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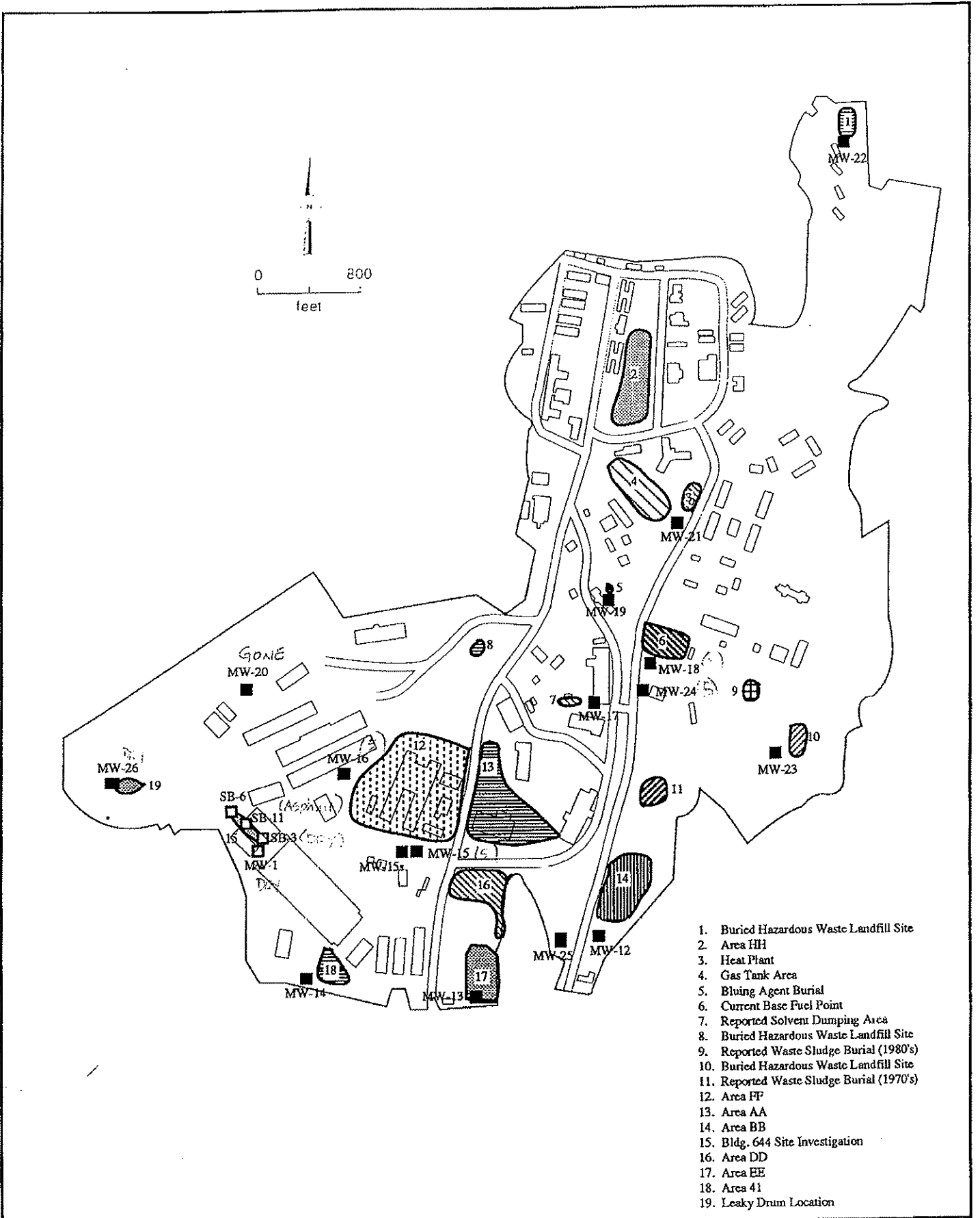
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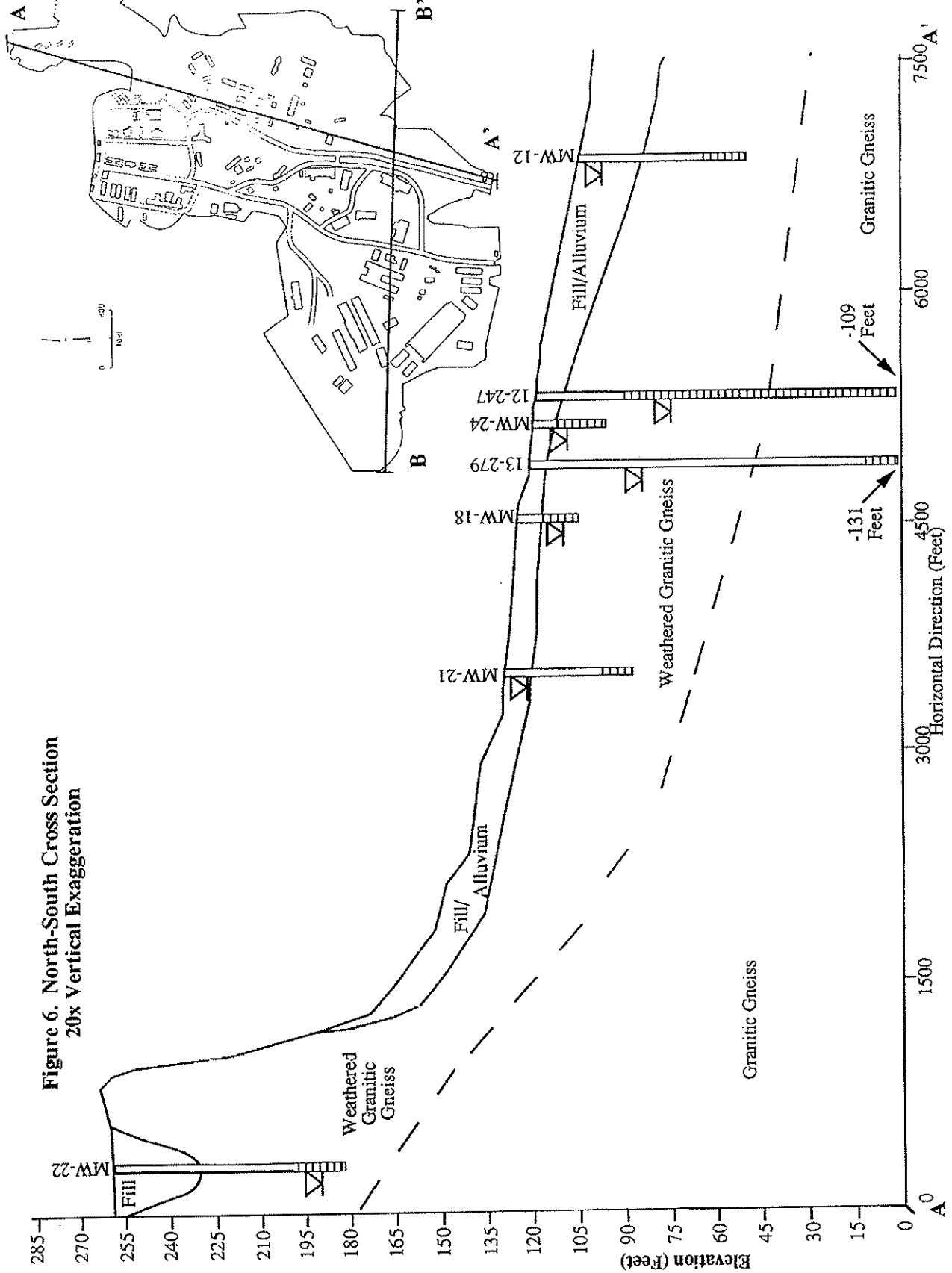


1. Buried Hazardous Waste Landfill Site
2. Area III
3. Heat Plant
4. Gas Tank Area
5. Bluing Agent Burial
6. Current Base Fuel Point
7. Reported Solvent Dumping Area
8. Buried Hazardous Waste Landfill Site
9. Reported Waste Sludge Burial (1980's)
10. Buried Hazardous Waste Landfill Site
11. Reported Waste Sludge Burial (1970's)
12. Area FF
13. Area AA
14. Area BB
15. Bldg. 644 Site Investigation
16. Area DD
17. Area EE
18. Area 41
19. Leaky Drum Location

Project No. 91C0499H	Camp Carroll, Korea	Monitoring Well Locations in Relation to Source Areas of Potential Contamination	Figure 5
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**Figure 6. North-South Cross Section
20x Vertical Exaggeration**



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91C0499H

Camp Carroll, Korea

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**North-South Cross Section
20x Vertical Exaggeration**

**Figure
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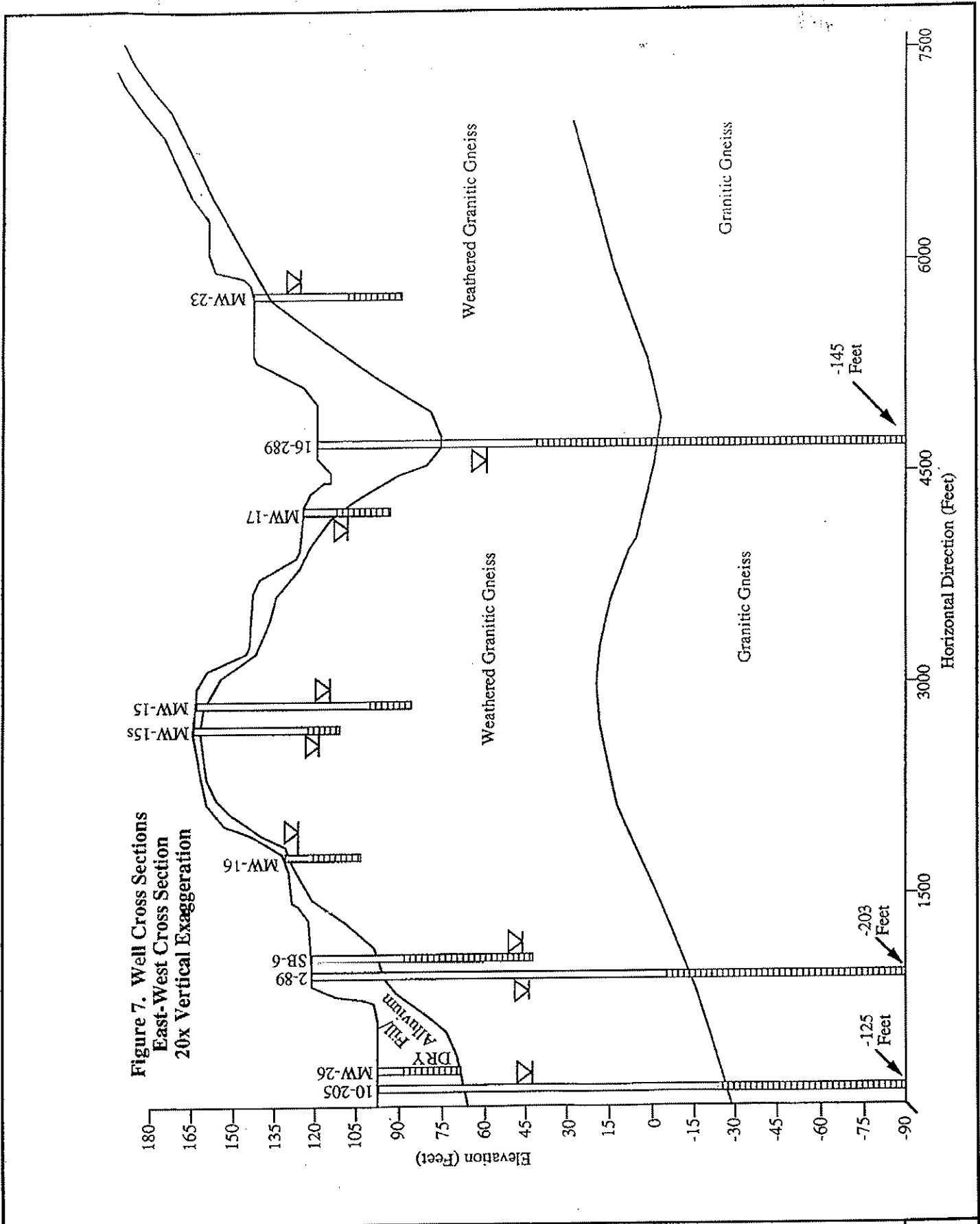
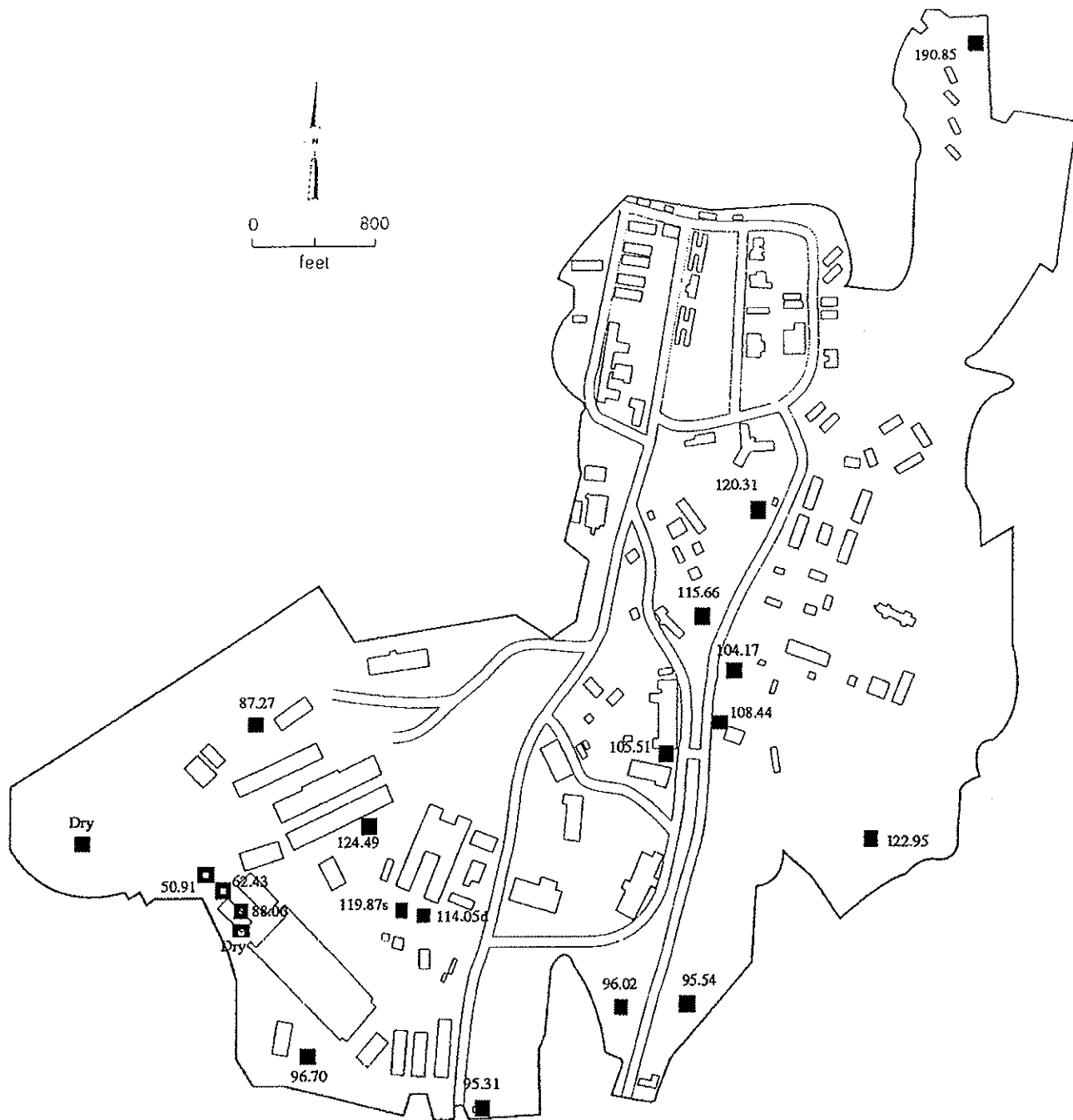


Figure 7. Well Cross Sections
East-West Cross Section
20x Vertical Exaggeration

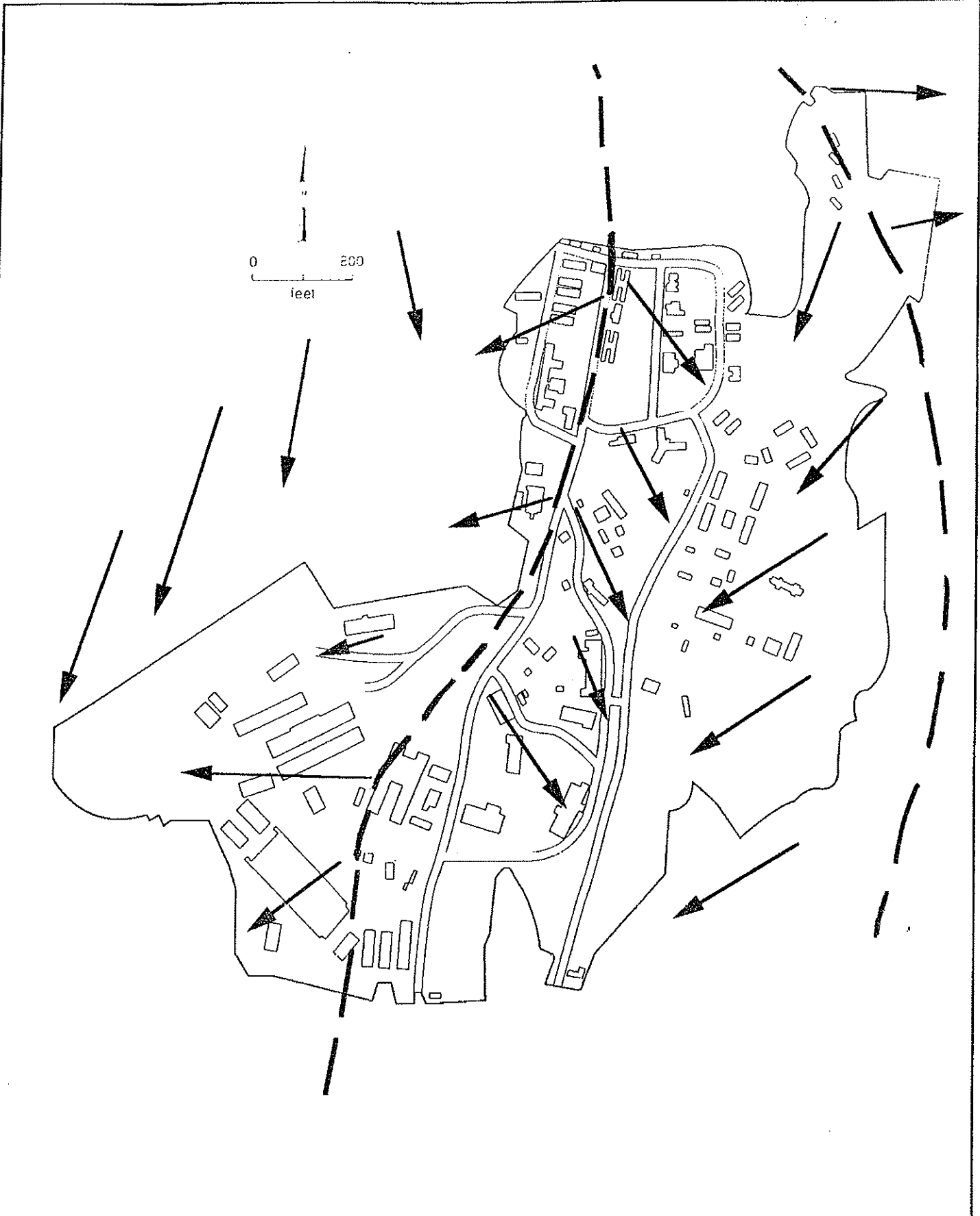
Project No. 91C0499H	Camp Carroll, Korea	East-West Cross Section 20x Vertical Exaggeration	Figure 7
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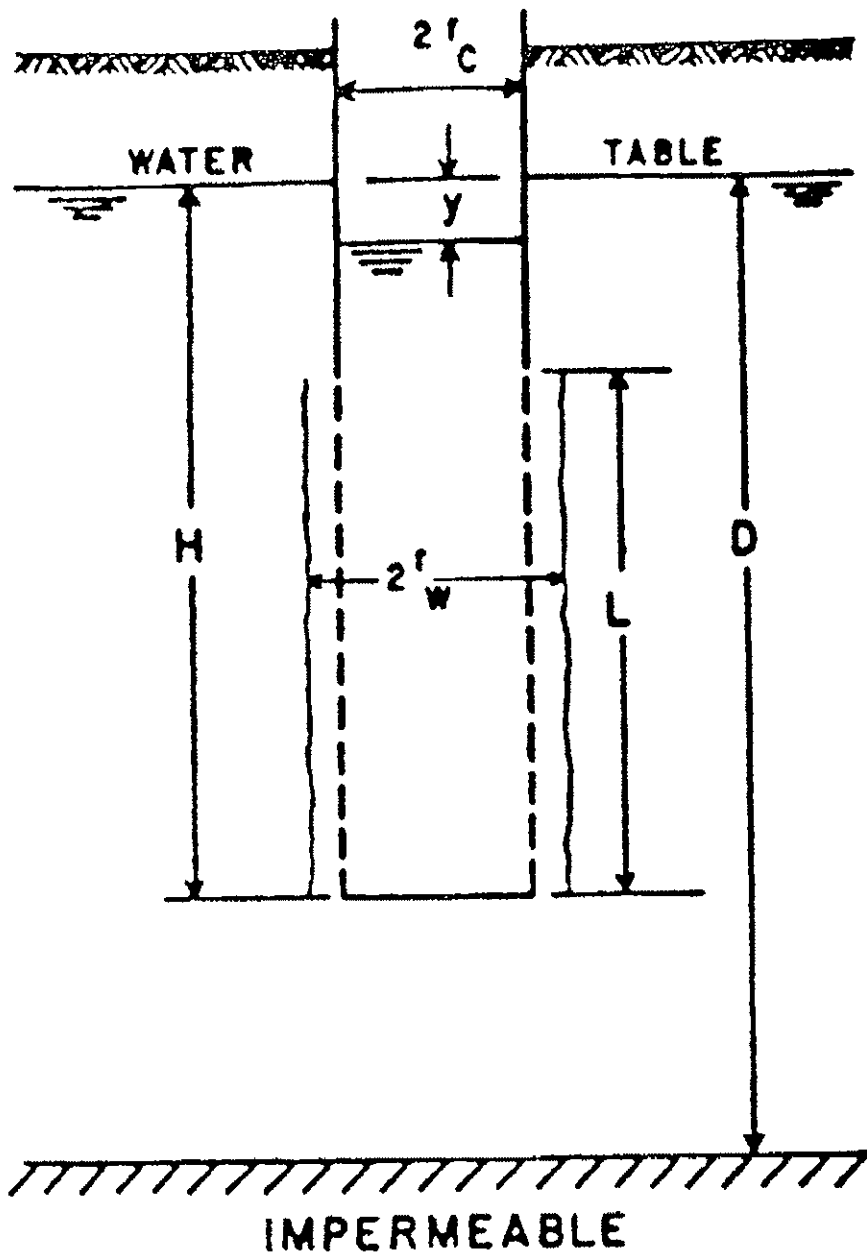
Project No. 91C0499H	Camp Carroll, Korea	Static Water Level Measurements Made on Installed Monitoring Wells on 4/16/92	Figure 8
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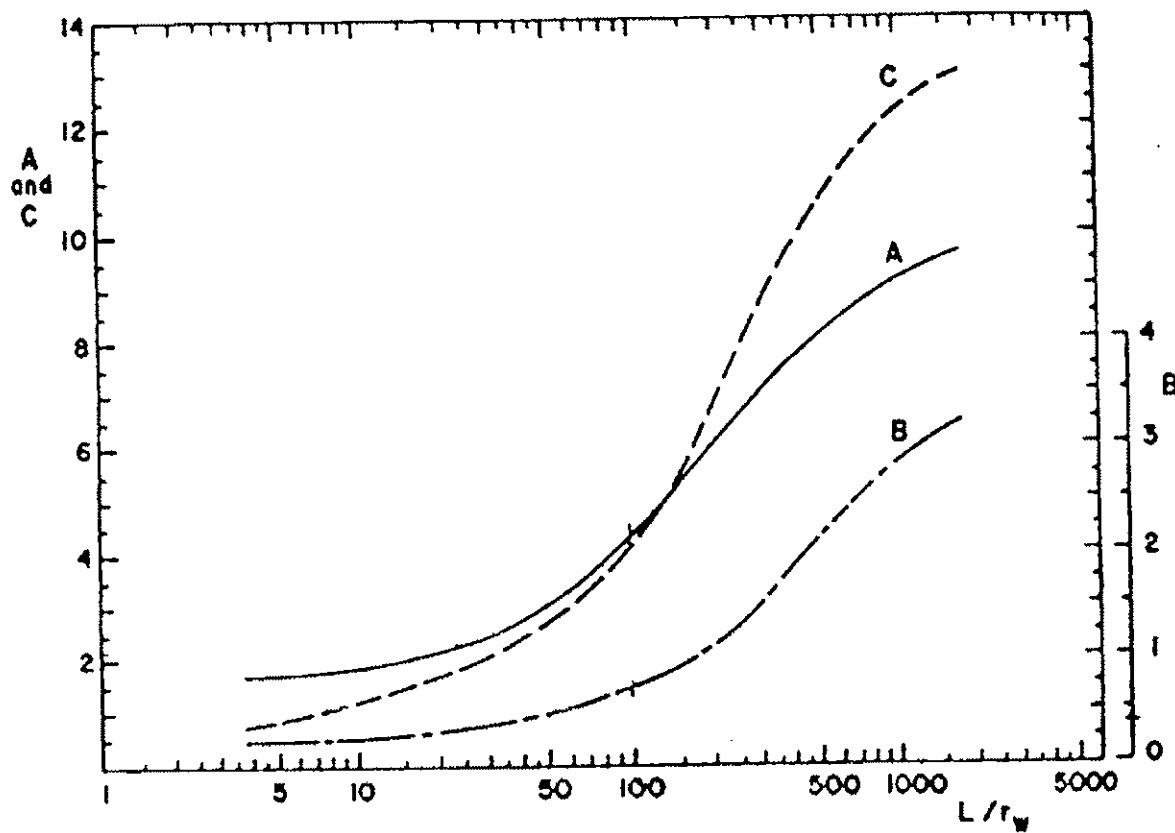
Project No. 91C0499H	Camp Carroll, Korea	Groundwater Flow Direction Under Camp Carroll	Figure 10
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Project No. 91C0499H	Camp Carroll, Korea	WELL GEOMETRY AND SYMBOLS	Figure 11
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Project No.
91C0499H

Camp Carroll, Korea

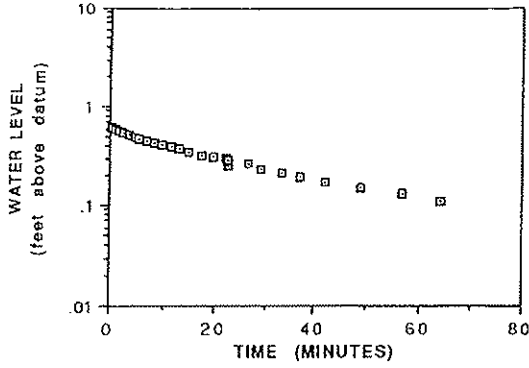
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GRAPH FOR DETERMINING
COEFFICIENTS A, B AND C

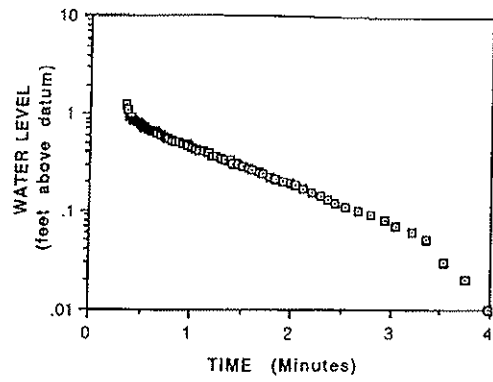
Figure
12

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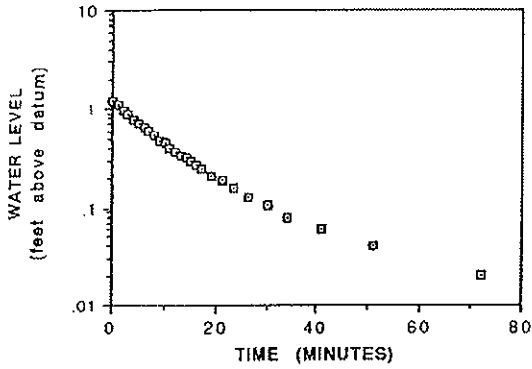
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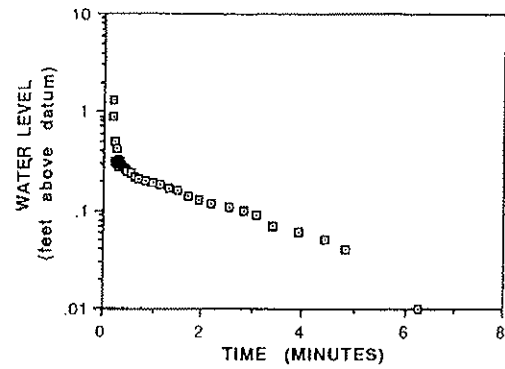
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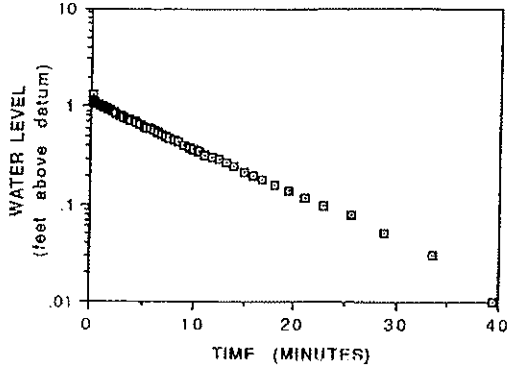
RECOVERY TEST SB-6



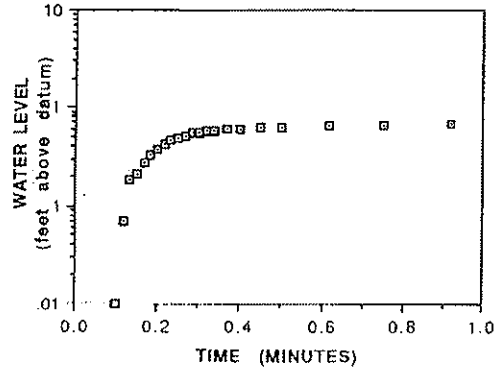
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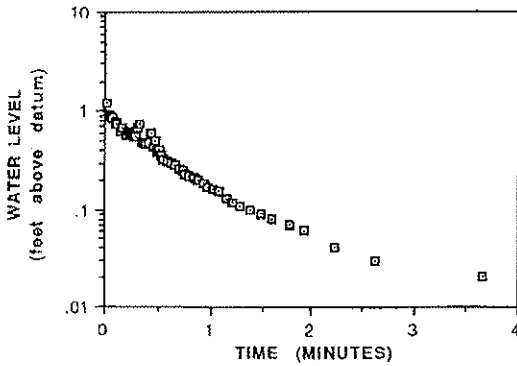
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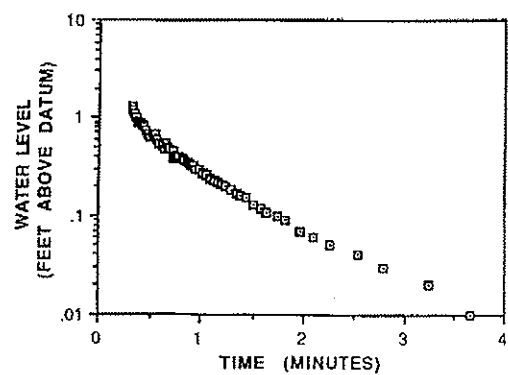
SLUG TEST MW-15s



SLUG TEST MW-12



RECOVERY TEST MW-16



Project No.
91C0499H

Camp Carroll, Korea

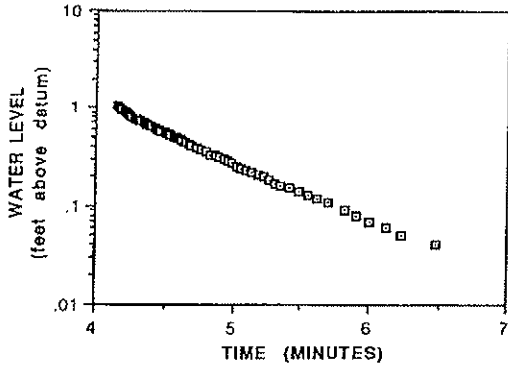
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BAIL TESTS TIME VERSUS
HEAD PLOTS

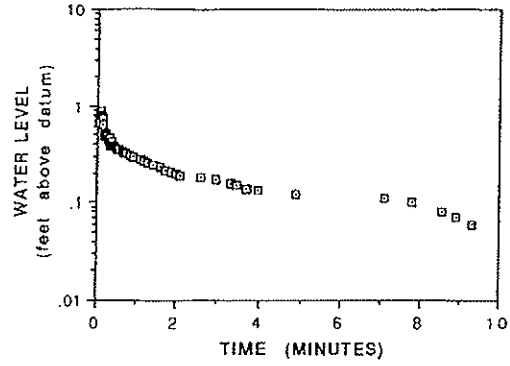
Figure
13a

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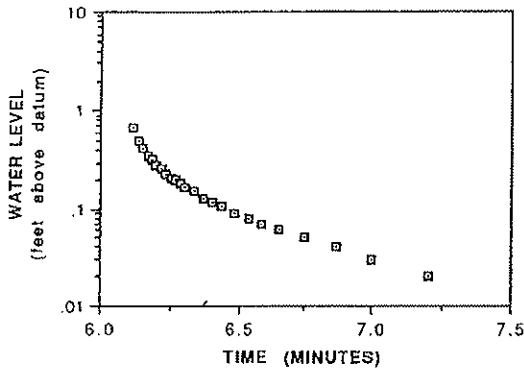
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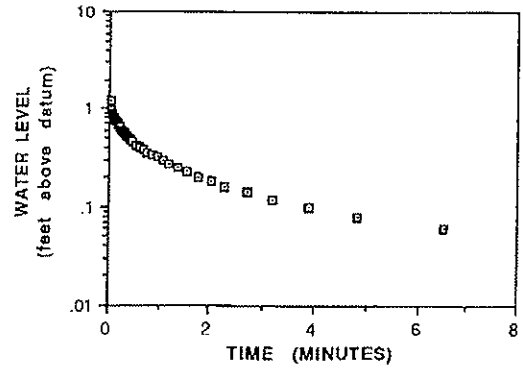
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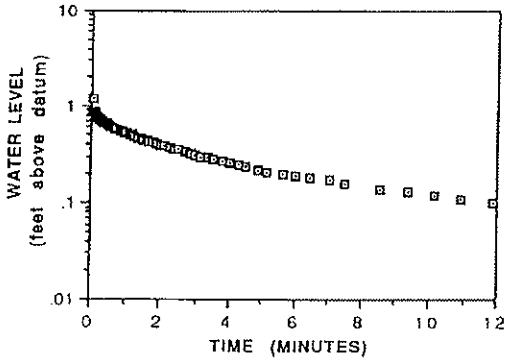
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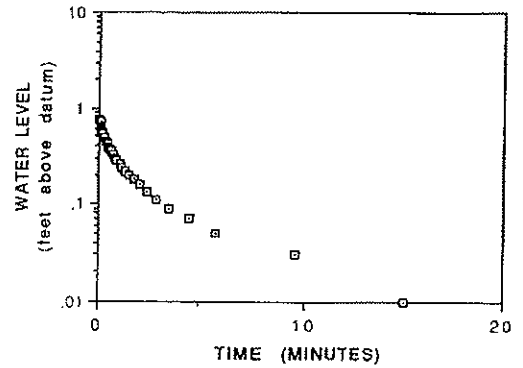
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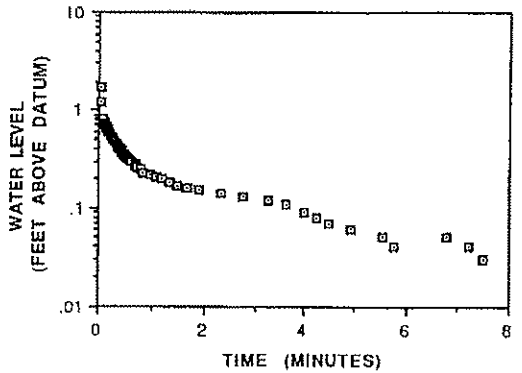
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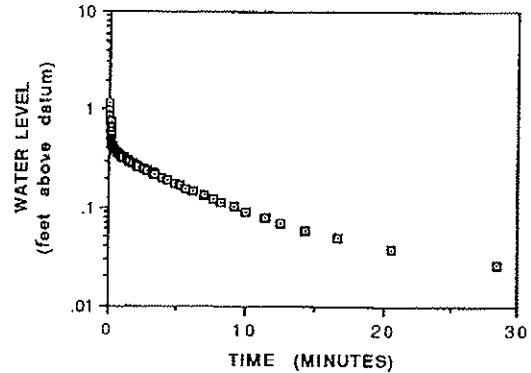
SLUG TEST MW-21



RECOVERY TEST MW-20



RECOVERY TEST MW-22



Project No.
91C0499H

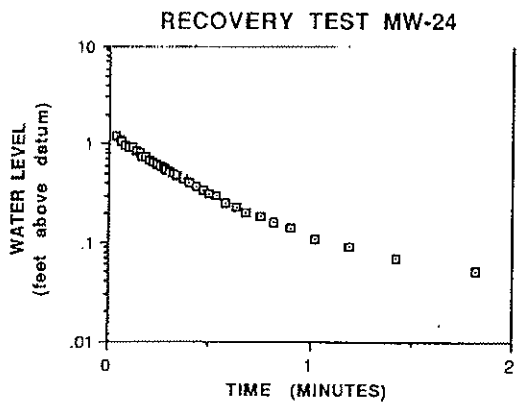
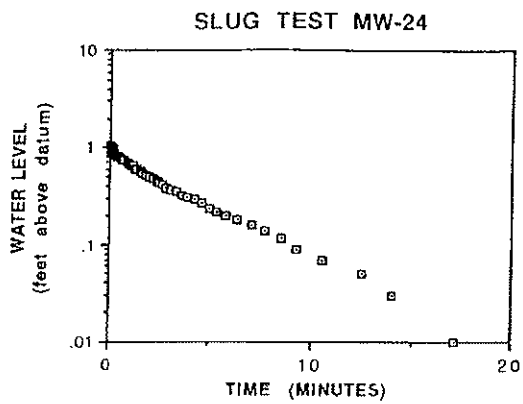
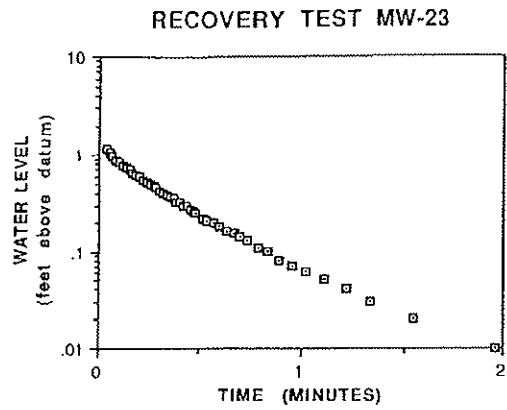
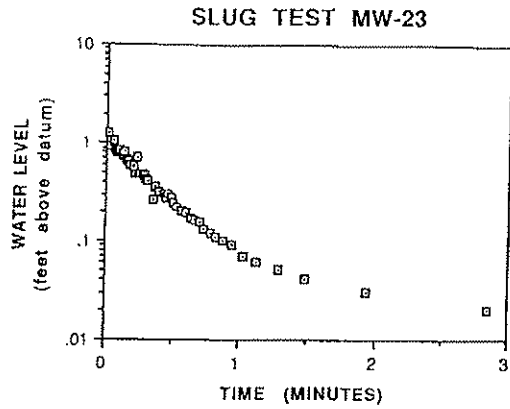
Camp Carroll, Korea

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BAIL TESTS TIME VERSUS
HEAD PLOTS

Figure
13b

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Project No.
91C0499H

Camp Carroll, Korea

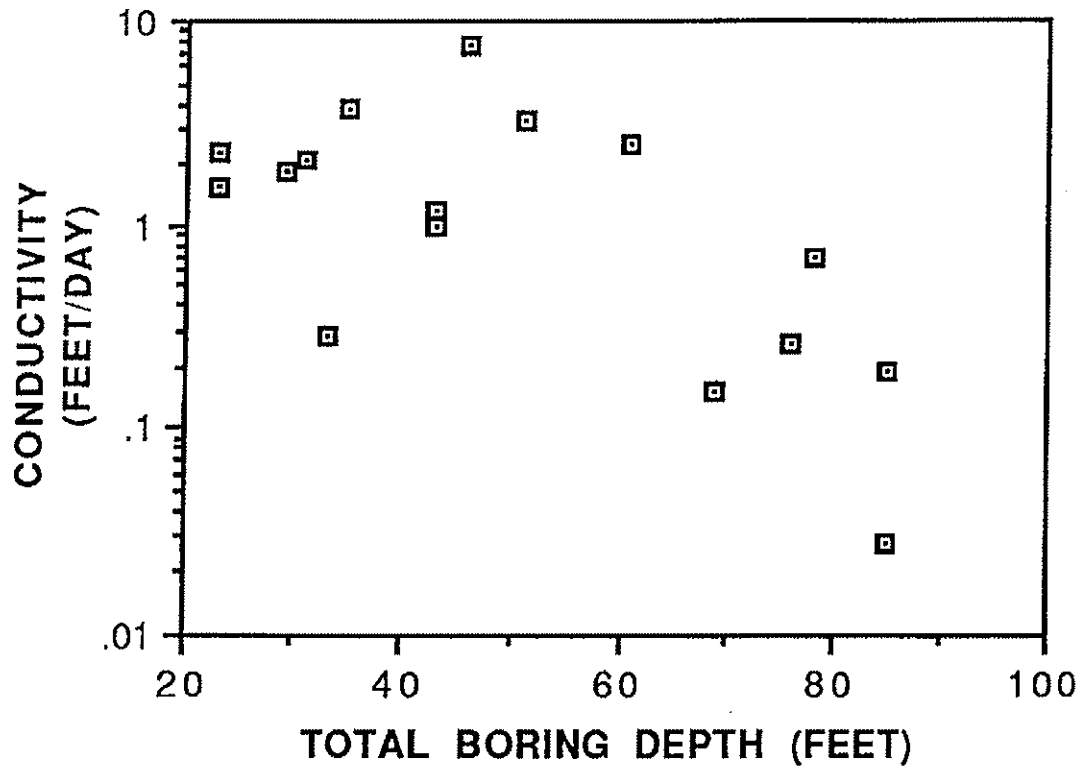
WOODWARD-CLYDE
CONSULTANTS

BAIL TESTS TIME VERSUS
HEAD PLOTS

Figure
13c

511

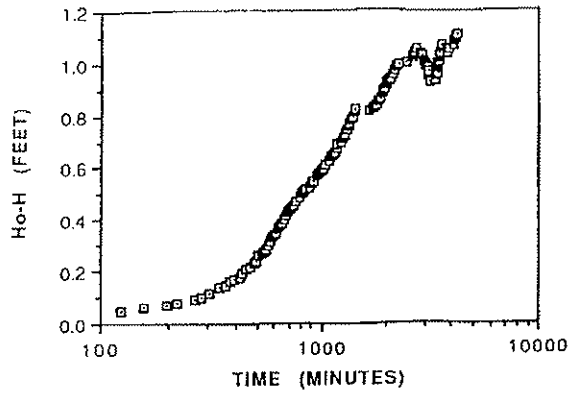
CAMP CARROLL MONITORING WELLS



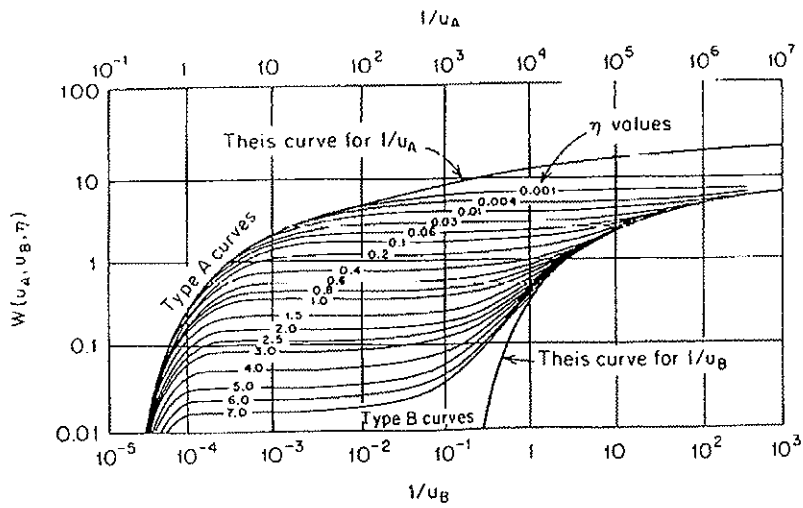
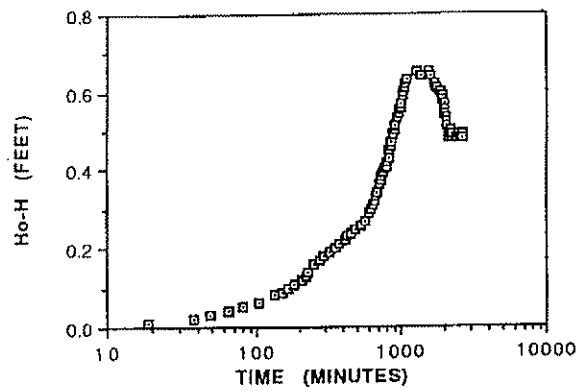
Project No. 91C0499H	Camp Carroll, Korea	HYDRAULIC CONDUCTIVITY VERSUS BORING DEPTH	Figure 14
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WELL 13-279 DRAWDOWN



RECOVERY DATA WELL 13-279



Project No.
91C0499H

Camp Carroll, Korea

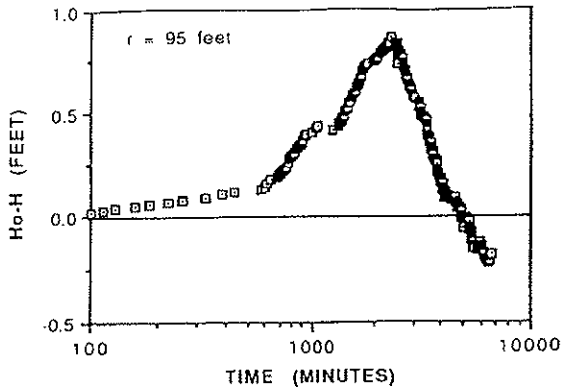
WOODWARD-CLYDE
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PUMP TESTS TIME VERSUS
HEAD PLOTS

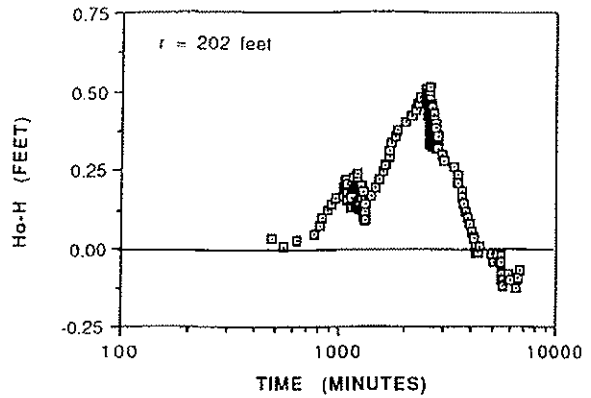
Figure
15a

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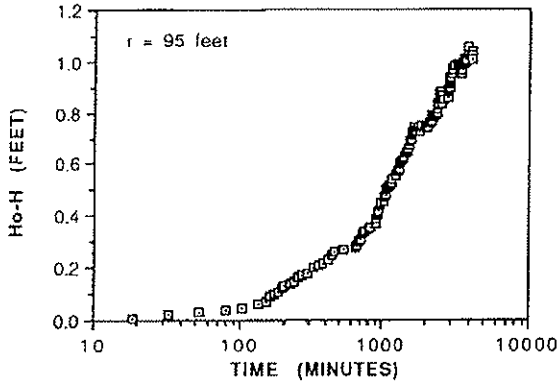
SB-6 DRAWDOWN



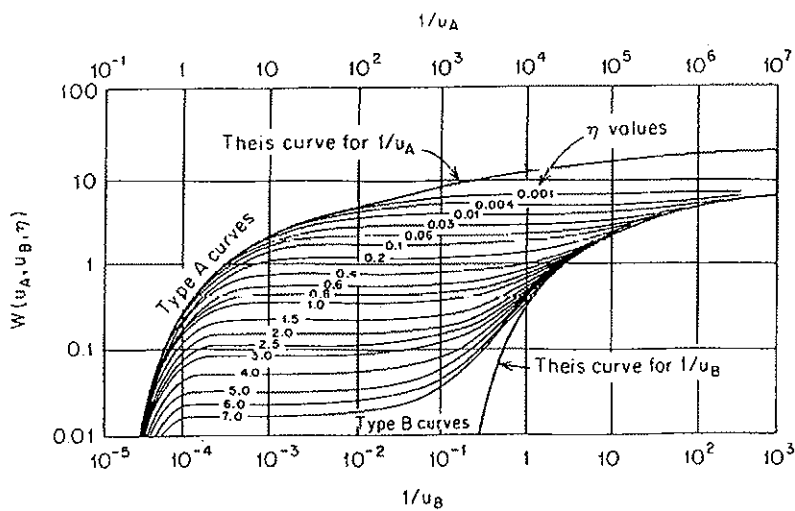
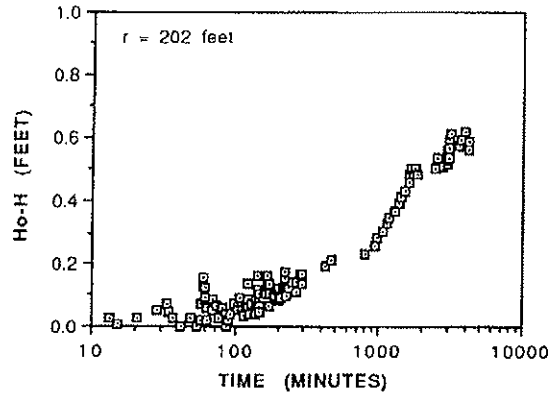
SB-11 DRAWDOWN



RECOVERY DATA SB-6



RECOVERY DATA SB-11



Project No.
91C0499H

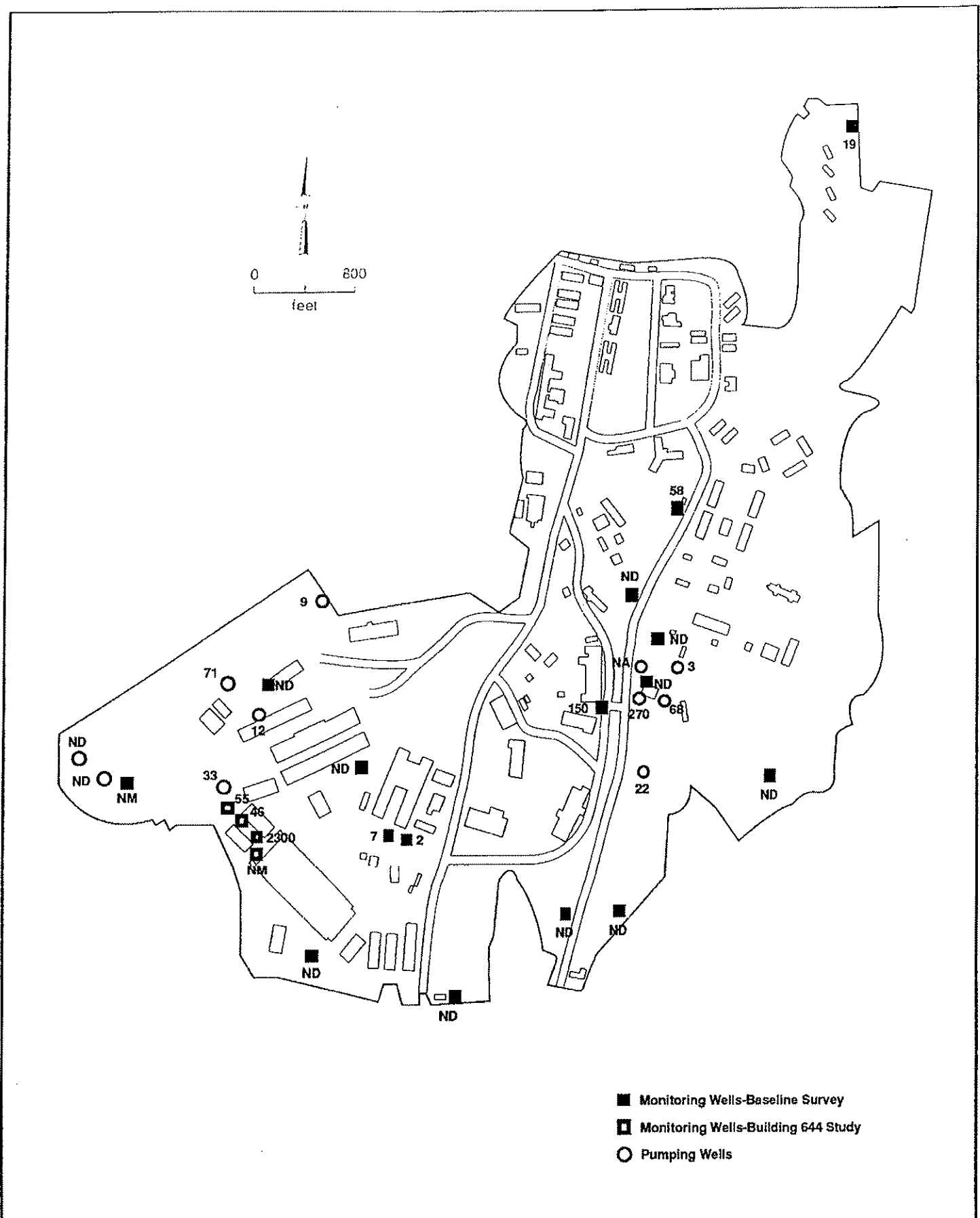
Camp Carroll, Korea

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PUMP TESTS TIME VERSUS
HEAD PLOTS

Figure
15b

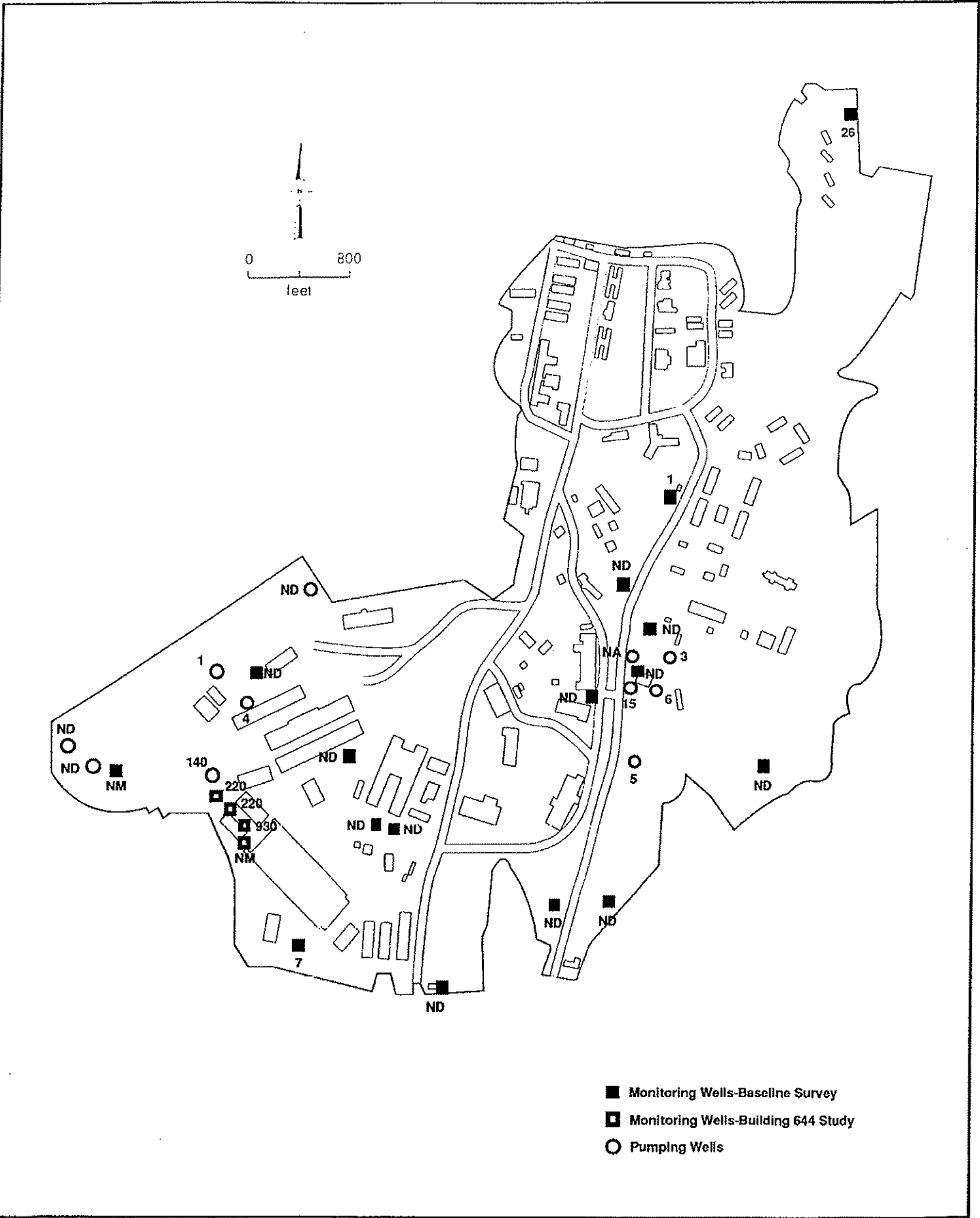
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- Monitoring Wells-Baseline Survey
- Monitoring Wells-Building 644 Study
- Pumping Wells

Project No. 91C0499H	Camp Carroll, Korea	Trichloroethylene Concentrations (ppb) in Groundwater Samples Collected Between 4/13/92-4/15/92	Figure 16
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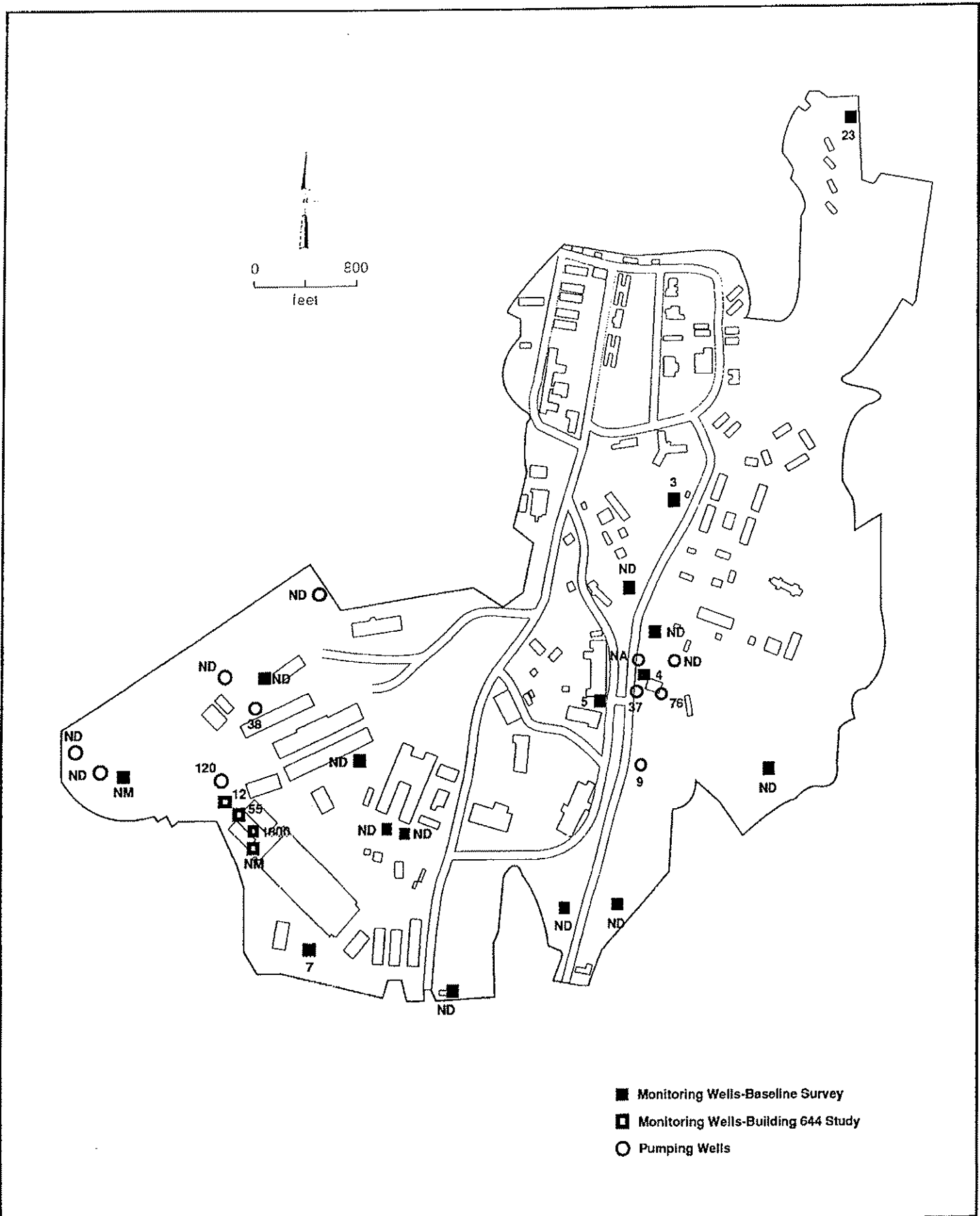
515



- Monitoring Wells-Baseline Survey
- Monitoring Wells-Building 644 Study
- Pumping Wells

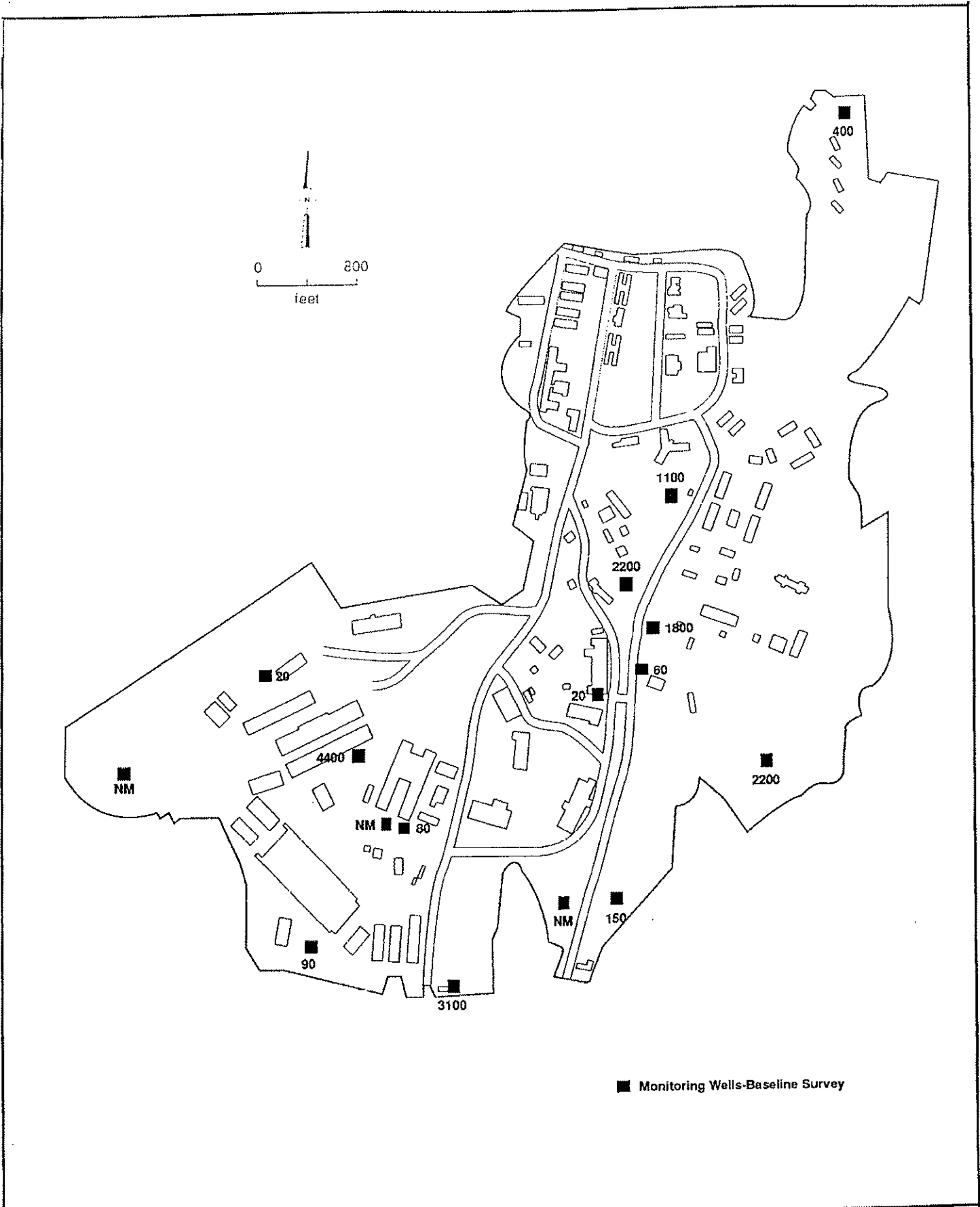
Project No. 91C0499H	Camp Carroll, Korea	Perchloroethylene Concentrations (ppb) in Groundwater Samples Collected Between 4/13/92-4/15/92	Figure 17
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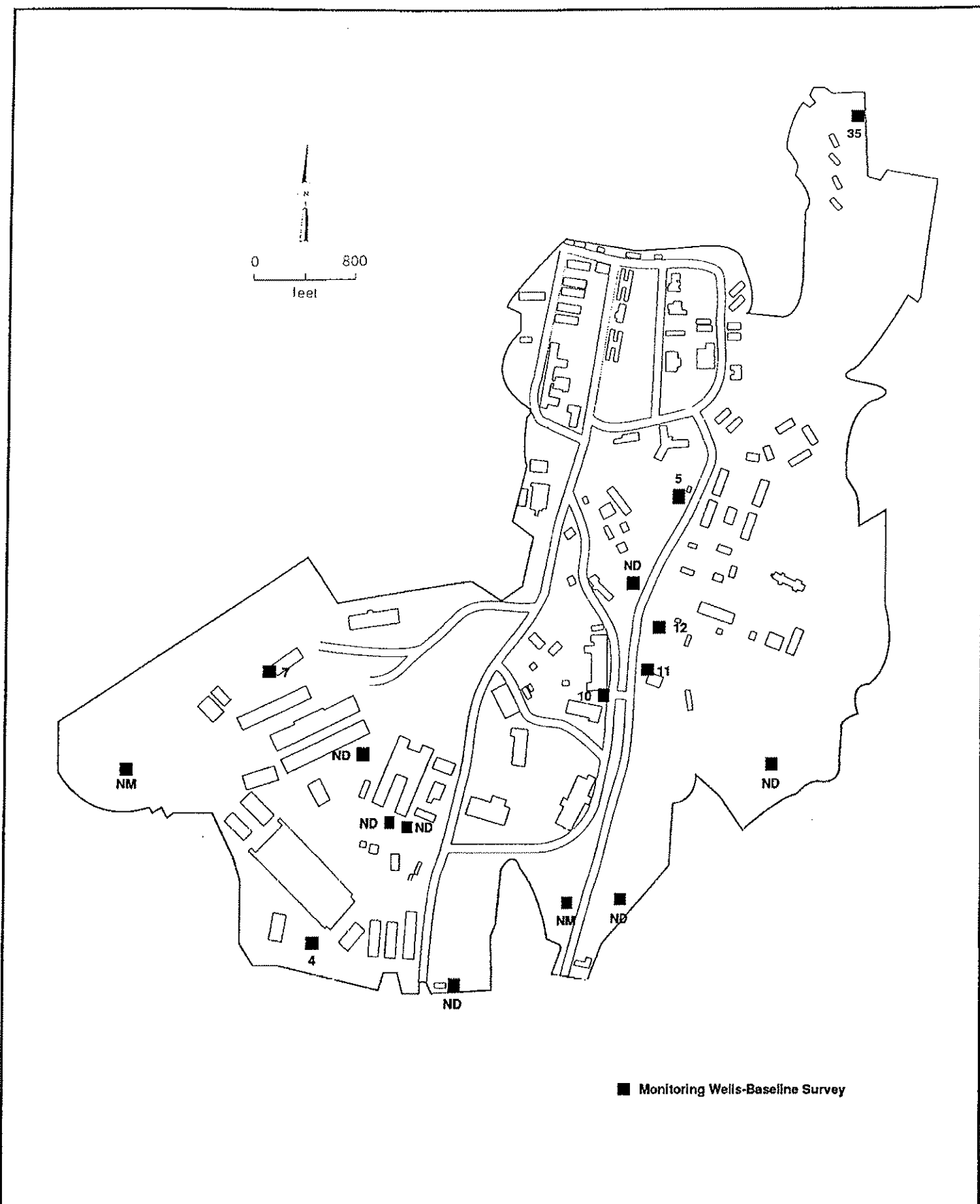
Project No. 91C0499H	Camp Carroll, Korea	1, 2 Dichloroethene Concentrations (ppb) in Groundwater Samples Collected Between 4/13/92-4/15/92	Figure 18
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Project No. 91C0499H	Camp Carroll, Korea	Nitrate Concentrations (ppb) in Groundwater Samples Collected Between 4/13/92-4/15/92	Figure 19
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Project No. 91C0499H	Camp Carroll, Korea	Lead Concentrations (ppb) in Groundwater Samples Collected Between 4/13/92-4/15/92	Figure 20
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ATTACHMENT 2

TABLES 1 THROUGH 15

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TABLE 2
Water Analysis for Organic Species in Pumped Water Supply Wells and Base Drinking Water

SAMPLE SOURCE	TREATED CITY WATER	TREATED WATER	TREATED WATER	TREATED WATER	TREATED WATER	TREATED WATER	TREATED WATER	TREATED WATER	TREATED WATER	TREATED WATER	TREATED WATER	MCL	MCLG
DATE	6/18/91	8/26/91	9/9/91	9/9/91	9/9/91	12/4/91	12/16/91	1/7/92	1/7/92	1/7/92	1/7/92		
SAMPLE NUMBER	SPEC 206	8-292*	6-2953	QA91-361	QA91-361	QA91-363	QA91-363	QA91-364	QA91-364	QA91-364	QA91-364		
LABORATORY	W.C.T.L	EHEA	EHEA	N.E.T.	N.E.T.	N.E.T.	N.E.T.	EHEA	EHEA	EHEA	EHEA		
CHLOROFORM**	NA	41.46	NA	NA	NA	2.04	4	3.2	2.1	2.1	2.1	5	0
BROMODICHLOROMETHANE**	NA	9.32	NA	NA	NA	<0.4	5	4.5	4.8	4.8	4.8	5	0
DIBROMOCHLOROMETHANE**	NA	1.52	NA	NA	NA	3.97	5	5.1	5.6	5.6	5.6	5	0
BROMOFORM**	NA	0.77	NA	NA	NA	1.42	2	1.3	1.5	1.5	1.5	5	0
BENZENE	NA	<0.2	<0.2	NA	NA	<0.4	NA	NA	<0.4	<0.4	<0.4	5	0
CARBON TETRACHLORIDE	NA	0.407	<0.2	NA	NA	<0.4	NA	NA	<0.4	<0.4	<0.4	5	0
1,4-DICHLOROBENZENE	NA	<0.2	<0.2	NA	NA	<0.4	NA	NA	<0.4	<0.4	<0.4	5	0
1,2-DICHLOROETHANE	NA	<0.2	<0.2	NA	NA	<0.4	NA	NA	<0.4	<0.4	<0.4	5	0
1,1,1-TRICHLOROETHANE	<1	<0.2	<0.2	NA	NA	<0.4	NA	NA	<0.4	<0.4	<0.4	5	0
VINYL CHLORIDE	NA	<0.2	<0.2	NA	NA	<0.4	NA	NA	<0.4	<0.4	<0.4	5	0
CIS-1,2-DICHLOROETHYLENE	NA	<0.2	<0.2	NA	NA	<0.4	NA	2	<0.4	<0.4	<0.4	5	0
TRICHLOROETHYLENE	<2	0.224	<0.2	NA	NA	2.47	<0.4	1	1.7	1.7	1.7	5	0
TETRACHLOROETHYLENE	<1	NA	NA	<0.4	7.1	<0.4	<0.4	3	0.6	0.6	0.6	5	0

SAMPLE SOURCE	WELL	WELL	WELL	WELL	WELL	WELL	WELL	WELL	WELL	WELL	WELL	MCL	MCLG
DATE	9/3/91	9/9/91	4/18/92	9/9/91	9/9/91	4/18/92	9/9/91	9/9/91	9/9/91	9/9/91	9/9/91		
SAMPLE NUMBER	6-2945	QA91-355	QA91-355	8-2946	QA91-354	QA91-354	QA91-354	QA91-354	QA91-354	QA91-354	QA91-354		
LABORATORY	EHEA	N.E.T.	P.E.L.	EHEA	N.E.T.	N.E.T.	N.E.T.	N.E.T.	N.E.T.	N.E.T.	N.E.T.		
CHLOROFORM**	4.2	NA	6	<0.2	NA	3	NA	0.43	NA	NA	NA	6	0
BROMODICHLOROMETHANE**	<0.2	NA	<1	<0.2	NA	<1	NA	<0.2	NA	NA	NA	6	0
DIBROMOCHLOROMETHANE**	<0.2	NA	<1	<0.2	NA	<1	NA	<0.2	NA	NA	NA	6	0
BROMOFORM**	<0.2	NA	<1	<0.2	NA	<1	NA	<0.2	NA	NA	NA	6	0
BENZENE	<0.2	NA	<1	<0.2	NA	6	NA	<0.2	NA	NA	NA	6	0
CARBON TETRACHLORIDE	0.29	NA	<1	0.23	NA	<1	NA	0.25	NA	NA	NA	6	0
1,4-DICHLOROBENZENE	<0.2	NA	<1	<0.2	NA	<1	NA	<0.2	NA	NA	NA	6	0
1,2-DICHLOROETHANE	<0.2	NA	<1	0.34	NA	<1	NA	<0.2	NA	NA	NA	6	0
1,1,1-TRICHLOROETHANE	<0.2	NA	<1	<0.2	NA	<1	NA	<0.2	NA	NA	NA	6	0
VINYL CHLORIDE	<0.2	NA	<1	<0.2	NA	<1	NA	<0.2	NA	NA	NA	6	0
CIS-1,2-DICHLOROETHYLENE	0.23	NA	3.8	<0.2	NA	1.29	NA	<0.2	NA	NA	NA	6	0
TRICHLOROETHYLENE	5.66	NA	12	3.39	3.9	3.9	3.9	22.22	4.9	4.9	4.9	6	0
TETRACHLOROETHYLENE	NA	3.5	4	NA	6.1	14.0	1	NA	0.64	0.64	0.64	6	0

All above values in parts per billion (ppb).
 NA Not Analyzed
 MCL Maximum Contaminant Level (applies to community and non-transient water systems)
 MCLG Maximum Contaminant Level Goal (found in 40 CFR, Subpart F, Section 141.50)
 ** These four compounds (trihalomethanes) comprise the 'total trihalomethanes (TTHM's).
 W.C.T.L. Water and Chemical Testing Laboratory, EMO DEH 17th ASS, APO 96343-0069.
 E.H.E.A. United States Army Pacific Environmental Health Engineering Agency.
 P.E.L. Pacific Environmental Laboratory, San Francisco California.
 N.E.T. National Environmental Testing Laboratory, Santa Rosa, California

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TABLE 2
Water Analysis for Organic Species in Pumped Water Supply Wells and Base Drinking Water

SAMPLE SOURCE	WELL	WELL	WELL	WELL	WELL	WELL	WELL	WELL	WELL	MCL	MCLG	
DATE	8-107	5-187	6-187	8-188	8-188	8-188	8-188	8-188	10-205	10-205		
SAMPLE NUMBER	1/7/92	4/16/92	6/18/91	9/3/91	9/3/91	9/3/91	9/3/91	9/3/91	6/18/91	9/3/91		
LABORATORY	8-3155 EHEA	8-3155 EHEA	8-3155 EHEA	8-3155 EHEA	8-3155 EHEA	8-3155 EHEA	8-3155 EHEA	8-3155 EHEA	8-3155 EHEA	8-3155 EHEA	8-2949 EHEA	
CHLOROFORM**	0.7	<1	NA	<0.2	NA	NA	NA	NA	NA	NA	5	0
BROMODICHLOROMETHANE**	<0.4	0.9	NA	<0.2	NA	NA	NA	NA	NA	NA	5	0
DIBROMOCHLOROMETHANE**	0.6	<1	NA	<0.2	NA	NA	NA	NA	NA	NA	76	0
BROMOFORM**	<0.4	<1	NA	<0.2	NA	NA	NA	NA	NA	NA	5	0
BENZENE	<0.4	<1	NA	<0.2	NA	NA	NA	NA	NA	NA	200	0
CARBON TETRACHLORIDE	<0.4	<1	NA	<0.2	NA	NA	NA	NA	NA	NA	2	0
1,4-DICHLOROBENZENE	<0.4	<1	NA	0.39	NA	NA	NA	NA	NA	NA	70	0
1,2-DICHLOROETHANE	<0.4	0.4	1	1.15	NA	NA	NA	NA	NA	NA	5	0
1,1,1-TRICHLOROETHANE	<0.4	2.1	<1	<0.2	NA	NA	NA	NA	NA	NA	200	0
VINYL CHLORIDE	<0.4	<1	NA	<0.2	NA	NA	NA	NA	NA	NA	70	0
CIS-1,2-DICHLOROETHYLENE	<0.4	<1	NA	<0.2	NA	NA	NA	NA	NA	NA	5	0
TRICHLOROETHYLENE	36.6	140.5	7.1	<0.2	NA	NA	NA	NA	NA	NA	5	0
TETRACHLOROETHYLENE	NA	NA	1	NA	NA	NA	NA	NA	NA	NA	5	0
SAMPLE SOURCE	10-205	10-205	11-208	11-206	12-247	12-247	12-247	12-247	12-247	12-247		
DATE	9/9/91	4/15/92	9/3/91	4/15/92	6/18/91	6/18/91	6/18/91	6/18/91	1/7/92	4/18/92		
SAMPLE NUMBER	0A91-359	9W-10	8-2955	PW-11	SPEC-204	SPEC-204	8-2950	8-2950	8-3157	8-3157		
LABORATORY	N.E.T.	P.E.L.	EHEA	P.E.L.	W.C.T.L.	W.C.T.L.	EHEA	EHEA	EHEA	EHEA		
CHLOROFORM**	NA	<1	NA	<1	NA	NA	0.61	0.61	0.6	0.6	3	0
BROMODICHLOROMETHANE**	NA	<1	NA	<1	NA	NA	0.3	0.3	<0.4	<0.4	<1	0
DIBROMOCHLOROMETHANE**	NA	<1	NA	<1	NA	NA	<0.2	<0.2	0.5	0.5	<1	0
BROMOFORM**	NA	<1	NA	<1	NA	NA	<0.2	<0.2	<0.4	<0.4	<1	0
BENZENE	NA	<1	NA	<1	NA	NA	<0.2	<0.2	<0.4	<0.4	<1	0
CARBON TETRACHLORIDE	NA	<1	NA	<1	NA	NA	2.82	2.82	<0.4	<0.4	<1	0
1,4-DICHLOROBENZENE	NA	<1	NA	<1	NA	NA	0.34	0.34	<0.4	<0.4	<1	0
1,2-DICHLOROETHANE	NA	<1	NA	<1	NA	NA	<0.2	<0.2	<0.4	<0.4	<1	0
1,1,1-TRICHLOROETHANE	NA	<1	NA	<1	12	12	5.34	5.34	<0.4	<0.4	200	0
VINYL CHLORIDE	NA	<1	NA	<1	NA	NA	<0.2	<0.2	<0.4	<0.4	2	0
CIS-1,2-DICHLOROETHYLENE	NA	<1	NA	<1	NA	NA	3.53	3.53	<0.4	<0.4	70	0
TRICHLOROETHYLENE	<0.4	<1	NA	8	87	87	116.97	116.97	37.3	37.3	200	0
TETRACHLOROETHYLENE	<0.4	<1	NA	<1	9	9	11	11	NA	NA	5	0

All above values in parts per billion (ppb).

NA Not Analyzed

MCL Maximum Contaminant Level (applies to community and non-transient water systems)

MCLG Maximum Contaminant Level Goals (found in 40 CFR, Subpart F, Section 141.50)

** These four compounds (trihalomethanes) comprise the total trihalomethanes (TTHM's).

W.C.T.L. Water and Chemical Testing Laboratory, EMO DEH-17th ASS, APO 96343-0069.

E.H.E.A. United States Army Pacific Environmental Health Engineering Agency.

P.E.L. Pacific Environmental Laboratory, San Francisco, California.

N.E.T. National Environmental Testing Laboratory, Santa Rosa, California

The TTHM's have an MCL of 100 ppb (found in 40 CFR, Section 141.12)

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TABLE 2
Water Analysis of Organic Species in Pumped Water Supply Wells and Base Drinking Water

SAMPLE SOURCE	WELL	WELL	WELL	WELL	WELL	WELL	WELL	WELL	MCL	MCLG
DATE	12-247	13-279	13-279	14-283	14-283	14-283	15-288	16-288	15-288	15-288
SAMPLE NUMBER	4/16/92	9/3/91	9/9/91	9/23/91	9/23/91	9/23/91	9/23/91	9/23/91	9/23/91	4/16/92
LABORATORY	PW-12	6-2951	0A91-357	6-2973	6-2973	6-2974	6-2971	6-2972	6-2972	PW-15
	N.E.T.	E.H.E.A.	N.E.T.	E.H.E.A.	E.H.E.A.	E.H.E.A.	E.H.E.A.	E.H.E.A.	E.H.E.A.	P.E.L.
CHLOROFORM**	<0.4	0.89	NA	NA	NA	NA	NA	NA	NA	4
BROMODICHLOROMETHANE**	<0.4	<0.2	NA	NA	NA	NA	NA	NA	NA	<1
DIBROMOCHLOROMETHANE**	<0.4	<0.2	NA	NA	NA	NA	NA	NA	NA	<1
BROMOFORM**	<0.4	<0.2	NA	NA	NA	NA	NA	NA	NA	<1
BENZENE	<0.4	<0.2	NA	NA	NA	NA	NA	NA	NA	<1
CARBON TETRACHLORIDE	<0.4	0.32	NA	NA	NA	NA	NA	NA	NA	<1
1,4-DICHLOROBENZENE	<0.4	0.24	NA	NA	NA	NA	NA	NA	NA	<1
1,2-DICHLOROETHANE	<0.4	<0.2	NA	NA	NA	NA	NA	NA	NA	<1
1,1,1-TRICHLOROETHANE	5.1	7.82	NA	NA	NA	NA	NA	NA	NA	<1
VINYL CHLORIDE	<0.4	<0.2	NA	NA	NA	NA	NA	NA	NA	<1
CIS-1,2-DICHLOROETHYLENE	<0.4	34.32	NA	NA	NA	<0.8	NA	NA	NA	2
TRICHLOROETHYLENE	270	125.1	170	42.5	NA	NA	NA	NA	NA	70
TETRACHLOROETHYLENE	9.8	NA	12	NA	NA	NA	<0.8	NA	NA	5
										0

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All above values in parts per billion (ppb).
 NA Not Analyzed
 MCL Maximum Contaminant Level (applies to community and non-transient water systems)
 MCLG Maximum Contaminant Level Goal (found in 40 CFR, Subpart F, Section 141.50)
 ** These four compounds (trihalomethanes) comprise the total trihalomethanes (TTHMs). The TTHMs have an MCL of 100 ppb (found in 40 CFR, Section 141.12)
 W.C.T.L. Water and Chemical Testing Laboratory, EMC DEH 17th ASS. APO 96343-0069.
 E.H.E.A. United States Army Pacific Environmental Health Engineering Agency.
 P.E.L. Pacific Environmental Laboratory, San Francisco, California.
 N.E.T. National Environmental Testing Laboratory, Santa Rosa, California

TABLE 3
Boring Location Rationale

WELL NUMBER	WELL ELEVATION (FEET)	WELL DEPTH (FEET)	RATIONALE FOR LOCATION
MW-12	106.13	60.20	Located along the down-gradient boundary of base perimeter.
MW-13	123.84	77.80	Located adjacent to Area BB.
MW-14	116.48	28.50	Located along the down-gradient boundary of base perimeter. Located in Cannibilization Area and adjacent to UST's.
MW-15	155.62	68.50	Located along the down-gradient boundary of base perimeter. Located adjacent to Area 41, oil water separators and wash rack.
MW-15s	156.81	45.00	Located down-gradient of Area FF. Samples groundwater from beneath the water table.
MW-16	126.72	22.00	Located down-gradient of Area FF. Samples groundwater at the water table.
MW-17	126.75	34.50	Located down-gradient of Area FF, leaky diesel storage tank and reported residue dump.
MW-18	120.16	19.50	Located down-gradient of reported site of solvent dumping and adjacent to Building 326 engine rebuild facility.
MW-19	130.36	32.50	Located down-gradient of current base fuel point. Located adjacent to site of bluing agent burial. Well is located at reported site of 1,1,2-trichloroethane dumping.
MW-20	106.79	30.00	Located down-gradient of COSIS facility where vehicles and trucks are cleaned and degreased on base.
MW-21	126.10	42.50	Located down-gradient of Heat Plant where diesel spill occurred and gas tank area.
MW-22	259.73	75.30	Located adjacent to buried hazardous waste landfill site. BEQ #2 Landfill.
MW-23	141.06	50.00	Located adjacent to buried hazardous waste landfill site. Area D.
MW-24	119.89	22.50	Shallow groundwater sample in the vicinity of deep contaminated water supply wells.
MW-25	99.00	8.50	Located at the site of previous Cannibilization area.
MW-26	96.68	24.50	Located along the down-gradient boundary of base perimeter. Located along the down-gradient boundary of base perimeter. Located in the vicinity of previous leaky drum area.

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TABLE 4
Water Quality Parameters Measured During Bailing

Well #	Date	Time	Discharge (gallons)	pH	Temperature (Celcius)	Specific Conductance (micromhos/cm)
MW-12	4/12/92	9:20	1	6.43	12	110
MW-12	4/12/92	9:30	2.5	6.51	13	105
MW-12	4/12/92	9:45	15	6.53	13	100
MW-13	4/12/92	14:20	1	6.4	11	130
MW-13	4/12/92	15:00	10	6.35	12	125
MW-13	4/12/92	16:10	25	6.45	12.5	120
MW-14	4/13/92	10:00	1	6.27	19	70
MW-14	4/13/92	10:05	2	6.23	19.5	80
MW-14	4/13/92	10:20	5	6.29	19.5	85
MW-15	4/12/92	14:10	1	6.52	10.5	200
MW-15	4/12/92	14:40	8	6.48	11	205
MW-15	4/12/92	15:00	14	6.49	12	210
MW-15s	4/12/92	11:25	1	6.36	12.5	215
MW-15s	4/12/92	11:35	2	6.38	13	220
MW-15s	4/12/92	11:50	4	6.36	14	230
MW-16	4/13/92	11:20	1	6.84	235	235
MW-16	4/13/92	11:35	5	6.86	220	220
MW-16	4/13/92	11:50	10	6.78	200	200
MW-17	4/13/92	15:00	1	7.31	16.5	210
MW-17	4/13/92	15:30	4	6.91	16.5	205
MW-17	4/13/92	15:45	8	6.87	16.5	190
MW-18	4/12/92	11:50	1	6.15	14	130
MW-18	4/12/92	12:00	2	6.05	14.5	130
MW-18	4/12/92	12:20	6	6.05	14.5	125
MW-19	4/12/92	10:20	1	6.2	11	135
MW-19	4/12/92	10:35	4	6.17	12	120
MW-19	4/12/92	11:00	9	6.1	13.5	130
MW-20	4/13/92	16:25	1	7.45	17.5	410
MW-20	4/13/92	16:40	6	7.33	18	360
MW-20	4/13/92	17:35	15	7.31	18	350
MW-21	4/12/92	11:15	1	6.75	12	120
MW-21	4/12/92	11:45	10	6.71	12	120
MW-21	4/12/92	12:35	19	6.7	12.5	125
MW-22	4/12/92	9:00	1	6.51	23	253
MW-22	4/12/92	9:50	5	6.6	23	255
MW-22	4/12/92	10:30	10	6.69	23	256

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TABLE 4
Water Quality Parameters Measured During Bailing

Well #	Date	Time	Discharge (gallons)	pH	Temperature (Celcius)	Specific Conductance (micromhos/cm)
MW-23	4/12/92	14:10	1	6.05	11.5	195
MW-23	4/12/92	14:25	5	6.07	12	190
MW-23	4/12/92	14:50	10	6.03	12.5	180
MW-23	4/12/92	15:10	15	5.99	13	180
MW-24	4/12/92	9:20	1	6.24	12	255
MW-24	4/12/92	9:45	3	6.23	12.5	335
MW-24	4/12/92	10:00	6	6.26	13	320
MW-25	4/13/92	16:50	1	6.28	15	270
MW-25	4/13/92	17:00	2	6.22	14.5	280
MW-25	4/13/92	17:10	5	6.23	14	300
SB-3	4/13/92	10:30	1	6.2	15	550
SB-3	4/13/92	11:00	5	6.24	15	600
SB-3	4/13/92	12:00	15	6.21	16.5	650
SB-6	4/13/92	10:05	1	6.77	13	145
SB-6	4/13/92	10:10	3	6.74	13.5	135
SB-6	4/13/92	10:15	5	6.8	14	135
SB-11	4/13/92	15:00	1	6.18	14.5	140
SB-11	4/13/92	15:25	5	6.21	14.5	160
SB-11	4/13/92	16:00	15	6.26	15	175
'1-87	4/15/92	13:50	~100	7.69	17	210
'2/89	4/15/92	14:10	~100	8.14	15	150
6-167	4/15/92	11:45	~100	8.06	15	150
8-188	4/15/92	13:30	~100	8.15	17	250
10-205	4/15/92	10:52	~100	7.83	16	500
11-206	4/15/92	13:45	~100	7.58	17	200
12-247	4/15/92	15:15	~100	7.68	16	185
14-283	4/15/92	15:05	~100	7.58	16	210
15-286	4/15/92	15:10	~100	7.57	16	185
16-289	4/15/92	14:55	~100	7.85	17	160

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TABLE 5
 Slug Test Variables Measured for Calculation of Hydraulic Conductivity

WELL #	BORING DPTH (Feet)	ln(Re/Rw)	Yo	Time (M. nutes)	2L (Feet)	Y	Time (Days)	Yo/Yt	ln(Yo/Yt)	Hydraulic Conductivity (Feet/Day)
12	61	2.874	1	1.05	30	0.1	0.00072917	1.0	2.30	2.24
12	61	2.874	1.4	1	30	0.1	0.0006944	1.4	2.64	2.70
12	61	2.874	1	1	30	0.1	0.0006944	1.0	2.30	2.36
12	61	2.874	1.3	1.1	30	0.1	0.0007639	1.3	2.56	2.39
13	78	3.185	4	3.5	50	0.1	0.00243056	4.0	3.69	0.72
13	78	3.185	1.2	2.45	50	0.1	0.0017014	1.2	2.48	0.69
14	29	2.075	0.35	2.5	20	0.1	0.00173611	3.5	1.25	0.56
14	29	2.075	1	0.95	20	0.2	0.0006597	5	1.61	1.88
15b	46	1.98	1.3	0.2	16	0.4	0.0001389	3.25	1.18	7.79
15b	69	2.584	5.8	1.2	30	1	0.00833333	5.8	1.76	0.13
15d	69	2.584	1.7	17.5	30	0.1	0.0121528	1.7	2.83	0.15
16	23	2.457	1.05	1.45	30	0.1	0.00100694	10.5	2.35	1.42
16	23	2.457	1.6	1.6	30	0.1	0.0011111	1.6	2.77	1.52
17	35	2.294	0.7	0.25	26	0.1	0.00017361	7	1.95	7.34
17	35	2.294	0.7	0.5	26	0.1	0.0003472	7	1.95	3.67
19	33	2.433	0.75	7.3	30	0.1	0.00506944	7.5	2.01	0.24
19	33	2.433	0.75	4.1	30	0.2	0.0026472	3.75	1.32	0.28
20	31	2.188	0.85	1.2	20	0.1	0.0008333	8.5	2.14	2.08
20	31	2.188	0.45	3.5	20	0.1	0.00243056	4.5	1.50	0.50
21	43	2.899	0.55	2.1	40	0.1	0.00145833	5.5	1.70	0.63
21	43	2.899	1	1.8	40	0.1	0.00125	10	2.30	0.99
21	43	2.899	0.6	3	40	0.1	0.00208333	6	1.79	0.46
21	43	2.899	1	1.5	40	0.1	0.0010417	10	2.30	1.19
22	76	1.972	0.4	8	14	0.1	0.0055556	4	1.38	0.26
23	51	2.646	1.1	0.75	30	0.1	0.0005208	11	2.40	3.01
23	51	2.646	1.2	0.65	30	0.1	0.0004514	12	2.48	3.60
23	51	2.646	1.1	0.65	30	0.1	0.00045139	11	2.40	3.48
23	51	2.646	1.2	0.75	30	0.1	0.00052083	12	2.48	3.12
24	23	2.212	1.2	0.8	23	0.1	0.00055556	12	2.48	3.19
24	23	2.212	1.2	1.1	23	0.1	0.0007639	12	2.48	2.32
24	23	2.212	1.3	0.9	23	0.1	0.000625	13	2.56	2.93
sb-11	85	2.857	0.55	4.0	46	0.1	0.0277778	5.5	1.70	0.03
sb-11	85	2.857	0.63	2.5	46	0.2	0.01736111	3.15	1.15	0.03
sb-6	85	2.27	1.2	2.3	14	0.1	0.0159722	1.2	2.48	0.19
sb-6	85	2.27	1.05	2.1	14	0.1	0.01458333	10.5	2.35	0.19

BOLD FONT DENOTES RECOVERY TEST

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TABLE 6
ANALYTICAL METHODS

CAMP CARROLL BASELINE STUDY - ANALYTICAL METHODS

TARGET COMPOUNDS	ANALYTICAL EPA METHODS	SOIL DETECTION LIMITS (wet wt)	UNITS	WATER DETECTION LIMITS	UNITS
Halogenated Volatile Organics	601/8010			1	ug/L
Aromatic Volatile Organics	602/8020			0.5	ug/L
Volatile Petroleum Hydrocarbons	mod 8015			0.05	mg/L
Semivolatile Compounds	625/8270			10 - 50*	ug/L
Organophosphate Pesticides	614/8140			0.2	mg/L
Total Phosphorus	365.2	1	mg/kg	0.02	mg/L
Nitrate-N	352.1	NA	mg/kg	0.05	mg/L
Sulfate	375.4	4	mg/kg	0.6	mg/L
Metals					
Arsenic	6010/7000	0.3	mg/kg	0.003	mg/L
Barium	6010/7000	0.02	mg/kg	0.002	mg/L
Cadmium	6010/7000	0.02	mg/kg	0.002	mg/L
Chromium	6010/7000	0.05	mg/kg	0.005	mg/L
Copper	6010/7000	0.06	mg/kg	0.006	mg/L
Lead	6010/7000	0.5	mg/kg	0.003	mg/L
Mercury	6010/7000	0.05	mg/kg	0.0002	mg/L
Nickel	6010/7000	0.1	mg/kg	0.01	mg/L
Selenium	6010/7000	0.3	mg/kg	0.003	mg/L
Silver	6010/7000	0.1	mg/kg	0.01	mg/L
Zinc	6010/7000	0.2	mg/kg	0.02	mg/L

* Detection Limit is compound specific

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TABLE 8
TRIP, METHOD, AND PROCEDURE BLANKS REVIEW

CAMP CARROLL BASELINE STUDY - TRIP, METHOD, AND PROCEDURE BLANKS REVIEW - NET					
SAMPLE	MATRIX	SAMPLE I.D.	ANALYSIS	ANALYSIS DATE	TARGET COMPOUNDS DETECTED
Method Blank	Water	Reagent Water	8270	4/27/92	None
Method Blank	Water	Reagent Water	8270	4/23/92	None
Trip Blank	Water	TB-1	8010	4/28/92	None
Trip Blank	Water	TB-1	8020	4/28/92	None
Trip Blank	Water	TB-2	8010	4/29/92	None
Trip Blank	Water	TB-2	8020	4/29/92	None
Method Blank	Water	Reagent Water	8015	4/23/92-4/24/92	None
Method Blank	Water	Reagent Water	8015	4/22/92-4/23/92	None
Method Blank	Water	Reagent Water	NPS	4/23/92-4/24/92	None
Method Blank	Water	Reagent Water	NPS	4/17/92-4/24/92	None
Method Blank	Water	Reagent Water	8010	4/17/92	None
Method Blank	Water	Reagent Water	8010	4/20/92	None
Method Blank	Water	Reagent Water	8010	4/24/92	None
Method Blank	Water	Reagent Water	8010	4/28/92	None
Method Blank	Water	Reagent Water	8010	4/29/92	None
Method Blank	Water	Reagent Water	8020	4/21/92	None
Method Blank	Water	Reagent Water	8020	4/23/92	None
Method Blank	Water	Reagent Water	8020	4/27/92	None
Method Blank	Water	Reagent Water	8020	4/28/92	None
Method Blank	Water	Reagent Water	8020	4/29/92	None
Method Blank	Water	Reagent Water	8020	4/30/92	None
Method Blank	Water	Reagent Water	Metals	4/22/92-4/29/92	None
Method Blank	Water	Reagent Water	Metals	4/30/92-5/7/92	None
Method Blank	Water	Reagent Water	8140	4/29/92-4/30/92	None
Method Blank	Sand	Standard Ottawa Sand	Metals	4/30/92-5/7/92	None
Method Blank	Sand	Standard Ottawa Sand	P, S	4/24/92-5/1/92	None

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TABLE 9

CAMP CARROLL BASELINE STUDY - Matrix Spike and Matrix Spike Duplicates Recoveries Review - NET						
SAMPLE	DATE	MATRIX	METHOD	COMPOUNDS	% RECOVERY	% RECOVERY
					MS	MSD
Lab Control Sample	4/29/92-4/30/92	Water	8140	Diazinon	83%	72%
Lab Control Sample	4/29/92-4/30/92	Water	8140	Me-Parathion	66%	66%
Lab Control Sample	4/29/92-4/30/92	Water	8140	Et-Parathion	71%	68%
Lab Control Sample Dup	4/23/92	Water	mod 8015	Volatile TPH	92%	
SS-309	5/1/92	Soil	365.2	T. Phosphorus	94%	
MW-12	4/17/92	Water	8010	1,1-Dichloroethane	90%	95%
MW-12	4/17/92	Water	8010	1,1,2-Trichloro-1,2,2-trifluoroethane	93%	91%
MW-12	4/17/92	Water	8010	1,1,1-Trichloroethane	94%	100%
MW-12	4/17/92	Water	8010	Trichloroethylene	98%	98%
MW-12	4/17/92	Water	8010	Perchloroethylene	97%	92%
MW-12	4/17/92	Water	8010	Chlorobenzene	88%	87%
MW-12	4/17/92-4/24/92	Water	424F	Total Phosphorus	100%	
MW-12	4/17/92-4/24/92	Water	375.4	Sulfate	90%	
MW-15s	4/20/92	Water	8010	1,1-Dichloroethane	83%	84%
MW-15s	4/20/92	Water	8010	1,1,2-Trichloro-1,2,2-trifluoroethane	89%	93%
MW-15s	4/20/92	Water	8010	1,1,1-Trichloroethane	84%	89%
MW-15s	4/20/92	Water	8010	Trichloroethylene	90%	89%
MW-15s	4/20/92	Water	8010	Perchloroethylene	94%	93%
MW-15s	4/20/92	Water	8010	Chlorobenzene	93%	91%
MW-16	4/30/92-5/7/92	Water	metals	As	84%	
MW-16	4/30/92-5/7/92	Water	metals	Ba	100%	
MW-16	4/30/92-5/7/92	Water	metals	Cd	95%	
MW-16	4/30/92-5/7/92	Water	metals	Cr	100%	
MW-16	4/30/92-5/7/92	Water	metals	Cu	93%	
MW-16	4/30/92-5/7/92	Water	metals	Pb	110%	
MW-16	4/30/92-5/7/92	Water	metals	Ni	99%	
MW-16	4/30/92-5/7/92	Water	metals	Se	95%	
MW-16	4/30/92-5/7/92	Water	metals	Ag	80%	
MW-16	4/30/92-5/7/92	Water	metals	Zn	99%	
MW-16	4/28/92	Water	8020	Benzene	108%	111%
MW-16	4/28/92	Water	8020	Toluene	111%	114%
MW-16	4/28/92	Water	8020	Chlorobenzene	115%	117%

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TABLE 9

CAMP CARROLL BASELINE STUDY - Matrix Spike and Matrix Spike Duplicates Recoveries Review - NET							
Sample	Date	Matrix	Method	Compounds	% Recovery	% Recovery	% RPD
MW-17	4/24/92	Water	352.1	Nitrate	105%		
MW-18	4/21/92	Water	8020	Benzene	94%	98%	4%
MW-18	4/21/92	Water	8020	Toluene	94%	100%	6%
MW-18	4/21/92	Water	8020	Chlorobenzene	94%	98%	4%
MW-18	4/22/92-4/23/92	Water	metals	As	94%		
MW-18	4/22/92-4/23/92	Water	metals	Ba	93%		
MW-18	4/22/92-4/23/92	Water	metals	Cd	78%		
MW-18	4/22/92-4/23/92	Water	metals	Cr	81%		
MW-18	4/22/92-4/23/92	Water	metals	Cu	84%		
MW-18	4/22/92-4/23/92	Water	metals	Pb	98%		
MW-18	4/22/92-4/23/92	Water	metals	Ni	80%		
MW-18	4/22/92-4/23/92	Water	metals	Se	97%		
MW-18	4/22/92-4/23/92	Water	metals	Ag	75%		
MW-18	4/22/92-4/23/92	Water	metals	Zn	79%		
MW-20	4/23/92-4/24/92	Water	375.4	Sulfate	100%		
MW-21	4/24/92	Water		Hg	100%		
MW-23	4/17/92	Water	352.1	Nitrate	95%		
MW-25	4/23/92	Water	mod 8015	TPH	94%	87%	8%
SB-6	4/24/92	Water	8010	1,1-Dichloroethane	106%	100%	6%
SB-6	4/24/92	Water	8010	1,1,2-Trichloro-1,2,2-trifluoroethane	92%	96%	4%
SB-6	4/24/92	Water	8010	1,1,1-Trichloroethane	93%	98%	5%
SB-6	4/24/92	Water	8010	Trichloroethylene	76%	80%	5%
SB-6	4/24/92	Water	8010	Perchloroethylene	29%	18%	47%
SB-6	4/24/92	Water	8010	Chlorobenzene	92%	100%	8%
PW 10-205	4/29/92	Water	8020	Benzene	92%	98%	6%
PW 10-205	4/29/92	Water	8020	Toluene	90%	102%	13%
PW 10-205	4/29/92	Water	8020	Chlorobenzene	92%	96%	4%
PW 15	4/29/92	Water	8010	1,1-Dichloroethane	100%	89%	12%
PW 15	4/29/92	Water	8010	1,1,2-Trichloro-1,2,2-Trifluoroethane	100%	99%	1%
PW 15	4/29/92	Water	8010	1,1,1-Trichloroethane	103%	103%	<1%
PW 15	4/29/92	Water	8010	Trichloroethylene	48%	47%	2%
PW 15	4/29/92	Water	8010	Perchloroethylene	87%	91%	4%
PW 15	4/29/92	Water	8010	Chlorobenzene	100%	101%	1%

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TABLE 9

CAMP CARROLL BASELINE STUDY - Matrix Spike and Matrix Spike Duplicates Recoveries Review - NET						
Sample	Date	Matrix	Method	Compounds	% Recovery	% RPD
FP-S	4/28/92	Water	8010	1,1-Dichloroethane	100%	<1%
FP-S	4/28/92	Water	8010	1,1,2-Trichloro- 1,2,2-Trifluoroethane	93%	6%
FP-S	4/28/92	Water	8010	1,1,1-Trichloroethane	92%	7%
FP-S	4/28/92	Water	8010	Trichloroethylene	90%	10%
FP-S	4/28/92	Water	8010	Perchloroethylene	92%	8%
FP-S	4/28/92	Water	8010	Chlorobenzene	89%	11%
MW-22	4/30/92	Water	8270	2-Fluorophenol	45%	
MW-22	4/30/92	Water	8270	Phenol-d6	30%	
MW-22	4/30/92	Water	8270	Nitrobenzene-d5	49%	
MW-22	4/30/92	Water	8270	2-Fluorobiphenyl	56%	
MW-22	4/30/92	Water	8270	2,4,5-Tribromophenol	32%	
MW-22	4/30/92	Water	8270	Terphenyl-d14	86%	
MW-23	4/30/92	Water	8270	2-Fluorophenol	43%	
MW-23	4/30/92	Water	8270	Phenol-d6	35%	
MW-23	4/30/92	Water	8270	Nitrobenzene-d5	66%	
MW-23	4/30/92	Water	8270	2-Fluorobiphenyl	71%	
MW-23	4/30/92	Water	8270	2,4,5-Tribromophenol	30%	
MW-23	4/30/92	Water	8270	Terphenyl-d14	98%	
MW-12	4/30/92	Water	8270	2-Fluorophenol	49%	
MW-12	4/30/92	Water	8270	Phenol-d6	35%	
MW-12	4/30/92	Water	8270	Nitrobenzene-d5	62%	
MW-12	4/30/92	Water	8270	2-Fluorobiphenyl	69%	
MW-12	4/30/92	Water	8270	2,4,5-Tribromophenol	41%	
MW-12	4/30/92	Water	8270	Terphenyl-d14	96%	
SB-3	4/27/92	Water	8270	2-Fluorophenol	14%	
SB-3	4/27/92	Water	8270	Phenol-d6	17%	
SB-3	4/27/92	Water	8270	Nitrobenzene-d5	35%	
SB-3	4/27/92	Water	8270	2-Fluorobiphenyl	75%	
SB-3	4/27/92	Water	8270	2,4,5-Tribromophenol	30%	
SB-3	4/27/92	Water	8270	Terphenyl-d14	100%	
MW-13	4/27/92	Water	8270	2-Fluorophenol	13%	
MW-13	4/27/92	Water	8270	Phenol-d6	16%	
MW-13	4/27/92	Water	8270	Nitrobenzene-d5	42%	

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TABLE 9

CAMP CARROLL BASELINE STUDY - Matrix Spike and Matrix Spike Duplicates Recoveries Review - NET						
Sample	Date	Matrix	Method	Compounds	% Recovery	% RPD
MW-13	4/27/92	Water	8270	2-Fluorobiphenyl	68%	
MW-13	4/27/92	Water	8270	2,4,5-Tribromophenol	15%	
MW-13	4/27/92	Water	8270	Terphenyl-d14	82%	
MW-14	4/27/92	Water	8270	2-Fluorophenol	51%	
MW-14	4/27/92	Water	8270	Phenol-d6	40%	
MW-14	4/27/92	Water	8270	Nitrobenzene-d5	48%	
MW-14	4/27/92	Water	8270	2-Fluorobiphenyl	49%	
MW-14	4/27/92	Water	8270	2,4,5-Tribromophenol	21%	
MW-14	4/27/92	Water	8270	Terphenyl-d14	56%	

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TABLE 10
LABORATORY DUPLICATE REVIEW

CAMP CARROLL BASELINE STUDY - LABORATORY DUPLICATE REVIEW - NET									
SAMPLE	SS-309	MW-12	MW-16	MW-17	MW-18	MW-20	MW-21	MW-23	
PHOSPHORUS	TEST 1	52	ND			ND			
	TEST 2	50	ND			ND			
	RPD	4%	<1%			<1%			
NITRATE	TEST 1			0.02				2.2	
	TEST 2			0.02				2.1	
	RPD			<1%				5%	
SULFATE	TEST 1		23						
	TEST 2		23						
	RPD		<1%						
Pb	TEST 1				0.011				
	TEST 2				0.012				
	RPD				9%				
Hg	TEST 1					ND			
	TEST 2					ND			
	RPD					<1%			
ALL METALS	TEST 1			ND					
	TEST 2			ND					
	RPD			<1%					

TABLE 11
METHOD DETECTION LIMITS

CAMP CARROLL BASELINE STUDY - METHOD DETECTION LIMITS - NET									
TARGET COMPOUNDS	ANALYTICAL EPA METHODS	SOIL (w. wt)	UNITS	WATER	UNITS	SAMPLES WITH ELEVATED DETECTION LIMITS			
Halogenated Volatile Organics	601/8010			1	ug/L	MW-19 (25 ug/L)**	SB-3 (10 ug/L)**		
Aromatic Volatile Organics	602/8020			0.5	ug/L				
Volatile Petroleum Hydrocarbons	mod 8015			10 - 50	ug/L	MW-18 (0.06mg/L)	SB-3 (0.5 mg/L)**		
Semivolatile Compounds	625/8270			0.2	mg/L	MW-12 (11 - 57 ug/L)*	MW-14 (12 - 62 ug/L)*	MW-22 (11 - 57 ug/L)*	MW-23 (13 - 63 ug/L)*
Organophosphate Pesticides	614/8140				mg/L	SB-3 (20 mg/L)**			
Phosphorus, Nitrate, Sulfate	PNS	1/NA/4	mg/kg	.02/.05/6	mg/L				
Metals									
Arsenic		0.3	mg/kg	0.003	mg/L				
Barium		0.02	mg/kg	0.002	mg/L				
Cadmium		0.02	mg/kg	0.002	mg/L				
Chromium		0.05	mg/kg	0.005	mg/L				
Copper		0.05	mg/kg	0.006	mg/L				
Lead		0.5	mg/kg	0.003	mg/L				
Mercury		0.05	mg/kg	0.0002	mg/L				
Nickel		0.1	mg/kg	0.01	mg/L				
Selenium		0.3	mg/kg	0.003	mg/L				
Silver		0.1	mg/kg	0.01	mg/L				
Zinc		0.2	mg/kg	0.02	mg/L				
* Elevated detection limit due to insufficient sample supplied to the laboratory									
** Elevated detection limit due to dilution of sample necessary to maintain linear range of detection									

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TABLE 12
SURROGATE COMPOUND INTERFERENCE REVIEW

CAMP CARROLL BASELINE STUDY - SURROGATE COMPOUND INTERFERENCE REVIEW - NET									
ANALYTICAL EPA METHOD 625/8270									
COMPOUND	ACCEPTABLE RECOVERIES	SAMPLES/RECOVERIES (%)							
		MW-12	MW-13	MW-14	MW-22	MW-23	SB-3		
2-Fluorophenol	21% - 100%	49	13*	51	45	43			14*
Phenol-d6	10% - 94%	35	16	40	30	35			17
Nitrobenzene-d5	35% - 114%	62	42	48	49	66			35
2-Fluorobiphenyl	43% - 116%	69	68	49	56	71			75
2,4,6-Tribromophenol	10% - 123%	41	15	21	32	30			30
Terphenyl-d14	33% - 141%	96	82	56	86	98			100

* One surrogate outside of acceptable recoveries per sample is permissible.

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TABLE 13
SUMMARY OF ANALYTICAL RESULTS

WELL SAMPLE	TABLE 13. SUMMARY OF ANALYTICAL RESULTS									
	PCE ug/L	TCE ug/L	CHCl3 ug/L	1,2Dichloroethene ug/L	Mex12 ug/L	1,1Dichloroethene ug/L	1,2Dichloroethane ug/L	1,1,1Trichloroethane ug/L	1,1,1Trichloroethane ug/L	Toluene ug/L
Detection										
Limits	1	1	1	1	1 to 5	1	1	1	1	0.5
MW12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW14	7	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW15	ND	2	1	ND	ND	ND	ND	ND	ND	ND
MW15S	ND	7	4	ND	ND	ND	ND	ND	ND	ND
MW16	ND	ND	3	ND	ND	ND	ND	ND	ND	ND
MW17	ND	150	ND	5	ND	ND	ND	ND	ND	ND
MW:8	ND	ND	ND	ND	5	ND	ND	ND	ND	ND
MW:9	ND	ND	ND	ND	70	1100	70	4700	1.1	ND
MW20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW21	1	58	1	3	1	ND	ND	ND	ND	ND
MW22	26	19	8	ND	ND	23	ND	ND	ND	ND
MW23	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW24	ND	ND	ND	4	1	ND	ND	ND	ND	ND
MW25	ND	ND	ND	6	ND	ND	ND	ND	ND	ND
SB3	650	2000	1700	1800	130	ND	ND	ND	ND	ND
SB6	220	55	3	12	ND	ND	ND	ND	ND	ND
SB1:	220	46	8	55	ND	ND	ND	ND	ND	ND

* Sample contains peaks in the volatility range of diesel at an approximate concentration of 5.4mg/L, but peaks do not match the diesel pattern.

A higher than normal detection limit is reported for diesel due to these interfering peaks.

ND = NOT QUANTIFIED ABOVE THE DETECTION LIMIT

BLANKS = NO ANALYSIS COMPLETED

TABLE 13
SUMMARY OF ANALYTICAL RESULTS

WELL SAMPLE	PCE ug/L	TCE ug/L	CHCl3 ug/L	1,2Dichloroethene ug/L	MeCl2 ug/L	1,1Dichloroethene ug/L	1,2Dichloroethane ug/L	1,1,1Trichloroethane ug/L	Toluene ug/L
Detection Limits	1	1	1	1	1 to 5	1	1	1	0.5
PW1-87	4	12	8	38	ND	ND	ND	ND	ND
PW2-89	140	33	3	120	ND	ND	ND	ND	ND
PW3	ND	ND	ND	ND	ND	ND	ND	ND	ND
PW4	ND	ND	ND	ND	ND	ND	ND	ND	ND
PW5	ND	ND	ND	ND	ND	ND	ND	ND	ND
PW6	1	71	ND	ND	ND	ND	ND	ND	ND
PW7	ND	ND	ND	ND	ND	ND	ND	ND	ND
PW8-188	ND	ND	ND	ND	ND	ND	ND	ND	ND
PW9	ND	ND	ND	ND	ND	ND	ND	ND	ND
PW10	ND	ND	ND	ND	ND	ND	ND	ND	ND
PW11-206	ND	9	ND	ND	ND	ND	ND	ND	ND
PW-12	15	200	3	37	ND	8	ND	5	ND
PW-13	ND	ND	ND	ND	ND	ND	ND	ND	ND
PW-14	3	3	ND	ND	ND	ND	ND	ND	ND
PW-15	6	68	4	76	ND	ND	ND	ND	ND
PW-16	5	22	ND	9	ND	ND	ND	ND	ND
FP-S	ND	ND							
HP-S									
ND = NOT QUANTIFIED ABOVE THE DETECTION LIMIT									
BLANKS = NO ANALYSIS COMPLETED									

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TABLE 14
COMPARISON OF ANALYTICAL RESULTS FROM QA LAB (NET) AND ANALYTICAL LAB (PACIFIC)

TABLE 14. COMPARISON OF ANALYTICAL RESULTS FROM QA LAB (NET) AND ANALYTICAL LAB (PACIFIC)												
Sample	NET	PEL	NET	PEL	NET	PEL	NET	PEL	NET	PEL	NET	PEL
	Ba		Zn		Toluene		Xylenes		Malathion			
Detection Limit	0.02 mg/L	0.002	0.02 mg/L	0.02	0.5 ug/L	0.5	0.6 ug/L	0.5				20
MW-22	0.02	0.11	0.05	ND	ND	ND	ND	ND				
MW-23	0.13	0.15	0.06	ND	ND	ND	ND	ND				
SB-3					4300	ND	11	ND	130	94		
PW-12					ND	ND	ND	ND				
ND = NOT DETECTED ABOVE QUANTITATION LIMIT												
BLANK = NOT ANALYZED FOR												

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TABLE 15
CONTAMINANT LEVELS DETECTED IN VICINITY OF SOURCE AREAS ON CAMP CARROLL

POTENTIAL SOURCE AREA	DOWN-GRADIENT WELL OR SURFACE WATER SAMPLE	TCE (ppb)	POE (ppb)	1,2-DCE (ppb)	1,1-DCE (ppb)	1,1,1-TCA (ppb)	TPH (ppb)	Pb (ppb)	Zn (ppb)	NO3 (ppb)
BEO #2 LANDFILL	MW-22	19	26	ND	29	ND	NA	35	ND	440
HEAT PLANT	MW-21	58	1	3	ND	ND	ND	5	ND	1100
BUILDING 309	MW-19	ND	ND	ND	1100	4700	NA	ND	ND	2200
BASE FUEL POINT	MW-18	ND	ND	ND	ND	ND	ND	12	ND	1800
	MW-24	ND	ND	4	ND	ND	NA	11	ND	60
	PW 12-247	200	15	37	8	5	NA	NA	NA	NA
	PW 13-289	ND	ND	ND	ND	ND	NA	NA	NA	NA
	PW 14-283	3	3	ND	ND	ND	NA	NA	NA	NA
PW 15-286	68	6	76	ND	ND	NA	NA	NA	NA	
AREA D	MW-23	ND	ND	ND	ND	ND	NA	ND	ND	2200
BUILDINGS 326 AND 375	MW-17	150	ND	5	ND	ND	NA	10	ND	20
	PW 12-247	200	15	37	8	5	NA	NA	NA	NA
	PW 13-289	ND	ND	ND	ND	ND	NA	NA	NA	NA
	PW 14-283	3	3	ND	ND	ND	NA	NA	NA	NA
PW 15-286	68	6	76	ND	ND	NA	NA	NA	NA	
AREA BB AND SEWAGE TREATMENT FACILITY	MW-12	ND	ND	ND	ND	ND	NA	ND	ND	150
OLD CANNIBALIZATION SITE	MW-25	ND	ND	6	ND	ND	ND	NA	NA	NA
AREA EE	MW-13	ND	ND	ND	ND	ND	ND	NA	30	3100
AREA FF	MW-15	2	ND	ND	ND	ND	NA	ND	ND	780
	MW-15s	7	ND	ND	ND	ND	NA	NA	NA	NA
	MW-16	ND	ND	ND	ND	ND	ND	ND	ND	4400
AREA 41	MW-14	ND	7	ND	ND	ND	4	20	3100	
COSIS FACILITY	MW-20	ND	ND	ND	ND	ND	NA	7	40	20
	PW 6-167	71	1	ND	ND	ND	NA	NA	NA	NA
BUILDING 644 SITE	SB-3	2000	650	1800	ND	ND	2.4	NA	NA	NA
	SB-6	55	220	12	ND	ND	NA	NA	NA	NA
	SB-11	46	220	55	ND	ND	NA	NA	NA	NA
	PW 2-89	53	140	120	ND	ND	NA	NA	NA	NA
										NA= Not Analyzed ND= Not Detected

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ATTACHMENT 3

SAFETY COMPLETION REPORTS AND FIELD NOTES

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SAFETY COMPLETION REPORT

This report must be submitted to the Operating Unit Health and Safety Officer upon completion of the project.

PROJECT NAME: CAMP CARROLL

PROJECT NUMBER: 91CO499H

1. EVALUATION OF HEALTH AND SAFETY PLAN

a. Was the plan adequate?

YES.

b. Did the plan adequately anticipate chemical and physical hazards actually present at the site?

YES, WITH THE EXCEPTION NOTED BELOW.

c. What situations were discovered that were not anticipated in the health and safety plan?

POTENTIALLY RADIOACTIVE WASTE WAS REPORTED TO HAVE BEEN PRESENT IN A HISTORICAL DUMP SITE. A MONITORING WELL WAS INSTALLED AND INADVERTENTLY ENCOUNTERED WASTE MATERIALS AT THAT LOCATION.

d. How were these situations handled?

SINCE THE "RUMOR" THAT RADIOACTIVE WASTES MAY HAVE BEEN PRESENT IN AN INACTIVE WASTE SITE, WAS NOT DISCOVERED UNTIL THE POTENTIALLY RADIOACTIVE MATERIAL WAS ENCOUNTERED, THE SITE WAS SHUT DOWN SECURED WITH BARRICADES + CAUTION TAPE. ALL PPE REMOVED AND LEFT AT THE SITE, AND A RADIATION SURVEY WAS CONDUCTED BY CERTIFIED RADIATION

e. Was the recommended PPE (such as gloves, respirators, eye, face and skin protection) adequate to protect employees from chemical exposures?

YES.

TECHNICIANS (SCINTILLATION WIFE SAMPLES OBTAINED AND FIELD GEIGER COUNTERS UTILIZED). ALL RESULTS WERE NEGATIVE.

f. Comments

SINCE THE INVESTIGATION INCLUDED A HISTORICAL RECORDS SEARCH THAT WAS SIMULTANEOUS WITH THE FIELD INTRUSIVE INVESTIGATION, A COMPLETE KNOWLEDGE OF ALL HISTORICAL WASTE PRACTICES WAS NOT POSSIBLE PRIOR TO FIELD MOBILIZATION. CONSIDERING THIS LIMITATION, AN ADEQUATE ANTICIPATION OF THE PHYSICAL AND CHEMICAL HAZARDS WAS ADDRESSED IN THE PLAN.

2.0 HEALTH AND SAFETY ACTIVITIES

- a. Was air monitoring performed? Yes No
- b. What type of air monitoring was conducted? Personal Area
- c. What instrument was used? GASTECH CGI AND H-MU PIDS (10.2+11.7 eV)
- d. Was medical monitoring conducted? Yes No
- e. What changes were made due to air monitoring results?

THE DRILL CREW UPGRADED TO LEVEL C PPE ONLY ONCE DURING THE INVESTIGATION, WHEN ORGANIC VAPORS WERE INDICATED AT CONCENTRATIONS IN EXCESS OF ACCEPTABLE ACTION LEVELS AS PER THE H&S PLAN.

3.0 NAMES OF PERSONNEL ON SITE

Name	Company
[REDACTED] b6	WCC
[REDACTED] b6	WCC
[REDACTED] b6	WCC
[REDACTED] b6	FED - ACCF
[REDACTED] b6	FED
[REDACTED] b6	FED
[REDACTED] b6	FED
[REDACTED] b6	FED
[REDACTED] b6	FED
[REDACTED] b6	FED

4.0 PLEASE ATTACH THE FOLLOWING INFORMATION

- Air Monitoring Data Sheet - IN FIELD LOGBOOK.
- Medical Monitoring Records
- Compliance Agreements

FORM COMPLETED BY:

[REDACTED] b6
 Signature 5/11/92 Date

[REDACTED] b6
 Print Name

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Woodward-Clyde Consultants

HEALTH AND SAFETY COMPLIANCE AGREEMENT

I, the undersigned, have received a copy of the health and safety plan for the project identified below. I have read the plan, understand it, and agree to comply with all of the health and safety requirements therein. I understand that I may be prohibited from continuing work on the project for failing to comply.

I have have not (check one) been briefed by a project safety authority on the health and safety requirements of the project.

Project No. 91C0499H

Project Title CAMP CARROLL

Date of Plan March 6, 1992


Print Name b6


Signature b6

WCC
Firm

3/30/92
Date

Woodward-Clyde Consultants

HEALTH AND SAFETY COMPLIANCE AGREEMENT

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Project No. 91C0499H

Project Title CAMP CARROLL

Date of Plan MARCH 6, 1992

Print Name  ^{b6}, Phil

Signature  ^{b6}

Firm WOODWARD-CLYDE CONSULTANTS

Date 3/17/92

Woodward-Clyde Consultants

HEALTH AND SAFETY COMPLIANCE AGREEMENT

I, the undersigned, have received a copy of the health and safety plan for the project identified below. I have read the plan, understand it, and agree to comply with all of the health and safety requirements therein. I understand that I may be prohibited from continuing work on the project for failing to comply.

I have Y have not (check one) been briefed by a project safety authority on the health and safety requirements of the project.

Project No. 9100499H

Project Title CAMP CARROLL

Date of Plan MARCH 6, 1992

Print Name _____

[REDACTED]

b6

Signature _____

[REDACTED]

b6

(FED)

Firm _____

Date 3/19/92

Woodward-Clyde Consultants

HEALTH AND SAFETY COMPLIANCE AGREEMENT

I, the undersigned, have received a copy of the health and safety plan for the project identified below. I have read the plan, understand it, and agree to comply with all of the health and safety requirements therein. I understand that I may be prohibited from continuing work on the project for failing to comply.

I have have not (check one) been briefed by a project safety authority on the health and safety requirements of the project.


Project No. 91C0499H

Project Title CAMP CARROLL

Date of Plan MARCH 6, 1992


Print Name b6


Signature b6


Firm b6

16 Mar 1992
Date

Woodward-Clyde Consultants

HEALTH AND SAFETY COMPLIANCE AGREEMENT

I, the undersigned, have received a copy of the health and safety plan for the project identified below. I have read the plan, understand it, and agree to comply with all of the health and safety requirements therein. I understand that I may be prohibited from continuing work on the project for failing to comply.

I have have not (check one) been briefed by a project safety authority on the health and safety requirements of the project.

Project No. 91C0499H

Project Title Camp CARROLL

Date of Plan MARCH 6, 1992

 bb
Print Name

 bb
Signature

Firm _____

16 Mar 1992
Date

Woodward-Clyde Consultants

HEALTH AND SAFETY COMPLIANCE AGREEMENT

I, the undersigned, have received a copy of the health and safety plan for the project identified below. I have read the plan, understand it, and agree to comply with all of the health and safety requirements therein. I understand that I may be prohibited from continuing work on the project for failing to comply.

I have have not (check one) been briefed by a project safety authority on the health and safety requirements of the project.

Project No. 91C0499H

Project Title CAMP CARROLL

Date of Plan MARCH 6, 1992

Print Name  b6

Signature  b6

Firm ACOEF USAZE - FED

Date 16 MAR 92

555

Woodward-Clyde Consultants

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Project No. 91C0499H

Project Title CAMP CARROLL

Date of Plan MARCH 6, 1992

Print Name Mr. [REDACTED] b6

Signature [REDACTED] b6

Firm LISACC. PCW

Date 3/17/92

Woodward-Clyde Consultants

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 bb
Print Name

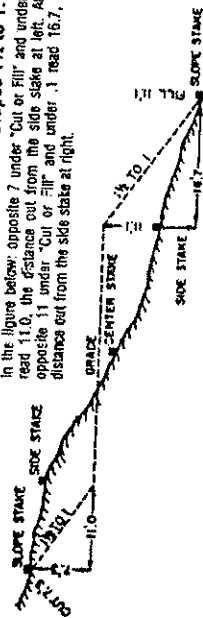
 bb
Signature

Firm _____

16 MAR 92
Date

DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

Roadway of any Width, Side Slopes 1 1/2 to 1.
 In the figure below, opposite 7 under "Cut or Fill" and under 3 read 11.0, the distance out from the slope stake at left. Also, opposite 11 under "Cut or Fill" and under .3 read 16.7, the distance out from the side stake at right.



Cut or Fill	Distance out from Side or Shoulder Stake										Cut or Fill
	0	1	2	3	4	5	6	7	8	9	
0	0.0	0.2	0.3	0.5	0.8	0.9	1.1	1.2	1.4	0	
1	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	1	
2	3.0	3.2	3.3	3.5	3.8	3.8	4.1	4.2	4.4	2	
3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.8	5.7	3	
4	6.0	6.2	6.3	6.5	6.8	6.6	6.9	7.1	7.2	4	
5	7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.8	8.7	5	
6	9.0	9.2	9.3	9.5	9.8	9.9	10.1	10.2	10.4	6	
7	10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.8	11.7	7	
8	12.0	12.2	12.3	12.5	12.6	12.9	13.1	13.2	13.4	8	
9	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	9	
10	15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	10	
11	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	11	
12	18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	12	
13	19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	13	
14	21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	14	
15	22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	15	
16	24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	16	
17	25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	17	
18	27.0	27.2	27.3	27.5	27.5	27.8	27.9	28.1	28.2	18	
19	28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	19	
20	30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	20	
21	31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	21	
22	33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	22	
23	34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	23	
24	36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	24	
25	37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	25	
26	39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	26	
27	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	27	
28	42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	28	
29	43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	29	
30	45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	30	
31	46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	31	
32	48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	32	
33	49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	33	
34	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	34	
35	52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	35	
36	54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	36	
37	55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	37	
38	57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	38	
39	58.5	58.7	58.8	59.0	59.1	59.3	59.4	59.6	59.7	39	
40	60.0	60.2	60.3	60.5	60.6	60.8	60.9	61.1	61.2	40	

CAMP CARROLL

WAEGWAN, KOREA

HEALTH AND SAFETY
FIELD BOOK

PROJECT NO. 9100499H

PROJECT MANAGER: [REDACTED] b6

SITE SAFETY OFFICER: [REDACTED] b6

MARCH 16, 1992 TO APRIL 15, 1992

765
 BASE - 11 *
 ABBN - 550 NINE
 COMM. 14-00911

"Rite in the Rain"
 The paper in this book has been treated
 by an exclusive chemical waterproofing
 process. Wet or dry, even the hardest
 pencil will produce a clean, sharp mark.

6039 13 9 11 71 1002 231 6 1 5 157 2009 11 11 5 51 6509

813 049 078 505 7

3/16/92

has already picked for Decon Area; he will "handle" all waste transfer/disposal; he will phone to get variance for FOIA records (if not available), he doesn't want his to impede progress of project.

0905 - checked meters - 7 in SA his FOIA; 10:27 - went to to mark well locations and check overhead utility line clearance.

WELL NO. DISTANCE TO NEAREST OVERHEAD LINES

- MW-12 > 45'
- MW-14 > 45'
- MW-16 ≥ 45'
- MW-13 X/5'

(to be continued)
1330 - went to discuss M&S issues w/ [redacted] will help get some items together.

1345 - I met Mr. [redacted] (SP?) current BASE SAFETY OFFICERS (replaces Mr. [redacted] with COM THOM on his part. reviewed work scope.

3/16/92 (E)

BASE SAFETY OFFICERS PROVIDED US
W/ SOME SIGNS IN HONOLULU + ENG.

1400 - WENT TO MEET
(BASE ITH.)

- DISCUSSED WORK + THE HES PLAN

• EMERGENCY SERVICES

→ 150TH = 1ST LINE OF CARE

→ 1543 @ ITRUK

→ HOSPITAL @ IRI @ SEDNA

→ TRIPUR @ Hawaii

↳ GENERAL E.M.S.

→ DISCUSSED EMERGENCY RESPONSE

→ BRING H'S PLAN FOR HER TO REVIEW

→ CUT FINGERS OFF OF GLOVES

SMASH FUTURE CARTRIDGES

• ANNE SMA SMOED LINE TO SEE OUR

H'S PLAN (WHICH I HAD JUST

REVIEWED BY HER) I SMA I'D GET

A COPY TO HER FOR REVIEW.

1500 - WENT TO GATHER MATERIALS TO

CONSTRUCT DECON PAD. OBTAINED

SOME ADAL. EYEWASH SOLUTION.

SET UP DECON PAD FOR DAILY USE

IN FENCED OFF, SECURED AREA W/

DEDICATED WATER + STEAM CLEANER.

3/16/92 ④

DECON AREA FOR RIG CONSTRUCTED W/ STEEL
JISQUINE + 4x4 TIMBER WRAPPED
BERMS, W/ PARAFLEX + SUMP PUMP, RIG
RAMP SET-UP. BUILT ON LOW SIDE OF
PARKING LOT.

1540-HELD H&S INFORMATION MEETING:

DISCUSSED THE FOLLOWING:

- GEN. SAFETY POLICY AS PER EN 385-111
(PROVIDED COPY IN KOREAN FOR THEIR
REVIEW; REFERENCED PERT. SECTIONS)
- REVIEWED EMPLOYEE AND PROJ. SAFETY
RECS (SCOPE OF PROJECT)
- EMPLOYEES RESPONSIBILITIES FOR SAFETY,
PROPERTY + REPORTING OF ACCIDENTS
- DISCUSSED MED FACILITIES, EMERGENCY
RESPONSE + INFO. POSTINGS/LOCATIONS
- PROCEDURES TO REPORT UNSAFE CONDITIONS/
PRACTICES
- SAFE CLEANANCE PROCEDURES
- EMERGENCY + FIRE FIGHTING PROCEDURES
- SITE SPECIFIC (JOB SPECIFIC) HAZARDS
AND RISK ASSESSMENT (CHEMICAL
HAZARDS + PHYSICAL HAZARDS - DRILL.
ABOVE/BELW AROUND WILDMES, USE OF HAZAR.
TOOLS, HEAT/COLD STRESS, VIBRA., DUST

3/16/92 ⑤

- CONTROL, HEARING PROTECTION, DRUM HANDLING, DECON OPERATIONS (STEAM CLEANING)
- AIR MONITORING + ACTION LEVELS, REVIKARD APE USE + PROTECTION LEVELS
- ALCOHOL + DRUG ABUSE POLICY
- SITE TRAFFIC CONTROL (AUTO + PEDEST)
- PERSONNEL DECON.
- DISASTE. PRACTICE
- MEETINGS
- VISITORS
- POSTINGS
- REVIEWED EMERGENCY + CONTINGENCY PROCEDURES
- USED CHALK BOARD TO DRAW 'EXCLUSION ZONE', 'DECON ZONE', 'SUPPORT ZONE' SET UP.
- ASKED FOR QUESTIONS, COMMENTS, CONCERNS. I PROVIDED THEM W/ (3) COPIES OF THE NIS PLAN + THE EM-385 IN KOREAN, FOR REVIEW.
- I REITERATED THE IMPORTANCE OF FAMILIARITY W/ THE PLAN WE DISCUSSED COMMUNICATION IMPORTANCE + HOW SAFETY IS 1st CONCERN.

1730 - MEETING COMPLETE; WILL DO FIT TESTS IN AM.
 1900 - RETURNED TO ROOM; CLEANED RESPIRATORS.

- NOTE:
- ① MR. [REDACTED] DOES NOT POSSESS 40-HR OSHA TRAINING RECORDS; THEREFORE, I WILL NOT ALLOW HIM TO DON PPE AND ENTER EXCLUSION ZONE.
 - ② MR. [REDACTED] HAS HURT HIS RIBS APPROX. 2 WEEKS AGO, AND THEREFORE WILL BE ON LIGHT LABOR.
 - ③ MR. [REDACTED] DOES NOT POSSESS A SMALL MSA RESPIRATOR, AND HENCE, IF HE CANNOT PASS A FIT TEST W/ ANOTHER RESP. THAT WE HAVE ON-SITE, WILL NOT WORK UNDER LEVEL C PROTECTION (WILL REMAIN OUTSIDE OF EXCLUSION ZONE).

* THESE ISSUES RELATED TO [REDACTED] AND [REDACTED]; AND TO [REDACTED] b6

⑤
B

3/17/92

0730 - MET DRILLERS OVER BREAKFAST, ASKED IF THEY HAD REVIEWED H'S PLANS, AND IF THEY HAD ANY QUESTIONS. NO QUESTIONS ASKED; SAID THEY UNDERSTOOD.

0930 - HELD 'INDOOR TRAINING' w/ [REDACTED] AND [REDACTED] b6

DISCUSSED ALL OF ITEMS LISTED ON Pg. (4); PLUS EMPHASIZED IMPORTANCE OF POLICING GENERAL SAFETY ISSUES AS COMPLIED WITH BY THE DRILL CREW. ALSO; I TOLD [REDACTED] b6

THAT I WILL NOT ALLOW MR. [REDACTED] INTO PPE AND THE EXCLUSION ZONE, WITHOUT 40 HOUR OSHA TRAINING CERTIFICATION. FURTHERMORE, ENTIRE CREW MUST PASS FIT-TESTING, PRIOR TO ANY LEVEL C WORK.

ALSO, [REDACTED] TOLD ME THAT RIG MAINTENANCE RECORDS ARE EN-ROUTE. HE ASSURED ME THAT THEY EXIST, AND WILL BE FIXED. SIGNED H'S COMPLIANCE AGREEMENTS.

3/17/92 ⑥

0900 - HELD SAFETY 'TRIGGERS' MEETING. REVIEWED SAFE STEERING COLUMN PRACTICE w/ DRIVERS, NEEDS TO HAVE FIRE EXT. 25' TO 75' FROM RIG; AND SAFE DECON PRACTICE ALSO, IMPORTANCE OF STEEL TOE BOOTS + HARD HATS ANY TIME RIG MUST IS UP.

0940 - GOT POLY-COATED THREX, GUNES, STEEL-TOE RUBBER BOOTS AND SAFETY GLASSES FOR DRIVERS.

1100 - DISCUSSED H'S PROBS w/ [REDACTED] b6

[REDACTED] WENT TO PHONE [REDACTED] AND [REDACTED] TRIED [REDACTED] b6

TO DECIDE TO SEND MR. [REDACTED] TO SEOU (HE HAS NO 40-HR TRAINING). NOT A PROBLEM; MR. [REDACTED] b6

'MASTER' DRIVER, THE HEALTH MR. [REDACTED] WILL BE HELD, AND TIME INJURED MR. [REDACTED] b6 WILL BE ON LIGHT-DUTY WORK.

1310 - TRANSFERRED ALL OF HEALTH & SAFETY FR. TO APPROX RIG DECON PAD FOUND. ADD. REF. CARTRIDGES, TWEET ETC. NEED: ADD CAUTION TAPE SAVER GLOVES

⑥
3/17/92

1400 - CONDUCTED FIT TEST TOP BOH

MR. [REDACTED] AND MR. [REDACTED] b6
BOH PASSED (W/MSA RUBBER)
THEN SPENDER / SIZE

MR. [REDACTED] b6	MR. [REDACTED] b6	MR. [REDACTED] b6	MR. [REDACTED] b6	MR. [REDACTED] b6	MR. [REDACTED] b6
1/2 FREE	1/2 FREE	FULL FREE			
MED	MED	MED	MED	MED/LG	MED/LG
LARGE	LARGE	LARGE	LARGE	NONE	NONE
NONE	NONE	NONE	NONE		
MED.	MED.				
MED/LG	MED/LG				

1540 - RESTOCKED / ORGANIZED
H&S SUPPLIES. PURCHASED DRINKS,
WATER. CLEANED ALL RESPIRATORS.
w/ RECORD SWAB. CHECKED FOR SEALS.

3/18/92

0800 - Calibrated 10.2 eV H-nk w/
100 ppm isobutylene standard
calibration gas.

0850 - met drivers. [REDACTED] went to
get excursion zone barrier out.
I prep'd H&S eq. for fire mfg.
for 1st hole (M-12). Preparing
posting sheets (OSHA lists, H&S,
MAPP, PHONE MAP + ELECTRICAL
CLEARANCE DOC'S), ORGANIZED
PERSONNEL DECON ZONE.

0930 - MEUD TRILANTE H&S MEETING.
DISCUSSED DTH'S PLANNED ACTIVITIES +
POSTINGS (SEE AGENT). CREW CONSISTS OF
MR. [REDACTED] WITH MR. [REDACTED] (UNIDENTIFIED). BOTH ARE
40 - WT OSHA CERTIFIED. HIGHLY
CAPABLE OF WORKING.

1006 - BEETA DRILLING ON M-12.

37-77000-50

(8)

3-19-91

0900 - Calibrated H-nu's.
 1000 - GAVE HIS INDICATION TO MR. [redacted]
 1030 - GAVE MR. [redacted] FIT TEST. PASSED w/ 66
 MSA 1/2 FREE LARGE NEG. BY [redacted]
 + IRRITANT SMOKE. DID NOT PASS w/
 HIS OWN SURVIVE-GIN RESP.
 1040 - WENT TO SET UP ON MW-13.
 11:00 - HEARD VIBRATE, SAFETY MTC. DISCUSSED
 DAY'S OPERATIONAL PLANS SET UP DECON
 GME, EXCLUSION ZONE, ETC.

MW-13	MONITORING	DRIVER	H-nu	TIME/F	MONITORING	DRIVER	H-nu
1309	5'	NO	NO		NO	NO	NO
1313	15'	"	"		"	"	"
1318	25'	"	"		"	"	"
	35'	"	"		"	"	"
	45'	"	"		"	"	"
	55'	"	"		"	"	"
	65'	"	"		"	"	"
	75'	"	"		"	"	"
	85'	"	"		"	"	"
	95'	"	"		"	"	"

SHUT DOWN @ 1700h/15

AIR MONITORING MW-12

TIME/F	MONITORING	DRIVER	H-nu
10:10/3'	NO	NO	NO
15'	"	"	"
20'	"	"	"
25'	"	"	"
35'	"	"	"
45'	"	"	"
5'	3	NO	NO
	10		

NOTE: STRONG WIND FROM NORTH (BIG SET UP w/ HOLE TO SOUTH)

3/20/91

0800 - Calibrated H-nus.
0900 - Held 'tailgate' mtg.; discussed plans for day → set 6" steel casing in hole for MW-13. Well as welder to connect casing string. Are safety key (as per REQUEST).

1000 - Checked hole annulus for combustible gasses prior to welding: Gas Tech = NO ppm; ND for LEL %; H-nu = ND for organic vapors. No odors; appears OK to weld casing in place.

1300 - Checked drillers breathing zone + hole annulus while cleaning it out. ND w/ H-nu + Gas Tech.

NOTE: DRILLER WEARS LEATHER GLOVES AND WELDING FACE MASK WHILE USING arc welder + acetylene welder.

1600 - Held weekly H&S mtg. Discussed practice so far (B&E monitoring, physical hazards, welding hazards, etc.) No questions.

⑦

3/21/92

0800 - met drillers. Reversed decan H&S practice. Rapid to get-up on MW-23. Set up enc zone, decan, etc. 1015 - Began drilling on MW-23.

MW-23

TIME /	H-nus		Gas Tech	
	BE	ANNULUS	BE	ANNULUS
1015 / 5'	ND	ND	ND	ND
10	"	"	"	"
20	"	"	"	"
30	"	"	"	"
40	"	"	"	"
50	"	"	"	"

NOTE: STRONG WIND FROM NORTH; PIC SITUATED w/ ANNULUS POINTING N.

Shut down @ 1750 hrs. 3/22/92

0800 - Held H&S tailgate setting to complete MW-23. ND 1100 - Set up to synout MW-23. ND H-nu or Gas Tech positive deflections.

1330 - went to clean rig + eq. for next well

1400 - Drilled to 50' & set 6" CASIM \rightarrow
3/23/92

0630 - Calibrated H-mu

0700 - Held His MITG.

0800 - Moved to MW-12B. Set up to drill & case well as per MW-12; cased to 50', drilled w/ 6" bit to 60'.

0930 - Built well in MW-12B. Added stand & bent.

1200 - Shut down (drillers)

(10)

MW12B 3/23.
H-mu
B.T. AMM.

10'	NA	ND	GRS Tech
20'	NA	"	BR RW
30'	NA	"	ND
40'	"	"	"
50'	"	"	"
3/24	"	"	"
60'	"	"	"

3/24/92

DRILLERS off \rightarrow AFTER WORK DAY.
checked materials, etc.

3/25/92

DRIVING
(1/2 DAY; DRILLERS
RETURNING FROM SEAR)

AM
[redacted] but I did finish work on MW-13 & MW-23.

1400 - DRILLERS RETURN held safety mtg. Discussed exclusion zone, monitoring of gases prior to welding & containment of cuttings
1430 - went to govt MW-12B.

(10)

3/25/92 (cont)

MET [redacted] (FEO) HES officer briefed on HES issues. He had no questions or concerns re: operations.

3/26/92

0730 - Cultivated H-mu
0800 - Held HES tailgate.
0810 - Moved to decn area.
Decn rig support truck, etc.; Fuel, water tank, refueled rig.
Cultivated H-mu
0920 - Moved to MW-21 location.

TIME	MW-21		Gas Tech	
	BZ	H-mu	BZ	minimums
0920/10'	NO	NO	NO	NO
0930 20'	"	"	"	"
30'	"	"	"	"
40'	"	"	"	"

(11)

3/26/92

1000 - Surface seeps appeared due to open work + air pressure. Point H-C adars detected. Nothing noted w/ H-mu or gas Tech (strong wind). Collected 2 water samples @ stream creek. Proceed to catch hole to avoid further off-gassing.

3/27/92

0730 - Cultivated H-mu
0830 - Held HES tailgate. [redacted] has advised that we use DEM help to complete remaining operations.

0910 - No detectable odors at H-mu. Tech readings in MW-21. Built well (start) + completed.

TIME	MW-17		MW-21	
	BZ	H-mu	BZ	H-mu
1000 - Set up to drill	NO	NO	NO	NO
10'	"	"	"	"
20'	"	"	"	"
30'	"	"	"	"

1700 - Held weekly H&S mtg. Discuss welding, cuttings handling, hearing protection + eye protection. No substitutions.

3/30/91

0730 - Calibrated H-mu.
 0800 - Held H&S Tailgate. Discuss standing of wells + safe operation of rust.
 0830 - No detectable odors in MW-17 pilot hole. Rained out + began well construction.

1410 - MW-18 BEGUN DRILLING

H-mu		G.T.	
B.Z.	HOLE	B.Z.	HOLE
ND	ND	ND	ND
ND	ND	NA	NA
NA	NA	↓	↓
35'			

1730 - Completed MW-18 to 20'.

(12)

3/31/92

0730 - Held H&S mtg for [redacted] discussed items listed on [redacted] re: employee induction. 0745 - Calibrated H-mu.
 0800 - Second Rig.
 0820 - Held H&S Tailgate; discussed decon procedure + safety barriers.
 0950 - Moved to MW-18.

0940 - BEGUN DRILLING MW-18

H-mu		G.T.	
B.Z.	HOLE	B.Z.	HOLE
ND	ND	ND	ND
20'			
30'			
35'			

4/1/92

0700 - Calibrated H-mu.
 0750 - Discussed site of MW-18. Major [redacted] plan to utilize them in non-oxidation zone capacity.
 0810 - Held H&S Tailgate.

1070 - Set up on old MW-12A location. 4/1/92
 Now called MW-25-
 1130 - Completed MW-25 (8') location
 Moved to base camp to decon.
 1200 - Broke for lunch
 1315 - Began drilling on MW-24.

H-m	GT
B.Z.	AMP.
10'	NO
20'	NO
23'	"
	"
	"

 1700 - Shut down for evening. 4/2/92
 0700 - Calig. H-m
 0800 - Held HES tailgate.
 Discussed sanding operation & creating pulling.
 1010 - Began drilling MW-16:

H-m	GT
An.	B.Z.
NO	NO
NO	NO
NO	NO
NO	NO

4/2/92
 Completed MW-16.
 Moved to decon area
 1430 - Moved to MW-14 location
 1530 - Began drilling MW-14

H-m	GT
An.	B.Z.
NO	NO
NO	NO
NO	NO
NO	NO

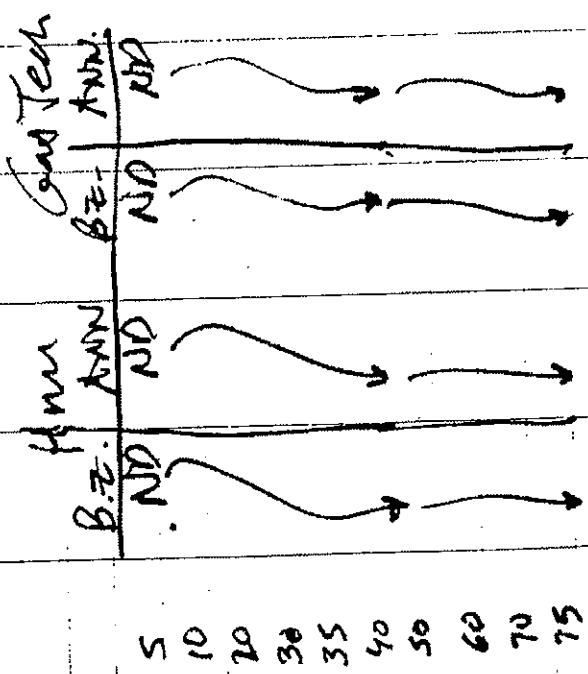
 1700 - Shut down on MW-14. Open hole ID ~ 41 FT; IDW ~ 30 FT. 4/3/92
 0700 - Calibrated H-m
 0800 - Held HES tailgate
 Discussed safe use of crane tools (SAS)
 Completed MW-14. No oars, no H-m operations.
 1130 - Decon'd Rig + eq.
 1330 - Set up on MW-20

H-m	GT
An.	B.Z.
NO	NO
NO	NO
NO	NO
NO	NO

4/6/92

0700 - Calibrated H-mm
 0800 - Held brief H&S mtg w/ drvk crew. Discussed w/ general practice safety on MW-20 - NP straight BT

1400 - Set up on MW-15

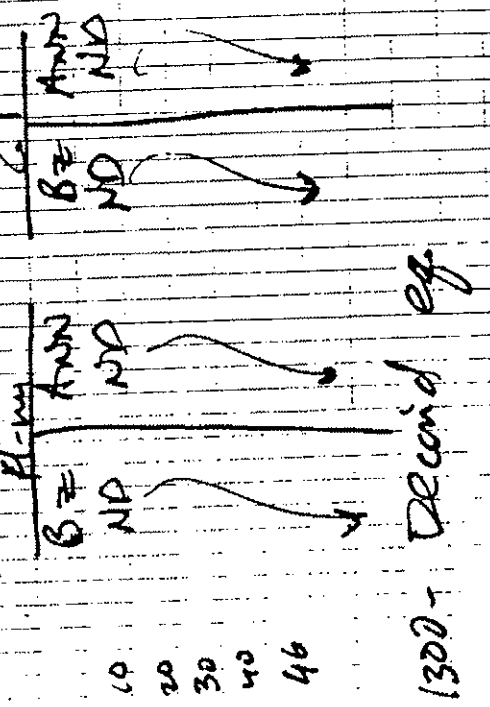


1700 - Shift down

4/7/92

0730 - Calibrated H-mm
 0810 - met dimmers; held brief H&S mtg. Discussed use of new pulling cable (larger gauge steel).
 0830 - 120 km or GT readings (deflextas) seen in open hole annulus of MW-15. Constructed well.

1050 - Drilled MW-15 adjacent to MW-15.



1300 - Record eq.

15

4/9/92
Cell Grated

0730 - met H-mu [redacted] MW-28 location. Held brief HES. Dismissed Level C operations.
 0830 - measured H-mu + G.T. Readings down hole MW-28 = ND on good.
 0930 - BEGAN WELL CONSTRUCTION.
 1330 - COMPLETED WELL CONSTRUCTION.
 1340 - [redacted] ON SITE. Shield he heard a rumour over lunch that low level RAD WASTE may have been pumped in area. He shut down, placed all of our APE into trash bags, secured site, left boots etc. at location, and cordoned off site w/ caution tape. He went to fuel camp and second out selves. This afternoon [redacted] will meet w/ Radiation Technicians AND NUCLEONICS LAB MANAGER TO ASSESS POSSIBLE RAD CONCENTRATION / EXPOSURE.
 1630 - MET THE NUCLEONICS LAB

Time	MW-28	Annulus	B.Z.	Ann.	G.T	B.Z.
1419 *	5'	ND	ND	ND	ND	ND
1421	10'	ND	ND	ND	ND	ND
1444 **	15'	150	< 5	30	ND	ND
	20'	150	ND	ND	ND	ND
	25'	ND	ND	ND	ND	ND
	30'	ND	ND	ND	ND	ND
	40'	ND	ND	ND	ND	ND
	50'	ND	ND	ND	ND	ND
	60'	ND	ND	ND	ND	ND
	70'	ND	ND	ND	ND	ND
	80'	ND	ND	ND	ND	ND
	90'	ND	ND	ND	ND	ND

* went to level C protection
 ** AT 1419; NO H-mu or G.T deflection noted; highly volatile material (gas) dispersed? Appears that a large zone of volatile organic gas was present in the annulus zone ~15-20' deep. Cased hole w/ 6" steel to 23'.
 1730 - 8mm down for evening.

HANGER AND RADATION TECH. THEY PERFORMED A FIELD SURVEY w/ TWO HAND HELD INSTRUMENTS FOR BOTH LOW LEVEL & B and HIGH LEVEL & RADIATION. THEY DETERMINED NOTHING OVER BACKGROUND LEVELS. THEY ASSESSED CUTTINGS, DRILL PITS, DRILL BIT, DRILL CASING, WASTE WATER, AND ENTIRE SITE PROXIMITY. THEIR NAMES WERE:

- 1. LMC: [REDACTED]
- 2. SSGT [REDACTED]
- 3. Ludlum model 177-57 Radiation Monitor
- 4. [REDACTED] 1" x 1" crystal Ludlum Model 19 Geiger Counter

INSTRUMENTS USED THEY THEN COLLECTED 5 WASTE SAMPLES FOR SCINTILLATION ANALYSES. THE LOCATIONS SAMPLED INCLUDE:

- WASTE metal exhumed in drill cuttings at ~20'-25'
- cuttings sampled from ~15'-25' (in bags)
- drill cuttings on ground surface
- drill bit
- drill steel casing from 15'-25'

4/8/92
 1800 - MET w/ drivers, explained negative findings. Asked if they had any concerns AND OR QUESTIONS. THEY had none.

1900 - [REDACTED] reported that all scintillation counts came back negative. No evidence of any alpha, beta or radiation above normal background levels.

4/9/92
 0700 - Calibrated H-mu
 0800 - Held Greg H's tailgate. Discussed yesterday's findings. Reorganized "base camp" area. Cleaned-up base pad.

0830 - Mr. [REDACTED] (FED. ecologist) will be visiting & observed on-site today. He will remain out of excavation zone. Decided 13th eg. 0955 - SET up for drill H-mu

	H-mu	GT
5'	BZ Ann	BZ Ann
10'	NP	NP
20'	NP	NP
30'	NP	NP

1030 - Raining too hard to air well casing TOOK empty lunch to Jet Subside

1330 - Cont'd MW-26 work. Constructed + completed well.

1600 - Moved to decon yard.

1700 - Held site safety mtg to discuss overall issues re: HAZ MATTERIALS DRIVING.

4/10/92
 0930 DRILLERS OFF SITE.
 CONTINUED BRILING OF WELLS FOR DEVELOPMENT.
 → NO DETECTABLE OODORS IN ANY WELLS.
 → HAZ. only FEP imp. on site.
 4/11/92
 [redacted] myself continue MW development by purging.

4/12/92
 (cont.) + purging of ~1/2 wells (those in unconfined (unloosed areas)).

(17)

4/13/92
 - Sampled wells in unscoured areas. No H-mn or Astech tech deflections in well heads.
 - Purged wells in scoured areas.




4/14/92
 - Sampled wells in scoured areas. No H-mn or Astech deflections in well heads.

4/15/92
 - Shipped samples from 4/13/92
 - Shipped samples from 4/14/92
 - Purged and sampled pumping wells around base.

ATTACHMENT 4

BORING LOGS




576


MONITORING WELL LOCATION		EQUIPMENT YARD; FORMER "CAN" POINT		ELEVATION AND DATUM		TOC NA GS -99 Feet	
DRILLING AGENCY		ACOEFED		DRILLER		Mr.  <i>W</i>	
DRILLING EQUIPMENT		JASWELL TRUCKMOUNT WITH CONAIR 250 PSI COMPRESSOR		DATE STARTED		3-18-92	
DRILLING METHOD		AIR ROTARY WITH PERCUSSION BIT		DATE FINISHED		3-18-99	
DRILLING METHOD		AIR ROTARY WITH PERCUSSION BIT		COMPLETION DEPTH		5.0 ft	
DRILL BIT		8" CARBIDE PERCUSSION		SAMPLER		Cuttings Grab	
NO. OF SAMPLES		DIST. 0		UNDIST.		NA	
SIZE AND TYPE OF CASING		NA		WATER LEVEL		FIRST -4.0 ft ATD	
TYPE OF PERFORATION		NA		COMPL.		NA	
TYPE OF PERFORATION		NA		24 HRS.		NA	
SIZE AND TYPE OF PACK		#3 LONESTAR SAND		LOGGED BY:		 <i>b6</i>	
TYPE OF SEAL		NO. 1 HYDRATED BENTONITE		CHECKED BY:		 <i>b6</i>	
TYPE OF SEAL		NO. 2 PORTLAND HI NEAT CEMENT & ~5% GRANULAR BENTONITE					
TYPE OF SEAL		NO. 2 PORTLAND HI NEAT CEMENT & ~5% GRANULAR BENTONITE					

Depth (feet)	Samples	Blows	MATERIAL DESCRIPTION	Open-hole gas reading (ppm)		H2S (ppm)	Well Construction
				gas tech	Hnu		
5			Loose, moist to wet, Silty to Gravelly Sand (SM-GM) with little to some clay, locally (Continued as above, with local clayey clasts; continued angular lithic fragments and silty fine to coarse sands)	5	20	ND	Backfill w/ cuttings
5.0			Bottom of hole= 5.0 feet (Note: Hole drilled without surface casing. Hole abandoned at 5 feet below ground surface. Backfilled with cuttings and bentonite. Moderately strong petroliferous odors encountered in soil gas forced to surface by air rotary drilling technique in unconsolidated material without steel surface casing. This location was re-drilled and MW-25 was installed proximally.)				

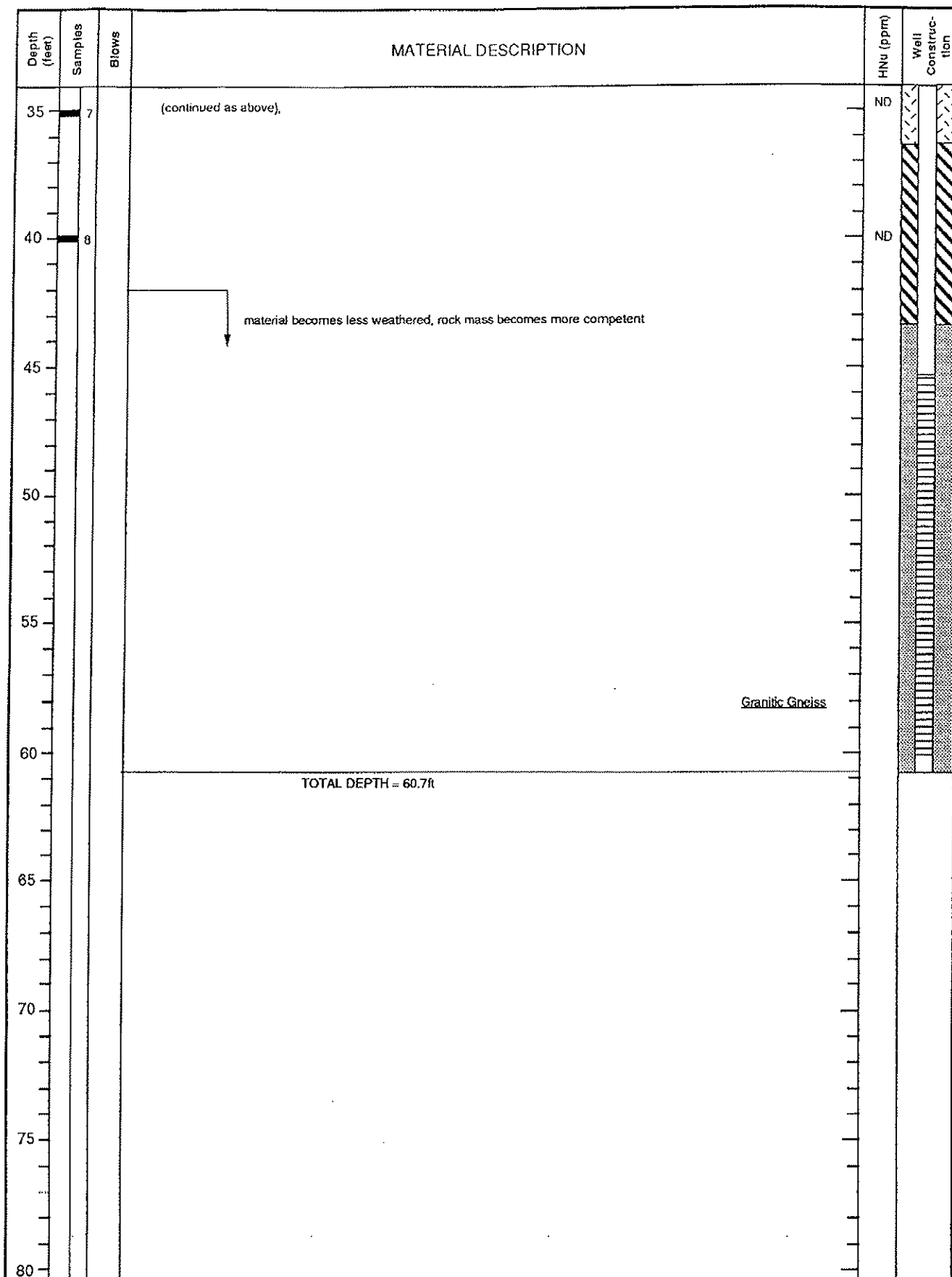
Depth (feet)	Samples	Blows	MATERIAL DESCRIPTION	H ₂ O (ppm)	Well Construction
35	7		(continued as above),	ND	↑ Slough ↓
40	8		<u>Granitic Gneiss</u>	ND	
45			TOTAL DEPTH = 45.0ft.		
50			(Hole abandoned since no steel surface casing available to retain overburden material and properly construct monitoring well)		
55					
60					
65					
70					
75					
80					

578




MONITORING WELL LOCATION		SOUTHERN PERIMETER OF BASE, NEAR MAIN GATE APPROX. 250 FT NORTH OF MW-12 LOCATION		ELEVATION AND DATUM		TOC 106.13 Feet	
DRILLING AGENCY		ACOE FED		DRILLER		Mr.  b6	
DRILLING EQUIPMENT		JASWELL TRUCKMOUNT WITH CONAIR 250 PSI COMPRESSOR		COMPLETION DEPTH		60.7 ft	
DRILLING METHOD		AIR ROTARY WITH PERCUSSION BIT		DRILL BIT		6.5/8" CARBIDE PERCUSSION	
SIZE AND TYPE OF CASING		6" STEEL TO 50' (REMOVED) 2" SCH 40 PVC		FROM		GS TO 45.2 FT.	
TYPE OF PERFORATION		0.020" FACT SLOT TRILOCK 2" SCH 40 PVC		FROM		45.2 TO 60.2 FT.	
SIZE AND TYPE OF PACK		UNIFORMLY GRADED SILICA SAND (ACOE)		FROM		43.5 TO 60.7 FT.	
TYPE OF SEAL		NO. 1 HYDRATED BENTONITE		FROM		36.2 TO 43.5 FT.	
		NO. 2 PORTLAND I-II NEAT CEMENT & ~5% GRANULAR BENTONITE		FROM		GS TO 36.2 FT.	
				LOGGED BY:		 b6	
				CHECKED BY:		 b6	

Depth (feet)	Samples	Blows	MATERIAL DESCRIPTION	Open-hole gas reading (ppm)		HNU (ppm)	Well Construction
				gas tech	Hnu		
			Loose, damp, medium reddish brown to dark brown, Silty to Gravelly Sand; fine to medium grained with angular coarse gravel	ND	ND		
			FILL				
5			Medium dense (?), moist, dark brown to olive grey Silty Sand with cobbles and boulders			ND	
			FILL				
10	1		Soft, wet, medium to dark reddish brown, Silty Clay to Clayey Sand (SM-SW), low plasticity, rice paddy material	4/16/92 10.59 Ft		ND	
			Qal				
15	2		material continued as above; loose (no cuttings return)			ND	
			FILL				
20	3		Loose, saturated, poorly sorted (well graded) Silty Sand (SM-SW), subrounded to angular grains with dark to reddish brown silty matrix			ND	
			Qal				
25	4		FILL				
			FILL				
30	5		Medium dense (?), saturated, medium brown to olive greyish, well graded sand-sized angular minerals with silty matrix; highly weathered, altered			ND	
			Granitic Gneiss				
35							

579



580

MONITORING WELL LOCATION		SOUTHERN PERIMETER OF BASE, SOUTH SIDE OF "CAN" POINT WORK YARD		ELEVATION AND DATUM		TOC 123.84 Feet	
DRILLING AGENCY		ACOE FED		DRILLER		Mr.  <i>W6</i>	
DRILLING EQUIPMENT		JASWELL TRUCKMOUNT WITH CONAIR 250 PSI COMPRESSOR		COMPLETION DEPTH		78.2 ft	
DRILLING METHOD		AIR ROTARY WITH PERCUSSION BIT		DRILL BIT		6.578" CARBIDE PERCUSSION	
SIZE AND TYPE OF CASING		6" STEEL 2" SCH 40 PVC		FROM GS TO 54.5 FT.		WATER LEVEL	
TYPE OF PERFORATION		0.020" FACT SLOT TRILOCK 2" SCH 40 PVC		FROM 52.8 TO 77.8 FT.		DIST. 17	
SIZE AND TYPE OF PACK		UNIFORMLY GRADED SILICA SAND (ACOE)		FROM 51.0 TO 78.2 FT.		UNDIST. NA	
TYPE OF SEAL		NO. 1 HYDRATED BENTONITE		FROM 42.0 TO 51.0 FT.		COMPL. ~65 ft	
		NO. 2 PORTLAND HI NEAT CEMENT & ~5% GRANULAR BENTONITE		FROM GS TO 42.0 FT.		24 HRS. NA	
				LOGGED BY:		CHECKED BY:	
							
				<i>b6</i>		<i>b6</i>	

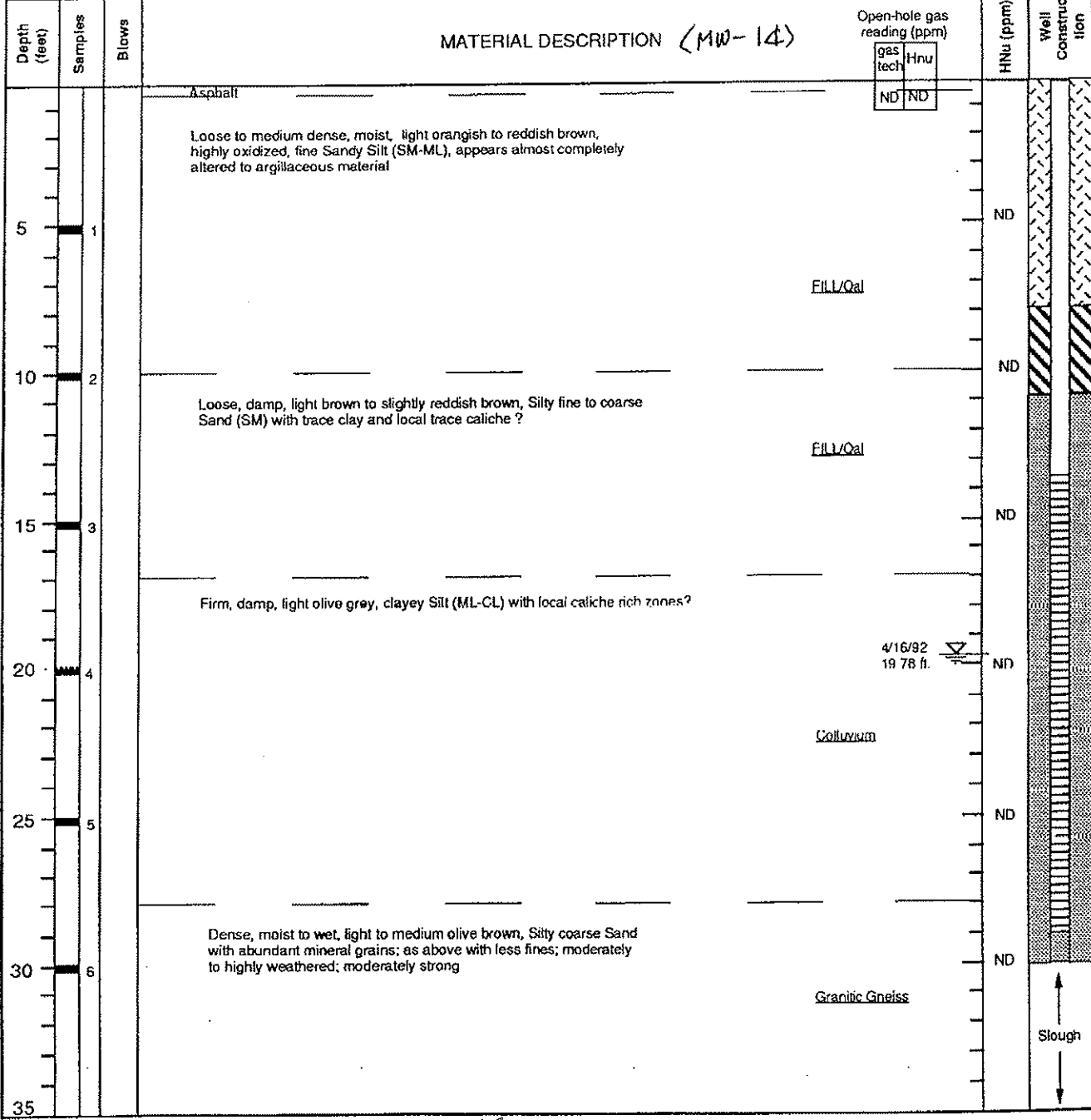
Depth (feet)	Samples	Blows	MATERIAL DESCRIPTION	Open-hole gas reading (ppm)		HNU (ppm)	Well Construction
				gas tech	Hnu		
			Loose, damp to moist, light reddish brown, Silty to Clayey Sand; with angular lithic fragments				
			Firm, moist, dark reddish brown, Clay (CL) with little silt, moderately plastic, with trace subangular to angular fine to medium grained sand				
5			Slight increase in plasticity			ND	
			Local increase in sand content; less plastic				
10	1					ND	
			Medium dense, dark reddish brown, damp to moist, Clayey Silt to Silty Clay (ML-CL) with trace to little fine to medium grained sand; Highly weathered, low strength, completely altered				
15	2		material continued as above;			ND	
			Slightly lighter reddish brown color				
20	3					ND	
			Medium dense, moist, very light buff to grey, Silty to Clayey Sand with medium to fine subangular to rounded grains, low plasticity ((SM to SC) material similar to above, unoxidized?, sand grains appear dominantly comprised of quartz and feldspar. Moderately weathered, low strength to moderately strong				
25	4					ND	
			Increase in sand grain content; less weathered; visible micaceous grains				
30	5					ND	
			Color becomes light reddish brown, locally				
35							

581

Depth (feet)	Samples	Blows	MATERIAL DESCRIPTION	H ₂ O (ppm)	Well Construction
35	7		(continued as above), Rock material appears to have increasing micaceous minerals (glaucophane and biotite) with plagioclase and quartz; decreasing clay content	ND	
40	8		Slight increase in clay content	ND	
45	9		material becomes less weathered, rock mass becomes more competent Increase in mafic mineral content; composite mineral grains appear fine to coarse sand-sized; material return is damp to dry; trace to little clay; some silt		
50	10				
55	11		Material appears less oxidized; occasional oxidized iron-oxide rich local zones.		
60	12				
65	13		Increase in moisture content		
70	14		Material appears saturated Increase in mineral grain size of cutting return		
75	15				
80	16				
			TOTAL DEPTH = 78.2 ft		

582

MONITORING WELL LOCATION <u>Building 658 yard; between battery storage and used POL storage</u>		ELEVATION AND DATUM <u>TOC 116.48 Feet</u>	
DRILLING AGENCY <u>ACOE FED</u>	DRILLER <u>Mr. [redacted] (MW-14)</u>	DATE STARTED <u>4-2-92</u>	DATE FINISHED <u>4-3-92</u>
DRILLING EQUIPMENT <u>JASWELL TRUCKMOUNT WITH CONAIR 250 PSI COMPRESSOR</u>		COMPLETION DEPTH <u>29.0 ft</u>	SAMPLER <u>Cuttings Grab</u>
DRILLING METHOD <u>AIR ROTARY WITH PERCUSSION BIT</u>	DRILL BIT <u>8" CARBIDE PERCUSSION</u>	NO. OF SAMPLES <u>8</u>	DIST. <u>8</u>
SIZE AND TYPE OF CASING <u>2" SCH 40 PVC</u>	FROM <u>GS</u> TO <u>13.5 FT.</u>	WATER LEVEL <u>FIRST = 43.0 ft ATD</u>	UNDIST. <u>NA</u>
TYPE OF PERFORATION <u>0.020" FACT SLOT TRILOCK 2" SCH 40 PVC</u>	FROM <u>13.5</u> TO <u>28.5 FT.</u>	COMPL. <u>= 20 ft</u> 24 HRS. <u>20.4 Ft</u>	
SIZE AND TYPE OF PACK <u>#3 LONESTAR SAND</u>	FROM <u>11.0</u> TO <u>30.0 FT.</u>	LOGGED BY: <u>[redacted]</u> b6	
TYPE OF SEAL	<u>NO. 1 HYDRATED BENTONITE</u>	FROM <u>8.0</u> TO <u>11.0 FT.</u>	CHECKED BY: <u>[redacted]</u> b6
	<u>NO. 2 PORTLAND I-II NEAT CEMENT & -5% GRANULAR BENTONITE</u>	FROM <u>GS</u> TO <u>8.0 FT.</u>	



Depth (feet)	Samples	Blows	MATERIAL DESCRIPTION	H/Nu (ppm)	Well Construction
35	7		(continued as above). Granitic Gneiss	ND	↑
40	8		Dense, moist to wet, light to medium olive brown, Silty coarse Sand with abundant unaltered mineral grains visible; moderately weathered; medium strength; becomes saturated at 42 ft.	ND	↓
45			TOTAL DEPTH = 43.0ft		
50					
55					
60					
65					
70					
75					
80					




584

MONITORING WELL LOCATION		PROXIMAL TO WATER TREATMENT PLANT (JUST NORTH); SOUTH OF BLDG. S-665 IN ROAD; APPROX. 12' N OF MW15		ELEVATION AND DATUM		TOC 156.81 Feet	
DRILLING AGENCY		ACOE FED		DRILLER		Mr. [redacted] <i>blw</i>	
DRILLING EQUIPMENT		JASWELL TRUCKMOUNT WITH CONAIR 250 PSI COMPRESSOR		COMPLETION DEPTH		45.5	
DRILLING METHOD		AIR ROTARY WITH PERCUSSION BIT		DRILL BIT		6.5"/8" CARBIDE PERCUSSION	
SIZE AND TYPE OF CASING		2" SCH 40 PVC		FROM GS TO		35.0 FT.	
TYPE OF PERFORATION		0.020" FACT SLOT TRILOCK 2" SCH 40 PVC		FROM 35.0 TO		45.0 FT.	
SIZE AND TYPE OF PACK		UNIFORMLY GRADED SILICA SAND (ACOE)		FROM 32.0 TO		45.5 FT.	
TYPE OF SEAL		NO. 1 HYDRATED BENTONITE		FROM 27.5 TO		32.0 FT.	
		NO. 2 PORTLAND I-II NEAT CEMENT & ~5% GRANULAR BENTONITE		FROM GS TO		27.5 FT.	
				DATE STARTED		4-7-92	
				DATE FINISHED		4-8-92	
				NO. OF SAMPLES		9	
				DIST.		9	
				UNDIST.		NA	
				WATER LEVEL		FIRST DRY ATD	
				COMPL.		NA	
				24 HRS.		37.5 Ft	
				LOGGED BY:		[redacted] <i>blw</i>	
				CHECKED BY:		[redacted] <i>blw</i>	

Depth (feet)	Samples	Blows	MATERIAL DESCRIPTION	Open-hole gas reading (ppm)		H ₂ S (ppm)	Well Construction
				gas tech	Hru		
			Concrete/asphalt	ND	ND		
			Medium dense, dry, medium brown, Silty to Gravelly Sand (SM-GM)				
			FILL				
5	1		Dense, dry to damp, medium to light olive brown, Silty fine to coarse Sand (SM), abundant subangular fine to medium grained mineral grains present, highly weathered, moderately strong			ND	
			Granitic Gneiss				
10	2					ND	
			Color becomes light brown to buff; trace caliche rich zones?				
15	3					ND	
			Decrease in fines; material becomes sandier; moderately weathered				
20	4					ND	
			Rock mass becomes more competent				
25	5					ND	
			Color becomes light olive brown				
30	6					ND	
			Granitic Gneiss				
35							

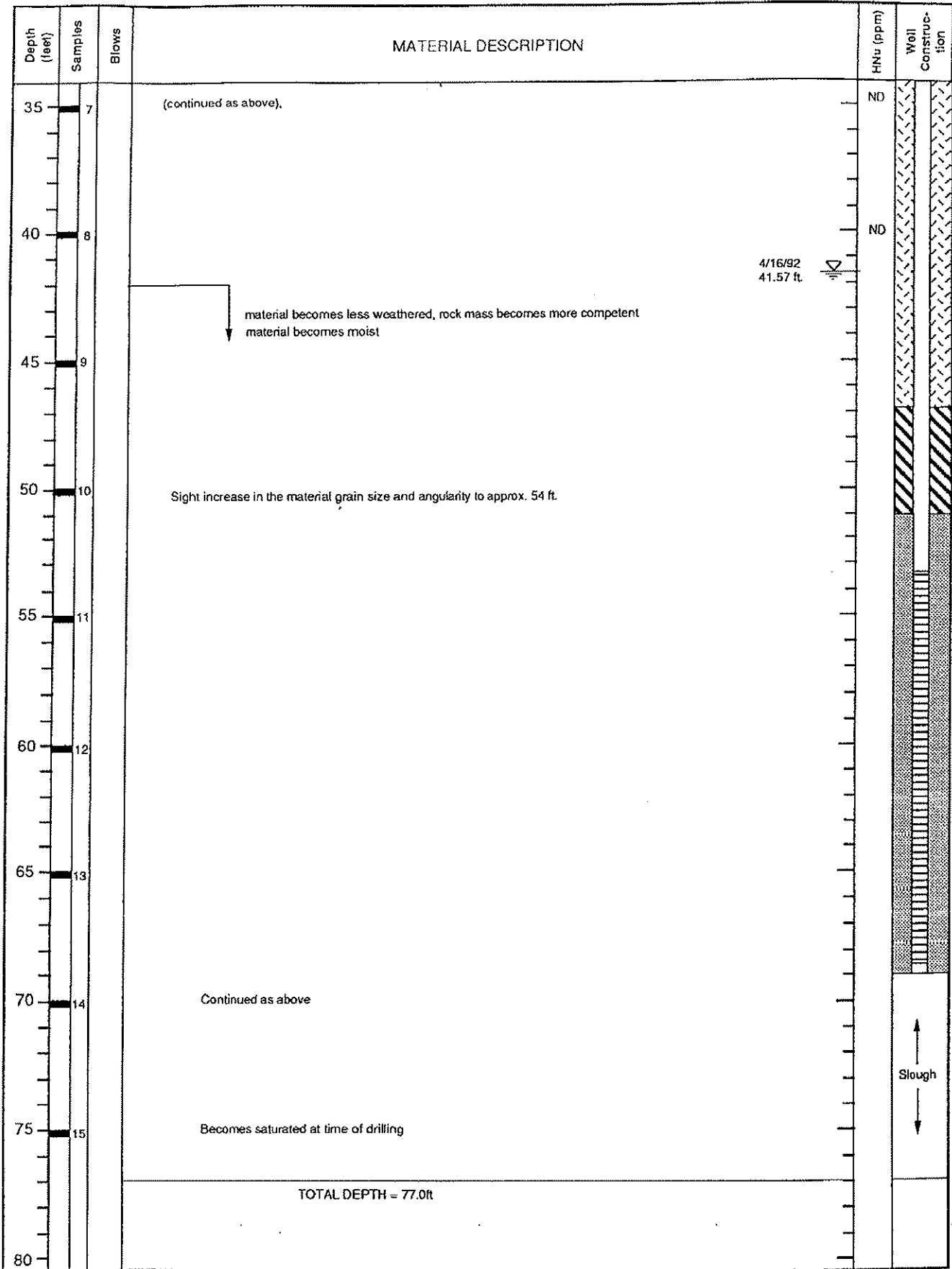
Depth (feet)	Samples	Blows	MATERIAL DESCRIPTION	pH (ppm)	Well Construction
35	7		(continued as above),	ND	
40	8		<p style="text-align: right;">4/16/92 35.94 Feet</p> <p style="text-align: center;"><u>Granitic Gneiss</u></p>	ND	
45	9		<p>material becomes less weathered, rock mass becomes more competent material becomes moist</p>		
			TOTAL DEPTH = 46.0ft		
50					
55					
60					
65					
70					
75					
80					

586




MONITORING WELL LOCATION		PROXIMAL TO WATER TREATMENT PLANT (JUST NORTH); SOUTH OF BLDG. S-665 IN ROAD		ELEVATION AND DATUM		TOC 155.62 Feet	
DRILLING AGENCY		ACOE FED		DRILLER		Mr.  b6	
DRILLING EQUIPMENT		JASWELL TRUCKMOUNT WITH CONAIR 260 PSI COMPRESSOR		COMPLETION DEPTH		69.0ft	
DRILLING METHOD		AIR ROTARY WITH PERCUSSION BIT		DRILL BIT		6.5 7/8" CARBIDE PERCUSSION	
SIZE AND TYPE OF CASING		6" STEEL TO 22' (REMOVED) 2" SCH 40 PVC		FROM		GS TO 53.5 FT.	
TYPE OF PERFORATION		0.020" FACT SLOT TRILOCK 2" SCH 40 PVC		FROM		53.5 TO 68.5 FT.	
SIZE AND TYPE OF PACK		UNIFORMLY GRADED SILICA SAND (ACOE)		FROM		51.0 TO 69.0 FT.	
TYPE OF SEAL		NO. 1 HYDRATED BENTONITE		FROM		47.0 TO 51.0 FT.	
		NO. 2 PORTLAND I-II NEAT CEMENT & ~5% GRANULAR BENTONITE		FROM		GS TO 51.0 FT.	
				WATER LEVEL		FIRST -76 ft. ATD	
				NO. OF SAMPLES		DIST. 15	
				UNDIST.		NA	
				COMPL.		NA	
				24 HRS.		= 43ft.	
				LOGGED BY:		 b6	
				CHECKED BY:		 b6	

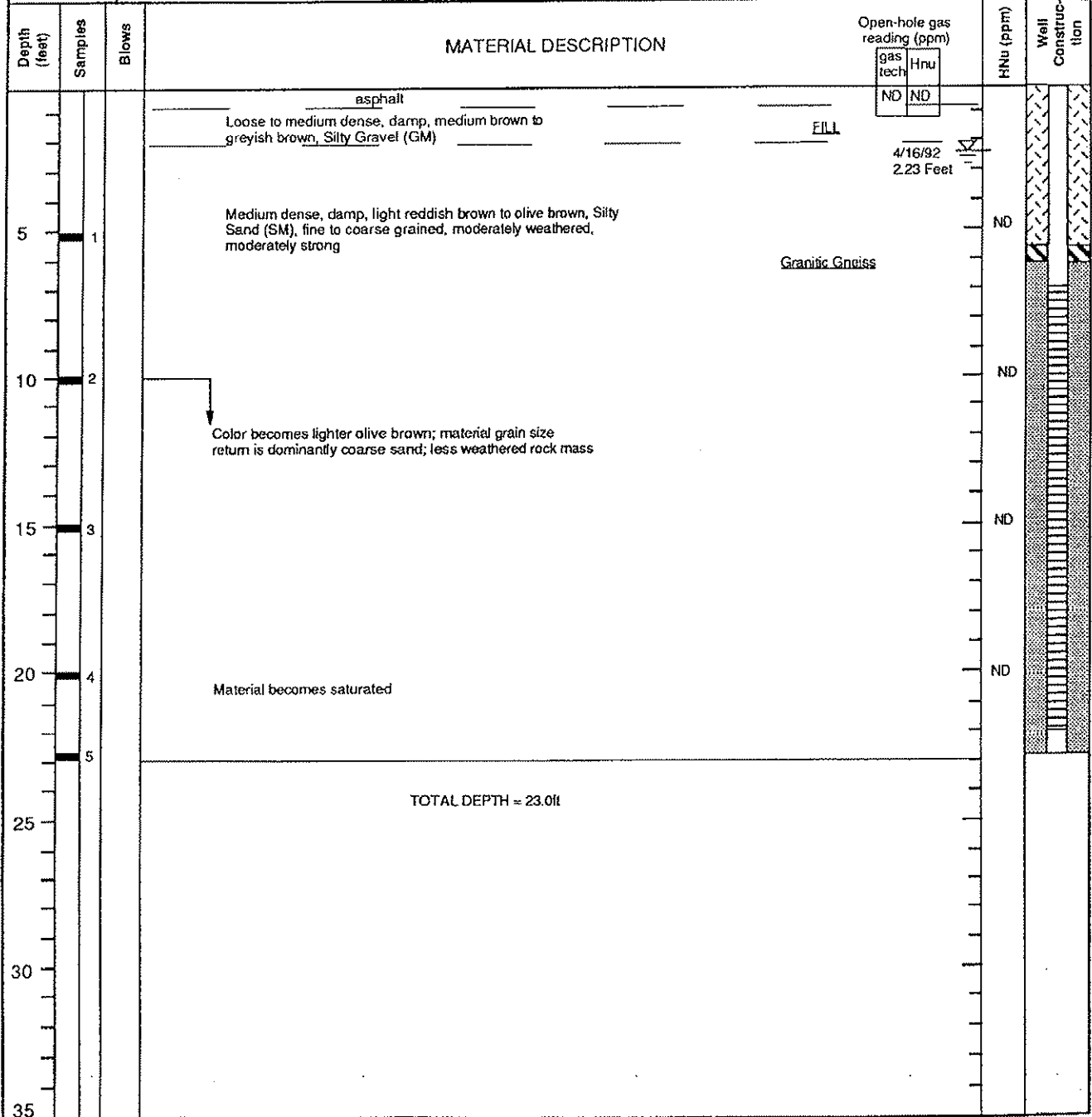
Depth (feet)	Samples	Blows	MATERIAL DESCRIPTION	Open-hole gas reading (ppm)		HNU (ppm)	Well Construction
				gas tech	Hnu		
			Concrete/asphalt	ND	ND		
			Medium dense, dry, medium brown, Silty to Gravelly Sand (SM-GM)				
			FILL				
5	1		Dense, dry to damp, medium to light olive brown, Silty fine to coarse Sand (SM), abundant subangular fine to medium grained mineral grains present, highly weathered, moderately strong			ND	
			Granitic Gneiss				
10	2					ND	
			Color becomes light brown to buff ; trace caliche rich zones?				
15	3					ND	
			Decrease in fines; material becomes sandier; moderately weathered				
20	4					ND	
			Rock mass becomes more competent				
25	5					ND	
			Color becomes light olive brown				
30	6					ND	
			Granitic Gneiss				
35							

587



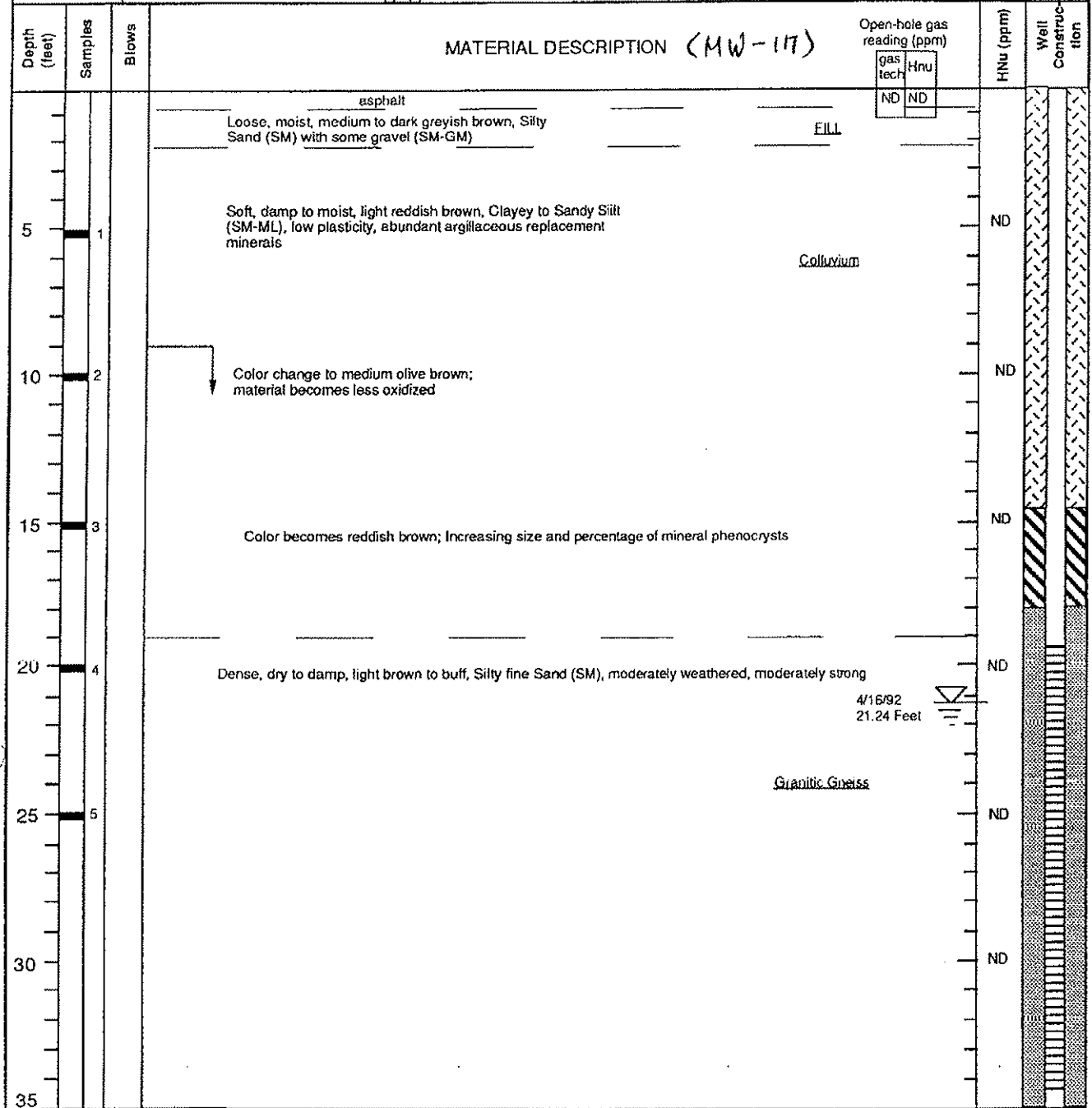
588

MONITORING WELL LOCATION ADJACENT TO LONG BUILDING IN SECURED AREA; IN ROAD DOWNGRADIENT OF FORMER "ACID PITS"		ELEVATION AND DATUM TOC 126.72 Feet	
DRILLING AGENCY ACOE FED	DRILLER Mr.  b6	DATE STARTED 4-2-92	DATE FINISHED 4-2-92
DRILLING EQUIPMENT JASWELL TRUCKMOUNT WITH CONAIR-250 PSI COMPRESSOR		COMPLETION DEPTH 22.5 ft	SAMPLER Cuttings Grab
DRILLING METHOD AIR ROTARY WITH PERCUSSION BIT	DRILL BIT 6.5/8" CARBIDE PERCUSSION	NO. OF SAMPLES DIST. 5	UNDIST. NA
SIZE AND TYPE OF CASING 2" SCH 40 PVC	FROM GS TO 7.0 FT.	WATER LEVEL FIRST = 20.0 ft	COMPL. = 14 ft 24 HRS. 2.7 R
TYPE OF PERFORATION 0.020" FACT SLOT TRILOCK 2" SCH 40 PVC	FROM 22.0 TO 22.0 FT.	LOGGED BY:  b6	
SIZE AND TYPE OF PACK UNIFORMLY GRADED SILICA SAND (ACOE)	FROM 6.0 TO 22.0 FT.	CHECKED BY:  b6	
TYPE OF SEAL	NO. 1 HYDRATED BENTONITE	FROM 5.5 TO 6.0 FT.	
	NO. 2 PORTLAND I-II NEAT CEMENT & -5% GRANULAR BENTONITE	FROM GS TO 27.5 FT.	



589

MONITORING WELL LOCATION <u>Parking Lot of Building 326 (Major Assembly Division) (MW-17)</u>			ELEVATION AND DATUM <u>TOC 126.75 Feet</u>		
DRILLING AGENCY <u>ACOE FED</u>		DRILLER <u>Mr. [redacted] b/c</u>	DATE STARTED <u>3-27-92</u>	DATE FINISHED <u>3-30-92</u>	
DRILLING EQUIPMENT <u>JASWELL TRUCKMOUNT WITH CONAIR 250 PSI COMPRESSOR</u>			COMPLETION DEPTH <u>35.0 ±</u>	SAMPLER <u>Cuttings Grab</u>	
DRILLING METHOD <u>AIR ROTARY WITH PERCUSSION BIT</u>		DRILL BIT <u>6.57/8" CARBIDE PERCUSSION</u>	NO. OF SAMPLES	DIST. <u>8</u>	UNDIST. <u>NA</u>
SIZE AND TYPE OF CASING <u>2" SCH 40 PVC</u>		FROM <u>GS</u> TO <u>19.5 FT.</u>	WATER LEVEL	FIRST <u>= 41 ft</u>	COMPL. <u>= 22.8 ft</u>
TYPE OF PERFORATION <u>0.020" FACT SLOT TRILOCK 2" SCH 40 PVC</u>		FROM <u>19.5</u> TO <u>34.5 FT.</u>	LOGGED BY:		CHECKED BY:
SIZE AND TYPE OF PACK <u>UNIFORMLY GRADED SILICA SAND (ACOE)</u>		FROM <u>18.0</u> TO <u>43.0 FT.</u>	[redacted] b/c		[redacted] b/c
TYPE OF SEAL		FROM <u>14.5</u> TO <u>18.0 FT.</u>			
NO. 1 <u>HYDRATED BENTONITE</u>		FROM <u>GS</u> TO <u>14.5 FT.</u>			
NO. 2 <u>PORTLAND I-II NEAT CEMENT & -5% GRANULAR BENTONITE</u>					

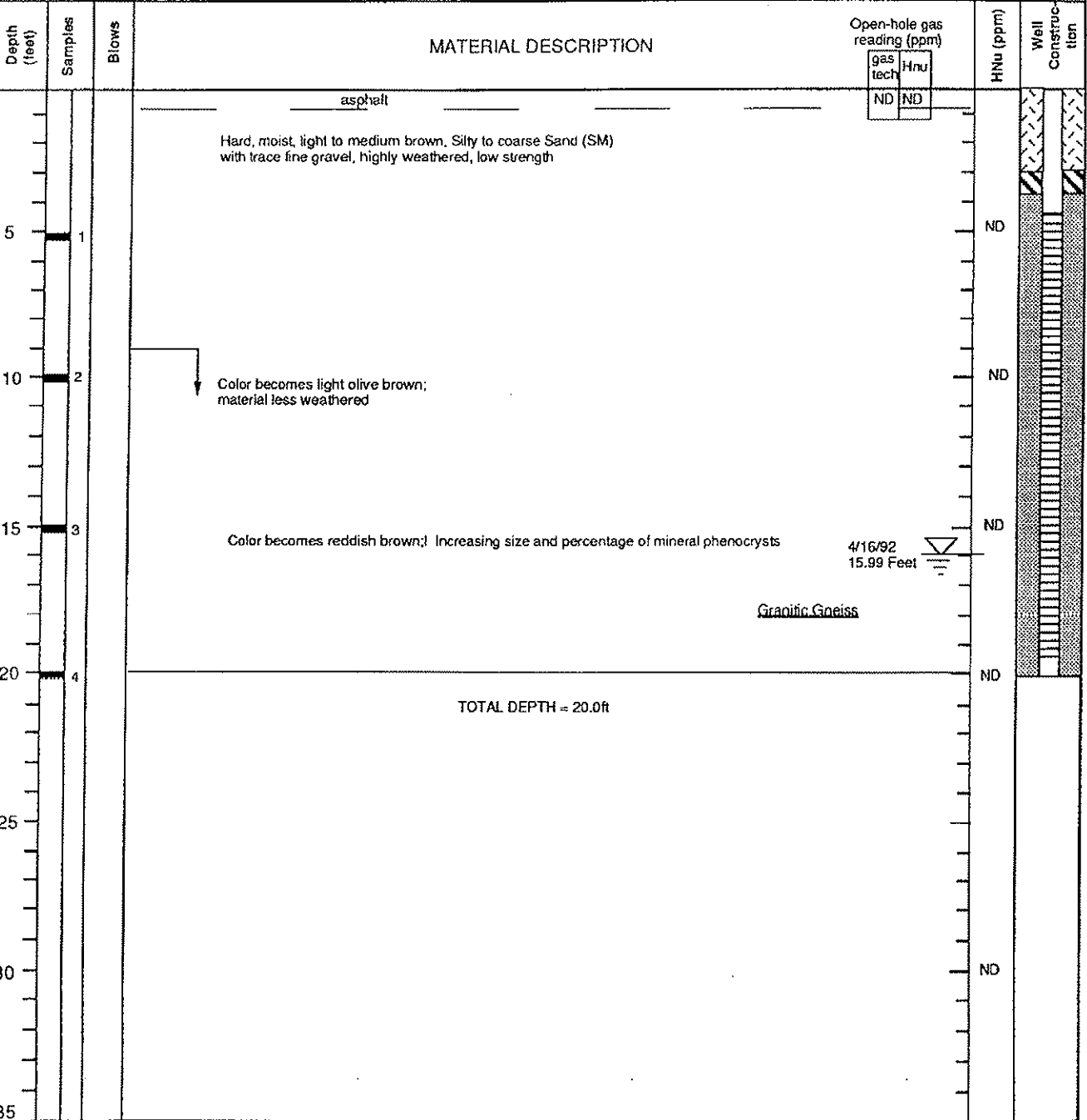


590

Depth (feet)	Samples	Blows	MATERIAL DESCRIPTION	H ₂ O (ppm)	Well Construction
35			(Continued as above)		<p>↑ slough ↓</p>
40			<p>Granitic Gneiss</p> <hr/> <p>Dense, dry to damp, light brown to buff, Silty Sand (SM), fine to medium grained, moderately to slightly weathered, moderately strong; increasingly competent</p> <p>Granitic Gneiss</p>		
45			TOTAL DEPTH = 43.0ft		
50					
55					
60					
65					
70					
75					
80					

591

MONITORING WELL LOCATION <u>PARKING LOT OF FUEL DEPOT AREA (S. OF FUEL POINT)</u>		ELEVATION AND DATUM <u>TOC 120.16 Feet</u>	
DRILLING AGENCY <u>ACOE FED</u>	DRILLER <u>Mr. [redacted] b6</u>	DATE STARTED <u>3-30-92</u>	DATE FINISHED <u>3-30-92</u>
DRILLING EQUIPMENT <u>JASWELL TRUCKMOUNT WITH CONAIR 250 PSI COMPRESSOR</u>		COMPLETION DEPTH <u>20.0 ft</u>	SAMPLER <u>Cuttings Grab</u>
DRILLING METHOD <u>AIR ROTARY WITH PERCUSSION BIT</u>	DRILL BIT <u>6.5 7/8" CARBIDE PERCUSSION</u>	NO. OF SAMPLES <u>4</u>	DIST. <u>4</u>
SIZE AND TYPE OF CASING <u>6" STEEL TO 22' (REMOVED) 2" SCH 40 PVC</u>	FROM <u>GS</u> TO <u>4.5 FT.</u>	WATER LEVEL <u>FIRST = 10.0</u>	COMPL. <u>24 HRS. 16.29 ft</u>
TYPE OF PERFORATION <u>0.020" FACT SLOT TRILOCK 2" SCH 40 PVC</u>	FROM <u>4.5</u> TO <u>19.5 FT.</u>	LOGGED BY: <u>[redacted] b6</u>	CHECKED BY: <u>[redacted] b6</u>
SIZE AND TYPE OF PACK <u>UNIFORMLY GRADED SILICA SAND (ACOE)</u>	FROM <u>4.0</u> TO <u>20.0 FT.</u>		
TYPE OF SEAL	<u>NO. 1 HYDRATED BENTONITE</u>	FROM <u>3.0</u> TO <u>4.0 FT.</u>	
	<u>NO. 2 PORTLAND HI NEAT CEMENT & ~5% GRANULAR BENTONITE</u>	FROM <u>GS</u> TO <u>3.0 FT.</u>	

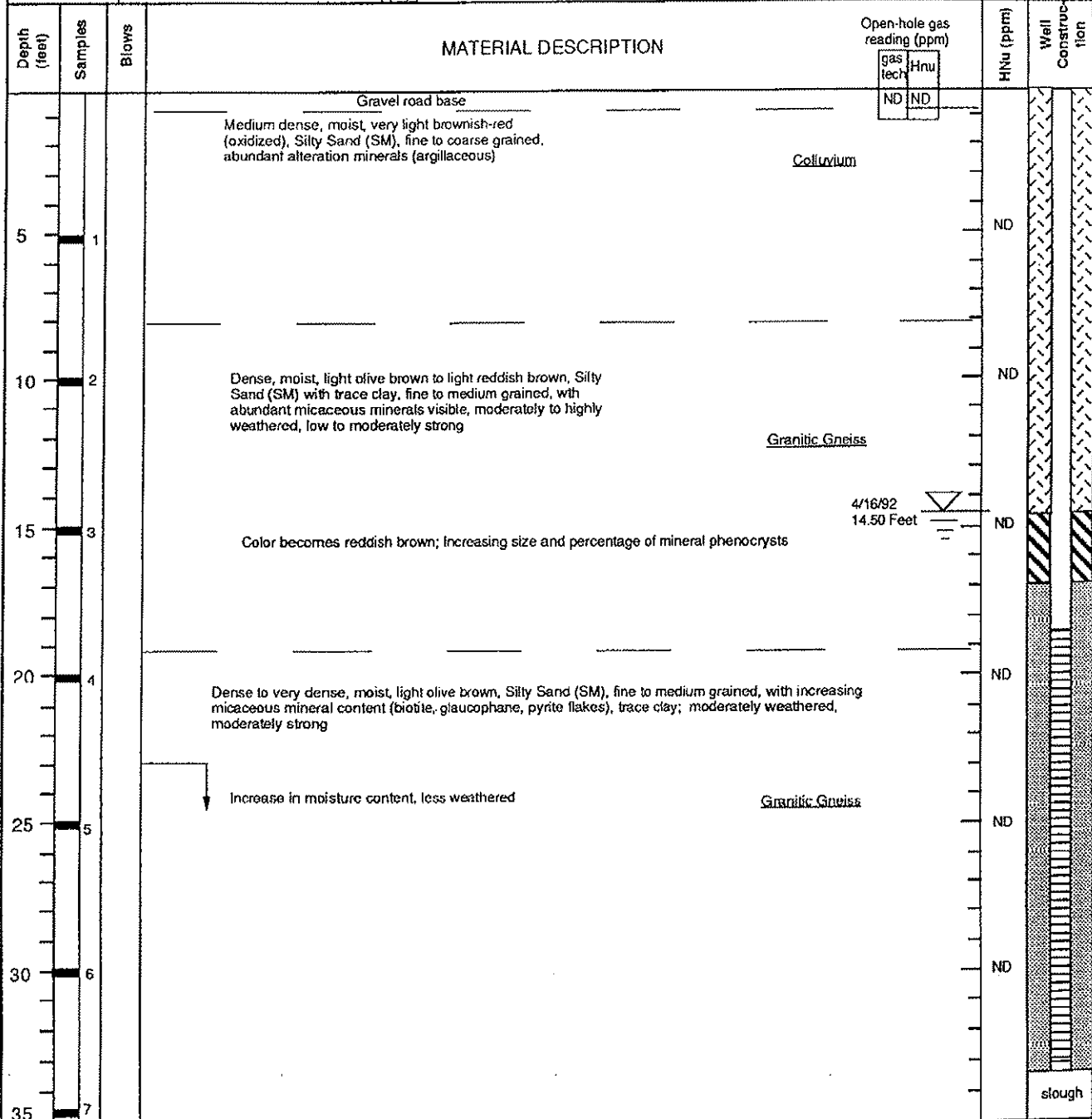


592

Depth (feet)	Samples	Blows	MATERIAL DESCRIPTION	HNu (ppm)	Well Construction
35			(Continued as above)		slough
			TOTAL DEPTH = 35.0ft		

593

MONITORING WELL LOCATION <u>Behind Building No. 309; Near Former "Bluing Dump"</u>		ELEVATION AND DATUM <u>TOC 130.36 Feet</u>	
DRILLING AGENCY <u>ACOE FED</u>	DRILLER <u>Mr. [redacted] b/c</u>	DATE STARTED <u>3-31-92</u>	DATE FINISHED <u>4-1-92</u>
DRILLING EQUIPMENT <u>JASWELL TRUCKMOUNT WITH CONAIR 250 PSI COMPRESSOR</u>		COMPLETION DEPTH <u>33.0 ft</u>	SAMPLER <u>Cuttings Grab</u>
DRILLING METHOD <u>AIR ROTARY WITH PERCUSSION BIT</u>		DRILL BIT <u>6.578" CARBIDE PERCUSSION</u>	NO. OF SAMPLES <u>7</u>
SIZE AND TYPE OF CASING <u>2" SCH 40 PVC</u>		FROM <u>GS</u> TO <u>18.5 FT.</u>	WATER LEVEL <u>FIRST " 33 ft</u>
TYPE OF PERFORATION <u>0.020" FACT SLOT TRILOCK 2" SCH 40 PVC</u>		FROM <u>18.5</u> TO <u>32.5 FT.</u>	LOGGED BY: <u>[redacted] b/c</u>
SIZE AND TYPE OF PACK <u>UNIFORMLY GRADED SILICA SAND (ACOE)</u>		FROM <u>17.0</u> TO <u>33.0 FT.</u>	CHECKED BY: <u>[redacted] b/c</u>
TYPE OF SEAL	<u>NO. 1 HYDRATED BENTONITE</u>	FROM <u>14.5</u> TO <u>17.0 FT.</u>	
	<u>NO. 2 PORTLAND I-II NEAT CEMENT & ~5% GRANULAR BENTONITE</u>	FROM <u>GS</u> TO <u>14.5 FT.</u>	



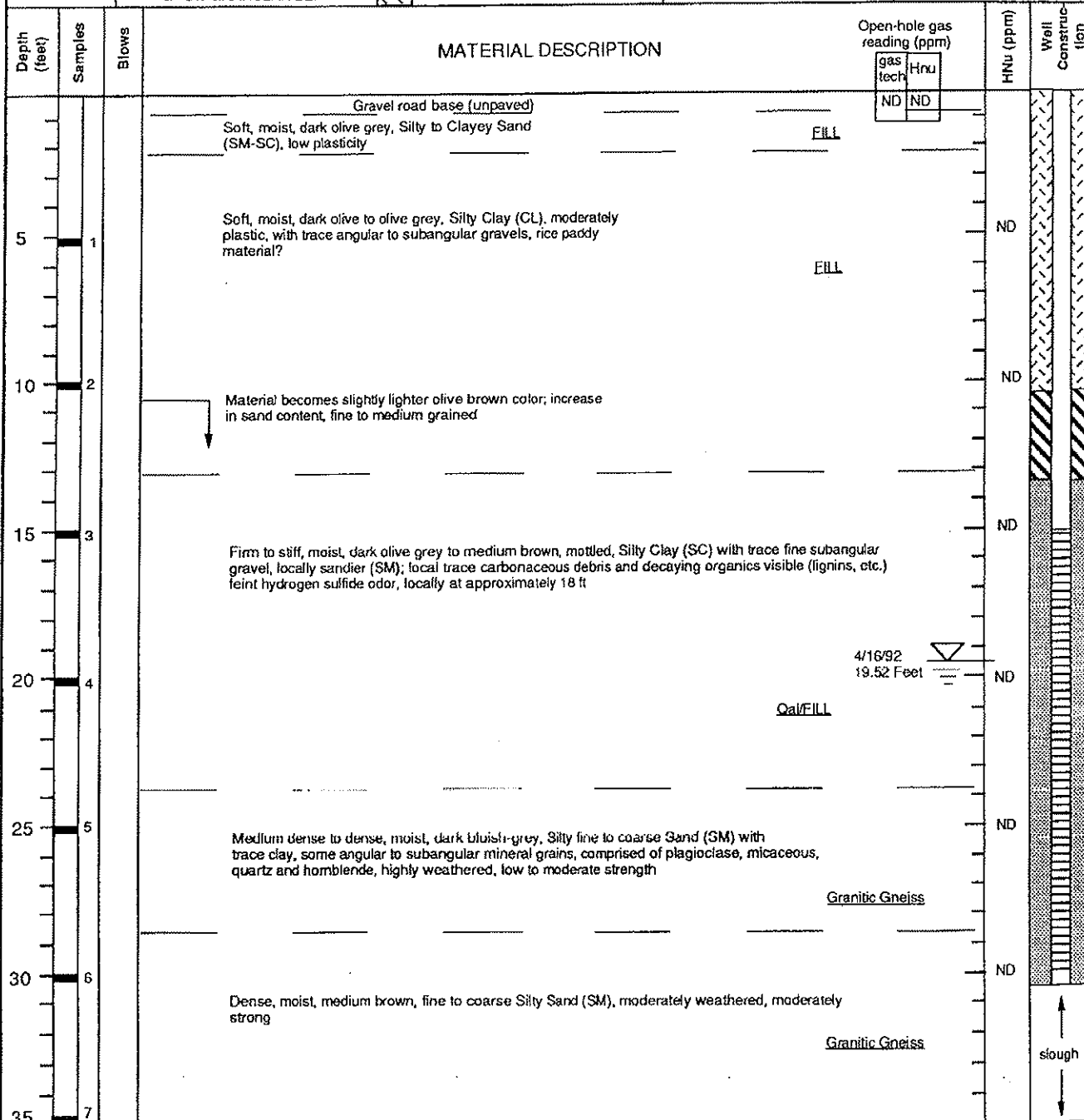
594

MONITORING WELL LOCATION <u>SOUTHERN PERIMETER OF BASE, NEAR MAIN GATE</u>		ELEVATION AND DATUM <u>TOC 106.13 Feet</u>	
DRILLING AGENCY <u>ACOE FED</u>	DRILLER <u>Mr. [redacted]</u>	DATE STARTED <u>3-18-92</u>	DATE FINISHED <u>3-22-99</u>
DRILLING EQUIPMENT <u>JASWELL TRUCKMOUNT WITH CONAIR 250 PSI COMPRESSOR</u>		COMPLETION DEPTH <u>45.0 ft</u>	SAMPLER <u>Cuttings Grab</u>
DRILLING METHOD <u>AIR ROTARY WITH PERCUSSION BIT</u>	DRILL BIT <u>6.5" CARBIDE PERCUSSION</u>	NO. OF SAMPLES <u>8</u>	DIST. <u>8</u>
SIZE AND TYPE OF CASING <u>NA</u>	FROM <u>NA</u> TO <u>NA</u> FT.	WATER LEVEL <u>FIRST =20.6 ft. ATD</u>	UNDIST. <u>NA</u>
TYPE OF PERFORATION <u>NA</u>	FROM <u>NA</u> TO <u>NA</u> FT.	LOGGED BY: <u>[redacted]</u>	
SIZE AND TYPE OF PACK <u>#3 LONESTAR SAND</u>	FROM <u>NA</u> TO <u>NA</u> FT.	CHECKED BY: <u>[redacted]</u>	
TYPE OF SEAL	NO. 1 <u>HYDRATED BENTONITE</u>	FROM <u>NA</u> TO <u>NA</u> FT.	b6
	NO. 2 <u>PORTLAND I-II NEAT CEMENT & ~5% GRANULAR BENTONITE</u>	FROM <u>GS</u> TO <u>45.0</u> FT.	

Depth (feet)	Samples	Blows	MATERIAL DESCRIPTION	Open-hole gas reading (ppm)		H2S (ppm)	Well Construction
				gas tech	H2S		
5	1		Loose to medium dense, moist, medium to light reddish brown, SILTY SAND (SM), fine to coarse, with some fine to coarse angular gravels	ND	ND	ND	Well Construction
			(Continued as above, with local clayey clasts; continued angular lithic fragments and silty fine to coarse sands)	FILL		ND	
10	2			FILL/Qal		ND	
15	3		material continued as above; loose (no cuttings return)			ND	
20	4		(continued as above), becomes medium reddish to olive brown, silty to clayey medium to coarse sand, trace fine angular gravels, sand is subangular to subrounded; becomes saturated	3/18/92	20.6 ft	ND	
25	5		(continued as above; silty medium to coarse sand with little to trace clay; sand grains fairly well sorted /poorly graded; subangular with increase in sand content)	FILL/Qal		ND	
30	6		Soft to loosed, saturated, color becomes dark reddish brown, Sandy Silt (SM to ML) with trace to little clay; sand grains subangular to subrounded; dominant increase in fines; highly oxidized and completely altered granitic gneiss (?)			ND	Slough
35			Granitic Gneiss				

595




MONITORING WELL LOCATION		CARE AND PRESERVATION DIVISION SUPPLY SECURITY OFFICE; NEAR BLDG. T-834 (COSIS FACILITY)		ELEVATION AND DATUM		TOC 106.79 Feet	
DRILLING AGENCY		ACOE FED		DRILLER		Mr. [redacted] <i>blc</i>	
DRILLING EQUIPMENT		JASWELL TRUCKMOUNT WITH CONAIR 250 PSI COMPRESSOR		COMPLETION DEPTH		30.5 FT	
DRILLING METHOD		AIR ROTARY WITH PERCUSSION BIT		DRILL BIT		6.5" / 8" CARBIDE PERCUSSION	
SIZE AND TYPE OF CASING		2" SCH 40 PVC		FROM GS TO		15.0 FT.	
TYPE OF PERFORATION		0.020" FACT SLOT TRILOCK 2" SCH 40 PVC		FROM		15.0 TO 30.0 FT.	
SIZE AND TYPE OF PACK		UNIFORMLY GRADED SILICA SAND (ACOE)		FROM		13.5 TO 30.5 FT.	
TYPE OF SEAL		NO. 1 HYDRATED BENTONITE		FROM		10.5 TO 13.5 FT.	
		NO. 2 PORTLAND HI NEAT CEMENT & -5% GRANULAR BENTONITE		FROM		GS TO 10.5 FT.	
				WATER LEVEL		FIRST = 43 ft	
				NO. OF SAMPLES		DIST. 7	
				UNDIST.		NA	
				COMPL.		= 20.5 ft	
				24 HRS.		19.6 ft	
LOGGED BY:				[redacted] <i>blc</i>			
CHECKED BY:				[redacted] <i>blc</i>			

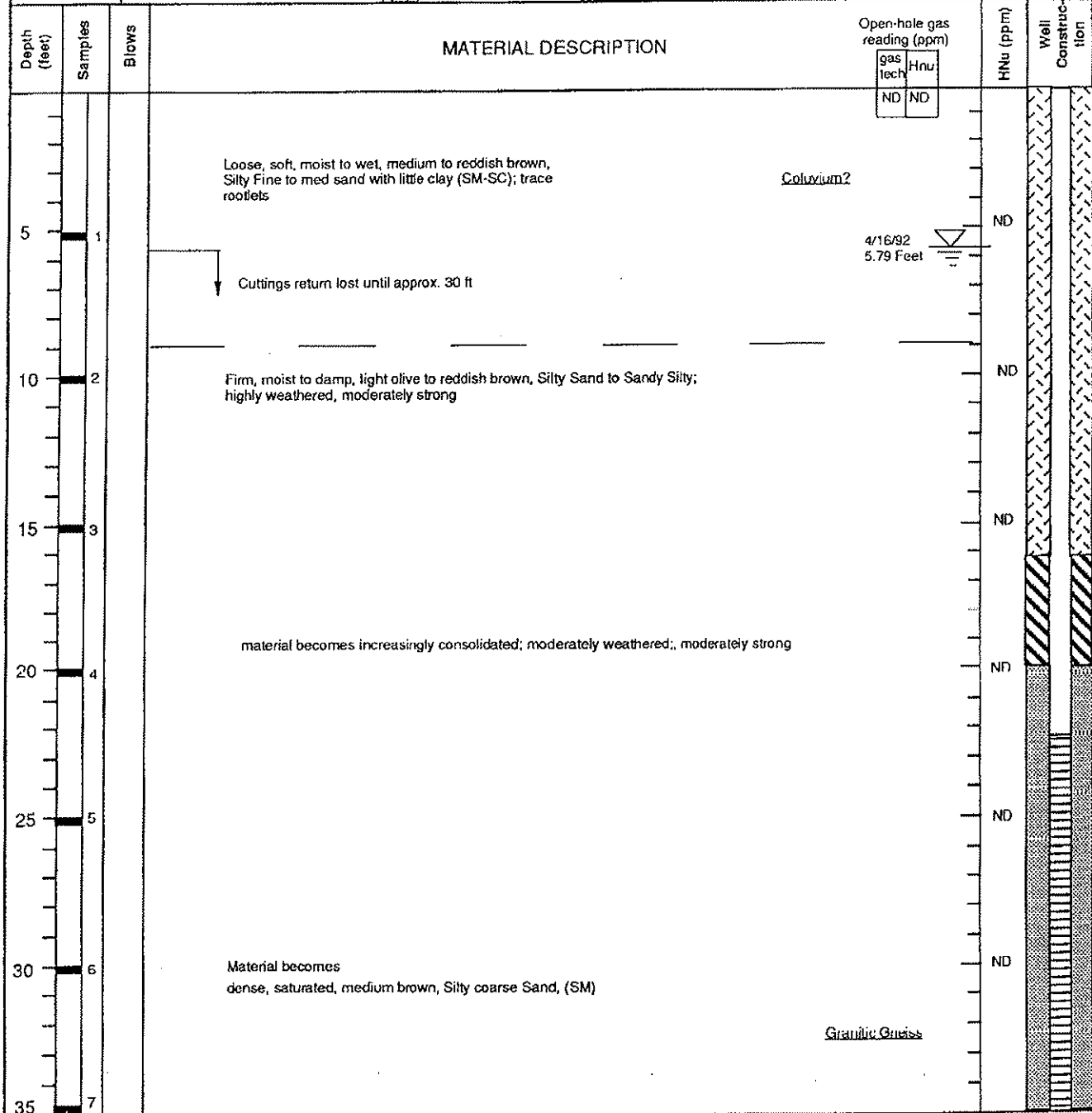


596


Depth (feet)	Samples	Blows	MATERIAL DESCRIPTION	MNU (ppm)	Well Construction
35			(Continued as above)		
40			Becomes slightly darker brown color <u>Granitic Gneiss</u>		
45			TOTAL DEPTH = 43.0ft		
50					
55					
60					
65					
70					
75					
80					

597

MONITORING WELL LOCATION		Just north of intersection of Kentucky Ave and Arkansas; on lawn south of heating plant		ELEVATION AND DATUM		TOC 126.10 Feet	
DRILLING AGENCY		ACOE FED		DRILLER		Mr. 	
DRILLING EQUIPMENT		JASWELL TRUCKMOUNT WITH CONAIR 250 PSI COMPRESSOR		DATE STARTED		3-26-92	
DRILLING METHOD		AIR ROTARY WITH PERCUSSION BIT		DATE FINISHED		3-27-92	
DRILL BIT		6.578" CARBIDE PERCUSSION		COMPLETION DEPTH		43.0	
NO. OF SAMPLES		DIST. 4		SAMPLER		Cuttings Grab	
UNDIST.		NA		WATER LEVEL		FIRST = 30 ft?	
SIZE AND TYPE OF CASING		2" SCH 40 PVC		FROM GS TO 22.5 FT.		COMPL. = 25 ft	
TYPE OF PERFORATION		0.020" FACT SLOT TRILOCK 2" SCH 40 PVC		FROM 22.5 TO 42.5 FT.		24 HRS. 6.15 ft	
SIZE AND TYPE OF PACK		UNIFORMLY GRADED SILICA SAND (ACOE)		FROM 20.0 TO 43.0 FT.		LOGGED BY: 	
TYPE OF SEAL		NO. 1 HYDRATED BENTONITE		FROM 16.0 TO 20.0 FT.		CHECKED BY: 	
		NO. 2 PORTLAND I-II NEAT CEMENT & -5% GRANULAR BENTONITE		FROM GS TO 16.0 FT.		b6	



598

Depth (feet)	Samples	Blows	MATERIAL DESCRIPTION	H ₂ S (ppm)	Well Construction
35			(Continued as above)		
40			Granitic Gneiss		
45			TOTAL DEPTH = 43.0ft		
50					
55					
60					
65					
70					
75					
80					

599

MONITORING WELL LOCATION		NORTH END OF BASE ON HILL TOP; FORMER SOLID WASTE DUMP/TRENCH (MW-22)		ELEVATION AND DATUM		TOC 259.73 Feet	
DRILLING AGENCY		ACOE FED		DRILLER		M. [redacted] b6	
DRILLING EQUIPMENT		JASWELL TRUCKMOUNT WITH CONAIR 250 PSI COMPRESSOR		DATE STARTED		4-7-92	
DRILLING METHOD		AIR ROTARY WITH PERCUSSION BIT		DATE FINISHED		4-8-92	
DRILLING METHOD		AIR ROTARY WITH PERCUSSION BIT		COMPLETION DEPTH		75.8 FT	
DRILLING METHOD		AIR ROTARY WITH PERCUSSION BIT		SAMPLER		Cuttings Grab	
DRILL BIT		6.5" x 8" CARBIDE PERCUSSION		NO. OF SAMPLES		DIST. 17	
UNDIST.		NA		COMPL.		70.3 ft	
SIZE AND TYPE OF CASING		5" STEEL TO 22' (REMOVED) 2" SCH 40 PVC		WATER LEVEL		FIRST -83 ft ATD	
TYPE OF PERFORATION		0.020" FACT SLOT TRILOCK 2" SCH 40 PVC		FROM		GS TO 60.3 FT.	
SIZE AND TYPE OF PACK		UNIFORMLY GRADED SILICA SAND (ACOE)		FROM		60.3 TO 75.3 FT.	
TYPE OF SEAL		NO. 1 HYDRATED BENTONITE		FROM		57.0 TO 82.0 FT.	
TYPE OF SEAL		NO. 2 PORTLAND I-II NEAT CEMENT & -5% GRANULAR BENTONITE		FROM		GS TO 51.0 FT.	
LOGGED BY:		[redacted] b6		CHECKED BY:		[redacted] b6	

Depth (feet)	Samples	Blows	MATERIAL DESCRIPTION (MW-22)	Open-hole gas reading (ppm)		HNU (ppm)	Well Construction
				gas tech	Hnu		
			Loose, moist, medium to light reddish brown, Silty Sand (SM), fine to medium grained, with trace clay; trace gravels	ND	ND		
			FILL				
5	1		Medium dense, damp, medium to light reddish brown, Silty Sand (SM) with trace clay; some angular lithic fragments			ND	
			FILL				
10	2		Local zone of organic odors (solvents?) Approximately 11 ft to 19 ft			ND	
15	3		Dense to very dense, damp, light olive brown, Silty Sand (SM), very fine to fine grained			20	
20	4					50	
25	4		Localized metallic debris; material increases in grain size and lithic mineral content			ND	
			FILL				
30	6		Very dense, dry, light to very light olive brown, Silty Sand (SM), very fine grained; moderately weathered, moderately strong			ND	
			Granitic Gneiss				

600