ORIGINAL (Red)

105942

ICF SRW ASSOCIATES

A DIVISION OF ICF TECHNOLOGY INCORPORATED

FINAL REMEDIAL INVESTIGATION REPORT
VOLUME 2 OF 2

DORNEY ROAD LANDFILL

LEHIGH COUNTY, PENNSYLVANIA

AUGUST 11, 1988

Robinson Plaza II, Suite 200, Pittsburgh, PA 15205 (412) 788-9200

ORIGINAL (Red)

APPENDIX A - RI DATA SUMMARY TABLES

ORIGINAL (Red)

GROUNDWATER

JOHNEY ROAD ANALYTICAL DATA

CMPD CL	CMPD-DESC	TYPE	UPGRADIENT	DOWNGRADIENT	DOWNGRADIENT	DOWNGRADIENT	DOWNGRADIENT	DOWNGRADIENT	DOWNGRADIENT	DOWNGRADIENT	REFERENCE	RINSATE	UPGRADIENT	DOWNGRADIENT
		LOCATION	MW-1	MW-2	MW-3	MW-4	MW-5	MW-5 DUP	MW-6	MW-7	SAMPLE	SAMPLE	MW-10	MW-20
		SAMPLE	GW1-101-001	GW1-102-001	GW1-103-001	GW1-104-001	GW1-105-001	GW1-105-002	GW1-106-001	GW1-107-001	GW1-108-001	GW1-109-001	GW1-110-001	GW1-120-001
		ECN	199351	199369	199372	199370	199040	199039	199304	199336	199349	199076	199330	199360
		DATE	05/04/88	05/03/88	05/03/88	05/03/88	05/05/88	05/05/88	05/03/88	05/04/88	05/04/88	05/05/88	05/04/88	05/03/88
		MATRIX	WA	WA	WA	WA	WA	WA	WA	WA	WA	WA	WA	WA
CMPD CL	CMPD-DESC	UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
101 M	ANTIMONY					25 (J)								
102 M	ARSENIC			2.2 (J)								7.9 (J) H,B		
103 M	BERYLLIUM				2.4 (J)				4.4 (J)					
105 M	CHROMIUM													
106 M	COPPER			130	19 (J)									36
107 M	LEAD				9.0	5.9								4 (J)
108 M	MERCURY			0.57	0.26				0.24	1.2				
109 M	NICKEL													
110 M	SELENIUM											3 (J) H,B		
111 M	SILVER													
112 M	THALLIUM						3 (J)	2.9 (J)	2.1 (J)					
113 M	ZINC		29 B,B	80	100	50	10 (J) B,B	6.1 (J) B,B	54	30 B,B	15 (J),B	17 (J),B	10 (J),B	171
114 M	BARIUM		62 (J)	116 (J)	73 (J)	173 (J)	70 (J)	79 (J)	70 (J)	263	5.5 (J)		6.4 (J)	39 (J)
115 M	IRON		12 (J)	19 (J),B	9750	211	27 (J)	31 (J)	41 (J),B	4.3 (J)	155 ,B	10 (J),B	31 (J),B	13 (J),B
116 M	MANGANESE		10 (J),B	27 E	373 E	309 E	80	83		444	6.7 (J) E,B		7.4 (J) E,B	1.3 (J) E,B
117 M	VANADIUM		4.7 (J) E	6.4 (J)	11 (J)	4 (J)	5.7 (J) E	4 (J) E					2.8 (J)	3.4 (J)
118 M	ALUMINUM		20 (J)		1010					69 (J)	19 (J),B		60 (J),B	25 (J),B
120 M	COBALT		5.6 (J)	6.3 (J)	7.6 (J)	11 (J)	6.0 (J)	5.4 (J)		12 (J)			6.1 (J)	
121 M	MAGNESIUM		27900	67500	52900	64000	24800	25500	23300	4270 (J)			14800	31900
122 M	Calcium		49100	91300	89100	170000	47600	48300	36900	6900	232 (J),B	80 (J),B	9570	51300
130 M	Sodium		6400 (J) E	6360	3750 (J)	5040	14900 E	14400 E	3700 (J)	2970 (J) E			16000	3640 (J)
131 M	Potassium		4270 (J)	6830 (J)	3870 (J)	3040 (J)	5930	5790	2650 (J)	2000 (J)			57000	3660 (J)
1001 C	CYANIDE													

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ORIGINAL (Red)

Qualifiers: V. Validation; J = Estimated B = Unusable

DOWNEY ROAD ANALYTICAL DATA

	TYPE	DOWNGRADIENT	DOWNGRADIENT	DOWNGRADIENT	LANDFILL	LANDFILL	LANDFILL	LANDFILL	LANDFILL	DOWNGRADIENT
	LOCATION	MW-1D	MW-5D	MW-7D	LMW-3	LMW-4	LMW-5	LMW-6	LMW-7	EXISTING
	SAMPLE	DW1-13D-001	DW1-15D-001	DW1-17D-001	DW1-MLS-001	DW1-MLG-001	DW1-MLS-001	DW1-MLG-001	DW1-MLF-001	DW1-DRE-001
	CCN	199387	199839	199533	199540	199375	199581	190036/634	199507	190060
	DATE	05/05/00	05/05/00	05/04/00	05/04/00	05/03/00	05/03/00	05/03/00	05/04/00	05/05/00
	MATRIX	WA	WA	WA	WA	WA	WA	WA	WA	WA
CMPD CL CMPD-DESC	UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
101 A ANTIMONY										
102 A ARSENIC						100		40 (J)		
103 A BERYLLIUM				2.2 (J)	2.7 (J)	111	19 (J)	5.2 (J)	17 S	0.3 (J B,)
105 A CHROMIUM			5.3 (J)							2.1 (J)
106 A COPPER		56				37	37	13		
107 A LEAD						29	31			
108 A MERCURY					26	116	60	2.3 (J)		
109 A NICKEL										
110 A SELENIUM					73	3350	462	250 E	119	
111 A SILVER										
112 A THALLIUM						66				
113 A ZINC		98	40 B,J	31 B,J	33	17				
114 A BARIUM		44 (J)	36 (J)	36 (J)	2750	37700	232	797 B,J	21 .B	21 .J
115 A IRON		83 (J)	132	11 (J)	63800	790	156 (J)	48 (J)	2330	297
116 A MANGANESE		6.7 (J) E	17 .B	62	2170 E	1060000	2700	55600	4270	190
117 A VANADIUM		5.0 (J)				470000 E	99 E	13300	243 E	250
118 A ALUMINUM		20 (J)	19 (J)				5.7 (J)	11 (J) E	23 (J)	0.7 (J)
120 A COBALT		5.8 (J)	6 (J)		29 (J,B	1450	176 (J,B	88 (J)	63 (J,B	
121 A MAGNESIUM		49600	7310	5000	19 (J)	2620	50	80	33 (J)	5.7 (J)
129 A Calcium		86600	9990	101000	66900	473000	68600	133000	300000	68000 E,)
130 A Sodium		3770 (J)	12600 E	4750 (J) E	97300	1330000	25700	149000	37300	96600
131 A Potassium		4170 (J)	8100	3700	152000	860000	1360000	436000 E	470000	3650 (J)
1001 C CYANIDE					30400	700000	457000	485000	251000	2990 (J)
					10 B,)					

AR300794

ORIGINAL (Red)

[illegible] ASAD ANALYTICAL DATA

	TYPE	UPGRADIENT	DOWNGRADIENT	DOWNGRADIENT	DOWNGRADIENT	DOWNGRADIENT	DOWNGRADIENT	DOWNGRADIENT	DOWNGRADIENT	REFERENCE	REFERENCE	UPGRADIENT	DOWNGRADIENT
	LOCATION	MW-1	MW-2	MW-3	MW-4	MW-5	MW-5 DUP	MW-6	MW-7	SAMPLE	SAMPLE	MW-10	MW-20
	SAMPLE	GMW-101-001	GMW-102-001	GMW-103-001	GMW-104-001	GMW-105-001	GMW-105-002	GMW-106-001	GMW-107-001	GMW-108-001	GMW-109-001	GMW-110-001	GMW-120-001
	LAB	194361	194360	194358	194357	194352	194356	194363	194362	194359	194358	194360	194364
	DATE	05/04/88	05/03/88	05/03/88	05/03/88	05/05/88	05/05/88	05/03/88	05/04/88	05/04/88	05/05/88	05/04/88	05/03/88
	MATRIX	WA	WA	WA	WA	WA	WA	WA	WA	WA	WA	WA	WA
CAS NO.	CAS-DESC UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
101	Antimony		37 (J)		26 (J)	57 (J,)	83 .)						
102	Arsenic	1.9 (J)	1.8 (J)	1.6 (J)		2.3 (J,)	6.9 (J,)				6.4 (J) 0.0		1.5 (J)
103	Barium	39		1.7 (J)		30 .)	50 .)	3.3 (J)					
104	Cadmium					4.3 (J,)	23 .)						
105	Calcium	6.4 (J)		10		13 .)	30 .)					6.6 (J)	
106	Chromium		19 (J)	137		34 .)	113 .)	19 (J)					19 (J)
107	Lead	10	3.5	30	3.6 (J)	230 .)	610 .)	12	2.4 (J)	0.6		0.6	7.2
108	Mercury		2.2	0.71	0.21	0.54 .)	1.6 .)	0.22	1.5				
109	Nickel	73 E		30 (J)		226 E,)	886 E,)						
110	Selenium					.)	.)				2.5 (J) 0.0		
111	Silver					.)	.)						
112	Sodium					12 .)	50 (J,)	2.3 (J)					
113	Zinc	367 E,)	111	526	93	367 E,)	1470 E,)	120	123 J	0.0 (J) 0.0	13 (J) 0.0	13 (J) 0.0	145
114	Boron	173 (J)	121 (J)	104 (J)	194 (J)	660 .)	1800 .)	52 (J)	275	4 (J)	40 (J) 0.0	9.3 (J)	42 (J)
115	Iron	30200	6460	66800	1360	50000 .)	200000 .)	9500	6130	47 (J)	7.0 (J) 0.0	400	1360
116	Manganese	1660	36 E	915 E	443 E	8800 .)	29200 .)	362 E	860	7.5 (J) 0.0		23 .0	23 E
117	Magnesium	25 (J) E	8 (J)	31 (J)	5.7 (J)	47 (J) E,)	180 E,)	6.1 (J)	7.5 (J) E			3.6 (J) E	5.7 (J)
118	Aluminum	4000	302	6430	462	9910 .)	18600 .)	2560	1320	32 (J)		322	390
120	Cobalt	47 (J)	12 (J)	21 (J)	13 (J)	187 .)	660 .)	6.1 (J)	16 (J)	0.5 (J)		6 (J)	5.4 (J)
121	Magnesium	30400	71100	63600	65400	192000 .)	534000 .)	27700	6490 (J)			15600	31600
122	Calcium	55300	97700	124000	122000	379000 .)	757000 .)	41700	7290	105 (J)	86 (J) 0.0	12100	52700
123	Sodium	4700 (J) E	8400	1110000	5540	17200 E,)	21100 E,)	4360 (J)	4230 (J) E			16300 E	4620 (J)
124	Potassium	4040 (J)	6430	4360 (J)	3200 (J)	5330 .)	7540 .)	3500 (J)	4360 (J)			30600	4030 (J)

Qualifiers: Standard Indicators J = Estimated B = Unusable

AR300795

ORIGINAL (Red)

DOWNEY WOOD ANALYTICAL DATA

	TYPE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	LOCATION	MW-30	MW-30	MW-79	LMW-3	LMW-4	LMW-5	LMW-6	LMW-7	EXISTING
	SAMPLE	[illegible]-159-001	[illegible]-159-001	[illegible]-179-001	[illegible]-M13-001	[illegible]-M14-001	[illegible]-M15-001	[illegible]-M16-001	[illegible]-M17-001	[illegible]-M18-001
	CCN	199586	199001	199562	199350	199374	199390	199037	199357	199072
	DATE	05/03/88	05/05/88	05/04/88	05/04/88	05/03/88	05/03/88	05/05/88	05/04/88	05/05/88
	MATRIX	WA	WA	WA	WA	WA	WA	WA	WA	WA
CNPD CL	CNPD-DESC	UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
101	A ANTIMONY					70	99		70	26 (I)	
102	A ARSENIC				1.9 (I)	9.0 (I)	100		10	5.3 (I)	0.9 (I) B,J
103	A BERYLLIUM		2.6 (I)			11	1.9 (I)	1.7 (I)		22	
104	A CADMIUM					4.5 (I)	19		4.5 (I)	6.9	
105	A CHROMIUM			7.9 (I)		72	70	56	7 (I)	60	
106	A COPPER		20 (I)			210	57	19 (I)		103	
107	A LEAD		13	21	9.0	11900	793	277	209	109	
108	A MERCURY				0.99	0.04	0.06	0.24		0.2	
109	A NICKEL					693 E	3300	606	309 E	326 E	
110	A SELENIUM										
111	A SILVER						71				
112	A THALLIUM		2.3 (I)			6.1 (I)	10			5.6 (I)	
113	A ZINC		240	90 B,J	195 B,J	1010 B,J	37700	790	23500 B,J	912 B,J	0.3 (I,J)
114	A BARIUM		82 (I)	64 (I)	93 (I)	3470	371	204	240	3400	270 B
115	A IRON		12000	399	1360	245000	1110000	14000	170000	130000	3650
116	A MANGANESE		409 E	25 B	62	6970	670000 E	507 E	16700	8300	240
117	A VANADIUM		15 (I)	3.3 (I) E	6.4 (I) E	121 E		16 (I)	15 (I) E	175 E	5.5 (I)
118	A ALUMINUM		2670	175 (I)	440	50100	6730	2300	1100	37000	
120	A COBALT		8.6 (I)	5.6 (I)	7.0 (I)	129	2610	77	193	270	5.2 (I)
121	A MAGNESIUM		50700	8900	2740 (I)	69000	500000	87300	140000	410000	60000 E,J
129	A Calcium		90700	33500	65000	190000	1300000	34000	192000	81700	97600
136	A Sodium		3330 (I)	17600 E	4620 (I) E	156000 E	973000	1750000	465000 E	675000 E	3060 (I)
131	A Potassium		3040 (I)	8620	4630 (I)	52300	736000	501000	501000	259000	3190 (I,B

Qualifiers: Standard CLP. Validation: J = Estimated B = Unusable 1 = Holding Times 2 = RF (0.05) 3 = Blank Contamination: 4 = RPD > 30%: 5 = % D >25%: 6 = Suspected Lab Contaminant 7 = Surrogate Recoveries Out of Contr

AR300796

BOMCEY ROAD ANALYTICAL DATA

	TYPE	UNCONTAMINATED	CONTAMINATED	CONTAMINATED	CONTAMINATED	CONTAMINATED	CONTAMINATED	CONTAMINATED	CONTAMINATED	REFERENCE	DISCARD	UNCONTAMINATED	CONTAMINATED	CONTAMINATED
	LOCATION	MW-1	MW-2	MW-3	MW-4	MW-5	MW-5 DUP	MW-6	MW-7	SAMPLE	SAMPLE	MW-10	MW-20	MW-10
	SAMPLE	GWD-101-001	GWD-102-001	GWD-103-001	GWD-104-001	GWD-105-001	GWD-105-002	GWD-106-001	GWD-107-001	GWD-108-001	GWD-109-001	GWD-110-001	GWD-120-001	GWD-110-001
	CCN	194341	194364	194120	194176	194065	194057	194287	194343	194316	194073	194339	194356	194305
	DATE	05/04/00	05/03/00	05/03/00	05/03/00	05/03/00	05/05/00	05/03/00	05/04/00	05/04/00	05/05/00	05/04/00	05/02/00	05/03/00
	MATRIX	wa	wa	wa	wa	wa	wa	wa	wa	wa	wa	wa	wa	wa
COMPD CA	COMPD-DESC	UNITS	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
202 V	Benzene			5											
203 V	Chlorobenzene														
205 V	Chloroethane			3 J		3 J									
210 V	1,1-Dichloroethane			22		7									
215 V	1,2-Dichloroethane			3 J									4 J		
217 V	1,2-Dichloroethene			3 J											
219 V	Ethylbenzene														
222 V	Methylene Chloride	1 B J,B3				1 J,B3	2 J,B3	1 B J,B3			2 J,B3		1 J,B3		14
224 V	Tetrachloroethene			37			2 J	3 J		2 J				9	
225 V	Toluene					1 J							7		
227 V	1,1,1-Trichloroethane					2 J									
229 V	Trichloroethene			51			1 J	1 J						15	
231 V	Vinyl Chloride			14		1 J									
234 V	Xylenes														
252 V	Acetone	4 J,15				7 J,14				3 J,B3	11 B,B3		9 B J,B3		21 ,14
253 V	2-Butanone														
256 V	4-Methyl-2-pentanone														
289 V	Xylenes (Total)														
299 V	1,2-Dichloroethane(Total)			100			2 J	3 J							
413 B	bis(2-Ethylhexyl)Phthalate	2 J					7 J	9 J						44	
422 B	1,4-Dichlorobenzene			2 J									11 J		
426 B	Dimethylphthalate														
429 B	Naphthalene														
434 B	Benzyl Alcohol				2 J										
437 B	2-Methylnaphthalene														
461 A	2,4-Dimethylphenol														
510 A	Phenol				25										
520 A	2-Methylphenol														
523 A	4-Methylphenol				23										
571 A	Benzoic Acid				60 J										
910 P	Energy														

Qualifiers: Standard ... Qualifiers: 1 = Unknown Potentiated Orthosilicate 2 = Holding Time 3 = MF (0.05) 4 = Blank Contam... 5 = LCS Recov. 6 = Suspected Lab Contaminant 7 = Surrogate Recovery Out of Control

0007097

ORIGINAL (Red)

DORNEY ROAD ANALYTICAL DATA

COMP CL	COMP-DESC	TYPE	DOWNGRADIENT	DOWNGRADIENT	LANDFILL	LANDFILL	LANDFILL	LANDFILL	LANDFILL	LANDFILL	DOWNGRADIENT
		LOCATION	MW-30	MW-79	LMW-3	LMW-4	LMW-5	LMW-6	LMW-6	LMW-7	EXISTING
		SAMPLE	GWD-150-001	GWD-170-001	GWD-113-001	GWD-114-001	GWD-113-001	GWD-116-001	GWD-116-001	GWD-117-001	GWD-108-001
		CCN	199050	199502	199335	199373	199379	199035	199436	199531	199061
		DATE	05/05/00	05/04/00	05/04/00	05/03/00	05/03/00	05/05/00	05/04/00	05/04/00	05/03/00
		MATRIX	WA	WA	WA	WA	WA	WA	WA	WA	WA
		UNITS	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
207 V	Benzene		6		14		2 J			14	
208 V	Chlorobenzene				8 J				44 J		
209 V	Chloroethane									8 J	
210 V	1,1-Dichloroethane			2 J							7
215 V	1,2-Dichloroethane										
217 V	1,2-Dichloropropane										
219 V	Ethylbenzene										
222 V	Methylene Chloride		3 B J,B5		140	69 J	40		130	150	
224 V	Tetrachloroethene		1 J		9 J,B5	2000	2 J,B5		91 B J,B5	8 J,B5	
225 V	Toluene		43								
227 V	1,1,1-Trichloroethane			1 J	71	700	100		390	79	
229 V	Trichloroethene										2 J
231 V	Vinyl Chloride		1 J		3 J		25				
251 V	Styrene										
252 V	Acetone		17		62 B,J5	2700 ,J4	14 ,J4		43 J		
253 V	2-Butanone				81 ,J2	3200 ,J2			1000 ,J5	56 B,J5	
256 V	4-Methyl-2-pentanone				19 ,J5	490 J			3300 ,J2		
289 V	Xylenes (Total)				530 E	170 J	270		69 J,J5	26 ,J5	
299 V	1,2-Dichloroethane(Total)		1 J		3 J	63 J	7		360 B	530 E	
415 B	Bis(2-Ethylhexyl)Phthalate		33	31	10 J		50	40 B J	79 J	2 J	
422 B	1,4-Dichlorobenzene				4 J		20	32 B J		5 J	
429 B	Diethylphthalate				17 J					7 J	
439 B	Naphthalene				10 J		20	24 B J		20	
474 B	Benzyl Alcohol					3700 BJ,J7	41			33	
477 B	2-Methylnaphthalene						4 J				
601 A	2,4-Dimethylphenol						20				
610 A	Phenol					3700 BJ,J7		92 B J			
620 A	2-Methylphenol				2 J		29				
627 A	4-Methylphenol				23	2000 BJ,J7		680 B		6 J	
633 A	Benzoic Acid					36000 BJ,J7		2000 B		370 E,J4	
710 P	Endrin					0.35					

HR 300798

ORIGINAL REC.

ORIGINAL PAGE

RESIDENTIAL WELLS

DGM41: ROUND ANALYTICAL DATA

CMPD CL	CMPD-DESC	TYPE	DOWNGRADIENT	DOWNGRADIENT	DOWNGRADIENT	UPGRADIENT	UPGRADIENT	UPGRADIENT	UPGRADIENT	UPGRADIENT	REFERENCE
		BANER	MUTH	EUTI	EUTI DUP	FELLOS	DONNEY	N. SHADE	V. SHADE	FEUSTERMAKER	SAMPLE
		SAMPLE	RMD-001-001	RMD-002-001	RMD-002-002	RMD-003-001	RMD-004-001	RMD-005-001	RMD-006-001	RMD-007-001	RMD-008-001
		ECN	199576	199576	199577	199573	199830	199827	199829	199828	199564
		DATE	05/04/88	05/04/88	05/04/88	05/04/88	05/05/88	05/05/88	05/05/88	05/05/88	05/04/88
		DATUIS	NA	NA	NA	NA	NA	NA	NA	NA	NA
		UNITS	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
210 V	1,1-Dichloroethane		2 J								
222 V	Methylene Chloride		2 B J.05	2 B J.05							2 B J.05
230 V	Tetrachloroethene		6							2 J	
236 V	Trichloroethene		9								
252 V	Acetone		9 B J.05	16 B.05	6 B J.05	7 B J.05					10 B.05
299 V	1,2-Dichloroethene(Total)		22								
412 B	Bis(2-Ethylhexyl)Phthalate						2 J				

Qualifiers: ? CLP. Validation: J = Estimated B = Unusable I = Holding Time: 2 = RF (0.05: 3 = Blank Contamination >50 > 30%: 5 = 2 B >75%: 6 = Suspected Lab Contaminant: 7 = Surrogate Recoveries Out of Contr

AR300800

ORIGINAL (Red)

BORNEY POND ANALYTICAL DATA

CMPD CL	CMPD-DESC	TYPE	BOUNDARYCENT	BOUNDARYCENT	BOUNDARYCENT	UPGRADIENT	UPGRADIENT	UPGRADIENT	UPGRADIENT	UPGRADIENT	REFERENCE
		LOCATION	NUTH	NUTI	NUTI DUP	YELLOW	BORNEY	N. SHORE	W. SHORE	FENSTERMAKER	SAMPLE
		SAMPLE	RU1-001-001	RU1-002-001	RU1-007-002	RU1-003-001	RU1-004-001	RU1-005-001	RU1-006-001	RU1-007-001	RU1-000-001
		CCN	199304	199306	199307	199305	199034	199031	199033	199032	199370
		DATE	05/04/88	05/04/88	05/04/88	05/04/88	05/05/88	05/05/88	05/05/88	05/05/88	05/04/88
		DRYWTG	NA	NA	NA	NA	NA	NA	NA	NA	NA
		UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
113 N	ZINC			2.5 (J,)	30 ,)	440 ,)	9.1 (J,)			132 ,)	
114 N	BARIUM		26 (J) E	30 (J) E	32 (J) E	17 (J) E	16 (J) E	1 (J) E	14 (J) E	20 (J) E	0.1 (J) E
115 N	IRON		17 (J)	09 (J)	3.6 (J)	3.9 (J)	36 (J)	179	14 (J)		
116 N	MANGANESE		3.0 (J)	2.7 (J)	5.5 (J)	5.5 (J)	5.5 (J)	03	3.0 (J)	3.3 (J)	. 2.0 (J)
117 N	VANADIUM		3.2 (J)		3 (J)	3.3 (J)	2.6 (J)			3.2 (J)	
118 N	ALUMINUM										30 (J)
121 N	MAGNESIUM		20000 E,)	20100 E,)	20100 E,)	19000 E,)	24900 E,)	6490 E,)	17900 E,)	23900 E,)	162 (J) E,)
129 N	Calcium		39300	07000	07400	119000	50000	00200	56700	38000	205 (J)
130 N	Sodium		3000 (J) E	3200 (J) E	4040 (J) E	10400 E	4690 (J) E	4540 (J) E	3270 (J) E	3150 (J) E	
131 N	Potassium				2930 (J)					5260	

Qualifiers: Standard EPA Validations: + = Estimated B = Unusual

AR300801

ORIGINAL (Red)

SURFACE WATER

ANALYTICAL DATA BASE FOR BARNEY GOOD SITE.

	MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	TYPE	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE	DUPLICATE	REFERENCE
	NUMBER	SOIL-001-001	SOIL-002-001	SOIL-003-001	SOIL-004-001	SOIL-005-001	SOIL-005-002	SOIL-006-001
	CCN	170875	170876	170877	170879	170879	170900	170890
	DATE	01/05/88	01/05/88	01/05/88	01/05/88	01/05/88	01/05/88	01/05/88
CRPD CL	CRPD-DESC	UNITS	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
209 V	Chloroethane		11					
210 V	1,1-Dichloroethane		9					
219 V	Ethylbenzene		3 J					
222 V	Methylene Chloride				1 J,B5	1 B J,B5		2 J,B5
225 V	Toluene		8					
227 V	1,1,1-Trichloroethane		2 J					
232 V	Acetone		12				12	

Qualifiers: Standard CLP, Validation: J = Estimated R = Unusable 1 = Holding Time 2 = RF (0.05 3 = Blank contamination 4 = RPD > 30% 5 = % D > 25% 6 = Suspected Lab Contaminant

AR300803

ORIGINAL (Red)

ANALYTICAL DATA BASE FOR DORNEY ROAD SITE.

CMPD CL	CMPD-DESC	MATRIX	SOI	SOI	SOI	SOI	SOI	SOI	SOI
		TYPE	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE	DUPLICATE	REFERENCE
		NUMBER	SOI-001-001	SOI-002-001	SOI-003-001	SOI-004-001	SOI-005-001	SOI-005-002	SOI-006-001
		CCN	174917	174918	174920	174889	174919	174921	174922
		DATE	01/05/88	01/05/88	01/05/88	01/05/88	01/05/88	01/05/88	01/05/88
		UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
102 M	ARSENIC			1.7 (1)					
105 M	CHROMIUM		9.2 (1)	5.1 (1)			0.9 (1)	11	5.1 (1)
107 M	LEAD		30	22			14	12 (1)	
110 M	SELENIUM		.1	.1	.1	3.0 (30,0	.1	.1	.1
113 M	ZINC		34	22	23	11 (1)	14 (1)	13 (1)	0.9 (1)
114 M	BARIUM		300	190 (1)	195 (1)	21 (1)	7.5 (1)	0.2 (1)	1.0 (1)
115 M	IRON		85600 0,1	8140 0,1	1990 0,1	353 0,1	1060 0,1	1950 0,1	34 (1),0
116 M	MANGANESE		31000	4100	590	51	356	490	
117 M	VANADIUM		19 (1)	5.5 (1)	0.2 (1)	0.2 (1)	5.5 (1)	9.2 (1)	
118 M	ALUMINUM		1400	122 (1)		110 (1)	136 (1)	195 (1)	
120 M	COBALT		133	10 (1)	7.7 (1)	7 (1)	0.5 (1)	12 (1)	
121 M	MAGNESIUM		14900	14300	17500	2900 (1)	20900	23790	190 (1)
129 M	Calcium		10500	77300	30700	6040	23700	27000	
130 M	Sodium		10700	15600	14000	3700 (1)	10790	24000	
131 M	Potassium		12000	15000	11600	5000	19400	25300	
1001 C	CYANIDE		43 0,0	.0	.1	20 0,1	.1	.1	.1

Qualifiers: Standard CLP, Validations 1 = Estimated 0 = Unusable 1 = Holding Time 2 = BF (0.05 3 = Blank Contamination 4 = IRSP) 301 5 = ID) 251 6 = Suspected Lab Contaminant

AR300804

LEACHATE SEEPS

BORREY ROAD ANALYTICAL DATA

	SITE	SWD	SWD
	POINT	SEEP-007	SEEP-007
	SAMPLE	SWD-007-001	SWD-008-001
	CCN	197566	197570
	DATE	05/19/88	05/19/88
	DEPTH	0	0
	MATRIX	WA	WA
CMPD CL	CMPD-DESC	ug/l	ug/l
299 V	Chloroform	1 J	
272 V	Methylene Chloride		970
275 V	Toluene		1600
257 V	Acetone		6900
253 V	2-Butanone		16000
256 V	4-Methyl-2-pentanone		390 J,j1
424 B	Diethylphthalate		360 ,j1
426 B	Di-n-Butylphthalate		6 J,j1
439 B	Naphthalene		310 ,j1
040 A	Phenol		370 ,j1
670 A	2-Methylphenol		20 J,j1
677 A	4-Methylphenol		3700 E,j1
635 A	Benzoic Acid		2700 E,j1

AR300806

ORIGINAL (Red)

Qualifiers: Standard Q: Outcome: j = Estimated; B = Unusable; 1 = Holding Times; 2 = RF (0.05); 3 = Blank Contamination; 4 = ISTD; 5 = IB (75%); 6 = Suspected Lab Contaminant; 7 = Surrogate Recoveries Out of Control

EOMWEY MIND ANALYTICAL DATA

	SITE	SWI	SWI
	POINT	SEEP 007	SEEP-008
	SAMPLE	SWI-007-W01	SWI-008-W01
	CCN	195569	195571
	DATE	05/10/88	05/10/88
	DEPTH	0	0
	MATRIX	WA	WA
MPD CL	CMPD-DESC	UG/L	UG/L
101 M	ANTIMONY		163
102 M	ARSENIC	9.4 (1) ,J	242 N,J
106 M	COPPER		39
107 M	LEAD	2.6 (1)	496
109 M	NICKEL		1610
111 M	SILVER		15 ,N
112 M	ZINC	88 ,J	71600 ,J
114 M	BARIUM	295	989
115 M	IRON	4500	2190000
116 M	MANGANESE	28700	118000
117 M	VANADIUM	4.4 (1)	
118 M	ALUMINUM	296 E,J	612 E,J
120 M	COBALT	10 (1)	785
121 M	MAGNESIUM	10400 E,J	259000 E,J
128 M	Calcium	46400	1220000
130 M	Sodium	4490 (1)	757000
131 M	Potassium	3770 (1),N	669000

Qualifiers: Standard CLP. Validation: J = Estimated N = Unusable

AR300807

SEDIMENT

ANALYTICAL DATA BASE FOR BURNEY ROAD SITE.

	TYPE	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE	DUPLICATE	REFERENCE	BYPASS
	NUMBER	S00-001-001	S00-002-001	S00-003-001	S00-004-001	S00-005-001	S00-005-002	S00-006-001	S00-007-001
	CLN	179901	179905	179910	179937	179916	179913	179916	176176
	DATE	01/05/88	01/05/88	01/05/88	01/05/88	01/05/88	01/05/88	01/05/88	01/15/88
	MATRIX	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	WA
CNPD CL	CNPD-DESC	UNITS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/l
211 V	Chloroform			6 J					
219 V	Ethylbenzene		6 J						
272 V	Methylene Chloride		8 B,05	15 B,05	6 B J,05	20 B,05	10 B,05	16 B,05	8 B,05	2
275 V	Toluene					3 J,05				
252 V	Acetone		100 B,05	160 B	74 B	22 B,05	57 B	79 B	19 B,05	
253 V	2-Butanone			21 ,15						
413 B	bis(2-Ethylhexyl)Phthalate						70 J			
609 A	Pentachlorophenol								98 J	
672 A	4-Methylphenol				32 J					
1047 C	pH		7.5	7.6	7.6	7.8	7.9	7.9	9.4	
1002 C	Percent Moisture, Undecanted		35	37	34	26	36	35		

Qualifiers: Standard CLP, Validation: J = Estimated B = Unusable 1 = Holding Time 2 = RF <0.05 3 = Blank Contamination 4 = ISTD >30% 5 = ID >25% 6 = Suspected Lab Contaminant

AR300809

ORIGINAL (Red)

ANALYTICAL DATA BASE FOR DORNEY ROAD SITE.

		TYPE	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE	DUPLICATE	REFERENCE	RINSATE
		NUMBER	S01-001-001	S01-002-001	S01-003-001	S01-004-001	S01-005-001	S01-005-002	S01-006-001	S01-007-001
		CCN	174973	174974	174930	174931	174932	174933	174934	176123
		DATE	01/05/88	01/05/88	01/05/88	01/05/88	01/05/88	01/05/88	01/05/88	01/15/88
		MATRIX	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	WA
CMPD	CL	CMPD-DESC	UNITS	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	UG/L
101	M	ANTIMONY		,B	,B	,B	,B	,B	,B	
102	M	ARSENIC		7 N,,	8.6 N,,	4.7 N,,	9.8 N,,	20 SN,,	8.1 N,,	1.4 (N,,	1.7 (,
103	M	BERYLLIUM		3 E,,	3.2 E,,	4.4 E,,	2.4 E,,	5.7 E,,	4.7 E,,	
105	M	CHROMIUM		6.9 E,,	11 E,,	11 E,,	8.1 E,,	7.1 E,,	7.9 E,,	7.8 E,,	
106	M	COPPER		17	27	99	17	18	17		
107	M	LEAD		41 E,,	34 E,,	95 E,,	37 E,,	37 E,,	49 E,,		
108	M	MERCURY			0.14	0.19	0.14	0.12	0.12		,,
109	M	NICKEL		50 E	46 E	52 E	43 E	51 E	47 E		
110	M	SELENIUM								0.35 (,,	,,
112	M	THALLIUM		1.1 (,	1.3 (,	1 (,	1.7 (,	1.6 (,	1.6 (,		
113	M	ZINC		105	111	121	119	171	133	5.7	12 (,
114	M	BARIUM		70	109	69	89	73	67	3.9 (,	77 (N
115	M	IRON		43100	47500	47500	37300	41500	37000	105	15500 E,,
116	M	MANGANESE		1090	1600	472	1310	1420	1290	1.1 (,	530 E,,
117	M	VANADIUM		23	34	20	23	25	23	15	
118	M	ALUMINUM		11100	17600	12300	11500	9510	9890	105	
120	M	COBALT		35	36	24	26	31	26		
121	M	MAGNESIUM		765 (N	1510 (, E	1080 (, E	846 (N	1710 E	1570 E	304 (N	7510
129	M	Calcium		273 (,	463 (,	465 (,	315 (,	1080 (,	1130 (,	1700	43900
130	M	Sodium								860 (,	6590
131	M	Potassium									7510
1090	C	Percent Solids		60	66	63	77	69	70	100	

Qualifiers: Standard CLP, Validations , = Estimated B = Unusable 1 = Holding Time 2 = RF (0.05 3 = Blank Contamination 4 = RPD > 30% 5 = RD > 25% 6 = Suspected Lab Contaminant

AR300810

ORIGINAL
(Red)

SURFACE SOILS

ANALYTICAL DATA FOR DORNEY ROAD SITE

CRPD CL	CRPD-DESC	TYPE	ONSITE	OFFSITE	ONSITE	OFFSITE	ONSITE	OFFSITE	ONSITE	OFFSITE	ONSITE	OFFSITE	ONSITE	OFFSITE
		NUMBER	SSD-001-001	SSD-002-001	SSD-003-001	SSD-004-001	SSD-005-001	SSD-006-001	SSD-007-001	SSD-008-001	SSD-009-001	SSD-010-001	SSD-011-001	SSD-012-001
		CCN	175244	175245	175246	175247	175248	175249	175274	175218	175219	175270	175271	175272
		DATE	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00
		MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		UNITS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
293 V	Benzene													
295 V	Bromoform													
296 V	Carbon Tetrachloride													
297 V	Chlorobenzene		1 J	1 J				3 J				6 J		2 J
298 V	Dibromochloromethane													
299 V	Chloroethane													
211 V	Chloroform		4 J										2 J	
212 V	Bromodichloromethane													
214 V	1,1-Dichloroethane													
215 V	1,2-Dichloroethane													
216 V	1,1-Dichloroethene													
217 V	1,2-Dichloropropane													
218 V	cis-1,3-Dichloropropene													
219 V	Ethylbenzene													
220 V	Bromomethane													
221 V	Chloromethane													
222 V	Methylene Chloride		8 B,05	10 B,05	20 B,05	7 B,05	25 B,05	24 B,05	14 B,05	46 B,05	35 B,05	51 B,05	12 B,05	66 B,05
223 V	1,1,2,2-Tetrachloroethane													
224 V	Tetrachloroethene													
225 V	Toluene		14 ,05	29 ,05		4 J,05	24 ,05	97 ,05		98 ,05	15 ,05	230 ,16		59 ,05
227 V	1,1,1-Trichloroethane													
228 V	1,1,2-Trichloroethane													
229 V	Trichloroethene													
231 V	Vinyl Chloride													
230 V	trans-1,3-Dichloropropene													
231 V	Styrene													
232 V	Acetone		14 B,05	32 B,05	17 B,05	16 B,05	39 B,05	41 B,05	96 B,05	80 ,05	49 ,05	5000 E,15	16 B,05	1300 E,15
233 V	2-Butanone		,02	,02	,02	,02	,02	,02	,02	,02	,02	120 ,12	,02	,02
234 V	Carbon Disulfide													
235 V	2-Hexanone													
236 V	4-Methyl-2-pentanone													
237 V	Vinyl Acetate													
209 V	Xylenes (Total)													
239 V	1,2-Dichloroethane(Total)													
401 B	Acenaphthene													
402 B	Acenaphthylene													
403 B	Anthracene													
405 B	Benzo(a)Anthracene													
406 B	Benzo(a)Pyrene													
407 B	Benzo(b)Fluoranthene													
408 B	Benzo(g,h,i)Perylene													
409 B	Benzo(k)Fluoranthene													

Qualifiers: Standard CLP, Validation J = Estimated R = Unusable 1 = Holding Time 2 = RF (0.05 3 = Blank Contamination 4 = ISRD > 30% 5 = S D > 25% 6 = Suspected Lab Contaminant

AR300812

ANALYTICAL DATA FOR DORNEY ROAD SITE

CMPD	CL	CMPD-DESC	TYPE	ONSITE	OFFSITE	ONSITE	OFFSITE	ONSITE	OFFSITE	ONSITE	OFFSITE	ONSITE	OFFSITE	ONSITE	OFFSITE
			NUMBER	SS0-001-001	SS0-002-001	SS0-003-001	SS0-004-001	SS0-005-001	SS0 006 001	SS0-007-001	SS0-008 001	SS0-009 001	SS0 010-001	SS0 011-001	SS0 012 001
			CCN	175244	175245	175246	175247	175248	175249	175274	175218	175219	175220	175221	175222
			DATE	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00
			MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			UNITS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
013	B	bis(2-Ethylhexyl)Phthalate								1000		67 J,15			
015	B	Butylbenzylphthalate													
018	B	Chrysene								760					
019	B	Dibenzo(a,h)Anthracene													
022	B	1,4-Dichlorobenzene								170 J					
024	B	Diethylphthalate													
026	B	Di-n-Butylphthalate								1000					
029	B	Di-n-Octyl Phthalate													
031	B	Fluoranthene								290 J					
032	B	Fluorene								75 J					
037	B	Indeno(1,2,3-cd)Pyrene													
039	B	Naphthalene								230 J					
043	B	N-Nitrosodiphenylamine(1)													
044	B	Phenanthrene								620					
045	B	Pyrene								400 J					
076	B	Dibenzofuran													
077	B	2-Methylnaphthalene								230 J					
610	A	Phenol								100 J					
620	A	2-Methylphenol													
622	A	4-Methylphenol								1000					
625	A	Benzoic Acid													
710	P	DIELDRIN			23		47								
719	P	PCB-1254													
1047	C	pH		6.8	7.5	7.2	7.3	6.9	7.4	6.2	7.2	7.6	7	7	6.5
1082	C	Percent Moisture, Undecanted		20	19	19	20	20	21	44	10	31	20	20	19

Qualifiers: Standard CLP. Validation: J = Estimated R = Unusable I = Holding Time 2 = RF <0.05 3 = Blank Contamination 4 = 25% > 30% 5 = 1 D > 25% 6 = Suspected Lab Contaminant

AR300813

ANALYTICAL DATA FOR DONNEY ROAD SITE

CMPD CL	CMPD-DESC	TYPE	ONSITE	OFFSITE	DUPLICATE	ONSITE	OFFSITE	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
		NUMBER	SS0-013-001	SS0-014-001	SS0-014-002	SS0-015-001	SS0-016-001	SS0-017-001	SS0-018-001	SS0-019-001	SS0-020-001	SS0-021-001	SS0-022-001	SS0-023-001
		CLP#	175223	175250	175251	175224	175252	175253	175254	175255	175271	175265	175266	175263
		DATE	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00
		MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		UNITS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
203	V Benzene									.01				1 J
205	V Bromoform									.01				
206	V Carbon Tetrachloride									.01				
207	V Chlorobenzene		2 J	3 J	3 J		2 J	2 J		.01			2 J	
208	V Dibromochloromethane									.01				
209	V Chloroethane									.01				
211	V Chloroform					4 J		10		.01	1 B J			4 B J
212	V Bromodichloromethane									.01				
214	V 1,1-Dichloroethane									.01				
215	V 1,2-Dichloroethane									.01				
216	V 1,1-Dichloroethene									.01				
217	V 1,2-Dichloropropane									.01				
218	V cis-1,3-Dichloropropene									.01				
219	V Ethylbenzene									.01				
220	V Bromomethane									.01				
221	V Chloromethane									.01				
222	V Methylene Chloride		65 B,03	18 B,03	19 B,03	10 B,03	13 B,03	41 B,03	15 B,03	4 B J,03	26 B,03	22 B,03	9 B,03	10 B,03
223	V 1,1,2,2-Tetrachloroethane									.01				
224	V Tetrachloroethene					1 J				.01				
225	V Toluene		87 ,03	77 ,03	70 ,03		42 ,03	70 ,03		.01		57 ,03	4 J,03	2 J,03
227	V 1,1,1-Trichloroethane									.01				
228	V 1,1,2-Trichloroethane									.01				
229	V Trichloroethene									.01				
234	V Vinyl Chloride									.01				
250	V Trans-1,3-Dichloropropene									.01				
251	V Styrene									.01				
252	V Acetone		90 ,03	21 B,03		32 B,03				.01	30 B,03	300 B	80 B,03	17 B,03
253	V 2-Butanone		,02	,02	,02	,02	,02	,02	,02	,02	,02	710 B,12	,02	,02
254	V Carbon Disulfide									.01				
255	V 2-Hexanone									.01		20 ,15		
256	V 4-Methyl-2-pentanone									.01		47 ,15		
257	V Vinyl Acetate									.01				
299	V Xylenes (Total)									.01				
299	V 1,2-Dichloroethene(Total)									.01				
461	B Acenaphthene													
462	B Acenaphthylene													
463	B Anthracene													
465	B Benzo(a)Anthracene											23 J		
466	B Benzo(a)Pyrene											84 J		
467	B Benzo(b)Fluoranthene											220 J B,15		
468	B Benzo(g,h,i)Perylene													
469	B Benzo(k)Fluoranthene											220 J B		

Qualifiers: Standard CLP, Validation: J = Estimated B = Unusable 1 = Holding Time 2 = RF <0.05 3 = Blank Contamination 4 = LRSD > 30% 5 = % D > 25% 6 = Suspected Lab Contaminant

AR300814

ORIGINAL (Red)

ANALYTICAL DATA FOR BURNEY ROAD SITE

CMPD CL	CMPD-DESC	TYPE	ONSITE	OFFSITE	DUPLICATE	ONSITE	OFFSITE	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
		NUMBER	SSO-013-001	SSO-014-001	SSO-014-002	SSO-015-001	SSO-016-001	SSO-017-001	SSO-018-001	SSO-019-001	SSO 020 001	SSO-021 001	SSO-022 001	SSO-023 001
		CCN	175223	175250	175251	175224	175252	175253	175254	175255	175271	175265	175266	175267
		DATE	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00
		MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		UNITS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
013 B	bis(2-Ethylhexyl)Phthalate					44 J,15				46 J		270 J	67 J	
015 B	Butylbenzylphthalate													
018 B	Chrysene											120 J		
019 B	Dibenzo(a,h)Anthracene													
022 B	1,4-Dichlorobenzene													
024 B	Diethylphthalate											300 J		
026 B	Di-n-Butylphthalate											84 J,R3		
029 B	Di-n-Octyl Phthalate													
031 B	Fluoranthene											96 J		
032 B	Fluorene													
037 B	Indeno(1,2,3-cd)Pyrene													
039 B	Naphthalene											50 J		
043 B	N-Nitrosodiphenylamine(1)													
044 B	Phenanthrene											80 J		
045 B	Pyrene											130 J		
076 B	Dibenzofuran													
077 B	2-Methylnaphthalene													
610 A	Phenol											340 J		
670 A	2-Methylphenol											70 J		
672 A	4-Methylphenol											3400		
675 A	Benzoic Acid					2000								
710 P	DIELDRIN													
719 P	PCB-1254													
1047 C	pH		7	7.2	7.3	6.9	7.1	7	6.8	7	6.2	7.1	6.8	6.8
1097 C	Percent Moisture, Undecanted		23	16	16	23	22	20	30	24	20	22	23	20

AR300815

Qualifiers: Standard CLP, Validation: J = Estimated R = Unusable 1 = Holding Time 2 = RF (0.05 3 = Blank Contamination 4 = ZRSD > 30% 5 = % D > 25% 6 = Suspected Lab Contaminant

ANALYTICAL DATA FOR DONKEY ROAD SITE

	TYPE	ONSITE	ONSITE	BACKGROUND	ONSITE	OFFSITE	ONSITE	OFFSITE	ONSITE	ONSITE	ONSITE	ONSITE	DUPLICATE
	NUMBER	SSD-024-001	SSD-025-001	SSD-026-001	SSD-027-001	SSD-028-001	SSD-029-001	SSD-030-001	SSD-031-001	SSD-032-001	SSD-033-001	SSD-034-001	SSD-034-002
	CLP	175268	175269	175270	175273	175213	175225	175226	175236	175237	175238	175239	175240
	DATE	01/08/88	01/08/88	01/08/88	01/08/88	01/08/88	01/08/88	01/08/88	01/08/88	01/08/88	01/08/88	01/08/88	01/08/88
	MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CRPD CL	CRPD-DESC	UNITS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
203	V	Benzene			1 J					.01			1 J		
205	V	Bromoform								.01					
206	V	Carbon Tetrachloride								.01					
207	V	Chlorobenzene			1 J			8	4 J	.01	3 J	24			17
208	V	Dibromochloromethane								.01					
209	V	Chloroethane								.01					
211	V	Chloroform				2 J 0.03		1 J	4 J	.01	1 J	4 J	2 J	72	
212	V	Bromodichloromethane								.01					
214	V	1,1-Dichloroethane								.01					
215	V	1,2-Dichloroethane								.01					
216	V	1,1-Dichloroethene								.01					
217	V	1,2-Dichloropropane								.01					
218	V	cis-1,3-Dichloropropene								.01					
219	V	Ethylbenzene								.01					82
220	V	Bromomethane								.01					
221	V	Chloromethane								.01					
222	V	Methylene Chloride		17 0.03	19 0.03	20 0.03	24 0.03	15 0.03	20 0.03	39 0.03	13 0.03	45 0.03	11 0.03	13 0.03	34 0.03
223	V	1,1,2,2-Tetrachloroethane								.01					500 E
224	V	Tetrachloroethene								.01					
225	V	Toluene			14 .03			210 .03	160 .03	.01	72 .03	770 E.06			
227	V	1,1,1-Trichloroethane								.01					
228	V	1,1,2-Trichloroethane								.01					
229	V	Trichloroethene								.01					
231	V	Vinyl Chloride								.01					
250	V	trans-1,3-Dichloropropene								.01					
251	V	Styrene								.01					
252	V	Acetone		40 0.03	22 0.03	21 0.03	130 0.03	130 .03	29 0.03	27 .03	200 0.05	670 0.05	160 0.03	90 0.03	11000 0 E.05
253	V	2-Butanone		.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
254	V	Carbon Disulfide								.01					
255	V	2-Hexanone								.01					
256	V	4-Methyl-2-pentanone								.01					
257	V	Vinyl Acetate								.01					
289	V	Xylenes (total)								.01					190 .05
299	V	1,2-Dichloroethane(total)								.01					
461	B	Acenaphthene												180 J	1500
462	B	Acenaphthylene													71 J
463	B	Anthracene										190 J		230 J	1200
465	B	Benzo(a)anthracene					89 J					710 J		840	1600
466	B	Benzo(a)Pyrene					71 J					900 J		910	860
467	B	Benzo(b)fluoranthene					150 J E					2000		2400	2100
468	B	Benzo(g,h,i)Perylene										340 J		270 J	200 J
469	B	Benzo(k)fluoranthene					150 J E					2000		2400	2100

Qualifiers: Standard CLP, Validations J = Estimated U = Unusable 1 = Holding Time 2 = BF (0.05 3 = Blank Contamination 4 = LRSD > 30% 5 = % D > 25% 6 = Suspected Lab Contaminant

AR300816

ORIGINAL (Red)

ANALYTICAL DATA FOR BORNEY ROAD SITE SS02.WK1 3/31/00

	TYPE	ONSITE	ONSITE	BACKGROUND	ONSITE	OFFSITE	ONSITE	OFFSITE	ONSITE	ONSITE	ONSITE	ONSITE	DUPLICATE
	NUMBER	SS0-024-001	SS0-025-001	SS0-026-001	SS0-027-001	SS0-028-001	SS0-029-001	SS0-030-001	SS0-031-001	SS0-032-001	SS0-033-001	SS0-034-001	SS0-034-002
	CCN	175268	175269	175270	175273	175213	175225	175226	175236	175237	175238	175239	175240
	DATE	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00
	MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CMPD CL	CMPD-DESC UNITS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
013 B	bis(2-Ethylhexyl)Phthalate	47 J	45 J			74 J	2700			20000 E		3300	2000
015 B	Butylbenzylphthalate						77 J					550 J	620
018 B	Chrysene						91 J			1600		960	1200
019 B	Dibenzo,h)Anthracene											66 J	
022 B	1,4-Dichlorobenzene									960 J		490 J	200 J
024 B	Diethylphthalate											62 J	
026 B	Di-n-Butylphthalate									2000		1700	2000
029 B	Di-n-Octyl Phthalate									710 J		300 J	
031 B	Fluoranthene						77 J			1400		1400	3500
032 B	Fluorene									270 J		130 J	1300
037 B	Indeno(1,2,3-cd)Pyrene									260 J		200 J	230 J
039 B	Naphthalene									1700		230 J	2200
041 B	N-Nitrosodiphenylamine(1)									370 J		120 J	
044 B	Phenanthrene						69 J			1900		960	6100
045 B	Pyrene						72 J			1100 J		1400	2400
076 B	Dibenzofuran									270 J		93 J	930
077 B	2-Methylnaphthalene									1290		210 J	640
610 A	Phenol									410 J		160 J	
620 A	2-Methylphenol												
622 A	4-Methylphenol									1790		620	230 J
625 A	Benzoic Acid									260 J,p5		170 J,p5	
710 P	DIELDRIN												
719 P	PCB-1254						650						
1047 C	pH	6.4	6.4	6.3	6.2	7.4	7.2	6.8	6.8	6.6	6.8	7	7.1
1082 C	Percent Moisture, Undecanted	29	19	20	23	25	18	20	15	22	23	41	42

AR300817

Qualifiers: Standard CLP, Validation: p = Estimated R = Unusable 1 = Holding time 2 = RF <0.05 3 = Blank Contamination 4 = RPD > 30% 5 = % D > 25% 6 = Suspected Lab Contaminant

ANALYTICAL DATA FOR DONNEY ROAD SITE

CMPD CL	CMPD-DESC	TYPE	ONSITE	ONSITE	ONSITE	ONSITE	BLANKAIR	REFERENCE	REFERENCE	BLANKAIR
		NUMBER	SS0-035-001	SS0-036-001	SS0-037-001	SS0-038-001	SS0-039-001	SS0-040-001	SS0-041-001	SS0-042-001
		CCN	175241	175242	175243	175212	176127	175210	175211	176128
		DATE	01/08/88	01/08/88	01/08/88	01/08/88	01/15/88	01/08/88	01/08/88	01/15/88
		MATRIX	SOIL	SOIL	SOIL	SOIL	WA	SOIL	SOIL	WA
		UNITS	ug/kg	ug/kg	ug/kg	ug/kg	ug/l	ug/kg	ug/kg	ug/l
203 V	Benzene									
205 V	Bromoform									
206 V	Carbon tetrachloride									
207 V	Chlorobenzene			6 J	3 J	2 J				
208 V	Dibromochloromethane									
209 V	Chloroethane									
211 V	Chloroform									
212 V	Bromodichloromethane									
214 V	1,1-Dichloroethane									
215 V	1,2-Dichloroethane									
216 V	1,1-Dichloroethene									
217 V	1,2-Dichloropropane									
218 V	cis-1,3-Dichloropropene									
219 V	Ethylbenzene					2 J				
220 V	Bromomethane									
221 V	Chloromethane									
222 V	Methylene Chloride		14 B,B3	12 B,B3	33 B,B3	9 B,B3	6 J	25 B,B3	19 B,B3	
223 V	1,1,2,2-Tetrachloroethane									
224 V	Tetrachloroethene									
225 V	Toluene		4 J,B3	120 ,B3	75 ,B3	55 ,B3		10 ,B3	22 ,B3	
227 V	1,1,1-Trichloroethane									
228 V	1,1,2-Trichloroethane									
229 V	Trichloroethene									
231 V	Vinyl Chloride									
250 V	Trans-1,3-Dichloropropene									
251 V	Styrene									
252 V	Acetone		330 B E,J5		10 B,B3	45 ,B3	11	10 ,B3	20 B,B3	6 J
253 V	2-Butanone		,B2	,B2	,B2	,B3	,B2	,B2	,B2	,B2
254 V	Carbon Disulfide									
255 V	2-Hexanone									
256 V	4-Methyl-2-pentanone									
257 V	Vinyl Acetate									
289 V	Xylenes (total)									
290 V	1,2-Dichloroethene(total)									
401 B	Acenaphthene									
402 B	Acenaphthylene									
403 B	Anthracene									
405 B	Benzo(a)anthracene									
406 B	Benzo(a)pyrene									
407 B	Benzo(b)fluoranthene									
408 B	Benzo(g,h,i)Perylene									
409 B	Benzo(k)fluoranthene									

Qualifiers: Standard CLP, Validation: J = Estimated B = Unusable 1 = Holding Time 2 = RF (0.05 3 = Blank Contamination 4 = IDED > 30% 5 = I B > 25% 6 = Suspected Lab Contaminant

AR300818

ORIGINAL (Red)

ANALYTICAL DATA FOR DORNEY ROAD SITE

CMPD CL	CMPD-DESC	TYPE	ONSITE	ONSITE	ONSITE	ONSITE	RINSATE	REFERENCE	REFERENCE	RINSATE
		NUMBER	SSD-035-001	SSD-036-001	SSD 037-001	SSD-038-001	SSD 039 001	SSD-040 001	SSD-041-001	SSD-042 001
		CEN	175291	175292	175293	175212	176177	175210	175211	176179
		DATE	01/00/00	01/00/00	01/00/00	01/00/00	01/15/00	01/00/00	01/00/00	01/15/00
		MATRIX	SOIL	SOIL	SOIL	SOIL	WA	SOIL	SOIL	WA
		UNITS	ug/kg	ug/kg	ug/kg	ug/kg	ug/l	ug/kg	ug/kg	ug/l
413 B	bis(2-Ethylhexyl)Phthalate									
415 B	Butylbenzylphthalate								37 J	
418 B	Chrysene									
419 B	Dibenzo(a,h)Anthracene									
422 B	1,4-Dichlorobenzene									
424 B	Diethylphthalate									
426 B	Di-n-Butylphthalate									
429 B	Di-n-Octyl Phthalate							70 J	67 J	
431 B	Fluoranthene									
432 B	Fluorene									
437 B	Indeno(1,2,3-cd)Pyrene									
439 B	Naphthalene									
443 B	N-Nitrosodiphenylamine(1)									
444 B	Phenanthrene									
445 B	Pyrene									
476 B	Dibenzofuran									
477 B	2-Methylnaphthalene									
610 A	Phenol									
620 A	2-Methylphenol									
622 A	4-Methylphenol									
625 A	Benzoic Acid									
710 P	DIELDRIN		88	53						
719 P	PCB-1254									
1047 C	pH		7.2	6.9	6.7	6.8		8.0	8.7	
1087 C	Percent Moisture, Undecanted		20	21	25	26				

Qualifiers: Standard CLP, Validations: J = Estimated R = Unusable 1 = Holding Time 2 = RF (0.05 3 = Blank Contamination 4 = ERSD > 30% 5 = I B > 25% 6 = Suspected Lab Contaminant

AR300819

ANALYTICAL DATA BASE FOR BONNEY ROAD SITE.

CMPD CL	CMPD-DESC	TYPE	ONSITE	OFFSITE	ONSITE	OFFSITE	ONSITE	OFFSITE	ONSITE	OFFSITE	ONSITE	OFFSITE
		NUMBER	SSI-001-001	SSI-002-001	SSI-003-001	SSI-004-001	SSI-005-001	SSI-006-001	SSI-007-001	SSI-008-001	SSI-009-001	SSI-010-001
		CLN	175296	175297	175298	175299	175300	175301	175321	175272	175275	175276
		DATE	01/08/88	01/08/88	01/08/88	01/08/88	01/08/88	01/08/88	01/08/88	01/08/88	01/08/88	01/08/88
		MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		UNITS	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
101 M	ANTIMONY		.8	.8	.8	.8	.8	.8	713 N,J	.8	.8	.8
102 M	ARSENIC		7.3 0 N,B	10 0 N,B	14 0 N,B	8.4 0 N,B	11 0 NE,B	8.5 0 N,B	41 N,B	6.7 N,J	5.2 N,J	9.1 N,J
103 M	BERYLLIUM		2.6	1.9	2.9	1.9	4.8	2.1	2.3	1.7 E,J	2.7 E,J	2.2 E,J
104 M	CADMIUM		2	1.8								
105 M	CHROMIUM		35 0 E,J	30 0 E,J	24 0 E,J	20 0 E,J	19 0 E,J	45 0 E,J	23	21 0,J	4.6 0,J	20 0,J
106 M	COPPER		23 0 E,J	10 0 E,J	18 0 E,J	14 0 E,J	20 0 E,J	14 0 E,J	37	44	13	20
107 M	LEAD		41 N,J	122 N,J	33 N,J	248 N,J	49 N,J	120 N,J	96400 N,J	32 0,J	77 0,J	40 0,J
108 M	MERCURY								0.23 N,J	0.12	0.16	
109 M	NICKEL		44 0 E,J	22 0 E,J	41 0 E,J	31 0 E,J	47 0 E,J	20 0 E,J	82	29 0	33 0	35 0
110 M	SELENIUM		.8	0.39 (N),B	.8	.8	.8	.8	.8			
112 M	THALLIUM		1.3 (1)	0.85 (1)	1.1 (1)		1.4 (1)			0.71 (1)		1.0 (1)
113 M	ZINC		132	89	125	146	160	121	240 E,J	130	130	113
114 M	BARIUM		89 E,J	131 E,J	70 E,J	69 E,J	70 E,J	162 E,J	96	62	36 (1)	53
115 M	IRON		55600	41600	47300	42500	43400	43400	43700	45000	42300	50000
116 M	MANGANESE		2690	2110	2050	1460	1530	2300	649	766	674	1260
117 M	VANADIUM		40 E	41 E	31 E	42 E	30 E	46 E	14 (N)	40	13 (1)	44
118 M	ALUMINUM		15300 0	10700 0	15100 0	12100 0	13000 0	20400 0	6160	17300	6740	14500
120 M	COBALT		30 E	30 E	36 E	30 E	25 E	34 E	27 E	36	10 (1)	30
121 M	MAGNESIUM		966 (N),J	1950 E,J	1120 (N),J	2710 E,J	872 (N),J	3660 E,J	662 (N)	2200 E	516 (N)	1950 E
129 M	Calcium		509 (1)	1820	690 (1)	1730	365 (1)	2300	3240 E,J	2030	1300 (1)	732 (1)
130 M	Sodium											
131 M	Potassium									841 (1)		
1001 C	CYANIDE								.8			
1000 C	Percent Solids		79	79	81	81	79	80	56	82	63	79

Qualifiers: Standard CLP, Validation: J = Estimated R = Unusable 1 = Holding Time 2 = RF (0.05 3 = Blank Contamination 4 = 1050 > 101 5 = B > 252 6 = Suspected Lab Contaminant

AR300820

ORIGINAL (Red)

ANALYTICAL DATA BASE FOR DORNEY ROAD SITE.

		TYPE	ONSITE	OFFSITE	ONSITE	OFFSITE	DUPLICATE	ONSITE	OFFSITE	ONSITE	ONSITE	ONSITE
		NUMBER	SSI 011 001	SSI-012-001	SSI 013-001	SSI 014 001	SSI-014-002	SSI-015 001	SS-016-001	SSI-017 001	SSI-018 001	SSI-019-001
		CCN	175277	175278	175279	175302	175303	175280	175304	175305	175306	175307
		DATE	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00
		MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CMPD CL	CMPD-DESC	UNITS	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
101 A	ANTIMONY		.B	.B	.B	.B	.B	.B	.B	.B	.B	.B
102 A	ARSENIC		9.6 N,)	5.9 N,)	6.0 N,)	15 0 N,B	12 (300,B	7.4 N	20 0 N,B	5 0 N,B	11 0 N,B	6.1 0 N,B
103 A	BERYLLIUM		1.0 E,)	3.1 E,)	6.3 E,)	0.5	1.0	5.1 E,)	0.0	2.5	3.6	1.0
104 A	CADMIUM					2.5			2.0	2.1	2	1.9
105 A	CHROMIUM		13 0,)	199 0,)	20 0,)	19 0 E,)	30 0 E,)	10 0,)	52 0 E,)	1500 0 E,)	27 0 E,)	37 0 E,)
106 A	COPPER		13	28	20	22 0 E,)	19 0 E,)	25	10 0 E,)	50 0 E,)	25 0 E,)	16 0 E,)
107 A	LEAD		43 ,)	37 0,)	39 0,)	163 N,)	35 N,)	413 0,)	55 N,)	165 N,)	323 N,)	46 N,)
108 A	MERCURY		0.14	0.15	0.11			0.14		0.16 N,)		0.10 N,)
109 A	NICKEL		22 0	199 0	52 0	70 0 E,)	20 0 E,)	60 0	50 0 E,)	1500 0 E,)	59 0 E,)	33 0 E,)
110 A	SELENIUM					0.3 (N,B	.B		0.44 (N,B	.B	.B	.B
112 A	THALLIUM		1.1 (1)	1.5 (1)	1.7 (1)	0.87 (1)	2.0 (1)	1.6 (1)	1.7 (1)	-	0.91 (1)	2.5 (1)
113 A	ZINC		73	133	165	217	197	162	172	179	135	193
114 A	BARIUM		93	96	60	213 E,)	81 E,)	84	114 E,)	67 E,)	60 E,)	82 E,)
115 A	IRON		27000	53600	57000	44900	76400	45000	102000	50990	40990	61500
116 A	MANGANESE		1570	1010	1250	2990	5070	1460	4730	1990	1260	2210
117 A	VANADIUM		27	35	34	34 E	39 E	29	57 E	21 E	21 E	34 E
118 A	ALUMINUM		10500	12900	12700	11900 0	17300 0	9750	19100 0	11000 0	11100 0	19700 0
120 A	COBALT		27	46	31	26 E,)	109 E,)	25	124 E,)	45 E,)	22 E,)	64 E,)
121 A	MAGNESIUM		1190 (N	1100 E	1620 E	1300 E,)	1540 E,)	1700 E	1190 (N,)	1730 (N,)	1010 (N,)	1790 E,)
129 A	Calcium		679 (1)	700 (1)	501 (1)	923 (1)	650 (1)	1050 (1)	1090 (1)	1070	717 (1)	603 (1)
130 A	Sodium		513 (1)					615 (1)				
131 A	Potassium		709 (1)	604 (1)	1010 (1)			1100				
1001 C	CYANIDE											
1000 C	Percent Solids		76	81	78	83	84	77	78	73	75	79

AR300821

Qualifiers: Standard CLP, Validation:) = Estimated B = Unusable 1 = Holding Time 2 = RF (0.05) 3 = Blank Contamination 4 = RPD > 30% 5 = D > 25% 6 = Suspected Lab Contamination

ANALYTICAL Data BASE FOR DORNEY ROAD SITE.

CRPD CL	CRPD-DESC	TYPE	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE	BACKGROUND	ONSITE	OFFSITE	ONSITE
		NUMBER	SSI-020-001	SSI-021-001	SSI-022-001	SSI-023-001	SSI-024-001	SSI-025-001	SSI-026-001	SSI-027-001	SSI-028-001	SSI-029-001
		CCN	175308	175314	175315	175316	175317	175318	175319	175320	175214	175204
		DATE	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00
		MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		UNITS	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
101 M	ANTIMONY		.U	.U	.U	.U	.U	.U	.U	.U	.U	.U
102 M	ARSENIC		0.85 (N,U	3.0 N S,U	2.2 (N, U	1.0 N,U	3.6 N,U	1.2 (N,U	2.5 N,U	1.4 (N,U	15 N,)	16 N,)
103 M	BERYLLIUM		2.5	3.2	2.4	2.0	3.1	3.0	2.1	3.5	1.7 E,)	2.7 E,)
104 M	CADMIUM											
105 M	CHROMIUM		12	12	16	14	16	16	16	11	30 E,)	32 E,)
106 M	COPPER		21	22	25	10	29	51	15	10	14	216
107 M	LEAD		15 N,)	300 N,)	1200 N,)	31 N,)	25 N,)	28 N,)	25 N,)	23 N,)	52 E,)	2300 E,)
108 M	MERCURY		0.16 N,)	0.17 N,)	0.13 N,)	0.14 N,)	0.14 N,)	0.14 N,)		0.12 N,)		0.15
109 M	NICKEL		43	56	44	40	41	40	39	53	41 0	43 0
110 M	SELENIUM		.U	.U	.U	.U	.U	.U	.U	.U		
112 M	THALLIUM		0.82 (1)	0.84 (1)	0.62 (1)	3.7	1.1 (1)	0.81 (1)	0.7 (1)	0.64 (1)	0.97 (1)	1.1 (1)
113 M	ZINC		140 E,)	426 E,)	130 E,)	113 E,)	116 E,)	107 E,)	117 E,)	140 E,)	130	175
114 M	BARIUM		44	83	56	56	60	65	81	61	79	130
115 M	IRON		35900	57900	43100	46900	45600	50200	54000	49300	64000	69700
116 M	MANGANESE		1460	775	1000	1730	1850	1700	2770	1070	1530	1710
117 M	VANADIUM		39 E	36 E	33 E	46 E	50 E	44 E	45 E	33 E	53	43
118 M	ALUMINUM		12900	7660	11300	12000	14300	11900	12900	9230	21000	15300
120 M	COBALT		41 E	40 E	31 E	43 E	43 E	44 E	72 E	35 E	55	39
121 M	MAGNESIUM		730 (N	1740 E	2730 E	913 (1)	1040 (N	900 (N	1010 (N	790 (N	1300 E	2400 E
129 M	Calcium		236 (N,)	3400 E,)	4000 E,)	567 (N,)	440 (N,)	464 (N,)	585 (N,)	126 (N,)	545 (1)	2600
130 M	Sodium			779 (1)		473 (1)	425 (1)					
131 M	Potassium			800 (1)		636 (1)	736 (1)				605 (1)	
1001 C	CYANIDE		.U	.U	.U	.U	.U	.U	.U	.U		
1400 C	Percent Solids		80	77	71	84	81	84	80	76	77	84

Qualifiers: Standard CLP, Validations) = Estimated U = Unusable 1 = Holding Time 2 = BF <0.05 3 = Blank Contamination 4 = 1050 > 308 5 = 0 > 253 6 = Suspected Lab Contaminant

AR300822

ORIGINAL (Red)

ANALYTICAL DATA BASE FOR DORNEY ROAD SITE.

	TYPE	OFFSITE	ONSITE	ONSITE	ONSITE	ONSITE	DUPLICATE	ONSITE	ONSITE	ONSITE	ONSITE
	NUMBER	SS1-030-001	SS1-031-001	SS1-032-001	SS1-033-001	SS1-034-001	SS1-034-002	SS1-035-001	SS1-036-001	SS1-037-001	SS1-038-001
	CCN	175282	175283	175289	175290	175291	175292	175293	175294	175295	175215
	DATE	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00	01/00/00
	MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CMPD CL	CMPD-DESC	UNITS	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
101 M	ANTIMONY		,B	,B	20 N,B	,B	27 N,B	,B	,B	,B	,B	,B
102 M	ARSENIC		0.1 N,J	9.0 0 N,B	36 0 NE,B	4 0 N,B	12 0 NE,B	11 0 N,B	11 0 N,B	8.9 0 N,B	17 0 N,B	5.1 N,J
103 M	BERYLLIUM		1.6 E,J	2.9	2.3	2.1	2.6	2.8	2.1	1.8	3	1.9 E,J
104 M	CADMIUM				1.9							
105 M	CHROMIUM		13 N,J	19 0 E,J	25 0 E,J	14 0 E,J	60 0 E,J	107 0 E,J	25 0 E,J	60 0 E,J	38 0 E,J	11 N,J
106 M	COPPER		12	22 0 E,J	20 0 E,J	11 0 E,J	33 0 E,J	107 0 E,J	12 0 E,J	9.1 0 E,J	20 0 E,J	17
107 M	LEAD		25 N,J	71 N,J	29300 N,J	50 N,J	20000 N,J	72600 N,J	57 N,J	34 N,J	39 N,J	116 N,J
108 M	MERCURY			0.12 N,J		0.11 N,J	0.23 N,J	0.21 N,J	0.19 N,J			
109 M	NICKEL		22 0	37 0 E,J	26 0 E,J	31 0 E,J	92 0 E,J	101 0 E,J	21 0 E,J	9.3 0 E,J	42 0 E,J	37 0
110 M	SELENIUM			0.30 EN,B	14 NE,B	,B	,B	,B	,B	,B	,B	
112 M	THALLIUM			1.5 E					1.1 E		0.56 E	
113 M	ZINC		73	199	213	84	192	872 P	190	70	161	87
114 M	BARIUM		74	71 E,J	81 E,J	34 EN,J	120 E,J	134 E,J	64 E,J	85 E,J	164 E,J	46 E
115 M	IRON		29200	44200	44600	40400	33600	95300	45600	40400	40700	32900
116 M	MANGANESE		1210	1600	670	710	491	1370	1600	2100	2030	990
117 M	VANADIUM		23	32 E	30 E	22 E	18 E	15 EN	31 E	36 E	48 E	23
118 M	ALUMINUM		19500	14000 0	17000 0	11900 0	7760 0	6460 0	13700 0	14600 0	23100 0	19100
120 M	COBALT		15	23 E	13 EN	21 E	12 EN	10 E	32 E	35 E	46 E	17
121 M	MAGNESIUM		2110 E	836 EN,J	1830 E,J	602 EN,J	3570 E,J	4630 E,J	1080 EN,J	1600 E,J	2270 E,J	2000 E
129 M	Calcium		1010 E	579 E	2090	260 E	2600	15700	701 E	607 E	817 E	846 E
130 M	Sodium											
131 M	Potassium											817 E
1001 C	CYANIDE											
1000 C	Percent Solids		70	85	68	76	60	50	81	85	70	77

Qualifiers: Standard CLP, Validations J = Estimated B = Unusable E = Holding Time 2 = RF <0.05 3 = Blank Contamination 4 = ICSD > 30% 5 = B > 2SA 6 = Suspected Lab Contaminant

AR300823

ORIGINAL (Red)

ANALYTICAL DATA BASE FOR DORNEY ROAD SITE.

		TYPE	RINSATE	REFERENCE	REFERENCE	RINSATE
		NUMBER	SS1-039-001	SS1-040-001	SS1-041-001	SS1-042-001
		CLP	176170	175216	175217	176175
		DATE	01/15/90	01/08/90	01/08/90	01/15/90
		MATRIX	WA	SOIL	SOIL	WA
CMPD CL	CMPD-DESC	UNITS	UG/L	UG/KG	UG/KG	UG/L
101 M	ANTIMONY			.R	.R	
102 M	ARSENIC			0.42 (BN,)	0.6 (BN,)	1.8 (I)
103 M	BERYLLIUM			.J	.J	
104 M	CADMIUM					
105 M	CHROMIUM			8.6 0,)	7.5 0,)	
106 M	COPPER					
107 M	LEAD			.J	.J	
108 M	MERCURY		.J			.J
109 M	NICKEL					
110 M	SELENIUM		.J			.J
112 M	THALLIUM					
113 M	ZINC		10 (I)	6.1	5	13 (I)
114 M	BARIUM		9.4 (BE	3.9 (I)	3.0 (I)	40 (BE
115 M	IRON		5.6 (BN,)	172	150	7070 0,)
116 M	MANGANESE		32 E,)	1.1 (I)	0.6 (I)	267 E,)
117 M	VANADIUM			15	15	
118 M	ALUMINUM			190	107	
120 M	COBALT					
121 M	MAGNESIUM		2300 (I)	299 (BE	269 (BE	4750 (I)
129 M	Calcium		3360 (I)	1010	1010	21700
130 M	Sodium		6310	700 (I)	562 (I)	8130
131 M	Potassium					4530 (I)
1001 C	CYANIDE					115 0
1000 C	Percent Solids			100		

Qualifiers: Standard CLP, Validations) = Estimated R = Unusable I = Holding Time 2 = RF (0.05 3 = Blank Contamination 4 = 1250 > 392 5 = 0 > 252 6 = Suspected Lab Contaminant

AR300824

ORIGINAL (Red)

ORIGINAL
(Red)

SUBSURFACE SOIL

ANALYTICAL DATA FOR DORNEY ROAD SITE

	LOCATION	LMW-1	LMW-3	LMW-3	MW-19	MW-19	LMW-2	LMW-6	MW-30	LMW-5	MW-4	MW-4
	TYPE	ON-NATURAL	ON-WASTE	ON-NATURAL	OFFSITE	OFFSITE	ON-WASTE	ON-WASTE	OFFSITE	ON-NATURAL	OFFSITE	DUPLICATE
	NUMBER	SPD-001-001	SPD-002-001	SPD-003-001	SPD-004-001	SPD-005-001	SPD-006-001	SPD-007-001	SPD-008-001	SPD-009-001	SPD-010-001	SPD-010-002
	CLN	177929	177930	177931	178067	178077	178092	179336	179335	180072	180004	180003
	DATE	01/22/88	01/22/88	01/22/88	01/29/88	01/29/88	01/29/88	02/04/88	02/04/88	02/11/88	02/11/88	02/11/88
	DEPTH(FT)	23-32.5	2-17	20-22	51-55	.5-1.5	0.5-30	2-54	.5-1.5	48-53	.5-1.5	.5-1.5
	MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CMPD CL	CMPD-DESC	UNITS ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
203 V	Bromene	2 J										
207 V	Chlorobenzene							2 J				
211 V	Chloroform	2 J,B5	2 J	1 J	4 J	3 J	5 J	13	4 J			
215 V	1,2-Dichloroethane		19	5 J			3 J			2 J	6 J	
219 V	Ethylbenzene	96	200	13						7 J		
222 V	Methylene Chloride	34 B,B5	25 B,B5	46 B,B5	23 B,B5	31 B,B5	16	9		10		
224 V	Tetrachloroethene			6 J			25 B,B5	33 B,B5	22 B,B5	67 B,B5	14 B,B5	20 B,B5
225 V	Toluene	63 ,B5	46 ,B5	52 ,B5	29	32	35	5 J	33	3 J		
229 V	Trichloroethene			2 J				190		72 ,B5		
251 V	Styrene									2 J		
252 V	Acetone	42 ,B5	66 B,B5	300 E	43 B,B5	20 B,B5	100 B,B5	900 B E,,6	16 B,B5	3 J		
253 V	2-Butanone	20 ,,J2	19 ,,J2	800 E,,J2	,B2	,B2	26 ,,J2	1000 E,,J2	,B2	500 B E	33 B,B5	16 B,B5
254 V	Carbon Disulfide							3 J		890 E	,B2	,B2
255 V	2-Hexanone						23 ,,J5	37 ,,J2		6 J		
256 V	4-Methyl-2-pentanone			7 J,,J5			11 J,,J5	210 ,,J2		110		
289 V	Xylenes (Total)	290	930 E	65			60	38		33		
299 V	1,2-Dichloroethene(Total)		,B2		,B2	,B2	,B2	,B2	,B2	5 J		
401 B	Acenaphthene		170 J									
402 B	Acenaphthylene											
403 B	Anthracene		110 J									
405 B	Benzo(a)Anthracene	78 J	570									
406 B	Benzo(a)Pyrene		730									
407 B	Benzo(b)Fluoranthene	46 J,,J5	1700 B B,,J5									
408 B	Benzo(g,h,i)Perylene		510									
409 B	Benzo(k)Fluoranthene		1700 B B,,J5									
413 B	bis(2-Ethylhexyl)Phthalate	2400 B	400	1200 B	200 J		970	9400	40 J			
415 B	Butylbenzylphthalate		1200	150 J			160 J	200 J		2200		
418 B	Chrysene		2400 B							2000		
419 B	Dibenzo(a,h)Anthracene		180 J									
420 B	1,3-Dichlorobenzene	56 J										
422 B	1,4-Dichlorobenzene	69 J	49 J									
424 B	Diethylphthalate		110 J				62 J,,J5	1000				
425 B	Dimethyl Phthalate		99 J									
426 B	Di-n-Butylphthalate		830	170 J			61 J	350 J		160 J		
429 B	Di-n-Octyl Phthalate	46 J								55 J		
431 B	Fluoranthene	170 J	710									
432 B	Fluorene	46 J	67 J									
437 B	Indeno(1,2,3-cd)Pyrene		450 J									
439 B	Naphthalene	81 J	290 J	150 J			43 J					
443 B	N-Nitrosodiphenylamine(1)		210 J									
444 B	Phenanthrene	190 J	670									

Qualifiers: Standard CLP, Validation; J = Estimated B = Unusable 1 = Nothing Found 2 = RF <0.05 3 = Blank Contamination 4 = 25% >30% 5 = 10 >25% 6 = Suspected Lab Contaminant

AR300826

ORIGINAL (Red)

ANALYTICAL DATA FOR DORNEY ROAD SITE

	LOCATION	LDR-1	LDR-3	LDR-3	DR-10	DR-10	LDR-2	LDR-4	DR-10	LDR-5	DR-9	DR-9
	TYPE	ON-NATURAL	ON-BASE	ON-NATURAL	OFFSITE	OFFSITE	ON-BASE	ON-BASE	OFFSITE	ON-NATURAL	OFFSITE	DUPLICATE
	NUMBER	SPD-001-001	SPD-002-001	SPD-003-001	SPD-004-001	SPD-005-001	SPD-006-001	SPD-007-001	SPD-008-001	SPD-009-001	SPD-010-001	SPD-010-002
	CCN	177029	177030	177031	170067	170077	170092	179336	179335	180672	180684	180683
	DATE	04/22/88	04/22/88	04/22/88	01/29/88	01/29/88	01/29/88	02/04/88	02/04/88	02/11/88	02/11/88	02/11/88
	DEPTH(FT)	25-32.5	3-17	20-22	51-55	.5-1.5	0.5-10	2-54	.5-1.5	48-53	.5-1.5	.5-1.5
	MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CRPD CL	CRPD-DESC	UNITS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
445 B	Pyrene		75 J	360								
474 B	Benzyl Alcohol							340 J,15				
476 B	Dibenzofuran											
477 B	2-Methylnaphthalene			130 J								
610 A	Phenol			170 J	150 J			1100		160 J		
620 A	2-Methylphenol			1300								
622 A	4-Methylphenol				350 J		100 J	1500 ,15				
625 A	Benzoic Acid			360 J,15								
710 P	DIELDRIN											
723 P	PCB-1260											
1047 C	pH		7.0	7.1	6.2	7.3	7.4	6.9	7.9	8.7	6.8	6.8	6.9
1082 C	Percent Moisture, Undecanted		24	31	24	21	18	16	8	19	24	19	18

Qualifiers: Standard CLP, Validation: J = Estimated R = Unusable 1 = Holding Time 2 = RF <0.05 3 = Blank Contamination 4 = RPD >101 5 = SD >25% 6 = Suspected Lab Contaminant

AR300827

ORIGINAL (Red)

ANALYTICAL DATA FOR DORNEY ROAD SITE

	LOCATION	MW-20	MW-5	LMW-6	MW-5	LMW-7	LMW-7	BA	BA	MW-7	TB-LMW-6
	TYPE	OFFSITE	OFFSITE	ON-NATURAL	OFFSITE	ON-WASTE	ON-NATURAL	RINSATE	REFERENCE	OFFSITE	ON-NATURAL
	NUMBER	SPD-011-001	SPD-012-001	SPD-013-001	SPD-014-001	SPD-015-001	SPD-016-001	SPD-017-001	SPD-018-001	SPD-019-001	SPD-020-001
	CCN	190082	101119	191131	191136	191149	191152	191171	191159	197065	197075
	DATE	07/19/88	07/18/88	07/19/88	07/19/88	07/19/88	07/19/88	07/19/88	07/19/88	04/08/88	04/08/88
	DEPTH(FT)	.5-1.5	20-24	32-37	.5-1.0	2-22	25-28	0	0	15-19	64-70
	MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	WA	SOIL	SOIL	SOIL
CRPD CL	CRPD-DESC	UNITS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/l	ug/kg	ug/kg	ug/kg
205 V	Benzene			.5J	.5J	.5J						
207 V	Chlorobenzene		2 J	.5J	.5J	.5J		2 J				
211 V	Chloroform						6 J				2 J	7 B
215 V	1,2-Dichloroethane											
219 V	Ethylbenzene			.5J	.5J	.5J						
222 V	Methylene Chloride		9 B,03	19 B,03	20 B,03	22 B,03	20 B,03	43 B,03	3 B J,03	44 B,03	77 B,01	27 B,01
226 V	Tetrachloroethene											
228 V	Toluene		8 .03	22 .03	.5J	.5J	14 .03	29 .03		45 .03		
229 V	Trichloroethene											
234 V	Styrene			.5J	.5J	.5J						
252 V	Acetone		17 B,03	220 B,03	79 B,03	39 B,03	71 B,03	57 B,03	4 B J,03	31 B,03	110 B,01	17 B,01
253 V	2-Butanone			.02	03 .12	.02	31 .12	8 J,12	.02	.02	.02	35 .12
254 V	Carbon Disulfide											
255 V	2-Hexanone						10					
256 V	4-Methyl-2-pentanone				1 J							
289 V	Xylenes (Total)			.5J	.5J	.5J						
299 V	1,2-Dichloroethene(Total)											
491 B	Acenaphthene											
492 B	Acenaphthylene					260 J						
493 B	Anthracene					170 J						
495 B	Benzo(a)Anthracene					1100						
496 B	Benzo(a)Pyrene					1700						
497 B	Benzo(b)Fluoranthene					2700						
498 B	Benzo(g,h,i)Perylene					560						
499 B	Benzo(k)Fluoranthene					2700						
513 B	Bis(2-Ethylhexyl)Phthalate				900	1700	85 J,03	110 J,03		46 J,03		41 .01
515 B	Butylbenzylphthalate				160 J	140 J						
518 B	Chrysene					1600						
519 B	Dibenzo(a,h)Anthracene					200 J						
520 B	1,2-Dichlorobenzene											
522 B	1,4-Dichlorobenzene											
524 B	Diethylphthalate											
525 B	Dimethyl Phthalate											
526 B	Di-n-Butylphthalate				230 J	230 J						
529 B	Di-n-Octyl Phthalate											
531 B	Fluoranthene					2500						
532 B	Fluorene					75 J						
537 B	Indeno(1,2,3-cd)Pyrene					500						
539 B	Naphthalene											
543 B	N-Nitrosodiphenylamine(1)											
544 B	Phenanthrene					1300						

Qualifiers: Standard CLP, Validation: J = Estimated B = Unusable 1 = Holding Time 2 = MF (0.05 3 = Blank Contamination 4 = 2250 >502 5 = ID >25% 6 = Suspected Lab Contaminant

AR300828

ORIGINAL (Red)

ANALYTICAL DATA FOR BURNEY ROAD SITE

	LOCATION	MW-20	MW-5	LMW-6	MW-5	LMW-7	LMW-7	NA	NA	MW-7	TB-LMW-4
	TYPE	OFFSITE	OFFSITE	ON-NATURAL	OFFSITE	ON-WASTE	ON-NATURAL	RINSATE	REFERENCE	OFFSITE	ON-NATURAL
	NUMBER	SPO-011-001	SPO-012-001	SPO-013-001	SPO-014-001	SPO-015-001	SPO-016-001	SPO-017-001	SPO-018-001	SPO-019-001	SPO-020-001
	CLP	100002	101119	101131	101136	101149	101152	101171	101159	109063	109075
	DATE	02/11/88	02/18/88	02/18/88	02/18/88	02/18/88	02/18/88	02/18/88	02/18/88	04/08/88	04/08/88
	DEPTH(FT)	.5-1.5	20-24	32-37	.5-1.0	2-22	23-28	0	0	15-19	64-70
	MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	NA	SOIL	SOIL	SOIL
CMPD CL	CMPD-DESC	UNITS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/l	ug/kg	ug/kg	ug/kg
445 B	Pyrene					1400						
474 B	Benzyl Alcohol											56 J
476 B	Dibenzofuran					51 J						
477 B	2-Methylnaphthalene											
660 A	Phenol											170 J
620 A	2-Methylphenol											
622 A	4-Methylphenol				45 J		89 J					70 J
625 A	Benzoic Acid						150 J,j4					
710 P	DIELDRIN		140 j4									
723 P	PCB-1260					260						
1067 C	pH		7	8.2	7.6	8.2	8.1	8.1		9.2	5.8	6.7
1082 C	Percent Moisture, Undecanted		16	25	23	24	18	21			27	19

Qualifiers: Standard CLP, Validations j = Estimated N = Unusable 1 = Holding Time 2 = BF (0.05 3 = Blank Contamination 4 = 10SD >10X 5 = SD >25X 6 = Suspected Lab Contaminant

AR300829

ORIGINAL (Red)

DORNEY ROAD ANALYTICAL DATA

	LOCATION	LRD-1	LRD-3	LRD-3	RD-19	RD-19	LRD-2	LRD-6	RD-20	LRD-5	RD-4	RD-4
	TYPE	ON-NATURAL	ON-WASTE	ON-NATURAL	OFFSITE	OFFSITE	ON-WASTE	ON-WASTE	OFFSITE	ON-NATURAL	OFFSITE	DUPLICATE
	NUMBER	SP1-001-001	SP1-002-001	SP1-003-001	SP1-004-001	SP1-005-001	SP1-006-001	SP1-007-001	SP1-008-001	SP1-009-001	SP1-010-001	SP1-010-002
	CCN	177923	177922	177921	178100	178112	178114	179343	179340	180089	180092	180093
	DATE	01/22/88	01/22/88	01/22/88	01/29/88	01/29/88	01/29/88	02/04/88	02/04/88	02/11/88	02/11/88	02/11/88
	DEPTH(FT)	25-32.5	3-17	20-22	51-55	.5-1.5	.5-30	2-34	.5-1.5	40-53	.5-1.5	.5-1.5
	MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CNPD CL	CNPD-DESC	UNITS	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
101 R	ANTIMONY		.J	.J	.J	.R	.R	.R	.R	.R		
102 R	ARSENIC		3 (30,R	2.4 (30,R	1.2 (30,R | 31 0 N,)	17 0 N,)	21 0 N,)	6.1 0 NS,)	6.9 0 NS,)	5.9 0 NS,)	8.7 (39N,)	5.3 0 N,)
103 R	BERYLLIUM		33	3.9	1.7	96	1.7 P	3.0	3.4	1.4	30	0.5 (1	0.95 (1
104 R	CADMIUM		3.9			7.7		1.3			4.6		
105 R	CHROMIUM		19	20	5.1	13 0 E	21 0 E	70 0 E	31 0 E	17 0 E	11	20	27
106 R	COPPER		21	60	19	29 0,)	16 0,)	22 0,)	22 0,)	12 0,)	22	27	30
107 R	LEAD		19 N,)	2130 N,)	200 N,)	27 0 N,)	26 0 N,)	49 0 N,)	43 0 N,)	20 0 N,)	27 0 N,)	19 N,)	22 0 N,)
108 R	MERCURY			0.21 N,)	0.06 N,)		0.12		0.15		0.15		
109 R	NICKEL		171	63	39	102 E	49 E	105 E	79 E	28 E	39	31	31
110 R	SELENIUM		1 (30,R	.R	.R	.R	.R	.R	.R	.R	0.4 N,R	.R	.R
112 R	THALLIUM		3.1			2.0	2.2 (1	2.6	1.5 (1	3.2	1.0 (1 N,R	.R	.R
113 R	ZINC		466 E,)	125 E,)	86 E,)	643	110	273	201	69	273	86	108
114 R	BARIUM		73	83	71	199 N,)	83 N,)	155 N,)	80 N,)	72 N,)	50	46 (1	64
115 R	IRON		32000	36700	45000	37600	39700	107000	70700	39700	44000	39000	46000
116 R	MANGANESE		2260	1470	1520	2090 N,)	1900 N,)	6470 N,)	1500 N,)	1700 N,)	1140	953	894
117 R	VANADIUM		57 E	40 E	43 E	42	31	56	42	20	20	30	43
118 R	ALUMINUM		3630	10800	11900	11300 N,)	9900 N,)	10600 N,)	12700 N,)	9820 N,)	10400	17100	17900
120 R	COBALT		20 E	47 E	40 E	69 N,)	64 N,)	223 N,)	63 N,)	44 N,)	17 E,)	30 E,)	33 E,)
121 R	MAGNESIUM		1670 E	1930 (3E	610 (3E	10100	1440	1060 (1	2470	1190 (1 | 2170 E,)	1900 E,)	2370 E,)
129 R	Calcium		1040 (3E,)	1090 E,)	373 (3E,)	10600 N,)	4660 N,)	501 (39,)	2770 N,)	390 (1 N,)	834 (1	1270	1310
130 R	Sodium		1370	369 (1		1960	431 (1	612 (1	732 (1	461 (1	495 (1	584 (1	798 (1
131 R	Potassium					699 (1	777 (1		857 (1	869 (1	1000 (1	1910	2200
1001 C	CYANIDE		.R	.R	.R	.R	.R	.R	.R	.R		1.4	
1000 C	Percent Solids		70	67	72	76	82	84	80	81	70	83	81

Qualifiers: Standard CLP,Validation: J = Estimated R = Unusable 1 = Holding Time 2 = RF (0.05 3 = Blank Contamination 4 = ISTD > 30% 5 = E D > 25% 6 = Suspected Lab Contaminant

AR300830

ORIGINAL (Red)

DORNEY ROAD ANALYTICAL DATA

	LOCATION	MW-20	MW-5	LMW-6	MW-5	LMW-7	LMW-7	MW	MW	MW-7	TB-LMW-4
	TYPE	OFFSITE	OFFSITE	OFFSITE	OFFSITE	ON-SITE	ON-NATURAL	BLANKAIR	REFERENCE	OFFSITE	ON-NATURAL
	NUMBER	SPI-011-001	SPI-012-001	SPI-013-001	SPI-014-001	SPI-015-001	SPI-016-001	SPI-017-001	SPI-018-001	SPI-019-001	SPI-020-001
	CCN	180085	181120	181132	181138	181150	181155	181173	181160	189036	189082
	DATE	02/11/88	02/18/88	02/18/88	02/18/88	02/18/88	02/18/88	02/18/88	02/18/88	04/08/88	04/08/88
	DEPTH(FT)	.5-1.5	20-24	32-37	.5-1.0	2-22	23-28	0	0	15-19	64-70
	MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	AA	SOIL	SOIL	SOIL
CAPO CL	CAPO-DESC	UNITS	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/L	MG/KG	MG/KG	MG/KG
101 M	ANTIMONY										
102 M	ARSENIC		14 (WK,)	1.4 (SWK,)	1.2 (SWK,)	23 0 K,)	18 0 K,)	6.2 0 K,)	1 (SWK,)	0.74 (I)	6.9
.03 M	BERYLLIUM		2.6	7	2.1	2.0	0.7	2.8		1.8 0 E,)	5.6 0 E,)
104 M	CADMIUM		1.4		1.0	1.0	1.6	1.0			
105 M	CHROMIUM		19	13	2.1 (I)	37	10	16	7.4	16 0	5.8 0
106 M	COPPER		22	18	26	38	21	21		19	8.8
107 M	LEAD		32 0 K,)	10 K,)	40 0 K,)	446 0 K,)	48 0 K,)	16 K,)	.)	8 0 K,)	20 0 K,)
108 M	MERCURY					0.19	0.14	0.008			
109 M	NICKEL		36	74	32	61	74	71		69 0,)	35 0,)
110 M	SELENIUM		.B	.B	.B	0.55 (WK,B	.B	.B	.B	0.77 (I) B,B	.B
112 M	THALLIUM		1.5 (WK,B	5.3 K,B	0.59 (WK,B	1.5 (I) K,B	2.4 (WK,B	1.8 (WK,B	.B		
113 M	ZINC		90	361	64	279	189	224	9.8 (I)	6.7	146 0,)	218 0,)
114 M	BARIUM		50	21 (I)	18 (I)	161	127	67 (I)	1.7 (I)	4.3 (I)	55	15 (I)
115 M	IRON		30000	49300	21000	40000	45300	50600	51 (I)	165	68100 0,)	26400 0,)
116 M	MANGANESE		1340	224	1100	1460	2100	1330		1.8 (I)	1150 0,)	536 0,)
117 M	VANADIUM		35	30	8.7 (I)	33	29	35	3 (I,B	16	40 E	40 (I) E
118 M	ALUMINUM		11900	9830	3810	11100	13300	12000		220	8590	3630
120 M	COBALT		35 E,)	29 E,)	13 (WK,)	30 E,)	36 E,)	29 E,)			55 0 E	20 0 E
121 M	MAGNESIUM		2640 E,)	4710 E,)	619 (WK,)	3650 E,)	4630 E,)	4470 (WK,)		332 (WK,)	634 (I) E	1050 (I) E
129 M	Calcium		614 (I)	262 (I)	341 (I)	14100	1290	333 (I)	167 (I)	2100	469 (I)	252 (I)
130 M	Sodium			2240	2170					500 (I)	697 (I)	461 (I)
131 M	Potassium		1430	5410	3530							
1001 C	CYANIDE								.)		.B	.B
1000 C	Percent Solids		84	76	77	77	79	78		86	73	81

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Qualifiers: TLP,Validation: J = Estimated R = Unusable 1 = Holding Time 2 = RF (0.05 3 = Blank Contamination 4 > 361 5 = E B > 252 6 = Suspected Lab Contaminant

APPENDIX B - LABORATORY AND EPA QA PROTOCOL

CHAPTER V
PROGRAM QUALITY ASSURANCE

The purpose of this chapter is to present a summary of the different aspects of quality assurance (QA) and to show their interrelationship within the overall structure of the program. This information is included to familiarize users with the program's basic QA principles and their application, and to facilitate a more complete understanding of the quality of CLP analytical data in terms of potential utilization.

A. Interface with Agency Quality Assurance

The primary role of the CLP is to support the Agency's Superfund investigation and cleanup efforts by producing analytical data of known and documented quality usable for Agency enforcement actions keyed to identification of pollutant sources and recovery of cleanup costs. Therefore, a comprehensive quality assurance program that reflects Agency QA objectives has been incorporated into all aspects of CLP operations. The CLP links three primary aspects of QA: (1) field QA, which includes field sampling operations and QA project planning; (2) laboratory QA, which is comprised of analytical method QC and external or program QA; and (3) post-laboratory QA to review laboratory and method performance and their impact on data quality.

Field operations include sampling activities performed by the EPA Regions and National Remedial Action/Field Investigation Team (REM/FIT) and Technical Assistance Team (TAT) contractors, which result in samples being processed through the CLP for analysis. The CLP NPO coordinates closely with these and other Agency sampling groups and Agency QA teams, in the development and application of Quality Assurance Program Plans and site-specific Quality Assurance Project Plans. These plans include the consistent use of Agency-specified analytical procedures, containers, sampling techniques, sample preservation, sample tags and chain-of-custody documents, and adherence to DOT regulations in sample shipment. The CLP strongly supports the use of consistent field sampling, and sample packaging and shipment techniques, and specifies types of sample containers and required sample volumes for appropriate

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target analyses. Through its Sample Bottle Repository system, the CLP provides Superfund samplers with the precleaned sampling bottles for use in the field.

The CLP is directly involved in all aspects of laboratory QA. Analytical methods require extensive Agency-specified quality control (QC) procedures and documentation to ensure a complete data product that will withstand legal scrutiny. The CLP operates an extensive external QA program, which includes: pre-award and post-award laboratory performance evaluation sample analyses and laboratory facility evaluations, required submission of laboratory Standard Operating Procedures (SOPs) for analytical operations and documentation, continuous monitoring of lab performance by Headquarters POs and Regional DPOs, and a multi-level data review process to evaluate the validity of the data product, individual laboratory performance and methods performance.

The CLP, through a variety of mechanisms, continuously strives to improve the quality of program data by maintaining state-of-the-art analytical methods, refining the structure and requirements of analytical contracts, and strengthening laboratory operations. CLP QA activities are coordinated through the NPO QA Officer, to ensure that the CLP is operating in accordance with overall Agency QA mandates.

The application of field QA is addressed in Chapters II and III, where sample volume, container, preservation, packaging, shipment and documentation requirements are discussed. Analysis or method QC is addressed for each analytical program in Chapter II, which contains a description of contract analytical methods and QC requirements for each program. The following sections of this chapter describe the program's external laboratory QA activities.

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B. Laboratory Selection Process

1. Prebid Conference

The CLP prebid conferences are requested and chaired by the National Programs Office and are arranged by SMO to facilitate the invitation for bid (IFB) process for all interested laboratories. During each conference, the appropriate program officer will explain a particular aspect of the IFB. Areas of review include: contracting aspects; pre-award information; statement of work; and the role in the CLP of the Environmental Monitoring Systems Laboratory, SMO and the National Enforcement Investigations Center.

Whenever possible, a prebid conference is scheduled for each routine analytical service IFB series. Prebid conferences are announced and logistical information provided in the IFB. In addition, if time allows, the conference is advertised in advance in Chemical and Engineering News. Prebid conferences are generally held three to four weeks prior to the bid opening. The conferences are held at various U.S. cities.

2. Preaward PE Sample Analysis

The first criterion for laboratory selection is pre-award performance evaluation (PE) sample analysis. For some solicitations prior to bid opening, interested laboratories may request preaward PE samples through the contracting officer and submit a deposit that is returned upon completion of sample analyses and submission of the PE sample data package. For other solicitations, PE samples will be available only after bid opening and only to bidders determined by EPA to be in the competitive range.

PE samples are prepared by EMSL/LV and are representative of the types of field samples that the contractor would routinely be analyzing under the subject procurement. The laboratory is required to analyze PE samples according to contract procedures set forth in the IFB, and to report PE

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sample data according to IFB requirements, within a specified time period, usually 21 days. Bidders' PE sample data are evaluated by NPO and EMSL/LV personnel, in terms of compliance with contract requirements and accuracy of determination of compounds at the levels known to be in the PE samples. Analysis results are rated by a scoresheet developed by EMSL/LV. The PE sample score is a primary consideration in determining bidder responsiveness/responsibility for contract award.

3. Bid Price

The second criterion for laboratory selection is bid price. Following bid opening, bid abstracts are reviewed and evaluated by EPA NPO and EPA Procurement and Contracts Management Division (PCMD) officials. The lowest competitive bidders are selected to participate in pre-award bid confirmation, the process through which bidder responsiveness and responsibility for award are demonstrated and evaluated.

4. Preaward Bid Confirmations

Preaward bid confirmations may include: 1) bidder analysis of PE samples (discussed in 2, above), 2) bidder submission of Standard Operating Procedures (SOPs), and 3) site evaluation of the bidder's facility performed by EPA program management and PCMD personnel.

a. Standard Operating Procedures

Bidders are required to submit copies of all laboratory Standard Operating Procedures (SOPs) at the time of submission of PE sample data. SOPs are not required to coincide with each specific detail of the contract requirement, but must be representative of good laboratory practices and must demonstrate that the laboratory has a facility-wide quality assurance program in place and operating. Bidder SOPs are reviewed by NPO and EMSL/LV personnel and are utilized by EPA in performance of the site evaluation.

AR300836

b. On-Site Laboratory Evaluation

EPA NPO, EMSL/LV, and NEIC personnel participate in on-site evaluations of laboratory facilities of bidders which scored acceptably on the PE sample analyses and are within the EPA determined competitive range. EPA personnel perform a walk-through of the facility and perform a thorough on-site evaluation. The results of the on-site evaluation are considered in the final determination of bidder responsiveness/responsibility for contract award.

AR300837

C. Laboratory Start-Up Process

Laboratories entering the program undergo a learning curve process during which they become fully familiarized and obtain expertise in application of program methodologies and quality control procedures. To reduce the learning curve period and bring laboratories "up to speed" in a timely manner, CLP management employs a series of laboratory start-up procedures which are utilized during the laboratory's initial contract operations and whenever laboratory problems are identified during contract performance.

1. Provision of Standards to Laboratory

Immediately following contract award, EMSL/LV arranges for the provision of Standard Reference materials (SRMs) to the contractor, through the Agency's contractor-operated QA Materials Bank. These SRMs are utilized by the laboratory as the official standards to which laboratory supplied standards must be traceable throughout contract performance.

2. PO Review of First Data Packages

Initial data packages are targeted for immediate review and evaluation by the NPO Project Officer (PO), EMSL/LV and the Region. This review is intensive and focuses on any problems the laboratory has, either in applying methodologies or in reporting the data. The PO then supplies feedback to the laboratory concerning the status of the data and works with the laboratory in identifying and remedying problems.

3. PO/DPO Laboratory Visits

Depending on the extent of the problems found during the review of an initial data package, the PO or DPO may visit the laboratory facility and work on-site with laboratory personnel in rectifying problems. This process also occurs on an ongoing basis during the life of the contract. On-site laboratory evaluations are performed yearly by EPA staff, EMSL/LV,

AR300838

NEIC, and the PO and/or Deputy Project Officer (DPO), as well as on an as-needed basis to resolve performance problems.

4. PO/DPO/SMO/Laboratory Communication

Telephone communication is the most widely applied method for problem-solving and maintaining efficient laboratory operations, both during the laboratory start-up phase and throughout the performance of the contract. During the start-up period, communication links are established and the laboratory becomes familiarized with the communication process. In general, the laboratory notifies SMO immediately upon identification of any problem regarding the samples or any difficulties encountered in analysis. SMO routinely resolves sample-related problems in coordination with the Regional client, and refers technical problems to the contract PO or DPO, who contacts the laboratory and resolves the problem. The resolution and any specific actions taken are reported to the appropriate SMO personnel, who records this information as part of the permanent Case record. The laboratory also records the problem and resolution in the narrative portion of the sample data report, so that the Region considers this information in association with evaluating and using the data. Regional DPOs assist in the monitoring of contractor performance and play a major role in ongoing laboratory problem resolution in coordination with the PO.

AR300839

ORIGINAL (Red)

D. Laboratory Performance Evaluation

1. Performance Evaluation Sample Analysis

Performance Evaluation (PE) samples are prepared by ORD EMSL/LV and sent to contractor laboratories for analysis, normally on a quarterly basis. Aqueous organic and inorganic PE samples are typically shipped as "double blind" samples (i.e., the PE samples are not discernable from routine field samples) to ensure that the laboratory processes the samples in a routine manner. Evaluation of PE sample data is performed by EMSL/LV and is used by the NPO in formally evaluating laboratory contract performance. Additionally, PE sample QC data are entered by EMSL/LV into the program's QA Data Base, and are utilized, along with other laboratory data, in trend analyses, and evaluation and revision of contract QC criteria.

2. On-Site Laboratory Evaluation

At least once a year, EPA NPO, NEIC, Regional and EMSL/LV personnel visit each contract laboratory facility and evaluate laboratory procedures. The evaluation reports which result from these on-site visits are utilized by the NPO in identifying and remedying laboratory performance problems. Repeat on-site visits are made on an as-needed basis throughout the year, to resolve laboratory problems.

3. Corrective Action

Upon identification of laboratory performance problems, the PO and DPO work closely with the laboratory to effect correction of the problems. Depending on the scope of the problems, the laboratory may be placed on temporary hold, whereby the laboratory does not receive additional samples for analysis until the problem has been corrected.

Should the contractor's non-compliance to contract performance or deliverable requirements continue, the EPA Contracting Officer is requested by the NPO to issue a Show Cause Notice to the contractor.

AR300840

This document requires the contractor, within a ten-day period of time, to present the government with any facts bearing on the issue, to be used in the government's determination regarding whether the contractor's failure to perform arose out of causes beyond the laboratory's control and without fault or negligence on the part of the contractor. The contractor, in response, must submit substantial evidence to demonstrate that the contract should not be terminated for default.

A recovery plan is generally included as part of the contractor's response to the Show Cause Notice. EPA Contracts and NPO officials review the contractor's response and proposed recovery plan, and determine whether the contractor has presented sufficient evidence to demonstrate timely remedy of the noncompliance. Following this review, if the contractor has presented acceptable evidence toward recovery, the government issues a Cure Notice to the contractor which delineates the government-accepted recovery plan that the contractor must follow to avoid contract termination. The government's recovery plan includes actions and time schedules for completion of each step of the recovery process, and specifies an overall time period acceptable for completion of recovery.

Should the contractor not comply with the recovery schedule, the next and final step may be contract termination by the government for default. In addition to terminating the laboratory's contract, this action impacts on evaluation of the contractor's responsiveness/responsibility for award under future CLP solicitations.

AR300841

E. Sample Data Evaluation

1. Intercomparison Check Sample Studies

Intercomparison check sample studies are initiated by the EPA Regions on a periodic basis and involve simultaneous shipment of known samples to two or more CLP and/or Regional laboratories for analysis. Check samples are routinely shipped as "single blind" sample (i.e., the laboratory is aware samples are check samples but does not know sample composition). Analytical data from study participants are compiled by the Region and used in comparative data evaluation. The Region provides intercomparison sample study results to the NPO and EMSL/LV for use in programmatic applications. These studies differ from the PE sample program in that check sample data do not result in contractual evaluation of individual laboratory performance.

2. Regional Sample Split/Spike Programs

This Regionally directed program involves simultaneous sample analysis by two or more CLP and/or Regional laboratory facilities, and provides the Region with comparative data utilized in evaluating application of methods. In the sample split program, the Regions arrange to have field samples split and sent to different contractor and Regional laboratories for analysis. In the sample spike program, a known sample volume is prepared and divided into two or more equivalent portions. Each sample portion is then spiked with known levels of contaminants, and sent to different contractor and/or Regional laboratories for analysis. Results of split/spike sample analyses performed by CLP laboratories are provided to the NPO and EMSL/LV by the Region.

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ORIGINAL

F. Analytical Data Review

Upon completion of analysis and data reporting, the laboratory simultaneously sends a copy of the complete data package to the CLP SMO, EMSL/LV and the Regional client. Each of these groups performs complementary aspects of data review.

1. EMSL/LV Data Review

On a routine basis, EMSL/LV performs a comprehensive QA audit on a statistically significant subset of CLP sample data packages using a Mil. Standard 105D approach. EMSL/LV also provides data audits, data evaluation and participates in special requests such as enforcement support, preparation/evaluation of data review SOPs and special projects (e.g., Dioxin Incineration Study, Love Canal Habitability Study.) Based on these reviews, EMSL/LV prepares a detailed report on the data packages, which is provided to the NPO, DPOs, Regional Data Reviewers, and to Regional clients by SMO. This review package is valuable to both program management and users in evaluating the suitability of the contract methods to the types of samples analyzed, the quality of the analytical data, and the performance of the contractor laboratories.

In addition, EMSL/LV maintains the program's QA/QC Data Base. This data base includes:

- Spike recoveries
- Blanks
- Duplicates
- Tuning
- Calibration
- Method of standard additions
- ICP check
- Analytical results for dioxin

AR300843

WELL COMPLETION LOG

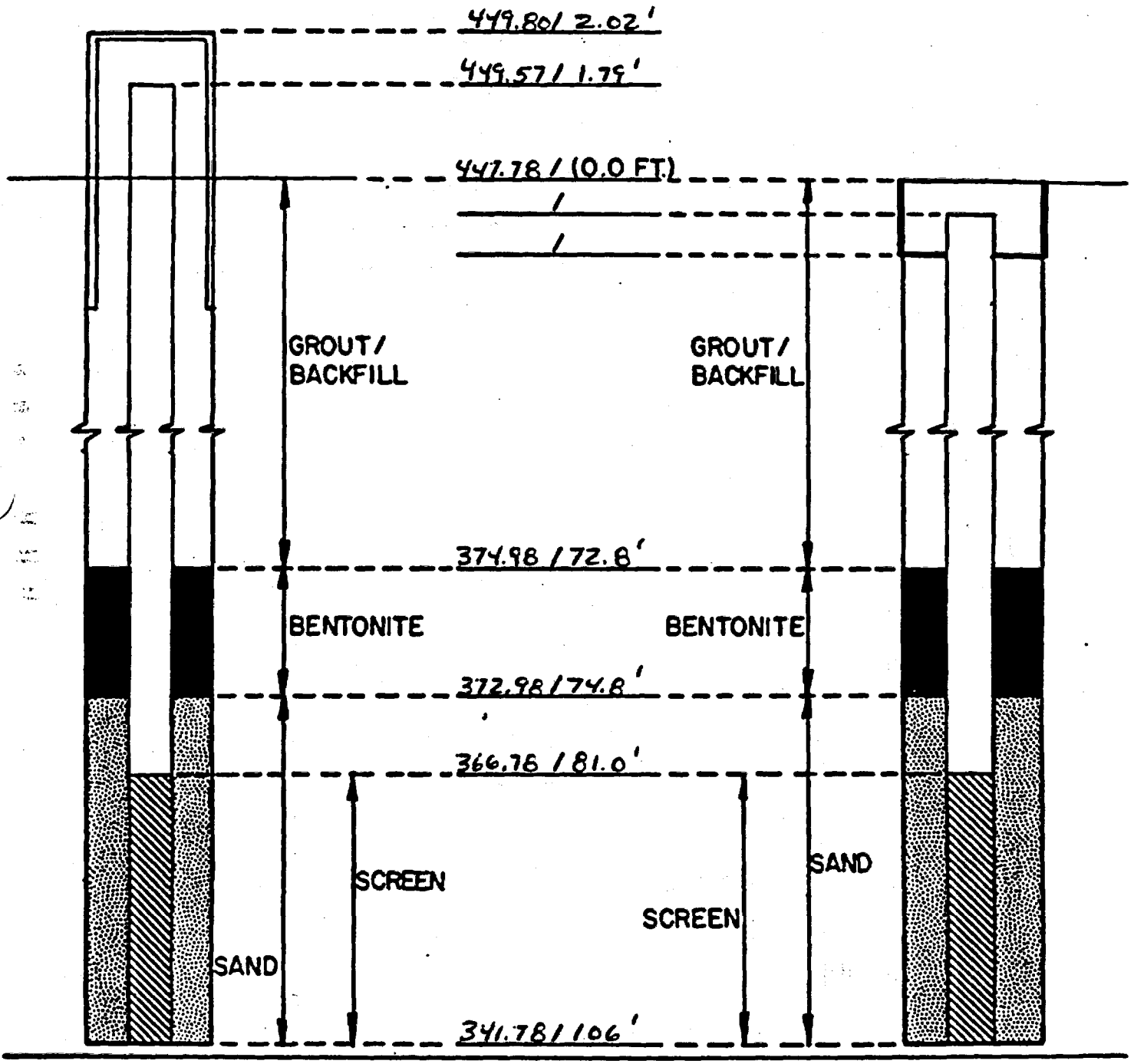
ORIGINAL (Red)

PROJECT NAME: Dorney Road Landfill Site PROJECT NO.: 30527

WELL NO.: MW-10 DATE: 2-10-88 LOCATION:

DRILLING METHOD: 10" Hollow Stem Auger to bedrock then 8" ODEX Hammer to total Depth GEOLOGIST: J Allen

ELEVATION / DEPTH



NOTES: Total Depth 106.5

AR300844

WELL COMPLETION LOG

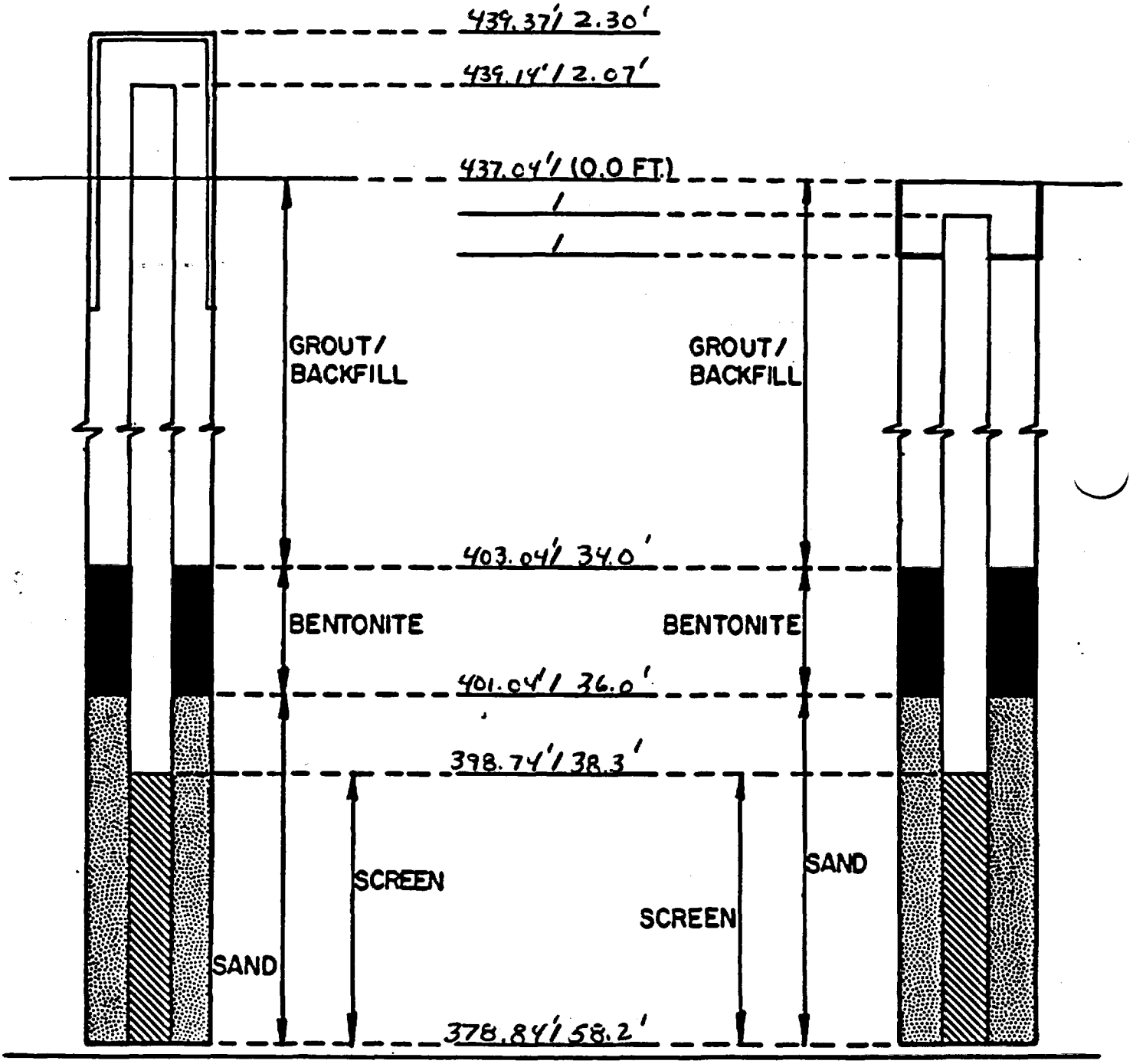
ORIGINAL (Red)

PROJECT NAME: Dorney Road Landfill Site PROJECT NO.: 30527

WELL NO.: MW-2 DATE: 3-15-88 LOCATION:

DRILLING METHOD: 10" O.D. Hollow Stem Augers to bedrock then 8" ODEX Downhole Hammer to total Depth GEOLOGIST: J. Allen

ELEVATION / DEPTH



NOTES: Total Depth 59.7'

AR300845

WELL COMPLETION LOG

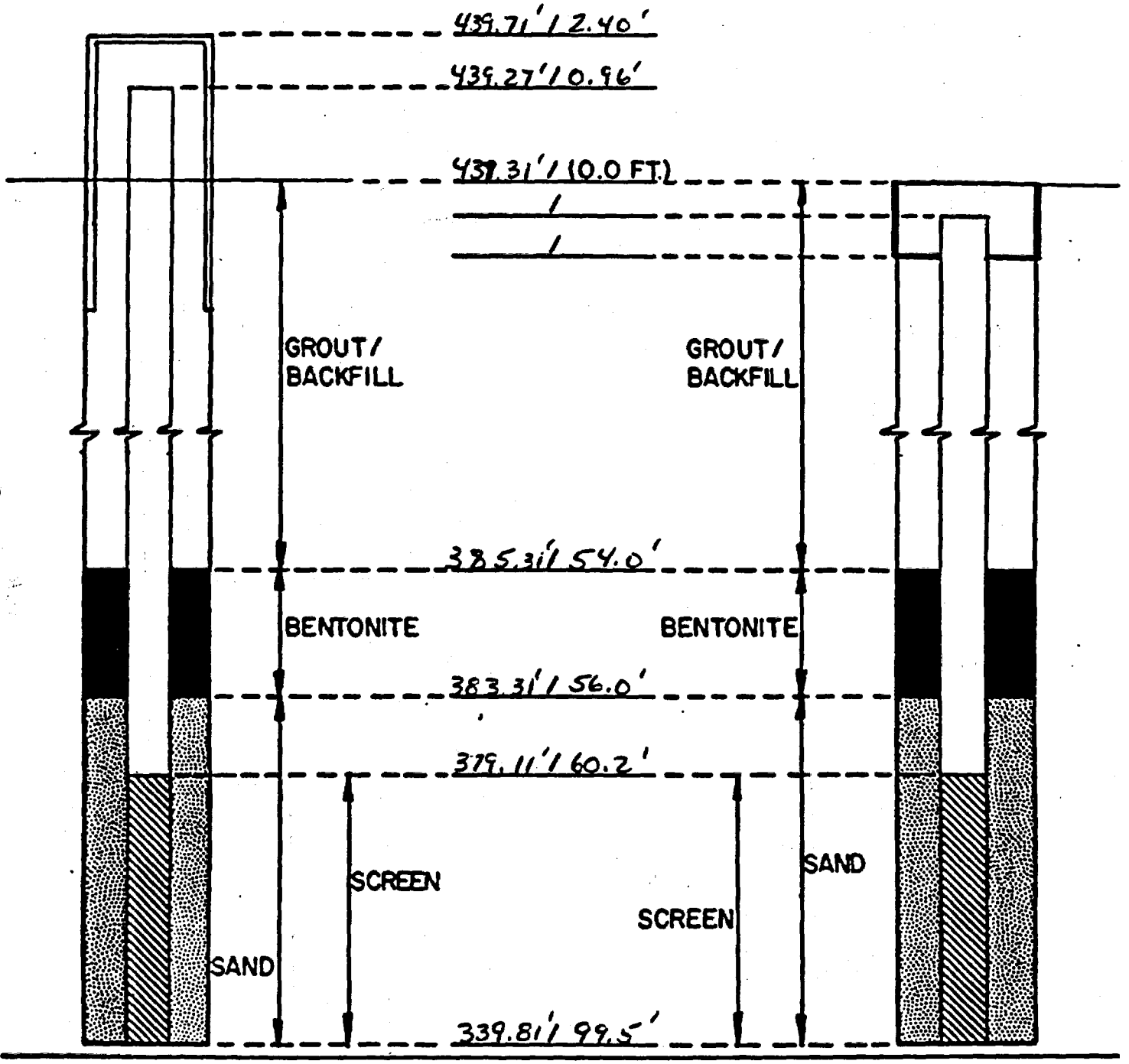
ORIGINAL (Red)

PROJECT NAME: Dorney Road Landfill Site PROJECT NO.: 30527

WELL NO.: MW-2D DATE: 2-29-88 LOCATION:

DRILLING METHOD: 10" OD Hollow Stem Auger to Bedrock then 8" ODEx Downhole Hammer to total Depth GEOLOGIST: J. Allen

ELEVATION / DEPTH



NOTES: Total Depth 100'

AR300846

WELL COMPLETION LOG

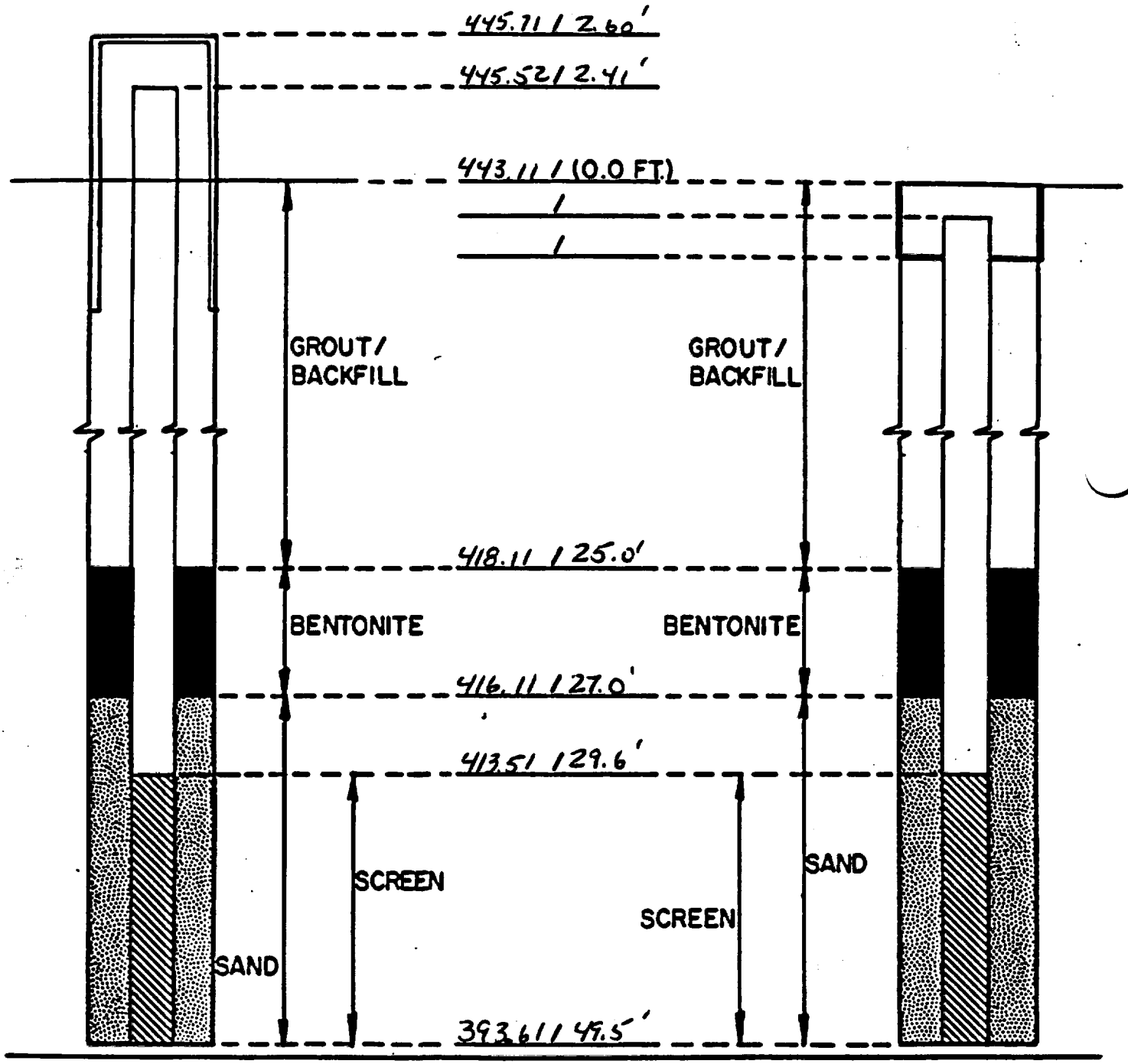
ORIGINAL (Red)

PROJECT NAME: Dorney Road Landfill Site PROJECT NO.: 30527

WELL NO.: MW-3 DATE: 3-3-88 LOCATION:

DRILLING METHOD: 10" O.D. Hollow Stem Auger to Bedrock then 7 5/8" Downhole Hammer GEOLOGIST: J. Allen

ELEVATION / DEPTH



NOTES: Total Depth 50

AR300847

WELL COMPLETION LOG

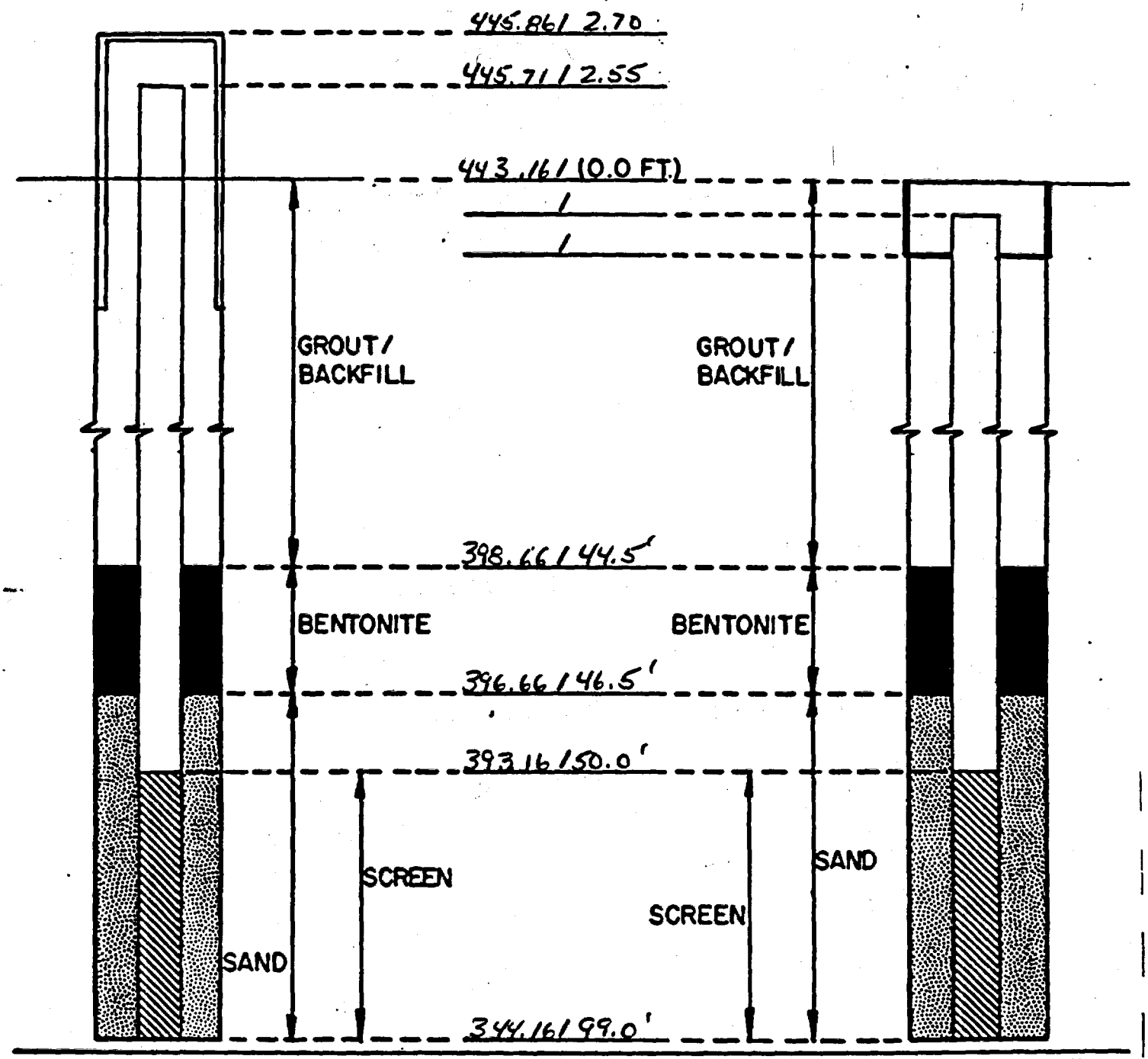
ORIGINAL (Red)

PROJECT NAME: Dorney Road Landfill Site PROJECT NO.: 30527

WELL NO.: MW-30 DATE: 3-2-88 LOCATION:

DRILLING METHOD: 10" O.D. Hollow Stem Auger to Bedrock then 7 5/8" Downhole Hammer GEOLOGIST: J. Allen

ELEVATION / DEPTH



NOTES: Total Depth 102'

AR300848

WELL COMPLETION LOG

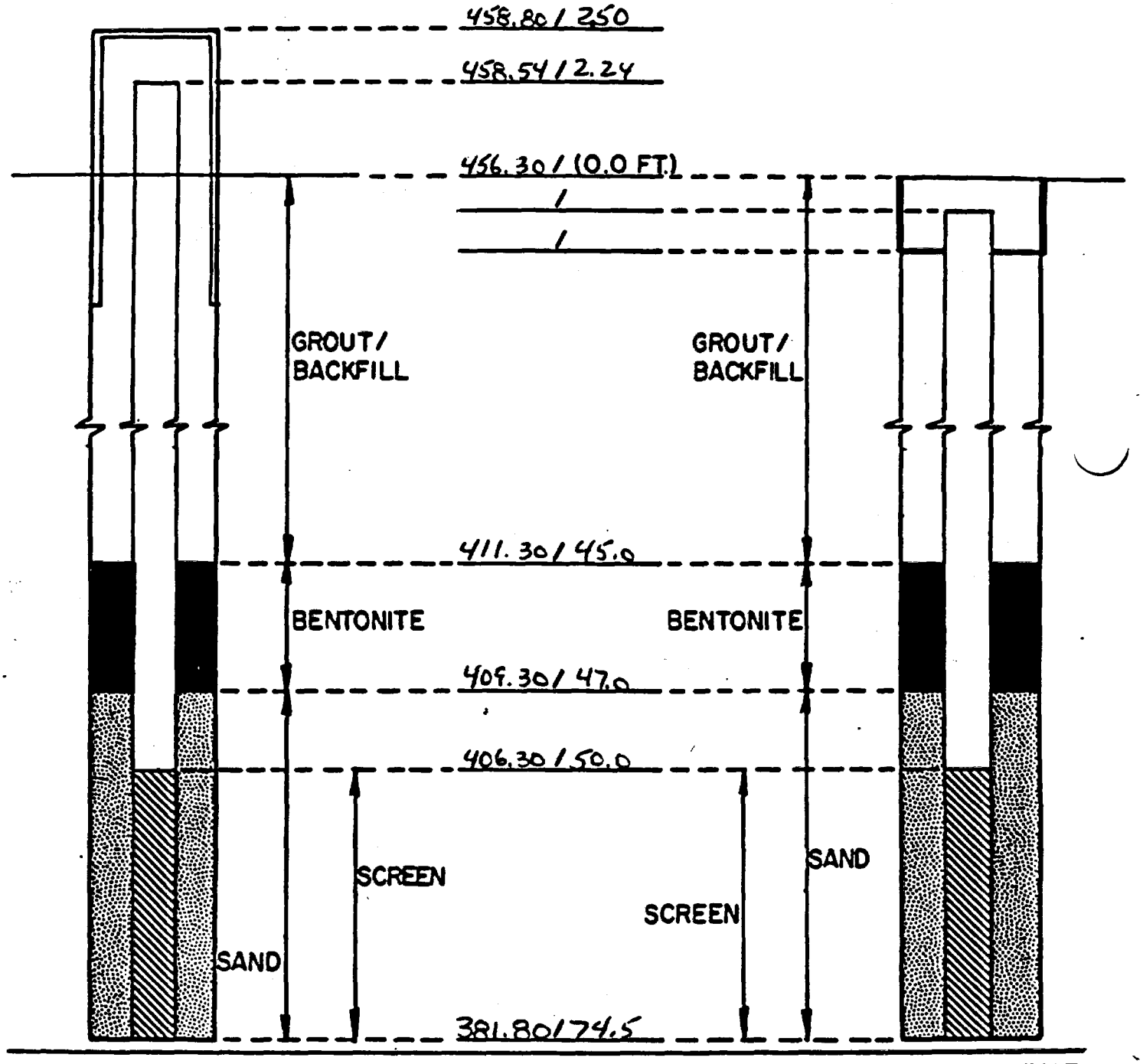
ORIGINAL (Red)

PROJECT NAME: Ocracy Road Landfill Site PROJECT NO.: 30527

WELL NO.: MW-4 DATE: 2-15-88 LOCATION:

DRILLING METHOD: 8" Downhole Hammer GEOLOGIST: J. Allen

ELEVATION / DEPTH



NOTES: Total Depth 99.5

45800849

WELL COMPLETION LOG

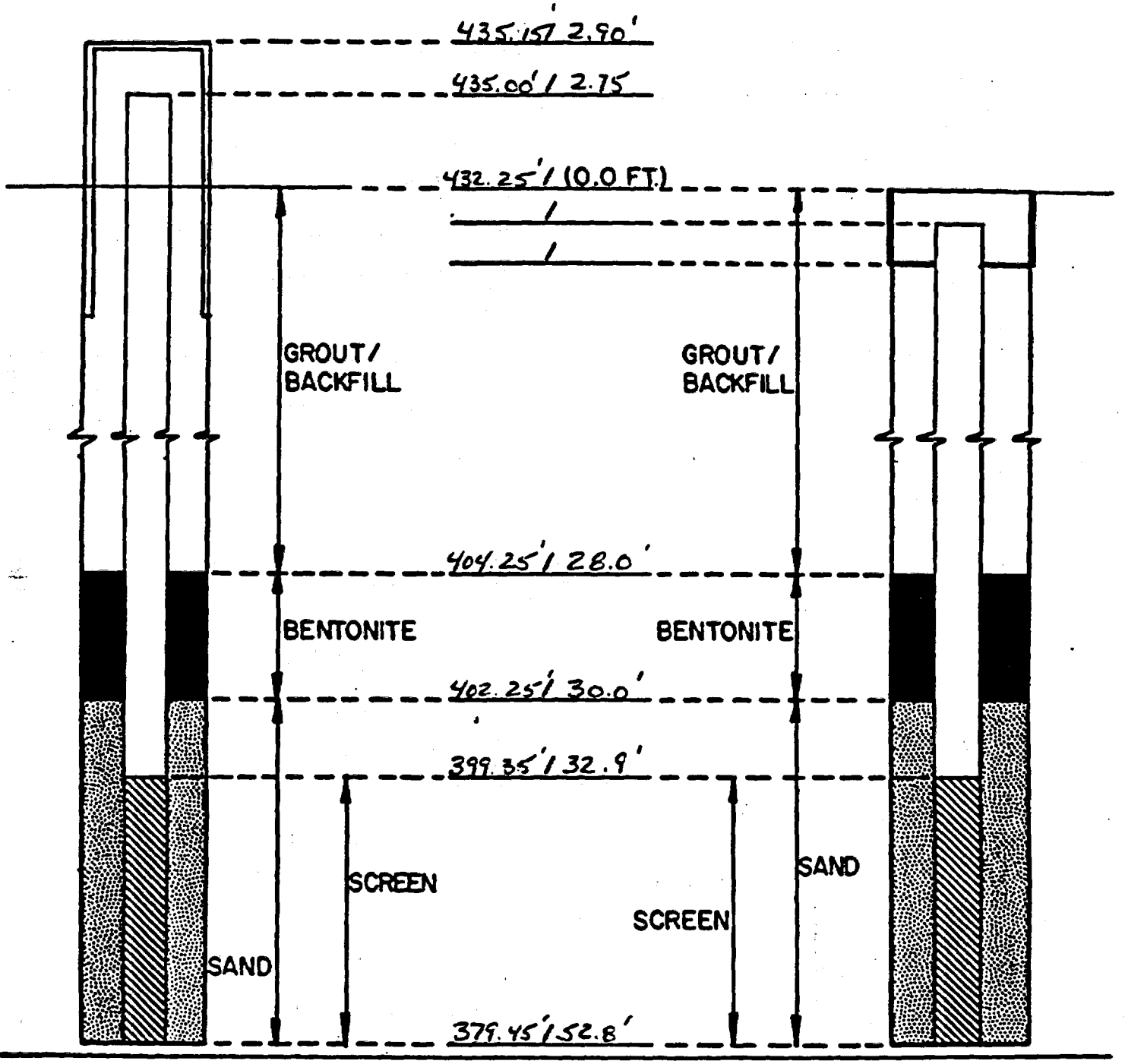
ORIGINAL (Red)

PROJECT NAME: Dorney Road Landfill Site PROJECT NO.: 30527

WELL NO.: MW-5 DATE: 3-10-88 LOCATION:

DRILLING METHOD: 10" OD Hollow Stem Auger to Bedrock then ODEX (6") Downhole Hammer GEOLOGIST: J. Allen

ELEVATION / DEPTH



NOTES: Originally cored (NX) to 100' then reamed with the ODEX system to 73'. Hole caved to 54'. Bentonite Seal set at 54.0 to 53.4'

AR300850

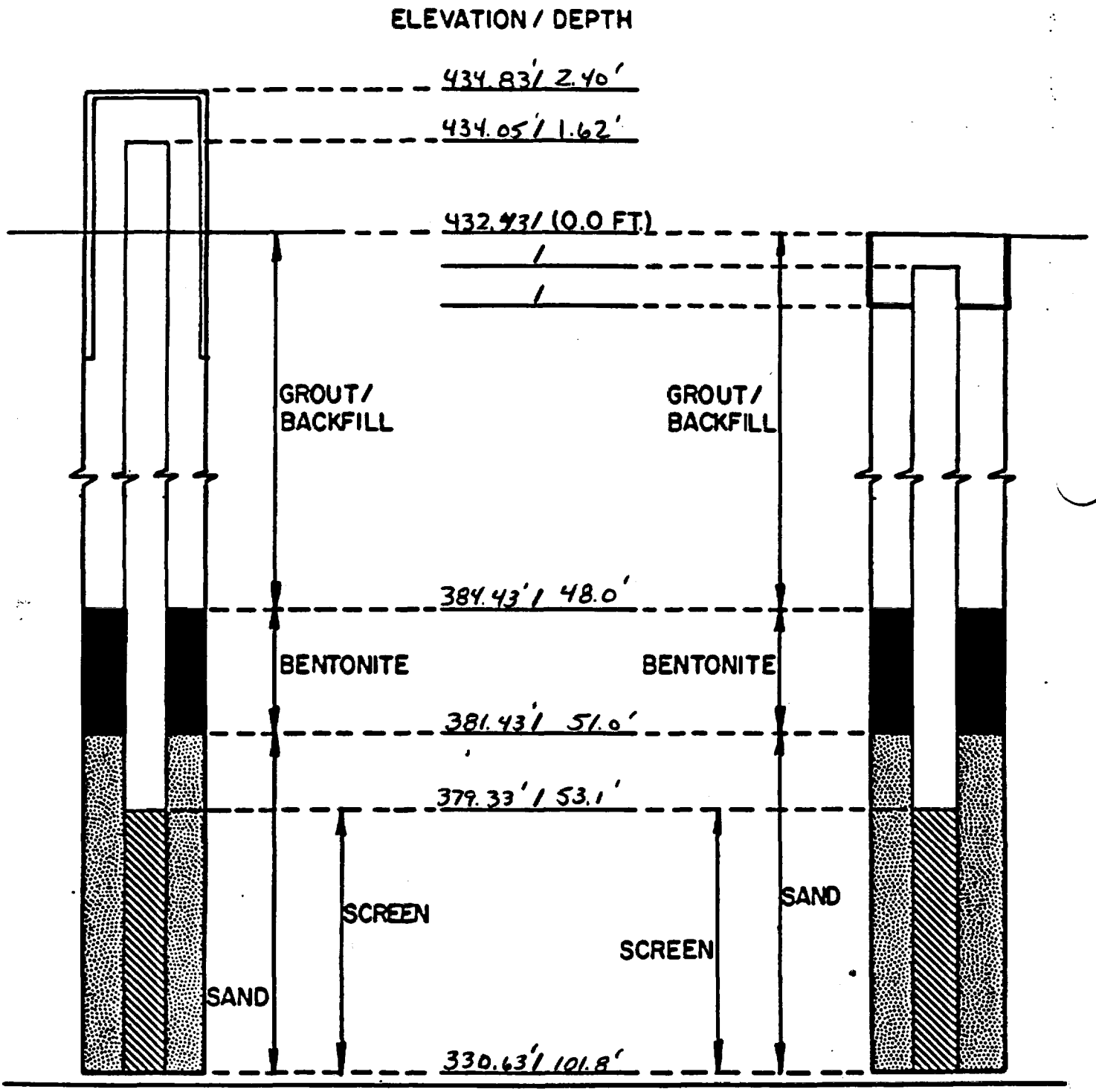
WELL COMPLETION LOG

ORIGINAL (Red)

PROJECT NAME: Dorney Road Landfill Site PROJECT NO.: 30527

WELL NO.: MW-50 DATE: 3-18-88 LOCATION:

DRILLING METHOD: 10" Auger to Bedrock then 8" ODEX Downhole Hammer GEOLOGIST: J. Allen



NOTES: Total Depth 102.0'. While setting the grout seal the level would not rize past 43' on the second day. We set a bentonite seal to 42' then sand between 42' and 39' then another bentonite seal between 39' and 35'.

4115008 5

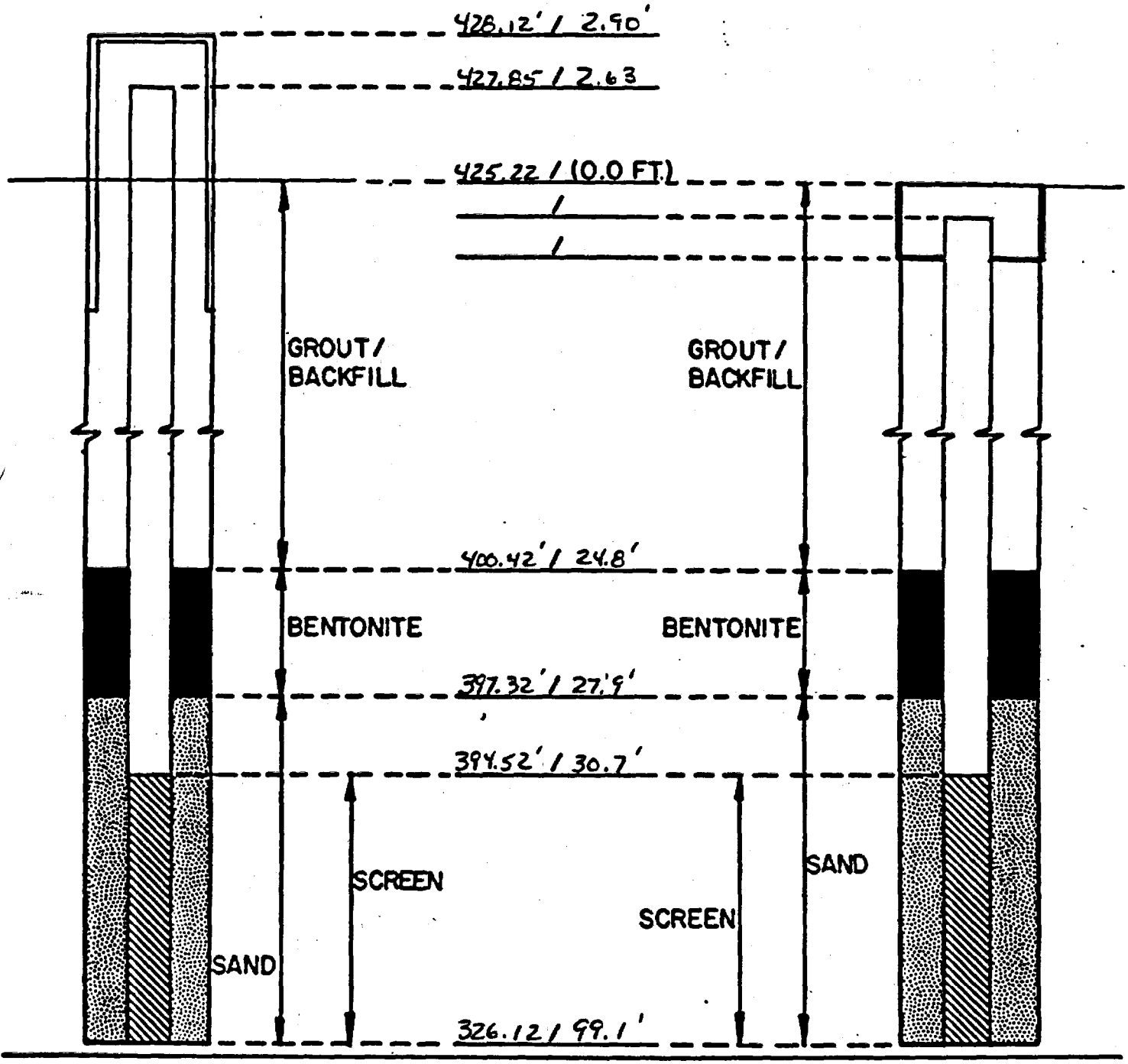
WELL COMPLETION LOG

PROJECT NAME: Dorney Road Landfill Site PROJECT NO.: 30527

WELL NO.: MW-6 DATE: 3-29-88 LOCATION:

DRILLING METHOD: 10" O.D. Hollow Stem Auger to Bedrock then 8" ODEX Down-hole Hammer GEOLOGIST: J. Allen

ELEVATION / DEPTH



NOTES: Total Depth 99.6'

AR300852

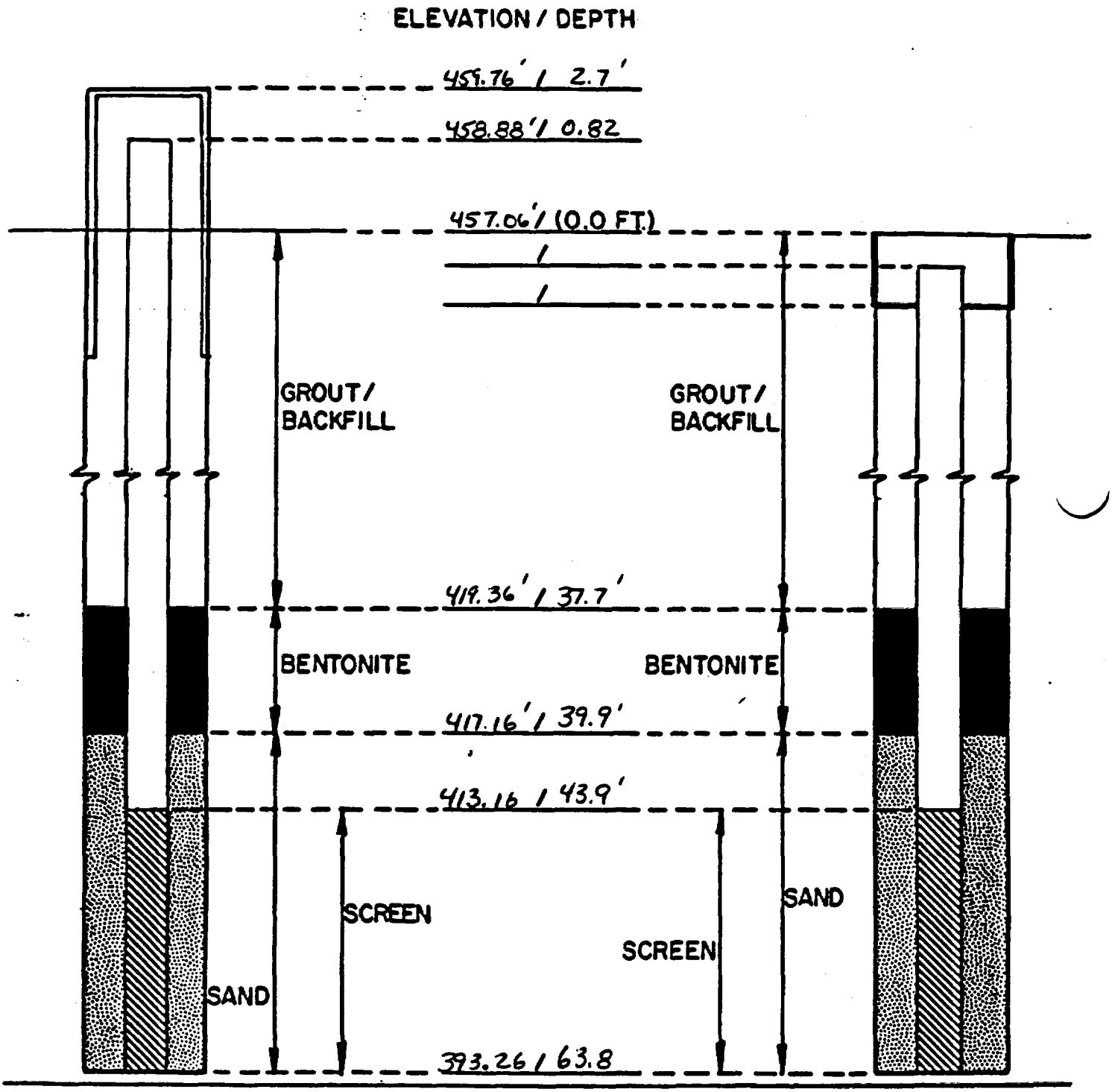
WELL COMPLETION LOG

ORIGINAL

PROJECT NAME: Dorney Road Landfill Site PROJECT NO.: 30527

WELL NO.: MW-7 DATE: 4-5-88 LOCATION:

DRILLING METHOD: 10" O.D. Hollow Stem Augers GEOLOGIST: T. Allen



NOTES: Total Depth 64'

AR300853

WELL COMPLETION LOG

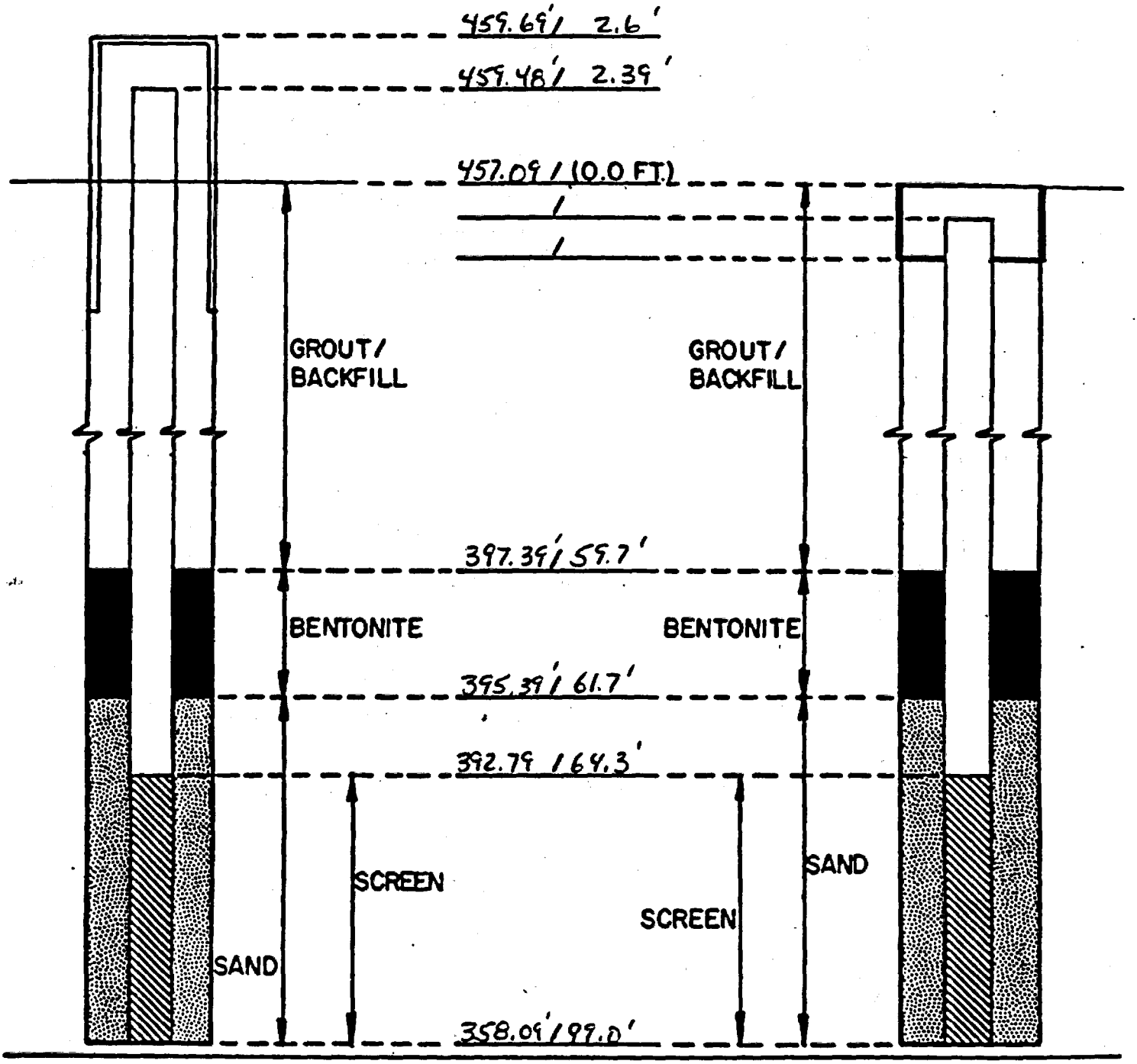
ORIGINAL (Red)

PROJECT NAME: Dorney Road Landfill Site PROJECT NO.: 30527

WELL NO.: MW-70 DATE: 4-4-88 LOCATION:

DRILLING METHOD: 10" O.D. Hollow Stem Augers to Bedrock then 6" Downhole Hammer GEOLOGIST: J. Allen

ELEVATION / DEPTH



NOTES: Total Depth 101'

AR300854

WELL COMPLETION LOG

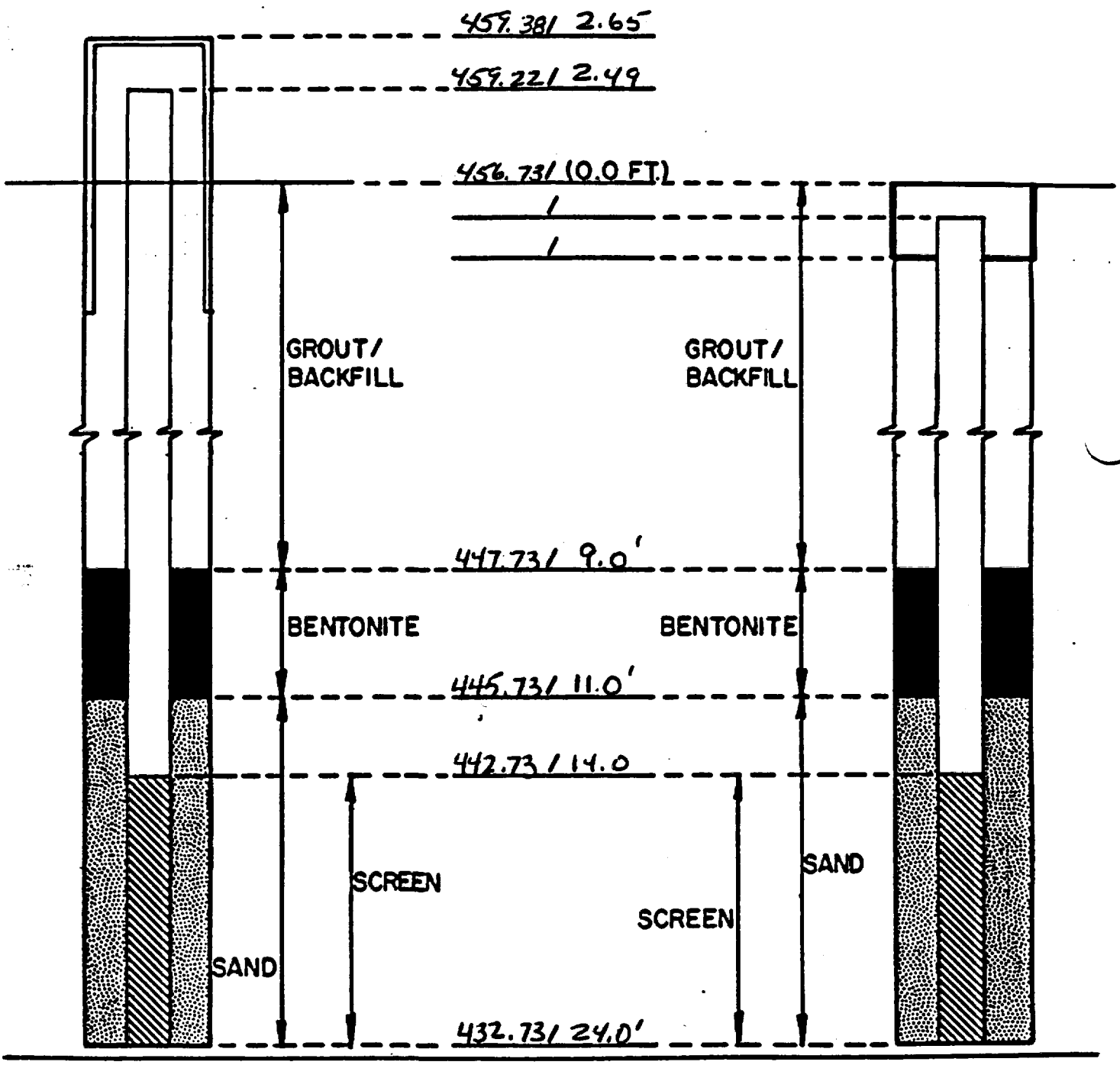
ORIGINAL (Red)

PROJECT NAME: Dorney Road Landfill Site PROJECT NO.: 30527

WELL NO.: LMW-1 DATE: 1-29-88 LOCATION:

DRILLING METHOD: 8" OD Hollow Stem Augers GEOLOGIST: M. Hurban

ELEVATION / DEPTH



NOTES: Total Depth 32.5, Bentonite seal Back to 24'
Well was installed and went dry after the completion of the well

AR300855

WELL COMPLETION LOG

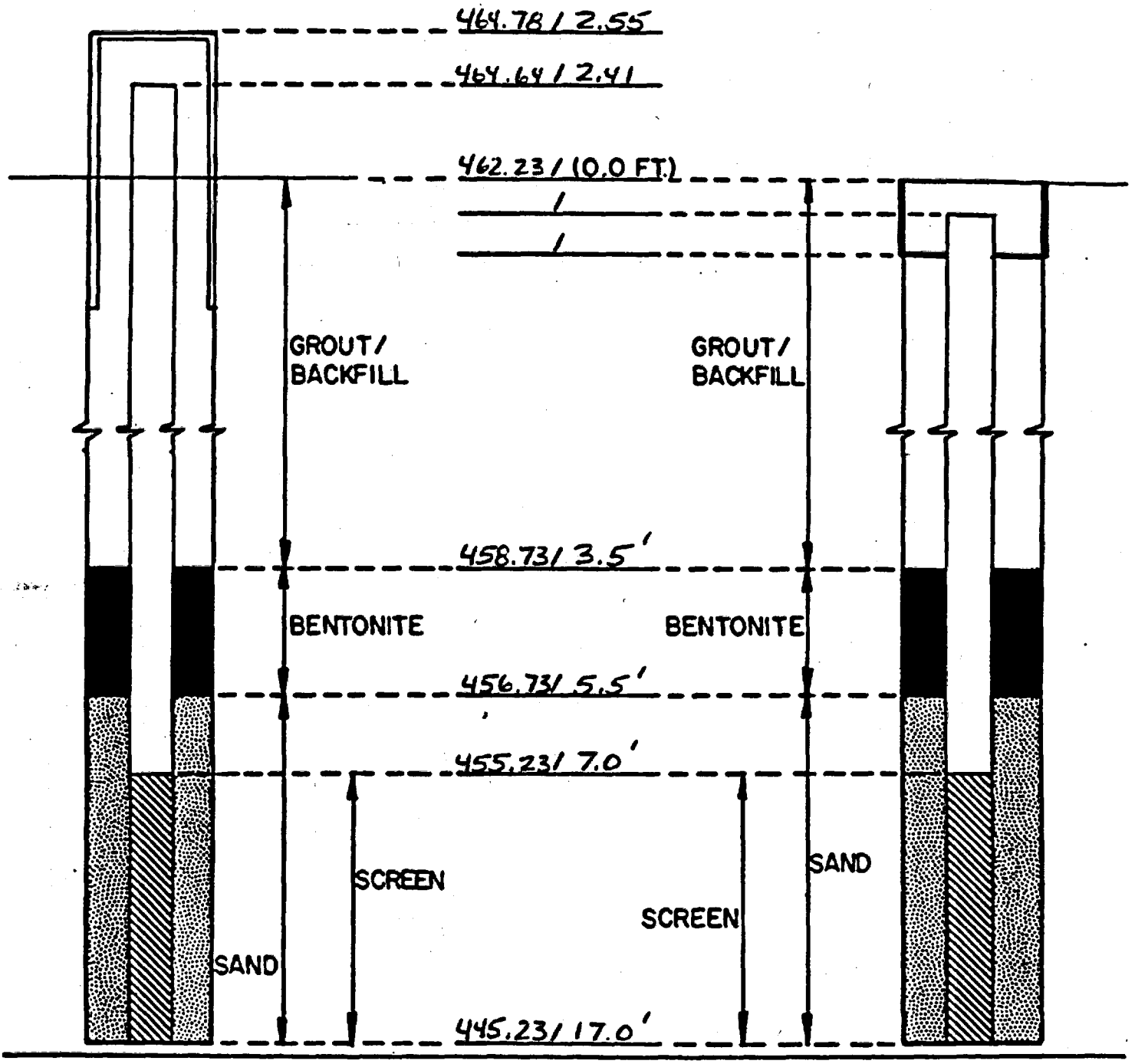
ORIGINAL (Red)

PROJECT NAME: Dorney Road Landfill Site PROJECT NO.: 30527

WELL NO.: LMW-3 DATE: 1-24-88 LOCATION:

DRILLING METHOD: 8" O.D. Hollow Stem Auger GEOLOGIST: M. Hurban

ELEVATION / DEPTH



NOTES: Total Depth 24.5', seal set to 18'

AR300856

WELL COMPLETION LOG

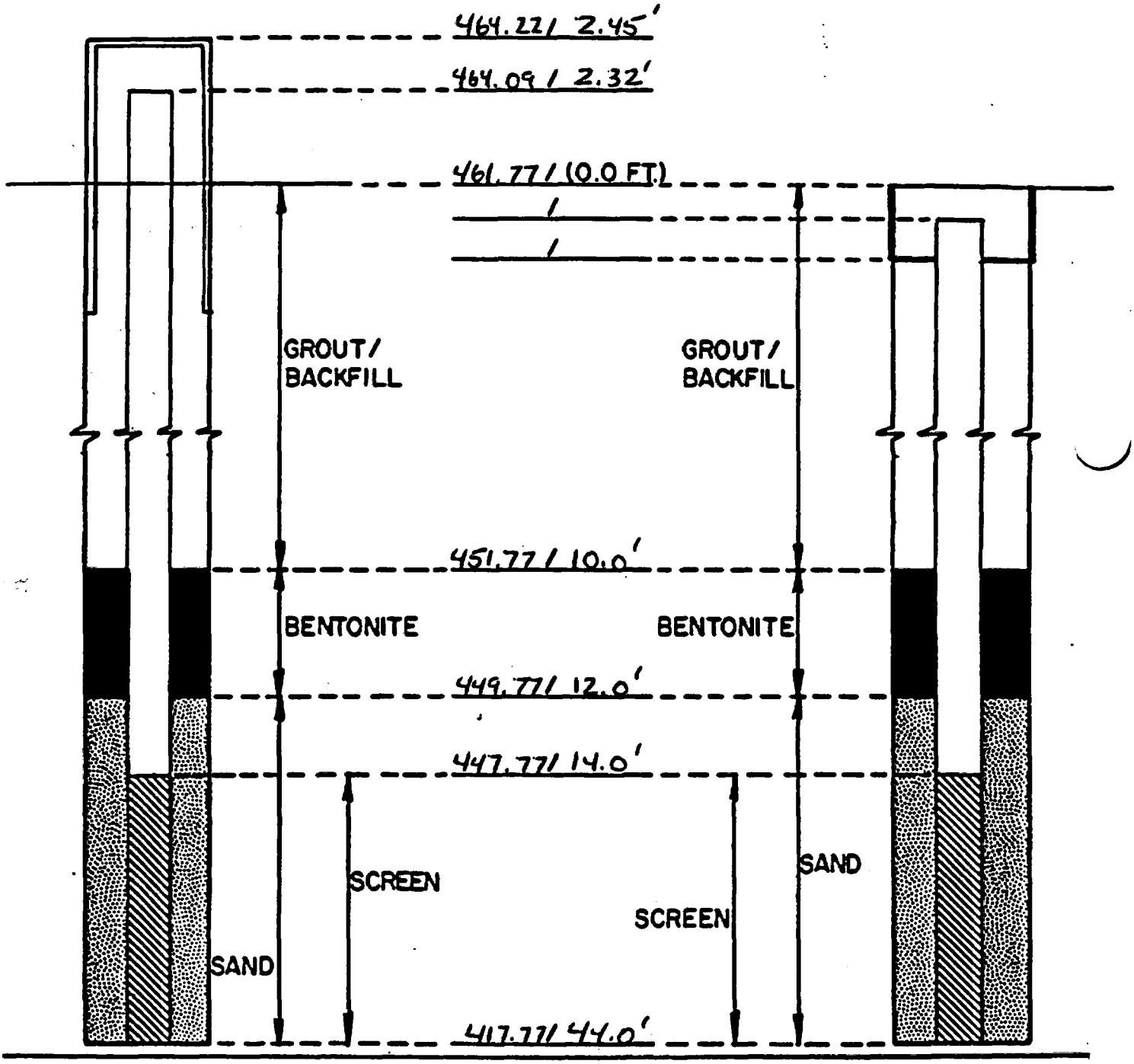
ORIGINAL (Red)

PROJECT NAME: Dorney Road Landfill Site PROJECT NO.: 30527

WELL NO.: LMW-4 DATE: 2-4-88 LOCATION:

DRILLING METHOD: 8" O.D. Hollow Stem Auger GEOLOGIST: M Hurban

ELEVATION / DEPTH



NOTES: Total Depth 54.0', seat set to 44'

AR300857

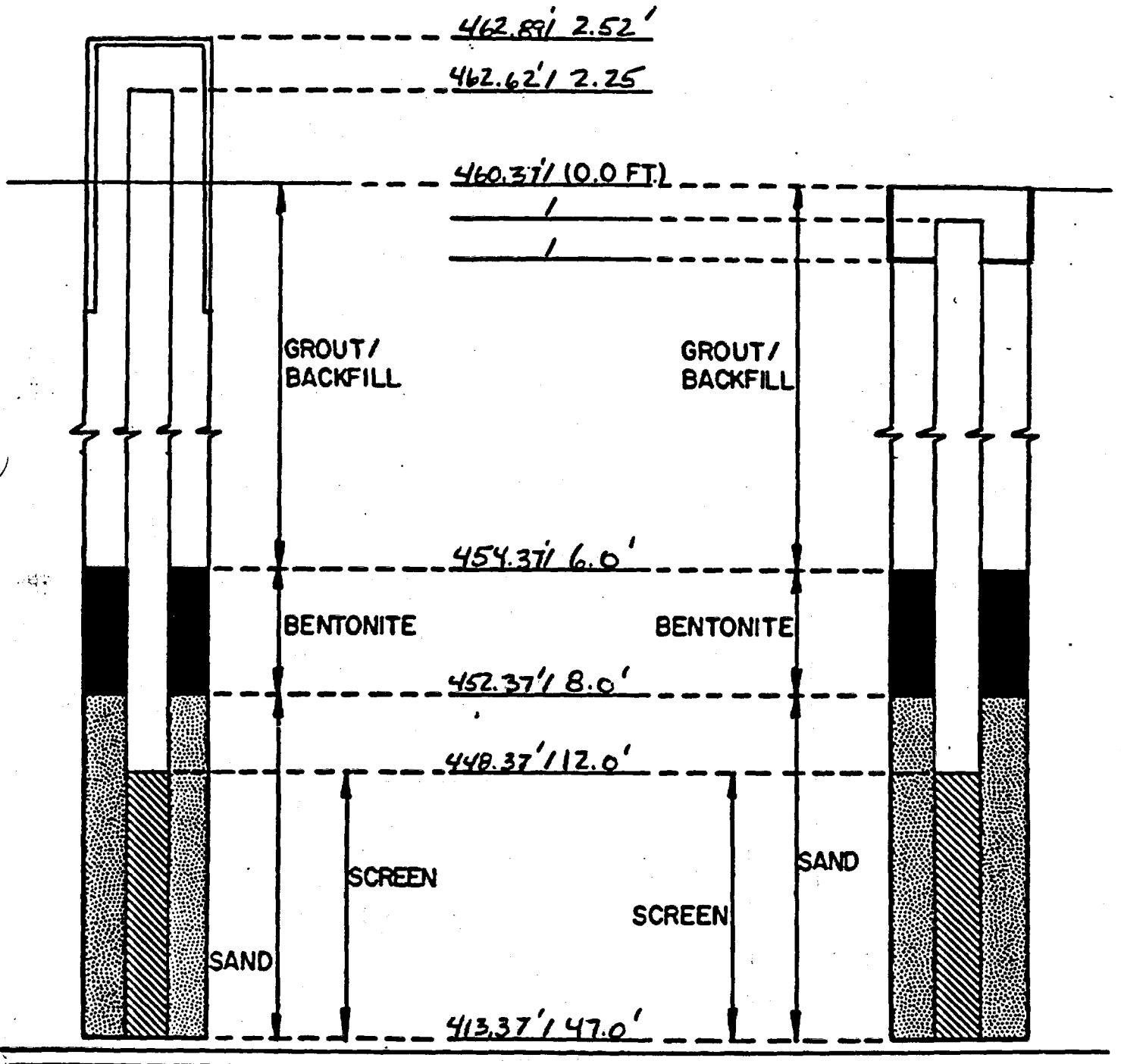
WELL COMPLETION LOG

PROJECT NAME: Dorney Road Landfill Site PROJECT NO.: 30527

WELL NO.: LMW-5 DATE: 2-11-88 LOCATION:

DRILLING METHOD: 8" O.D. Hollow Stem Augers GEOLOGIST: M Hurban

ELEVATION / DEPTH



NOTES: Total Depth 53.0', Seal Set to 47'

AR300858

WELL COMPLETION LOG

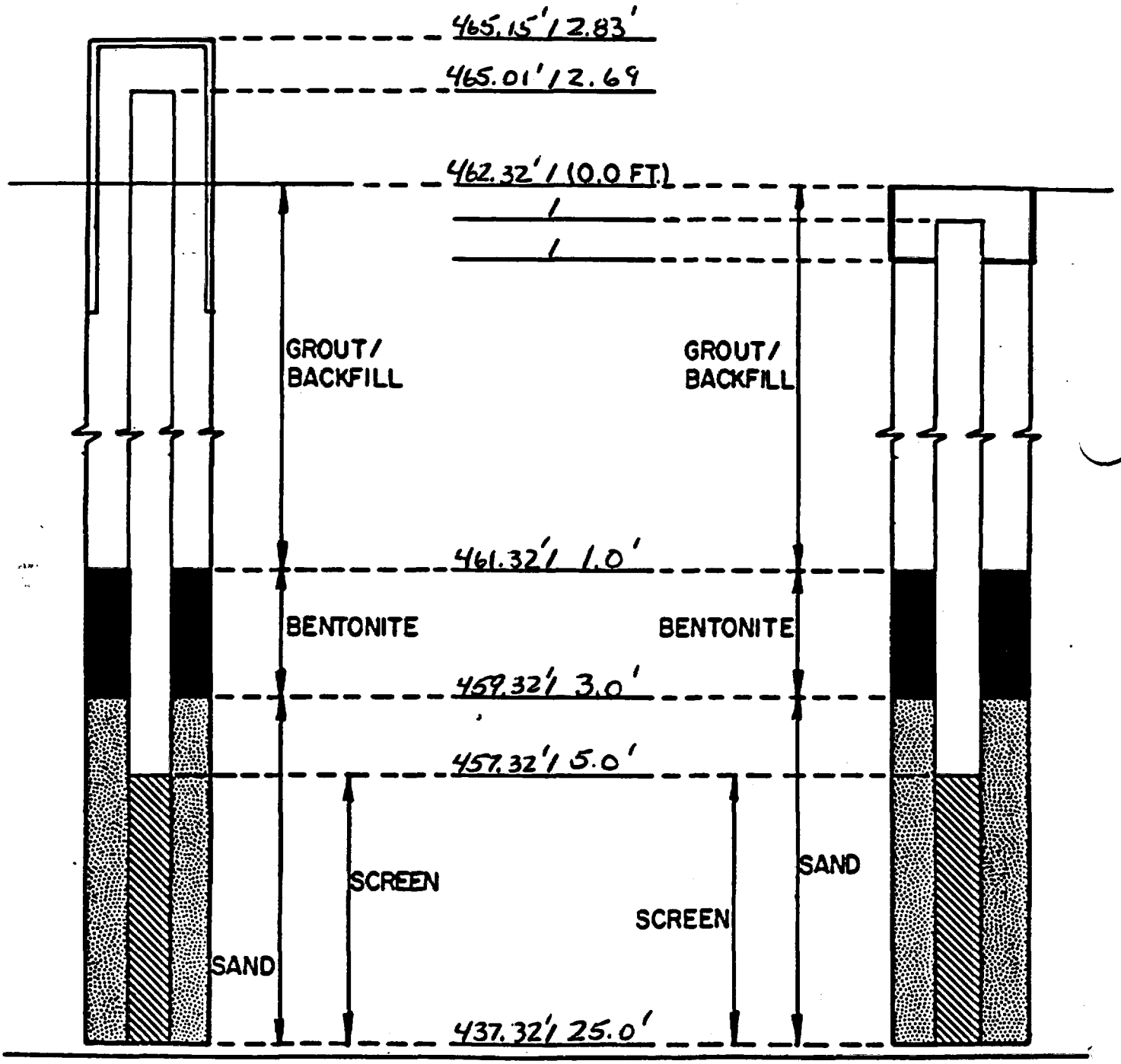
ORIGINAL (Red)

PROJECT NAME: Dorney Road Landfill Site PROJECT NO.: 30527

WELL NO.: LMW-6 DATE: 2-16-88 LOCATION:

DRILLING METHOD: 8" O.D. Hollow Stem Auger GEOLOGIST: M Hurban

ELEVATION / DEPTH



NOTES: Total Depth 40.0, Seal Set to 25.0'

AR300859

WELL COMPLETION LOG

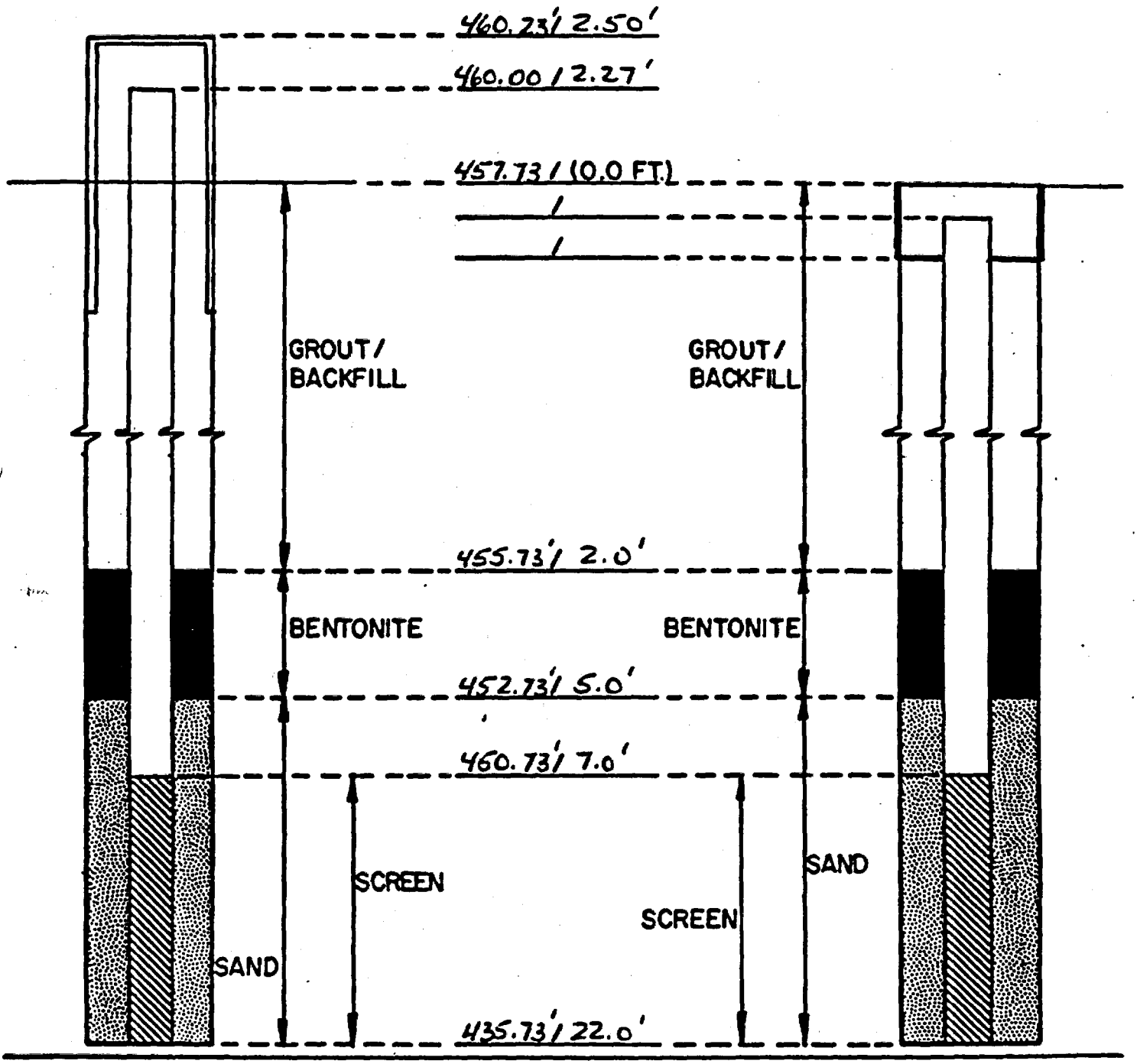
ORIGINAL (Red)

PROJECT NAME: Dorney Road Landfill Site PROJECT NO.: 30527

WELL NO.: LMW-7 DATE: 2-18-88 LOCATION:

DRILLING METHOD: 8" O.D. Hollow Stem Auger GEOLOGIST: M. Hurban

ELEVATION / DEPTH



NOTES: Total Depth 28.5' Seal Set to 22.0

AR300860

ORIGINAL (Red)

APPENDIX E - HYDROGEOLOGIC CALCULATIONS

ORIGINAL (Red)

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PROJECT Dorney Road Landfill Site PROJECT NO. 30527

PAGE 1 OF 10

Hydraulic Conductivity Calculation

MADE BY JPA DATE 6-6-88 CHECKED BY [illegible] DATE 6/17/88

Since we could not maintain a constant flow in MW-4, only the recovery data is utilized. Using Hvorslev method - Rising Head Test (Thompson 1987):

$$k = \frac{r^2}{2L(t_2-t_1)} \ln\left(\frac{L}{R}\right) \ln\left(\frac{S_1'}{S_2'}\right) \quad \text{where } S_1' = \frac{S_1}{S_0}$$

Figure 1 - shows recovery curve as $\ln(S/S_0)$ vs. t (min).

$r = 2'' = 0.167'$

$R = 4'' = 0.333'$

$L = 15.35'$ (screened interval beneath static level)

$S_1' = 0.155$

$S_2' = 0.034$

$t_1 = 20\text{min} = 0.333\text{hr}$

$t_2 = 70\text{min} = 1.167\text{hr}$

$$k = \frac{(0.167)^2}{2(15.35)(1.167-0.333)} \ln\left(\frac{15.35}{0.333}\right) \ln\left(\frac{0.155}{0.034}\right)$$

$$= 6.3 \times 10^{-3} \text{ ft/hr} = 1.80 \times 10^{-6} \text{ ft/sec}$$

$$= 1.80 \times 10^{-6} \times 5.74 \times 10^{5} = 1.0 \text{ gpd/ft}^2$$

Result is low by ~5%

* Note Actual hydraulic conductivity is lower due to the presence of 1" hose in well while recovery was being measured, consequently reducing volume to be refilled

This method assumes:

- change in water level is instantaneous and no cone of depression is created. This is not the case pumping

AR300862

only removed the water from storage in the borehole

- Flow is according to Darcy's law
- screen and filter pack do not inhibit flow

No drawdown was observed in nearby wells

The Theis Recovery Method for Non-Equilibrium Conditions in an unconfined aquifer was used to define the aquifer characteristics for the pump tests for wells MW-3D and MW-5.

- initial assumption may was that $u < 0.05$ due to small radius between pumping well and observation well.
- consequently, the Cooper-Jacob, modified method to Theis equation could be used
  - data plotted as drawdown vs. time on semi-log paper

Pump test MW-3D - using data from observation well MW-3.

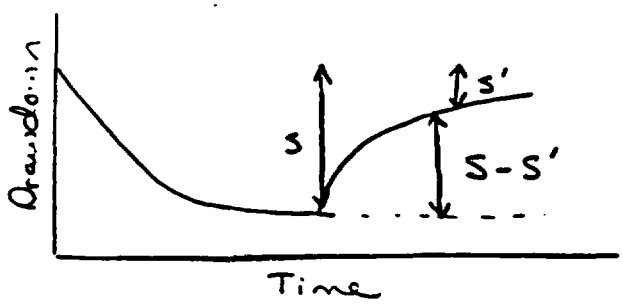
Transmissivity = T

$T = \frac{264 Q}{\Delta s}$ Δs = slope of recovery curve

- Recovery is more accurately presented as Residual drawdown = s'

Hydraulic Conductivity Calc

MADE BY JPA DATE 6-6-88 CHECKED BY MK DATE 6/17/88



From Figure 2 (Residual Drawdown vs Ratio t/t')

$\Delta s = 3.45'$

and $Q = 37$ gpm (Avg flow during pumping)

$$\therefore T = \frac{264\,(37)}{3.45} = 2831.1 \text{ gpd/ft}$$

Due to delayed recovery in MW-3 the calculated recovery curve could not be used to obtain t_o so the drawdown curve was used in calculating the storage coefficient (S)

Drawdown for MW-3 is Figure 3

$t_o = 0.375$ min $= 0.0003$ days

Storage $S = \dfrac{0.3\,T t_o}{r^2}$

$r = 6'$ (radius from center of pumping well to observation well)

$$S = \frac{0.3\,(2831.1)(0.0003)}{(6)^2} = 7.1 \times 10^{-3}$$

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PROJECT Dorney Road Landfill Site PROJECT NO. 30527

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Hydraulic Conductivity Calc

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using the same approach for MW-5D

MW-5D

$$T = \frac{264\,Q}{\Delta s'}$$

$Q = 35.8$ gpm (Avg flow during pumping)

$\Delta s' = 0.083'$ (From Figure 4)

$$T = \frac{264(35.8)}{0.083} = 113{,}869.8 \text{ gpd/ft}$$

$$S = \frac{0.3\,T\,t_o}{r^2}$$

$t_o = 1.82$ min $= 0.0013$ days (From Figure 5)

$r = 12.5$ ft

so $$S = \frac{0.3(113{,}869.8)(0.0013)}{(12.5)^2} = 2.8 \times 10^{-1}$$

testing to see if these numbers conform with the original assumption ie: $u < 0.05$

$$u = \frac{1.87 r^2 S}{T t}$$

you must solve for the time at which the test data becomes valid ie $u = 0.05$

or $$t = \frac{1.87 r^2 S}{0.05 T}$$

so

MW-3 $$t = \frac{1.87(6)^2(7.1 \times 10^{-3})}{0.05(2831.1)} = 0.0034 \text{ days}$$

$= 4.86$ min

AR300865

MW-50 $t = \frac{1.87\,(12.5)^2\,(2.8\times10^{-1})}{0.05\,(113869.8)} = 0.0144$ days

$= 20.7$ min

This demonstrates that linear approach is applicable for data after 4.8 min for MW-3 and 20.7 min for MW-50.

As comparison to standard, Theis Curve matching Method, the following compares Transmissivities and Storage Coefficients calculated for Drawdown Curves from MW-3 and MW-50.

The Theis equation require a number for W(u) and u which can be obtained by comparing the drawdown curve to the Theoretical curve (Figure 6)

Drawdown Curves for MW-3 (Figure 7) and MW-50 (Figure 8) are plotted as drawdown (meters) vs. time (sec). These units were used to expand the scale to improve accurracy in curve matching.

Each drawdown curve displayed a diversion from the normal curve after initial drawdown began. Consequently, two curves were obtained and a match point for each curve

and evaluated for comparitive analysis.

MW-3 From match point #1

We find $W(u) = 2.10$

$1/u = 13$ so $u = 0.0769$

$t = 400 \text{ sec} = 6.67 \text{ min} = 0.0046 \text{ days}$

$s = 1.12 \text{ m} = 3.674 \text{ ft}$

$$T = \frac{114.6(Q)}{s} W(u)$$

$Q = 37 \text{ gpm}$

so $$T = \frac{114.6(37)}{3.674}(2.10) = 2423.6 \text{ gpd/ft}^2$$

$$S = \frac{uTt}{1.87 r^2}$$

$r = 6'$

so $$S = \frac{0.0769(2423.6)(0.0046)}{1.87 (6)^2} = 1.3 \times 10^{-2}$$

Match Point #2

$W(u) = 4.35$

$1/u = 150$ or $u = 0.0067$

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ORIGINAL PAGE

PROJECT Dorney Road Landfill Site PROJECT NO. 3[illegible]27

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Hydraulic Conductivity Calc.

MADE BY JPA DATE 6-6-88 CHECKED BY JMK DATE 6/17/88

$t = 1200$ sec $= 20$ min $= 0.0139$ days

$s = 1.41$ m $= 4.626$ ft

So $T = \frac{114.6\,(37)}{4.626}(4.35) = 3987.2$ gpd/ft

and $S = \frac{0.0067\,(3987.2)(0.0139)}{1.87\,(6)^2} = 5.5 \times 10^{-3}$

MW-5D $T = \frac{114.6\,(Q)}{s}\,W(u)$ $S = \frac{uTt}{1.87\,r^2}$

Match Point #1

$W(u) = 1.35$

$1/u = 5.4$ or $u = 0.1852$

$t = 1230$ sec $= 20.5$ min $= 0.0142$ days

$s = 0.0265$ m $= 0.0869'$

$Q = 35.8$ gpm $r = 12.5'$

So $T = \frac{114.6\,(35.8)}{0.0869}(1.35) = 63{,}735.5$ gpd/ft

$S = \frac{0.1852\,(63735.5)(0.0142)}{1.87\,(12.5)^2} = 5.7 \times 10^{-1}$

Match Point #2

$W(u) = 3.27$

$1/u = 45.5$ or $u = 0.022$

Hydraulic Conductivity Calc.

MADE BY JPF DATE [illegible] CHECKED BY MK DATE 6/17/88

$t = 4000$ sec $= 66.67$ min $= 0.0463$ days

$s = 0.0387$ m $= 0.127'$

So $T = \frac{114.6\,(35.8)}{0.127}(3.27) = 105{,}635.9$ gpd/ft

$S = \frac{0.022\,(105{,}635.9)(0.0463)}{1.87\,(12.5)^2} = 3.7 \times 10^{-1}$

Comparisons of Transmissivity show a good correlation between the linear approach and curve matched data from the later part of the drawdown curve. for MW-50 but this is opposite for MW-3

MW-3 T = 2423.6 gpd/ft (match Point #1)
= 3987.2 " (match Point #2)
= 2831.2 " (linear)

MW-50 T = 63,735.5 gpd/ft (match Point #1)
= 105,635.9 " " (match Point #2)
= 113,869.9 " " (linear)

Comparison of Storage Coefficients show good correlation between linear appoach and curve matching of later portion of drawdown for both MW-3 and MW-50.

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ORIGINAL (Red)

PROJECT Varney Road Landfill Site PROJECT NO. 30527

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Hydraulic Conductivity Calc

MADE BY JPA DATE 6-6-88 CHECKED BY MK DATE 6/17/88

MW-3 $S = 1.3 \times 10^{-2}$ (Match Point #1)
$= 5.5 \times 10^{-3}$ (Match Point #2)
$= 7.1 \times 10^{-3}$ (linear)

MW-50 $S = 5.7 \times 10^{-1}$ (Match Point #1)
$= 3.7 \times 10^{-1}$ (Match Point #2)
$= 2.8 \times 10^{-1}$ (linear)

The Theis method assumes that the pumped well penetrates the entire aquifer thickness, however, this is not true. But one can use this method to obtain close approximations of the aquifer characteristics.

The hydraulic conductivity of the aquifer is the transmissivity divided by the thickness of the aquifer. Since the depth of the aquifer is unknown we can make a conservative guest of 200 ft.

So $K = \frac{T}{200'}$

AR300870

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ORIGINAL (Red)

PROJECT Dorney Road Landfill Site PROJECT NO. 30527

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Hydraulic Conductivity Calc.

MADE BY JPA DATE 6-6-88 CHECKED BY MK DATE 6/17/88

For MW-3 (using linear calc. T)

$$K = \frac{2831.2}{200} = 14.2 \text{ gpd/ft}^2$$

For MW-5D

$$K = \frac{113869.9}{200} = 569.3 \text{ gpd/ft}^2$$

These numbers may however be low since the effect of partial penetration of the aquifer also effects well yeilds which are directly related to Transmissivity.

ie: $T = \frac{264(Q)}{\Delta S}$

- Q would remain constant since it was controlled by pump capacity
- ΔS would decrease because a higher specific yield would result in a lower drawdown

AR300871

MW-4

Recovery Data page 1

ORIGINAL (Red)

1 t	2 t'	3 S	4 S/S₀	5	6	7	8	9
5.5	0	11.91	1					
6.0	0.5	10.51	0.88					
6.5	1.0	8.55	0.72					
7.0	1.5	7.13	0.60					
7.5	2.0	6.05	0.51					
8.0	2.5	5.28	0.44					
8.5	3.0	4.72	0.40					
9.0	3.5	4.30	0.36					
9.5	4.0	3.98	0.33					
10.0	4.5	3.73	0.31					
12.0	6.5	3.13	0.26					
14.0	8.5	2.78	0.23					
16.0	10.5	2.51	0.22					
18.0	12.5	2.32	0.19					
20.0	14.5	2.15	0.18					
22.0	16.5	2.00	0.17					
24.0	18.5	1.89	0.16					
26.0	20.5	1.77	0.148					
28.0	22.5	1.66	0.139					
[illegible]	24.5	1.56	0.131					
[illegible]	26.5	1.47	0.123					
[illegible]	28.5	1.39	0.117					
36.0	30.5	1.32	0.110					
38.0	32.5	1.24	0.104					
40.0	34.5	1.20	0.101					
42.0	36.5	1.13	0.095					
44.0	38.5	1.07	0.090					
46.0	40.5	1.01	0.085					
[illegible]	42.5	0.96	[illegible]					
[illegible]	44.5	0.91	0.076					
[illegible]	46.5	0.87	0.073					

MW-4

Recovery Data pg 2

ORIGINAL (Red)

	2	3	4	5	6	7	8
	t	s	$\frac{s}{s_0}$				
54.0	48.5	0.82	0.069				
56.0	50.5	0.77	0.065				
58.0	52.5	0.72	0.060				
60.0	54.5	0.68	0.057				
62.0	56.5	0.64	0.054				
64.0	58.5	0.60	0.050				
66.0	60.5	0.55	0.046				
68.0	62.5	0.53	0.04[illegible]				
70.0	64.5	0.50	0.042				
72.0	66.5	0.47	0.039				
74.0	68.5	0.41	0.037				
76.0	70.5	0.41	0.034				
78.0	72.5	0.39	0.032				
80.0	74.5	0.36	0.030				
82.0	76.5	0.34	0.028				

AR300873

ORIGINAL (Red)

Pg 1

MW-3 (Drawdown Data)

[illegible]	2 (min) Elapsed [illegible]	3 Depth	4 [illegible]	5 [illegible] Gage	6 [illegible]	7 Interval Rate	8 [illegible]
8:08	0	41.55	0	93270	0	—	
8:10	2	43.[illegible]	1.8[illegible]	—			
8:12	4	44.43	2.88	—			
8:13	5	—	[illegible]	93460	190	3[illegible]	38.0
8:14	6	45.00	3.45	—			
8:16	8	45.31	3.79				
8:18	10	45.[illegible]	3.85				
8:20	12	45.56	[illegible]				
8:22	14	[illegible]	[illegible]				
8:26	18	45.31	[illegible]				
8:30	22	46.15	[illegible]				
8:[illegible]	[illegible]	[illegible]	[illegible]				
8:[illegible]	27	—	—	94310	1040	32.6	33.5
8:[illegible]	30	46.50	[illegible]				
[illegible]	[illegible]	46.72	[illegible]				
[illegible]	[illegible]	—	—	94680	[illegible]	33.6	37.1
[illegible]	[illegible]	46.[illegible]	[illegible]				
[illegible]	[illegible]	47.10	[illegible]				
[illegible]	[illegible]	—	—	[illegible]	1730	40.0	37.6
[illegible]	[illegible]	—	—	95260	1990	37.14	37.5
[illegible]:2	[illegible]	47.28	5.72				
[illegible]	[illegible]	47.45	5.90				
[illegible]	[illegible]	—	—	95490	2220	35.4	37.31
9:11	[illegible]	47.30	5.75				
9:23	75	47.70	6.15				
9:24	76	—	—	96090	2820	36.36	37.10
9:30	82	47.70	6.15				
9:37	89	47.70	6.15				
9:47	[illegible]	47.74	6.[illegible]				
9:48	100	—	—	96990	3720	37.50	[illegible]
10:09	[illegible]	—	—	97[illegible]	[illegible]	36.67	37.10

ORIGINAL (Red)

MW-3 (Crandon) pg 2

	2	3	4	5	6	7	8
10:[illegible]	.22	47.77	6.22	—			
10:17	129	47.82	6.27	—			
10:23	135	—	—	98280	5010	37.14	37
[illegible]	37	47.75	6.20	—			
10:38	150	47.80	6.25	—			
10:[illegible]	153	—	—	98930	5660	36.[illegible]	36.99
[illegible]	166	47.8[illegible]	6.26				
[illegible]	175	47.8[illegible]	6.25				
[illegible]	177	—	—	99[illegible]	6540	36.67	36.95
[illegible]	2[illegible]	stopped test		99947	6677	36.25	36.89

AR300875

ORIGINAL (Red)

Run-3 (Recovery)

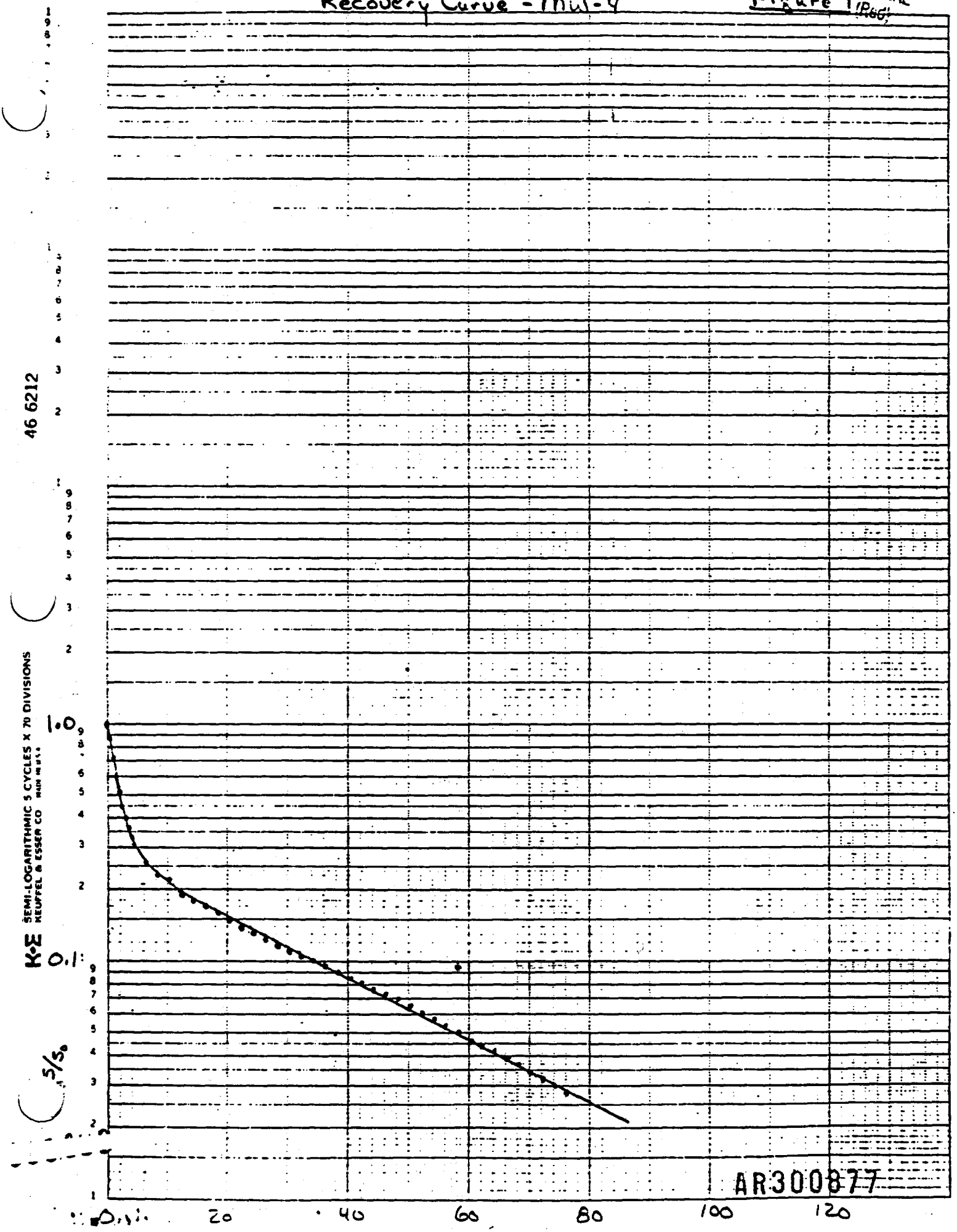
1	2 Elapsed	3 t'	4 s	5 s'	6 s-s'	7 t/t'	8	9
09	181	0				∞		
0	182	1	[illegible]	0.30	0	182		
11:21	192	12	47.80	6.25	0.95	16.1		
11:33	[illegible]	24	46.87	5.32	0.98	8.54		
11:37	209	28	46.50	4.95	1.35	7.46		
[illegible]	[illegible]	34	46.27	4.72	1.58	6.32		
[illegible]	[illegible]	[illegible]	[illegible]	4.60	1.70	5.76		
[illegible]	[illegible]	43	[illegible]	4.45	1.85	5.21		
12:01	[illegible]	52	45.60	4.05	2.25	4.48		
12:08	[illegible]	59	45.60	4.05	2.25	4.07		
2:15	[illegible]	66	45.49	3.94	2.36	3.74		
12:25	257	76	45.40	3.85	2.45	3.38		
12:54	286	105	45.10	3.55	2.75	2.72		
3:06	[illegible]	117	45.00	3.45	2.85	2.55		
13:20	322	141	[illegible]	3.19	3.19	2.28		
13:35	[illegible]	156	44.70	3.15	3.15	2.16		
[illegible]	[illegible]	166	44.66	3.11	3.19	2.09		
16:58	[illegible]	[illegible]	44.10	2.55	3.75	1.52		
	41.55 = s_0		drop to water					

AR300876

Recovery Curve - MW-4

Figure 1

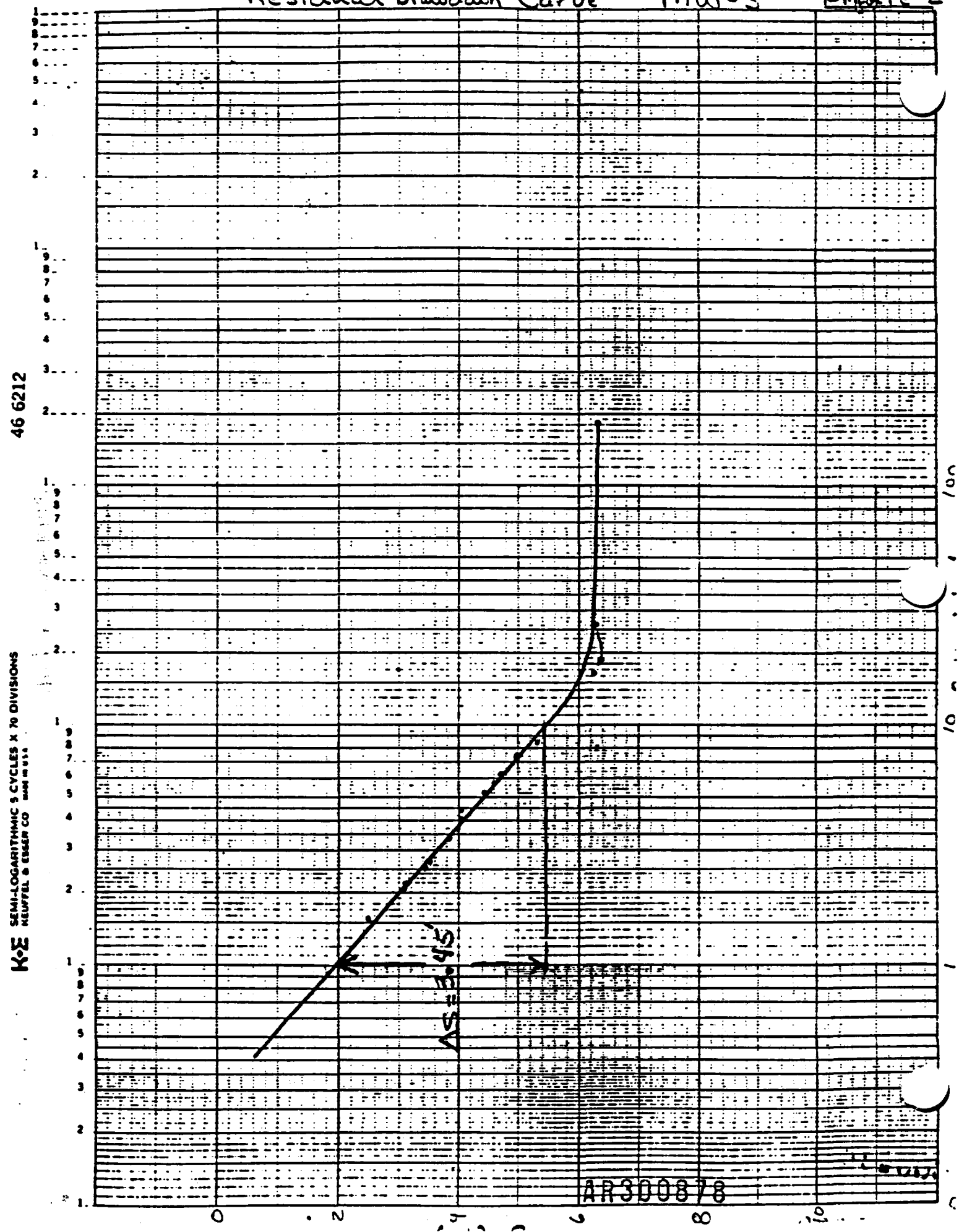
ORIGINAL (PAGE)



AR300877

ORIGINAL
Figure 2

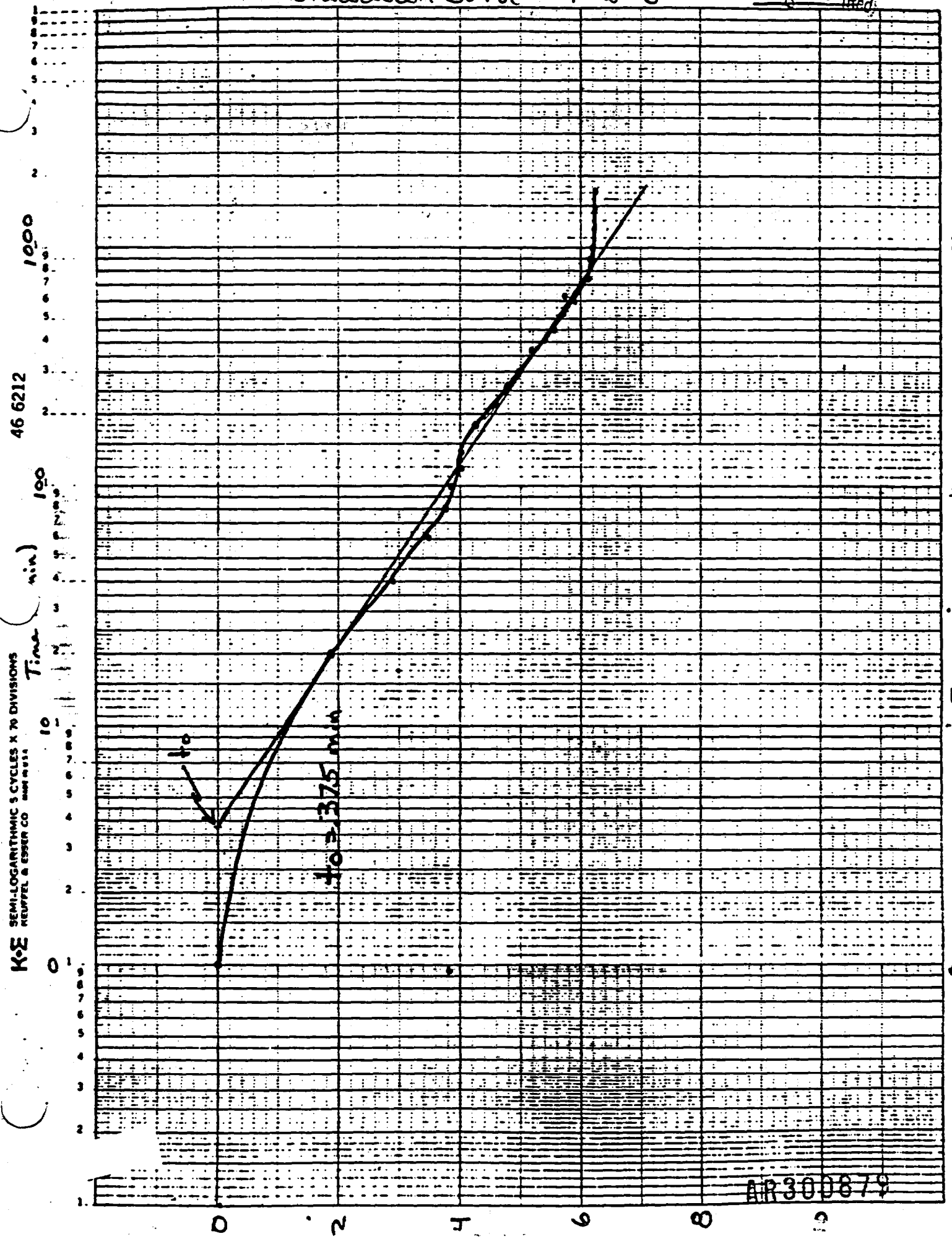
Residual Drawdown Curve – MW-3



AR300878

Drawdown Curve MW-3 Figure

ORIGINAL (Red)



AR300879

ORIGINA
(Red)

rr ..-5C

Drawdown Data

	2	3	4	5	6	7	8
ms	Elapse Time	Depth	[illegible]	flow rage	[illegible]	Interval Fluid	Avg Fluid
9:49	0	47.21	0	100320	0	0	0
9:52	3	47.25	[illegible]	—	—	—	—
9:57	[illegible]	47.25	[illegible]	—	—	—	—
10:03	[illegible]	47.28	[illegible]	—	—	—	—
10:07	[illegible]	47.30	[illegible]				—
10:10	[illegible]			101060	740	35.2	35.2
10:13	[illegible]	47.3[illegible]	[illegible]	—	—	—	—
10:24	35	47.32	[illegible]		—	—	—
10:25	36	—		101600	1280	36.0	35.5
10:34	45	47.32	[illegible]	—	—	—	—
10:47	58	47.33	[illegible]	102400	2080	36.4	35.86
11:03	[illegible]	47.32	[illegible]		—	—	—
11:07	78	—		103110	2790	35.50	35.
11:18	89	47.3[illegible]	[illegible]	—	—	—	
[illegible]19	90	—		103530	3210	35.0	35.67
[illegible]39	110	47.36	0.15				—
[illegible]56	127	47.37	0.16		—	—	—
[illegible]57	128	—		104910	4590	36.31	35.86
12:25	156	47.37	0.16		—		—
12:26	157			105940	5620	37.93	35.79
12:42	173	47.38	0.17	106560	6240	38.75	36.07
12:56	187	47.38	0.[illegible]		—	—	—
12:57	188	—		107030	6710	31.33	35.69
Recover @ 1300				107160	6840		35.81

AR300880

MW-5C

ORIGINAL (Red)

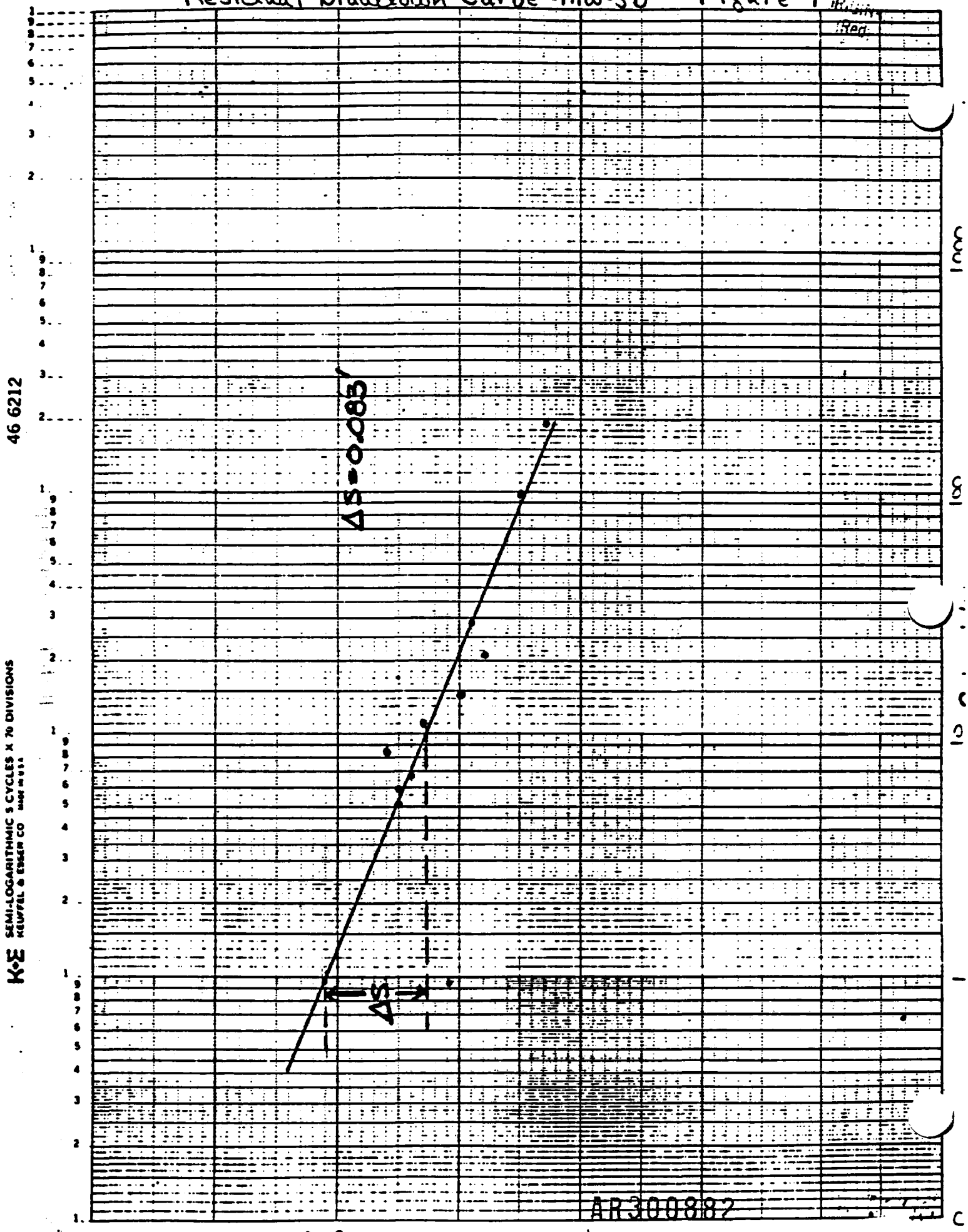
Recover Data

	2 Elapsed	3	4 H	5 S'	6	7	8 t/t'
1300	191	0	47.38	0.17			∞
1302	193	2	47.36	0.15			96.5
1307	198	7	47.32	0.11			28.28
[illegible]	201	[illegible]	47.33	0.12			20.10
1314	205	[illegible]	47.31	0.10			14.64
1319	210	9	47.28	0.07			11.05
1326	217	[illegible]	47.25	0.04			8.35
1333	224	[illegible]	47.23	0.06			6.79
[illegible]	230	[illegible]	47.26	0.05			5.90
1347	238	[illegible]	47.26	0.05			5.06

$s = 47.21$

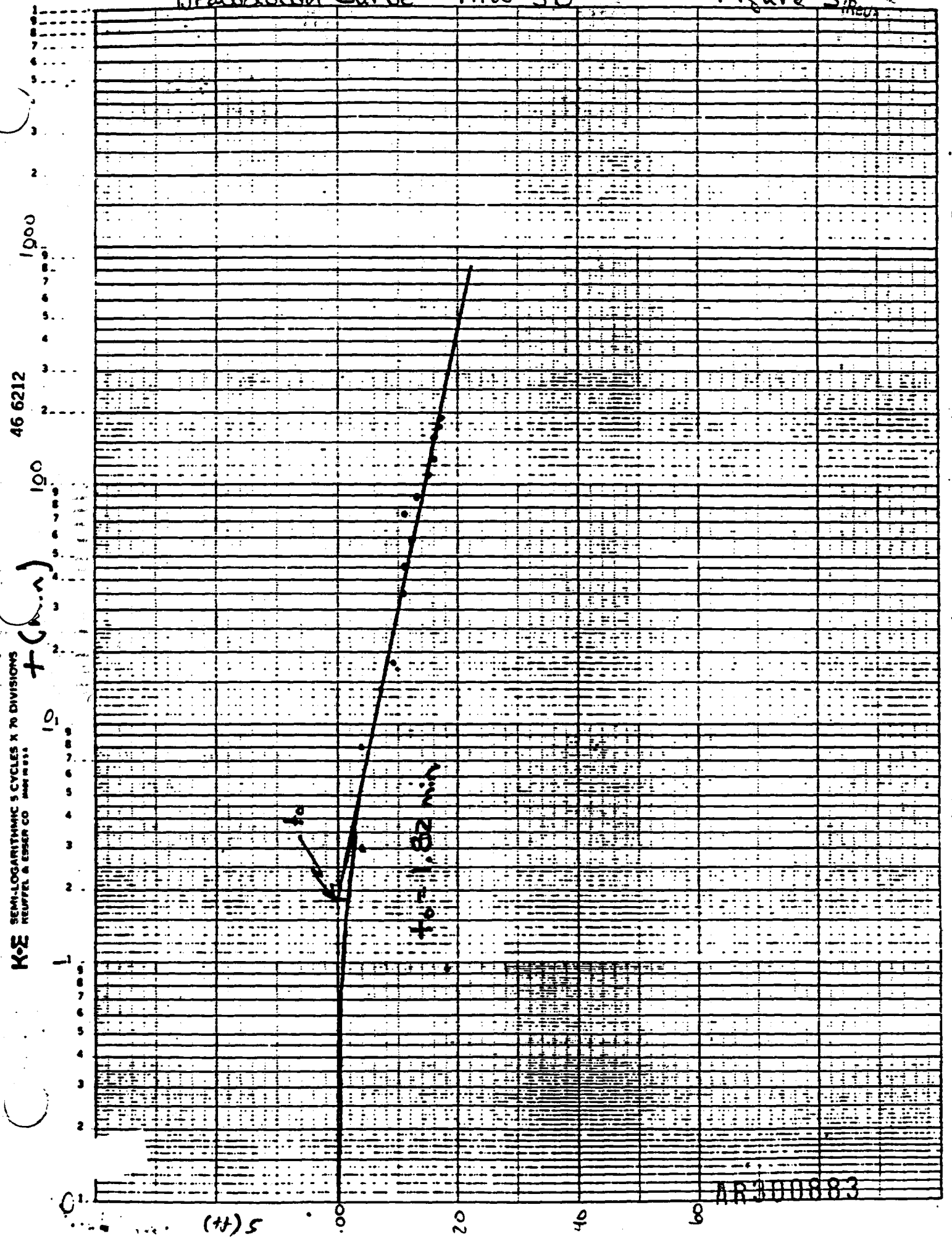
AR300881

Residual Drawdown Curve -MW-50 Figure 4



Drawdown Curve - MW-5D

Figure 5

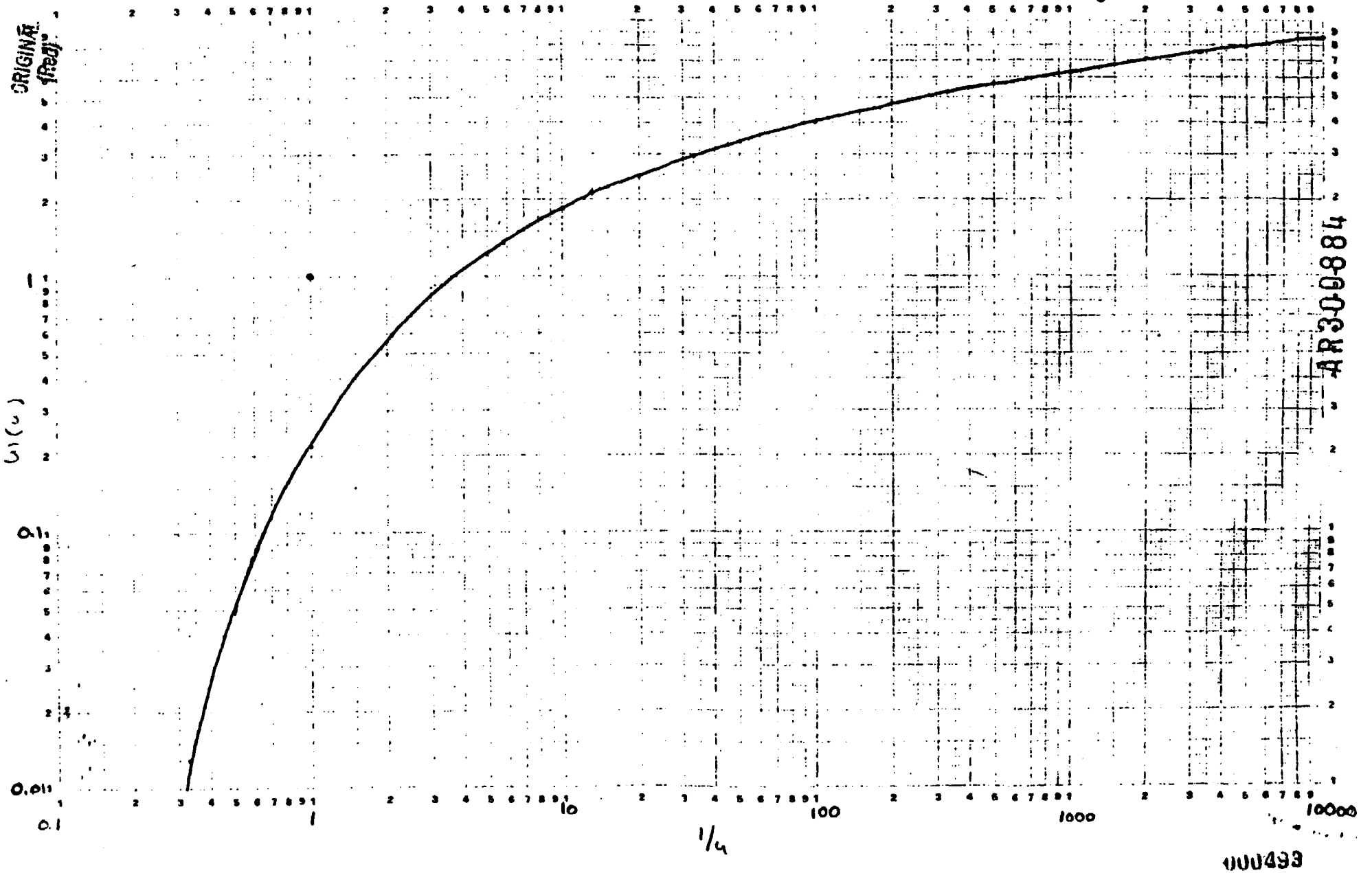


AR300883

Theoretical Curve

W(u) verse 1/u

Figure 6



ORIGINAL PAGE IS

AR30-0884

000493

WELL COMPLETION LOG

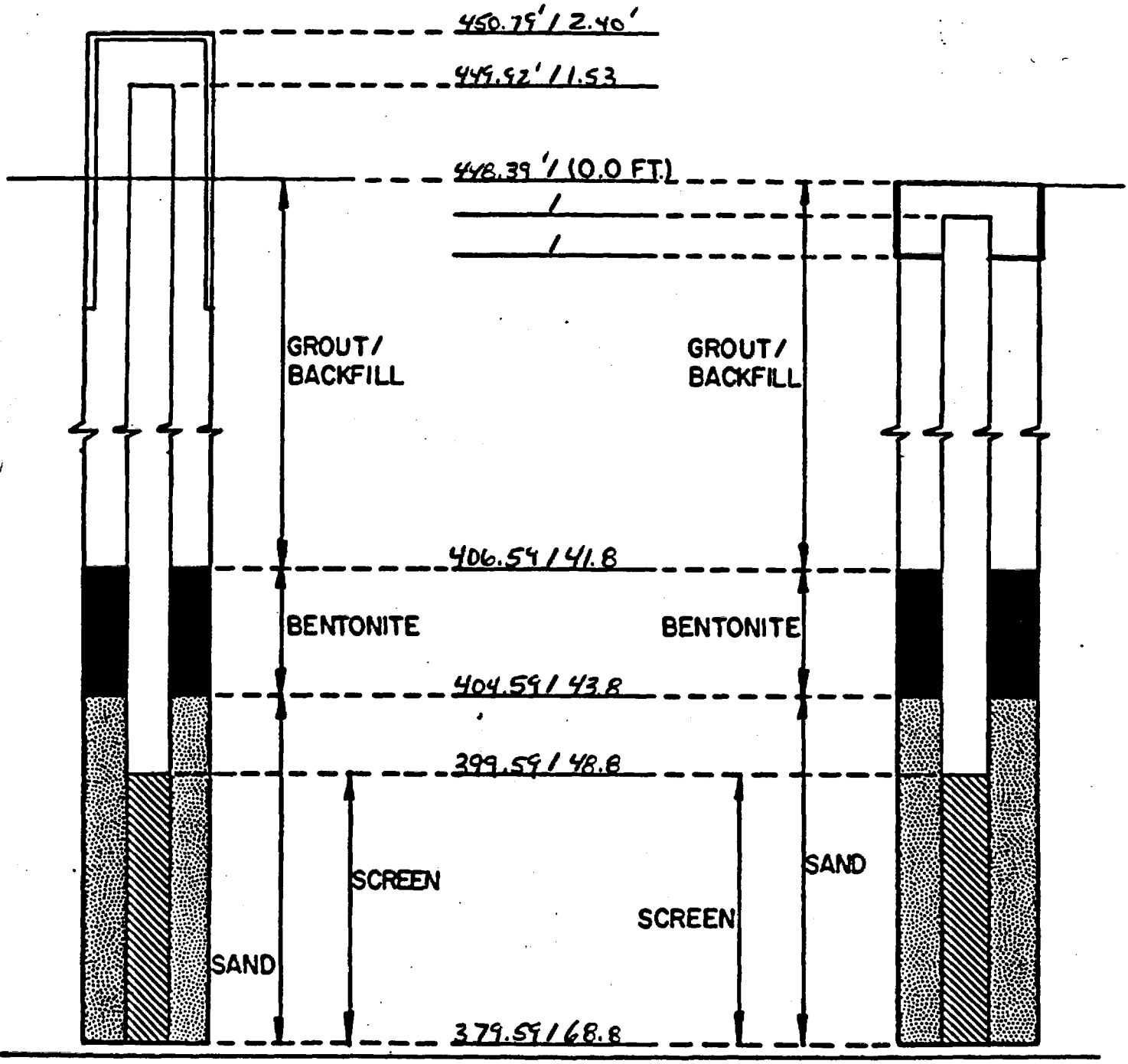
ORIGINAL (Red)

PROJECT NAME: Dorney Road Landfill Site PROJECT NO.: 30527

WELL NO.: MW-1 DATE: 1-22-88 LOCATION:

DRILLING METHOD: 10" OD Hollow Stem Auger and Air Rotary GEOLOGIST: J. T. Moore

ELEVATION / DEPTH



NOTES: The bore hole was drilled to a depth of 108.5'. Four inch casing was used to a depth of 100'. A twenty section of 4" casing sheared off at 82' to 84' and was left in place. A bentonite was installed between 75.7' to 70.3' with sand filter pack beneath.

AR300885

ICF/SRW Field Classification Sheet

PAGE NO. 2 of 2 (Rev)

PROJECT/LOCATION Darney Road Landfill

PROJECT NO. 30527

ELEVATION 457.73 GWL 0 HRS. ____ HRS.

BORING NO. LMW-7

DATE (START) 2-17-88 (FINISH) 2-17-88 FIELD ENGINEER M Hurban

	DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	DESCRIPTION: PROFILE	SOIL DENSITY—CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
	1	2	3	4	5	6	7	8	9	10
S-5	14.0				+					
	14.5	2			+			Same as above, wet		S-5 at 1348 Hrs *
	15.0	4			+					No HNU readings
	15.5	6								
	16.0	5	.5		+	Stiff	Brown			To 160' no methane
	16.5				+					
S-6	17.0				+					
	17.5	8			+					S-6 at 1414 Hrs *
	18.0	8			+					No HNU readings
	18.5	60	.9		+	Stiff	Brown	Clay minor gravel + silt		
	19.0				+			with small amount of		80% LEL 17.0'-19.0'
	19.5				+			plastic, wet		
S-7	20.0				+					S-7 at 1424 Hrs *
	20.5	5								No HNU readings
	21.0	5			+					
	21.5	7								
	22.0	9	.6		+	Stiff	Brown	Clay, minor gravel + silt		
	22.5				+			moist		S-8 at 1446 Hrs
S-8	23.0				+					No HNU readings
	23.5	2								
	24.0	1			+					Bernie advances
	24.5	1								10" augers
S-9	25.0	1	1.4			Med	Reddish Brown	Clay, minor silt no		Tim Alexander
	25.5	11						gravel (native material)		agrees that native
	26.0	8						slight amount of sand, silt		material has been
S-10	26.5	18	1.4			Med	Reddish Brown			reached and Tim
	27.0	5						Same as above		Farrow agrees
	27.5	6								S-9 at 1605 Hrs
	28.0	8	1.2			Med	Reddish Brown	Same as above		S-10 at 1613 Hrs
	28.5									No HNU readings

REMARKS * Composite sample from 2'-22' SP-015-001 1450 Hrs 2/17/88 VOA/Amber/Plastic

SP-016-001 VOA/Grab/25'-26.5' 1605 Hrs 2/17/88

SP-016-001 Composite/Amber/plastic 23'-28' 1613 Hrs 2/17/88

PROJECT NO. 30527

BORING NO. LMW-7

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300886

ORIGINAL (Red)

WELL CONSTRUCTION DETAILS

IGF/SHW

Field Classification Sheet

PAGE NO. 3 ORIGINAL (Red)

PROJECT/LOCATION Dorney Road Landfill

PROJECT NO. 30527

ELEVATION 462.32 GWL 0 HRS. HRS.

BORING NO. LMW-6

DATE (START) 2-15-88 (FINISH) 2-16-88 FIELD ENGINEER M Hurban

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	SOIL DENSITY—CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
28.5				+					Drilling begins 0834 Hrs
S-10 29.0				+					2/16/88 with S-10
29.5	28			+			No Recovery / Cobbles		S-10 at 0849 Hrs
30.0	18			+					No HNU readings
30.5	75			+					
31.0				+					S-11 at 0836 Hrs
31.5				+					no HNU readings
S-11 32.0									Possibly native material
32.5	10								at 32'-34' but unit
33.0	14								for see S-12
33.5	16					light brown	Silt with minor amount		
34.0	21	.6			Med	to tan	of clay with some iron		S-12 at 0852 Hrs
34.5	16						staining, *Dry		No HNU readings
35.0	17								with S-12 it
35.0	17					light Brown	Same as above		is for sure that
S-13 36.0	18	1.3			Med	to Tan			native material
36.5	20								has been reached
37.0	19	.9			Med		Same as above		took VOA sample *
37.5									from 34'-36' at
38.0									0854 Hrs.
38.5									S-13 0923 Hrs
39.0									No HNU readings
39.5									Composite Sample
40.0									from 32'-37'.
									well tests/location
									to begin at
									1000 Hrs

REMARKS * No water in Augers to 29' 2/16/88 Native material encountered at 32.0

PROJECT NO. 30527

BORING NO. LMW-6

.01 .001

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

VOA 34'-36' Grab Composite Amber/Plastic 32' 88800888

ICF/SRW Field Classification Sheet

PAGE NO. 1 ORIGINAL 2 Red.

PROJECT/LOCATION Dorsey Road Landfill 3+00N/2+00 west

PROJECT NO. 3052

ELEVATION 457.73. GWL 0 HRS. HRS.

BORING NO. LMW-7

DATE (START) 2/17/88 (FINISH) 2/17/88

FIELD ENGINEER M. HARRIS

	DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD(%)	PROFILE	SOIL DENSITY—CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
	1	2	3	4	5	6	7	8	9	10
	0.0				+					Drilling at 1321
	0.5				+					
	1.0									S-1 - 1327 Hrs *
	1.5				+					No HNU reading
S-1	2.0				+					
	2.5	2			+					
	3.0	3								
	3.5	15			+					
	4.0	10	.3		+	Med	Brownish Gray	Clay - minor amount of silt, plastic, glass, paper wood.		
	4.5				+					
S-2	5.0									
	5.5	7			+					S-2 1329 Hrs *
	6.0	5			+					No HNU reading
	6.5	6			+					
	7.0	7	1.3		+	Med	Brown	Clay - minor silt and fine gravel		
	7.5				+					
S-3	8.0									S-3 1332 Hrs *
	8.5	4			+					No HNU reading
	9.0	6			+					
	9.5	6			+					
	10.0	5	.7		+	Med	Brown	Same as above but wet		S-4 1341 Hrs *
	10.5				+					No HNU reading
S-4	11.0									
	11.5	2			+					
	12.0	3			+					
	12.5	2			+					
	13.0	2	.6		+	Med	Brown	Same as above, wet		
	13.5				+					
	14.0				+					
	14.5				+					

REMARKS: * Sample taken for composite

10" augers used

PROJECT NO. 3052

BORING NO. LMW-7

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300889

ICF/SRW Field Classification Sheet

PAGE NO. 1 of ORIGINAL (Red)

PROJECT/LOCATION Dorney Road Landfill 14+00N/3+00W

PROJECT NO. 30527

ELEVATION 462.32 GWL 0 HRS. ____ HRS.

BORING NO. LMW-6

DATE (START) 2/15/88 (FINISH) 2/16/88 FIELD ENGINEER M. HUDSON

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
0.0									Drilling begins 1400 Hrs
0.5									
1.0									
1.5									
2.0									
2.5	3								
3.0	5						No Recovery		S-1 1417 Hrs
3.5	27						* Screens are in spoons		No HNU readings
4.0	20								No Methane as yet
4.5									
5.0									
5.5	10								S-2 1420 Hrs
6.0	10						Paper and cardboard, wet		No HNU readings
6.5	40	.4			loose	Gray			No Methane as yet
7.0									Foul odor
7.5									Obstruction at 6.5'
8.0									
8.5	8								
9.0	8						Paper, cloth, wood and cardboard, wet		S-3 1430 Hrs
9.5	7								No HNU readings
10.0	9	.3			loose	Gray			No Methane
10.5									Foul odor
11.0									
11.5	52								S-4 1445 Hrs
12.0	5								No Methane
12.5	6						Paper, cloth, elastic, glass, wood, wet		No HNU reading
13.0	5	.7			loose	Gray			
13.5									
14.0									
14.5									

REMARKS * Water at 4'

PROJECT NO. 30527

BORING NO. LMW-6

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300890

ICF/SRW Field Classification Sheet

PAGE NO. 2 ORIGINAL (Red)

PROJECT/LOCATION Dorney Road Landfill

PROJECT NO. 30527

ELEVATION 462.32 · GWL 0 HRS. ____ HRS.

BORING NO. LMW-6

DATE (START) 2-15-88 (FINISH) 2-16-88 FIELD ENGINEER M. Hurlburt

	DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	SOIL DENSITY—CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
	1	2	3	4	5	6	7	8	9	10
S-5	14.0									S-5 1503 Hrs
	14.5	14								HNU reading 0ppm
	15.0	51						Sand board and metal, wet		
	15.5	17								
	16.0	13	.5			loose	Gray			
	16.5									
S-6	17.0									S-6 1515 Hrs
	17.5	8								HNU reading 0ppm
	18.0	10								
	18.5	14								
	19.0	17	.9			loose	Gray	Ground up paper very wet		
	19.5									S-7 1620 Hrs
S-7	20.0									HNU reading 0ppm
	20.5	70								25% LEL at 22.0'
	21.0	60	.4			loose	Gray	Paper, plastic, glass, wood and Al foil, wet		wire is wrapped
	21.5									around augers, taking
	22.0									time to remove.
	22.5									
S-8	23.0	50/.2	0			—	—	No Recovery		S-8 1720 Hrs
	23.5									No HNU Readings
	24.0									
	24.5									
	25.0									
	25.5									S-9 1745 Hrs
S-9	26.0							No Recovery		No HNU Readings
	26.5	50/.1				—	—			
	27.0									
	27.5									
	28.0									
	28.5									

REMARKS * Sampled to 26.1' and Augered to 29' ending 2/15/88

PROJECT NO. 30527

BORING NO. LMW-6

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300891

ICF/SRW Field Classification Sheet

ORIGINAL (Red)

PAGE NO. 3 of 4

PROJECT/LOCATION Dorney Road Land Fill

PROJECT NO. 30527

ELEVATION 460.37 GWL 0 HRS. HRS.

BORING NO. LMW-5

DATE (START) 2-8-88 (FINISH) 2-10-88 FIELD ENGINEER M Hurbem

	DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	DESCRIPTION: PROFILE	SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
	1	2	3	4	5	6	7	8	9	10
	28.5				+					H2S break 1000 Hrs
S-10	29.0				+					to 1030 Hrs.
	29.5	12			+			No Recovery		S-10 at 1046 Hrs
	30.0	5			+					No HNU readings
	30.5	6			+					
	31.0	7			+					
	31.5				+					S-11 1107 Hrs
S-11	32.0				+					HNU reading Oppm
	32.5	28			+			No Recovery / Screens		
	33.0	5			+			are being used		H2 Hrs W.L. in
	33.5	5			+					wells at 28.87'
	34.0	8			+					
	34.5				+					
S-12	35.0				+			No Recovery		S-12 1128 Hrs
	35.5	50			+					HNU reading Oppm
	36.0				+					
	36.5				+					
	37.0				+					
	37.5				+					
S-13	38.0				+					S-13 1419 Hrs
	38.5	14			+					HNU reading Oppm
	39.0	18			+			Paper, cardboard, wood and		
	39.5	15			+			plastic, 85% clay in		S-14 1446 Hrs
S-14	40.0	50	9		+		Gray	shoe, wet		HNU reading Oppm
	40.5	50	0.2		+		Gray	Paper and wood, plastic		
	41.0				+			glass and wire, wet		
	41.5				+					
	42.0				+					
	42.5				+					
	43.0				+					

REMARKS * At 31.0' cuttings still shows paper, cloth, plastic, wood, battery casing fragments and cardboard. Reasons for lack of recovery unknown, frustrating.

PROJECT NO. 30527

BORING NO. LMW-5

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300892

ICF/SRW Field Classification Sheet

ORIGINAL Redpt

PAGE NO. 4 of 4

PROJECT/LOCATION Dorney Road Landfill

PROJECT NO. 30527

ELEVATION 460.37 GWL 0 HRS. HRS.

BORING NO. LMW-5

DATE (START) 2-8-88 (FINISH) 2-10-88 FIELD ENGINEER M Hurley

	DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO. TYPE & RECOVERY OR % ROCK RECOVERY	RQD(%)	PROFILE	SOIL DENSITY-CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
	1	2	3	4	5	6	7	8	9	10
S-15	42.0									
	42.5	50/.5						No Recovery		S-15 at 1602 Hrs
	43.0									HNU readings Oppm
(M.H)	43.5									Obstruction at
S-16	44.0									44' so next sample
	44.5									will be at 45'.
S-16	45.0									S-16 1648 Hrs
	45.5	5						Paper, glass and wood		HNU reading Oppm
	46.0	8						fragments with minor		
	46.5	15				loose	light Brown	amount of silty clay mixed		
	47.0	8	.3			~~light Brown~~	—			
	47.5									
S-17	48.0									S-17 at 1715 Hrs
	48.5	6				Stiff	orange	Clay with minor amount		HNU reading Oppm
	49.0	7						of silt. moist.		
	49.5	5						(Native material)		lost sample for day
S-18	50.0	6	1.2							2/9/88
	50.5	6								Drilling 2/10/88 825 Hrs
	51.0	6								S-18 at 0906 Hrs
S-19	51.5	6	.9			Stiff	orange	Clay with minor amount		W.L. at 830 Hrs
	52.0	4						of silt. moist		42.61' No HNU
	52.5	4								readings.
	53.0	4	1.2			Stiff	orange	Clay with minor amount		S-19 at 0915 Hrs
								of silt. moist.		HNU reading 0 ppm
										Penetrated native
								All of clay sample was used for		material by 5'.
								Sample SP-009-001. No sample		backfilled hole from
								was available for reference		48'-50' with pellets and
								sample.		1' of sand from 47'-
										48' and will set well.

REMARKS * 3"x18" long split-spoon used from 50.0'-51.5'. This will make sure that enough sample is collected for analysis.

PROJECT NO. 3052

BORING NO. LMW-5

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

SP-009-001 VOA/Grab/50'-51.5' 0906 HRS 2/10/88

SP-009-001 composite/Amber Plastic 0.98'-53' 0915 HRS 2/10/88

ICF/SRW Field Classification Sheet

PAGE NO. 1 OF 7

PROJECT/LOCATION Dorney Road Landfill

PROJECT NO. 30527

ELEVATION 460.37 GWL 0 HRS. 0839 Hrs 8.23' 2/9/88 HRS.

BORING NO. LMW-5

DATE (START) 2/8/88 (FINISH) 2/10/88

FIELD ENGINEER MARK Hirbon

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
0.0									
0.5									
1.0									
1.5									
-1 2.0									S-1 1556 Hrs
2.5	4					Gray to Black	Paper, glass, cardboard and plastic.		HNU reading 7ppm for sample. No soil for sample
3.0	4								
3.5	24								
4.0	4	1.2							
4.5									
-2 5.0									
5.5	2						No Recovery		S-2 1626 Hrs
6.0	2								No HNU reading in borehole
6.5	3								
7.0	4								
7.5									
-3 8.0									
8.5	3						No Recovery		S-3 1638 Hrs
9.0	2								No HNU reading in borehole. Battery casing fragments may be blocking spoon/screens are being used
9.5	3								
10.0	1								
10.5									
-4 11.0									
11.5	5						No Recovery		
12.0	1								
12.5	1						Material is very soft and screens are being used in spoons.		
13.0	2								S-4 1701 Hrs No HNU readings
13.5									
14.0									
14.5									

REMARKS * Methane a problem at 1.0' Water or wet at 6.0'

PROJECT NO. 30527

BORING NO. LMW-5

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300894

ICF/SRW Field Classification Sheet

ORIGINAL (Red)

PAGE NO. 2

PROJECT/LOCATION Dorney Road Landfill

PROJECT NO. 30527

ELEVATION 460.37 GWL 0 HRS. ____ HRS.

BORING NO. LMW-5

DATE (START) 2-8-88 (FINISH) 2-10-88 FIELD ENGINEER M Hurbers

	DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	DESCRIPTION: PROFILE	SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
	1	2	3	4	5	6	7	8	9	10
S-5	14.0				+					S-5 1713 Hrs
	14.5	5			+			No Recovery		HNU readings 0ppm
	15.0	4			+					
	15.5	3			+					Augered to 17'
	16.0	8			+					and ended day
	16.5				+					
S-6	17.0				+					Drilling begins
	17.5	3			+		gray	Paper and plastic, wet		with S-6 at 0839 Hrs
	18.0	5			+			and battery casing fragments		on 2/9/88
	18.5	7			+					W.L. 8.23'
	19.0	4	.2		+					Methane has become
	19.5				+					0%.
S-7	20.0				+					S-6 at 0849 Hrs
	20.5	8			+					HNU reading 0ppm
	21.0	11			+			No recovery - Battery		
	21.5	12			+			casing fragments must		270% LEL
	22.0	6			+			be being advanced infront		10 ppm HNU meter
	22.5				+			of spoon.		CN at borehole
S-8	23.0				+					only. No HNU readings
	23.5	4			+		Gray	~~No Recovery~~ Plastic, paper, wire		S-7 0908 Hrs.
	24.0	7			+					
	24.5	6			+					S-8 0944 Hrs
	25.0	5	.2		+					No HNU reading
	25.5				+					
S-9	26.0									S-9 at 0955 Hrs
	26.5	10			+					No HNU reading
	27.0	10			+		Gray	Plastic, paper and wood		
	27.5	6								
	28.0	7	.2		+					
	28.5				+					

REMARKS * Cuttings consist of paper, cardboard, wood, plastic, metal and battery casing fragments.

PROJECT NO. 30527

BORING NO. LMW-5

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300895

ICF/SRW Field Classification Sheet

ORIGINAL (Red)

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PROJECT/LOCATION Dorney Road Landfill

PROJECT NO. 30527

ELEVATION 461.77 GWL 0 HRS. HRS.

BORING NO. LMW-4

DATE (START) 2-1-88 (FINISH) 2-3-88 FIELD ENGINEER M Hurban

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	SOIL DENSITY—CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
39.0									
39.5									
-14 40.0									S-14 0940 Hrs
40.5	14						No Recovery / split-spoons		HNU reading —
41.0	30						to have screens.		
41.5	22								
42.0	20	–			–	–			
42.5									
-15 43.0									S-15 1020 Hrs
43.5	26						Cardboard, plastic with		HNU reading 0ppm
44.0	11						.4' of a gravelly silty		Drillers take 15min
44.5	18						clay		break (Hrs)
45.0	50	1.3			Med	Gray			
45.5									
-16 46.0									S-16 - 1211 Hrs
46.5	18								HNU reading 0ppm
47.0	42								
47.5	86								
48.0	14	1.4			Med	Gray	Cardboard, plastic with		
48.5							last .45' of a gravelly		S-17 1404 Hrs
-17 49.0							silty clay.		HNU reading 0ppm
49.5	10								
50.0	9								
50.5	8								
51.0	10	.8			Med/loose	Brown	Gravelly silty clay with		
51.5							Hematite, moist to wet		S-18 1515 Hrs
52.0									HNU reading
-18 52.5	13				loose	Brown	Gravelly sand grading		0ppm
53.0	14						to coarse to med. sand,		
53.5	11						iron stained, uniform Hardshaft		

*MARKS * Composite Sample SP-007-001 2'-54' 1515 Hrs
VOA Grab " SP-007-001 28'-30'

PROJECT NO. 30527

BORING NO. LMW-4

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300896

ICF/SRW Field Classification Sheet

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PROJECT/LOCATION Dorney Road Landfill PROJECT NO. 30527

ELEVATION 461.77 GWL 0 HRS. BORING NO. LMW-4

HRS.

DATE (START) 2-1-88 (FINISH) 2-3-88 FIELD ENGINEER M. Hurban

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD(%)	DESCRIPTION: PROFILE	DESCRIPTION: SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	DESCRIPTION: COLOR	DESCRIPTION: MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
54.0	12	1.2							

REMARKS *

PROJECT NO. 30527

BORING NO. LMW-4

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

ICF/SRW Field Classification Sheet

ORIGINAL (Red)

PAGE NO. 2 of 5

PROJECT/LOCATION: Dorney Road Landfill

PROJECT NO. 30527

ELEVATION 461.77 GWL 0 HRS. HRS.

BORING NO. LMW-4

DATE (START) 2-1-88 (FINISH) 2-3-88 FIELD ENGINEER M Harbaw

	DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD(%)	DESCRIPTION: PROFILE	SOIL DENSITY-CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
	1	2	3	4	5	6	7	8	9	10
S-5	14.0				+					
	14.5	16			+					S-5 at 1634 Hrs
	15.0	8			+			Silty clay with paper		HNU reading 0ppm
	15.5	11			+			cloth and glass, wet	*	No Reference sample
S-6	16.0	24	.9		+	Med	Brown			
(A.D.)	16.5	6			+					S-6 at 1634 Hrs
	17.0	7			+					HNU reading 0ppm
	17.5	14			+			Alternating layers of a fine	*	No Reference sample
	18.0	8	1.3		+	Med/stiff	Brown	gravelly silty clay and		
	18.5				+			waste of paper, cloth, glass and		
S-7	19.0				+			wood. Wet		
	19.5	17			+					
(A.D.)	20.0	12			+					S-7 at 1705 Hrs
	20.5	7			+			Cardboard and paper, glass,		HNU reading 5ppm
	21.0	13	.5		+	Med		minor amount of silty clay	—	Did not take
	21.5				+					sample because
S-8	22.0	8			+					sample was all
	22.5	14			+					paper
(A.D.)	23.0	15			+				*	no reference sample
	23.5	50	.6		+	Med		Cardboard, wood and cloth		
	24.0				+			silty clay	*	Drilling begins
	24.5				+					2/2/88 0800 Hrs
	25.0				+					arise from 15' to 22'
	25.5	31			+					for sample # 8
(A.D.)	26.0	16			+					S-8 0844 Hrs
	26.5	17			+			Cardboard, plastic and		No HNU reading
	27.0	15/4	1.1		+	Med		cloth, silty clay.		S-9 1004 Hrs
	27.5				+					No HNU reading
	28.0				+					Heavy leachate
					+					odors from ref.

REMARKS * Minor destruction at 23.5'/ 0816 Hrs LEL ~~Mi~~ at 250% will let hole heat for a time. Drilling continues at 25' for sample 0844 Hrs

PROJECT NO. 30527

BORING NO. LMW-4

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300898

ICF/SRW Field Classification Sheet

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PROJECT/LOCATION Darney Road Landfill

PROJECT NO. 30527

ELEVATION 461.77 GWL 0 HRS. _____ HRS.

BORING NO. LMW

DATE (START) 2-1-88 (FINISH) 2-3-88 FIELD ENGINEER M Hurden

	DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	DESCRIPTION: PROFILE	SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
	1	2	3	4	5	6	7	8	9	10
S-10	28.0									S-10 - 1045 Hrs
	28.5	21					Brownish gray	Gravelly silty clay with		0-2ppm HNU rdg.
	29.0	19						alternating layers of		readings. Took
	29.5	13						cardboard, paper and cloth,	*	VOA sample (Grab)
	30.0	30	.8					plastic, Tin cans. Wet		28-30' SP-007-001
	30.5									
~~S-11~~	~~30.0~~									
	~~30.5~~									
	~~31.0~~									
	~~31.5~~									
	~~32.0~~									
	~~32.5~~									
	~~33.0~~									
	~~33.5~~									
	~~34.0~~									S-11 1214 Hrs
S-11	31.0									No HNU readings
	31.5	13								
	32.0	5								1445 Hrs W.L
	32.5	11								in augers at
	33.0	12	1.4			Med	Gray	Cardboard, paper, plastic		27.1'
	33.5							glass, minor amount of silty		
	34.0							clay		S-12 1515 Hrs. for
S-12	34.5	10								sample S-12
	35.0	16								NO HNU readings
	35.0	28								
	36.0	22	1.2			Med	Gray	Cardboard, paper, plastic		0-1½, begin 2/3/88
	36.5							glass, corn husks, minor		0812 Hrs. Augering
S-13	37.0							amount of silty clay		from 34'-37'
	37.5	50	–					W.L. 4/3/88 36'		S-13 - 0850 Hrs
	38.0					–	–	S-13 No recovery		
	38.5							Obstruction		

REMARKS * Don Welshons shuts down rig at 1530 Hrs because of extremely muddy and rainy conditions.

PROJECT NO. 305

BORING NO. LMW-4

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300899

ICF/SRW Field Classification Sheet

PAGE NO. ORIGINAL (Red) 5

PROJECT/LOCATION Dorney Road Landfill 4+40N + 4+20W

PROJECT NO. 30527

ELEVATION 461.77 GWL 0 HRS. HRS.

BORING NO. LMW-4

DATE (START) 2/1/88 (FINISH) 2/3/88

FIELD ENGINEER M. HURBAN

	DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	SOIL DENSITY-CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
	1	2	3	4	5	6	7	8	9	10
	0.0				+					Drilling at 1405 Hrs
	0.5				+					
	1.0				+					
	1.5									S-1 at 1410 Hrs
S-1	2.0				+					HNU reading 0 ppm
	2.5	4			+					
	3.0	4			+			Silty clay: Stiff clay		
	3.5	5						with minor amounts of fine		
	4.0	6	1.4		+	Stiff	Brown	gravel and iron staining		
	4.5				+					
2	5.0				+					
	5.5	1								
	6.0	2			+					
	6.5	3			+			Same as above		S-2 at 1425 Hrs
	7.0	4	.85		+	Stiff	Brown			HNU reading 0 ppm
	7.5				+					
S-3	8.0									
	8.5	7			+					
	9.0	13			+					
	9.5	12						Same as above except		S-3 at 1450 Hrs
	10.0	20	1.1		+	Stiff	Brown	for 1' of glass and paper.		HNU reading 0 ppm
	10.5				+					
S-4	11.0				+					
	11.5	3			+					
	12.0	13			+					S-4 at 1525 Hrs
	12.5	11			+					HNU reading 0 ppm
	13.0	13	.7		+	Loose to Med.	Gray	Fill: Paper, glass, beer	*	No reference sample
	13.5							cans, plastic, cloth		because of lack of
	14.0				+					sample
	14.5				+					

REMARKS * Methane ranged from 30 to 70% LEL from 10' to 14'

PROJECT NO. 30527

BORING NO. LMW-4

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300900

ICF/SRW Field Classification Sheet

ORIGINAL (Red) 2

PAGE NO. 1

PROJECT/LOCATION Dorney Road 5+80N + 6+80W

PROJECT NO. 30527

ELEVATION 462.23 GWL 0 HRS. 1/29/88 15.7' G.L.

BORING NO. LMW-3

DATE (START) 1/21/88 (FINISH) 1/22/88 HRS.

FIELD ENGINEER M. HURBAN

	DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO. TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	DESCRIPTION: PROFILE	SOIL DENSITY—CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS* Drilling begins at 1357
	1	2	3	4	5	6	7	8	9	10
S-1	0.0									S-1 1357 Hrs.
	0.5	3								HNU reading 0ppm
	1.0	12								
	1.5	13								
	2.0	14	.9			Stiff	orange	Fill: Clay fill material		
	2.5									
	3.0									
	3.5									
S-2	4.0									
	4.5	1								S-2 1415 Hrs.
	5.0	2								HNU reading 0ppm
	5.5	7								
	6.0	17	.8			Stiff	orange	Fill - grading to plastic pieces and wood fragments		
	6.5									
	7.0									
	7.5									
S-3	8.0									
	8.5	13								S-3 1442 Hrs
	9.0	13								HNU reading 1 ppm
	9.5	13								
	10.0	12	.4			Med.	Orange to Gray	Clay fill and paper and battery casing fragments + wood		No Reference sample
	10.5								*	Took VOA sample
	11.0									
	11.5									
S-4	12.0									
	12.5	10	.3			100%	Gray	Paper and cardboard		S-4 1511 Hrs
	13.0	11								HNU reading 0ppm
	13.5	11								
	14.0	12								LOW LEL at 15'
	14.5									no HNU readings

Dan Webster shuts down rig at 1518 Hr.

REMARKS #

PROJECT NO. 30527

BORING NO. LMW-3

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300901

ICF/SRW Field Classification Sheet

PAGE NO. 2 of ~~ORIGINAL~~ (Red)

PROJECT/LOCATION Dorney Road Landfill

PROJECT NO. 30527

ELEVATION 462.23. GWL 0 HRS. HRS.

BORING NO. LMW-3

DATE (START) 1-21-88 (FINISH) 1-22-88 FIELD ENGINEER M. Hurlburt

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	SOIL DENSITY-CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
14.5									1046 Hrs
S-5 15.0									drilling begins
15.5	8								
16.0	11								Sample S-5 1053 Hrs
16.5	5								HNU reading 0ppm
17.0	13	.5			loose	gray	Wire and paper gravel		wet
17.5							and clay, wet		
S-6 18.0	25								
18.5	23								
19.0	23								S-6 1130 Hrs
19.5	4	1.5			stiff	brown	Clay - minor amount		HNU reading 0ppm
S-7 20.0	4						of silt and little gravel,		
20.5	4						.5 in of paper sandwich		
S-7 21.0	3						at 18.0-18.5' wet		S-7 1145 Hrs
21.5	2	1.8			Stiff	orange	Clay - minor amounts		HNU reading 0ppm
S-8 22.0	3						of silt + gravel, wet		
22.5	3								
23.0	2								S-8 1201 Hrs
23.5	2	1.7			Stiff	orange	Same as above		HNU reading 0ppm
24.0									
24.5									
							Native material begins		
							at 18.5'		
							Bentonite pellets were		
							added to borehole		
							from 24' to 18'.		

REMARKS * Composite sample from 0'-17' ① VOA/BNA/Pest/PCB ② Metals ③ VOA at 8'-10'

Jack sample from 20'-22' with 3" spoon of clay

PROJECT NO. 30527

BORING NO. LMW-3

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300902

ORIGINAL (Red)

ICF/SRW Field Classification Sheet

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PROJECT/LOCATION Dorney Road Landfill

PROJECT NO. 30527

ELEVATION — GWL 0 HRS. HRS.

BORING NO. LMW-2 Test Boring

DATE (START) 1-20-88 (FINISH) 1-29-88 FIELD ENGINEER M Hurbur

	DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD(%)	DESCRIPTION: PROFILE	SOIL DENSITY—CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
	1	2	3	4	5	6	7	8	9	10
S-4	14.0									S4—1456 Hrs
	14.5	7								HNU reading 0 ppm
	15.0	5								
	15.5	9								
	16.0	6	.1			loose	Gray	Paper, wood, plastic		
	16.5									
	17.0									
	17.5									
S-5	18.0									1518 Hrs S-5
	18.5	13								HNU reading 0 ppm
	19.0	13								
	19.5	12								
	20.0	12	.9			loose	Gray	Same as above, but wet		
(M.D.) S-6	20.5									
	21.0									
	21.5									
S-6	22.0									
	22.5	21								1603 Hrs S-6
	23.0	10								HNU reading 1-2 ppm
	23.5	10								
	24.0	9	.2			loose	Gray	Same as above		Not enough sample to collect (M.D. 30527)
	24.5									
S-7	25.0									1/21/88 starts
	25.5									at 22' 0830 Hrs
	26.0									Drillers auger down
	26.5									to 24' and hit methane
	27.0									again after hole
	27.5									was vented. 800% LEL
										at 24'

REMARKS * Not enough sample was colleded to sample. This small amount will be used for the composite.

1615 Hrs Methane pouring out of borehole, Don Welshons shuts down rig.

PROJECT NO. 30527

BORING NO. Test Boring LMW-2

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

operations discontinue until 1/21/88

AR300903

ORIGINAL (Red)

ICF/SRW

Field Classification Sheet

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PROJECT/LOCATION Dorney Road Landfill

PROJECT NO. 30527

ELEVATION 462.23 GWL 0 HRS. _____ HRS.

BORING NO. LMW-2

DATE (START) 1-20-88 (FINISH) 1-29-88 FIELD ENGINEER M. Hicban

	DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	DESCRIPTION: PROFILE	SOIL DENSITY-CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
	1	2	3	4	5	6	7	8	9	10
S-7	25.0									S-7 1113 Hrs
	25.5	4								No HNU readings
	26.0	5						Gravel - Fine gravel		Above is no
	26.5	6						consisting of hematite		longer coming from
	27.0	6	.8			loose	Brown	and limonite fragments,		borehole. With this last
	27.5									sample a lot of methane
S-8	28.0									active material may have
	28.5	6								been reached.
	29.0	6								S-8 - 1201 Hrs
	29.5	6						same as above		HNU reading [illegible]
	30.0	6	.6			loose	Brown			

REMARKS * Drilling begins/continues on 1/27/88 ECE reference sample will not take because enough sample is needed for composite sample

PROJECT NO. 30527

BORING NO. Test boring LMW-2

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300904

ICF/SRW Field Classification Sheet

ORIGINAL 3 (Rev) 3

PAGE NO. 3

PROJECT/LOCATION Dorney Road Landfill

PROJECT NO. 30527

ELEVATION 456.73 GWL 0 HRS. ____ HRS.

BORING NO. LMW-1

DATE (START) 1-18-88 (FINISH) 1-29-88 FIELD ENGINEER M. Hanson

	DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	DESCRIPTION: PROFILE	SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
	1	2	3	4	5	6	7	8	9	10
SP-7	18.0									SP-7 1000 Hrs
	18.5	9								HNU reading 0ppm
	19.0	80	.4'				gray	Paper, wood and plastic		
	19.5									Rig refusal at 19' refusal with
	20.0									spoon and auger
	20.5									At 20' bringing up
	21.0									large amounts of cloth
	21.5									
SP-8	22.0									SP-8 1118 Hrs
	22.5	10								HNU reading 0ppm
	23.0	4								
	23.5'	6	.15				gray	Cloth and paper, wet		
	24.0									
	24.5									
SP-9	25.0									SP-9 1136 Hrs
	25.5	2								HNU reading 0ppm
	26.0	3								
	26.5	5								
SP	27.0	8	1.6				orange brown	Clay, minor amount of		SP-10 1125 Hrs
SP-10	27.5	3						silt, moist to wet.		HNU reading 0ppm
	28.0	3								After filling 1 liter amber
	28.5	4								bottle, a reading of
SP-11	29.0	3	1.5				orange brown	Same as above		30ppm (head space) was
	29.5	3	ZRD							noted.
	30.0	4						SP-11 no recovery		SP-11 1540 Hrs
SP-12	30.5	3	0							HNU reading
	31.0	2								
	31.5	2								SP-12 1615 Hrs
	32.0	1								HNU reading 0ppm
	32.5	1	1.1'				orange brown	Same as above		

REMARKS #

PROJECT NO. 30527

BORING NO. LMW-1

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300905

ICF/SRW Field Classification Sheet

ORIGINAL (Red)

PAGE NO. 1 of 3

PROJECT/LOCATION Dorney Road Landfill 25' east of 3100/9100W

PROJECT NO. 30527

ELEVATION —

GWL 0 HRS.

HRS.

BORING NO. Test Boring LMW-2

DATE (START) 1/20/88 (FINISH) Hole grouted on 1/29/88

FIELD ENGINEER M. HURBAW

	DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	DESCRIPTION: PROFILE	SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
	1	2	3	4	5	6	7	8	9	10
	0.0									
S-1	0.5									1402 hrs Sample #1
	1.0	5						Fill: silty clay with		HNU reading 0ppm
	1.5	6						minor amounts of		
	2.0	9						gravel		
	2.5	14	1.2			stiff	Brown Orange			
	3.0									
	3.5									
	4.0									
	4.5									
S-2	5.0									
	5.5	1								
	6.0	1						Same as above		1421 Hrs S-2
	6.5	1								HNU reading 0ppm
	7.0	2	1.1			stiff	Brown Orange			
	7.5									
	8.0									
	8.5									
	9.0									
	9.5									
S-3	10.0									
	10.5	4								1437 Hrs S-3
	11.0	17								HNU reading 0ppm
	11.5	6								
	12.0	7	.3			loose		Paper, cardboard, plastic,		
	12.5							metal and wood		drilling to 14.0'
	13.0									bringing up cloth
	13.5									
	14.0									
	14.5									

REMARKS: Reference samples will be collected when volume permits/Sample will be collected for composite sample

PROJECT NO. 30527

BORING NO. Test Boring LMW-2

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300906

ICF/SRW Field Classification Sheet

ORIGINAL (Red)

PAGE NO. 1

PROJECT/LOCATION Dorney Road

PROJECT NO. 30527

ELEVATION 456.73 GWL 0 HRS. 19.8' G.L.

HRS.

BORING NO. LMW-1

DATE (START) 18 January 1988 (FINISH) 1/29/88

FIELD ENGINEER James T. Moore

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO. TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	DESCRIPTION: PROFILE	DESCRIPTION: SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	DESCRIPTION: COLOR	DESCRIPTION: MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
0.5	2	SP-1		+		Red-	Silty CLAY, with trace	CL	Cap Material
1.0	2	1.3 ft		+		Brown	amount of Sand (moist)		
1.5	5			+					
2.0				+					
2.5				+					
3.0	7	SP-2		+		Red-	Silty CLAY, trace cmf	CL	Cap material
3.5	7	1.1 ft		+		Brown	Sand (moist)		ends @ 6.0 ft
4.0	15			+					depth
4.5				+					
5.0				+					
5.5				+					
6.0	8	SP-3		+		Reddish	FILL; mostly clay with organic		
6.5	16	0.8 ft		+		Black	material (paper), cloth, rages,		
7.0	18			+			trace construction debris		
7.5				+			(moist).		
8.0				+					
8.5				+					
9.0	2	SP-4		+		Yellow-	FILL; paper (dry)		
9.5	5	0.1 ft		+		brown			
10.0	8			+					
10.5				+					
11.0				+					
11.5									1st sonde 1/19/88
12.0	7	SP-5				Black	FILL; paper, glass, tr. organic		
12.5	5	0.5 ft				to Red	material, misc. debris, tr.		
13.0	4					Brown	clay (moist to wet)		
13.5									
14.0									
14.5									
15.0	60	SP-6				Gray	FILL; wood fragments, con-		

REMARKS *

PROJECT NO. 30527

BORING NO. LMW-1

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

ICF/SRW Field Classification Sheet

ORIGINAL

PAGE NO. 2 of 3

PROJECT/LOCATION Dorney Road

PROJECT NO. 30527

ELEVATION 456.73 GWL 0 HRS.

HRS.

BORING NO. LMW-1

DATE (START) 1-18-88 (FINISH) 1-29-88

FIELD ENGINEER J.T. Moore

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	DESCRIPTION: PROFILE	DESCRIPTION: SOIL DENSITY—CONSISTENCY OR ROCK HARDNESS	DESCRIPTION: COLOR	DESCRIPTION: MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
15.5	29	0.5				to Red	struction debris, trace		
16.0	18					Brown	organic material (moist)		
16.5									
17.0									
17.5									
18.0									
18.5									

REMARKS #

PROJECT NO. 30527

BORING NO. LMW-1

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300908

ICF/SRW Field Classification Sheet

ORIGINAL (Red)

PAGE NO. 1

PROJECT/LOCATION Dorney Road Landfill

PROJECT NO. 30527

ELEVATION ____ GWL 0 HRS. ____ HRS.

BORING NO. TB-3

DATE (START) 4-7-88 (FINISH) 4-7-88 FIELD ENGINEER Jeff Allc.

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD(%)	DESCRIPTION: PROFILE	DESCRIPTION: SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	DESCRIPTION: COLOR	DESCRIPTION: MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
							No Samples Collected		
							or/brn silty clay		
							med moist, plastic		
5					10'				
10									

REMARKS * Test Boring using 6" Augers Adjacent Dorney Road.

PROJECT NO. 30527

BORING NO. TB-3

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

R300909

ICF/SRW Field Classification Sheet

ORIGINAL (Red)

PAGE NO. 1 of 1

PROJECT/LOCATION Dorney Road Landfill

PROJECT NO. 30527

ELEVATION _____ GWL 0 HRS. _____ HRS.

BORING NO. TB-4

DATE (START) 4-7-88 (FINISH) 4-7-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	DESCRIPTION: PROFILE	DESCRIPTION: SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	DESCRIPTION: COLOR	DESCRIPTION: MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
							No Samples Collected		
							Or/brn silty clay		
							moist, plastic		
5					10'				
10									

REMARKS ** Test Boring using 6" Augers Adjacent Dorney Road.

PROJECT NO. 30527

BORING NO. TB-4

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300910

ICF/SRW Field Classification Sheet

PAGE NO. 1 of 1 (Rev) ORIGINAL

PROJECT/LOCATION Dorney Road Landfill

PROJECT NO. 30527

ELEVATION ____ GWL 0 HRS. ____ HRS.

BORING NO. TB-1

DATE (START) 4-7-88 (FINISH) 4-7-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	DESCRIPTION: PROFILE	SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
							No Samples collected		
							Ochra ~~soft~~ silty		
5							Clay, silty/plastic		
					10'		moist		
10									

REMARKS * Test Boring using 6" Augers Adjacent Dorney Road

PROJECT NO. 30527

BORING NO. TB-2

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300911

ICF/SRW Field Classification Sheet

PAGE NO. 1 of 1 ORIGINAL

PROJECT/LOCATION Dorney Road Landfill PROJECT NO. ~~FB~~ 30527

ELEVATION _____ GWL 0 HRS. _____ HRS. BORING NO. TB-2

DATE (START) 4-7-88 (FINISH) 4-7-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD(%)	DESCRIPTION: PROFILE	DESCRIPTION: SOIL DENSITY—CONSISTENCY OR ROCK HARDNESS	DESCRIPTION: COLOR	DESCRIPTION: MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
							No Samples Collected		
							or/brn silty clay, moist, plastic		
5									
					10'				
10									

REMARKS * Test Boring using 6" Auger
Adjacent Dorney Road

PROJECT NO. 30527

BORING NO. ~~A~~ TB-2

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300912

ICF/SRW Field Classification Sheet

PAGE NO. 3 ORIGINAL (Red)

PROJECT/LOCATION Dorney Road PROJECT NO. 30527

ELEVATION 457.09 GWL 0 HRS. BORING NO. MW-70

HRS.

DATE (START) 3-29-88 (FINISH) 4-4-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	DESCRIPTION: SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	DESCRIPTION: COLOR	DESCRIPTION: MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	18-19	31 1.8			mod Compact	gr, sg, black, & red banded weathered			
	16-17						shaly limestone (silt)		
	7-10	32 2.0			" "		As Above		
	10-15								
65	13-14	33 0.8			Compact		As above		
	20-26								
	- 7	34 2.0'			"		As above		
	8-28								
	weight of rods 3/20"	35 0.6'			"		As above		
70									
							70' to 101' – 6" Air Hammer		
					weathered Bedrock				
							Competent rock at 76'		
75									
							70' to 83' well was only producing mud consequently we could not collect samples for identification		
80									
							83' through 101' Black carbonaceous shale calcareous, white dolom. fracture fillings. Well begin producing significant water at approx 92'		
85									
101'									

REMARKS *

PROJECT NO. 30527

BORING NO. MW-70

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300913

ICF/SRW Field Classification Sheet

ORIGINAL

PAGE NO. 1 of 1

PROJECT/LOCATION Dorney Road Landfill

PROJECT NO. 30527

ELEVATION _____ GWL: 0 HRS. _____ HRS.

BORING NO. TB-LMW4

DATE (START) 4-7-88 (FINISH) 4-8-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
							Adjacent LMW-4		
							0 to 54' – 8" Augers		
							No Samples Taken		
55	6-10	1 1.4'				or/brn	silty clay and refuse		
	11-20						– paper & battery casings		
	20-12	2 0.8'					0.3' Buff/brn sandy silt		
	15-16						0.5' red brown clay/silt with hematite fragments		
	– 25	3 1.5'				Buff	silt with paper was found		
60	28-26						at mid point of sample		
	43-33	4 0.6'				gy	silt - sandy silt		paper on outside
	23-19								of sample but
	9-14	5 0					—		this was due to
	14-9								caving from top
65	6-12	6 0.6'				or/brn	silty clay with abundant		
	11-6						coarse ~~fg~~ fragments		
	7-15	7 1.7'				or/brn	silty clay to silt		
	25-3								
	16-21	8 1.0'				brn/gy	silt		
70	25-21								

REMARKS * Samples were scanned with HNu. – organics were not detected.

PROJECT NO. 30527

BORING NO. TB-LMW4

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300914

ICF/SRW Field Classification Sheet

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PROJECT/LOCATION Dorney Road Landfill

PROJECT NO. 30527

ELEVATION 457.09 · GWL 0 HRS. ____ HRS.

BORING NO. MW-70

DATE (START) 3-29-88 (FINISH) 4-4-88

FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	SOIL DENSITY—CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	1-2	1 1.4'			Stiff	or/brn	silty clay with trace sand		
	4-6						abundant coarse quartz fragments		
	2-6	2 1.0			"	" "	As Above		
	6-7								
5.0	6-8	3 1.6'			"	" "	As Above		
	6-7								
	5-7	4 2.0'			"	or/brn	silty clay with trace fine sand		
	6-9						Slightly moist		
	8-10	5 1.7'			firm	or/brn	clay silt, abundant fragments		~~[illegible]~~
10.0	11-11						slightly mottled		
	5-5	6 1.6'			stiff	or/brn	clay silt, abundant coarse		
	9-5						fragments		
	10-11	7 1.6'			stiff plastic	or/brn	clay silt, abundant fragments		
	12-10						Very moist		
15.0	10-8	8 2.0'			Very stiff	or/brn	clay silt with coarse		Wet coarse sand
	9-10						chalky sand zones.		at 15' & 16'
	4-6	9 2.0			Stiff	or/brn	clay silt with gray highly weathered		wet in coarse
	5-6						clay. Hematite at base		zones
	11-7	10 2.0			"	or/brn	clay silt with coarse		very moist
20.0	5-6						hematite zone 19.0 to 19.3 (wet)		
	5-8	11 2.0			Very stiff	or/brn	silty clay with hematite		water collecting
	9-11						and chert fragments.		in Hole
	6-11	12 2.0			" "	or/brn	wet silty clay with red		
	12-10						hematite banding ~~23.5~~	23.5	to 24.0
25.0	5-6	13 2.0			Stiff	" "	As above		
	6-5						5'-10' of standing water		in Hole
	5-6	14 0.9			Very stiff	or/brn	Sandy silt with highly		
	13-15						weathered remanent bedding		
	5-7	15 1.7			stiff	yl/sy	Sandy silt with quartz		wet in quartz
30.0	7-8						fragments		zones

REMARKS * Samples were scanned with an OVA - no detections

PROJECT NO. 30527

BORING NO. MW-70

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300915

ICF/SRW Field Classification Sheet

ORIGINAL

PAGE NO. 2 of [illegible]

PROJECT/LOCATION Dorney Road Landfill PROJECT NO. 30527

ELEVATION 457.09 GWL 0 HRS. BORING NO. MW-70

HRS.

DATE (START) 3-29-88 (FINISH) 4-4-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	SOIL DENSITY-CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	8-8	16 1.6'			Very Stiff	yl/gy	sandy silt, abundant coarse		very moist
	8-11						fragments,		
	12-15	17 .75			Hard	" "	As above		
	14-25								
35	10-12	18 2.0'			Med Comp	or/gy	highly weathered contacted		
	14-15						remanent shaly limestone		
	9-14	19 2.0'			" "		As above with red and		
	16-17						gray coloration banding.		0-10° dip.
	6-6	20 2.0'			Stiff	gy/brn	clay silt, highly mottled		
40	7-8						structureless, moist		
	5-6	21 2.0'			"	gy/brn	silt with abundant		
	7-8						Mn staining, moist		
	11-6	22 2.0'			"	gy/brn	silt and silty clay, abundant		
	8-7						Mn staining		
45	14-12	23 2.0'			Very Stiff	gy/brn	silt with blends of red		
	11-13						brown clay silt zones		
	3-5	24 0.2'			Stiff	rd/gy	silt and silty clay		
	5-6								
	4-5	25 1.6			Very Stiff		48 to 49 as above 49 to 49.5' red sandy		silt - wet
50	9-14						49.5 to 50 yell./gy silt.		
	?	26 1.5			Hard	rd/brn	sandy silt (clay silt on top)		
	12-18								
	16-16	27 2.0			Very Comp.	rd/brn	clay silt with remanent		
	18-37						bedding.		
55	16-18	28 2.0			Compact	rd/brn	As Above		
	21-23								
	5-6	29 2.0			Very Stiff	or/gy	silty clay with remanent		Mn staining
	7-10						bedding (shaly limestone)		
	17-17	30 2.0			Compact	or/gy	58-59 clay silt, 59 to 60		
60	21-28						highly banded or/gy, black/red banded silt.		

REMARKS * Samples were scanned with an OVA while drilling but organics were not detected.

PROJECT NO. 30527

BORING NO. MW-70

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300916

ICF/SRW Field Classification Sheet

ORIGINAL (Red)

PAGE NO. 1 of 2

PROJECT/LOCATION Dorney Road Landfill

PROJECT NO. 30527

ELEVATION 425.22' GWL 0 HRS. _____ HRS.

BORING NO. MW-6

DATE (START) 3-23-88 (FINISH) 3-28-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	1-2	1 0.2'			Med Stiff	Brn	Soil - sandy silt, granular		
	3-2								
	1-2	2 1.7'			Soft	Or/Brn	Interlayered fine sand		Vy moist
	5-1						and plastic silty clay		
5.0	3-7	3 1.6'			Very Stiff	Or/Brn	4.0-5.5' moist clay (silty)		
	12-7						5.5 to 6.0 sandy silt, weathered chert Fragments		
	9-9	4 2.0'			" "	Buff/Gray	highly weathered shaly limestone - Ma Stains		
	11-12						/abundant fragments of chert.		
	7-10	5 1.4'			" "		As above with increase		
10.0	12-8						in sand to base		
	1-2	6 1.3'			Med Stiff	Gy/Or	Sandy silt, abundant		
	3-5						shaly limestone		
	3-4	7 2.0'			Stiff		As above		
	6-5								
15.0	1-3	8 2.0'			Stiff	Gy/Brn	to Buff - silty sand and		
	5-7						highly weathered limestone		
	7-11	9 2.0'			Very Stiff	Gy/Brn	interbedded shaly silt and		
	12-13						silty sand		
	4-5	10 1.6			" "	Gy/Brn	silty very coarse sand		
20.0	8-8						abundant remnant bedding		
	10-50/4"					Rd/Brn	weathered dolomite		
	9-12					Rd/Brn	Very sandy clay		
	50/4"						and gray dolomite at the base		
25.0					Bedrock 23'				
		ODEX					Med Gray Dolomite		
30.0									

REMARKS * Samples were scanned with HNu but no organics were detected.

PROJECT NO. 30527

BORING NO. MW-6

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300917

ICF/SRW Field Classification Sheet

ORIGINAL (Red)

PAGE NO. 2 of 2

PROJECT/LOCATION Dorney Road Landfill

PROJECT NO. 30527

ELEVATION 425.22 GWL 0 HRS. _____ HRS.

BORING NO. MW-6

DATE (START) 3-23-88 (FINISH) 3-28-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD(%)	DESCRIPTION: PROFILE	SOIL DENSITY—CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
							Hit water @ 35' to 40'		
							23 to 44 med Gray Dolomite with white Dolomite fracture fillings.		
							Large Void 49 to 53'		
							44 to 63 Dark gray dolomite		
							63 to 76 light to medium Gray Dolomite		
							68' produced significant water		
							76 - 82 interbedded light and medium gray dolomite with white fracture filling and iron staining.		
							82 to 99.6 light/med gray dolomite		
							Voids between 96' to 97'		
99.6							Total depth 99.6'		

REMARKS *

PROJECT NO. 30527

BORING NO. MW-6

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300918

ICF/SRW Field Classification Sheet

ORIGINAL (Rev)pt

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PROJECT/LOCATION Dorney Road

PROJECT NO. 30527

ELEVATION 432.25 GWL 0 HRS. ____ HRS.

BORING NO. MW-50

DATE (START) 2-11-88 (FINISH) 3-10-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	SOIL DENSITY—CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	1.0	15%	0		med Hard	lt/gray	platy limestone, vuggy highly Fractured		Run #5 61 to 68.5
65							Apparent dip ~30 to 40°		
							lower 1.3' of core is dark		
70	2.0	40%	0		soft	"	platy limestone, slight Felstaining		Run #6 68.5 to 73.5
75	3.3	33%	0		soft	"	2.0' as above & bedding is ~45°		Run #7 73.5 to 83.5
							lower 1.3 is dark gray hard dolomite, highly Fractured		
80									
85	3.0	30%	23				2.7' dolomite as above		Run #8
							0.6' at base is med gray limestone		83.5 to 93.5
90									

REMARKS *

PROJECT NO. 30527

BORING NO. MW-50

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300919

ICF/SRW Field Classification Sheet

ORIGINAL (Red)

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PROJECT/LOCATION Dorney Road

PROJECT NO. 30527

ELEVATION 432.25 GWL 0 HRS. ____ HRS.

BORING NO. MW-5D

DATE (START) 2-11-88 (FINISH) 3-10-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	DESCRIPTION: PROFILE	SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
									Run #9
95	1.0	19%	0		soft	light/gray	highly weathered limestone		95.5 to 100
100									

REMARKS *

PROJECT NO. 30527

BORING NO. MW-5D

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300920

ICF/SRW Field Classification Sheet

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PROJECT/LOCATION Dorney Road

PROJECT NO. 30527

ELEVATION 432.25 GWL 0 HRS. HRS.

BORING NO. MW-50 recompiled 5

DATE (START) 2-11-88 (FINISH) 3-10-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	SOIL DENSITY-CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	32-18	1 SS			Compact	brown	Fill: concrete and clay silt		
	6-13	1.6'					with abundant fragments of refuse		
	12-12	2 SS			very stiff	or/bn	silty clay, plastic		
	13-10	0.8'							
5	17-9	3 SS			very stiff	or/bn	Very plastic clay, moist		
	9-10	0.2'							
	3-6	4 SS			Stiff	yell/bn	clay silt, organic (black) matter		
	8-9	1.5'					coarse fragments (chert, hematite & quartz)		
	10-10	5 SS			very Stiff	yell/bn	to gray silt and very fine sand		
10	9-13	1.6'					see traces of bedding structure		
	6-8	6 SS			" "	org/gray	fine sandy silt, fragment		
	12-14	1.5'					of weathered dolomite		
	4-8	7 SS			" "	" "	very fine sandy silt, moist		
	12-15	1.2'					soft gray fragments		
15	4-6	8 SS			" "	yell/bn	very fine silty sand, trace		
	10-9	2.0'					clay and coarse fragments		
	12-14	9 SS			" "	yell to og/bn	very fine sandy silt		moist
	11-12	2.0'							
	10-9	10 SS			" "	"	very fine sandy silt with		
20	18-12	2.0'					several bands of Mn & Fe	staining	
	7-9	11 SS			" "	"	sandy, clay silt and a		
	12-11	1.5'					1" band of Fe @ 21'		
	3-6	12 SS			stiff	"	very moist clay silt with		
	7-9	2.0					trace Fe staining		
25	22-18	13 SS			compact	yell/or	very coarse clay, solid		
	15-16	1.6					25.5' to 26 weathered bedrock		
	6-11	14 SS			compact	or/bn	fine sandy silt and weathered		
	22-21	2.0					shaly carbonate		
	30-35	15 SS			"	or/gray	highly weathered shaly		
30	31-36	2.0					carbonate		

REMARKS * All samples scanned with Hnu - no detection

PROJECT NO. 30527

BORING NO. MW-50

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300921

ICF/SRW Field Classification Sheet

PAGE NO. ~~ORIGINAL~~ (Red) 4

PROJECT/LOCATION Dorney Road.

PROJECT NO. 30527

ELEVATION 432.25 GWL 0 HRS. _____ HRS.

BORING NO. MW-5

DATE (START) 2-11-88 (FINISH) 3-10-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	SOIL DENSITY-CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	11-19	16 SS			Compact	or/gray	sandy weathered dolomite		
	25-19	2.0					a weathered shaly dolomite		
	8-22	17 SS			"	"	as above with the 2"		
	11-10	1.8					band of clay		
35	7-11				med cmp	or/bn	34 to 35' coarse sandy clay		
	72/6"	refused					35 black chert		
	4.2	56%	11		soft in first		2', or/bn sandy clay		Run #1
							2.2' of extremely fractured		36 to 43.5
40							dark gray dolomite with		
							white dolomite cement.		
							spacing .5"		
							tensional fractures		
45	1.3	13%	0		Hard	med light	gray dolomite, highly		Run #2
							brecciated		43.5 to 53.5
50									
	13'	37%	0		Hard	med light	gray dolomite, brecciated		Run #3
55									53.5 to 57
	2.2	55%	0		Hard	dolomite	Extremely contorted		Run #4
									57 to 61'
60							60 to 61 shaly limestone		

REMARKS * _____

PROJECT NO. 30527

BORING NO. MW-50

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300922

ICF/SRW Field Classification Sheet

ORIGINAL

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PROJECT/LOCATION Dorney Road

PROJECT NO. 30527

ELEVATION 456.30 GWL 0 HRS. ____ HRS.

BORING NO. MW-4

DATE (START) 2-8-88 (FINISH) 2-16-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	DESCRIPTION: PROFILE	SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
							Fracture at 60' appears open due to staining on face.		
							Fractures at 61' appear tensional		
65									
		100%	25		Very hard	med/dk	gray dolomite, Fracture spacing at 3" to 1'. Tensional		Run #9 64 to 73
							Fractures at 69 to 70		
							70 to 73 fractures are iron stained and have a trace of clay.		
70									
							Dolomite coating on Fracture faces.		
		100%	63		" "	"	dolomite, Fracture spacing on 4" to 1' Dolomite		Run #10 73 to 78.6
75							fracture filling at 77'		
80		96%	86		" "	dk gray	dolomite, highly fractured Apperent bedding 20°		Run #11 78.6 to 84
							Stiolites @ 81.6 & 82.6		
							Fracture @ 81 is iron stained		
85		100%	63		" "	"	dolomite, Fractures at 6" to 4" spacing from 84 to 86.0		Run #12 84 to 94
							From 86 to 94 beginning to see more of the depositional fractures.		
90									

REMARKS *

PROJECT NO. 30527

BORING NO. MW-4

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300923

ICF/SRW Field Classification Sheet

ORIGINAL (Red)

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PROJECT/LOCATION Dorney Road

PROJECT NO. 30527

ELEVATION 456.30 GWL 0 HRS. _____ HRS.

BORING NO. MW-4

DATE (START) 2-8-88 (FINISH) 2-16-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD(%)	DESCRIPTION: PROFILE	DESCRIPTION: SOIL DENSITY—CONSISTENCY OR ROCK HARDNESS	DESCRIPTION: COLOR	DESCRIPTION: MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
95		100	44		Very hard	dk gray	dolomite, highly fractured but the majority of fractures appear filled. One large iron stained ung at 95'		Run #13 94 to 99.5
100									

REMARKS * _____

PROJECT NO. 30527

BORING NO. MW-4

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300924

ICF/SRW Field Classification Sheet

PAGE NO. 1 ORIGINAL (Red)

PROJECT/LOCATION Dorney Road

PROJECT NO. 30527

ELEVATION 456.30 GWL 0 HRS 52.8 (12 hrs.) HRS.

BORING NO. MW-4

DATE (START) 2-8-88 (FINISH) 2-16-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	35-35	1 SS			Frozen	bn	silty clay, plastic,		
	18-18	1.3'					abund. Fragments, & organic matter		Root zone
	10-15	2 SS			Very Stiff	or/bn	silty clay, with abundant		
	13-17	1.5'					chert, quartz & organic matter		Root zone
5.0	14-16	3 SS			Very stiff	or/bn	clay silt, with abundant		
	17-14	1.5'					weathered chert, quartz		Roots to 5'
	15-13	4 SS			Very stiff		As Above		
	14-6	1.2'							7.5' bedrock
							Augered		
10.0									
	83/4"	Run #1			Very Hard	med/dk	grey crystalline dolomite		Run #1
		80%	81%				small breccia 10.9 to 11.5		10.0 to 14.0
							High angle Fract. 12.3		
							dolomite coating Fract. Faces.		
15.0									
					Very hard	med/dk	grey crystalline dolomite		
							breccia at 15.5 to 15.8		Run #2
		73%	51				High angle Fractures at		14 to 22.9
							1' to 6" spacing		
20.0							Highly Fractured at 21'		
							iron staining & clay in void at 19.0'		
							Gets darker downward.		
	Run #3, 100%		0		Very hard	dk/gray	highly Fractured dolomite		Run #3, 22.9 to 24'
25.0									
	Run #4, 100%		33		" "	"	highly fractured dolomite		Run #4
							Fracture spacing at 4 to 6" spaces		24 to 26.6
	Run #5								
30.0									

REMARKS * All split-spoon were scanned and the core hole was periodically scanned with an HNu but no organics were detected

PROJECT NO. 30527

BORING NO. MW-4

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300925

ICF/SRW Field Classification Sheet

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PROJECT/LOCATION Dorney Road PROJECT NO. 30527

ELEVATION 456.30 GWL 0 HRS. ___ HRS. BORING NO. MW-4

DATE (START) 7-8-88 (FINISH) 2-16-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	DESCRIPTION: PROFILE	SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	Run #5	96%	70%		Very Hard	dk gray	dolomite, stiolite at 26.27.6		Run #5
							Fracture spacing is 6" to 1'		26.6 to 34
							Vertical Fractures at 29.2		
							30.3 & 31.4		
35.0									
		92%	63%		" "	"	35.6 to 38 Highly contorted		Run #6
					dolomite		stiolites with voids		34 to 44
							and dolomite cementation		
							38.6 to 39.3 highly contorted		
40.0							fractures.		
45.0									
		100%	66		" "	"	dolomite, highly fractured		Run #7
							both angular & vertical		44 to 54
							Fractures are dolomite		
50.0							filled, Highly contorted		
							at 46.1 to 49.1		
							Open Fractures are iron		
							stained.		
55.0									
		100%	78		" "	"	dolomite, Fracture spacing at		Run #8
							6" to 1', stiolites at 56 to		54 to 64
							56.5 & 58.5 & 60. They		
							have a vuggy texture, dolomite		
60.0							fractures 1/8" to 1/4" filled with dolomite		

REMARKS * The boring was periodically scanned with an HNu but no organics were detected

PROJECT NO. 30527

BORING NO. MW-4

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300926

ICF/SRW Field Classification Sheet

PAGE NO. 1 ORIGINAL

PROJECT/LOCATION Dorney Road Landfill PROJECT NO. 30527

ELEVATION 443.16 GWL 0 HRS. BORING NO. MW-3D (ODEK)

HRS.

DATE (START) 2-25-88 (FINISH) 3-1-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	DESCRIPTION: PROFILE	SOIL DENSITY—CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
							Caved at ~~28~~ 9'		
							Bedrock 28'		
25							28 to 35 did not get sample returns.		
35							35 to 45.5 Dark gray hard dolomite with few fractures. (Trace filled fractures)		
45							45.5 switched to 7 5/8" Air Hammer. 45 to 56 Hard dark gray dolomite		
55							56 to 60 Fractured dark gray dolomite. Abundant voids (small voids are filled with org clay) 60 to 65 Fractured (small) dark gray dolomite with silicified dolomite fracture filling		
65							65 to 75 dark gray dolomite with abundant clay filling.		
75									

REMARKS * See Sample log for Split-Spoon Description

PROJECT NO. 30527

BORING NO. MW-3D (ODEK)

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300927

ICF/SRW Field Classification Sheet

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PROJECT/LOCATION Dorney Road Landfill PROJECT NO. 30527

ELEVATION 443.16 GWL 0 HRS. _____ BORING NO. MW-30 (OD)

HRS.

DATE (START) 2-25-88 (FINISH) 3-1-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	DESCRIPTION: PROFILE	SOIL DENSITY—CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
							75 to 82 dark gray dolomite as above		
							82 to 85 large open void.		
85							85 dark gray dolomite		
							90 to 92' caving hole.		
95							85 to 92' we did not get returns (cuttings) due to open void		
							95 to 102 dark gray shaly dolomite - Abundant shale - could not catch samples due to the abundance of water.		
100									
102							production rate at 100' is est. at approx 100 to 200 gpm		

REMARKS *

PROJECT NO. 30527

BORING NO. MW-30 (ODEx)

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300928

ICF/SRW Field Classification Sheet

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PROJECT/LOCATION Dorney Road Landfill

PROJECT NO. 30527

ELEVATION 437.31 · GWL 0 HRS. _____ HRS.

BORING NO. MW-20 (open portion)

DATE (START) 2-17-88 (FINISH) 2-18-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	DESCRIPTION: PROFILE	SOIL DENSITY—CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
							64 to 73 As above		
							70 to 73 Soft dolomite (large voids)		
70									
							73 to 78 Highly Fractured light/med gray dolomite & chert with clay fillings.		
75									
							79 to 94 light gray dolomite with abundant clay and white dolomite fracture fillings. Also increasing abundance of hematite downwards. Steady increase of water production from ~20 gpm at 76' to ~100 gpm at 91'.		
80									
85									
							94 to 100' light gray dolomite chips approx. 60% of cuttings being composed of hematite		
90									
100									

REMARKS: Collection of cuttings were attempted at 3' intervals however plugging of the bit due to mud prevented this in numerous occasions.

PROJECT NO. 30527

BORING NO. MW-20 (OPEN)

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300929

ICF/SRW Field Classification Sheet

PAGE NO. 1 of ORIGINAL (Red)

PROJECT/LOCATION Dorney Road

PROJECT NO. 30527

ELEVATION 443.16 GWL 0 HRS. ____ HRS.

BORING NO. MW-30

DATE (START) 2-2-88 (FINISH) 3-1-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	2-4	1 SS			med stiff	bn	clay silt with abundant		water was detected
	4-4	1.2'					organic matter		at 1' but samples
	2-3	2 SS			stiff	or/bn	sandy, silty clay with abundant		are only damp.
	5-7	1.0'					chert fragments at base		
5.0	9-7	3 SS			med comp.	or/bn	Interbedded coarse sand and		
	6-8	1.7'					2" clay layers of silt		
	8-5	4 SS			very stiff	or/bn	silty clay and interlayered		
	8-10	2.0'					coarse angular fragments		
	6-6	3 SS			stiff	or/bn	8 to 9' silty coarse sand		
10.0	5-7	2.0'					9 to 10' silty clay		
	6-8	5 SS			very stiff	bn	clay silt with large ang. fragments		iron staining
	10-10	2.0'					of limonite, limonite and chert		
	7-8	7 SS			very stiff	or/bn	silty clay with abundant		
	8-9	2.0'					weathered chert nodules		
15.0	2-2	3 SS			stiff	yll/bn	silty sand with large chert		
	8-7	1.3'					nodule at 16.5'		
	2-4	4 SS			med stiff	or/bn	silty clay with large block		
	6-2	1.9'					chert nodule at base		
	2-1	1 SS			soft	or/bn	clay silt with trace chert		
20.0	1-1	1.2'							
	6-4	11 SS			stiff	or/bn	clay silt with trace chert		
	5-6	1.9'							
	6-12	13 SS			very stiff	or/bn	fine sandy silt with several		
	8-14	2.0'			to	yll/bn	weathered chert nodules		
25.0	7-12	13 SS			very stiff	or/bn	24 to 25.1 fine sandy silt		
	13-12	2.0'					25.1 to 26 weathered shaley dolomite		
	9-8	14 SS			very stiff	or/br	26 to 27 silty plastic clay		
	7-7	2.0'					27 to 28 weathered yll/bn & gy/bl	shale	
									28 to 30 Augered
30.0									

REMARKS * All samples were scanned with an HNu but no organic compounds were detected

PROJECT NO. 30527

BORING NO. MW-30

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300930

ICF/SRW Field Classification Sheet

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PROJECT/LOCATION Dorney Road

PROJECT NO. 30527

ELEVATION 437.31 GWL 0 HRS. HRS.

BORING NO. MW-20

DATE (START) 1-28-88 (FINISH) 2-18-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD(%)	PROFILE	SOIL DENSITY-CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
		Run 4					Voids at 58.8 to 59.8, 59.5 to 60		
							61 to 61.3, 61.4 to 61.6, 62.8 to 62.9		
	2.3'	Run 5	43		hard	gray	dolomite with abundant dolomite		Run #5
							filled fractures, iron staining		61.5' to 64
65							on fractures at 62.7 & 63.5		
	0.0'	Run 6	0		hard		voids at 67 to 67.3,		Run #6
							67.5 to 67.8, 68 to 68.5		64 to 68.5
70							Problems with casing at 71'		
	0.0'	Run 7	0		hard		voids at 74 to 75, 75.5 to 77		Run #7
							77.2 to 77.5,		68.5' to 73.5'
							H_2O @ 52.0'		
							Also voids at 68.5 to 71		
75	0.0	Run 8	0		hard		& 72.5 to 72.7		Run #8
									73.5 to 78.5
							see voids listed above		
80									
							See ODEX (log) for additional		
							information.		

REMARKS *

PROJECT NO. 30527

BORING NO. MW-20

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300931

ICF/SRW Field Classification Sheet

PAGE NO. 1 of ORIGINAL (Red)

PROJECT/LOCATION Dorney Road Landfill

PROJECT NO. 30527

ELEVATION 437.31 GWL 0 HRS. ____ HRS.

BORING NO. MW-2D (ODEX)

DATE (START) 2-17-88 (FINISH) 2-18-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
							0-27' open hole		
							27 to 39 caved Area		
							39 to 42 Hard med/lt gray dolomite		
40									
							42 to 43 soft fracture med/lt gray dolomite		
							43 to 54 light gray dolomite		
45									
50									
							54 to 56 large Void or highly fractured zone (dolomite as above)		water 54 to 55
55							56 to 59 As above		
							59 to 64 light gray dolomite with abundant orange clay		
60									
65									

REMARKS * Re-Entered MW-2D with ODEX Hammer
See Sample log for split-spoon discription (also cores)

PROJECT NO. 30527

BORING NO. MW-2D (ODEX)

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300932

ICF/SRW Field Classification Sheet

PAGE NO. 1 ORIGINAL

PROJECT/LOCATION Dorney Road

PROJECT NO. 3+25N/35' East of Co. Rd.

ELEVATION 437.31 GWL 0 HRS. _____ HRS.

BORING NO. MW-2D

DATE (START) 1-28-88 (FINISH) 2-18-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	SOIL DENSITY-CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	4-4	1-SS			Stiff	or/br	fine sandy clay, slightly plastic		
	7-6	↓ 1.2'					damp, bands of clay sand		
	10-11	2-SS			Med compact	or/br	2 to 2.2 as above 2.2 to 3.0 coarse		large chert nodule
	19-7	↓ 0.8'					angular sand and chert fragments		blocked spoon
5.0	7-7	3-SS			Stiff	or	silty clay with fine sand, soil		H2O at 5.0'
	7-9	↓ 0.6'					in spoon appears only damp.		silty plastic
	10-11	4-SS			Stiff	or/br	6 to 6.5 plastic silty clay 6.5 to 6.7		mottled, damp
	7-6	↓ 1.3'					chert nodule 6.7 to 8 clay as above		abun. fragments
	8-8	5-SS			Vy stiff	or/br	silty clay, angular gray chert		lost the H2O zone
10.0	10-3	↓ 1.3'					fragments, silty plastic		silty mottled
	5-6	6-SS			Stiff	or/br	clay silt, ~~silty~~ silty plastic		damp, Hole is
	8-5	↓ 1.9'					abund. angular chert frag.		drying up.
	4-5	7-SS			Stiff	or/br	clay silt and chert fragments		Lower portion is
	7-6	↓ 2.0					and or/gy compact silt.		mottled
15.0	2-2	8-SS			Stiff	or/gray	14 to 15.5 clay silt, iron stained		mottled
	7-14	↓ 1.5					15.5 to 16 weathered dolomite		-bedrock-
	8-39	9-SS			Vy Comp.	gray	Highly weathered dolomite		damp
	50-25	↓ 1.5					green gray clay entrap		
	24-54	10-SS			Soft	gray	weathered soft dolomite,		damp.
20.0	15-39	↓ 1.2					silty iron stained		
	36-13	11-SS			Soft	gray	highly weathered dolomite with		
	15-14	↓ 1.1					.4' orange clay seams		
	32-16	12-SS			Soft	gray	weathered dolomite, and plastic		
	15-10	↓ 1.0					orange clay		
25.0	21-25	13-SS			Soft	or/br	weathered dolomite, and clay		
	18-22	↓ 1.4					filled voids, and chert at base		
	28-23	14-SS			Vy comp.	or/gray	weathered dolomite and plastic		
	39-25	↓ 1.76					clay silt, and granular limonite	and chert	(red/brown)
	6-1	15-SS			Loose	red/br	granular limonite and clay		
30.0	1-1	↓ 1.5					silt.		

REMARKS * An HNu was used to scan the sample but no organics were detected

PROJECT NO. 30527

BORING NO. MW-2D

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300933

ICF/SRW Field Classification Sheet

ORIGINAL (Red)

PAGE NO. 2 of (Red)

PROJECT/LOCATION Dorney Road PROJECT NO. 30527

ELEVATION 437.31 GWL 0 HRS. BORING NO. MW-20

HRS.

DATE (START) 1-28-88 (FINISH) 2-18-88 FIELD ENGINEER Jeff Allen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO. TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	SOIL DENSITY-CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	5-5	16-3			Soft	gray	silty weathered dolomite with		
	14-20	↓ 1.1'					orange silty clay on top		
	41-53	17-3			Soft	gray	weathered dolomite, fine to		
	43-54	↓ 1.6'					med sandy weathered zones		
35					~~Soft~~	~~gray~~			
	53	4					highly weathered dolomite		
	42-21	18-3			~~Med hard~~	or/br	(silty) 37.5' or/br granular		
	16	↓ 1.6'			Soft		clay, silt, limonite & chert		
	100/1"	12 refusal			Med hard	or/br	dolomite could not advance		post 39.5'
40									Coring Run #1
	3.9'	Run 1	75		hard	gray	39.5' to 42.1 highly fractured	Bkn	39.5' to 45'
							dolomite, with dolo. cement in fractures		
						gray	42.1 to 45' massive dolomite		
							with angular fractures	Bkn	
45							(filled with calcite)		
							No recovery but drilling like above		Coring Run #2
	0.0'	Run 2	0		hard				45' to 54.5'
							48' to 53' abundant	BRK	
60							2" voids (possibly		
							filled with clay)		
55							55 to 56.5 abundant	BRK	
	0.0'	Run 3	0		hard		fractures		Coring Run #3
							57 to 57.5 void		54.5' to 57.5'
					hard	gray	Fracture dolomite, angular fragm	BRK	Coring Run #4
60	0.4'	Run 4	0				starting to cave		57.5' to 61.5'

REMARKS: An HNu was used to scan the Hole but no organic compounds were detected.

PROJECT NO. 30527

BORING NO. MW-20

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300934

ICF/SRW Field Classification Sheet

PAGE NO. 7 ORIGINAL (Red)

PROJECT/LOCATION Dorney Road Landfill Site PROJECT NO. 30527

ELEVATION 447.78 GWL 0 HRS. BORING NO. MW-1D

HRS.

DATE (START) (FINISH) FIELD ENGINEER J. Moore & M Hurban

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	SOIL DENSITY—CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
								Brk	
								"	
								"	
	1.5	75%	0			Light	As above	"	Run # 4
92.5						gray		"	91.5 to 93.5
								"	
								"	
	1.7	28%	0			Light	Limestone (~~shale~~ SPA) weathered	"	Run # 5
						gray	bedding 60°, highly	"	93.5 to 98.5
95.0							fractured, fracture	"	
							fillings of hematite and	"	
							chert	"	
								"	
								"	
97.5								"	
								"	
								"	
	0.3	3%	0			Light	As Above	"	Run #6
						brown	Highly fractured	"	98.5 to 108.5
100								"	
								"	
								"	
								"	
								"	
102.5								"	
								"	
								"	
								"	
								"	
105								"	

REMARKS * All samples scanned with Hnu - no organics detected

PROJECT NO. 30527

BORING NO. MW-1D

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300935

ICF/SRW Field Classification Sheet

ORIGINAL (Red)

PAGE NO. 8 of (Red)

PROJECT/LOCATION Dorney Road Landfill Site

PROJECT NO. 30527

ELEVATION 447.78 GWL 0 HRS.

BORING NO. MW-10

HRS.

DATE (START) (FINISH)

FIELD ENGINEER J. Moore & M Hurchen

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	DESCRIPTION: PROFILE	DESCRIPTION: SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	DESCRIPTION: COLOR	DESCRIPTION: MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
							Run 6 continued		
107.5									
110									

REMARKS * All samples scanned with Hnu – no organic detection

PROJECT NO. 30527

BORING NO. MW-10

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300936

ICF/SRW Field Classification Sheet

PAGE NO. 5 of 8

PROJECT/LOCATION Dorney Road Landfill Site PROJECT NO. 30527

ELEVATION 447.78 GWL 0 HRS. BORING NO. MW-10

HRS.

DATE (START) (FINISH) 2-14- FIELD ENGINEER J. Moore & M Hurben

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	SOIL DENSITY—CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	39								
	26	S-31			Dense	Brown	As Above, remanent		
	73	2.0				yellow	bedding		
	81								
62.5	117								
							Auger		
	27	S-32			Dense	Brown	Clayey silt, trace		
	35	2.0				orange	fragments		
	47								
65.0	73								
	252	S-33			Hard	Brown	As above		
		0.5				orange	Auger		
	120	S-34			Hard	yellow	No Recovery		
67.5		0				gray			
							Auger		
	244	S-35			Hard	yellow	weathered shale		
70.0		0.45				gray			
							Auger		
72.5	200	S-36					No Recovery		
		0							
							Auger		
75.0	87								

REMARKS * All samples scanned with Hnu - no organics detected

PROJECT NO. 30527

BORING NO. MW-10

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300937

ICF/SRW Field Classification Sheet

ORIGINAL

PAGE NO. 6 of 13

PROJECT/LOCATION Dorney Road Landfill Site

PROJECT NO. 30527

ELEVATION 447.78 GWL 0 HRS.

BORING NO. MW-10

HRS.

DATE (START) (FINISH) FIELD ENGINEER M Hurban / J. Moore

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	DESCRIPTION: SOIL DENSITY—CONSISTENCY OR ROCK HARDNESS	DESCRIPTION: COLOR	DESCRIPTION: MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	80	S-37			Hard	Brown	Silty clay and remanent		
	160					orange	Bedding (shale)		
	160								
	180	S-38			Hard		As Above		
77.5									
							Augen		
	120/6	S-39			Hard	gray	Remanent bedding (limey		
	↑	0.15'					shale)		Run #1
80.0		Run 1			Med	gray	Dolomite, clay filled		79' to 83'
	2.0	50%	0				fractures		
82.5									
	↑ 1.5	100%	66		med	gray	As Above		Run #2
									83 to 84.5'
85.0									
	1.2	18%	0				Weathered limestone,		Run #3
							hematite and clay fracture		84.5 to 91.5'
							filling, bedding 30° to 45°		
							extensive fractures,		
87.5							possible fracture zone		
							86 to 90, 89.5 trace		
							chert infilling.		
90.0									

REMARKS * All samples scanned with Hnu - no organics detected

PROJECT NO. 30527

BORING NO. MW-10

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300938

ICF/SRW Field Classification Sheet

ORIGINAL (Red)

PAGE NO. 3 of 8

PROJECT/LOCATION Dorney Road Landfill Site

PROJECT NO. 30527

ELEVATION 447.78 GWL 0 HRS. HRS.

BORING NO. MW-1D

DATE (START) (FINISH) 2-14-88

FIELD ENGINEER J. Moore & M. Hurban

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	8	S-16			loose/	Brown	Clay-silty, fine sand with		
	8	1.4'			stiff		thin layer of broken limestone		Remnant bedding
	8						iron staining		
	6								
32.5	4	S-17			Stiff/	Brown	As Above		
	13	1.6'			Dense				
	17								
	24								
	13	S-18			med stiff	Brown	Silty, sandy clay, iron		
35.0	10	1.9'				/tan	Staining, frag of Hematite		
	14								
	16								
	6	S-19			med dense	Brown	Sandy silt		
	7	0.5'				/tan			
37.5	14								
	27								
	6	S-20			med dense	Brown	Fine sandy silt, Hematite		
	24	1.1'					fragments		
	17								
40.0	24								
	5	S-21			med dense	Brown	Silty clay, minor sand		
	7	1.8'				orange	lense, Iron staining		
	10								
	17								
42.5	17	S-22			med dense		As Above with trace		
	24	1.2'					Hematite		
	20								
	18								
	5	S-23			med dense	Dark	Silty clay with fine		
45.0	7	1.9'				Brown	Angular fragments		

REMARKS * All samples scanned with Hnu – no organics detected

PROJECT NO. 30527

BORING NO. MW-1D

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300939

ICF/SRW Field Classification Sheet

ORIGINAL (Red)

PAGE NO. 4 of 8

PROJECT/LOCATION Dorney Road Landfill Site

PROJECT NO. 30527

ELEVATION 447.78 GWL 0 HRS. ____ HRS.

BORING NO. MW-10

DATE (START) ____ (FINISH) 2-14-88

FIELD ENGINEER J. Moore & M. Hurban

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	DESCRIPTION: PROFILE	SOIL DENSITY—CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	9								
	7								
	6	S-2			Med Dense	Dark	Silty clay, thin sandy silt		
	14	1.9'				Brown	layers, fine fragments		
47.5	17								
	15								
	15	S-25			Med Dense	Red/	clay and silty clay, trace		
	13	2.0'				Brown	Hematite, silty wet		
	17								
0.0	19								
	11	S-26			Med Dense	Red/	As Above, silty wet		
	9	2.0'				Brown			
	7								
	7								
52.5	5	S-27			Med Dense	Brown	Silty clay to fine sandy		
	7	1.4'					silty, med wet		
	8								
	7								
	1	S-28			Dense	Brown	Silty clay, trace fragment		
55.0	1	1.6'					Very moist		
	3								
	4								
	91/5"	S-29			—	Brown	As above		
	Refusal 0.4'								
57.5							Augered		
	56	S-30			Med Dense	Brown	Silty clay, trace fragments		
	41	1.7'					of limestone		
60.0	20								

REMARKS: All samples scanned with Hnu - no organics detected

PROJECT NO. 30527

BORING NO. MW-10

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300940

ICF/SRW Field Classification Sheet

ORIGINAL (Red)

PAGE NO. 1

PROJECT/LOCATION Dorney Road Landfill Site

PROJECT NO. 30527

ELEVATION 447.78 GWL 0 HRS. _____ HRS. _____

BORING NO. MW-10

DATE (START) _____ (FINISH) _____

FIELD ENGINEER J. Moore & M. Hurban

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO. TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	DESCRIPTION: PROFILE	SOIL DENSITY–CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	6	S-1			Soft/	Brown	loam, silty loam, clayey		
	9	1.2'			loose		grading to silty sandy		
	11						silt, minor limestone frag.		
	7								
2.5	6	S-2			Soft/	Brown	silty loam with large.		
	7	0.7'			loose		fragments, iron rich, minor		
	3						clay.		
	2								
	5	S-3			soft/		No Recovery		
5.0	3	0'			loose				
	2								
	3								
	2	S-4			Soft/	Brown	Silty clayey coarse fragments		
	2	0.8'			loose		-iron stained limestone frag.		
7.5	2						limonite frag.		
	2								
	1	S-5			Soft/	Brown	Silty clay with small to		
	2	0.8'			loose		medium fragments of		
	1						limestone		
10.0	2								
	2	S-6			Soft/	Brown	As Above		
	3	0.7'			loose				
	3								
	4								
12.5	2	S-7			Soft/	Brown	Iron rich fragments of		
	2	0.9'			loose		lime, chert, limonite, and		
	2						trace clay and silt.		
	3								
	6	S-8			Soft/	Brown	No Recovery		
15.0	6	0			loose				

REMARKS * All samples were scanned with Hnu for organic detection – 0ppm dections

PROJECT NO. 30527

BORING NO. MW-10

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300941

ICF/SRW Field Classification Sheet

PAGE NO. 2 of 3 ORIGINAL (Red)

PROJECT/LOCATION Dorney Road Landfill Site

PROJECT NO. 30527

ELEVATION 447.78 GWL 0 HRS. ____ HRS.

BORING NO. MW-10

DATE (START) ____ (FINISH) 2-14-88

FIELD ENGINEER J. Moore + M. Hurbem

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	RQD (%)	PROFILE	SOIL DENSITY—CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS*
1	2	3	4	5	6	7	8	9	10
	5								
	5								
	6	S-9			loose	Brown	Coarse sand with minor		
	3	1.0'					clay, trace chert & limonite		
17.5	4						fining downward		
	4								
	5	S-10			loose	Brown	As Above		
	3	0.4'							
	2								
20.0	2								
	1	S-11				Brown	Clay, wet		
	1	0.6'			loose				
	1				/stiff				
	1								
22.5	2	S-12			loose/	Brown	As Above		
	3	1.1'			Stiff				
	4								
	2								
	3	S-13			loose/	Brown	clay, grading to		
25.0	4	1.3'			stiff		sandy silt, trace amount		
	4						of limonite, chert, silty		
	4						wet		
	3	S-14			loose/	Brown	Silty clay, few limonite		
	5	0.9'			stiff		and rock fragments,		
27.5	7						silty layered		
	8								
	10	S-15			loose/	Brown	Silty sandy clay,		
	12	1.7'			stiff	/orange			
	13								
30.0	14								

REMARKS * All samples scanned with Hnu - no organic detections

PROJECT NO. 30527

BORING NO. MW-10

* ORGANIC VAPOR READINGS, ODORS, etc.

** DRILLER AND METHOD OF ADVANCING AND CLEANING BORING

AR300942

ORIGINAL (Red)

APPENDIX D - BORING LOGS AND WELL CONSTRUCTIONS

ORIGINAL (Red)

Semivolatiles	CAS Number	Quantitation Limits** Water ug/L	Low Soil/Sediment[b] ug/Kg
95. Benzo(k)fluoranthene	207-08-9	10	330
96. Benzo(a)pyrene	50-32-8	10	330
97. Indeno(1,2,3-cd)pyrene	193-39-5	10	330
98. Dibenz(a,h)anthracene	53-70-3	10	330
99. Benzo(g,h,i)perylene	191-24-2	10	330

[b]Medium Soil/Sediment Contract Required Quantitation Limits (CRQL) for Semi-Volatile TCL Compounds are 60 times the individual Low Soil/Sediment CRQL.

*Specific quantitation limits are highly matrix dependent. The quantitation limits listed herein are provided for guidance and may not always be achievable.

**Quantitation limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis as required by the contract, will be higher.

AR300944

ORIGINAL (Red)

Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL)*

Pesticides/PCBs	CAS Number	Quantitation Limits** Water ug/L	Low Soil/Sediment[c] ug/Kg
100. alpha-BHC	319-84-6	0.05	8.0
101. beta-BHC	319-85-7	0.05	8.0
102. delta-BHC	319-86-8	0.05	8.0
103. gamma-BHC (Lindane)	58-89-9	0.05	8.0
104. Heptachlor	76-44-8	0.05	8.0
105. Aldrin	309-00-2	0.05	8.0
106. Heptachlor Epoxide	1024-57-3	0.05	8.0
107. Endosulfan I	959-98-8	0.05	8.0
108. Dieldrin	60-57-1	0.10	16.0
109. 4,4'-DDE	72-55-9	0.10	16.0
110. Endrin	72-20-8	0.10	16.0
111. Endosulfan II	33213-65-9	0.10	16.0
112. 4,4'-DDD	72-54-8	0.10	16.0
113. Endosulfan Sulfate	1031-07-8	0.10	16.0
114. 4,4'-DDT	50-29-3	0.10	16.0
115. Endrin Ketone	53494-70-5	0.10	16.0
116. Methoxychlor	72-43-5	0.5	80.0
117. alpha-chlordane	5103-71-9	0.5	80.0
118. gamma-chlordane	5103-74-2	0.5	80.0
119. Toxaphene	8001-35-2	1.0	160.0
120. Aroclor-1016	12674-11-2	0.5	80.0
121. Aroclor-1221	11104-28-2	0.5	80.0
122. Aroclor-1232	11141-16-5	0.5	80.0
123. Aroclor-1242	53469-21-9	0.5	80.0
124. Aroclor-1248	12672-29-6	0.5	80.0
125. Aroclor-1254	11097-69-1	1.0	160.0
126. Aroclor-1260	11096-82-5	1.0	160.0

[c]Medium Soil/Sediment Contract Required Quantitation Limits (CRQL) for Pesticide/PCB TCL compounds are 15 times the individual Low Soil/Sediment CRQL.

*Specific quantitation limits are highly matrix dependent. The quantitation limits listed herein are provided for guidance and may not always be achievable.

**Quantitation limits listed for soil/sediment are based on wet weight. The quantitation Limits calculated by the laboratory for soil/sediment, calculated on dry weight basis as required by the contract, will be higher.

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Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL)*

Semivolatiles	CAS Number	Quantitation Limits** Water ug/L	Low Soil/Sediment[b] ug/Kg
35. Phenol	108-95-2	10	330
36. bis(2-Chloroethyl) ether	111-44-4	10	330
37. 2-Chlorophenol	95-57-8	10	330
38. 1,3-Dichlorobenzene	541-73-1	10	330
39. 1,4-Dichlorobenzene	106-46-7	10	330
40. Benzyl Alcohol	100-51-6	10	330
41. 1,2-Dichlorobenzene	95-50-1	10	330
42. 2-Methylphenol	95-48-7	10	330
43. bis(2-Chloroisopropyl) ether	39638-32-9	10	330
44. 4-Methylphenol	106-44-5	10	330
45. N-Nitroso-Dipropylamine	621-64-7	10	330
46. Hexachloroethane	67-72-1	10	330
47. Nitrobenzene	98-95-3	10	330
48. Isophorone	78-59-1	10	330
49. 2-Nitrophenol	88-75-5	10	330
50. 2,4-Dimethylphenol	105-67-9	10	330
51. Benzoic Acid	65-85-0	50	1600
52. bis(2-Chloroethoxy) methane	111-91-1	10	330
53 2,4-Dichlorophenol	120-83-2	10	330
54. 1,2,4-Trichlorobenzene	120-82-1	10	330
55. Naphthalene	91-20-3	10	330
56. 4-Chloroaniline	106-47-8	10	330
57. Hexachlorobutadiene	87-68-3	10	330
58. 4-Chloro-3-methylphenol (para-chloro-meta-cresol)	59-50-7	10	330
59. 2-Methylnaphthalene	91-57-6	10	330
60. Hexachlorocyclopentadiene	77-47-4	10	330
61. 2,4,6-Trichlorophenol	88-06-2	10	330
62. 2,4,5-Trichlorophenol	95-95-4	50	1600
63. 2-Chloronaphthalene	91-58-7	10	330
64. 2-Nitroaniline	88-74-4	50	1600

(continued)

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Semivolatiles	CAS Number	Quantitation Limits** Water ug/L	Low Soil/Sediment[b] ug/Kg
65. Dimethyl Phthalate	131-11-3	10	330
66. Acenaphthylene	208-96-8	10	330
67. 2,6-Dinitrotoluene	606-20-2	10	330
68. 3-Nitroaniline	99-09-2	50	1600
69. Acenaphthene	83-32-9	10	330
70. 2,4-Dinitrophenol	51-28-5	50	1600
71. 4-Nitrophenol	100-02-7	50	1600
72. Dibenzofuran	132-64-9	10	330
73. 2,4-Dinitrotoluene	121-14-2	10	330
74. Diethylphthalate	84-66-2	10	330
75. 4-Chlorophenyl Phenyl ether	7005-72-3	10	330
76. Fluorene	86-73-7	10	330
77. 4-Nitroaniline	100-01-6	50	1600
78. 4,6-Dinitro-2-methylphenol	534-52-1	50	1600
79. N-nitrosodiphenylamine	86-30-6	10	330
80. 4-Bromophenyl Phenyl ether	101-55-3	10	330
81. Hexachlorobenzene	118-74-1	10	330
82. Pentachlorophenol	87-86-5	50	1600
83. Phenanthrene	85-01-8	10	330
84. Anthracene	120-12-7	10	330
85. Di-n-butylphthalate	84-74-2	10	330
86. Fluoranthene	206-44-0	10	330
87. Pyrene	129-00-0	10	330
88. Butyl Benzyl Phthalate	85-68-7	10	330
89. 3,3'-Dichlorobenzidine	91-94-1	20	660
90. Benzo(a)anthracene	56-55-3	10	330
91. Chrysene	218-01-9	10	330
92. bis(2-ethylhexyl)phthalate	117-81-7	10	330
93. Di-n-octyl Phthalate	117-84-0	10	330
94. Benzo(b)fluoranthene	205-99-2	10	330

(continued)

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Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL)*

Volatiles	CAS Number	Quantitation Limits** Water ug/L	Low Soil/Sediment[a] ug/Kg
1. Chloromethane	74-87-3	10	10
2. Bromomethane	74-83-9	10	10
3. Vinyl Chloride	75-01-4	10	10
4. Chloroethane	75-00-3	10	10
5. Methylene Chloride	75-09-2	5	5
6. Acetone	67-64-1	10	10
7. Carbon Disulfide	75-15-0	5	5
8. 1,1-Dichloroethene	75-35-4	5	5
9. 1,1-Dichloroethane	75-35-3	5	5
10. 1,2-Dichloroethene (total)	540-59-0	5	5
11. Chloroform	67-66-3	5	5
12. 1,2-Dichloroethane	107-06-2	5	5
13. 2-Butanone	78-93-3	10	10
14. 1,1,1-Trichloroethane	71-55-6	5	5
15. Carbon Tetrachloride	56-23-5	5	5
16. Vinyl Acetate	108-05-4	10	10
17. Bromodichloromethane	75-27-4	5	5
18. 1,1,2,2-Tetrachloroethane	79-34-5	5	5
19. 1,2-Dichloropropane	78-87-5	5	5
20. cis-1,3-Dichloropropene	10061-01-5	5	5
21. Trichloroethene	79-01-6	5	5
22. Dibromochloromethane	124-48-1	5	5
23. 1,1,2-Trichloroethane	79-00-5	5	5
24. Benzene	71-43-2	5	5
25. trans-1,3-Dichloropropene	10061-02-6	5	5
26. Bromoform	75-25-2	5	5
27. 2-Hexanone	591-78-6	10	10
28. 4-Methyl-2-pentanone	108-10-1	10	10
29. Tetrachloroethene	127-18-4	5	5
30. Toluene	108-88-3	5	5

(continued)

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Volatiles	CAS Number	Quantitation Limits** Water ug/L	Low Soil/Sediment[a] ug/Kg
31. Chlorobenzene	108-90-7	5	5
32. Ethyl Benzene	100-41-4	5	5
33. Styrene	100-42-5	5	5
34. Xylenes (Total)	133-02-7	5	5

[a]Medium Soil/Sediment Contract Required Quantitation Limits (CRQL) for Volatile TCL Compounds are 100 times the individual Low Soil/Sediment CRQL.

*Specific quantitation limits are highly matrix dependent. The quantitation limits listed herein are provided for guidance and may not always be achievable.

**Quantitation limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis as required by the contract, will be higher.

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- Furnace AA QC Analysis: Required for quantitation; incorporates duplicate injections and analytical spikes in order to evaluate the precision and accuracy of the individual analytical determinations on each sample.

- Laboratory Control Samples (LCS): Standards carried through sample preparation and analysis procedures to document the performance of the entire analytical process. The results for analysis of LCS are submitted with the data package. Laboratories on a quarterly basis verify their instrument detection limits, ICP linear ranges, ICP interelement correction factors and ICP integration times.

It is the responsibility of the contractor laboratory to document, in each data package submitted, that both initial and ongoing instrument and analytical QC requirements have been met. Any samples analyzed when contract QC requirements have not been met are re-analyzed by the laboratory.

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ORIGINAL (Red)

APPENDIX C - CONTRACT REQUIRED DETECTION LIMITS

ORIGINAL (Red)

considerably depending on the nature and homogeneity of the sample, interferent contaminants that coextract from the sample, and by the analytical method. Lowest detection limits are achieved on low level water samples in the ppb range, where sample matrix interferences are minimal.

Extrapolations from the "pure water" IDLs must be made to estimate the detection limits for low and medium water and soil samples, since the detection levels achievable for these samples will be highly dependent on the inorganic species and matrix of each sample. Although data is reported down to the "pure water" IDL, results below the CRDL should be used with caution. Results below the CRDL are bracketed by the laboratory to indicate a value near the instrument detection limit.

5. Contract Quality Control Requirements

The CLP quality control (QC) program for inorganic RAS laboratory analysis is structured to provide consistent results of known and documented quality. The program, therefore, places stringent quality control requirements on all laboratories performing sample analysis. Sample data packages contain documentation of a series of QC operations that allow an experienced chemist to determine the quality of the data and its applicability to each investigation. In addition, laboratory contracts contain provisions for sample re-analysis if and when specified QC criteria are not met by the contract laboratory. Each CLP laboratory is also encouraged to develop additional internal QA/QC procedures.

The minimum QC requirements of the inorganic RAS program consist of both an initial and ongoing demonstration of laboratory capability to generate acceptable performance with the contract methods in the analysis of water and soil samples. CLP contracts define extensive QA procedures that must be performed and documented, and criteria that must be met. These include, but are not limited to, the following:

- Initial calibration and calibration verification (ICV).

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- Continuing calibration verification (CCV).
- ICP interference check sample (ICS) analysis.
- ICP serial dilution analysis.
- Preparation blank (PB) analysis.
- Spiked sample analysis.
- Duplicate sample analysis.
- Furnace AA QC analysis.
- Laboratory control sample (LCS) analysis.

The instrument QC operations include initial and continuing calibration checks, which are performed daily and/or every 10 samples. These checks determine that the analytical system is meeting contract-required criteria.

Analytical QC operations include:

- ICP Interference Check Sample Analyses: Performed at least twice per eight-hour shift, to verify interelement and background correction factors.
- Preparation Blank Analyses: Performed for each batch of samples or for each set of 20 samples, to ascertain whether sample concentrations reflect contamination.
- Spiked Sample Analyses and Duplicate Sample Analyses: Performed for each concentration and matrix within a Case of samples or for each set of 20 samples of a similar matrix within a Case, to provide information concerning sample homogeneity, analytical precision and accuracy, the effect of the sample matrix on the analytical methodology, and to enable the Agency to evaluate the long-term precision of the method.
- Serial Dilution Analyses: Performed for each group of samples of a similar matrix type and concentration for each Case of samples, or for each 20 samples received (whichever is more frequent) to ascertain whether significant chemical or physical interferences exist due to sample matrix.

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ORIGINAL (Red)

- Individual analytical results are flagged by the laboratory when QC indicates potential bias due to matrix effects, homogeneity, etc.
- QC results for: preparation blanks, calibration blanks, calibration verification standards, matrix spikes, duplicates, laboratory control samples, interference check samples, analytical spikes and serial dilution analyses.
- Tabulation of instrument detection limits determined in pure water solutions.
- Digestion/distillation logs, sample traffic reports, and raw data system printouts identifying calibration standards, calibration blanks, preparation blanks, samples and any atypical dilution, duplicates, spikes, interference checks and any instrument adjustments or apparent anomalies on the measurement record.

A summary of RAS inorganic contract deliverables and copies of data reporting forms are contained in Appendix B.

4. Analytical Protocols

The standardized inorganic analytical methods are based on Federal Register (FR) methods, EPA Methods for Chemical Analysis of Water and Wastes (MCAWW), and Test Methods for Evaluating Solid Waste (SW-846), for the analysis of water and soil samples. Analysis for specified metals and cyanide is performed by flame, furnace and cold vapor atomic absorption (AA), colorimetric, distillation, and inductively coupled argon plasma (ICP) methods.

a. Water Method

Water samples for metals analysis are prepared, acid digested and the digestate filtered to remove insoluble materials prior to analysis. Samples are analyzed by AA or ICP methods, and dilutions are performed where any analyte concentration exceeds the calibrated range.

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For water samples, a quantitative determination for cyanide is made by midi-distillation and colorimetric analysis or by titration. Mercury is quantitated in water samples by the cold vapor technique.

b. Soil/Sediment Method

Soil samples for metals analysis are prepared and acid digested and the digestate filtered to remove insoluble materials prior to analysis. Samples are analyzed by AA or ICP methods, and dilutions are performed where any analyte concentration exceeds the calibrated range.

For soil samples, a quantitative determination for cyanide is made by midi-distillation and automated colorimetric analysis. Mercury is quantitated in soil/sediment samples by the cold vapor technique.

c. Contract Required Detection Limits (CRDLs)

Exhibit C of the Statement of Work of inorganics IFB contracts contains minimum contract-required detection levels (CRDLs) that must be met by all laboratories for each of the metals and cyanide in pure water. On a quarterly basis, the contract laboratories are required to verify that their instrument detection limits (IDL) meet the CRDL's.

The instrument detection limits reported by the laboratory on the inorganic data sheets (see Appendix B Form I) are based on analysis of analytes in pure water. Detection limits for the sample analyses may be higher, depending on the sample matrix.

Detection limits for low level water samples can be achieved in the part-per-billion (ppb) to low part-per-million (ppm) range; detection limits for medium water and soil samples can be achieved in the low-ppm to mid-ppm range. Detection limits are significantly affected by matrix interferences and other sample parameters that vary

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ORIGINAL (Red)

lead acetate test paper and the filter the solution before raising the pH for stabilization.

- Preserve samples with 2 ml of 10 N sodium hydroxide per liter of sample (pH $\geq$ 12).
- Store the samples such that their temperature is maintained at 4°C until the time of analysis.

No chemical preservation is required for medium level water samples or low or medium soil samples.

For soil samples the standard procedure applied by the analytical laboratory for homogenization is to thoroughly mix the contents of the sample container. For solid samples with significant amounts of water, the user has the option to specify that the supernatant be decanted and the remaining sample be mixed thoroughly and analyzed.

Each sample estimated as medium level (water or soil) must be enclosed and sealed in a metal paint can for shipment. If it is not certain whether a sample should be categorized as low or medium concentration, volume should be collected and the sample preserved as specified for low level samples, however shipping procedures must be followed as designated for medium level samples. For water samples, one field blank should be supplied for each Case. Soil blanks are currently not available. It is recommended that the user not submit soil field blanks for analysis. If the user submits a rinsate blank with a case of soil samples, it will be treated as a separate aqueous matrix sample with full QC and accordingly, a sufficient volume for analysis should be provided to the laboratory. When a suitable soil blank material becomes available through EMSL, one soil blank will be supplied for each Case. No additional volume is required for duplicate analyses of either water or soil samples.

The user may specify that the duplicate and matrix spike be performed on a particular sample. If sufficient sample volume is not provided, analysis of all required parameters and/or complete QA/QC determination may not

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be possible. If this occurs, SMO will contact the RSCC to determine appropriate adjustments in analysis.

Required sample volume and container types for inorganic RAS analysis of water and soil samples are illustrated in Appendix C. Pre-cleaned sample bottles are available through the Sample Bottle Repositories, as detailed in Chapter IV.

2. Constituents Identified and Quantified

The inorganic RAS program provides identification and quantification of metals and cyanide in water and soil/sediment samples. These compounds are listed on the inorganic data reporting form included in Appendix B.

3. Contract Deliverable Requirements

The inorganic RAS program specifies contractually-required deliverables for completion of metals and cyanide analysis and submission of the final data package within 30 or 35 days (as specified by the contract delivery schedule) following sample receipt at the laboratory. Laboratories are subject to financial penalties for late delivery and incentives for early delivery of the final data package. Illegible data reports are considered unacceptable and the laboratory is required to resubmit readable versions of any illegible pages.

The inorganic RAS data package provides a complete set of data for independent review by the client user. Through review of data package components, the client can determine the quality of the analytical data.

Each inorganic RAS data package includes the following components:

- Cover page, listing the samples included in the report and narrative comments describing problems encountered in analysis.
- Tabulated results of inorganic compounds identified and quantified, reported in ug/l or mg/kg; including a brief description of the sample.

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B. Inorganic Routine Analytical Services (RAS)

1. Sample Matrices, Concentration Levels, Volumes Required and Preservation Techniques

The inorganic RAS contract methods apply to analysis of water and soil/sediment samples. Samples for analysis should be single-phase, homogeneous samples of an appropriate matrix. Sample matrices other than water, sediment or soil are processed through the SAS program.

Inorganic RAS contract methods determine concentrations of inorganic priority pollutant constituents ranging from low or background levels of concentration to medium levels, where a compound may comprise up to 15 percent of the total sample. Low level samples are generally those collected off-site, around the perimeters of a waste site, or in areas where hazards are thought to be significantly reduced by normal environmental processes. Low level samples are estimated to contain less than 10 ppm of the inorganic priority pollutant (PP) contaminants. Medium level samples are most often those collected on-site, in areas of moderate dilution by normal environmental processes. Medium level samples are estimated to contain concentrations of inorganic PP contaminants up to 15 percent. Low and medium level designations are made for sample collection volume and shipment purposes, and for determination of appropriate analytical methods and QA/QC requirements. Samples estimated to contain concentrations of any PP contaminant higher than 15 percent of the sample must be sent through High Concentration SAS for sample preparation and analysis.

The sample volume, container types, and preservations required for inorganic analysis vary according to the matrix and estimated concentration level of the sample. For RAS inorganic analysis of a water sample estimated as low level, 1 liter volume is required for metals analysis and 1 liter volume is required for cyanide analysis. These samples should each be collected in a 1-liter polyethylene bottle. For RAS inorganic analysis of a water sample estimated as medium level, 16 ounce volume is required for metals and 16 ounce volume for cyanide. These samples should each be

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collected in a 16-ounce glass jar. For RAS inorganic analysis of a soil sample estimated as low or medium level, 6 ounce sample volume is required for both metals and cyanide analyses. These samples should each be collected in an 8-ounce glass jar.

For the inorganics RAS program only, it is recommended that a Case of samples be collected over no more than a three-day period and samples shipped collectively when the Case is completed.

The standard procedure applied by the analytical laboratory for homogenization is to shake the sample in its original sample container and transfer 100 mL aliquots to a 250 mL beaker. For aqueous samples with high solids content, the user has the option to specify that the sample not be mixed and the analysis be performed on the supernatant. When collecting low level water samples, different preservation techniques apply to the metals and cyanide portions, as follows. For "total" metals analyses, the sample is acidified to pH $\leq$ 2 with HNO_3. (Total meaning inclusion of particulate and dissolved fractions.) For dissolved metals analyses, the sample is filtered, then acidified to pH $\leq$ 2 with HNO_3. Note of caution: if the sample contains a significant particulate fraction, acidification without filtration could result in deceptively high metal values for the water sample. Varying amounts of particulate matter can also give large differences in metal values for duplicate acidified water samples.

For the cyanide aliquot, the following guidelines should be followed:

- Test a drop of sample with potassium iodide-starch test paper (KI-starch paper); a blue color indicates the presence of oxidizing agents and the need for treatment. Add ascorbic acid, a few crystals at a time, until a drop of sample produces no color on the indicator paper. Then add an additional 0.6g of ascorbic acid for each liter of sample volume.
- Test a drop of sample on lead acetate paper previously moistened with acetic acid buffer solution. Darkening of the paper indicates the presence of S^{2-}. If S^{2-} is present, add powdered cadmium carbonate until a drop of the treated solution does not darken the

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5. Contract Quality Control Requirements

The CLP quality control (QC) program for organic RAS laboratory analysis is structured to provide consistent results of known and documented quality. The program, therefore, places stringent quality control requirements on all laboratories performing sample analyses. Sample data packages contain documentation of a series of QC operations that allow an experienced chemist to determine the quality of the data and its applicability to each sampling effort. In addition, laboratory contracts contain provisions for sample re-analysis if and when specified QC criteria are not met by the contract laboratory. Each CLP laboratory is also encouraged to develop additional internal QA/QC procedures.

The minimum QC requirements of the organic RAS program consist of both an initial and ongoing demonstration of laboratory capability to generate acceptable performance with the contract methods in the analysis of water and soil samples. CLP contracts define extensive QC procedures that must be performed and documented, and criteria that must be met. These include, but are not limited to, the following.

Instrument QC procedure:

- GC/MS instrument tunes for both volatile and semi-volatile compound analyses.
- Initial multi-level calibration for each TCL (HSL) compound.
- Continuing calibration for each TCL (HSL) compound.

Sample QC procedure:

- Addition of surrogate compounds to each sample and blank for determining percent recovery information.
- Duplicate matrix spike analyses.
- Method blank analyses.

Certain QC procedures listed above demonstrate that the instrument is operating within contract specifications. These include:

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ORIGINAL (Red)

- A demonstration that the two tuning compounds (DFTPP for extractables and BFB for volatiles) meet the defined ion abundance criteria.
- Determination of an average response factor ($\overline{RF}$) based on a calibration using several concentrations of each HSL compound that must meet a defined relative standard deviation (RSD) and minimum $\overline{RF}$.
- A continuing calibration at a single concentration for each HSL compound for which specified compounds are flagged as controls which must meet defined percent difference (%D) from the initial $\overline{RF}$, or a new initial calibration must be performed.

Other QC procedures are required to demonstrate the quality of the analytical data generated. These include:

- Addition of surrogate spikes to all samples and blanks to monitor sample preparation and analysis and to provide percent recovery information for each sample, so that the suitability of the method for each sample (regardless of matrix) may be established.
- Analysis of duplicate matrix spiked samples to display the precision of the method for the particular matrix and also to provide percent recovery information for defined TCL (HSL) compounds (specified matrix spikes) as for surrogates.
- Analysis of reagent blanks for each Case or each set of 20 samples (whichever is less) and for each matrix within a Case, to assure that laboratory contaminants are not reflected in data results.

It is the responsibility of the contractor laboratory to document, in each data package submitted, that both initial and ongoing instrument and analytical QC criteria have been met. The laboratory must demonstrate that instrument tuning and calibration criteria have been met, that interferences from the analytical system are under control, and that surrogate spike, matrix spike and matrix spike duplicate recoveries falling outside contract acceptance windows are attributable to sample matrix interferences and not to laboratory analytical errors. Any samples analyzed when contract QC criteria have not been met must be re-analyzed by the laboratory if sufficient sample volume is available.

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compounds in greatest apparent concentration, reported in ug/l or mg/kg.

- Raw sample analytical data, including sample chromatograms, spectra, quantitation reports, and calculations.
- Standards data package, including chromatograms, spectra and data system printouts amd initial and continuing calibration reports.
- QC data package, documenting instrument tuning and analytical QC criteria.

The organic RAS deliverables index and copies of organic data reporting sheets are contained in Appendix B.

4. Analytical Protocols

The standardized organic analytical methods are based on Federal Register (FR) Methods 625 (B/N/A), 608 (pesticide), and 624 (VOA) modified for CLP use in the analysis of both water and soil samples. Analysis for the organic HSL compounds includes an optional GC screen (to determine appropriate dilution fraction or aliquote sizes for GC/MS analysis) and GC/MS analysis.

a. Water Method

Water samples for full organic analysis (base/neutral/acid, volatile and pesticide/PCB compounds) are first prepared and/or solvent extracted, resulting in three individual sample fractions: semivolatile (B/N/A); volatile (VOA); and pesticide/PCB. Extracts are cleaned up when necessary, using optional column chromatography techniques.

The identification and quantification of the organic TCL (HSL) compounds in water samples is performed by GC/MS for B/N/A and VOA fractions, and by GC/EC for the pesticide/PCB fraction.

In addition, the 20 highest non-TCL (HSL) base/neutral/acid compound peaks and the 10 highest non-TCL (HSL) volatile peaks are tentatively

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identified and their concentrations estimated, using a forward search of the NBS Mass Spectral Library.

b. Soil Method

Soil samples for full organic analysis (base/neutral/acid and pesticide/PCB compounds) are prepared by sonification prior to solvent extraction. Extracts are cleaned up using optional column chromatography techniques when necessary.

The identification and quantification of the organic TCL (HSL) compounds in soil samples is performed by GC/MS for B/N/A and VOA fractions, and by GC/EC for the pesticide/PCB fraction.

In addition, the 20 highest non-TCL (HSL) base/neutral/acid peaks and the 10 highest non-TCL (HSL) volatile peaks are tentatively identified and their concentrations estimated, using a forward search of the NBS Mass Spectral Library.

c. Contract Required Quantitation Limits (CRQLs)

Low level analysis contract required quantitation limits for water samples are based on CRQLs for each organic compound using FR Methods 624, 625, and 608 and are at the part-per-billion (ppb) level. Approximate achievable sample quantitation levels for low and medium level water and soil samples can be calculated based on the sample size and on concentration/dilution factors.

CRQLs are provided for analytical guidance, as the limits are highly matrix dependent. Matrix interferences vary considerably depending on the nature and homogeneity of the sample, on the interferent contaminants which coextract from the sample, and on the sample volume taken for analysis.

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volume should be collected as specified for low level samples, however shipping procedures must be followed as designated for medium level samples.

Sample portions for volatile analysis (water and soil) should be collected so that the containers are completely filled, leaving no headspace.

If sufficient sample volume is not provided, completion of all required parameters and/or complete QA/QC determinations may not be possible. If this occurs, SMO will contact the RSCC to determine appropriate adjustments in analysis.

Required sample volumes and container types for RAS organic analysis of water and soil samples are illustrated in Appendix C. Pre-cleaned sample bottles are available through the Sample Bottle Repository, as detailed in Chapter IV.

2. Compounds Identified and Quantified

The organic RAS program provides identification and quantification of EPA Target Compound List (TCL) (previously termed the Hazardous Substances List -- HSL) organic compounds (VOA, B/N/A, and pesticide/PCB fractions) in water and soil/sediment samples. These compounds, which include priority pollutant compounds and other organics of interest, are identified on the organic data reporting sheets in Appendix B.

In addition, the laboratory is required to execute a maximum of 30 NBS Mass Spectral Library searches for compounds not identified on the TCL (HSL). The 10 peaks of greatest apparent concentration in the volatile fraction and the 20 peaks in the base/neutral/acid fraction are tentatively identified and the concentration estimated, following a visual comparison of sample spectra with the nearest library matches. The tentative identification of non-TCL (HSL) organic compounds provides information on potential organic contaminants outside of the analytical parameters of the RAS program.

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3. Contract Deliverable Requirements

The organic RAS program specifies contractually required deliverables by the laboratory for sample extraction, volatile analysis and data reporting. These requirements include:

- Completion of sample extraction for water samples within 5 days of sample receipt and for soil samples within 10 days of sample receipt;
- Completion of volatile analysis for water samples within 7 days of sample receipt and for soil samples within 10 days of sample receipt;
- Completion of extractable analysis and reporting of data within 30 or 40 days (as specified by the contract delivery schedule) following sample receipt.

Laboratories are subject to financial penalties for late delivery in meeting these deadlines and incentives for early delivery of the final data package. Illegible data reports are considered unacceptable, and the laboratory is required to resubmit readable versions of any illegible pages.

The organic RAS data package provides a complete set of data for independent review by the client user. Through review of data package components, the client can determine the quality of the analytical data.

Each organic RAS data package includes the following components:

- Narrative report, describing analytical problems encountered and internal QC processes applied.
- Copies of sample Traffic Reports.
- Quality control summary, containing surrogate, method blank, matrix spike and matrix spike duplicate analyses recoveries, and instrument tuning and performance information.
- Sample data, including tabulated results of the organic TCL (HSL) compounds identified and quantified, and the tentative identification and estimated concentration of up to 30 non-TCL (HSL) organic

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ORIGINAL (Red)

A. Organic Routine Analytical Services (RAS)

1. Sample Matrices, Concentration Levels and Volumes Required

The organic RAS contract methods apply to analysis of water (aqueous) and soil/sediment samples. Samples for analysis should be single-phase, homogeneous samples of a similar matrix. Sample matrices other than water, sediment or soil are processed through the SAS program.

Organic RAS contract methods determine concentrations of organic compounds ranging from low or environmental levels of concentration to medium levels, where a compound may comprise as much as 15 percent of the total sample, at the lowest appropriate detection limits. Low level samples are considered to be those collected off-site, around the perimeter of a waste site, or in areas where hazards are thought to be significantly reduced by normal environmental processes. Medium level samples are most often those collected on-site, in areas of moderate dilution by normal environmental processes. Low and medium level designations are made in the field by the sampler to determine packaging and shipment procedures only. Low and medium level analysis designations are performed within the

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ORIGINAL (Red)

laboratory to determine the appropriate analytical protocol to be used. For soil/sediment samples only, there are separate procedures for semi-volatiles organics analysis depending upon whether the samples are determined to be low (< 20 ppm) or medium (> 20 ppm) concentration.

The sample volume and container types required for RAS organic analysis vary according to the matrix and estimated concentration level of the sample. For RAS organic analysis of a water sample estimated as low level, one gallon sample volume is required for extractables - base, neutral, acid (B/N/A) and pesticides/PCB, and 80 ml for volatiles (VOA). The extractables sample is collected in two 80-ounce amber glass bottles, four 1-liter amber glass bottles, or one 4-liter amber glass bottle. The volatiles sample is collected in two 40-ml glass vials. For RAS organics analysis of a water sample estimated as medium level, a four liter volume is required for extractables and 80 ml for volatiles. The extractables sample should be collected in four 32-ounce glass jars, and the volatiles sample in two 40-ml glass vials. For RAS organics analysis of a soil/sediment sample estimated as low or medium level, a six ounce volume is required for extractables. The sample should be collected in one 8-ounce glass jar for extractables and two 120-ml glass vials for volatiles.

For a laboratory to perform matrix spike, matrix spike duplicates, and contractual reanalyses, triple the sample volume is required in at least one sample in twenty for each sample with the same concentration/matrix. Additionally, for water samples, one field blank should be supplied per Case, and one volatile trip blank should be supplied per shipment. No additional volume is required for soil sample duplicate analyses. Soil blanks are supplied to Regions by EMSL/LV. Use of aqueous blanks for soil samples is not appropriate.

For shipping purposes, each sample estimated as medium level (water or soil) must be enclosed and sealed in a metal paint can for shipment. Because it is not certain whether a sample is actually low or medium level,

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These data are then statistically evaluated and utilized to determine and update contract QC acceptance windows for CLP-generated data and to characterize laboratory and method performance.

2. Regional Data Review

The Regional client reviews all data packages resulting from Regional sampling efforts. It is the responsibility of the Region, as the data user, to determine the applicability of each data package to its intended use, e.g., site investigation support, cleanup activities and/or enforcement actions. In this review, the Region applies the CLP data review Standard Operating Procedures and references the requirements of the contract Statement of Work under which the analyses were performed.

3. Contract Compliance Screening (CCS)

Every RAS CLP-generated data package is screened by SMO upon receipt on a fast-turnaround basis (See Chapter IV, Section E). CCS determines if all contractually required forms are included, that forms are completed according to contract specifications, and that QA/QC results meet contract specifications. CCS results are distributed to the laboratory, Region and EMSL/LV and are used to determine recommendation for payment. All CLP data packages are checked for completeness by SMO. If any missing information, incomplete forms or other problems with the data package are identified, the laboratory is contacted and instructed to submit the missing or incorrect portions of the data package. Other compliance discrepancies are addressed by the CCS reconciliation process.

4. SMO Data Review Services

Under direction of the NPO, SMO may perform additional data review, checking the data for compliance to contract QC procedures and parameters and for applicability to its intended uses. This review is provided on a limited basis in response to specific Regional requests. Consult Chapter IV, Section F, for a complete description of the data review services provided and appropriate request procedures.

AR300968

G. Analytical Methodology Improvement/Development

1. Protocol Standardization and Improvement

Refining and improving analytical protocols to maintain state-of-the-art status and to reflect newly defined or changed requirements of the Superfund effort, is an ongoing activity for all CLP participants. This effort is accomplished through an established system of information transfer coordinated through the NPO. All program participants submit comments or recommendations to the NPO on an ongoing basis. The NPO reviews all submitted information and considers recommendations for program application on a periodic basis.

Since 1982, input on protocol improvements has come primarily through the CLP Technical Caucuses which involve NPO, EMSL/LV, EMSL/Cincinnati, EPA Regions, SMO, laboratories and other program support contractor personnel. Analytical methods and data reporting formats are reviewed and discussed in detail at the caucus sessions. EPA personnel then review caucus discussions and compile concensus recommendations for protocol changes. Following NPO approval of recommended changes, existing laboratory contracts are modified by the Contracting Officer to include recommended revisions, through contract change order actions. Whenever possible, all laboratory contracts within an analytical program are changed concurrently to maintain consistency across the program. NPO-approved protocol revisions are included in any new IFB solicitations.

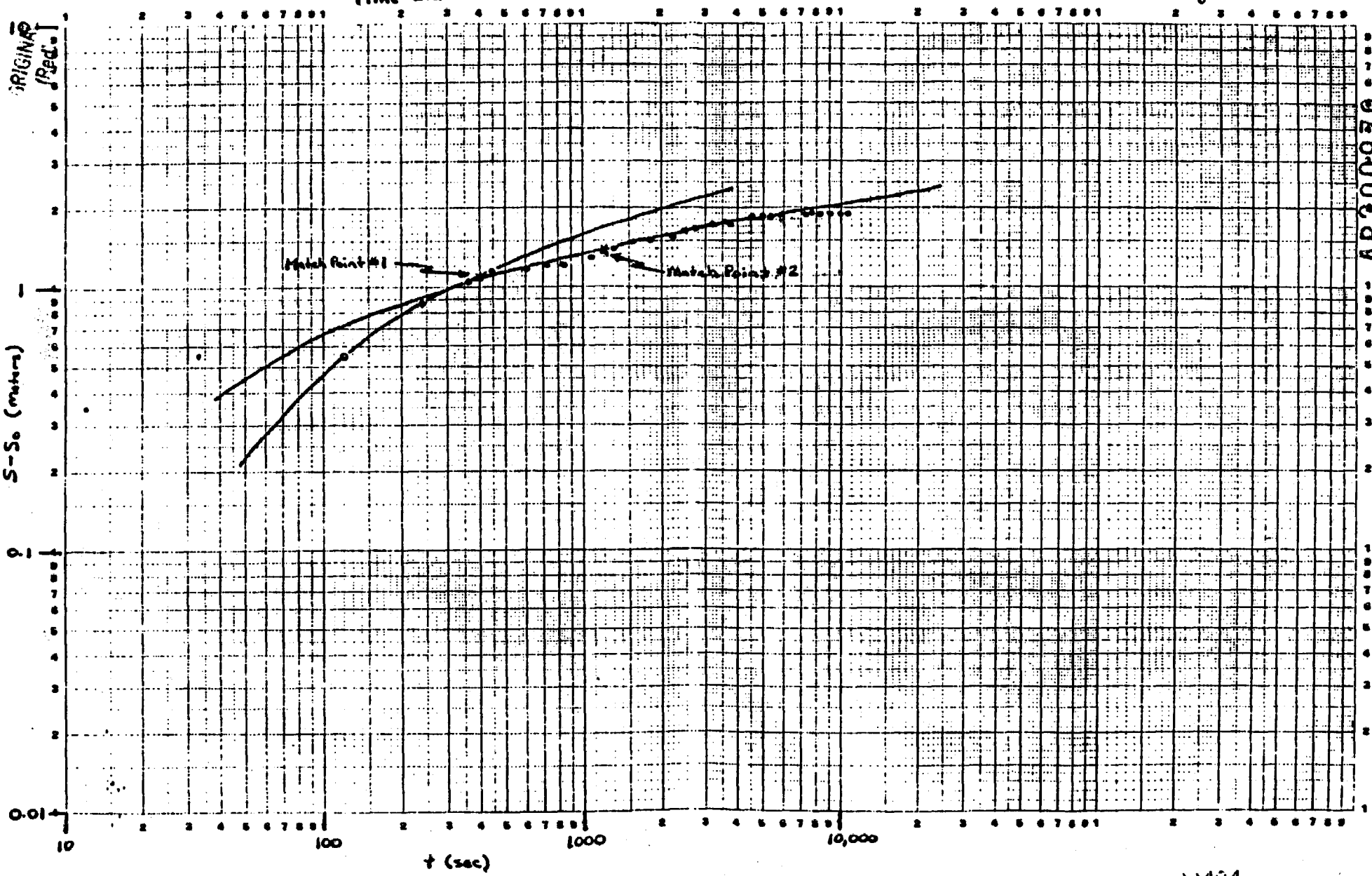
2. Method Development

Development of new analytical methods may be initiated by a newly identified or redefined Agency analysis requirement, such as dioxin analysis. Analytical methods utilized in the CLP are based on EPA developed and approved methodologies. The NPO, EMSL/LV, EMSL/Cincinnati, EPA Regions and the contractor community have historically contributed to development of new program analytical methodologies. Regardless of the group responsible for method development, methods are reviewed by several sources and are tested prior to implementation, to the extent possible to meet program requirements.

AR300969

Figure 7

Time Drawdown Curve - Observation Well #MW-3

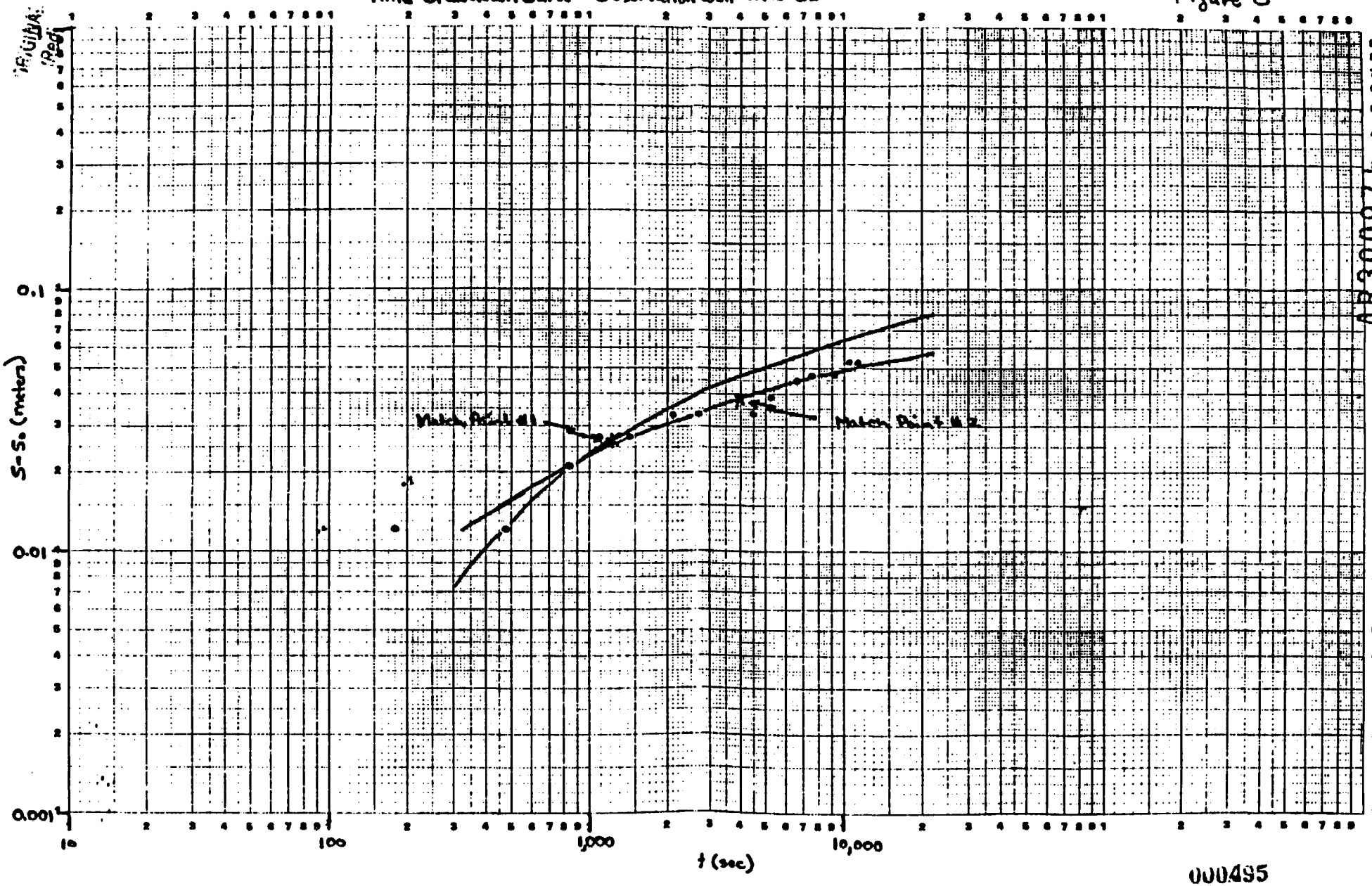


AR300970

000494

Time Drawdown Curve - Observation Well MW-5D

Figure 8



AR300971

000495

ORIGINAL (Red)

WELL MW3D
RECOVERY DATA

SE1000E
Environmental Logger
05/10 18:22

Unit# 00401 Test# 0

INPUT 1: Level (F) TLC

Reference	0.00
Scale factor	50.10
Offset	0.00

Step# 1 05/10 11:02

Elapsed Time	Value
0.0000	13.52
0.0033	13.54
0.0066	13.82
0.0099	13.73
0.0133	13.73
0.0166	13.63
0.0200	13.54
0.0233	13.47
0.0266	13.38
0.0300	12.16
0.0333	12.95
0.0500	13.03
0.0666	12.86
0.0833	12.87
0.1000	12.87
0.1166	12.84
0.1333	12.86
0.1500	12.82
0.1666	12.86
0.1833	12.84
0.2000	12.82
0.2166	12.86
0.2333	12.84
0.2500	12.84
0.2666	12.86
0.2833	12.86
0.3000	12.84
0.3166	12.84
0.3333	12.84
0.4167	12.84
0.5000	12.84
0.5833	12.82
0.6667	12.79
0.7500	12.76
0.8333	12.74
0.9167	12.71
1.0000	12.70
1.0833	12.67
1.1667	12.63

ORIGINAL (Red)

WELL MW 30

RECOVERY DATA

[illegible]	[illegible]
1.3333	12.57
1.4166	12.50
1.5000	12.54
1.5833	12.51
1.6667	12.48
1.7500	12.46
1.8333	12.43
1.9167	12.40
2.0000	12.37
2.5000	12.22
3.0000	11.97
3.5000	11.64
4.0000	10.45
4.5000	9.98
5.0000	9.58
5.5000	8.70
6.0000	7.97
6.5000	7.64
7.0000	7.30
7.5000	6.97
8.0000	6.73
8.5000	6.58
9.0000	6.43
9.5000	6.29
10.0000	6.15
12.0000	5.77
14.0000	5.58
16.0000	5.42
18.0000	5.28
20.0000	5.17
22.0000	5.09
24.0000	5.03
26.0000	4.96
28.0000	4.88
30.0000	4.79
32.0000	4.69
34.0000	4.61
36.0000	4.52
38.0000	4.46
40.0000	4.39
42.0000	4.33
44.0000	4.27
46.0000	4.22
48.0000	4.17
50.0000	4.12
52.0000	4.08
54.0000	4.03
56.0000	4.00
58.0000	3.97
60.0000	3.93
62.0000	3.90
64.0000	3.87
66.0000	3.84
68.0000	3.4[illegible]
70.0000	3.78
72.0000	3.76

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ORIGINAL (Red)

WELL MW3D
RECOVERY DATA

74.0000	3.73
76.0000	3.71
78.0000	3.68
80.0000	3.66
82.0000	3.63
84.0000	3.62
86.0000	3.59
88.0000	3.57
90.0000	3.55
92.0000	3.52
94.0000	3.51
96.0000	3.49
98.0000	3.48
100.000	3.44
110.000	3.35
120.000	3.27
130.000	3.19
140.000	3.13
150.000	3.06
160.000	3.[illegible]

END

ORIGINAL (Red)

WELL MW3D
DRAWDOWN DATA

SL-600B
Environmental Logger
05/10 18:12

Unit# 00401 Test# 0

INPUT 1: Level (F) TOC

Reference	0.00
Scale factor	50.10
Offset	0.00

Step# 0 05/10 08:01

Elapsed Time	Value
0.0000	0.15
0.0033	0.15
0.0066	0.25
0.0099	0.42
0.0133	1.15
0.0166	1.47
0.0200	1.74
0.0233	1.39
0.0266	1.20
0.0300	0.99
0.0333	0.88
0.0500	1.07
0.0666	1.51
0.0833	1.66
0.1000	1.85
0.1166	1.94
0.1333	2.04
0.1500	1.96
0.1666	1.96
0.1833	1.97
0.2000	1.99
0.2166	2.00
0.2333	2.08
0.2500	2.15
0.2666	2.05
0.2833	2.08
0.3000	2.23
0.3166	2.10
0.3333	2.13
0.4167	2.10
0.5000	2.30
0.5833	2.16
0.6667	2.26
0.7500	2.34
0.8333	2.38
0.9167	2.43
[illegible]	2.46
[illegible]833	2.64

ORIGINAL (Red)

WELL MW3D
DRAWDOWN DATA

1.0667	2.77
1.2500	2.87
1.3333	2.80
1.4166	2.81
1.5000	2.83
1.5833	2.84
1.6667	2.87
1.7500	2.92
1.8333	3.02
1.9167	3.03
2.0000	3.02
2.5000	3.25
3.0000	3.36
3.5000	3.48
4.0000	3.66
4.5000	3.82
5.0000	4.00
5.5000	4.14
6.0000	4.27
6.5000	4.47
7.0000	4.77
7.5000	4.74
8.0000	5.10
8.5000	5.15
9.0000	5.34
9.5000	5.55
10.0000	5.67
12.0000	6.43
14.0000	7.02
16.0000	7.38
18.0000	7.69
20.0000	8.06
22.0000	8.35
24.0000	8.71
26.0000	8.85
28.0000	9.15
30.0000	9.22
32.0000	9.34
34.0000	9.38
36.0000	9.58
38.0000	9.68
40.0000	9.76
42.0000	9.83
44.0000	9.96
46.0000	10.02
48.0000	10.20
50.0000	10.26
52.0000	10.34
54.0000	10.32
56.0000	10.58
58.0000	10.51
60.0000	10.66
62.0000	10.72
64.0000	10.78
66.0000	10.89

ORIGINAL (Red)

WELL MW3D
DRAWDOWN DATA

68.0000	11.05
70.0000	11.05
72.0000	11.19
74.0000	11.29
76.0000	11.40
78.0000	11.45
80.0000	11.67
82.0000	11.56
84.0000	11.59
86.0000	11.70
88.0000	11.84
90.0000	11.73
92.0000	11.89
94.0000	12.06
96.0000	12.05
98.0000	12.22
100.000	12.16
110.000	12.44
120.000	12.70
130.000	12.92
140.000	13.12
150.000	13.39
160.000	13.73
170.000	14.18
180.000	14.75

END

ORIGINAL (Red)

WELL MW-4
RECOVERY AND DRAWDOWN DATA

SE1000B
Environmental Logger
05/10 18:25

Unit# 00401 Test# 1

INPUT 1: Level (F) TOC

Reference	0.00
Scale factor	50.10
Offset	0.00

Step# 0 05/10 14:27

Elapsed Time	Value
0.0000	- 0.47
0.0033	0.56
0.0066	- 0.18
0.0099	0.47
0.0133	0.28
0.0166	0.44
0.0200	0.50
0.0233	0.58
0.0266	0.66
0.0300	0.71
0.0333	0.79
0.0500	1.04
0.0666	1.23
0.0833	1.42
0.1000	1.59
0.1166	1.72
0.1333	1.86
0.1500	1.97
0.1666	2.10
0.1833	2.26
0.2000	2.38
0.2166	2.48
0.2333	2.59
0.2500	2.72
0.2666	2.84
0.2833	2.97
0.3000	3.10
0.3166	3.22
0.3333	3.35
0.4167	3.95
0.5000	4.49
0.5833	5.01
0.6667	5.50
0.7500	5.96
0.8333	6.39
0.9167	6.80
1.0000	7.19
1.0833	7.54

ORIGINAL (Red)

WELL MW-4
RECOVERY AND DRAWDOWN DATA

1.1667	7.86
1.2500	8.13
1.3333	8.39
1.4166	8.65
1.5000	8.90
1.5833	9.14
1.6667	9.41
1.7500	9.64
1.8333	9.87
1.9167	10.09
2.0000	10.32
2.5000	11.64
3.0000	11.87
3.5000	11.68
4.0000	11.87
4.5000	11.84
5.0000	11.23
5.5000	11.91
6.0000	10.51
6.5000	8.55
7.0000	7.13
7.5000	6.05
8.0000	5.28
8.5000	4.72
9.0000	4.30
9.5000	3.98
10.0000	3.73
12.0000	3.13
14.0000	2.78
16.0000	2.51
18.0000	2.32
20.0000	2.15
22.0000	2.00
24.0000	1.89
26.0000	1.77
28.0000	1.66
30.0000	1.56
32.0000	1.47
34.0000	1.39
36.0000	1.32
38.0000	1.24
40.0000	1.20
42.0000	1.13
44.0000	1.07
46.0000	1.01
48.0000	0.96
50.0000	0.91
52.0000	0.87
54.0000	0.82
56.0000	0.77
58.0000	0.72
60.0000	0.68
62.0000	0.64
64.0000	0.60
66.0000	0.55
68.0000	0.53
70.0000	0.50
72.0000	0.47
74.0000	0.44
76.0000	0.41
78.0000	0.39
80.0000	0.36
82.0000	0.34

END

ORIGINAL (Red)

SE1090B
Environmental Logger
05/11 21:36

MW-5
DRAWDOWN

Unit# 00401 Test# 0

INPUT 1: Level (F) TOC

Reference	0.00
Scale factor	50.10
Offset	0.00

Step# 0 05/11 09:42

Elapsed Time	Value
0.0000	0.01
0.0033	0.03
0.0066	0.03
0.0099	0.03
0.0133	0.03
0.0166	0.03
0.0200	0.20
0.0233	0.06
0.0266	0.18
0.0300	0.09
0.0333	0.15
0.0500	0.15
0.0666	0.18
0.0833	0.20
0.1000	0.20
0.1166	0.20
0.1333	0.17
0.1500	0.17
0.1666	0.17
0.1833	0.17
0.2000	0.18
0.2166	0.18
0.2333	0.17
0.2500	0.18
0.2666	0.20
0.2833	0.18
0.3000	0.20
0.3166	0.22
0.3333	0.23
0.4167	0.25
0.5000	0.22
0.5833	0.25
0.6667	0.23
0.7500	0.23
0.8333	0.26
0.9167	0.25
1.0000	0.26
1.0833	0.28
1.1667	0.30
1.2500	0.28

ORIGINAL (Red)

MW-5
DRAWDOWN

1.3333	0.28
1.4166	0.31
1.5000	0.30
1.5833	0.28
1.6667	0.33
1.7500	0.31
1.8333	0.33
1.9167	0.31
2.0000	0.34
2.5000	0.33
3.0000	0.34
3.5000	0.37
4.0000	0.37
4.5000	0.37
5.0000	0.39
5.5000	0.44
6.0000	0.44
6.5000	0.42
7.0000	0.44
7.5000	0.45
8.0000	0.42
8.5000	0.44
9.0000	0.44
9.5000	0.47
10.0000	0.47
12.0000	0.50
14.0000	0.49
16.0000	0.52
18.0000	0.55
20.0000	0.55
22.0000	0.53
24.0000	0.56
26.0000	0.55
28.0000	0.55
30.0000	0.60
32.0000	0.58
34.0000	0.60
36.0000	0.58
38.0000	0.61
40.0000	0.63
42.0000	0.60
44.0000	0.63
46.0000	0.60
48.0000	0.61
50.0000	0.61
52.0000	0.61
54.0000	0.63
56.0000	0.63
58.0000	0.63
60.0000	0.61
62.0000	0.63
64.0000	0.66
66.0000	0.64
68.0000	0.64
70.0000	0.64
72.0000	0.68
74.0000	0.64

ORIGINAL (Red)

MW-5
DRAWDOWN

76.0000	0.63
78.0000	0.66
80.0000	0.64
82.0000	0.66
84.0000	0.64
86.0000	0.66
88.0000	0.66
90.0000	0.68
92.0000	0.66
94.0000	0.69
96.0000	0.66
98.0000	0.66
100.000	0.66
110.000	0.68
120.000	0.66
130.000	0.71
140.000	0.69
150.000	0.68
160.000	0.69
170.000	0.69
180.000	0.72
190.000	0.71

END

MW 5
RECOVERY

ORIGINAL (Red)

SE1000B
Environmental Logger
05/11 21:39

Unit# 00401 Test# 0

INPUT 1: Level (F) TOC

Reference	0.00
Scale factor	50.10
Offset	0.00

Step# 1 05/11 12:52

Elapsed Time	Value
0.0000	0.68
0.0033	0.71
0.0066	0.69
0.0099	0.61
0.0133	0.61
0.0166	0.56
0.0200	0.56
0.0233	0.55
0.0266	0.53
0.0300	0.52
0.0333	0.50
0.0500	0.49
0.0666	0.49
0.0833	0.47
0.1000	0.47
0.1166	0.45
0.1333	0.45
0.1500	0.44
0.1666	0.44
0.1833	0.42
0.2000	0.42
0.2166	0.42
0.2333	0.41
0.2500	0.41
0.2666	0.41
0.2833	0.41
0.3000	0.39
0.3166	0.39
0.3333	0.39
0.4167	0.36
0.5000	0.34
0.5833	0.33
0.6667	0.31
0.7500	0.31
0.8333	0.30
0.9167	0.30
1.0000	0.30
1.0833	0.28
1.1[illegible]	0.26

ORIGINAL (Red)

MW 5
RECOVERY

1.2500		0.26
1.3333		0.26
1.4166		0.25
1.5000		0.25
1.5833		0.25
1.6667		0.23
1.7500		0.23
1.8333		0.23
1.9167		0.22
2.0000		0.22
2.5000		0.20
3.0000		0.18
3.5000		0.17
4.0000		0.15
4.5000		0.14
5.0000		0.14
5.5000		0.12
6.0000		0.12
6.5000		0.11
7.0000		0.11
7.5000		0.09
8.0000		0.09
8.5000		0.07
9.0000		0.07
9.5000		0.06
10.0000		0.06
12.0000		0.04
14.0000		0.03
16.0000		0.03
18.0000		0.01
20.0000		0.00
22.0000		0.00
24.0000	-	0.01
26.0000	-	0.03
28.0000	-	0.03
30.0000	-	0.03
32.0000	-	0.04
34.0000	-	0.06
36.0000	-	0.04
38.0000	-	0.06
40.0000	-	0.07
42.0000	-	0.06
44.0000	-	0.07
46.0000	-	0.07
48.0000	-	0.07
50.0000	-	0.07
52.0000	-	0.06
54.0000	-	0.07
56.0000	-	0.07
58.0000	-	0.07
60.0000	-	0.07
62.0000	-	0.07
64.0000	-	0.07

END

ICF/SRW Associates

ORIGINAL (Red)

PROJECT Dorney Road Landfill Site PROJECT NO. 30527

PAGE 1 OF 1

Groundwater flow Calculation

MADE BY JPA DATE 6-14-88 CHECKED BY MK DATE 6/17/88

Groundwater Flow $Q = AU$ and $U = \frac{k}{\varepsilon} \cdot \frac{dh}{dl}$

Area = A = Perimeter Dist x Aquifer Thickness

Assumes a 200 ft Aquifer thickness

$A = 3530' \times 200'$

At MW-4 $k = 1.0$ gpd/ft^2 $\frac{dh}{dl} = 0.015$

$$Q = \frac{(3530 \times 200)(1.0)(0.015)}{.05} = 211{,}800 \text{ gpd}$$

$$U = \frac{[1.0 \times (1.74 \times 10^{-6})]}{.05} 0.015 = 5.2 \times 10^{-7} \text{ ft/sec}$$

$$= 4.5 \times 10^{-1} \text{ ft/day}$$

At MW-3D

$$Q = \frac{(3530 \times 200)(14.2)(0.018)}{.05} = 3{,}609{,}080 \text{ gpd}$$

$$U = \frac{[14.2 \times (1.74 \times 10^{-6})]}{.05} 0.018 = 8.8 \times 10^{-6} \text{ ft/sec}$$

$$= 6.6 \times 10^{-1} \text{ ft/day}$$

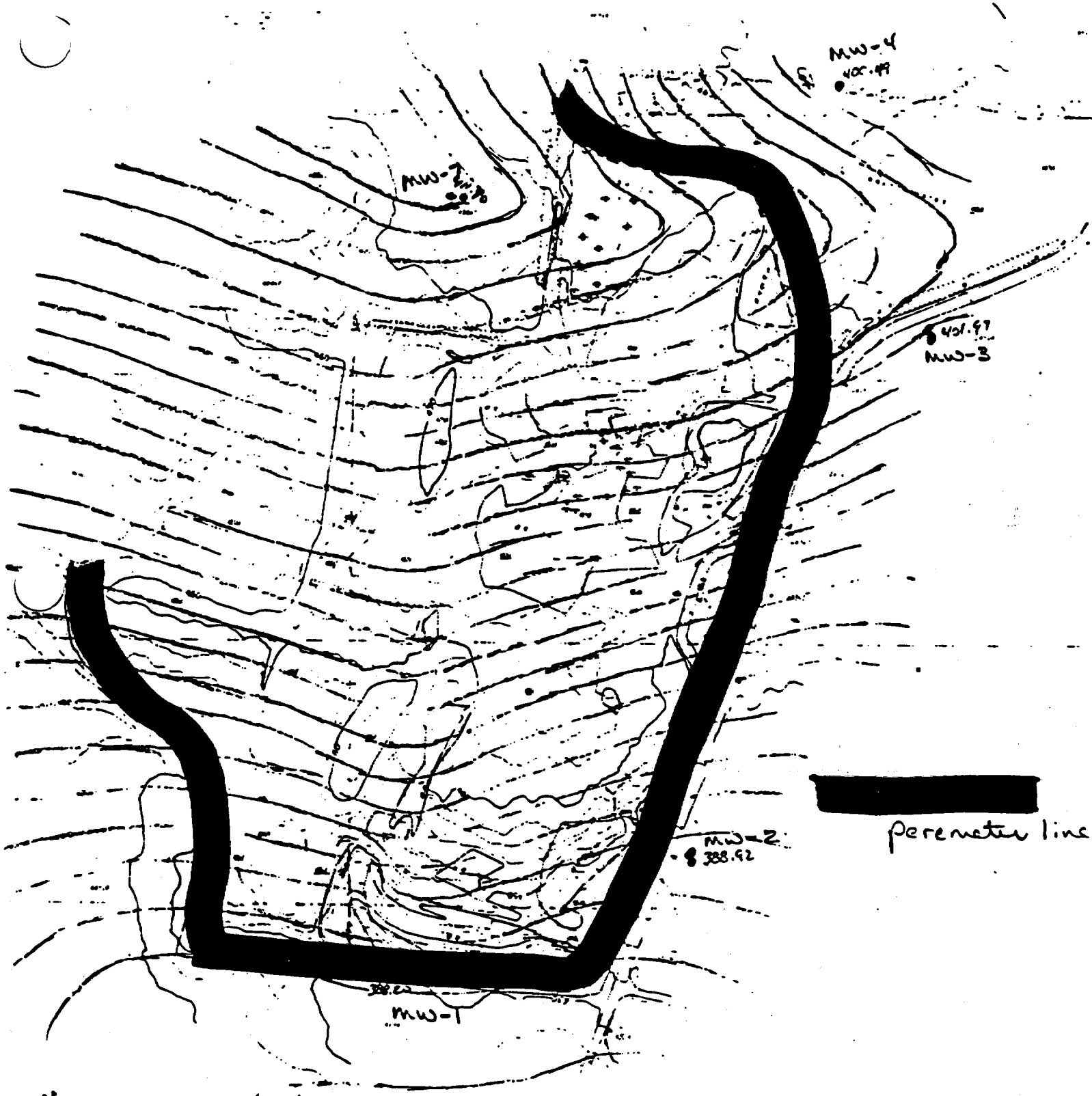
At MW-5

$$Q = \frac{(3530 \times 200)(569.3)(0.0067)}{.05} = 53{,}858{,}040 \text{ gpd}$$

$$U = \frac{[569.3 \times (1.74 \times 10^{-6})]}{.05} 0.0067 = 1.3 \times 10^{-4} \text{ ft/sec}$$

$$= 11.2 \text{ ft/day}$$

ORIGINAL (Red)



MK
6/17/88

Scale 1" = 250'

Pie
Wa

ORIGINAL
(Red)

APPENDIX F - GEOPHYSICAL INVESTIGATIONS