Jet Propulsion Laboratory
California Institute of Technology
4800 Oak Grove Drive
Pasadena, California 91109-8099
(818) 354-4321

JPL

NAS7.000083
NASA - JPL
SSIC No. 9661

September 13, 1995

Refer to: 95-043.SF:ll

Debbie Lowe
U.S. EPA, Region IX
75 Hawthorne Street, M/S H-9-1
San Francisco, CA 94105

Dear Debbie:

Subject: Presentation Materials from RPM Meeting on August 25, 1995

On behalf of the National Aeronautics and Space Administration (NASA), I am pleased to provide a copy of the presentation materials used at the RPM Meeting of August 25, 1995.

If have any questions or comments regarding these materials please feel free to contact me or Judy Novelly at (818) 354-0180 or (818) 354-8634, respectively.

Sincerely,

Charles L. Buril, P.E.
Manager, Environmental Affairs Office

Attachment

bcc: R. Pool
P. Robles

Jet Propulsion Laboratory
California Institute of Technology
4800 Oak Grove Drive
Pasadena, California 91109-8099
(818) 354-4321

JPL

September 13, 1995

Refer to: 95-043.SF:ll

Penny Nakashima
Cal EPA
1011 N. Grandview Avenue
Glendale, CA 91201

Dear Penny:

Subject: Presentation Materials from RPM Meeting on August 25, 1995

On behalf of the National Aeronautics and Space Administration (NASA), I am pleased to provide a copy of the presentation materials used at the RPM Meeting of August 25, 1995.

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Sincerely,

Charles L. Buril, P.E.
Manager, Environmental Affairs Office

Attachment

bcc: R. Pool
P. Robles

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California Institute of Technology

4800 Oak Grove Drive
Pasadena, California 91109-8099

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JPL

September 13, 1995

Refer to: 95-043.SF:ll

Jon Bishop
L.A. Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754

Dear Jon:

Subject: Presentation Materials from RPM Meeting on August 25, 1995

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Sincerely,

Charles L. Buril, P.E.
Manager, Environmental Affairs Office

Attachment

bcc: R. Pool
P. Robles

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California Institute of Technology
4800 Oak Grove Drive
Pasadena, California 91109-8099
(818) 354-4321

JPL

September 13, 1995

Refer to: 95-043.SF:ll

Steven Niou
URS Consultants
164 W. Hospitality Ln., Suite 6
San Bernardino, CA 92408

Dear Steven:

Subject: Presentation Materials from RPM Meeting on August 25, 1995

On behalf of the National Aeronautics and Space Administration (NASA), I am pleased to provide a copy of the presentation materials used at the RPM Meeting of August 25, 1995.

If have any questions or comments regarding these materials please feel free to contact me or Judy Novelly at (818) 354-0180 or (818) 354-8634, respectively.

Sincerely,

Charles L. Buril, P.E.
Manager, Environmental Affairs Office

Attachment

bcc: R. Pool
P. Robles

1. Previous Groundwater Level Data

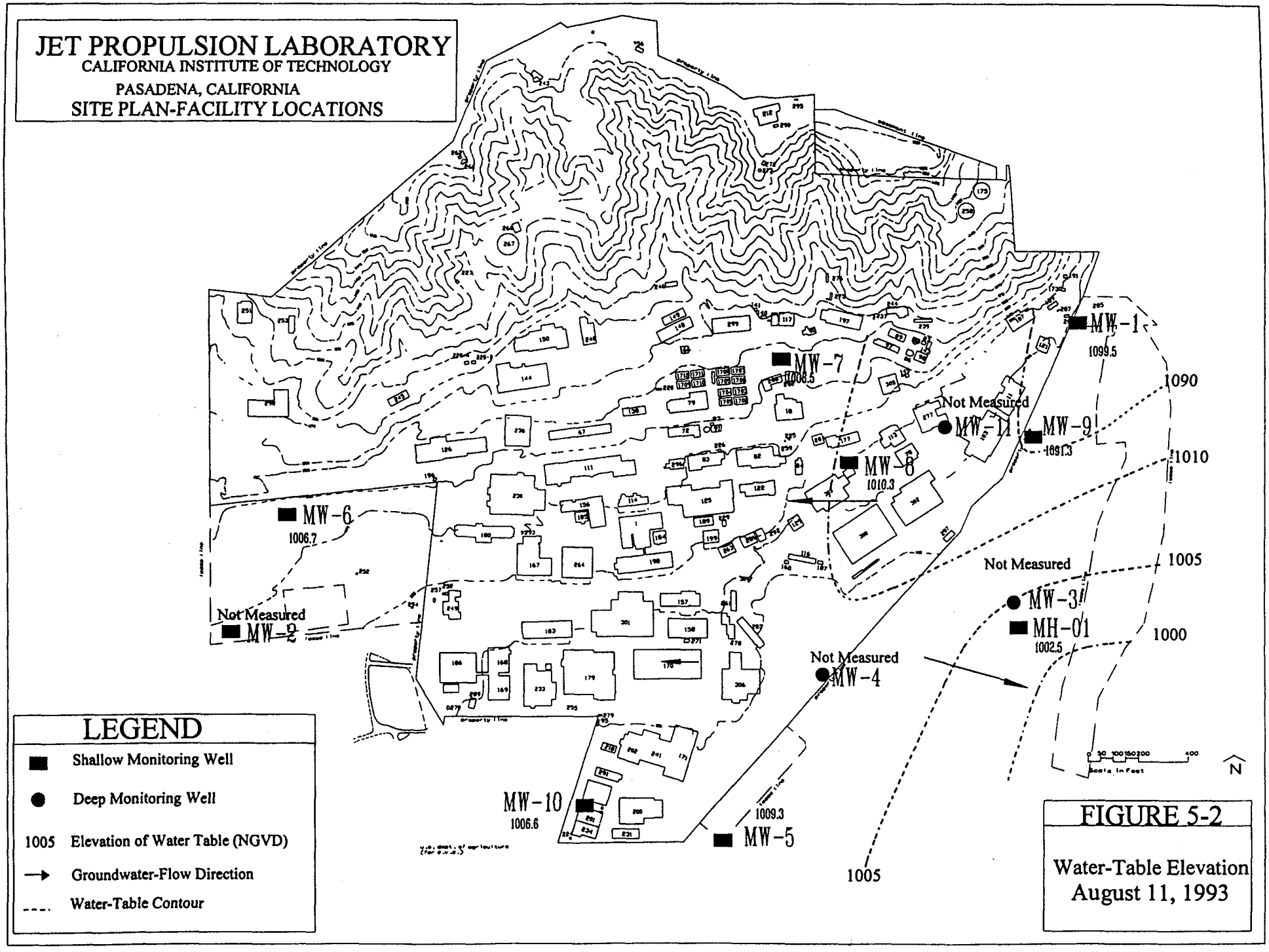
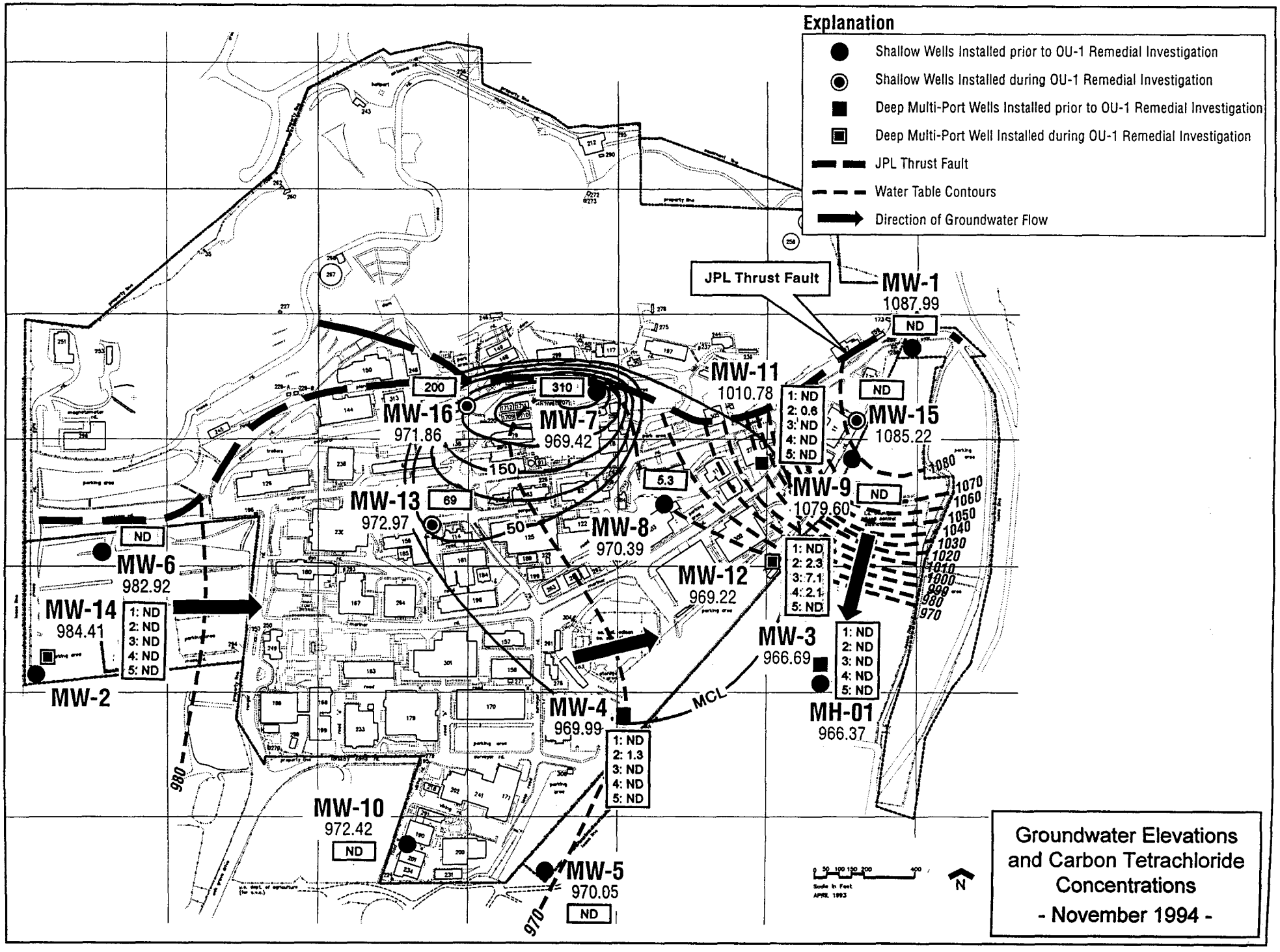
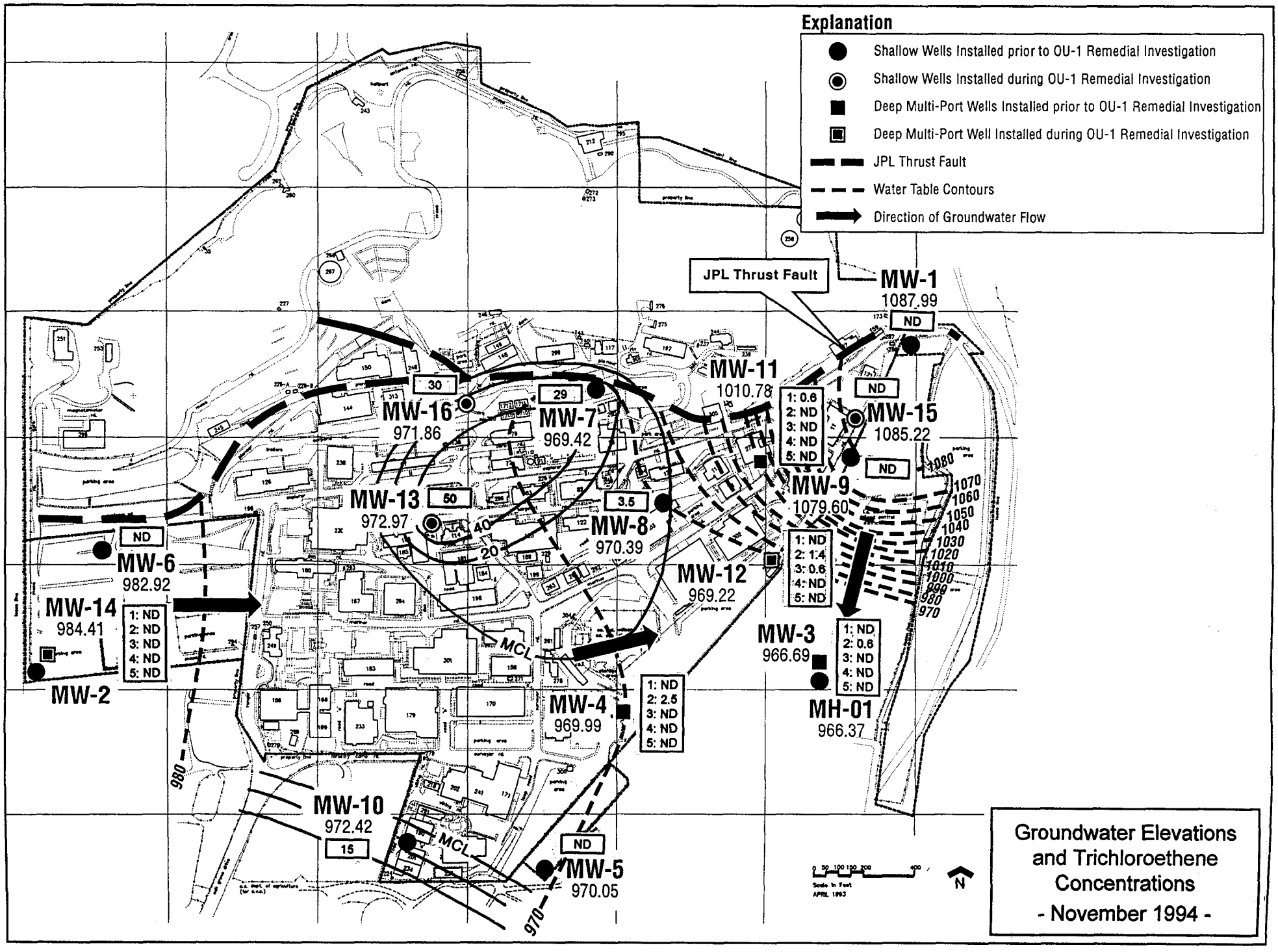


FIGURE 5-2

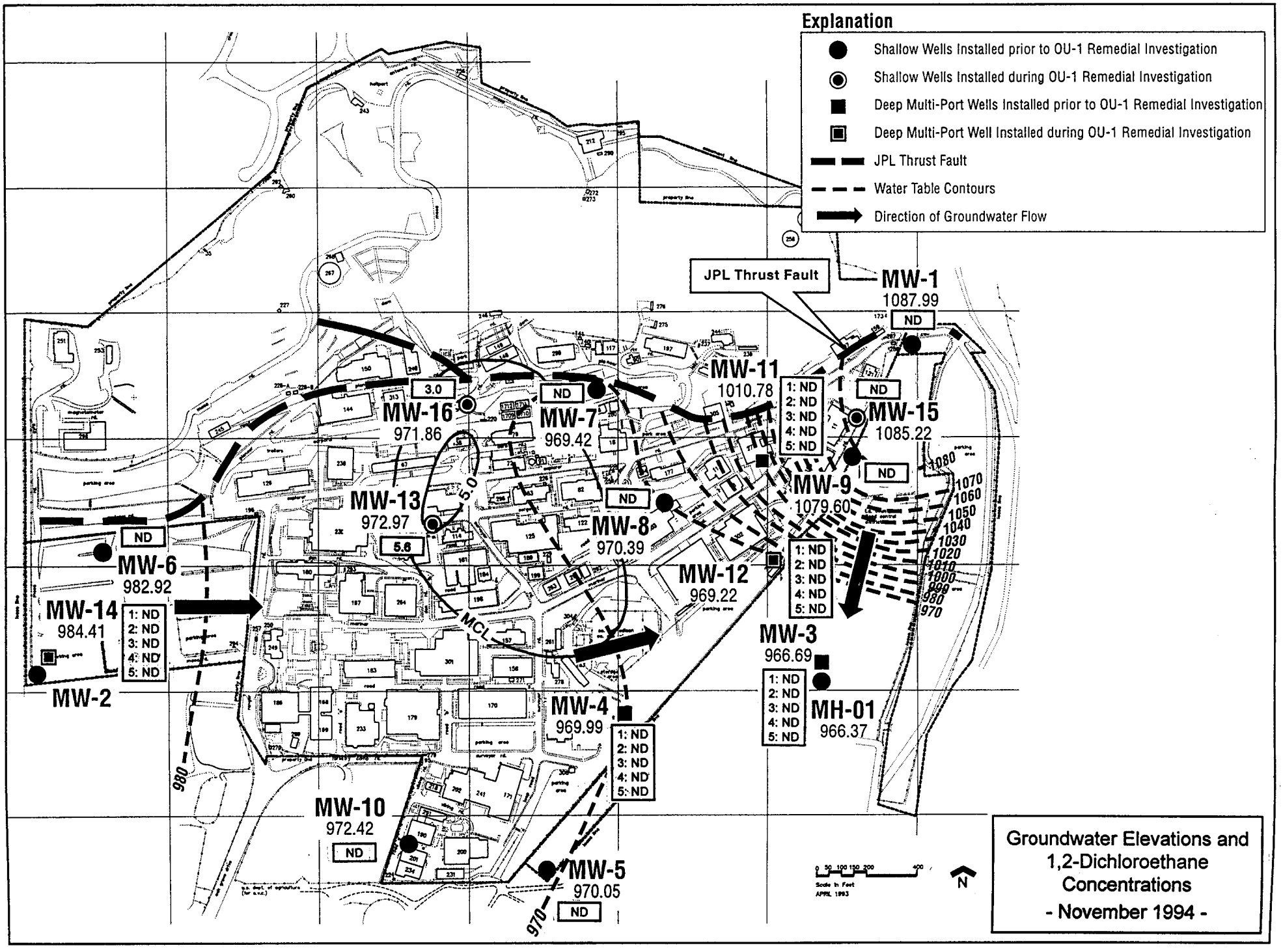
Water-Table Elevation
August 11, 1993



Groundwater Elevations and Carbon Tetrachloride Concentrations
- November 1994 -



Groundwater Elevations and Trichloroethene Concentrations
- November 1994 -



Groundwater Elevations and 1,2-Dichloroethane Concentrations
- November 1994 -

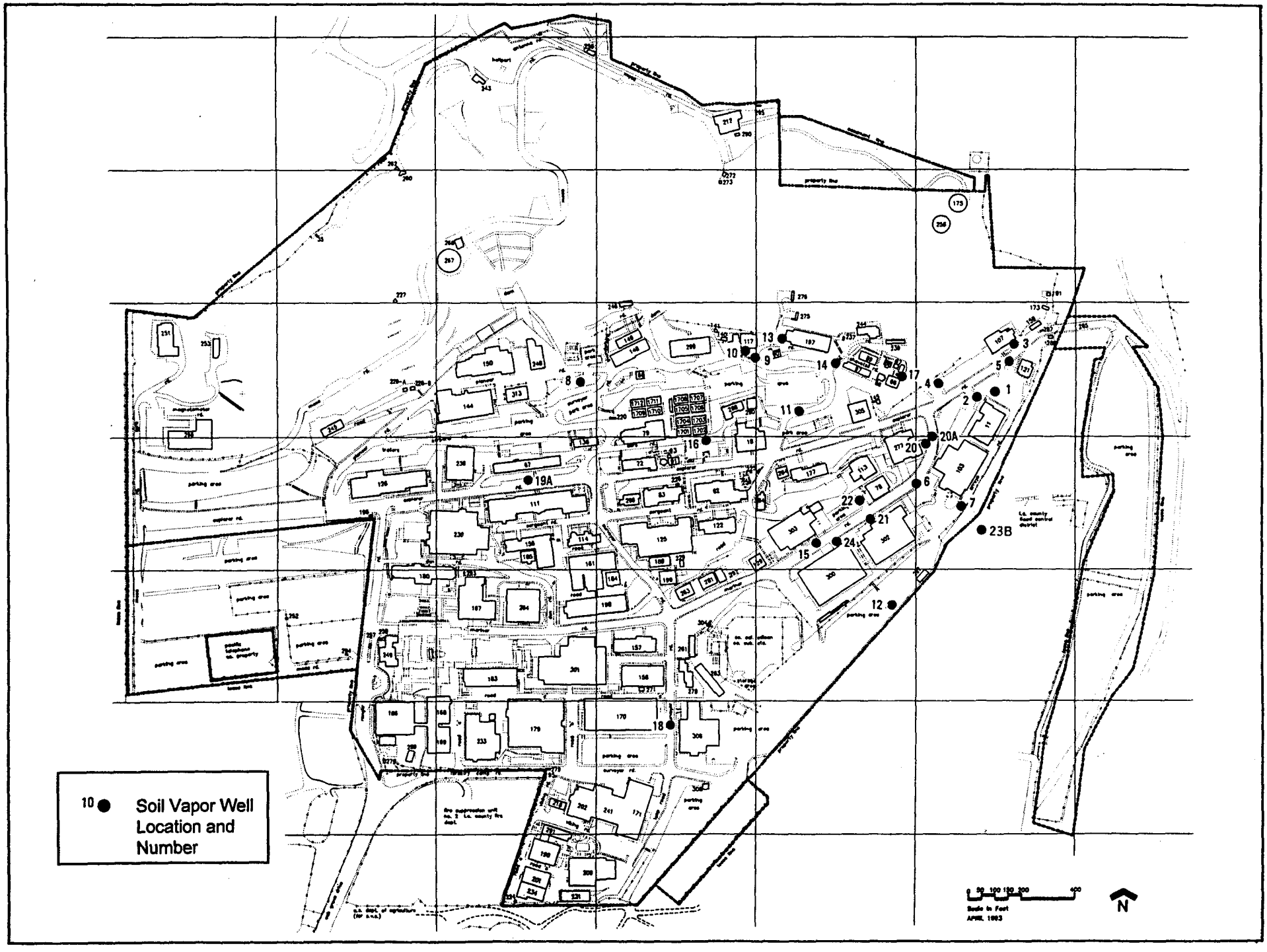
Notes on the Following Attached Groundwater Contaminant Plume Maps

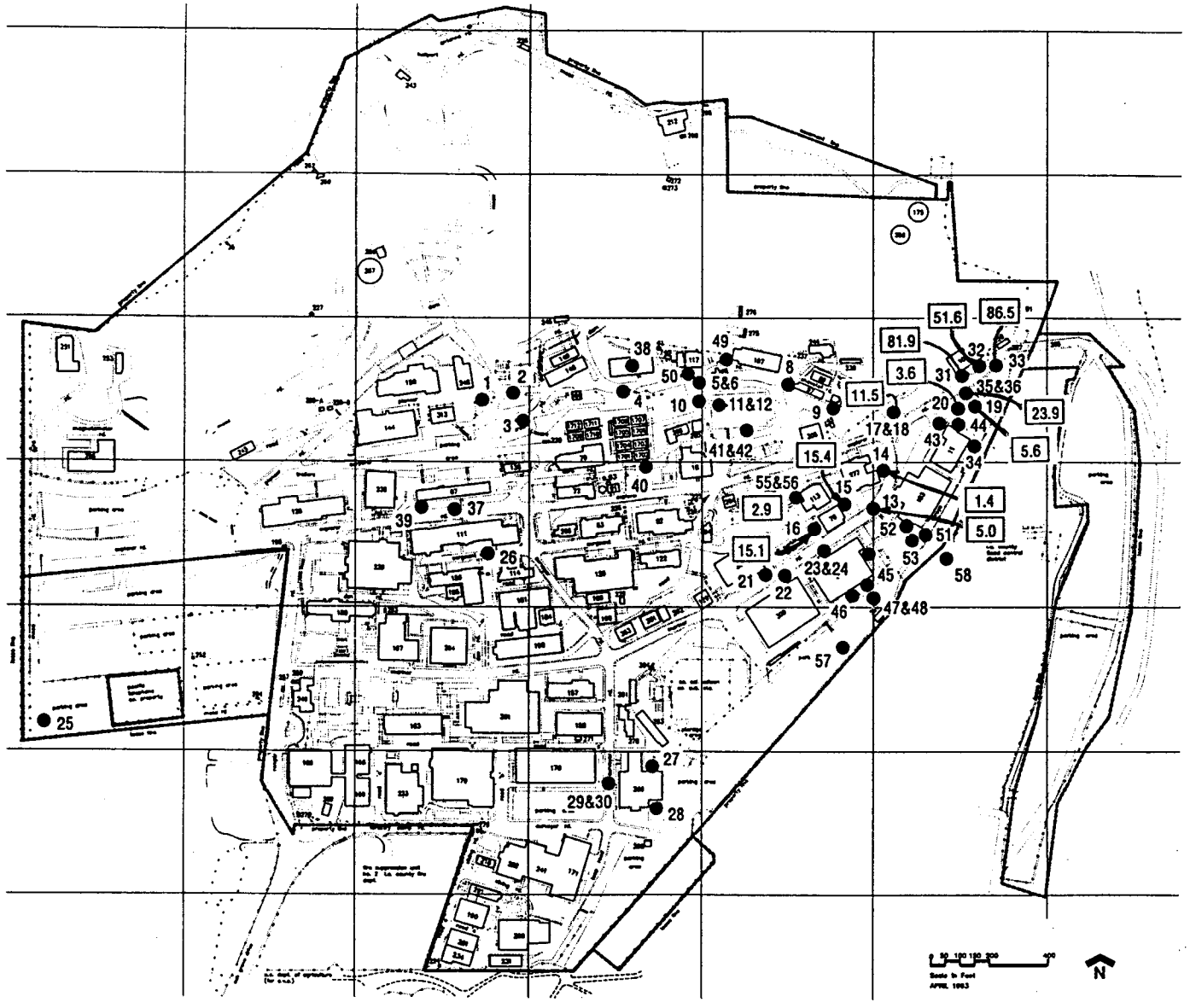
1: Only three volatile organic compounds were detected in the groundwater beneath JPL at concentrations above state or Federal Maximum Contaminant Levels (MCLs) during the Remedial Investigation (RI). These compounds are carbon tetrachloride, trichloroethene and 1,2-dichloroethane which have MCLs of 0.5 μg/l, 5.0 μg/l and 0.5 μg/l, respectively. Only maps for these three compounds have been included. Maps for each compound for each RI sampling event (June, 1994 and November, 1994) are presented.

2: The outermost contaminant plume contour line on each map is the approximate limit of the compound above its MCL.

3: Note that all three compounds have the highest concentrations in shallow wells MW-7, MW-13 and MW-16, with lower concentrations generally in the second screens (second from top) of deep multi-port wells like MW-4, MW-12, indicating the compounds are sinking and are likely present in the groundwater below the screen in shallow well MW-8 at different concentrations than those detected in MW-8. The contaminant plume maps have been prepared to reflect this situation.

3. OU-2

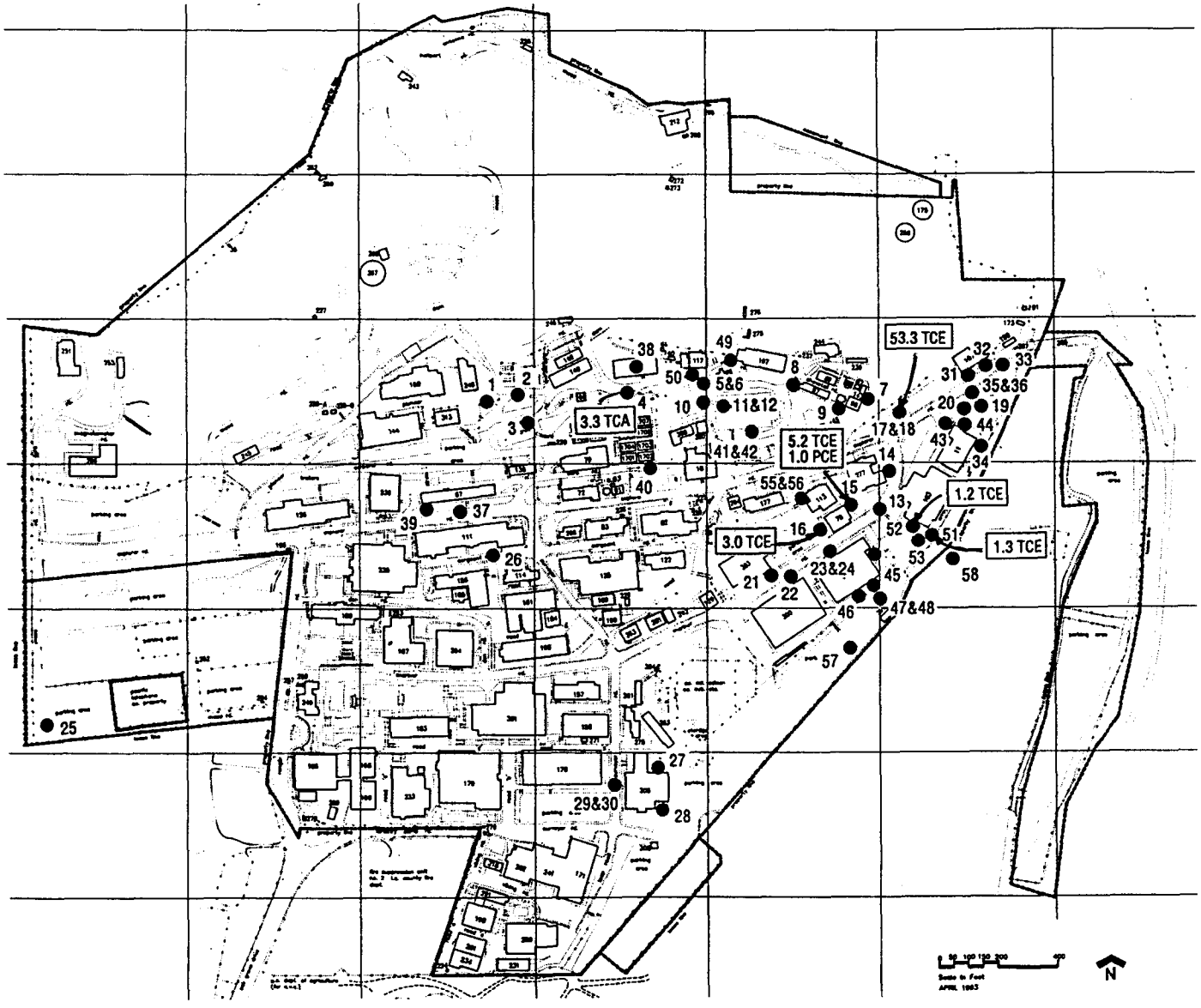

10 Soil Vapor Well Location and Number
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19A
20
20A
21
22
23B
24
N



21 Soil Vapor Sample Location and Number

Carbon Tetrachloride Detected

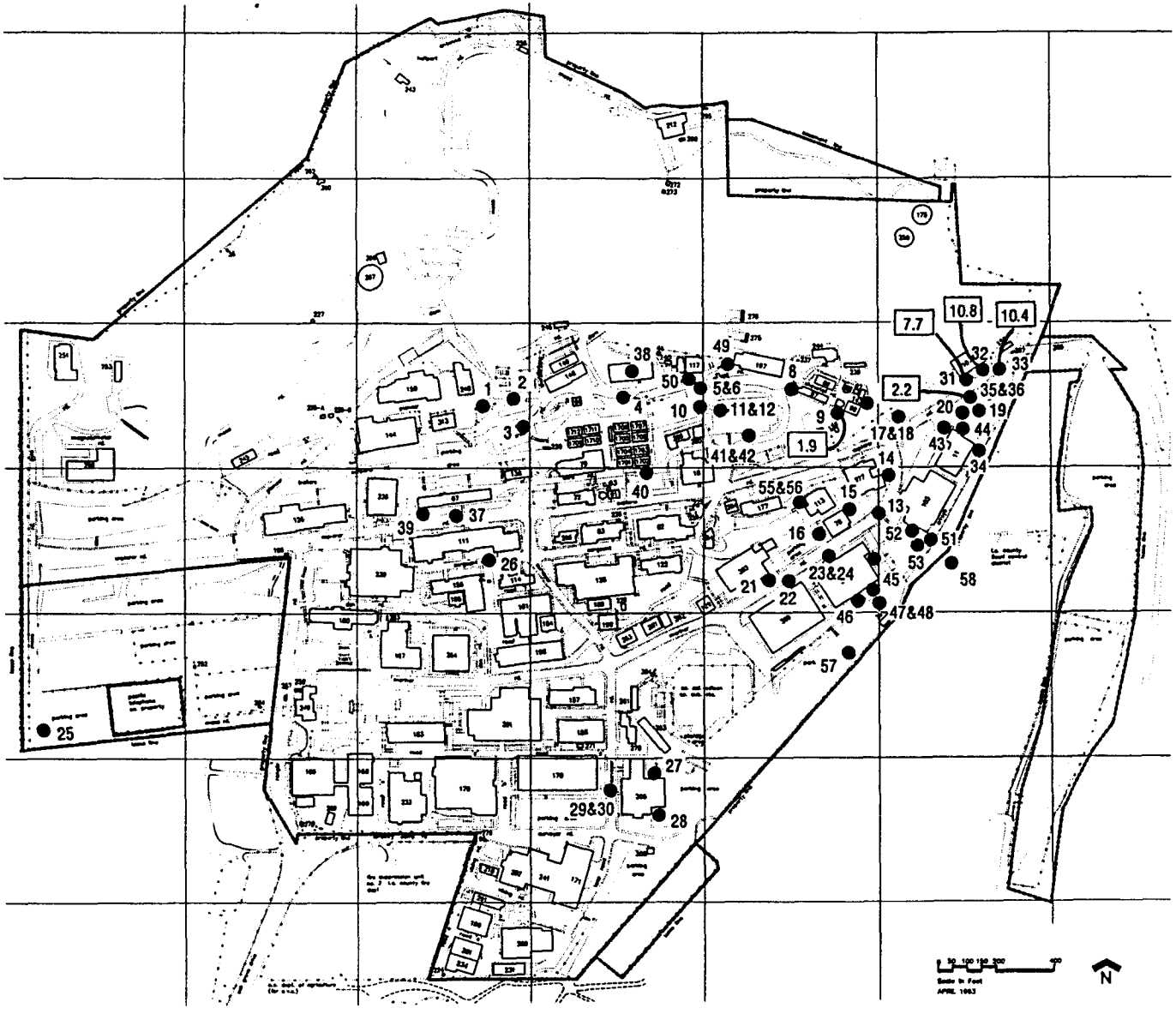
Jet Propulsion Laboratory
Initial Soil Vapor Results



● 21 Soil Vapor Sample Location and Number

Trichoroethene (TCE), Tetrachloroethene (PCE) and Trichloroethane (TCA) Detected

Jet Propulsion Laboratory Initial Soil Vapor Results



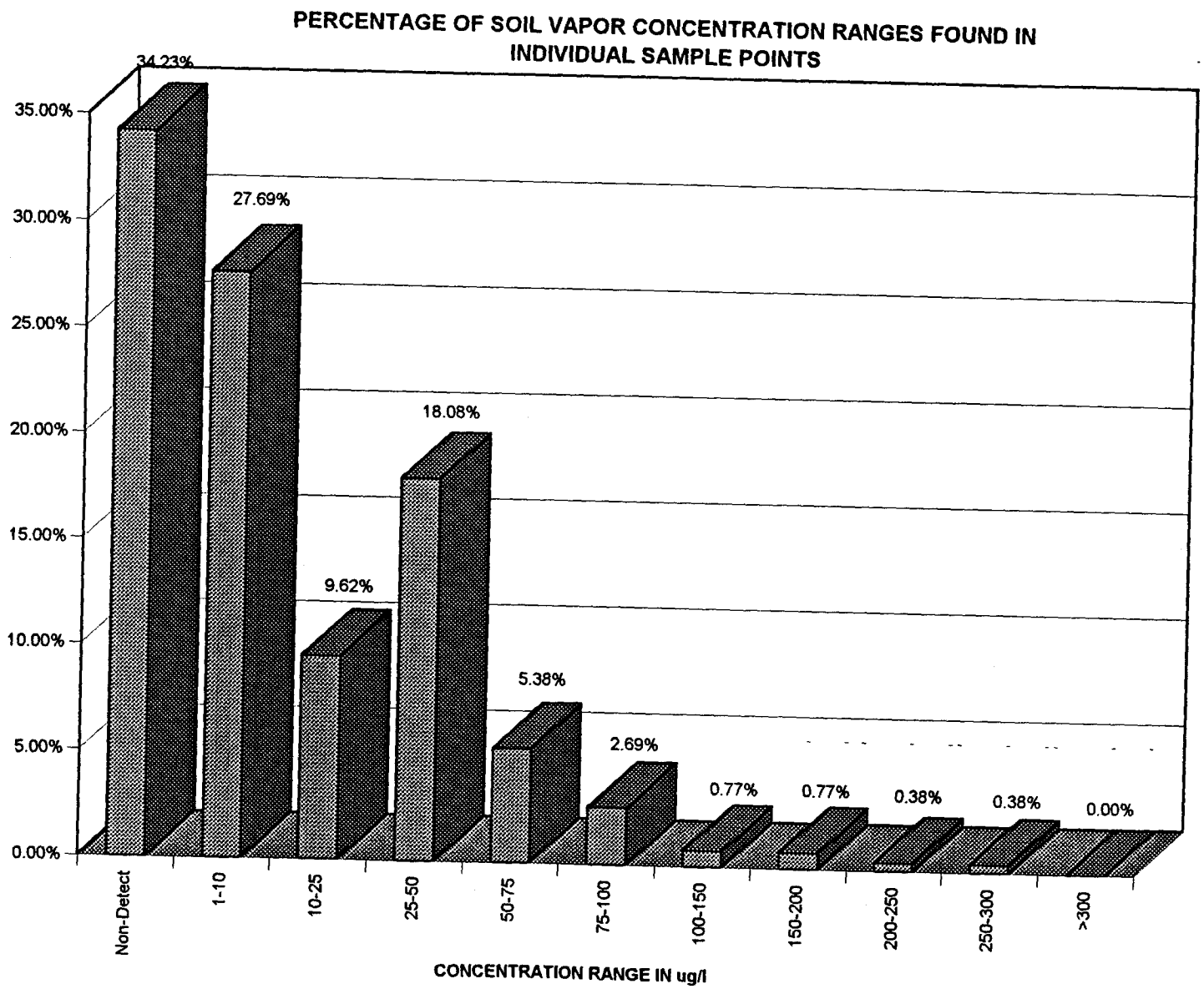
● 21 Soil Vapor Sample Location and Number

Chloroform Detected

Jet Propulsion Laboratory
Initial Soil Vapor Results

RANGES OF TOTAL VOC CONCENTRATIONS IN SOIL-VAPOR SAMPLES

	Initial Soil-Vapor Survey (January 1994)	Samples from Soil-Vapor Wells			Percentage of Soil-Vapor Samples in Each Concentration Range		
		Round 1 (December 1994)	Round 2 (March 1995)	Total Samples	Initial Survey	Soil-Vapor Wells	Survey Plus Wells
Number of Samples	57	111	92	203	57	203	260
Ranges of VOC Concentrations (µg/l)							
Non Detect (<1.0)	38	32	19	51	66.7	25.1	34.2
1-10	10	39	23	62	17.5	30.5	27.7
10-25	3	12	10	22	5.3	10.8	9.6
25-50	1	21	25	46	1.8	22.7	18.1
50-75	3	3	8	11	5.3	5.4	5.4
75-100	2	0	5	5	3.5	2.5	2.7
100-150	0	1	1	2	0	1.0	0.8
150-200	0	2	0	2	0	1.0	0.8
200-250	0	1	0	1	0	0.5	0.4
250-300	0	0	1	1	0	0.5	0.4
>300	0	0	0	0	0	0	0

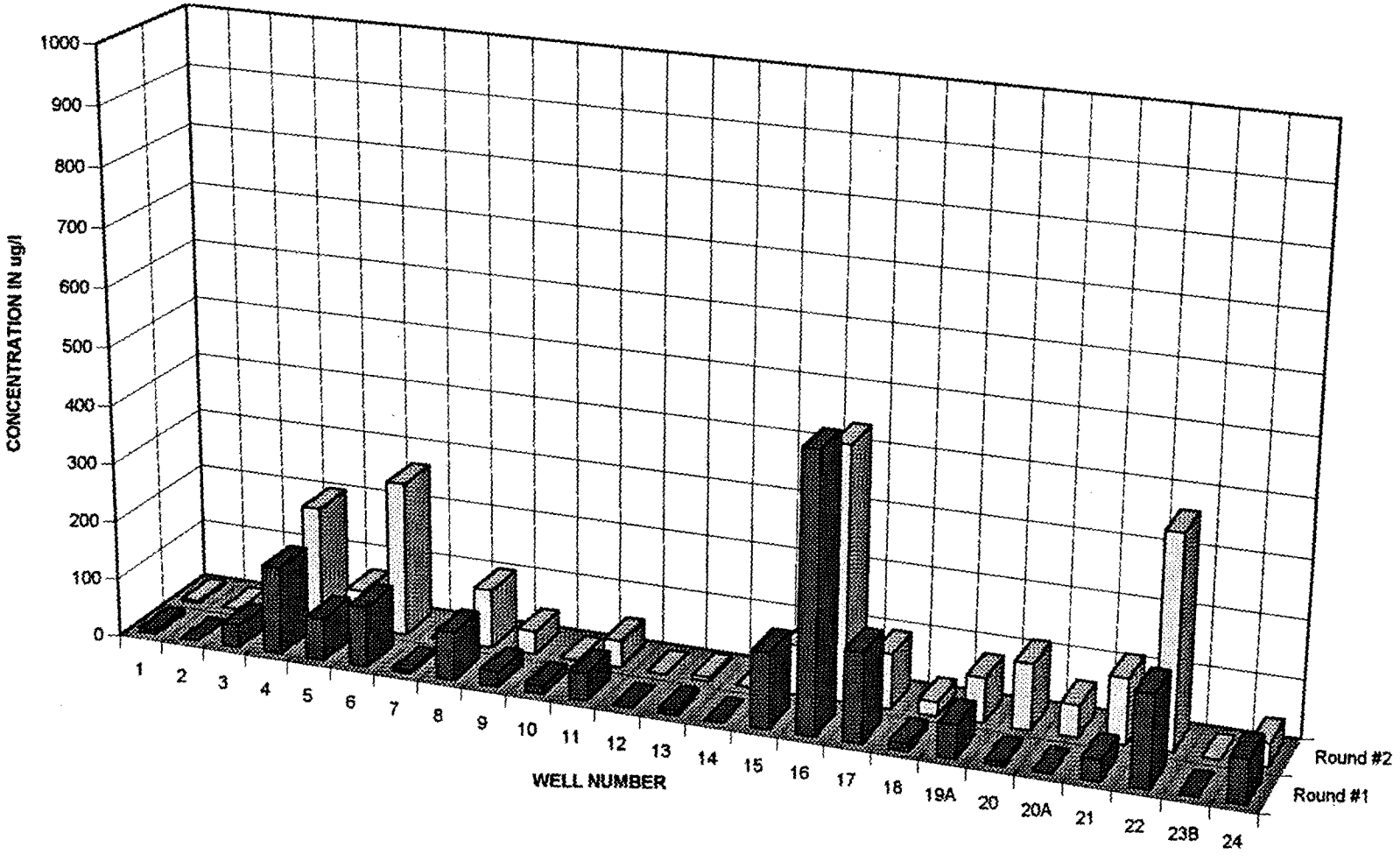

PERCENTAGE OF SOIL VAPOR CONCENTRATION RANGES FOUND IN INDIVIDUAL SAMPLE POINTS
35.00%
30.00%
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%
34.23%
27.69%
9.62%
18.08%
5.38%
2.69%
0.77%
0.77%
0.38%
0.38%
0.00%
Non-Detect
1-10
10-25
25-50
50-75
75-100
100-150
150-200
200-250
250-300
>300
CONCENTRATION RANGE IN ug/l

TOTAL VOC CONCENTRATIONS PER SOIL-VAPOR WELL IN MICROGRAMS PER LITER (µg/l)

Soil Vapor Well Number	Sampling Round 1 (December 1994)	Sampling Round 2 (March 1995)	Highest Concentration Measured
1	6.9	4.0	6.9
2	0	0	0
3	37.3	48.7	48.7
4	149.4	200.5	200.5
5	71.7	64.9	71.7
6	103.1	264.7	264.7
7	4.9	4.3	4.9
8	81.8	99.9	99.9
9	26.4	39.3	39.3
10	13.1	1.3	13.1
11	47.3	45.7	47.3
12	0	0	0
13	7.6	6.6	7.6
14	0	0	0
15	128.8	84.0	128.8
16	473.8	433.9	473.8
17	152.5	92.9	152.5
18	13.2	23.4	23.4
19A	57.3	76.1	76.1
20	6.4	111.4	111.4
20A	1.0	54.1	54.1
21	36.4	110.9	110.9
22	156.5	361.5	361.5
23B	0	0	0
24	75.0	39.0	75.0

Note: Duplicate samples with the higher concentrations were used in the total concentration sum for each well.

TOTAL CONCENTRATION OF VOC's PER SOIL VAPOR WELL



4. Appendix 1

Operable Units 1 and 2 Data

RESULTS OF VOLATILE AND SEMI-VOLATILE ORGANIC COMPOUNDS ANALYSES: OU-1 REMEDIAL INVESTIGATION

Concentrations in μg/l

Values Above State and Federal MCLs are Shaded

Sample Location	Sample Number	Sample Event (1994)	Depth of Well (feet)	Screened Interval (feet)	Carbon Tetrachloride	TCE	Other Volatile Organic Compounds (EPA Method 542.2)	Chloroform	Freon 113	Semi-Volatile Organic Compounds (EPA Methods 8270 or 525.1 as indicated)
MW-1	MW-3	JUNE/JULY	120	70-110	-	-	-	-	-	8270: -
	MW-203	NOV/DEC	120	70-110	-	-	-	-	-	8270: 11 DI-N-BUTYLPHTHALATE 9.3 (B) ETHYL BENZENE[EP] 8.4 (B) UNKNOWN ALKYL SUBS. PROPANOIC ACID[EP] 2100 (B) UNKNOWN SCAN #191[EP] 525.1: -
MW-3										
SCREEN 1	MW-56	JUNE/JULY	700	170-180	-	-	0.9 TOLUENE	-	-	8270: -
	MW-258	NOV/DEC	700	170-180	-	-	-	-	-	8270: 10 DI-N-BUTYLPHTHALATE 16 (B) ETHYL BENZENE[EP] 2900 (B) UNKNOWN[EP] 525.1: -
SCREEN 2	MW-54	JUNE/JULY	700	250-260	-	-	-	2.6	-	8270: -
	MW-254	NOV/DEC	700	250-260	-	0.6	-	1.1	-	8270: 17 (B) ETHYL BENZENE[EP] 1200(B) UNKNOWN[EP] 525.1: -
SCREEN 2 DUP	MW-256	NOV/DEC	700	250-260	-	-	-	0.7	-	8270: 11-DI-N-BUTYLPHTHALATE 15 (B) ETHYL BENZENE[EP] 3000 (B) UNKNOWN[EP] 525.1: -
SCREEN 3	MW-52	JUNE/JULY	700	344-354	-	-	-	-	-	8270: -
	MW-252	NOV/DEC	700	344-354	-	-	-	-	-	8270: 12 (B) ETHYL BENZENE[EP] 2900 (B) UNKNOWN[EP] 525.1: -
SCREEN 4	MW-50	JUNE/JULY	700	555-565	-	-	-	-	-	8270: -
	MW-250	NOV/DEC	700	555-565	-	-	-	-	-	8270: 9 (B) ETHYL BENZENE[EP] 2300 (B) UNKNOWN[EP] 525.1: -

TABLE (cont.)

Sample Location	Sample Number	Sample Event (1994)	Depth of Well (feet)	Screened Interval (feet)	Carbon Tetrachloride	TCE	Other Volatile Organic Compounds (EPA Method 542.2)	Chloroform	Freon 113	Semi-Volatile Organic Compounds (EPA Methods 8270 or 525.1 as indicated)
SCREEN 5	MW-48	JUNE/JULY	700	650-660	-	-	0.7 CARBON DISULFIDE	-	-	8270: 12 UNKNOWN SCAN#1390[EP]
	MW-248	NOV/DEC	700	650-660	-	-	0.5 ETHYL BENZENE 2.2 CARBON DISULFIDE[EP]	-	-	8270: 8.9 N-BUTYL-BENZENESULFONAMIDE[EP] 16 (B) ETHYL BENZENE[EP] 2600 (B) UNKNOWN[EP] 525.1: 1.4 (EB) DI(2 ETHYLHEXYL) PHTHALATE
MW-4										
SCREEN 1	MW-46	JUNE/JULY	560	147-157	-	-	-	-	-	8270: -
	MW-246	NOV/DEC	560	147-157	-	-	-	-	-	8270: 9 (B) ETHYL BENZENE[EP] 2100 (B) UNKNOWN[EP] 525.1: -
SCREEN 2	MW-44	JUNE/JULY	560	237-247	1.9	7.9	0.8 1,2-DCA	3.6	-	8270: -
	MW-244	NOV/DEC	560	237-247	1.3	2.5	-	1.7	-	8270: 11 (B) ETHYL BENZENE[EP] 2600 (B) UNKNOWN[EP] 525.1: -
SCREEN 3	MW-42	JUNE/JULY	560	319-329	-	-	-	-	-	8270: -
	MW-242	NOV/DEC	560	319-329	-	-	-	-	-	8270: 14 (B) ETHYL BENZENE[EP] 3000 (B) UNKNOWN SCAN#193[EP] 525.1: -
SCREEN 4	MW-40	JUNE/JULY	560	389-399	-	-	-	-	-	8270: -
	MW-240	NOV/DEC	560	389-399	-	-	-	-	-	8270: 9 UNKNOWN SCAN #252[EP] 11 (B) ETHYL BENZENE[EP] 2600 (B) UNKNOWN SCAN #191[EP] 525.1: -
SCREEN 5	MW-38	JUNE/JULY	560	510-520	-	-	-	-	-	8270: -
	MW-238	NOV/DEC	560	510-520	-	-	-	-	-	8270: 13 (B) ETHYL BENZENE[EP] 2900 (B) UNKNOWN[EP] 525.1: -
MW-5	MW-9	JUNE/JULY	140	85-135	-	-	-	-	-	8270: 7.7 ETHYL BENZENE[EP] 6.0 UNKNOWN SCAN#432[EP]
	MW-209	NOV/DEC	140	85-135	-	-	-	1.1	-	8270: 8.3 (B) ETHYL BENZENE[EP] 11 (B) UNKNOWN ALKYL SUBS. PROPANOIC ACID[EP] 1900 (B) UNKNOWN SCAN #188[EP] 525.1: -
MW-6	MW-1	JUNE/JULY	245	195-245	-	-	-	-	-	8270: -
	MW-201	NOV/DEC	245	195-245	-	-	0.7 PCE	-	-	8270: 1800 (B) UNKNOWN SCAN #190[EP] 525.1: -

TABLE (cont.)

Sample Location	Sample Number	Sample Event (1994)	Depth of Well (feet)	Screened Interval (feet)	Carbon Tetrachloride	TCE	Other Volatile Organic Compounds (EPA Method 542.2)	Chloroform	Freon 113	Semi-Volatile Organic Compounds (EPA Methods 8270 or 525.1 as indicated)
MW-7	MW-23	JUNE/JULY	275	225-275	180	33	1.5 1,1-DCE 1.0 1,2-DCA 1.5 PCE	17	3.9	8270: - 525.1: -
	MW-223	NOV/DEC	275	225-275	310	29	2.3 1,1-DCE 2.6 PCE	11	8.2	8270: 13 (B) ETHYL BENZENE[EP] 620 (B) SUBS. ALKYL HEXANEDIOIC ACID ESTER[EP] 2800 (B) UNKNOWN SCAN #188[EP] 525.1: -
MW-7 DUP	MW-25	JUNE/JULY	275	225-275	190	34	1.6 1,1-DCE 1.0 1,2-DCA 1.6 PCE	18	3.8	8270: -
	MW-225	NOV/DEC	275	225-275	280	26	2.2 1,1-DCE 2.6 PCE	11	8.3	8270: 14 (B) ETHYL BENZENE[EP] 83 (B) SUBS. ALKYL HEXANEDIOIC ACID ESTER[EP] 3000 (B) UNKNOWN SCAN #189[EP] 525.1: -
MW-7 HIGH FLOW RATE	MW-27	JUNE/JULY	275	225-275	220	32	1.6 1,1-DCE 1.1 1,2-DCA 1.5 PCE	19	3.8	NA
	MW-227	NOV/DEC	275	225-275	290	27	2.2 1,1-DCE 2.5 PCE	11	8.6	NA
MW-8	MW-11	JUNE/JULY	205	155-205	-	-	-	2.3	-	8270: 14 ETHYL BENZENE[EP] 7.1 UNKNOWN SCAN #433[EP]
	MW-211	NOV/DEC	205	155-205	5.3	3.5	-	2.3	0.9	8270: 12 DI-N-BUTYLPHTHALATE 14 (B) ETHYL BENZENE[EP] 2900 (B) UNKNOWN SCAN #189[EP] 525.1: -
MW-8 HIGH FLOW RATE	MW-13	JUNE/JULY	205	155-205	0.6	0.9	-	2.6	-	NA
	MW-213	NOV/DEC	205	155-205	5.4	3.5	-	2.4	0.9	NA
MW-9	MW-7	JUNE/JULY	68	18-68	-	-	-	-	-	8270: 11 ETHYL BENZENE[EP] 7.9 UNKNOWN SCAN#433[EP]
	MW-207	NOV/DEC	68	18-68	-	-	-	-	-	8270: 11 DI-N-BUTYLPHTHALATE 10 (B) ETHYL BENZENE[EP] 12 (B) UNKNOWN ALKYL SUBS. PROPANOIC ACID[EP] 2300 (B) UNKNOWN SCAN #189[EP] 525.1: -

TABLE (cont.)

Sample Location	Sample Number	Sample Event (1994)	Depth of Well (feet)	Screened Interval (feet)	Carbon Tetrachloride	TCE	Other Volatile Organic Compounds (EPA Method 542.2)	Chloroform	Freon 113	Semi-Volatile Organic Compounds (EPA Methods 8270 or 525.1 as indicated)
MW-10	MW-14	JUNE/JULY	155	105-155	0.5	24	1.2 1,1,1-TCA 0.7 PCE 0.8 TOLUENE	1.7	1.8	8270: - 525.1: -
	MW-214	NOV/DEC	155	105-155	-	14	1.5 1,1-DCA 1.2 PCE	1.9	0.9	8270: 12 (B) ETHYL BENZENE[EP] 9.9 (B) UNKNOWN ALKYL SUBS. PROPANOIC ACID[EP] 2100 (B) UNKNOWN SCAN #190[EP] 525.1: -
MW-10/HIGH FLOW RATE	MW-16	JUNE/JULY	155	105-155	-	20	0.8 1,1,1-TCA 0.5 PCE 1.1 TOLUENE	1.2	1.1	NA
	MW-216	NOV/DEC	155	105-155	-	15	1.6 1,1-DCA 1.3 PCE	2.0	1.1	NA
MW-11										
SCREEN 1	MW-78	JUNE/JULY	680	140-150	0.6	-	-	0.7	-	8270: -
	MW-278	NOV/DEC	680	140-150	-	0.6	-	5.3	-	8270: 16 (EB) DI-N-BUTYLPHTHALATE 12 (B) ETHYL BENZENE[EP] 14 (B) UNKNOWN ALKYL SUBS. PROPANOIC ACID[EP] 2700 (B) UNKNOWN SCAN #192[EP] 525.1: -
SCREEN 2	MW-76	JUNE/JULY	680	250-260	-	-	0.7 METHYL T-BUTYL ETHER[EP]	0.6	-	8270: -
	MW-276	NOV/DEC	680	250-260	0.6	-	-	1.9	-	8270: 10 (B) ETHYL BENZENE[EP] 11 (B) UNKNOWN ALKYL SUB. PROPANOIC ACID[EP] 2400 (B) UNKNOWN SCAN #190[EP] 525.1: -
SCREEN 2 (REANALYZED DUE TO LOW INTERNAL STANDARD)	MW-76	JUNE/JULY	680	250-260	1.0	-	0.5 CARBON DISULFIDE	1.0	-	NA
SCREEN 3	MW-74	JUNE/JULY	680	420-430	-	-	0.5 CARBON DISULFIDE	0.6	-	8270: -
	MW-274	NOV/DEC	680	420-430	-	-	-	0.5	-	8270: 10 (EB) DI-N-BUTYLPHTHALATE 11 (B) ETHYL BENZENE[EP] 12 (B) UNKNOWN SUBS. PROPANOIC ACID[EP] 2500 (B) UNKNOWN SCAN #190[EP] 525.1: -

TABLE (cont.)

Sample Location	Sample Number	Sample Event (1994)	Depth of Well (feet)	Screened Interval (feet)	Carbon Tetrachloride	TCE	Other Volatile Organic Compounds (EPA Method 542.2)	Chloroform	Freon 113	Semi-Volatile Organic Compounds (EPA Methods 8270 or 525.1 as indicated)
SCREEN 4	MW-72	JUNE/JULY	680	515-525	-	-	-	-	-	8270: 15 UNKNOWN SCAN #1226[EP] 8.5 UNKNOWN SCAN #1237[EP]
	MW-272	NOV/DEC	680	515-525	-	-	-	-	-	8270: 8.3 UNKNOWN SCAN #1239 10 (B) ETHYL BENZENE[EP] 10 (B) UNKNOWN ALKYL SUBS. PROPANOIC ACID[EP] 2200 (B) UNKNOWN SCAN #190[EP] 525.1: -
SCREEN 5	MW-70	JUNE/JULY	680	630-640	-	-	0.5 CARBON DISULFIDE	-	-	8270: 32 (EB) 2,4-BIS(1,1-DIMETHYLETHYL)PHENOL[EP]
	MW-270	NOV/DEC	680	630-640	-	-	-	-	-	8270: 8.6 UNKNOWN SCAN #1240 11 (B) ETHYL BENZENE[EP] 540 (B) SUBS. ALKYL HEXANEDIOIC ACID ESTER[EP] 2300 (B) UNKNOWN SCAN #190[EP] 525.1: -
MW-12										
SCREEN 1	MW-68	JUNE/JULY	596	135-145	-	-	-	-	-	8270: -
	MW-268	NOV/DEC	596	135-145	-	-	-	-	-	8270: 10 (B) ETHYL BENZENE[EP] 560 (B) SUBS. ALKYL HEXANEDIOIC ACID ESTER[EP] 2200 (B) UNKNOWN SCAN #191[EP] 525.1: -
SCREEN 2	MW-64	JUNE/JULY	596	240-250	0.8	3.0	1.2 PCE	1.6 (TB)	-	8270: 12 BENZO(A)ANTHRACENE 16 BENZO(A)PYRENE 28 BENZO(B)FLUORANTHENE 10 BENZO(G,H,I)PERYLENE 11 BENZO(K)FLUORANTHENE 21 CHRYSENE 39 FLUORANTHENE 10 INDENO(1,2,3-C,D)PYRENE 29 PHENANTHRENE 33 PYRENE 13 UNKNOWN POLYNUCLEAR AROMATIC HYDROCARBON
	MW-266	NOV/DEC	596	240-250	2.3	1.4	0.6 PCE	2.1	-	8270: 8.4 (B) ETHYL BENZENE[EP] 160 (B) SUBS. ALKYL HEXANEDIOIC ACID ESTER[EP] 1800 (B) UNKNOWN SCAN #191 525.1: -
SCREEN 2 DUP	MW-66	JUNE/JULY	596	240-250	0.7	2.8	1.1 PCE	1.5 (TB)	-	8270: 310 UNKNOWN SCAN#538 17 UNKNOWN SUBS. OXETANE SCAN#599 18 UNKNOWN SUBS. OXETANE SCAN#613 56 UNKNOWN SUBS. OXETANE SCAN#661

TABLE (cont.)

Sample Location	Sample Number	Sample Event (1994)	Depth of Well (feet)	Screened Interval (feet)	Carbon Tetrachloride	TCE	Other Volatile Organic Compounds (EPA Method 542.2)	Chloroform	Freon 113	Semi-Volatile Organic Compounds (EPA Methods 8270 or 525.1 as indicated)
SCREEN 3	MW-62	JUNE/JULY	596	315-325	8.5	-	0.5 CARBON DISULFIDE	1.5 (TB)	-	8270: -
	MW-264	NOV/DEC	596	315-325	7.1	0.6	-	5.1	-	8270: 11 UNKNOWN PHTHALATE[EP] 10 UNKNOWN SCAN #1239[EP] 17 (B) ETHYL BENZENE[EP] 3000 (B) UNKNOWN SCAN #191 525.1: -
SCREEN 4	MW-60	JUNE/JULY	596	430-440	2.7	-	1.1 METHYLENE CHLORIDE	1.1 (TB)	-	8270: 13 UNKNOWN SCAN#654[EP]
	MW-262	NOV/DEC	596	430-440	2.1	-	0.8 METHYLENE CHLORIDE	1.5	-	8270: 10 DI-N-BUTYLPHTHALATE 12 UNKNOWN PHTHALATE[EP] 15 (B) ETHYL BENZENE[EP] 2600 (B) UNKNOWN SCAN #190[EP] 525.1: -
SCREEN 5	MW-58	JUNE/JULY	596	546-556	0.7	-	-	0.7 (TB)	-	8270: 43 UNKNOWN SCAN#535 17 UNKNOWN SUBS. OXETANE SCAN#658
	MW-260	NOV/DEC	596	546-556	-	-	-	-	-	8270: 12 (B) ETHYL BENZENE[EP] 2600 (B) UNKNOWN[EP] 525.1: -
MW-13	MW-17	JUNE/JULY	235	180-230	15	71	1.6 1,1-DCE 8.4 1,2-DCA 0.7 PCE 0.7 TOLUENE	38	-	8270: 36 UNKNOWN SCAN#533
	MW-217	NOV/DEC	235	180-230	69	46	2.4 1,1-DCE 5.6 1,2-DCA 0.9 PCE	30	-	8270: 14 (B) ETHYL BENZENE[EP] 550 (B) SUBS. ALKYL HEXANEDIOIC ACID ESTER[EP] 3000 (B) UNKNOWN SCAN #188[EP] 525.1: -
MW-13 DUP	MW-19	JUNE/JULY	235	180-230	18	73	1.7 1,1-DCE 8.9 1,2-DCA 0.8 PCE 0.9 TOLUENE	37	-	8270: -
	MW-219	NOV/DEC	235	180-230	70	50	2.3 1,1-DCE 5.4 1,2-DCA 0.9 PCE	31	1.3	8270: 12 (B) ETHYL BENZENE[EP] 400 (B) SUBS. HEXANEDIOIC ACID ESTER[EP] 2500 (B) UNKNOWN SCAN #185[EP] 525.1: -

TABLE (cont.)

Sample Location	Sample Number	Sample Event (1994)	Depth of Well (feet)	Screened Interval (feet)	Carbon Tetrachloride	TCE	Other Volatile Organic Compounds (EPA Method 542.2)	Chloroform	Freon 113	Semi-Volatile Organic Compounds (EPA Methods 8270 or 525.1 as indicated)
MW-14										
SCREEN 1	MW-36	JUNE/JULY	588	205-215	-	-	2.0 1,1-DCA 0.5 PCE	0.9	-	8270: 9.2 ETHYL BENZENE[EP] 7.8 UNKNOWN SCAN#432[EP]
	MW-236	NOV/DEC	588	205-215	-	-	3.9 1,1-DCA	0.5	-	8270: 17 (EB) UNKNOWN[EP] 27 (B) ETHYL BENZENE[EP] 17 (B) UNKNOWN[EP] 2600 (B) UNKNOWN[EP] 14 (B) UNKNOWN ALCOHOL[EP] 525.1: -
SCREEN 2	MW-34	JUNE/JULY	588	275-285	-	-	0.6 1,1-DCA 0.6 PCE	0.5	-	8270: 8.1 ETHYL BENZENE[EP]
	MW-234	NOV/DEC	588	275-285	-	-	0.6 1,1-DCA 0.7 PCE	-	-	8270: 12 (B) ETHYL BENZENE[EP] 2700 (B) UNKNOWN[EP] 525.1: -
SCREEN 3	MW-32	JUNE/JULY	588	380-390	-	-	-	-	-	8270: -
	MW-232	NOV/DEC	588	380-390	-	-	-	-	-	8270: 14 (B) ETHYL BENZENE[EP] 3400 (B) UNKNOWN[EP] 525.1: -
SCREEN 4	MW-30	JUNE/JULY	588	453-463	-	-	-	-	-	8270: 8.6 ETHYL BENZENE[EP] 57 UNKNOWN SCAN#548[EP] 7.4 UNKNOWN SCAN#611[EP] 7.4 UNKNOWN SCAN#669[EP]
	MW-230	NOV/DEC	588	453-463	-	-	-	-	-	8270: 23 (B) ETHYL BENZENE[EP] 13 (B) UNKNOWN[EP] 2800 (B) UNKNOWN[EP] 15 (B) UNKNOWN ALCOHOL[EP] 525.1: -
SCREEN 5	MW-28	JUNE/JULY	588	538-548	-	-	-	-	-	8270: 8.2 ETHYL BENZENE[EP]
	MW-228	NOV/DEC	588	538-548	-	-	-	-	-	8270: 30 (B) ETHYL BENZENE[EP] 16 (B) UNKNOWN[EP] 2900 (B) UNKNOWN[EP] 17 (B) UNKNOWN ALCOHOL[EP] 525.1: 0.6 (EB) DI(2 ETHYLHEXYL) PHTHALATE

TABLE (cont.)

Sample Location	Sample Number	Sample Event (1994)	Depth of Well (feet)	Screened Interval (feet)	Carbon Tetrachloride	TCE	Other Volatile Organic Compounds (EPA Method 542.2)	Chloroform	Freon 113	Semi-Volatile Organic Compounds (EPA Methods 8270 or 525.1 as indicated)
MW-15	MW-5	JUNE/JULY	75	20-70	-	-	-	-	-	8270: -
	MW-205	NOV/DEC	75	20-70	-	-	-	-	-	8270: 15 DI-N-BUTYLPHTHALATE 12 (B) ETHYL BENZENE[EP] 12 (B) UNKNOWN ALKYL SUBS. PROPANOIC ACID[EP] 2800 (B) UNKNOWN SCAN #190[EP] 525.1: -
MW-16	MW-21	JUNE/JULY	285	230-280	150	43	2.3 1,1 DCE 4.0 1,2 DCA 1.5 PCE	58	1.0	8270: -
	MW-221	NOV/DEC	285	230-280	200	29	4.7 1,1 DCE 3.0 1,2 DCA 3.0 PCE	41	2.0	8270: 13 (B) ETHYL BENZENE[EP] 180 (B) SUBS. ALKYL HEXANEDIOIC ACID ESTER[EP] 2800 (B) UNKNOWN SCAN #189[EP] 525.1: 0.7 DI(2-ETHYLHEXYL) PHTHALATE
DETECTION LIMITS					0.5	0.5	0.5 FOR ALL EXCEPT: 5.0 2-BUTANONE 1.0 2-CHLOROETHYLVINYLETHER 5.0 4-METHYL1-2-PENTANONE	0.5	0.5	8270: 5.0-50.0 525.1: 0.02-1.0
EPA REGION IX MAXIMUM CONTAMINANT LEVELS					5.0	5.0	5.0 1,2 DCA 7.0 1,1 DCE 5.0 PCE 200 1,1,1 TCA 5.0 METHYLENE CHLORIDE 1,000 TOLUENE	100	-	700 ETHYL BENZENE 6.0 PHTHALATES
CALIFORNIA MAXIMUM CONTAMINANT LEVELS					0.5	5.0	5.0 1,1 DCA 0.5 1,2 DCA 6.0 1,1 DCE 5.0 PCE 200 1,1,1 TCA	100	1200	680 ETHYL BENZENE 4.0 PHTHALATES

NOTES:

(EB): Indicates compound also present in field equipment blank.
(B) : Indicates compound also present in laboratory method blank.
(TB): Indicates compound also present in trip blank.
EP : Indicates extraneous peak.
NA : Indicates not analyzed.
- : Indicates not detected.

RESULTS OF INORGANIC ANALYSES: OU-1 REMEDIAL INVESTIGATION
(Only metals detected are listed)*

Concentrations in mg/l unless otherwise noted

Values Above State and Federal MCLs are Shaded (Cr^{+6} Values also Shaded)

Sample Location	Sample Event (1994)	Sample Number	Al (6010)	As (206.2)	Ba (6010)	Cr^{+6} (7196)	Cr Total (6010)	Cu (6010)	Ni (6010)	Pb (239.2)	Sr (6010)	Zn (6010)	Cyanide (335.3)	Turbidity[1] (NTUs)
MW-1	June/July	MW-3	NA	-	0.039	-	-	-	-	-	0.29	0.022	-	1.7
	Nov/Dec	MW-203	-	-	0.040	-	-	-	-	-	0.31	-	-	2.0
MW-1 FILTERED	June/July	MW-4	NA	-	0.040	-	-	-	-	-	0.29	0.021	NA	NA
	Nov/Dec	MW-204	-	-	0.038	NA	-	-	-	0.002	0.29	0.025	NA	NA
MW-3														
SCREEN 1	June/July	MW-56	NA	-	0.032	-	-	-	-	-	0.29	-	-	3.4
	Nov/Dec	MW-258	-	-	0.038	-	-	-	-	-	0.34	-	-	3.5
SCREEN 1 FILTERED	June/July	MW-57	NA	-	0.032	-	-	-	-	-	0.29	0.020 (EB[1])	NA	NA
	Nov/Dec	MW-259	-	-	0.037	NA	-	-	-	-	0.33	-	NA	NA
SCREEN 2	June/July	MW-54	NA	-	0.044	-	-	-	-	-	0.31	0.023 (EB)	-	0.8
	Nov/Dec	MW-256	-	-	0.043	-	-	-	-	-	0.37	-	-	2.9
SCREEN 2 FILTERED	June/July	MW-55	NA	-	0.044	-	-	-	-	-	0.31	-	NA	NA
	Nov/Dec	MW-257	-	-	0.042	NA	-	-	-	-	0.37	0.037	NA	NA
SCREEN 3	June/July	MW-52	NA	-	0.024	-	-	-	-	-	0.24	0.023 (EB)	-	15.3
	Nov/Dec	MW-252	-	-	0.023	-	-	-	-	-	0.26	-	-	4.2
SCREEN 3 FILTERED	June/July	MW-53	NA	-	0.023	-	-	-	-	-	0.23	-	NA	NA
	Nov/Dec	MW-253	-	-	0.023	NA	-	-	-	-	0.27	-	NA	NA
SCREEN 4	June/July	MW-50	NA	-	0.025	-	-	-	-	-	0.26	-	-	6.4
	Nov/Dec	MW-250	0.081	-	0.027	-	-	-	-	-	0.20	0.025	-	3.9
SCREEN 4 FILTERED	June/July	MW-51	NA	-	0.023	-	-	-	-	-	0.26	-	NA	NA
	Nov/Dec	MW-251	-	-	0.022	NA	-	-	-	-	0.29	-	NA	NA
SCREEN 5	June/July	MW-48	NA	0.014	-	-	-	-	-	-	0.10	0.026 (EB)	-	3.4
	Nov/Dec	MW-248	0.063 (EB)	0.006	-	-	-	-	-	-	0.076	-	-	2.0
SCREEN 5 FILTERED	June/July	MW-49	NA	0.017	-	-	-	-	-	-	0.10	-	NA	NA
	Nov/Dec	MW-249	0.063 (EB[1])	0.006	-	NA	-	-	-	-	0.080	-	NA	NA

TABLE (Cont.)

Sample Location	Sample Event (1994)	Sample Number	Al (6010)	As (206.2)	Ba (6010)	Cr^{+6} (7196)	Cr Total (6010)	Cu (6010)	Ni (6010)	Pb (239.2)	Sr (6010)	Zn (6010)	Cyanide (335.3)	Turbidity[1] (NTUs)
MW-4														
SCREEN 1	June/July	MW-46	NA	-	0.043	-	-	-	-	-	0.28	-	-	2.5
	Nov/Dec	MW-246	-	-	0.042	-	-	-	-	-	0.33	0.027	-	7.2
SCREEN 1 FILTERED	June/July	MW-47	NA	-	0.043	-	-	-	-	-	0.29	-	NA	NA
	Nov/Dec	MW-247	-	-	0.047	NA	-	-	-	-	0.32	-	NA	NA
SCREEN 2	June/July	MW-44	NA	-	0.068	-	-	-	-	-	0.48	-	-	2.3
	Nov/Dec	MW-244	-	-	0.083	-	0.017	-	0.019	-	0.56	-	-	5.0
SCREEN 2 FILTERED	June/July	MW-45	NA	-	0.067	-	-	-	-	-	0.48	0.052	NA	NA
	Nov/Dec	MW-245		-	0.077	NA	-	-	0.036	-	0.53	-	NA	NA
SCREEN 3	June/July	MW-42	NA	-	0.053	-	-	-	-	-	0.28	0.048 (EB)	-	2.6
	Nov/Dec	MW-242	0.066	-	0.058	-	-	-	-	-	0.32	0.021	-	2.2
SCREEN 3 FILTERED	June/July	MW-43	NA	-	0.052	-	-	-	-	-	0.28	0.026 (EB[1])	NA	NA
	Nov/Dec	MW-243	-	-	0.057	NA	-	-	-	-	0.32	-	NA	NA
SCREEN 4	June/July	MW-40	NA	-	0.033	-	0.018	-	0.014	-	0.26	0.031 (EB)	-	3.3
	Nov/Dec	MW-240	-	-	0.032	-	-	-	-	-	0.26	-	-	2.1
SCREEN 4 FILTERED	June/July	MW-41	NA	-	0.031	-	-	-	-	-	0.26	0.022 (EB[1])	NA	NA
	Nov/Dec	MW-241	-	-	0.032	NA	-	-	-	-	0.26	-	NA	NA
SCREEN 5	June/July	MW-38	NA	-	0.050	-	0.011	-	-	-	0.30	0.027 (EB)	-	18.0
	Nov/Dec	MW-238	-	-	0.037	-	-	-	-	-	0.28	-	-	15.7
SCREEN 5 FILTERED	June/July	MW-39	NA	-	0.045	-	-	-	-	-	0.29	0.033 (EB[1])	NA	NA
	Nov/Dec	MW-239	-	-	0.037	NA	-	-	-	0.003	0.29		NA	NA
MW-5	June/July	MW-9	NA	-	0.052	-	-	-	-	-	0.32	0.061	-	1.7
	Nov/Dec	MW-209	-	-	0.054	-	0.011	-	-	-	0.36	-	-	1.3
MW-5 FILTERED	June/July	MW-10	NA	-	0.057	-	-	0.015	-	-	0.34	0.025	NA	NA
	Nov/Dec	MW-210	-	-	0.052	NA	-	-	-	-	0.36	-	NA	NA
MW-6	June/July	MW-1	NA	-	0.055	-	0.075	0.012	0.036	-	0.40	0.028	-	2.2
	Nov/Dec	MW-201	0.096	-	0.092	-	0.24	-	0.035	-	0.73	0.050	-	4.8
MW-6 FILTERED	June/July	MW-2	NA	-	0.054	-	-	-	0.034	-	0.41	0.034	NA	NA
	Nov/Dec	MW-202	-	-	0.086	NA	-	-	0.019	-	0.72	-	NA	NA

TABLE (Cont.)

Sample Location	Sample Event (1994)	Sample Number	Al (6010)	As (206.2)	Ba (6010)	Cr^{+6} (7196)	Cr Total (6010)	Cu (6010)	Ni (6010)	Pb (239.2)	Sr (6010)	Zn (6010)	Cyanide (335.3)	Turbidity[1] (NTUs)
MW-7	June/July	MW-23	NA	-	0.049	-	-	-	-	-	0.34	-	-	4.6
	Nov/Dec	MW-223	-	-	0.048	-	0.012	-	-	-	0.34	-	-	3.2
MW-7 FILTERED	June/July	MW-24	NA	-	0.048	-	-	-	-	-	0.34	-	NA	NA
	Nov/Dec	MW-224	-	-	0.047	NA	0.011	-	-	-	0.33	-	NA	NA
MW-7 DUP	June/July	MW-25	NA	-	0.048	-	-	-	-	-	0.34	-	-	4.6
	Nov/Dec	MW-225	-	-	0.055	-	0.013	-	-	-	0.34	0.038	-	3.2
MW-7 DUP FILTERED	June/July	MW-26	NA	-	0.049	-	-	-	-	-	0.34	-	NA	NA
	Nov/Dec	MW-226	-	-	0.048	NA	0.012	-	-	-	0.33	-	NA	NA
MW-8	June/July	MW-11	NA	-	0.039	-	-	0.024	-	-	0.26	0.029	-	4.2
	Nov/Dec	MW-211	0.13	-	0.040	-	-	-	-	-	0.27	-	-	4.3
MW-8 FILTERED	June/July	MW-12	NA	-	0.039	-	-	-	-	0.002	0.27	0.028	NA	NA
	Nov/Dec	MW-212	-	-	0.035	NA	-	-	-	-	0.26	-	NA	NA
MW-9	June/July	MW-7	NA	-	0.058	-	-	-	-	-	0.33	0.030	-	5.6
	Nov/Dec	MW-207	0.16	-	0.092	-	-	-	-	-	0.55	-	-	3.9
MW-9 FILTERED	June/July	MW-8	NA	-	0.055	-	-	-	-	-	0.32	0.022	NA	NA
	Nov/Dec	MW-208	-	-	0.094	NA	-	-	-	-	0.56	-	NA	NA
MW-10	June/July	MW-14	NA	-	0.096	-	0.012	-	-	-	0.61	-	-	3.8
	Nov/Dec	MW-214	0.11	-	0.14	-	0.017	-	0.012	-	0.95	-	-	4.0
MW-10 FILTERED	June/July	MW-15	NA	-	0.095	-	-	-	-	-	0.61	-	NA	NA
	Nov/Dec	MW-215	-	-	0.13	NA	0.010	-	-	-	0.89	-	NA	NA
MW-11														
SCREEN 1	June/July	MW-78	NA	-	0.038	-	0.021	-	0.022	-	0.49	0.021 (EB)	0.006	6.8
	Nov/Dec	MW-278	-	-	0.033	-	-	-	0.012	-	0.49	-	-	1.9
SCREEN 1 FILTERED	June/July	MW-79	NA	-	0.038	-	-	-	-	0.002	0.50	-	NA	NA
	Nov/Dec	MW-279	-	-	0.030	NA	-	-	-	-	0.48	-	NA	NA
SCREEN 2	June/July	MW-76	NA	-	0.047	-	-	-	-	-	0.40	0.030 (EB)	-	11.4
	Nov/Dec	MW-276	-	-	0.048	-	-	-	-	-	0.47	-	-	0.5
SCREEN 2 FILTERED	June/July	MW-77	NA	-	0.037	-	-	-	-	-	0.41	-	NA	NA
	Nov/Dec	MW-277	-	-	0.043	NA	-	-	-	-	0.47	-	NA	NA

TABLE (Cont.)

Sample Location	Sample Event (1994)	Sample Number	Al (6010)	As (206.2)	Ba (6010)	Cr^{+6} (7196)	Cr Total (6010)	Cu (6010)	Ni (6010)	Pb (239.2)	Sr (6010)	Zn (6010)	Cyanide (335.3)	Turbidity[1] (NTUs)
SCREEN 3	June/July	MW-74	NA	-	0.041	-	-	-	0.011	0.013	0.39	0.023 (EB)	-	2.9
	Nov/Dec	MW-274	-	-	0.15	-	-	-	-	-	0.43	0.020	-	3.2
SCREEN 3 FILTERED	June/July	MW-75	NA	-	0.047	-	-	-	-	0.025	0.40	-	NA	NA
	Nov/Dec	MW-275	-	-	0.048	NA	-	-	-	-	0.44	-	NA	NA
SCREEN 4	June/July	MW-72	NA	-	0.031	-	-	-	-	-	0.40	0.024	-	4.4
	Nov/Dec	MW-272	-	-	0.029	-	-	-	-	-	0.40	-	-	2.7
SCREEN 4 FILTERED	June/July	MW-73	NA	-	0.030	-	-	-	-	-	0.41	-	NA	NA
	Nov/Dec	MW-273	-	-	0.028	NA	-	-	-	-	0.39	-	NA	NA
SCREEN 5	June/July	MW-70	NA	-	0.026	-	0.012	-	0.010	-	0.26	0.041	0.006	2.5
	Nov/Dec	MW-270	-	-	0.097	-	-	-	-	-	0.26	0.053	-	2.6
SCREEN 5 FILTERED	June/July	MW-71	NA	-	0.027	-	-	-	-	-	0.26	0.028	NA	NA
	Nov/Dec	MW-271	-	-	0.028	NA	-	-	-	0.002	0.26	-	NA	NA
MW-12														
SCREEN 1	June/July	MW-68	NA	-	0.048	-	-	-	-	-	0.34	-	-	1.9
	Nov/Dec	MW-268	-	-	0.046	-	-	-	-	-	0.36	-	-	4.4
SCREEN 1 FILTERED	June/July	MW-69	NA	-	0.048	-	-	0.010 (EB[1])	-	-	0.34	-	NA	NA
	Nov/Dec	MW-269	-	-	0.046	NA	-	-	-	0.020	0.35	-	NA	NA
SCREEN 2	June/July	MW-64	NA	-	0.042	-	0.016	-	-	-	0.39	-	-	12.3
	Nov/Dec	MW-266	-	-	0.027	-	-	-	-	-	0.35	-	-	13.8
SCREEN 2 FILTERED	June/July	MW-65	NA	-	0.042	-	-	-	-	-	0.39	-	NA	NA
	Nov/Dec	MW-267	-	-	0.027	NA	-	-	-	-	0.37	-	NA	NA
SCREEN 2 DUP	June/July	MW-66	NA	-	0.044	-	-	-	-	-	0.44	-	-	12.3 13.8
SCREEN 2 DUP/FILTERED	June/July	MW-67	NA	-	0.40	-	0.014	-	-	-	0.38	-	NA	NA
SCREEN 3	June/July	MW-62	NA	-	0.034	-	-	-	-	-	0.37	0.028	-	16.3
	Nov/Dec	MW-264	-	-	0.033	-	-	-	-	-	0.43	0.024	-	15.2
SCREEN 3 FILTERED	June/July	MW-63	NA	-	0.031	-	-	-	-	-	0.38	-	NA	NA
	Nov/Dec	MW-265	-	-	0.029	NA	-	-	-	0.005	0.41	-	NA	NA
SCREEN 4	June/July	MW-60	NA	-	0.050	-	-	-	-	-	0.40	0.022 (EB)	-	3.2
	Nov/Dec	MW-262	-	-	0.049	-	-	-	-	-	0.42	-	-	2.8
SCREEN 4 FILTERED	June/July	MW-61	NA	-	0.053	-	-	-	-	-	0.42	0.029 (EB[1])	NA	NA
	Nov/Dec	MW-263	-	-	0.049	NA	-	-	-	-	0.43	-	NA	NA

TABLE (Cont.)

Sample Location	Sample Event (1994)	Sample Number	Al (6010)	As (206.2)	Ba (6010)	Cr^{+6} (7196)	Cr Total (6010)	Cu (6010)	Ni (6010)	Pb (239.2)	Sr (6010)	Zn (6010)	Cyanide (335.3)	Turbidity[1] (NTUs)
SCREEN 5	June/July	MW-58	NA	-	0.030	-	-	0.020 (EB)	0.011	-	0.33	0.020 (EB)	-	3.3
	Nov/Dec	MW-260	-	-	0.025	-	-	-	-	-	0.18	-	-	3.9
SCREEN 5 FILTERED	June/July	MW-59	NA	-	0.030	-	-	-	-	-	0.34	0.031 (EB[1])	NA	NA
	Nov/Dec	MW-261	-	-	0.023	-	-	-	-	-	0.18	-	NA	NA
MW-13	June/July	MW-17	NA	-	0.063	-	0.062	-	-	-	0.51	-	-	4.7
	Nov/Dec	MW-217	0.14	-	0.043	0.019	0.033	-	-	-	0.40	-	-	3.6
MW-13 FILTERED	June/July	MW-18	NA	-	0.061	-	0.054	-	-	-	0.52	-	NA	NA
	Nov/Dec	MW-218	-	-	0.042	NA	0.024	-	-	-	0.39	-	NA	NA
MW-13 DUP	June/July	MW-19	NA	-	0.063	-	0.061	-	-	-	0.51	-	-	4.7
	Nov/Dec	MW-219	0.10	-	0.043	0.026	0.026	-	-	-	0.40	-	-	3.6
MW-13 DUP FILTERED	June/July	MW-20	NA	-	0.058	-	0.054	-	-	-	0.49	-	NA	NA
	Nov/Dec	MW-220	-	-	0.043	NA	0.024	-	-	-	0.40	-	NA	NA
MW-14														
SCREEN 1	June/July	MW-36	NA	-	0.15	-	-	0.017	-	-	1.2	0.029	-	3.4
	Nov/Dec	MW-236	-	-	0.15	-	-	-	-	-	1.2	-	-	6.9
SCREEN 1 FILTERED	June/July	MW-37	NA	-	0.15	-	-	0.012 (EB[1])	-	-	1.2	0.024 (EB[1])	NA	NA
	Nov/Dec	MW-237	-	-	0.15	NA	-	-	-	-	1.2	-	NA	NA
SCREEN 2	June/July	MW-34	NA	-	0.089	-	0.012	-	-	-	0.93	0.037 (EB)	-	7.9
	Nov/Dec	MW-234	-	-	0.095	-	-	-	-	-	1.1	-	-	4.2
SCREEN 2 FILTERED	June/July	MW-35	NA	-	0.091	-	-	-	-	-	0.96	0.047 (EB[1])	NA	NA
	Nov/Dec	MW-235	-	-	0.092	NA	-	-	-	-	1.1	-	NA	NA
SCREEN 3	June/July	MW-32	NA	-	0.047	-	-	-	-	-	0.38	0.031 (EB)	-	4.4
	Nov/Dec	MW-232	-	-	0.060	-	-	-	-	-	0.46	-	-	2.8
SCREEN 3 FILTERED	June/July	MW-33	NA	-	0.040	-	0.012	-	-	-	0.38	0.088 (EB[1])	NA	NA
	Nov/Dec	MW-233	-	-	0.060	NA	-	-	-	-	0.46	0.071 (EB[1])	NA	NA
SCREEN 4	June/July	MW-30	NA	-	0.044	-	-	-	-	-	0.27	0.028 (EB)	-	4.8
	Nov/Dec	MW-230	-	-	0.063	-	-	-	-	-	0.33	-	-	13.7
SCREEN 4 FILTERED	June/July	MW-31	NA	-	0.045	-	-	-	-	-	0.27	0.030 (EB[1])	NA	NA
	Nov/Dec	MW-231	-	-	0.065	NA	-	-	-	-	0.34	-	NA	NA

TABLE (Cont.)

Sample Location	Sample Event (1994)	Sample Number	Al (6010)	As (206.2)	Ba (6010)	Cr^{+6} (7196)	Cr Total (6010)	Cu (6010)	Ni (6010)	Pb (239.2)	Sr (6010)	Zn (6010)	Cyanide (335.3)	Turbidity[1] (NTUs)
SCREEN 5	June/July	MW-28	NA	-	0.034	-	-	-	-	-	0.23	0.030 (EB)	-	2.0
	Nov/Dec	MW-228	0.093	-	0.032	-	-	-	-	-	0.24	-	-	4.1
SCREEN 5 FILTERED	June/July	MW-29	NA	-	0.028	-	-	-	-	-	0.23	0.028 (EB[1])	NA	NA
	Nov/Dec	MW-229	-	-	0.031	NA	-	-	-	-	0.24	-	NA	NA
MW-15	June/July	MW-5	NA	-	0.056	-	-	-	-	-	0.33	0.037 (EB)	-	3.9
	Nov/Dec	MW-205	-	-	0.085	-	-	-	-	-	0.53	-	-	1.4
MW-15 FILTERED	June/July	MW-6	NA	-	0.051	-	-	-	-	-	0.31	0.021 (EB[1])	NA	NA
	Nov/Dec	MW-206	-	-	0.085	NA	-	-	-	-	0.54	-	NA	NA
MW-16	June/July	MW-21	NA	-	0.073	-	-	-	-	-	0.37 (EB)	-	-	2.3
	Nov/Dec	MW-221	-	-	0.056	-	-	-	-	-	0.33 (EB[2])	0.031 (EB[2])	-	2.5
MW-16 FILTERED	June/July	MW-22	NA	-	0.077	-	-	-	-	-	0.38 (EB[1])	0.022 (EB[1])	NA	NA
	Nov/Dec	MW-222	-	-	0.055	NA	-	-	-	-	0.32 (EB[1,2])	-	NA	NA
DETECTION LIMITS			0.05	0.05	0.02	0.01	0.01	0.01	0.01	0.002	0.01	0.02	0.005	-
California Maximum Contaminant Level			1.0	0.05	1.0	-	0.05	-	-	0.05	-	-	-	-
EPA Maximum Contaminant Level			0.05-0.2[2]	0.05	2.0	-	0.1	1.0[2]	0.1	0.015[3]	-	5.0[2]	0.2	-

NOTES:

*: Metals not detected include antimony (<0.005 mg/l), beryllium (<0.001 mg/l), cadmium (<0.005 mg/l), cobalt (<0.05 mg/l), mercury (<0.0002 mg/l), molybdenum (<0.02 mg/l), selenium (<0.005 mg/l), silver (<0.01 mg/l), thallium (<0.001 mg/l), and vanadium (<0.02 mg/l).

(EB): Indicates metal also present in field equipment blank.

(EB[1]): Indicates metal also present in field equipment blank. However, sample from equipment blank not filtered.

(EB[2]): Indicates metal also present in field equipment blank. However, equipment blank collected from dedicated sampling equipment prior to June/July, 1994 sampling event.

NA: Not analyzed.

-: Not detected.

(1): Value in Nephelometric Turbidity Units (NTUs) measured in the field. Values for multi-port screens are average of before and after sampling measurements.

(2): Secondary standard.

(3): Treatment technique and public notification triggered at Action Level of 0.015 mg/l.

5. Appendix 2

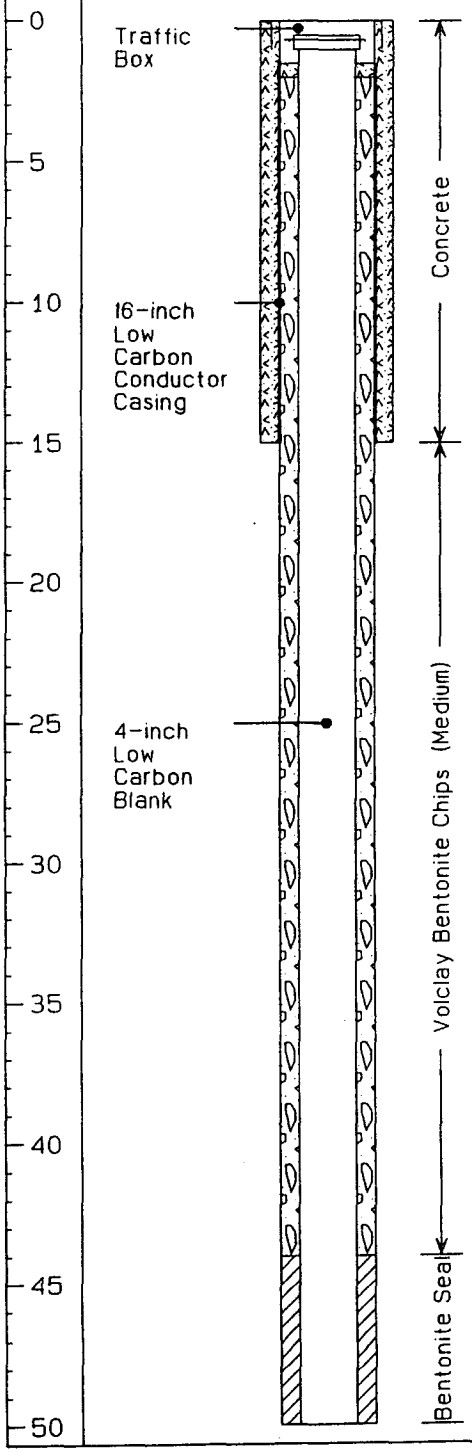
OU-1 Soil Vapor Well Log

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 12

PROJECT *Jet Propulsion Laboratory*
LOCATION *Southeast corner building 302*
GEOLOGIST *S. Arav*
DRILLING CO *Beylik*
DATE (start/finish) *02/23/94 - 02/23/94*

DRILLING METHOD *Mud Rotary (12.25-inch boring)*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approximately 1102 feet*
TOTAL DEPTH (ft) *672*
DEPTH TO WATER (ft) *Approximately 113 feet*



Depth (ft)	Sample No.	Blows/6-in.	OVA (ppm)	Moisture	Consistency	USCS Symbol	Lithologic Description and Notes
0							ASPHALT PAVEMENT (0.25 feet thick)
						SP	POORLY GRADED SAND. Medium dark brown; approximately 95% medium to coarse sand, subangular; approximately 5% nonplastic to low plastic fines; trace fine subangular gravel; slightly moist, no odor; occasional subrounded granitic cobbles.
5			0	SM			
							Encountered 1 foot by 1/2-inch galvanized pipe in soil cuttings at 7 feet.
						SP	
10						SM	POORLY GRADED SAND WITH SILT Dark brown; approximately 85% fine to medium sand, subangular; 10% nonplastic fines; 5% fine subangular granitic gravel; slightly moist, no odor, trace of subangular coarse gravel and cobbles.
	Soil-01	30 40	0	SM			
15							Drilled the upper 17-feet of the hole with an auger. Began using drilling mud at 17 feet after 16-inch diameter conducter casing was installed.
						SP	
20	No Recovery						POORLY GRADED SAND WITH GRAVEL AND COBBLES. Light brown; approximately 75% fine to coarse sand, subangular; approximately 20% fine to coarse subrounded granitic gravel and 5% nonplastic fines. Abundant granitic cobbles, no odor.
	No Recovery						
25	No Recovery						Collected grab sample of soil cuttings (SC-04) at 20 feet. Very difficult drilling. Attempted to collect soil sample with split spoon sampler at 20', 22' 25', 31' and 34'. Refusal at all attempts. Abundant cobbles.
30	No Recovery						Drilling Mud: Weight: 75.4 lbs/cu.ft. Viscosity: 53 seconds Sand Content: 1.5 percent
35	No Recovery						As above, difficult drilling.
40							
45	Soil-02	100	0	NA			Collected soil sample "SOIL-02" with split spoon sampler between 45 and 46 feet. Only 4-inches recovery.
50							

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DEPTH TO WATER (ft) *Approximately 113 feet*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
50	4-inch Low Carbon Blank; Bentonite Seal (1:1 Sand/Bentonite)								SP	Drilling mud: Weight: 65.1 lbs/cu.ft. Viscosity: 36 seconds Sand Content: 2.5 percent
									SM	SILTY SAND WITH GRAVEL Light brown; approximately 70% fine to medium sand, poorly graded; subangular; approximately 15% fine subrounded granitic gravel and 15% nonplastic fines, no odor.
55										
60										As above.
65									SP	POORLY GRADED SAND WITH GRAVEL AND COBBLES. Light brown; approximately 75% medium to coarse sand, subangular to subrounded; approximately 20% fine to coarse granitic gravel with cobbles; approximately 5% nonplastic fines, no odor.
70										As above with more cobbles.
75	4-inch Low Carbon Blank								SM	SILTY SAND WITH GRAVEL Light brown; approximately 70% fine to medium sand, poorly graded, subangular; 15% nonplastic fines and 15% fine to coarse granitic gravel; no odor.
80									SP	Very difficult drilling. Boulder from 79 feet to 80 feet. POORLY GRADED SAND. Light brown; approximately 85% fine to coarse sand, poorly graded, subangular; 5% nonplastic fines; approximately 10% gravel, subangular; some cobbles; no odor.
85									SM	Increase in cobbles from 82-84 feet; drilling difficult. SILTY SAND. Light brown; approximately 85% fine to medium sand, poorly graded, subangular; approximately 15% nonplastic fines; no odor. Trace granitic gravel and cobbles. Easy drilling.
90									SP	POORLY GRADED SAND WITH GRAVEL Light brown; approximately 75% medium to coarse sand, subangular to subrounded; approximately 20% fine granitic gravel and 5% nonplastic fines; no odor.
95										Drilling mud: Weight: 63.6 lbs/cu.ft. Viscosity: 37 seconds Sand Content: 0.5 percent
100										

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Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
100									SP	As above. Collected grab sample of soil cuttings ("SC-04") at 100 feet. Difficult and slow drilling.
105									SP SM	POORLY GRADED SAND WITH SILT AND GRAVEL. Light brown; approximately 70% fine to coarse sand, poorly graded and subangular; approximately 10% nonplastic fines; approximately 20% fine to coarse gravel, subangular; no odor; trace cobbles and boulders.
110										As above; difficult drilling.
115	4-inch Low Carbon Blank; Bentonite Seal (1:1 Sand/Bentonite)									
120										POORLY GRADED SAND WITH SILT AND GRAVEL. Light brown; approximately 65% fine to coarse sand, poorly graded, subangular; approximately 10% fines, nonplastic; approximately 25% fine to coarse gravel, subangular; trace cobbles; difficult drilling; no odor.
125										As above; difficult drilling.
130									SP	POORLY GRADED SAND. Light brown; approximately 85% fine to coarse poorly graded, subangular sand; approximately 5% fines, nonplastic; approximately 10% fine to coarse gravel, subangular; trace cobbles; no odor.
135										
140	4-inch Stainless Steel Screen, 0.010-inch Slot Size; No. 2/16 Lonestar Sand									As above.
145										Drilling mud: Weight: 66 lbs/cu.ft. Viscosity: 36 seconds Sand Content: 4.5 percent
150									SP	

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Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
150									SP SM	POORLY GRADED SAND WITH SILT Light brown; approximately 15% fine, 45% medium and 20% coarse sand, poorly graded, subangular; approximately 10% nonplastic fines; approximately 10% fine to coarse subangular gravel; no odor; trace cobbles.
155										
160										As above.
165										As above.
170									SP	POORLY GRADED SAND Light brown; approximately 20% fine, 55% medium and 15% coarse subangular to angular, poorly graded sand; approximately 5% nonplastic fines; approximately 10% fine to coarse subangular to angular gravel; no odor; trace cobbles.
175	4-inch Low Carbon Blank; No. 2/16 Lonestar Sand; Bentonite Seal (1:1 Sand/Bentonite)									
180										As above with less gravel; easier drilling.
185									SP	POORLY GRADED SAND. Light gray brown; approximately 15% fine, 55% medium; and 15% coarse subangular to angular, poorly graded sand; approximately 5% nonplastic fines; approximately 10% fine to coarse gravel, subangualr to angular; no odor; trace cobbles.
190										
195										Drilling mud: Weight: 67.5 lbs/cu.ft. Viscosity: 44 seconds Sand Content: 8 percent
200										

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Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
200									SP	Collected grab sample of soil cuttings ("SC-04") at 200 feet.
205										As above with increase in amount of cobbles.
										As above.
210										POORLY GRADED SAND. Light brownish gray; approximately 15% fine, 70% medium, 10% coarse poorly graded, subangular to angular sand; approximaetly 5% nonplastic fines; trace subangular to angular gravel; trace cobbles; no odor.
215										
220										As above.
									SP SM	POORLY GRADED SAND WITH SILT Light brown; approximately 80% fine to coarse sand, subrounded to subangular, poorly graded; approximately 10% nonplastic fines and 10% fine to coarse subrounded granitic gravel; no odor.
225	4-inch Low Carbon Blank									
230										POORLY GRADED SAND WITH SILT Light brown to gray; approximately 10% fine, 70% medium, and 5% coarse poorly graded, subangular sand; 10% nonplastic fines; 5% subangular to angular gravel; trace cobbles; no odor.
									SP SM	
235										Difficult drilling.
240										
245	4-inch Stainless Steel Screen, 0.010-inch Slot Size									As above.
250										

Bentonite Seal (1:1 Sand/Bentonite)

No. 2/16 Lonestar Sand

FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
250									SP SM	Drilling Mud: Weight: 67.5 lbs/cu.ft. Viscosity: 33 seconds Sand Content: 2 percent
255	No. 2/16 Lonestar Sand									POORLY GRADED SAND WITH SILT Light brown to gray; approximately 10% fine, 70% medium, 5% coarse poorly graded, subangular sand; 10% nonplastic fines; approximately 5% subangular to angular gravel; trace cobbles; no odor.
260										
265										As above.
270										As above.
275	4-inch Low Carbon Blank; Bentonite Seal									POORLY GRADED SAND WITH SILT Light brown to gray; approximately 15% fine, 70% medium, and 5% coarse, poorly graded, subangular sand; 10% nonplastic fines; trace subangular to angular gravel; trace cobbles; no odor.
280										As above, easier drilling.
285									SP	POORLY GRADED SAND Light brown; approximately 85% fine to coarse poorly graded sand, subangular to subrounded; approximately 10% fine to coarse granitic gravel and 5% nonplastic fines; no odor.
290										
295									SP SM	POORLY GRADED SAND WITH SILT Light brown to gray; approximately 15% fine, 70% medium, and 5% coarse, poorly graded, subangular sand; approximately 10% nonplastic fines; trace subangular to angular fine gravel; trace cobbles; no odor.
300										Slow drilling.

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Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
300									SP SM	Collected grab sample of soil cuttings ("SC-04") at 300 feet. Drilling Mud: Weight: 68.3 lbs/cu.ft. Viscosity: 35 seconds Sand Content: 1.5 percent
305	Bentonite Seal									POORLY GRADED SAND WITH SILT Light brown to gray; approximately 15% fine, 70% medium, and 5% coarse, poorly graded, subangular sand; approximately 10% nonplastic fines; trace subangular to angular fine gravel; trace cobbles; no odor.
310	No. 2/16 Lonestar Sand									
315										As above with increase in amount of gravel and/or cobbles from 315 feet to 321 feet. Very difficult drilling.
320	4-inch Stainless Steel Screen, 0.010-inch Slot Size									Directional survey at 320 feet: 0.0 degrees from vertical.
325										POORLY GRADED SAND WITH SILT Light brown to gray; approximately 15% fine, 70% medium, and 5% coarse, poorly graded subangular sand; approximately 10% nonplastic fines; trace subangular fine gravel; trace cobbles; no odor.
330	Bentonite Seal (1:1 Sand/Bentonite)									
335									SM	SILTY SAND. Light brown; approximately 85% fine to medium subrounded to subangular sand; approximately 15% nonplastic fines; trace fine granitic gravel; no odor.
340	4-inch Low Carbon Blank									
345										
350										

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Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
350									SM	Drilling mud: Weight: 71 lbs/cu.ft. Viscosity: 38 seconds Sand Content: 3 percent
										As above.
355										
360										As above.
										Easy drilling.
365										
										SILTY SAND. Light brown to gray; approximately 10% fine, 45% medium, and 25% coarse sand, poorly graded and subangular to angular; approximately 15% nonplastic fines; approximately 5% fine to coarse gravel; no odors.
370										
										Easy drilling.
375	4-inch Low Carbon Blank Bentonite Seal (1:1 Sand/Bentonite)									
										As above.
380										Cobbles encountered at 381 feet.
385										SILTY SAND. Light brown to gray; approximately 10% fine, 50% medium, and 20% coarse sand, subangular to angular, poorly graded; 15% nonplastic fines; approximately 5% fine to coarse subangular gravel; no odors; trace cobbles.
390										
395										Drilling Mud: Weight: 70.5 lbs/cu.ft. Viscosity: 40 seconds Sand Content: 3 percent
400										

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400									SM	Collected grab sample of soil cuttings ("SC-04") at 400 feet.
405	Bentonite Seal (1:1 Sand/Bentonite)									SILTY SAND. Light brown to gray; approximately 5% fine, 55% medium, and 20% coarse subangular to angular, poorly graded sand; approximately 15% nonplastic fines; approximately 5% fine to coarse subangular gravel; no odors; trace cobbles.
410										
415										As above; difficult drilling.
420										Very slow drilling.
									SP SM	
425	4-inch Low Carbon Blank									POORLY GRADED SAND WITH SILT AND GRAVEL. Light brown to gray; approximately 10% fine, 45% medium, and 20% coarse subangular to angular, poorly graded sand; approximately 10% nonplastic fines; approximately 15% fine to coarse subangular gravel; no odors; trace cobbles; difficult drilling.
430	No. 2/16 Lonestar Sand									
435	4-inch Stainless Steel Screen, 0.010-inch Slot Size									As above.
440										As above.
445	Bentonite Seal									Drilling Mud: Weight: 70.5 lbs/cu.ft. Viscosity: 36 seconds Sand Content: 3 percent
450										

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 12

PROJECT *Jet Propulsion Laboratory*
LOCATION *Southeast corner building 302*
GEOLOGIST *S. Arav*
DRILLING CO *Beylik*
DATE (start/finish) *02/23/94 - 02/23/94*

DRILLING METHOD *Mud Rotary (12.25-inch boring)*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approximately 1102 feet*
TOTAL DEPTH (ft) *672*
DEPTH TO WATER (ft) *Approximately 113 feet*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
450									SP SM SM	SILTY SAND. Light brown; approximately 85% fine to medium sand, poorly graded, subangular; approximately 15% nonplastic fines; no odor.
455										
460										Very easy drilling.
465										Easy drilling.
									SP SM	POORLY GRADED SAND WITH SILT AND GRAVEL. Light brown; approximately 65% fine to coarse poorly graded sand, subangular; approximately 20% fine to coarse granitic gravel; 15% nonplastic fines; no odor.
470										
									SM	SILTY SAND. Light brown; approximately 80% fine to medium sand, poorly graded; approximately 20% nonplastic fines; no odor.
475	4-inch Low Carbon Blank; Bentonite Seal (1:1 Sand/Bentonite)									
										Easy drilling.
480									SP SM	Directional survey at 480 ft: <0.5 degrees from vertical.
485										POORLY GRADED AND WITH SILT AND GRAVEL. Light brown to gray; approximately 10% fine, 55% medium, and 10% coarse poorly graded, subangular to angular sand; approximately 10% fines, nonplastic; approximately 15% gravel, subangular; no odor; trace cobbles.
490										
495										As above with less gravel and cobbles.
500										

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 12

PROJECT *Jet Propulsion Laboratory*
LOCATION *Southeast corner building 302*
GEOLOGIST *S. Arav*
DRILLING CO *Beylik*
DATE (start/finish) *02/23/94 - 02/23/94*

DRILLING METHOD *Mud Rotary (12.25-inch boring)*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approximately 1102 feet*
TOTAL DEPTH (ft) *672*
DEPTH TO WATER (ft) *Approximately 113 feet*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
500									SP SM	Collected grab sample of soil cuttings ("SC-04") at 500 feet.
505										As above with increase in amount of gravel and cobbles. Drilling Mud: Weight: 78 lbs/cu.ft. Viscosity: 36 seconds Sand Content: 3 percent
510										As above with decrease in amount of gravel and cobbles.
515										
520										As above.
525	4-inch Low Carbon Blank; Bentonite Seal (1:1 Sand/Bentonite)									POORLY GRADED SAND WITH SILT Light brown to gray; approximately 10% fine, 65% medium, and 15% coarse sand, poorly graded, subangular; approximately 10% nonplastic fines; trace fine gravel, subangular; no odor; easy drilling.
530										
535										As above with increase in amount of gravel and cobbles.
540	No. 2/16 Lonestar Sand									POORLY GRADED SAND WITH SILT Light brown; approximately 90% fine to medium sand, subangular to subrounded; approximately 10% fines, nonplastic; no odor; trace coarse sand.
545	4-inch Stainless Steel Screen, 0.010-inch Slot Size									
550										

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 12

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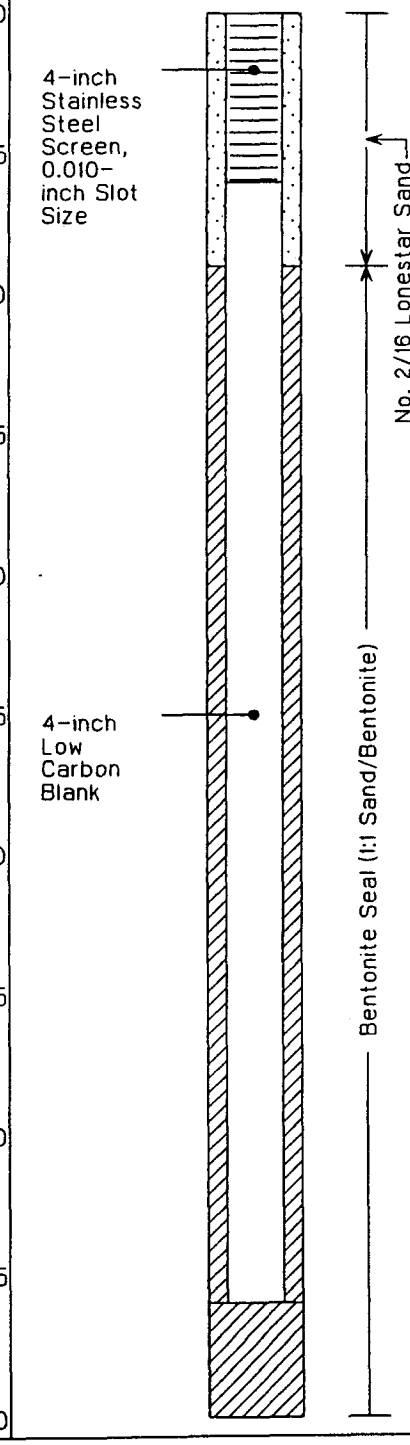
LOCATION *Southeast corner building 302*
GEOLOGIST *S. Arav*
DRILLING CO *Beylik*
DATE (start/finish) *02/23/94 - 02/23/94*

DRILLING METHOD *Mud Rotary (12.25-inch boring)*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approximately 1102 feet*
TOTAL DEPTH (ft) *672*
DEPTH TO WATER (ft) *Approximately 113 feet*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
550									SP SM	Very difficult drilling between 551 feet and 554 feet.
	4-inch Stainless Steel Screen, 0.010-inch Slot Size								SP SM	POORLY GRADED SAND WITH SILT AND GRAVEL. Light brown; as above with approximately 20% medium to coarse granitic rock chips from gravels and cobbles; no odor.
555										Drilling Mud: Weight: 79 lbs/cu.ft. Viscosity: 39 seconds Sand Content: 2.5 percent
560										As above with fewer granitic rock chips in cuttings.
										Difficult drilling from 564-566 ft.
565									SP SM	POORLY GRADED SAND WITH SILT AND GRAVEL. Light brown; approximately 70% fine to medium sand, subangular to subrounded; approximately 10% fines, nonplastic; approximately 20% rock chips from granitic gravel and cobbles; no odor.
570										
									SP SM	POORLY GRADED SAND WITH SILT Light brown; approximately 90% fine to medium sand, subangular to subrounded; approximately 10% fines, nonplastic; no odor; trace coarse sand; trace coarse granitic rock chips from gravels and/or cobbles.
575	4-inch Low Carbon Blank									
580										Rough drilling from 574 to 580 feet.
									ML	SANDY SILT. Medium brown; approximately 55% fines, nonplastic; approximately 45% fine sand, micaceous; no odor.
									SP SM	
585										POORLY GRADED SAND WITH SILT AND GRAVEL. Light brown; approximately 70% fine to medium sand, subangular to subrounded; approximately 10% fines, nonplastic; 20% coarse to medium rock chips from gravels and cobbles; no odor.
									SP	
590										Very difficult drilling from 588 to 592 ft.
										POORLY GRADED SAND WITH GRAVEL Light brown; approximately 70% fine to medium sand, subrounded; approximately 25% medium granitic rock chips from gravels and cobbles; approximately 5% fines, nonplastic; no odor.
595										Drilling Mud: Weight: 71 lbs/cu.ft. Viscosity: 34 seconds Sand Content: 3 percent
600									SM	



FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 12

PROJECT *Jet Propulsion Laboratory*
LOCATION *Southeast corner building 302*
GEOLOGIST *S. Arav*
DRILLING CO *Beylik*
DATE (start/finish) *02/23/94 - 02/23/94*

DRILLING METHOD *Mud Rotary (12.25-inch boring)*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approximately 1102 feet*
TOTAL DEPTH (ft) *672*
DEPTH TO WATER (ft) *Approximately 113 feet*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
600	Bentonite Seal (1:1 Sand/Bentonite)								SM	Collected sample of soil cuttings at 600 feet (SOIL-04).
										Directional survey: <0.5 degrees from vertical.
605										SILTY SAND. Light brown; Approximately 75% fine to coarse sand, subangular to subrounded; approximately 15% fines, nonplastic; approximately 10% medium to coarse granitic rock chips from gravels and/or cobbles; no odor; some sandy silt in cuttings; brown; approximately 55% fines, nonplastic with approximately 45% very fine sand.
									SP	
610										POORLY GRADED SAND WITH GRAVEL Multi-colored; approximately 75% fine to medium sand, subangular to subrounded; approximately 20% coarse to medium granitic rock chips from gravels and cobbles; approximately 5% fines, nonplastic; trace coarse sand.
615										Difficult drilling from 613-623 ft.
620										Drilling Mud: Weight: 71 lbs/cu.ft. Viscosity: 38 seconds Sand Content: 2.5 percent
									SP SM	POORLY GRADED SAND WITH SILT Light brown; approximately 90% fine to medium sand, subangular, poorly graded; approximately 10% nonplastic fines; trace gravel; no odor.
625										
630										As above with increase in amount of gravel and/or cobbles.
									SM	SILTY SAND. Light brown; approximately 85% fine to medium sand, subangular; approximately 15% nonplastic fines; trace gravel.
635										Difficult drilling at 636 to 637 ft.
									SP SM	POORLY GRADED SAND WITH SILT AND GRAVEL. Light brown; approximately 70% medium to coarse subangular to subrounded sand; approximately 20% fine to coarse granitic gravel and 10% nonplastic fines; no odor.
640										
645										GRANITIC ROCK: Cuttings are rock chips of granitic material; approximately 65% feldspar, 30% quartz and 5% mafics; drills relatively easy suggesting weathered horizon.
650										

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 12

PROJECT *Jet Propulsion Laboratory*
LOCATION *Southeast corner building 302*
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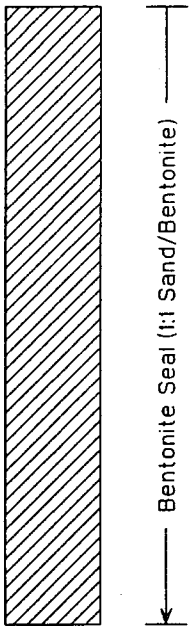
DRILLING CO *Beylik*
DATE (start/finish) *02/23/94 - 02/23/94*

DRILLING METHOD *Mud Rotary (12.25-inch boring)*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approximately 1102 feet*
TOTAL DEPTH (ft) *672*
DEPTH TO WATER (ft) *Approximately 113 feet*

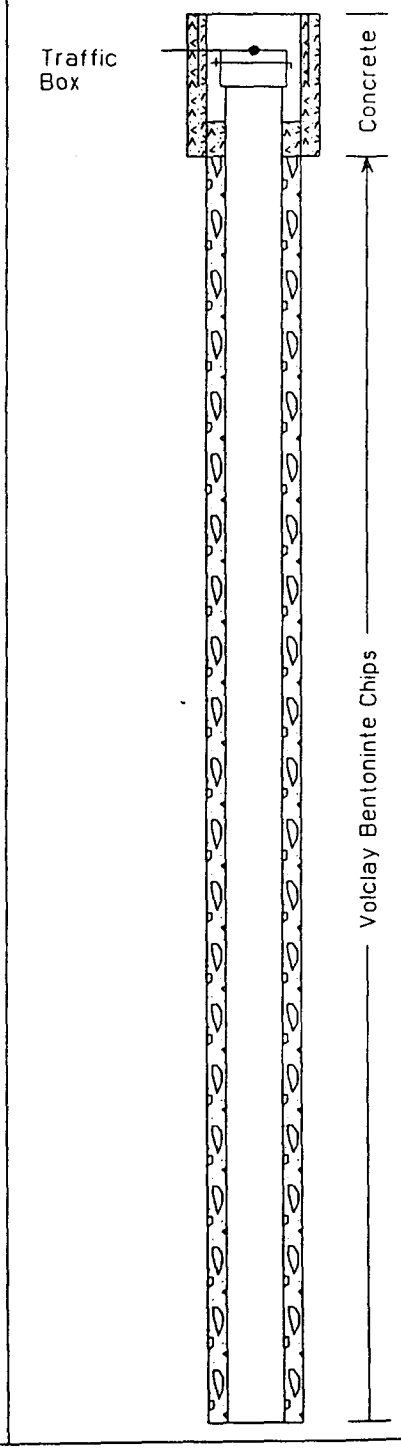
Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
650										GRANITIC ROCK. Cuttings are rock chips of granitic material. Approximately 65% feldspar, 30% quartz; and 5% mafic material. Drills relatively easily suggesting possible weathered horizon.
655										Drilling Mud: Weight: 69.5 lbs/cu.ft. Viscosity: 41 seconds Sand Content: 4.5 percent
660										As above, difficult drilling.
665										
670										Very difficult drilling at 668 feet Unweathered material? Collected grab sample of soil cuttings at 671 ft (SC-04). Bottom of hole at 672 feet.
675										
680										
685										
690										
695										
700										

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 13

PROJECT *Jet Propulsion Laboratory*
LOCATION *South of Building 111.*
GEOLOGIST *C. Kreller*
DRILLING CO *Beylik*
DATE (start/finish) *3/19/94 - 4/4/94*

DRILLING METHOD *Air Rotary with Casing Advance*
SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1185 feet*
TOTAL DEPTH (ft) *239*
DEPTH TO WATER (ft) *183*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
0										ASPHALT - PAVEMENT (0.25 feet thick)
1									SP SM	POORLY GRADED SAND WITH SILT Approximately 85% fine sand; approximately 10% nonplastic fines; approximately 5% coarse sand, trace fine subrounded gravel; maximum particle size 1/2 inch; reddish brown (4/4); slightly moist; no odor; micaceous.
2										
3										
4										
5					0	SM				
6										Soil cutting sample collected at 6 feet (SC-03).
7										
8										
9										
10										
11										
12										
13										
14										
15					0	SM				As above.
16										
17										
18										
19										
20					0	SM				

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 13

PROJECT *Jet Propulsion Laboratory*
LOCATION *South of Building 111.*
GEOLOGIST *C. Kreller*
DRILLING CO *Beylik*
DATE (start/finish) *3/19/94 - 4/4/94*

DRILLING METHOD *Air Rotary with Casing Advance*
SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1185 feet*
TOTAL DEPTH (ft) *239*
DEPTH TO WATER (ft) *183*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
20									SP SM	POORLY GRADED SAND WITH SILT 80% fine to coarse subrounded sand; 10% nonplastic fines; 10% fine subrounded gravel, maximum particle size 3/4 inch; reddish brown (4/14); slightly moist; no odor; micaceous.
21										
22										
23										
24										
25	4-inch Schedule 40 PVC Casing									As above.
26										
27										
28	Volclay Bentonite Chips								SP	POORLY GRADED SAND 95% fine to coarse subrounded sand; 5% nonplastic fines; maximum particle size 1/4 inch; reddish brown (4/14); slightly moist; no odor; micaceous.
29										
30					0	SM				
31										
32										
33										
34										
35					0	SM				
36										
37										As above.
38										
39										
40					0	SM				

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 13

PROJECT *Jet Propulsion Laboratory*
LOCATION *South of Building 111.*
GEOLOGIST *C. Kreller*
DRILLING CO *Beylik*
DATE (start/finish) *3/19/94 - 4/4/94*

DRILLING METHOD *Air Rotary with Casing Advance*
SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1185 feet*
TOTAL DEPTH (ft) *239*
DEPTH TO WATER (ft) *183*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
40									SP	POORLY GRADED SAND Approximately 90% fine to medium sand; approximately 5% nonplastic fines; trace subrounded coarse sand; maximum particle size 1/4 inch; reddish brown (4/14); slightly moist; no odor; micaceous.
41										
42										
43										
44										
45										
46										As above.
47										
48										
49										
50	4-inch Schedule 40 PVC Casing; Volclay Bentoninte Chips				0	SM				POORLY GRADED SAND - as above but slight decrease in amount of medium sand (predominately fine grained sand); no odor; slightly moist.
51										Collected soil cuttings sample at 50 feet (SC-03).
52										
53										
54										
55									SP SM	POORLY GRADED SAND WITH SILT Approximately 80% fine to medium grained sand; approximately 15% nonplastic fines; 5% fine subrounded gravel; maximum particle size 3/4 inch; light reddish brown (4/4); slightly moist; no odor; micaceous.
56										
57										
58										
59										
60					0	SM				

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 13

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GEOLOGIST *C. Kreller*
DRILLING CO *Beylik*
DATE (start/finish) *3/19/94 - 4/4/94*

DRILLING METHOD *Air Rotary with Casing Advance*
SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1185 feet*
TOTAL DEPTH (ft) *239*
DEPTH TO WATER (ft) *183*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
60									SP SM	As above.
61										
62										
63									SP	POORLY GRADED SAND WITH GRAVEL Approximately 75% medium to coarse sand, subangular to subrounded; approximately 20% fine to coarse subrounded granitic gravel; approximately 5% nonplastic fines; reddish brown; slightly moist; no odor.
64										
65										
66										
67										Encountered a large cobble at 67 feet. Very hard drilling.
68										
69									SP SM	
70					0	SM				POORLY GRADED SAND WITH SILT Approximately 80% fine to medium sand, subrounded; approximately 15% nonplastic fines; approximately 5% fine subrounded granitic gravel; light reddish brown; slightly moist; no odor.
71										
72										
73										
74									SP	POORLY GRADED SAND. Approximately 90% fine to medium sand, subangular to subrounded; approximately 5% nonplastic fines, and 5% fine subrounded granitic gravel; light reddish brown; slightly moist; no odor.
75	4-inch Schedule 40 PVC Casing				0	SM				
76										
77										
78										
79										
80					0	SM				

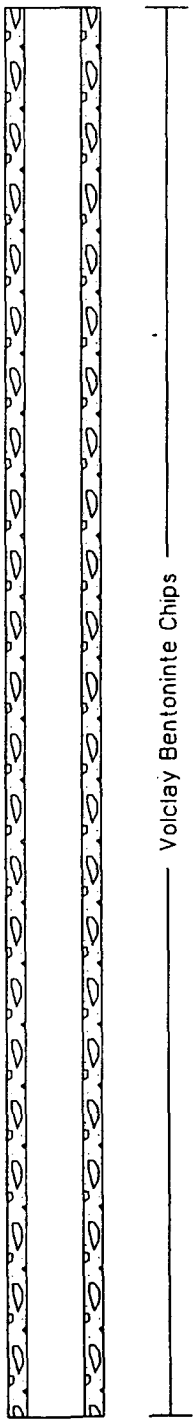
Volclay Bentoninte Chips

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 13

PROJECT *Jet Propulsion Laboratory*
LOCATION *South of Building 111.*
GEOLOGIST *C. Kreller*
DRILLING CO *Beylik*
DATE (start/finish) *3/19/94 - 4/4/94*

DRILLING METHOD *Air Rotary with Casing Advance*
SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1185 feet*
TOTAL DEPTH (ft) *239*
DEPTH TO WATER (ft) *183*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
80									SP	As above.
81										
82										
83										
84										
85										As above.
86										
87										
88										
89										
90					0	SM				As above.
91										
92										
93										
94										
95										As above.
96										
97										
98										
99										
100					0	SM				

Voiclay Bentoninte Chips

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 13

PROJECT *Jet Propulsion Laboratory*
LOCATION *South of Building 111.*
GEOLOGIST *C. Kreller*
DRILLING CO *Beylik*
DATE (start/finish) *3/19/94 - 4/4/94*

DRILLING METHOD *Air Rotary with Casing Advance*
SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1185 feet*
TOTAL DEPTH (ft) *239*
DEPTH TO WATER (ft) *183*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
100	4-inch Schedule 40 PVC Casing; Volclay Bentonite Chips								SP	POORLY GRADED SAND. Approximately 85% medium to coarse sand, subrounded to subangular; approximately 10% fine subrounded granitic gravel; approximately 5% nonplastic fines; light reddish brown; slightly moist; no odor.
101										
102										
103										
104										
105										
106										
107										
108										
109										
110					0	SM				As above.
111										
112										
113										
114										
115										
116										
117										
118										
119										As above.
120					0	SM				

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 13

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GEOLOGIST *C. Kreller*
DRILLING CO *Beylik*
DATE (start/finish) *3/19/94 - 4/4/94*

DRILLING METHOD *Air Rotary with Casing Advance*
SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1185 feet*
TOTAL DEPTH (ft) *239*
DEPTH TO WATER (ft) *183*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
120									SP	POORLY GRADED SAND as above.
121										
122										
123										
124									SP	POORLY GRADED SAND WITH GRAVEL Approximately 55% medium to coarse sand, subangular to subrounded; approximately 40% fine to coarse subrounded granitic gravel; approximately 5% nonplastic fines; light brown.
125	4-inch Schedule 40 PVC Casing									
126										
127										Difficult drilling.
128										
129									SP SM	POORLY GRADED SAND WITH SILT Approximately 90% fine to medium sand, subangular to subrounded; approximately 10% nonplastic fines; light reddish brown; slightly moist; no odor.
130					0	SM				
131										Drilling much easier.
132										
133										
134										
135					0	SM				
136										
137										
138										As above.
139										
140					0	SM				

Volclay Bentonite Chips

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 13

PROJECT *Jet Propulsion Laboratory*
LOCATION *South of Building 111.*
GEOLOGIST *C. Kreller*
DRILLING CO *Beylik*
DATE (start/finish) *3/19/94 - 4/4/94*

DRILLING METHOD *Air Rotary with Casing Advance*
SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1185 feet*
TOTAL DEPTH (ft) *239*
DEPTH TO WATER (ft) *183*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
140									SP SM	POORLY GRADED SAND WITH SILT 90% fine grained sand; 10% nonplastic fines; trace subrounded medium to coarse sand; light reddish brown; slightly moist; no odor.
141										
142										
143										Encountered trace course gravel from approximately 143 ft to 146 ft.
144										
145					0	SM				
146										As above.
147										
148										
149										Collected sample of soil cuttings at 150 feet (SC-03).
150	4-inch Schedule 40 PVC Casing; Volclay Bentoninte Chips				0	SM				POORLY GRADED SAND WITH SILT 85% fine to medium sand; 10% nonplastic fines; 5% fine subrounded gravel; grayish brown (10YR 4/2); very slightly moist; no odor.
151										
152										
153										
154									SP	POORLY GRADED SAND WITH GRAVEL Approximately 75% fine to medium sand; approximately 25% fine subangular granitic gravel; light gray (10YR 7/1); dry; no odor.
155					0	D				
156										
157										
158					0	SM				Encountered abundant boulders/cobbles at 158 feet.
159										
160					0	SM				

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 13

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LOCATION *South of Building 111.*
GEOLOGIST *C. Kreller*
DRILLING CO *Beylik*
DATE (start/finish) *3/19/94 - 4/4/94*

DRILLING METHOD *Air Rotary with Casing Advance*
SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1185 feet*
TOTAL DEPTH (ft) *239*
DEPTH TO WATER (ft) *183*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
160									SP	POORLY GRADED SAND WITH GRAVEL Approximately 70% medium to coarse sand; approximately 5% nonplastic fines; approximately 25% fine to coarse subrounded gravel; reddish brown (5YR 4/4); slightly moist; no odor.
161										
162										
163										
164										
165										
166										
167										As above.
168										
169										
170	4-inch Stainless Steel Blank				0	SM				
171										
172										Difficult drilling. As above but increase in amount of gravels.
173										
174										
175					0	SM				
176										
177										
178										
179										As above.
180					0	SM				

Volclay Bentonite Chips

Bentonite Pellets

No. 2/16 Lonestar Sand

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 13

PROJECT *Jet Propulsion Laboratory*
LOCATION *South of Building 111.*
GEOLOGIST *C. Kreller*
DRILLING CO *Beylik*
DATE (start/finish) *3/19/94 - 4/4/94*

DRILLING METHOD *Air Rotary with Casing Advance*
SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1185 feet*
TOTAL DEPTH (ft) *239*
DEPTH TO WATER (ft) *183*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
180									SP	As above.
181										
182										
183						▽				Encountered groundwater at 183 feet.
184										
185										
186										
187									SP	POORLY GRADED SAND. Approximately 95% fine to coarse sand; approximately 5% nonplastic fines; trace fine subrounded granitic gravel; reddish brown; wet; no odor.
188										
189										
190	0.010-inch Slot Size, 4-inch Stainless Steel Screen; No. 2/16 Lonestar Sand				0	W				
191										
192										
193										As above with approximately 10% fine to coarse subrounded granitic gravel (193 feet).
194										
195					0	W				Difficult drilling
196									GP	POORLY GRADED GRAVEL WITH SAND Approximately 55% fine to coarse subrounded to subangular granitic gravel; approximately 40% medium to coarse subrounded to subangular sand; approximately 5% nonplastic fines; reddish brown; wet; no odor.
197										
198					0	W				
199										
200					0	W			SP	

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 13

PROJECT *Jet Propulsion Laboratory*
LOCATION *South of Building 111.*
GEOLOGIST *C. Kreller*
DRILLING CO *Beylik*
DATE (start/finish) *3/19/94 - 4/4/94*

DRILLING METHOD *Air Rotary with Casing Advance*
SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1185 feet*
TOTAL DEPTH (ft) *239*
DEPTH TO WATER (ft) *183*

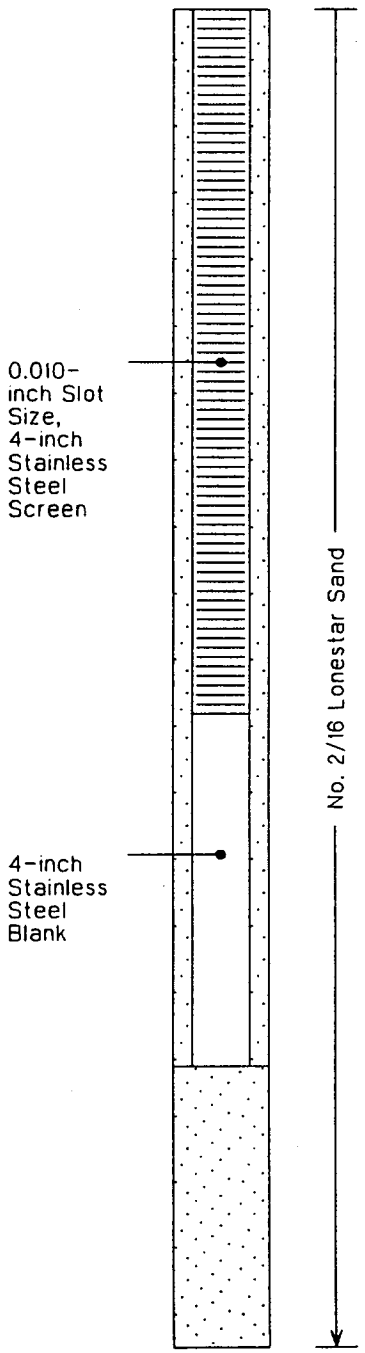
Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
200									SP	Collected sample of soil cuttings at 200 feet (SC-03).
201										POORLY GRADED SAND. Approximately 90% medium to coarse sand; approximately 5% nonplastic fines; 5% fine subrounded gravel; gray-brown; wet; no odor; maximum particle size 3/4 inch.
202										
203										
204										
205										
206										
207										
208										
209										
210	0.010-inch Slot Size, 4-inch Stainless Steel Screen; No. 2/16 Lonestar Sand				0	W				As above.
211										
212									SP	Difficult drilling.
213										POORLY GRADED SAND WITH GRAVEL Approximately 75% medium to coarse sand, subangular to subrounded; approximately 20% gravel (fine to coarse), subrounded; approximately 5% nonplastic fines; light brown; wet; no odor.
214										
215					0	W				
216										
217										
218										
219										
220					0	W			SP	

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 13

PROJECT *Jet Propulsion Laboratory*
LOCATION *South of Building 111.*
GEOLOGIST *C. Kreller*
DRILLING CO *Beylik*
DATE (start/finish) *3/19/94 - 4/4/94*

DRILLING METHOD *Air Rotary with Casing Advance*
SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1185 feet*
TOTAL DEPTH (ft) *239*
DEPTH TO WATER (ft) *183*



Depth (ft)	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
220								SP	POORLY GRADED SAND. Approximately 90% medium to coarse sand, subrounded to subangular; approximately 5% nonplastic fines and 5% fine subrounded granitic gravel; light brown; wet; no odor.
221									
222									
223									
224								SP	POORLY GRADED SAND WITH GRAVEL Approximately 70% medium to coarse subrounded to subangular sand; approximately 25% fine to coarse subrounded granitic gravel; approximately 5% nonplastic fines; light brown; wet; no odor.
225				0	W				
226									
227								GP	POORLY GRADED GRAVEL. Approximately 55% fine to coarse subrounded granitic gravel; approximately 45% medium to coarse subangular sand; light brown; wet; no odor.
228									
229								SP	POORLY GRADED SAND. Approximately 90% medium to coarse sand, subangular to subrounded; approximately 5% fine subrounded granitic gravel and 5% nonplastic fines; light brown; wet; no odor.
230				0	W				
231									
232									Collected grab sample of soil cuttings (SC-03) at 232 feet.
233									
234									
235				0	W				
236									
237									As above.
238									
239									Total Depth Drilled 239 feet.
240									

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 14

PROJECT *Jet Propulsion Laboratory*
LOCATION *Southwest Corner of the West parking lot.*
GEOLOGIST *R. Tweidt*
DRILLING CO *Beylik*
DATE (start/finish) *03/14/94 - 03/25/94*

DRILLING METHOD *Mud Rotary (12.25-inch boring)*
SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1174 feet*
TOTAL DEPTH (ft) *656*
DEPTH TO WATER (ft) *Approximately 166 feet*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
0	Traffic Box				0	SM			SM	ASPHALT PAVEMENT (0.25 feet thick)
5	Concrete									SILTY SAND. Yellowish brown (10YR 5/6), approximately 75-80% fine to medium grained sand, subangular to subrounded, slightly moist, no odor, approximately 15-20% fines with no plasticity, approximately 5% fine gravel that is granitic in composition and subangular to subrounded.
10	16-inch Low Carbon Conductor Pipe									
15										(Upper 15-feet of boring initially drilled with 22-inch auger to install 16-inch conductor casing.) Conducter casing set to 15 feet below grade.
20					0	NA				Grab sample of soil cuttings collected at 20 feet (SC-05). Drilling Mud: Weight: 64 lbs/cu.ft. Viscosity: 35 seconds Sand Content: 3 percent
25	4-inch Low Carbon Blank									As above with slight coarsening in grain size.
30	Volclay Bentonite Chips (Medium)									
35										
40					0	NA				
45									SP SM	POORLY GRADED SAND WITH SILT. Light yellowish brown (10YR 6/4), approximately 90% medium to coarse grained sand, subangular to subrounded, no odor, trace fine gravel with diameter approximately .75 inch, approximately 10% nonplastic fines.
50										

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Monitoring Well 14

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DATE (start/finish) *03/14/94 - 03/25/94*

DRILLING METHOD *Mud Rotary (12.25-inch boring)*
SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1174 feet*
TOTAL DEPTH (ft) *656*
DEPTH TO WATER (ft) *Approximately 166 feet*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
50	4-inch Low Carbon Blank; Bentonite Seal								SP SM	Drilling Mud: Weight: 83 lbs/cu.ft. Viscosity: 31 seconds Sand Content: 1.5 percent
55										As above but slight coarsening in grain size.
60					0	NA				As above with trace (<2%) broken rock fragments from drill bit (ie. fresh surfaces), lithology of fragments is aphanitic metasediments.
65										
70										
75	4-inch Low Carbon Blank								SP	As above with slight coarsening of sand size. POORLY GRADED SAND. Light yellowish brown (10YR 6/4), approximately 95% medium to coarse grained sand, subrounded to angular, approximately 5% fines, nonplastic, no odor.
80					0	NA				Drilling Mud: Weight: 54 lbs/cu.ft. Viscosity: 45 seconds Sand Content: NA
85										
90									SP	POORLY GRADED SAND WITH GRAVEL. Light brown, approximately 75% medium to coarse grained sand, subangular to subrounded; 20% fine granitic gravel, subrounded; approximately 5% fines, nonplastic; no odor.
95									SP	POORLY GRADED SAND. Light brown, approximately 95% medium to coarse sand, subangular to subrounded; approximately 5% nonplastic fines; trace fine gravel; no odor.
100					0	NA			SP	

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DATE (start/finish) *03/14/94 - 03/25/94*

DRILLING METHOD *Mud Rotary (12.25-inch boring)*
SAMPLING METHOD *Not Applicable*
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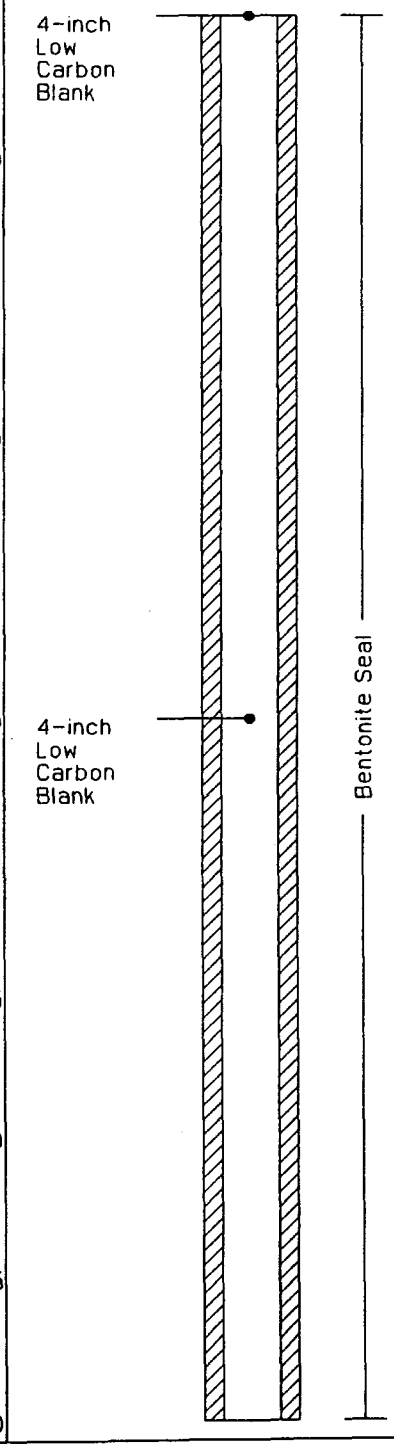
TOTAL DEPTH (ft) *656*
DEPTH TO WATER (ft) *Approximately 166 feet*



Depth (ft)	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
100							SP	POORLY GRADED SAND WITH GRAVEL. Light brown, approximately 70% medium to coarse sand, subangular to subrounded; approximately 25% fine to coarse granitic gravel; about 5% nonplastic fines; no odor.
105								Grab sample of soil cuttings collected at 100 feet (SC-05).
								Drilling Mud: Weight: 62 lbs/cu.ft. Viscosity: 41 seconds Sand Content: <1 percent
110								As above with slight decrease in average sand size.
115							SP	POORLY GRADED SAND. Light brown, approximately 95% fine to medium sand, subangular to subrounded; approximately 5% nonplastic fines; no odor.
120			0	NA				
125								As above.
130								
135							SP	POORLY GRADED SAND WITH GRAVEL Light brown; approximately 80% medium to coarse sand, subrounded to subangular; approximately 15% fine to coarse granitic gravel; 5% nonplastic fines; no odor.
140			0	NA			SP	Drilling Mud Viscosity: 42 seconds. POORLY GRADED SAND Light brown; approximately 85% medium sand; 10% fine to coarse granitic gravel; 5% nonplastic fines; no odor.
145							SM	SILTY SAND. Light yellowish brown (90YR 6/4); approximately 85% fine to medium sand; trace coarse sand and fine gravel, subangular to subrounded; approximately 15% nonplastic fines; no odor.
150								

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Monitoring Well 14

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DRILLING CO *Beylik*
DATE (start/finish) *03/14/94 - 03/25/94*

DRILLING METHOD *Mud Rotary (12.25-inch boring)*
SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1174 feet*
TOTAL DEPTH (ft) *656*
DEPTH TO WATER (ft) *Approximately 166 feet*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
150	4-inch Low Carbon Blank								SM	
										150ft-153ft - Very fast drilling, drill bit went down 3 feet within 20 seconds; no drill chatter; material unknown; some fine and medium sand in cuttings.
155										Drilling Mud: Weight: NA Viscosity: 50 seconds Sand Content: 3 percent
160					0	NA				Directional survey at 160 feet: <1 degree from vertical.
										Same as above.
165										
										Drilling Mud: Weight: 66.6 lbs/cu.ft. Viscosity: 33 seconds Sand Content: 1.5 percent
170										Same as above.
175	4-inch Low Carbon Blank; Bentonite Seal									
										Same as above.
180					0	NA			SP	POORLY GRADED SAND. Light brown; approximately 95% medium to coarse sand, subangular to subrounded; approximately 5% nonplastic fines; trace fine granitic gravel; no odor.
185										Decrease in grain size; predominately fine to medium grained.
									SM	SILTY SAND Light brown; approximately 85% fine to medium sand; trace coarse sand; approximately 15% nonplastic fines; no odor.
190										
195										Drilling Mud: Weight: 67 lbs/cu.ft. Viscosity: 30 seconds Sand Content: 1.5 percent
200					0	NA				

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SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1174 feet*
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DEPTH TO WATER (ft) *Approximately 166 feet*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
200									SM	Grab sample of soil cuttings collected at 200 feet (SC-05).
										Slight decrease in sand size; predominately fine with some medium grained sand.
205									SP SM	POORLY GRADED SAND WITH SILT. Light brown; approximately 90% fine to medium sand, subangular to subrounded; trace coarse sand; approximately 10% nonplastic fines; no odor.
210	4-inch Stainless Steel Screen, 0.010-inch Slot Size									
215	No. 2/16 Lonestar Sand									
220					0	NA				Drilling Mud Viscosity: 33 seconds.
225	4-inch Low Carbon Blank								SM	SILTY SAND. Light brown; approximately 85% fine to medium sand; trace coarse sand; approximately 15% nonplastic fines; no odor; micaceous.
230										
235	Bentonite Seal									
240					0	NA				
245										
250										As above.

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DATE (start/finish) *03/14/94 - 03/25/94*

DRILLING METHOD *Mud Rotary (12.25-inch boring)*
SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1174 feet*
TOTAL DEPTH (ft) *656*
DEPTH TO WATER (ft) *Approximately 166 feet*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
250	4-inch Low Carbon Blank								SM	Drilling Mud: Weight: 70.3 lbs/cu.ft. Viscosity: 32 seconds Sand Content: NA
255	Bentonite Seal									As above.
260					0	NA				Direction survey at 260 feet: <0.5 degrees from vertical. Drilling Mud: Weight: 70.3 lbs/cu.ft. Viscosity: 31 seconds Sand Content: NA
265									SP	POORLY GRADED SAND. Light brown; approximately 95% medium to coarse sand, subangular to subrounded; trace fine sand; approximately 5% nonplastic fines; trace fine granitic gravel. No odor.
270										
275	No. 2/16 Lonestar Sand									
280	4-inch Stainless Steel Screen, 0.010-inch Slot Size				0	NA				Same as above
285					0	NA			SM	SILTY SAND. Light brown; approximately 80% fine to medium subangular to subrounded sand; approximately 20% nonplastic fines; no odor.
290					0	NA				As above but with predominately fine grained sand.
295	Bentonite Seal									
300										

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DATE (start/finish) *03/14/94 - 03/25/94*

DRILLING METHOD *Mud Rotary (12.25-inch boring)*
SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1174 feet*
TOTAL DEPTH (ft) *656*
DEPTH TO WATER (ft) *Approximately 166 feet*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
300	4-inch Low Carbon Blank; Bentonite Seal								SM	Grab sample of soil cuttings collected at 300 feet (SC-05).
										Same as above.
305										Drilling Mud: Weight: 69.6 lbs/cu.ft. Viscosity: 35 seconds Sand Content: NA
310									SP SM	POORLY GRADED SAND WITH SILT. Light brown; approximately 55% fine sand, 15% medium sand, 10% coarse sand; approximately 10% nonplastic fines and 10% fine to coarse granitic gravel; no odor.
315										
320					0	NA				Drilling Mud: Weight: 70.3 lbs/cu.ft. Viscosity: 33 seconds Sand Content: 0.75 percent
									SM	SILTY SAND. Light brown; approximately 80% fine to medium subrounded to subangular sand; approximately 20% nonplastic fines; no odor.
325	4-inch Low Carbon Blank									
330										
335										
340					0	NA				Same as above.
345										
350										

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DATE (start/finish) *03/14/94 - 03/25/94*

DRILLING METHOD *Mud Rotary (12.25-inch boring)*
SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1174 feet*
TOTAL DEPTH (ft) *656*
DEPTH TO WATER (ft) *Approximately 166 feet*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
350	4-inch Low Carbon Blank								SM	
355										
360	Bentonite Seal				0	NA				Same as above.
365										
370										
375										
380	No. 2/16 Lonestar Sand				0	NA			SP SM	Drilling Mud: Weight: 71.06 lbs/cu.ft. Viscosity: 40 seconds Sand Content: 1.6 percent POORLY GRADED SAND WITH SILT. Light brown; approximately 85% medium to coarse sand, subangualr to subrounded; approximately 10% nonplastic fines; 5% fine to coarse granitic gravel; no odor.
385	4-inch Stainless Steel Screen, 0.010-inch Slot Size									
390										Direction survey at 390 feet: <1 degree from vertical.
395	Bentonite Seal									As above.
400					0	NA				

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Monitoring Well 14

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DRILLING CO *Beylik*
DATE (start/finish) *03/14/94 - 03/25/94*

DRILLING METHOD *Mud Rotary (12.25-inch boring)*
SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1174 feet*
TOTAL DEPTH (ft) *656*
DEPTH TO WATER (ft) *Approximately 166 feet*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
400	4-inch Low Carbon Blank; Bentonite Seal; No. 2/16 Lonestar Sand								SP SM	Grab sample of cuttings collected at 400 feet (SC-05). POORLY GRADED SAND WITH SILT AND GRAVEL. light brown; approximately 75% medium sand; trace fine and coarse sand; approximately 15% fine to coarse granitic gravel and 10% nonplastic fines; no odor.
405										
410										
415										Drilling Mud: Weight: 72.6 lbs/cu.ft. Viscosity: 40 seconds Sand Content: <1 percent
420					0	NA				
425	4-inch Low Carbon Blank								SM	SILTY SAND WITH GRAVEL. Light brown; approximately 70% fine to medium sand; approximately 15% fine to coarse granitic gravel; 15% nonplastic fines; no odor.
430										
435									SP SM	POORLY GRADED SAND WITH SILT. Light brown; approximately 85% medium to coarse sand, subangular to subrounded; approximately 10% nonplastic fines; 5% fine to coarse granitic gravel; no odor.
440					0	NA				
445										
450										

FOSTER WHEELER ENVIRONMENTAL CORPORATION

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DATE (start/finish) *03/14/94 - 03/25/94*

DRILLING METHOD *Mud Rotary (12.25-inch boring)*
SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1174 feet*
TOTAL DEPTH (ft) *656*
DEPTH TO WATER (ft) *Approximately 166 feet*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
450									SP SM	Encountered boulder from 451'-452'. Drilling Mud: Weight: 74.4 lbs/cu.ft. Viscosity: 40 seconds Sand Content: 2 percent
455	4-inch Stainless Steel Screen, 0.010-inch Slot Size; No. 2/16 Lonestar Sand									As above with increase in amount of fine to coarse granitic gravel.
460					0	NA				
465										
470										
475	4-inch Low Carbon Blank									
480					0	NA				Same as above.
485	Bentonite Seal									
490										
495										
500					0	NA				

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DRILLING METHOD *Mud Rotary (12.25-inch boring)*
SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1174 feet*
TOTAL DEPTH (ft) *656*
DEPTH TO WATER (ft) *Approximately 166 feet*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
500	4-inch Low Carbon Blank; Bentonite Seal								SP, SM, SM	Grab sample of soil cuttings collected at 500 feet (SC-05). SILTY SAND. Light brown; approximately 80% fine to medium sand; approximately 20% nonplastic fines; trace fine to coarse granitic gravel; no odor.
505										Drilling Mud: Weight: 71.8 lbs/cu.ft. Viscosity: 41 seconds Sand Content: 1 percent
510									SP, SM, SM	POORLY GRADED SAND WITH SILT AND GRAVEL. Light brown; approximately 70% predonimately medium sand; approximately 20% fine to coarse granitic gravel and 10% nonplastic fines; no odor.
515										SILTY SAND WITH GRAVEL. Light brown; approximately 70% fine to medium sand; approximately 15% fine to coarse granitic gravel and 15% nonplastic fines; no odor.
520					0	NA				
525	4-inch Low Carbon Blank									
530										
535										As above but sand becomes finer grained, possibly siltier with decrease in amount of gravel.
540	No. 2/16 Lonestar Sand				0	NA				Drilling Mud: Weight: 74.8 lbs/cu.ft. Viscosity: 40 seconds Sand Content: 1 percent
545	4-inch Stainless Steel Screen, 0.010-inch Slot Size									
550										

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DATE (start/finish) *03/14/94 - 03/25/94*

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SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1174 feet*
TOTAL DEPTH (ft) *656*
DEPTH TO WATER (ft) *Approximately 166 feet*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
550									SM	
555										
560	No. 2/16 Lonestar Sand				0	NA				Same as above.
565	Bentonite Seal									
570										
575	4-inch Low Carbon Blank									
580					0	NA				Same as above. Directional survey at 580 feet: <0.5 degrees from vertical. Drilling Mud: Weight: 71.8 lbs/cu.ft. Viscosity: 32 seconds Sand Content: <0.5 percent
585										
590	Bentonite Seal									
595										
600					0	NA				

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DATE (start/finish) *03/14/94 - 03/25/94*

DRILLING METHOD *Mud Rotary (12.25-inch boring)*
SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1174 feet*
TOTAL DEPTH (ft) *656*
DEPTH TO WATER (ft) *Approximately 166 feet*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
600									SM	Grab sample of soil cuttings collected at 600 feet (SC-05).
										Same as above.
605										Drilling Mud: Weight: 71.8 lbs/cu.ft. Viscosity: 40 seconds Sand Content: 1 percent
610										
615									GR	Difficult drilling.
										Granitic rock - medium sized rock chip pieces as cuttings; surfaces on all pieces angular, fresh breakage, 50% K-feldspar; 30% quartz; 15% plagioclase; 5% other (mafics).
620					0	NA				
625	Bentonite Seal									
630										
635										As above.
640					0	NA				
645										Drilling Mud: Weight: 74.8 lbs/cu.ft. Viscosity: 34 seconds Sand Content: <1 percent
650										

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DATE (start/finish) *03/14/94 - 03/25/94*

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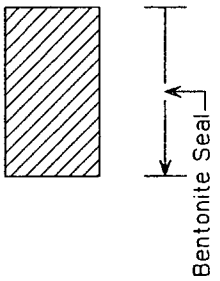
SAMPLING METHOD *Not Applicable*
SURFACE ELEVATION *Approximately 1174 feet*
TOTAL DEPTH (ft) *656*
DEPTH TO WATER (ft) *Approximately 166 feet*

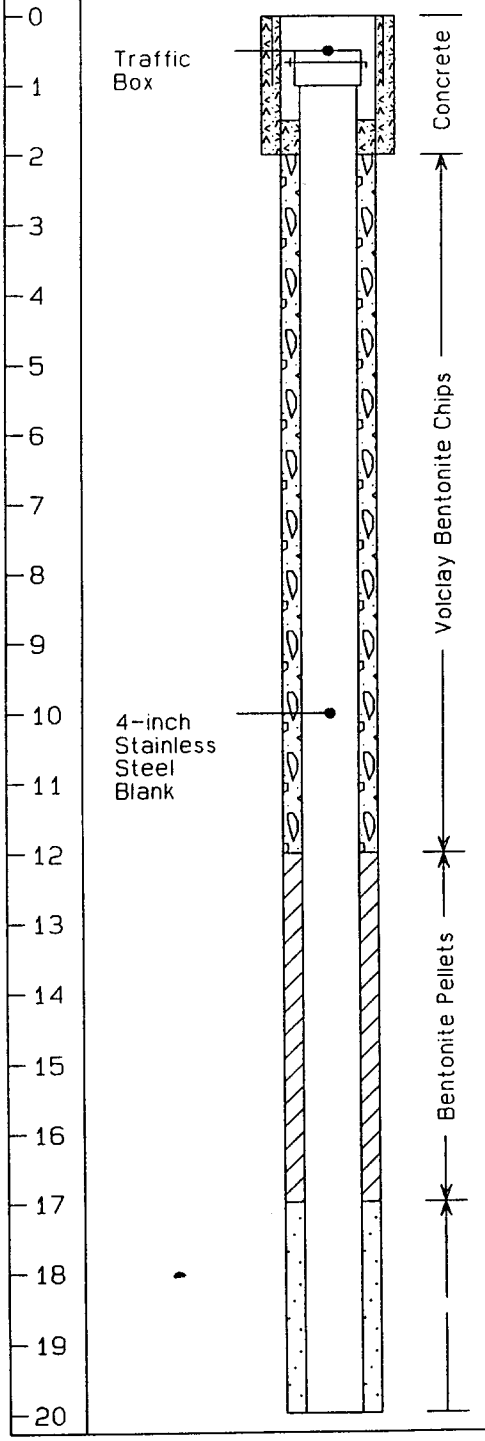
Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
650									GR	
655										Grab sample of soil cuttings collected at 656 feet (SC-05). Bottom of boring at 656 feet.
660										
665										
670										
675										
680										
685										
690										
695										
700										

FOSTER WHEELER ENVIRONMENTAL CORPORATION

MW-15

PROJECT *Jet Propulsion Laboratory*
LOCATION *Northeast Corner of Building 11*
GEOLOGIST *Bill Robin*
DRILLING CO *Beylik*
DATE (start/finish) *02/26/94 - 02/27/94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approx. 1121 ft*
TOTAL DEPTH (ft) *77.0*
DEPTH TO WATER (ft) *25.7 ft*



Depth (ft)	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
0									ASPHALT PAVEMENT (0.25 feet thick)
								SP	GRAVEL ROADBASE (0.25 - 0.50 feet)
1									POORLY GRADED SAND - 80% fine sand, 15% medimum sand, 5% coarse sand, trace fines (nonplastic), maximum size coarse sand; brown, moist; abundant mica.
2									
3									
4									Collected grab sample of cuttings at 4 feet (SC-01).
5									POORLY GRADED SAND 90% fine sand, 5% medium angular to subangular sand, 5% angular to subangular coarse sand, trace fines (nonplastic), maximum size coarse sand; light brown, dry.
6									
7									
8	No Recovery		NA		D			SP	POORLY GRADED SAND WITH GRAVEL AND COBBLES. 40% medium subangular to subrounded sand, 20% fine to coarse subangular to subrounded gravel, 20% coarse angular to subangular sand, 20% fine sand; maximum size coarse gravel; light brown, dry.
9									
10									
11									Attempted to collect soil sample between 8 and 9 feet. No recovery.
12									
13	Soil-3		NA	0	D				Collected soil sample (SOIL-3) at 13 - 13.5 feet.
14									
15									
16									Attempted to collect soil sample at 18 feet. No recovery.
17								SP	POORLY GRADED SAND WITH GRAVEL 35% fine sand, 20% coarse subangular to subrounded gravel, 10% fine subangular to subrounded gravel, 15% coarse angular to subrounded sand, 20% medium subangular to subrounded sand, trace fines (nonplastic); maximum size coarse gravel; light brown, dry.
18	No Recovery		NA		D				
19									
20									Cobbles at 18 feet.

FOSTER WHEELER ENVIRONMENTAL CORPORATION

MW-15

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LOCATION *Northeast Corner of Building 11*
GEOLOGIST *Bill Robin*
DRILLING CO *Beylik*
DATE (start/finish) *02/26/94 - 02/27/94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approx. 1121 ft.*
TOTAL DEPTH (ft) *77.0*
DEPTH TO WATER (ft) *25.7 ft*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
20									SP	Decreasing coarse sand and increasing fine sand.
21										Attempted to collect soil sample between 23 and 24 feet, no recovery.
22										POORLY GRADED SAND 60% fine sand, 30% medium sand, 10% fine subangular to subrounded gravel, trace coarse angular to subangular sand, maximum size fine gravel; light brown, dry.
23		No Recovery		NA		D				
24									GP	BOULDERS AND COBBLES Fine to coarse subangular to subrounded gravel.
25										Encountered groundwater at approximately 25.7 feet. (Depth to water measured at 13:56 on 2/26/94).
26						▽				
27									SP	
28										POORLY GRADED SAND 70% fine sand, 20% medium sand, 10% fine subangular to subrounded gravel, trace coarse angular to subangular sand, maximum size fine gravel; light grayish brown, wet; abundant biotite.
29		Soil-4 Soil-5		NA NA	0 0	W W				
30	0.010-inch Slot Size, 4-inch Stainless Steel Screen									Collected soil samples "SOIL-4" and "SOIL-5" from 28.5 to 29.0 feet and 29.0 to 29.5 feet, respectively.
31										
32										POORLY GRADED SAND 55% fine sand, 40% medium sand, 5% coarse angular to subangular sand, trace fine angular to subangular gravel, trace fines (nonplastic); light brown, wet.
33										
34										Boulder at 34 feet.
35										
36										POORLY GRADED SAND 75% medium subangular to subrounded sand, 20% coarse subangular to subrounded sand, 5% fine sand, trace fine gravel; maximum size fine gravel; light brown, wet.
37										
38										As above but with trace coarse subangular to subrounded gravel.
39										
40										

No. 2/16 Lonestar Sand

FOSTER WHEELER ENVIRONMENTAL CORPORATION

MW-15

PROJECT *Jet Propulsion Laboratory*
LOCATION *Northeast Corner of Building 11*
GEOLOGIST *Bill Robin*
DRILLING CO *Beylik*
DATE (start/finish) *02/26/94 - 02/27/94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approx. 1121 ft.*
TOTAL DEPTH (ft) *77.0*
DEPTH TO WATER (ft) *25.7 ft*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
40									SP	
41										As above.
42										
43										
44									SW	WELL GRADED SAND WITH GRAVEL 50% fine subangular to subrounded gravel, 30% coarse subangular to subrounded sand, 10% medium sand, 10% fine sand, trace fines (nonplastic), trace coarse subangular to subrounded gravel; maximum size coarse gravel; light brown, wet.
45										
46										Boulder at 46 feet.
47										
48										Collected grab sample of soil cuttings at 46-49 feet.
49										
50	0.010-inch Slot Size, 4-inch Stainless Steel Screen									
51									SP	
52										POORLY GRADED SAND 70% medium subangular to subrounded sand, 20% coarse subangular to subrounded sand, 10% fine sand, trace fines (nonplastic), trace fine to coarse subrounded to well rouned gravel; maximum size coarse gravel; light brown, wet.
53										
54										
55										POORLY GRADED SAND 45% fine sand, 40% medium sand, 10% coarse subangluar sand, 5% fine to coarse gravel; maximum size coarse gravel; light brown; wet.
56										
57					0	W				
58										
59										
60										

No. 2/16 Lonestar Sand

FOSTER WHEELER ENVIRONMENTAL CORPORATION

MW-15

PROJECT *Jet Propulsion Laboratory*
LOCATION *Northeast Corner of Building 11*
GEOLOGIST *Bill Robin*
DRILLING CO *Beylik*
DATE (start/finish) *02/26/94 - 02/27/94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approx. 1121 ft*
TOTAL DEPTH (ft) *77.0*
DEPTH TO WATER (ft) *25.7 ft*

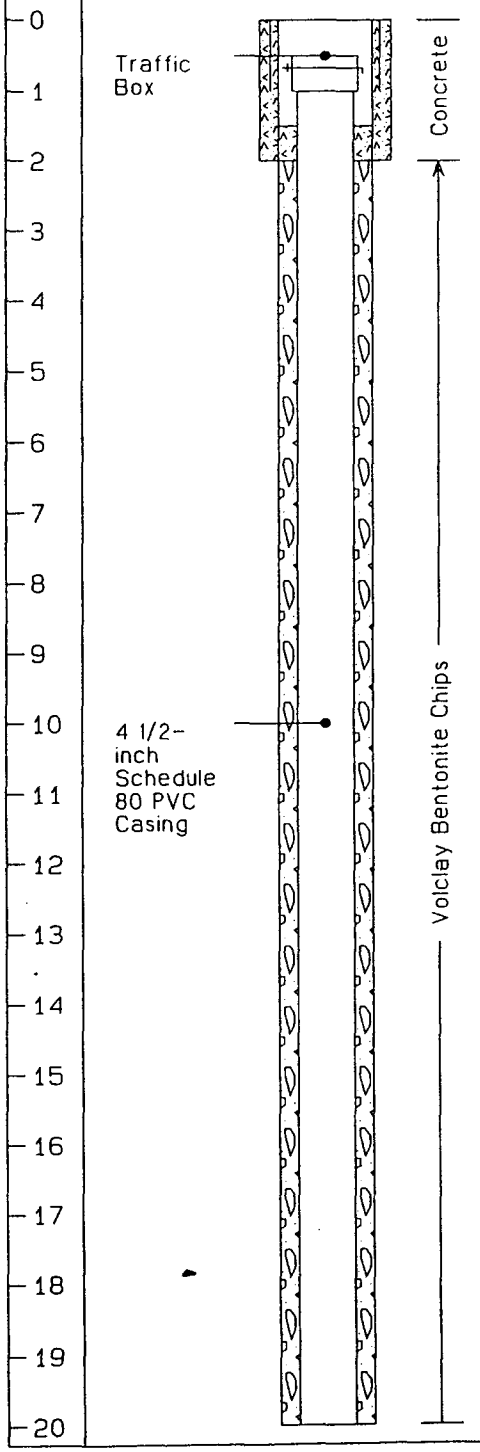
Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
60									SP	
61									SP	POORLY GRADED SAND WITH GRAVEL 40% medium sand, 30% fine angular to subangular gravel, 20% fine sand, 10% coarse angular to subangular sand, trace coarse subrounded gravel, trace fines (nonplastic); maximum size coarse gravel; light brown, wet.
62										
63									SP	
64										
65	0.010-inch Slot Size, 4-inch Stainless Steel Screen									
66										
67										POORLY GRADED SAND 80% fine sand, 20% medium subangular to subrounded sand, trace coarse subangular sand, trace fines (nonplastic); maximum size coarse sand; brown, wet.
68										
69										
70	No. 2/16 Lonestar Sand									
71										
72										POORLY GRADED SAND 90% fine sand, 10% medium sand, trace fines (nonplastic); maximum size medium sand; brown, wet.
73	4-inch Stainless Steel Blank									
74										
75										
76					0	W				Collected grab sample of soil cuttings at 76 feet (SC-01).
77										POORLY GRADED SAND 60% fine sand, 30% medium sand, 10% coarse sand, trace fines (nonplastic) trace fine subangular to subrounded gravel; maxiumum size fine gravel; light brown, wet.
78										
79										Bottom of boring at 77 feet.
80										

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 16

PROJECT *Jet Propulsion Laboratory*
LOCATION *North of Building 138*
GEOLOGIST *Bill Robin / Sara Arav*
DRILLING CO *Beylik*
DATE (start/finish) *02/28/94 - 03/19/94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approximately 1236 feet.*
TOTAL DEPTH (ft) *287*
DEPTH TO WATER (ft) *234*



Depth (ft)	Lithologic Description and Notes
0	ASPHALT PAVEMENT (0.25 feet thick)
	GRAVEL ROADBASE (0.25 - 0.50 feet)
1–2	POORLY GRADED SAND. 90% fine sand, 10% medium subangular to subrounded sand, trace coarse subrounded sand, trace nonplastic fines; maximum size coarse sand; brown, moist.
7	Collected soil sample "SOIL-06" at 9.0 to 9.5 feet.
9–10	SILTY SAND. 50% fines, rapid dilatency, low plasticity, low toughness, 30% fine sand, 10% medium sand, 10% coarse subangular sand, trace fine to coarse subangular to subrounded gravel; brown, moist, maximum size coarse gravel.
12	Collected grab sample of soil cuttings at 12 feet "SC-02" (tags 0065 and 0066).
14–15	POORLY GRADED SAND. 90% fine sand, 10% medium subangular to subrounded sand; maximum size medium sand; brown; moist.
17–19	POORLY GRADED SAND WITH GRAVEL. 50% fine sand, 20% medium angular to subangular sand, 15% coarse subangular to subrounded sand, 10% fine subrounded gravel, 5% coarse subangular to subrounded gravel; maximum size coarse gravel; trace nonplastic fines; light brown, dry.
19	Collectd soil sample "SOIL-7" at 19.0 to 19.5 feet.

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 16

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LOCATION *North of Building 138*
GEOLOGIST *Bill Robin / Sara Arav*
DRILLING CO *Beylik*
DATE (start/finish) *02/28/94 - 03/19/94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approximately 1236 feet.*
TOTAL DEPTH (ft) *287*
DEPTH TO WATER (ft) *234*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
20									SP	
21										
22									SP	POORLY GRADED SAND. 70% fine sand, 20% medium subangular to well rounded sand, 10% coarse subangular to subrounded sand, trace fine subrounded flat gravel; maximum size fine gravel; light brown, dry.
23										
24										
25										
26										
27										Collected soil sample "SOIL-08" at 28.0 to 28.5 feet.
28		Soil-08		NA	0	D			SW	
29										WELL GRADED SAND WITH GRAVEL 50% fine to coarse subrounded gravel, 25% coarse angular to subangular sand, 15% medium angular to subangular sand, 10% fine sand; maxium size coarse gravel; light brown, dry.
30	4 1/2-inch Schedule 80 PVC Casing; Volclay Bentonite Chips									
31										
32										
33										
34										
35									SP	POORLY GRADED SAND WITH SILT. 50% fine 50% fine sand, 25% medium subrounded sand, 15% coarse subangular to subrounded, sand, 10% nonplastic fines, trace fine gravel; maxium size fine gravel; brown; moist.
36										
37										
38										
39										Encountered boulders and cobbles at 39 feet.
40										

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 16

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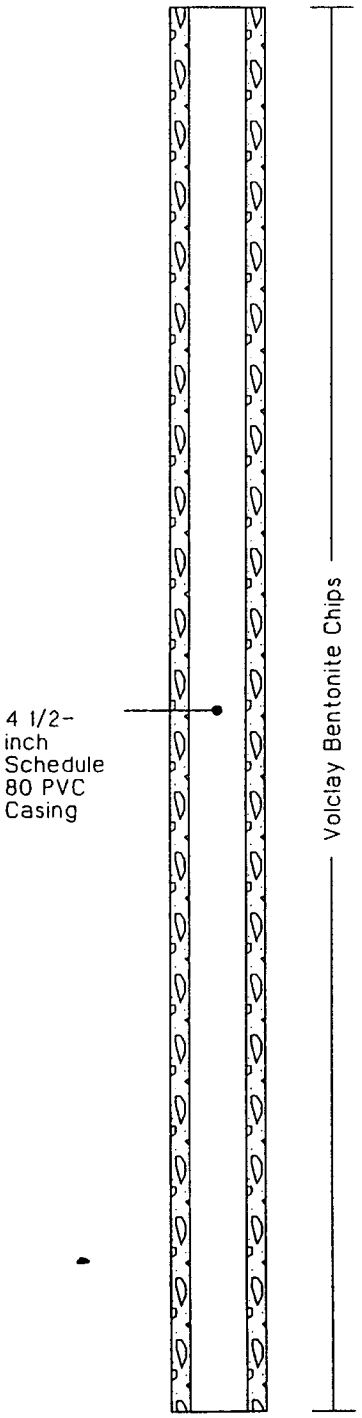
DRILLING CO *Beylik*
DATE (start/finish) *02/28/94 - 03/19/94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approximately 1236 feet.*
TOTAL DEPTH (ft) *287*
DEPTH TO WATER (ft) *234*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
40									SP	
41										As above but with abundant fine grained hornblend.
42										
43										Encountered boulders and cobbles at 43 feet.
44										POORLY GRADED SAND. 40% fine sand, 40% medium subangular to subrounded sand, 20% coarse subangular to subrounded sand, trace fine subrounded to well rounded gravel; maximum size fine gravel; light brown, moist; abundant fine to medium hornblend.
45										
46										
47									SP	POORLY GRADED SAND WITH GRAVEL 30% fine subrounded gravel, 40% medium subrounded sand, 20% fine sand, 10% coarse subangular to subrounded sand, trace coarse subrounded gravel, trace nonplastic fines; maximum size coarse gravel; brown, moist.
48										
49										
50	4 1/2-inch Schedule 80 PVC Casing									
51										
52										Collected grab sample of soil cuttings between 48 and 52 feet "SC-02" (tags 0077 and 0078).
53									SP	
54										
55										POORLY GRADED SAND. 50% fine sand, 35% medium subangular to subrounded sand, 10% coarse subangular to subrounded sand, 5% nonplastic fines; maximum size coarse sand; brown; moist.
56										
57										
58										
59										
60										

Volclay Bentonite Chips

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 16

PROJECT *Jet Propulsion Laboratory*
LOCATION *North of Building 138*
GEOLOGIST *Bill Robin / Sara Arav*
DRILLING CO *Beylik*
DATE (start/finish) *02/28/94 - 03/19/94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approximately 1236 feet.*
TOTAL DEPTH (ft) *287*
DEPTH TO WATER (ft) *234*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
60									SP	
61										
62										As above.
63										As above but with abundant fine to medium hornblend.
64									GP	BOULDERS AND COBBLES. With 25% coarse subangular sand.
65										
66									SP	
67										
68					1					POORLY GRADED SAND. 70% fine sand, 30% medium angular to subangular sand, trace coarse subangular sand; maximum size coarse sand; trace fine to coarse subangular to subrounded gravel; brown, moist; abundant fine hornblend.
69										
70	4 1/2-inch Schedule 80 PVC Casing; Volclay Bentonite Chips									
71										
72					2					As above.
73										
74									SM	SILTY SAND. 80% fine sand; 20% fines, rapid dilatency, medium plasticity, low toughness; trace coarse subangular sand, trace fine to coarse subrounded gravel; brown, moist; (heaving sands noted during drilling).
75										
76										
77										
78										
79										
80										As above but with 10% medium subangular to subrounded sand.

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DATE (start/finish) *02/28/94 - 03/19/94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approximately 1236 feet.*
TOTAL DEPTH (ft) *287*
DEPTH TO WATER (ft) *234*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
80									SM	
81										
82										
83										
84										As above.
85										
86										
87										
88										
89									SP	POORLY GRADED SAND. 100% fine sand, trace nonplastic fines, trace coarse subrounded to well rounded sand; maximum size coarse sand; brown, moist.
90	4 1/2-inch Schedule 80 PVC Casing; Volclay Bentonite Chips				1					
91										
92										
93										
94										POORLY GRADED SAND. 95% fine sand, 5% medium subrounded sand, trace coarse sand; maximum size coarse sand; light brown, moist.
95										
96										POORLY GRADED SAND. 60% fine sand, 20% medium subangular to subrounded sand, 10% coarse angular to subangular sand, 10% fine subrounded gravel, trace coarse subangular gravel; maximum size coarse gravel; light grayish brown; moist.
97										
98										
99										
100										

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 16

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DRILLING CO *Beylik*
DATE (start/finish) *02/28/94 - 03/19/94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approximately 1236 feet.*
TOTAL DEPTH (ft) *287*
DEPTH TO WATER (ft) *234*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
100									SP	
101										
102										Encountered cobbles at 102 feet.
103										
104										POORLY GRADED SAND. 65% fine sand, 30% medium subrounded sand, 5% coase subangular to subrounded sand, trace fine subrounded gravel; maximum size fine gravel; grayish brown.
105										
106										Collected grab sample of soil cuttings "SC-02" between 106 and 108 feet (tags 0079 and 0080).
107										As above.
108										Encountered cobbles at 108.5 feet.
109										
110	4 1/2-inch Schedule 80 PVC Casing; Volclay Bentonite Chips									POORLY GRADED SAND. 50% medium subangular to subrounded sand, 45% fine sand, 5% coarse subangular to subrounded sand, trace fine to coarse subrounded gravel; maximum size coarse gravel; grayish brown, moist.
111										
112										
113									SM	SILTY SAND. 75% fine sand, 15% fines, 10% medium subangular sand, fines have slow dilatency, medium plasticity, low to medium toughness, low dry strength; maximum size medium sand; brown, moist.
114										
115										
116										As above but with trace coarse angular sand.
117										
118									SM	SILTY SAND. 70% fine sand, 30% fines, fines have rapid dilatency, medium plasticity, low toughness; brown; moist.
119										
120										

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 16

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DATE (start/finish) *02/28/94 - 03/19/94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approximately 1236 feet.*
TOTAL DEPTH (ft) *287*
DEPTH TO WATER (ft) *234*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
120									SM	SILTY SAND. 40% medium subangular sand, 40% fine sand, 20% fines, trace coarse subangular to subrounded sand, trace fine subrounded gravel; maximum size fine gravel; brown; dry.
121										
122										
123										
124										
125									SP	POORLY GRADED SAND. 70% fine sand, 20% medium subangular to subrounded sand, 10% coarse subangular to subrounded sand, trace fine subangular flat gravel, trace nonplastic fines; maximum size fine gravel; brown, dry.
126										
127										
128										As above but incease in fine to coarse subangular flat gravel.
129										
130	4 1/2-inch Schedule 80 PVC Casing; Volclay Bentonite Chips									POORLY GRADED SAND. 50% medium sand, 30% fine sand, 10% angular to subrounded coarse sand, 10% fine to coarse subangular to subrounded gravel, trace nonplastic fines; maximum size coarse gravel; gravel is flat to flat and elongated; light brown, dry.
131										
132										POORLY GRADED SAND 50% fine sand, 45% medium subangular to subrounded sand, 5% coarse subangular to subrounded sand; maximum size coarse sand; light brown, dry.
133										
134										
135										As above but with trace fine subrounded gravel.
136										Encountered cobbles at 136 feet.
137										As above.
138									GP	POORLY GRADED GRAVEL WITH SAND 60% fine subrounded gravel; 10% coarse subrounded gravel, 30% coarse subangular to subrounded sand, trace fine sand; maximum size coarse gravel; light brown, dry.
139										
140										

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 16

PROJECT *Jet Propulsion Laboratory*
LOCATION *North of Building 138*
GEOLOGIST *Bill Robin / Sara Arav*
DRILLING CO *Beylik*
DATE (start/finish) *02/28/94 - 03/19/94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approximately 1236 feet.*
TOTAL DEPTH (ft) *287*
DEPTH TO WATER (ft) *234*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
140									GP	As above.
141										
142									SP	
143										POORLY GRADED SAND. 60% medium subangular to subrounded sand, 20% fine sand, 20% coarse angular to subrounded sand, trace fine subrounded gravel; maximum size fine gravel; light brown, dry.
144										
145										
146										POORLY GRADED SAND. 50% fine sand, 40% medium subangular sand, 10% coarse sand; trace nonplastic fines; maximum size coarse sand; light brown, dry.
147										
148									GP	POORLY GRADED GRAVEL. 60% fine subangular to subrounded gravel, 15% coarse subangular to subrounded gravel, 20% coarse subangular to subrounded sand, 5% medium sand, trace fine sand; maximum size coarse gravel; light brown, dry.
149										
150	4 1/2-inch Schedule 80 PVC Casing									
151									SP	POORLY GRADED SAND. 80% medium subangular to subrounded sand, 20% fine sand, trace coarse subangular to subrounded sand, trace fine subrounded gravel; maximum size fine gravel; trace nonplastic fines; light brown, dry.
152										
153										Encountered gravel at 153 feet.
154										POORLY GRADED SAND. 75% fine sand, 20% medium angular to subrounded sand, 5% coarse angular sand, trace fine gravel; maximum size fine gravel; light brown, dry.
155										
156									SW	Encountered cobbles at 156 feet. WELL GRADED SAND. 40% coarse angluar to subangular sand, 30% medium angular to subangular sand, 20% fine sand, 10% fine subangular to subrounded gravel, trace coarse subrounded gravel, trace nonplastic fines; maximum size coarse gravel; light brown, dry.
157										
158										
159										Collected grab sample of soil cuttings "SC-02" between 154 and 156 feet.
160									SP	

Volclay Bentonite Chips

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 16

PROJECT *Jet Propulsion Laboratory*
LOCATION *North of Building 138*
GEOLOGIST *Bill Robin / Sara Arav*
DRILLING CO *Beylik*
DATE (start/finish) *02/28/94 - 03/19/94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approximately 1236 feet.*
TOTAL DEPTH (ft) *287*
DEPTH TO WATER (ft) *234*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
160									SP	POORLY GRADED SAND. 35% medium subangular to subrounded sand, 30% fine sand, 20% coarse subrounded sand, 10% fine to coarse subrounded gravel, 5% nonplastic fines; maximum size coarse gravel; brown, moist.
161										
162										
163										
164										As above but with trace fine to coarse gravel.
165										
166										
167										
168									GW	WELL GRADED GRAVEL WITH SAND, COBBLES AND BOULDERS. 40% coarse subangular to subrounded gravel, 30% fine subangular to subrounded gravel, 20% coarse subangular sand, 5% medium subangular sand, trace fine sand; abundant coarse to medium grained white plagioclase; light gray brown, dry.
169										
170	4 1/2-inch Schedule 80 PVC Casing									
171										
172										As above.
173										
174										
175									SP	POORLY GRADED SAND. 80% coarse subangular to subrounded sand, 20% medium subangular to subrounded sand, trace fine angular to subangular gravel; maximum size fine gravel; light gray brown, moist; abundant k-feldspar and plagioclase as coarse and medium sand.
176										
177										
178										WELL GRADED GRAVEL WITH SAND 50% coarse subangular to subrounded gravel, 30% fine subangular to subrounded gravel, 20% coarse subangular to subrounded sand, trace medium sand; maximum size coarse gravel; light gray brown, dry.
179									GW	
180									SP	

Volclay Bentonite Chips

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 16

PROJECT *Jet Propulsion Laboratory*
LOCATION *North of Building 138*
GEOLOGIST *Bill Robin / Sara Arav*
DRILLING CO *Beylik*
DATE (start/finish) *02/28/94 - 03/19/94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approximately 1236 feet.*
TOTAL DEPTH (ft) *287*
DEPTH TO WATER (ft) *234*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
180									SP	POORLY GRADED SAND WITH GRAVEL 80% fine to coarse sand, 20% fine gravel.
181									GP	POORLY GRADED GRAVEL WITH SAND 60% fine angular to subrounded gravel, 10% coarse subangular to subrounded flat gravel, 30% coarse subangular to subrounded sand, trace medium sand, trace nonplastic fines; maximum size coarse gravel; light brown, dry; abundant k-feldspar and plagioclase.
182									SP	
183									SP SM	
184										POORLY GRADED SAND. 40% coarse subangular to subrounded sand, 40% fine sand, 10% medium sand, 10% fine angular to well rounded gravel, trace coarse subangular to subrounded gravel, trace nonplastic fines; maximum size coarse gravel; light gray brown, dry; abundant hornblend as fine and medium sand, abundant k-feldspar and plagioclase as coarse sand and fine gravel.
185										
186										
187										
188										POORLY GRADED SAND WITH SILT Approximately 80% fine to medium, poorly graded subangular sand; approximately 10-15% nonplastic fines, approximately 5-10% fine to coarse subangular gravel; brown; slightly moist.
189										
190	4 1/2-inch Schedule 80 PVC Casing									
191	Volclay Bentonite Chips									
192										
193									SP SM	POORLY GRADED SAND WITH SILT AND GRAVEL. Approximately 75-80% fine to medium poorly graded subangular to angular sand, approximately 5-10% nonplastic fines, 15-20% fine to medium subangular gravel; light brown, moist; no odor; trace cobbles.
194										
195										
196										Difficult drilling, encountered a large boulder from 196 to 202 feet.
197										
198										
199										Collected grab sample of cuttings "SC-02" at 200 feet.
200										

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 16

PROJECT *Jet Propulsion Laboratory*
LOCATION *North of Building 138*
GEOLOGIST *Bill Robin / Sara Arav*
DRILLING CO *Beylik*
DATE (start/finish) *02/28/94 - 03/19/94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approximately 1236 feet.*
TOTAL DEPTH (ft) *287*
DEPTH TO WATER (ft) *234*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
200									SP SM	As above.
201										
202										
203									SP SM	
204										
205	4 1/2-inch Schedule 80 PVC Casing									POORLY GRADED SAND WITH SILT Approximately 85% fine to medium poorly graded subangular sand; approximately 15% nonplastic fines; trace gravel; no odor.
206										
207										
208										Encountered cobbles from 207 to 209 feet. Difficult drilling.
209										
210										
211										
212										As above.
213									SP SM	
214										POORLY GRADED SAND WITH SILT AND GRAVEL. Approximately 80% fine to medium poorly graded subangular sand; approximately 15% nonplastic fines; approximately 5% fine to medium subangular to angular gravel; brown, no odor, slightly moist.
215	4-inch Stainless Steel Blank									
216										
217										
218										
219										As above.
220										

Volclay Bentonite Chips

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 16

PROJECT *Jet Propulsion Laboratory*
LOCATION *North of Building 138*
GEOLOGIST *Bill Robin / Sara Arav*
DRILLING CO *Beylik*
DATE (start/finish) *02/28/94 - 03/19/94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approximately 1236 feet.*
TOTAL DEPTH (ft) *287*
DEPTH TO WATER (ft) *234*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
220									SP SM	As above.
221										
222										
223										
224									SP SM	
225	4-inch Stainless Steel Blank									POORLY GRADED SAND WITH SILT AND GRAVEL. Approximately 25% fine, 30% medium, 30% coarse sand, poorly graded, subrounded, subangular to angular; 10-15% nonplastic fines; trace to 5% fine subangular to angular gravel; dry, no odor.
226										
227										
228										
229										Difficult drilling between 229 and 231 feet. Granitic rock chips in cuttings.
230										
231										
232										
233										
234						▽				Encountered groundwater at 234 feet.
235	0.010-inch Slot Size, 4-inch Stainless Steel Screen									
236										
237										
238										As above - difficult drilling, granitic rock chips in cuttings.
239										
240										

Volclay Bentonite Chips
Bentonite Pellets
No 2/16 Lonestar Sand

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 16

PROJECT *Jet Propulsion Laboratory*
LOCATION *North of Building 138*
GEOLOGIST *Bill Robin / Sara Arav*
DRILLING CO *Beylik*
DATE (start/finish) *02/28/94 - 03/19/94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approximately 1236 feet.*
TOTAL DEPTH (ft) *287*
DEPTH TO WATER (ft) *234*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
240									SP SM	As above.
241										
242										Difficult drilling, granitic rock chips in cuttings
243										
244									SM	SILTY SAND. Approximately 75% fine to coarse poorly graded and subrounded sand; approximately 20-25% fines with low plasticity, low toughness; approximately 5% to trace fine to medium subangular to subrounded gravel; brown, wet.
245										
246										
247										
248										
249										
250	0.010 -inch Slot Size, 4-inch Stainless Steel Screen; No 2/16 Lonestar Sand									As above. Collected grab sample of soil cuttings ("SC-02") at 250 feet.
251										
252										
253									SP SM	
254										POORLY GRADED SAND WITH SILT AND GRAVEL. Approximately 75% fine to coarse, poorly graded subangular sand; approximately 10% nonplastic fines; approximately 15% fine gravel. Difficult drilling.
255										
256										
257										
258										Encountered a boulder at 258 to 259 feet.
259										
260										

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 16

PROJECT *Jet Propulsion Laboratory*
LOCATION *North of Building 138*
GEOLOGIST *Bill Robin / Sara Arav*
DRILLING CO *Beylik*
DATE (start/finish) *02/28/94 - 03/19/94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approximately 1236 feet.*
TOTAL DEPTH (ft) *287*
DEPTH TO WATER (ft) *234*

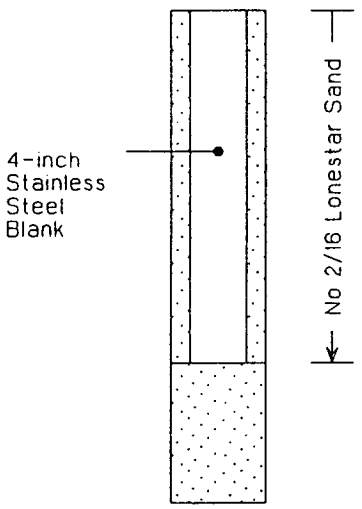
Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
260									SP SM	As above.
261										
262										
263										
264										
265										
266									GP GM	POORLY GRADED GRAVEL WITH SILT AND SAND. Approximately 30% medium to coarse subrounded and poorly graded sand, approximately 10% nonplastic fines, appoximately 60% fine to coarse subangular to subrounded gravel; light brown.
267										
268										
269										
270	0.010-inch Slot Size, 4-inch Stainless Steel Screen; No 2/16 Lonestar Sand									Difficult drilling, granitic rock chips in soil cuttings.
271										
272										
273										
274										
275										
276										
277										As above.
278										Collected grab sample of soil cuttings ("SC-02") at 278 feet.
279										
280										

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Monitoring Well 16

PROJECT *Jet Propulsion Laboratory*
LOCATION *North of Building 138*
GEOLOGIST *Bill Robin / Sara Arav*
DRILLING CO *Beylik*
DATE (start/finish) *02/28/94 - 03/19/94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2" x 24" Split Spoon Sampler*
SURFACE ELEVATION *Approximately 1236 feet.*
TOTAL DEPTH (ft) *287*
DEPTH TO WATER (ft) *234*

Depth (ft)	Well Completion	Sample No.	Samples	Blows/6-in.	OVA (ppm)	Moisture	Consistency	Lithology	USCS Symbol	Lithologic Description and Notes
280									GP GM	As Above.
281										
282										
283										
284										
285										
286										
287										Total depth of boring: 287 feet.
288										
289										
290										
291										
292										
293										
294										
295										
296										
297										
298										
299										
300										

6. Appendix 3

OU-2 Soil Vapor Well Log

EBASCO ENVIRONMENTAL

BG-1

PROJECT *Jet Propulsion Laboratory*
LOCATION *West Parking Lot*
GEOLOGIST *B.G. Randolph*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *4-6-94 / 4-6-94*

DRILLING METHOD *Hollow Stem Auger*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1190.7 Feet*
TOTAL DEPTH (ft) *25.5*
DEPTH TO WATER (ft) *Not Encountered*

Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0	Soil-Vapor Well Not Installed									Asphalt pavement (3-inches thick).
									GM	Gravel base for pavement.
									SP	SAND (FILL) - Fine to coarse sand with trace silt and occasional pieces fine gravel, dark orange-brown, damp, dense.
									SP	SAND - Fine to coarse sand with trace silt, reddish-brown, slightly moist, dense, micaceous.
10										Occasional pieces fine gravel 10' to 15'.
										Orange-brown 12' to 15', becoming more silty.
										Light orange-brown at 17', very dense.
20										
				100	-	-	-			Fine to medium sand with some silt and coarse sand and trace fine gravel, light orange-brown, damp, very dense, micaceous (no odor).
30										
40										
50										
60										
70										
80										
90										
100										

EBASCO ENVIRONMENTAL

BG-1A

PROJECT *Jet Propulsion Laboratory*
LOCATION *West Parking Lot*
GEOLOGIST *B.G. Randolph*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *10-1-94 / 10-1-94*

DRILLING METHOD *Hollow Stem Auger*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1190.7 Feet*
TOTAL DEPTH (ft) *21.5*
DEPTH TO WATER (ft) *Not Encountered*

Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0	Soil-Vapor Well Not Installed									Asphalt pavement (3-inches thick).
									GP	Gravel base for pavement.
									SP	SAND (FILL) - Fine to coarse sand with trace silt and occasional pieces fine gravel, dark orange-brown, damp, dense.
									SP	SAND - Fine to coarse sand with trace silt, reddish-brown, slightly moist, dense, micaceous.
10										Tree roots in cuttings at 9.5'.
										Occasional pieces fine gravel from 10' to 17'.
										Orange-brown 12' to 17', more silty.
										Light orange-brown at 17'.
20				100	-	-	-			Fine to medium sand with trace silt, light orange-brown, damp to slightly moist, micaceous (no odor).
				100	-	-	-			
30										
40										
50										
60										
70										
80										
90										
100										

EBASCO ENVIRONMENTAL

BG-2

PROJECT: Jet Propulsion Laboratory
LOCATION: West Parking Lot - Upper Terrace
GEOLOGIST: B.G. Randolph
DRILLING CO: Beylik Drilling
DATE (start/finish): 4-6-94 / 4-6-94

DRILLING METHOD: Hollow Stem Auger
SAMPLING METHOD: 2 1/2-inch split-spoon
SURFACE ELEVATION: 1265.2 Feet
TOTAL DEPTH (ft): 18.5
DEPTH TO WATER (ft): Not Encountered

Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0	Soil-Vapor Well Not Installed									Asphalt pavement (3-inches thick).
									GP	Gravel base for pavement.
									SM	SILTY SAND - Silty fine to medium sand with trace coarse sand and fine gravel, very dark orange-brown, damp to slightly moist, dense.
10									SM	GRAVELLY SILTY SAND - Fine gravelly silty fine to medium sand with trace coarse sand, orange-brown, moist, dense, micaceous.
									SP	SAND - Fine to medium sand with some silt and trace coarse sand moist, dense, micaceous.
									SP	GRAVELLY SAND - Fine gravelly fine to medium sand with coarse sand and trace silt, light orange-brown, damp, very dense, micaceous (no odor).
				100	-	-	-			
20										
30										
40										
50										
60										
70										
80										
90										
100										

EBASCO ENVIRONMENTAL

BG-2A

PROJECT *Jet Propulsion Laboratory*
LOCATION *West Parking Lot - Upper Terrace*
GEOLOGIST *B.G. Randolph*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *10-1-94 / 10-1-94*

DRILLING METHOD *Hollow Stem Auger*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1265.2 Feet*
TOTAL DEPTH (ft) *18.5*
DEPTH TO WATER (ft) *Not Encountered*

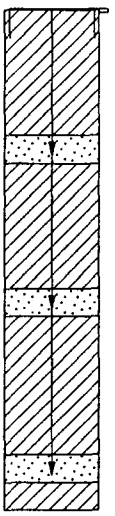
Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0	Soil-Vapor Well Not Installed									Asphalt pavement (3-inches thick).
									GP	Gravel base for pavement.
									SM	SILTY SAND - Silty fine to medium sand with trace coarse sand and fine gravel, very dark orange-brown, slightly moist, dense.
10									SM	GRAVELLY SILTY SAND - Fine gravelly silty fine to medium sand with some coarse sand, orange-brown, moist, dense, micaceous.
									SP	SAND - Fine to medium sand with some silt, and coarse sand and fine gravel, orange-brown, moist, dense, micaceous.
									SP	GRAVELLY SAND - Fine gravelly fine to coarse sand with trace silt, light orange-brown, slightly mosit, very dense, micaceous (no odor).
				100	-	-	-			
20										
30										
40										
50										
60										
70										
80										
90										
100										

EBASCO ENVIRONMENTAL

B-1

PROJECT *Jet Propulsion Laboratory*
LOCATION *Seepage Pit No. 2*
GEOLOGIST *R. Tweidt*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *8-29-94 / 8-30-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1124.5 Feet*
TOTAL DEPTH (ft) *38*
DEPTH TO WATER (ft) *Not Encountered*

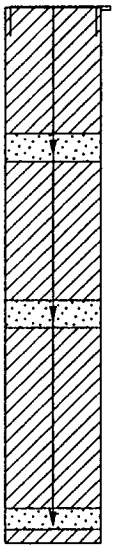
Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0									Fill	ASPHALT pavement (3 inches thick).
										RUBBLE FILL - Mixture of silty sand, medium sand, sandy gravel, and gravel; pale brown to orange brown to dark gray, dry to very moist, medium dense.
10				30	0	0	0			Dark gray medium sand, slightly moist (no odor).
										Occasional pea-sized asphalt fragments from 17' to 21'.
20		VPSS-1		70	0	4	0		SM	Silty fine to medium sand, dark gray-brown mottled with black specks, moist, dense (no odor).
										SILTY SAND - Fine to medium sand with trace coarse sand and fine gravel, yellowish-brown, slightly moist, medium dense, micaceous (no odor).
30				10	0	-	0			Granitic and dioritic rock fragments (no odor).
										Granitic boulder from 35' to 37'.
		VPSS-2		100	0	2	0			Silty fine to medium sand (with granitic rock fragments and piece of galvanized electrical fitting in upper part of sampler barrel) dark orange-brown, very moist, dense, micaceous (no odor).
40										
50										
60										
70										
80										
90										
100										

EBASCO ENVIRONMENTAL

B-2

PROJECT *Jet Propulsion Laboratory*
LOCATION *Seepage Pit No. 3*
GEOLOGIST *R. Tweidt*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *8-30-94 / 8-30-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1126.2 Feet*
TOTAL DEPTH (ft) *38.5*
DEPTH TO WATER (ft) *Not Encountered*

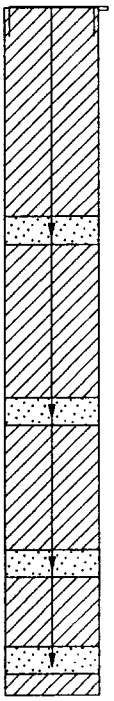
Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0									SM	ASPHALT pavement (3 inches thick). SILTY SAND - Fine to medium sand with some fine gravel, dark yellowish-brown, slightly moist, medium dense.
10		VPSS-3		100	0	60	0			(No odor).
20				0	0	-	0			(Lost sample during retrieval.) Fine to medium with some coarse sand, fine to coarse gravel and small cobbles, orange-brown, moist, micaceous.
30				0	0	-	0			(Granitic rock plugged bit.)
40		VPSS-4		100	2	1	0			Fine to medium sand with traces of silt, coarse sand, and fine gravel, dark orange-brown, very moist, (no odor).
50										
60										
70										
80										
90										
100										

EBASCO ENVIRONMENTAL

B-3

PROJECT *Jet Propulsion Laboratory*
LOCATION *Seepage Pit No. 36*
GEOLOGIST *R. Tweidt & B.G. Randolph*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *8-31-94 / 9-1-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1133.9 Feet*
TOTAL DEPTH (ft) *52*
DEPTH TO WATER (ft) *Not Encountered*

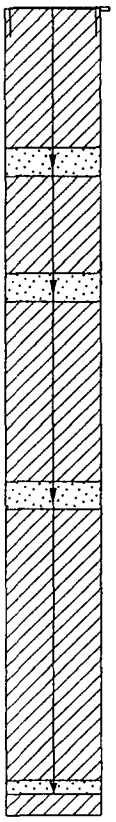
Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0									SM	ASPHALT pavement (3 inches thick). SILTY SAND (FILL) - Silty fine to medium sand, pale brown, damp, dry, medium dense, (no odor). Small pieces of wood debris in cuttings.
										Concrete - Slurried Concrete Backfill.
									SM	SILTY SAND - Silty fine to coarse sand with trace fine gravel, pale gray-brown to orange-brown, slightly moist, dense, micaceous.
10				10	0.5	-	0		SM	GRAVELLY SILTY SAND - Silty fine to coarse sand with fine to coarse gravel and occassional cobbles, yellowish-brown to orange-brown, damp to slightly moist, dense, micaceous.
									SP	GRAVELLY SAND - Gravelly fine to coarse sand with some silt, light yellowish-brown, slightly moist, dense. (Granitic rock fragements plugged bit.)
20				10	0	0.5	0		GP	SANDY GRAVEL - Fine to coarse sandy gravel with numerouse cobbles and occasional boulder, pale yellowish-brown to orange-brown, slightly moist, dense.
30		VPSS-5		100	3	0.5	1		GM	SILTY GRAVEL - Silty sandy fine gravel, mottled gray-green and pale yellowish-brown, slightly moist, very dense, micaceous (no odor).
									GP	SANDY GRAVEL - Fine to coarse sandy gravel with cobbles, light yellowish-brown to orange-brown, occasional gray gravel, slightly moist, very dense.
									SP	GRAVELLY SAND - Fine to coarse gravelly sand with cobbles, light orange-brown to pale yellowish-brown, slightly moist, very dense.
40				10	2	12	0		GP	GRAVELLY SAND - Fine to coarse gravelly sand with trace silt, light orange-brown to yellowish-brown, slightly moist, very dense. Boulder from 41' to 42.5'.
									SP	SAND - Fine to coarse sand with some fine gravel and trace silt, light to dark orange-brown, slightly moist, very dense, micaceous. Boulder at 48.5'.
50		VPSS-6		80	1	0	0		GP	SANDY GRAVEL - Fine to coarse gravel, medium to coarse sand with some fine sand and trace silt, light gray-brown to orange-brown, very moist, very dense, micaceous (no odor).
60										
70										
80										
90										
100										

EBASCO ENVIRONMENTAL

B-4

PROJECT *Jet Propulsion Laboratory*
LOCATION *Seepage Pit No. 29*
GEOLOGIST *R. Tweidt*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *9/2/94 to 9/2/94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1137.6 Feet*
TOTAL DEPTH (ft) *60.5*
DEPTH TO WATER (ft) *Not Encountered*

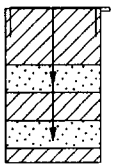
Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0									SP	ASPHALT pavement (3 inches thick). GRAVELLY SAND (FILL) - Fine to coarse gravelly, fine to medium sand with trace silt, orange-brown, damp to slightly moist, dense, micaceous. Occasional small fragments of red brick from 4.5' to 8'.
10		VPSS-7		100	1	0	0		GP	SANDY GRAVEL - Fine to coarse sandy gravel with occasional cobbles and trace silt, mottled gray-brown and orange-brown, slightly moist, very dense (no odor).
									SP	GRAVELLY SAND - Gravelly fine to coarse sand with cobbles, light orange brown to pale yellow-brown, slightly moist, dense.
20		VPSS-8		100	1	2	0		GP	SANDY GRAVEL - Fine to coarse sandy gravel with some silt and occasional cobble or decomposed granitic boulder, gray-brown and light to dark orange-brown, slightly moist, dense, (no odor). Numerous cobbles and small boulders from 25' to 34'.
30				0	2	-	0			
		VPSS-9		100	1.5	2	0		SP	SAND - Fine to coarse sand with some silt and occasional fine gravel, orange-brown, slightly moist, dense, micaceouse (no odor).
40		VPSS-10		100	2	0.5	0			Alternating thin lenses light gray-brown fine sand and dark orange-brown fine to coarse sand with some silt and fine gravel, moist, very dense, micaceous (no odor). Occassional cobbles and coarse gravel from 43' to 48'.
50		VPSS-11		100	4.5	0.5	0			SAND - Fine to coarse sand with occasional pieces fine gravel, orange-brown, slightly moist, trace mica (no odor).
60		VPSS-12		100	0	0	0		GP	SANDY GRAVEL AND GRAVELLY SAND - Alternating thin lenses fine to coarse sandy fine to coarse gravel and gravelly fine to coarse sand with some silt, very moist to wet, very dense, micaceouse, (no odor).
70										
80										
90										
100										

EBASCO ENVIRONMENTAL

B-5

PROJECT *Jet Propulsion Laboratory*
LOCATION *Seepage Pit No. 37*
GEOLOGIST *B.G. Randolph*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *9-3-94 / 9-3-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1126.8 Feet*
TOTAL DEPTH (ft) *12*
DEPTH TO WATER (ft) *Not Encountered*

Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0										ASPHALT pavement (3 inches thick).
									GP	Gravel base for pavement
									SP	GRAVELLY SAND - Fine gravelly fine to coarse sand with trace silt and coarse gravel, orange-brown to gray-brown, damp to slightly moist, dense.
10		VPSS-13		100	0	0	0		SM	SILTY SAND - Silty fine sand, dark gray-brown, slightly moist, micaceous.
									SP	SAND - Fine to medium sand with some silt, coarse sand and occassional pieces fine gravel, dark orange brown to dark gray-bronw, slightly moist, medium dense, trace mica and roots, (no odor).
										Boulder at 12', very hard. Refusal: 200 blows for 1/8-inch penetration.
20										
30										
40										
50										
60										
70										
80										
90										
100										

EBASCO ENVIRONMENTAL

B-6

PROJECT *Jet Propulsion Laboratory*
LOCATION *Seepage Pit No. 6*
GEOLOGIST *B.G. Randolph*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *9-4-94 / 9-5-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1137.5 Feet*
TOTAL DEPTH (ft) *100.5*
DEPTH TO WATER (ft) *Not Encountered*

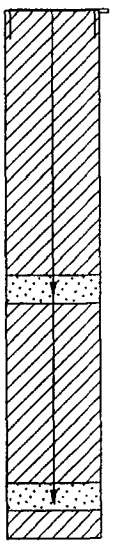
Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0									GP	ASPHALT pavement (4 inches thick). Gravel base for pavement.
									SP	SAND - Fine to coarse sand with some silt, fine gravel and occassional pieces coarse gravel, light orange- brown to light gray-brown, slightly moist, medium dense.
10		VPSS-14		100	0.5	0	0			Fine to coarse sand with some fine to coarse gravel and trace silt, dark orange-brown, moist, medium dense, trace mica (no odor).
									SP SM	SAND AND SILTY SAND - Alternating thin lenses fine to coarse sand with some silt and silty fine to coarse sand with occasional pieces of fine gravel, dark orange-brown, moist, medium dense, micaceous (no odor).
20		VPSS-15		100	0.7	0	0			
30		VPSS-16		100	0	0	0			Alternating thin lenses light gray fine to coarse sand with some fine gravel, pale yellowish-brown silty fine to medium sand and dark orange-brown silty fine to medium sand with occasional pieces fine gravel, all very moist, medium dense, micaceous (no odor).
40					0.5	-	0		GP	GRAVELLY COBBLES AND BOULDERS - Granitic and granodioritic rock fragments with some fine gravel and sand 39' to 47.5'.
				0	-	-	-			
				0	-	-	-			
		VPSS-17		80	0.5	0.5	0		GM	SILTY SANDY GRAVEL - Silty fine to coarse sandy gravel with trace clay, mottled dark orange-brown, gray-brown, and pale yellowish-brown, moist, dense, micaceous (no odor).
50		VPSS-18		100	0.5	0	0			
									SP	SAND - Fine to medium sand with some coarse sand and fine gravel, dark orange-brown, moist, dense, micaceous.
60		VPSS-19		100	1	0.5	0		SP SM	SAND AND SILTY SAND - Alternating thin lenses light orange-brown fine to coarse sand with occasional pieces fine gravel and dark orange-brown silty fine sand, moist, very dense, micaceous (no odor).
									GP	SANDY GRAVEL - Fine to coarse sandy fine fine to coarse gravel, light orange-brown to pale yellowish- brown, slightly moist, very dense.
70		VPSS-20		90	0	0	0			Numerous cobbles and boulders from 66' to 93'.
										Fine to coarse sandy fine gravel with trace silt, light yellowish-brown to light brownish-gray, micaceous (no odor).
										Thin lenses of fine to coarse gravelly fine to coarse sand 75'to 78', pale yellowish-brown to orange-brown, micaceous.
80					0.5	-	0			
										Occasional thin lenses fine to coarse sand from 83' to 85.5'.
										Boulder at 85.5'.
90				0	0	-	0			
									SP GP	GRAVELLY SAND AND SANDY GRAVEL - Alternating lenses sandy fine to coarse gravel with some silt and occasional pieces coarse gravel, and gravelly fine to coarse sand; orange-brown with some gray-brown mottling, moist, very dense, micaceous.
100				0	0	-	0			(Granitic rock fragment plugged bit.)

EBASCO ENVIRONMENTAL

B-7

PROJECT *Jet Propulsion Laboratory*
LOCATION *Near Seepage Pit Nos. 7, 7A and 7B*
GEOLOGIST *R. Tweidt*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *9-5-94 / 9-8-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1115.8 Feet*
TOTAL DEPTH (ft) *60.5*
DEPTH TO WATER (ft) *59.5*

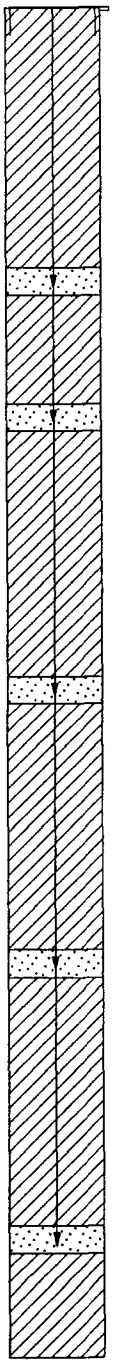
Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0										ASPHALT pavement (4 inches thick).
									SP	SAND (FILL) - Fine to medium sand with some silt and coarse sand, brown, damp, medium dense.
									SP	SAND - Fine to medium sand with some coarse sand and fine to coarse gravel and trace silt, pale brown to orange-brown, damp to slightly moist, dense, micaceous.
10					0	-	0			Sampler bouncing on rock at 9'. Numerous cobbles from 9' to 20'; occasional boulder.
20				0	0.5	-	0			(Fresh granitic rock plugged-off bit.) Numerous cobbles and boulders from 20' to total depth.
30		VPSS-21		100	1.5	1.5	0			Fine to coarse sand with some silt and fine gravel, orange-brown, moist (no odor).
40				25	0.5	-	0			Granitic rock fragments (no odor).
50		VPSS-22		100	1	4.5	0			Moist, very dense (no odor). Fine to medium sand with some silt, dark orange-brown.
60		VPSS-23		100	0.5	0.5	0			Encounter groundwater at 59.5' during sampling. Water level stabilized at 43.7' below ground surface.
70										
80										
90										
100										

EBASCO ENVIRONMENTAL

B-8

PROJECT: Jet Propulsion Laboratory
LOCATION: Waste Pit Area No. 3
GEOLOGIST: R. Tweidt / B.G. Randolph
DRILLING CO: Beylik Drilling
DATE (start/finish): 9-8-94 / 9-9-94

DRILLING METHOD: Dual-wall air percussion
SAMPLING METHOD: 2 1/2-inch split-spoon
SURFACE ELEVATION: 1256.6 Feet
TOTAL DEPTH (ft): 101.5
DEPTH TO WATER (ft): Not Encountered



Depth (ft)	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0								SM	ASPHALT pavement (3 inches thick). SILTY SANDY SILT - Silty fine to medium sand with some fine gravel, dark yellowish brown, damp, dense, micaceous.
10	VPSS-24		100	0	0.5	0			(No odor.)
20	VPSS-25		100	0	2	0		SP	SAND - Fine to medium sand with some coarse sand and fine gravel and trace silt, yellowish-brown to orange-brown, slightly moist, dense, micaceous (no odor). Occasional cobble 21' to 28'.
30	VPSS-26		100	1	1.5	0			(No odor.)
								SM	SILTY SAND - Silty fine to medium sand with some fine gravel, yellowish brown to orange-brown, moist, dense.
40	VPSS-27		100	0	1	0			(No odor.)
50	VPSS-28		100	0	3	0			(No odor.) Granitic boulder from 51' to 54'.
60			0	1	-	0			(Fresh granitic rock plugged bit.)
	VPSS-29		85	0	0	0			(No odor.)
70			0	0	-	0		SP GP	GRAVELLY SAND AND SANDY GRAVEL - Alternating lenses gravel fine to coarse sand and sandy fine to coarse gravel with some silt and cobbles, light to dark orange-brown, slightly moist, medium dense, micaceous. Boulder at 70'. Numerous cobbles and small boulders 72' to 77'.
80	VPSS-30		80	0	0	0			Gravelly fine to coarse sand with trace silt, orange-brown, (no odor).
90			10	1	0.5	0			Sandy fine to coarse gravel. Silty sandy gravel, micaceous. Boulders from 93.5' to 95.5'.
100	VPSS-31		100	1	0	0			Fine gravelly fine to coarse sand, mottled pale yellowish- brown, orange-brown, dark brownish-gray and pale grayish- white, slightly moist, very dense (no odor).

EBASCO ENVIRONMENTAL

B-9

PROJECT *Jet Propulsion Laboratory*
LOCATION *Seepage Pit No. 19*
GEOLOGIST *B.G. Randolph*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *9-10-94 / 9-11-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1230.8 Feet*
TOTAL DEPTH (ft) *90*
DEPTH TO WATER (ft) *Not Encountered*

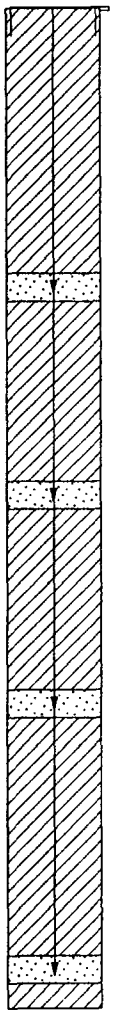
Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0									GP	ASPHALT pavement (4 inches thick).
										Gravel base for pavement.
									SP	SAND (FILL) - Fine to coarse sand with some fine gravel, orange-brown, slightly moist, medium dense, micaceous.
									SP	SAND - Gravelly fine to coarse sand with trace silt, orange-brown, slightly moist, medium dense, micaceous.
10		VPSS-32		100	0	0	0			Fine to coarse sand with some silt (no odor).
										Cobbles at 16'.
20		VPSS-33		100	0	1	0			Occasional pieces fine to coarse gravel. (No odor.)
		VPSS-34							GP	SANDY GRAVEL - Fine to coarse sandy fine to coarse gravel with trace silt, slightly moist, very dense.
										Cobbles from 28' to 32'.
30				10	0.5	-	0			Granitic and dioritic rock fragments with some orange-brown sand matrix, slightly moist, very dense.
										Boulders from 33.5' to 37'.
40		VPSS-35		80	0	0	0			Numerous cobbles from 38' to 47'.
										Gravel with some fine to medium sand and trace silt.
		VPSS-36		100	0	0	0			*Decomposed granite, very highly weathered, pale pink with some dark green specks, moist, very dense, trace mica (no odor).*
50		VPSS-37		100	0	0	0		SP	GRAVELLY SAND - Gravelly fine to medium sand with some silt, mottled pale yellowish-brown, light orange-brown, and gray-brown, slightly moist, very dense, micaceous (no odor). Occasional cobbles from 53' to 56'.
60		VPSS-38		100	0	0.5	0			Decomposed granitic and granodioritic rock, mottled pale yellowish-brown, orange-brown and light gray-brown, slightly moist, very dense (no odor). Boulder from 60' to 66'.
									GP	SANDY GRAVEL - Fine to coarse sandy gravel with cobbles and trace silt, light yellow-brown to orange-brown and occasional gray-brown, slightly moist, very dense, trace mica.
70				0	0	-	0			From 71' to 80', cuttings include sandy fine gravel, fragements of fresh and highly weathered granite, and walnut-size pieces of laminated fine sandy silt with traces of clay.
80		VPSS-39		80	1	0	0			Decomposed granitic rock (equavilent to a SP soil type), pale yellowish-white to gray-brown and dark orange-brown, trace of clay in weathered rock, moist (no odor).
									GP GM	Rock fragments are highly weathered granitic and dioritic from 84' to 90'. Occasional thin (1 to 2 inches thick) lenses of silty fine sand with trace of clay from 86' to 90', moist, micaceous.
90				0	0	-	0			Sampler bouncing on large boulder, 8 blows for 1/2-inch penetration. Terminate boring.
100										

EBASCO ENVIRONMENTAL

B-10

PROJECT *Jet Propulsion Laboratory*
LOCATION *Seepage Pit No. 30*
GEOLOGIST *B.G. Randolph*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *9-12-94 / 9-13-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1232.8 Feet*
TOTAL DEPTH (ft) *72*
DEPTH TO WATER (ft) *Not Encountered*

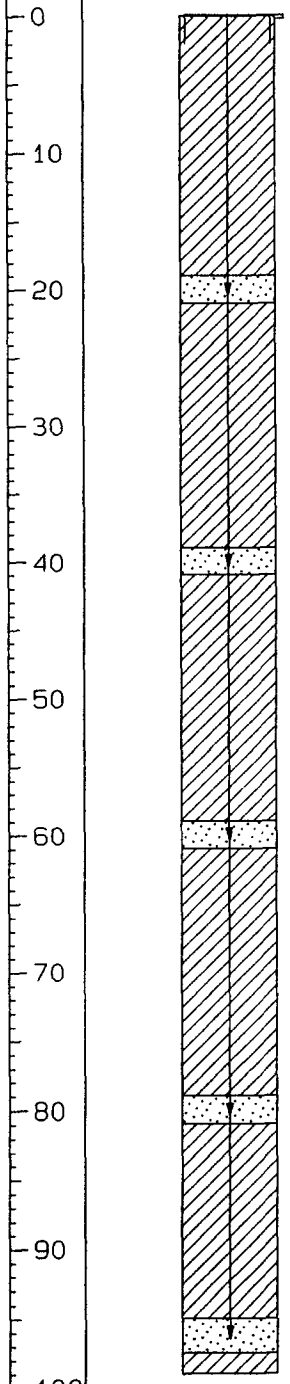
Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0									GM	ASPHALT pavement (4 inches thick). Gravel base for pavement.
									SM	SILTY SAND (FILL) - Silty fine to coarse sand with occasional silty fine gravel, dark orange-brown, moist, medium dense, micaceous. Occasional pieces coarse gravel from 5' to 8'. Fine roots materials at 8.5'.
10		VPSS-40		100	0	0	0		SP	SAND - fine to medium sand with some silt and occasional coarse sand, orange-brown, slightly moist, medium dense, trace mica, (no odor).
										Occasional pieces fine gravel from 16' to 25'. Silt content decreasing.
20		VPSS-42 VPSS-41		100	0	0	0			Fine to coarse sand with some silt and occasional pieces fine gravel, micaceous (no odor).
									SP SM	SAND AND SILTY SAND - Alternating thin lenses fine to coarse sand with trace silt an silty fine to medium sand with occasional pieces coarse sand, fine gravel, and traces of clay, moist, medium dense, micaceous.
30		VPSS-43		100	0	0	0		ML CL	SILT AND CLAY - Light gray-brown fine sandy silt with trace clay, moist, micaceous, firm to very firm; and light to dark gray-brown clayey silt, dry to damp, very hard (no odor).
									SM GM	SILTY SAND AND SILTY GRAVEL - Alternating thin lenses silty fine to coarse sand with some fine gravel, and sitly sandy fine to coarse gravel, pale yellowish-brown to orange-brown to gray-brown, slightly moist, dense, micaceous. Cobbles at 36'.
40		VPSS-44		100	0	0	0		ML CL	CLAYEY SILT - Fine sandy clayey silt with occasional coarse sand and fine gravel, mottled orange-brown and gray-brown, damp to slightly moist, hard to very hard, trace mica (no odor).
									SP GP	GRAVELLY SAND AND SANDY GRAVEL - Alternating thin lenses gravelly fine to coarse sand with some silt and fine to coarse sandy gravel with occasional cobbles and trace silt, light orange-brown to pale gray-brown, slightly moist, dense, micaceous.
50		VPSS-45		80	0	0	0			Silty fine to coarse sand, mottled pale yellowish-gray, dark brown-gray, and pale orange-brown (no odor).
									GM	SILTY SANDY GRAVEL - Fine to medium sandy gravel with some silt and coarse sand, slightly moist, very dense, very micaceous.
										Cobbles and boulder from 57' to 59.5'.
60		VPSS-46		100	0	0	0			Silty sandy fine to coarse gravel, mottled pale yellowish-brown, light gray, light to dark orange-brown, and dark brownish-gray, damp to slightly moist, very dense, micaceous (no odor).
										Cobbles and boulders from 63' to 69.5'.
70		VPSS-47		100	0	0	0		SP GM	SAND AND SILTY GRAVEL - Fine to coarse sand with trace silt and clay and silty fine to coarse sandy fine gravel with trace clay; mottled dark orange-brown, pale yellowish-brown, orange-brown and dark gray-brown; slightly moist, very dense (no odor).
										Boulder at 71.5', very hard. Refusal at 72' (800 blows for 6 inches penetration).
80										
90										
100										

EBASCO ENVIRONMENTAL

B-11

PROJECT *Jet Propulsion Laboratory*
LOCATION *Seepage Pit No. 17*
GEOLOGIST *B.G. Randolph*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *9-17-94 / 9-18-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1193.1 Feet*
TOTAL DEPTH (ft) *100*
DEPTH TO WATER (ft) *Not Encountered*



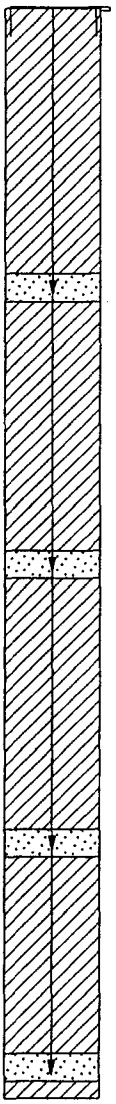
Depth (ft)	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0								GP	ASPHALT pavement (4 inches thick).
									Gravel base for pavement.
								SP	SAND - Fine to medium sand with some coarse sand and trace silt, orange-brown, slightly moist, medium dense, trace mica.
									Occasional pieces fine gravel.
10	VPSS-48		100	0	0	0			Micaceous (no odor).
									Some fine gravel from 16' to 20'.
20	VPSS-49		100	0	0	0			Fine to coarse sand with trace silt and occasional pieces fine gravel, dark orange-brown, (no odor).
									Becoming dense at 24'; slight increase in silt content.
30	VPSS-50		100	0	0	0			Fine to coarse sand with some silt and trace fine gravel, orange-brown, moist, dense (no odor).
									Occasional pieces fine and coarse gravel from 33' to 55'.
40	VPSS-51 VPSS-52		100	0	0	0			Medium to coarse sand with some fine sand and trace silt, pale yellowish-brown to light orange-brown, trace mica (no odor).
50	VPSS-53		100	0	0	0			Fine to coarse sand with trace silt, dark orange-brown.
								GP	SANDY GRAVEL - Fine to coarse sandy fine to coarse gravel with cobbles, boulders and trace silt, pale yellowish-brown, paly gray, and dark orange-brown, damp to slightly moist, very dense.
60			0						Granitic rock fragements with sandy soil matrix.
								SP	GRAVELLY SAND - Fine gravelly fine to coarse sand with trace silt, orange-brown, slightly moist, very dense, micaceous.
	VPSS-54		100	0	0	0			(No odor.)
70	VPSS-55		100	0	0.5	0			(No odor.) Boulder from 73.5' to 70'.
								GP GM	SANDY GRAVEL - Silty fine to medium sandy gravel with cobbles and small boulders, light yellowish-brown to mottled pale yellowish-brown and dark brown-gray, damp to slightly moist, very dense, micaceous.
80			20						Granitic rock fragments with trace silty fine sand soil matrix (no odor).
									Occasional thin lenses silty fine to medium sand from 82' to 93', dark orange-brown, micaceous.
									Numerous cobbles from 83' to 88'.
90			0						(Lost sample during retrieval.)
								SP	GRAVELLY SAND - Fine gravelly fine to medium sand with some coarse sand, orange-brown, slightly moist, very dense, micaceous.
								GP	SANDY GRAVEL - Fine to coarse sandy gravel with trace silt, pale yellowish-brown to dark orange-brwon, slightly moist to moist, very dense, micaceous (no odor).
100	VPSS-57		90	0	0	0			

EBASCO ENVIRONMENTAL

B-12

PROJECT *Jet Propulsion Laboratory*
LOCATION *Waste Pit Area No. 2*
GEOLOGIST *B.G. Randolph*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *9-19-94 / 9-19-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1097.9 Feet*
TOTAL DEPTH (ft) *81*
DEPTH TO WATER (ft) *Not Encountered*

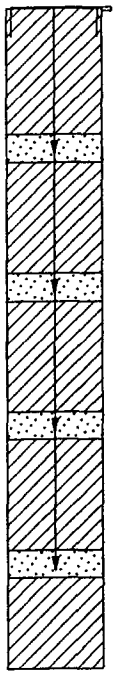
Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0									SP	Asphalt pavement (3-inches thick).
										GRAVELLY SAND (FILL) - Gravelly fine to coarse sand with trace silt, dark orange-brown, moist, medium dense, micaceous.
										Coarse gravel and cobbles from 7' to 8.5'.
10		VPSS-58		80	0	0	0			Traces of fine roots (no odor).
				0	0	-	-		GP	SANDY GRAVEL - Fine to coarse sandy fine to coarse gravel with trace silt, pale yellowish-brown and orange-brown, slightly moist, very dense, micaceous.
				0	0	-	0			Numerous cobbles and boulders from 15' to 24'.
20										
		VPSS-59		100	0	0	0			(No odor).
30										
		VPSS-60		100	0	0	0		SP	GRAVELLY SAND - Fine to coarse gravelly fine to coarse sand with trace silt, mottled pale yellowish-brown and orange-brown with dark gray-brown, slightly moist, very dense, micaceous.
										(No odor).
										Cobbles from 36.5' to approximately 38.5'.
40		VPSS-61		100	0	0	0			(No odor).
									SP GP	GRAVELLY SAND AND SANDY GRAVEL - Alternating thin lenses gravelly fine to coarse sand with trace silt, and fine to coarse sandy gravel with occasional cobbles or small boulders; yellowish-brown to orange-brown, slightly moist, very dense, micaceous.
50				20	0	-	0			Granitic and dioritic rock fragments with trace silty fine to medium sand as soil matrix (no odor).
									SP	GRAVELLY SAND - Fine gravelly fine to coarse sand with trace silt and occasional coarse gravel and cobbles, orange-brown, moist, dense, micaceous.
60		VPSS-62		100	0	0	0			Mottled orange-brown and gray-brown, slightly moist.
										Moist at 64'.
70		VPSS-63		100	0	0	0			Fine to medium sand with some coarse sand and occasional pieces fine gravel, yellowish-brown to dark orange-brown, moist.
										Becoming more moist at approximately 77'. Gravelly fine to coarse sand with trace silt.
80				20	0	0	0			Granitic rock fragments with trace silty fine to medium sand as soil matrix, very moist, (no odor).
										In capillary fringe; terminate boring.
90										
100										

EBASCO ENVIRONMENTAL

B-13

PROJECT *Jet Propulsion Laboratory*
LOCATION *West end of Building 197*
GEOLOGIST *B.G. Randolph*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *9-20-94 / 9-21-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1239.2 Feet*
TOTAL DEPTH (ft) *48*
DEPTH TO WATER (ft) *Not Encountered*

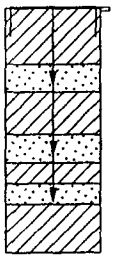
Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0									GP	Asphalt pavement (3-inches thick). Base materials for pavement. GRAVELLY SAND AND SANDY GRAVEL (FILL) - Gravelly fine to coarse sand with trace silt and fine to coarse sandy fine gravel, orange-brown, slightly moist, medium dense.
									SP	
									GP	
10		VPSS-64		100	0	0	0		GP	SANDY GRAVEL - Fine to coarse sandy fine to coarse gravel, light gray-brown and orange-brown, slightly moist, medium dense to dense, micaceous (no odor).
									SP	GRAVELLY SAND - Fine to coarse sandy fine to coarse gravel; light gray-brown and orange-brown, slightly moist, medium dense to dense, micaceous.
									SP	GRAVELLY SAND AND SANDY GRAVEL - Alternating lenses of gravelly fine to coarse sand with some silt, and fine to medium sandy fine gravel with some silt and trace clay; mottled light yellowish-brown, orange-brown and gray-brown, slightly moist, to moist, medium dense to dense, some mica (no odor).
20		VPSS-65		100	0	0	0		GP	
									GM	SILTY SANDY GRAVEL - Silty fine to medium sandy fine to coarse gravel with trace clay and occasional cobbles, light yellow-brown to orange-brown, slightly moist to moist, dense, micaceous.
									SP	GRAVELLY SAND - Gravelly fine to medium sand with some silt and trace clay, mottled light yellow-brown and orange-brown, slightly moist to moist, very dense, micaceous (no odor).
30		VPSS-66		100	1.5	0	0		GP	
										Cobbles at 38'.
40				0	0	-	0		GR	GRANITIC ROCK - Highly weathered fine-grained grainitc / granodioritic rock; nearly decompossed at contact and increases in hardness with depth.
50										
60										
70										
80										
90										
100										

EBASCO ENVIRONMENTAL

B-14

PROJECT *Jet Propulsion Laboratory*
LOCATION *Seepage Pit No. 33*
GEOLOGIST *B.G. Randolph*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *9-22-94 / 9-22-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1213.0 Feet*
TOTAL DEPTH (ft) *18*
DEPTH TO WATER (ft) *Not Encountered*

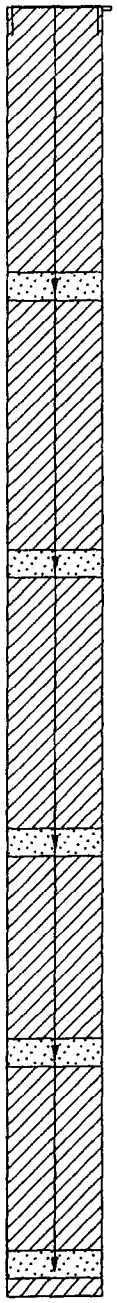
Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0										Asphalt pavement (3-inches thick).
									GP	Base material for pavement.
									SP	SAND (FILL) - Fine to coarse sand with trace silt, some fine gravel and occasional cobbles; gray-brown to orange-brown, slightly moist, mdeium dense, micaceous.
									SM	SILTY SAND AND SAND - Alternating thin layers dark orange-brown silty fine to medium sand and dark orange-brown fine to coarse sand with trace silt, occasional fine root holes, slightly moist to moist, medium dense, micaceous.
									SP	(Slight hydrocarbon odor.)
10		VPSS-67		100	0	100	0			
									GP	GRAVEL - Fine to coarse sandy gravel with cobbles and trace silt, light yellow-brown to orange-brown, damp to slightly moist, very dense.
					310	5	0		GR	Boulder from 14.5' to 16'.
20										GRANITIC ROCK - Moderately weathered fine-grained granitic/granodioritic rock; became very hard after 1.5 feet of penetration. Refusal at 18' (800 blows for last 2.5-inches penetration).
30										
40										
50										
60										
70										
80										
90										
100										

EBASCO ENVIRONMENTAL

B-15

PROJECT *Jet Propulsion Laboratory*
LOCATION *Seepage Pit No. 16*
GEOLOGIST *B.G. Randolph*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *9-24-94 / 9-24-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1123.5 Feet*
TOTAL DEPTH (ft) *95*
DEPTH TO WATER (ft) *Not Encountered*

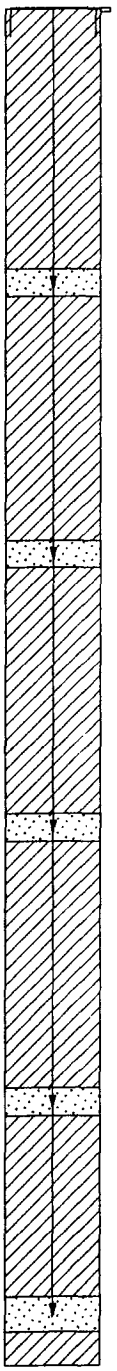
Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0									GP	Asphalt pavement (4-inches thick).
										Gravel base for pavement.
									SP	SAND - Fine to coarse sand with some fine gravel and trace silt, orange-brown, slightly moist, medium dense, micaceous.
10		VPSS-68		80	0	0	0		SP	GRAVELLY SAND - Fine to coarse gravelly fine to coarse sand with occasional cobble, light yellow-brown to orange-brown, slightly moist, dense, micaceous.
										(No odor.)
				0	0	0	0			(Rock plugged sampler bit.)
20		VPSS-69		100	0	0	0			Gravelly fine to coarse sand with trace silt, orange-brown, moist, medium dense (no odor).
										Alternating thin lenses fine to coarse sand with some fine gravel and trace silt, and fine to coarse sand with some silt from 25' to 38'; orange-brown, very moist, medium dense, micaceous.
30		VPSS-70		100	0	0	0			Very moist to wet (no odor).
40				0	0	-	0		GP	SANDY GRAVEL - Fine to coarse sandy gravel with some silt, orange-brown, moist to very moist, very dense, micaceous.
									SP	GRAVELLY SAND - Fine to coarse gravelly fine to coarse sand with trace silt, very moist, dense, micaceous. Occasional cobbles from 48' to 54'.
50				0	0	-	0		GP	SANDY GRAVEL - Fine to coarse sandy fine to coarse gravel with trace silt, orange-brown to gray-brown, slightly moist, very dense, micaceous.
		VPSS-71		100	0	0	0		SP GP	GRAVELLY SAND AND SANDY GRAVEL - Alternating thin layers orange-brown fine to coarse gravelly fine to coarse sand with trace silt and orange-brown fine to coarse sandy gravel with cobbles and trace silt, slightly moist to moist, dense to very dense, micaceous.
60		VPSS-72		100	0	0	0			Fine gravelly fine to coarse sand, light yellowish-brown, slightly moist (no odor).
										Cobbles from 63' to 65.5'.
70		VPSS-73		85	0	0	0			Granitic rock fragments from gravel/cobbles, light orange-brown, dry, hard (no odor).
										Becoming less gravelly, more sandy (fine to medium sand).
80		VPSS-74		100	0	0	0		SP	SAND - Fine to coarse sand with trace silt, some fine to coarse gravel; orange-brown, moist, very dense, micaceous. (No odor).
									GP	SANDY GRAVEL - Fine to coarse sandy gravel with occasional cobble and trace silt, orange-brown with some gray-brown mottling, moist, very dense, micaceous.
90				0	0	-	0			Fine gravelly fine to coarse sand from 87.5' to 90', orange-brown, moist, dense. (Granitic rock plugged bit.) Very gravelly from 91.5' to 94'.
										Granitic boulder at 94'. Refusal at 95' (200 blows for 1/8-inch penetration).
100										

EBASCO ENVIRONMENTAL

B-16

PROJECT *Jet Propulsion Laboratory*
LOCATION *Seepage Pit Nos. 20 and 21*
GEOLOGIST *B.G. Randolph*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *9-28-94 / 9-29-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1199.2 Feet*
TOTAL DEPTH (ft) *101.5*
DEPTH TO WATER (ft) *Not Encountered*

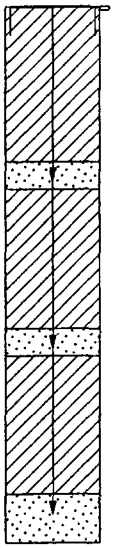
Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0									GP	Asphalt pavement (3-inches thick).
										Gravel base for pavement.
									SP	GRAVELLY SAND (FILL) - Gravelly fine to coarse sand with trace silt, dark orange-brown, slightly moist, medium dense, micaceous.
									GP	
									GP	SANDY GRAVEL - Fine to coarse sandy gravel with cobbles and trace silt, mottled light yellow-brown, light gray-brown and dark orange-brown, slightly moist, dense.
10				20	0	1.5	0			Granitic rock fragments and trace sandy soil matrix (no odor).
									SP	SAND - Fine to coarse gravelly sand with trace silt, dark orange-brown, slightly moist to moist, dense, micaceous.
20		VPSS-75		100	0	0	0			
		VPSS-76								Fine to coarse sand with some fine gravel, orange-brown, dense (no odor).
										Occasional cobbles from 25' to 48'.
30		VPSS-77		100	0	0	0			Fine to medium sand with some coarse sand and silt, moist, (no odor).
										Gravelly from 35' to 38'.
										Occasional thin lenses silty fine sand, dark orange-brown, very moist, from 38' to 43'.
40		VPSS-78		100	0	0	0			(No odor.)
									SP	GRAVELLY SAND AND SILTY SAND - Alternating thin lenses fine gravelly fine to coarse sand with trace silt, and silty fine to medium sand; dark orange-brown, moist to very moist, dense, micaceous. (No odor.)
									SM	
50		VPSS-80		100	0	0	0			
		VPSS-79							SP	SAND - Fine to coarse sand with some silt and fine gravel, dark orange-brown, moist, dense, micaceous.
60		VPSS-81		100	0	0	0			Mottled gray-brown and dark orange-brown, very moist, (no odor).
										Occasional small cobbles from 62' to 65'.
									SM	SILTY SAND - Silty fine to medium sand, mottled dark orange-brown and gray-brown, moist, dense, micaceous.
70		VPSS-82		100	0	0	0		SP	SAND - Fine to medium sand with some fine to coarse gravel and trace silt, mottled gray-brown and orange-brown, moist, very dense, micaceous (no odor).
										Gravelly from 72' to 74'.
										Granitic boulder at 74.5'.
80		VPSS-83		100	0	0	0			Alternating thin lenses fine sand with some silt and fine to coarse sand with some fine to coarse gravel, orange-brown, very dense.
										(No odor).
										Occasional small cobbles from 82' to 90'.
90		VPSS-84		100	0	0	0			Fine to coarse sand with some silt and fine gravel, mottled dark orange-brown and reddish-brown, moist, very dense, micaceous (no odor).
									SM	SILTY SAND - Silty fine to medium sand, dark reddish-brown, moist, very dense.
										Cobbles from 97' to 98'.
100		VPSS-85		100	0	0	0			Wet (No odor).

EBASCO ENVIRONMENTAL

B-17

PROJECT *Jet Propulsion Laboratory*
LOCATION *Seepage Pit No. 34*
GEOLOGIST *B.G. Randolph*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *9-30-94 / 9-30-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1214.1 Feet*
TOTAL DEPTH (ft) *40*
DEPTH TO WATER (ft) *Not Encountered*

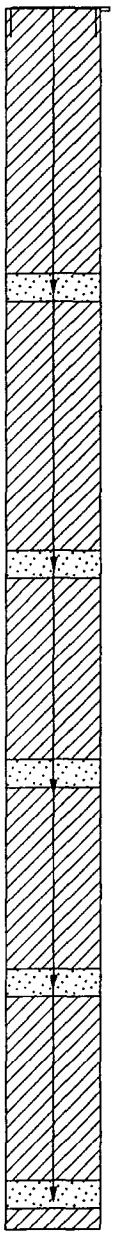
Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0									SP	*Asphalt pavement (3-inches thick).* SAND - Fine to coarse sand with some fine to coarse gravel and silt, orange-brown, damp, medium dense, micaceous.
10				0	0	-	0		SP GP	GRAVELLY SAND - Fine to coarse gravelly sand with trace silt, light yellow-brown to orange-brown, dry to damp, medium dense to dense, micaceous. (Sample lost during retrieval.)
				0	0	-	0		GP	SANDY GRAVEL - Sandy fine to coarse gravel with cobbles, orange-brown and gray-brown, damp, very dense. Numerous cobbles from 15' to 31'.
20		VPSS-86		60	0	0	0			(No odor.)
		VPSS-87		80	0	0	0			More sandy at 25.5'. Soil matrix in gravel is fine sandy clayey silt, dark orange-brown and gray-brown, very moist.
30				0	0	4*	0			4* ppm in hole after pulling up 10'. Dioritic boulders from 31' to 40' with gravelly sand in matrix.
40										Terminate boring in dioritic boulder (400 blows for last 2-inches of penetration).
50										
60										
70										
80										
90										
100										

EBASCO ENVIRONMENTAL

B-18

PROJECT *Jet Propulsion Laboratory*
LOCATION *Mariner Road - West side of Bldg. 306*
GEOLOGIST *R. Tweidt*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *10-1-94 / 10-2-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1109.4 Feet*
TOTAL DEPTH (ft) *89.5*
DEPTH TO WATER (ft) *Not Encountered*

Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0									GP	Asphalt pavement (3-inches thick).
										Gravel base for pavement.
									SM	SILTY SAND (FILL) - Silty fine to medium sand, dark gray-brown, moist, medium dense (several small pieces wood fragments in cuttings).
									SP	GRAVELLY SAND (FILL?) - Fine to medium sand with some coarse sandy fine gravel, light brownish gray, slightly moist, medium dense, (no odor).
10		VPSS-88		100	0	0	0		ML	SILT - Fine sandy silt, dark gray-brown, slightly moist, firm (no odor).
									SP	SAND - Fine to medium sand with some coarse sand and fine gravel, light yellowish-brown, slightly moist, medium dense, (no odor). Small boulder at 11'. Becoming more gravelly at 17.5'. Numerous cobbles from 19' to 23'.
20				0	0	-	0			
									SM	SILTY SAND - Silty fine sand with trace medium sand, yellowish-brown, slightly moist, medium dense, micaceous (no odor).
									SP	GRAVELLY SAND - Fine to coarse gravelly fine to medium sand with some coarse sand, yellowish-brown, slightly moist, dense.
30				0	0	-	0			Cobbles at 30.5'.
		VPSS-89		100	0	0	0			Very dense, micaceous (no odor).
										Numerous cobbles from 36' to 44'.
40				0	0	-	0			
		VPSS-90		100	0	0	0		SP	SAND - Fine to medium sand with trace coarse sand, yellowish-brown, slightly moist, dense, micaceous (no odor).
50		VPSS-91		100	0	0	0			Very dense (no odor).
										Gravelly from 53' to 56'.
										Becoming less dense at 56'.
										Occasional pieces fine gravel from 58' to 78'.
60		VPSS-92		100	0	0	0			Dense, (no odor).
70		VPSS-93		100	0	0	0			(No odor).
									SP	GRAVELLY SAND - Fine to coarse gravelly fine to medium sand with some coarse sand and trace silt, slightly moist, very dense (no odor).
80				0	0	0	0		GP	Numerous cobbles and boulders from 80.5' to 89.5'.
90										Refusual at 89.5' (100 blows for 1/16-inch penetration).
100										

EBASCO ENVIRONMENTAL

B-19

PROJECT *Jet Propulsion Laboratory*
LOCATION *Seepage Pit Nos. 23 and 24*
GEOLOGIST *B.G. Randolph*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *10-3-94 / 10-3-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1196.3 Feet*
TOTAL DEPTH (ft) *46*
DEPTH TO WATER (ft) *Not Encountered*

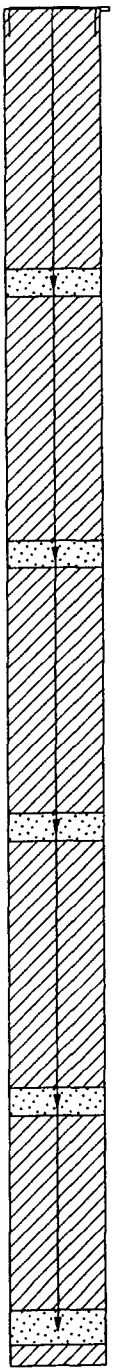
Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0	Soil-Vapor Well Not Installed								GP	Asphalt pavement (3-inches thick).
										Gravel base for pavement.
									SP	SAND - Fine to medium sand with trace coarse sand and fine gravel, orange-brown, slightly moist, dense, micaceous. Becoming gravelly at 6.5'.
									GP	SANDY GRAVEL - Gravelly fine to coarse sand with trace silt, mottled pale yellowish-brown, pale gray-brown and dark orange-brown, moist, dense, micaceous (no odor).
10				100	0	0	0			Numerous cobbles from 12' to 23'.
20				0	0	-	0			Sampler on boulder at 20': 5 blows for zero penetration.
									SP	GRAVELLY SAND - Gravely fine to coarse sand with some silt and occasional cobbles, orange-brown, moist, dense, micaceous.
									GM	SILTY SANDY GRAVEL - Silty fine to coarse sandy fine gravel, dark orange-brown, saturatued, dense micaceous, (no odor).
30				100	0	0	0		SM	SILTY SAND - Silty fine to coarse snad with some fine gravel, dark orange-brown, moist to very moist, dense, micaceous.
									GM	SILTY SANDY GRAVEL - Silty fine to coarse sandy fine to coarse gravel, dark orange-brown, moist to very moist, dense, micaceous.
40				0	0	-	0			Sampler on boulder at 40' (6 blows for 1/2-inch penetration).
									SM GM	SILTY SAND AND SANDY GRAVEL - Alternating thin lenses silty fine to medium sand, fine to coarse sand with fine gravel, and silty fine to coarse sandy fine to coarse gravel with occasional cobbles; orange-brown to dark orange-brown, moist, dense to very dense, micaceous.
50										Refusal at 46' (600 blows for 1/2-inch penetration).
60										
70										
80										
90										
100										

EBASCO ENVIRONMENTAL

B-19A

PROJECT *Jet Propulsion Laboratory*
LOCATION *Seepage Pit Nos. 23 and 24*
GEOLOGIST *B.G. Randolph*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *10-4-94 / 10-4-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1196.4 Feet*
TOTAL DEPTH (ft) *101*
DEPTH TO WATER (ft) *Not Encountered*



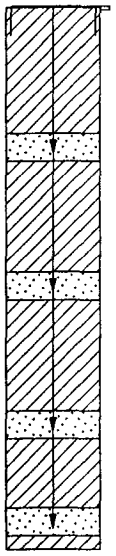
Depth (ft)	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0								GP	Asphalt pavement (3-inches thick). Gravel base for pavement.
								SP	SAND - Fine to medium sand with some coarse sand, fine gravel and trace silt, orange-brown, slightly moist to moist, dense, micaceous.
								SP	GRAVELLY SAND AND SANDY GRAVEL - Fine to coarse sand with fine gravel and sandy fine to coarse gravel with trace silt, orange-brown, slighlty moist to moist, dense, micaceous.
10								GP	SANDY GRAVEL - Gravelly fine to coarse sand with trace silt, mottled pale yellowish-brown, pale gray-brown, and dark orange-brown, slighlty moist to moist, dense, micaceous.
									Cobbly from 12.5' to 23'.
20	VPSS-96		100	0	0	0			(No odor.)
								SP	GRAVELLY SAND - Gravelly fine to coarse sand with some silt and occasional cobbles, orange-brown, moist, dense, micaceous.
30								GM	SILTY SANDY GRAVEL - Silty fine to coarse sandy fine gravel, dark orange-brown, wet, dense, micaceous.
								SM	SILTY SAND - Silty fine to coarse sand with some fine gravel, dark orange-brown, moist to very moist, dense, micaceous.
								GP	SILTY SANDY GRAVEL - Silty fine to medium sandy gravel with some coarse sand, dark orange-brown, moist to very moist, dense to very dense, micaceous.
								GM	Fine to coarse sandy gravel with some silt (no odor).
40	VPSS-97		100	0	0	0			Cobbles and boulders from 44' to 49'.
								GP	SANDY GRAVEL, COBBLES AND BOULDERS - Silty fine to medium sandy gravel, cobbles and boulders, soil matrix is orange-brown, moist, dense, micaceous.
50	VPSS-98		100	0	0	0		SM	GRAVELLY SILTY SAND - Fine to coarse gravelly silty fine to medium sand with some coarse sand, orange-brown, moist, very dense, micaceous (no odor).
								GM	*Alternating thin lenses* silty fine to medium sandy gravel and gravelly silty fine sand from 53' to 70'.
60	VPSS-99		100	0	0	0			(No odor.)
70	VPSS-100		100	0	0	0			Silty fine sandy gravel, orange-brown, moist, dense, micaceous (no odor).
								GP	SILTY SANDY GRAVEL AND COBBLES - Silty fine to medium sandy gravel with cobbles and boulders, soil matrix is orange-brown, moist, micaceous. Rock fragments are granitic and dioritic.
								GM	Boulder at 77'
80			20	0	-	0			Granitic rock fragments with fine to coarse sand soil matrix (no odor).
								SP	GRAVELLY SAND AND SANDY GRAVEL - Alternating lenses of fine to coarse gravelly fine to coarse sand with trace silt and fine to medium sandy fine gravel with trace coarse sand and silt, orange-brown, moist, very dense.
								GP	
90	VPSS-101		100	0	0	0			Micaceous (no odor).
									Very gravelly from 96' to 101'.
100	VPSS-102		80	0	0	0			(No odor.)

EBASCO ENVIRONMENTAL

B-20

PROJECT *Jet Propulsion Laboratory*
LOCATION *Seepage Pit No. 5*
GEOLOGIST *B.G. Randolph*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *10-13-94 / 10-13-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1142.7 Feet*
TOTAL DEPTH (ft) *41.5*
DEPTH TO WATER (ft) *Not Encountered*

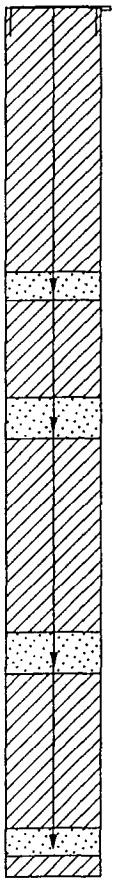
Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0									SP	Asphalt pavement (3-inches thick). SAND - Fine to coarse sand with trace fine gravel and silt, light to dark orange-brown, damp to slightly moist, medium dense, micaceous. *Occasional pieces coarse gravel from 5' to 18'.*
10		VPSS-114		100	0	1	0			Fine to coarse sand with trace silt and some fine gravel, dark brown and orange-brown, moist, dense, micaceous (no odor).
20		VPSS-115		100	0	0	0			Fine to medium sand with trace coarse sand and some silt, mottled ornage-brown and dark brown, very moist, dense, micaceous, (no odor). Occasional balls of silt with trace clay up to 2-inches in diameter from 25' to 29'.
30		VPSS-116		100	0	0	0		SM ML SP GP	SILTY SAND AND SANDY SILT - Alternating thin lenses of silty fine to medium sand with trace coarse sand, and fine sandy silt with trace clay; dark orange-brown, very moist, dense, micaceous (no odor). Becoming more sandy and gravelly. GRAVELLY SAND AND SANDY GRAVEL - Fine to coarse gravelly fine to coarse sand and sandy fine to coarse gravel with cobbles; orange-brown, moist, very dense, micaceous.
40				20	0	-	0			Granitic rock fragments, damp (no odor). Refusal at 41.5' (400 blows for 1/8-inch penetration).
50										
60										
70										
80										
90										
100										

EBASCO ENVIRONMENTAL

B-20A

PROJECT *Jet Propulsion Laboratory*
LOCATION *Mariner Road near Seepage Pit No. 5*
GEOLOGIST *B.G. Randolph*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *10-22-94 / 10-23-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1142.7 Feet*
TOTAL DEPTH (ft) *72*
DEPTH TO WATER (ft) *70' to 71'*

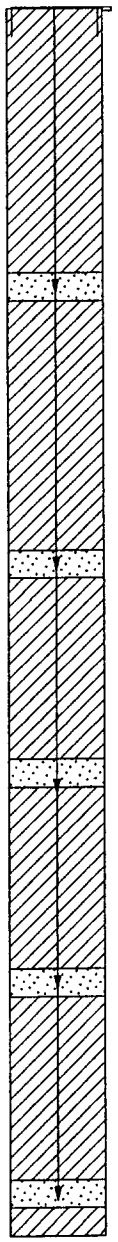
Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0									GP	Asphalt pavement (3-inches thick). Gravel base for pavement.
									SP	SAND - Fine to medium sand with trace silty coarse sand and fine gravel, dark orange-brown, moist, medium dense, micaceous.
										Occasional pieces coarse gravel from 7' to 10'.
10		VPSS-125		100	0	0	0		GP	SANDY GRAVEL - Fine to medium sandy gravel with small cobbles, light yellowish-brown and orange-brown, slightly moist, dense (no odor).
									SP	SAND - Fine to medium sand with trace silt and fine gravel, dark orange-brown, slightly moist to moist, dense, micaceous.
										Occasional pieces coarse gravel from 16' to 30'.
20		VPSS-126 VPSS-127		100	0	0	0			Dark orange-brown with trace of gray-brown mottling, moist (no odor).
										Cobble at 25'.
										Occasional thin lenses silty fine to medium sand from 26' to 30'.
30				20	0	-	0		GM	SILTY GRAVEL - Silty fine to coarse gravel with some fine to medium sand, dark orange-brown, very moist, dense, micaceous.
									GP	SANDY GRAVEL - Fine to coarse sandy fine to coarse gravel with occasional small cobbles and trace silt, dark orange- brown, moist, very dense, micaceous.
										Small granitic boulders at 37'.
40				20	0	-	0			Granitic rock fragments with trace of silty fine to medium sand soil matrix, damp to slightly moist.
										Granitic boulders at 43'
				20	0	-	0		SP	GRAVELLY SAND - Fine to coarse gravelly fine to coarse sand with trace silt, orange-brown, moist, dense, micaceous (no odor).
50		VPSS-128		100	0	0	0			Fine to coarse sand with some fine gravel and trace silt, pale brown to dark orange-brown.
										Gravelly from 57' to 63' with cobbles at 57'. Fragments of fresh and decomposed granitic rock (no odor).
60				20	0	-	0		GP	SANDY GRAVEL - Fine to coarse sandy fine to coarse gravel with cobbles; pale orange-brown, pale gray-brown and orange-brown; damp to slightly moist, very dense, micaceous.
									SP	GRAVELLY SAND - Fine gravelly fine to coarse sand with trace silt, dark orange-brown, slightly moist to moist, very dense, micaceous.
									GP	SANDY GRAVEL - Fine to medium sandy fine gravel with some coarse sand and coarse gravel, light orange-brown, slightly moist, very dense, micaceous (no odor).
70		VPSS-129		100	0	0	0			Saturated (no odor) at 72'; discharging water from borehole through cyclone. Water level stablizied at 63.95' below ground surface. Perched Groundwater encountered at approximately 70' to 71'.
80										
90										
100										

EBASCO ENVIRONMENTAL

B-21

PROJECT *Jet Propulsion Laboratory*
LOCATION *Near Seepage Pit No. 14*
GEOLOGIST *B.G. Randolph*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *10-8-94 / 10-9-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1127.1 Feet*
TOTAL DEPTH (ft) *90*
DEPTH TO WATER (ft) *Not Encountered*

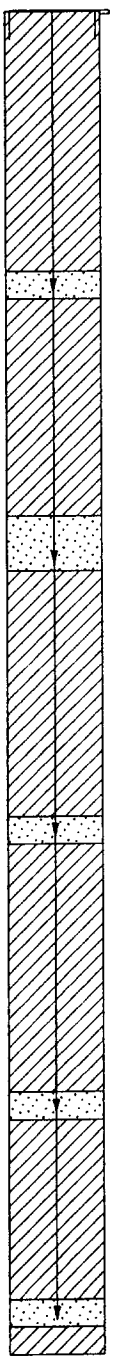
Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0									GP/SM	Crushed aggregate fill in tree planter. SILTY SAND (FILL) - Silty fine to medium sand, dark brown, mosit, loose, tree roots. Silty fine to medium sand with some coarse sand and trace fine gravel, light orange-brown, slightly moist, medium dense, micaceous.
10		VPSS-103		100	0	0	0		SP	SAND - Fine to medium sand with trace coarse sand, orange-brown, moist, dense, micaceous (no odor). Fine to coarse sand at 13'.
20		VPSS-104 VPSS-105		100	0	0	0			Fine to coarse sand with trace silt and fine gravel (no odor). Occasional pieces of coarse gravel from 22' to 32'.
30		VPSS-106		100	0	0	0			Fine to medium sand with trace coarse sand and trace fine gravel (no odor).
									GP	SANDY GRAVEL - Fine to coarse sandy gravel with cobbles and trace silt, light orange-brown, damp, dense. Several small granitic and granodioritic boulders from 35' to 38.5'.
40				0	0	-	0			Granitic and dioritic cobbles and small boulders from 39' to 49'.
50		VPSS-107		100	0	0	0			Fine sandy gravel with cobbles, orange-brown, slightly moist, very dense, micaceous (no odor).
									SP	GRAVELLY SAND - Fine to coarse gravelly fine to coarse sand trace silt and occasional cobbles, orange-brown, slightly moist to moist, dense, micaceous.
60		VPSS-108		100	0	0	0			Fine to coarse sand with fine gravel and small balls of fine sandy silt, very dense (no odor). Occasional cobbles from 61' to 67'.
				10	0	-	0		GP	SANDY GRAVEL - Fine to medium sandy fine to coarse gravel with cobbles and trace coarse sand, orange-brown, slightly moist, very dense.
70										Alternating lenses of gravelly fine to coarse sand with some silt, and fine to coarse sandy gravel with cobbles and boulders, light yellowish-brown to orange-brown to light gray, slightly moist to moist, very dense, micaceous.
80										Occasional thin lens fine to medium sand with fine gravel.
90										Boulder at 89'. Refusal at 90' (200 blows for 1/2-inch penetration).
100										

EBASCO ENVIRONMENTAL

B-22

PROJECT *Jet Propulsion Laboratory*
LOCATION *Seepage Pit No. 12*
GEOLOGIST *B.G. Randolph*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *10-11-94 / 10-12-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1129.0 Feet*
TOTAL DEPTH (ft) *100.5*
DEPTH TO WATER (ft) *Not Encountered*



Depth (ft)	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0								GP SP	Asphalt pavement (3-inches thick). Gravel base for pavement. SAND - Fine to medium sand with some coarse sand, trace silt and fine gravel, orange-brown, slightly moist, medium dense, micaceous. Some fine gravel from 4.5' to 7.5'.
10	VPSS-109		100	0	0	0			Fine to coarse sand with trace fine gravel and silt, dark orange-brown, slightly moist, medium dense, micaceous (no odor). Occasional pieces fine gravel from 13' to 20'.
20	VPSS-110 VPSS-111		100	0	0	0			Slighlty moist to moist (no odor). Occasional thin lenses fine gravelly sand from 22' to 28'. Occasional pieces coarse gravel from 26' to 28'.
30	VPSS-112		100	0	0	0			Mottled light and dark orange-brown with some fine gravel (no odor). Fine gravelly sand from 32' to 33'. Occasional pieces coarse gravel from 33' to 39'. Fine gravelly sand from 37' to 39'. Cobbles at 39'. Rock fragments in bit.
40			0	0	-	0		GP	GRAVEL - Fine to coarse gravel with some sand and numerous cobbles, light yellowish-brown to light orange-brown, damp, very dense, soil matrix is micaceous.
50	VPSS-113		100	0	0	0		SP	SAND - Fine to coarse sand with some fine gravel, orange-brown, moist, very dense, micaceous (no odor).
								SP GP	GRAVELLY SAND - Fine to coarse gravelly fine to medium sand with some silt and cobbles, mottled light to dark orange-brown with some gray-brown, slighlty moist to moist, very dense, trace mica. Granitic rock fragments (no odor).
60			20	0	-	0			
								GP	COBBLES AND BOULDERS WITH SANDY GRAVEL - Granitic and dioritic cobbles from 63' to 67'. Granitic boulder from 68' to 69.5'.
70				0	-	0			Cobbles and boulders from 70' to 79.5'. Gray-brown sandy silt soil matrix from 73' to 76'. Orange-brown silty sand matrix from 76' to 79.5'.
80				0	-	0			Granitic boulder from 79.5' to 83.5'. Cobbles and boulders from 83.5' to 86.5'. Fine to coarse sand matrix with fine to coarse gravel from 86.5' to 92.5'.
90			10	0	-	0			Granitic rock fragments with some fine to coarse sandy soil matrix (no odor).
								SP GP	GRAVELLY SAND AND SANDY GRAVEL - Fine gravelly fine to coarse sand with trace silt, and fine sandy fine to coarse gravel with cobbles; dark orange-brown to dark gray-brown, moist, very dense, micaceous.
100			0	0	-	0			

EBASCO ENVIRONMENTAL

B-23

PROJECT *Jet Propulsion Laboratory*
LOCATION *Waste Pit Area No.1*
GEOLOGIST *C. Kreller*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *10-17-94 / 10-17-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1094.6 Feet*
TOTAL DEPTH (ft) *20.5*
DEPTH TO WATER (ft) *Not Encountered*

Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0	Soil-Vapor Well Not Installed								SP	SAND - Fine to medium sand with trace coarse sand, light brown, and loose, micaceous.
			☒	20	0	-	0		GP	SANDY GRAVEL - Fine to medium sandy fine to coarse gravel with cobbles, light brown to orange-brown, slightly moist, dense, micaceous.
10			☒	10	0	-	0			Dioritic and grantic rock fragments at 5' (no odor).
										Granitic rock fragmens at 10' (no odor). Occasional thin lenses of fine to medium sand from 12' to 18'.
			☒	10	0	-	0			Numerous cobbles from 14' to 20'.
			☒	10	0	-	0			Granitic rock fragments at 15' and 17' (no odor).
20			☒	0	0	-	0			Refusal at 20.5' (200 blows for 1/2-inch penetration).
30										
40										
50										
60										
70										
80										
90										
100										

EBASCO ENVIRONMENTAL

B-23A

PROJECT *Jet Propulsion Laboratory*
LOCATION *Waste Pit Area No. 1*
GEOLOGIST *C. Kreller*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *10-18-94 / 10-18-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1094.8 Feet*
TOTAL DEPTH (ft) *26.5*
DEPTH TO WATER (ft) *23.5*

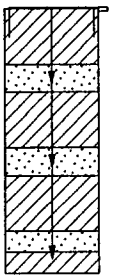
Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0	Soil-Vapor Well Not Installed			100	0	0.5	0		SP	SAND - Fine to medium sand with trace coarse sand, light brown, slightly moist, loose, micaceous (no odor).
				25	0	-	0		GP	SANDY GRAVEL - Fine to medium sandy fine to coarse gravel, pale yellowish-brown to orange-brown, damp to slighlty moist, very dense, micaceous soil matrix (no odor).
10				0	0	-	0			Numerous cobbles and boulders from 8' to 24'. (Sampler bouncing on rock; no penetration.)
20				10	0	0	0			Granitic rock fragments (no odor).
										Static groundwater level.
				100	0	0	0		SP	SAND - Fine to medium sand with traces of silt and coarse sand, light orange-brown, saturated, medium dense, micaceous (no odor).
30										Terminate boring at 26.5'; groundwater encountered during sampling and stablized at depth of 23.5'
40										
50										
60										
70										
80										
90										
100										

EBASCO ENVIRONMENTAL

B-23B

PROJECT *Jet Propulsion Laboratory*
LOCATION *Waste Pit Area No.1*
GEOLOGIST *C. Kreller*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *10-18-94 / 10-18-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1094.9 Feet*
TOTAL DEPTH (ft) *21*
DEPTH TO WATER (ft) *Not Encountered*

Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0									SP	SAND - Fine to medium sand with trace coarse sand, light brown, slightly moist, loose, micaceous.
									GP	SANDY GRAVEL - Fine to medium sandy fine to coarse gravel with numerous small cobbles, light orange-brown, damp to slightly moist, dense, micaceous soil matrix.
				25	0	-	0			
10				0	0	-	0			Granitic rock fragments (no odor).
				50	0	-	0			Decomposed granitic rock fragments (no odor).
20				20	0	-	0			Fresh granitic rock fragments (no odor).
30										
40										
50										
60										
70										
80										
90										
100										

EBASCO ENVIRONMENTAL

B-24

PROJECT *Jet Propulsion Laboratory*
LOCATION *Near Seepage Pit No. 15*
GEOLOGIST *B.G. Randolph*
DRILLING CO *Beylik Drilling*
DATE (start/finish) *10-15-94 / 10-16-94*

DRILLING METHOD *Dual-wall air percussion*
SAMPLING METHOD *2 1/2-inch split-spoon*
SURFACE ELEVATION *1125.0 Feet*
TOTAL DEPTH (ft) *100*
DEPTH TO WATER (ft) *Not Encountered*

Depth (ft)	Soil-Vapor Well Completion	Sample No.	Samples	% Recovery	OVA (ppm) Drill Pipe	OVA (ppm) Sample	OVA (ppm) Breath Zn	Lithology	USCS Symbol	Lithologic Description and Notes
0									GP	Crushed aggregate fill in tree planter
									SP	SAND (FILL) - Fine to medium sand with fine to coarse gravel, dark brown, moist, medium dense.
									SP	SAND - Fine to medium sand with some fine gravel, dark orange-brown, slightly moist, medium dense, micaceous.
10		VPSS-117		100	0	0	0			Occasional pieces coarse gravel from 7' to 9'.
										Fine to coarse sand with some fine gravel, light orange-brown, damp to slightly moist (no odor).
										Fine to medium sand with some coarse sand and trace silt and fine gravel, dark orange-brown, moist.
20		VPSS-118		100	0	0	0			Fine to coarse sand with some silt and fine gravel (no odor).
										Occasional pieces coarse gravel from 23' to 27'.
										Small cobbles at 27'.
30		VPSS-119		100	0	0	0			Fine to medium sand with trace silty fine sand, dark orange-brown to dark brown, dense (no odor).
									SP GP	SAND AND GRAVELLY SAND - Alternating thin lenses of fine to coarse sand with trace silt and fine gravel, and fine gravelly fine to coarse sand; light to dark orange-brown, moist, dense, micaceous.
40				0	0	-	0		GP	SANDY GRAVEL - Fine to coarse sandy fine to coarse gravel with cobbles, light orange-brown to dark orange-brown, moist, dense to very dense, micaceous.
									ML	SILT - Fine sandy silt with trace clay, dark orange-brown, moist, firm, micaceous.
									SP GP	SANDY GRAVEL AND GRAVELLY SAND - Fine to coarse sandy fine gravel with some coarse gravel and trace silt, and fine to coarse sand with some gravel; orange-brown, moist, very dense, micaceous.
50		VPSS-120		100	0	0	0		SP	SAND - Fine to coarse sand with trace silt and fine gravel, orange-brown, moist, dense, micaceous (no odor).
										Occasional small cobbles from 52' to 58'.
60		VPSS-121		75	0	0	0			Fine to medium sand with some fine gravel and trace silt (no odor).
									GP	SANDY GRAVEL - Fine to coarse sandy fine and coarse gravel with cobbles, orange-brown, slightly moist to moist, very dense, micaceous.
70		VPSS-122		100	0	0	0		SP	SAND - Fine to coarse sand with some fine gravel and trace silt, orange-brown, moist, micaceous (no odor).
										Numerous cobbles from 76' to 79'.
				30	0	0	0		SP GP	
80										Granitic rock fragments with trace silty fine sand (no odor).
									GP	SANDY GRAVEL, COBBLES AND BOULDERS - Sandy fine to coarse gravel with cobbles and small boulders, light yellowish-brown to pale gray-brown to orange-brown, slightly moist, very dense.
										Numerous cobbles and small boulders from 87' to 92'.
90				20	0	-	0			Fresh and decomposed granitic rock fragments (no odor).
										Granitic Boulder from 92' to 94'.
										Alternating thin lenses gravelly fine to medium sand and sandy gravel and cobbles from approximately 94' to 97'.
										Cobbles and boulders from 97' to 100'.
100										