benzene	2.6	U
107-06-2	1,2-Dichloroethane	2.6	U
79-01-6	Trichloroethene	2.6	U
78-87-5	1,2-Dichloropropane	2.6	U
75-27-4	Bromodichloromethane	2.6	U
10061-01-5	cis-1,3-Dichloropropene	2.6	U
108-10-1	4-Methyl-2-pentanone	13	U
108-88-3	Toluene	2.6	U
10061-02-6	trans-1,3-Dichloropropene	2.6	U
79-00-5	1,1,2-Trichloroethane	2.6	U
127-18-4	Tetrachloroethene	6.8	
591-78-6	2-Hexanone	13	U
124-48-1	Dibromochloromethane	2.6	U
108-90-7	Chlorobenzene	2.6	U
100-41-4	Ethylbenzene	2.6	U
1330-20-7	Xylene (total)	2.6	U
100-42-5	Styrene	2.6	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1618403

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI.009 SAS No.: SDG No.: 63098

Matrix: (soil/water) WATER Lab Sample ID: 321642

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321642DV

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/18/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 2.6

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	2.6	U
79-34-5	1,1,2,2-Tetrachloroethane	2.6	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1618503

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI.009 SAS No.: SDG No.: 63098

Matrix: (soil/water) WATER Lab Sample ID: 321645

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321645V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/18/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	1.0	
75-01-4	Vinyl Chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon Disulfide	1.0	U
75-09-2	Methylene Chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
540-59-0	1,2-Dichloroethene (total)	2.4	
75-34-3	1,1-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	2.3	
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylene (total)	1.0	U
100-42-5	Styrene	1.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1618503

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI.009 SAS No.: SDG No.: 63098

Matrix: (soil/water) WATER Lab Sample ID: 321645

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321645V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/18/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1618601

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI.009 SAS No.: SDG No.: 63098

Matrix: (soil/water) WATER Lab Sample ID: 321646

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321646V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/17/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.94	J
75-01-4	Vinyl Chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon Disulfide	1.0	U
75-09-2	Methylene Chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
540-59-0	1,2-Dichloroethene (total)	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	22	
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylene (total)	1.0	U
100-42-5	Styrene	1.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1618601

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI.009 SAS No.: SDG No.: 63098

Matrix: (soil/water) WATER Lab Sample ID: 321646

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321646V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/17/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI16187

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI.009 SAS No.: SDG No.: 63098

Matrix: (soil/water) WATER Lab Sample ID: 321649

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321649V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/17/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon Disulfide	1.0	U
75-09-2	Methylene Chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
540-59-0	1,2-Dichloroethene (total)	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	2.9	
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	180	E
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylene (total)	1.0	U
100-42-5	Styrene	1.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI16187

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI.009 SAS No.: SDG No.: 63098

Matrix: (soil/water) WATER Lab Sample ID: 321649

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321649V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/17/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI16187DL

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI.009 SAS No.: SDG No.: 63098

Matrix: (soil/water) WATER Lab Sample ID: 321651D1

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321651DV

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/18/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 8.3

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	8.3	U
75-01-4	Vinyl Chloride	8.3	U
74-83-9	Bromomethane	8.3	U
75-00-3	Chloroethane	8.3	U
75-35-4	1,1-Dichloroethene	8.3	U
67-64-1	Acetone	42	U
75-15-0	Carbon Disulfide	8.3	U
75-09-2	Methylene Chloride	8.3	U
156-60-5	trans-1,2-Dichloroethene	8.3	U
540-59-0	1,2-Dichloroethene (total)	8.3	U
75-34-3	1,1-Dichloroethane	8.3	U
156-59-2	cis-1,2-Dichloroethene	8.3	U
78-93-3	2-Butanone	42	U
67-66-3	Chloroform	8.3	U
71-55-6	1,1,1-Trichloroethane	8.3	U
56-23-5	Carbon Tetrachloride	8.3	U
71-43-2	Benzene	8.3	U
107-06-2	1,2-Dichloroethane	8.3	U
79-01-6	Trichloroethene	8.3	U
78-87-5	1,2-Dichloropropane	8.3	U
75-27-4	Bromodichloromethane	8.3	U
10061-01-5	cis-1,3-Dichloropropene	8.3	U
108-10-1	4-Methyl-2-pentanone	42	U
108-88-3	Toluene	8.3	U
10061-02-6	trans-1,3-Dichloropropene	8.3	U
79-00-5	1,1,2-Trichloroethane	8.3	U
127-18-4	Tetrachloroethene	170	D
591-78-6	2-Hexanone	42	U
124-48-1	Dibromochloromethane	8.3	U
108-90-7	Chlorobenzene	8.3	U
100-41-4	Ethylbenzene	8.3	U
1330-20-7	Xylene (total)	8.3	U
100-42-5	Styrene	8.3	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI16187DL

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI.009 SAS No.: SDG No.: 63098

Matrix: (soil/water) WATER Lab Sample ID: 321651D1

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321651DV

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/18/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 8.3

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	8.3	U
79-34-5	1,1,2,2-Tetrachloroethane	8.3	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1618803

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI.009 SAS No.: SDG No.: 63098

Matrix: (soil/water) WATER Lab Sample ID: 321654

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321654DV

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/18/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 4.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	4.0	U
75-01-4	Vinyl Chloride	4.0	U
74-83-9	Bromomethane	4.0	U
75-00-3	Chloroethane	4.0	U
75-35-4	1,1-Dichloroethene	4.0	U
67-64-1	Acetone	20	U
75-15-0	Carbon Disulfide	4.0	U
75-09-2	Methylene Chloride	4.0	U
156-60-5	trans-1,2-Dichloroethene	4.0	U
540-59-0	1,2-Dichloroethene (total)	4.0	
75-34-3	1,1-Dichloroethane	4.0	U
156-59-2	cis-1,2-Dichloroethene	3.8	J
78-93-3	2-Butanone	20	U
67-66-3	Chloroform	4.0	U
71-55-6	1,1,1-Trichloroethane	4.0	U
56-23-5	Carbon Tetrachloride	4.0	U
71-43-2	Benzene	4.0	U
107-06-2	1,2-Dichloroethane	4.0	U
79-01-6	Trichloroethene	77	
78-87-5	1,2-Dichloropropane	4.0	U
75-27-4	Bromodichloromethane	4.0	U
10061-01-5	cis-1,3-Dichloropropene	4.0	U
108-10-1	4-Methyl-2-pentanone	20	U
108-88-3	Toluene	4.0	U
10061-02-6	trans-1,3-Dichloropropene	4.0	U
79-00-5	1,1,2-Trichloroethane	4.0	U
127-18-4	Tetrachloroethene	66	
591-78-6	2-Hexanone	20	U
124-48-1	Dibromochloromethane	4.0	U
108-90-7	Chlorobenzene	4.0	U
100-41-4	Ethylbenzene	4.0	U
1330-20-7	Xylene (total)	4.0	U
100-42-5	Styrene	4.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1618803

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI.009 SAS No.: SDG No.: 63098

Matrix: (soil/water) WATER Lab Sample ID: 321654

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321654DV

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/18/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 4.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	4.0	U
79-34-5	1,1,2,2-Tetrachloroethane	4.0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1618902

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI.009 SAS No.: SDG No.: 63098

Matrix: (soil/water) WATER Lab Sample ID: 321656

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321656D4V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/18/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 3.3

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	3.3	U
75-01-4	Vinyl Chloride	3.3	U
74-83-9	Bromomethane	3.3	U
75-00-3	Chloroethane	3.3	U
75-35-4	1,1-Dichloroethene	3.3	U
67-64-1	Acetone	17	U
75-15-0	Carbon Disulfide	3.3	U
75-09-2	Methylene Chloride	3.3	U
156-60-5	trans-1,2-Dichloroethene	3.3	U
540-59-0	1,2-Dichloroethene (total)	2.8	J
75-34-3	1,1-Dichloroethane	3.3	U
156-59-2	cis-1,2-Dichloroethene	2.6	J
78-93-3	2-Butanone	17	U
67-66-3	Chloroform	3.3	U
71-55-6	1,1,1-Trichloroethane	3.3	U
56-23-5	Carbon Tetrachloride	3.3	U
71-43-2	Benzene	3.3	U
107-06-2	1,2-Dichloroethane	3.3	U
79-01-6	Trichloroethene	84	
78-87-5	1,2-Dichloropropane	3.3	U
75-27-4	Bromodichloromethane	3.3	U
10061-01-5	cis-1,3-Dichloropropene	3.3	U
108-10-1	4-Methyl-2-pentanone	17	U
108-88-3	Toluene	3.3	U
10061-02-6	trans-1,3-Dichloropropene	3.3	U
79-00-5	1,1,2-Trichloroethane	3.3	U
127-18-4	Tetrachloroethene	52	
591-78-6	2-Hexanone	17	U
124-48-1	Dibromochloromethane	3.3	U
108-90-7	Chlorobenzene	3.3	U
100-41-4	Ethylbenzene	3.3	U
1330-20-7	Xylene (total)	3.3	U
100-42-5	Styrene	3.3	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1618902

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI.009 SAS No.: SDG No.: 63098

Matrix: (soil/water) WATER Lab Sample ID: 321656

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321656D4V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/18/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 3.3

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	3.3	U
79-34-5	1,1,2,2-Tetrachloroethane	3.3	U

ITS Environmental Laboratories

55 South Park Drive
Colchester, VT 05446

NAVY RAC PROJECT 22587-145

BECHTEL ID NUMBER:
494-0035-001-01

SC/PC SEQ SHT SUBMTL

Analytical Report

Bechtel Environmental, Inc.
151 Lafayette Drive
P.O. Box 350
Oak Ridge, TN 37831-0350

Attention : Lori Davenport

Date : 01/08/97
ETR Number : 63103
Project No.: 95277
No. Samples: 22
Arrived : 12/17/96
P.O. Number: PI.009

Case:PI.009 SDG:63103

Standard analyses were performed in accordance with Methods for Analysis of Water and Wastes, EPA-600/4/79-020, Test Methods for Evaluating Solid Waste, SW-846, or Standard Methods for the Examination of Water and Wastewater. All results are in mg/l unless otherwise noted.

Lab No./ Method No.	Sample Description/ Parameter		Result
321713	PI1618004:12/16/96	@1310(Water)	
	300.0	Chloride	14.2
	300.0	Sulfate	42.1
	300.0	Nitrate as N	<0.1
321714	PI1618104:12/16/96	@1305(Water)	
	300.0	Chloride	15.0
	300.0	Sulfate	34.8
	300.0	Nitrate as N	<0.1
321715	PI1618204:12/15/96	@1800(Water)	
	300.0	Chloride	66.9
	300.0	Sulfate	55.4
	300.0	Nitrate as N	<0.1
321716	PI1618304:12/16/96	@0830(Water)	
	300.0	Chloride	25.7
	300.0	Sulfate	53.2
	300.0	Nitrate as N	0.2
321717	PI1618404:12/15/96	@1642(Water)	
	300.0	Chloride	80.0
	300.0	Sulfate	8.7
	300.0	Nitrate as N	<0.1
321718	PI1618504:12/15/96	@1647(Water)	
	300.0	Chloride	26.7
	300.0	Sulfate	25.3
	300.0	Nitrate as N	<0.1

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ITS Environmental
Laboratories

55 South Park Drive
Colchester, VT 05446

Analytical Report

Bechtel Environmental, Inc.
151 Lafayette Drive
P.O. Box 350
Oak Ridge, TN 37831-0350

Attention : Lori Davenport

Date : 01/08/97
ETR Number : 63103
Project No.: 95277
No. Samples: 22
Arrived : 12/17/96
P.O. Number: PI.009

Case:PI.009 SDG:63103

Standard analyses were performed in accordance with Methods for Analysis of Water and Wastes, EPA-600/4/79-020, Test Methods for Evaluating Solid Waste, SW-846, or Standard Methods for the Examination of Water and Wastewater. All results are in mg/l unless otherwise noted.

Lab No./ Method No.	Sample Description/	Parameter	Result
321719	PI1618604:12/15/96	@1504(Water)	
	300.0	Chloride	247
	300.0	Sulfate	90.0
	300.0	Nitrate as N	<0.1
321720	PI1618704:12/15/96	@1630(Water)	
	300.0	Chloride	54.5
	300.0	Sulfate	53.9
	300.0	Nitrate as N	0.2
321721	PI1618804:12/15/96	@1720(Water)	
	300.0	Chloride	150
	300.0	Sulfate	33.5
	300.0	Nitrate as N	0.2
321722	PI1618904:12/15/96	@1749(Water)	
	300.0	Chloride	39.6
	300.0	Sulfate	18.3
	300.0	Nitrate as N	2.2
321723	PI1619601:12/16/96	@0820(Soil)	
	IN847	TOC by Lloyd Kahn	4330 f
	IN623	Solids, Percent	80.8 c

Comments/Notes

f = mg/Kg dry weight
c = %W/W as received

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ITS Environmental Laboratories

55 South Park Drive
Colchester, VT 05446

Analytical Report

Bechtel Environmental, Inc.
151 Lafayette Drive
P.O. Box 350
Oak Ridge, TN 37831-0350

Attention : Lori Davenport

Date : 01/08/97
ETR Number : 63103
Project No.: 95277
No. Samples: 22
Arrived : 12/17/96
P.O. Number: PI.009

Case:PI.009 SDG:63103

Standard analyses were performed in accordance with Methods for Analysis of Water and Wastes, EPA-600/4/79-020, Test Methods for Evaluating Solid Waste, SW-846, or Standard Methods for the Examination of Water and Wastewater. All results are in mg/l unless otherwise noted.

Lab No./ Method No.	Sample Description/	Parameter	Result
321725	PI1619701:12/16/96	@0800(Soil)	
	IN847	TOC by Lloyd Kahn	14000 f J
	IN623	Solids, Percent	82.7 c ↓
321727	PI1619801:12/16/96	@0850(Soil)	
	IN847	TOC by Lloyd Kahn	217000 f J
	IN623	Solids, Percent	45.6 c ↓
321728	PI1619901:12/16/96	@1140(Soil)	
	IN847	TOC by Lloyd Kahn	114000 f J
	IN623	Solids, Percent	85.8 c ↓
321730	PI1620001:12/16/96	@1150(Soil)	
	IN847	TOC by Lloyd Kahn	3750 f J
	IN623	Solids, Percent	82.7 c ↓

Comments/Notes

f = mg/Kg dry weight
c = %W/W as received

< Last Page > Submitted By : Kare R. Chiger

Aquatec Inc.
000012

ITS Environmental
Laboratories

55 South Park Drive
Colchester, VT 05446

Analytical Report

Bechtel Environmental, Inc.
151 Lafayette Drive
P.O. Box 350
Oak Ridge, TN 37831-0350

Attention : Lori Davenport

Date : 01/08/97
ETR Number : 63117
Project No.: 95277
No. Samples: 40
Arrived : 12/18/96
P.O. Number: PI.009

Case:PI009 SDG:63103

Standard analyses were performed in accordance with Methods for Analysis of Water and Wastes, EPA-600/4/79-020, Test Methods for Evaluating Solid Waste, SW-846, or Standard Methods for the Examination of Water and Wastewater. All results are in mg/l unless otherwise noted.

Lab No./ Method No.	Sample Description/	Parameter	Result
321765	PI1619004:12/17/96	(Water)	
	300.0	Chloride	41.4
	300.0	Sulfate	44.9
	300.0	Nitrate as N	<0.1
	6010	Iron, Total	4.8
321769	PI1619104:12/17/96	(Water)	
	300.0	Chloride	1320
	300.0	Sulfate	274
	300.0	Nitrate as N	<0.1
	6010	Iron, Total	8.4
321773	PI1619204:12/17/96	(Water)	
	300.0	Chloride	62.0
	300.0	Sulfate	56.2
	300.0	Nitrate as N	<0.1
	6010	Iron, Total	8.0
321777	PI1619304:12/17/96	(Water)	
	300.0	Chloride	15.4
	300.0	Sulfate	28.0
	300.0	Nitrate as N	<0.1
	6010	Iron, Total	2.5
321781	PI1619404:12/17/96	(Water)	
	300.0	Chloride	27.9
	300.0	Sulfate	59.8
	300.0	Nitrate as N	<0.1
	6010	Iron, Total	3.8

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ITS Environmental Laboratories

55 South Park Drive
Colchester, VT 05446

Analytical Report

Bechtel Environmental, Inc.
151 Lafayette Drive
P.O. Box 350
Oak Ridge, TN 37831-0350

Attention : Lori Davenport

Date : 01/08/97
ETR Number : 63117
Project No.: 95277
No. Samples: 40
Arrived : 12/18/96
P.O. Number: PI.009

Case:PI009 SDG:63103

Standard analyses were performed in accordance with Methods for Analysis of Water and Wastes, EPA-600/4/79-020, Test Methods for Evaluating Solid Waste, SW-846, or Standard Methods for the Examination of Water and Wastewater. All results are in mg/l unless otherwise noted.

Lab No./ Method No.	Sample Description/ Parameter		Result
321785	PI1619504:12/17/96	(Water)	
	300.0	Chloride	27.9
	300.0	Sulfate	41.4
	300.0	Nitrate as N	<0.1
	6010	Iron, Total	9.2
321786	PI1620201:12/16/96	(Soil)	
	IN847	TOC by Lloyd Kahn	19400 f J
	IN623	Solids, Percent	86.1 c ↓
321786MS	PI1620201MS:[MS]12/16/96	(Soil)	
	IN623	Solids, Percent	86.1 c J
	IN847	TOC by Lloyd Kahn	97000 f ↓
321786DP	PI1620201REP:[REP]12/16/96	(Soil)	
	IN623	Solids, Percent	88.2 c J
	IN847	TOC by Lloyd Kahn	11800 f ↓
321788	PI1620301:12/16/96	(Soil)	
	IN847	TOC by Lloyd Kahn	3930 f J
	IN623	Solids, Percent	73.8 c ↓

Comments/Notes

f = mg/Kg dry weight
c = %W/W as received

< Last Page > Submitted By : Karen R. Chiger

Aquatec Inc.
000014

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1619602

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) SOIL Lab Sample ID: 321724

Sample wt/vol: 5.0 (g/mL) G Lab File ID: O321724V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. 17 Date Analyzed: 12/26/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	6	U
75-00-3	Chloroethane	6	U
75-35-4	1,1-Dichloroethene	6	U
67-64-1	Acetone	66	
75-15-0	Carbon Disulfide	6	U
75-09-2	Methylene Chloride	0.8	J
156-60-5	trans-1,2-Dichloroethene	6	U
540-59-0	1,2-Dichloroethene (total)	0.9	J
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	0.9	J
78-93-3	2-Butanone	12	U
67-66-3	Chloroform	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	0.8	J
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	12	U
108-88-3	Toluene	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	2	J
591-78-6	2-Hexanone	12	U
124-48-1	Dibromochloromethane	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
1330-20-7	Xylene (total)	6	U
100-42-5	Styrene	6	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1619602

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) SOIL Lab Sample ID: 321724

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 0321724V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. 17 Date Analyzed: 12/26/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-25-2	Bromoform	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1619702

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) SOIL Lab Sample ID: 321726

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 0321726V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. 14 Date Analyzed: 12/26/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	6	U
75-00-3	Chloroethane	6	U
75-35-4	1,1-Dichloroethene	6	U
67-64-1	Acetone	10	J
75-15-0	Carbon Disulfide	6	U
75-09-2	Methylene Chloride	1	J
156-60-5	trans-1,2-Dichloroethene	6	U
540-59-0	1,2-Dichloroethene (total)	3	J
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	3	J
78-93-3	2-Butanone	12	U
67-66-3	Chloroform	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	6	
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	12	U
108-88-3	Toluene	1	J
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	32	
591-78-6	2-Hexanone	12	U
124-48-1	Dibromochloromethane	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
1330-20-7	Xylene (total)	6	U
100-42-5	Styrene	6	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1619702

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) SOIL Lab Sample ID: 321726

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 0321726V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. 14 Date Analyzed: 12/26/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-25-2	Bromoform	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1619702RE

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) SOIL Lab Sample ID: 321726R1

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 0321726I2V

Level: (low/med) LOW Date Received: 12/17/97

% Moisture: not dec. 14 Date Analyzed: 01/06/97

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	6	U
75-00-3	Chloroethane	6	U
75-35-4	1,1-Dichloroethene	6	U
67-64-1	Acetone	8	JB
75-15-0	Carbon Disulfide	6	U
75-09-2	Methylene Chloride	8	
156-60-5	trans-1,2-Dichloroethene	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	6	U
78-93-3	2-Butanone	12	U
67-66-3	Chloroform	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	1	J
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	12	U
108-88-3	Toluene	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	8	
591-78-6	2-Hexanone	12	U
124-48-1	Dibromochloromethane	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
1330-20-7	Xylene (total)	6	U
100-42-5	Styrene	6	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1619702RE

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) SOIL Lab Sample ID: 321726R1

Sample wt/vol: 5.0 (g/mL) G Lab File ID: O321726I2V

Level: (low/med) LOW Date Received: 12/17/97

% Moisture: not dec. 14 Date Analyzed: 01/06/97

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-25-2	Bromoform	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1619902

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) SOIL Lab Sample ID: 321729

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 0321729V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. 14 Date Analyzed: 12/26/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	6	U
75-00-3	Chloroethane	6	U
75-35-4	1,1-Dichloroethene	6	U
67-64-1	Acetone	52	
75-15-0	Carbon Disulfide	6	U
75-09-2	Methylene Chloride	1	J
156-60-5	trans-1,2-Dichloroethene	6	U
540-59-0	1,2-Dichloroethene (total)	3	J
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	3	J
78-93-3	2-Butanone	12	U
67-66-3	Chloroform	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	5	J
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	12	U
108-88-3	Toluene	2	J
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	30	
591-78-6	2-Hexanone	12	U
124-48-1	Dibromochloromethane	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
1330-20-7	Xylene (total)	6	U
100-42-5	Styrene	6	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1619902

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) SOIL Lab Sample ID: 321729

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 0321729V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. 14 Date Analyzed: 12/26/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-25-2	Bromoform	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1619902RE

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) SOIL Lab Sample ID: 321729R1

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 0321729I2V

Level: (low/med) LOW Date Received: 12/17/97

% Moisture: not dec. 14 Date Analyzed: 01/06/97

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	6	U
75-00-3	Chloroethane	6	U
75-35-4	1,1-Dichloroethene	6	U
67-64-1	Acetone	30	B
75-15-0	Carbon Disulfide	6	U
75-09-2	Methylene Chloride	9	
156-60-5	trans-1,2-Dichloroethene	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	6	U
78-93-3	2-Butanone	12	U
67-66-3	Chloroform	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	6	U
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	12	U
108-88-3	Toluene	2	J
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	10	
591-78-6	2-Hexanone	12	U
124-48-1	Dibromochloromethane	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
1330-20-7	Xylene (total)	6	U
100-42-5	Styrene	6	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1619902RE

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) SOIL Lab Sample ID: 321729R1

Sample wt/vol: 5.0 (g/mL) G Lab File ID: O321729I2V

Level: (low/med) LOW Date Received: 12/17/97

% Moisture: not dec. 14 Date Analyzed: 01/06/97

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-25-2	Bromoform	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1620002

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) SOIL Lab Sample ID: 321731

Sample wt/vol: 1.0 (g/mL) G Lab File ID: 0321731DV

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/27/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	25	U
75-01-4	Vinyl Chloride	25	U
74-83-9	Bromomethane	25	U
75-00-3	Chloroethane	25	U
75-35-4	1,1-Dichloroethene	25	U
67-64-1	Acetone	56	
75-15-0	Carbon Disulfide	25	U
75-09-2	Methylene Chloride	25	U
156-60-5	trans-1,2-Dichloroethene	25	U
540-59-0	1,2-Dichloroethene (total)	22	J
75-34-3	1,1-Dichloroethane	25	U
156-59-2	cis-1,2-Dichloroethene	22	J
78-93-3	2-Butanone	50	U
67-66-3	Chloroform	25	U
71-55-6	1,1,1-Trichloroethane	25	U
56-23-5	Carbon Tetrachloride	25	U
71-43-2	Benzene	25	U
107-06-2	1,2-Dichloroethane	25	U
79-01-6	Trichloroethene	80	
78-87-5	1,2-Dichloropropane	25	U
75-27-4	Bromodichloromethane	25	U
10061-01-5	cis-1,3-Dichloropropene	25	U
108-10-1	4-Methyl-2-pentanone	50	U
108-88-3	Toluene	25	U
10061-02-6	trans-1,3-Dichloropropene	25	U
79-00-5	1,1,2-Trichloroethane	25	U
127-18-4	Tetrachloroethene	1100	E
591-78-6	2-Hexanone	50	U
124-48-1	Dibromochloromethane	25	U
108-90-7	Chlorobenzene	25	U
100-41-4	Ethylbenzene	25	U
1330-20-7	Xylene (total)	25	U
100-42-5	Styrene	25	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1620002

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) SOIL Lab Sample ID: 321731

Sample wt/vol: 1.0 (g/mL) G Lab File ID: O321731DV

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/27/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-25-2	Bromoform	25	U
79-34-5	1,1,2,2-Tetrachloroethane	25	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1620101

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) WATER Lab Sample ID: 321732

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321159DV

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/19/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.67	J
75-01-4	Vinyl Chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon Disulfide	1.0	U
75-09-2	Methylene Chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
540-59-0	1,2-Dichloroethene (total)	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
1330-20-7	Xylene (total)	1.0	U
100-42-5	Styrene	1.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1620101

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) WATER Lab Sample ID: 321732

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: M321159DV

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. _____ Date Analyzed: 12/19/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1619001

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) WATER Lab Sample ID: 321762

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: L321762DV

Level: (low/med) LOW Date Received: 12/18/96

% Moisture: not dec. _____ Date Analyzed: 12/27/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 140.8

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	140	U
75-01-4	Vinyl Chloride	140	U
74-83-9	Bromomethane	140	U
75-00-3	Chloroethane	140	U
75-35-4	1,1-Dichloroethene	140	U
67-64-1	Acetone	700	U
75-15-0	Carbon Disulfide	140	U
75-09-2	Methylene Chloride	140	U
156-60-5	trans-1,2-Dichloroethene	140	U
540-59-0	1,2-Dichloroethene (total)	240	
75-34-3	1,1-Dichloroethane	140	U
156-59-2	cis-1,2-Dichloroethene	220	
78-93-3	2-Butanone	700	U
67-66-3	Chloroform	140	U
71-55-6	1,1,1-Trichloroethane	140	U
56-23-5	Carbon Tetrachloride	140	U
71-43-2	Benzene	140	U
107-06-2	1,2-Dichloroethane	140	U
79-01-6	Trichloroethene	2800	
78-87-5	1,2-Dichloropropane	140	U
75-27-4	Bromodichloromethane	140	U
10061-01-5	cis-1,3-Dichloropropene	140	U
108-10-1	4-Methyl-2-pentanone	700	U
108-88-3	Toluene	140	U
10061-02-6	trans-1,3-Dichloropropene	140	U
79-00-5	1,1,2-Trichloroethane	140	U
127-18-4	Tetrachloroethene	1200	
591-78-6	2-Hexanone	700	U
124-48-1	Dibromochloromethane	140	U
108-90-7	Chlorobenzene	140	U
100-41-4	Ethylbenzene	140	U
1330-20-7	Xylene (total)	140	U
100-42-5	Styrene	140	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1619001

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) WATER Lab Sample ID: 321762

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: L321762DV

Level: (low/med) LOW Date Received: 12/18/96

% Moisture: not dec. _____ Date Analyzed: 12/27/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 140.8

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	140	U
79-34-5	1,1,2,2-Tetrachloroethane	140	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1619101

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) WATER Lab Sample ID: 321766

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: L321766DV

Level: (low/med) LOW Date Received: 12/18/96

% Moisture: not dec. _____ Date Analyzed: 12/27/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 27.8

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	28	U
75-01-4	Vinyl Chloride	170	
74-83-9	Bromomethane	28	U
75-00-3	Chloroethane	28	U
75-35-4	1,1-Dichloroethene	28	U
67-64-1	Acetone	140	U
75-15-0	Carbon Disulfide	28	U
75-09-2	Methylene Chloride	28	U
156-60-5	trans-1,2-Dichloroethene	8.3	J
540-59-0	1,2-Dichloroethene (total)	650	
75-34-3	1,1-Dichloroethane	28	U
156-59-2	cis-1,2-Dichloroethene	610	
78-93-3	2-Butanone	140	U
67-66-3	Chloroform	28	U
71-55-6	1,1,1-Trichloroethane	28	U
56-23-5	Carbon Tetrachloride	28	U
71-43-2	Benzene	28	U
107-06-2	1,2-Dichloroethane	28	U
79-01-6	Trichloroethene	130	
78-87-5	1,2-Dichloropropane	28	U
75-27-4	Bromodichloromethane	28	U
10061-01-5	cis-1,3-Dichloropropene	28	U
108-10-1	4-Methyl-2-pentanone	140	U
108-88-3	Toluene	28	U
10061-02-6	trans-1,3-Dichloropropene	28	U
79-00-5	1,1,2-Trichloroethane	28	U
127-18-4	Tetrachloroethene	360	
591-78-6	2-Hexanone	140	U
124-48-1	Dibromochloromethane	28	U
108-90-7	Chlorobenzene	28	U
100-41-4	Ethylbenzene	28	U
1330-20-7	Xylene (total)	28	U
100-42-5	Styrene	28	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1619101

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) WATER Lab Sample ID: 321766

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: L321766DV

Level: (low/med) LOW Date Received: 12/18/96

% Moisture: not dec. _____ Date Analyzed: 12/27/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 27.8

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	28	U
79-34-5	1,1,2,2-Tetrachloroethane	28	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1619201

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) WATER Lab Sample ID: 321770

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: L321770DV

Level: (low/med) LOW Date Received: 12/18/96

% Moisture: not dec. _____ Date Analyzed: 12/27/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 2631.6

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	2600	U
75-01-4	Vinyl Chloride	2600	U
74-83-9	Bromomethane	2600	U
75-00-3	Chloroethane	2600	U
75-35-4	1,1-Dichloroethene	2600	U
67-64-1	Acetone	13000	U
75-15-0	Carbon Disulfide	2600	U
75-09-2	Methylene Chloride	2600	U
156-60-5	trans-1,2-Dichloroethene	2600	U
540-59-0	1,2-Dichloroethene (total)	4000	
75-34-3	1,1-Dichloroethane	2600	U
156-59-2	cis-1,2-Dichloroethene	3800	
78-93-3	2-Butanone	13000	U
67-66-3	Chloroform	2600	U
71-55-6	1,1,1-Trichloroethane	2600	U
56-23-5	Carbon Tetrachloride	2600	U
71-43-2	Benzene	2600	U
107-06-2	1,2-Dichloroethane	2600	U
79-01-6	Trichloroethene	15000	
78-87-5	1,2-Dichloropropane	2600	U
75-27-4	Bromodichloromethane	2600	U
10061-01-5	cis-1,3-Dichloropropene	2600	U
108-10-1	4-Methyl-2-pentanone	13000	U
108-88-3	Toluene	2600	U
10061-02-6	trans-1,3-Dichloropropene	2600	U
79-00-5	1,1,2-Trichloroethane	2600	U
127-18-4	Tetrachloroethene	60000	
591-78-6	2-Hexanone	13000	U
124-48-1	Dibromochloromethane	2600	U
108-90-7	Chlorobenzene	2600	U
100-41-4	Ethylbenzene	2600	U
1330-20-7	Xylene (total)	2600	U
100-42-5	Styrene	2600	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1619201

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) WATER Lab Sample ID: 321770

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: L321770DV

Level: (low/med) LOW Date Received: 12/18/96

% Moisture: not dec. _____ Date Analyzed: 12/27/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 2631.6

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	2600	U
79-34-5	1,1,2,2-Tetrachloroethane	2600	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1619301

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) WATER Lab Sample ID: 321774

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: L321774DV

Level: (low/med) LOW Date Received: 12/18/96

% Moisture: not dec. _____ Date Analyzed: 12/27/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 12.5

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	12	U
75-01-4	Vinyl Chloride	12	U
74-83-9	Bromomethane	12	U
75-00-3	Chloroethane	12	U
75-35-4	1,1-Dichloroethene	12	U
67-64-1	Acetone	62	U
75-15-0	Carbon Disulfide	12	U
75-09-2	Methylene Chloride	12	U
156-60-5	trans-1,2-Dichloroethene	12	U
540-59-0	1,2-Dichloroethene (total)	4.3	J
75-34-3	1,1-Dichloroethane	12	U
156-59-2	cis-1,2-Dichloroethene	4.0	J
78-93-3	2-Butanone	62	U
67-66-3	Chloroform	12	U
71-55-6	1,1,1-Trichloroethane	12	U
56-23-5	Carbon Tetrachloride	12	U
71-43-2	Benzene	12	U
107-06-2	1,2-Dichloroethane	12	U
79-01-6	Trichloroethene	17	
78-87-5	1,2-Dichloropropane	12	U
75-27-4	Bromodichloromethane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
108-10-1	4-Methyl-2-pentanone	62	U
108-88-3	Toluene	12	U
10061-02-6	trans-1,3-Dichloropropene	12	U
79-00-5	1,1,2-Trichloroethane	12	U
127-18-4	Tetrachloroethene	190	
591-78-6	2-Hexanone	62	U
124-48-1	Dibromochloromethane	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
1330-20-7	Xylene (total)	12	U
100-42-5	Styrene	12	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1619301

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) WATER Lab Sample ID: 321774

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: L321774DV

Level: (low/med) LOW Date Received: 12/18/96

% Moisture: not dec. _____ Date Analyzed: 12/27/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 12.5

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	12	U
79-34-5	1,1,2,2-Tetrachloroethane	12	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1619401

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) WATER Lab Sample ID: 321778

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: L321778DV

Level: (low/med) LOW Date Received: 12/18/96

% Moisture: not dec. _____ Date Analyzed: 12/27/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 263.2

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	260	U
75-01-4	Vinyl Chloride	260	U
74-83-9	Bromomethane	260	U
75-00-3	Chloroethane	260	U
75-35-4	1,1-Dichloroethene	260	U
67-64-1	Acetone	1300	U
75-15-0	Carbon Disulfide	260	U
75-09-2	Methylene Chloride	260	U
156-60-5	trans-1,2-Dichloroethene	260	U
540-59-0	1,2-Dichloroethene (total)	540	
75-34-3	1,1-Dichloroethane	260	U
156-59-2	cis-1,2-Dichloroethene	510	
78-93-3	2-Butanone	1300	U
67-66-3	Chloroform	260	U
71-55-6	1,1,1-Trichloroethane	260	U
56-23-5	Carbon Tetrachloride	260	U
71-43-2	Benzene	260	U
107-06-2	1,2-Dichloroethane	260	U
79-01-6	Trichloroethene	1400	
78-87-5	1,2-Dichloropropane	260	U
75-27-4	Bromodichloromethane	260	U
10061-01-5	cis-1,3-Dichloropropene	260	U
108-10-1	4-Methyl-2-pentanone	1300	U
108-88-3	Toluene	260	U
10061-02-6	trans-1,3-Dichloropropene	260	U
79-00-5	1,1,2-Trichloroethane	260	U
127-18-4	Tetrachloroethene	5600	
591-78-6	2-Hexanone	1300	U
124-48-1	Dibromochloromethane	260	U
108-90-7	Chlorobenzene	260	U
100-41-4	Ethylbenzene	260	U
1330-20-7	Xylene (total)	260	U
100-42-5	Styrene	260	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1619401

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) WATER Lab Sample ID: 321778

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: L321778DV

Level: (low/med) LOW Date Received: 12/18/96

% Moisture: not dec. _____ Date Analyzed: 12/27/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 263.2

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	260	U
79-34-5	1,1,2,2-Tetrachloroethane	260	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1619501

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) WATER Lab Sample ID: 321782

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: L321782DV

Level: (low/med) LOW Date Received: 12/18/96

% Moisture: not dec. _____ Date Analyzed: 12/27/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 1428.6

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	1400	U
75-01-4	Vinyl Chloride	1400	U
74-83-9	Bromomethane	1400	U
75-00-3	Chloroethane	1400	U
75-35-4	1,1-Dichloroethene	1400	U
67-64-1	Acetone	7100	U
75-15-0	Carbon Disulfide	1400	U
75-09-2	Methylene Chloride	1400	U
156-60-5	trans-1,2-Dichloroethene	1400	U
540-59-0	1,2-Dichloroethene (total)	1200	J
75-34-3	1,1-Dichloroethane	1400	U
156-59-2	cis-1,2-Dichloroethene	1100	J
78-93-3	2-Butanone	7100	U
67-66-3	Chloroform	1400	U
71-55-6	1,1,1-Trichloroethane	1400	U
56-23-5	Carbon Tetrachloride	1400	U
71-43-2	Benzene	1400	U
107-06-2	1,2-Dichloroethane	1400	U
79-01-6	Trichloroethene	4900	
78-87-5	1,2-Dichloropropane	1400	U
75-27-4	Bromodichloromethane	1400	U
10061-01-5	cis-1,3-Dichloropropene	1400	U
108-10-1	4-Methyl-2-pentanone	7100	U
108-88-3	Toluene	1400	U
10061-02-6	trans-1,3-Dichloropropene	1400	U
79-00-5	1,1,2-Trichloroethane	1400	U
127-18-4	Tetrachloroethene	32000	
591-78-6	2-Hexanone	7100	U
124-48-1	Dibromochloromethane	1400	U
108-90-7	Chlorobenzene	1400	U
100-41-4	Ethylbenzene	1400	U
1330-20-7	Xylene (total)	1400	U
100-42-5	Styrene	1400	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1619501

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) WATER Lab Sample ID: 321782

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: L321782DV

Level: (low/med) LOW Date Received: 12/18/96

% Moisture: not dec. _____ Date Analyzed: 12/27/96

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 1428.6

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-25-2	Bromoform	1400	U
79-34-5	1,1,2,2-Tetrachloroethane	1400	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1620202

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) SOIL Lab Sample ID: 321787

Sample wt/vol: 5.0 (g/mL) G Lab File ID: O321787V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. 14 Date Analyzed: 12/21/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
74-87-3	Chloromethane	6	U	
75-01-4	Vinyl Chloride	6	U	
74-83-9	Bromomethane	6	U	
75-00-3	Chloroethane	6	U	
75-35-4	1,1-Dichloroethene	6	U	
67-64-1	Acetone	23	B	u
75-15-0	Carbon Disulfide	6	U	
75-09-2	Methylene Chloride	6	U	
156-60-5	trans-1,2-Dichloroethene	6	U	
540-59-0	1,2-Dichloroethene (total)	6	U	
75-34-3	1,1-Dichloroethane	6	U	
156-59-2	cis-1,2-Dichloroethene	6	U	
78-93-3	2-Butanone	12	U	
67-66-3	Chloroform	6	U	
71-55-6	1,1,1-Trichloroethane	6	U	
56-23-5	Carbon Tetrachloride	6	U	
71-43-2	Benzene	6	U	
107-06-2	1,2-Dichloroethane	6	U	
79-01-6	Trichloroethene	1	J	
78-87-5	1,2-Dichloropropane	6	U	
75-27-4	Bromodichloromethane	6	U	
10061-01-5	cis-1,3-Dichloropropene	6	U	
108-10-1	4-Methyl-2-pentanone	12	U	
108-88-3	Toluene	6	U	
10061-02-6	trans-1,3-Dichloropropene	6	U	
79-00-5	1,1,2-Trichloroethane	6	U	
127-18-4	Tetrachloroethene	1	J	
591-78-6	2-Hexanone	12	U	
124-48-1	Dibromochloromethane	6	U	
108-90-7	Chlorobenzene	6	U	
100-41-4	Ethylbenzene	6	U	
1330-20-7	Xylene (total)	6	U	
100-42-5	Styrene	6	U	

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1620202

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) SOIL Lab Sample ID: 321787

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 0321787V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. 14 Date Analyzed: 12/21/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-25-2	Bromoform	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1620302

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) SOIL Lab Sample ID: 321789

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 0321789V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. 19 Date Analyzed: 12/21/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	6	U
75-00-3	Chloroethane	6	U
75-35-4	1,1-Dichloroethene	6	U
67-64-1	Acetone	59	B
75-15-0	Carbon Disulfide	6	U
75-09-2	Methylene Chloride	6	U
156-60-5	trans-1,2-Dichloroethene	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	6	U
78-93-3	2-Butanone	12	U
67-66-3	Chloroform	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	6	U
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	12	U
108-88-3	Toluene	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	6	U
591-78-6	2-Hexanone	12	U
124-48-1	Dibromochloromethane	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
1330-20-7	Xylene (total)	6	U
100-42-5	Styrene	6	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1620302

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) SOIL Lab Sample ID: 321789

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 0321789V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. 19 Date Analyzed: 12/21/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-25-2	Bromoform	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1620402

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) SOIL Lab Sample ID: 321792

Sample wt/vol: 5.0 (g/mL) G Lab File ID: O321792V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. 17 Date Analyzed: 12/21/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
74-87-3	Chloromethane	6	U	
75-01-4	Vinyl Chloride	6	U	
74-83-9	Bromomethane	6	U	
75-00-3	Chloroethane	6	U	
75-35-4	1,1-Dichloroethene	6	U	
67-64-1	Acetone	28	B	u
75-15-0	Carbon Disulfide	6	U	
75-09-2	Methylene Chloride	6	U	
156-60-5	trans-1,2-Dichloroethene	6	U	
540-59-0	1,2-Dichloroethene (total)	3	J	
75-34-3	1,1-Dichloroethane	6	U	
156-59-2	cis-1,2-Dichloroethene	3	J	
78-93-3	2-Butanone	12	U	
67-66-3	Chloroform	6	U	
71-55-6	1,1,1-Trichloroethane	6	U	
56-23-5	Carbon Tetrachloride	6	U	
71-43-2	Benzene	6	U	
107-06-2	1,2-Dichloroethane	6	U	
79-01-6	Trichloroethene	21		
78-87-5	1,2-Dichloropropane	6	U	
75-27-4	Bromodichloromethane	6	U	
10061-01-5	cis-1,3-Dichloropropene	6	U	
108-10-1	4-Methyl-2-pentanone	12	U	
108-88-3	Toluene	0.6	J	
10061-02-6	trans-1,3-Dichloropropene	6	U	
79-00-5	1,1,2-Trichloroethane	6	U	
127-18-4	Tetrachloroethene	69		
591-78-6	2-Hexanone	12	U	
124-48-1	Dibromochloromethane	6	U	
108-90-7	Chlorobenzene	6	U	
100-41-4	Ethylbenzene	6	U	
1330-20-7	Xylene (total)	6	U	
100-42-5	Styrene	6	U	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1620402

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) SOIL Lab Sample ID: 321792

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 0321792V

Level: (low/med) LOW Date Received: 12/17/96

% Moisture: not dec. 17 Date Analyzed: 12/21/96

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-25-2	Bromoform	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1620402RE

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) SOIL Lab Sample ID: 322792R1

Sample wt/vol: 5.0 (g/mL) G Lab File ID: O321792I2V

Level: (low/med) LOW Date Received: 12/18/97

% Moisture: not dec. 16 Date Analyzed: 01/06/97

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	6	U
75-00-3	Chloroethane	6	U
75-35-4	1,1-Dichloroethene	6	U
67-64-1	Acetone	22	B
75-15-0	Carbon Disulfide	0.9	J
75-09-2	Methylene Chloride	18	
156-60-5	trans-1,2-Dichloroethene	6	U
540-59-0	1,2-Dichloroethene (total)	2	J
75-34-3	1,1-Dichloroethane	6	U
156-59-2	cis-1,2-Dichloroethene	2	J
78-93-3	2-Butanone	12	U
67-66-3	Chloroform	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
71-43-2	Benzene	6	U
107-06-2	1,2-Dichloroethane	6	U
79-01-6	Trichloroethene	14	
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-10-1	4-Methyl-2-pentanone	12	U
108-88-3	Toluene	1	J
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	57	
591-78-6	2-Hexanone	12	U
124-48-1	Dibromochloromethane	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
1330-20-7	Xylene (total)	0.6	J
100-42-5	Styrene	6	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PI1620402RE

Lab Name: INCHCAPE ENVIRONMENTAL Contract: 95277

Lab Code: INCHVT Case No.: PI009 SAS No.: SDG No.: 63103

Matrix: (soil/water) SOIL Lab Sample ID: 322792R1

Sample wt/vol: 5.0 (g/mL) G Lab File ID: O321792I2V

Level: (low/med) LOW Date Received: 12/18/97

% Moisture: not dec. 16 Date Analyzed: 01/06/97

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

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

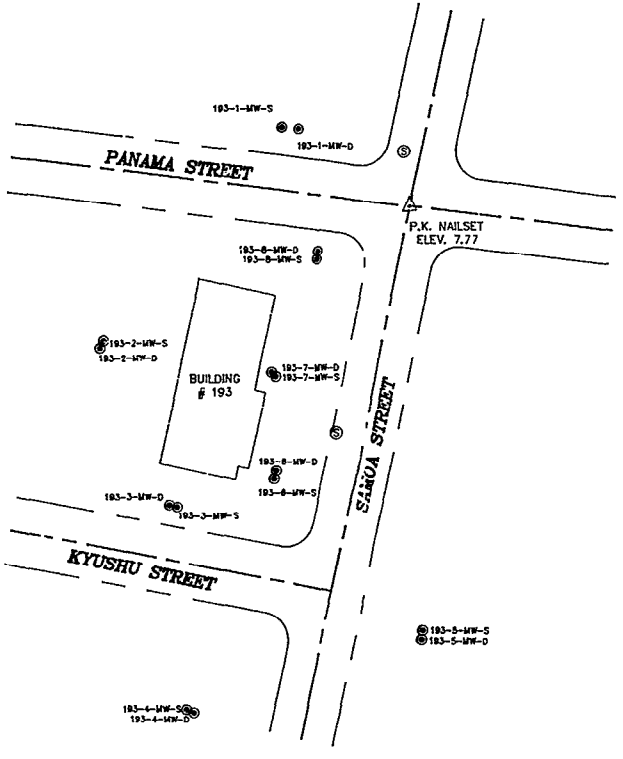
CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
75-25-2	Bromoform	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U

FIELD READINGS OF
IRON CONTENT IN GROUNDWATER

WELL NUMBER	DEEP			SHALLOW		
	Fe (mg/l)	Date	Time	Fe (mg/l)	Date	Time
193-1MW	0.45	12/15	13:32	0.20	12/15	13:30
193-2MW	1.10	12/15	18:30	0.70	12/15	18:45
193-3MW	1.00	12/15	16:55	0.15	12/15	16:45
193-4MW	1.4	12/15	15:15	1.2	12/15	16:30
193-5MW	0.60	12/15	17:20	1.00	12/15	17:45
193-6MW	2.0	12/17	13:31	2.2	12/17	13:22
193-7MW	2.2	12/17	12:05	0.48	12/17	11:35
193-8MW	1.9	12/17	10:35	2.1	12/17	10:25

GENERAL NOTES:

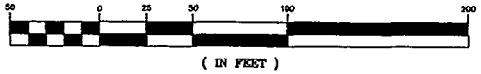
1.) ◉ = MONITORING WELLS
2.) ALL COORDINATES BASED ON DISCS ""7-206 & 7-205""
3.) ALL COORDINATES ARE STATE PLANE COORINATES
4.) HORIZONTAL DATUM : NAD 83
5.) VERTICAL DATUM: NGVD 29
6.) Ⓢ = SANITARY SEWER MANHOLE



MONITORING #	NORTH	EAST	ELEV.	DESCRIPTION
193-1-MW-S	187455.597	2099298.879	7.79	TOP OF COVER
			7.60	TOP OF RISER
193-1-MW-D	187454.710	2099308.355	7.81	TOP OF COVER
			7.57	TOP OF RISER
193-2-MW-S	187345.032	2099203.731	7.46	TOP OF COVER
			7.11	TOP OF RISER
193-2-MW-D	187341.197	2099201.966	7.45	TOP OF COVER
			7.23	TOP OF RISER
193-3-MW-S	187257.657	2099244.001	7.85	TOP OF COVER
			7.60	TOP OF RISER
193-3-MW-D	187258.713	2099239.820	7.78	TOP OF COVER
			7.57	TOP OF RISER
193-4-MW-S	187150.910	2099249.096	7.20	TOP OF COVER
			6.98	TOP OF RISER
193-4-MW-D	187149.280	2099253.080	7.14	TOP OF COVER
			6.93	TOP OF RISER
193-5-MW-S	187192.220	2099377.309	8.82	TOP OF COVER
			8.60	TOP OF RISER
193-5-MW-D	187187.346	2099376.763	8.64	TOP OF COVER
			8.26	TOP OF RISER
193-6-MW-S	187273.011	2099295.097	7.80	TOP OF COVER
			7.61	TOP OF RISER
193-6-MW-D	187277.268	2099296.248	7.76	TOP OF COVER
			7.5[illegible]	TOP OF RISER
193-7-MW-S	187326.652	2099295.775	7.99	TOP OF COVER
			7.68	TOP OF RISER
193-7-MW-D	187328.810	2099293.569	7.95	TOP OF COVER
			7.72	TOP OF RISER
193-8-MW-S	187387.149	2099318.846	7.88	TOP OF COVER
			7.60	TOP OF RISER
193-8-MW-D	187391.271	2099319.322	7.77	TOP OF COVER
			7.53	TOP OF RISER

AS-BUILT SURVEY OF
MONITORING WELLS
NEAR BUILDING 193
PREPARED FOR:
BECHTEL ENVIRONMENTAL, INC.
LOCATED IN,
PARRIS ISLAND,
BEAUFORT COUNTY, SOUTHCAROLINA
DATED: DEC. 23, 1996
SCALE: 1"=50'

GRAPHIC SCALE



(IN FEET)
1 inch = 50 ft.

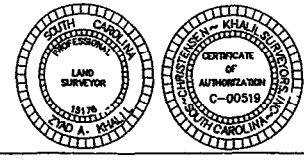
CERTIFICATION:

I, ZYAD A. KHALIL, HEREBY STATE THAT TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF, THE SURVEY SHOWN HEREIN WAS MADE IN ACCORDANCE WITH THE REQUIREMENTS OF THE MINIMUM STANDARDS MANUAL FOR THE PRACTICE OF LAND SURVEYING IN SOUTH CAROLINA, AND MEETS OR EXCEEDS THE REQUIREMENTS FOR A CLASS "B" SURVEY AS SPECIFIED THEREIN.

CHRISTENSEN ~ KHALIL SURVEYORS, INC.

1816 BOUNDARY STREET, BEAUFORT, S.C. 29902
(803) 524-4148, FAX (803) 524-8884

ZYAD A. KHALIL RLS
S.C. REG. NO. 15176
[THIS SURVEY IS NOT VALID UNLESS IT BEARS THE ORIGINAL SIGNATURE AND AN EMBOSSED SEAL]



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