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74-07

Part 1, Site Suitability Application
Site Characterization, Facility Plan and
Hydrogeologic Report

Nov. 2002

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Part 1 SITE SUITABILITY APPLICATION

Site Characterization, Facility Plan and Hydrogeologic Report

C&D Landfill, Inc., CDLF (Phase 2)
Pitt County, North Carolina

Prepared for

November 2002

David Garrett, P.G., P.E.

Engineering and Geology

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David Garrett, P.G., P.E.
Engineering and Geology

September 5, 2004

MEMORANDUM

TO: Elizabeth Stewart, NC DENR Division of Waste Management

RE: Response to Preliminary Review Comments
Site Suitability Investigation for
C&D Landfill, Inc., Phase 2 (Pitt County)

I have made the following corrections to the report per our verbal discussion of July 23, 2004. Please see the attached revisions for your copy.

Table 1

A note was added to explain why the test boring is 80 feet deep and the bottom of the piezometer screen is set at 65 feet (the bore hole collapsed while attempting to set the piezometer). This borehole is outside the proposed footprint.

The depth of the boring for B-8 was changed to 15 feet from 35 feet.

The screen depth for B-12 and B-17s was shown correctly as 15 feet (field records were checked). However, several borings were incorrectly shown with screen lengths of 5 feet: B-13, B-15s, B-16, B-18, B-19, B-20, B-21, B-22, B-23s, B-24, B-25, B-27. The table has been corrected to reflect the boring logs.

The ground elevation at B-30 was corrected to say 16.33, consistent with the boring log.

Stick up heights on many of the borings were shown incorrectly. This was caused by a "copy" error in setting up the spreadsheet, which affected the screen intervals, as well. All values have been corrected.

Table 2

Page 1 has been printed.

Table 3

The aquifer thickness has been designated in units of feet. The conductivity value for B-5 has been revised to reflect the result provided in Appendix VI.

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Table 4

The stabilized water level for B-1d has been corrected to show 1.6 feet (below ground surface).

Minor corrections to the ground elevations were made to be consistent with Table 1 and the boring records.

Table 5

References (top of casing) for water elevations and the units have been provided.

Table 7

Hydraulic conductivity values have been corrected to match the values given in Table 3 and in Appendix VI. Water levels have been corrected per values given for 5/8/02 (per Table 5) for borings B-1 through B-3. Water levels representing the estimated maximum seasonal high ground water elevations, typically observed in April-May 2003, were used for calculation gradients at borings with numbers B-4 and higher. Reference contours were adjusted, as needed, and all gradients and velocity values were recalculated. Ground water velocities were calculated for those borings with field conductivity test results (i.e., B-1 through B-10).

Please find the enclosed Tables 1-8, with today's revision date, which supercede those already in your copy of the report. Please note Tables 1B, 2, 6, and 8 have not changed. None of these revisions materially changed the data or the conclusions drawn from the investigation. If these revisions are satisfactory, I will make sufficient copies of the tables to amend all copies of the report held by the Solid Waste Section, the Client and the Engineer.

Thank you for your review comments.

Table 1A
Test Boring/Piezometer Data

* The top of the Yorktown is generally identified by a turretella-rich marker bed in green, medium stiff silt-clay

** The Castle Hayne is generally identified by shell-rich cemented sands and clays

***The Beaufort formation is generally characterized by the presence of glauconite (a green sedimentary mica), but this material could have been reworked into the shallower Yorktown sediments, as glauconite was observed

Elevation Data				Test Boring Data								Piezometer Construction Data				
Boring Number	Boring Date	PVC Pipe Elev.	Ground Elev.	Drilling Method	Total Depth, ft.	Yorktown Fm. * Depth, ft.	Yorktown Fm. * Elev.	Castle Hayne Fm. * Depth, ft.	Castle Hayne Fm. * Elev.	Poss. Beaufort Fm. ** Depth, ft.	Poss. Beaufort Fm. ** Elev.	Top of Piez. Screen Depth, ft.	Top of Piez. Screen Elev.	Bot. of Piez. Screen Depth, ft.	Bot. of Piez. Screen Elev.	Stickup ft.
B-1d	12/27/01	20.23	17.33	Rotary	80.0	23.0	-5.7	32.4	17.3	51.9	17.3	55.0	-37.7	65.0	-47.7	2.90
B-1s	12/14/01	20.06	17.19	HSA	15.0							10.0	7.2	15.0	2.2	2.87
B-2	12/17/01	21.02	16.94	HSA	20.0	14.7	2.2					10.0	6.9	20.0	-3.1	4.08
B-3	12/18/01	20.74	17.28	HSA	30.0	26.3	-9.0					20.0	-2.7	30.0	-12.7	3.46
B-4	12/18/01	22.83	19.34	HSA	25.0	19.6	-0.3					15.0	4.3	25.0	-5.7	3.49
B-4A	04/10/02	21.98	19.47	Hand Auger	5.0	–		–				2.5	17.0	5.0	14.5	2.50
B-5	12/17/01	23.90	19.28	HSA	25.0	19.7	-0.4					15.0	4.3	25.0	-5.7	4.62
B-5A	04/10/02	21.04	19.43	Hand Auger	4.0	–		–				1.5	17.9	4.0	15.4	3.32
B-6	12/18/01	21.98	18.43	HSA	25.0	19.9	-1.5					15.0	3.4	25.0	-6.6	3.55
B-6A	04/10/02	19.04	18.54	Hand Auger	3.8	–		–				1.3	17.2	3.8	14.7	3.64
B-7	12/12/01	21.04	18.28	HSA	25.0	17.0	1.3					15.0	3.3	25.0	-6.7	2.76
B-8	12/13/01	18.69	15.32	HSA	15.0	8.5	6.8					10.0	5.3	15.0	0.3	3.37
B-8A	04/10/02	17.93	15.42	Hand Auger	3.9	–		–				1.4	14.0	3.9	11.5	3.62
B-9	12/13/01	20.64	17.55	HSA	20.0	16.1	1.4					10.0	7.6	20.0	-2.4	3.09
B-10	12/13/01	21.28	18.29	HSA	20.0	13.5	4.8					10.0	8.3	20.0	-1.7	2.99
B-11	12/11/02	17.93	15.24	HSA	40.0	10.9	4.3	27.6	-12.4			35.0	-19.8	40.0	-24.8	2.69
B-12	12/12/02	20.14	16.74	HSA	20.0	17.9	-1.2					15.0	1.7	20.0	-3.3	3.40
B-13	12/12/02	21.90	18.82	HSA	20.0	17.8	1.0					15.0	3.8	20.0	-1.2	3.08
B-14	12/18/02	19.17	16.26	HSA	40.0	11.8	4.5	31.9	-15.6			35.0	-18.7	40.0	-23.7	2.91
B-15d	12/13/02	20.52	17.57	HSA	40.0	15.5	2.1	35.2	-17.6			35.0	-17.4	40.0	-22.4	2.95
B-15s	12/13/02	20.45	17.59	HSA	20.0	15.5	2.1					15.0	2.6	20.0	-2.4	2.86
B-16	12/10/02	18.77	15.92	HSA	20.0	8.1	7.8					15.0	0.9	20.0	-4.1	2.85
B-17d	12/18/02	19.61	17.07	HSA	40.0	12.7	4.4	37.1	-20.0			35.0	-17.9	40.0	-22.9	2.54
B-17s	12/18/02	19.67	17.00	HSA	20.0	13.0	4.0					15.0	2.0	20.0	-3.0	2.67
B-18	12/09/02	21.55	18.77	HSA	20.0	17.9	0.9					15.0	3.8	20.0	-1.2	2.78
B-19	12/06/02	21.93	18.62	HSA	20.0	13.3	5.3					15.0	3.6	20.00	-1.4	3.31
B-20	12/09/02	20.74	18.18	HSA	20.0	18.1	0.1					15.0	3.2	20.00	-1.8	2.56
B-21	12/10/02	19.01	16.17	HSA	20.0	8.2	8.0					15.0	1.2	20.0	-3.8	2.84
B-22	12/12/02	21.07	18.02	HSA	20.0	17.8	0.2					15.0	3.0	20.0	-2.0	3.05
B-23d	12/17/02	17.45	14.54	HSA	40.0	12.7	1.8	33.8	-19.3			35.0	-20.5	40.0	-25.5	2.91
B-23s	12/18/02	16.60	13.90	HSA	20.0	13.0	0.9					15.0	-1.1	20.0	-6.1	2.70
B-24	12/11/02	19.49	16.73	HSA	20.0	13.3	3.4					15.0	1.7	20.0	-3.3	2.76
B-25	12/10/02	18.36	15.76	HSA	20.0	8.7	7.1					15.0	0.8	20.0	-4.2	2.60
B-26	12/19/02	20.93	17.77	HSA	40.0	21.7	-3.9	35.4	-17.6			35.0	-17.2	40.0	-22.2	3.16
B-27	12/09/02	19.81	16.98	HSA	20.0	13.4	3.6					15.0	2.0	20.0	-3.0	2.83
B-28	12/17/02	19.57	16.76	HSA	40.0	12.1	4.7					35.0	-18.2	40.0	-23.2	2.81
B-29	04/23/03	19.42	17.10	HSA	20.0	19.5	-2.4					10.0	7.1	20.0	-2.9	2.32
B-30	04/23/03	21.27	16.33	HSA	40.0	14.3	2.0	37.9	-21.6			30.0	-13.7	40.0	-23.7	4.94

Notes:

1. No rock or partially weathered rock was encountered, although 100+ bpf material (cemented layers) was encountered
2. Some of the formation depths are estimated as near as possible based on the sampling interval
3. Clay layer will shell marker bed was not encountered at B-1 (alluvial deposits indicate the presence of an old channel located nearby)
4. The deeper formations (Castle Hayne and Beaufort), believed to have been encountered at B-1d, were characterized in the Phase 1 investigation (these layers are beneath the conifining unit and are considered relatively insignificant to the hydrogeology of the site)
5. Test boring B-1d collapsed below a depth of 65 feet while attempting to set the piezometer (boring originally extended to 80 feet); piezometer set at 65 feet

Table 1B
Supplemental Data for Selected Regional Water Wells

Based on NC DENR Monitoring Well Database

All dimensions given in feet, elevations refenced to mean sea level

Test Boring Data			Data on Specific Geologic Formations																			
Boring	Ground	Total	Yorktown Fm.			Castle Hayne Fm.			Beaufort Fm.			Pee Dee Fm.			Black Creek Fm.			Cape Fear Fm.			Basement	
Number	Elev.	Depth, ft.	Depth, ft.	Elev.	Thickness	Depth, ft.	Elev.	Thickness	Depth, ft.	Elev.	Thickness	Depth, ft.	Elev.	Thickness	Depth, ft.	Elev.	Thickness	Depth, ft.	Elev.	Thickness	Depth, ft.	Elev.
M21Q *	15	730	20	15	47	67	-22	-24	43	-32	39	86	-71	117	203	-188	319	522	-507			
N22I *	42	250	14	34	36	50	-8	28	78	-45	59	146	-104									
N23B	62	440	19	36	**				49	4	44	102	-40	73	175	-113						
N23D	56	432	8	38	**				26	16	24	64	-8	320	384	-328						
N23G *	68	456	10	56	**				68	31	53	90	-22	45	135	-67	259	394	-326			
N23O	67	480	20	47	**				66	24	29	72	-5	66	138	-71	304	442	-375			
O23A	50	514	10	36	**				38	-28	66	144	-94	110	254	-204	226	480	-430			
M24R	49	754	21	30	**							48	1	30	78	-29	257	335	-286	419	754	-705
M24B *	26	502	40	18	**							32	-6	14	46	-20	221	267	-241			
O23L	42	1092	28	32	26	54	7	106	160	-26	22	90	-48	90	180	-138	272	452	-410	640	1092	-1050
O22H	46	470	0	26	0	0	-2	0	0	-20	94	160	-114	120	280	-234						
N23P	70	802	0	60	**				0	32	40	78	-8	70	148	-78	266	414	-344			
M24U *	65	711	0	44	**							66	-1	48	114	-49	283	397	-332			
M18I	40	1526				0	-73	0	0	-222	126	388	-348	105	493	-453	194	687	-647			
M20E *	45	516	0	17	0	0	-9	0	0	-115	30	190	-145	120	310	-265						
Average formation thickness for closest borings:					**35**			**24**			**45**			**70**			**270**			**530**		

* Relatively close to site (see Map, Appx. V)

** Interface not clearly identified – deeper unit may have been absent.

Supplemental Data for On-site Wells (Phase 1)

Elevation Data				Test Boring Data							Piezometer Construction Data				
Boring	Boring	PVC Pipe	Ground	Drilling	Total	Yorktown Fm.		Castle Hayne Fm.		Beaufort Fm.		Top of Piez. Screen		Bot. of Piez. Screen		Stickup
Number	Date	Elev.	Elev.	Method	Depth, ft.	Depth, ft.	Elev.	Depth, ft.	Elev.	Depth, ft.	Elev.	Depth, ft.	Elev.	Depth, ft.	Elev.	ft.
MW-1d	10/12/00	21.14	17.40	HSA	50.0	7.5	-32.6	30.5	50.0			40.0	17.4	50.0	0.0	36789.86
(Old B-1)																
MW-1S	05/06/01	20.91	17.59	HSA	13.0	–						3.0	18.0	13.0	18.0	36786.20
MW-2D	10/09/00	21.80	17.97	Rotary	70.0	12.5	0.0	33.5	0.0	61.5	0.0	39.0	0.0	49.0	0.0	0.00
(Old B-2d)																
MW-2S	05/05/01	21.44	18.45	HSA	13.0	–	0.0		0.0			3.0	0.0	13.0	0.0	0.00
MW-3D	10/12/00	22.83	19.37	HSA	50.0	14.0	1.8	27.5	14.8			40.0	14.8	50.0	-1.2	36997.58
(Old B-3)																
MW-4	05/05/01	18.42	14.83	HSA	13.0	–						3.0	16.0	13.0	-3.9	36996.60
MW-5	11/18/02	17.90	14.80	HSA	18.0	18.4	0.3					3.0	18.3	18.0	18.3	37556.79
MW-6	05/05/01	20.03	16.87	HSA	13.0	–						3.0	19.9	13.0	19.9	37552.12
MW-7	05/05/01	19.40	16.03	HSA	13.0	–						3.0	19.9	13.0	19.9	37555.05
MW-8	11/18/02	21.21	18.30	HSA	18.0	17.6	0.0					3.0	0.0	18.0	0.0	0.00
MW-9D	11/15/02	22.88	19.88	HSA	39.0	16.5	0.0					33.0	0.0	38.0	0.0	0.00
MW-9S	11/18/02	22.95	19.91	HSA	18.5	16.5	0.0					3.0	0.0	18.0	0.0	0.00

Table 2
Geotechnical Laboratory Data

Grain Size Distributution and Soil Classification

S = Split Spoon Sample
B = Bulk Sample (Remolded)
U = Shelby Tube (Undisturbed)
G = Grab Sample

Boring Number	Sample Number	Sample Depth, ft.	Grain Size Distribution % F. Gravel	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Liquid Limit	Plasticity Limit	Plasticity Index	USCS Class.	Natural Moisture	Hydrogeologic Description
			> 4.75 mm	4.75 - 2.0 mm	2.0 - 0.425 mm	0.425 - 0.074 mm	0.074 - 0.002 mm	< 0.002 mm					%	
			>#4 SIEVE	#4 - #10	#10 - #40	#40 - #200	<#200	By Hydrometer						
B-1	U1	12.3' - 12.8'	0.00	0.30	4.76	52.83	21.54	20.57	36	19	17	CL	42.2	Fine sandy silty CLAY (Lean CLAY)
B-2	B1	1' - 5'	0.31	0.64	20.25	43.57	30.29	4.93	NP	NP	NP	SM	31.8	Non-plastic silty fine to medium SAND
B-4	S4	9.5' - 10'	0.00	1.18	59.96	36.25	2.61	**	NP	NP	NP	SP	20.9	Poorly graded fine to medium SAND
B-7	S1	2' - 2.5'	0.12	0.57	28.33	55.74	15.24	**	NP	NP	NP	SM	8.4	Non-plastic silty fine to medium SAND
B-7	S2	4.5' - 5'	0.00	0.41	38.33	58.67	2.59	**	NP	NP	NP	SP	3.2	Poorly graded fine to medium SAND
B-7	S3	7' - 7.5'	0.11	0.69	54.26	36.83	8.11	**	NP	NP	NP	SP-SM	21.0	Slightly silty medium to fine SAND
B-7	S4	9.5' - 10'	0.36	3.22	53.13	40.86	2.43	**	NP	NP	NP	SP	20.2	Poorly graded fine to medium SAND
B-7	S5	14.5' - 15'	0.00	0.64	45.13	45.53	8.70	**	NP	NP	NP	SP-SM	24.1	Slightly silty medium to fine SAND
B-7	S6	19.5' - 20'	0.00	0.36	31.36	61.51	6.77	**	NP	NP	NP	SP-SM	18.4	Slightly silty medium to fine SAND
B-7	S7	24.5' - 25'	0.00	1.26	24.18	58.23	16.33	**	NP	NP	NP	SM	29.1	Non-plastic silty fine to medium SAND
B-8	B2	1' - 5'	0.06	0.30	17.42	45.89	30.84	5.49	NP	NP	NP	SM	16.2	Non-plastic silty fine to medium SAND
B-8	U2	14.4' - 14.9'	1.06	1.50	2.86	56.13	20.07	18.38	30	16	14	CL	31.0	Fine sandy silty CLAY (Lean CLAY)

Notes to Above:

Moisture Contents are Dry Unit Weight Based

Moisture data for bulk samples acquired from individual jar samples collected with the bulk sample. Samples were oven-dried.
These data are considered representative of in-situ moisture conditions for earth work considerations.

Samples tested by Geotechnics, Inc., Raleigh, NC

** Insufficient fraction passing #200 sieve to run hydrometer (may contain some clay)

Table 2 - Continued
Geotechnical Laboratory Data

Compaction Data – Bulk Samples

Boring Number	Sample Number	Sample Depth, ft.	Max. Dry Density, pcf	Optimum Moisture, %	Natural Moisture, %
B-2	B1	1.0 - 5.0	98.6	18.1	31.8
B-8	B2	1.0 - 5.0	103.1	17.0	16.2

Hydraulic Conductivity Data – Remolded Bulk Samples

Boring Number	Sample Number	Sample Depth, ft.	Porosity %	Sat'd Conductivity cm/sec	Compaction % MDD	Tested Moisture, %	K cm/sec
B-2	B1	1.0 - 5.0	44.0%	6.80E-06	97.8%	19.0%	5.64E-07
B-8	B2	1.0 - 5.0	42.0%	6.50E-06	98.2%	16.6%	4.37E-07

Hydraulic Conductivity Data – Undisturbed Samples

Boring Number	Sample Number	Sample Depth, ft.	Porosity %	Sat'd Conductivity cm/sec	Tested Density (pcf)	Tested Moisture, %	K cm/sec
B-1	U1	11.0 - 11.3	50.0%	1.50E-07	124.0	27.1%	2.22E-04
B-10	U2	14.4 - 14.7	36.0%	4.60E-07	115.0	19.2%	3.03E-05

Triaxial Shear Strength Data

Boring Number	Sample Number	Sample Depth, ft.	Total Strength Parameters c (psf)	phi (degrees)	Effective Strength Parameters c' (psf)	phi (degrees)
B-2	B1	1.0 - 5.0	374	19.3	0	40.0
B-1	U1	11.0 - 11.3	130	12.5	32.1	27.4
B-8	B2	1.0 - 5.0	418	20.6	0	38.8
B-8	U2	13.0 -15.0	360	13.1	179	36.2

Consolidation Test Data

Boring Number	Sample Number	Sample Depth, ft.	* Max. Past Pressure, psf	Compression Ratio **	Consolidation Coefficient***
B-1	U1	11.0 - 11.3	1700	0.045	
B-10	U3	13.4 - 13.5	1600	0.057	

Notes to Above:

* estimated as intersection of apparent virgin compression curve and recompression curve, sample exhibits smooth transition (sand-like behavior)

** based on less than one full log cycle, steepest part of virgin compression curve

*** value taken at 2000 psf

All Moisture Contents are Dry Unit Weight Based

Moisture data for bulk samples acquired from individual jar samples collected with the bulk sample. These data are considered representative of in-situ moisture conditions for earth work considerations.

Table 3
Summary of Hydrogeological Properties

Conductivity Values Based on Falling Head Slug Tests, Evaluated by Two Methods: Hvorslev Bouwer-Rice

Piezometer No.	Hydrological Unit	Hydrogeological Description	Aquifer Thickness	Effective Porosity	Total Porosity	Conductivity k (cm/sec)	Conductivity k (cm/sec)	Representative Grain Size Distribution				Representative Boring, Sample I.D.
								% Gravel	% Sand	% Silt	% Clay	
			feet									
B-10	Aquifer Unit 1	Loose Variably Silty F-C Sand	15	0.50	0.50	9.365E-04	2.232E-03					
B-9		with Occ. Clay Layers				9.453E-04	2.237E-03					
B-8						1.474E-03	3.250E-03					
B-7						3.080E-04	7.486E-04	0.00	83.67	16.33	**	B-7, S7
B-6						1.970E-04	4.788E-04					
B-5						8.542E-04	2.104E-03					
B-4						1.018E-03	2.494E-03	0.00	97.39	2.61	**	B-4, S4
B-3						1.167E-03	3.062E-03					
B-2						1.012E-03	2.532E-03	0.31	64.47	30.29	4.93	B-2, B1
B-1s						8.737E-04	1.869E-03					
B-1d	Aquifer Unit 2	Dense Silty Sand and Clay	30	0.40	0.40	9.216E-05	2.568E-04	1.00	31.00	31.00	37.00	B-2s, U3, Phase 1

Effective and total porosity values taken from Groundwater and Wells (Driscoll, 1986), p. 67.

** Too little clay to measure in hydrometer

Aquifer thickness values assumed based on hydrogeologic cross sections

Thickness of saturated zone in Aquifer Unit 1 varies from 3 to 8 feet

No piezometers were completed in the confining units (see Undusturbed Samples on Table 2)

Table 4
Short-Term Ground Water Observations

Boring Number	Boring Date	PVC Pipe Elev.	Ground Elev.	Piezometer Stickup, ft.	Time of Boring Levels, BGS Depth, ft.	Time of Boring Levels, BGS Elev.	Stabilized Levels (24 hr), BGS Depth, ft.	Stabilized Levels (24 hr), BGS Elev.	Stabilized Levels (7+ day), BGS Depth, ft.	Stabilized Levels (7+ day), BGS Elev.	Date
B-1d	12/27/01	20.23	17.19	3.04	1.6	**15.6**	1.6	**15.6**	1.6	**15.6**	12/27/01
B-1s	12/14/01	20.06	17.19	2.87	1.5	**15.7**	1.4	**15.8**	1.6	**15.59**	12/27/01
B-2	12/17/01	21.02	16.94	4.08	2.3	**14.6**	2.3	**14.6**	2.5	**14.44**	12/27/01
B-3	12/18/01	20.74	17.28	3.46	3.4	**13.9**	3.3	**14.0**	3.0	**14.28**	12/27/01
B-4	12/18/01	22.83	19.34	3.49	5.1	**14.2**	5.1	**14.2**	4.9	**14.44**	12/27/01
B-5	12/17/01	23.90	19.28	4.62	5.3	**14.0**	5.2	**14.1**	5.2	**14.08**	12/27/01
B-6	12/18/01	21.98	18.43	3.55	4.1	**14.3**	4.2	**14.2**	4.2	**14.23**	12/27/01
B-7	12/12/01	21.04	18.28	2.76	5.6	**12.7**	5.6	**12.7**	5.8	**12.48**	12/18/01
B-8	12/13/01	18.69	15.32	3.37	3.5	**11.8**	3.5	**11.8**	3.5	**11.82**	12/18/01
B-9	12/13/01	20.64	17.55	3.09	6.4	**11.2**	6.4	**11.2**	6.5	**11.05**	12/18/01
B-10	12/13/01	21.28	18.29	2.99	6.5	**11.8**	6.4	**11.9**	6.3	**11.99**	12/18/01
B-11	12/11/02	17.93	15.24	2.69	5.5	**9.7**	5.0	**10.2**	4.49	**10.75**	01/15/03
B-12	12/12/02	20.14	16.74	3.40	4.8	**11.9**	4.8	**11.9**	4.84	**11.90**	01/15/03
B-13	12/12/02	21.90	18.82	3.08	4.7	**14.1**	5.5	**13.3**	6.39	**12.43**	01/15/03
B-14	12/18/02	19.17	16.26	2.91	3.9	**12.4**	3.7	**12.6**	3.49	**12.77**	01/15/03
B-15d	12/13/02	20.52	17.57	2.95	14.3	**3.3**	10.5	**7.1**	6.60	**10.97**	01/15/03
B-15s	12/13/02	20.45	17.59	2.86	6.5	**11.1**	5.9	**11.7**	5.33	**12.26**	01/15/03
B-16	12/10/02	18.77	15.92	2.85	3.9	**12.0**	3.3	**12.6**	2.70	**13.22**	01/15/03
B-17d	12/18/02	19.61	17.07	2.54	4.7	**12.4**	4.5	**12.5**	4.38	**12.69**	01/15/03
B-17s	12/18/02	19.67	17.00	2.67	5.0	**12.0**	4.2	**12.8**	3.36	**13.64**	01/15/03
B-18	12/09/02	21.55	18.77	2.78	3.7	**15.1**	4.0	**14.7**	4.36	**14.41**	01/15/03
B-19	12/06/02	21.93	18.62	3.31	4.3	**14.3**	4.1	**14.5**	3.94	**14.68**	01/15/03
B-20	12/09/02	20.74	18.18	2.56	3.7	**14.5**	3.9	**14.3**	4.12	**14.06**	01/15/03
B-21	12/10/02	19.01	16.17	2.84	3.1	**13.1**	2.5	**13.6**	1.96	**14.21**	01/15/03
B-22	12/12/02	21.07	18.02	3.05	4.3	**13.7**	4.6	**13.4**	4.94	**13.08**	01/15/03
B-23d	12/17/02	17.45	14.54	2.91	2.9	**11.6**	3.0	**11.5**	3.09	**11.45**	01/15/03
B-23s	12/18/02	16.60	13.90	2.70	3.0	**10.9**	2.2	**11.7**	1.43	**12.47**	01/15/03
B-24	12/11/02	19.49	16.73	2.76	3.4	**13.3**	3.5	**13.2**	3.58	**13.15**	01/15/03
B-25	12/10/02	18.36	15.76	2.60	3.4	**12.4**	2.8	**13.0**	2.10	**13.66**	01/15/03
B-26	12/19/02	20.93	17.77	3.16	3.9	**13.9**	4.0	**13.8**	4.09	**13.68**	01/15/03
B-27	12/09/02	19.81	16.98	2.83	2.2	**14.8**	2.5	**14.4**	2.87	**14.11**	01/15/03
B-28	12/17/02	19.57	16.76	2.81	4.3	**12.5**	5.1	**11.7**	5.84	**10.92**	01/15/03
B-29	04/23/03	19.42	17.1	2.32	2.3	**14.8**	2.3	**14.8**	2.30	**14.80**	04/22/03
B-30	04/23/03	21.27	16.33	4.94	2.6	**13.7**	2.5	**13.8**	2.40	**13.93**	04/22/03

Notes: NA in depth column means water level was "Not Acquired."

BGS data referenced "below ground surface."

TOC data referenced from "top of casing."

Table 5
Long Term Ground Water Levels

Water Level Elevations All values given in feet and referenced from Top of Casing

Boring	Casing Elev.	Ground Elev.	11/16/00	12/12/00	01/24/01	03/23/01	05/16/01	11/12/01
MW-1d	21.14	17.40					11.12	
MW-1s	20.91	17.59					12.00	10.83
MW-2d	21.80	17.97					9.11	
MW-2s	21.44	18.45					10.54	9.70
MW-4	18.42	14.83					11.48	10.95
MW-5	17.90	14.80						
MW-6	20.03	16.87					10.19	9.57
MW-7	19.40	16.03					10.74	10.08
MW-8	21.21	18.30						
MW-9d	22.88	19.88						
MW-9s	22.95	19.91						

B-1d	20.23	17.33						
B-1s	20.06	17.33						
B-2	21.02	16.94						
B-3	20.74	17.45						
B-4	22.83	19.47						
B-5	23.90	19.43						
B-5A	22.75	19.43						
B-6	21.98	18.54						
B-7	21.04	18.30						
B-8	18.69	15.42						
B-8A	19.04	15.42						
B-9	20.64	17.54						
B-10	21.30	18.09						
B-11	17.93	15.24						
B-12	20.14	16.74						
B-13	21.90	18.82						
B-14	19.17	16.26						
B-15d	20.52	17.57						
B-15s	20.45	17.59						
B-16	18.77	15.92						
B-17d	19.61	17.07						
B-17s	19.67	17.00						
B-18	21.55	18.77						
B-19	21.93	18.62						
B-20	20.74	18.18						
B-21	19.01	16.17						
B-22	21.07	18.02						
B-23d	17.45	14.54						
B-23s	16.60	13.90						
B-24	19.49	16.73						
B-25	18.36	15.76						
B-26	20.93	17.77						
B-27	19.81	16.98						
B-28	19.57	16.76						
B-29	19.42	17.1						
B-30	21.27	16.33						

Boring	Casing Elev.	Ground Elev.	11/16/00	12/12/00	01/24/01	03/23/01	05/16/01	11/12/01
MW-1s	20.91	17.59					12.00	10.83
B-3 (Phase 1)	22.83	19.37	10.69	10.73	10.44	10.72		
B-5 (Phase 1)	20.46	18.61	11.57	11.66	11.41	11.59		
B-9d (Phase 1)	20.40	18.46	11.08	11.02	10.79	10.98		
B-13 (Phase 1)	21.69	19.80	11.73	11.45	11.35	11.69		
B-14 (Phase 1)	20.70	18.56	11.41	11.33	11.20	11.58		

Surface impoundments occurred at B-1s/d and B-2 during the winter/spring of 2002 due to beaver activity on the main drainage canal located south of the western "panhandle"

Borings B-1 through B-6 are located within a future soil borrow area, a relatively low-lying area that may have been influenced by the beaver activity and/or recent logging activity

Borings B-7 through B-10 are located in the proposed 20-acre waste footprint, within higher ground not as likely to have been influenced by the beavers

Table 5
Long Term Ground Water Levels

Water Level Elevations - continued All values given in feet and referenced from Top of Casing

		Heavy Beaver Activity							
Boring	12/27/01	02/12/02	03/12/02	04/10/02	04/22/02	05/02/02	05/08/02	06/25/02	11/27/02
MW-1d									
MW-1s						13.06			12.35
MW-2d									
MW-2s						10.91			9.95
MW-4						11.80			11.66
MW-5									10.92
MW-6						10.30			9.73
MW-7						10.89			10.33
MW-8									11.03
MW-9d									10.21
MW-9s									10.84
B-1d	15.59	16.10	15.61		16.04		15.37	13.82	
B-1s	15.59	16.18	15.78		16.38		16.20	14.38	
B-2	14.44	15.94	15.97		16.04		14.94	13.31	
B-3	14.28	16.23	16.21	16.71	16.59		15.83	14.04	
B-4	14.44	17.50	16.73	17.49	17.13		15.82	13.86	
B-5	14.08	16.76	16.25	16.75	16.69		15.60	14.17	
B-5A				17.50			19.16		
B-6	14.23	16.99	16.53	16.95	16.93		15.87	13.76	
B-7	12.38	13.90	13.73		14.33		13.45	12.59	
B-8	11.82	13.70	13.29	13.89	13.97		13.15	11.88	
B-8A				13.62			12.93	12.77	
B-9	11.15	12.24	12.53		13.10		12.61	11.67	
B-10	11.71	13.50	13.42		14.33		13.56	12.39	
B-11									
B-12									
B-13									
B-14									
B-15d									
B-15s									
B-16									
B-17d									
B-17s									
B-18									
B-19									
B-20									
B-21									
B-22									
B-23d									
B-23s									
B-24									
B-25									
B-26									
B-27									
B-28									
B-29									
B-30									

Boring	12/27/01	02/12/02	03/12/02	04/10/02	04/22/02	05/02/02	05/08/02	06/25/02	11/27/02
MW-1s							13.06		12.35
B-3 (Phase 1)	9.35								
B-5 (Phase 1)	10.11	11.10	11.08		11.66		11.66	10.11	
B-9d (Phase 1)		9.55			10.45		11.10	9.76	
B-13 (Phase 1)	10.14	11.14	11.44		12.13		12.24	10.89	
B-14 (Phase 1)	11.80	11.02	11.28		12.24		12.13	10.86	

Table 5
Long Term Ground Water Levels

Maximum Seasonal High Water Elevation

Water Level Elevations - continued

All values given in feet and referenced from Top of Casing

Boring	01/15/03	02/25/03	04/22/03	05/14/03	06/22/03	Shallowest Max. Elev.	Deepest Min. Elev.	Observed Difference
MW-1d				11.98		11.98	11.12	0.86
MW-1s				13.08		13.08	10.83	2.25
MW-2d				9.74		9.74	9.11	0.63
MW-2s				11.24		11.24	9.70	1.54
MW-4				11.82		11.82	10.95	0.87
MW-5				11.72		11.72	10.92	0.80
MW-6				10.57		10.57	9.57	1.00
MW-7				10.92		10.92	10.08	0.84
MW-8				11.85		11.85	11.03	0.82
MW-9d						10.21	10.21	0.00
MW-9s				11.65		19.16	9.84	9.32
B-1d						16.10	13.82	2.28
B-1s						16.38	14.38	2.00
B-2						16.04	13.31	2.73
B-3					12.96	16.71	12.96	3.75
B-4						17.50	13.86	3.64
B-5			16.44	16.30	14.85	16.76	14.08	2.68
B-5A			17.17	17.03		19.16	17.03	2.13
B-6						16.99	13.76	3.23
B-7	13.57	14.17	14.20	14.06	13.51	14.33	12.38	1.95
B-8	13.01	13.95	14.18	14.04	12.94	14.18	11.82	2.36
B-8A	13.05	13.72	14.00	13.86	12.71	14.00	12.71	1.29
B-9	12.46	13.11	13.30	13.16	12.52	13.30	11.15	2.15
B-10	13.30	14.10	14.53	14.39	13.42	14.53	11.71	2.82
B-11	10.75	11.19	11.91	11.77	11.10	11.91	10.75	1.16
B-12	11.90	12.42	12.62	12.48	12.05	12.62	11.90	0.72
B-13	12.43	13.13	13.40	12.26	12.45	13.40	12.26	1.14
B-14	12.77	13.22	13.70	13.56	12.94	13.70	12.77	0.93
B-15d	10.97	11.37	12.05	11.91	11.30	12.05	10.97	1.08
B-15s	12.26	12.89	13.25	13.11	12.34	13.25	12.26	0.99
B-16	13.22	14.82	14.27	14.13	12.97	14.82	12.97	1.85
B-17d	12.69	13.21	13.71	12.56	12.97	13.71	12.56	1.15
B-17s	13.64	14.65	14.39	14.25	13.44	14.65	13.44	1.21
B-18	14.41	15.40	15.13	14.99	13.80	15.40	13.80	1.60
B-19	14.68	15.99	15.54	15.40	14.22	15.99	14.22	1.77
B-20	14.06	15.25	15.15	15.01	13.80	15.25	13.80	1.45
B-21	14.21	15.72	15.59	15.45	13.80	15.72	13.80	1.92
B-22	13.08	14.05	14.34	14.20	13.22	14.34	9.84	4.50
B-23d	11.45	12.15	12.76	12.62	12.05	12.76	9.84	2.92
B-23s	12.47	9.84	12.96	12.82	12.40	12.96	9.84	3.12
B-24	13.15	14.12	14.20	13.00	12.95	14.20	12.95	1.25
B-25	13.66	15.33	15.01	14.87	13.02	15.33	13.02	2.31
B-26	13.68	14.20	14.59	14.45	13.85	14.59	13.68	0.91
B-27	14.11	15.26	14.82	14.03	13.68	15.26	13.68	1.58
B-28	10.92	12.13	12.76	12.62	12.02	12.76	10.92	1.84
B-29			14.80	13.48	13.26	14.80	13.26	1.54
B-30			16.23	15.06	13.08	16.23	13.08	3.15

Boring	01/15/03	02/25/03	04/22/03	05/14/03	06/22/03	Max.	Min.	Difference
MW-1s				13.08		13.08	10.83	2.25
B-3 (Phase 1)						10.73	9.35	1.38
B-5 (Phase 1)						11.66	10.11	1.55
B-9d (Phase 1)						11.10	9.55	1.55
B-13 (Phase 1)						12.24	10.14	2.10
B-14 (Phase 1)						12.24	10.86	1.38

Table 6
Vertical Ground Water Gradient Calculations

The vertical gradients can change with time due to seasonal fluctuation of the potentiometric levels between the upper, unconfined aquifer and the deeper, partly confined aquifer

Selected Ground Water Observation Dates

Nested Piezometers: **B-1s** Aquifer Unit 1 – Silt and clay strata (10 to 15 feet)
B-1d Aquifer Unit 2 – Silty Sand, Partly Cemented

Piezometer No.	Top of Screen, El.	Bottom of Screen, El.	delta-Screen Interval, ft *	12/27/01 W.T.E.	02/12/02 W.T.E.	03/12/02 W.T.E.	04/10/02 W.T.E.	04/22/02 W.T.E.	05/08/02 W.T.E.	06/25/02 W.T.E.
B-1s	7.3	2.3	40	15.59	16.18	15.78	–	16.38	16.20	14.38
B-1d	-37.7	-47.7		15.59	16.10	15.61	–	16.04	15.37	13.82
delta-W.T.E. (see Note 1)				0.00	0.08	0.17		0.34	0.83	0.56
Vertical Gradient (see Note 2)				**0.0000 Down**	**0.0020 Down**	**0.0042 Down**		**0.0085 Down**	**0.0207 Down**	**0.0140 Down**

Water level observation ceased due to elimination this portion of the site for new landfill footprint (possible borrow site)

Nested Piezometers: **B-8A** Aquifer Unit 1 – Silty and clayey sand strata (upper 6 feet)
B-8 Aquifer Unit 1 – Deeper silt strata (10 to 15 feet)

Piezometer No.	Top of Screen, El.	Bottom of Screen, El.	delta-Screen Interval, ft *	03/23/01 W.T.E.	W.T.E.	W.T.E.	04/10/02 W.T.E.	W.T.E.	05/08/02 W.T.E.	06/25/02 W.T.E.	01/15/03 W.T.E.	02/25/03 W.T.E.	04/22/03 W.T.E.	05/14/03 W.T.E.	06/22/03 W.T.E.
B-8A	14.0	11.5	6.1	13.77	–	–	10.00	–	9.31	9.15	12.95	13.72	14.00	13.86	12.71
B-8	5.4	0.4		13.61	–	–	10.62	–	9.88	8.61	13.01	13.95	14.18	14.04	12.94
delta-W.T.E. (see Note 1)				0.16			-0.62		-0.57	0.54	-0.06	-0.23	-0.18	-0.18	-0.23
Vertical Gradient (see Note 2)				**0.0262 Down**			**-0.1016 Up**		**-0.0934 Up**	**0.0885 Down**	**-0.0098 Up**	**-0.0377 Up**	**-0.0295 Up**	**-0.0295 Up**	**-0.0377 Up**

Nested Piezometers: **B-5A** Aquifer Unit 1 – Silty and clayey sand strata (upper 6 feet)
B-5 Aquifer Unit 1 – Deeper silt and sand strata (15 to 25 feet)

Piezometer No.	Top of Screen, El.	Bottom of Screen, El.	delta-Screen Interval, ft *	W.T.E.	W.T.E.	W.T.E.	04/10/02 W.T.E.	W.T.E.	05/08/02 W.T.E.	06/25/02 W.T.E.	01/15/03 W.T.E.	02/25/03 W.T.E.	04/22/03 W.T.E.	05/14/03 W.T.E.	06/22/03 W.T.E.
B-5A	17.9	15.4	11	–	–	–	14.18	–	15.84	dry	–	–	17.17	17.03	dry
B-5	4.4	-5.6		–	–	–	12.28	–	11.13	9.70	–	–	16.44	16.30	14.85
delta-W.T.E. (see Note 1)							1.90		4.71				0.73	0.73	
Vertical Gradient (see Note 2)							**0.1727 Down**		**0.4282 Down**				**0.0664 Down**	**0.0664 Down**	

Nested Piezometers: **B-6A** Aquifer Unit 1 – Silty and clayey sand strata (upper 6 feet)
B-6 Aquifer Unit 1 – Deeper silt and sand strata (15 to 25 feet)

Piezometer No.	Top of Screen, El.	Bottom of Screen, El.	delta-Screen Interval, ft *	W.T.E.	W.T.E.	W.T.E.	04/10/02 W.T.E.	W.T.E.	05/08/02 W.T.E.	06/25/02 W.T.E.
B-6A	17.2	14.7	11.2	–	–	–	12.93	–	12.40	dry
B-6	3.5	-6.5		–	–	–	13.51	–	12.43	10.32
delta-W.T.E. (see Note 1)							-0.58		-0.03	
Vertical Gradient (see Note 2)							**-0.0518 Up**		**-0.0027 Up**	

Water level observation ceased due to elimination this portion of the site for new landfill footprint (possible borrow site)

Nested Piezometers: **B-15s** Aquifer Unit 1 – Silt and clay strata (10 to 15 feet)
B-15d Aquifer Unit 2 – Silty Sand, Partly Cemented

Piezometer No.	Top of Screen, El.	Bottom of Screen, El.	delta-Screen Interval, ft *	W.T.E.	W.T.E.	W.T.E.	W.T.E.	W.T.E.	W.T.E.	W.T.E.	01/15/03 W.T.E.	02/25/03 W.T.E.	04/22/03 W.T.E.	05/14/03 W.T.E.	06/22/03 W.T.E.
B-15s	12.6	-2.4	15	–	–	–	–	–	–	–	12.26	12.89	13.25	13.11	12.34
B-15d	-17.4	-22.4		–	–	–	–	–	–	–	10.97	11.37	12.05	11.91	11.30
delta-W.T.E. (see Note 1)						Borings were installed December 2002					1.29	1.52	1.20	1.20	1.04
Vertical Gradient (see Note 2)											**0.0860 Down**	**0.1013 Down**	**0.0800 Down**	**0.0800 Down**	**0.0693 Down**

Nested Piezometers: **B-17s** Aquifer Unit 1 – Silt and clay strata (10 to 15 feet)
B-17d Aquifer Unit 2 – Silty Sand, Partly Cemented

Piezometer No.	Top of Screen, El.	Bottom of Screen, El.	delta-Screen Interval, ft *	W.T.E.	W.T.E.	W.T.E.	W.T.E.	W.T.E.	W.T.E.	W.T.E.	01/15/03 W.T.E.	02/25/03 W.T.E.	04/22/03 W.T.E.	05/14/03 W.T.E.	06/22/03 W.T.E.
B-17s	2.0	-3.0	14.9	–	–	–	–	–	–	–	13.64	14.65	14.39	14.25	13.44
B-17d	-17.9	-22.9		–	–	–	–	–	–	–	12.69	13.21	13.71	12.56	12.97
delta-W.T.E. (see Note 1)						Borings were installed December 2002					0.95	1.44	0.68	1.69	0.47
Vertical Gradient (see Note 2)											**0.0638 Down**	**0.0966 Down**	**0.0456 Down**	**0.1134 Down**	**0.0315 Down**

Nested Piezometers: **B-23s** Aquifer Unit 1 – Silt and clay strata (10 to 15 feet)
B-23d Aquifer Unit 2 – Silty Sand, Partly Cemented

Piezometer No.	Top of Screen, El.	Bottom of Screen, El.	delta-Screen Interval, ft *	W.T.E.	W.T.E.	W.T.E.	W.T.E.	W.T.E.	W.T.E.	W.T.E.	01/15/03 W.T.E.	02/25/03 W.T.E.	04/22/03 W.T.E.	05/14/03 W.T.E.	06/22/03 W.T.E.
B-23s	8.9	-6.1	14.4	–	–	–	–	–	–	–	12.47	9.84	12.96	12.82	12.40
B-23d	-20.5	-25.5		–	–	–	–	–	–	–	11.45	12.15	12.76	12.62	12.05
delta-W.T.E. (see Note 1)						Borings were installed December 2002					1.02	-2.31	0.20	0.20	0.35
Vertical Gradient (see Note 2)											**0.0708 Down**	**-0.1604 UP**	**0.0139 Down**	**0.0139 Down**	**0.0243 Down**

Notes to Above:

* Difference between bottom of upper screen and top of deeper screen

1 delta-W.T.E. = difference in water level (shallow well minus deep well)

2 Vertical Gradient = delta-W.T.E / delta-Screen Interval

3 **Negative vertical gradients are upward, positive gradients are downward.**

Table 7
Horizontal Ground Water Gradient and Velocity Calculations

Based on Bouwer-Rice Solutions (Table 3) All elevations and distances given in feet

Well / Piez.	Hydraulic Conductivity (k)		Water	Ref. GW	Vertical	Horizontal	Hydraulic	Effective	Ground Water Velocity	
No.	cm/sec	ft/day	Elevation	Contour	Distance	Distance	Gradient (I)	Porosity (n)	ft/day	in/day
B-1d	2.568E-04	0.715	15.37	16	0.63	200	0.0031	0.50	4.51E-03	0.05
B-1s	1.869E-03	5.206	16.20	16	0.20	200	0.0010	0.50	1.04E-02	0.12
B-2	2.532E-03	7.053	14.94	15	0.06	40	0.0015	0.50	2.12E-02	0.25
B-3	3.062E-03	8.529	15.83	15	0.83	80	0.0104	0.50	1.77E-01	2.12
B-4	2.494E-03	6.947	17.50	17	0.50	70	0.0071	0.50	9.92E-02	1.19
B-5	2.104E-03	5.861	16.76	17	0.24	90	0.0027	0.50	3.13E-02	0.38
B-6	4.788E-04	1.334	16.99	17	0.01	45	0.0002	0.50	5.93E-04	0.01
B-7	7.486E-04	2.085	14.33	14	0.33	300	0.0011	0.50	4.59E-03	0.06
B-8	3.250E-03	9.053	14.18	15	0.82	185	0.0044	0.50	8.03E-02	0.96
B-9	2.237E-03	6.231	13.30	14	0.70	310	0.0023	0.50	2.81E-02	0.34
B-10	2.232E-03	6.217	14.53	13	1.53	140	0.0109	0.40	1.70E-01	2.04
B-11			11.91	12	0.09	35	0.0026	Conductivity	Not	Acquired
B-12			12.62	12	0.62	100	0.0062	Conductivity	Not	Acquired
B-13			13.4	13	0.40	50	0.0080	Conductivity	Not	Acquired
B-14			13.7	16	2.30	100	0.0230	Conductivity	Not	Acquired
B-15d			12.05	11	1.05	180	0.0058	Conductivity	Not	Acquired
B-15s			13.25	11	2.25	180	0.0125	Conductivity	Not	Acquired
B-16			14.82	14	0.82	65	0.0126	Conductivity	Not	Acquired
B-17d			13.71	14	0.29	70	0.0041	Conductivity	Not	Acquired
B-17s			14.65	14	0.65	70	0.0093	Conductivity	Not	Acquired
B-18			15.4	15	0.40	240	0.0017	Conductivity	Not	Acquired
B-19			15.99	15	0.99	300	0.0033	Conductivity	Not	Acquired
B-20			15.25	16	0.75	75	0.0100	Conductivity	Not	Acquired
B-21			15.72	15	0.72	135	0.0053	Conductivity	Not	Acquired
B-22			14.34	14	0.34	30	0.0113	Conductivity	Not	Acquired
B-23d			12.76	13	0.24	25	0.0096	Conductivity	Not	Acquired
B-23s			12.96	13	0.04	25	0.0016	Conductivity	Not	Acquired
B-24			14.2	14	0.20	50	0.0040	Conductivity	Not	Acquired
B-25			15.33	15	0.33	85	0.0039	Conductivity	Not	Acquired
B-26			14.59	15	0.41	60	0.0068	Conductivity	Not	Acquired
B-27			15.26	15	0.26	25	0.0104	Conductivity	Not	Acquired
B-28			12.76	14	1.24	220	0.0056	Conductivity	Not	Acquired
B-29			14.8	16	1.20	65	0.0185	Conductivity	Not	Acquired
B-30			16.23	14	2.23	20	0.1115	Conductivity	Not	Acquired

Water levels used in calculations reflect observations made on 5/8/02 (see Table 5), the date of the slug tests for borings B-1s, B-1d, B-2, and B-3 using ground water contours at the time of observation (only B-1 through B-10 existed then – these are the "Site Suitability" borings)

Water levels used in calculations reflect Estimated Seasonal High water Levels, observed April-May 2003 (see Figure F-4), for borings B-4 – B-30 (these borings have not been slug tested)

Ground Water Velocity Calculated from Equation:

$V=KI/n$ where K = Hydraulic Gradient in units of ft/ft
n = Effective Porosity is unitless
V = Ground Water Velocity in ft/day

Hydraulic Conductivity Conversion Factor: 1 ft/day = 3.59E-04 cm/sec

Hydraulic conductivity data taken from slug test data, Table 3

Hydraulic Gradient values were calculated from the potentiometric surface map (Figure F-4).

Effective Porosity values from published literature (see footnote on Table 3).

Table 8
Hand Auger Boring Data

These borings were made to facilitate installation of shallow piezometers required to verify shallow ground water conditions within portions of the site

Only B-8A remains within the landfill footprint due to design changes

Piezometers were installed with 2.5 foot screens, sand packs, bentonite seals

All depths given in feet

Boring	From	To	Soil description
B-4A	0	4.95	Sand (continually caving in)
	Stick up 2.50 feet Sand pack placed to 0.7 feet b.g.s. Bentonite placed to surface Water level 3.12 feet b.g.s. upon completion		
B-5A	0	4.01	Sand (continually caving in)
	Stick up 3.32 feet Sand pack placed to 0.3 feet b.g.s. Bentonite placed to surface Water level 1.83 feet b.g.s. upon completion		
B-6A	0	3.8	Sand (continually caving in)
	Stick up 3.64 feet Sand pack placed to 0.3 feet b.g.s. Bentonite placed to surface Water level 1.97 feet b.g.s. upon completion		
B-8A	0	3.88	Sand (continually caving in)
	Stick up 3.62 feet Sand pack placed to 0.7 feet b.g.s. Bentonite placed to surface Water level 1.8 feet b.g.s. upon completion		

Pitt County C&D - Site Suitability

Section 2.2 - Endangered Species

- waiting for response and insert

Section 2.3 - Archaeological & Historical Site

- waiting for response and insert

Section 4.0 - Site Characterization

4.1 - Local Area Study

figure S1 - 2 mile radius

figure S2 - local area map (1/4 mile radius)

figure S3 - aerial photograph (1/4 mile radius)

potable water supply wells located on Figure S1

4.2 - Soil Test Boring Investigation

test borings & hand auger borings (Dec'01 & Jan'02) displayed on Figure F1

test boring data summerized on Table 1A

test borings labled with "B" were bored to depths 15 - 70 feet

test boring records in Appendix III

4.3 - Soil Classification

results of lab testing in Table 2

lab data in Appendix IV

eastern portion of site - soils in the upper 5 - 8 feet are classified as low to medium plasticity clayey silt (CL-ML) and silty sand (SM)

western portion of site - in the surface soils, well graded sands and silty sands

over entire site - below 12 to 17 feet, layer of clayey silt (ML) and plastic clay (CL-CH) varies in thickness to 15 feet

below 35 feet - soils are layered silty and clayey sands (SM and SM-ML)

below 50 feet - soils are very clayey (CL & ML)

4.4 - Geologic Hazards

no unusaual geologic features or conditions

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4.5 - Undisturbed Samples

shelby tube samples taken for B-1, B-8 + B-10s

lab results in Table 2 + Appendix IV

4.6 - Remolded Samples

bulk samples from upper 5 feet taken at B-2 + B-8

$K \cong 6.5 \times 10^{-6}$ cm/s for both samples

4.7 - Site Stratigraphy

hydrogeologic [illegible] or Drawings X1 + X2

Unit 1 Aquifer - 5-8 feet recent to Pliocene age fluvial sediments

pockets of well graded sands up to 15' thick

thin clay layer 16-24" thick at a depth of 36-48" w/ $K = 10^{-6}$ cm/s

water table typically 4-7' bgs

hydraulic conductivity varies from 10^{-3} cm/s to 10^{-4} cm/s

Unit 1 Confining Layer - 12-17 feet [illegible] silt

K @ B-1 [illegible] = [illegible] cm/s / K @ B-10 for 14' = 4.6 [illegible] cm/s

Unit 2 Aquifer - depths of 35 to 45 feet silty sands + [illegible] (SM + M-ML)

$K \simeq 10^{-6}$ cm/s

unit is 25 to 35' thick

Unit 2 Confining Layer - unit located 50-80' thick in B-1d

$K \cong 10^{-4}$ to 10^{-5} cm/s

4.8 - Water Table Information

Table 4 - shows time of boring, 24-hr + 7-day readings

Table 5 - shows long term readings

Appendix III - Test Boring Data

★ B-1D : the boring log states total depth of 80', but the diagram shows the bottom of screen to be at 65'. Typo? Change & submit new record

Appendix IV - Geotechnical Data

★ boring B1 from 12.3'-12.8' the "Sieve and Hydrometer Analysis" Sheet states USCS symbol to be SC, but the "atterberg limits" sheet states the USCS symbol to be CL. Explain?

★ boring B8 (14.4-14.9) the "Sieve ..." Sheet states USCS symbol to be SC, but the "atterberg" sheet states USCS symbol to be CL. Explain?

★ boring B8 (13.4-13.9) the "Sieve" sheet USCS = SC-SM, the "atterberg" sheet USCS = CL-ML. Explain?

★ boring B10S (13.7-14.2) the "Sieve" sheet USCS = SC-SM, the "atterberg" sheet USCS = CL-ML. Explain?

Appendix VI - Slug Test Data

★ B1S, screen length stated as 10 feet, but construction records have screen length at 5'

Tables

Table 1

★ B-1d - Table states TD = 80', well log diagram states TD = 65'

★ B-8 Table states TD = 35', well log states TD = 15'

★ B-12 Table states top of screen depth = 15', well log states top of screen depth = 5'

★ B-17S "

★ B-30 Table states ground ele = 18.63', well log states ground elev = 16.33'

★ B-28, B-29, B-30 no stick-up height listed

★ Where did the stick-up height numbers come from? It's not the PVC pipe elev. - ground elev.

Table 2

* The first page of Table 2 might be missing. The title of the page in report is Table 2 - Continued.

Table 3

* B-5 - Bouwer & Rice method $K = 2.104 \times 10^{-3}$ cm/s, table states $K = 2.104 \times 10^{-4}$ cm/s
* no units shown for Aquifer thickness

Table 4

* B-1d - according to the well construction record the stabilized water level for B-1d is 1.6 ft table 4 states the stabilized water level was not acquired

Table 7

* The hydraulic conductivity numbers do not match the slug test data from Table 3. Where did these numbers come from?
* The water table elevations do not match the data on Table 5 from 5/08/02

Table 5

* There are no units listed on this table. Put units on table and submit edited table.
* Make note as to where water levels were taken - ie reference point

Well Construction

Screen Interval / length	Boring ID	TD	Ground Elev.	ToB	24-hr	Stable
5-20 / 15	B-25	20	15.76	3.4	2.8	2.1
35-40 / 5	B-26	40	17.77	3.9	4.0	4.1
5-20 / 15	B-27	20	16.98	2.2	2.5	2.9
35-40 / 5	B-28	40	16.76	4.3	5.1	5.8
10-20 / 10	B-29	20	17.10	2.3	2.3	2.3
30-40 / 10	B-30	40	16.33	2.6	2.5	2.4

Soil Laboratory Testing

	Boring ID	% sand	% silt	% clay	LL	PL	PI	USCS Symbol
	B4 (S-4)			2.61				SP (nonplastic)
	B7 (S-1)			15.24				SM (nonplastic)
	B7 (S-2)			2.51				SP (nonplastic)
	B7 (S-3)			8.11				SP-SM (nonplastic)
	B7 (S-4)			2.43				SP (nonplastic)
	B7 (S-5)			8.70				SP-SM (nonplastic)
	B7 (S-6)			6.77				"
	S7 (S-7)			16.33				SM (NP)
different USCS	▲ B1 (~~11-13~~ 12.3-12.8)	57.89		42.11	36	19	17	SC
	B1 (11.3-11.8)			22.23				SM (NP)
	B2 (1-15)	64.46		35.23				SM (NP)
	S8 (1-5)	63.62		36.33				SM (NP)
different USCS	▲ S8 (14.4-14.9)	60.49		38.45	30	16	14	SC
"	▲ B8 (13.4-13.9)			36.36	27	20	7	SC-SM
"	▲ 310S (13.7-14.2)	gravel - 29.10 52.40		18.82	25	20	5	SC-SM

Well Construction

Screen Interval / length	Boring ID	TD	Ground Elev	TOB	24 hr	Stable
55-65 / 10	★B-1D	80	17.33	1.6	1.6	1.6
10-15 / 5	B-1S	15	17.19	1.5	1.4	1.6
10-20 / 10	B-2	20	16.94	2.3	2.3	2.5
20-30 / 10	B-3	30	17.28	3.4	3.3	3.0
15-25 / 10	B-4	25	19.34	5.1	5.1	4.9
15-25 / 10	B-5	25	19.28	5.3	5.2	5.2
15-25 / 10	B-6	25	18.43	4.1	4.2	4.2
15-25 / 10	B-7	25	18.28	5.6	5.6	5.8
10-15 / 5	B-8	15	15.32	3.5	3.5	3.5
10-20 / 10	B-9	20	17.55	6.4	6.4	6.5
10-20 / 10	B-10	20	18.29	6.5	6.4	6.3
35-40 / 5	B-11	40	15.24	5.5	5.0	4.5
5-20 / 15	B-12	20	16.74	4.8	4.8	4.8
5-20 / 15	B-13	20	18.82	4.7	5.5	6.4
35-40 / 5	B-14	40	16.26	3.9	3.7	3.5
35-40 / 5	B-15D	40	17.57	14.3	10.5	6.6
5-20 / 15	B-15S	20	17.59	6.5	5.9	5.3
5-20 / 15	B-16	20	15.92	3.9	3.3	2.7
35-40 / 5	B-17D	40	17.07	4.7	4.5	4.4
5-20 / 15	B-17S	20	17.00	5.0	4.2	3.4
"	B-18	20	18.77	3.7	4.0	4.4
"	B-19	20	18.62	4.3	4.1	3.9
"	B-20	20	18.18	3.7	3.9	4.1
"	B-21	20	16.17	3.1	2.5	2.0
"	B-22	20	18.02	4.3	4.6	4.9
35-40 / 15	B-23D	40	14.54	2.9	3.0	3.1
5-20 / 15	B-23S	20	13.90	3.0	2.2	1.4
"	B-24	20	16.73	3.4	3.5	3.6

Slug Test Data

Boring ID	Hvorslev K (cm/s)	Bouwer & Rice K (cm/s)
B-1S (falling head)	8.737×10^{-4}	1.869×10^{-3}
B-1D (falling)	9.216×10^{-5}	2.568×10^{-4}
B-2 (falling)	1.012×10^{-3}	2.532×10^{-3}
B-3 (falling)	1.167×10^{-3}	3.062×10^{-3}
B-4 (falling)	1.018×10^{-3}	2.494×10^{-3}
B-5 (falling)	8.542×10^{-4}	2.104×10^{-3}
B-6 (falling)	1.978×10^{-4}	4.788×10^{-4}
B-7 (falling)	3.08×10^{-4}	7.486×10^{-4}
B-8 (falling)	1.474×10^{-3}	3.325×10^{-3}
B-9 (falling)	9.453×10^{-4}	2.237×10^{-3}
B-10 (falling)	9.365×10^{-4}	2.232×10^{-3}

Table 5 (5/8/02)

Boring ID	GW Elevation (from TOP)	Stick Up	GW Elevation (from BGS)
1d	15.37	3.04	12.33
1s	16.2	2.87	13.33
2	14.94	4.08	10.86
3	15.83	3.46	12.37
4	15.82	3.49	12.33
5	15.60	4.62	10.98
6	15.87	3.55	12.32
7	13.45	2.76	10.69
8	13.15	3.37	9.78
9	~~12.93~~ 12.61	3.09	9.52
10	~~12.61~~ 13.56	3.19	10.37

Part 1 – Site Suitability Application

Construction & Demolition Debris Landfill (Phase 2)
Pitt County, North Carolina

Prepared for:

C&D Landfill, Inc.
802 Recycling Lane
Greenville, North Carolina 27834

To the Attention of:

Mr. Judson Whitehurst
President

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7/23/03

July 2003

Part 1 – Site Suitability Application Report

C&D Landfill, Inc. (Phase 2)
(New Disposal Unit and Addition to Facility Boundary)

Siting and Hydrogeologic Evaluation
with Conceptual Facility Plan

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1B Supplemental Test Boring/Piezometer Data

2 Geotechnical Laboratory Test Data - *.0504 (1) (c)*

3 Summary of Hydrologic Properties (Lithologic Units) -*.0504 (1) (c)*

4 Short-Term Ground Water Level Observations -*.0504 (1) (c)*

5 Long-Term Ground Water Level Observations -*.0504 (1)* (g) *(v)*

6 Vertical Ground Water Gradient and Velocity Calculations - *.0504 (1) (g) (v)*

7 Horizontal Ground Water Gradient and Velocity Calculations - *.0504 (1) (g) (v)*

8 Hand Auger Boring Data -*.0504 (1) (g) (v)*

Figures *Refer to Drawings listed below, located in the accompanying plan set.*

S1 Regional Characterization Map (2 mile radius, 1" = 2000') -*.0504(1)(b)*

S2 Local Area Map (Quarter-mile radius,1" = 400') - *.0504 (1) (b)*

S3 Local Area Photo (Quarter-mile radius,1" = 400') - *.0504 (1) (a)*

F1 Test Boring and Pit Locations - *.0504 (1) (c) (ii)*

F2 Proposed Grading Plan -*.0504 (1) (d)*

F3 Proposed Top of Waste Contours -*.0504 (1) (d)*

F4 Ground Water Potentiometric Surfaces - *.0504 (1) (c) (iii)*

F5 Upper Confining Layer Contours

F6 Facility Plan

X1-2 Hydrogeological Cross Sections - *.0504 (1) (c) (i) (G)*

Appendices

I Boundary Survey with Wetlands Map -*.0504 (2) (h) (i)* and *.0503 (2) (c) (ii)*

II Location Restrictions -*.0503 (1) (a) – (d)*
- A FIRM Map -*.0503 (1) (a)*
- B Cultural Resources Documentation - *.0503 (1) (b) (i through vi)*
- C Regional Aeronautical Chart - *.0504 (1) (b) (iv)*
- D Peak Seismic Accelerations Map - *.0504 (1) (c) (i) (D)*

III Test Boring/Piezometer Installation Records -*.0504 (1) (c)*

IV Geotechnical Laboratory Data - *.0504 (1) (c)*

V Supplemental Information
- A NOAA Climatic Data
- B NC DENR Monitoring Well Database
- C Historical Ground Water Hydrographs
- D Ground Water Reference

VI Slug Test Data and Calculations - *.0504 (1) (c)*

VII Local Government Approval Documentation - *.0504 (1) (e)*

1.0 Project Overview

The subject facility is an expansion of an existing Construction and Demolition debris landfill (CDLF), located along U.S. Highway 264 east of Greenville, in Pactolus Township, Pitt County, NC. The privately owned and operated facility serves a multi-county area. Phase 1 (33 acres) was permitted ca. 2001 and now operates between 100 and 200 tons per day on average, but daily waste intake rates currently vary higher than this amount. Phase 2 is not contiguous with Phase 1, due to certain site constraints (drainage features and wetlands). Phase 2 involves an addition of land to the facility boundary (89.58 acres), thus much of the original permitting process for the Site Suitability stage (Part 1) must be repeated, as well as performing the Detailed Design stage (Part 2).

This report, Part 1, demonstrates that the facility meets the requirements for siting criteria and hydrogeological evaluations required for "Site Suitability", as outlined in the North Carolina Solid Waste Management rules 15 NCAC 13B .0503 through .0505. Conditions at the Phase 2 disposal site are similar to those identified within Phase 1. The eastern portion of Phase 2 (31.59 acres) is hydraulically isolated on a gently sloping rise, with two small streams providing on-site discharge points. A large nearby stream (Grindle Creek) is the regional ground water discharge feature, which converges with the Tar River. The western side of Phase 2 (57.99 acres) forms a "panhandle" along an abandoned railroad corridor, but this area is isolated by wetlands and ground water conditions are typically shallow in this portion of the site. The "panhandle" has potential as a soil borrow site.

Local land use is a mix of agricultural, commercial and low-density residential. The expansion tract is currently undeveloped but has been utilized for timber production in the recent past. Undeveloped, private property exists between the Phase 2 site and Grindle Creek. There are no potable ground water wells located between the C&D landfill and these streams. Water supply within a two-mile radius consists of a private water company serving most of the homes and businesses, with a few scattered wells. Existing transportation waste routes will not be modified.

Depths to ground water in the eastern portion of the site are such that the facility will meet regulatory vertical separation requirements without extensive grading. The waste boundary is at least 200 feet from the property line, and the nearest residence or potable well is more than 500 feet from the waste boundary. Subsurface conditions feature numerous vertical confining layers that will enhance future modifications to the existing ground water monitoring program for Phase 1. The Phase 2 site will support development of a 20-acre waste cell (the waste cell in Phase 1 is 15 acres).

This report (Part 1) includes a site characterization prepared by David Garrett, P.G., P.E., and a facility plan prepared by John Tucker, P.E. The future Part 2 report will address construction plans and specifications, an operations plan, a S&EC plan, Water Quality Monitoring and final closure.

2.0 Applicable Location Restrictions -.0503 *(1) (a) - (d), and 0504 (1)*

2.1 Flood Plain -*.0503 (1) (a)*

The main drainage features at the C&D landfill site are two small streams that emerge to the north and south of landfill footprint. Both flow southwest toward Grindle Creek (a regional tributary to Tar River), as shown on Figures S1 and S2. The small streams have associated wetlands, which will be avoided in accordance with other sections of this rule. There is a flood plain associated with Grindle Creek, but this will not be impacted by the proposed landfill. The landfill footprint contains subtle drainage features with no running streams. An inspection of FIRM mapping, reprinted in Appendix II, indicates that no designated flood plains exist within the facility boundary. The landfill site did <u>not</u> flood during the 1999 regional flooding event associated with Hurricane Floyd.

2.2 Endangered and Threatened Species - *.0503(l)(b)(I and ii)*

The North Carolina Department of Natural Heritage was contacted to determine the likelihood of encountering endangered and threatened species on the site. The response will be made available for insertion into Appendix II when available. Past use of the site for agriculture and silvaculture makes it unlikely that an endangered species habitat exists on the site.

2.3 Archaeological and Historical Site -*.0503 (1) (b) (iii)*

The North Carolina Department of Cultural Resources was contacted to determine the likelihood that the C&D landfill will affect an archaeological or historic site. The response will be made available for insertion into Appendix II when available. Past use of the site for agriculture and silvaculture makes it unlikely that any archaeological or historic remains are present on the site.

2.4 State Nature and Historic Preserve -*.0503 (1) (b) (iv)*

There are no state parks, scenic or recreational areas within the local study area for this project. The ongoing operation of the C&D facility will not adversely affect any lands in the state nature and historic preserve (none have identified in the immediate area).

2.5 Airport Safety -*.0503 (1) (c)*

There will be no putrescible wastes placed in the planned C&D landfill. Birds are not expected to be attracted to this facility. Based on the aeronautical chart presented in Appendix II, there are no airports located within two miles of the site. The nearest public airports are Washington (about 3 miles east) and Pitt-Greenville (about 17 miles west) from the site.

2.6 Cover Soils -.*0503 (1) (d)*

On-site soils consist of moderately clayey and silty sands that will serve as suitable cover materials. Test borings indicate that suitable cover soils extend to depths generally in excess of 5 feet, or more, over a majority of the study area. There are sufficient on-site and nearby off-site soil resources available to meet the anticipated cover soil requirements. A detailed inventory of the soil requirements and available soil resources will be provided in the upcoming Part 2 design report.

3.0 Site Design Requirements -.*0503 (2) (a) through (g)*

3.1 Explosive Gases -.*0503 (2) (a)*

The site will be managed such that explosive gas concentrations will not exceed regulatory thresholds in on-site structures and at the property line. This will be accomplished through waste segregation. The inert waste stream is not anticipated to produce methane in sufficient quantities to cause an explosion concern. No explosive gas control devices are anticipated to be required.

3.2 Public Access -.*0503 (2) (b)*

The site will be accessible to the public only during daylight business hours. An operator will be on duty during business operations. The site is secured by a fence and entrance gate along US 264 and inaccessible terrain along the south boundary.

3.3 Surface Water Protection -.*0503 (2) (c)*

The site will not discharge pollutants into the waters of the State, in accordance with the NPDES requirements and applicable state and federal law. No dredged material or fill material will be placed into waters of the State, including designated wetlands. The site shall not cause non-point source pollution to the waters of the State that exceeds assigned water quality standards. These requirements will be met through best management practices for storm water runoff control and proper waste screening.

3.4 Ground Water Protection -.*0503 (2) (d)*

The site drawings demonstrate that the bottom elevation of the waste will be a minimum of four feet above the seasonal high water table, as determined by the site study. Ground water records are available for nearby Phase 1 monitoring wells, covering a two-year period (summarized in Table 5). The site will be managed to prevent the likelihood of a ground water impact.

3.5 Open Burning -.*0503 (2) (e)*

Open burning of waste will not be allowed. The Operations Plan for the facility will reflect this.

3.6 Horizontal Buffers -.*0503 (2) (f)*

A minimum 200-foot buffer will be observed along the property lines, in accordance with this rule. There are no private dwellings or water wells within 500 feet of the planned facility. A 50-foot buffer will be observed along the perennial streams and wetlands.

3.7 Sedimentation and Erosion Control -.*0503 (2) (g)*

A sedimentation and erosion control plan is in preparation and will be implemented prior to operation of the facility. The plan will include proper operation and maintenance of runoff control structures to meet this requirement. An S&EC plan will be presented with the Part 2 design report.

4.0 Site Characterization -.*0504 (1)*

4.1 Local Area Study -.*0504 (1) (a) and (b)*

Figure S1 depicts the area within two miles of the site boundary on the USGS quadrangle map. Figures S2 and S3 depict the local area map and aerial photograph, respectively, showing the surrounding area within a one quarter-mile radius. All figures have the facility property boundary identified. Land use in the vicinity is a mix of commercial, residential, agricultural, and undeveloped parcels. The site is located outside any city limits or extra-territorial jurisdictions, where there is no applicable zoning. The maps show all known homes, businesses, utilities and roads, along with streams and the general topography. There are no flood plains located within the facility boundary.

Primary access to the site is from US 264, which is the major regional transportation route. All local public roads are paved. Current public road transportation routes will not be modified. Wastes will not need to be transported through residential areas. The site is isolated from the public by adjacent private property and natural drainage features which are not easily crossed by vehicles or on foot. There is no current residential or commercial development within 500 feet of the C&D waste boundary, except for the adjacent recycling business operated by EJE Recycling, Inc. There are no utility easements within the facility boundary.

Potable water supply wells identified within a two-mile radius of the site are shown on Drawing S1. Most of the area dwellings and businesses are served by Stokes Regional Water Corporation, including Pactolus School, located two miles west of the site. The nearest residences with wells are

located along Sticks Road (S.R. 1563), east of the site at a distance of 2000 feet, and along a private lane, approximately 3000 feet to the southeast. Although these wells are north of Grindle Creek, none are hydrologically down-gradient of the site. One potentially significant ground water user (National Spinning) was identified north of the site on Shepard Mill Road.

Potential contaminant sources near the facility include the recycling yard and transfer station (located 500 feet east of the C&D Phase 2 footprint), a solid waste convenience center in Pactolus (two miles west), a gas station at US 264 and NC 30 (more than one mile west), and two auto wrecking yards (the nearer of which is 4000 feet north). None of these facilities have been investigated for ground water contamination, nor is any contamination implied. No known surface water intakes exist within two miles of the site.

4.2 Soil Test Boring Investigation - *.0504 (1) (c) (i)*

Test borings and hand auger borings performed in December 2001 and January 2002 are shown on Figure F1. The test borings, labeled as the "B" series borings on the site map, were extended to depths varying from 15 to 70 feet, penetrating the several of the major lithologic and hydrologic units mapped in the region. Test boring data are summarized on Table 1A. The deeper subsurface data were supplemented by three relatively shallow hand auger borings. Figure F1 also shows site topography and the locations of the hydrogeologic cross sections (discussed later in this text).

All of the B-series borings were converted to standpipe piezometers for long-term ground water level observation. All test borings were grouted to the surface; some e.g., B-1s/2d, B-5 and B-6, may have application as future monitoring wells (with the installation of locking steel covers). There are 34 piezometers and two surface streams serving as ground water observation points within the 89.5-acre addition to the facility boundary. There are 23 piezometers within/near the Phase 2 footprint, which covers approximately 20 acres. A ground water potentiometric map, discussed in a later section, has been prepared from these data. Test boring records are presented in Appendix III.

4.3 Soil Classification -*.0504 (1) (c) (i) (A-C)*

The soil test borings were sampled with standard penetration test techniques (ASTM D- 1586). Soil samples were visually classified by an experienced geologist, and laboratory testing was performed to confirm the field classifications. Supplemental laboratory testing included standard Procter moisture-density tests, triaxial-cell hydraulic conductivity tests on undisturbed and remolded samples, triaxial shear strength and one-dimensional consolidation tests. The results of laboratory testing are presented on Table 2. Laboratory data are presented in Appendix IV.

Within the eastern portion of the site (the proposed CDLF footprint), soils within the upper 5 to 8 feet of the surface are generally classified as low to medium plasticity clayey silt (CL-ML) and silty sand (SM). Occasional pockets of clean well graded sand (SW) were encountered in the near subsurface. Within the western portion of the site, the proposed borrow site, soils generally consist of clean, well graded sands and silty sands, with relatively little clay. These sediments appear to be a relict stream channel, whereas the more clayey soils are likely channel-bank deposits.

Below a typical depth of 12 to 17 feet exists a layer of clayey silt (ML) and plastic clay (CL-CH), which appears to be continuous over the site and varies in thickness to approximately 15 feet, or more. This layer was previously identified as a partial confining layer during the investigation for Phase 1 (please refer to the December 2000 Site Suitability report). Below depths of 35 feet exist layered silty and clayey sands (SM and SM-ML), which locally are cemented. The soils became very clayey (CL and ML) below depths of approximately 50 feet. These conditions are also consistent with the Phase 1 site.

4.4 Geologic Hazards Considerations -*.0504 (1) (c) (i) (D)*

No unusual geologic features or conditions, including seismic hazards or unstable areas, have been identified on or near the site. Subsurface conditions generally consist of medium stiff to stiff marine sediments, with alternating sandy and clayey layers. No extensive soft clay layers were encountered (reduced long-term settlement potential) or loose sand layers were encountered beneath the water table (minimal liquefaction potential). None of eastern North Carolina is located within a Seismic Impact Zone[1], i.e. horizontal acceleration potential in excess of 0.01g, based a map of likely peak accelerations found in Appendix II. Historically, this region has not been affected by seismicity. The Greenville region is not prone to karst development, as seen elsewhere in the coastal plain.

4.5 Undisturbed Samples -*.0504 (1) (c) (i) (E)*

Shelby tube samples were procured from test borings B-1, B-8, and B-10s and subjected to laboratory triaxial permeability, shear strength and consolidation testing. Laboratory test results are summarized on Table 2 and presented in Appendix IV. The near-surface soils consist of normally consolidated fluvio-marine sediments, where potential settlement is a concern relative to vertical separation. There appears to be a low likelihood of deep-seated instability and/or excessive settlement. Settlement and stability calculations will be completed for the Part 2 design report.

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[1]EPA/600/R-95/051, RCRA Subtitle D (258) Seismic Design Guidance for Municipal Solid Waste Landfill Facilities, 1995, including Seismic Intensity Capable Faults Map, See Appendix II

4.6 Remolded Samples -.*0504 (1) (c) (i) (F)*

Representative bulk samples were procured from the upper 5 feet the surface at test borings B-2 and B-8. Remolded samples were subjected to laboratory triaxial permeability tests, summarized on Table 2. Permeability values on the order of 6.5×10^{-6} cm/sec were obtained for both samples. The bulk samples are considered to be representative of the shallower soils within the eastern portion of the site. Laboratory data is presented in Appendix IV.

4.7 Site Stratigraphy - . *0504 (1) (c) (i) (G)*

Hydrogeologic profiles are presented on Drawing X1 and X2. The stratigraphy at the site has been correlated to the following hydrogeologic units: two aquifers, an upper and a lower (Units 1 and 2 Aquifers) and two confining layers, upper and lower (Units 1 and 2 Confining Layers). Typical of the coastal plain, the site stratigraphy within the upper 25 feet beneath the surface is defined by a distinct boundary between recent fluvial sediments (tan-yellow and white, cross-bedded sands and clays) and deeper marine sediments (dark green silty sands and clays, with cemented shell hash).

The uppermost marine sediments have been identified as the Miocene-age Yorktown formation based on the fossil assemblage, yet the presence of glauconite in the deeper sediments (a dark green-black mica, related to biotite, which forms in deep marine environments)[2] suggests other possible formations mapped in the region, e.g., Castle Hayne, Beaufort, Pee Dee, or the Black Creek. Specific studies of index fossils were not performed to distinguish these formations, but a comparative study of water well data in the region[3] indicates that the on-site borings likely encountered the Castle Hayne and/or the Beaufort, in addition to the Yorktown.

Unit 1 Aquifer – Soils within the upper 5 to 8 feet below the surface consist of recent to Pliocene-age fluvial sediments, likely associated with former shorelines and/or estuaries of the Tar River and/or Grindle Creek. Pockets of buff-white, well graded sand (SW), with thicknesses of 15 feet, indicate former channel migration. Correlation of test borings and hand augers to earlier studies for Phase 1 indicates a relatively shallow, tan-yellow clay layer existing at depths between 16 to 24 inches, extending to depths of 36 to 48 inches. Cross-bedding is likely; the clay layer is present at most (but not all) test locations within the eastern portion of the site (not a true confining layer). The clay, sampled at B-2 and B-8, exhibits a laboratory permeability of 10^{-6} cm/sec (Table 2).

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[2]Hurlbut, Jr., C.S., and C. Klein, Manual of Mineralogy (after J.D. Dana), 19th ed., J.W. Wiley & Sons, New York, 1977.

[3]DENR Monitoring Well Database (interactive), North Carolina DENR Division of Water Resources, Ground Water Branch, viewed at web site http://www.dwr.ehnr.state.nc.us.

The silty sands and clean sands within the upper 10 to 14 feet are considered to be the uppermost aquifer at the site. The water table typically occurs at depths of 4 to 7 feet below the ground surface within this unit in the eastern portion of the site (typically shallower within the lower lying western portion of the site). Several piezometers were completed to a depth of 15 feet. Based on these data (Table 3) the hydraulic conductivity for this unit varies on the order of 10^{-3} cm/sec to 10^{-4} cm/sec.

Unit 1 Confining Layer – Below a depth of 12 to 17 feet exists a sandy silt, grading downward to a plastic clay, which collectively vary in thickness from approximately 15 to 25 feet. The top of this layer is distinguished by a dark green-gray color, characteristic of marine sediments, and heavy shell hash, including whole turritellas (a snail-like marine mollusk). This strata represents the top of the Yorktown formation. The clay layer is present in every boring and exhibits a stiff, moist "gumbo" consistency, that is, the clay is easily molded into a thread of less than 1/8-inch diameter and maintains this level of plasticity for repeated remolding over several minutes.

Laboratory permeability testing on relatively undisturbed samples (see Table 3 and Appendix IV), taken at B-1 from a depth of 11 feet and at B-10 from a depth of 14 feet, indicate hydraulic conductivity values of 1.5×10^{-7} cm/sec and 4.6×10^{-7} cm/sec, respectively. This unit has been identified as the top of the Yorktown Formation, a marine clay of Miocene age, which predates the numerous sea level fluctuations associated with glacial activity (elsewhere) during the Pleistocene. The top of the confining unit, marked by the turritella -rich fossil assemblage, appears to be sculpted by channelized water during the multiple estuarine ingresses and regresses of the para-glacial period (see Figure F5). At some borings, there is a sandy transition layer, sometimes with the marker fossils (B-1d), but the clay layer is deeper or absent to the west of the footprint (B-30) and the marker bed is absent. Considering the flat potentiometric gradient and upward vertical gradient (discussed later), vertical ground water migration potential relative to the confining layer is limited.

Unit 2 Aquifer – Below depths of 35 to 45 feet exist relatively dense silty sands and clayey sands (SM and SM-ML), which locally are cemented. These soils contain variable amounts of glauconite (a type of mica found in deep marine sediments, distinguished by a green-black "speckled" color), and scattered pelecypod shell hash (including modern-type clams). The deeper sediments were often cemented, giving firm resistance to the drilling equipment. Occasional cemented shell hash concretions were encountered in the split spoon sampling, some of which resemble the distinctive pelecypod-mold structure of the Castle-Hayne formation. The concretions were not widely encountered and might represent reworked sediments derived from the older formation. A piezometer completed within this unit (MW-1d) indicates in-situ hydraulic conductivity values on the order of 10^{-6} cm/sec, while other piezometers within Phase 1 indicated conductivity values on the order of 10^{-4} to 10^{-5} cm/sec (see Table 3). This unit is 25 to 30 feet thick, based on the data.

Unit 2 Confining Layer – The deeper sediments (possible Castle-Hayne or Beaufort) became very clayey below depths of approximately 50 feet, but otherwise resembled the soils described in the overlying aquifer. This unit was encountered in test boring B-1d, extended to a depth of 80 feet. While the actual thickness cannot be determined, piezometer "slug test" data indicate a hydraulic conductivity on the order of 10^{-4} to 10^{-5} cm/sec (see Table 3). An earlier slug test for a nearby piezometer in Phase 1 (B-9) indicated an in-situ conductivity value on the order of 10^{-6} cm/sec.

Published data indicates that confining units exist between the Yorktown and Castle Hayne formations and between the Castle Hayne and the underlying Beaufort formation. Based on the projected depth of the Castle Hayne in this region, and the observation of pelecypod-mold concretions in the split spoon samples, it is likely that the test boring encountered this confining layer. The presence of glauconite (not typically associated with the Castle Hayne) might indicate the deeper Beaufort formation.

4.8 Water Table Information -*.0504 (1) (c) (i) (H)*

Short-term water level observations, taken at time of boring completion, following 24 hours, and after a period of at least seven days, are tabulated on Table 4. Long-term ground water level observation data are presented on Table 5. This table reflects water level elevation data acquired over a period covering more than one year for on-site data and over two years for the nearby Phase 1 monitoring well network. These data provide the basis for the ground water potentiometric surface map (Figure F4), which includes the estimated maximum seasonal high ground water elevations (see Section 5.4). These maximum water elevations have been shown on the hydrogeologic cross section (Figures X1 and X2).

4.9 Test Boring Locations -*.0504 (1) (c) (ii)*

The test borings and relevant site features are shown on Figure F1. Vertical and horizontal control is tied into the site grid, referencing permanent bench marks located on the premises. The test borings provide ground water observation points at a ratio of at least 1 per 10 acres, relative to the 89 acre addition to the facility boundary, which is adequate for "Site Suitability" characterization per North Carolina Solid Waste Rules. The borings also provide a data density on excess of one boring per acre within an dn immediately adjacent to the proposed Phase 2 footprint.

4.10 Potentiometric Surface Map -*.0504 (1) (c) (iii)*

Ground water potentiometric surfaces, based on observed maximum stabilized ground water elevations (24 hours, or later), are shown on Figure F4. The potentiometric contours represent an

estimate of hydraulic head, measured by the water level in the piezometer. These values may likely represent the highest elevations below which saturated soils are expected but not necessarily the actual ground water depths at a given location or time. The potentiometric surface is a composite of the various hydrogeologic units, intersected at different screen intervals. Some of the deeper units are under artesian pressure, which occurs infrequently as indicated by an upward vertical gradient (higher water level in the deeper piezometer), e.g., at B-23s and B-23d.

The potentiometric surface indicates a generally south to southwest ground water flow pattern, toward the perennial stream (Grindle Creek). The potentiometric surface generally reflects the surface topography, but all the subtle features in the surface drainage are not necessarily reflected. Drainage features within the Phase 2 site, which drain to both the west and the east sides of the site, appear to be partially man-made conveyances flowing south toward Grindle Creek. Most of these features do not appear to be influenced by (or influential upon) the potentiometric surfaces, except the potentiometric contours do bend around the western feature, which may be a natural stream.

The highest ground water elevations occur along the northern property boundary in the western "panhandle." Site conditions at the Phase 2 site, and within the adjacent property to the north, are highly conducive to surface water infiltration, i.e., flat surfaces, sandy subsoils, and poor vegetative cover. Ground water levels in the western portion of the site are shallow, although the activity of beavers along the western drainage feature during the winter of 2001-02 may have exacerbated the shallow water conditions noted then. This requires further evaluation.

Based on the potentiometric surface, a subtle ground water divide appears beneath the center of the eastern portion of the site. This feature divides subsurface flow between the eastern and western drainage features. These minor tributaries exhibit distinct channels and a perennial aquifer discharge. Both streams exist in relatively deep swales, several feet lower than the majority of the site. In this respect, the ground water contours reflect the surface topography, as expected.

5.0 Geological and Hydrogeological Evaluation - *.0504 (1) (c) (iv)*

5.1 Local and Regional Geology

Available geologic mapping[4] indicates that the landfill site is situated within the Coastal Plain physiographic and geologic province, located approximately 18 miles west of the Suffolk Scarp. In outcrop, nearly all of Pitt County is underlain by the Miocene-age Yorktown formation, except along the southern border (where the Eocene-age Castle-Hayne formation and the Cretaceous-age Pee Dee

[4]North Carolina Geologic Map, NC Geological Survey, 1985.

formation outcrop). The Pee Dee outcrops along the Tar River in Greenville, and the Cretaceous-age Black Creek and Cape Fear formations have been mapped further upstream.

Historical literature[5] describes a cross-section from Wilson to Cape Hatteras, which places the top of crystalline bedrock at a depth of approximately 1000 feet beneath eastern Pitt County. The Division of Water Resources data in Appendix V (see Footnote 3) lists two wells in the vicinity of the site in which basement was encountered at depths of approximately 750 and 1100 feet, respectively. The Water Resources Database is extensive and includes litho-stratigraphic data for most of the major production wells in the region.

The Yorktown is described in other literature[6] as "...predominant(ly)...thick, massive marine clays interbedded with lenticular sands, shell beds, and indurated shell limestones." The Yorktown is a moderately prolific aquifer, under slight artesian pressure, with discontinuous water-bearing units occurring throughout the formation, unlike the Castle Hayne, a high yielding regional aquifer (important further east) under high artesian pressure. The Yorktown is recharged directly by precipitation and is considered important for its high storage capacity and as a source of recharge to the deeper aquifers in the region.

Based on the Water Resources Database, the Yorktown is present in nearly all recorded borings drilled in the vicinity, varying in depth from 0 to 28 feet beneath the surface and thicknesses which vary from 25 to 42 feet (average of 35 feet). The Castle Hayne had not been recognized in all the recorded borings (this formation "pinches out" toward the north portion of the County), which might affect the thickness of the Yorktown in a few borings. More likely, the Yorktown thicknesses are relatively consistent, but the deeper Castle Hayne sediments may have been reworked or lost to erosion. Where it was encountered, the Castle Hayne varied in depth from 35 to 50 feet beneath the surface, with thicknesses that vary from 10 to 37 feet (average of 24 feet in the nearest wells, though thicknesses on order of 100 to 150 feet are more representative further south).

Beneath the Castle Hayne, exists the Tertiary-age Beaufort Formation, a mixture of marine clay and sand, characterized by the presence of glauconite and calcareous cementation. Given the combined average thickness of the Yorktown and Castle Hayne formations in the vicinity of the site (59 feet), it is possible that the deeper borings on-site (B-1d in Phase 2 and B-9 in Phase 1, each was 70 feet) did encounter the Beaufort formation. The various clay and sand layers that define the on-site hydrogeologic units may correspond to these units as described in the Water Resources Database.

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[5]Explanatory Test to the North Carolina Geologic Map, Bulletin No. 71, North Carolina Department of Conservation and Development, Division of Mineral Resources, 1958.

[6]Brown, P.M., "Geology and Ground Water Resources in the Greenville Area, North Carolina," Bulletin No. 73, NC Department of Conservation and Development, Division of Mineral Resources, 1959.

5.2 Confining Layer Characteristics

The Yorktown formation consists of a layered clayey silt and plastic clay that serves as a confining layer beneath the site. The top contours of the Yorktown are shown in Figure F5. Based on these contours, the upper surface of the confining layer slopes gently to the southeast (in contrast to the southwest direction of the potentiometric surface), and the contours appear to show a trough or relict channel that parallels the major streams in the region, including Grindle Creek and Tar River.

It is likely that the contours reflect a former erosional surface within the top of the Yorktown. Fossils found in the upper Yorktown (clams and turritellas) suggest a relatively shallow marine environment with reducing conditions, indicated by the dark green colors. Taken into consideration with the apparent erosional sculpting along the top of the Yorktown, a regressive marine sequence occurred in the late Miocene, followed by possible surface exposure and erosion. Later the region was reinundated and deposition of shallow fluvial or near-shore yellow sands and clays occurred in an oxidizing environment. This sequence is consistent with the depositional history of the region.

Based on the test data, the Yorktown confining layer on-site varies between 14 and 24 feet in thickness. Based on regional water well construction data reported by Division of Water Resources, the Yorktown appears to be continuous throughout the region and exhibits an average thickness of 35 feet. Site specific hydraulic conductivity data indicate permeability values on the order of 10^{-6} cm/sec. Thus, it can be concluded that the Yorktown is indeed a confining layer for the site. The upper contours shown in Figure F5 suggest that the principle ground water flow component is toward the southwest, consistent with the potentiometric surfaces shown in Figure F4.

5.3 Ground Water Flow Characteristics

The site is characterized as exhibiting multiple, unconsolidated marine sedimentary formations of varying permeability. The upper-most aquifer, Aquifer Unit 1 (unconsolidated Tertiary sediments), is characterized as a closed-loop, unconfined, porous flow medium, with a relatively short separation between the recharge and discharge zones. Recharge occurs due to surface percolation over much of the site, discharge to the on-site streams along the northwest and south east sides of the site. Much of the site has been cultivated, which enhances surface recharge. Recently timbered ground within the upland area to the north of the site appears to recharge the surface aquifer.

Confining Unit 1 (Yorktown formation) is a relatively low permeability layer which limits vertical migration. The ground water gradients are subtle, and flow velocities are in the range of tenths to hundredths of inches per day (Table 7). Aquifer Unit 2, beneath Confining Unit 1, is characterized as a confined porous aquifer. This unit (believed to represent the Castle Hayne formation) is coarser

than the overlying confining unit and exhibits numerous cemented zones. The permeability measured in this zone is similar to the confining units, and the unit is somewhat clayey in places. A piezometer couplet at B-1s and B-1d indicates an upward gradient, consistent with findings of the Phase 1 site suitability evaluation. A conceptual ground water flow model for the uppermost aquifer, depicted in the hydrogeologic cross sections (Figures X1 and X2), is summarized below:

1. The site is hydraulically isolated, surrounded on three sides by surface drainage features.

2. Recharge occurs over most of the site and is heavy due to flat topography and high permeability soils near the surface; there is relatively little surface flow onto the site, but there is a potential for ground water recharge from off-site areas to the north.

3. Unconfined lateral flow occurs within a near-surface, saturated layer of unconsolidated sand. Aquifer Unit 1 (the "uppermost aquifer") blankets the site and exists between a discontinuous clay layer just beneath the surface and a deeper confining layer.

4. Ground water gradients are subtle to flat; velocities are relatively slow. The flow direction is generally toward the west and southwest. The potentiometric surface suggests a minor flow direction to the southeast, toward a surface stream between Phase 1 and Phase 2.

5. Downward recharge into the deeper Aquifer Unit 2, if any, occurs very slowly; flow in this unit is limited due to the low transmissivity. Upward gradients are indicated by the data.

These conditions are considered typical of coastal plain regions. Based on topography, the expected regional discharge feature is Grindle Creek, although the unnamed tributaries on the site function as discharge features, too. The property does not extend all the way to Grindle Creek. Thus, there is the potential for ground water migration to the south, southwest and southeast directions that warrants specific monitoring effort. There are no down gradient ground water users at present. The land between the C&D site and Grindle Creek is undeveloped.

5.4 Seasonal High Ground Water

The region experienced a slight drought during the autumn-early winter months of 2001, based on climatological data from the NOAA.[7] The trend shows in the Modified Palmer Drought Index plot (see Appendix V). While still technically in a mild drought, the winter-spring months of 2002 experienced more normal rainfall levels, based on the Z-index. Relatively normal rainfall was

[7]National Oceanic and Atmospheric Administration, National Climatic Data Center, interactive web site at www.ncdc.noaa.gov.

experienced in the region through 2002, despite widespread drought conditions prevailing in the central and western portions of North Carolina. Then, the spring and early summer months of 2003 became very wet. Water levels in both the Phase 2 piezometers (installed during December 2001) and extant piezometers and monitoring wells within Phase 1 reflect this trend: water levels were generally lower in December 2001, then rose during the following months to a peak in April-May 2002 and April 2003 (see the Ground Water Hydrograph in the Tables section of this report).

Water levels on the Phase 1 site were observed at three shallow piezometers (B-5, B-13, and B-14), which provide water level observation in the uppermost aquifer, while the deeper piezometer (B-9) provided long-term water data on the deeper aquifer during the observation period for Phase 2. During the period of record for these piezometers, which goes back to November 2000, water levels in shallow piezometers has varied between 1.4 and 2.1 feet, and in the deeper piezometer the water level has varied about 1.6 feet. The lowest recorded water levels at these piezometers were observed during December 2001. The shallowest water levels were observed during April-May 2002 and again in April 2003.

Temporary surface impoundments may have affected the western portion of the Phase 2 site (i.e., the "panhandle") during the winter of 2001. Shallow ground water levels observed in this portion of the site are believed to be influenced by prolific beaver activity along the surface streams, thus the observed ground water levels are not considered representative of true ground water levels for piezometers at B-1 through B-6 during this time period. Due to the shallow water, however, and other geometric constraints, this portion of the site was considered more suitable for a borrow site and regular ground water observation was ceased.

Within the eastern portion of the Phase 2 site, which exhibits subsurface conditions more similar to the Phase 1 site than the western portion of the site, the water levels were generally deeper and consistent with the levels observed at the Phase 1 piezometers during the winter and spring of 2001. This side of the site was selected for addition al characterization, and a number of additional piezometers were installed in late 2001. The piezometers within the eastern portion of Phase 2 and those within Phase 1 (particularly the deeper one at B-9) peaked in April-May of both 2002 and 2003, with the 2003 peak being slightly higher (by a few tenths or hundredths of a foot).

As such, with two seasonal peaks in the on-site data and a good correlation with the climatic data, it is concluded that the April-May 2003 data set represents the maximum seasonal high water elevations likely to be experienced on the site. Please refer to the ground water hydrographs in the Tables section of this report and the climatological data found in Appendix V. The potentiometric surfaces map (Figure F4) represents these maximum seasonal high ground water levels, which have been used to establish base grades that meet the vertical separation requirements.

5.5 Ground Water Gradients and Velocities

A summary of measured hydraulic conductivities (based on slug tests) and apparent horizontal hydraulic gradients and velocities are presented on Table 7. Horizontal hydraulic gradients were estimated based on the potentiometric contours. Ground water velocities at each piezometer were calculated using apparent horizontal hydraulic gradients, hydraulic conductivity values and empirical effective porosity values according to the equation:

$$V = KI/n:$$

Where:

	v =	Ground Water Velocity
	K =	Hydraulic Conductivity (from rising head tests)
	I =	Hydraulic Gradient (from water table elevations)
	n =	Porosity (based on referenced values).

Horizontal ground water gradients at the C&D landfill vary from 0.001 to 0.010 (units are ft/ft). The range of calculated ground water velocities vary from 7.90E-05 to 1.38E-02 feet/day. It should be recognized that slug tests (Appendix VI) used to measure the permeability are short-term, non-steady state tests that measure permeability within a limited zone of influence about each piezometer.

The velocity calculations are sensitive to variable hydraulic gradients and empirical porosity values. Laboratory porosity values are based on the *total* percentage of pore space (voids) within a soil, where *effective* porosity reflects the degree of pore space inter-connectivity. Laboratory porosity values can be adversely affected by sample disturbance, where the published empirical values are based on numerous field tests and reflect more probable in-situ conditions. The effective porosity values used in the calculations are based on the conservative side of the range of published values.

The significant influence on ground water velocities at this site is the relatively flat ground water gradient. As the landfill site is developed with higher slope angles and covered with relatively low-permeability surfaces (i.e. the final cover), runoff will increase and ground water recharge is expected to diminish. The already flat ground water gradients are expected to further flatten.

5.6 Summary of Hydrogeological Evaluation

Subsurface conditions within the eastern portion of the site are favorable to the proposed C&D landfill development. Ground water depths are such that regulatory minimum vertical separation can be achieved, but there will be a need for somewhat extensive earthwork. Ground water gradients are flat and velocities are very low. The near surface aquifer is thin and contains a discontinuous

clay layer that further limits ground water migration potential. On-site discharge features exist, but there is land between the site and the regional discharge feature (Grindle Creek) which is not controlled by the site owner/operator. The ground water monitoring plan will take this into account.

Deep confining layers exist that limit the downward contaminant migration potential. The site is situated above regional aquifers, but the likelihood of affecting local or regional ground water supplies is negligible due to the relative hydraulic isolation of the site. There are no down gradient ground water wells or significant ground water users identified within a one-mile radius. Domestic water is supplied by a regional water company. Local ground water quality will be protected by proper site management and monitoring. Conditions at the site have been adequately characterized to formulate an effective ground and surface water monitoring program.

The C&D landfill will reduce the surface recharge area somewhat. When closed, the C&D will effect a minor reduction in ground water recharge within the facility boundary due to side slope runoff. The area in which ground water recharge will be reduced is small compared to the drainage basin feeding the regional discharge feature, so base flow reduction at the stream will be minimal. The Part 2 Detailed Hydrologic Report will contain specific data on settlement and slope stability, but subsurface conditions identified thus far indicate no problematic areas. Based on this site characterization, there appear to be no limiting factors that would preclude development of a C&D landfill. The site is suitable for this intended purpose.

6.0 Conceptual Design Plan - *.0504 (1) (d)*

6.1 Narrative Description

Figures F2 and F3 depict the proposed grading plan and final waste contours, respectively. The C&D footprint covers slightly less than 20 acres and involves grade cuts and fills on the order of 1 to 4 feet. Horizontal buffers of 200-feet to property lines are observed, per the Solid Waste Rules. Final waste thicknesses will be approximately 95 feet at the center of the landfill, with 3H:1V side slopes leading to a contiguous final cap. Sedimentation and erosion control measures will be implemented in accordance with applicable regulations. Sediment basins will be incorporated into the buffers, as shown on the drawings. The forthcoming Part 2 Construction Plan will provide details of the facility plan, along with technical specifications and a CQA plan.

6.2 Special Engineering Features

The grading plan incorporates cuts and fills required to maintain a 4-foot minimum separation between the waste and the maximum seasonal high ground water level. Other features of the plan

include sedimentation and erosion control devices required to maintain surface water quality adjacent to the facility. Scales, offices, equipment maintenance shops and other appurtenances required to support the facility are already in place.

7.0 Local Government Approval - *.0504 (1) (e)*

7.1 Local Board Approval

The site is not located within an incorporated town or within the extra-territorial jurisdiction or such. The Pitt County Board of Commissioners, at its regular meeting on October 23, 2000, voted in favor of allowing the subject site to be developed as a C&D landfill. This meeting was well attended and heard public comments. A copy of the meeting minutes is included in Appendix VII. A letter from the County stating that the site is not zoned is included in Appendix VII.

7.2 Franchise Agreement

The Franchise Agreement and meeting minutes, which where approved February 3, 2003, are included in Appendix VII.. The agreement is a renewal for operations of Phase 1 as well as included new operations in Phase 2 and Phase 3 at the time those are permitted. This document defines the nature of the site and its intended operation.

8.0 Facility Report - *.0504 (1) (g)*

8.1 Service Area - *.0504 (1) (g) (i)*

The site will serve a 50-mile radius from it location in eastern Pitt County. A map presented in the Draft Franchise Agreement (Appendix VII) shows this area. This area includes all or part of the following 22 counties (1996 population data based on the NC Office of State Planning):

Pitt	119,236	Edgecombe	56,054
Beaufort	43,210	Nash	86,026
Craven	87,174	Halifax	56,523
Pamlico	12,010	Northampton	20,858
Jones	9,322	Hertford	22,214
Lenoir	59,262	Chowan	14,152
Onslow	150,216	Bertie	20,532
Duplin	43,535	Martin	25,762
Wayne	112,386	Washington	13,504
Greene	17,180	Tyrrell	3,671
Wilson	68,460	Hyde	5,191

8.2 Waste Stream Characteristics - *.0504 (1) (g) (ii)*

The landfill will be permitted to receive up to 200 tons per day of C&D wastes. The wastes will be derived from new construction, both commercial and residential, and demolition wastes. Initially, the waste stream will include debris from flood damaged homes and businesses. Typical contents of the waste include, but are not limited to, gypsum board, lumber, asphalt shingles, paper products, plastic and other miscellaneous materials. The facility will not accept putrescible, liquid, or hazardous wastes. Properly packaged asbestos wastes will be placed in a designated area.

8.3 Equipment Requirements - *.0504 (1) (g) (iii)*

Equipments requirements for operation of the landfill are as follows:

Excavator	Liebherr 631, or equivalent	Cover soil
Dozer	Dresser TD20, or equivalent	Waste placement and cover
Dump Truck	Ford F-750, or equivalent	Haul cover soil
Water Truck	Unspecified	Dust control
Tractor	Unspecified	Mowing, light grading

8.4 Water Quality Monitoring Plan - . *0504 (1) (g) (iv)*

A monitoring plan for ground and surface water is already in place. This plan will be modified and presented with the upcoming Part 2 Design Hydrogeologic Report. A map which accompanies the plan will show the locations of existing and future monitoring wells and surface water sampling points. Sampling will be conducted on a semi-annual basis, in accordance with current regulations. The samples will be analyzed for the Appendix I list of ground water constituents, or an alternative list subject to approval by NC DWM. All well construction will comply with applicable regulations.

8.5 Operating Capacity and Life Expectancy - . *0504 (1) (h)*

Based on the conceptual grading plan and final waste contours (Drawings F2 and F3), the landfill will have a volumetric capacity of 1,056,000 cubic yards, or 528,000 tons in place. Factoring in anticipated growth, the estimated capacity of the landfill (in years) varies by tonnage, as follows:

Annual	**Daily Tonnage**		
Growth	**50**	**100**	**200**
0%	29 years	14 years	7 years
2%	23 years	12 years	6.5 years
5%	18 years	11 years	6.5 years
10%	15 years	9 years	5.5 years

Actual daily tonnage will vary based on regional economic factors and unforeseen occurrences. An initial tonnage of 200 tons per day is expected to dispose of flood damaged structural debris, after which time, the normal waste stream is expected to be 100 tons per day.

8.6 Soil Volume Analysis

The following data was developed using AutoCAD DTM, based on the conceptual grading plan. Sufficient soil resources available on adjacent tracts were examined during this investigation. The forthcoming Part 2 Design Report will provide detailed airspace and earthwork calculations.

Total Proposed Airspace	1,121,000 cy
Final Cover Required (2' thickness)	65,000 cy
Net Airspace	1,056,000 cy
Intermediate Cover Required (15%)	158,400 cy
Total Base Fill Volume	97,000 cy
Net Soil Balance	- 320,400 cy

Table 1A
Test Boring/Piezometer Data

* The top of the Yorktown is generally identified by a turretella-rich marker bed in green, medium stiff silt-clay

** The Castle Hayne is generally identified by shell-rich cemented sands and clays

***The Beaufort formation is generally characterized by the presence of glauconite (a green sedimentary mica), but this material could have been reworked into the shallower Yorktown sediments, as glauconite was observed

Elevation Data				Test Boring Data								Piezometer Construction Data				
Boring Number	Boring Date	PVC Pipe Elev.	Ground Elev.	Drilling Method	Total Depth, ft.	Yorktown Fm. * Depth, ft.	Yorktown Fm. * Elev.	Castle Hayne Fm. * Depth, ft.	Castle Hayne Fm. * Elev.	Poss. Beaufort Fm. ** Depth, ft.	Poss. Beaufort Fm. ** Elev.	Top of Piez. Screen Depth, ft.	Top of Piez. Screen Elev.	Bot. of Piez. Screen Depth, ft.	Bot. of Piez. Screen Elev.	Stickup ft.
B-1d	12/27/01	20.23	17.33	Rotary	80.0	23.0	-5.7	32.4	17.3	51.9	17.3	55.0	-2.7	65.0	-12.7	3.46
B-1s	12/14/01	20.06	17.19	HSA	15.0							10.0	4.3	15.0	-5.7	3.49
B-2	12/17/01	21.02	16.94	HSA	20.0	14.7	2.2					10.0	17.0	20.0	14.5	2.33
B-3	12/18/01	20.74	17.28	HSA	30.0	26.3	-9.0					20.0	4.3	30.0	-5.7	4.62
B-4	12/18/01	22.83	19.34	HSA	25.0	19.6	-0.3					15.0	17.9	25.0	15.4	1.94
B-4A	04/10/02	21.80	19.47	Hand Auger	5.0	–		–				2.5	3.4	5.0	-6.6	2.50
B-5	12/17/01	23.90	19.28	HSA	25.0	19.7	-0.4					15.0	17.2	25.0	14.7	0.50
B-5A	04/10/02	21.37	19.43	Hand Auger	4.0	–		–				1.5	3.3	4.0	-6.7	3.32
B-6	12/18/01	21.98	18.43	HSA	25.0	19.9	-1.5					15.0	5.3	25.0	0.3	3.37
B-6A	04/10/02	19.04	18.54	Hand Auger	3.8	–		–				1.3	14.0	3.8	11.5	3.64
B-7	12/12/01	21.04	18.28	HSA	25.0	17.0	1.3					15.0	7.6	25.0	-2.4	3.09
B-8	12/13/01	18.69	15.32	HSA	35.0	8.5	6.8					10.0	8.3	15.0	-1.7	2.99
B-8A	04/10/02	18.15	15.42	Hand Auger	3.9	–		–				1.4	-19.8	3.9	-24.8	3.62
B-9	12/13/01	20.64	17.55	HSA	20.0	16.1	1.4					10.0	1.7	20.0	-3.3	3.40
B-10	12/13/01	21.28	18.29	HSA	20.0	13.5	4.8					10.0	13.8	20.0	-1.2	3.08
B-11	12/11/02	17.93	15.24	HSA	40.0	10.9	4.3	27.6	-12.4			35.0	-18.7	40.0	-23.7	2.91
B-12	12/12/02	20.14	16.74	HSA	20.0	17.9	-1.2					15.0	-17.4	20.0	-22.4	2.95
B-13	12/12/02	21.90	18.82	HSA	20.0	17.8	1.0					5.0	12.6	20.0	-2.4	2.86
B-14	12/18/02	19.17	16.26	HSA	40.0	11.8	4.5	31.9	-15.6			35.0	10.9	40.0	-4.1	2.85
B-15d	12/13/02	20.52	17.57	HSA	40.0	15.5	2.1	35.2	-17.6			35.0	-17.9	40.0	-22.9	2.54
B-15s	12/13/02	20.45	17.59	HSA	20.0	15.5	2.1					5.0	2.0	20.0	-3.0	2.67
B-16	12/10/02	18.77	15.92	HSA	20.0	8.1	7.8					5.0	13.8	20.0	-1.2	2.78
B-17d	12/18/02	19.61	17.07	HSA	40.0	12.7	4.4	37.1	-20.0			35.0	13.6	40.0	-1.4	3.31
B-17s	12/18/02	19.67	17.00	HSA	20.0	13.0	4.0					15.0	13.2	20.0	-1.8	2.56
B-18	12/09/02	21.55	18.77	HSA	20.0	17.9	0.9					5.0	11.2	20.0	-3.8	2.84
B-19	12/06/02	21.93	18.62	HSA	20.0	13.3	5.3					5.0	13.0	20.00	-2.0	3.05
B-20	12/09/02	20.74	18.18	HSA	20.0	18.1	0.1					5.0	-20.5	20.00	-25.5	2.91
B-21	12/10/02	19.01	16.17	HSA	20.0	8.2	8.0					5.0	8.9	20.0	-6.1	2.70
B-22	12/12/02	21.07	18.02	HSA	20.0	17.8	0.2					5.0	11.7	20.0	-3.3	2.76
B-23d	12/17/02	17.45	14.54	HSA	40.0	12.7	1.8	33.8	-19.3			35.0	10.8	40.0	-4.2	2.60
B-23s	12/18/02	16.60	13.90	HSA	20.0	13.0	0.9					5.0	-17.2	20.0	-22.2	3.16
B-24	12/11/02	19.49	16.73	HSA	20.0	13.3	3.4					5.0	12.0	20.0	-3.0	2.83
B-25	12/10/02	18.36	15.76	HSA	20.0	8.7	7.1					5.0	-18.2	20.0	-23.2	2.81
B-26	12/19/02	20.93	17.77	HSA	40.0	21.7	-3.9	35.4	-17.6			35.0	7.1	40.0	-2.9	2.32
B-27	12/09/02	19.81	16.98	HSA	20.0	13.4	3.6					5.0	-11.4	20.0	-21.4	2.64
B-28	12/17/02	19.57	16.76	HSA	40.0	12.1	4.7					35.0	0.0	40.0	0.0	0.00
B-29	04/23/03	19.42	17.1	HSA	20.0	19.5	-2.4					10.0	0.0	20.0	0.0	0.00
B-30	04/23/03	21.27	18.63	HSA	40.0	14.3	4.3	37.9	-19.3			30.0	0.0	40.0	0.0	0.00

Notes:

1. No rock or partially weathered rock was encountered, although 100+ bpf material (cemented layers) was encountered
2. Some of the formation depths are estimated as near as possible based on the sampling interval
3. Clay layer will shell marker bed was not encountered at B-1 (alluvial deposits indicate the presence of an old channel located nearby)
4. The deeper formations (Castle Hayne and Beaufort), believed to have been encountered at B-1d, were characterized in the Phase 1 investigation (these layers are beneath the conifining unit and are considered relatively insignificant to the hydrogeology of the site)

Table 1B
Supplemental Data for Selected Regional Water Wells

Based on NC DENR Monitoring Well Database

All dimensions given in feet, elevations refenced to mean sea level

Test Boring Data			Data on Specific Geologic Formations																			
			Yorktown Fm.			Castle Hayne Fm.			Beaufort Fm.			Pee Dee Fm.			Black Creek Fm.			Cape Fear Fm.			Basement	
Boring Number	Ground Elev.	Total Depth, ft.	Depth, ft.	Elev.	Thickness	Depth, ft.	Elev.	Thickness	Depth, ft.	Elev.	Thickness	Depth, ft.	Elev.	Thickness	Depth, ft.	Elev.	Thickness	Depth, ft.	Elev.	Thickness	Depth, ft.	Elev.
M21Q *	15	730	20	15	47	67	-22	-24	43	-32	39	86	-71	117	203	-188	319	522	-507			
N22I *	42	250	14	34	36	50	-8	28	78	-45	59	146	-104									
N23B	62	440	19	36	**				49	4	44	102	-40	73	175	-113						
N23D	56	432	8	38	**				26	16	24	64	-8	320	384	-328						
N23G *	68	456	10	56	**				68	31	53	90	-22	45	135	-67	259	394	-326			
N23O	67	480	20	47	**				66	24	29	72	-5	66	138	-71	304	442	-375			
O23A	50	514	10	36	**				38	-28	66	144	-94	110	254	-204	226	480	-430			
M24R	49	754	21	30	**							48	1	30	78	-29	257	335	-286	419	754	-705
M24B *	26	502	40	18	**							32	-6	14	46	-20	221	267	-241			
O23L	42	1092	28	32	26	54	7	106	160	-26	22	90	-48	90	180	-138	272	452	-410	640	1092	-1050
O22H	46	470	0	26	0	0	-2	0	0	-20	94	160	-114	120	280	-234						
N23P	70	802	0	60	**				0	32	40	78	-8	70	148	-78	266	414	-344			
M24U *	65	711	0	44	**							66	-1	48	114	-49	283	397	-332			
M18I	40	1526				0	-73	0	0	-222	126	386	-346	105	493	-453	194	687	-647			
M20E *	45	516	0	17	0	0	-9	0	0	-115	30	190	-145	120	310	-265						
Average formation thickness for closest borings:					35			24			45			70			270			530		

* Relatively close to site (see Map, Appx. V)

** Interface not clearly identified – deeper unit may have been absent.

Supplemental Data for On-site Wells (Phase 1)

Elevation Data				Test Boring Data								Piezometer Construction Data				
						Yorktown Fm.		Castle Hayne Fm.		Beaufort Fm.		Top of Piez. Screen		Bot. of Piez. Screen		Stickup
Boring Number	Boring Date	PVC Pipe Elev.	Ground Elev.	Drilling Method	Total Depth, ft.	Depth, ft.	Elev.	Depth, ft.	Elev.	Depth, ft.	Elev.	Depth, ft.	Elev.	Depth, ft.	Elev.	ft.
MW-1d	10/12/00	21.14	17.40	HSA	50.0	7.5	-32.6	30.5	50.0			40.0	17.4	50.0	0.0	36789.86
(Old B-1) MW-1S	05/06/01	20.91	17.59	HSA	13.0	–						3.0	18.0	13.0	18.0	36786.20
MW-2D	10/09/00	21.80	17.97	Rotary	70.0	12.5	0.0	33.5	0.0	61.5	0.0	39.0	0.0	49.0	0.0	0.00
(Old B-2d) MW-2S	05/05/01	21.44	18.45	HSA	13.0	–	0.0		0.0			3.0	0.0	13.0	0.0	0.00
MW-3D	10/12/00	22.83	19.37	HSA	50.0	14.0	1.8	27.5	14.8			40.0	14.8	50.0	-1.2	36997.58
(Old B-3) MW-4	05/05/01	18.42	14.83	HSA	13.0	–						3.0	16.0	13.0	-3.9	36996.60
MW-5	11/18/02	17.90	14.80	HSA	18.0	18.4	0.3					3.0	18.3	18.0	18.3	37556.79
MW-6	05/05/01	20.03	16.87	HSA	13.0	–						3.0	19.9	13.0	19.9	37552.12
MW-7	05/05/01	19.40	16.03	HSA	13.0	–						3.0	19.9	13.0	19.9	37555.05
MW-8	11/18/02	21.21	18.30	HSA	18.0	17.6	0.0					3.0	0.0	18.0	0.0	0.00
MW-9D	11/15/02	22.88	19.88	HSA	39.0	16.5	0.0					33.0	0.0	38.0	0.0	0.00
MW-9S	11/18/02	22.95	19.91	HSA	18.5	16.5	0.0					3.0	0.0	18.0	0.0	0.00

Table 2 - Continued
Geotechnical Laboratory Data

Compaction Data – Bulk Samples

Boring Number	Sample Number	Sample Depth, ft.	Max. Dry Density, pcf	Optimum Moisture, %	Natural Moisture, %
B-2	B1	1.0 - 5.0	98.6	18.1	31.8
B-8	B2	1.0 - 5.0	103.1	17.0	16.2

Hydraulic Conductivity Data – Remolded Bulk Samples

Boring Number	Sample Number	Sample Depth, ft.	Porosity %	Sat'd Conductivity cm/sec	Compaction % MDD	Tested Moisture, %	K cm/sec
B-2	B1	1.0 - 5.0	44.0%	6.80E-06	97.8%	19.0%	5.64E-07
B-8	B2	1.0 - 5.0	42.0%	6.50E-06	98.2%	16.6%	4.37E-07

Hydraulic Conductivity Data – Undisturbed Samples

Boring Number	Sample Number	Sample Depth, ft.	Porosity %	Sat'd Conductivity cm/sec	Tested Density (pcf)	Tested Moisture, %	K cm/sec
B-1	U1	11.0 - 11.3	50.0%	1.50E-07	124.0	27.1%	2.22E-04
B-10	U2	14.4 - 14.7	36.0%	4.60E-07	115.0	19.2%	3.03E-05

Triaxial Shear Strength Data

Boring Number	Sample Number	Sample Depth, ft.	Total Strength Parameters c (psf)	phi (degrees)	Effective Strength Parameters c' (psf)	phi (degrees)
B-2	B1	1.0 - 5.0	374	19.3	0	40.0
B-1	U1	11.0 - 11.3	130	12.5	32.1	27.4
B-8	B2	1.0 - 5.0	418	20.6	0	38.8
B-8	U2	13.0 -15.0	360	13.1	179	36.2

Consolidation Test Data

Boring Number	Sample Number	Sample Depth, ft.	* Max. Past Pressure, psf	Compression Ratio **	Consolidation Coefficient***
B-1	U1	11.0 - 11.3	1700	0.045	
B-10	U3	13.4 - 13.5	1600	0.057	

Notes to Above:

* estimated as intersection of apparent virgin compression curve and recompression curve, sample exhibits smooth transition (sand-like behavior)

** based on less than one full log cycle, steepest part of virgin compression curve

*** value taken at 2000 psf

All Moisture Contents are Dry Unit Weight Based

Moisture data for bulk samples acquired from individual jar samples collected with the bulk sample. These data are considered representative of in-situ moisture conditions for earth work considerations.

Table 3
Summary of Hydrogeological Properties

Conductivity Values Based on Falling Head Slug Tests, Evaluated by Two Methods: Hvorslev Bouwer-Rice

Piezometer No.	Hydrological Unit	Hydrogeological Description	Aquifer Thickness	Effective Porosity	Total Porosity	Conductivity k (cm/sec)	Conductivity k (cm/sec)	Representative Grain Size Distribution				Representative Boring, Sample I.D.
								% Gravel	% Sand	% Silt	% Clay	
B-10	Aquifer Unit 1	Loose Variably Silty F-C Sand	15	0.50	0.50	9.37E-04	2.23E-03					
B-9		with Occ. Clay Layers				9.45E-04	2.24E-03					
B-8						1.47E-03	3.25E-03					
B-7						3.08E-04	7.49E-04	0.00	83.67	16.33	**	B-7, S7
B-6						1.97E-04	4.79E-04					
B-5						8.54E-04	2.10E-04					
B-4						1.02E-03	2.49E-03	0.00	97.39	2.61	**	B-4, S4
B-3						1.17E-03	3.06E-03					
B-2						1.01E-03	2.53E-03	0.31	64.47	30.29	4.93	B-2, B1
B-1s						8.74E-04	1.87E-03					
B-1d	Aquifer Unit 2	Dense Silty Sand and Clay	30	0.40	0.40	9.22E-05	2.57E-04	1.00	31.00	31.00	37.00	B-2s, U3, Phase 1

Effective and total porosity values taken from Groundwater and Wells (Driscoll, 1986), p. 67.

** Too little clay to measure in hydrometer

Aquifer thickness values assumed based on hydrogeologic cross sections

Thickness of saturated zone in Aquifer Unit 1 varies from 3 to 8 feet

No piezometers were completed in the confining units (see Undusturbed Samples on Table 2)

Table 4
Short-Term Ground Water Observations

Boring Number	Boring Date	PVC Pipe Elev.	Ground Elev.	Piezometer Stickup, ft.	Time of Boring Levels, BGS Depth, ft.	Time of Boring Levels, BGS Elev.	Stabilized Levels (24 hr), BGS Depth, ft.	Stabilized Levels (24 hr), BGS Elev.	Stabilized Levels (7+ day), BGS Depth, ft.	Stabilized Levels (7+ day), BGS Elev.	Date
B-1d	12/27/01	20.23	17.19	3.04	1.6	**15.6**	1.6	**15.6**	NA	**NA**	
B-1s	12/14/01	20.06	17.19	2.87	1.5	**15.7**	1.4	**15.8**	1.6	**15.59**	12/27/01
B-2	12/17/01	21.02	16.94	4.08	2.3	**14.6**	2.3	**14.6**	2.5	**14.44**	12/27/01
B-3	12/18/01	20.74	17.28	3.46	3.4	**13.9**	3.3	**14.0**	3.0	**14.28**	12/27/01
B-4	12/18/01	22.83	19.34	3.49	5.1	**14.2**	5.1	**14.2**	4.9	**14.44**	12/27/01
B-5	12/17/01	23.90	19.28	4.62	5.3	**14.0**	5.2	**14.1**	5.2	**14.08**	12/27/01
B-6	12/18/01	21.98	18.43	3.55	4.1	**14.3**	4.2	**14.2**	4.2	**14.23**	12/27/01
B-7	12/12/01	21.04	18.28	2.76	5.6	**12.7**	5.6	**12.7**	5.8	**12.48**	12/18/01
B-8	12/13/01	18.69	15.32	3.37	3.5	**11.8**	3.5	**11.8**	3.5	**11.82**	12/18/01
B-9	12/13/01	20.64	17.55	3.09	6.4	**11.2**	6.4	**11.2**	6.5	**11.05**	12/18/01
B-10	12/13/01	21.30	18.11	3.19	6.5	**11.6**	6.4	**11.7**	6.3	**11.81**	12/18/01
B-11	12/11/02	17.93	15.24	2.69	5.5	**9.7**	5.0	**10.2**	4.49	**10.75**	01/15/03
B-12	12/12/02	20.14	16.74	3.40	4.8	**11.9**	4.8	**11.9**	4.84	**11.90**	01/15/03
B-13	12/12/02	21.90	18.82	3.08	4.7	**14.1**	5.5	**13.3**	6.39	**12.43**	01/15/03
B-14	12/18/02	19.17	16.26	2.91	3.9	**12.4**	3.7	**12.6**	3.49	**12.77**	01/15/03
B-15d	12/13/02	20.52	17.57	2.95	14.3	**3.3**	10.5	**7.1**	6.60	**10.97**	01/15/03
B-15s	12/13/02	20.45	17.59	2.86	6.5	**11.1**	5.9	**11.7**	5.33	**12.26**	01/15/03
B-16	12/10/02	18.77	15.92	2.85	3.9	**12.0**	3.3	**12.6**	2.70	**13.22**	01/15/03
B-17d	12/18/02	19.61	17.07	2.54	4.7	**12.4**	4.5	**12.5**	4.38	**12.69**	01/15/03
B-17s	12/18/02	19.67	17.00	2.67	5.0	**12.0**	4.2	**12.8**	3.36	**13.64**	01/15/03
B-18	12/09/02	21.55	18.77	2.78	3.7	**15.1**	4.0	**14.7**	4.36	**14.41**	01/15/03
B-19	12/06/02	21.93	18.62	3.31	4.3	**14.3**	4.1	**14.5**	3.94	**14.68**	01/15/03
B-20	12/09/02	20.74	18.18	2.56	3.7	**14.5**	3.9	**14.3**	4.12	**14.06**	01/15/03
B-21	12/10/02	19.01	16.17	2.84	3.1	**13.1**	2.5	**13.6**	1.96	**14.21**	01/15/03
B-22	12/12/02	21.07	18.02	3.05	4.3	**13.7**	4.6	**13.4**	4.94	**13.08**	01/15/03
B-23d	12/17/02	17.45	14.54	2.91	2.9	**11.6**	3.0	**11.5**	3.09	**11.45**	01/15/03
B-23s	12/18/02	16.60	13.90	2.70	3.0	**10.9**	2.2	**11.7**	1.43	**12.47**	01/15/03
B-24	12/11/02	19.49	16.73	2.76	3.4	**13.3**	3.5	**13.2**	3.58	**13.15**	01/15/03
B-25	12/10/02	18.36	15.76	2.60	3.4	**12.4**	2.8	**13.0**	2.10	**13.66**	01/15/03
B-26	12/19/02	20.93	17.77	3.16	3.9	**13.9**	4.0	**13.8**	4.09	**13.68**	01/15/03
B-27	12/09/02	19.81	16.98	2.83	2.2	**14.8**	2.5	**14.4**	2.87	**14.11**	01/15/03
B-28	12/17/02	19.57	16.76	2.81	4.3	**12.5**	5.1	**11.7**	5.84	**10.92**	01/15/03
B-29	04/23/03	19.42	17.1	2.32	2.3	**14.8**	2.3	**14.8**	2.30	**14.80**	04/22/03
B-30	04/23/03	21.27	18.63	2.64	2.6	**16.0**	2.5	**16.1**	2.40	**16.23**	04/22/03

Notes: NA in depth column means water level was "Not Acquired."

BGS data referenced "below ground surface."

TOC data referenced from "top of casing."

Table 5
Long Term Ground Water Levels

Water Level Elevations

Boring	Casing Elev.	Ground Elev.	11/16/00	12/12/00	01/24/01	03/23/01	05/16/01	11/12/01
MW-1d	21.14	17.40					11.12	
MW-1s	20.91	17.59					12.00	10.83
MW-2d	21.80	17.97					9.11	
MW-2s	21.44	18.45					10.54	9.70
MW-4	18.42	14.83					11.48	10.95
MW-5	17.90	14.80						
MW-6	20.03	16.87					10.19	9.57
MW-7	19.40	16.03					10.74	10.08
MW-8	21.21	18.30						
MW-9d	22.88	19.88						
MW-9s	22.95	19.91						

B-1d	20.23	17.33						
B-1s	20.06	17.33						
B-2	21.02	16.94						
B-3	20.74	17.45						
B-4	22.83	19.47						
B-5	23.90	19.43						
B-5A	22.75	19.43						
B-6	21.98	18.54						
B-7	21.04	18.30						
B-8	18.69	15.42						
B-8A	19.04	15.42						
B-9	20.64	17.54						
B-10	21.30	18.09						
B-11	17.93	15.24						
B-12	20.14	16.74						
B-13	21.90	18.82						
B-14	19.17	16.26						
B-15d	20.52	17.57						
B-15s	20.45	17.59						
B-16	18.77	15.92						
B-17d	19.61	17.07						
B-17s	19.67	17.00						
B-18	21.55	18.77						
B-19	21.93	18.62						
B-20	20.74	18.18						
B-21	19.01	16.17						
B-22	21.07	18.02						
B-23d	17.45	14.54						
B-23s	16.60	13.90						
B-24	19.49	16.73						
B-25	18.36	15.76						
B-26	20.93	17.77						
B-27	19.81	16.98						
B-28	19.57	16.76						
B-29	19.42	17.1						
B-30	21.27	18.63						

Boring	Casing Elev.	Ground Elev.	11/16/00	12/12/00	01/24/01	03/23/01	05/16/01	11/12/01
MW-1s	20.91	17.59					12.00	10.83
B-3 (Phase 1)	22.83	19.37	10.69	10.73	10.44	10.72		
B-5 (Phase 1)	20.46	18.61	11.57	11.66	11.41	11.59		
B-9d (Phase 1)	20.40	18.46	11.08	11.02	10.79	10.98		
B-13 (Phase 1)	21.69	19.80	11.73	11.45	11.35	11.69		
B-14 (Phase 1)	20.70	18.56	11.41	11.33	11.20	11.58		

Surface impoundments occurred at B-1s/d and B-2 during the winter/spring of 2002 due to beaver activity on the main drainage canal located south of the western "panhandle"

Borings B-1 through B-6 are located within a future soil borrow area, a relatively low-lying area that may have been influenced by the beaver activity and/or recent logging activity

Borings B-7 through B-10 are located in the proposed 20-acre waste footprint, within higher ground not as likely to have been influenced by the beavers

Table 5
Long Term Ground Water Levels

Water Level Elevations - continued

		Heavy Beaver Activity							
Boring	12/27/01	02/12/02	03/12/02	04/10/02	04/22/02	05/02/02	05/08/02	06/25/02	11/27/02
MW-1d									
MW-1s						13.06			12.35
MW-2d									
MW-2s						10.91			9.95
MW-4						11.80			11.66
MW-5									10.92
MW-6						10.30			9.73
MW-7						10.89			10.33
MW-8									11.03
MW-9d									10.21
MW-9s									10.84

B-1d	15.59	16.10	15.61		16.04		15.37	13.82	
B-1s	15.59	16.18	15.78		16.38		16.20	14.38	
B-2	14.44	15.94	15.97		16.04		14.94	13.31	
B-3	14.28	16.23	16.21	16.71	16.59		15.83	14.04	
B-4	14.44	17.50	16.73	17.49	17.13		15.82	13.86	
B-5	14.08	16.76	16.25	16.75	16.69		15.60	14.17	
B-5A				17.50			19.16		
B-6	14.23	16.99	16.53	16.95	16.93		15.87	13.76	
B-7	12.38	13.90	13.73		14.33		13.45	12.59	
B-8	11.82	13.70	13.29	13.89	13.97		13.15	11.88	
B-8A				13.62			12.93	12.77	
B-9	11.15	12.24	12.53		13.10		12.61	11.67	
B-10	11.71	13.50	13.42		14.33		13.56	12.39	
B-11									
B-12									
B-13									
B-14									
B-15d									
B-15s									
B-16									
B-17d									
B-17s									
B-18									
B-19									
B-20									
B-21									
B-22									
B-23d									
B-23s									
B-24									
B-25									
B-26									
B-27									
B-28									
B-29									
B-30									

Boring	12/27/01	02/12/02	03/12/02	04/10/02	04/22/02	05/02/02	05/08/02	06/25/02	11/27/02
MW-1s							13.06		12.35
B-3 (Phase 1)	9.35								
B-5 (Phase 1)	10.11	11.10	11.08		11.66		11.66	10.11	
B-9d (Phase 1)		9.55			10.45		11.10	9.76	
B-13 (Phase 1)	10.14	11.14	11.44		12.13		12.24	10.89	
B-14 (Phase 1)	11.80	11.02	11.28		12.24		12.13	10.86	

Table 5
Long Term Ground Water Levels

Water Level Elevations - continued

Maximum Seasonal High Water Elevation

Boring	01/15/03	02/25/03	04/22/03	05/14/03	06/22/03	Shallowest Max. Elev.	Deepest Min. Elev.	Observed Difference
MW-1d				11.98		11.98	11.12	0.86
MW-1s				13.08		13.08	10.83	2.25
MW-2d				9.74		9.74	9.11	0.63
MW-2s				11.24		11.24	9.70	1.54
MW-4				11.82		11.82	10.95	0.87
MW-5				11.72		11.72	10.92	0.80
MW-6				10.57		10.57	9.57	1.00
MW-7				10.92		10.92	10.08	0.84
MW-8				11.85		11.85	11.03	0.82
MW-9d						10.21	10.21	0.00
MW-9s				11.65		11.65	10.84	0.81
B-1d						16.10	13.82	2.28
B-1s						16.38	14.38	2.00
B-2						16.04	13.31	2.73
B-3					12.96	16.71	12.96	3.75
B-4						17.50	13.86	3.64
B-5			16.44	16.30	14.85	16.76	14.08	2.68
B-5A			17.17	17.03		19.16	17.03	2.13
B-6						16.99	13.76	3.23
B-7	13.57	14.17	14.20	14.06	13.51	14.33	12.38	1.95
B-8	13.01	13.95	14.18	14.04	12.94	14.18	11.82	2.36
B-8A	13.05	13.72	14.00	13.86	12.71	14.00	12.71	1.29
B-9	12.46	13.11	13.30	13.16	12.52	13.30	11.15	2.15
B-10	13.30	14.10	14.53	14.39	13.42	14.53	11.71	2.82
B-11	10.75	11.19	11.91	11.77	11.10	11.91	10.75	1.16
B-12	11.90	12.42	12.62	12.48	12.05	12.62	11.90	0.72
B-13	12.43	13.13	13.40	12.26	12.45	13.40	12.26	1.14
B-14	12.77	13.22	13.70	13.56	12.94	13.70	12.77	0.93
B-15d	10.97	11.37	12.05	11.91	11.30	12.05	10.97	1.08
B-15s	12.26	12.89	13.25	13.11	12.34	13.25	12.26	0.99
B-16	13.22	14.82	14.27	14.13	12.97	14.82	12.97	1.85
B-17d	12.69	13.21	13.71	12.56	12.97	13.71	12.56	1.15
B-17s	13.64	14.65	14.39	14.25	13.44	14.65	13.44	1.21
B-18	14.41	15.40	15.13	14.99	13.80	15.40	13.80	1.60
B-19	14.68	15.99	15.54	15.40	14.22	15.99	14.22	1.77
B-20	14.06	15.25	15.15	15.01	13.80	15.25	13.80	1.45
B-21	14.21	15.72	15.59	15.45	13.80	15.72	13.80	1.92
B-22	13.08	14.05	14.34	14.20	13.22	14.34	13.08	1.26
B-23d	11.45	12.15	12.76	12.62	12.05	12.76	9.84	2.92
B-23s	12.47	9.84	12.96	12.82	12.40	12.96	9.84	3.12
B-24	13.15	14.12	14.20	13.00	12.95	14.20	12.95	1.25
B-25	13.66	15.33	15.01	14.87	13.02	15.33	13.02	2.31
B-26	13.68	14.20	14.59	14.45	13.85	14.59	13.68	0.91
B-27	14.11	15.26	14.82	14.03	13.68	15.26	13.68	1.58
B-28	10.92	12.13	12.76	12.62	12.02	12.76	10.92	1.84
B-29			14.80	13.48	13.26	14.80	13.26	1.54
B-30			16.23	15.06	13.08	16.23	13.08	3.15

Boring	01/15/03	02/25/03	04/22/03	05/14/03	06/22/03	Max.	Min.	Difference
MW-1s				13.08		13.08	10.83	2.25
B-3 (Phase 1)						10.73	9.35	1.38
B-5 (Phase 1)						11.66	10.11	1.55
B-9d (Phase 1)						11.10	9.55	1.55
B-13 (Phase 1)						12.24	10.14	2.10
B-14 (Phase 1)						12.24	10.86	1.38

Table 6
Vertical Ground Water Gradient Calculations

The vertical gradients can change with time due to seasonal fluctuation of the potentiometric levels between the upper, unconfined aquifer and the deeper, partly confined aquifer

Selected Ground Water Observation Dates

Nested Piezometers: **B-1s** Aquifer Unit 1 – Silt and clay strata (10 to 15 feet)
B-1d Aquifer Unit 2 – Silty Sand, Partly Cemented

Piezometer No.	Top of Screen, El.	Bottom of Screen, El.	delta-Screen Interval, ft *	12/27/01 W.T.E.	02/12/02 W.T.E.	03/12/02 W.T.E.	04/10/02 W.T.E.	04/22/02 W.T.E.	05/08/02 W.T.E.	06/25/02 W.T.E.
B-1s	7.3	2.3	40	15.59	16.18	15.78	–	18.38	16.20	14.38
B-1d	-37.7	-47.7		15.59	16.10	15.61	–	16.04	15.37	13.82
delta-W.T.E. (see Note 1)				0.00	0.08	0.17		2.34	0.83	0.56
Vertical Gradient (see Note 2)				0.0000 Down	0.0020 Down	0.0042 Down		0.0585 Down	0.0207 Down	0.0140 Down

Water level observation ceased due to elimination this portion of the site for new landfill footprint (possible borrow site)

Nested Piezometers: **B-8A** Aquifer Unit 1 – Silty and clayey sand strata (upper 6 feet)
B-8 Aquifer Unit 1 – Deeper silt strata (10 to 15 feet)

Piezometer No.	Top of Screen, El.	Bottom of Screen, El.	delta-Screen Interval, ft *	03/23/01 W.T.E.	W.T.E.	W.T.E.	04/10/02 W.T.E.	W.T.E.	05/08/02 W.T.E.	06/25/02 W.T.E.	01/15/03 W.T.E.	02/25/03 W.T.E.	04/22/03 W.T.E.	05/14/03 W.T.E.	06/22/03 W.T.E.
B-8A	14.0	11.5	6.1	13.77	–	–	10.00	–	9.31	9.15	12.95	13.72	14.00	13.88	12.71
B-8	5.4	0.4		13.61	–	–	10.62	–	9.88	8.61	13.01	13.95	14.18	14.04	12.94
delta-W.T.E. (see Note 1)				0.16			-0.62		-0.57	0.54	-0.06	-0.23	-0.18	-0.18	-0.23
Vertical Gradient (see Note 2)				0.0262 Down			-0.1016 Up		-0.0934 Up	0.0885 Down	-0.0098 Up	-0.0377 Up	-0.0295 Up	-0.0295 Up	-0.0377 Up

Nested Piezometers: **B-5A** Aquifer Unit 1 – Silty and clayey sand strata (upper 6 feet)
B-5 Aquifer Unit 1 – Deeper silt and sand strata (15 to 25 feet)

Piezometer No.	Top of Screen, El.	Bottom of Screen, El.	delta-Screen Interval, ft *	W.T.E.	W.T.E.	W.T.E.	04/10/02 W.T.E.	W.T.E.	05/08/02 W.T.E.	06/25/02 W.T.E.	01/15/03 W.T.E.	02/25/03 W.T.E.	04/22/03 W.T.E.	05/14/03 W.T.E.	06/22/03 W.T.E.
B-5A	17.9	15.4	11	–	–	–	14.18	–	15.84	dry	–	–	17.17	17.03	dry
B-5	4.4	-5.6		–	–	–	12.28	–	11.13	9.70	–	–	16.44	16.30	14.85
delta-W.T.E. (see Note 1)							1.90		4.71				0.73	0.73	
Vertical Gradient (see Note 2)							0.1727 Down		0.4282 Down				0.0664 Down	0.0664 Down	

Nested Piezometers: **B-6A** Aquifer Unit 1 – Silty and clayey sand strata (upper 6 feet)
B-6 Aquifer Unit 1 – Deeper silt and sand strata (15 to 25 feet)

Piezometer No.	Top of Screen, El.	Bottom of Screen, El.	delta-Screen Interval, ft *	W.T.E.	W.T.E.	W.T.E.	04/10/02 W.T.E.	W.T.E.	05/08/02 W.T.E.	06/25/02 W.T.E.
B-6A	17.2	14.7	11.2	–	–	–	12.93	–	12.40	dry
B-6	3.5	-6.5		–	–	–	13.51	–	12.43	10.32
delta-W.T.E. (see Note 1)							-0.58		-0.03	
Vertical Gradient (see Note 2)							-0.0518 Up		-0.0027 Up	

Water level observation ceased due to elimination this portion of the site for new landfill footprint (possible borrow site)

Nested Piezometers: **B-15s** Aquifer Unit 1 – Silt and clay strata (10 to 15 feet)
B-15d Aquifer Unit 2 – Silty Sand, Partly Cemented

Piezometer No.	Top of Screen, El.	Bottom of Screen, El.	delta-Screen Interval, ft *	W.T.E.	W.T.E.	W.T.E.	W.T.E.	W.T.E.	W.T.E.	W.T.E.	01/15/03 W.T.E.	02/25/03 W.T.E.	04/22/03 W.T.E.	05/14/03 W.T.E.	06/22/03 W.T.E.
B-15s	12.6	-2.4	15	–	–	–	–	–	–	–	12.26	12.89	13.25	13.11	12.34
B-15d	-17.4	-22.4		–	–	–	–	–	–	–	10.97	11.37	12.05	11.91	11.30
delta-W.T.E. (see Note 1)						Borings were installed December 2002					1.29	1.52	1.20	1.20	1.04
Vertical Gradient (see Note 2)											0.0860 Down	0.1013 Down	0.0800 Down	0.0800 Down	0.0693 Down

Nested Piezometers: **B-17s** Aquifer Unit 1 – Silt and clay strata (10 to 15 feet)
B-17d Aquifer Unit 2 – Silty Sand, Partly Cemented

Piezometer No.	Top of Screen, El.	Bottom of Screen, El.	delta-Screen Interval, ft *	W.T.E.	W.T.E.	W.T.E.	W.T.E.	W.T.E.	W.T.E.	W.T.E.	01/15/03 W.T.E.	02/25/03 W.T.E.	04/22/03 W.T.E.	05/14/03 W.T.E.	06/22/03 W.T.E.
B-17s	2.0	-3.0	14.9	–	–	–	–	–	–	–	13.64	14.65	14.39	14.25	13.44
B-17d	-17.9	-22.9		–	–	–	–	–	–	–	12.69	13.21	13.71	12.56	12.97
delta-W.T.E. (see Note 1)						Borings were installed December 2002					0.95	1.44	0.68	1.69	0.47
Vertical Gradient (see Note 2)											0.0638 Down	0.0966 Down	0.0456 Down	0.1134 Down	0.0315 Down

Nested Piezometers: **B-23s** Aquifer Unit 1 – Silt and clay strata (10 to 15 feet)
B-23d Aquifer Unit 2 – Silty Sand, Partly Cemented

Piezometer No.	Top of Screen, El.	Bottom of Screen, El.	delta-Screen Interval, ft *	W.T.E.	W.T.E.	W.T.E.	W.T.E.	W.T.E.	W.T.E.	W.T.E.	01/15/03 W.T.E.	02/25/03 W.T.E.	04/22/03 W.T.E.	05/14/03 W.T.E.	06/22/03 W.T.E.
B-23s	8.9	-6.1	14.4	–	–	–	–	–	–	–	12.47	9.84	12.96	12.82	12.40
B-23d	-20.5	-25.5		–	–	–	–	–	–	–	11.45	12.15	12.76	12.62	12.05
delta-W.T.E. (see Note 1)						Borings were installed December 2002					1.02	-2.31	0.20	0.20	0.35
Vertical Gradient (see Note 2)											0.0708 Down	-0.1604 UP	0.0139 Down	0.0139 Down	0.0243 Down

Notes to Above:

* Difference between bottom of upper screen and top of deeper screen

1 delta-W.T.E. = difference in water level (shallow well minus deep well)

2 Vertical Gradient = delta-W.T.E / delta-Screen Interval

3 **Negative vertical gradients are upward, positive gradients are downward.**

Table 7
Horizontal Ground Water Gradient and Velocity Calculations

Based on Bouwer-Rice Solutions (Table 3)

Well / Piez. No.	Hydraulic Conductivity (k) cm/sec	Hydraulic Conductivity (k) ft/day	Water Elevation	Ref. GW Contour	Vertical Distance	Horizontal Distance	Hydraulic Gradient (I)	Effective Porosity (n)	Ground Water Velocity (V), ft/day
B-1d	2.23E-03	6.217	12.47	15.00	2.53	650	0.0039	0.50	4.84E-02
B-1s	2.24E-03	6.231	11.65	15.00	3.35	650	0.0052	0.50	6.42E-02
B-2	3.25E-03	9.053	9.23	15.00	5.77	40	0.1443	0.50	2.61E+00
B-3	7.49E-04	2.085	12.54	15.00	2.46	500	0.0049	0.50	2.05E-02
B-4	4.79E-04	1.334	12.46	15.00	2.54	100	0.0254	0.50	6.78E-02
B-5	2.10E-04	0.585	11.13	15.00	3.87	60	0.0645	0.50	7.55E-02
B-6	2.49E-03	6.947	12.43	15.00	2.57	270	0.0095	0.50	1.32E-01
B-7	3.06E-03	8.529	10.71	13.00	2.29	90	0.0254	0.50	4.34E-01
B-8	2.53E-03	7.053	9.88	14.00	4.12	180	0.0229	0.50	3.23E-01
B-9	1.87E-03	5.206	9.51	11.00	1.49	140	0.0106	0.50	1.11E-01
B-10	2.57E-04	0.715	10.35	13.00	2.65	200	0.0133	0.40	2.37E-02

Ground Water Velocity Calculated from Equation: Water levels shown for 5/8/02 (see Table 5)

$V=Ki/n$ where K = Hydraulic Gradient in units of ft/ft
n = Effective Porosity is unitless
V = Ground Water Velocity in ft/day

Hydraulic Conductivity Conversion Factor: 1 ft/day = 3.59E-04 cm/sec

Hydraulic conductivity data taken from slug test data, Table 3

Hydraulic Gradient values were calculated from the potentiometric surface map.

Effective Porosity values from published literature (see footnote on Table 3).

Table 8
Hand Auger Boring Data

These borings were made to facilitate installation of shallow piezometers required to verify shallow ground water conditions within portions of the site

Only B-8A remains within the landfill footprint due to design changes

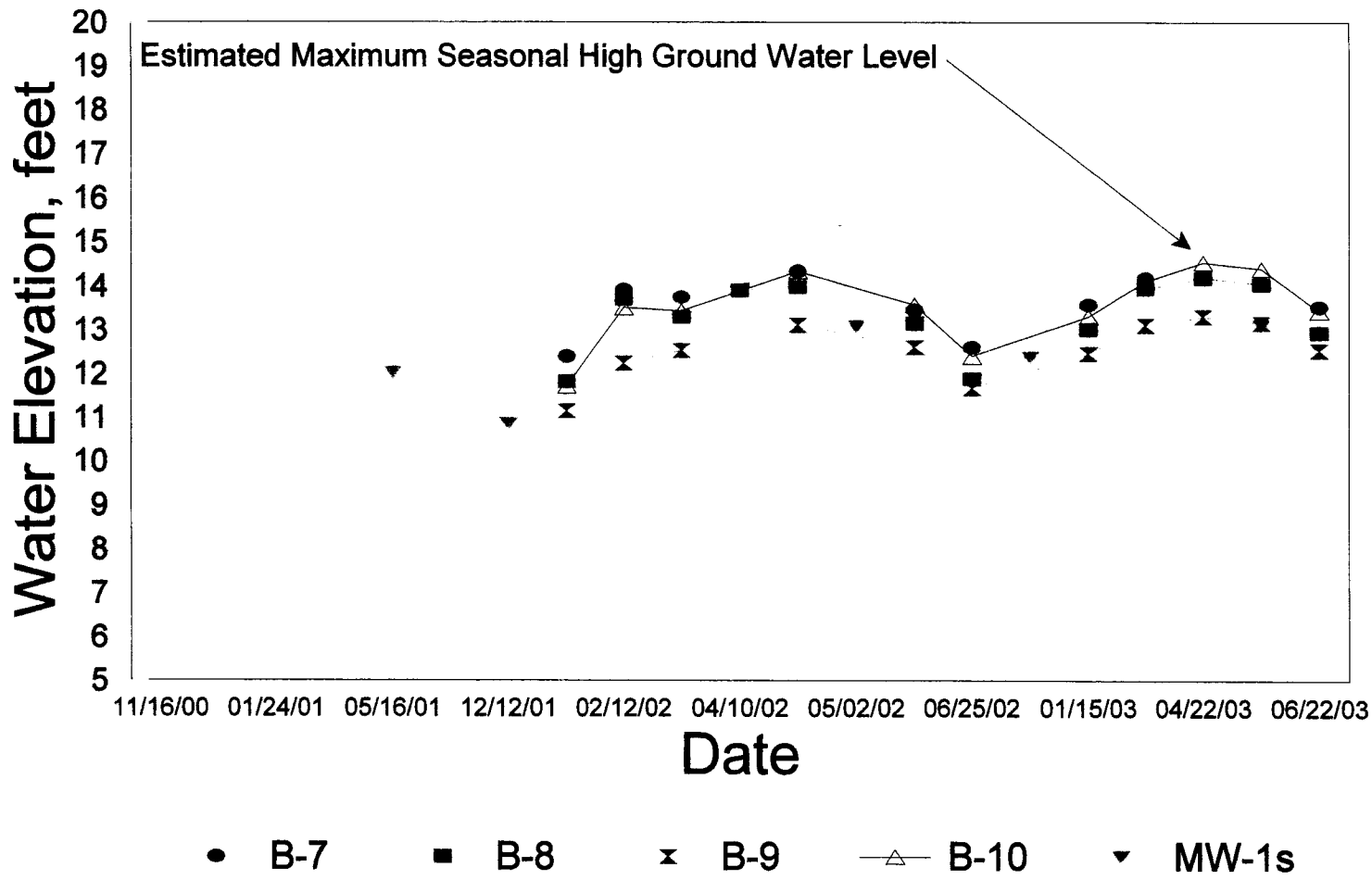
Piezometers were installed with 2.5 foot screens, sand packs, bentonite seals

All depths given in feet

Boring	From	To	Soil description
B-4A	0	4.95	Sand (continually caving in)
	Stick up 2.50 feet Sand pack placed to 0.7 feet b.g.s. Bentonite placed to surface Water level 3.12 feet b.g.s. upon completion		
B-5A	0	4.01	Sand (continually caving in)
	Stick up 3.32 feet Sand pack placed to 0.3 feet b.g.s. Bentonite placed to surface Water level 1.83 feet b.g.s. upon completion		
B-6A	0	3.8	Sand (continually caving in)
	Stick up 3.64 feet Sand pack placed to 0.3 feet b.g.s. Bentonite placed to surface Water level 1.97 feet b.g.s. upon completion		
B-8A	0	3.88	Sand (continually caving in)
	Stick up 3.62 feet Sand pack placed to 0.7 feet b.g.s. Bentonite placed to surface Water level 1.8 feet b.g.s. upon completion		

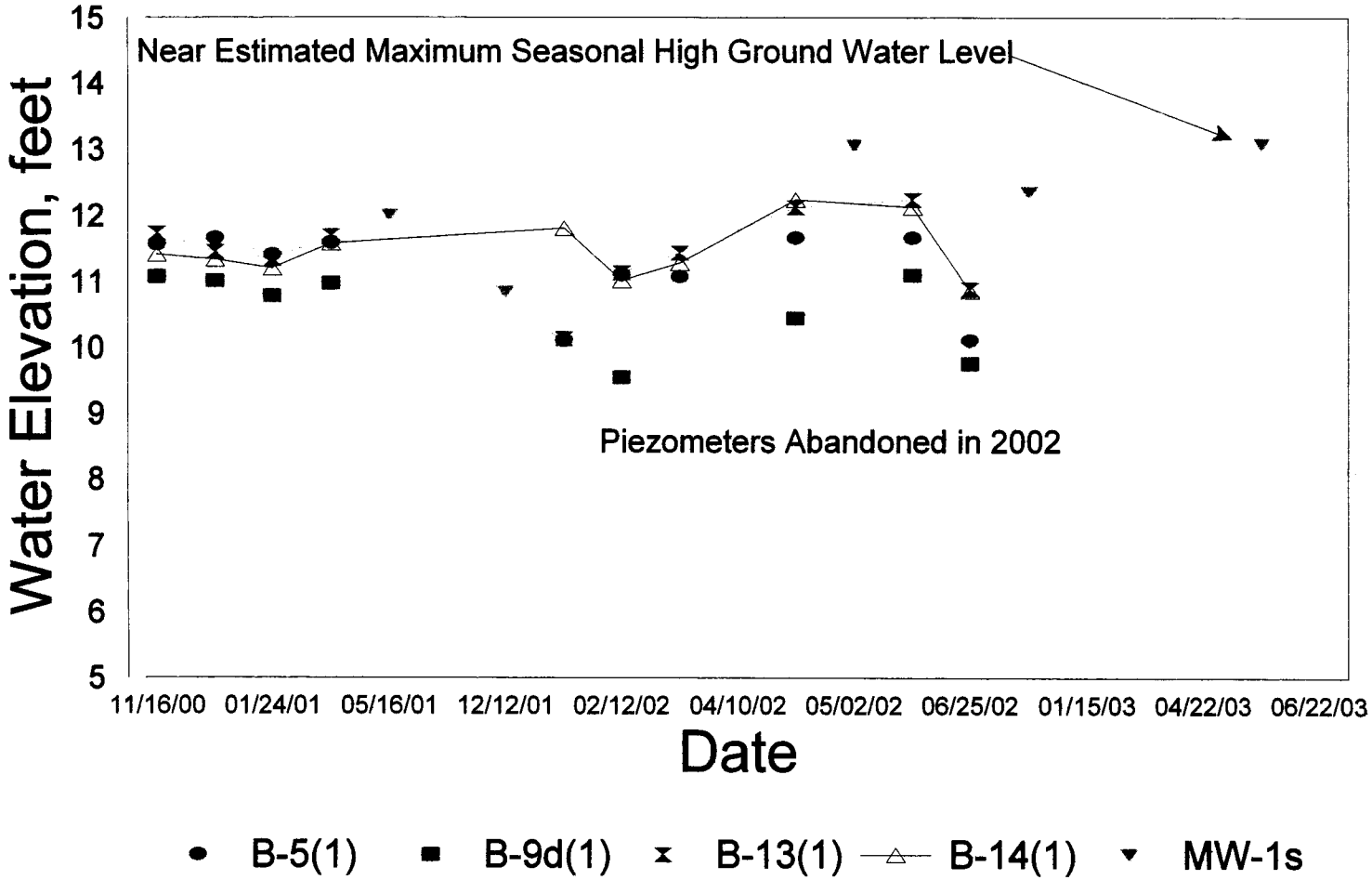
Ground Water Hydrograph

Phase 2 Piezometers and MW-1s



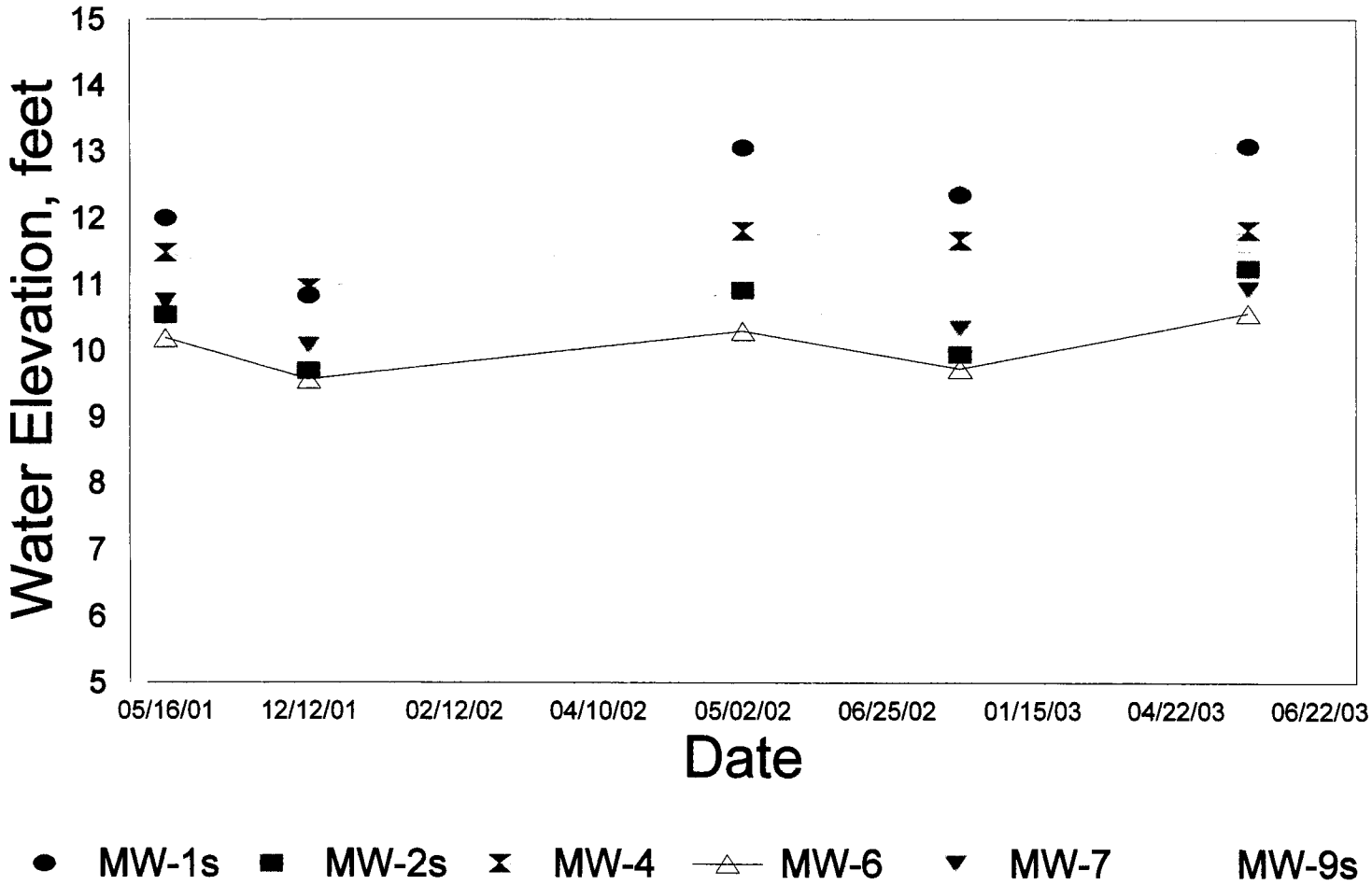
Ground Water Hydrograph

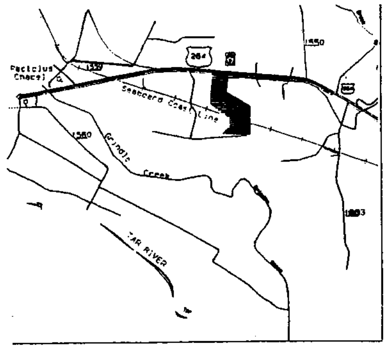
Phase 1 Wells and Piezometers



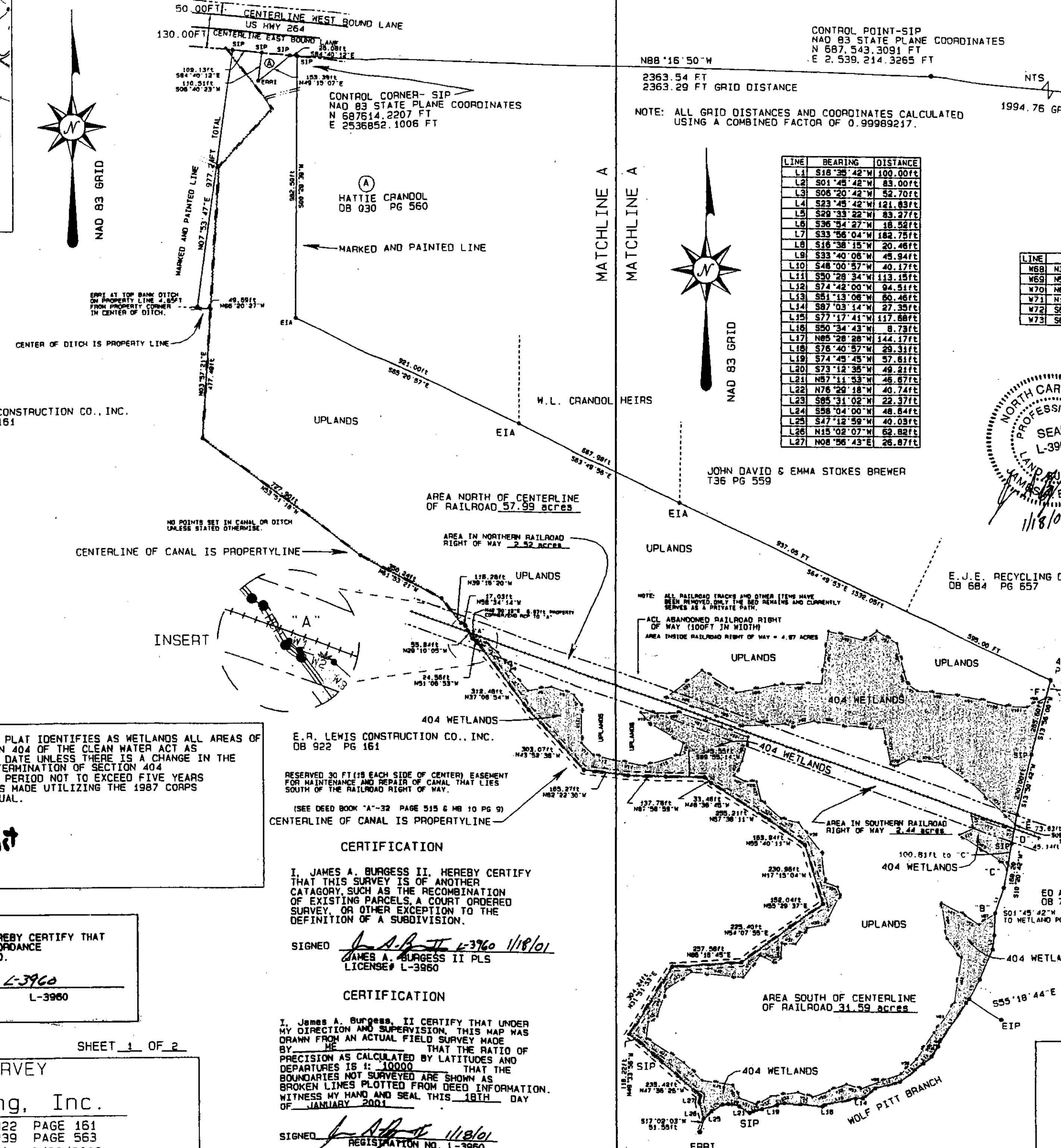
Ground Water Hydrograph

Selected Monitoring Wells





VICINITY MAP
NOT TO SCALE



SCALE 1"=300'

0 300 600

LEGEND

EIP = EXISTING IRON PIPE
ERRI = EXISTING RAILROAD IRON
SIP = SET IRON PIPE
EIA = EXISTING IRON AXLE
NTS = NOT TO SCALE

THIS CERTIFIES THAT THIS COPY OF THIS PLAT IDENTIFIES AS WETLANDS ALL AREAS OF WETLANDS REGULATED PURSUANT TO SECTION 404 OF THE CLEAN WATER ACT AS DETERMINED BY THE UNDERSIGNED ON THIS DATE UNLESS THERE IS A CHANGE IN THE LAW OR PUBLISHED REGULATIONS. THIS DETERMINATION OF SECTION 404 JURISDICTION MAY BE RELIED UPON FOR A PERIOD NOT TO EXCEED FIVE YEARS FROM THIS DATE. THIS DETERMINATION WAS MADE UTILIZING THE 1987 CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL.

NAME: Henry Wicker
TITLE: Regulatory Specialist
DATE: 2.26.2001

I, James A.Burgess II, HEREBY CERTIFY THAT THIS MAP WAS DRAWN IN ACCORDANCE WITH G.S.47-30 AS AMMENDED.

[signature] L-3960
James A. Burgess II, PLS L-3960

CERTIFICATION

I, JAMES A. BURGESS II, HEREBY CERTIFY THAT THIS SURVEY IS OF ANOTHER CATAGORY, SUCH AS THE RECOMBINATION OF EXISTING PARCELS, A COURT ORDERED SURVEY, OR OTHER EXCEPTION TO THE DEFINITION OF A SUBDIVISION.

SIGNED [signature] L-3960 1/18/01
JAMES A. BURGESS II PLS
LICENSE# L-3960

CERTIFICATION

I, James A. Burgess, II CERTIFY THAT UNDER MY DIRECTION AND SUPERVISION, THIS MAP WAS DRAWN FROM AN ACTUAL FIELD SURVEY MADE BY ME THAT THE RATIO OF PRECISION AS CALCULATED BY LATITUDES AND DEPARTURES IS 1: 10000 THAT THE BOUNDARIES NOT SURVEYED ARE SHOWN AS BROKEN LINES PLOTTED FROM DEED INFORMATION. WITNESS MY HAND AND SEAL THIS 18TH DAY OF JANUARY 2001

SIGNED [signature] 1/18/01
REGISTRATION NO. L-3960

NORTH CAROLINA PROFESSIONAL SEAL L-3960 LAND SURVEYOR JAMES A BURGESS II

SHEET 1 OF 2

WETLANDS SURVEY
FOR
EJE Recycling, Inc.
REFERENCE: DEED BOOK 922 PAGE 161
DEED BOOK P39 PAGE 563
DATES OF SURVEY: 10/1-12/20/2000
PACTOLUS TOWNSHIP PITT COUNTY NORTH CAROLINA

OWNER: EJE Recycling, Inc.
ADDRESS: 802 Recycling Lane
Greenville, NC 27834

PHONE: 252-752-8274

BURGESS LAND SURVEYING P.A. PROFESSIONAL LAND SURVEYORS 123 W. Third St., PO Box 881	SURVEYED: JB	APPROVED: JABII

LINE	BEARING	DISTANCE
L1	S16°35'42"W	100.00ft
L2	S01°45'42"W	83.00ft
L3	S06°20'42"W	52.70ft
L4	S23°45'42"W	121.83ft
L5	S29°33'22"W	83.27ft
L6	S36°54'27"W	16.52ft
L7	S33°56'04"W	182.75ft
L8	S16°38'15"W	20.46ft
L9	S33°40'06"W	45.94ft
L10	S48°00'57"W	40.17ft
L11	S50°28'34"W	113.15ft
L12	S74°42'00"W	94.51ft
L13	S51°13'06"W	60.46ft
L14	S87°03'14"W	27.35ft
L15	S77°17'41"W	117.68ft
L16	S50°34'43"W	8.73ft
L17	N85°28'28"W	144.17ft
L18	S76°40'57"W	29.31ft
L19	S74°45'45"W	57.61ft
L20	S73°12'35"W	49.21ft
L21	N57°11'53"W	46.67ft
L22	N76°29'18"W	40.74ft
L23	S85°31'02"W	22.37ft
L24	S58°04'00"W	48.64ft
L25	S47°12'59"W	40.03ft
L26	N15°02'07"W	62.82ft
L27	N08°56'43"E	26.87ft

NORTH CAROLINA PROFESSIONAL SEAL L-3960 LAND SURVEYOR JAMES A. BURGESS II
1/18/01

404 WETLAND CALLS

C-D

LINE	BEARING	DISTANCE
W68	N30°24'04"W	34.68ft
W69	N57°28'51"W	192.34ft
W70	N66°04'46"E	60.10ft
W71	N12°50'41"W	46.17ft
W72	S69°51'00"E	152.46ft
W73	S69°51'00"E	18.91ft

E-F

LINE	BEARING	DISTANCE
W74	N46°57'59"W	216.14ft
W75	N57°08'55"W	139.33ft
W76	N82°54'43"W	126.05ft
W77	S59°48'35"W	46.34ft
W78	N81°15'45"W	28.32ft
W79	N11°35'16"W	135.05ft
W80	N85°39'34"W	149.30ft
W81	N81°13'01"W	109.81ft
W82	S76°07'54"W	85.41ft
W83	N69°46'19"W	28.95ft
W84	S87°02'45"W	156.30ft
W85	N68°35'32"W	161.89ft
W86	N70°46'09"W	141.99ft
W87	N52°50'34"E	165.08ft
W88	S57°16'06"E	151.88ft
W89	N78°58'52"E	145.84ft
W90	N87°49'31"E	177.28ft
W91	N07°21'13"E	198.23ft
W92	S76°17'07"E	135.71ft
W93	N54°41'47"E	58.78ft
W94	S57°40'05"E	88.94ft
W95	S13°49'26"E	110.71ft
W96	S15°38'18"E	44.92ft
W97	S53°09'39"E	45.87ft
W98	S83°34'11"E	151.70ft
W99	S80°42'07"E	88.61ft
W100	S78°02'08"E	96.37ft
W101	S87°29'06"E	81.42ft
W102	N62°32'55"E	77.58ft

A-B

LINE	BEARING	DISTANCE
W1	S48°04'09"E	16.72ft
W2	S70°47'55"E	46.12ft
W3	S49°17'10"E	43.26ft
W4	S33°59'09"E	49.90ft
W5	S70°07'32"E	24.69ft
W6	S10°35'47"W	23.22ft
W7	S43°39'39"E	95.60ft
W8	N79°50'59"E	87.52ft
W9	S71°43'29"E	94.22ft
W10	S37°09'49"E	46.97ft
W11	S00°35'33"W	139.12ft
W12	S44°49'38"E	64.29ft
W13	S74°31'53"E	74.86ft
W14	S78°45'01"E	120.06ft
W15	N71°40'15"E	136.49ft
W16	N16°27'25"E	45.91ft
W17	N60°09'29"W	137.27ft
W18	N42°28'03"W	57.97ft
W19	S88°40'41"E	105.81ft
W20	N82°50'04"E	30.92ft
W21	S71°33'14"E	172.20ft
W22	S70°22'43"E	105.86ft
W23	S14°03'32"W	93.92ft
W24	S31°10'01"W	59.98ft
W25	S62°40'02"E	47.32ft
W26	S88°13'16"E	43.17ft
W27	S12°49'19"E	71.52ft
W28	S48°09'15"E	99.23ft
W29	S77°12'29"E	68.32ft
W30	S38°07'06"E	141.83ft
W31	S06°20'20"E	111.20ft
W32	S70°17'45"E	50.80ft
W33	S18°08'52"E	29.42ft
W34	S26°03'11"W	127.23ft
W35	S79°41'42"W	68.78ft
W36	S35°53'15"W	74.76ft
W37	N85°36'13"W	52.71ft
W38	S03°05'45"W	56.75ft
W39	S49°29'41"W	24.31ft
W40	N65°47'14"W	64.63ft
W41	S37°31'54"W	104.20ft
W42	N83°38'03"W	194.63ft
W43	S55°12'40"W	114.86ft
W44	S17°22'09"W	107.22ft
W45	S55°27'53"W	38.63ft
W46	S06°55'27"W	69.37ft
W47	S57°07'51"E	163.86ft
W48	S44°57'48"E	95.40ft
W49	S80°44'11"E	116.41ft
W50	S25°17'18"E	54.31ft
W51	S67°48'37"E	70.60ft
W52	N59°44'15"E	61.86ft
W53	N81°03'32"E	103.51ft
W54	S70°51'42"E	57.72ft
W55	N69°20'11"E	67.95ft
W56	N67°32'24"E	68.72ft
W57	S71°55'37"E	56.72ft
W58	N68°18'30"E	161.57ft
W59	N46°09'31"E	79.71ft
W60	N31°32'24"E	121.93ft
W61	N33°56'31"E	143.06ft
W62	N09°12'27"E	169.20ft
W63	N38°21'30"W	90.98ft
W64	N09°09'45"W	135.44ft
W65	S62°15'43"E	102.78ft
W66	S57°28'21"E	63.59ft
W67	N55°58'59"E	72.87ft

SCALE 1"=300'

0 300 600

LEGEND

EIP = EXISTING IRON PIPE
ERRI = EXISTING RAILROAD IRON
SIP = SET IRON PIPE
EIA = EXISTING IRON AXLE
NTS = NOT TO SCALE

	ACRES
AREA IN 404 WETLANDS POCKET "A TO B"	6.88
AREA IN 404 WETLANDS POCKET "C TO D"	0.43
AREA IN 404 WETLANDS POCKET "E TO F"	7.66
TOTAL AREA 404 WETLANDS	14.97
TOTAL AREA UPLANDS	74.61
TOTAL AREA PARCEL	89.58

SHEET 2 OF 2

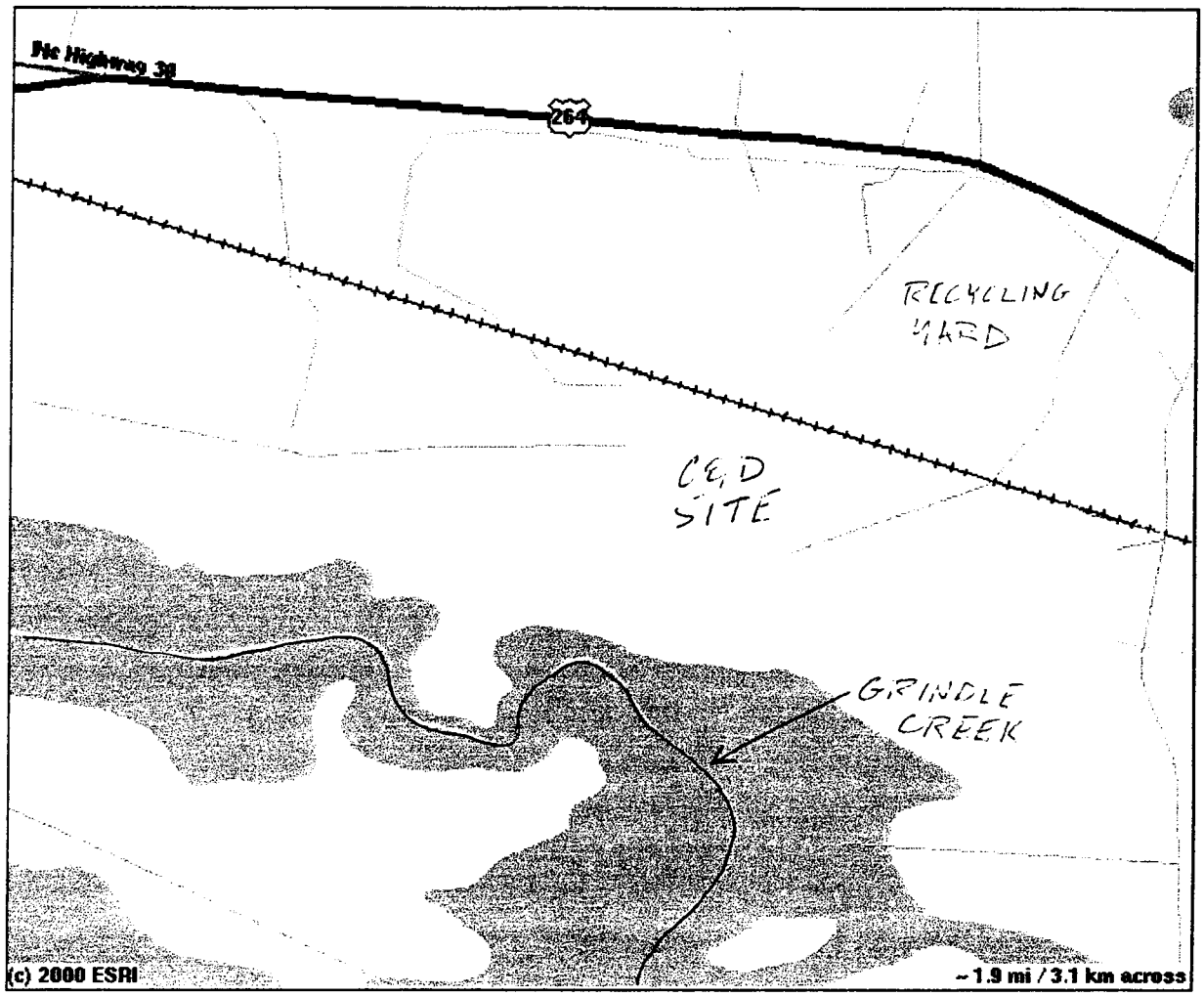
WETLANDS SURVEY
FOR
EJE Recycling, Inc.
REFERENCE: DEED BOOK 922 PAGE 161
DEED BOOK P39 PAGE 563
DATES OF SURVEY: 10/1-12/20/2000
PACTOLUS TOWNSHIP PITT COUNTY NORTH CAROLINA

OWNER: EJE Recycling, Inc.
ADDRESS: 802 Recycling Lane
Greenville, NC 27834

PHONE: 252-752-8274

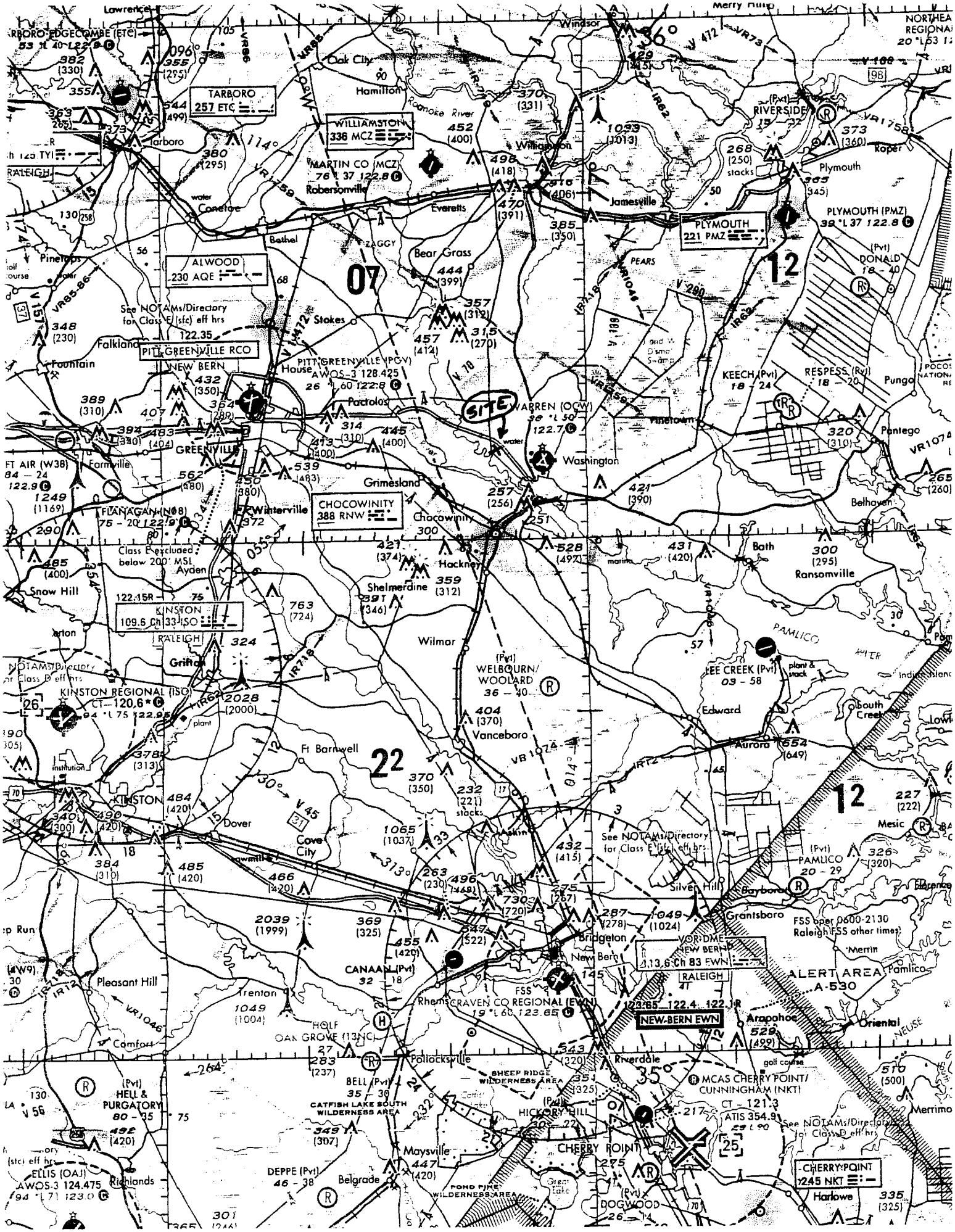
BURGESS LAND SURVEYING P.A. PROFESSIONAL LAND SURVEYORS 123 W. Third St., PO Box 881	SURVEYED: JB	APPROVED: JABII
	DRAWN: JABII	DATE: 01-16-01

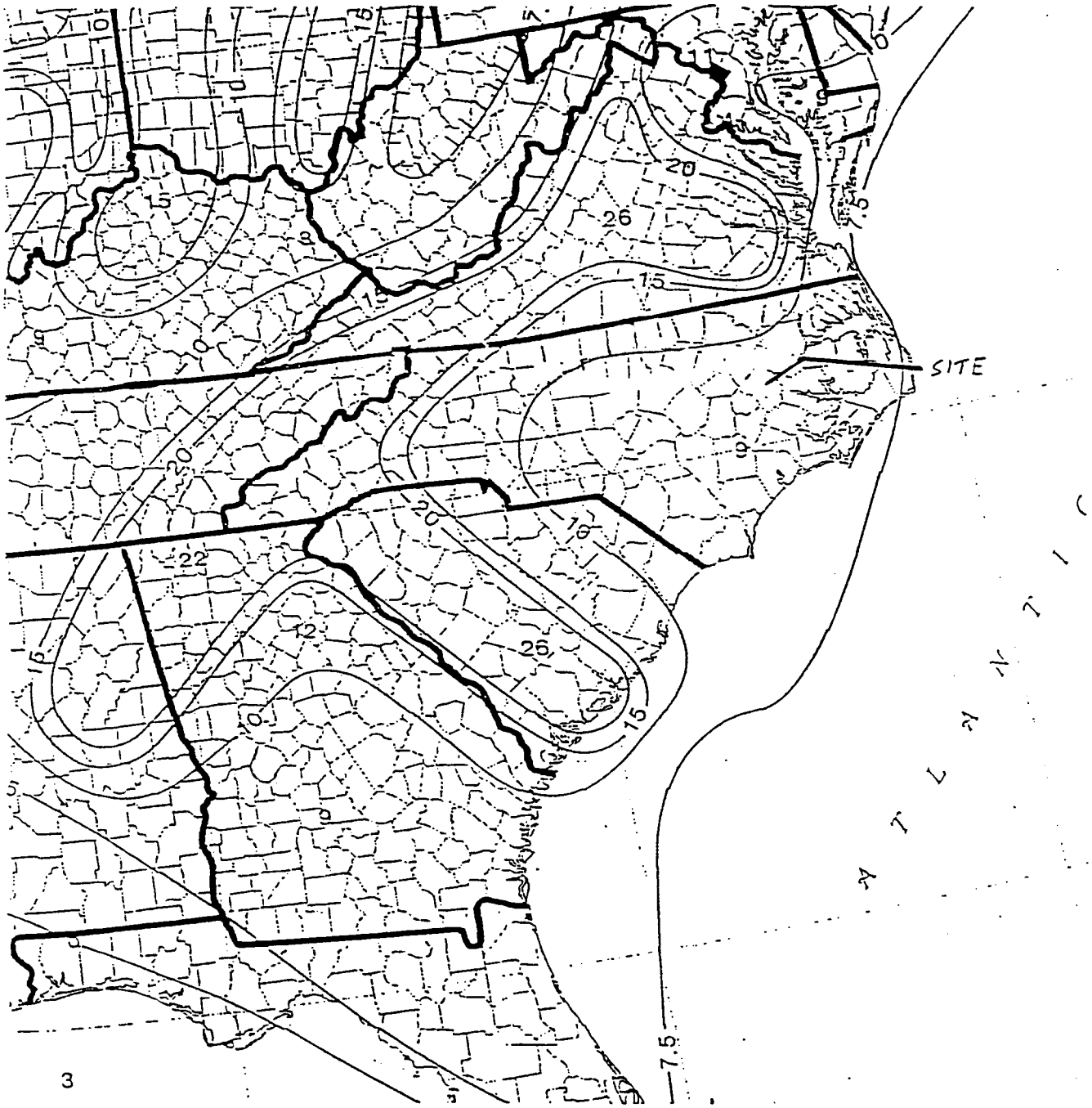
Flood Hazard Map



Map Centerpoint: -77.18903, 35.61552
Map Produced: Sun Nov 26 04:03:10 2000

ESRI/FEMA Project Impact
Hazard Information and Awareness Site
http://www.esri.com/hazards


SITE
TARBORO 257 ETC
WILLIAMSTON 336 MCZ
MARTIN CO (MCZ)
ALWOOD 230 AQE
PLYMOUTH 221 PMZ
PLYMOUTH (PMZ)
PITT-GREENVILLE RCO
NEW BERN
PITT-GREENVILLE (PGV)
AWOS-3 128.425
WARREN (OCW)
CHOCOWINITY 388 RNW
KINSTON 109.6 Ch 33 ISO
KINSTON REGIONAL (ISO)
CT—120.6
FLANAGAN (N08)
See NOTAMs/Directory for Class E (sfc) eff hrs
Class E excluded below 200' MSL
WELBOURN/WOOLARD
LEE CREEK (Pvt)
PAMLICO (Pvt)
DONALD (Pvt)
RESPESS (Pvt)
KEECH (Pvt)
RIVERSIDE (Pvt)
CANAAN (Pvt)
HELL & PURGATORY (Pvt)
BELL (Pvt)
DEPPE (Pvt)
DOGWOOD (Pvt)
HICKORY HILL (Pvt)
CRAVEN CO REGIONAL (EWN)
NEW-BERN EWN
VOR/DME NEW BERN 113.6 Ch 83 EWN
RALEIGH 4T
FSS open 0600-2130 Raleigh FSS other times
ALERT AREA A-530
MCAS CHERRY POINT/CUNNINGHAM (NKT)
CT—121.3
ATIS 354.9
CHERRY POINT 245 NKT
ELLIS (OAJ)
AWOS-3 124.475
CATFISH LAKE SOUTH WILDERNESS AREA
SHEEP RIDGE WILDERNESS AREA
POND PINE WILDERNESS AREA
07
22
12
35
25



PEAK BEDROCK
ACCELERATIONS MAP

G.N. RICHARDSON & ASSOCIATES, INC.
Engineering and Geological Services

417 N. Boylan Avenue Raleigh, North Carolina
(919) 828-0577 Fax 828-3899

SCALE:	DRAWN BY:	CHECKED BY:	DATE:	PROJECT NO.	FIGURE NO.

North Carolina Department of Cultural Resources
State Historic Preservation Office
David L. S. Brook, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary

Division of Historical Resources
David J. Olson, Director

December 11, 2002

Mr. John A. K. Tucker, P.E.
P.O. Box 297
Fuquay-Varina, NC 27526

Re: Pitt County Construction and Demolition Landfill, US 264
Pitt County, ER01-8253

Dear Mr. Tucker:

Thank you for your letter of November 1, 2002 concerning the above project.

We have conducted a review of the proposed undertaking and are aware of no historic resources which would be affected by the project. Therefore, we have no comment on the undertaking as proposed.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

Renee Gledhill-Earley

David Brook

DB:doc

Administration
Restoration

Location
507 N. Blount St, Raleigh, NC
515 N. Blount St, Raleigh , NC

Mailing Address
4617 Mail Service Center, Raleigh 27699-4617
4613 Mail Service Center, Raleigh 27699-4613

Telephone/Fax
(919) 733-4763 •733-8653
(919) 733-6547 •715-4801

NCDENR

North Carolina Department of Environment and Natural Resources
Division of Parks and Recreation

Michael F. Easley, Governor William G. Ross, Jr., Secretary Philip K. McKnelly, Director

November 20, 2002

John A.K. Tucker, P.E.
Consulting Engineer
PO Box 297
Fuquay-Varina, North Carolina

Subject: Landfill site in Pitt County

Dear Mr. Tucker:

The Natural Heritage Program has no records of anything on this site. The only nearby area of concern is the Tar River, about two miles to the south but with tributaries closer. This part of the Tar River does not have the Tar River spiny mussel, but has several other rare invertebrates which make it an aquatic site of statewide significance.

Sincerely,

Michael P. Schafale

Michael P. Schafale
Natural Heritage Program

MPS/mps

1615 Mail Service Center, Raleigh, North Carolina 27699-1615

David Garrett, P.G., P.E.

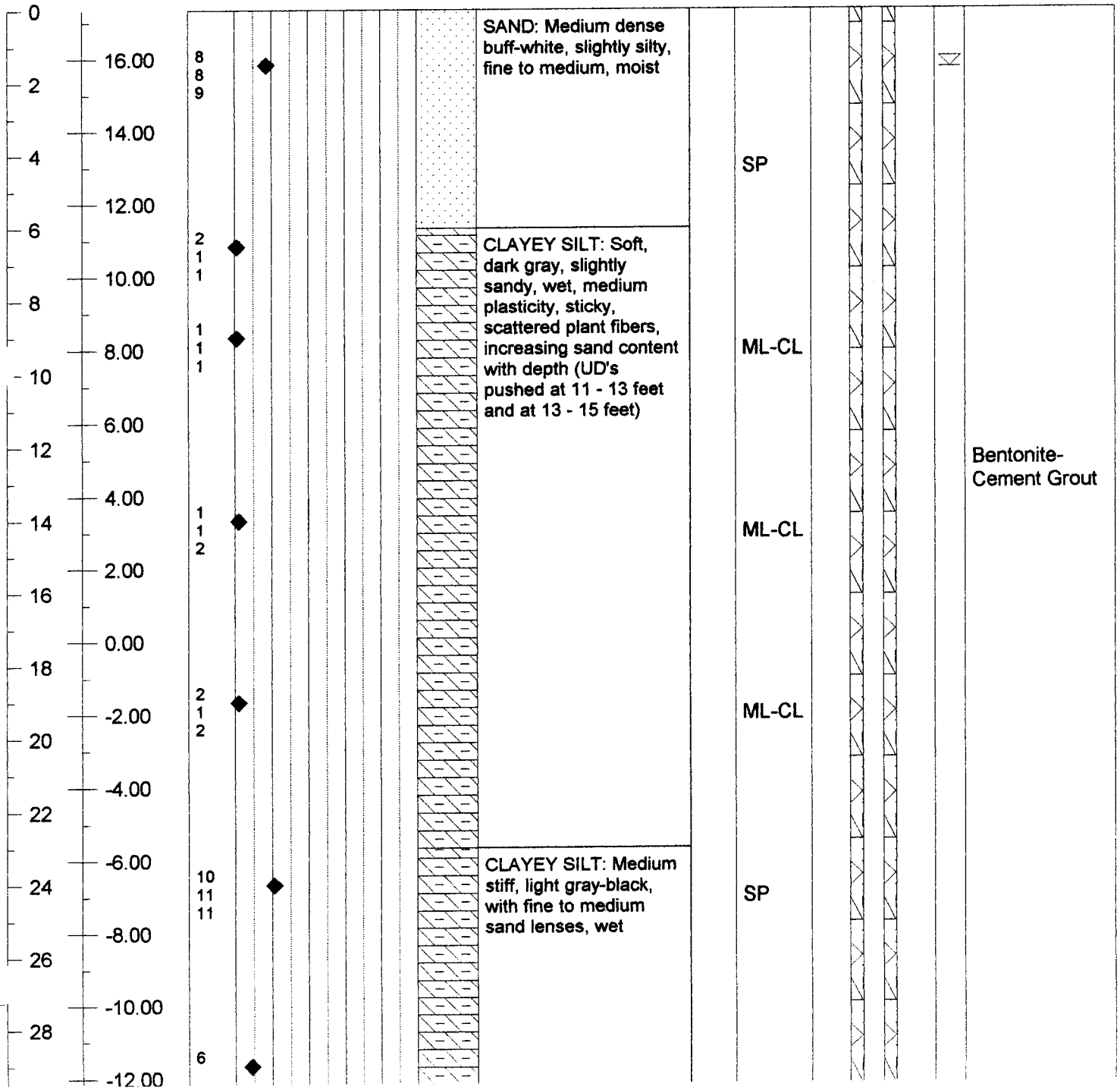
Engineering and Geology

Boring No. B-1d

Client and Project	**C&D Landfill, Inc. (Phases 3 and 4)**			Ground Elevation	**17.33**
Equipment	**CME 450**	Drilling Method	**3-15/16" Tri-cone**	Water Level, TOB	**1.6**
Date Started	**12/26/01**	Date Ended	**12/27/01**	Water Level, 24 Hr.	**1.6**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**1.6**
Comments	**Logged area, cold sunny weather**	Total Depth	**80.0**	Date of Observation	**12/27/01**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

Engineering and Geology

Boring No. B-1d

Client and Project	**C&D Landfill, Inc. (Phases 3 and 4)**			Ground Elevation	**17.33**
Equipment	**CME 450**	Drilling Method	**3-15/16" Tri-cone**	Water Level, TOB	**1.6**
Date Started	**12/26/01**	Date Ended	**12/27/01**	Water Level, 24 Hr.	**1.6**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**1.6**
Comments	**Logged area, cold sunny weather**	Total Depth	**80.0**	Date of Observation	**12/27/01**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data
30	5		SP
-14.00			
32			
-16.00		SILTY SAND: Dense, partly cemented, black-green speckled, variably clayey, silty, moist, hard layer at 34 to 36 feet, very hard below 47 feet	
34	10 11 50/.3		SM
-18.00			
36			
-20.00			
38			
-22.00	17 50/.3		SM
40			
-24.00			
42			
-26.00			
44	37 50/.5		SM
-28.00			Bentonite-Cement Grout
46			
-30.00			
48			
-32.00	50/.4		SM
50			
-34.00			
52		SILT: Medium stiff to soft, dark gray-green, layered fine sandy silt layers with sticky clay layers, glauconitic (attempted to push UD tube at 78-80' with no recovery)	Bentonite Seal
-36.00			
54	5 7 7		ML-CL
-38.00			
56			Sand Pack
-40.00			
58	9		

David Garrett, P.G., P.E.

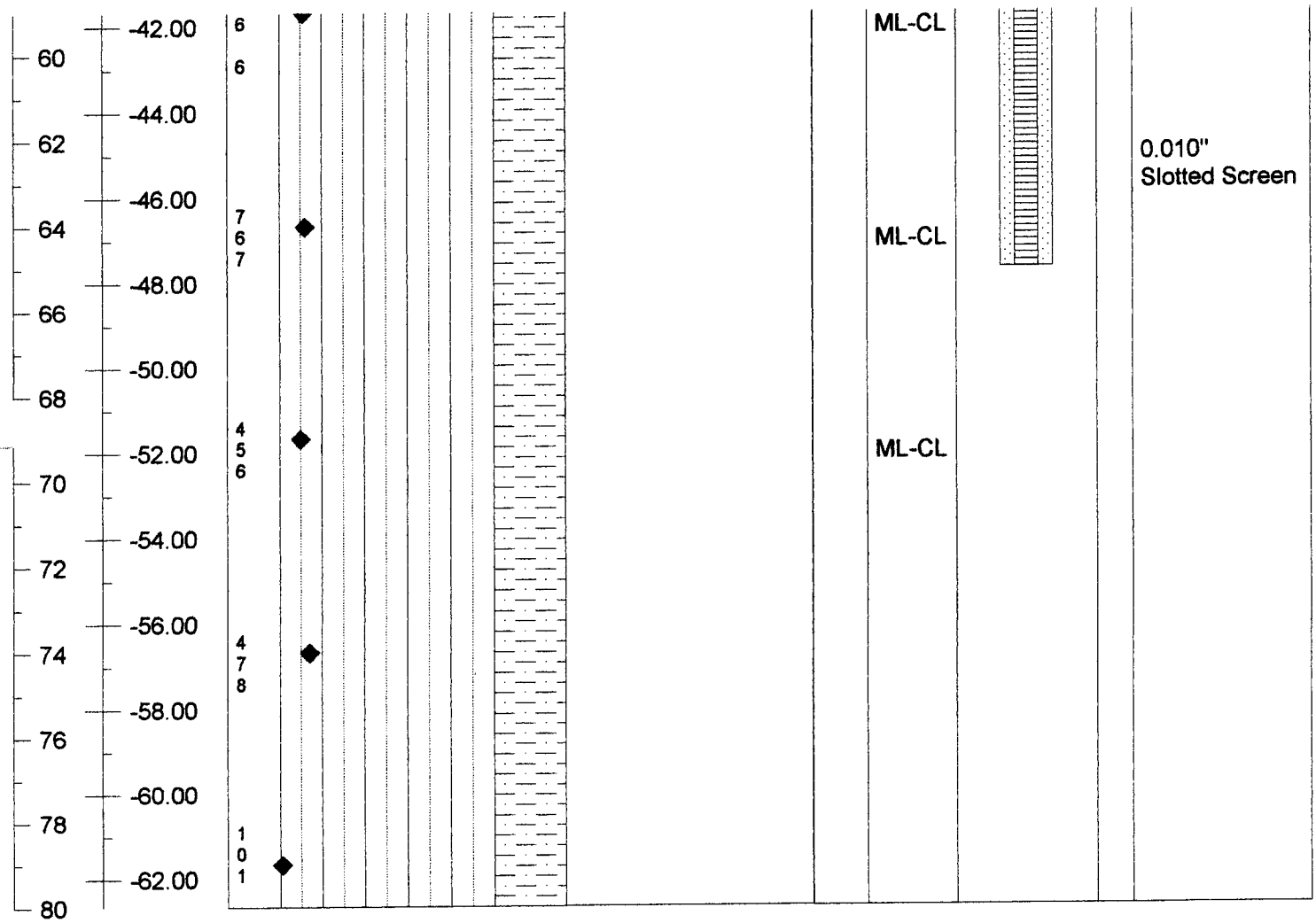
Engineering and Geology

Boring No. B-1d

Client and Project	**C&D Landfill, Inc. (Phases 3 and 4)**			Ground Elevation	**17.33**
Equipment	**CME 450**	Drilling Method	**3-15/16" Tri-cone**	Water Level, TOB	**1.6**
Date Started	**12/26/01**	Date Ended	**12/27/01**	Water Level, 24 Hr.	**1.6**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**1.6**
Comments	**Logged area, cold sunny weather**	Total Depth	**80.0**	Date of Observation	**12/27/01**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

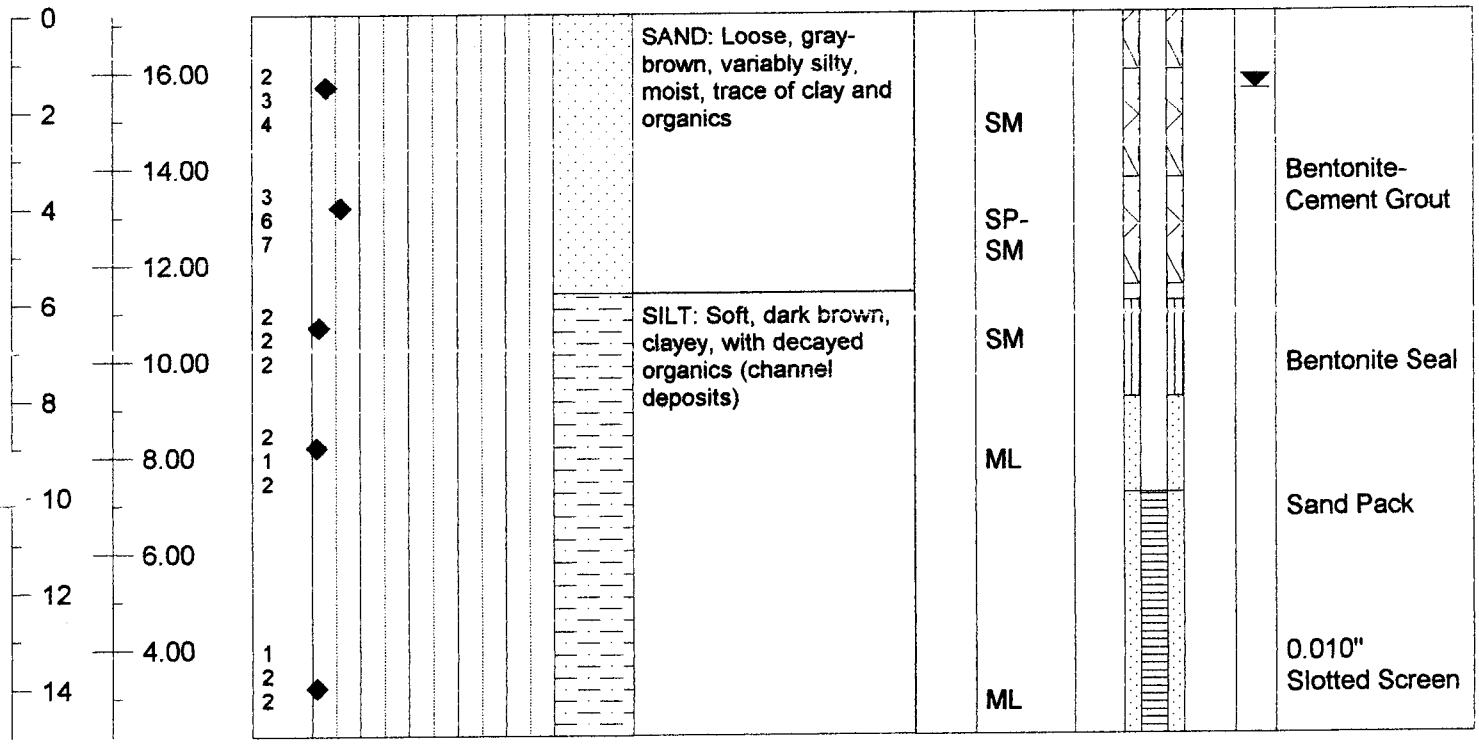
Engineering and Geology

Boring No. B-1s

Client and Project	**C&D Landfill, Inc. (Phases 3 and 4)**			Ground Elevation	**17.19**
Equipment	**CME 450**	Drilling Method	**4-1/4" HSA**	Water Level, TOB	**1.5**
Date Started	**12/14/01**	Date Ended	**12/14/01**	Water Level, 24 Hr.	**1.4**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**1.6**
Comments	**Logged area, cool rainy weather**	Total Depth	**15.0**	Date of Observation	**12/27/01**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

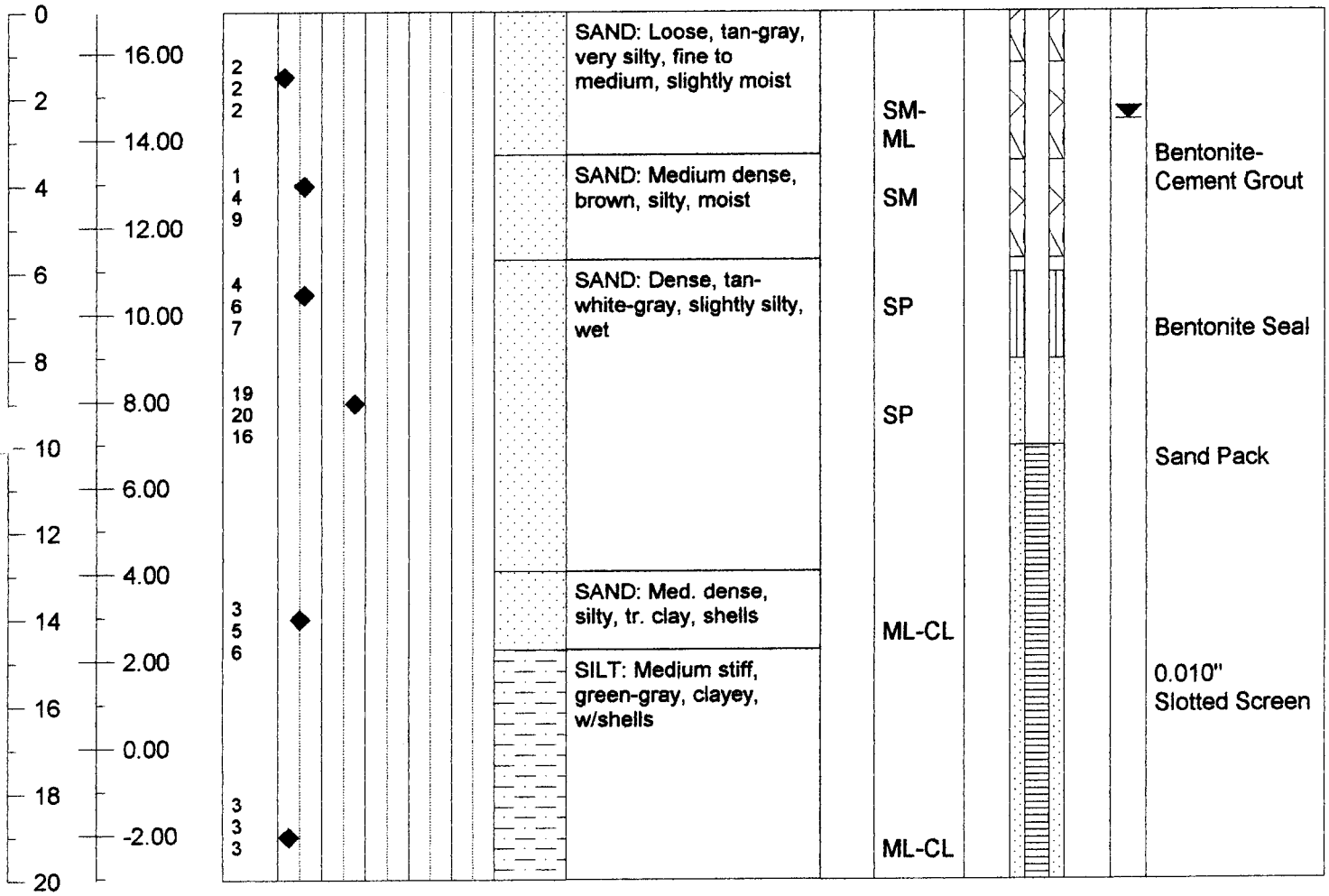
Engineering and Geology

Boring No. B-2

Client and Project	**C&D Landfill, Inc. (Phases 3 and 4)**			Ground Elevation	**16.94**
Equipment	**CME 450**	Drilling Method	**4-1/4" HSA**	Water Level, TOB	**2.3**
Date Started	**12/17/01**	Date Ended	**12/17/01**	Water Level, 24 Hr.	**2.3**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**2.5**
Comments	**Logged area, cool sunny weather**	Total Depth	**20.0**	Date of Observation	**12/27/01**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

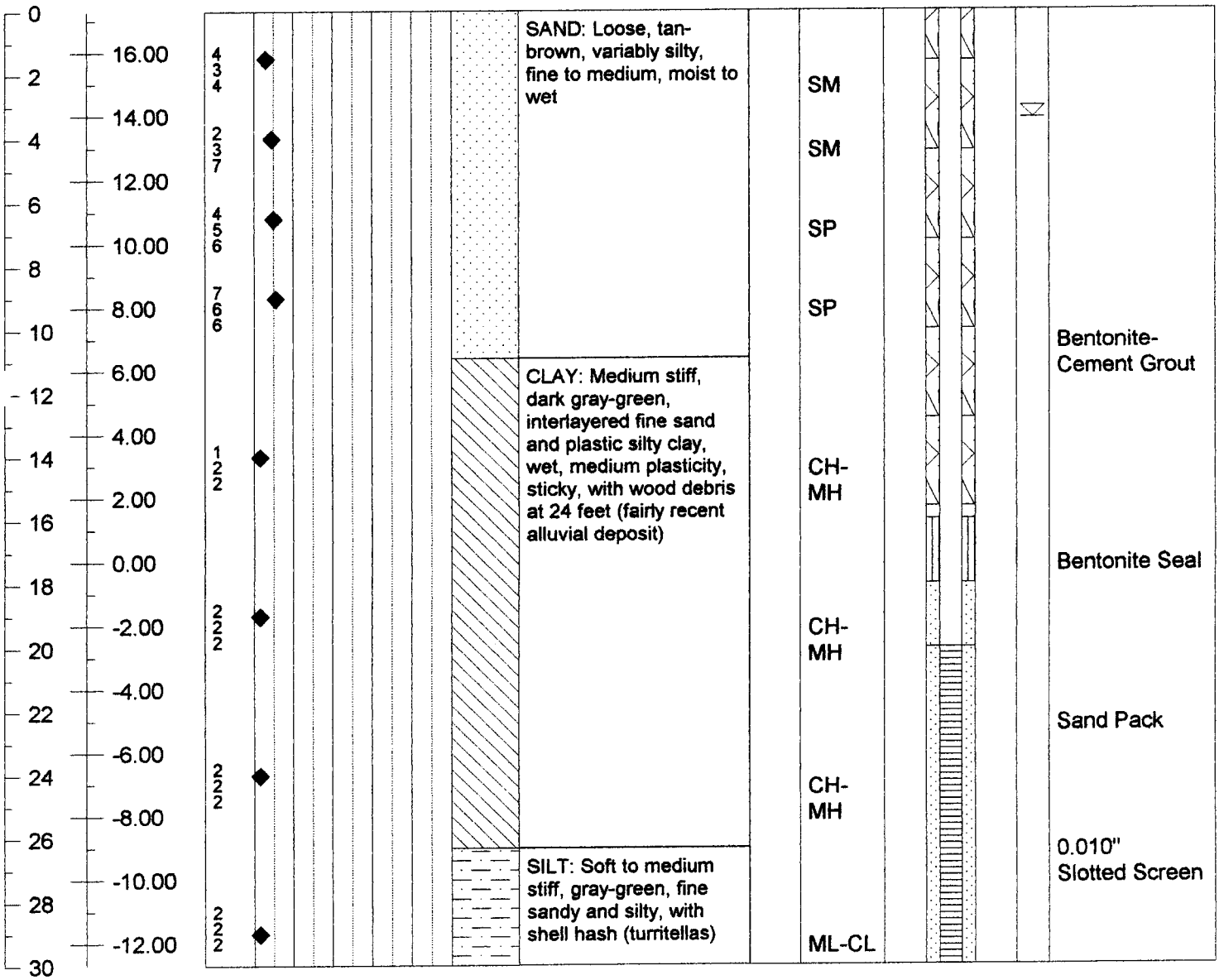
Engineering and Geology

Boring No. B-3

Client and Project	**C&D Landfill, Inc. (Phases 3 and 4)**			Ground Elevation	**17.28**
Equipment	**CME 450**	Drilling Method	**4-1/4" HSA**	Water Level, TOB	**3.4**
Date Started	**12/18/01**	Date Ended	**12/18/01**	Water Level, 24 Hr.	**3.3**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**3.0**
Comments	**Logged area, cool sunny weather**	Total Depth	**30.0**	Date of Observation	**12/27/01**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

Engineering and Geology

Boring No. B-4

Client and Project	**C&D Landfill, Inc. (Phases 3 and 4)**			Ground Elevation	**19.34**
Equipment	**CME 450**	Drilling Method	**4-1/4" HSA**	Water Level, TOB	**5.1**
Date Started	**12/18/01**	Date Ended	**12/18/01**	Water Level, 24 Hr.	**5.1**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**4.9**
Comments	**Logged area, cool sunny weather**	Total Depth	**25.0**	Date of Observation	**12/27/01**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data
0 / 18.00	2 3 4	SAND: Loose, tan-buff, slightly silty, fine to medium, slightly moist — SM	
2 / 16.00	3 4 5	CLAY: Medium stiff, light gray-orange, sandy, moist — SM-SC	Bentonite-Cement Grout
4 / 14.00	7 8 9	SAND: Medium dense, tan-white-gray, slightly silty, wet — SP	
6 / 12.00	5 5 7	SP	
8 / 10.00			
10 / 8.00		SAND: Loose, white-buff, fine to coarse, with occ. trace of clay wet	Bentonite Seal
12 / 6.00	2 5 7	SM	
14 / 4.00			
16 / 2.00			
18 / 0.00	4 3 3	SM	Sand Pack
20 / -2.00		SILT: Medium stiff, green-gray, clayey, w/shells	
22 / -4.00	3 4 5	ML-CL	0.010" Slotted Screen
24			

David Garrett, P.G., P.E.

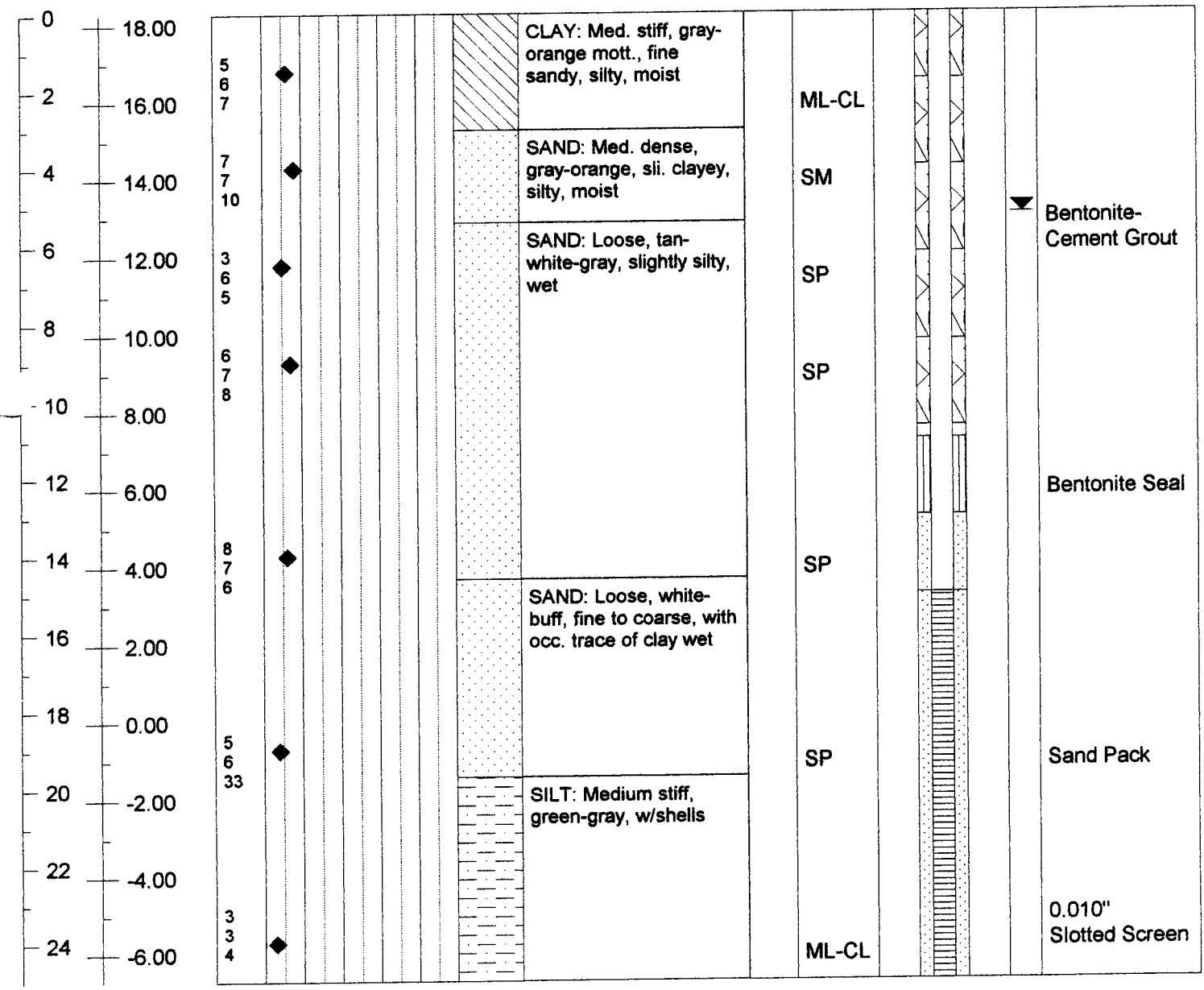
Engineering and Geology

Boring No. B-5

Client and Project	**C&D Landfill, Inc. (Phases 3 and 4)**			Ground Elevation	**19.28**
Equipment	**CME 450**	Drilling Method	**4-1/4" HSA**	Water Level, TOB	**5.3**
Date Started	**12/17/01**	Date Ended	**12/17/01**	Water Level, 24 Hr.	**5.2**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**5.2**
Comments	**Logged area, cool sunny weather**	Total Depth	**25.0**	Date of Observation	**12/27/01**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

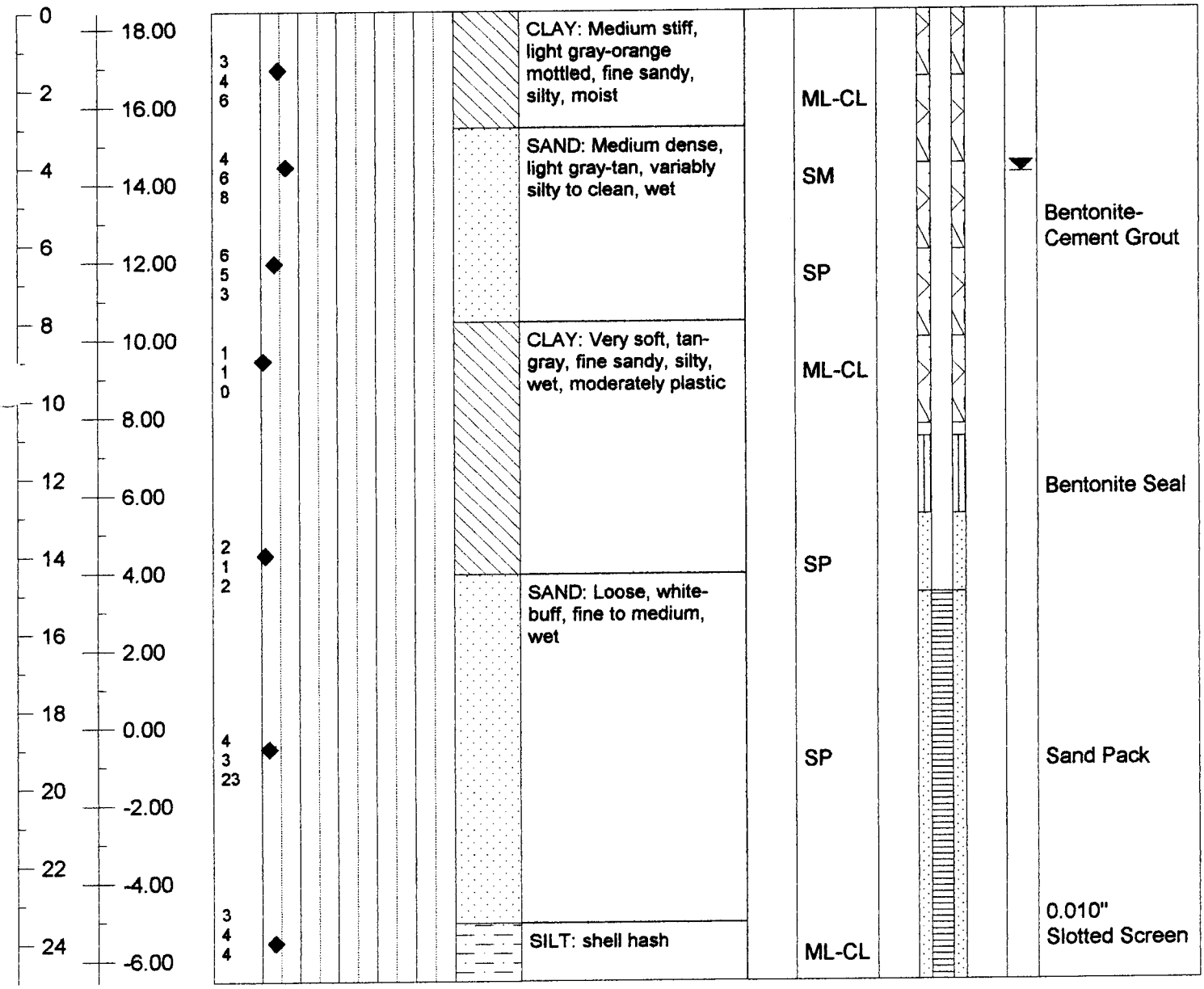
Engineering and Geology

Boring No. B-6

Client and Project	**C&D Landfill, Inc. (Phases 3 and 4)**			Ground Elevation	**18.43**
Equipment	**CME 450**	Drilling Method	**4-1/4" HSA**	Water Level, TOB	**4.1**
Date Started	**12/18/01**	Date Ended	**12/18/01**	Water Level, 24 Hr.	**4.2**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**4.2**
Comments	**Logged area, cool sunny weather**	Total Depth	**25.0**	Date of Observation	**12/27/01**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

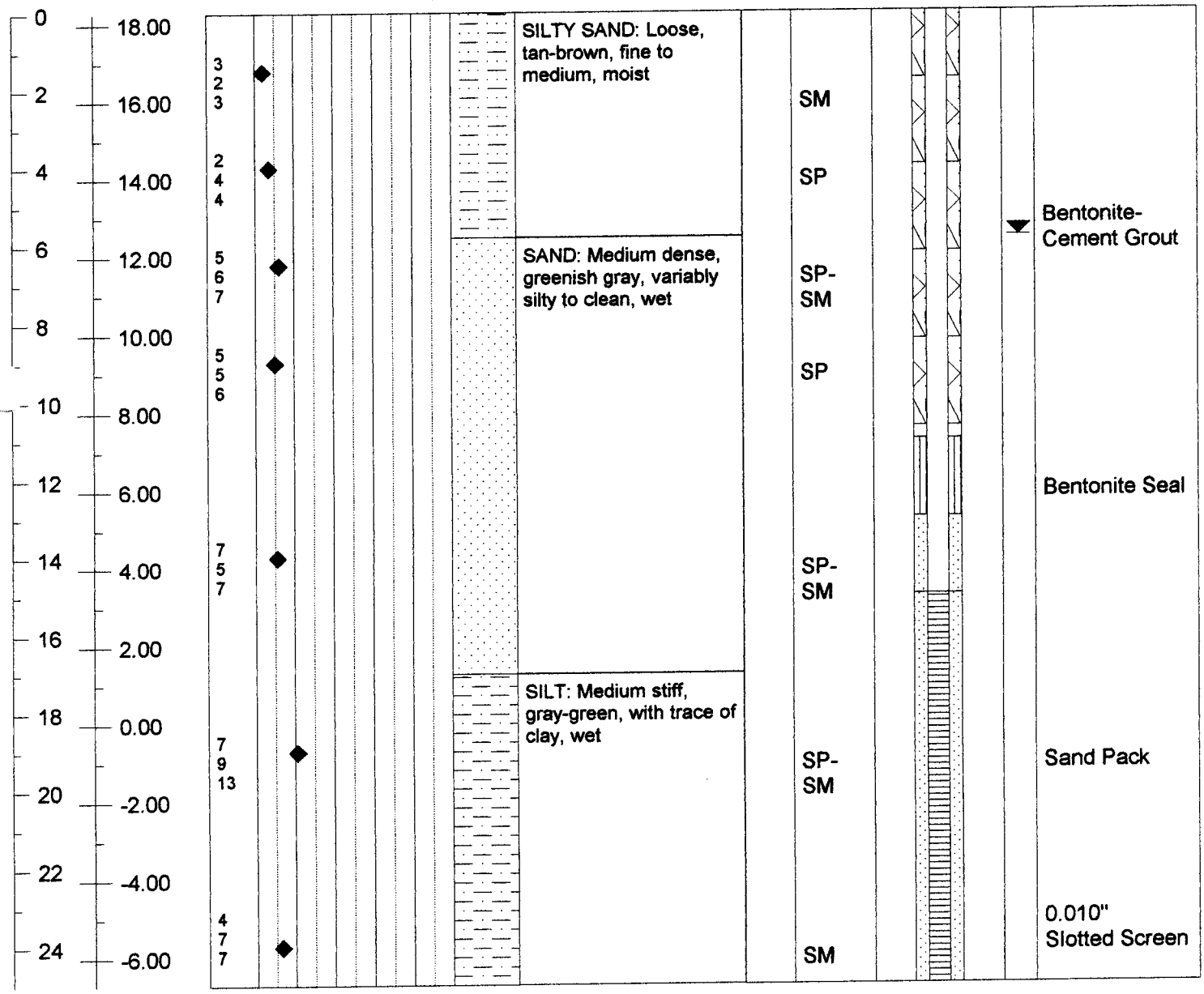
Engineering and Geology

Boring No. B-7

Client and Project	**C&D Landfill, Inc. (Phases 3 and 4)**			Ground Elevation	**18.28**
Equipment	**CME 450**	Drilling Method	**4-1/4" HSA**	Water Level, TOB	**5.6**
Date Started	**12/12/01**	Date Ended	**12/12/01**	Water Level, 24 Hr.	**5.6**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**5.8**
Comments	**Logged area, cool rainy weather**	Total Depth	**25.0**	Date of Observation	**12/18/01**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

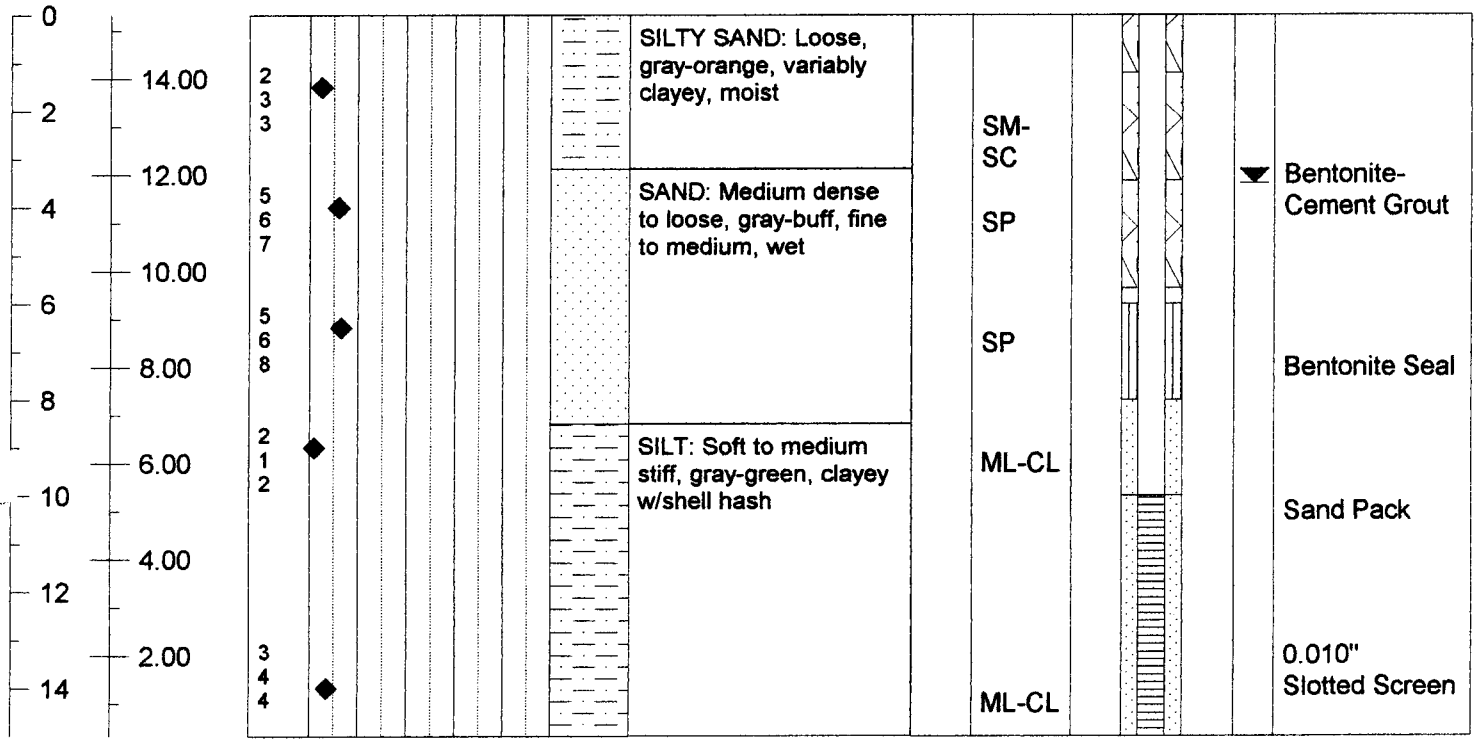
Engineering and Geology

Boring No. B-8

Client and Project	**C&D Landfill, Inc. (Phases 3 and 4)**			Ground Elevation	**15.32**
Equipment	**CME 450**	Drilling Method	**4-1/4" HSA**	Water Level, TOB	**3.5**
Date Started	**12/13/01**	Date Ended	**12/13/01**	Water Level, 24 Hr.	**3.5**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**3.5**
Comments	**Logged area, cool rainy weather**	Total Depth	**15.0**	Date of Observation	**12/18/01**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

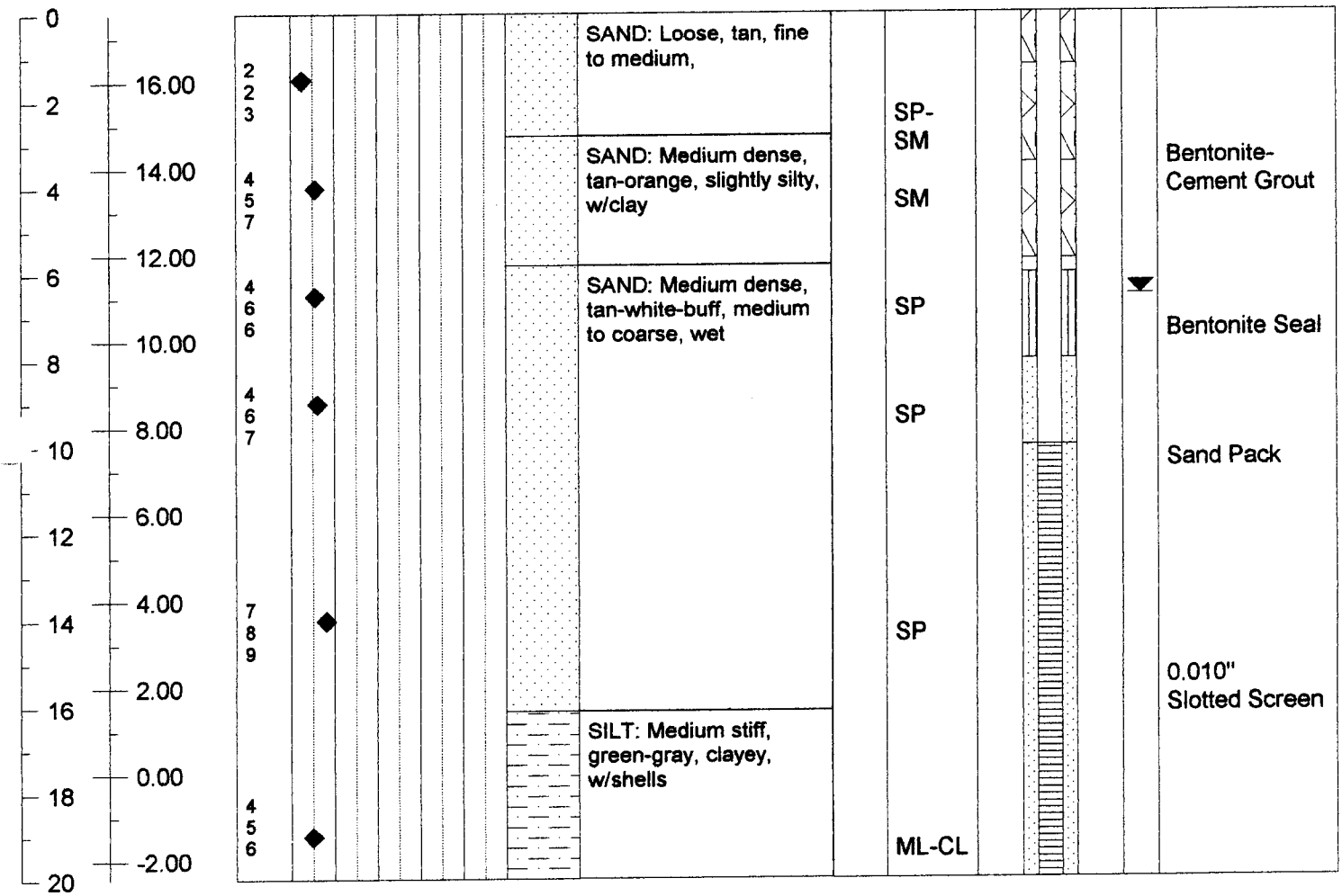
Engineering and Geology

Boring No. B-9

Client and Project	**C&D Landfill, Inc. (Phases 3 and 4)**			Ground Elevation	**17.55**
Equipment	**CME 450**	Drilling Method	**4-1/4" HSA**	Water Level, TOB	**6.4**
Date Started	**12/13/01**	Date Ended	**12/13/01**	Water Level, 24 Hr.	**6.4**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**6.5**
Comments	**Logged area, cool sunny weather**	Total Depth	**20.0**	Date of Observation	**12/18/01**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

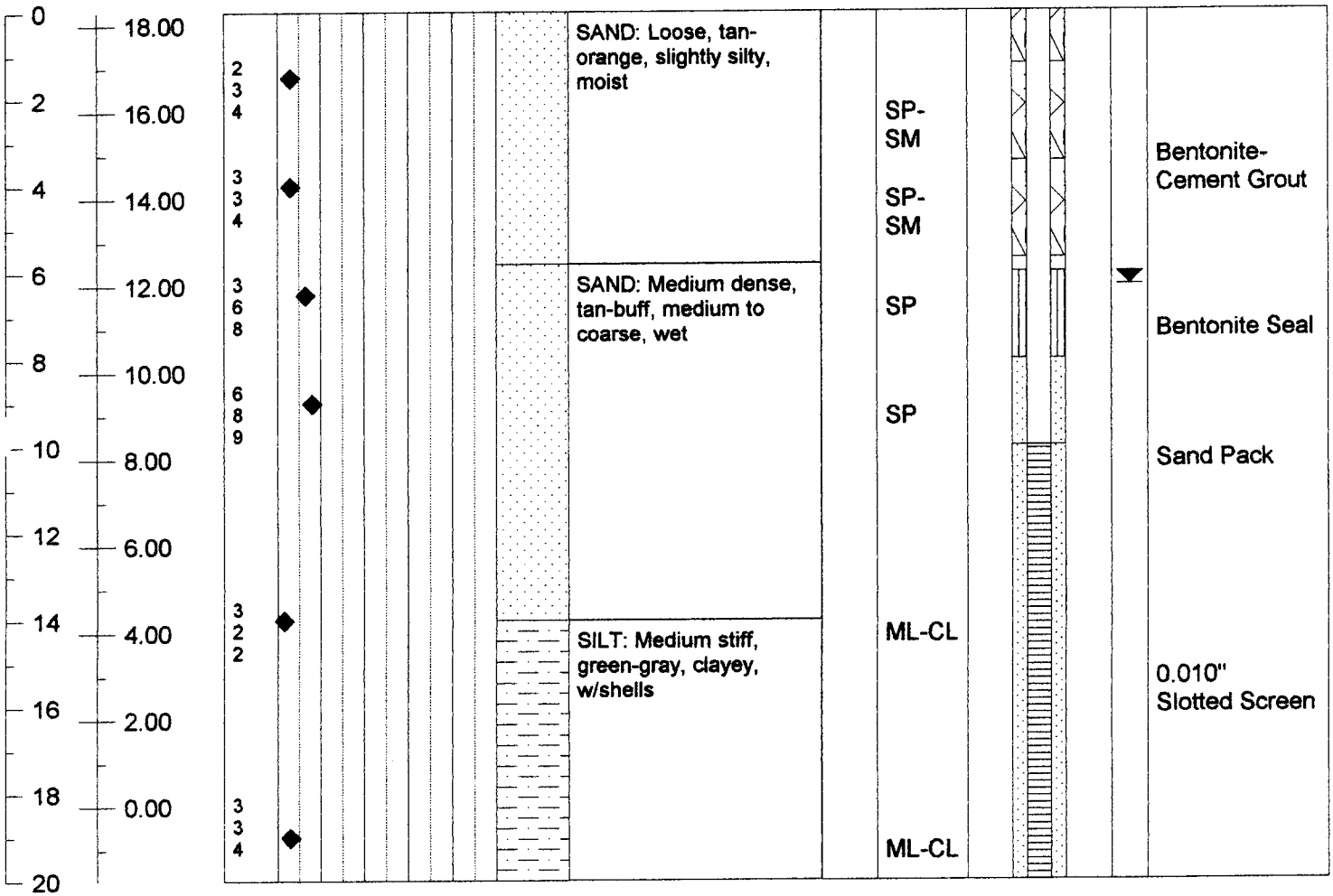
Engineering and Geology

Boring No. B-10

Client and Project	**C&D Landfill, Inc. (Phases 3 and 4)**			Ground Elevation	**18.29**
Equipment	**CME 450**	Drilling Method	**4-1/4" HSA**	Water Level, TOB	**6.5**
Date Started	**12/13/01**	Date Ended	**12/13/01**	Water Level, 24 Hr.	**6.4**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**6.3**
Comments	**Logged area, cool rainy weather**	Total Depth	**20.0**	Date of Observation	**12/18/01**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

Engineering and Geology

Boring No. B-11

Client and Project	**C&D Landfill, Inc. (Phases 2)**			Ground Elevation	**15.24**
Equipment	**D-10**	Drilling Method	**4-1/4" HSA**	Water Level, TOB	**5.5**
Date Started	**12/11/02**	Date Ended	**12/11/02**	Water Level, 24 Hr.	**5.0**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**4.5**
Comments	**Logged area, cool sunny weather**	Total Depth	**40.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data
0 / 14.00	4 4 9	SAND: Loose, tan, fine to medium — SM	
2 / 12.00	7 4 7	SAND: Medium dense, tan-orange, slightly silty — SW	
4 / 10.00	4 6 7	SW	
6 / 8.00	5 7 11	SW	
8 / 6.00			
10 / 4.00	3 4 4	CLAY: Medium stiff, gray, silty, w/fine sand, shells — ML-CL	
12 / 2.00			
14 / 0.00	4 5 6	ML-CL	Bentonite-Cement Grout
16 / -2.00			
18 / -4.00	3 4 6	ML-CL	
20 / -6.00			
22 / -8.00			
24 / -10.00	50/.3	SAND: Very dense, partly cemented, green-black, silty	
26 / -12.00			
28 / -14.00			

David Garrett, P.G., P.E.

Engineering and Geology

Boring No. B-11

Client and Project	**C&D Landfill, Inc. (Phases 2)**			Ground Elevation	**15.24**
Equipment	**D-10**	Drilling Method	**4-1/4" HSA**	Water Level, TOB	**5.5**
Date Started	**12/11/02**	Date Ended	**12/11/02**	Water Level, 24 Hr.	**5.0**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**4.5**
Comments	**Logged area, cool sunny weather**	Total Depth	**40.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data
30		CL	
-16.00		SM	
32			
-18.00			Bentonite Seal
34	24 12 36	SM	
-20.00			
36			Sand Pack
-22.00		SILTY SAND: Medium stiff, green-gray, clayey, w/shells	
38	16 25 50/.3		0.010" Slotted Screen
-24.00			
40			

David Garrett, P.G., P.E.

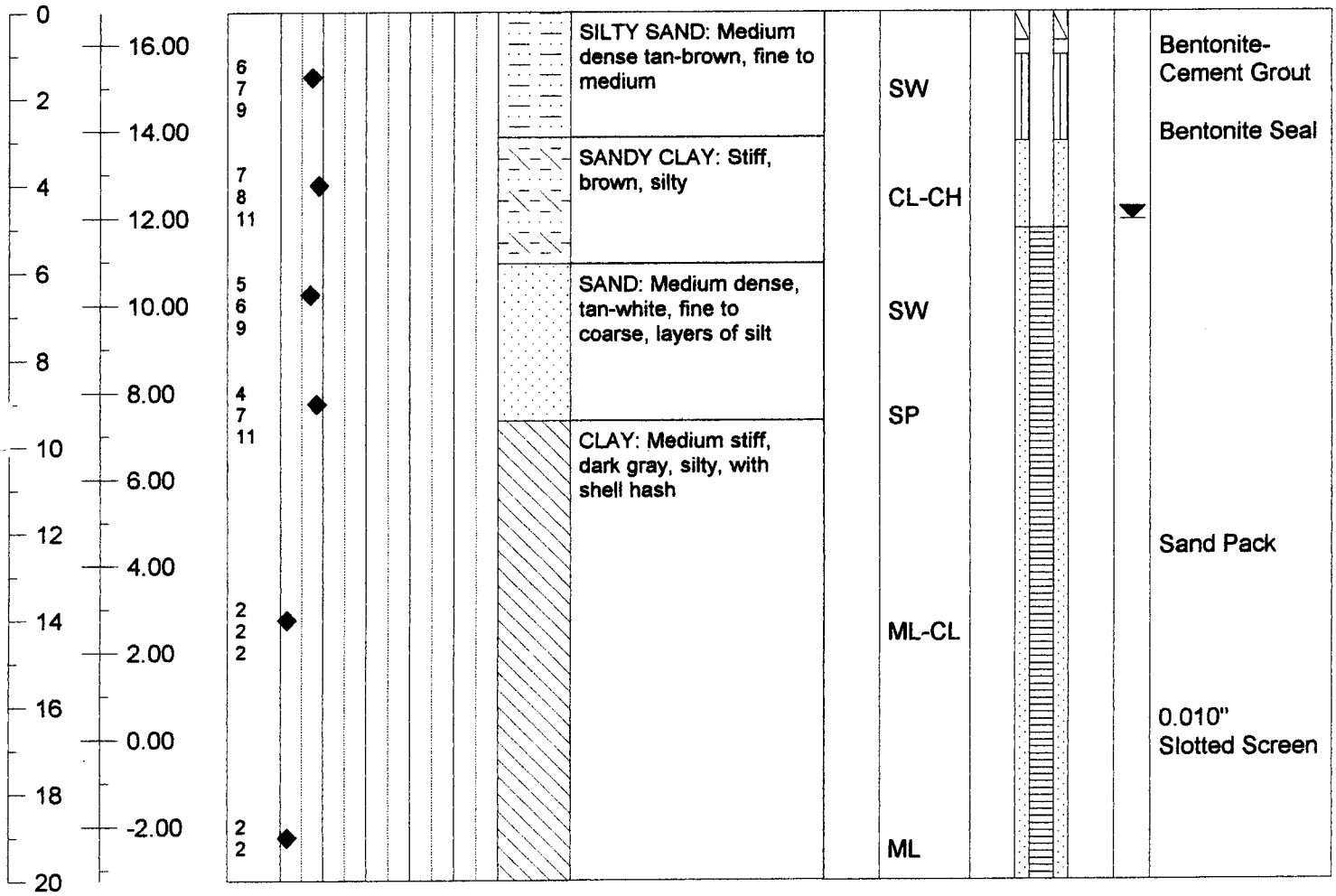
Engineering and Geology

Boring No. B-12

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**16.74**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**4.8**
Date Started	**12/12/02**	Date Ended	**12/12/02**	Water Level, 24 Hr.	**4.8**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**4.8**
Comments	**Logged area, cool sunny weather**	Total Depth	**20.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

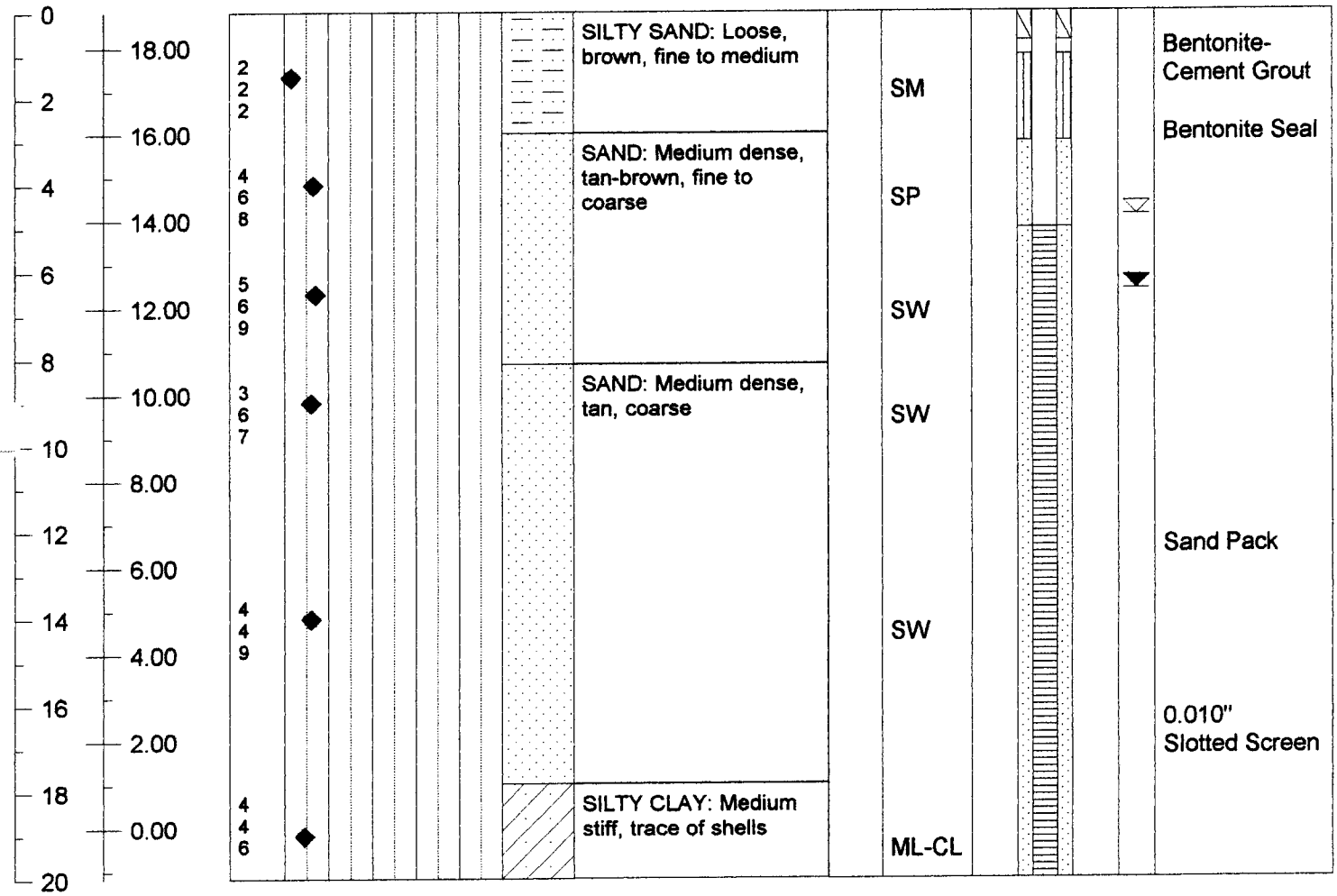
Engineering and Geology

Boring No. B-13

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**18.82**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**4.7**
Date Started	**12/12/02**	Date Ended	**12/12/02**	Water Level, 24 Hr.	**5.5**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**6.4**
Comments	**Logged area, cool sunny weather**	Total Depth	**20.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

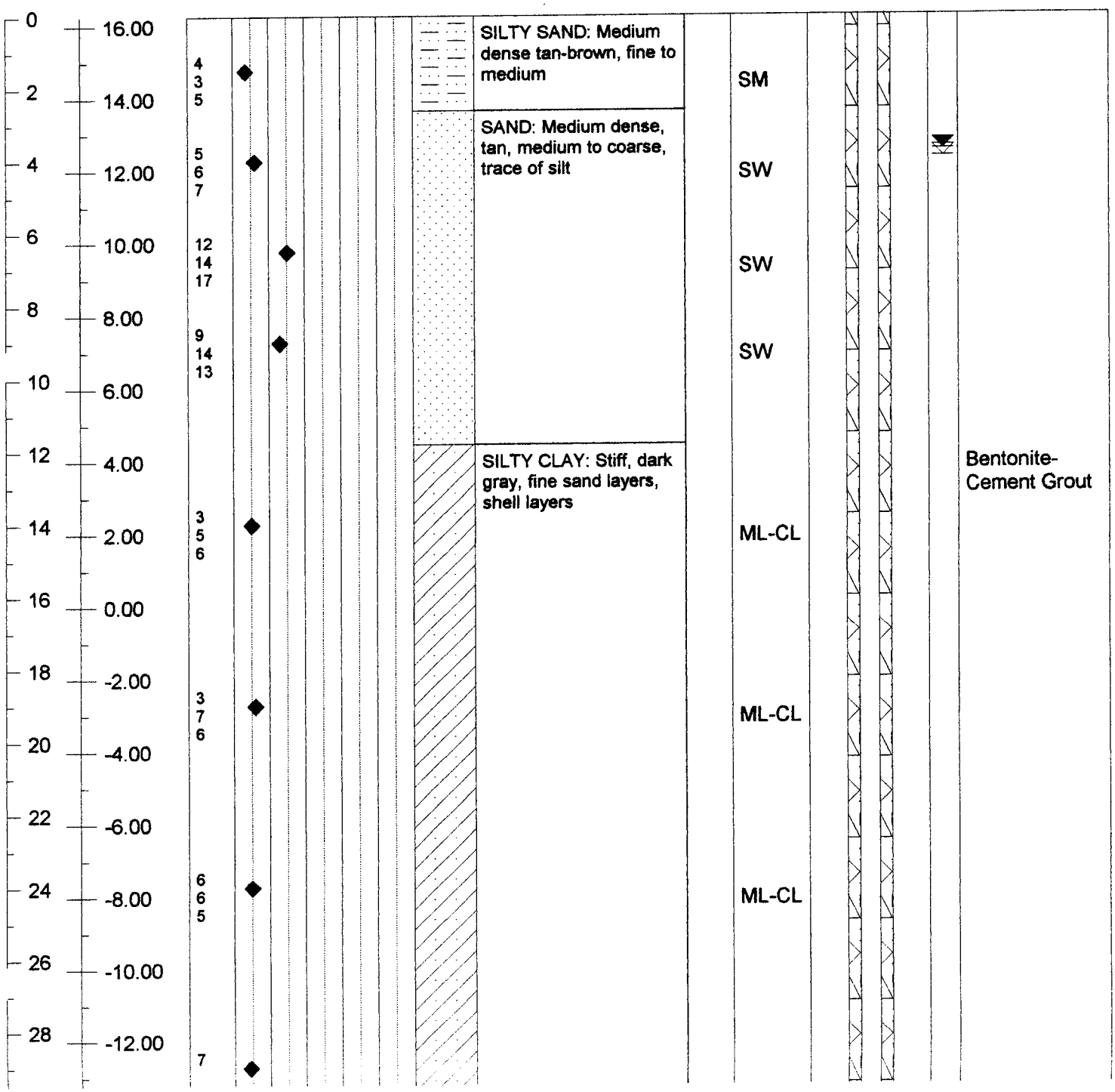
Engineering and Geology

Boring No. B-14

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**16.26**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**3.9**
Date Started	**12/18/02**	Date Ended	**12/18/02**	Water Level, 24 Hr.	**3.7**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**3.5**
Comments	**Logged area, cool sunny weather**	Total Depth	**40.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

Engineering and Geology

Boring No. B-14

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**16.26**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**3.9**
Date Started	**12/18/02**	Date Ended	**12/18/02**	Water Level, 24 Hr.	**3.7**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**3.5**
Comments	**Logged area, cool sunny weather**	Total Depth	**40.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data
30 -14.00	5	ML-CL	
32 -16.00		SAND: Very dense, dark gray, silty, glauconitic, shell hash	Bentonite Seal
34 -18.00	11 18 27	SM	Sand Pack
36 -20.00			0.010" Slotted Screen
38 -22.00	32 100	SM	
40			

David Garrett, P.G., P.E.

Engineering and Geology

Boring No. B-15d

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**17.57**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**14.3**
Date Started	**12/13/02**	Date Ended	**12/13/02**	Water Level, 24 Hr.	**10.5**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**6.6**
Comments	**Logged area, cool sunny weather**	Total Depth	**40.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data
0		CLAYEY SAND: Medium dense tan, fine to medium	
2 / 16.00	3 3 3	SC-CL	
4 / 14.00	3 4 6	SILTY SAND: Medium dense, tan, medium to coarse — SW	
6 / 12.00	4 8 9	SW	
8 / 10.00	7 11 8	SC	
10 / 8.00		CLAYEY SAND: Medium dense, dark gray, sand with clay lenses	
12 / 6.00			Bentonite-Cement Grout
14 / 4.00	7 11 11	SILTY CLAY: Stiff, dark gray, fine sand layers, shell layers — CH	
16 / 2.00			
18 / 0.00	7 23 46	CL-CH	
20 / -2.00			
22 / -4.00			
24 / -6.00	4 6 5	CL-CH	
26 / -8.00			
28 / -10.00	4	SILTY SAND: Very dense, dark gray,	

David Garrett, P.G., P.E.

Engineering and Geology

Boring No. B-15d

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**17.57**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**14.3**
Date Started	**12/13/02**	Date Ended	**12/13/02**	Water Level, 24 Hr.	**10.5**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**6.6**
Comments	**Logged area, cool sunny weather**	Total Depth	**40.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data
30 -12.00	5	clayey, glauconitic, shell hash — CH	Bentonite Seal
32 -14.00			
34 -16.00	14 8 11	SC-SM	Sand Pack
36 -18.00			0.010" Slotted Screen
38 -20.00	14 21 32	SM	
40 -22.00			

David Garrett, P.G., P.E.

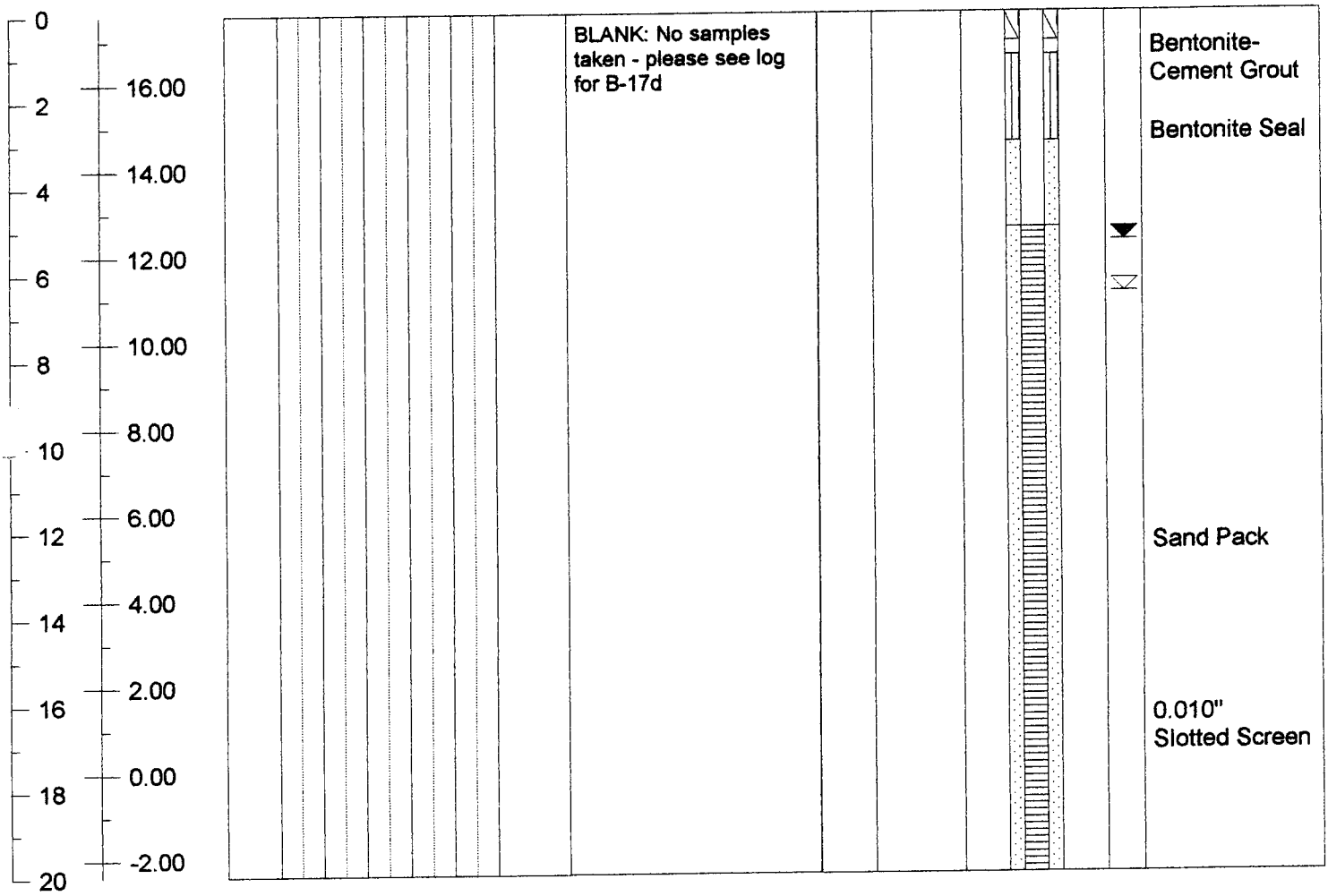
Engineering and Geology

Boring No. B-15s

lient and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**17.59**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**6.5**
Date Started	**12/18/02**	Date Ended	**12/18/02**	Water Level, 24 Hr.	**5.9**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**5.3**
Comments	**Logged area, cool sunny weather**	Total Depth	**20.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

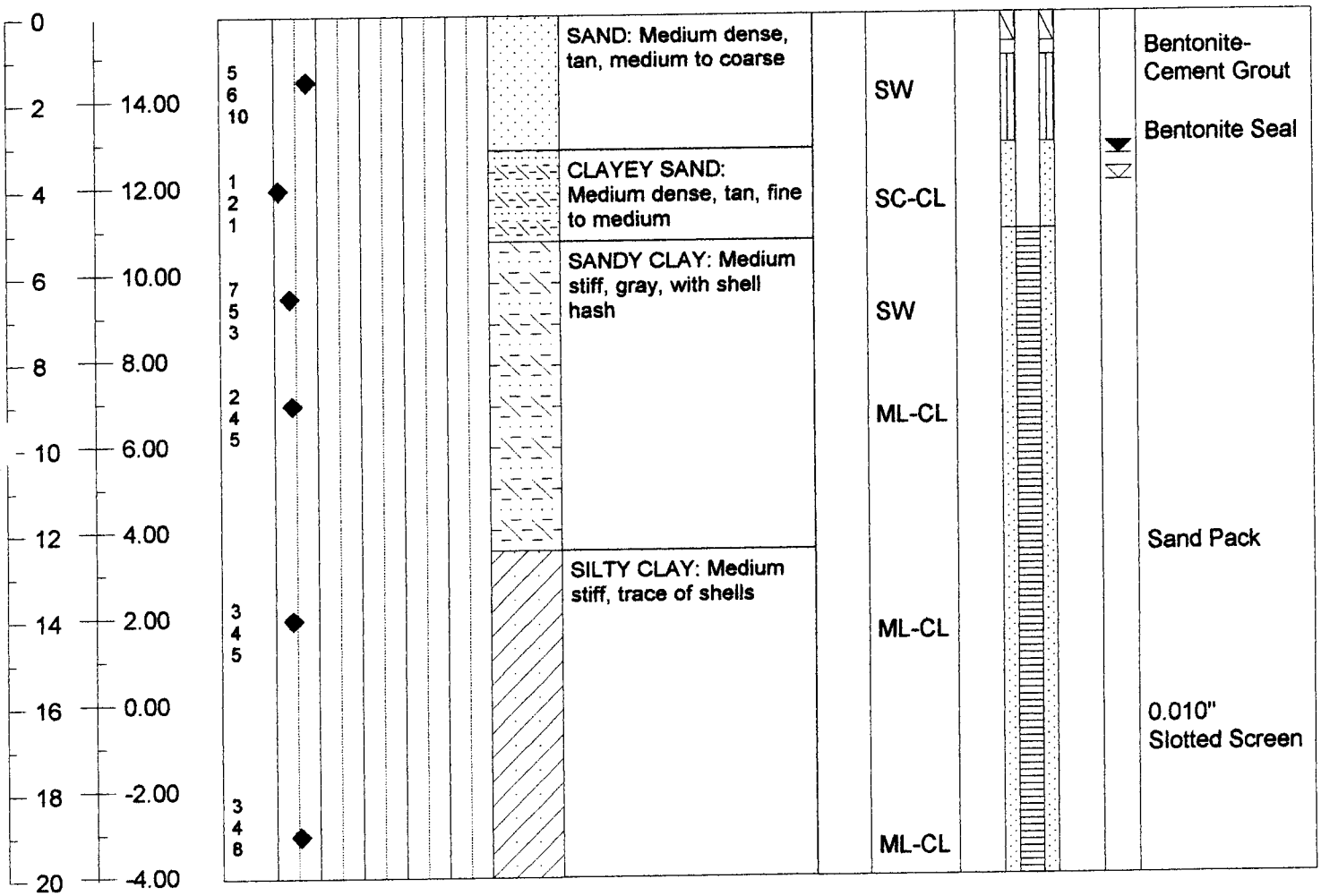
Engineering and Geology

Boring No. B-16

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**15.92**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**3.9**
Date Started	**12/10/02**	Date Ended	**12/10/02**	Water Level, 24 Hr.	**3.3**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**2.7**
Comments	**Logged area, cool sunny weather**	Total Depth	**20.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

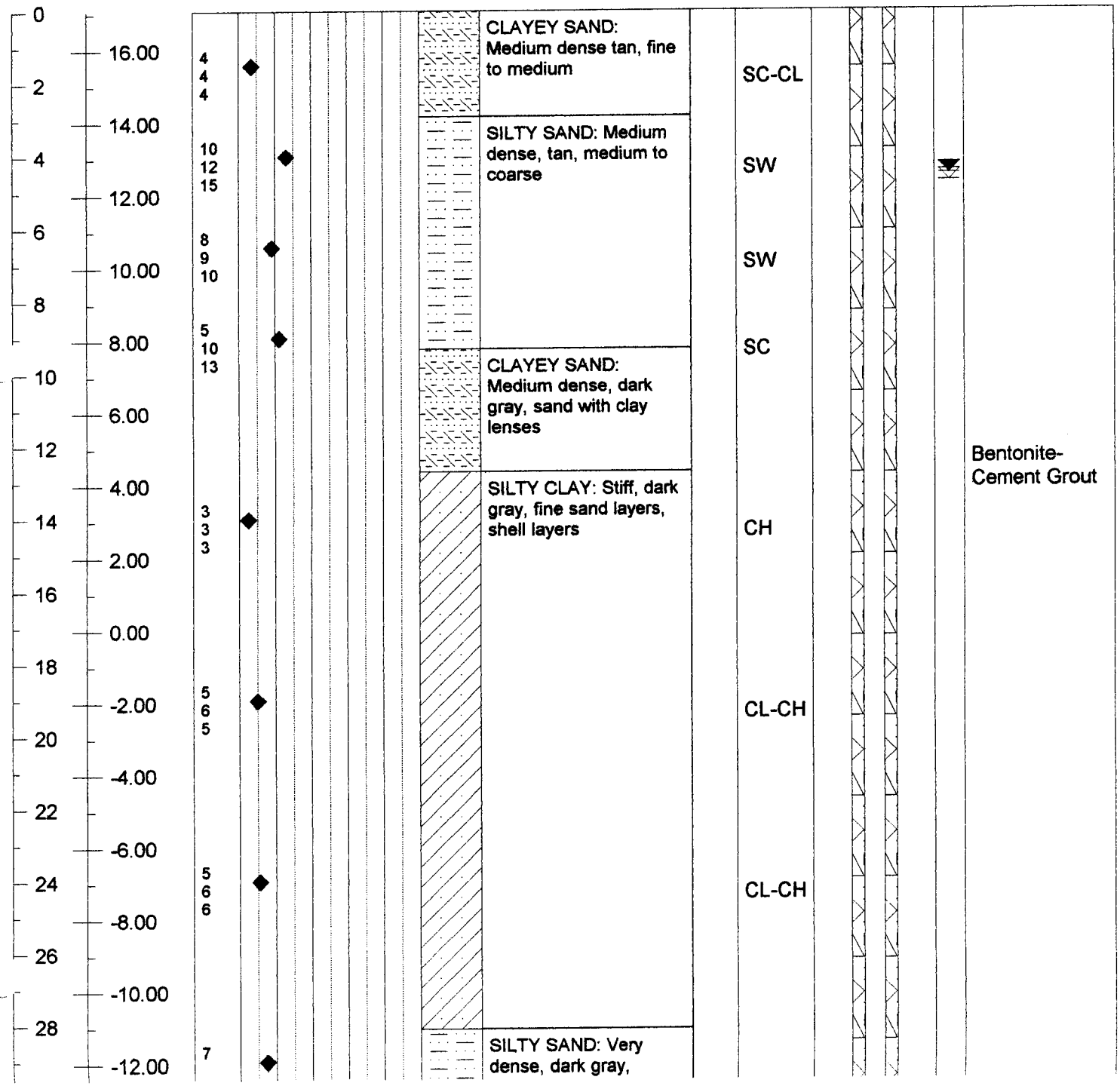
Engineering and Geology

Boring No. B-17d

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**17.07**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**4.7**
Date Started	**12/18/02**	Date Ended	**12/18/02**	Water Level, 24 Hr.	**4.5**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**4.4**
Comments	**Logged area, cool sunny weather**	Total Depth	**40.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

Engineering and Geology

Boring No. B-17d

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**17.07**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**4.7**
Date Started	**12/18/02**	Date Ended	**12/18/02**	Water Level, 24 Hr.	**4.5**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**4.4**
Comments	**Logged area, cool sunny weather**	Total Depth	**40.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data
30 / -14.00	8	clayey, glauconitic, shell hash — CH	Bentonite Seal
32 / -16.00			
34 / -18.00	7, 11, 13	SC-SM	Sand Pack
36 / -20.00			0.010" Slotted Screen
38 / -22.00	19, 33, 50/.5	SM	
40			

David Garrett, P.G., P.E.

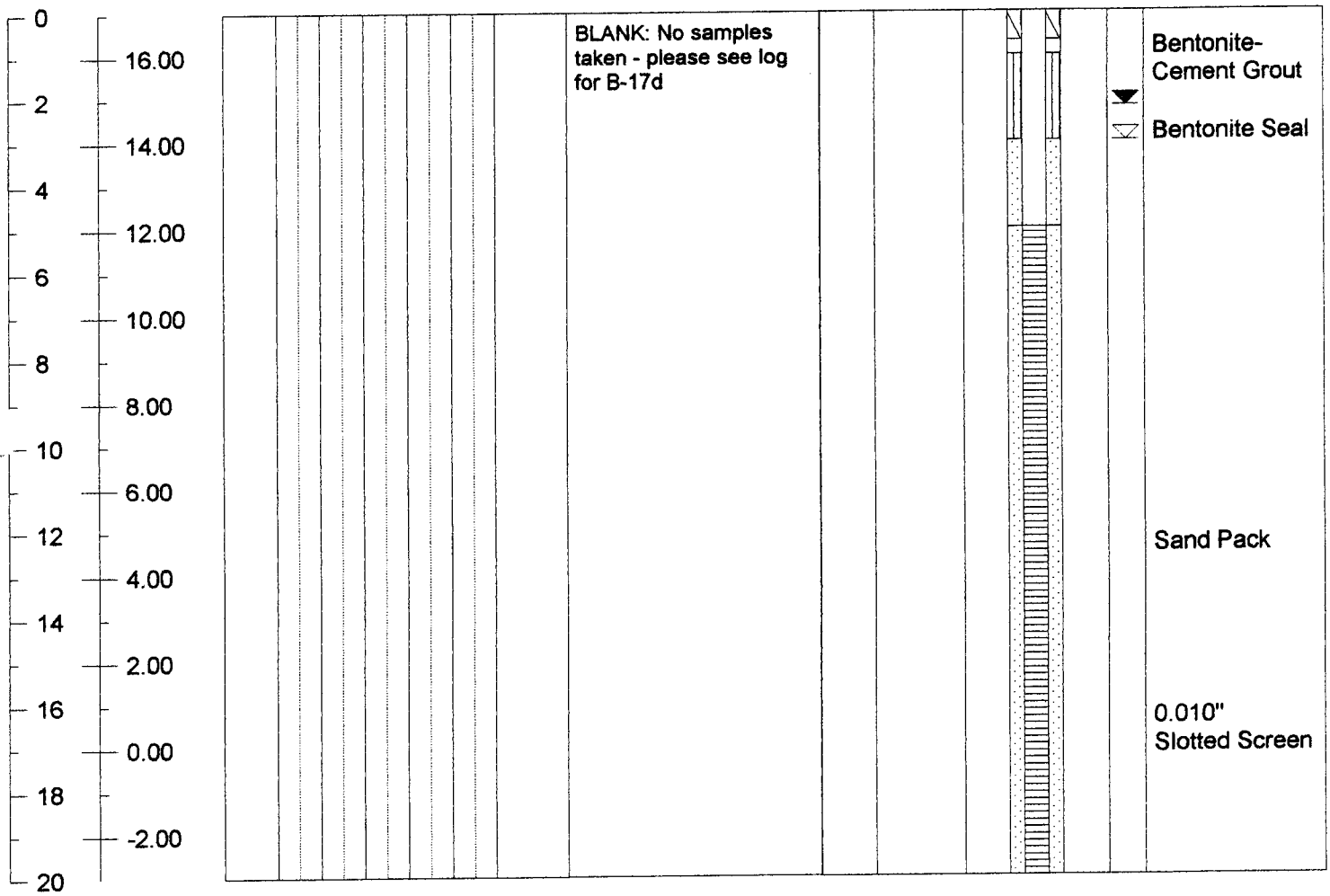
Engineering and Geology

Boring No. B-17s

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**17.00**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**5.0**
Date Started	**12/18/02**	Date Ended	**12/18/02**	Water Level, 24 Hr.	**4.2**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**3.4**
Comments	**Logged area, cool sunny weather**	Total Depth	**20.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

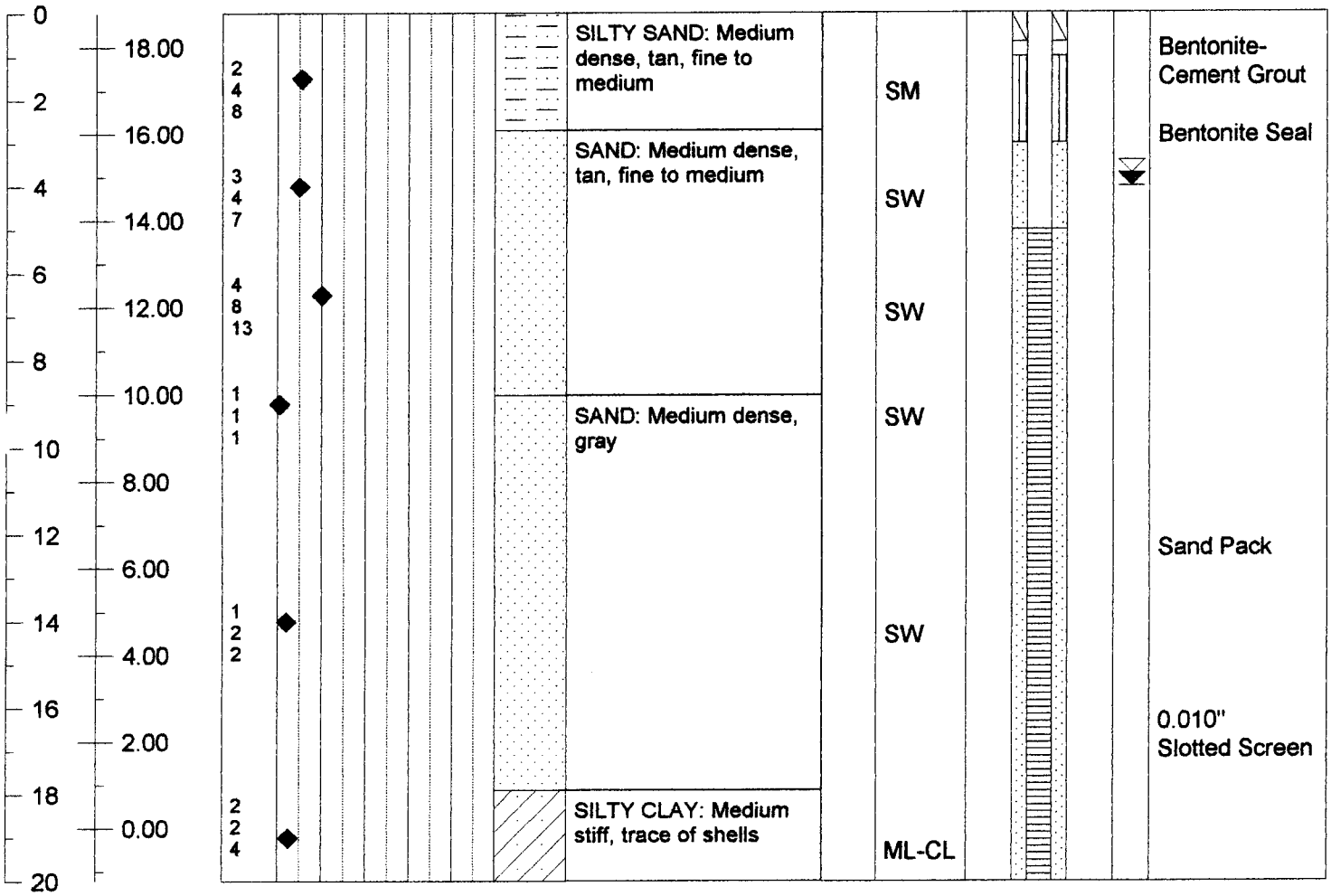
Engineering and Geology

Boring No. B-18

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**18.77**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**3.7**
Date Started	**12/09/02**	Date Ended	**12/09/02**	Water Level, 24 Hr.	**4.0**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**4.4**
Comments	**Logged area, cool sunny weather**	Total Depth	**20.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

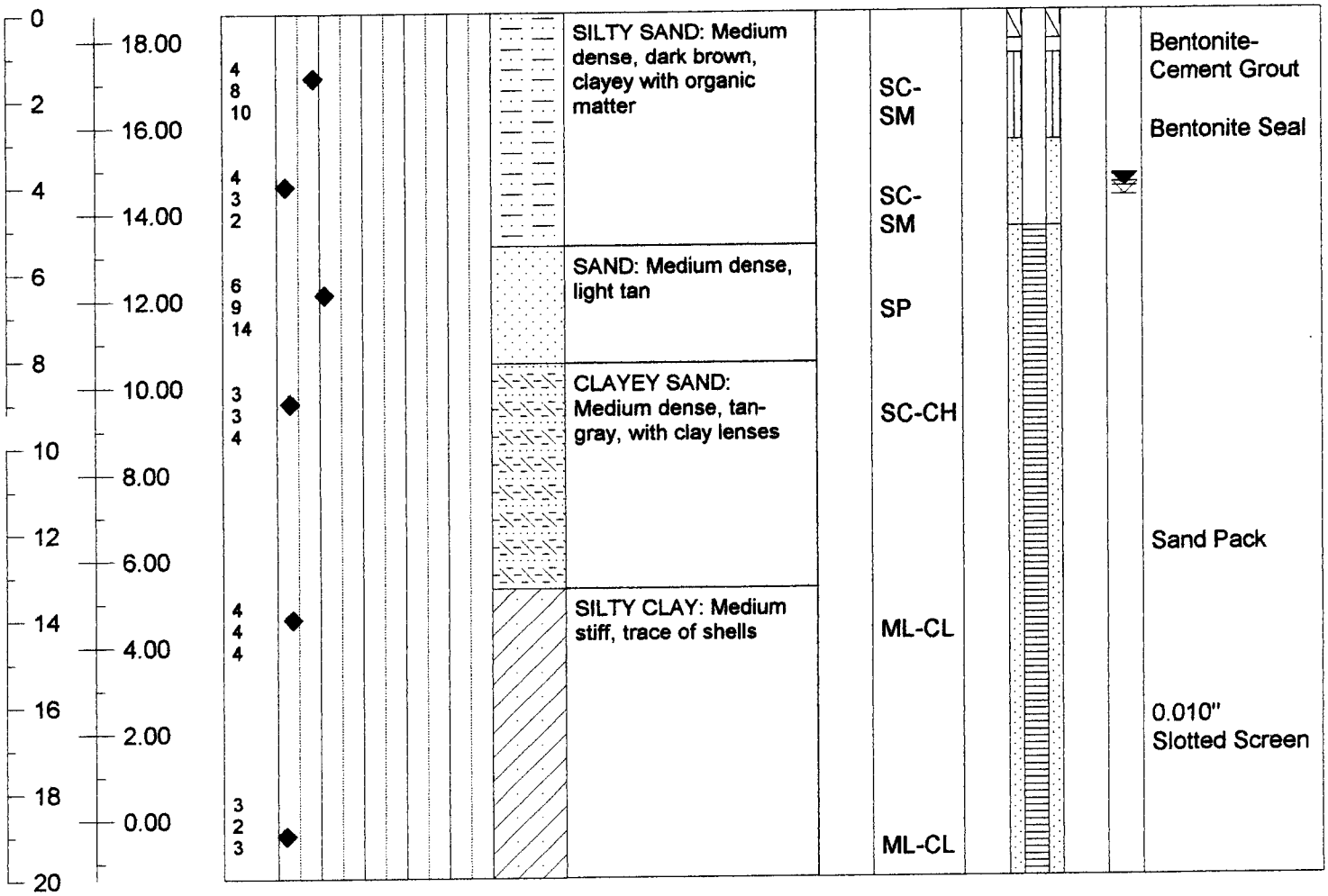
Engineering and Geology

Boring No. B-19

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**18.62**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**4.3**
Date Started	**12/06/02**	Date Ended	**12/06/02**	Water Level, 24 Hr.	**4.1**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**3.9**
Comments	**Logged area, cool sunny weather**	Total Depth	~~**40.0**~~ 20.0	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

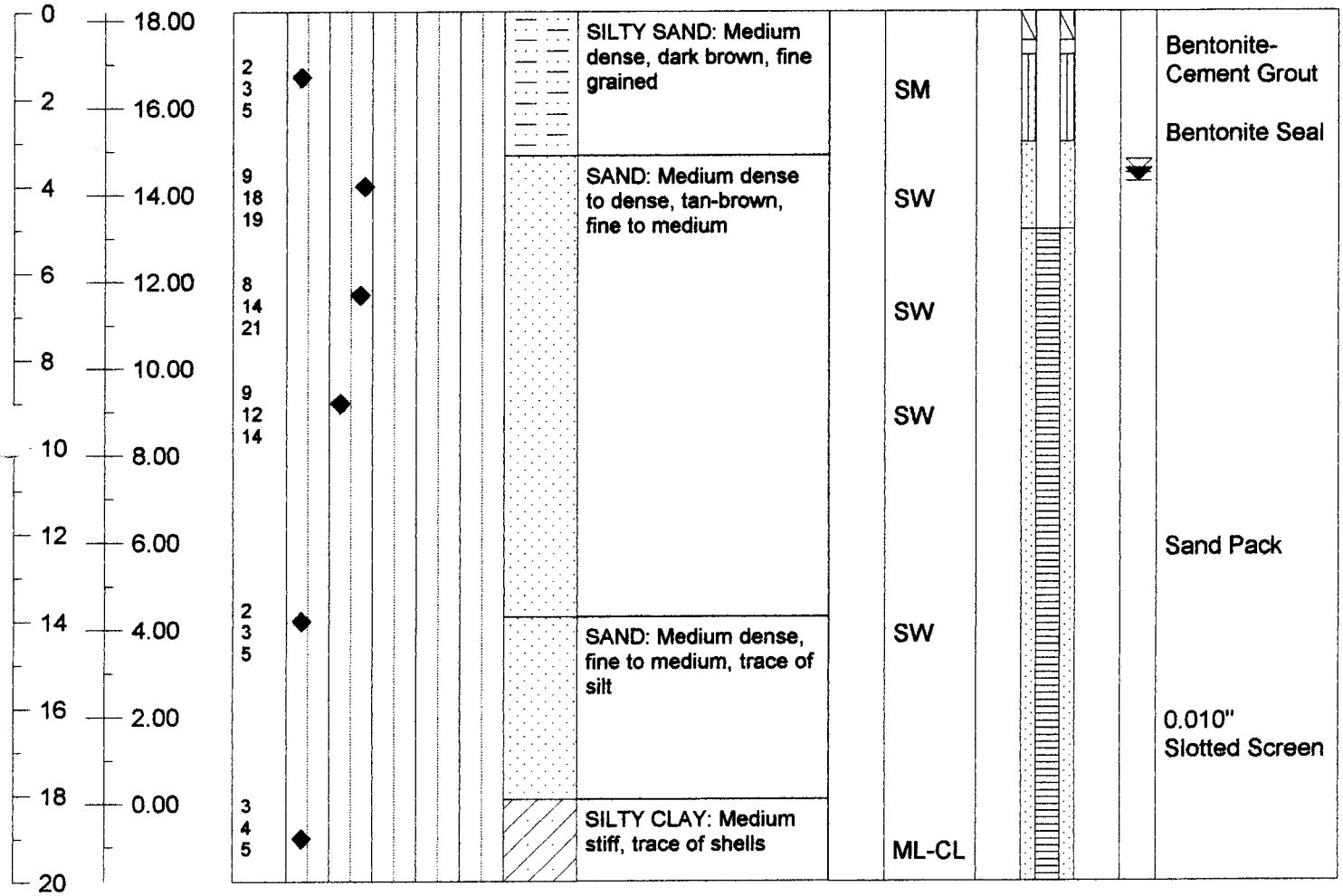
Engineering and Geology

Boring No. B-20

lient and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**18.18**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**3.7**
Date Started	**12/09/02**	Date Ended	**12/09/02**	Water Level, 24 Hr.	**3.9**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**4.1**
Comments	**Logged area, cool sunny weather**	Total Depth	**20.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

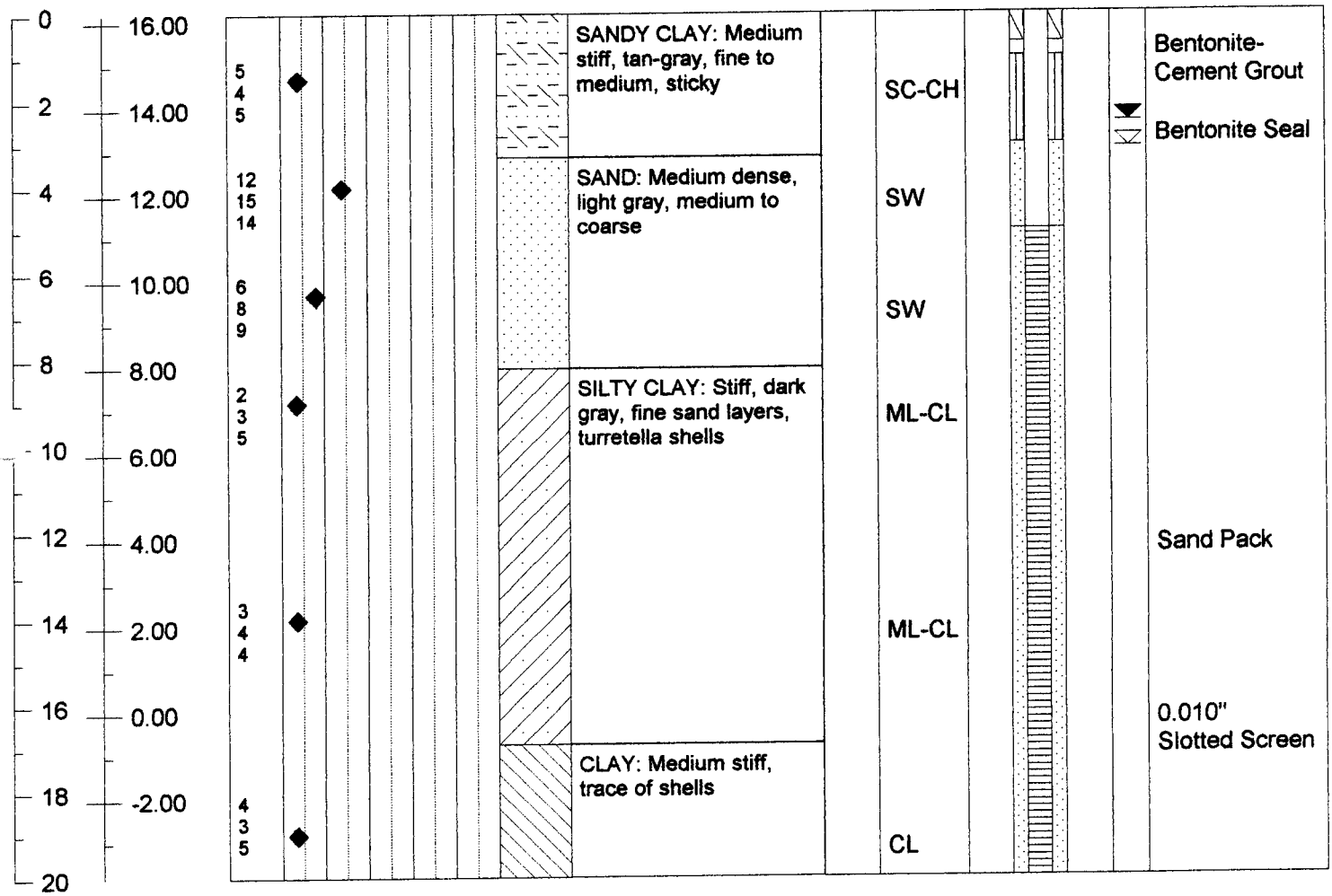
Engineering and Geology

Boring No. B-21

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**16.17**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**3.1**
Date Started	**12/10/02**	Date Ended	**12/10/02**	Water Level, 24 Hr.	**2.5**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**2.0**
Comments	**Logged area, cool sunny weather**	Total Depth	**20.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

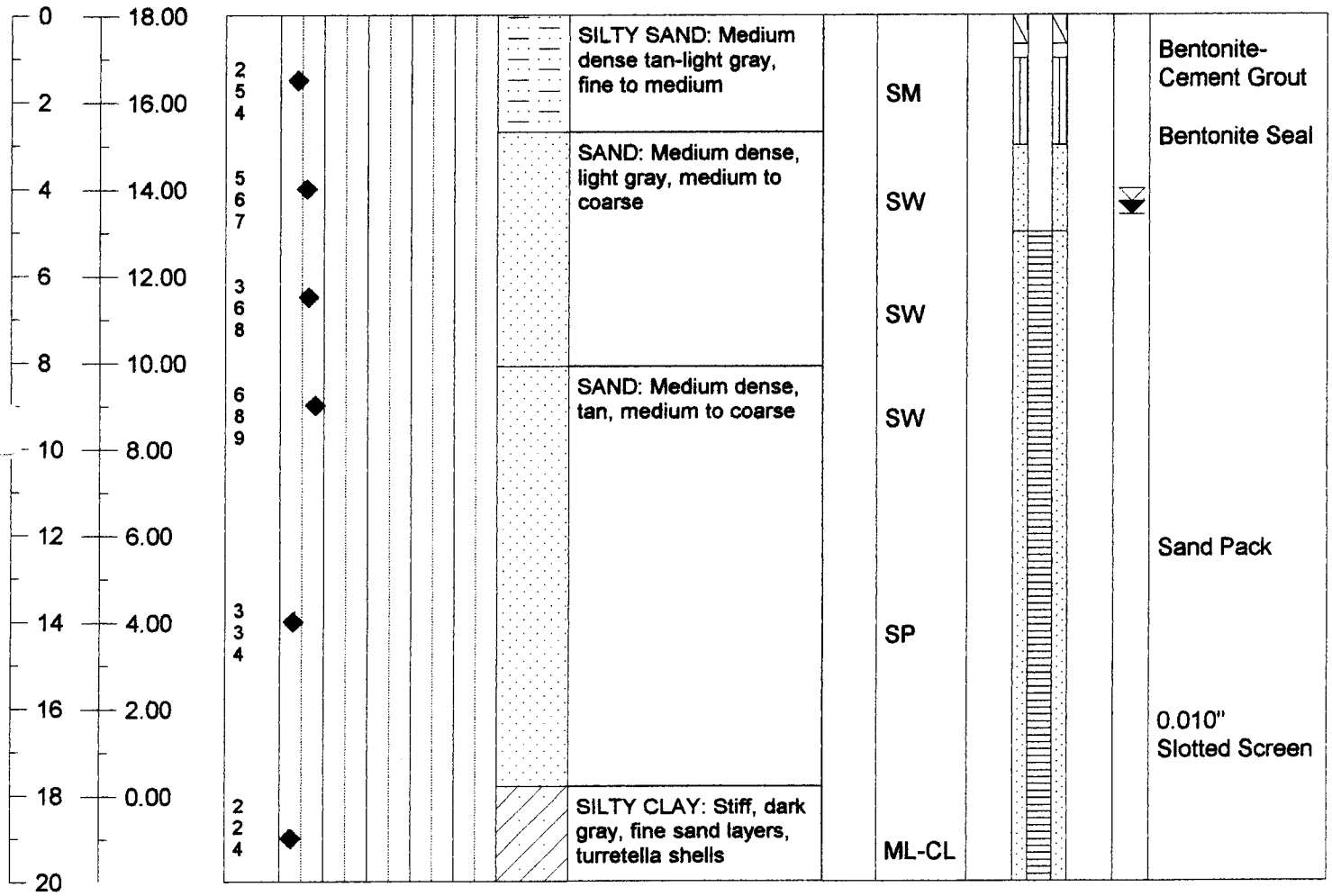
Engineering and Geology

Boring No. B-22

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**18.02**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**4.3**
Date Started	**12/12/02**	Date Ended	**12/12/02**	Water Level, 24 Hr.	**4.6**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**4.9**
Comments	**Logged area, cool sunny weather**	Total Depth	**20.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

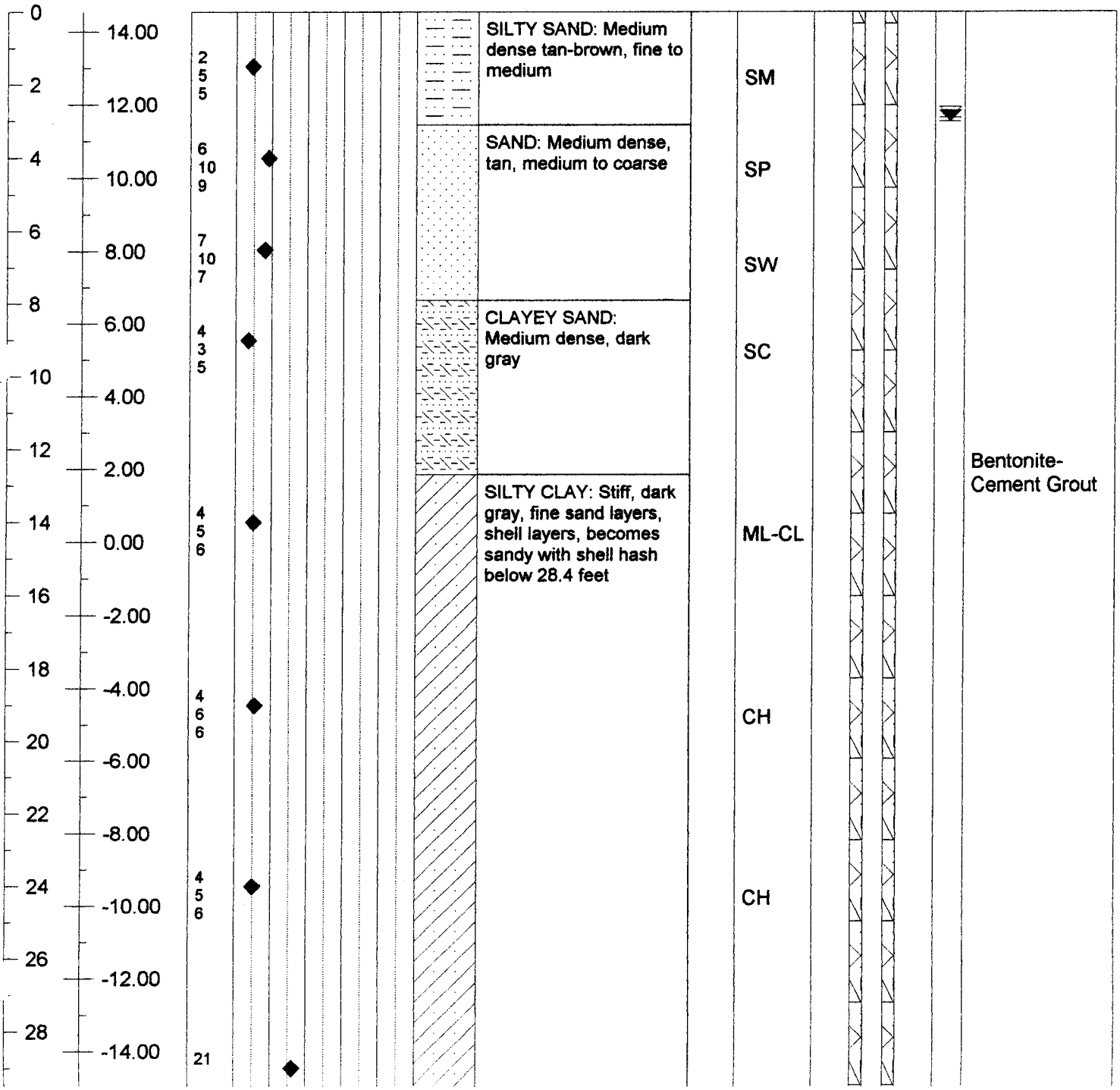
Engineering and Geology

Boring No. B-23d

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**14.54**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**2.9**
Date Started	**12/17/02**	Date Ended	**12/17/02**	Water Level, 24 Hr.	**3.0**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**3.1**
Comments	**Logged area, cool sunny weather**	Total Depth	**40.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

Engineering and Geology

Boring No. B-23d

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**14.54**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**2.9**
Date Started	**12/17/02**	Date Ended	**12/17/02**	Water Level, 24 Hr.	**3.0**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**3.1**
Comments	**Logged area, cool sunny weather**	Total Depth	**40.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data
30 / -16.00	16	SC-CL	Bentonite Seal
32 / -18.00			
34 / -20.00	50/.4	SAND: Very dense, dark gray, silty, glauconitic, shell hash — SM	Sand Pack
36 / -22.00			0.010" Slotted Screen
38 / -24.00	29 50/.5	SM	
40			

David Garrett, P.G., P.E.

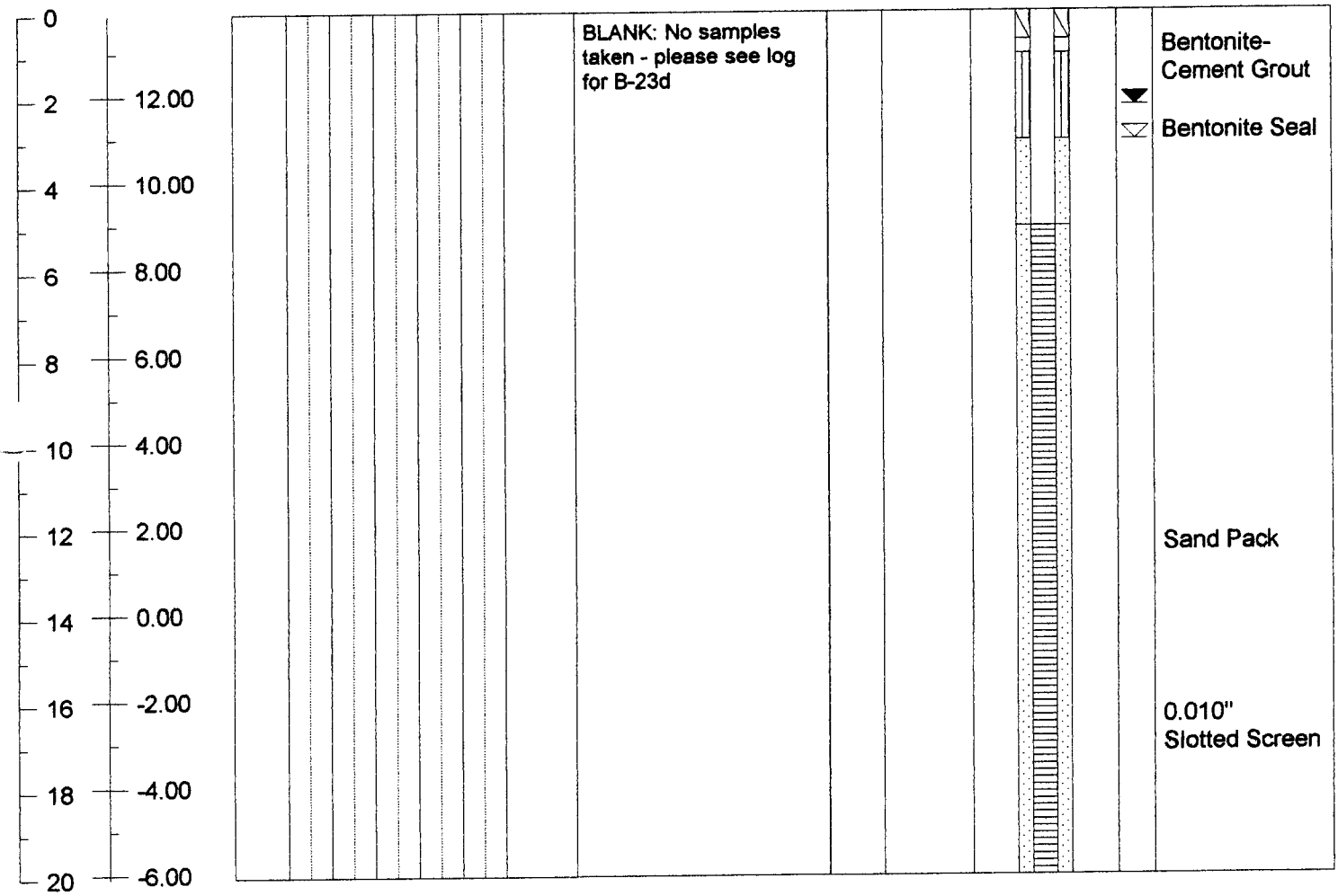
Engineering and Geology

Boring No. B-23s

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**13.90**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**3.0**
Date Started	**12/18/02**	Date Ended	**12/18/02**	Water Level, 24 Hr.	**2.2**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**1.4**
Comments	**Logged area, cool sunny weather**	Total Depth	**20.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

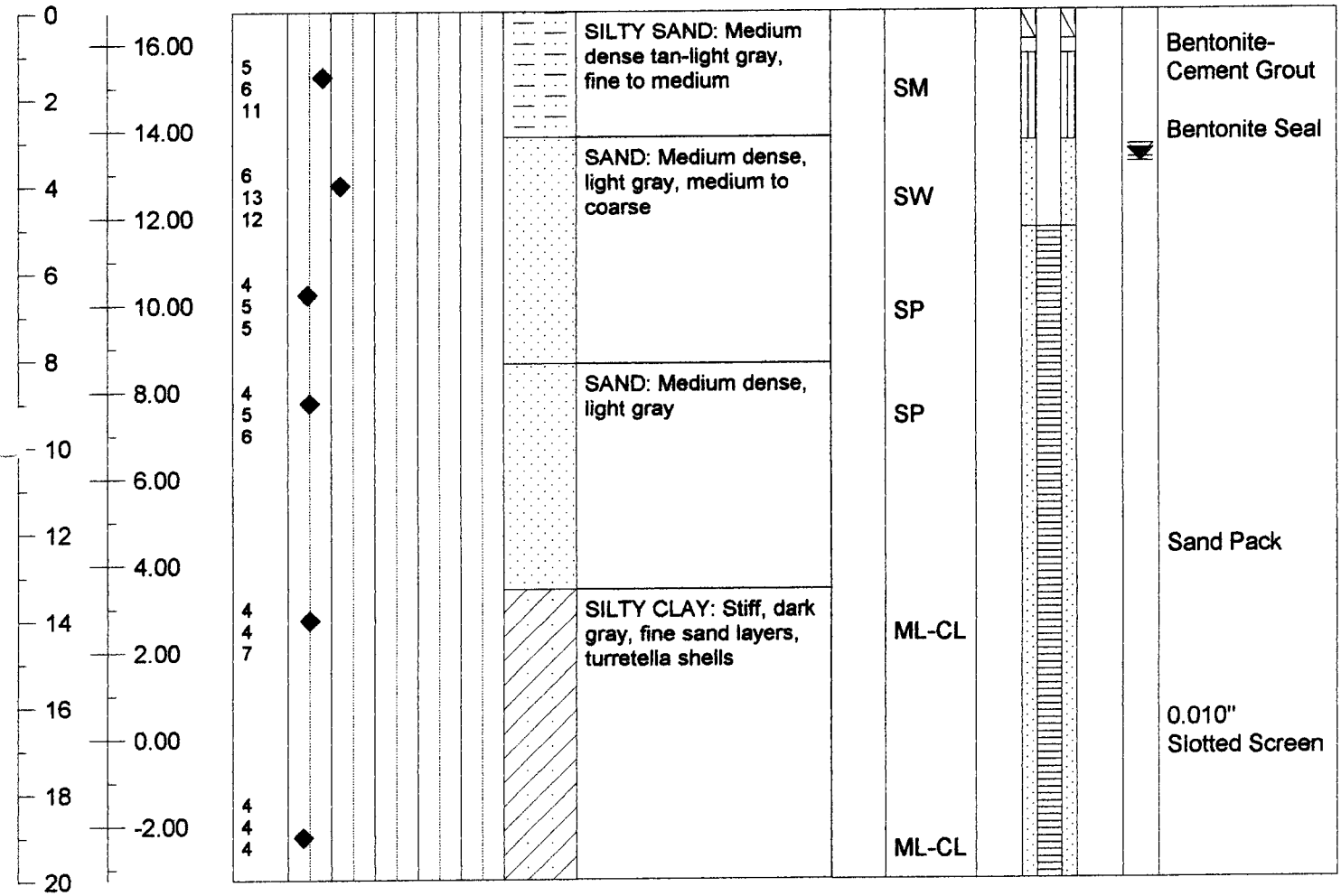
Engineering and Geology

Boring No. B-24

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**16.73**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**3.4**
Date Started	**12/11/02**	Date Ended	**12/11/02**	Water Level, 24 Hr.	**3.5**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**3.6**
Comments	**Logged area, cool sunny weather**	Total Depth	**20.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

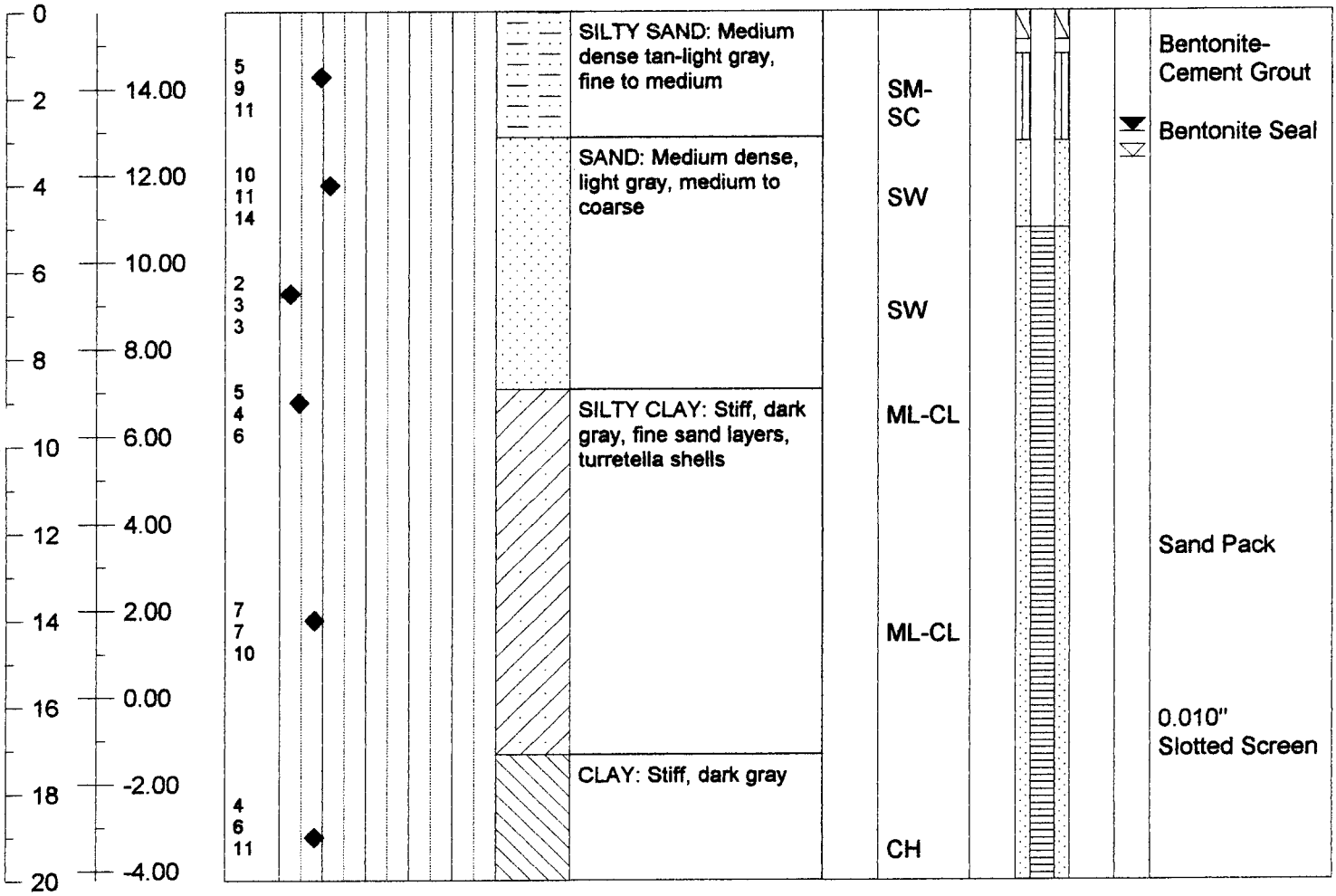
Engineering and Geology

Boring No. B-25

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**15.76**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**3.4**
Date Started	**12/10/02**	Date Ended	**12/10/02**	Water Level, 24 Hr.	**2.8**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**2.1**
Comments	**Logged area, cool sunny weather**	Total Depth	**20.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

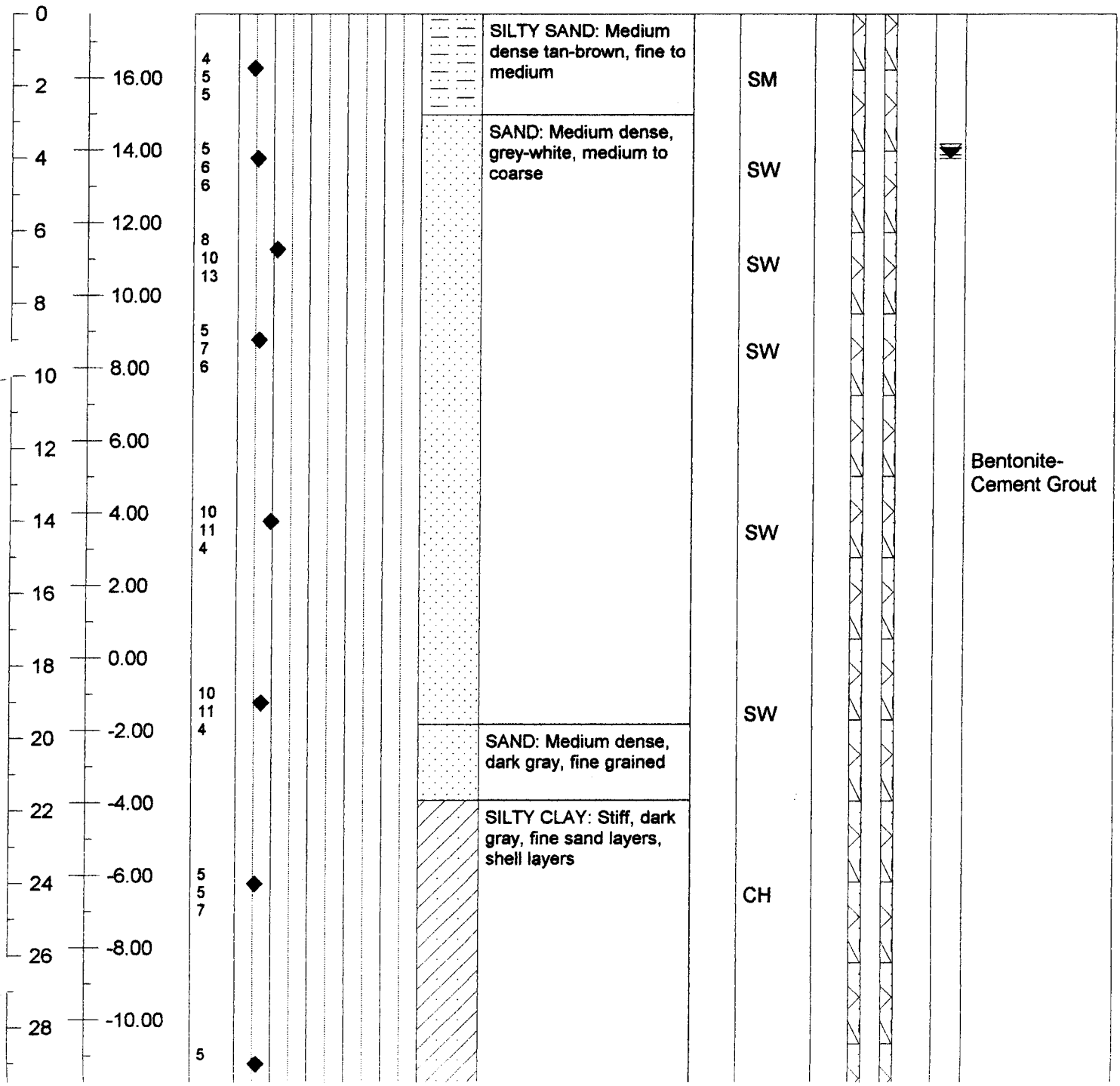
Engineering and Geology

Boring No. B-26

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**17.77**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**3.9**
Date Started	**12/19/02**	Date Ended	**12/19/02**	Water Level, 24 Hr.	**4.0**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**4.1**
Comments	**Logged area, cool sunny weather**	Total Depth	**40.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

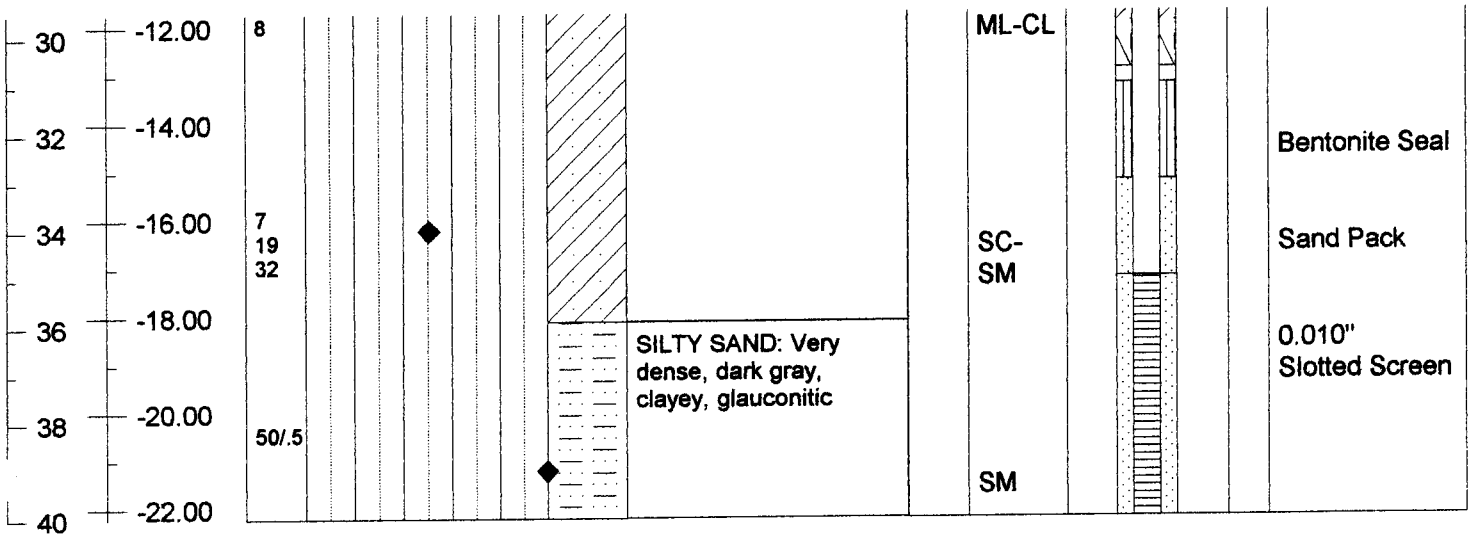
Engineering and Geology

Boring No. B-26

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**17.77**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**3.9**
Date Started	**12/19/02**	Date Ended	**12/19/02**	Water Level, 24 Hr.	**4.0**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**4.1**
Comments	**Logged area, cool sunny weather**	Total Depth	**40.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

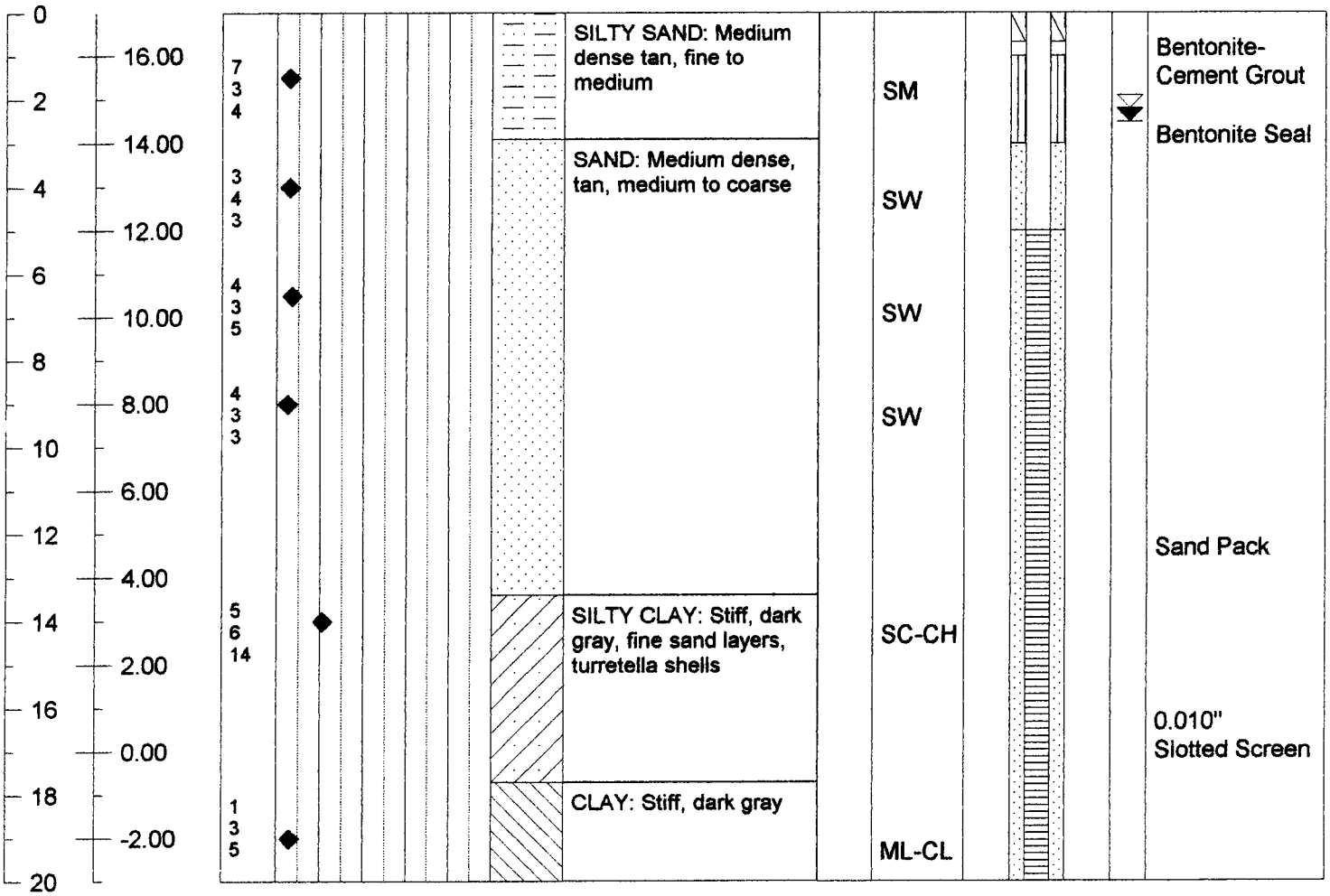
Engineering and Geology

Boring No. B-27

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**16.98**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**2.2**
Date Started	**12/09/02**	Date Ended	**12/09/02**	Water Level, 24 Hr.	**2.5**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**2.9**
Comments	**Logged area, cool sunny weather**	Total Depth	**20.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

Engineering and Geology

Boring No. B-28

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**16.76**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**4.3**
Date Started	**12/17/02**	Date Ended	**12/17/02**	Water Level, 24 Hr.	**5.1**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**5.8**
Comments	**Logged area, cool sunny weather**	Total Depth	**40.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data
0 / 16.00	2 2 3	SILTY SAND: Medium dense tan-brown, fine to medium — SM	
2 / 14.00			
4 / 12.00	3 3 3	SP	
6 / 10.00	6 9 7	SAND: Medium dense, tan-white, coarse — SW	
8 / 8.00	6 7 7	SW	
10 / 6.00			
12 / 4.00		CLAYEY SAND: Medium dense, dark gray, fine to medium, with shell layers	Bentonite-Cement Grout
14 / 2.00	2 3 5	SC-CH	
16 / 0.00			
18 / -2.00	2 3 6	SILTY CLAY: Stiff, dark gray, sand layers, shell hash — ML-CL	
20 / -4.00			
22 / -6.00			
24 / -8.00	5 4 5	CH	
26 / -10.00			
28 / -12.00	5		

David Garrett, P.G., P.E.

Engineering and Geology

Boring No. B-28

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**16.76**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**4.3**
Date Started	**12/17/02**	Date Ended	**12/17/02**	Water Level, 24 Hr.	**5.1**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**5.8**
Comments	**Logged area, cool sunny weather**	Total Depth	**40.0**	Date of Observation	**1/15/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data
30 / -14.00	6	CH	
32 / -16.00		SILTY SAND: Very dense, clayey, glauconitic	Bentonite Seal
34 / -18.00	8, 9, 14	SM	Sand Pack
36 / -20.00			0.010" Slotted Screen
38 / -22.00	8, 30, 44	SM	
40			

David Garrett, P.G., P.E.

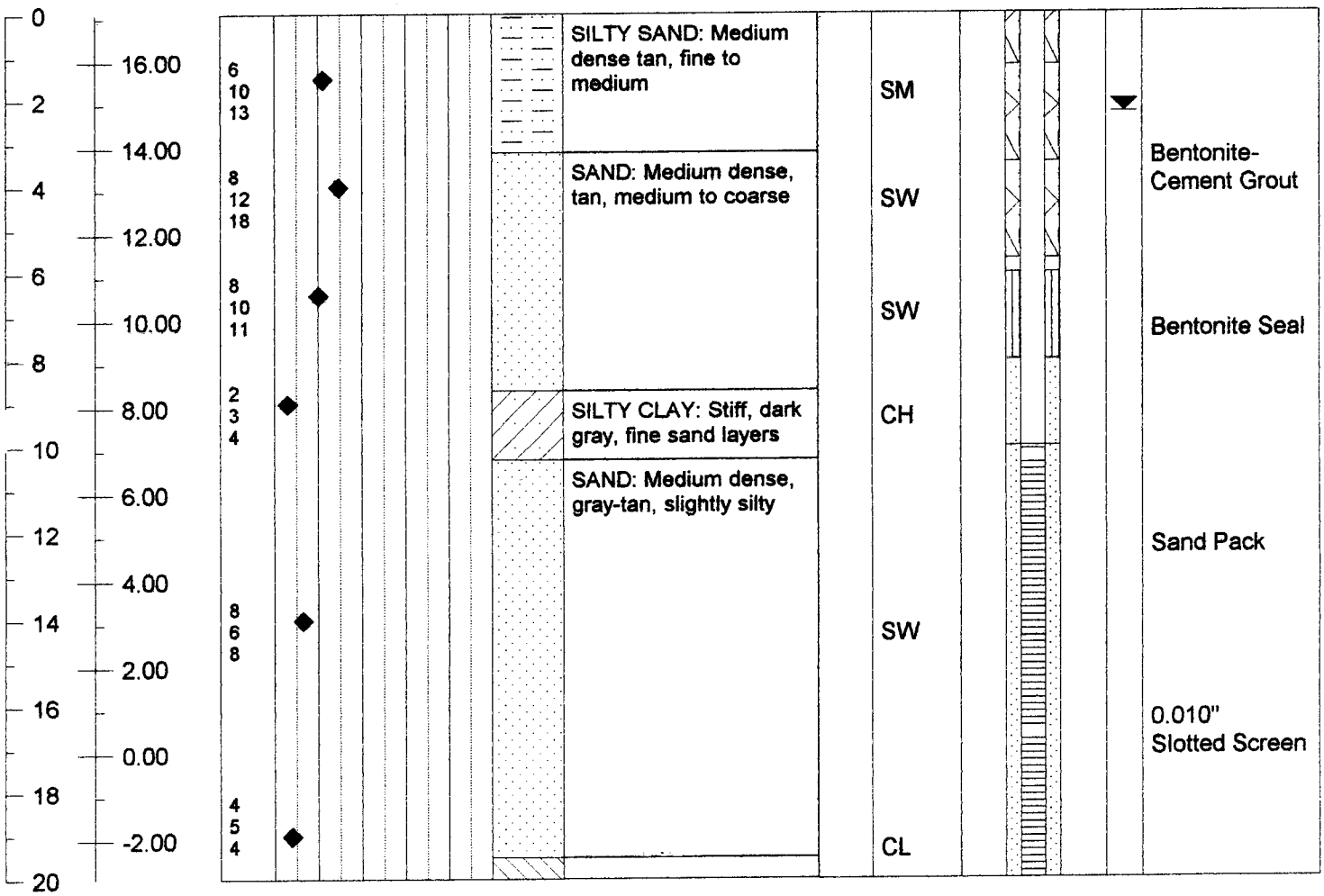
Engineering and Geology

Boring No. B-29

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**17.10**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**2.3**
Date Started	**4/23/02**	Date Ended	**4/23/02**	Water Level, 24 Hr.	**2.3**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**2.3**
Comments	**Logged area, cool sunny weather**	Total Depth	**20.0**	Date of Observation	**4/22/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

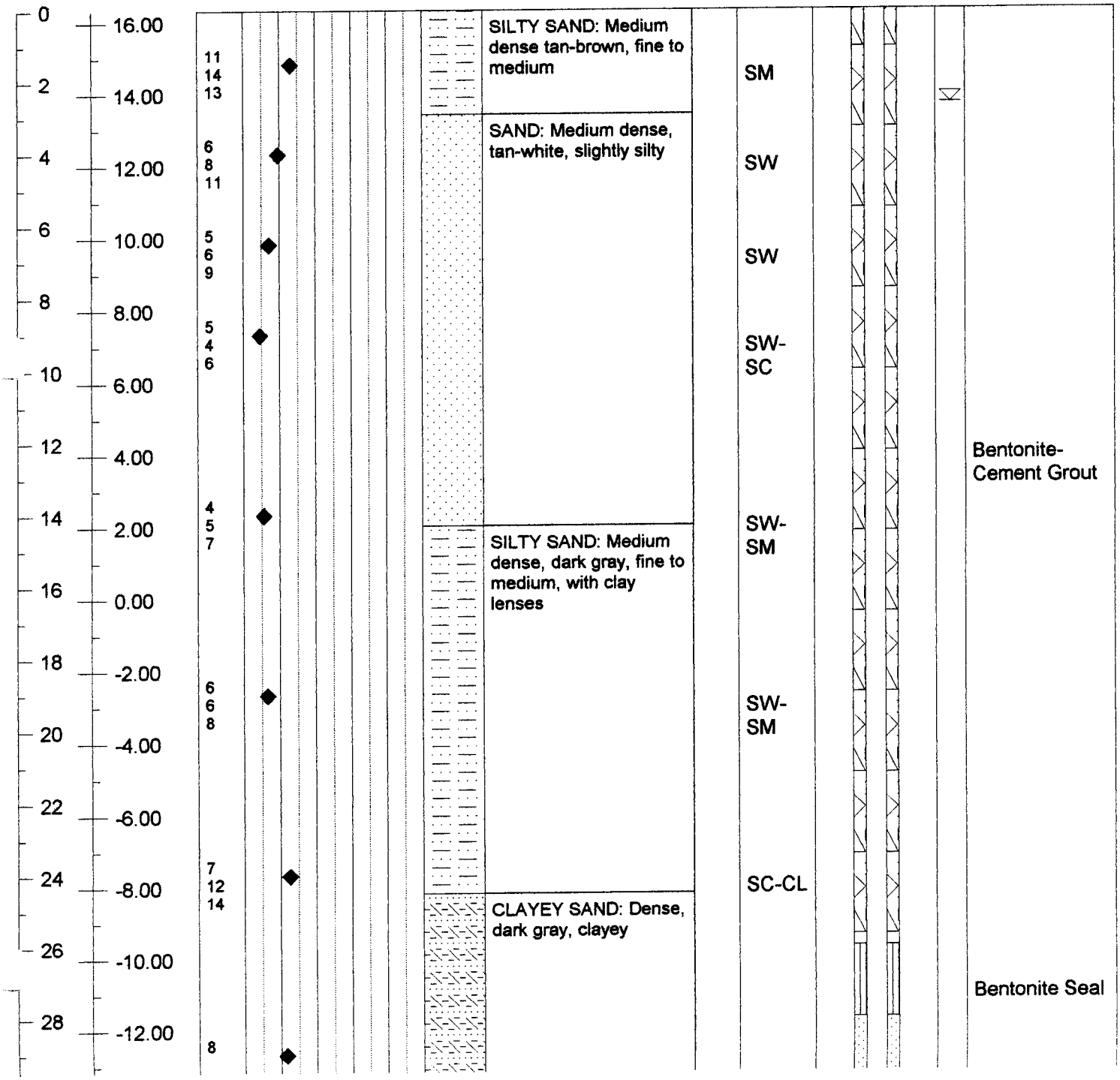
Engineering and Geology

Boring No. B-30

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**16.33**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**2.6**
Date Started	**4/23/02**	Date Ended	**4/23/02**	Water Level, 24 Hr.	**2.5**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**2.4**
Comments	**Logged area, cool sunny weather**	Total Depth	**40.0**	Date of Observation	**4/22/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

Engineering and Geology

Boring No. B-30

Client and Project	**C&D Landfill, Inc. (Phase 2)**			Ground Elevation	**16.33**
Equipment	**Detrich D-10**	Drilling Method	**3-1/4" HSA**	Water Level, TOB	**2.6**
Date Started	**4/23/02**	Date Ended	**4/23/02**	Water Level, 24 Hr.	**2.5**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**2.4**
Comments	**Logged area, cool sunny weather**	Total Depth	**40.0**	Date of Observation	**4/22/03**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol		Piezometer Constuction Data
30 / -14.00	14		SP	
32 / -16.00		CLAY: Very stiff, dark gray-green, sandy, with trace shell		
34 / -18.00	12, 18, 21		ML-CL	Sand Pack
36 / -20.00				0.010" Slotted Screen
38 / -22.00	18, 38, 50/.5	SILTY SAND: Very dense, clayey, glauconitic	SM	
40				

PHASE I (MW-1d)

David Garrett, P.G., P.E.

Engineering and Geology

Test Boring No. B-1

Client and Project	**C&D Landfill, Inc. (Pitt County)**			Collar Elevation	**17.40**
Equipment	**CME 750**	Drilling Method	**3-1/4" Hollow Auger**	Water Level, TOB	**NA**
Date Started	**10/12/00**	Date Ended	**10/13/00**	Water Level, 24 Hr.	**4.8**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**4.8**
Comments	**Plowed field, cool sunny weather**	Total Depth	**50.0**	Date of Observation	**10/16/00**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description and USCS Symbol		Piezometer Constuction Data
0 / 16.00		SAND: Medium dense buff-white, slightly silty, moist		
2 / 14.00	3 4 5	SAND: Loose, green-gray, silty and clayey, wet	SM	
4 / 12.00				
6 / 10.00				
8 / 8.00	2 1 1	SILT: Medium stiff, gray-green, fine sandy and clayey, with heavy shell hash (turritellas) wet, medium plasticity	SM	
10 / 6.00				
12 / 4.00	3 4 6		ML-CL	
14 / 2.00				
16 / 0.00				
18 / -2.00	4 4 6	CLAY: Medium stiff, gray-green, plastic gumbo clay, moist	CL	
20 / -4.00				
22 / -6.00	4 5 7		CL	
24 / -8.00				Bentonite-Cement Grout
26 / -10.00				
28 / -12.00	3 3 7		CL	
30 / -14.00				
32 / -16.00	6 22 18	SILTY SAND: Dense, partly cemented, black-green speckled, variably clayey, silty, moist, hard layer at 36 to 38 feet, very hard below 45 feet	SM	Bentonite Seal
34 / -18.00				
36				

David Garrett, P.G., P.E.
Engineering and Geology

Test Boring No. B-1

Client and Project	**C&D Landfill, Inc. (Pitt County)**			Collar Elevation	**17.40**
Equipment	**CME 750**	Drilling Method	**3-1/4" Hollow Auger**	Water Level, TOB	**NA**
Date Started	**10/12/00**	Date Ended	**10/13/00**	Water Level, 24 Hr.	**4.8**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**4.8**
Comments	**Plowed field, cool sunny weather**	Total Depth	**50.0**	Date of Observation	**10/16/00**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description and USCS Symbol	Piezometer Constuction Data
38 -20.00			
40 -22.00	31 15 24	SM	
42 -24.00			
44 -26.00	50/.1	SM	Sand Pack
46 -28.00			0.010" Slotted Screen
48 -30.00			
50 -32.00	50/.5	SM	

David Garrett, P.G., P.E.

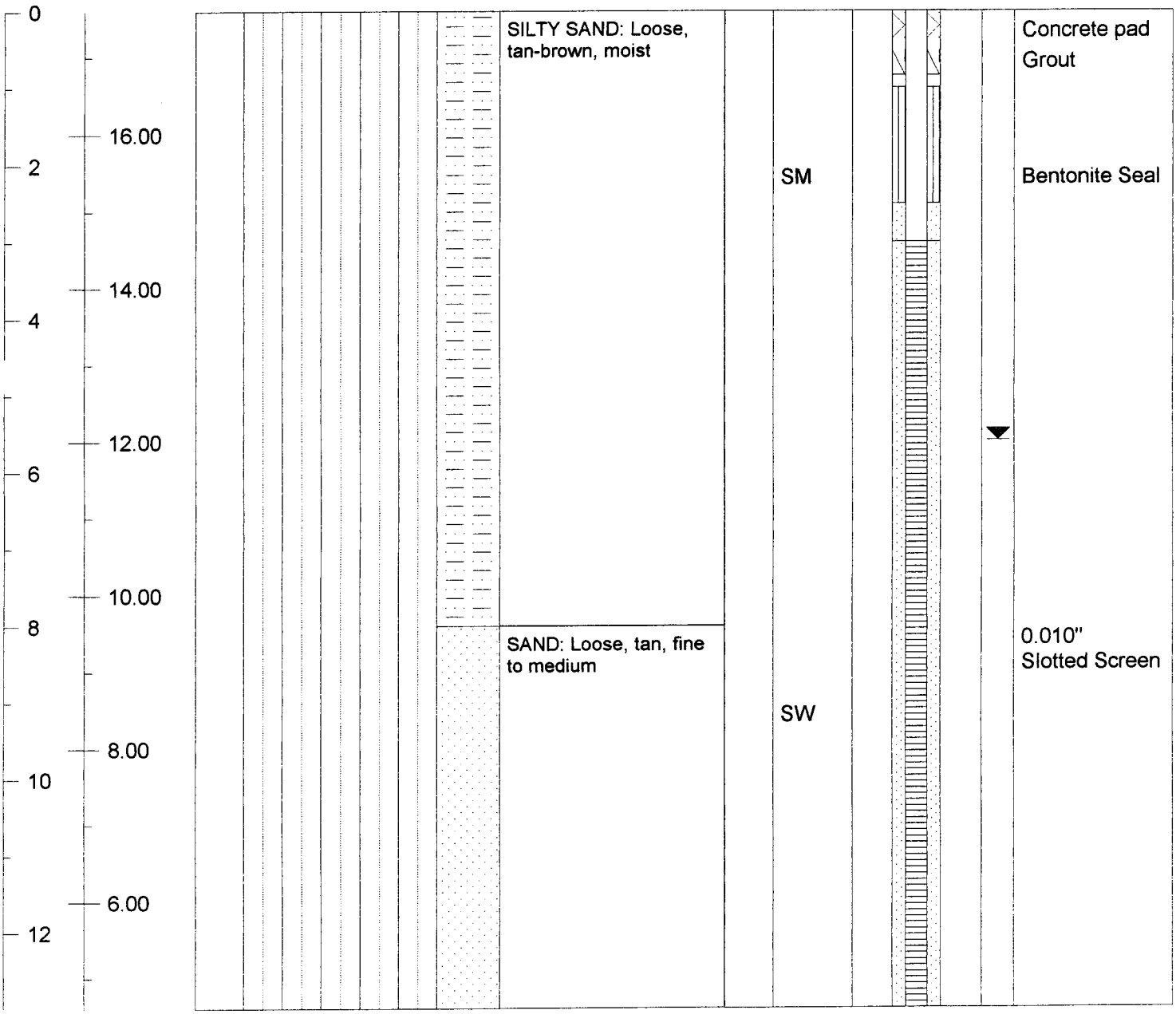
Engineering and Geology

Boring No. MW-1s

Client and Project	**C&D Landfill, Inc. (Pitt County)**			Collar Elevation	**17.59**
Equipment	**CME 75**	Drilling Method	**4-1/4" ID HSA**	Water Level, TOB	**NA**
Date Started	**05/02/01**	Date Ended	**05/02/01**	Water Level, 24 Hr.	**NA**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**5.59**
Comments	**Locking cover with 3.32' stickup**	Total Depth	**13.0**	Date of Observation	**5/16/01**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



MW-2d

David Garrett, P.G., P.E.

Engineering and Geology

Test Boring No. B-2d

Client and Project	**C&D Landfill, Inc. (Pitt County)**			Collar Elevation	**17.97**
Equipment	**CME 750**	Drilling Method	**3-7/8" rotary-mud**	Water Level, TOB	**6.6**
Date Started	**10/9/00**	Date Ended	**10/11/00**	Water Level, 24 Hr.	**7.9**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**7.9**
Comments	**Plowed field, cool sunny weather**	Total Depth	**70.0**	Date of Observation	**10/16/00**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description and USCS Symbol		Piezometer Constuction Data
0		SAND: Loose, tan-yellow, variably silty sand		
2 — 16.00				
4 — 14.00	16 8 9	CLAY: Medium stiff, tan-orange, very sandy, silty, slightly plastic, moist, crumbly	CL & SM	
6 — 12.00				
8 — 10.00	5 8 8	SAND: Medium dense, tan, subangular, f - c well graded (boring collapsed at 13.6 feet when casing pulled, redrilled with 4-1/4" hollow stem auger)	SP-SM	Bentonite-Cement Grout
10 — 8.00				
12 — 6.00				
14 — 4.00	3 3 4	CLAYEY SILT: Medium stiff, gray-green, fine sandy, with heavy shell hash (whole turritellas), moist, moderately plastic	CL-ML	
16 — 2.00				
18 — 0.00	2 2 3		CL-ML	
20 — -2.00				
22 — -4.00				
24 — -6.00	2 2 4	CLAY: Medium stiff, gray-green, plastic gumbo clay, moist	CL	
26 — -8.00				
28 — -10.00	2 2 3		CL	
30 — -12.00				
32 — -14.00				
34 — -16.00	1 6 8	SILT: Stiff, gray-green, fine sandy, clayey, interlayered with sand	SM	Bentonite Seal
36 — -18.00				

David Garrett, P.G., P.E.

Engineering and Geology

Test Boring No. B-2d

Client and Project	**C&D Landfill, Inc. (Pitt County)**			Collar Elevation	**17.97**
Equipment	**CME 750**	Drilling Method	**3-7/8" rotary-mud**	Water Level, TOB	**6.6**
Date Started	**10/9/00**	Date Ended	**10/11/00**	Water Level, 24 Hr.	**7.9**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**7.9**
Comments	**Plowed field, cool sunny weather**	Total Depth	**70.0**	Date of Observation	**10/16/00**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description and USCS Symbol		Piezometer Constuction Data
38 -20.00	5 4 29	SILT: Hard, black-green speckled, clayey, fine sandy, moist, moderately plastic, scattered pelecypod shell hash	ML	Sand Pack
40 -22.00				
42 -24.00				0.010" Slotted Screen
44 -26.00	10 20 27		ML	
46 -28.00				
48 -30.00				
50 -32.00	22 38 50/.2	SAND: Very dense (partly cemented), black-green speckled, clayey, silty, fine glauconite nodules	SM	Bentonite Seal
52 -34.00				
54 -36.00	50/.1		SM	
56 -38.00				
58 -40.00	6 7 7	SAND: Medium dense, green-black speckled, silty, clayey, fine grained, wet	SC	
60 -42.00				
62 -44.00		CLAY: Medium stiff to very hard, gray-green, fine sandy, silty, moderately plastic		
64 -46.00	5 6 5		CL	
66 -48.00				
68 -50.00	40 38 50/.5		CL	
70 -52.00				

David Garrett, P.G., P.E.

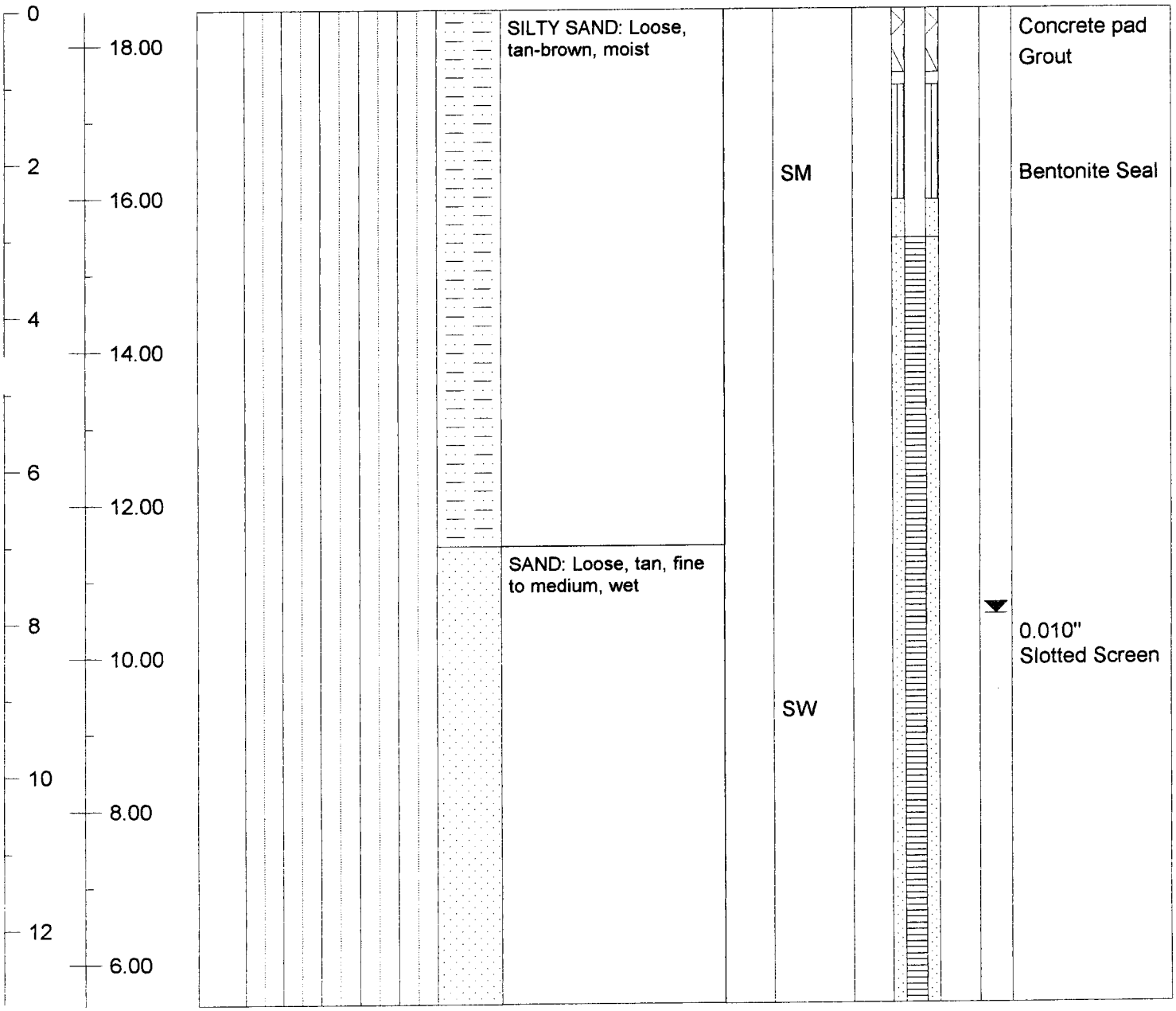
Engineering and Geology

Boring No. MW-2s

Client and Project	**C&D Landfill, Inc. (Pitt County)**			Collar Elevation	**18.45**
Equipment	**CME 75**	Drilling Method	**4-1/4" ID HSA**	Water Level, TOB	**NA**
Date Started	**05/03/01**	Date Ended	**05/03/01**	Water Level, 24 Hr.	**NA**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**7.91**
Comments	**Locking cover with 2.99' stickup**	Total Depth	**13.0**	Date of Observation	**5/16/01**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



MW-3d

David Garrett, P.G., P.E.

Engineering and Geology

Test Boring No. B-3

'ient and Project	**C&D Landfill, Inc. (Pitt County)**			Collar Elevation	**19.37**
Equipment	**CME 750**	Drilling Method	**4-1/4" Hollow Auger**	Water Level, TOB	**3.0 caved**
Date Started	**10/12/00**	Date Ended	**10/13/00**	Water Level, 24 Hr.	**4.5**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**4.5**
Comments	**Plowed field, cool sunny weather**	Total Depth	**50.0**	Date of Observation	**10/16/00**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description and USCS Symbol		Piezometer Constuction Data
0 / 18.00		CLAY: Stiff, bright yellow-orange, fine sandy, silty, moist	CL	Caved
2 / 16.00	4 4 6			
4 / 14.00		SAND: Medium dense, tan-yellow, silty, trace of clay, moist		
6 / 12.00		SAND: Medium dense, tan-buff, well graded fine to coarse, wet	SW	
8 / 10.00	4 5 5			
10 / 8.00				
12 / 6.00	2 4 4	SILT: Stiff, gray-green, fine sandy and clayey, with heavy shell hash (turritellas) wet, medium plasticity	ML-CL	
14 / 4.00				
16 / 2.00				
18 / 0.00	2 2 4		CL	
20 / -2.00				
22 / -4.00	2 5 7	CLAY: Medium stiff, gray-green, plastic gumbo clay, moist	CL	Bentonite-Cement Grout
24 / -6.00				
26 / -8.00		SILTY SAND: Medium dense to dense, partly cemented, black-green speckled, variably clayey, silty, moist, very hard drilling (cemented) below 38 feet, glauconitic	SM	
28 / -10.00	3 6 5			
30 / -12.00				
32 / -14.00	5 18 20		SM	Bentonite Seal
34 / -16.00				
36				

David Garrett, P.G., P.E.

Engineering and Geology

Test Boring No. B-3

Client and Project	**C&D Landfill, Inc. (Pitt County)**			Collar Elevation	**19.37**
Equipment	**CME 750**	Drilling Method	**4-1/4" Hollow Auger**	Water Level, TOB	**3.0 caved**
Date Started	**10/12/00**	Date Ended	**10/13/00**	Water Level, 24 Hr.	**4.5**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**4.5** ▼
Comments	**Plowed field, cool sunny weather**	Total Depth	**50.0**	Date of Observation	**10/16/00**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description and USCS Symbol	Piezometer Constuction Data
38 -18.00			
40 -20.00	15 50/.3	SM	
42 -22.00			Sand Pack
44 -24.00	50/.5	SM	
46 -26.00			0.010" Slotted Screen
48 -28.00			
50 -30.00	29 43 50/.5	SM	

David Garrett, P.G., P.E.

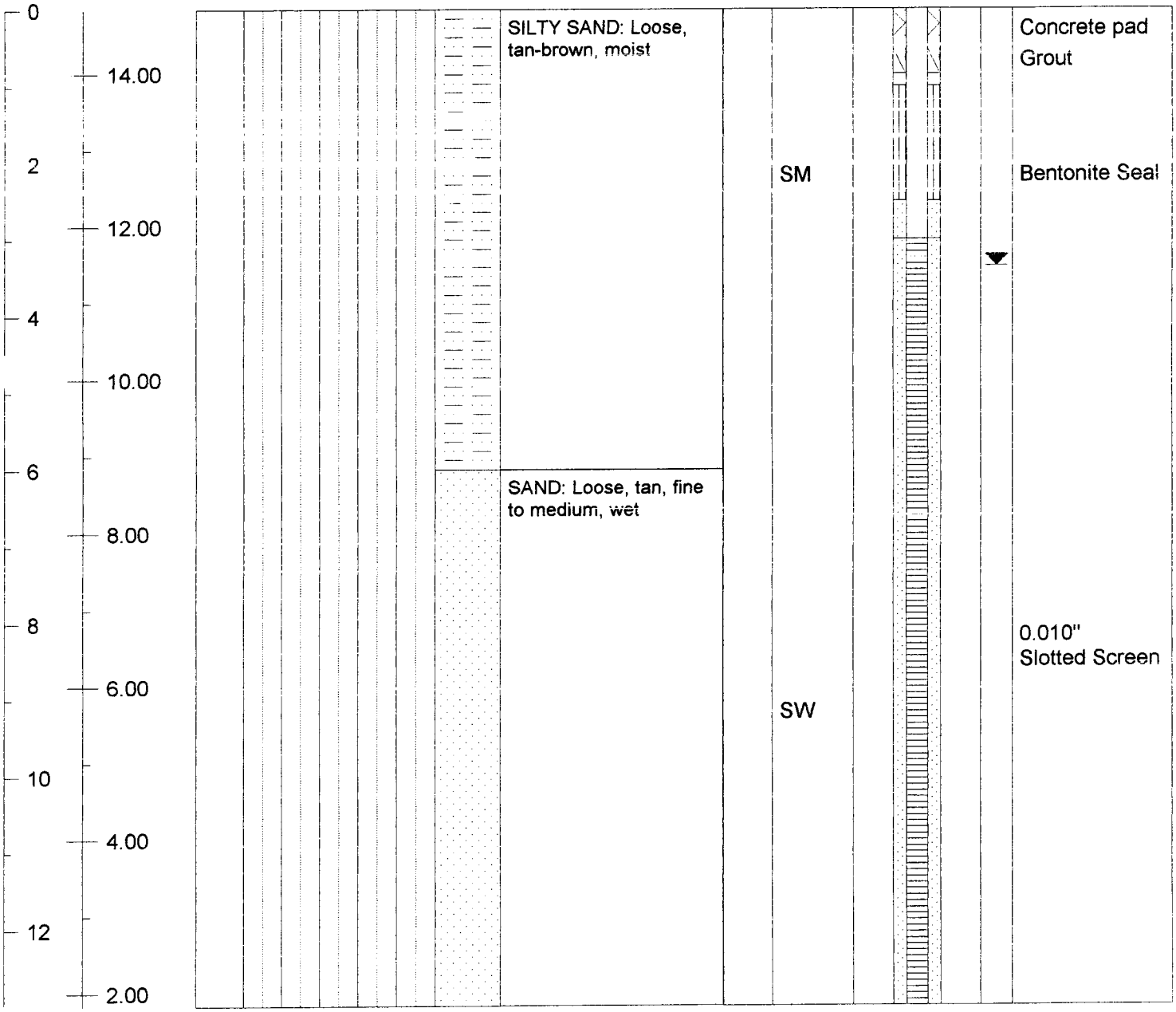
Engineering and Geology

Boring No. MW-4

Client and Project	**C&D Landfill, Inc. (Pitt County)**			Collar Elevation	**14.83**
Equipment	**CME 75**	Drilling Method	**4-1/4" ID HSA**	Water Level, TOB	**NA**
Date Started	**05/03/01**	Date Ended	**05/03/01**	Water Level, 24 Hr.	**NA**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**3.35**
Comments	**Locking cover with 3.59' stickup**	Total Depth	**13.0**	Date of Observation	**5/16/01**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

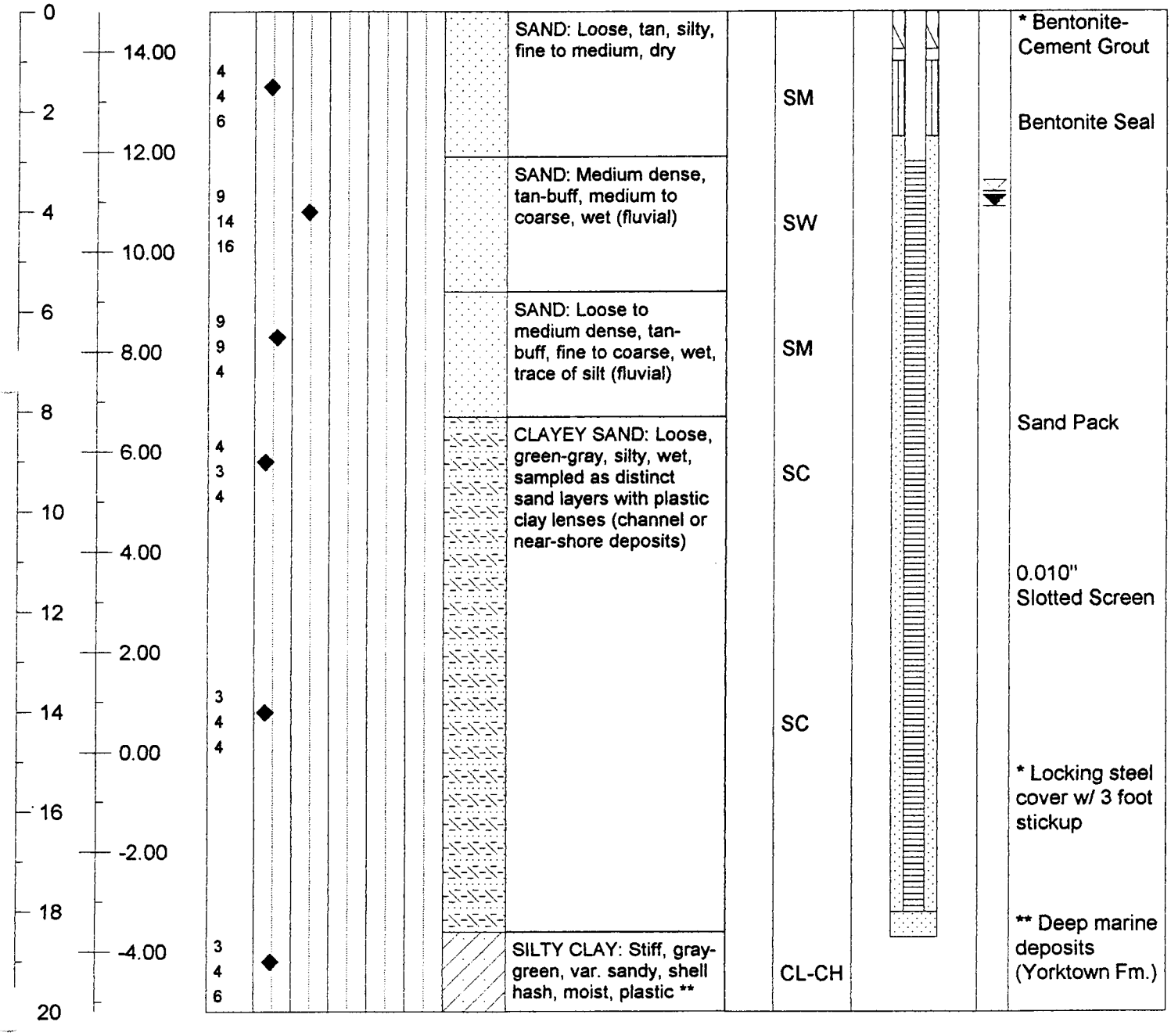
Engineering and Geology

Boring No. MW-5

Client and Project	**C&D Landfill, Inc. (Phase 1)**			Ground Elevation	**14.80**
Equipment	**Mobile B-53 ATV**	Drilling Method	**4-1/4" Hollow Auger**	Water Level, TOB	**3.6**
Date Started	**11/19/02**	Date Ended	**11/19/02**	Water Level, 24 Hr.	**NA**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**3.9**
Comments	**Wooded area, cool sunny weather**	Total Depth	**20.0**	Date of Observation	**11/27/02**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

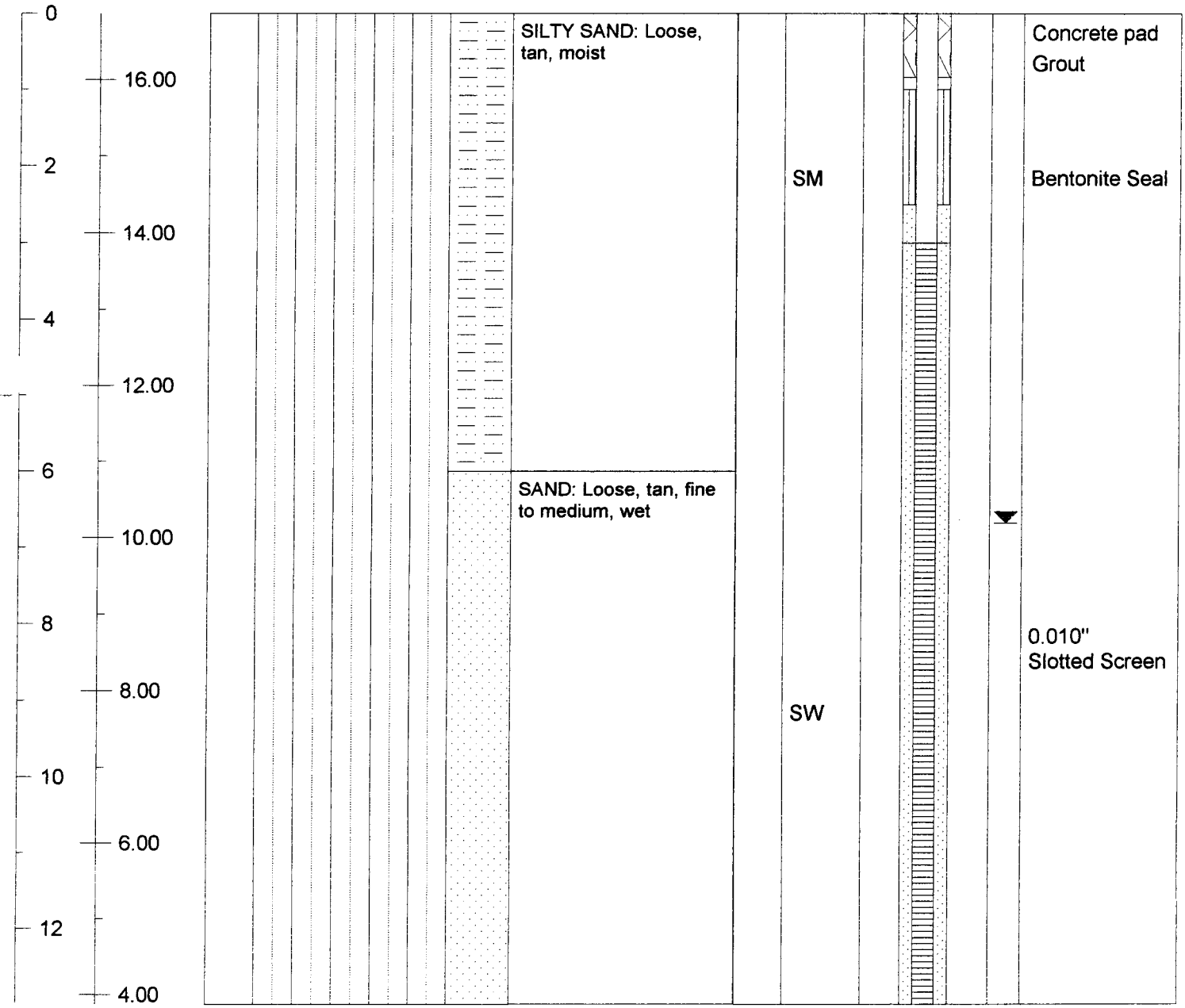
Engineering and Geology

Boring No. MW-6

Client and Project	**C&D Landfill, Inc. (Pitt County)**			Collar Elevation	**16.87**
Equipment	**CME 75**	Drilling Method	**4-1/4" ID HSA**	Water Level, TOB	**NA**
Date Started	**05/03/01**	Date Ended	**05/03/01**	Water Level, 24 Hr.	**NA**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**6.68**
Comments	**Locking cover with 3.16' stickup**	Total Depth	**13.0**	Date of Observation	**5/16/01**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

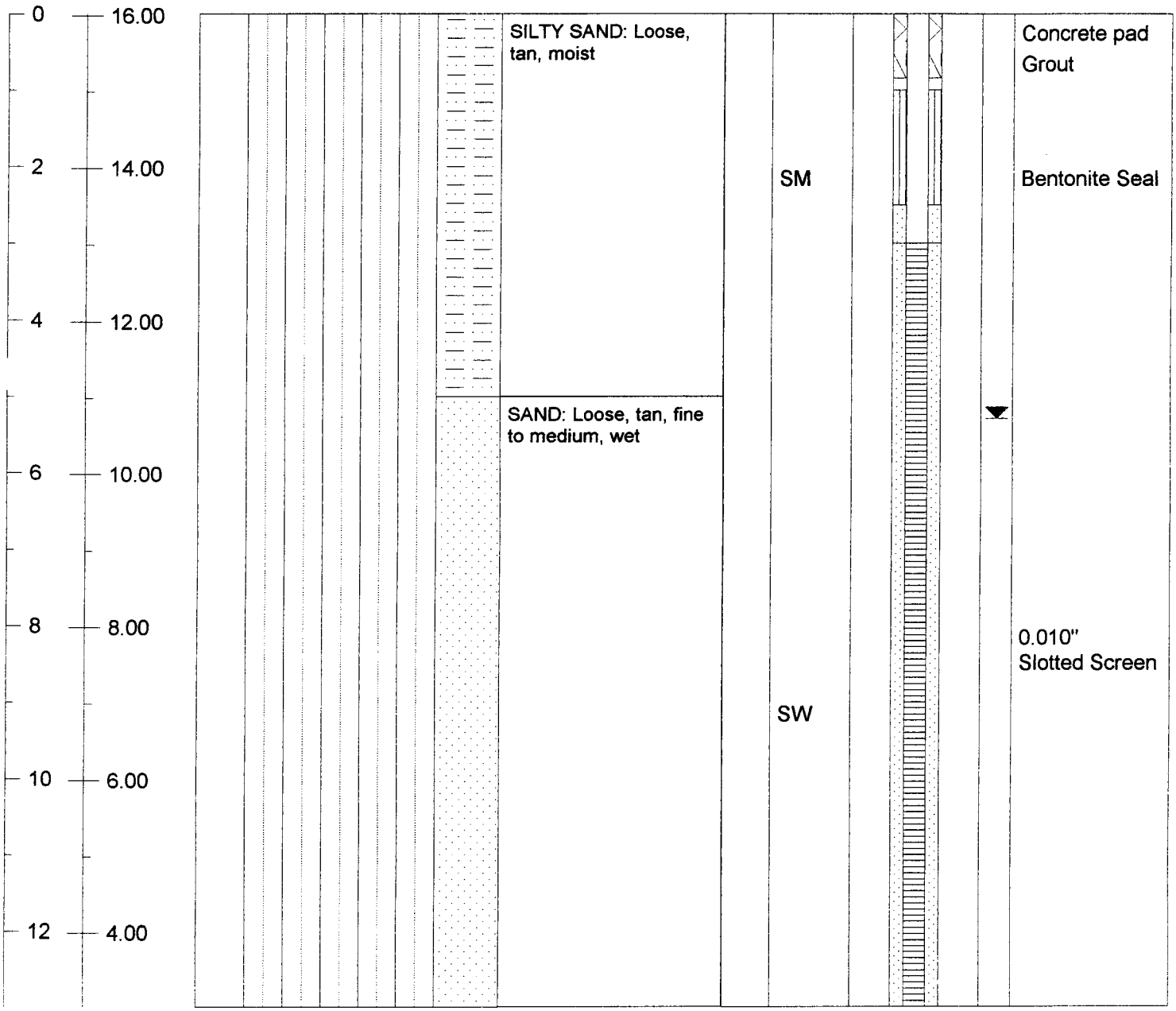
Engineering and Geology

Boring No. MW-7

Client and Project	**C&D Landfill, Inc. (Pitt County)**			Collar Elevation	**16.03**
Equipment	**CME 75**	Drilling Method	**4-1/4" ID HSA**	Water Level, TOB	**NA**
Date Started	**05/03/01**	Date Ended	**05/03/01**	Water Level, 24 Hr.	**NA**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**5.29**
Comments	**Locking cover with 3.37' stickup**	Total Depth	**13.0**	Date of Observation	**5/16/01**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

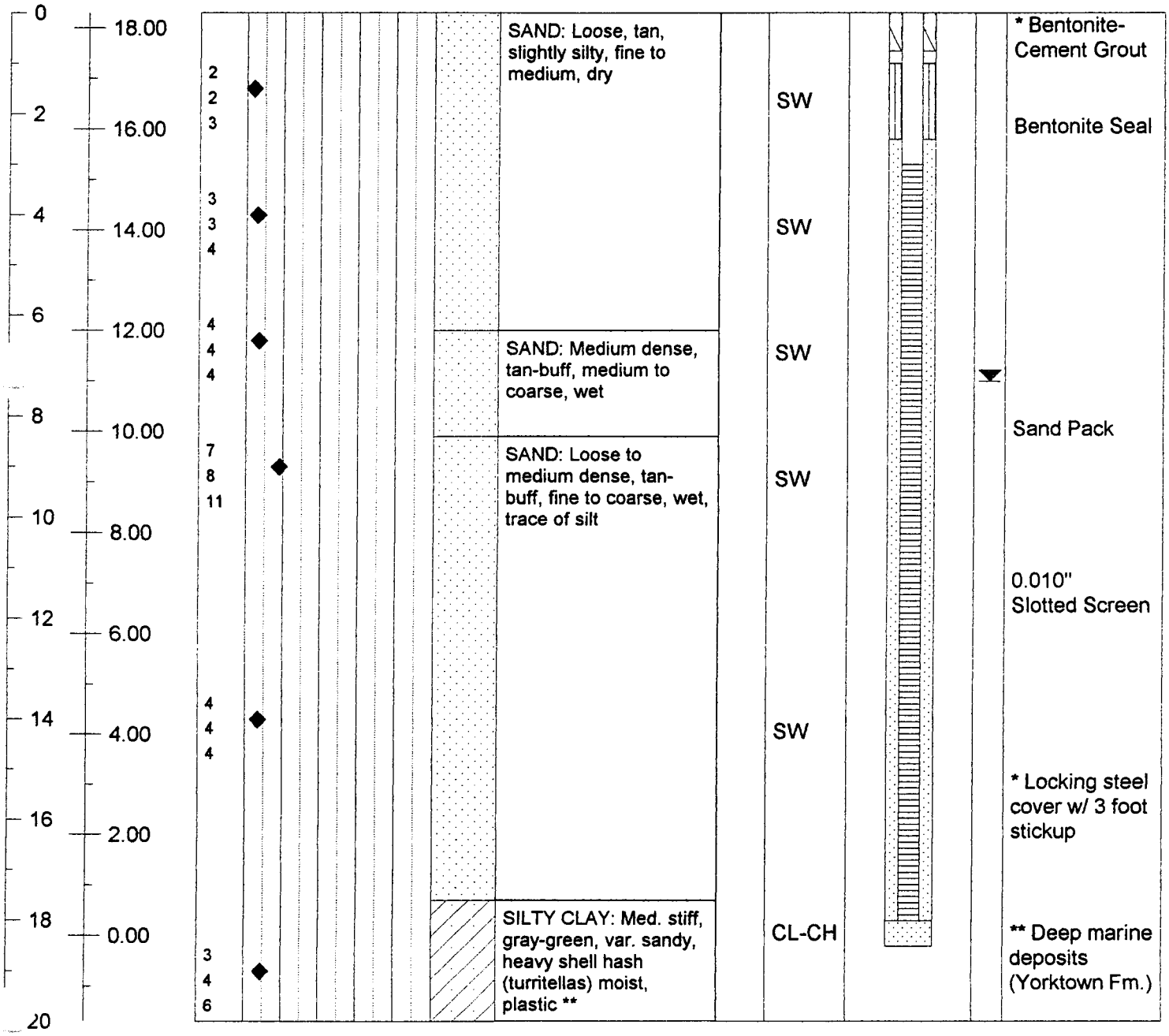
Engineering and Geology

Boring No. MW-8

Client and Project	**C&D Landfill, Inc. (Phase 1)**			Ground Elevation	**18.30**
Equipment	**Mobile B-53 ATV**	Drilling Method	**4-1/4" Hollow Auger**	Water Level, TOB	**7.3**
Date Started	**11/18/02**	Date Ended	**11/18/02**	Water Level, 24 Hr.	**7.3**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**7.3**
Comments	**Wooded area, cool sunny weather**	Total Depth	**20.0**	Date of Observation	**11/27/02**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

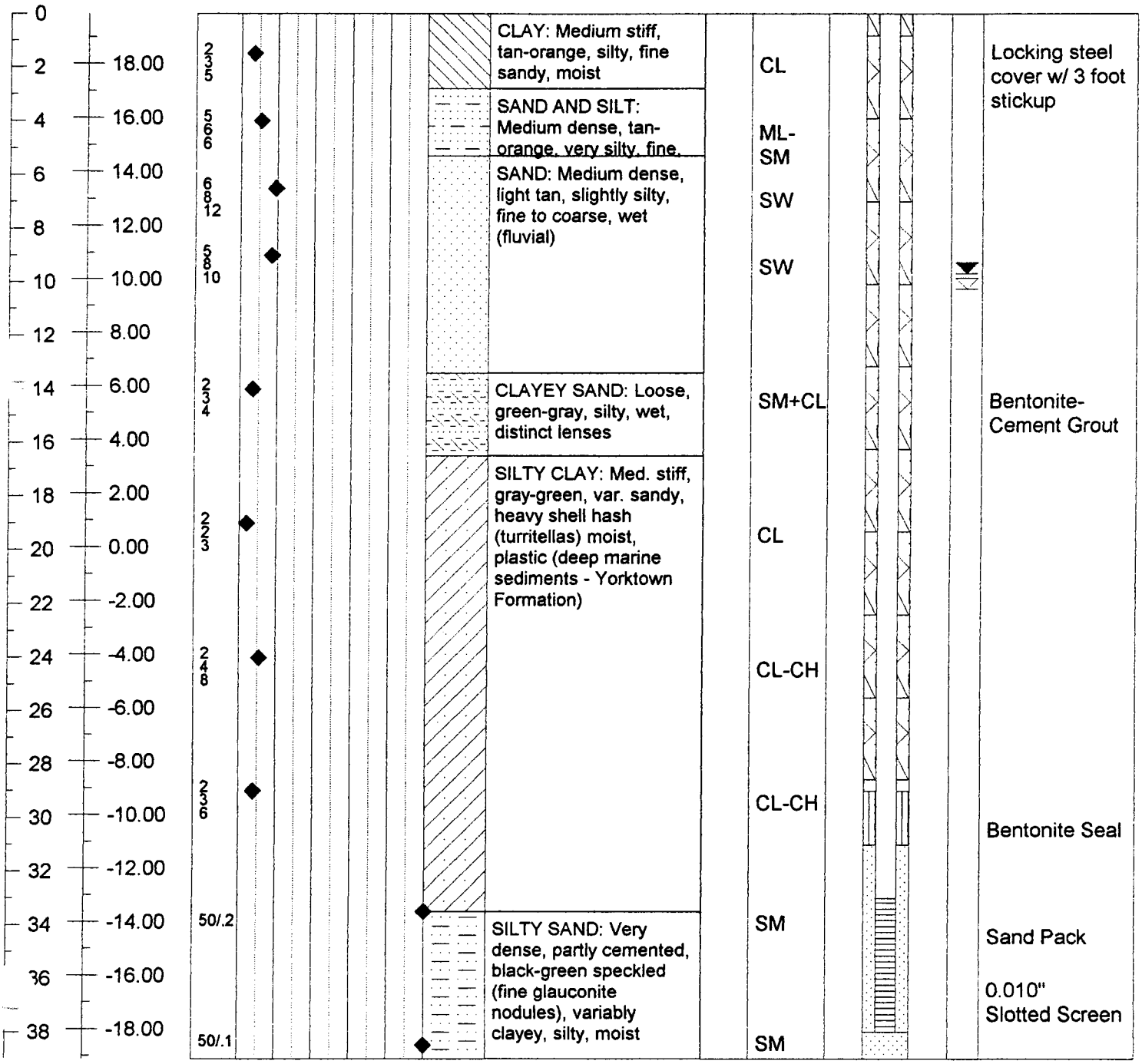
Engineering and Geology

Boring No. MW-9d

Client and Project	**C&D Landfill, Inc. (Phase 1)**			Ground Elevation	**19.88**
Equipment	**Mobile B-53 ATV**	Drilling Method	**4-1/4" Hollow Auger**	Water Level, TOB	**10.3**
Date Started	**11/14/02**	Date Ended	**11/14/02**	Water Level, 24 Hr.	**10.2**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**9.7**
Comments	**Wooded area, cool sunny weather**	Total Depth	**39.0**	Date of Observation	**11/27/02**

All depths are given in feet and referenced b.g.s.

Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data



David Garrett, P.G., P.E.

Engineering and Geology

Boring No. MW-9s

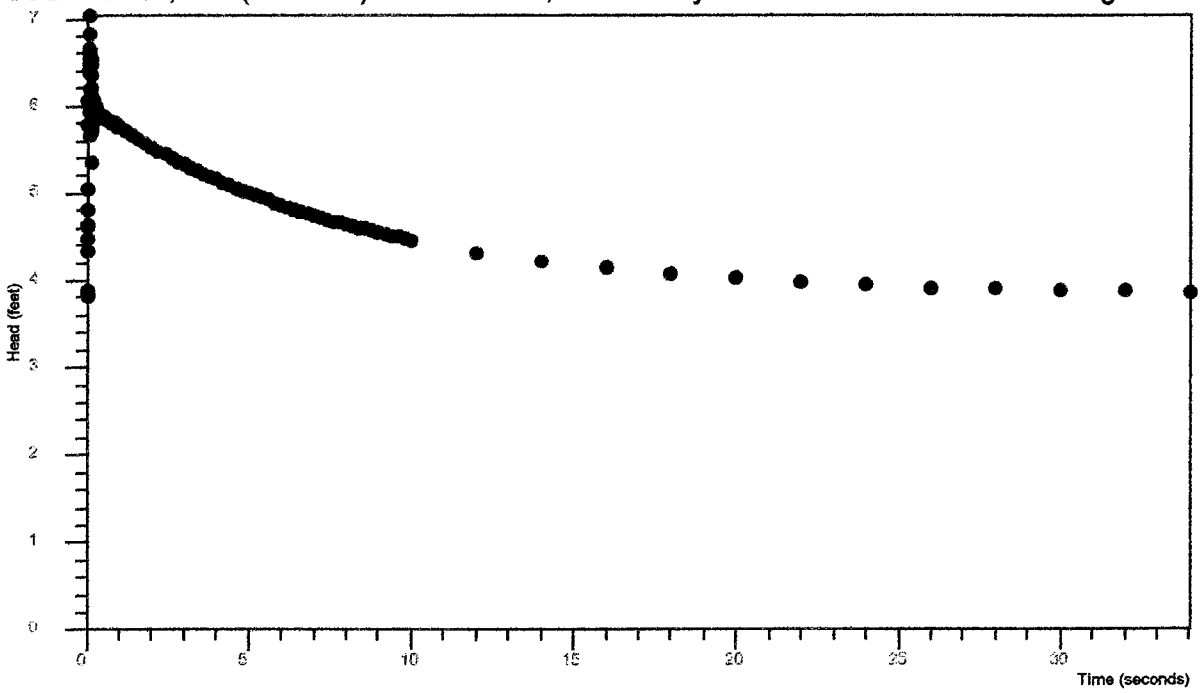
ent and Project	**C&D Landfill, Inc. (Phase 1)**			Ground Elevation	**19.91**
Equipment	**Mobile B-53 ATV**	Drilling Method	**4-1/4" Hollow Auger**	Water Level, TOB	**9.5**
Date Started	**11/19/02**	Date Ended	**11/19/02**	Water Level, 24 Hr.	**9.3**
Drilling Firm	**Bore & Core, Inc.**	Logged by	**David Garrett**	Stabilized Level	**9.1**
Comments	**Wooded area, cool sunny weather**	Total Depth	**18.5**	Date of Observation	**11/27/02**

All depths are given in feet and referenced b.g.s.

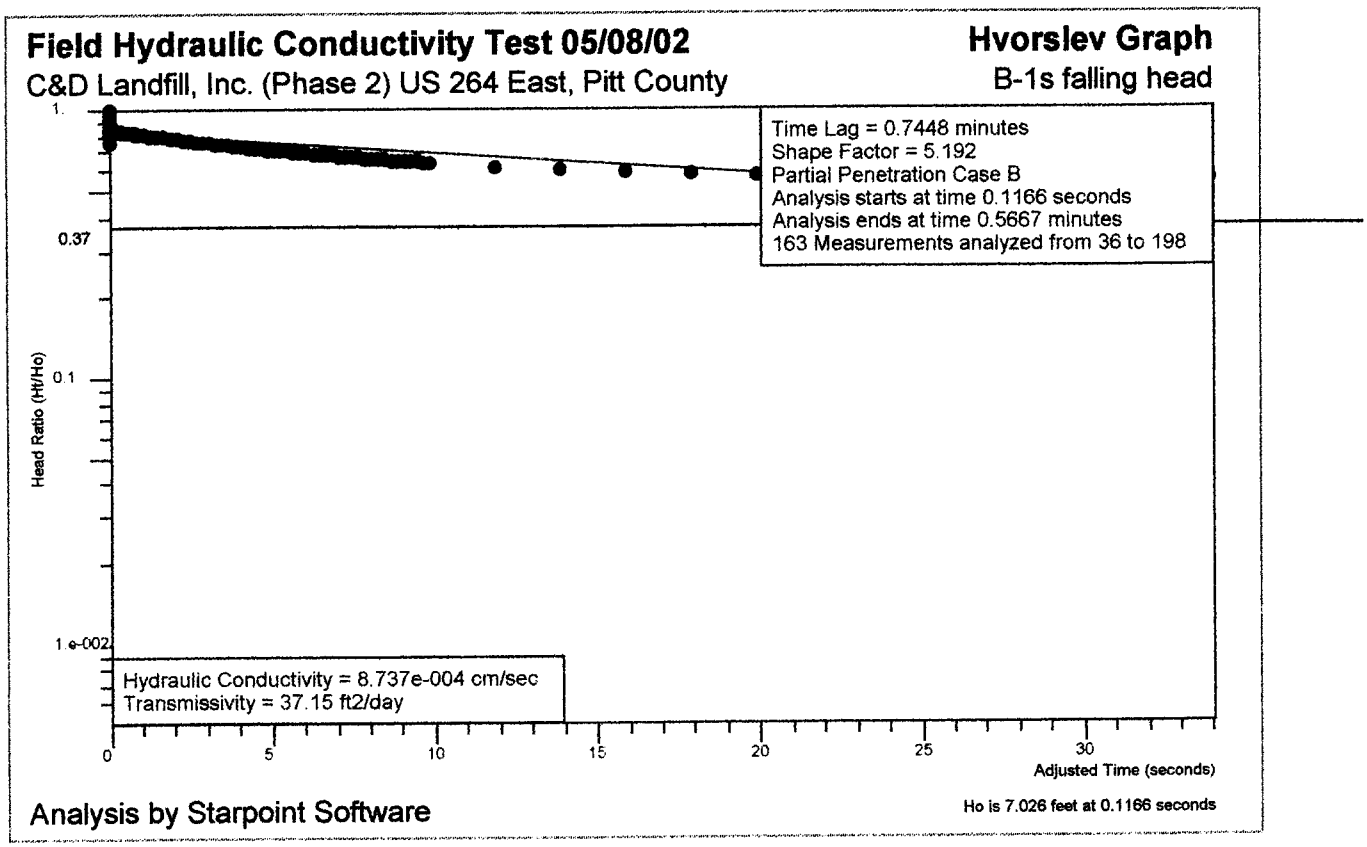
Depth and Elev.	SPT Value and Plot	Soil Description, OVA and USCS Symbol	Piezometer Constuction Data
0		No split spoon samples acquired, see log for MW-9d	* Bentonite-Cement Grout
2 — 18.00			Bentonite Seal
4 — 16.00			
6 — 14.00			
8 — 12.00			Sand Pack
10 — 10.00			
12 — 8.00			0.010" Slotted Screen
14 — 6.00			
16 — 4.00			* Locking steel cover w/ 3 foot stickup
18 — 2.00			

Field Hydraulic Conductivity Test 05/08/02 **Arithmetic Graph**

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County B-1s falling head



Analysis by Starpoint Software

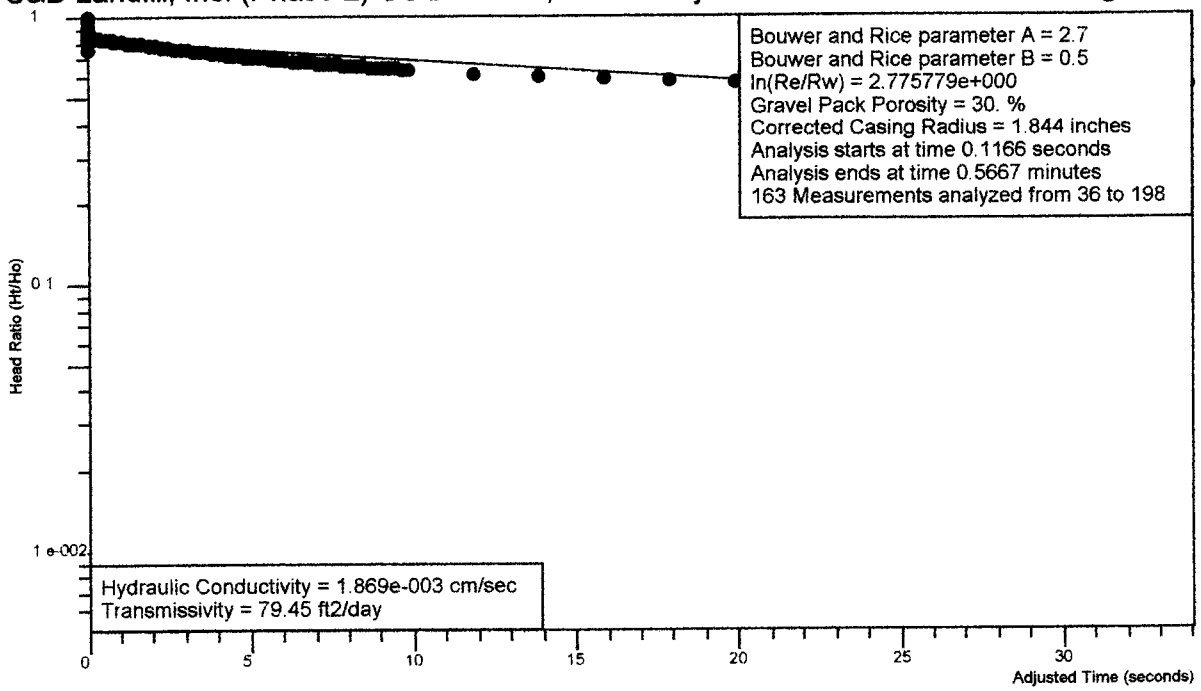

Field Hydraulic Conductivity Test 05/08/02
C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County
Hvorslev Graph
B-1s falling head
Time Lag = 0.7448 minutes
Shape Factor = 5.192
Partial Penetration Case B
Analysis starts at time 0.1166 seconds
Analysis ends at time 0.5667 minutes
163 Measurements analyzed from 36 to 198
Hydraulic Conductivity = 8.737e-004 cm/sec
Transmissivity = 37.15 ft2/day
Head Ratio (Ht/Ho)
1.
0.37
0.1
1.e-002
0
5
10
15
20
25
30
Adjusted Time (seconds)
Analysis by Starpoint Software
Ho is 7.026 feet at 0.1166 seconds

Field Hydraulic Conductivity Test 05/08/02

Bouwer and Rice Graph

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County

B-1s falling head



Analysis by Starpoint Software

Ho is 7.026 feet at 0.1166 seconds

Field Hydraulic Conductivity Test

Site Name:	C&D Landfill, Inc. (Phase 2)
Location:	US 264 East, Pitt County
Test Date:	05/08/02
Import File:	A:\David Garrett - Pitt County\B-1sfh

Well Label:	B-1s falling head
Aquifer Thickness:	15. feet
Screen Length:	10. feet
Casing Radius:	1. inches
Effective Radius:	3. inches
Gravel Pack Porosity:	30. %
Corrected Casing Radius:	1.844 inches
Static Water Level:	3.86 feet
Water Table to Screen Bottom:	13.87 feet
Anisotropy Ratio:	1.
Time Adjustment:	0.1166 Seconds

Test starts with trial 35
There are 198 time and drawdown measurements
Maximum head is 7.026 feet
Minimum head is 0. feet

Trial	Time (seconds)	Adjusted Time (seconds)	Drawdown (feet)	Head (feet)	Head Ratio
1	0.	-0.1166	0.	3.86	0.5494
2	3.3e-003	-0.1133	0.	3.86	0.5494
3	6.6e-003	-0.11	0.	3.86	0.5494
4	1.e-002	-0.1066	2.5e-002	3.835	0.5458
5	1.33e-002	-0.1033	1.8e-002	3.842	0.5468
6	1.66e-002	-1.e-001	3.1e-002	3.829	0.545
7	2.e-002	-9.66e-002	6.e-003	3.854	0.5485
8	2.33e-002	-9.33e-002	-2.5e-002	3.885	0.5529
9	2.66e-002	-9.e-002	-1.8e-002	3.878	0.5519
10	3.e-002	-8.66e-002	1.8e-002	3.842	0.5468
11	3.33e-002	-8.33e-002	1.2e-002	3.848	0.5477
12	3.66e-002	-8.e-002	5.6e-002	3.804	0.5414
13	4.e-002	-7.66e-002	-0.942	4.802	0.6835
14	4.33e-002	-7.33e-002	-0.477	4.337	0.6173
15	4.66e-002	-7.e-002	-0.753	4.613	0.6566
16	5.e-002	-6.66e-002	-0.609	4.469	0.6361
17	5.33e-002	-6.33e-002	-0.791	4.651	0.662
18	5.66e-002	-6.e-002	-1.18	5.04	0.7173
19	6.e-002	-5.66e-002	-1.915	5.775	0.8219
20	6.33e-002	-5.33e-002	-2.211	6.071	0.8641
21	6.66e-002	-5.e-002	-2.072	5.932	0.8443
22	7.e-002	-4.66e-002	-2.324	6.184	0.8802
23	7.33e-002	-4.33e-002	-2.506	6.366	0.9061
24	7.66e-002	-4.e-002	-2.632	6.492	0.924
25	8.e-002	-3.66e-002	-2.795	6.655	0.9472
26	8.33e-002	-3.33e-002	-2.569	6.429	0.915
27	8.66e-002	-3.e-002	-2.701	6.561	0.9338
28	9.e-002	-2.66e-002	-2.801	6.661	0.9481
29	9.33e-002	-2.33e-002	-2.764	6.624	0.9428
30	9.66e-002	-2.e-002	-2.745	6.605	0.9401

31	0.1	-1.66e-002	-2.701	6.561	0.9338
32	0.1033	-1.33e-002	-2.707	6.567	0.9347
33	0.1066	-1.e-002	-2.6	6.46	0.9194
34	0.11	-6.6e-003	-1.802	5.662	0.8059
35	0.1133	-3.3e-003	-2.091	5.951	0.847
36	0.1166	0.	-3.166	7.026	1.
37	0.12	3.4e-003	-2.965	6.825	0.9714
38	0.1233	6.7e-003	-1.808	5.668	0.8067
39	0.1266	1.e-002	-2.192	6.052	0.8614
40	0.13	1.34e-002	-2.676	6.536	0.9303
41	0.1333	1.67e-002	-2.619	6.479	0.9221
42	0.1366	2.e-002	-2.255	6.115	0.8703
43	0.14	2.34e-002	-1.846	5.706	0.8121
44	0.1433	2.67e-002	-1.991	5.851	0.8328
45	0.1466	3.e-002	-2.223	6.083	0.8658
46	0.15	3.34e-002	-2.336	6.196	0.8819
47	0.1533	3.67e-002	-1.846	5.706	0.8121
48	0.1566	4.e-002	-1.494	5.354	0.762
49	0.16	4.34e-002	-2.192	6.052	0.8614
50	0.1633	4.67e-002	-2.493	6.353	0.9042
51	0.1666	5.e-002	-2.116	5.976	0.8506
52	0.17	5.34e-002	-1.896	5.756	0.8192
53	0.1733	5.67e-002	-1.972	5.832	0.8301
54	0.1766	6.e-002	-2.211	6.071	0.8641
55	0.18	6.34e-002	-2.192	6.052	0.8614
56	0.1833	6.67e-002	-2.035	5.895	0.839
57	0.1866	7.e-002	-1.997	5.857	0.8336
58	0.19	7.34e-002	-2.11	5.97	0.8497
59	0.1933	7.67e-002	-2.141	6.001	0.8541
60	0.1966	8.e-002	-2.085	5.945	0.8461
61	0.2	8.34e-002	-2.053	5.913	0.8416
62	0.2033	8.67e-002	-2.079	5.939	0.8453
63	0.2066	9.e-002	-2.104	5.964	0.8488
64	0.21	9.34e-002	-2.091	5.951	0.847
65	0.2133	9.67e-002	-2.072	5.932	0.8443
66	0.2166	0.1	-2.079	5.939	0.8453
67	0.22	0.1034	-2.085	5.945	0.8461
68	0.2233	0.1067	-2.085	5.945	0.8461
69	0.2266	0.11	-2.079	5.939	0.8453
70	0.23	0.1134	-2.066	5.926	0.8434
71	0.2333	0.1167	-2.079	5.939	0.8453
72	0.2366	0.12	-2.079	5.939	0.8453
73	0.24	0.1234	-2.091	5.951	0.847
74	0.2433	0.1267	-2.167	6.027	0.8578
75	0.2466	0.13	-1.959	5.819	0.8282
76	0.25	0.1334	-2.097	5.957	0.8479
77	0.2533	0.1367	-2.204	6.064	0.8631
78	0.2566	0.14	-1.972	5.832	0.8301
79	0.26	0.1434	-2.003	5.863	0.8345
80	0.2633	0.1467	-2.104	5.964	0.8488
81	0.2666	0.15	-2.129	5.989	0.8524
82	0.27	0.1534	-2.06	5.92	0.8426
83	0.2733	0.1567	-2.035	5.895	0.839
84	0.2766	0.16	-2.066	5.926	0.8434

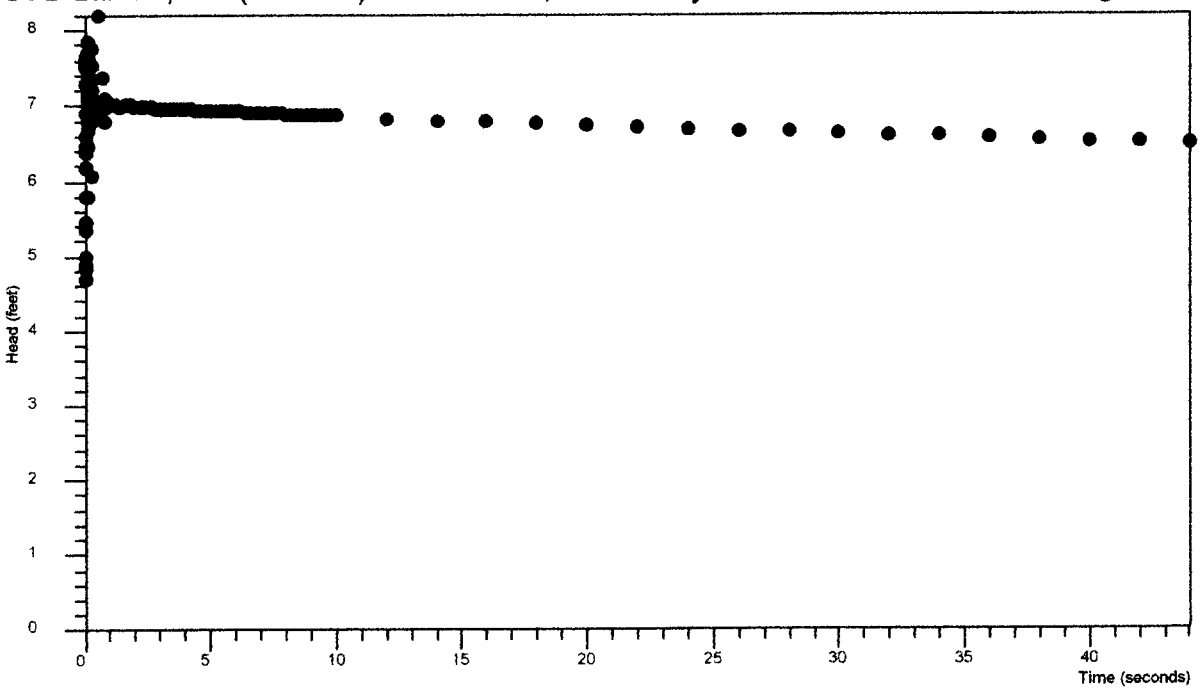
85	0.28	0.1634	-2.091	5.951	0.847
86	0.2833	0.1667	-2.072	5.932	0.8443
87	0.2866	0.17	-2.053	5.913	0.8416
88	0.29	0.1734	-2.06	5.92	0.8426
89	0.2933	0.1767	-2.072	5.932	0.8443
90	0.2966	0.18	-2.072	5.932	0.8443
91	0.3	0.1834	-2.06	5.92	0.8426
92	0.3033	0.1867	-2.06	5.92	0.8426
93	0.3066	0.19	-2.066	5.926	0.8434
94	0.31	0.1934	-2.066	5.926	0.8434
95	0.3133	0.1967	-2.06	5.92	0.8426
96	0.3166	0.2	-2.06	5.92	0.8426
97	0.32	0.2034	-2.06	5.92	0.8426
98	0.3233	0.2067	-2.06	5.92	0.8426
99	0.3266	0.21	-2.06	5.92	0.8426
100	0.33	0.2134	-2.053	5.913	0.8416
101	0.3333	0.2167	-2.06	5.92	0.8426
102	0.35	0.2334	-2.053	5.913	0.8416
103	0.3666	0.25	-2.047	5.907	0.8407
104	0.3833	0.2667	-2.041	5.901	0.8399
105	0.4	0.2834	-2.041	5.901	0.8399
106	0.4166	0.3	-2.035	5.895	0.839
107	0.4333	0.3167	-2.028	5.888	0.838
108	0.45	0.3334	-2.028	5.888	0.838
109	0.4666	0.35	-2.022	5.882	0.8372
110	0.4833	0.3667	-2.016	5.876	0.8363
111	0.5	0.3834	-2.016	5.876	0.8363
112	0.5166	0.4	-2.01	5.87	0.8355
113	0.5333	0.4167	-1.997	5.857	0.8336
114	0.55	0.4334	-2.003	5.863	0.8345
115	0.5666	0.45	-1.997	5.857	0.8336
116	0.5833	0.4667	-1.997	5.857	0.8336
117	0.6	0.4834	-1.991	5.851	0.8328
118	0.6166	0.5	-1.984	5.844	0.8318
119	0.6333	0.5167	-1.997	5.857	0.8336
120	0.65	0.5334	-1.972	5.832	0.8301
121	0.6666	0.55	-1.972	5.832	0.8301
122	0.6833	0.5667	-1.972	5.832	0.8301
123	0.7	0.5834	-1.966	5.826	0.8292
124	0.7166	0.6	-1.966	5.826	0.8292
125	0.7333	0.6167	-1.959	5.819	0.8282
126	0.75	0.6334	-1.953	5.813	0.8274
127	0.7666	0.65	-1.953	5.813	0.8274
128	0.7833	0.6667	-1.947	5.807	0.8265
129	0.8	0.6834	-1.94	5.8	0.8255
130	0.8166	0.7	-1.94	5.8	0.8255
131	0.8333	0.7167	-1.934	5.794	0.8247
132	0.85	0.7334	-1.934	5.794	0.8247
133	0.8666	0.75	-1.928	5.788	0.8238
134	0.8833	0.7667	-1.922	5.782	0.8229
135	0.9	0.7834	-1.915	5.775	0.8219
136	0.9166	0.8	-1.915	5.775	0.8219
137	0.9333	0.8167	-1.909	5.769	0.8211
138	0.95	0.8334	-1.909	5.769	0.8211

139	0.9666	0.85	-1.903	5.763	0.8202
140	0.9833	0.8667	-1.896	5.756	0.8192
141	1.	0.8834	-1.896	5.756	0.8192
142	1.2	1.083	-1.84	5.7	0.8113
143	1.4	1.283	-1.796	5.656	0.805
144	1.6	1.483	-1.752	5.612	0.7987
145	1.8	1.683	-1.708	5.568	0.7925
146	2.	1.883	-1.664	5.524	0.7862
147	2.2	2.083	-1.62	5.48	0.78
148	2.4	2.283	-1.582	5.442	0.7746
149	2.6	2.483	-1.545	5.405	0.7693
150	2.8	2.683	-1.501	5.361	0.763
151	3.	2.883	-1.463	5.323	0.7576
152	3.2	3.083	-1.432	5.292	0.7532
153	3.4	3.283	-1.394	5.254	0.7478
154	3.6	3.483	-1.356	5.216	0.7424
155	3.8	3.683	-1.325	5.185	0.738
156	4.	3.883	-1.293	5.153	0.7334
157	4.2	4.083	-1.256	5.116	0.7282
158	4.4	4.283	-1.224	5.084	0.7236
159	4.6	4.483	-1.193	5.053	0.7192
160	4.8	4.683	-1.168	5.028	0.7156
161	5.	4.883	-1.136	4.996	0.7111
162	5.2	5.083	-1.111	4.971	0.7075
163	5.4	5.283	-1.08	4.94	0.7031
164	5.6	5.483	-1.055	4.915	0.6995
165	5.8	5.683	-1.023	4.883	0.695
166	6.	5.883	-0.998	4.858	0.6914
167	6.2	6.083	-0.973	4.833	0.6879
168	6.4	6.283	-0.948	4.808	0.6843
169	6.6	6.483	-0.929	4.789	0.6816
170	6.8	6.683	-0.904	4.764	0.6781
171	7.	6.883	-0.879	4.739	0.6745
172	7.2	7.083	-0.86	4.72	0.6718
173	7.4	7.283	-0.835	4.695	0.6682
174	7.6	7.483	-0.816	4.676	0.6655
175	7.8	7.683	-0.797	4.657	0.6628
176	8.	7.883	-0.772	4.632	0.6593
177	8.2	8.083	-0.753	4.613	0.6566
178	8.4	8.283	-0.741	4.601	0.6549
179	8.6	8.483	-0.722	4.582	0.6521
180	8.8	8.683	-0.703	4.563	0.6494
181	9.	8.883	-0.684	4.544	0.6467
182	9.2	9.083	-0.665	4.525	0.644
183	9.4	9.283	-0.646	4.506	0.6413
184	9.6	9.483	-0.634	4.494	0.6396
185	9.8	9.683	-0.621	4.481	0.6378
186	10.	9.883	-0.602	4.462	0.6351
187	12.	11.88	-0.458	4.318	0.6146
188	14.	13.88	-0.351	4.211	0.5993
189	16.	15.88	-0.276	4.136	0.5887
190	18.	17.88	-0.213	4.073	0.5797
191	20.	19.88	-0.163	4.023	0.5726
192	22.	21.88	-0.119	3.979	0.5663

193	24.	23.88	-8.1e-002	3.941	0.5609
194	26.	25.88	-5.6e-002	3.916	0.5574
195	28.	27.88	-3.7e-002	3.897	0.5547
196	30.	29.88	-2.5e-002	3.885	0.5529
197	32.	31.88	-1.2e-002	3.872	0.5511
198	34.	33.88	-6.e-003	3.866	0.5502

Field Hydraulic Conductivity Test 05/08/02 **Arithmetic Graph**

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County B-1d falling head



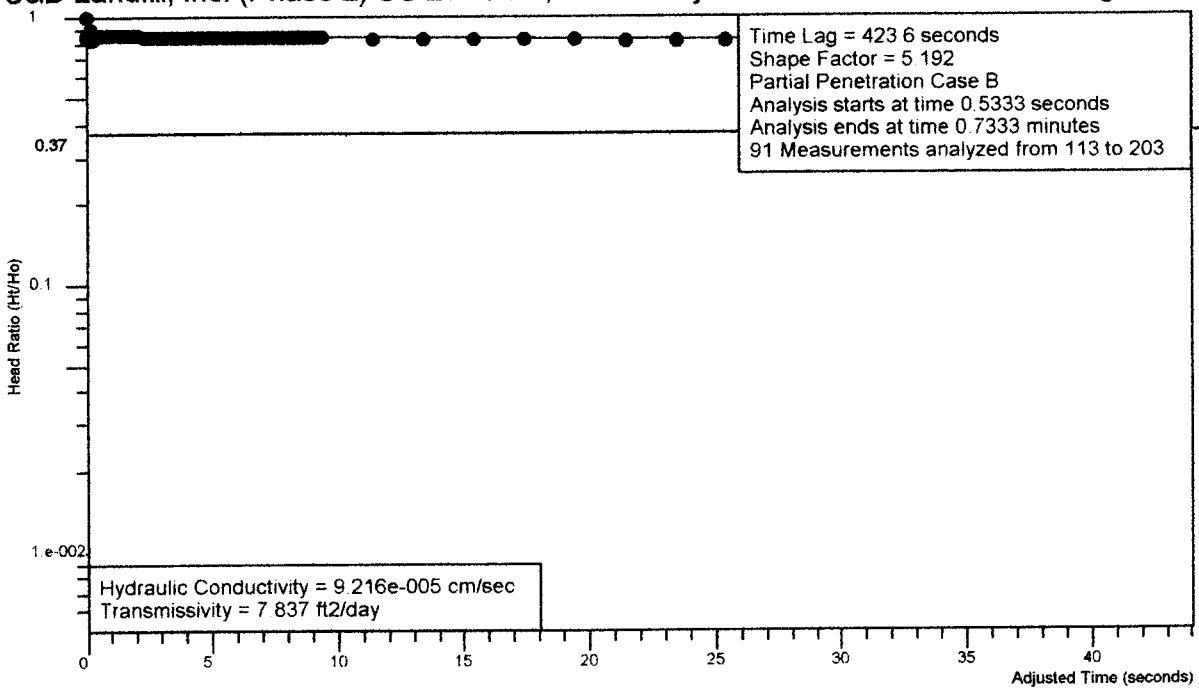
Analysis by Starpoint Software

Field Hydraulic Conductivity Test 05/08/02

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County

Hvorslev Graph

B-1d falling head



Analysis by Starpoint Software

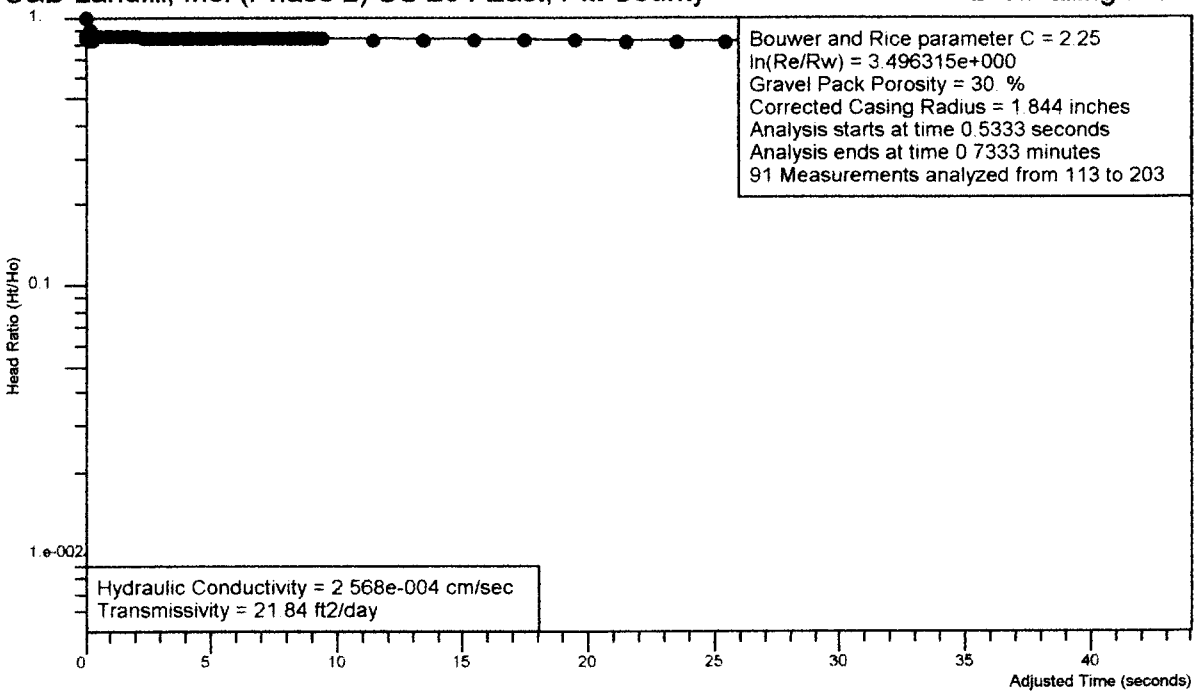
Ho is 8.186 feet at 0.5333 seconds

Field Hydraulic Conductivity Test 05/08/02

Bouwer and Rice Graph

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County

B-1d falling head



Analysis by Starpoint Software

Ho is 8.186 feet at 0.5333 seconds

Field Hydraulic Conductivity Test

Site Name: C&D Landfill, Inc. (Phase 2)
Location: US 264 East, Pitt County
Test Date: 05/08/02
Import File: A:\David Garrett - Pitt County\B-1dfh

Well Label: B-1d falling head
Aquifer Thickness: 30. feet
Screen Length: 10. feet
Casing Radius: 1. inches
Effective Radius: 3. inches
Gravel Pack Porosity: 30. %
Corrected Casing Radius: 1.844 inches
Static Water Level: 4.86 feet
Water Table to Screen Bottom: 63.04 feet
Anisotropy Ratio: 1.
Time Adjustment: 0.5333 Seconds
Test starts with trial 112
There are 203 time and drawdown measurements
Maximum head is 8.186 feet
Minimum head is 0. feet

Trial	Time (seconds)	Adjusted Time (seconds)	Drawdown (feet)	Head (feet)	Head Ratio
1	0.	-0.5333	0.	4.86	0.5937
2	3.3e-003	-0.53	0.	4.86	0.5937
3	6.6e-003	-0.5267	-6.e-003	4.866	0.5944
4	1.e-002	-0.5233	-6.e-003	4.866	0.5944
5	1.33e-002	-0.52	3.7e-002	4.823	0.5892
6	1.66e-002	-0.5167	1.8e-002	4.842	0.5915
7	2.e-002	-0.5133	-1.2e-002	4.872	0.5952
8	2.33e-002	-0.51	-1.8e-002	4.878	0.5959
9	2.66e-002	-0.5067	-6.e-003	4.866	0.5944
10	3.e-002	-0.5033	-0.144	5.004	0.6113
11	3.33e-002	-0.5	-0.484	5.344	0.6528
12	3.66e-002	-0.4967	0.176	4.684	0.5722
13	4.e-002	-0.4933	-0.609	5.469	0.6681
14	4.33e-002	-0.49	-0.924	5.784	0.7066
15	4.66e-002	-0.4867	-1.332	6.192	0.7564
16	5.e-002	-0.4833	-1.559	6.419	0.7841
17	5.33e-002	-0.48	-1.521	6.381	0.7795
18	5.66e-002	-0.4767	-1.603	6.463	0.7895
19	6.e-002	-0.4733	-1.722	6.582	0.8041
20	6.33e-002	-0.47	-2.037	6.897	0.8425
21	6.66e-002	-0.4667	-1.747	6.607	0.8071
22	7.e-002	-0.4633	-2.439	7.299	0.8916
23	7.33e-002	-0.46	-2.659	7.519	0.9185
24	7.66e-002	-0.4567	-2.722	7.582	0.9262
25	8.e-002	-0.4533	-2.798	7.658	0.9355
26	8.33e-002	-0.45	-2.666	7.526	0.9194
27	8.66e-002	-0.4467	-2.684	7.544	0.9216
28	9.e-002	-0.4433	-2.351	7.211	0.8809
29	9.33e-002	-0.44	-2.534	7.394	0.9032
30	9.66e-002	-0.4367	-2.508	7.368	0.9001

31	0.1	-0.4333	-2.697	7.557	0.9232
32	0.1033	-0.43	-2.716	7.576	0.9255
33	0.1066	-0.4267	-2.64	7.5	0.9162
34	0.11	-0.4233	-2.747	7.607	0.9293
35	0.1133	-0.42	-2.791	7.651	0.9346
36	0.1166	-0.4167	-2.829	7.689	0.9393
37	0.12	-0.4133	-2.496	7.356	0.8986
38	0.1233	-0.41	-1.923	6.783	0.8286
39	0.1266	-0.4067	-2.483	7.343	0.897
40	0.13	-0.4033	-2.71	7.57	0.9247
41	0.1333	-0.4	-2.219	7.079	0.8648
42	0.1366	-0.3967	-2.244	7.104	0.8678
43	0.14	-0.3933	-2.496	7.356	0.8986
44	0.1433	-0.39	-0.93	5.79	0.7073
45	0.1466	-0.3867	-2.974	7.834	0.957
46	0.15	-0.3833	-1.609	6.469	0.7903
47	0.1533	-0.38	-2.458	7.318	0.894
48	0.1566	-0.3767	-2.062	6.922	0.8456
49	0.16	-0.3733	-2.2	7.06	0.8624
50	0.1633	-0.37	-2.288	7.148	0.8732
51	0.1666	-0.3667	-1.81	6.67	0.8148
52	0.17	-0.3633	-2.144	7.004	0.8556
53	0.1733	-0.36	-2.263	7.123	0.8701
54	0.1766	-0.3567	-2.074	6.934	0.8471
55	0.18	-0.3533	-2.206	7.066	0.8632
56	0.1833	-0.35	-2.156	7.016	0.8571
57	0.1866	-0.3467	-2.169	7.029	0.8587
58	0.19	-0.3433	-2.162	7.022	0.8578
59	0.1933	-0.34	-2.169	7.029	0.8587
60	0.1966	-0.3367	-2.162	7.022	0.8578
61	0.2	-0.3333	-2.156	7.016	0.8571
62	0.2033	-0.33	-2.169	7.029	0.8587
63	0.2066	-0.3267	-2.169	7.029	0.8587
64	0.21	-0.3233	-2.162	7.022	0.8578
65	0.2133	-0.32	-2.162	7.022	0.8578
66	0.2166	-0.3167	-2.162	7.022	0.8578
67	0.22	-0.3133	-2.162	7.022	0.8578
68	0.2233	-0.31	-2.162	7.022	0.8578
69	0.2266	-0.3067	-2.162	7.022	0.8578
70	0.23	-0.3033	-2.162	7.022	0.8578
71	0.2333	-0.3	-2.162	7.022	0.8578
72	0.2366	-0.2967	-2.162	7.022	0.8578
73	0.24	-0.2933	-2.162	7.022	0.8578
74	0.2433	-0.29	-2.162	7.022	0.8578
75	0.2466	-0.2867	-2.162	7.022	0.8578
76	0.25	-0.2833	-2.162	7.022	0.8578
77	0.2533	-0.28	-2.162	7.022	0.8578
78	0.2566	-0.2767	-2.162	7.022	0.8578
79	0.26	-0.2733	-2.162	7.022	0.8578
80	0.2633	-0.27	-2.483	7.343	0.897
81	0.2666	-0.2667	-2.911	7.771	0.9493
82	0.27	-0.2633	-2.345	7.205	0.8802
83	0.2733	-0.26	-1.2	6.06	0.7403
84	0.2766	-0.2567	-2.666	7.526	0.9194

85	0.28	-0.2533	-1.936	6.796	0.8302
86	0.2833	-0.25	-2.244	7.104	0.8678
87	0.2866	-0.2467	-2.068	6.928	0.8463
88	0.29	-0.2433	-2.232	7.092	0.8664
89	0.2933	-0.24	-2.106	6.966	0.851
90	0.2966	-0.2367	-2.206	7.066	0.8632
91	0.3	-0.2333	-2.131	6.991	0.854
92	0.3033	-0.23	-2.169	7.029	0.8587
93	0.3066	-0.2267	-2.162	7.022	0.8578
94	0.31	-0.2233	-2.156	7.016	0.8571
95	0.3133	-0.22	-2.162	7.022	0.8578
96	0.3166	-0.2167	-2.162	7.022	0.8578
97	0.32	-0.2133	-2.162	7.022	0.8578
98	0.3233	-0.21	-2.162	7.022	0.8578
99	0.3266	-0.2067	-2.162	7.022	0.8578
100	0.33	-0.2033	-2.162	7.022	0.8578
101	0.3333	-0.2	-2.162	7.022	0.8578
102	0.35	-0.1833	-2.162	7.022	0.8578
103	0.3666	-0.1667	-2.156	7.016	0.8571
104	0.3833	-0.15	-2.156	7.016	0.8571
105	0.4	-0.1333	-2.156	7.016	0.8571
106	0.4166	-0.1167	-2.156	7.016	0.8571
107	0.4333	-1.e-001	-2.156	7.016	0.8571
108	0.45	-8.33e-002	-2.156	7.016	0.8571
109	0.4666	-6.67e-002	-2.156	7.016	0.8571
110	0.4833	-5.e-002	-2.156	7.016	0.8571
111	0.5	-3.33e-002	-2.156	7.016	0.8571
112	0.5166	-1.67e-002	-2.156	7.016	0.8571
113	0.5333	0.	-3.326	8.186	1.
114	0.55	1.67e-002	-2.005	6.865	0.8386
115	0.5666	3.33e-002	-2.156	7.016	0.8571
116	0.5833	5.e-002	-2.156	7.016	0.8571
117	0.6	6.67e-002	-2.15	7.01	0.8563
118	0.6166	8.33e-002	-2.15	7.01	0.8563
119	0.6333	1.e-001	-2.15	7.01	0.8563
120	0.65	0.1167	-2.15	7.01	0.8563
121	0.6666	0.1333	-2.15	7.01	0.8563
122	0.6833	0.15	-2.15	7.01	0.8563
123	0.7	0.1667	-2.15	7.01	0.8563
124	0.7166	0.1833	-2.15	7.01	0.8563
125	0.7333	0.2	-2.137	6.997	0.8548
126	0.75	0.2167	-2.515	7.375	0.9009
127	0.7666	0.2333	-2.232	7.092	0.8664
128	0.7833	0.25	-1.936	6.796	0.8302
129	0.8	0.2667	-1.93	6.79	0.8295
130	0.8166	0.2833	-2.118	6.978	0.8524
131	0.8333	0.3	-2.144	7.004	0.8556
132	0.85	0.3167	-2.206	7.066	0.8632
133	0.8666	0.3333	-2.15	7.01	0.8563
134	0.8833	0.35	-2.144	7.004	0.8556
135	0.9	0.3667	-2.144	7.004	0.8556
136	0.9166	0.3833	-2.144	7.004	0.8556
137	0.9333	0.4	-2.144	7.004	0.8556
138	0.95	0.4167	-2.144	7.004	0.8556

139	0.9666	0.4333	-2.144	7.004	0.8556
140	0.9833	0.45	-2.137	6.997	0.8548
141	1.	0.4667	-2.137	6.997	0.8548
142	1.2	0.6667	-2.137	6.997	0.8548
143	1.4	0.8667	-2.131	6.991	0.854
144	1.6	1.067	-2.137	6.997	0.8548
145	1.8	1.267	-2.15	7.01	0.8563
146	2.	1.467	-2.125	6.985	0.8533
147	2.2	1.667	-2.118	6.978	0.8524
148	2.4	1.867	-2.118	6.978	0.8524
149	2.6	2.067	-2.112	6.972	0.8517
150	2.8	2.267	-2.106	6.966	0.851
151	3.	2.467	-2.106	6.966	0.851
152	3.2	2.667	-2.1	6.96	0.8502
153	3.4	2.867	-2.1	6.96	0.8502
154	3.6	3.067	-2.093	6.953	0.8494
155	3.8	3.267	-2.093	6.953	0.8494
156	4.	3.467	-2.087	6.947	0.8486
157	4.2	3.667	-2.087	6.947	0.8486
158	4.4	3.867	-2.081	6.941	0.8479
159	4.6	4.067	-2.081	6.941	0.8479
160	4.8	4.267	-2.074	6.934	0.8471
161	5.	4.467	-2.074	6.934	0.8471
162	5.2	4.667	-2.068	6.928	0.8463
163	5.4	4.867	-2.068	6.928	0.8463
164	5.6	5.067	-2.068	6.928	0.8463
165	5.8	5.267	-2.062	6.922	0.8456
166	6.	5.467	-2.056	6.916	0.8449
167	6.2	5.667	-2.056	6.916	0.8449
168	6.4	5.867	-2.049	6.909	0.844
169	6.6	6.067	-2.049	6.909	0.844
170	6.8	6.267	-2.043	6.903	0.8433
171	7.	6.467	-2.043	6.903	0.8433
172	7.2	6.667	-2.037	6.897	0.8425
173	7.4	6.867	-2.037	6.897	0.8425
174	7.6	7.067	-2.037	6.897	0.8425
175	7.8	7.267	-2.03	6.89	0.8417
176	8.	7.467	-2.024	6.884	0.8409
177	8.2	7.667	-2.024	6.884	0.8409
178	8.4	7.867	-2.024	6.884	0.8409
179	8.6	8.067	-2.018	6.878	0.8402
180	8.8	8.267	-2.018	6.878	0.8402
181	9.	8.467	-2.012	6.872	0.8395
182	9.2	8.667	-2.012	6.872	0.8395
183	9.4	8.867	-2.005	6.865	0.8386
184	9.6	9.067	-2.005	6.865	0.8386
185	9.8	9.267	-2.005	6.865	0.8386
186	10.	9.467	-1.999	6.859	0.8379
187	12.	11.47	-1.967	6.827	0.834
188	14.	13.47	-1.942	6.802	0.8309
189	16.	15.47	-1.917	6.777	0.8279
190	18.	17.47	-1.892	6.752	0.8248
191	20.	19.47	-1.867	6.727	0.8218
192	22.	21.47	-1.848	6.708	0.8194

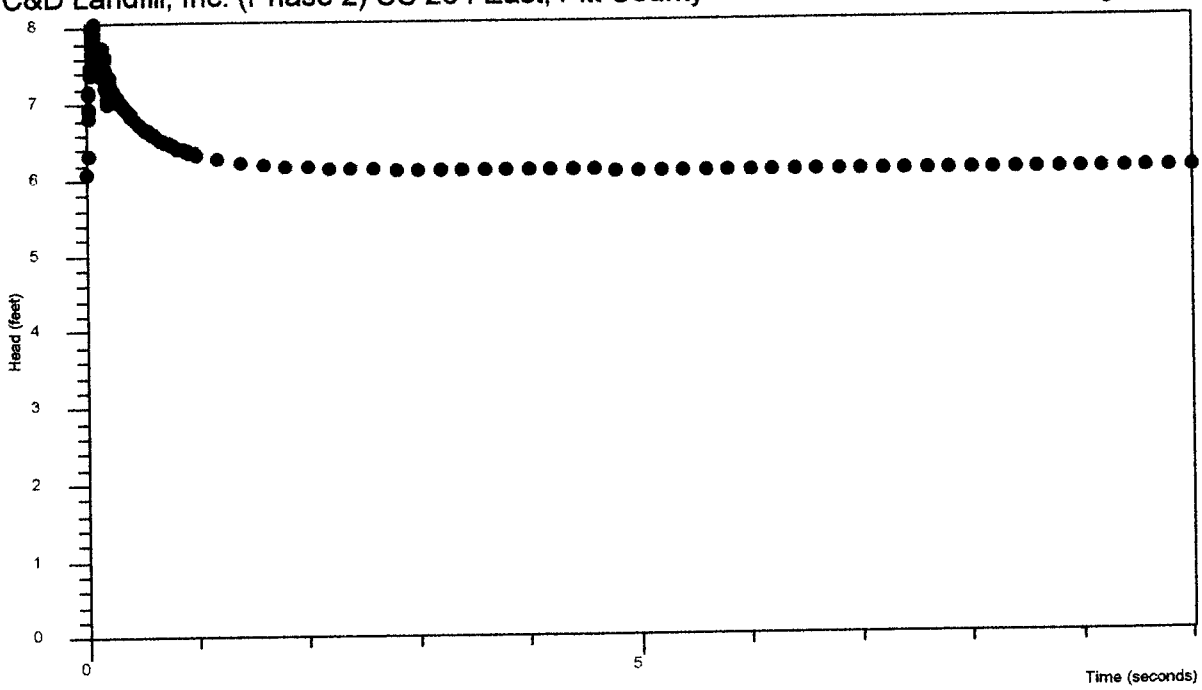
193	24.	23.47	-1.823	6.683	0.8164
194	26.	25.47	-1.804	6.664	0.8141
195	28.	27.47	-1.791	6.651	0.8125
196	30.	29.47	-1.766	6.626	0.8094
197	32.	31.47	-1.747	6.607	0.8071
198	34.	33.47	-1.722	6.582	0.8041
199	36.	35.47	-1.697	6.557	0.801
200	38.	37.47	-1.678	6.538	0.7987
201	40.	39.47	-1.666	6.526	0.7972
202	42.	41.47	-1.64	6.5	0.794
203	44.	43.47	-1.622	6.482	0.7918

Field Hydraulic Conductivity Test 05/08/02

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County

Arithmetic Graph

B-2 falling head



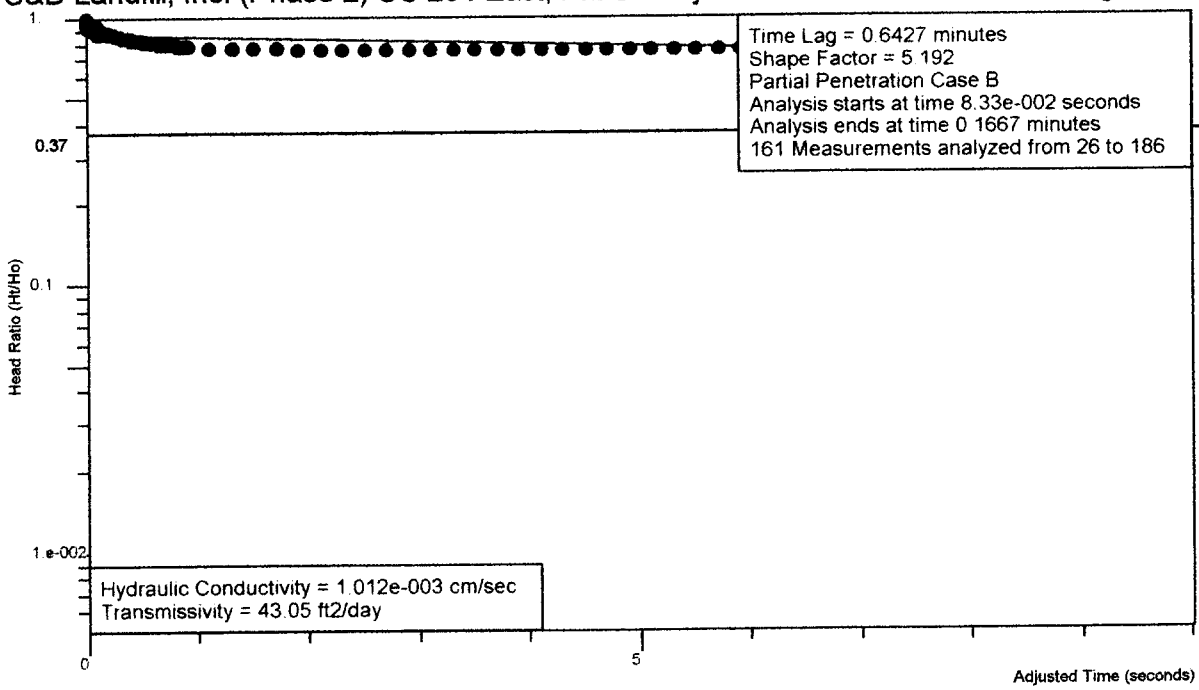
Analysis by Starpoint Software

Field Hydraulic Conductivity Test 05/08/02

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County

Hvorslev Graph

B-2 falling head



Analysis by Starpoint Software

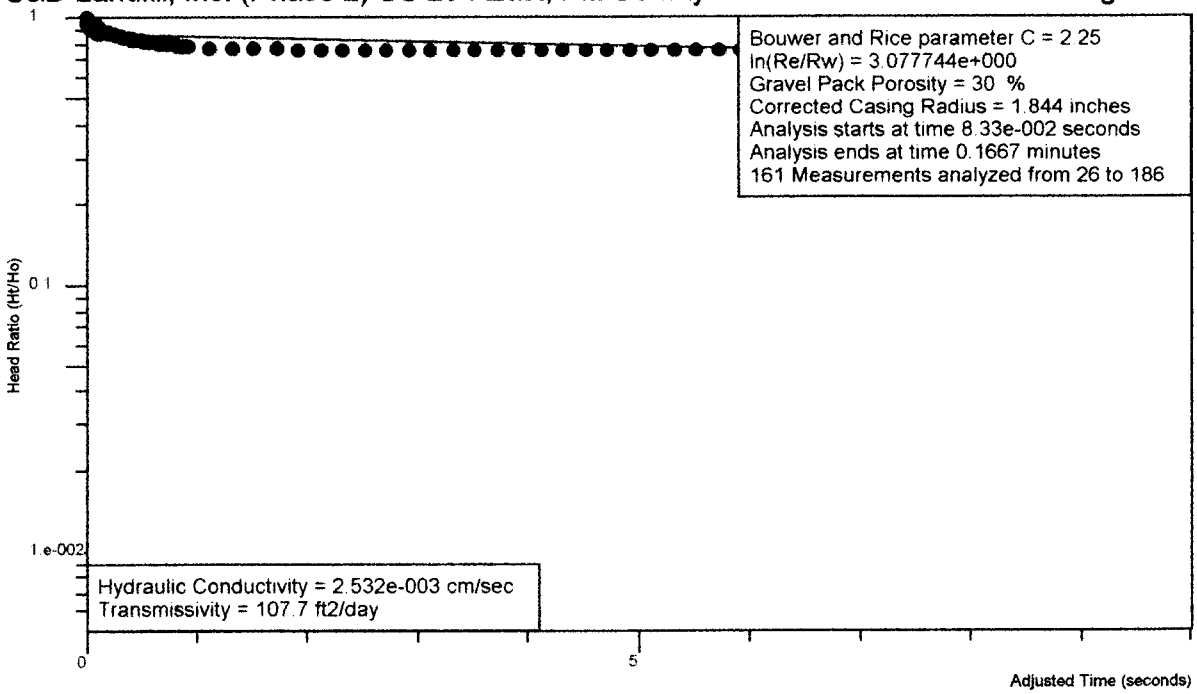
Ho is 8.052 feet at 8.33e-002 seconds

Field Hydraulic Conductivity Test 05/08/02

Bouwer and Rice Graph

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County

B-2 falling head



Analysis by Starpoint Software

Ho is 8.052 feet at 8.33e-002 seconds

Field Hydraulic Conductivity Test

Site Name:	C&D Landfill, Inc. (Phase 2)
Location:	US 264 East, Pitt County
Test Date:	05/08/02
Import File:	A:\David Garrett - Pitt County\B-2fh

Well Label:	B-2 falling head
Aquifer Thickness:	15. feet
Screen Length:	10. feet
Casing Radius:	1. inches
Effective Radius:	3. inches
Gravel Pack Porosity:	30. %
Corrected Casing Radius:	1.844 inches
Static Water Level:	6.08 feet
Water Table to Screen Bottom:	18. feet
Anisotropy Ratio:	1.
Time Adjustment:	8.33e-002 Seconds

Test starts with trial 25
There are 186 time and drawdown measurements
Maximum head is 8.052 feet
Minimum head is 0. feet

Trial	Time (seconds)	Adjusted Time (seconds)	Drawdown (feet)	Head (feet)	Head Ratio
1	0.	-8.33e-002	0.	6.08	0.7551
2	3.3e-003	-8.e-002	0.	6.08	0.7551
3	6.6e-003	-7.67e-002	-6.e-003	6.086	0.7558
4	1.e-002	-7.33e-002	0.	6.08	0.7551
5	1.33e-002	-7.e-002	6.e-003	6.074	0.7543
6	1.66e-002	-6.67e-002	0.	6.08	0.7551
7	2.e-002	-6.33e-002	-0.257	6.337	0.787
8	2.33e-002	-6.e-002	-0.728	6.808	0.8455
9	2.66e-002	-5.67e-002	-0.835	6.915	0.8588
10	3.e-002	-5.33e-002	-1.055	7.135	0.8861
11	3.33e-002	-5.e-002	-0.86	6.94	0.8619
12	3.66e-002	-4.67e-002	-1.086	7.166	0.89
13	4.e-002	-4.33e-002	-1.312	7.392	0.918
14	4.33e-002	-4.e-002	-1.394	7.474	0.9282
15	4.66e-002	-3.67e-002	-1.35	7.43	0.9228
16	5.e-002	-3.33e-002	-1.362	7.442	0.9242
17	5.33e-002	-3.e-002	-1.381	7.461	0.9266
18	5.66e-002	-2.67e-002	-1.419	7.499	0.9313
19	6.e-002	-2.33e-002	-1.419	7.499	0.9313
20	6.33e-002	-2.e-002	-1.469	7.549	0.9375
21	6.66e-002	-1.67e-002	-1.526	7.606	0.9446
22	7.e-002	-1.33e-002	-1.519	7.599	0.9437
23	7.33e-002	-1.e-002	-1.695	7.775	0.9656
24	7.66e-002	-6.7e-003	-1.858	7.938	0.9858
25	8.e-002	-3.3e-003	-1.959	8.039	0.9984
26	8.33e-002	0.	-1.972	8.052	1.
27	8.66e-002	3.3e-003	-1.953	8.033	0.9976
28	9.e-002	6.7e-003	-1.928	8.008	0.9945
29	9.33e-002	1.e-002	-1.733	7.813	0.9703
30	9.66e-002	1.33e-002	-1.614	7.694	0.9555

31	0.1	1.67e-002	-1.607	7.687	0.9547
32	0.1033	2.e-002	-1.657	7.737	0.9609
33	0.1066	2.33e-002	-1.657	7.737	0.9609
34	0.11	2.67e-002	-1.488	7.568	0.9399
35	0.1133	3.e-002	-1.557	7.637	0.9485
36	0.1166	3.33e-002	-1.406	7.486	0.9297
37	0.12	3.67e-002	-1.381	7.461	0.9266
38	0.1233	4.e-002	-1.318	7.398	0.9188
39	0.1266	4.33e-002	-1.419	7.499	0.9313
40	0.13	4.67e-002	-1.519	7.599	0.9437
41	0.1333	5.e-002	-1.318	7.398	0.9188
42	0.1366	5.33e-002	-1.431	7.511	0.9328
43	0.14	5.67e-002	-1.431	7.511	0.9328
44	0.1433	6.e-002	-1.419	7.499	0.9313
45	0.1466	6.33e-002	-1.394	7.474	0.9282
46	0.15	6.67e-002	-1.381	7.461	0.9266
47	0.1533	7.e-002	-1.362	7.442	0.9242
48	0.1566	7.33e-002	-1.369	7.449	0.9251
49	0.16	7.67e-002	-1.563	7.643	0.9492
50	0.1633	8.e-002	-1.664	7.744	0.9617
51	0.1666	8.33e-002	-1.331	7.411	0.9204
52	0.17	8.67e-002	-1.287	7.367	0.9149
53	0.1733	9.e-002	-1.375	7.455	0.9259
54	0.1766	9.33e-002	-1.513	7.593	0.943
55	0.18	9.67e-002	-1.155	7.235	0.8985
56	0.1833	1.e-001	-1.287	7.367	0.9149
57	0.1866	0.1033	-1.551	7.631	0.9477
58	0.19	0.1067	-1.293	7.373	0.9157
59	0.1933	0.11	-0.973	7.053	0.8759
60	0.1966	0.1133	-1.086	7.166	0.89
61	0.2	0.1167	-0.935	7.015	0.8712
62	0.2033	0.12	-1.224	7.304	0.9071
63	0.2066	0.1233	-1.212	7.292	0.9056
64	0.21	0.1267	-1.268	7.348	0.9126
65	0.2133	0.13	-1.237	7.317	0.9087
66	0.2166	0.1333	-1.142	7.222	0.8969
67	0.22	0.1367	-1.142	7.222	0.8969
68	0.2233	0.14	-1.155	7.235	0.8985
69	0.2266	0.1433	-1.161	7.241	0.8993
70	0.23	0.1467	-1.149	7.229	0.8978
71	0.2333	0.15	-1.13	7.21	0.8954
72	0.2366	0.1533	-1.117	7.197	0.8938
73	0.24	0.1567	-1.111	7.191	0.8931
74	0.2433	0.16	-1.105	7.185	0.8923
75	0.2466	0.1633	-1.098	7.178	0.8915
76	0.25	0.1667	-1.092	7.172	0.8907
77	0.2533	0.17	-1.08	7.16	0.8892
78	0.2566	0.1733	-1.073	7.153	0.8884
79	0.26	0.1767	-1.067	7.147	0.8876
80	0.2633	0.18	-1.055	7.135	0.8861
81	0.2666	0.1833	-1.048	7.128	0.8852
82	0.27	0.1867	-1.042	7.122	0.8845
83	0.2733	0.19	-1.036	7.116	0.8838
84	0.2766	0.1933	-1.029	7.109	0.8829

85	0.28	0.1967	-1.017	7.097	0.8814
86	0.2833	0.2	-1.011	7.091	0.8807
87	0.2866	0.2033	-0.998	7.078	0.879
88	0.29	0.2067	-0.998	7.078	0.879
89	0.2933	0.21	-0.992	7.072	0.8783
90	0.2966	0.2133	-0.985	7.065	0.8774
91	0.3	0.2167	-0.973	7.053	0.8759
92	0.3033	0.22	-0.967	7.047	0.8752
93	0.3066	0.2233	-0.96	7.04	0.8743
94	0.31	0.2267	-0.954	7.034	0.8736
95	0.3133	0.23	-0.948	7.028	0.8728
96	0.3166	0.2333	-0.941	7.021	0.872
97	0.32	0.2367	-0.935	7.015	0.8712
98	0.3233	0.24	-0.923	7.003	0.8697
99	0.3266	0.2433	-0.923	7.003	0.8697
100	0.33	0.2467	-0.916	6.996	0.8689
101	0.3333	0.25	-0.91	6.99	0.8681
102	0.35	0.2667	-0.872	6.952	0.8634
103	0.3666	0.2833	-0.841	6.921	0.8595
104	0.3833	0.3	-0.816	6.896	0.8564
105	0.4	0.3167	-0.778	6.858	0.8517
106	0.4166	0.3333	-0.753	6.833	0.8486
107	0.4333	0.35	-0.728	6.808	0.8455
108	0.45	0.3667	-0.703	6.783	0.8424
109	0.4666	0.3833	-0.678	6.758	0.8393
110	0.4833	0.4	-0.659	6.739	0.8369
111	0.5	0.4167	-0.634	6.714	0.8338
112	0.5166	0.4333	-0.602	6.682	0.8299
113	0.5333	0.45	-0.602	6.682	0.8299
114	0.55	0.4667	-0.577	6.657	0.8268
115	0.5666	0.4833	-0.558	6.638	0.8244
116	0.5833	0.5	-0.54	6.62	0.8222
117	0.6	0.5167	-0.527	6.607	0.8205
118	0.6166	0.5333	-0.508	6.588	0.8182
119	0.6333	0.55	-0.489	6.569	0.8158
120	0.65	0.5667	-0.47	6.55	0.8135
121	0.6666	0.5833	-0.458	6.538	0.812
122	0.6833	0.6	-0.445	6.525	0.8104
123	0.7	0.6167	-0.433	6.513	0.8089
124	0.7166	0.6333	-0.42	6.5	0.8073
125	0.7333	0.65	-0.408	6.488	0.8058
126	0.75	0.6667	-0.395	6.475	0.8041
127	0.7666	0.6833	-0.383	6.463	0.8027
128	0.7833	0.7	-0.37	6.45	0.801
129	0.8	0.7167	-0.364	6.444	0.8003
130	0.8166	0.7333	-0.351	6.431	0.7987
131	0.8333	0.75	-0.339	6.419	0.7972
132	0.85	0.7667	-0.332	6.412	0.7963
133	0.8666	0.7833	-0.32	6.4	0.7948
134	0.8833	0.8	-0.313	6.393	0.794
135	0.9	0.8167	-0.301	6.381	0.7925
136	0.9166	0.8333	-0.295	6.375	0.7917
137	0.9333	0.85	-0.288	6.368	0.7909
138	0.95	0.8667	-0.282	6.362	0.7901

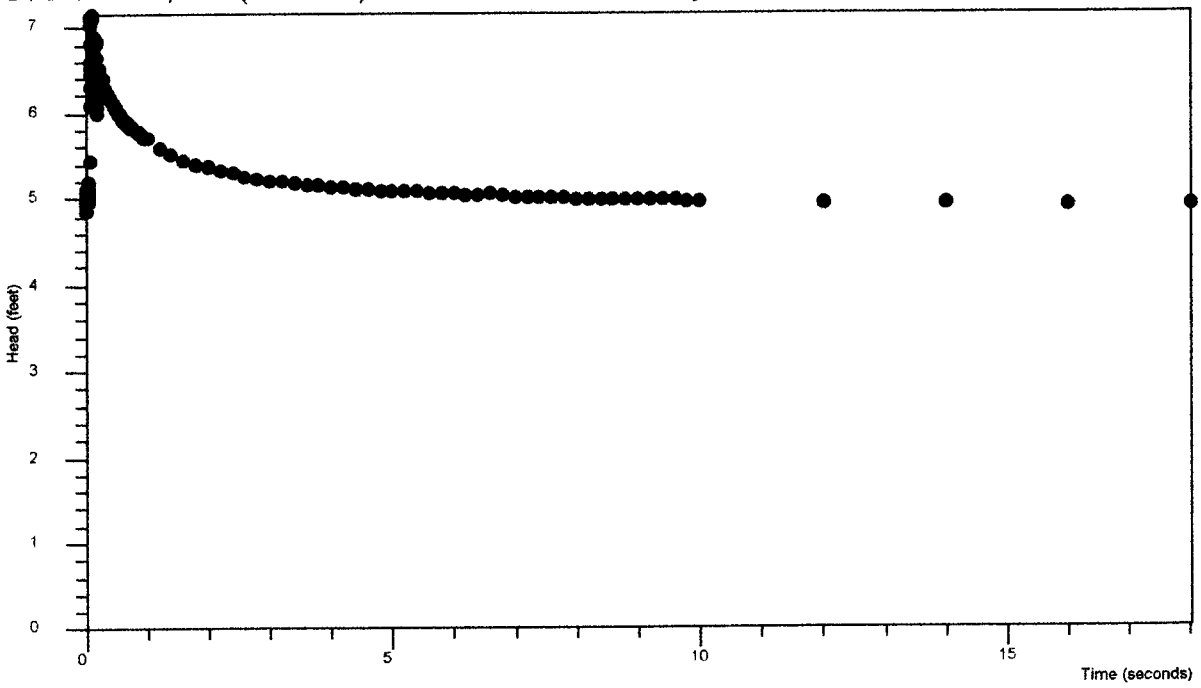
139	0.9666	0.8833	-0.269	6.349	0.7885
140	0.9833	0.9	-0.263	6.343	0.7878
141	1.	0.9167	-0.257	6.337	0.787
142	1.2	1.117	-0.182	6.262	0.7777
143	1.4	1.317	-0.138	6.218	0.7722
144	1.6	1.517	-0.106	6.186	0.7683
145	1.8	1.717	-8.7e-002	6.167	0.7659
146	2.	1.917	-6.9e-002	6.149	0.7637
147	2.2	2.117	-6.2e-002	6.142	0.7628
148	2.4	2.317	-5.e-002	6.13	0.7613
149	2.6	2.517	-4.3e-002	6.123	0.7604
150	2.8	2.717	-3.7e-002	6.117	0.7597
151	3.	2.917	-3.1e-002	6.111	0.7589
152	3.2	3.117	-3.1e-002	6.111	0.7589
153	3.4	3.317	-2.5e-002	6.105	0.7582
154	3.6	3.517	-2.5e-002	6.105	0.7582
155	3.8	3.717	-1.8e-002	6.098	0.7573
156	4.	3.917	-1.8e-002	6.098	0.7573
157	4.2	4.117	-1.8e-002	6.098	0.7573
158	4.4	4.317	-1.8e-002	6.098	0.7573
159	4.6	4.517	-1.8e-002	6.098	0.7573
160	4.8	4.717	-1.2e-002	6.092	0.7566
161	5.	4.917	-1.2e-002	6.092	0.7566
162	5.2	5.117	-1.2e-002	6.092	0.7566
163	5.4	5.317	-1.2e-002	6.092	0.7566
164	5.6	5.517	-1.2e-002	6.092	0.7566
165	5.8	5.717	-1.2e-002	6.092	0.7566
166	6.	5.917	-1.2e-002	6.092	0.7566
167	6.2	6.117	-1.2e-002	6.092	0.7566
168	6.4	6.317	-6.e-003	6.086	0.7558
169	6.6	6.517	-6.e-003	6.086	0.7558
170	6.8	6.717	-6.e-003	6.086	0.7558
171	7.	6.917	-6.e-003	6.086	0.7558
172	7.2	7.117	-6.e-003	6.086	0.7558
173	7.4	7.317	-6.e-003	6.086	0.7558
174	7.6	7.517	-6.e-003	6.086	0.7558
175	7.8	7.717	-6.e-003	6.086	0.7558
176	8.	7.917	-6.e-003	6.086	0.7558
177	8.2	8.117	-6.e-003	6.086	0.7558
178	8.4	8.317	-6.e-003	6.086	0.7558
179	8.6	8.517	-6.e-003	6.086	0.7558
180	8.8	8.717	-6.e-003	6.086	0.7558
181	9.	8.917	-6.e-003	6.086	0.7558
182	9.2	9.117	-6.e-003	6.086	0.7558
183	9.4	9.317	-6.e-003	6.086	0.7558
184	9.6	9.517	-6.e-003	6.086	0.7558
185	9.8	9.717	-6.e-003	6.086	0.7558
186	10.	9.917	0.	6.08	0.7551

Field Hydraulic Conductivity Test 05/08/02

Arithmetic Graph

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County

B-3 falling head



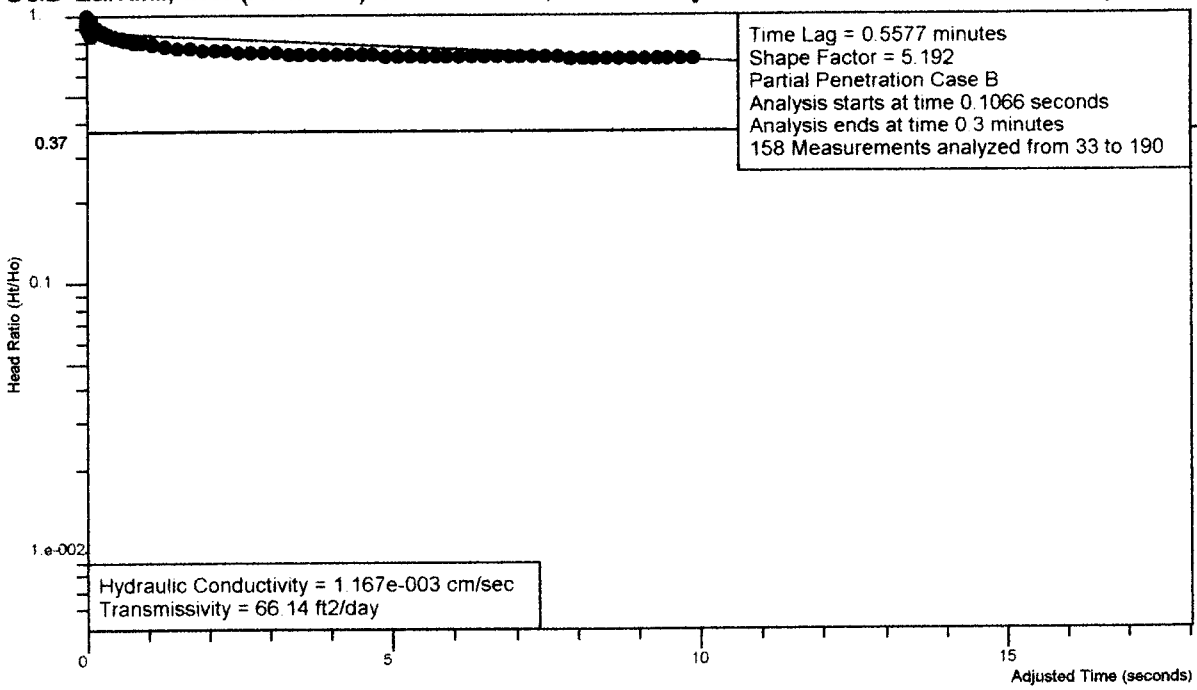
Analysis by Starpoint Software

Field Hydraulic Conductivity Test 05/08/02

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County

Hvorslev Graph

B-3 falling head



Analysis by Starpoint Software

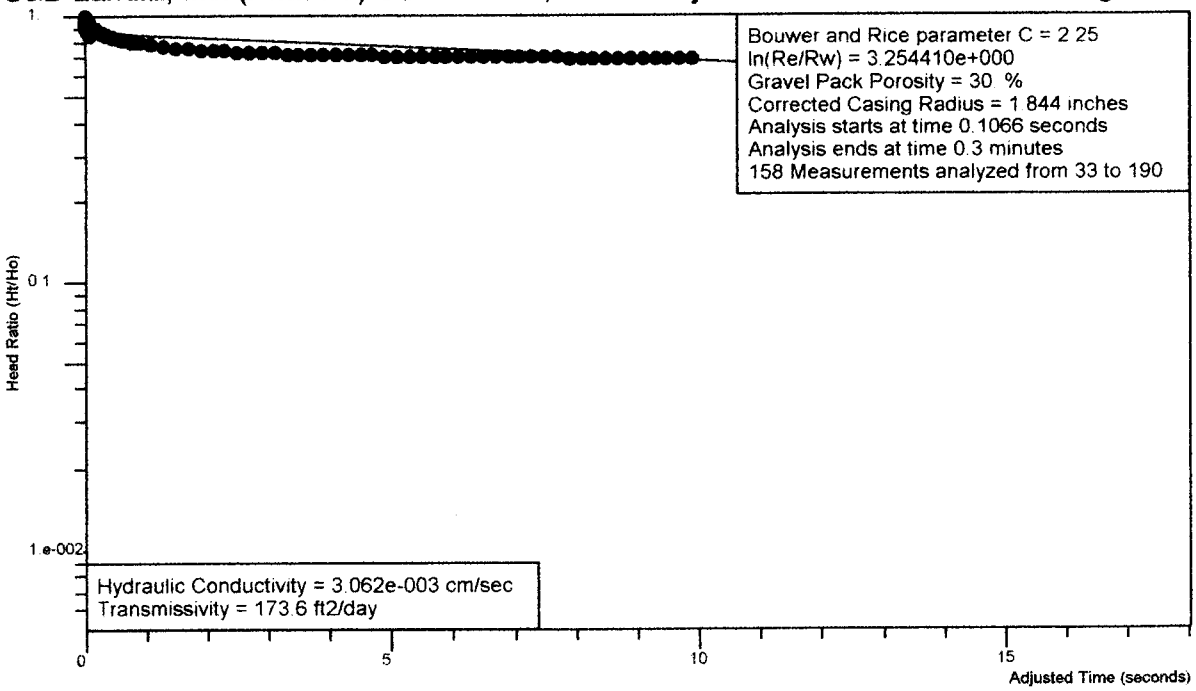
Ho is 7.14 feet at 0.1066 seconds

Field Hydraulic Conductivity Test 05/08/02

Bouwer and Rice Graph

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County

B-3 falling head



Analysis by Starpoint Software

Ho is 7.14 feet at 0.1066 seconds

Field Hydraulic Conductivity Test

Site Name:	C&D Landfill, Inc. (Phase 2)
Location:	US 264 East, Pitt County
Test Date:	05/08/02
Import File:	A:\David Garrett - Pitt County\B-3fh

Well Label:	B-3 falling head
Aquifer Thickness:	20. feet
Screen Length:	10. feet
Casing Radius:	1. inches
Effective Radius:	3. inches
Gravel Pack Porosity:	30. %
Corrected Casing Radius:	1.844 inches
Static Water Level:	4.91 feet
Water Table to Screen Bottom:	28.38 feet
Anisotropy Ratio:	1.
Time Adjustment:	0.1066 Seconds

Test starts with trial 32
There are 190 time and drawdown measurements
Maximum head is 7.14 feet
Minimum head is 0. feet

Trial	Time (seconds)	Adjusted Time (seconds)	Drawdown (feet)	Head (feet)	Head Ratio
1	0.	-0.1066	-0.17	5.08	0.7115
2	3.3e-003	-0.1033	-0.176	5.086	0.7123
3	6.6e-003	-0.1	-0.17	5.08	0.7115
4	1.e-002	-9.66e-002	-0.176	5.086	0.7123
5	1.33e-002	-9.33e-002	-0.1	5.01	0.7017
6	1.66e-002	-9.e-002	-5.6e-002	4.966	0.6955
7	2.e-002	-8.66e-002	-5.e-002	4.96	0.6947
8	2.33e-002	-8.33e-002	-1.2e-002	4.922	0.6894
9	2.66e-002	-8.e-002	4.4e-002	4.866	0.6815
10	3.e-002	-7.66e-002	-0.195	5.105	0.715
11	3.33e-002	-7.33e-002	-0.1	5.01	0.7017
12	3.66e-002	-7.e-002	-0.182	5.092	0.7132
13	4.e-002	-6.66e-002	-0.138	5.048	0.707
14	4.33e-002	-6.33e-002	-0.1	5.01	0.7017
15	4.66e-002	-6.e-002	-0.1	5.01	0.7017
16	5.e-002	-5.66e-002	-8.8e-002	4.998	0.7
17	5.33e-002	-5.33e-002	-5.6e-002	4.966	0.6955
18	5.66e-002	-5.e-002	-0.144	5.054	0.7078
19	6.e-002	-4.66e-002	-8.1e-002	4.991	0.699
20	6.33e-002	-4.33e-002	-0.258	5.168	0.7238
21	6.66e-002	-4.e-002	-0.289	5.199	0.7282
22	7.e-002	-3.66e-002	-0.522	5.432	0.7608
23	7.33e-002	-3.33e-002	-1.178	6.088	0.8527
24	7.66e-002	-3.e-002	-1.392	6.302	0.8826
25	8.e-002	-2.66e-002	-1.531	6.441	0.9021
26	8.33e-002	-2.33e-002	-1.619	6.529	0.9144
27	8.66e-002	-2.e-002	-1.688	6.598	0.9241
28	9.e-002	-1.66e-002	-1.903	6.813	0.9542
29	9.33e-002	-1.33e-002	-2.117	7.027	0.9842
30	9.66e-002	-1.e-002	-2.205	7.115	0.9965

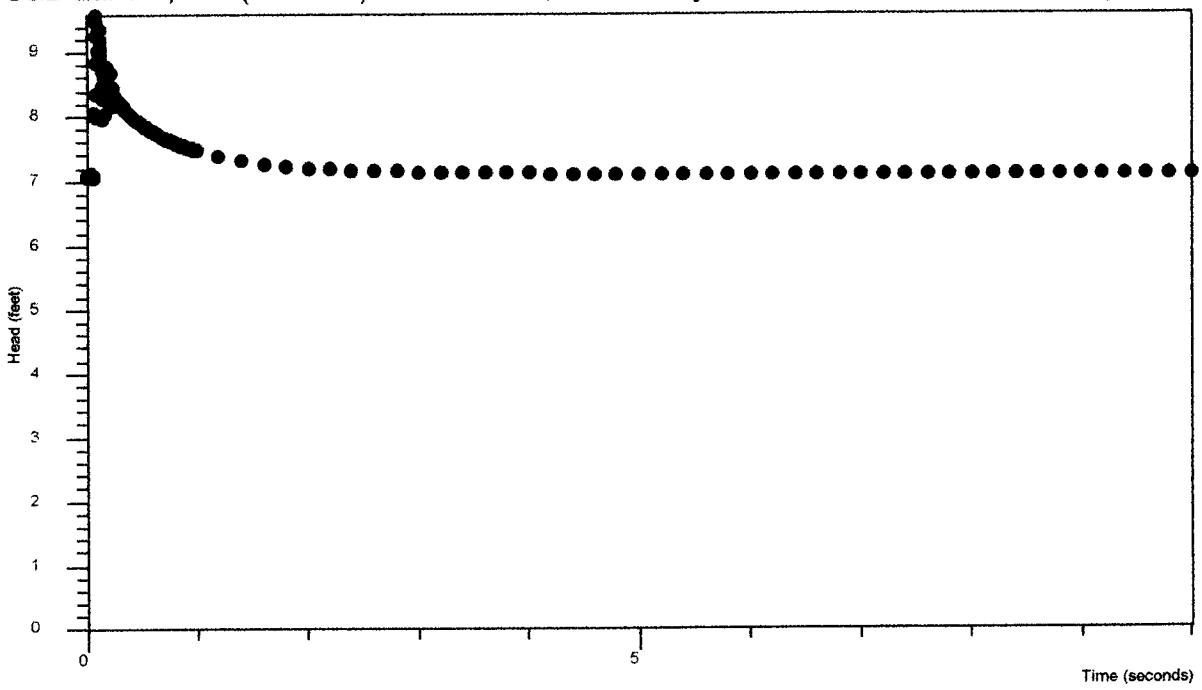
31	0.1	-6.6e-003	-2.224	7.134	0.9992
32	0.1033	-3.3e-003	-2.224	7.134	0.9992
33	0.1066	0.	-2.23	7.14	1.
34	0.11	3.4e-003	-2.224	7.134	0.9992
35	0.1133	6.7e-003	-2.212	7.122	0.9975
36	0.1166	1.e-002	-2.193	7.103	0.9948
37	0.12	1.34e-002	-2.199	7.109	0.9957
38	0.1233	1.67e-002	-1.991	6.901	0.9665
39	0.1266	2.e-002	-1.669	6.579	0.9214
40	0.13	2.34e-002	-1.506	6.416	0.8986
41	0.1333	2.67e-002	-1.587	6.497	0.9099
42	0.1366	3.e-002	-1.758	6.668	0.9339
43	0.14	3.34e-002	-1.909	6.819	0.955
44	0.1433	3.67e-002	-1.966	6.876	0.963
45	0.1466	4.e-002	-1.884	6.794	0.9515
46	0.15	4.34e-002	-1.613	6.523	0.9136
47	0.1533	4.67e-002	-1.304	6.214	0.8703
48	0.1566	5.e-002	-1.36	6.27	0.8782
49	0.16	5.34e-002	-1.417	6.327	0.8861
50	0.1633	5.67e-002	-1.594	6.504	0.9109
51	0.1666	6.e-002	-1.619	6.529	0.9144
52	0.17	6.34e-002	-1.663	6.573	0.9206
53	0.1733	6.67e-002	-1.575	6.485	0.9083
54	0.1766	7.e-002	-1.562	6.472	0.9064
55	0.18	7.34e-002	-1.726	6.636	0.9294
56	0.1833	7.67e-002	-1.896	6.806	0.9532
57	0.1866	8.e-002	-1.94	6.85	0.9594
58	0.19	8.34e-002	-1.94	6.85	0.9594
59	0.1933	8.67e-002	-1.606	6.516	0.9126
60	0.1966	9.e-002	-1.096	6.006	0.8412
61	0.2	9.34e-002	-1.153	6.063	0.8492
62	0.2033	9.67e-002	-1.222	6.132	0.8588
63	0.2066	0.1	-1.493	6.403	0.8968
64	0.21	0.1034	-1.556	6.466	0.9056
65	0.2133	0.1067	-1.625	6.535	0.9153
66	0.2166	0.11	-1.543	6.453	0.9038
67	0.22	0.1134	-1.506	6.416	0.8986
68	0.2233	0.1167	-1.462	6.372	0.8924
69	0.2266	0.12	-1.468	6.378	0.8933
70	0.23	0.1234	-1.468	6.378	0.8933
71	0.2333	0.1267	-1.474	6.384	0.8941
72	0.2366	0.13	-1.462	6.372	0.8924
73	0.24	0.1334	-1.468	6.378	0.8933
74	0.2433	0.1367	-1.455	6.365	0.8915
75	0.2466	0.14	-1.474	6.384	0.8941
76	0.25	0.1434	-1.449	6.359	0.8906
77	0.2533	0.1467	-1.43	6.34	0.888
78	0.2566	0.15	-1.468	6.378	0.8933
79	0.26	0.1534	-1.405	6.315	0.8845
80	0.2633	0.1567	-1.417	6.327	0.8861
81	0.2666	0.16	-1.424	6.334	0.8871
82	0.27	0.1634	-1.43	6.34	0.888
83	0.2733	0.1667	-1.411	6.321	0.8853
84	0.2766	0.17	-1.379	6.289	0.8808

85	0.28	0.1734	-1.506	6.416	0.8986
86	0.2833	0.1767	-1.342	6.252	0.8756
87	0.2866	0.18	-1.398	6.308	0.8835
88	0.29	0.1834	-1.348	6.258	0.8765
89	0.2933	0.1867	-1.405	6.315	0.8845
90	0.2966	0.19	-1.367	6.277	0.8791
91	0.3	0.1934	-1.392	6.302	0.8826
92	0.3033	0.1967	-1.367	6.277	0.8791
93	0.3066	0.2	-1.373	6.283	0.88
94	0.31	0.2034	-1.367	6.277	0.8791
95	0.3133	0.2067	-1.36	6.27	0.8782
96	0.3166	0.21	-1.36	6.27	0.8782
97	0.32	0.2134	-1.354	6.264	0.8773
98	0.3233	0.2167	-1.354	6.264	0.8773
99	0.3266	0.22	-1.348	6.258	0.8765
100	0.33	0.2234	-1.348	6.258	0.8765
101	0.3333	0.2267	-1.342	6.252	0.8756
102	0.35	0.2434	-1.323	6.233	0.873
103	0.3666	0.26	-1.304	6.214	0.8703
104	0.3833	0.2767	-1.279	6.189	0.8668
105	0.4	0.2934	-1.26	6.17	0.8641
106	0.4166	0.31	-1.241	6.151	0.8615
107	0.4333	0.3267	-1.222	6.132	0.8588
108	0.45	0.3434	-1.197	6.107	0.8553
109	0.4666	0.36	-1.171	6.081	0.8517
110	0.4833	0.3767	-1.146	6.056	0.8482
111	0.5	0.3934	-1.127	6.037	0.8455
112	0.5166	0.41	-1.115	6.025	0.8438
113	0.5333	0.4267	-1.096	6.006	0.8412
114	0.55	0.4434	-1.077	5.987	0.8385
115	0.5666	0.46	-1.064	5.974	0.8367
116	0.5833	0.4767	-1.045	5.955	0.834
117	0.6	0.4934	-1.033	5.943	0.8324
118	0.6166	0.51	-1.02	5.93	0.8305
119	0.6333	0.5267	-1.008	5.918	0.8289
120	0.65	0.5434	-0.995	5.905	0.827
121	0.6666	0.56	-0.976	5.886	0.8244
122	0.6833	0.5767	-0.957	5.867	0.8217
123	0.7	0.5934	-0.957	5.867	0.8217
124	0.7166	0.61	-0.951	5.861	0.8209
125	0.7333	0.6267	-0.938	5.848	0.819
126	0.75	0.6434	-0.926	5.836	0.8174
127	0.7666	0.66	-0.919	5.829	0.8164
128	0.7833	0.6767	-0.907	5.817	0.8147
129	0.8	0.6934	-0.894	5.804	0.8129
130	0.8166	0.71	-0.882	5.792	0.8112
131	0.8333	0.7267	-0.875	5.785	0.8102
132	0.85	0.7434	-0.863	5.773	0.8085
133	0.8666	0.76	-0.856	5.766	0.8076
134	0.8833	0.7767	-0.844	5.754	0.8059
135	0.9	0.7934	-0.838	5.748	0.805
136	0.9166	0.81	-0.825	5.735	0.8032
137	0.9333	0.8267	-0.818	5.728	0.8022
138	0.95	0.8434	-0.806	5.716	0.8006

139	0.9666	0.86	-0.8	5.71	0.7997
140	0.9833	0.8767	-0.794	5.704	0.7989
141	1.	0.8934	-0.787	5.697	0.7979
142	1.2	1.093	-0.674	5.584	0.7821
143	1.4	1.293	-0.598	5.508	0.7714
144	1.6	1.493	-0.541	5.451	0.7634
145	1.8	1.693	-0.491	5.401	0.7564
146	2.	1.893	-0.447	5.357	0.7503
147	2.2	2.093	-0.409	5.319	0.745
148	2.4	2.293	-0.377	5.287	0.7405
149	2.6	2.493	-0.346	5.256	0.7361
150	2.8	2.693	-0.321	5.231	0.7326
151	3.	2.893	-0.296	5.206	0.7291
152	3.2	3.093	-0.277	5.187	0.7265
153	3.4	3.293	-0.258	5.168	0.7238
154	3.6	3.493	-0.245	5.155	0.722
155	3.8	3.693	-0.233	5.143	0.7203
156	4.	3.893	-0.22	5.13	0.7185
157	4.2	4.093	-0.207	5.117	0.7167
158	4.4	4.293	-0.195	5.105	0.715
159	4.6	4.493	-0.182	5.092	0.7132
160	4.8	4.693	-0.176	5.086	0.7123
161	5.	4.893	-0.163	5.073	0.7105
162	5.2	5.093	-0.157	5.067	0.7097
163	5.4	5.293	-0.157	5.067	0.7097
164	5.6	5.493	-0.144	5.054	0.7078
165	5.8	5.693	-0.138	5.048	0.707
166	6.	5.893	-0.132	5.042	0.7062
167	6.2	6.093	-0.126	5.036	0.7053
168	6.4	6.293	-0.119	5.029	0.7043
169	6.6	6.493	-0.132	5.042	0.7062
170	6.8	6.693	-0.113	5.023	0.7035
171	7.	6.893	-0.107	5.017	0.7027
172	7.2	7.093	-0.1	5.01	0.7017
173	7.4	7.293	-9.4e-002	5.004	0.7008
174	7.6	7.493	-9.4e-002	5.004	0.7008
175	7.8	7.693	-8.8e-002	4.998	0.7
176	8.	7.893	-8.1e-002	4.991	0.699
177	8.2	8.093	-8.1e-002	4.991	0.699
178	8.4	8.293	-7.5e-002	4.985	0.6982
179	8.6	8.493	-7.5e-002	4.985	0.6982
180	8.8	8.693	-6.9e-002	4.979	0.6973
181	9.	8.893	-6.2e-002	4.972	0.6964
182	9.2	9.093	-6.9e-002	4.979	0.6973
183	9.4	9.293	-6.9e-002	4.979	0.6973
184	9.6	9.493	-6.2e-002	4.972	0.6964
185	9.8	9.693	-5.6e-002	4.966	0.6955
186	10.	9.893	-5.e-002	4.96	0.6947
187	12.	11.89	-2.4e-002	4.934	0.691
188	14.	13.89	-1.8e-002	4.928	0.6902
189	16.	15.89	6.e-003	4.904	0.6868
190	18.	17.89	1.2e-002	4.898	0.686

Field Hydraulic Conductivity Test 05/08/02 **Arithmetic Graph**

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County B-4 falling head



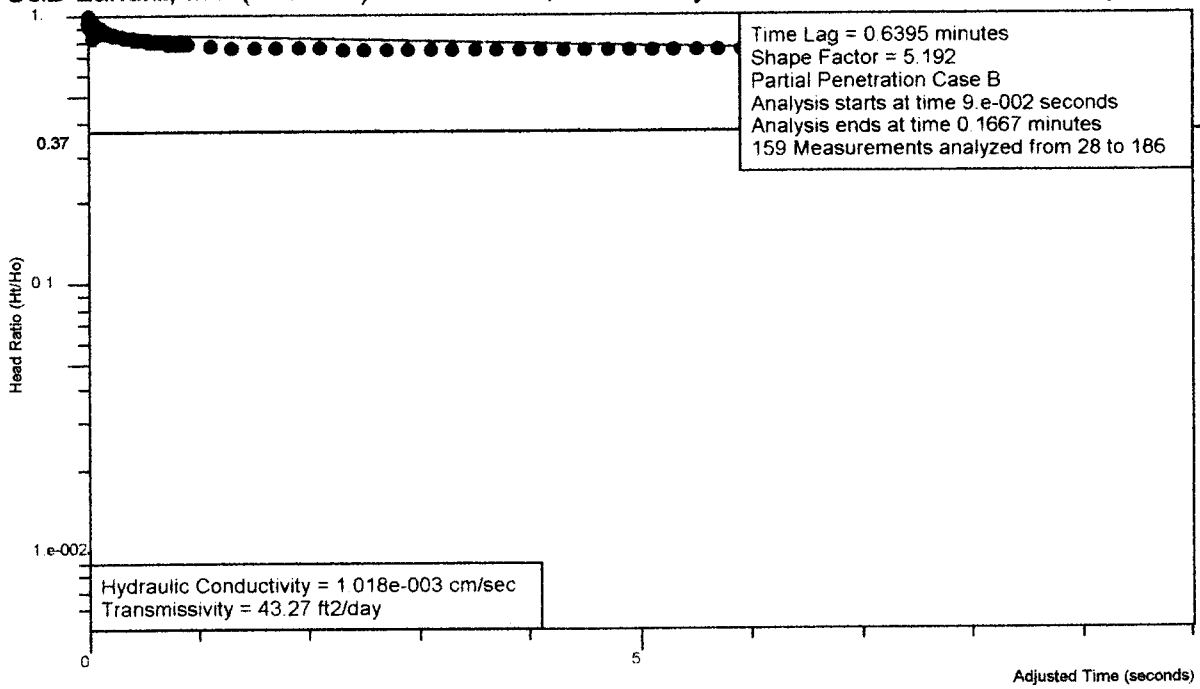
Analysis by Starpoint Software

Field Hydraulic Conductivity Test 05/08/02

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County

Hvorslev Graph

B-4 falling head



Analysis by Starpoint Software

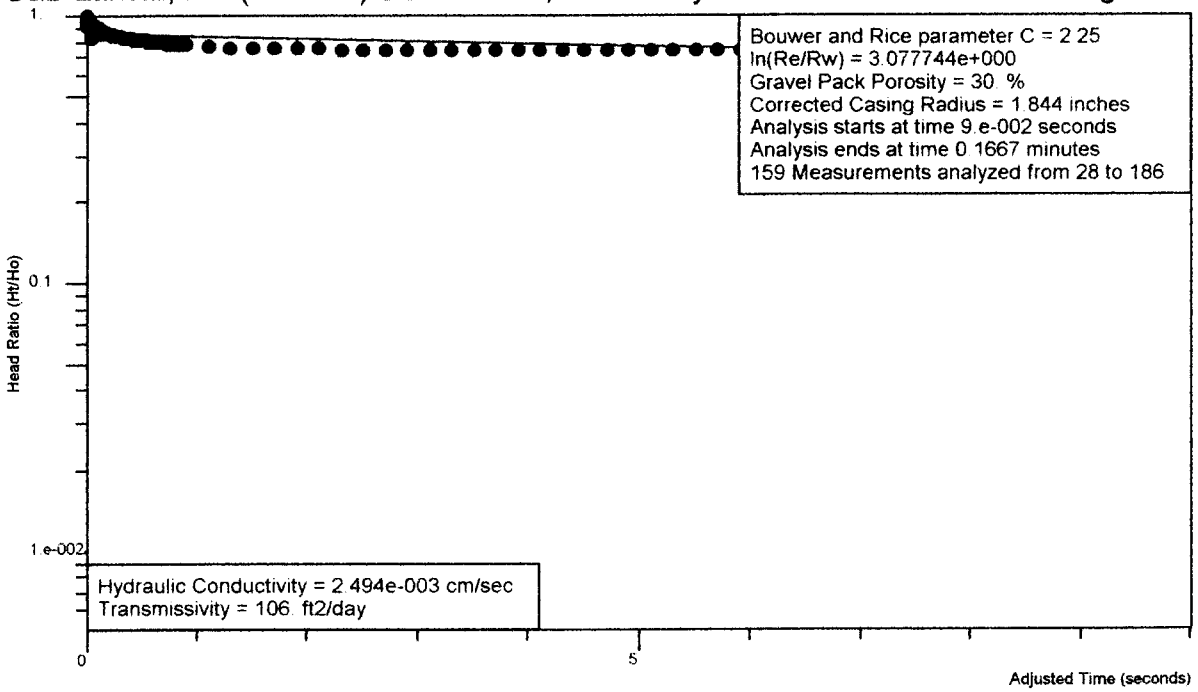
Ho is 9.564 feet at 9.e-002 seconds

Field Hydraulic Conductivity Test 05/08/02

Bouwer and Rice Graph

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County

B-4 falling head



Analysis by Starpoint Software

Ho is 9.564 feet at 9.e-002 seconds

Field Hydraulic Conductivity Test

Site Name: C&D Landfill, Inc. (Phase 2)
Location: US 264 East, Pitt County
Test Date: 05/08/02
Import File: A:\David Garrett - Pitt County\B-4fh

Well Label: B-4 falling head
Aquifer Thickness: 15. feet
Screen Length: 10. feet
Casing Radius: 1. inches
Effective Radius: 3. inches
Gravel Pack Porosity: 30. %
Corrected Casing Radius: 1.844 inches
Static Water Level: 7.07 feet
Water Table to Screen Bottom: 21.29 feet
Anisotropy Ratio: 1.
Time Adjustment: 9.e-002 Seconds
Test starts with trial 27
There are 186 time and drawdown measurements
Maximum head is 9.564 feet
Minimum head is 0. feet

Trial	Time (seconds)	Adjusted Time (seconds)	Drawdown (feet)	Head (feet)	Head Ratio
1	0.	-9.e-002	-6.e-003	7.076	0.7399
2	3.3e-003	-8.67e-002	-1.2e-002	7.082	0.7405
3	6.6e-003	-8.34e-002	-1.2e-002	7.082	0.7405
4	1.e-002	-8.e-002	-1.2e-002	7.082	0.7405
5	1.33e-002	-7.67e-002	-1.2e-002	7.082	0.7405
6	1.66e-002	-7.34e-002	-6.e-003	7.076	0.7399
7	2.e-002	-7.e-002	-1.2e-002	7.082	0.7405
8	2.33e-002	-6.67e-002	-1.2e-002	7.082	0.7405
9	2.66e-002	-6.34e-002	-1.2e-002	7.082	0.7405
10	3.e-002	-6.e-002	-1.2e-002	7.082	0.7405
11	3.33e-002	-5.67e-002	-1.2e-002	7.082	0.7405
12	3.66e-002	-5.34e-002	0.	7.07	0.7392
13	4.e-002	-5.e-002	-5.e-002	7.12	0.7445
14	4.33e-002	-4.67e-002	6.e-003	7.064	0.7386
15	4.66e-002	-4.34e-002	-3.1e-002	7.101	0.7425
16	5.e-002	-4.e-002	-1.2e-002	7.082	0.7405
17	5.33e-002	-3.67e-002	-1.8e-002	7.088	0.7411
18	5.66e-002	-3.34e-002	-2.5e-002	7.095	0.7418
19	6.e-002	-3.e-002	-6.e-003	7.076	0.7399
20	6.33e-002	-2.67e-002	-3.1e-002	7.101	0.7425
21	6.66e-002	-2.34e-002	-1.8e-002	7.088	0.7411
22	7.e-002	-2.e-002	-1.8e-002	7.088	0.7411
23	7.33e-002	-1.67e-002	-0.98	8.05	0.8417
24	7.66e-002	-1.34e-002	-0.923	7.993	0.8357
25	8.e-002	-1.e-002	-1.281	8.351	0.8732
26	8.33e-002	-6.7e-003	-1.772	8.842	0.9245
27	8.66e-002	-3.4e-003	-2.199	9.269	0.9692
28	9.e-002	0.	-2.494	9.564	1.
29	9.33e-002	3.3e-003	-2.406	9.476	0.9908
30	9.66e-002	6.6e-003	-2.249	9.319	0.9744

31	0.1	1.e-002	-2.193	9.263	0.9685
32	0.1033	1.33e-002	-1.973	9.043	0.9455
33	0.1066	1.66e-002	-1.79	8.86	0.9264
34	0.11	2.e-002	-1.966	9.036	0.9448
35	0.1133	2.33e-002	-2.186	9.256	0.9678
36	0.1166	2.66e-002	-2.281	9.351	0.9777
37	0.12	3.e-002	-2.13	9.2	0.9619
38	0.1233	3.33e-002	-1.979	9.049	0.9462
39	0.1266	3.66e-002	-1.91	8.98	0.9389
40	0.13	4.e-002	-1.841	8.911	0.9317
41	0.1333	4.33e-002	-1.966	9.036	0.9448
42	0.1366	4.66e-002	-1.627	8.697	0.9093
43	0.14	5.e-002	-1.294	8.364	0.8745
44	0.1433	5.33e-002	-0.885	7.955	0.8318
45	0.1466	5.66e-002	-1.231	8.301	0.8679
46	0.15	6.e-002	-1.426	8.496	0.8883
47	0.1533	6.33e-002	-1.206	8.276	0.8653
48	0.1566	6.66e-002	-0.948	8.018	0.8384
49	0.16	7.e-002	-1.269	8.339	0.8719
50	0.1633	7.33e-002	-1.608	8.678	0.9074
51	0.1666	7.66e-002	-1.596	8.666	0.9061
52	0.17	8.e-002	-1.545	8.615	0.9008
53	0.1733	8.33e-002	-1.69	8.76	0.9159
54	0.1766	8.66e-002	-1.552	8.622	0.9015
55	0.18	9.e-002	-1.501	8.571	0.8962
56	0.1833	9.33e-002	-1.25	8.32	0.8699
57	0.1866	9.66e-002	-1.212	8.282	0.866
58	0.19	1.e-001	-1.319	8.389	0.8771
59	0.1933	0.1033	-1.394	8.464	0.885
60	0.1966	0.1066	-1.426	8.496	0.8883
61	0.2	0.11	-1.376	8.446	0.8831
62	0.2033	0.1133	-1.332	8.402	0.8785
63	0.2066	0.1166	-1.307	8.377	0.8759
64	0.21	0.12	-1.313	8.383	0.8765
65	0.2133	0.1233	-1.596	8.666	0.9061
66	0.2166	0.1266	-1.294	8.364	0.8745
67	0.22	0.13	-1.093	8.163	0.8535
68	0.2233	0.1333	-1.219	8.289	0.8667
69	0.2266	0.1366	-1.225	8.295	0.8673
70	0.23	0.14	-1.369	8.439	0.8824
71	0.2333	0.1433	-1.294	8.364	0.8745
72	0.2366	0.1466	-1.288	8.358	0.8739
73	0.24	0.15	-1.212	8.282	0.866
74	0.2433	0.1533	-1.225	8.295	0.8673
75	0.2466	0.1566	-1.231	8.301	0.8679
76	0.25	0.16	-1.237	8.307	0.8686
77	0.2533	0.1633	-1.231	8.301	0.8679
78	0.2566	0.1666	-1.212	8.282	0.866
79	0.26	0.17	-1.206	8.276	0.8653
80	0.2633	0.1733	-1.225	8.295	0.8673
81	0.2666	0.1766	-1.174	8.244	0.862
82	0.27	0.18	-1.181	8.251	0.8627
83	0.2733	0.1833	-1.181	8.251	0.8627
84	0.2766	0.1866	-1.168	8.238	0.8614

85	0.28	0.19	-1.162	8.232	0.8607
86	0.2833	0.1933	-1.156	8.226	0.8601
87	0.2866	0.1966	-1.149	8.219	0.8594
88	0.29	0.2	-1.143	8.213	0.8587
89	0.2933	0.2033	-1.137	8.207	0.8581
90	0.2966	0.2066	-1.131	8.201	0.8575
91	0.3	0.21	-1.124	8.194	0.8568
92	0.3033	0.2133	-1.118	8.188	0.8561
93	0.3066	0.2166	-1.112	8.182	0.8555
94	0.31	0.22	-1.105	8.175	0.8548
95	0.3133	0.2233	-1.099	8.169	0.8541
96	0.3166	0.2266	-1.093	8.163	0.8535
97	0.32	0.23	-1.087	8.157	0.8529
98	0.3233	0.2333	-1.08	8.15	0.8522
99	0.3266	0.2366	-1.074	8.144	0.8515
100	0.33	0.24	-1.068	8.138	0.8509
101	0.3333	0.2433	-1.061	8.131	0.8502
102	0.35	0.26	-1.03	8.1	0.8469
103	0.3666	0.2766	-0.999	8.069	0.8437
104	0.3833	0.2933	-0.973	8.043	0.841
105	0.4	0.31	-0.942	8.012	0.8377
106	0.4166	0.3266	-0.917	7.987	0.8351
107	0.4333	0.3433	-0.892	7.962	0.8325
108	0.45	0.36	-0.873	7.943	0.8305
109	0.4666	0.3766	-0.848	7.918	0.8279
110	0.4833	0.3933	-0.823	7.893	0.8253
111	0.5	0.41	-0.804	7.874	0.8233
112	0.5166	0.4266	-0.779	7.849	0.8207
113	0.5333	0.4433	-0.76	7.83	0.8187
114	0.55	0.46	-0.76	7.83	0.8187
115	0.5666	0.4766	-0.722	7.792	0.8147
116	0.5833	0.4933	-0.709	7.779	0.8134
117	0.6	0.51	-0.691	7.761	0.8115
118	0.6166	0.5266	-0.672	7.742	0.8095
119	0.6333	0.5433	-0.659	7.729	0.8081
120	0.65	0.56	-0.64	7.71	0.8061
121	0.6666	0.5766	-0.628	7.698	0.8049
122	0.6833	0.5933	-0.615	7.685	0.8035
123	0.7	0.61	-0.603	7.673	0.8023
124	0.7166	0.6266	-0.584	7.654	0.8003
125	0.7333	0.6433	-0.571	7.641	0.7989
126	0.75	0.66	-0.559	7.629	0.7977
127	0.7666	0.6766	-0.546	7.616	0.7963
128	0.7833	0.6933	-0.534	7.604	0.7951
129	0.8	0.71	-0.521	7.591	0.7937
130	0.8166	0.7266	-0.508	7.578	0.7923
131	0.8333	0.7433	-0.496	7.566	0.7911
132	0.85	0.76	-0.49	7.56	0.7905
133	0.8666	0.7766	-0.477	7.547	0.7891
134	0.8833	0.7933	-0.464	7.534	0.7877
135	0.9	0.81	-0.458	7.528	0.7871
136	0.9166	0.8266	-0.446	7.516	0.7859
137	0.9333	0.8433	-0.439	7.509	0.7851
138	0.95	0.86	-0.427	7.497	0.7839

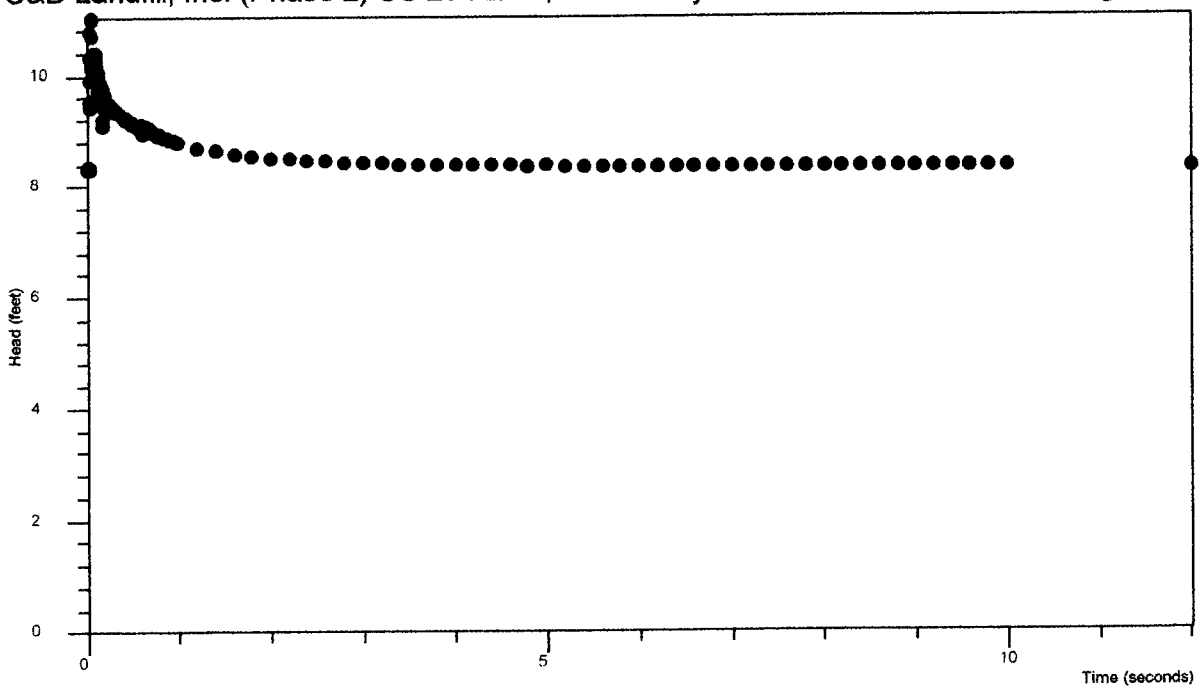
139	0.9666	0.8766	-0.42	7.49	0.7831
140	0.9833	0.8933	-0.408	7.478	0.7819
141	1.	0.91	-0.402	7.472	0.7813
142	1.2	1.11	-0.301	7.371	0.7707
143	1.4	1.31	-0.238	7.308	0.7641
144	1.6	1.51	-0.194	7.264	0.7595
145	1.8	1.71	-0.157	7.227	0.7556
146	2.	1.91	-0.132	7.202	0.753
147	2.2	2.11	-0.113	7.183	0.751
148	2.4	2.31	-9.4e-002	7.164	0.7491
149	2.6	2.51	-8.1e-002	7.151	0.7477
150	2.8	2.71	-7.5e-002	7.145	0.7471
151	3.	2.91	-6.2e-002	7.132	0.7457
152	3.2	3.11	-5.6e-002	7.126	0.7451
153	3.4	3.31	-5.e-002	7.12	0.7445
154	3.6	3.51	-5.e-002	7.12	0.7445
155	3.8	3.71	-4.4e-002	7.114	0.7438
156	4.	3.91	-4.4e-002	7.114	0.7438
157	4.2	4.11	-3.7e-002	7.107	0.7431
158	4.4	4.31	-3.7e-002	7.107	0.7431
159	4.6	4.51	-3.1e-002	7.101	0.7425
160	4.8	4.71	-3.1e-002	7.101	0.7425
161	5.	4.91	-3.1e-002	7.101	0.7425
162	5.2	5.11	-3.1e-002	7.101	0.7425
163	5.4	5.31	-3.1e-002	7.101	0.7425
164	5.6	5.51	-3.1e-002	7.101	0.7425
165	5.8	5.71	-2.5e-002	7.095	0.7418
166	6.	5.91	-2.5e-002	7.095	0.7418
167	6.2	6.11	-2.5e-002	7.095	0.7418
168	6.4	6.31	-2.5e-002	7.095	0.7418
169	6.6	6.51	-2.5e-002	7.095	0.7418
170	6.8	6.71	-2.5e-002	7.095	0.7418
171	7.	6.91	-2.5e-002	7.095	0.7418
172	7.2	7.11	-2.5e-002	7.095	0.7418
173	7.4	7.31	-2.5e-002	7.095	0.7418
174	7.6	7.51	-1.8e-002	7.088	0.7411
175	7.8	7.71	-2.5e-002	7.095	0.7418
176	8.	7.91	-2.5e-002	7.095	0.7418
177	8.2	8.11	-1.8e-002	7.088	0.7411
178	8.4	8.31	-1.8e-002	7.088	0.7411
179	8.6	8.51	-1.8e-002	7.088	0.7411
180	8.8	8.71	-1.8e-002	7.088	0.7411
181	9.	8.91	-1.8e-002	7.088	0.7411
182	9.2	9.11	-1.8e-002	7.088	0.7411
183	9.4	9.31	-1.8e-002	7.088	0.7411
184	9.6	9.51	-1.8e-002	7.088	0.7411
185	9.8	9.71	-1.8e-002	7.088	0.7411
186	10.	9.91	-1.8e-002	7.088	0.7411

Field Hydraulic Conductivity Test 05/08/02

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County

Arithmetic Graph

B-5 falling head



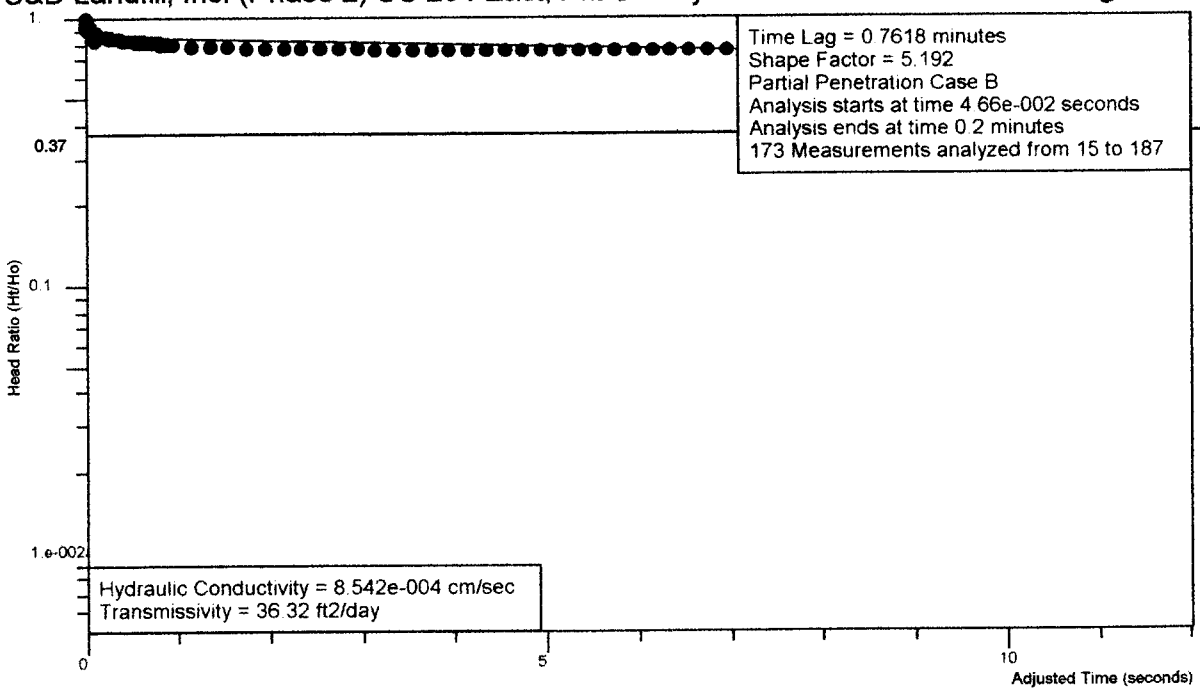
Analysis by Starpoint Software

Field Hydraulic Conductivity Test 05/08/02

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County

Hvorslev Graph

B-5 falling head



Analysis by Starpoint Software

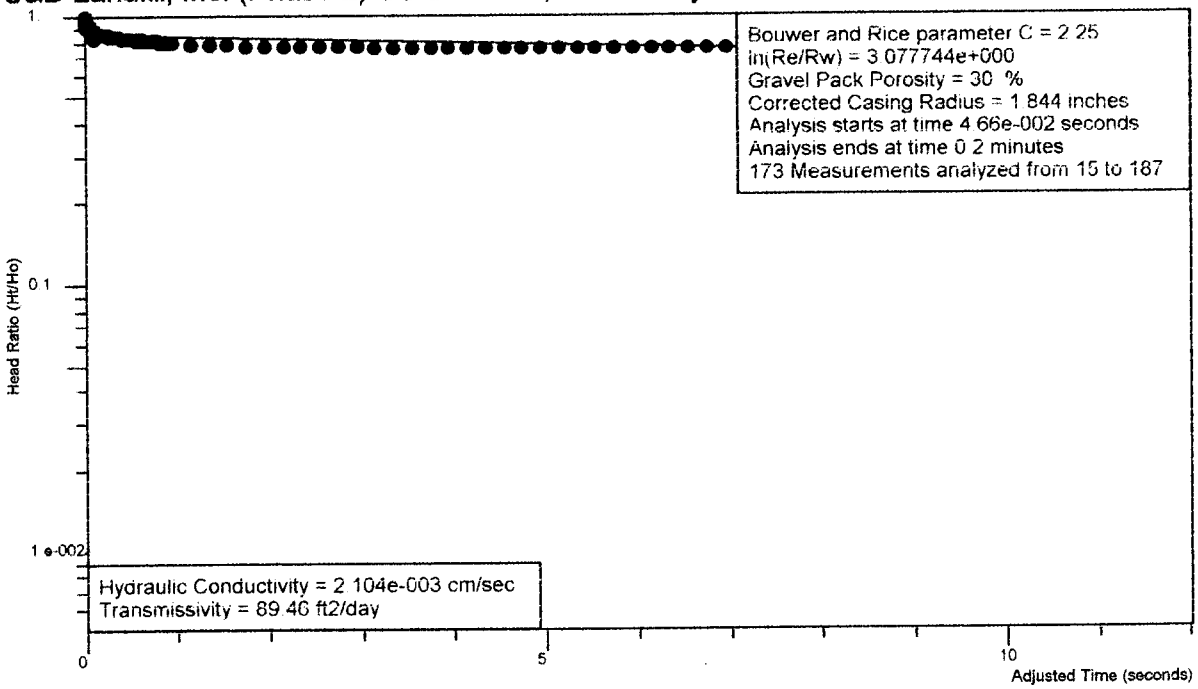
Ho is 11. feet at 4.66e-002 seconds

Field Hydraulic Conductivity Test 05/08/02

Bouwer and Rice Graph

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County

B-5 falling head



Analysis by Starpoint Software

Ho is 11. feet at 4.66e-002 seconds

Field Hydraulic Conductivity Test

Site Name: C&D Landfill, Inc. (Phase 2)
Location: US 264 East, Pitt County
Test Date: 05/08/02
Import File: A:\David Garrett - Pitt County\B-5fh

Well Label: B-5 falling head
Aquifer Thickness: 15. feet
Screen Length: 10. feet
Casing Radius: 1. inches
Effective Radius: 3. inches
Gravel Pack Porosity: 30. %
Corrected Casing Radius: 1.844 inches
Static Water Level: 8.3 feet
Water Table to Screen Bottom: 21.17 feet
Anisotropy Ratio: 1.
Time Adjustment: 4.66e-002 Seconds
Test starts with trial 14
There are 187 time and drawdown measurements
Maximum head is 11. feet
Minimum head is 0. feet

Trial	Time (seconds)	Adjusted Time (seconds)	Drawdown (feet)	Head (feet)	Head Ratio
1	0.	-4.66e-002	-1.8e-002	8.318	0.7559
2	3.3e-003	-4.33e-002	-2.5e-002	8.325	0.7565
3	6.6e-003	-4.e-002	-3.1e-002	8.331	0.7571
4	1.e-002	-3.66e-002	-3.1e-002	8.331	0.7571
5	1.33e-002	-3.33e-002	-3.1e-002	8.331	0.7571
6	1.66e-002	-3.e-002	-2.5e-002	8.325	0.7565
7	2.e-002	-2.66e-002	-3.1e-002	8.331	0.7571
8	2.33e-002	-2.33e-002	-4.4e-002	8.344	0.7583
9	2.66e-002	-2.e-002	-1.8e-002	8.318	0.7559
10	3.e-002	-1.66e-002	-1.106	9.406	0.8548
11	3.33e-002	-1.33e-002	-1.219	9.519	0.865
12	3.66e-002	-1.e-002	-1.616	9.916	0.9011
13	4.e-002	-6.6e-003	-2.031	10.33	0.9388
14	4.33e-002	-3.3e-003	-2.465	10.77	0.9783
15	4.66e-002	0.	-2.704	11.	1.
16	5.e-002	3.4e-003	-2.691	10.99	0.9988
17	5.33e-002	6.7e-003	-2.371	10.67	0.9697
18	5.66e-002	1.e-002	-2.05	10.35	0.9406
19	6.e-002	1.34e-002	-1.861	10.16	0.9234
20	6.33e-002	1.67e-002	-1.817	10.12	0.9194
21	6.66e-002	2.e-002	-2.018	10.32	0.9377
22	7.e-002	2.34e-002	-2.081	10.38	0.9434
23	7.33e-002	2.67e-002	-1.987	10.29	0.9348
24	7.66e-002	3.e-002	-1.741	10.04	0.9125
25	8.e-002	3.34e-002	-1.729	10.03	0.9114
26	8.33e-002	3.67e-002	-1.874	10.17	0.9246
27	8.66e-002	4.e-002	-1.999	10.3	0.9359
28	9.e-002	4.34e-002	-2.075	10.38	0.9428
29	9.33e-002	4.67e-002	-2.1	10.4	0.9451
30	9.66e-002	5.e-002	-1.962	10.26	0.9326

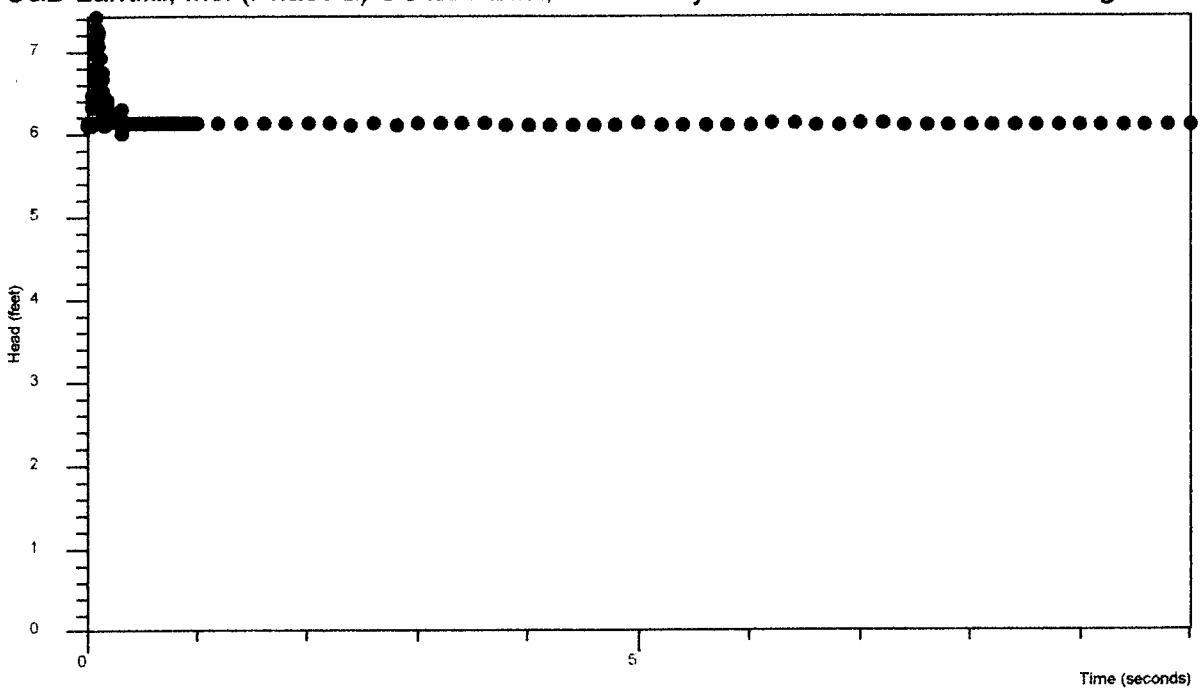
31	0.1	5.34e-002	-1.748	10.05	0.9131
32	0.1033	5.67e-002	-1.773	10.07	0.9154
33	0.1066	6.e-002	-1.911	10.21	0.9279
34	0.11	6.34e-002	-1.855	10.16	0.9228
35	0.1133	6.67e-002	-1.754	10.05	0.9137
36	0.1166	7.e-002	-1.679	9.979	0.9069
37	0.12	7.34e-002	-1.528	9.828	0.8931
38	0.1233	7.67e-002	-1.408	9.708	0.8822
39	0.1266	8.e-002	-1.666	9.966	0.9057
40	0.13	8.34e-002	-1.754	10.05	0.9137
41	0.1333	8.67e-002	-1.597	9.897	0.8994
42	0.1366	9.e-002	-1.307	9.607	0.873
43	0.14	9.34e-002	-1.333	9.633	0.8754
44	0.1433	9.67e-002	-1.37	9.67	0.8788
45	0.1466	0.1	-1.207	9.507	0.864
46	0.15	0.1034	-1.263	9.563	0.869
47	0.1533	0.1067	-1.572	9.872	0.8971
48	0.1566	0.11	-1.333	9.633	0.8754
49	0.16	0.1134	-0.804	9.104	0.8273
50	0.1633	0.1167	-0.911	9.211	0.8371
51	0.1666	0.12	-1.402	9.702	0.8817
52	0.17	0.1234	-1.414	9.714	0.8828
53	0.1733	0.1267	-1.465	9.765	0.8874
54	0.1766	0.13	-1.414	9.714	0.8828
55	0.18	0.1334	-1.282	9.582	0.8708
56	0.1833	0.1367	-1.182	9.482	0.8617
57	0.1866	0.14	-1.169	9.469	0.8605
58	0.19	0.1434	-1.201	9.501	0.8634
59	0.1933	0.1467	-1.138	9.438	0.8577
60	0.1966	0.15	-1.339	9.639	0.876
61	0.2	0.1534	-1.314	9.614	0.8737
62	0.2033	0.1567	-1.289	9.589	0.8714
63	0.2066	0.16	-1.15	9.45	0.8588
64	0.21	0.1634	-1.194	9.494	0.8628
65	0.2133	0.1667	-1.207	9.507	0.864
66	0.2166	0.17	-1.207	9.507	0.864
67	0.22	0.1734	-1.232	9.532	0.8662
68	0.2233	0.1767	-1.194	9.494	0.8628
69	0.2266	0.18	-1.194	9.494	0.8628
70	0.23	0.1834	-1.175	9.475	0.8611
71	0.2333	0.1867	-1.175	9.475	0.8611
72	0.2366	0.19	-1.144	9.444	0.8582
73	0.24	0.1934	-1.163	9.463	0.86
74	0.2433	0.1967	-1.201	9.501	0.8634
75	0.2466	0.2	-1.157	9.457	0.8594
76	0.25	0.2034	-1.169	9.469	0.8605
77	0.2533	0.2067	-1.125	9.425	0.8565
78	0.2566	0.21	-1.138	9.438	0.8577
79	0.26	0.2134	-1.131	9.431	0.8571
80	0.2633	0.2167	-1.131	9.431	0.8571
81	0.2666	0.22	-1.131	9.431	0.8571
82	0.27	0.2234	-1.125	9.425	0.8565
83	0.2733	0.2267	-1.119	9.419	0.856
84	0.2766	0.23	-1.113	9.413	0.8554

85	0.28	0.2334	-1.106	9.406	0.8548
86	0.2833	0.2367	-1.1	9.4	0.8542
87	0.2866	0.24	-1.094	9.394	0.8537
88	0.29	0.2434	-1.094	9.394	0.8537
89	0.2933	0.2467	-1.087	9.387	0.8531
90	0.2966	0.25	-1.081	9.381	0.8525
91	0.3	0.2534	-1.081	9.381	0.8525
92	0.3033	0.2567	-1.075	9.375	0.852
93	0.3066	0.26	-1.068	9.368	0.8513
94	0.31	0.2634	-1.068	9.368	0.8513
95	0.3133	0.2667	-1.062	9.362	0.8508
96	0.3166	0.27	-1.056	9.356	0.8502
97	0.32	0.2734	-1.05	9.35	0.8497
98	0.3233	0.2767	-1.05	9.35	0.8497
99	0.3266	0.28	-1.043	9.343	0.8491
100	0.33	0.2834	-1.037	9.337	0.8485
101	0.3333	0.2867	-1.037	9.337	0.8485
102	0.35	0.3034	-1.012	9.312	0.8462
103	0.3666	0.32	-0.987	9.287	0.844
104	0.3833	0.3367	-0.968	9.268	0.8422
105	0.4	0.3534	-0.949	9.249	0.8405
106	0.4166	0.37	-0.93	9.23	0.8388
107	0.4333	0.3867	-0.905	9.205	0.8365
108	0.45	0.4034	-0.899	9.199	0.836
109	0.4666	0.42	-0.874	9.174	0.8337
110	0.4833	0.4367	-0.861	9.161	0.8325
111	0.5	0.4534	-0.836	9.136	0.8302
112	0.5166	0.47	-0.823	9.123	0.8291
113	0.5333	0.4867	-0.804	9.104	0.8273
114	0.55	0.5034	-0.792	9.092	0.8262
115	0.5666	0.52	-0.754	9.054	0.8228
116	0.5833	0.5367	-0.836	9.136	0.8302
117	0.6	0.5534	-0.76	9.06	0.8233
118	0.6166	0.57	-0.628	8.928	0.8113
119	0.6333	0.5867	-0.773	9.073	0.8245
120	0.65	0.6034	-0.723	9.023	0.82
121	0.6666	0.62	-0.76	9.06	0.8233
122	0.6833	0.6367	-0.679	8.979	0.816
123	0.7	0.6534	-0.716	9.016	0.8193
124	0.7166	0.67	-0.672	8.972	0.8153
125	0.7333	0.6867	-0.641	8.941	0.8125
126	0.75	0.7034	-0.628	8.928	0.8113
127	0.7666	0.72	-0.622	8.922	0.8108
128	0.7833	0.7367	-0.635	8.935	0.812
129	0.8	0.7534	-0.603	8.903	0.8091
130	0.8166	0.77	-0.597	8.897	0.8085
131	0.8333	0.7867	-0.584	8.884	0.8073
132	0.85	0.8034	-0.572	8.872	0.8063
133	0.8666	0.82	-0.559	8.859	0.8051
134	0.8833	0.8367	-0.553	8.853	0.8045
135	0.9	0.8534	-0.54	8.84	0.8033
136	0.9166	0.87	-0.534	8.834	0.8028
137	0.9333	0.8867	-0.521	8.821	0.8016
138	0.95	0.9034	-0.515	8.815	0.8011

139	0.9666	0.92	-0.509	8.809	0.8005
140	0.9833	0.9367	-0.503	8.803	0.8
141	1.	0.9534	-0.496	8.796	0.7993
142	1.2	1.153	-0.396	8.696	0.7903
143	1.4	1.353	-0.333	8.633	0.7845
144	1.6	1.553	-0.282	8.582	0.7799
145	1.8	1.753	-0.245	8.545	0.7765
146	2.	1.953	-0.213	8.513	0.7736
147	2.2	2.153	-0.182	8.482	0.7708
148	2.4	2.353	-0.163	8.463	0.7691
149	2.6	2.553	-0.144	8.444	0.7674
150	2.8	2.753	-0.132	8.432	0.7663
151	3.	2.953	-0.119	8.419	0.7651
152	3.2	3.153	-0.106	8.406	0.7639
153	3.4	3.353	-0.1	8.4	0.7634
154	3.6	3.553	-9.4e-002	8.394	0.7628
155	3.8	3.753	-8.8e-002	8.388	0.7623
156	4.	3.953	-8.1e-002	8.381	0.7616
157	4.2	4.153	-7.5e-002	8.375	0.7611
158	4.4	4.353	-6.9e-002	8.369	0.7605
159	4.6	4.553	-6.9e-002	8.369	0.7605
160	4.8	4.753	-6.2e-002	8.362	0.7599
161	5.	4.953	-6.9e-002	8.369	0.7605
162	5.2	5.153	-6.2e-002	8.362	0.7599
163	5.4	5.353	-5.6e-002	8.356	0.7594
164	5.6	5.553	-5.6e-002	8.356	0.7594
165	5.8	5.753	-5.e-002	8.35	0.7588
166	6.	5.953	-5.e-002	8.35	0.7588
167	6.2	6.153	-5.e-002	8.35	0.7588
168	6.4	6.353	-4.4e-002	8.344	0.7583
169	6.6	6.553	-4.4e-002	8.344	0.7583
170	6.8	6.753	-4.4e-002	8.344	0.7583
171	7.	6.953	-4.4e-002	8.344	0.7583
172	7.2	7.153	-4.4e-002	8.344	0.7583
173	7.4	7.353	-3.7e-002	8.337	0.7576
174	7.6	7.553	-3.7e-002	8.337	0.7576
175	7.8	7.753	-3.7e-002	8.337	0.7576
176	8.	7.953	-3.7e-002	8.337	0.7576
177	8.2	8.153	-3.7e-002	8.337	0.7576
178	8.4	8.353	-3.7e-002	8.337	0.7576
179	8.6	8.553	-3.1e-002	8.331	0.7571
180	8.8	8.753	-3.1e-002	8.331	0.7571
181	9.	8.953	-3.1e-002	8.331	0.7571
182	9.2	9.153	-3.1e-002	8.331	0.7571
183	9.4	9.353	-3.1e-002	8.331	0.7571
184	9.6	9.553	-3.1e-002	8.331	0.7571
185	9.8	9.753	-3.1e-002	8.331	0.7571
186	10.	9.953	-3.1e-002	8.331	0.7571
187	12.	11.95	-2.5e-002	8.325	0.7565

Field Hydraulic Conductivity Test 05/08/02 **Arithmetic Graph**

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County B-6 falling head



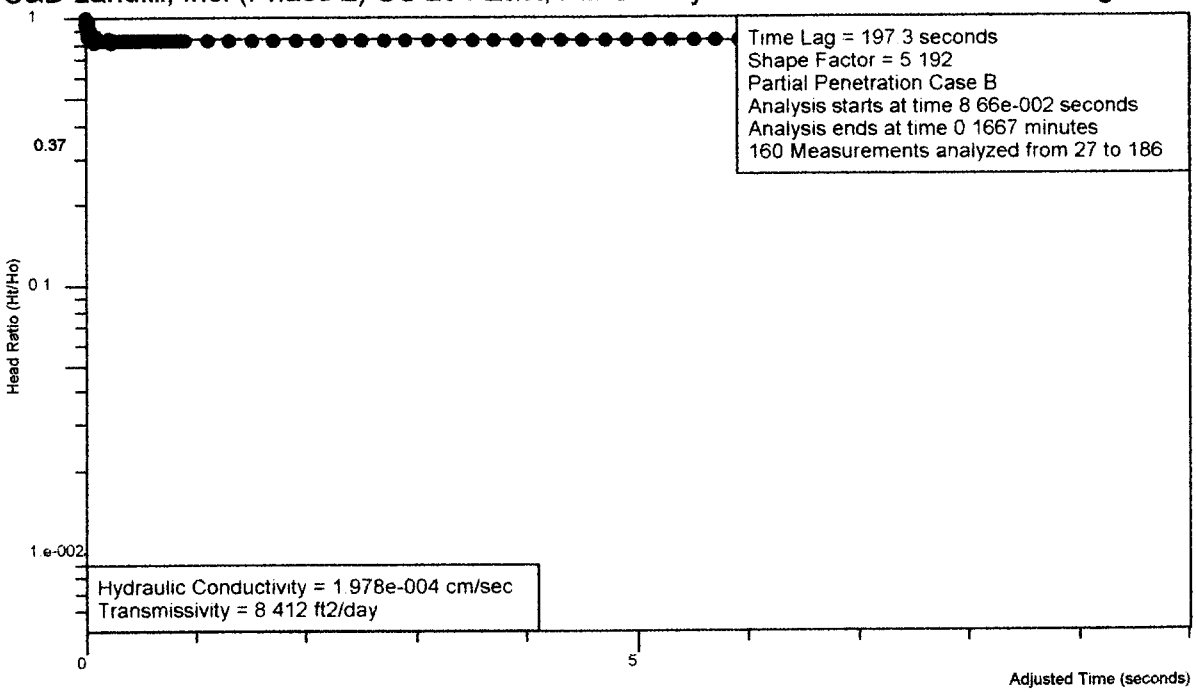
Analysis by Starpoint Software

Field Hydraulic Conductivity Test 05/08/02

Hvorslev Graph

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County

B-6 falling head



Analysis by Starpoint Software

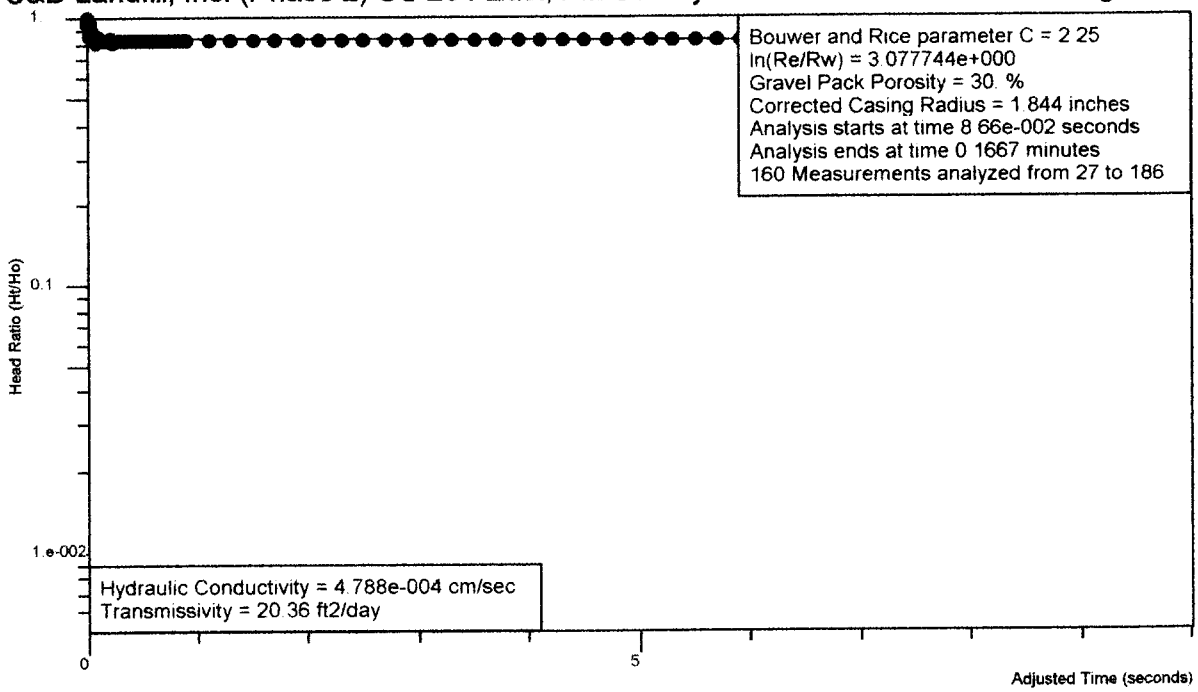
Ho is 7.418 feet at 8.66e-002 seconds

Field Hydraulic Conductivity Test 05/08/02

Bouwer and Rice Graph

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County

B-6 falling head



Analysis by Starpoint Software

Ho is 7.418 feet at 8.66e-002 seconds

Field Hydraulic Conductivity Test

Site Name: C&D Landfill, Inc. (Phase 2)
Location: US 264 East, Pitt County
Test Date: 05/08/02
Import File: A:\David Garrett - Pitt County\B-6fh

Well Label: B-6 falling head
Aquifer Thickness: 15. feet
Screen Length: 10. feet
Casing Radius: 1. inches
Effective Radius: 3. inches
Gravel Pack Porosity: 30. %
Corrected Casing Radius: 1.844 inches
Static Water Level: 6.11 feet
Water Table to Screen Bottom: 22.33 feet
Anisotropy Ratio: 1.
Time Adjustment: 8.66e-002 Seconds
Test starts with trial 26
There are 186 time and drawdown measurements
Maximum head is 7.418 feet
Minimum head is 0. feet

Trial	Time (seconds)	Adjusted Time (seconds)	Drawdown (feet)	Head (feet)	Head Ratio
1	0.	-8.66e-002	-1.2e-002	6.122	0.8253
2	3.3e-003	-8.33e-002	-1.2e-002	6.122	0.8253
3	6.6e-003	-8.e-002	-1.2e-002	6.122	0.8253
4	1.e-002	-7.66e-002	-1.2e-002	6.122	0.8253
5	1.33e-002	-7.33e-002	-1.2e-002	6.122	0.8253
6	1.66e-002	-7.e-002	6.e-003	6.104	0.8229
7	2.e-002	-6.66e-002	-6.e-003	6.116	0.8245
8	2.33e-002	-6.33e-002	0.	6.11	0.8237
9	2.66e-002	-6.e-002	1.2e-002	6.098	0.8221
10	3.e-002	-5.66e-002	0.	6.11	0.8237
11	3.33e-002	-5.33e-002	-1.8e-002	6.128	0.8261
12	3.66e-002	-5.e-002	0.	6.11	0.8237
13	4.e-002	-4.66e-002	-6.e-003	6.116	0.8245
14	4.33e-002	-4.33e-002	-6.e-003	6.116	0.8245
15	4.66e-002	-4.e-002	1.2e-002	6.098	0.8221
16	5.e-002	-3.66e-002	0.	6.11	0.8237
17	5.33e-002	-3.33e-002	-0.213	6.323	0.8524
18	5.66e-002	-3.e-002	-0.377	6.487	0.8745
19	6.e-002	-2.66e-002	-0.534	6.644	0.8957
20	6.33e-002	-2.33e-002	-0.61	6.72	0.9059
21	6.66e-002	-2.e-002	-0.698	6.808	0.9178
22	7.e-002	-1.66e-002	-0.861	6.971	0.9397
23	7.33e-002	-1.33e-002	-0.886	6.996	0.9431
24	7.66e-002	-1.e-002	-0.918	7.028	0.9474
25	8.e-002	-6.6e-003	-1.025	7.135	0.9618
26	8.33e-002	-3.3e-003	-1.201	7.311	0.9856
27	8.66e-002	0.	-1.308	7.418	1.
28	9.e-002	3.4e-003	-1.088	7.198	0.9703
29	9.33e-002	6.7e-003	-0.981	7.091	0.9559
30	9.66e-002	1.e-002	-1.088	7.198	0.9703

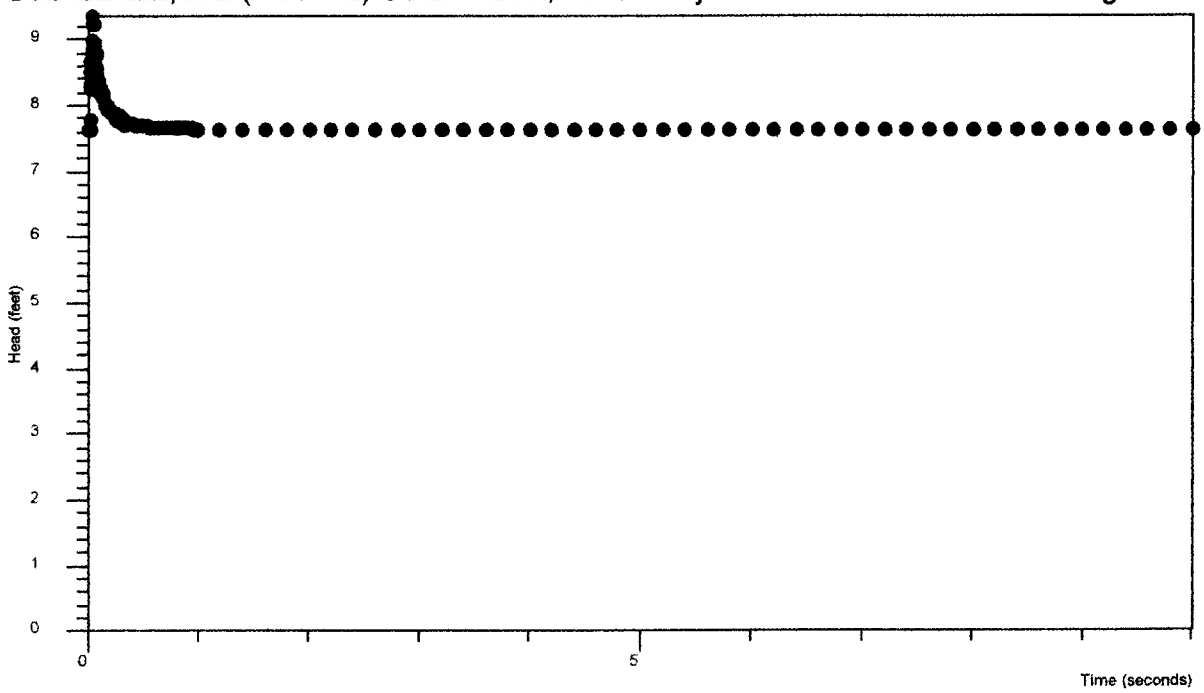
31	0.1	1.34e-002	-1.15	7.26	0.9787
32	0.1033	1.67e-002	-1.125	7.235	0.9753
33	0.1066	2.e-002	-1.113	7.223	0.9737
34	0.11	2.34e-002	-1.088	7.198	0.9703
35	0.1133	2.67e-002	-0.981	7.091	0.9559
36	0.1166	3.e-002	-0.823	6.933	0.9346
37	0.12	3.34e-002	-0.547	6.657	0.8974
38	0.1233	3.67e-002	-0.245	6.355	0.8567
39	0.1266	4.e-002	-0.327	6.437	0.8678
40	0.13	4.34e-002	-0.446	6.556	0.8838
41	0.1333	4.67e-002	-0.522	6.632	0.894
42	0.1366	5.e-002	-0.641	6.751	0.9101
43	0.14	5.34e-002	-0.559	6.669	0.899
44	0.1433	5.67e-002	-0.421	6.531	0.8804
45	0.1466	6.e-002	-0.377	6.487	0.8745
46	0.15	6.34e-002	-0.125	6.235	0.8405
47	0.1533	6.67e-002	6.e-003	6.104	0.8229
48	0.1566	7.e-002	-8.1e-002	6.191	0.8346
49	0.16	7.34e-002	-5.e-002	6.16	0.8304
50	0.1633	7.67e-002	1.2e-002	6.098	0.8221
51	0.1666	8.e-002	1.8e-002	6.092	0.8212
52	0.17	8.34e-002	-0.106	6.216	0.838
53	0.1733	8.67e-002	-0.301	6.411	0.8642
54	0.1766	9.e-002	-0.314	6.424	0.866
55	0.18	9.34e-002	-0.182	6.292	0.8482
56	0.1833	9.67e-002	-0.132	6.242	0.8415
57	0.1866	0.1	-0.138	6.248	0.8423
58	0.19	0.1034	-0.239	6.349	0.8559
59	0.1933	0.1067	-0.119	6.229	0.8397
60	0.1966	0.11	-0.144	6.254	0.8431
61	0.2	0.1134	-0.125	6.235	0.8405
62	0.2033	0.1167	-9.4e-002	6.204	0.8363
63	0.2066	0.12	-0.106	6.216	0.838
64	0.21	0.1234	-8.1e-002	6.191	0.8346
65	0.2133	0.1267	-8.1e-002	6.191	0.8346
66	0.2166	0.13	-5.e-002	6.16	0.8304
67	0.22	0.1334	-5.6e-002	6.166	0.8312
68	0.2233	0.1367	-6.9e-002	6.179	0.833
69	0.2266	0.14	-6.2e-002	6.172	0.832
70	0.23	0.1434	-5.6e-002	6.166	0.8312
71	0.2333	0.1467	-5.6e-002	6.166	0.8312
72	0.2366	0.15	-5.6e-002	6.166	0.8312
73	0.24	0.1534	-5.e-002	6.16	0.8304
74	0.2433	0.1567	-5.6e-002	6.166	0.8312
75	0.2466	0.16	-5.e-002	6.16	0.8304
76	0.25	0.1634	-4.4e-002	6.154	0.8296
77	0.2533	0.1667	-4.4e-002	6.154	0.8296
78	0.2566	0.17	-4.4e-002	6.154	0.8296
79	0.26	0.1734	-8.1e-002	6.191	0.8346
80	0.2633	0.1767	-3.7e-002	6.147	0.8287
81	0.2666	0.18	-3.7e-002	6.147	0.8287
82	0.27	0.1834	-3.7e-002	6.147	0.8287
83	0.2733	0.1867	-3.7e-002	6.147	0.8287
84	0.2766	0.19	-3.1e-002	6.141	0.8279

85	0.28	0.1934	-3.1e-002	6.141	0.8279
86	0.2833	0.1967	-3.7e-002	6.147	0.8287
87	0.2866	0.2	-2.5e-002	6.135	0.827
88	0.29	0.2034	-3.7e-002	6.147	0.8287
89	0.2933	0.2067	-3.1e-002	6.141	0.8279
90	0.2966	0.21	-2.5e-002	6.135	0.827
91	0.3	0.2134	-3.1e-002	6.141	0.8279
92	0.3033	0.2167	-2.5e-002	6.135	0.827
93	0.3066	0.22	-4.4e-002	6.154	0.8296
94	0.31	0.2234	-0.201	6.311	0.8508
95	0.3133	0.2267	-6.2e-002	6.172	0.832
96	0.3166	0.23	0.119	5.991	0.8076
97	0.32	0.2334	-6.2e-002	6.172	0.832
98	0.3233	0.2367	4.4e-002	6.066	0.8177
99	0.3266	0.24	-6.e-003	6.116	0.8245
100	0.33	0.2434	-3.7e-002	6.147	0.8287
101	0.3333	0.2467	1.2e-002	6.098	0.8221
102	0.35	0.2634	-1.8e-002	6.128	0.8261
103	0.3666	0.28	-1.8e-002	6.128	0.8261
104	0.3833	0.2967	-1.8e-002	6.128	0.8261
105	0.4	0.3134	-1.8e-002	6.128	0.8261
106	0.4166	0.33	-1.2e-002	6.122	0.8253
107	0.4333	0.3467	-1.2e-002	6.122	0.8253
108	0.45	0.3634	-1.2e-002	6.122	0.8253
109	0.4666	0.38	-1.2e-002	6.122	0.8253
110	0.4833	0.3967	-1.2e-002	6.122	0.8253
111	0.5	0.4134	-1.2e-002	6.122	0.8253
112	0.5166	0.43	-1.2e-002	6.122	0.8253
113	0.5333	0.4467	-1.2e-002	6.122	0.8253
114	0.55	0.4634	-1.2e-002	6.122	0.8253
115	0.5666	0.48	-1.2e-002	6.122	0.8253
116	0.5833	0.4967	-1.2e-002	6.122	0.8253
117	0.6	0.5134	-1.2e-002	6.122	0.8253
118	0.6166	0.53	-1.2e-002	6.122	0.8253
119	0.6333	0.5467	-1.2e-002	6.122	0.8253
120	0.65	0.5634	-1.2e-002	6.122	0.8253
121	0.6666	0.58	-1.2e-002	6.122	0.8253
122	0.6833	0.5967	-1.2e-002	6.122	0.8253
123	0.7	0.6134	-1.2e-002	6.122	0.8253
124	0.7166	0.63	-1.2e-002	6.122	0.8253
125	0.7333	0.6467	-1.2e-002	6.122	0.8253
126	0.75	0.6634	-1.2e-002	6.122	0.8253
127	0.7666	0.68	-6.e-003	6.116	0.8245
128	0.7833	0.6967	-1.2e-002	6.122	0.8253
129	0.8	0.7134	-6.e-003	6.116	0.8245
130	0.8166	0.73	-6.e-003	6.116	0.8245
131	0.8333	0.7467	-6.e-003	6.116	0.8245
132	0.85	0.7634	-6.e-003	6.116	0.8245
133	0.8666	0.78	-6.e-003	6.116	0.8245
134	0.8833	0.7967	-6.e-003	6.116	0.8245
135	0.9	0.8134	-6.e-003	6.116	0.8245
136	0.9166	0.83	-6.e-003	6.116	0.8245
137	0.9333	0.8467	-6.e-003	6.116	0.8245
138	0.95	0.8634	-6.e-003	6.116	0.8245

139	0.9666	0.88	-6.e-003	6.116	0.8245
140	0.9833	0.8967	-6.e-003	6.116	0.8245
141	1.	0.9134	-6.e-003	6.116	0.8245
142	1.2	1.113	-6.e-003	6.116	0.8245
143	1.4	1.313	-6.e-003	6.116	0.8245
144	1.6	1.513	-6.e-003	6.116	0.8245
145	1.8	1.713	-6.e-003	6.116	0.8245
146	2.	1.913	-6.e-003	6.116	0.8245
147	2.2	2.113	-6.e-003	6.116	0.8245
148	2.4	2.313	0.	6.11	0.8237
149	2.6	2.513	-6.e-003	6.116	0.8245
150	2.8	2.713	0.	6.11	0.8237
151	3.	2.913	-6.e-003	6.116	0.8245
152	3.2	3.113	-6.e-003	6.116	0.8245
153	3.4	3.313	-6.e-003	6.116	0.8245
154	3.6	3.513	-6.e-003	6.116	0.8245
155	3.8	3.713	0.	6.11	0.8237
156	4.	3.913	0.	6.11	0.8237
157	4.2	4.113	0.	6.11	0.8237
158	4.4	4.313	0.	6.11	0.8237
159	4.6	4.513	0.	6.11	0.8237
160	4.8	4.713	0.	6.11	0.8237
161	5.	4.913	-6.e-003	6.116	0.8245
162	5.2	5.113	0.	6.11	0.8237
163	5.4	5.313	0.	6.11	0.8237
164	5.6	5.513	0.	6.11	0.8237
165	5.8	5.713	0.	6.11	0.8237
166	6.	5.913	0.	6.11	0.8237
167	6.2	6.113	-6.e-003	6.116	0.8245
168	6.4	6.313	-6.e-003	6.116	0.8245
169	6.6	6.513	0.	6.11	0.8237
170	6.8	6.713	0.	6.11	0.8237
171	7.	6.913	-6.e-003	6.116	0.8245
172	7.2	7.113	-6.e-003	6.116	0.8245
173	7.4	7.313	0.	6.11	0.8237
174	7.6	7.513	0.	6.11	0.8237
175	7.8	7.713	0.	6.11	0.8237
176	8.	7.913	0.	6.11	0.8237
177	8.2	8.113	0.	6.11	0.8237
178	8.4	8.313	0.	6.11	0.8237
179	8.6	8.513	0.	6.11	0.8237
180	8.8	8.713	0.	6.11	0.8237
181	9.	8.913	0.	6.11	0.8237
182	9.2	9.113	0.	6.11	0.8237
183	9.4	9.313	0.	6.11	0.8237
184	9.6	9.513	0.	6.11	0.8237
185	9.8	9.713	0.	6.11	0.8237
186	10.	9.913	0.	6.11	0.8237

Field Hydraulic Conductivity Test 05/08/02 **Arithmetic Graph**

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County B-7 falling head



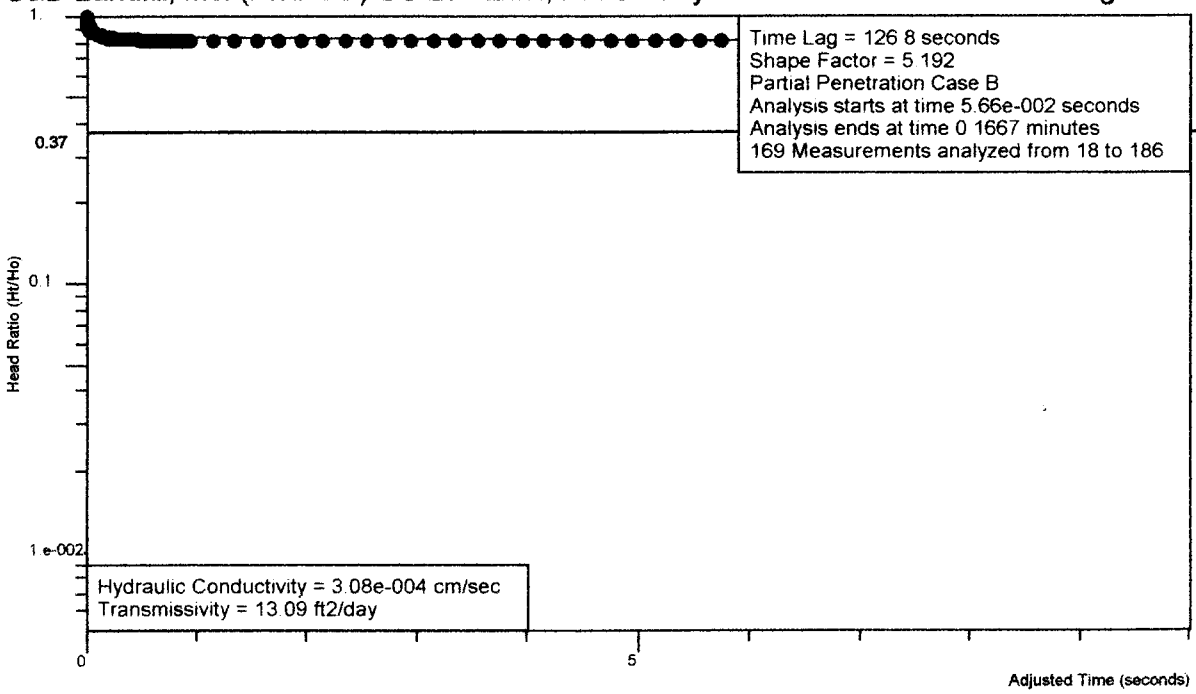
Analysis by Starpoint Software

Field Hydraulic Conductivity Test 05/08/02

Hvorslev Graph

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County

B-7 falling head



Analysis by Starpoint Software

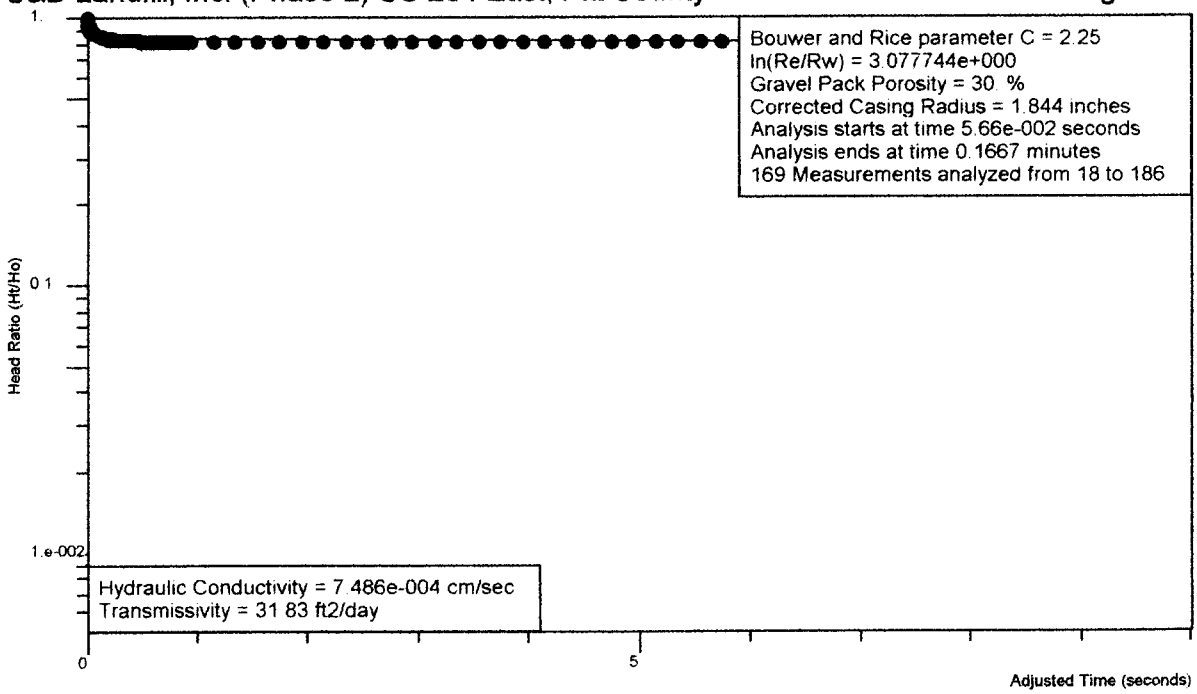
Ho is 9.344 feet at 5.66e-002 seconds

Field Hydraulic Conductivity Test 05/08/02

Bouwer and Rice Graph

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County

B-7 falling head



Analysis by Starpoint Software

Ho is 9.344 feet at 5.66e-002 seconds

Field Hydraulic Conductivity Test

Site Name: C&D Landfill, Inc. (Phase 2)
Location: US 264 East, Pitt County
Test Date: 05/08/02
Import File: A:\David Garrett - Pitt County\B-7fh

Well Label: B-7 falling head
Aquifer Thickness: 15. feet
Screen Length: 10. feet
Casing Radius: 1. inches
Effective Radius: 3. inches
Gravel Pack Porosity: 30. %
Corrected Casing Radius: 1.844 inches
Static Water Level: 7.59 feet
Water Table to Screen Bottom: 20.15 feet
Anisotropy Ratio: 1.
Time Adjustment: 5.66e-002 Seconds
Test starts with trial 17
There are 186 time and drawdown measurements
Maximum head is 9.344 feet
Minimum head is 0. feet

Trial	Time (seconds)	Adjusted Time (seconds)	Drawdown (feet)	Head (feet)	Head Ratio
1	0.	-5.66e-002	-2.5e-002	7.615	0.815
2	3.3e-003	-5.33e-002	-2.5e-002	7.615	0.815
3	6.6e-003	-5.e-002	-2.5e-002	7.615	0.815
4	1.e-002	-4.66e-002	-2.5e-002	7.615	0.815
5	1.33e-002	-4.33e-002	-3.1e-002	7.621	0.8156
6	1.66e-002	-4.e-002	-2.5e-002	7.615	0.815
7	2.e-002	-3.66e-002	-2.5e-002	7.615	0.815
8	2.33e-002	-3.33e-002	-0.176	7.766	0.8311
9	2.66e-002	-3.e-002	-0.678	8.268	0.8848
10	3.e-002	-2.66e-002	-0.735	8.325	0.8909
11	3.33e-002	-2.33e-002	-0.93	8.52	0.9118
12	3.66e-002	-2.e-002	-1.087	8.677	0.9286
13	4.e-002	-1.66e-002	-1.251	8.841	0.9462
14	4.33e-002	-1.33e-002	-1.207	8.797	0.9415
15	4.66e-002	-1.e-002	-1.194	8.784	0.9401
16	5.e-002	-6.6e-003	-1.383	8.973	0.9603
17	5.33e-002	-3.3e-003	-1.641	9.231	0.9879
18	5.66e-002	0.	-1.754	9.344	1.
19	6.e-002	3.4e-003	-1.647	9.237	0.9885
20	6.33e-002	6.7e-003	-1.364	8.954	0.9583
21	6.66e-002	1.e-002	-1.326	8.916	0.9542
22	7.e-002	1.34e-002	-1.345	8.935	0.9562
23	7.33e-002	1.67e-002	-1.087	8.677	0.9286
24	7.66e-002	2.e-002	-1.2	8.79	0.9407
25	8.e-002	2.34e-002	-1.169	8.759	0.9374
26	8.33e-002	2.67e-002	-0.968	8.558	0.9159
27	8.66e-002	3.e-002	-0.892	8.482	0.9077
28	9.e-002	3.34e-002	-0.691	8.281	0.8862
29	9.33e-002	3.67e-002	-0.861	8.451	0.9044
30	9.66e-002	4.e-002	-0.785	8.375	0.8963

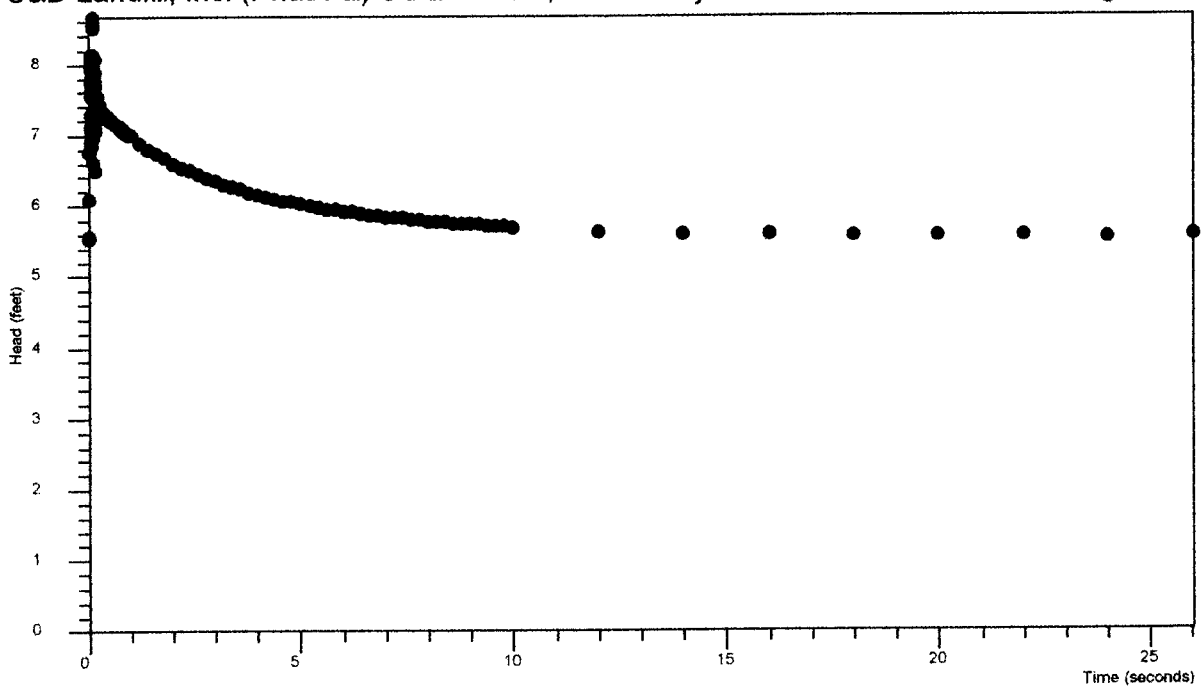
31	0.1	4.34e-002	-0.754	8.344	0.893
32	0.1033	4.67e-002	-0.804	8.394	0.8983
33	0.1066	5.e-002	-0.628	8.218	0.8795
34	0.11	5.34e-002	-0.616	8.206	0.8782
35	0.1133	5.67e-002	-0.634	8.224	0.8801
36	0.1166	6.e-002	-0.647	8.237	0.8815
37	0.12	6.34e-002	-0.653	8.243	0.8822
38	0.1233	6.67e-002	-0.641	8.231	0.8809
39	0.1266	7.e-002	-0.622	8.212	0.8789
40	0.13	7.34e-002	-0.603	8.193	0.8768
41	0.1333	7.67e-002	-0.572	8.162	0.8735
42	0.1366	8.e-002	-0.534	8.124	0.8694
43	0.14	8.34e-002	-0.559	8.149	0.8721
44	0.1433	8.67e-002	-0.534	8.124	0.8694
45	0.1466	9.e-002	-0.521	8.111	0.868
46	0.15	9.34e-002	-0.603	8.193	0.8768
47	0.1533	9.67e-002	-0.458	8.048	0.8613
48	0.1566	1.e-001	-0.452	8.042	0.8607
49	0.16	0.1034	-0.433	8.023	0.8586
50	0.1633	0.1067	-0.421	8.011	0.8573
51	0.1666	0.11	-0.427	8.017	0.858
52	0.17	0.1134	-0.414	8.004	0.8566
53	0.1733	0.1167	-0.414	8.004	0.8566
54	0.1766	0.12	-0.408	7.998	0.856
55	0.18	0.1234	-0.396	7.986	0.8547
56	0.1833	0.1267	-0.383	7.973	0.8533
57	0.1866	0.13	-0.377	7.967	0.8526
58	0.19	0.1334	-0.364	7.954	0.8512
59	0.1933	0.1367	-0.358	7.948	0.8506
60	0.1966	0.14	-0.345	7.935	0.8492
61	0.2	0.1434	-0.339	7.929	0.8486
62	0.2033	0.1467	-0.333	7.923	0.8479
63	0.2066	0.15	-0.326	7.916	0.8472
64	0.21	0.1534	-0.314	7.904	0.8459
65	0.2133	0.1567	-0.308	7.898	0.8452
66	0.2166	0.16	-0.301	7.891	0.8445
67	0.22	0.1634	-0.295	7.885	0.8439
68	0.2233	0.1667	-0.308	7.898	0.8452
69	0.2266	0.17	-0.276	7.866	0.8418
70	0.23	0.1734	-0.276	7.866	0.8418
71	0.2333	0.1767	-0.27	7.86	0.8412
72	0.2366	0.18	-0.264	7.854	0.8405
73	0.24	0.1834	-0.264	7.854	0.8405
74	0.2433	0.1867	-0.257	7.847	0.8398
75	0.2466	0.19	-0.251	7.841	0.8391
76	0.25	0.1934	-0.295	7.885	0.8439
77	0.2533	0.1967	-0.213	7.803	0.8351
78	0.2566	0.2	-0.27	7.86	0.8412
79	0.26	0.2034	-0.213	7.803	0.8351
80	0.2633	0.2067	-0.201	7.791	0.8338
81	0.2666	0.21	-0.213	7.803	0.8351
82	0.27	0.2134	-0.213	7.803	0.8351
83	0.2733	0.2167	-0.257	7.847	0.8398
84	0.2766	0.22	-0.169	7.759	0.8304

85	0.28	0.2234	-0.213	7.803	0.8351
86	0.2833	0.2267	-0.245	7.835	0.8385
87	0.2866	0.23	-0.251	7.841	0.8391
88	0.29	0.2334	-0.163	7.753	0.8297
89	0.2933	0.2367	-0.163	7.753	0.8297
90	0.2966	0.24	-0.182	7.772	0.8318
91	0.3	0.2434	-0.188	7.778	0.8324
92	0.3033	0.2467	-0.182	7.772	0.8318
93	0.3066	0.25	-0.194	7.784	0.833
94	0.31	0.2534	-0.188	7.778	0.8324
95	0.3133	0.2567	-0.144	7.734	0.8277
96	0.3166	0.26	-0.182	7.772	0.8318
97	0.32	0.2634	-0.157	7.747	0.8291
98	0.3233	0.2667	-0.207	7.797	0.8344
99	0.3266	0.27	-0.207	7.797	0.8344
100	0.33	0.2734	-9.4e-002	7.684	0.8223
101	0.3333	0.2767	-0.169	7.759	0.8304
102	0.35	0.2934	-0.15	7.74	0.8283
103	0.3666	0.31	-0.138	7.728	0.8271
104	0.3833	0.3267	-0.125	7.715	0.8257
105	0.4	0.3434	-0.119	7.709	0.825
106	0.4166	0.36	-0.113	7.703	0.8244
107	0.4333	0.3767	-0.106	7.696	0.8236
108	0.45	0.3934	-0.1	7.69	0.823
109	0.4666	0.41	-0.1	7.69	0.823
110	0.4833	0.4267	-9.4e-002	7.684	0.8223
111	0.5	0.4434	-8.8e-002	7.678	0.8217
112	0.5166	0.46	-8.8e-002	7.678	0.8217
113	0.5333	0.4767	-8.1e-002	7.671	0.821
114	0.55	0.4934	-8.1e-002	7.671	0.821
115	0.5666	0.51	-7.5e-002	7.665	0.8203
116	0.5833	0.5267	-7.5e-002	7.665	0.8203
117	0.6	0.5434	-7.5e-002	7.665	0.8203
118	0.6166	0.56	-6.9e-002	7.659	0.8197
119	0.6333	0.5767	-6.9e-002	7.659	0.8197
120	0.65	0.5934	-6.9e-002	7.659	0.8197
121	0.6666	0.61	-6.2e-002	7.652	0.8189
122	0.6833	0.6267	-6.2e-002	7.652	0.8189
123	0.7	0.6434	-6.9e-002	7.659	0.8197
124	0.7166	0.66	-5.6e-002	7.646	0.8183
125	0.7333	0.6767	-5.6e-002	7.646	0.8183
126	0.75	0.6934	-5.6e-002	7.646	0.8183
127	0.7666	0.71	-5.6e-002	7.646	0.8183
128	0.7833	0.7267	-5.6e-002	7.646	0.8183
129	0.8	0.7434	-5.6e-002	7.646	0.8183
130	0.8166	0.76	-5.e-002	7.64	0.8176
131	0.8333	0.7767	-5.e-002	7.64	0.8176
132	0.85	0.7934	-5.e-002	7.64	0.8176
133	0.8666	0.81	-5.e-002	7.64	0.8176
134	0.8833	0.8267	-5.e-002	7.64	0.8176
135	0.9	0.8434	-5.e-002	7.64	0.8176
136	0.9166	0.86	-5.e-002	7.64	0.8176
137	0.9333	0.8767	-5.e-002	7.64	0.8176
138	0.95	0.8934	-5.e-002	7.64	0.8176

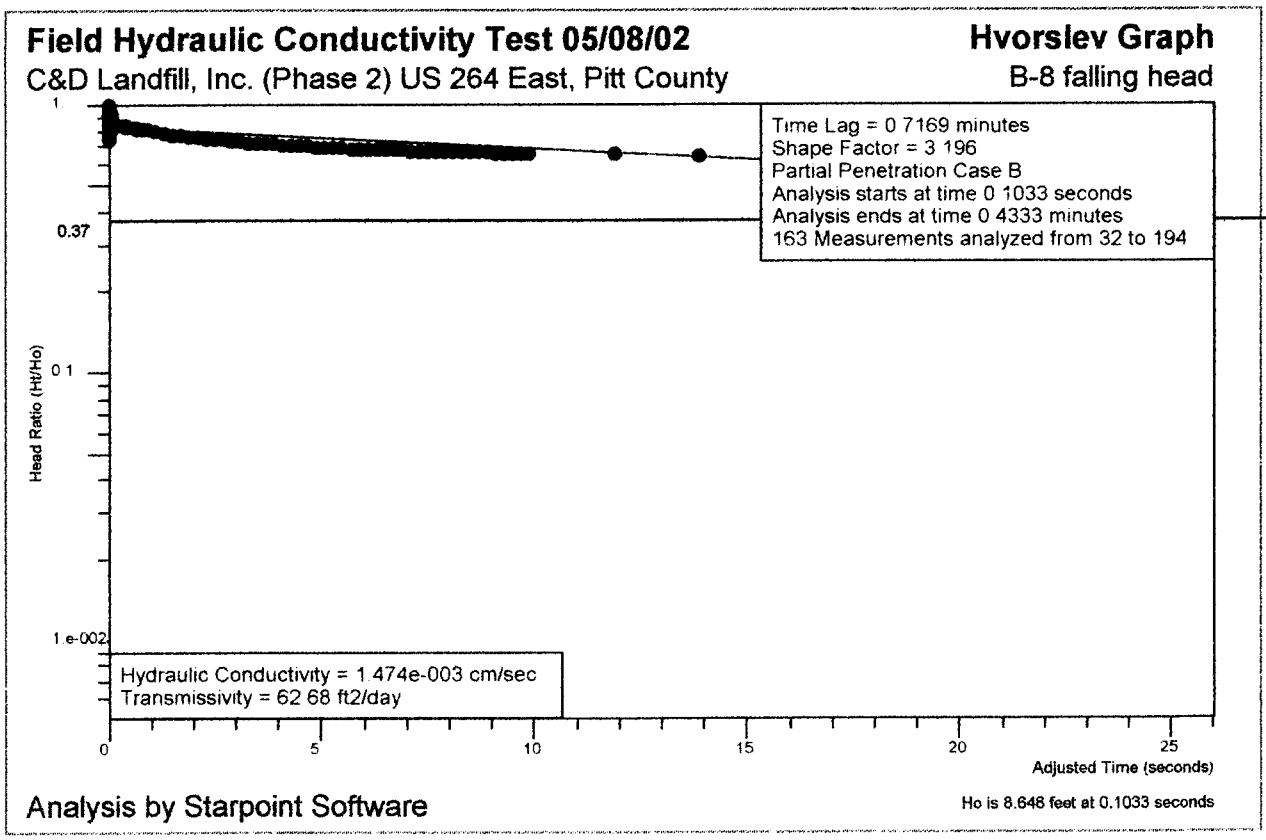
139	0.9666	0.91	-4.4e-002	7.634	0.817
140	0.9833	0.9267	-4.4e-002	7.634	0.817
141	1.	0.9434	-4.4e-002	7.634	0.817
142	1.2	1.143	-3.7e-002	7.627	0.8162
143	1.4	1.343	-3.7e-002	7.627	0.8162
144	1.6	1.543	-3.7e-002	7.627	0.8162
145	1.8	1.743	-3.1e-002	7.621	0.8156
146	2.	1.943	-3.1e-002	7.621	0.8156
147	2.2	2.143	-3.1e-002	7.621	0.8156
148	2.4	2.343	-3.1e-002	7.621	0.8156
149	2.6	2.543	-3.1e-002	7.621	0.8156
150	2.8	2.743	-3.1e-002	7.621	0.8156
151	3.	2.943	-3.1e-002	7.621	0.8156
152	3.2	3.143	-3.1e-002	7.621	0.8156
153	3.4	3.343	-3.1e-002	7.621	0.8156
154	3.6	3.543	-3.1e-002	7.621	0.8156
155	3.8	3.743	-3.1e-002	7.621	0.8156
156	4.	3.943	-3.1e-002	7.621	0.8156
157	4.2	4.143	-2.5e-002	7.615	0.815
158	4.4	4.343	-3.1e-002	7.621	0.8156
159	4.6	4.543	-2.5e-002	7.615	0.815
160	4.8	4.743	-2.5e-002	7.615	0.815
161	5.	4.943	-2.5e-002	7.615	0.815
162	5.2	5.143	-2.5e-002	7.615	0.815
163	5.4	5.343	-2.5e-002	7.615	0.815
164	5.6	5.543	-2.5e-002	7.615	0.815
165	5.8	5.743	-2.5e-002	7.615	0.815
166	6.	5.943	-2.5e-002	7.615	0.815
167	6.2	6.143	-2.5e-002	7.615	0.815
168	6.4	6.343	-2.5e-002	7.615	0.815
169	6.6	6.543	-2.5e-002	7.615	0.815
170	6.8	6.743	-2.5e-002	7.615	0.815
171	7.	6.943	-2.5e-002	7.615	0.815
172	7.2	7.143	-2.5e-002	7.615	0.815
173	7.4	7.343	-2.5e-002	7.615	0.815
174	7.6	7.543	-2.5e-002	7.615	0.815
175	7.8	7.743	-2.5e-002	7.615	0.815
176	8.	7.943	-2.5e-002	7.615	0.815
177	8.2	8.143	-2.5e-002	7.615	0.815
178	8.4	8.343	-2.5e-002	7.615	0.815
179	8.6	8.543	-2.5e-002	7.615	0.815
180	8.8	8.743	-2.5e-002	7.615	0.815
181	9.	8.943	-2.5e-002	7.615	0.815
182	9.2	9.143	-2.5e-002	7.615	0.815
183	9.4	9.343	-2.5e-002	7.615	0.815
184	9.6	9.543	-2.5e-002	7.615	0.815
185	9.8	9.743	-2.5e-002	7.615	0.815
186	10.	9.943	-2.5e-002	7.615	0.815

Field Hydraulic Conductivity Test 05/08/02 **Arithmetic Graph**

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County B-8 falling head



Analysis by Starpoint Software

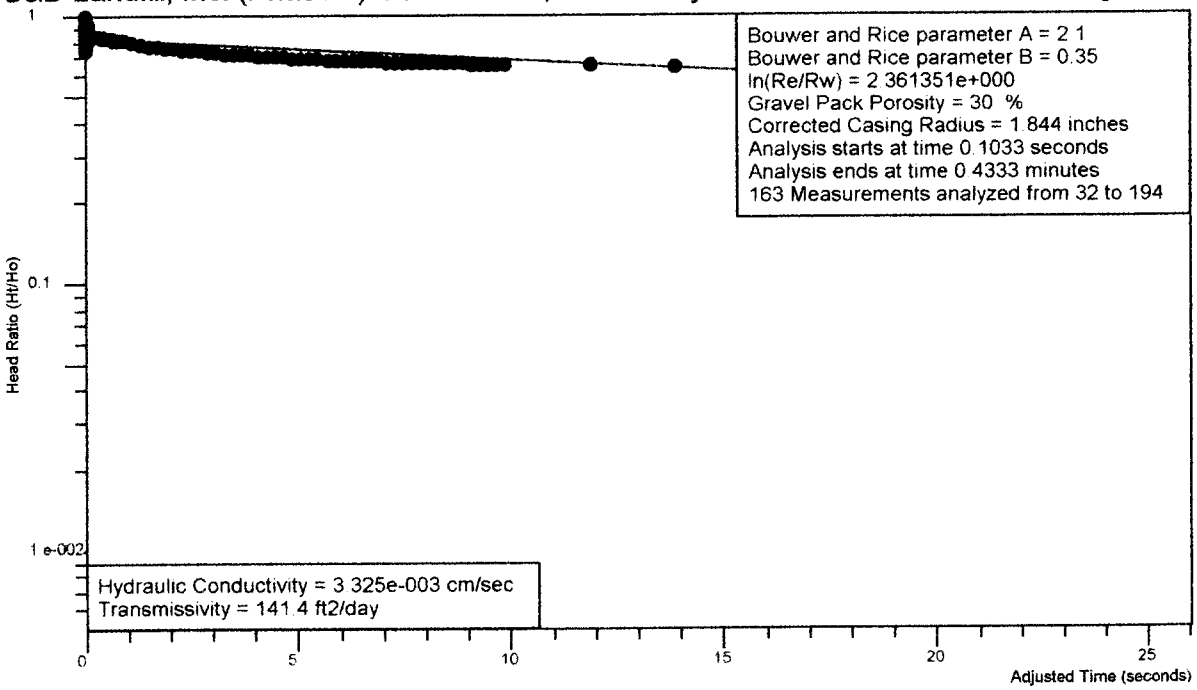

Field Hydraulic Conductivity Test 05/08/02
Hvorslev Graph
C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County
B-8 falling head
Time Lag = 0 7169 minutes
Shape Factor = 3 196
Partial Penetration Case B
Analysis starts at time 0 1033 seconds
Analysis ends at time 0 4333 minutes
163 Measurements analyzed from 32 to 194
Hydraulic Conductivity = 1.474e-003 cm/sec
Transmissivity = 62 68 ft2/day
Head Ratio (Ht/Ho)
1
0.37
0 1
1.e-002
0
5
10
15
20
25
Adjusted Time (seconds)
Analysis by Starpoint Software
Ho is 8.648 feet at 0.1033 seconds

Field Hydraulic Conductivity Test 05/08/02

Bouwer and Rice Graph

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County

B-8 falling head



Analysis by Starpoint Software

Ho is 8.648 feet at 0.1033 seconds

Field Hydraulic Conductivity Test

Site Name: C&D Landfill, Inc. (Phase 2)
Location: US 264 East, Pitt County
Test Date: 05/08/02
Import File: A:\David Garrett - Pitt County\B-8fh

Well Label: B-8 falling head
Aquifer Thickness: 15. feet
Screen Length: 5. feet
Casing Radius: 1. inches
Effective Radius: 3. inches
Gravel Pack Porosity: 30. %
Corrected Casing Radius: 1.844 inches
Static Water Level: 5.54 feet
Water Table to Screen Bottom: 12.73 feet
Anisotropy Ratio: 1.
Time Adjustment: 0.1033 Seconds
Test starts with trial 31
There are 194 time and drawdown measurements
Maximum head is 8.648 feet
Minimum head is 0. feet

Trial	Time (seconds)	Adjusted Time (seconds)	Drawdown (feet)	Head (feet)	Head Ratio
1	0.	-0.1033	-6.e-003	5.546	0.6413
2	3.3e-003	-0.1	-6.e-003	5.546	0.6413
3	6.6e-003	-9.67e-002	-6.e-003	5.546	0.6413
4	1.e-002	-9.33e-002	-6.e-003	5.546	0.6413
5	1.33e-002	-9.e-002	-6.e-003	5.546	0.6413
6	1.66e-002	-8.67e-002	-6.e-003	5.546	0.6413
7	2.e-002	-8.33e-002	-1.2e-002	5.552	0.642
8	2.33e-002	-8.e-002	-1.2e-002	5.552	0.642
9	2.66e-002	-7.67e-002	-6.e-003	5.546	0.6413
10	3.e-002	-7.33e-002	-6.e-003	5.546	0.6413
11	3.33e-002	-7.e-002	-2.5e-002	5.565	0.6435
12	3.66e-002	-6.67e-002	0.	5.54	0.6406
13	4.e-002	-6.33e-002	-1.8e-002	5.558	0.6427
14	4.33e-002	-6.e-002	-0.539	6.079	0.7029
15	4.66e-002	-5.67e-002	-1.236	6.776	0.7835
16	5.e-002	-5.33e-002	-1.569	7.109	0.822
17	5.33e-002	-5.e-002	-1.318	6.858	0.793
18	5.66e-002	-4.67e-002	-1.556	7.096	0.8205
19	6.e-002	-4.33e-002	-2.078	7.618	0.8809
20	6.33e-002	-4.e-002	-2.404	7.944	0.9186
21	6.66e-002	-3.67e-002	-2.593	8.133	0.9404
22	7.e-002	-3.33e-002	-2.247	7.787	0.9004
23	7.33e-002	-3.e-002	-2.009	7.549	0.8729
24	7.66e-002	-2.67e-002	-2.241	7.781	0.8997
25	8.e-002	-2.33e-002	-2.511	8.051	0.931
26	8.33e-002	-2.e-002	-2.561	8.101	0.9367
27	8.66e-002	-1.67e-002	-1.751	7.291	0.8431
28	9.e-002	-1.33e-002	-1.318	6.858	0.793
29	9.33e-002	-1.e-002	-1.381	6.921	0.8003
30	9.66e-002	-6.7e-003	-2.191	7.731	0.894

31	0.1	-3.3e-003	-2.982	8.522	0.9854
32	0.1033	0.	-3.108	8.648	1.
33	0.1066	3.3e-003	-2.448	7.988	0.9237
34	0.11	6.7e-003	-1.814	7.354	0.8504
35	0.1133	1.e-002	-1.632	7.172	0.8293
36	0.1166	1.33e-002	-1.676	7.216	0.8344
37	0.12	1.67e-002	-1.431	6.971	0.8061
38	0.1233	2.e-002	-2.046	7.586	0.8772
39	0.1266	2.33e-002	-3.026	8.566	0.9905
40	0.13	2.67e-002	-3.045	8.585	0.9927
41	0.1333	3.e-002	-2.253	7.793	0.9011
42	0.1366	3.33e-002	-1.983	7.523	0.8699
43	0.14	3.67e-002	-2.411	7.951	0.9194
44	0.1433	4.e-002	-2.605	8.145	0.9418
45	0.1466	4.33e-002	-1.073	6.613	0.7647
46	0.15	4.67e-002	-0.954	6.494	0.7509
47	0.1533	5.e-002	-1.556	7.096	0.8205
48	0.1566	5.33e-002	-2.329	7.869	0.9099
49	0.16	5.67e-002	-2.542	8.082	0.9346
50	0.1633	6.e-002	-2.216	7.756	0.8969
51	0.1666	6.33e-002	-1.707	7.247	0.838
52	0.17	6.67e-002	-1.512	7.052	0.8154
53	0.1733	7.e-002	-1.638	7.178	0.83
54	0.1766	7.33e-002	-1.971	7.511	0.8685
55	0.18	7.67e-002	-2.147	7.687	0.8889
56	0.1833	8.e-002	-2.084	7.624	0.8816
57	0.1866	8.33e-002	-1.87	7.41	0.8568
58	0.19	8.67e-002	-1.732	7.272	0.8409
59	0.1933	9.e-002	-1.757	7.297	0.8438
60	0.1966	9.33e-002	-1.883	7.423	0.8583
61	0.2	9.67e-002	-1.977	7.517	0.8692
62	0.2033	0.1	-1.99	7.53	0.8707
63	0.2066	0.1033	-1.883	7.423	0.8583
64	0.21	0.1067	-1.808	7.348	0.8497
65	0.2133	0.11	-1.801	7.341	0.8489
66	0.2166	0.1133	-1.889	7.429	0.859
67	0.22	0.1167	-2.009	7.549	0.8729
68	0.2233	0.12	-1.801	7.341	0.8489
69	0.2266	0.1233	-1.826	7.366	0.8518
70	0.23	0.1267	-1.795	7.335	0.8482
71	0.2333	0.13	-1.877	7.417	0.8577
72	0.2366	0.1333	-1.896	7.436	0.8599
73	0.24	0.1367	-1.889	7.429	0.859
74	0.2433	0.14	-1.852	7.392	0.8548
75	0.2466	0.1433	-1.82	7.36	0.8511
76	0.25	0.1467	-1.826	7.366	0.8518
77	0.2533	0.15	-1.845	7.385	0.854
78	0.2566	0.1533	-1.858	7.398	0.8555
79	0.26	0.1567	-1.858	7.398	0.8555
80	0.2633	0.16	-1.845	7.385	0.854
81	0.2666	0.1633	-1.826	7.366	0.8518
82	0.27	0.1667	-1.826	7.366	0.8518
83	0.2733	0.17	-1.833	7.373	0.8526
84	0.2766	0.1733	-1.889	7.429	0.859

85	0.28	0.1767	-1.801	7.341	0.8489
86	0.2833	0.18	-1.814	7.354	0.8504
87	0.2866	0.1833	-1.795	7.335	0.8482
88	0.29	0.1867	-1.826	7.366	0.8518
89	0.2933	0.19	-1.833	7.373	0.8526
90	0.2966	0.1933	-1.833	7.373	0.8526
91	0.3	0.1967	-1.82	7.36	0.8511
92	0.3033	0.2	-1.808	7.348	0.8497
93	0.3066	0.2033	-1.808	7.348	0.8497
94	0.31	0.2067	-1.808	7.348	0.8497
95	0.3133	0.21	-1.814	7.354	0.8504
96	0.3166	0.2133	-1.814	7.354	0.8504
97	0.32	0.2167	-1.808	7.348	0.8497
98	0.3233	0.22	-1.801	7.341	0.8489
99	0.3266	0.2233	-1.795	7.335	0.8482
100	0.33	0.2267	-1.795	7.335	0.8482
101	0.3333	0.23	-1.795	7.335	0.8482
102	0.35	0.2467	-1.782	7.322	0.8467
103	0.3666	0.2633	-1.77	7.31	0.8453
104	0.3833	0.28	-1.764	7.304	0.8446
105	0.4	0.2967	-1.751	7.291	0.8431
106	0.4166	0.3133	-1.745	7.285	0.8424
107	0.4333	0.33	-1.732	7.272	0.8409
108	0.45	0.3467	-1.72	7.26	0.8395
109	0.4666	0.3633	-1.713	7.253	0.8387
110	0.4833	0.38	-1.701	7.241	0.8373
111	0.5	0.3967	-1.695	7.235	0.8366
112	0.5166	0.4133	-1.682	7.222	0.8351
113	0.5333	0.43	-1.676	7.216	0.8344
114	0.55	0.4467	-1.663	7.203	0.8329
115	0.5666	0.4633	-1.657	7.197	0.8322
116	0.5833	0.48	-1.651	7.191	0.8315
117	0.6	0.4967	-1.638	7.178	0.83
118	0.6166	0.5133	-1.632	7.172	0.8293
119	0.6333	0.53	-1.625	7.165	0.8285
120	0.65	0.5467	-1.6	7.14	0.8256
121	0.6666	0.5633	-1.6	7.14	0.8256
122	0.6833	0.58	-1.594	7.134	0.8249
123	0.7	0.5967	-1.588	7.128	0.8242
124	0.7166	0.6133	-1.575	7.115	0.8227
125	0.7333	0.63	-1.569	7.109	0.822
126	0.75	0.6467	-1.563	7.103	0.8213
127	0.7666	0.6633	-1.55	7.09	0.8198
128	0.7833	0.68	-1.544	7.084	0.8191
129	0.8	0.6967	-1.538	7.078	0.8185
130	0.8166	0.7133	-1.531	7.071	0.8176
131	0.8333	0.73	-1.519	7.059	0.8163
132	0.85	0.7467	-1.512	7.052	0.8154
133	0.8666	0.7633	-1.506	7.046	0.8148
134	0.8833	0.78	-1.494	7.034	0.8134
135	0.9	0.7967	-1.487	7.027	0.8126
136	0.9166	0.8133	-1.481	7.021	0.8119
137	0.9333	0.83	-1.475	7.015	0.8112
138	0.95	0.8467	-1.469	7.009	0.8105

139	0.9666	0.8633	-1.456	6.996	0.809
140	0.9833	0.88	-1.45	6.99	0.8083
141	1.	0.8967	-1.443	6.983	0.8075
142	1.2	1.097	-1.337	6.877	0.7952
143	1.4	1.297	-1.261	6.801	0.7864
144	1.6	1.497	-1.186	6.726	0.7778
145	1.8	1.697	-1.123	6.663	0.7705
146	2.	1.897	-1.06	6.6	0.7632
147	2.2	2.097	-1.004	6.544	0.7567
148	2.4	2.297	-0.947	6.487	0.7501
149	2.6	2.497	-0.897	6.437	0.7443
150	2.8	2.697	-0.847	6.387	0.7386
151	3.	2.897	-0.803	6.343	0.7335
152	3.2	3.097	-0.765	6.305	0.7291
153	3.4	3.297	-0.721	6.261	0.724
154	3.6	3.497	-0.69	6.23	0.7204
155	3.8	3.697	-0.652	6.192	0.716
156	4.	3.897	-0.621	6.161	0.7124
157	4.2	4.097	-0.59	6.13	0.7088
158	4.4	4.297	-0.564	6.104	0.7058
159	4.6	4.497	-0.533	6.073	0.7022
160	4.8	4.697	-0.508	6.048	0.6994
161	5.	4.897	-0.483	6.023	0.6965
162	5.2	5.097	-0.458	5.998	0.6936
163	5.4	5.297	-0.439	5.979	0.6914
164	5.6	5.497	-0.42	5.96	0.6892
165	5.8	5.697	-0.395	5.935	0.6863
166	6.	5.897	-0.376	5.916	0.6841
167	6.2	6.097	-0.364	5.904	0.6827
168	6.4	6.297	-0.345	5.885	0.6805
169	6.6	6.497	-0.332	5.872	0.679
170	6.8	6.697	-0.313	5.853	0.6768
171	7.	6.897	-0.301	5.841	0.6754
172	7.2	7.097	-0.288	5.828	0.6739
173	7.4	7.297	-0.276	5.816	0.6725
174	7.6	7.497	-0.263	5.803	0.671
175	7.8	7.697	-0.251	5.791	0.6696
176	8.	7.897	-0.244	5.784	0.6688
177	8.2	8.097	-0.232	5.772	0.6674
178	8.4	8.297	-0.219	5.759	0.6659
179	8.6	8.497	-0.207	5.747	0.6645
180	8.8	8.697	-0.2	5.74	0.6637
181	9.	8.897	-0.194	5.734	0.663
182	9.2	9.097	-0.188	5.728	0.6623
183	9.4	9.297	-0.175	5.715	0.6608
184	9.6	9.497	-0.169	5.709	0.6602
185	9.8	9.697	-0.163	5.703	0.6595
186	10.	9.897	-0.156	5.696	0.6586
187	12.	11.9	-9.4e-002	5.634	0.6515
188	14.	13.9	-6.2e-002	5.602	0.6478
189	16.	15.9	-5.e-002	5.59	0.6464
190	18.	17.9	-2.5e-002	5.565	0.6435
191	20.	19.9	-1.8e-002	5.558	0.6427
192	22.	21.9	-1.2e-002	5.552	0.642

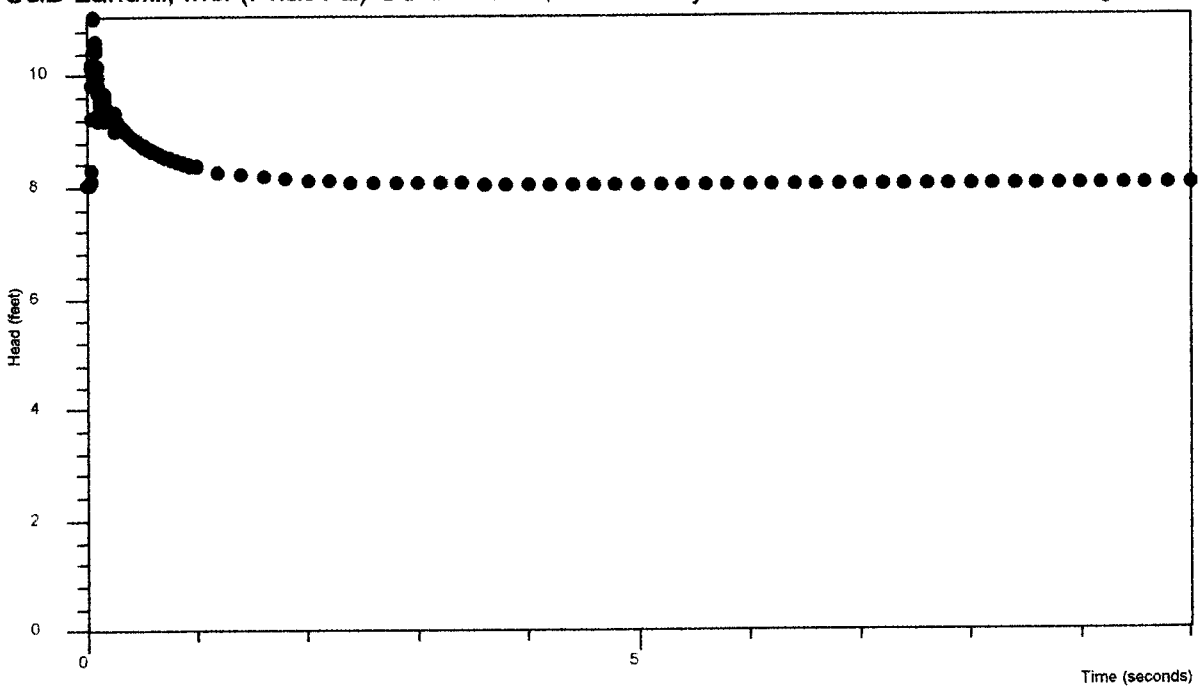
193	24.	23.9	-6.e-003	5.546	0.6413
194	26.	25.9	-1.2e-002	5.552	0.642

Field Hydraulic Conductivity Test 05/08/02

Arithmetic Graph

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County

B-9 falling head



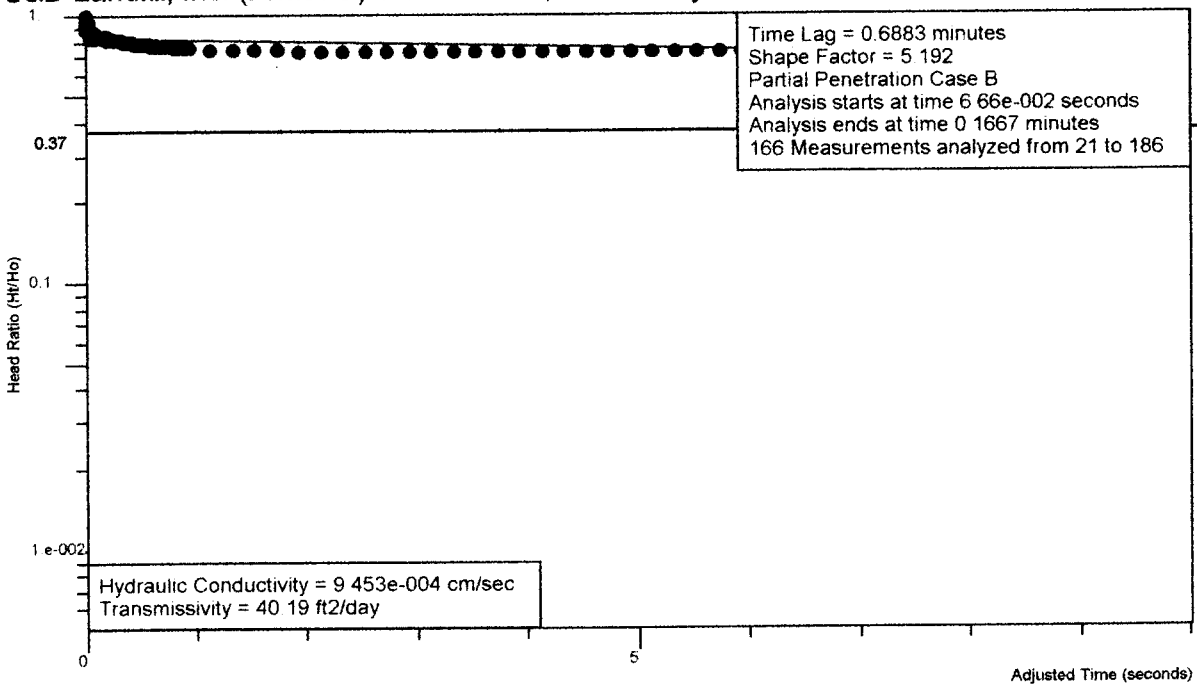
Analysis by Starpoint Software

Field Hydraulic Conductivity Test 05/08/02

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County

Hvorslev Graph

B-9 falling head



Analysis by Starpoint Software

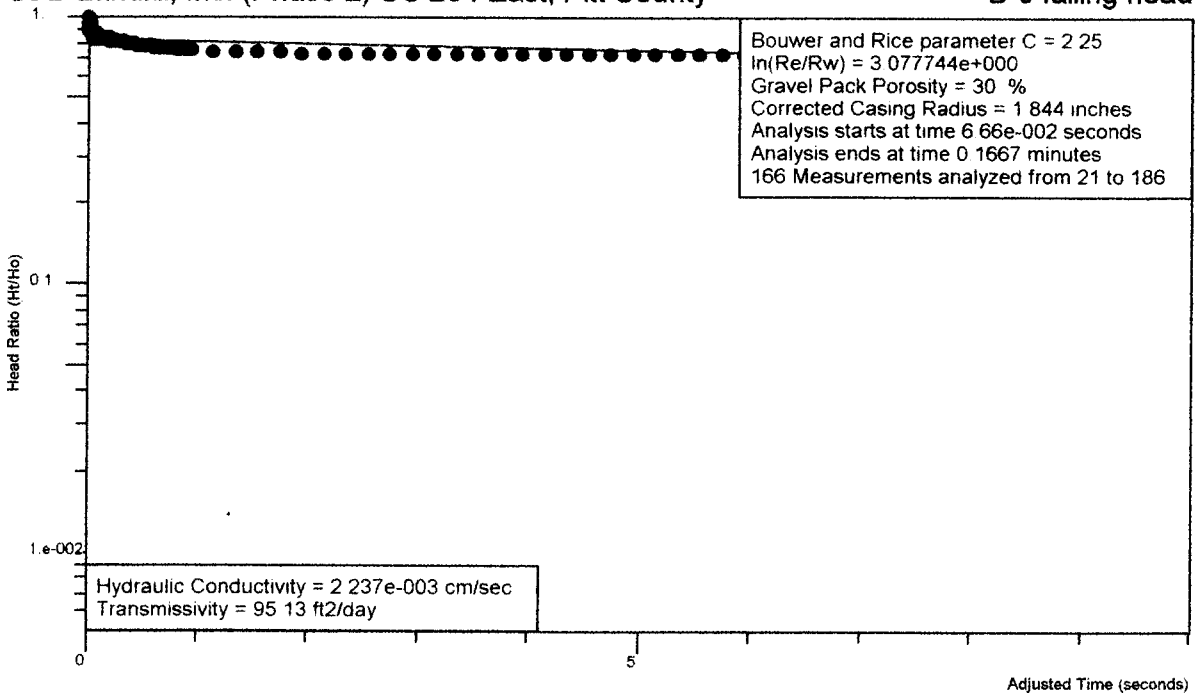
Ho is 11.04 feet at 6.66e-002 seconds

Field Hydraulic Conductivity Test 05/08/02

Bouwer and Rice Graph

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County

B-9 falling head



Analysis by Starpoint Software

Ho is 11.04 feet at 6.66e-002 seconds

Field Hydraulic Conductivity Test

Site Name:	C&D Landfill, Inc. (Phase 2)
Location:	US 264 East, Pitt County
Test Date:	05/08/02
Import File:	A:\David Garrett - Pitt County\B-9fh

Well Label:	B-9 falling head
Aquifer Thickness:	15. feet
Screen Length:	10. feet
Casing Radius:	1. inches
Effective Radius:	3. inches
Gravel Pack Porosity:	30. %
Corrected Casing Radius:	1.844 inches
Static Water Level:	8.03 feet
Water Table to Screen Bottom:	15.07 feet
Anisotropy Ratio:	1.
Time Adjustment:	6.66e-002 Seconds

Test starts with trial 20
There are 186 time and drawdown measurements
Maximum head is 11.04 feet
Minimum head is 0. feet

Trial	Time (seconds)	Adjusted Time (seconds)	Drawdown (feet)	Head (feet)	Head Ratio
1	0.	-6.66e-002	-6.e-003	8.036	0.728
2	3.3e-003	-6.33e-002	-6.e-003	8.036	0.728
3	6.6e-003	-6.e-002	-6.e-003	8.036	0.728
4	1.e-002	-5.66e-002	-6.e-003	8.036	0.728
5	1.33e-002	-5.33e-002	-6.e-003	8.036	0.728
6	1.66e-002	-5.e-002	-1.8e-002	8.048	0.7291
7	2.e-002	-4.66e-002	-6.e-003	8.036	0.728
8	2.33e-002	-4.33e-002	-6.e-003	8.036	0.728
9	2.66e-002	-4.e-002	-6.e-003	8.036	0.728
10	3.e-002	-3.66e-002	-1.8e-002	8.048	0.7291
11	3.33e-002	-3.33e-002	-6.e-003	8.036	0.728
12	3.66e-002	-3.e-002	-6.e-003	8.036	0.728
13	4.e-002	-2.66e-002	-0.263	8.293	0.7512
14	4.33e-002	-2.33e-002	-2.104	10.13	0.918
15	4.66e-002	-2.e-002	-8.7e-002	8.117	0.7353
16	5.e-002	-1.66e-002	-1.218	9.248	0.8378
17	5.33e-002	-1.33e-002	-1.809	9.839	0.8913
18	5.66e-002	-1.e-002	-2.16	10.19	0.9231
19	6.e-002	-6.6e-003	-2.544	10.57	0.9579
20	6.33e-002	-3.3e-003	-2.977	11.01	0.9971
21	6.66e-002	0.	-3.009	11.04	1.
22	7.e-002	3.4e-003	-2.506	10.54	0.9544
23	7.33e-002	6.7e-003	-2.16	10.19	0.9231
24	7.66e-002	1.e-002	-1.771	9.801	0.8879
25	8.e-002	1.34e-002	-1.953	9.983	0.9043
26	8.33e-002	1.67e-002	-2.38	10.41	0.943
27	8.66e-002	2.e-002	-2.581	10.61	0.9612
28	9.e-002	2.34e-002	-2.456	10.49	0.9499
29	9.33e-002	2.67e-002	-1.827	9.857	0.8929
30	9.66e-002	3.e-002	-1.664	9.694	0.8782

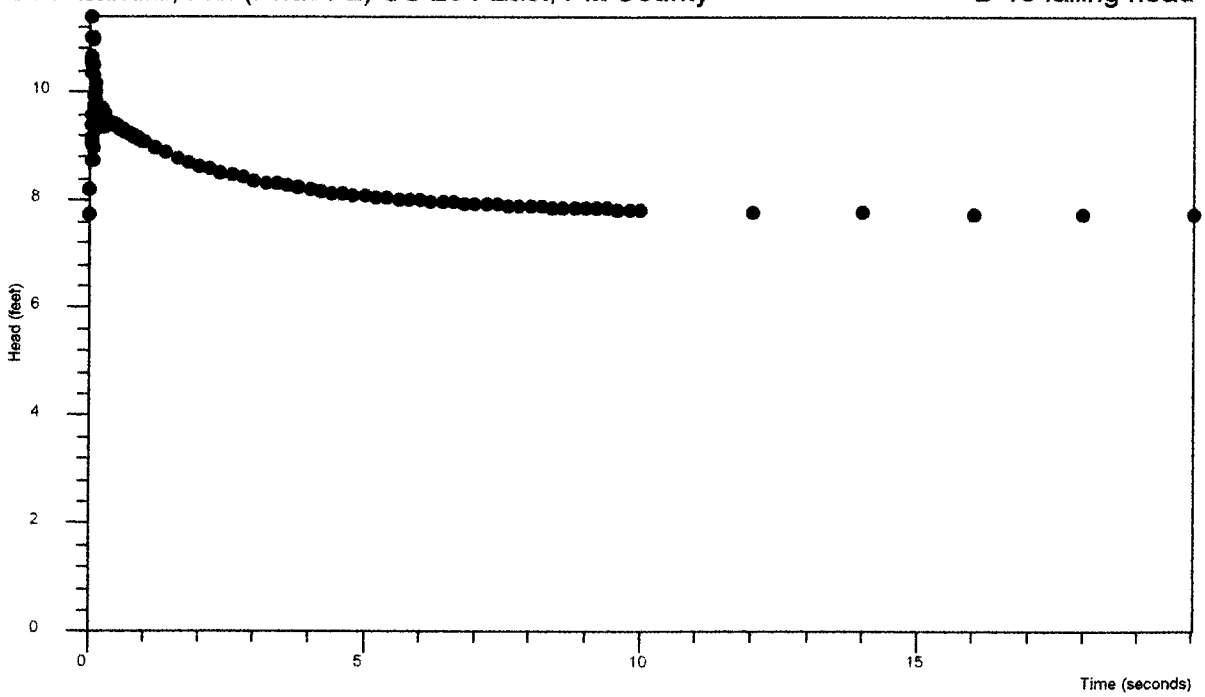
31	0.1	3.34e-002	-1.94	9.97	0.9032
32	0.1033	3.67e-002	-2.135	10.16	0.9208
33	0.1066	4.e-002	-1.809	9.839	0.8913
34	0.11	4.34e-002	-1.281	9.311	0.8435
35	0.1133	4.67e-002	-1.149	9.179	0.8315
36	0.1166	5.e-002	-1.406	9.436	0.8548
37	0.12	5.34e-002	-1.67	9.7	0.8787
38	0.1233	5.67e-002	-1.419	9.449	0.856
39	0.1266	6.e-002	-1.249	9.279	0.8406
40	0.13	6.34e-002	-1.469	9.499	0.8605
41	0.1333	6.67e-002	-1.494	9.524	0.8628
42	0.1366	7.e-002	-1.526	9.556	0.8657
43	0.14	7.34e-002	-1.507	9.537	0.8639
44	0.1433	7.67e-002	-1.488	9.518	0.8622
45	0.1466	8.e-002	-1.356	9.386	0.8503
46	0.15	8.34e-002	-1.205	9.235	0.8366
47	0.1533	8.67e-002	-1.161	9.191	0.8326
48	0.1566	9.e-002	-1.551	9.581	0.8679
49	0.16	9.34e-002	-1.664	9.694	0.8782
50	0.1633	9.67e-002	-1.463	9.493	0.86
51	0.1666	0.1	-1.337	9.367	0.8485
52	0.17	0.1034	-1.243	9.273	0.84
53	0.1733	0.1067	-1.287	9.317	0.844
54	0.1766	0.11	-1.369	9.399	0.8514
55	0.18	0.1134	-1.375	9.405	0.852
56	0.1833	0.1167	-1.344	9.374	0.8492
57	0.1866	0.12	-1.306	9.336	0.8457
58	0.19	0.1234	-1.293	9.323	0.8446
59	0.1933	0.1267	-1.293	9.323	0.8446
60	0.1966	0.13	-1.287	9.317	0.844
61	0.2	0.1334	-1.287	9.317	0.844
62	0.2033	0.1367	-1.262	9.292	0.8417
63	0.2066	0.14	-1.268	9.298	0.8423
64	0.21	0.1434	-1.256	9.286	0.8412
65	0.2133	0.1467	-1.249	9.279	0.8406
66	0.2166	0.15	-1.231	9.261	0.8389
67	0.22	0.1534	-1.231	9.261	0.8389
68	0.2233	0.1567	-1.224	9.254	0.8383
69	0.2266	0.16	-1.218	9.248	0.8378
70	0.23	0.1634	-1.212	9.242	0.8372
71	0.2333	0.1667	-1.199	9.229	0.836
72	0.2366	0.17	-1.193	9.223	0.8355
73	0.24	0.1734	-1.187	9.217	0.8349
74	0.2433	0.1767	-1.174	9.204	0.8338
75	0.2466	0.18	-1.161	9.191	0.8326
76	0.25	0.1834	-1.161	9.191	0.8326
77	0.2533	0.1867	-1.149	9.179	0.8315
78	0.2566	0.19	-1.256	9.286	0.8412
79	0.26	0.1934	-1.319	9.349	0.8469
80	0.2633	0.1967	-0.992	9.022	0.8173
81	0.2666	0.2	-0.986	9.016	0.8167
82	0.27	0.2034	-1.086	9.116	0.8258
83	0.2733	0.2067	-1.149	9.179	0.8315
84	0.2766	0.21	-1.174	9.204	0.8338

85	0.28	0.2134	-1.124	9.154	0.8292
86	0.2833	0.2167	-1.08	9.11	0.8253
87	0.2866	0.22	-1.074	9.104	0.8247
88	0.29	0.2234	-1.086	9.116	0.8258
89	0.2933	0.2267	-1.086	9.116	0.8258
90	0.2966	0.23	-1.074	9.104	0.8247
91	0.3	0.2334	-1.061	9.091	0.8235
92	0.3033	0.2367	-1.055	9.085	0.823
93	0.3066	0.24	-1.048	9.078	0.8224
94	0.31	0.2434	-1.048	9.078	0.8224
95	0.3133	0.2467	-1.042	9.072	0.8218
96	0.3166	0.25	-1.036	9.066	0.8213
97	0.32	0.2534	-1.023	9.053	0.8201
98	0.3233	0.2567	-1.017	9.047	0.8195
99	0.3266	0.26	-1.011	9.041	0.819
100	0.33	0.2634	-1.004	9.034	0.8184
101	0.3333	0.2667	-0.998	9.028	0.8178
102	0.35	0.2834	-0.967	8.997	0.815
103	0.3666	0.3	-0.935	8.965	0.8121
104	0.3833	0.3167	-0.91	8.94	0.8099
105	0.4	0.3334	-0.879	8.909	0.807
106	0.4166	0.35	-0.854	8.884	0.8048
107	0.4333	0.3667	-0.829	8.859	0.8025
108	0.45	0.3834	-0.803	8.833	0.8002
109	0.4666	0.4	-0.778	8.808	0.7979
110	0.4833	0.4167	-0.753	8.783	0.7956
111	0.5	0.4334	-0.734	8.764	0.7939
112	0.5166	0.45	-0.709	8.739	0.7916
113	0.5333	0.4667	-0.69	8.72	0.7899
114	0.55	0.4834	-0.672	8.702	0.7883
115	0.5666	0.5	-0.653	8.683	0.7866
116	0.5833	0.5167	-0.634	8.664	0.7849
117	0.6	0.5334	-0.621	8.651	0.7837
118	0.6166	0.55	-0.602	8.632	0.782
119	0.6333	0.5667	-0.584	8.614	0.7803
120	0.65	0.5834	-0.571	8.601	0.7791
121	0.6666	0.6	-0.558	8.588	0.778
122	0.6833	0.6167	-0.54	8.57	0.7763
123	0.7	0.6334	-0.527	8.557	0.7752
124	0.7166	0.65	-0.508	8.538	0.7734
125	0.7333	0.6667	-0.496	8.526	0.7724
126	0.75	0.6834	-0.483	8.513	0.7712
127	0.7666	0.7	-0.471	8.501	0.7701
128	0.7833	0.7167	-0.458	8.488	0.7689
129	0.8	0.7334	-0.445	8.475	0.7677
130	0.8166	0.75	-0.439	8.469	0.7672
131	0.8333	0.7667	-0.427	8.457	0.7661
132	0.85	0.7834	-0.414	8.444	0.7649
133	0.8666	0.8	-0.401	8.431	0.7637
134	0.8833	0.8167	-0.395	8.425	0.7632
135	0.9	0.8334	-0.383	8.413	0.7621
136	0.9166	0.85	-0.376	8.406	0.7615
137	0.9333	0.8667	-0.364	8.394	0.7604
138	0.95	0.8834	-0.358	8.388	0.7599

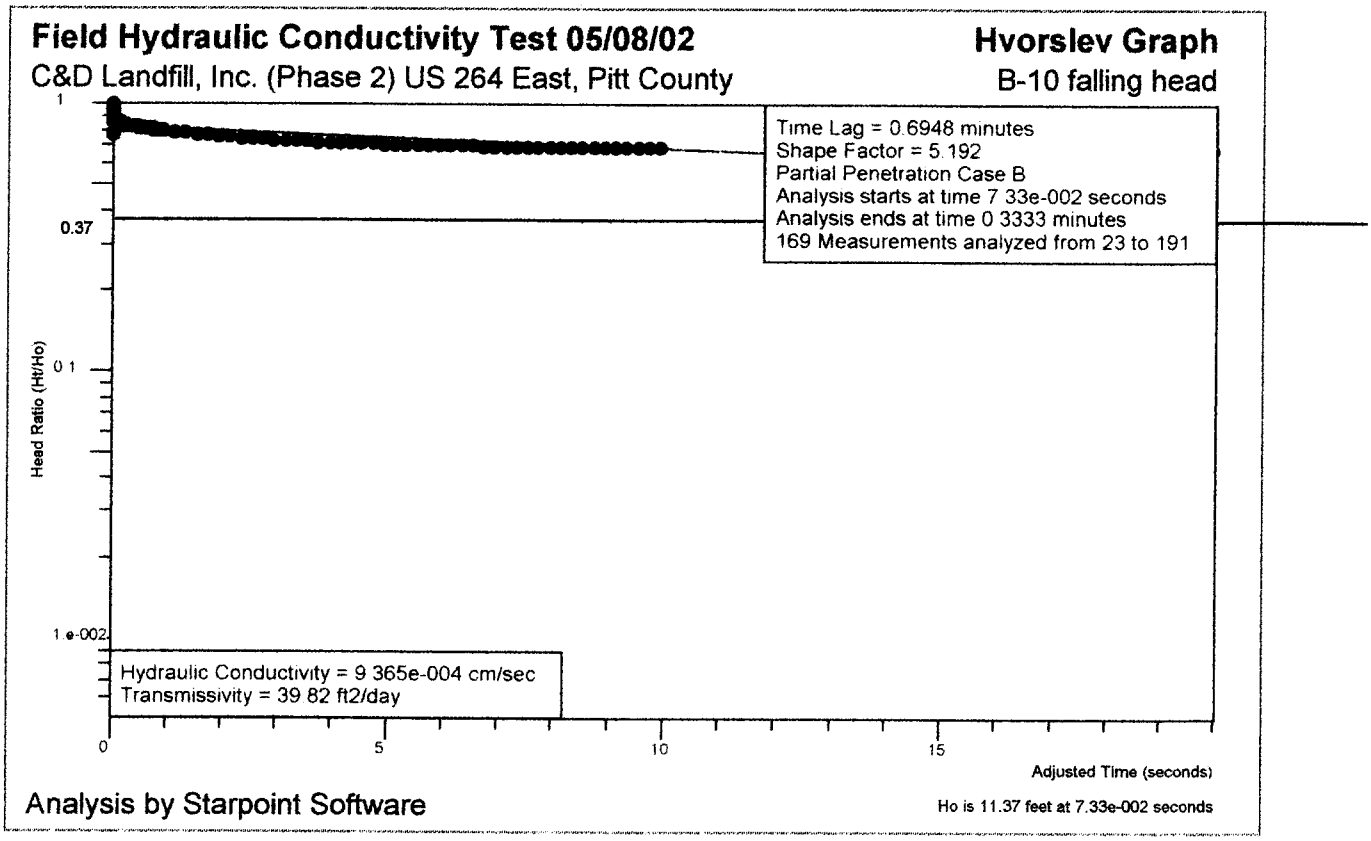
139	0.9666	0.9	-0.351	8.381	0.7592
140	0.9833	0.9167	-0.339	8.369	0.7581
141	1.	0.9334	-0.332	8.362	0.7575
142	1.2	1.133	-0.238	8.268	0.749
143	1.4	1.333	-0.182	8.212	0.7439
144	1.6	1.533	-0.144	8.174	0.7405
145	1.8	1.733	-0.113	8.143	0.7377
146	2.	1.933	-9.4e-002	8.124	0.7359
147	2.2	2.133	-7.5e-002	8.105	0.7342
148	2.4	2.333	-6.2e-002	8.092	0.733
149	2.6	2.533	-5.e-002	8.08	0.732
150	2.8	2.733	-4.3e-002	8.073	0.7313
151	3.	2.933	-3.7e-002	8.067	0.7308
152	3.2	3.133	-3.1e-002	8.061	0.7302
153	3.4	3.333	-3.1e-002	8.061	0.7302
154	3.6	3.533	-2.5e-002	8.055	0.7297
155	3.8	3.733	-2.5e-002	8.055	0.7297
156	4.	3.933	-1.8e-002	8.048	0.7291
157	4.2	4.133	-1.8e-002	8.048	0.7291
158	4.4	4.333	-1.8e-002	8.048	0.7291
159	4.6	4.533	-1.2e-002	8.042	0.7285
160	4.8	4.733	-1.2e-002	8.042	0.7285
161	5.	4.933	-1.2e-002	8.042	0.7285
162	5.2	5.133	-1.2e-002	8.042	0.7285
163	5.4	5.333	-6.e-003	8.036	0.728
164	5.6	5.533	-1.2e-002	8.042	0.7285
165	5.8	5.733	-1.2e-002	8.042	0.7285
166	6.	5.933	-6.e-003	8.036	0.728
167	6.2	6.133	-6.e-003	8.036	0.728
168	6.4	6.333	-6.e-003	8.036	0.728
169	6.6	6.533	-6.e-003	8.036	0.728
170	6.8	6.733	-6.e-003	8.036	0.728
171	7.	6.933	-6.e-003	8.036	0.728
172	7.2	7.133	-6.e-003	8.036	0.728
173	7.4	7.333	-6.e-003	8.036	0.728
174	7.6	7.533	-6.e-003	8.036	0.728
175	7.8	7.733	-6.e-003	8.036	0.728
176	8.	7.933	-6.e-003	8.036	0.728
177	8.2	8.133	-6.e-003	8.036	0.728
178	8.4	8.333	-6.e-003	8.036	0.728
179	8.6	8.533	0.	8.03	0.7274
180	8.8	8.733	0.	8.03	0.7274
181	9.	8.933	0.	8.03	0.7274
182	9.2	9.133	0.	8.03	0.7274
183	9.4	9.333	0.	8.03	0.7274
184	9.6	9.533	0.	8.03	0.7274
185	9.8	9.733	0.	8.03	0.7274
186	10.	9.933	0.	8.03	0.7274

Field Hydraulic Conductivity Test 05/08/02 **Arithmetic Graph**

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County B-10 falling head



Analysis by Starpoint Software

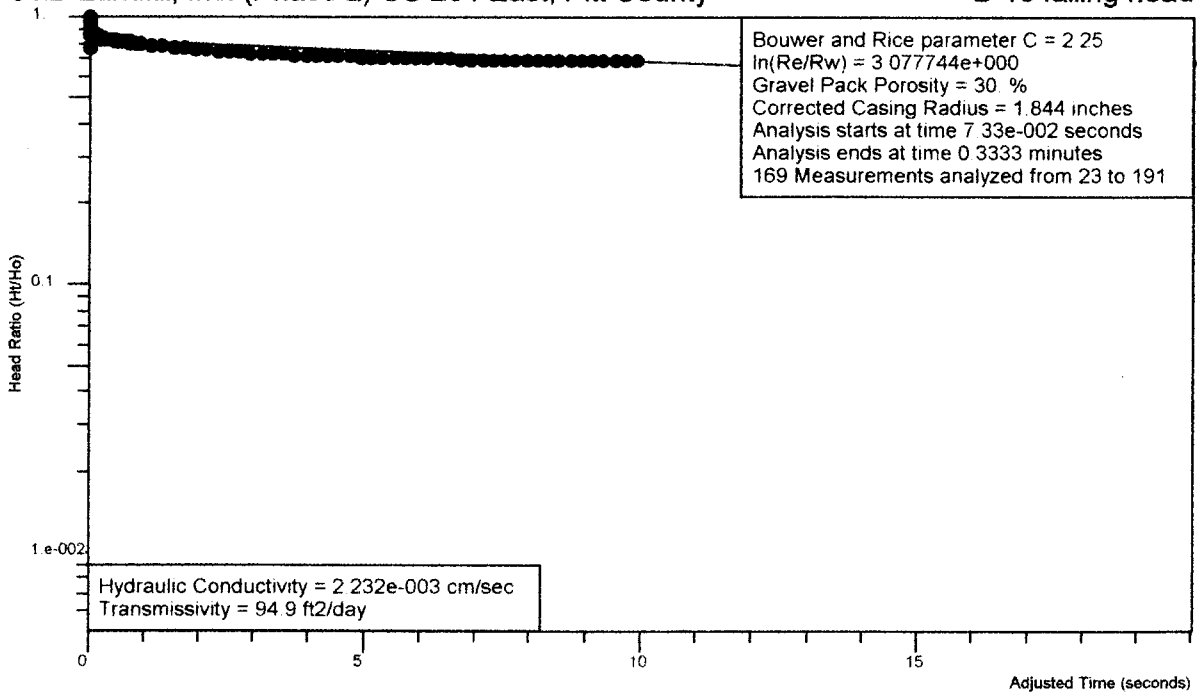

Field Hydraulic Conductivity Test 05/08/02
C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County
Hvorslev Graph
B-10 falling head
Time Lag = 0.6948 minutes
Shape Factor = 5.192
Partial Penetration Case B
Analysis starts at time 7.33e-002 seconds
Analysis ends at time 0.3333 minutes
169 Measurements analyzed from 23 to 191
Hydraulic Conductivity = 9.365e-004 cm/sec
Transmissivity = 39.82 ft2/day
Head Ratio (Ht/Ho)
1
0.37
0.1
1.e-002
0
5
10
15
Adjusted Time (seconds)
Analysis by Starpoint Software
Ho is 11.37 feet at 7.33e-002 seconds

Field Hydraulic Conductivity Test 05/08/02

Bouwer and Rice Graph

C&D Landfill, Inc. (Phase 2) US 264 East, Pitt County

B-10 falling head



Analysis by Starpoint Software

Ho is 11.37 feet at 7.33e-002 seconds

Field Hydraulic Conductivity Test

Site Name:	C&D Landfill, Inc. (Phase 2)
Location:	US 264 East, Pitt County
Test Date:	05/08/02
Import File:	A:\David Garrett - Pitt County\B-10fh

Well Label:	B-10 falling head
Aquifer Thickness:	15. feet
Screen Length:	10. feet
Casing Radius:	1. inches
Effective Radius:	3. inches
Gravel Pack Porosity:	30. %
Corrected Casing Radius:	1.844 inches
Static Water Level:	7.74 feet
Water Table to Screen Bottom:	15.47 feet
Anisotropy Ratio:	1.
Time Adjustment:	7.33e-002 Seconds

Test starts with trial 22
There are 191 time and drawdown measurements
Maximum head is 11.37 feet
Minimum head is 0. feet

Trial	Time (seconds)	Adjusted Time (seconds)	Drawdown (feet)	Head (feet)	Head Ratio
1	0.	-7.33e-002	-6.e-003	7.746	0.6811
2	3.3e-003	-7.e-002	-6.e-003	7.746	0.6811
3	6.6e-003	-6.67e-002	-1.2e-002	7.752	0.6817
4	1.e-002	-6.33e-002	-1.2e-002	7.752	0.6817
5	1.33e-002	-6.e-002	-6.e-003	7.746	0.6811
6	1.66e-002	-5.67e-002	-6.e-003	7.746	0.6811
7	2.e-002	-5.33e-002	0.	7.74	0.6806
8	2.33e-002	-5.e-002	-1.2e-002	7.752	0.6817
9	2.66e-002	-4.67e-002	-6.e-003	7.746	0.6811
10	3.e-002	-4.33e-002	-6.e-003	7.746	0.6811
11	3.33e-002	-4.e-002	-6.e-003	7.746	0.6811
12	3.66e-002	-3.67e-002	-0.458	8.198	0.7209
13	4.e-002	-3.33e-002	-1.35	9.09	0.7993
14	4.33e-002	-3.e-002	-1.419	9.159	0.8054
15	4.66e-002	-2.67e-002	-1.3	9.04	0.7949
16	5.e-002	-2.33e-002	-1.828	9.568	0.8414
17	5.33e-002	-2.e-002	-2.821	10.56	0.9287
18	5.66e-002	-1.67e-002	-3.267	11.01	0.9679
19	6.e-002	-1.33e-002	-2.632	10.37	0.9121
20	6.33e-002	-1.e-002	-0.998	8.738	0.7684
21	6.66e-002	-6.7e-003	-1.652	9.392	0.8259
22	7.e-002	-3.3e-003	-2.934	10.67	0.9386
23	7.33e-002	0.	-3.632	11.37	1.
24	7.66e-002	3.3e-003	-3.242	10.98	0.9657
25	8.e-002	6.7e-003	-2.18	9.92	0.8723
26	8.33e-002	1.e-002	-1.953	9.693	0.8524
27	8.66e-002	1.33e-002	-2.588	10.33	0.9082
28	9.e-002	1.67e-002	-3.229	10.97	0.9646
29	9.33e-002	2.e-002	-3.286	11.03	0.9696
30	9.66e-002	2.33e-002	-2.777	10.52	0.9248

31	0.1	2.67e-002	-2.192	9.932	0.8734
32	0.1033	3.e-002	-1.991	9.731	0.8557
33	0.1066	3.33e-002	-0.998	8.738	0.7684
34	0.11	3.67e-002	-1.231	8.971	0.7889
35	0.1133	4.e-002	-1.759	9.499	0.8353
36	0.1166	4.33e-002	-2.261	10.	0.8794
37	0.12	4.67e-002	-2.412	10.15	0.8927
38	0.1233	5.e-002	-2.079	9.819	0.8634
39	0.1266	5.33e-002	-1.683	9.423	0.8286
40	0.13	5.67e-002	-1.583	9.323	0.8198
41	0.1333	6.e-002	-1.765	9.505	0.8358
42	0.1366	6.33e-002	-2.029	9.769	0.859
43	0.14	6.67e-002	-2.117	9.857	0.8668
44	0.1433	7.e-002	-1.991	9.731	0.8557
45	0.1466	7.33e-002	-1.803	9.543	0.8392
46	0.15	7.67e-002	-1.727	9.467	0.8325
47	0.1533	8.e-002	-1.815	9.555	0.8402
48	0.1566	8.33e-002	-1.941	9.681	0.8513
49	0.16	8.67e-002	-1.979	9.719	0.8546
50	0.1633	9.e-002	-1.916	9.656	0.8491
51	0.1666	9.33e-002	-1.828	9.568	0.8414
52	0.17	9.67e-002	-1.803	9.543	0.8392
53	0.1733	0.1	-1.84	9.58	0.8424
54	0.1766	0.1033	-1.897	9.637	0.8474
55	0.18	0.1067	-1.903	9.643	0.848
56	0.1833	0.11	-1.872	9.612	0.8452
57	0.1866	0.1133	-1.834	9.574	0.8419
58	0.19	0.1167	-1.828	9.568	0.8414
59	0.1933	0.12	-1.847	9.587	0.843
60	0.1966	0.1233	-1.865	9.605	0.8446
61	0.2	0.1267	-1.859	9.599	0.8441
62	0.2033	0.13	-1.847	9.587	0.843
63	0.2066	0.1333	-1.828	9.568	0.8414
64	0.21	0.1367	-1.828	9.568	0.8414
65	0.2133	0.14	-1.84	9.58	0.8424
66	0.2166	0.1433	-1.84	9.58	0.8424
67	0.22	0.1467	-1.834	9.574	0.8419
68	0.2233	0.15	-1.828	9.568	0.8414
69	0.2266	0.1533	-1.821	9.561	0.8407
70	0.23	0.1567	-1.828	9.568	0.8414
71	0.2333	0.16	-1.828	9.568	0.8414
72	0.2366	0.1633	-1.821	9.561	0.8407
73	0.24	0.1667	-1.821	9.561	0.8407
74	0.2433	0.17	-1.815	9.555	0.8402
75	0.2466	0.1733	-1.815	9.555	0.8402
76	0.25	0.1767	-1.809	9.549	0.8397
77	0.2533	0.18	-1.809	9.549	0.8397
78	0.2566	0.1833	-1.809	9.549	0.8397
79	0.26	0.1867	-1.809	9.549	0.8397
80	0.2633	0.19	-1.96	9.7	0.853
81	0.2666	0.1933	-1.809	9.549	0.8397
82	0.27	0.1967	-1.627	9.367	0.8237
83	0.2733	0.2	-1.746	9.486	0.8342
84	0.2766	0.2033	-1.784	9.524	0.8375

85	0.28	0.2067	-1.903	9.643	0.848
86	0.2833	0.21	-1.84	9.58	0.8424
87	0.2866	0.2133	-1.771	9.511	0.8364
88	0.29	0.2167	-1.733	9.473	0.833
89	0.2933	0.22	-1.752	9.492	0.8347
90	0.2966	0.2233	-1.803	9.543	0.8392
91	0.3	0.2267	-1.821	9.561	0.8407
92	0.3033	0.23	-1.796	9.536	0.8386
93	0.3066	0.2333	-1.759	9.499	0.8353
94	0.31	0.2367	-1.752	9.492	0.8347
95	0.3133	0.24	-1.765	9.505	0.8358
96	0.3166	0.2433	-1.784	9.524	0.8375
97	0.32	0.2467	-1.784	9.524	0.8375
98	0.3233	0.25	-1.765	9.505	0.8358
99	0.3266	0.2533	-1.752	9.492	0.8347
100	0.33	0.2567	-1.752	9.492	0.8347
101	0.3333	0.26	-1.759	9.499	0.8353
102	0.35	0.2767	-1.746	9.486	0.8342
103	0.3666	0.2933	-1.733	9.473	0.833
104	0.3833	0.31	-1.702	9.442	0.8303
105	0.4	0.3267	-1.702	9.442	0.8303
106	0.4166	0.3433	-1.696	9.436	0.8298
107	0.4333	0.36	-1.683	9.423	0.8286
108	0.45	0.3767	-1.671	9.411	0.8276
109	0.4666	0.3933	-1.658	9.398	0.8264
110	0.4833	0.41	-1.652	9.392	0.8259
111	0.5	0.4267	-1.639	9.379	0.8247
112	0.5166	0.4433	-1.627	9.367	0.8237
113	0.5333	0.46	-1.614	9.354	0.8225
114	0.55	0.4767	-1.602	9.342	0.8215
115	0.5666	0.4933	-1.595	9.335	0.8209
116	0.5833	0.51	-1.583	9.323	0.8198
117	0.6	0.5267	-1.57	9.31	0.8187
118	0.6166	0.5433	-1.564	9.304	0.8181
119	0.6333	0.56	-1.551	9.291	0.817
120	0.65	0.5767	-1.545	9.285	0.8165
121	0.6666	0.5933	-1.532	9.272	0.8153
122	0.6833	0.61	-1.52	9.26	0.8143
123	0.7	0.6267	-1.514	9.254	0.8138
124	0.7166	0.6433	-1.501	9.241	0.8126
125	0.7333	0.66	-1.495	9.235	0.8121
126	0.75	0.6767	-1.482	9.222	0.8109
127	0.7666	0.6933	-1.476	9.216	0.8104
128	0.7833	0.71	-1.463	9.203	0.8093
129	0.8	0.7267	-1.451	9.191	0.8082
130	0.8166	0.7433	-1.444	9.184	0.8076
131	0.8333	0.76	-1.432	9.172	0.8065
132	0.85	0.7767	-1.426	9.166	0.806
133	0.8666	0.7933	-1.413	9.153	0.8049
134	0.8833	0.81	-1.407	9.147	0.8043
135	0.9	0.8267	-1.394	9.134	0.8032
136	0.9166	0.8433	-1.388	9.128	0.8027
137	0.9333	0.86	-1.382	9.122	0.8021
138	0.95	0.8767	-1.369	9.109	0.801

139	0.9666	0.8933	-1.363	9.103	0.8005
140	0.9833	0.91	-1.35	9.09	0.7993
141	1.	0.9267	-1.344	9.084	0.7988
142	1.2	1.127	-1.225	8.965	0.7883
143	1.4	1.327	-1.137	8.877	0.7806
144	1.6	1.527	-1.049	8.789	0.7729
145	1.8	1.727	-0.973	8.713	0.7662
146	2.	1.927	-0.904	8.644	0.7601
147	2.2	2.127	-0.841	8.581	0.7546
148	2.4	2.327	-0.785	8.525	0.7496
149	2.6	2.527	-0.728	8.468	0.7446
150	2.8	2.727	-0.678	8.418	0.7402
151	3.	2.927	-0.634	8.374	0.7364
152	3.2	3.127	-0.596	8.336	0.733
153	3.4	3.327	-0.559	8.299	0.7298
154	3.6	3.527	-0.521	8.261	0.7264
155	3.8	3.727	-0.49	8.23	0.7237
156	4.	3.927	-0.458	8.198	0.7209
157	4.2	4.127	-0.433	8.173	0.7187
158	4.4	4.327	-0.402	8.142	0.716
159	4.6	4.527	-0.383	8.123	0.7143
160	4.8	4.727	-0.358	8.098	0.7121
161	5.	4.927	-0.339	8.079	0.7104
162	5.2	5.127	-0.32	8.06	0.7088
163	5.4	5.327	-0.301	8.041	0.7071
164	5.6	5.527	-0.282	8.022	0.7054
165	5.8	5.727	-0.27	8.01	0.7044
166	6.	5.927	-0.257	7.997	0.7032
167	6.2	6.127	-0.238	7.978	0.7015
168	6.4	6.327	-0.226	7.966	0.7005
169	6.6	6.527	-0.213	7.953	0.6993
170	6.8	6.727	-0.201	7.941	0.6983
171	7.	6.927	-0.194	7.934	0.6977
172	7.2	7.127	-0.182	7.922	0.6966
173	7.4	7.327	-0.175	7.915	0.696
174	7.6	7.527	-0.163	7.903	0.695
175	7.8	7.727	-0.157	7.897	0.6944
176	8.	7.927	-0.15	7.89	0.6938
177	8.2	8.127	-0.138	7.878	0.6928
178	8.4	8.327	-0.131	7.871	0.6921
179	8.6	8.527	-0.125	7.865	0.6916
180	8.8	8.727	-0.119	7.859	0.6911
181	9.	8.927	-0.113	7.853	0.6906
182	9.2	9.127	-0.106	7.846	0.6899
183	9.4	9.327	-0.1	7.84	0.6894
184	9.6	9.527	-9.4e-002	7.834	0.6889
185	9.8	9.727	-9.4e-002	7.834	0.6889
186	10.	9.927	-8.7e-002	7.827	0.6883
187	12.	11.93	-5.e-002	7.79	0.685
188	14.	13.93	-2.5e-002	7.765	0.6828
189	16.	15.93	-1.8e-002	7.758	0.6822
190	18.	17.93	0.	7.74	0.6806
191	20.	19.93	-6.e-003	7.746	0.6811

Palmer's Z Index - July 2002 to June 2003

NOAA/NESDIS/NCDC
Climate Monitoring Group

Loop Mode:
Fwd | Swp

Animate Frames:
<< | Stop | >>

Dwell First:
-First | +First

Dwell Last:
-Last | +Last

Adjust Speed:
Slow | Fast

Advance One:
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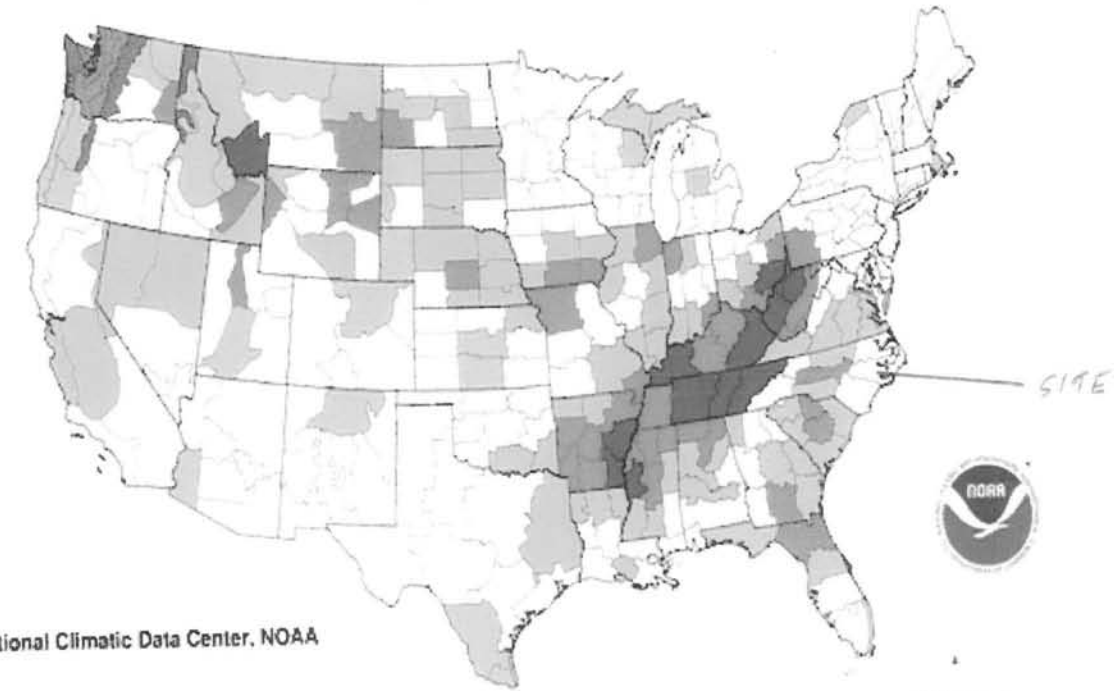
Frame No: 9

Palmer Z Index
Short-Term Conditions

March 2003



National Climatic Data Center, NOAA

extreme drought	severe drought	moderate drought	mid-range	moderately moist	very moist	extremely moist
-2.75 and below	-2.00 to -2.74	-1.25 to -1.99	-1.24 to +0.99	+1.00 to +2.49	+2.50 to +3.49	+3.50 and above

Palmer's Z Index - July 2002 to June 2003

NOAA/NESDIS/NCDC
Climate Monitoring Group

Loop Mode:
Fwd | Swp

Animate Frames:
<< | Stop | >>

Dwell First:
-First | +First

Dwell Last:
-Last | +Last

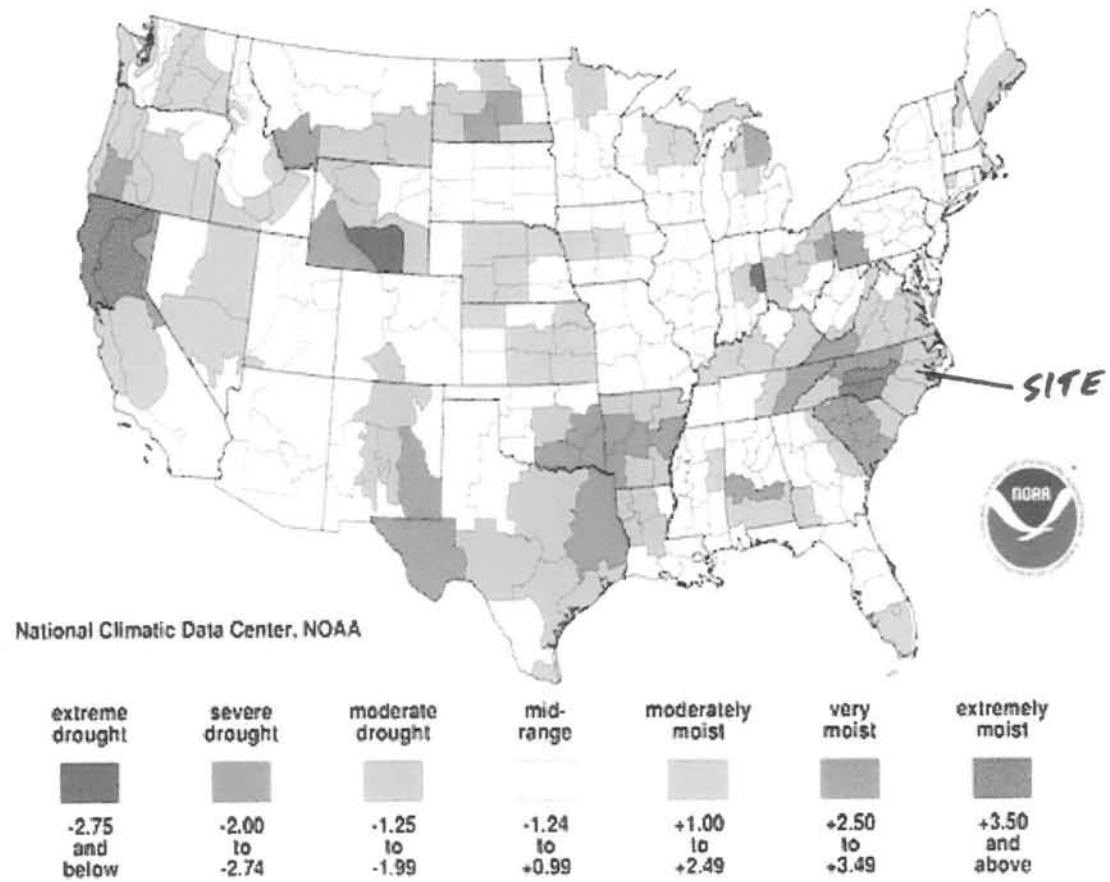
Adjust Speed:
Slow | Fast

Advance One:
< | >

Frame No: 10

Palmer Z Index
Short-Term Conditions

April 2003



Palmer's Z Index - July 2002 to June 2003

NOAA/NESDIS/NCDC
Climate Monitoring Group

Loop Mode:
Fwd | Swp

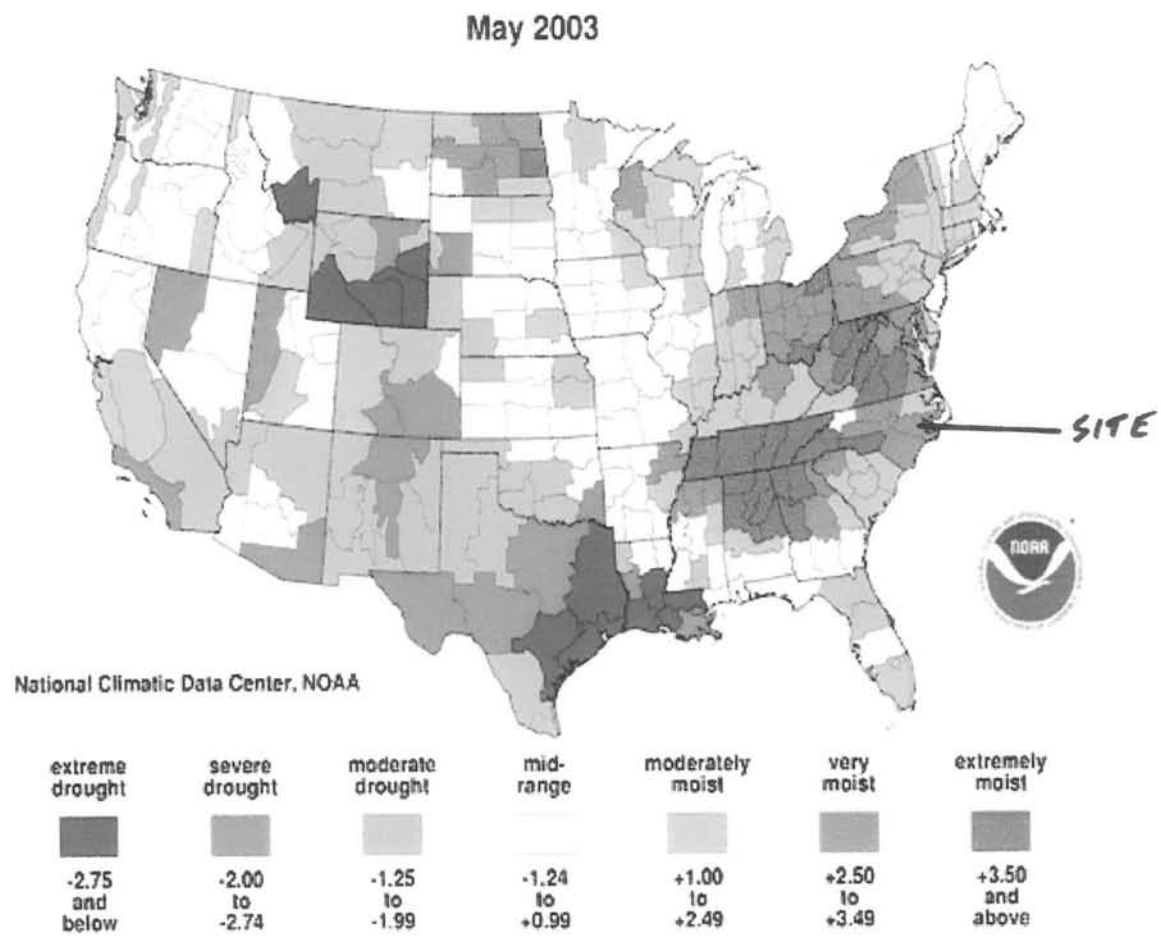
Animate Frames:
<< | Stop | >>

Dwell First:
-First | +First
Dwell Last:
-Last | +Last

Adjust Speed:
Slow | Fast

Advance One:
< | >

Frame No: 11



Palmer's Z Index - July 2002 to June 2003

NOAA/NESDIS/NCDC
Climate Monitoring Group

Loop Mode:
Fwd | Swp

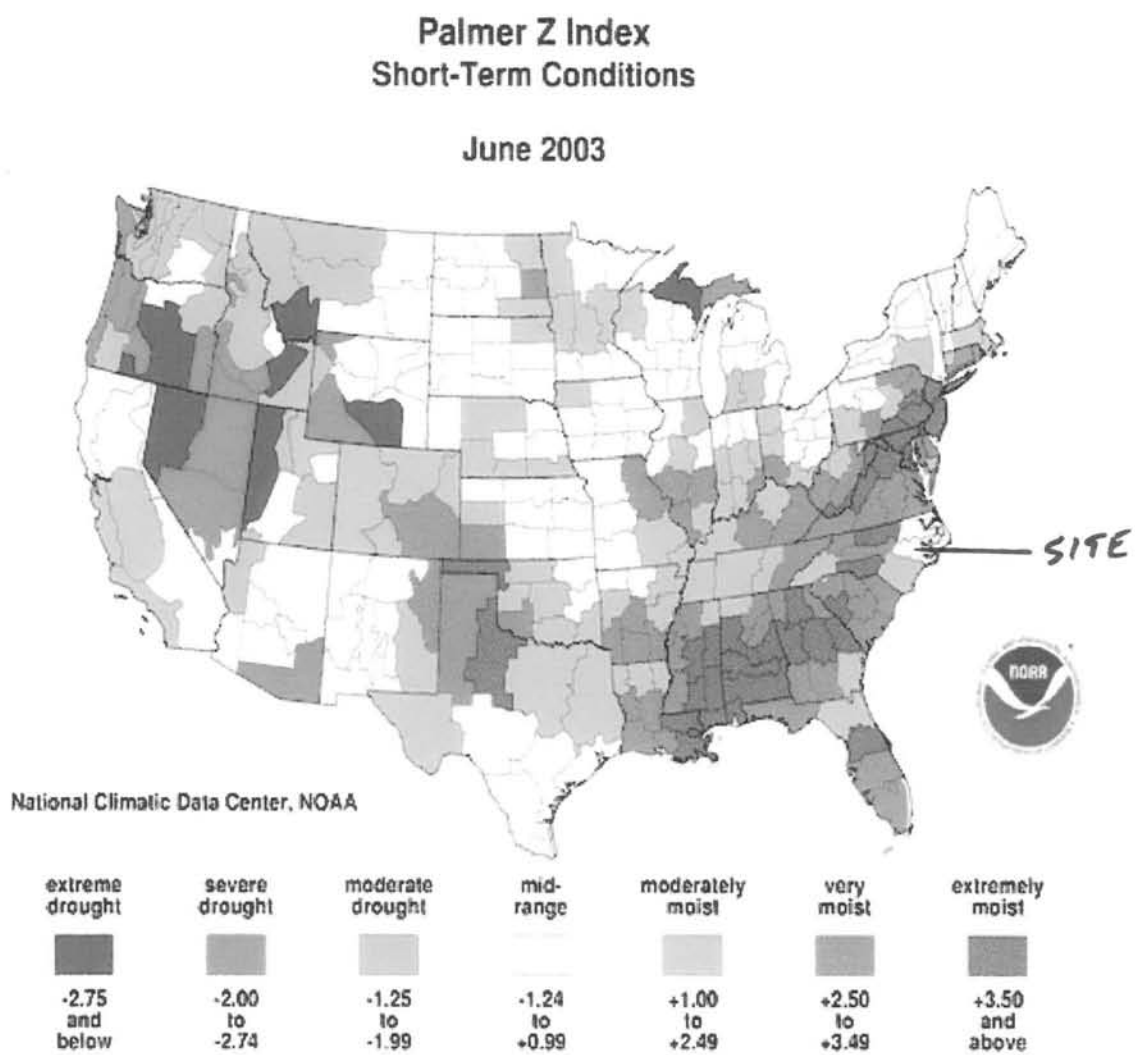
Animate Frames:
<< | Stop | >>

Dwell First:
-First | +First
Dwell Last:
-Last | +Last

Adjust Speed:
Slow | Fast

Advance One:
< | >

Frame No: 12



Palmer Hydrological Drought Index - July 2002 to June 2003

NOAA/NESDIS/NCDC
Climate Monitoring Group

Loop Mode:
Fwd | Swp

Animate Frames:
<< | Stop | >>

Dwell First:
-First | +First

Dwell Last:
-Last | +Last

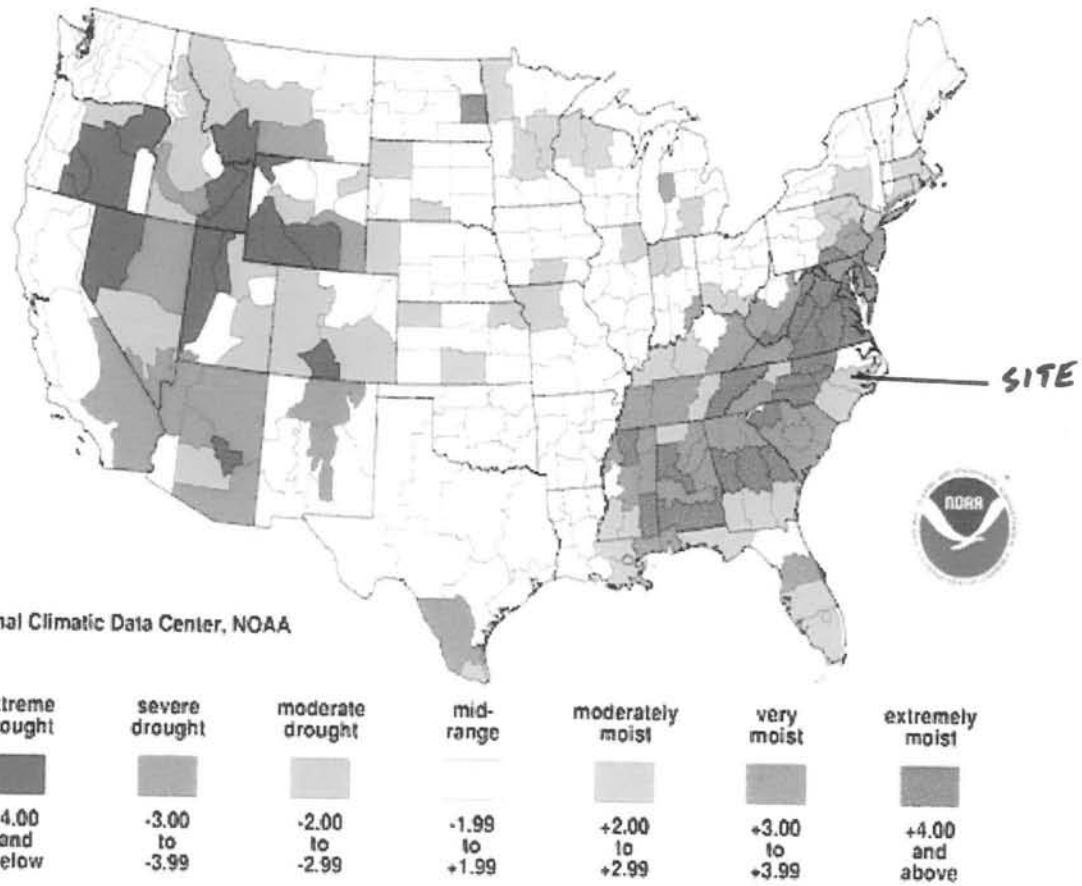
Adjust Speed:
Slow | Fast

Advance One:
< | >

Frame No: 12

Palmer Hydrological Drought Index
Long-Term (Hydrological) Conditions

June 2003



Palmer Hydrological Drought Index - July 2002 to June 2003

NOAA/NESDIS/NCDC
Climate Monitoring Group

Loop Mode:
Fwd | Swp

Animate Frames:
<< | Stop | >>

Dwell First:
-First | +First

Dwell Last:
-Last | +Last

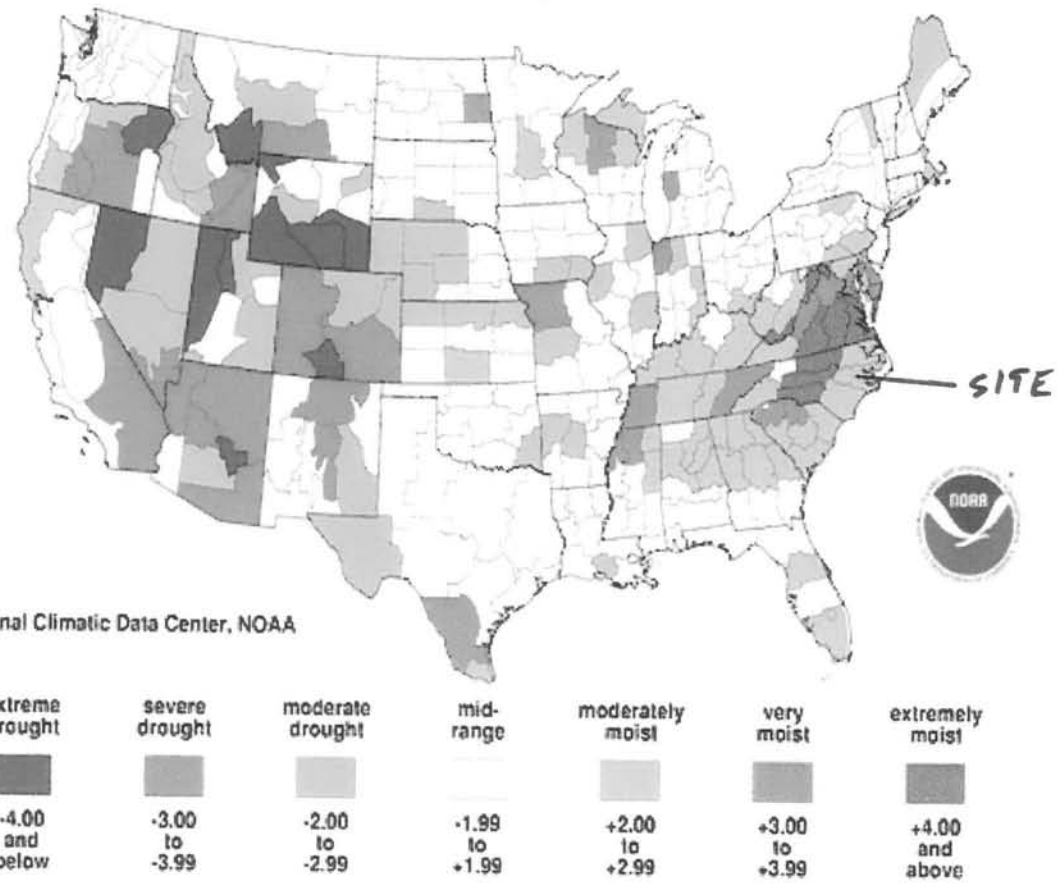
Adjust Speed:
Slow | Fast

Advance One:
< | >

Frame No: 11

Palmer Hydrological Drought Index
Long-Term (Hydrological) Conditions

May 2003



Palmer Hydrological Drought Index - July 2002 to June 2003

NOAA/NESDIS/NCDC
Climate Monitoring Group

Loop Mode:
Fwd | Swp

Animate Frames:
<< | Stop | >>

Dwell First:
-First | +First
Dwell Last:
-Last | +Last

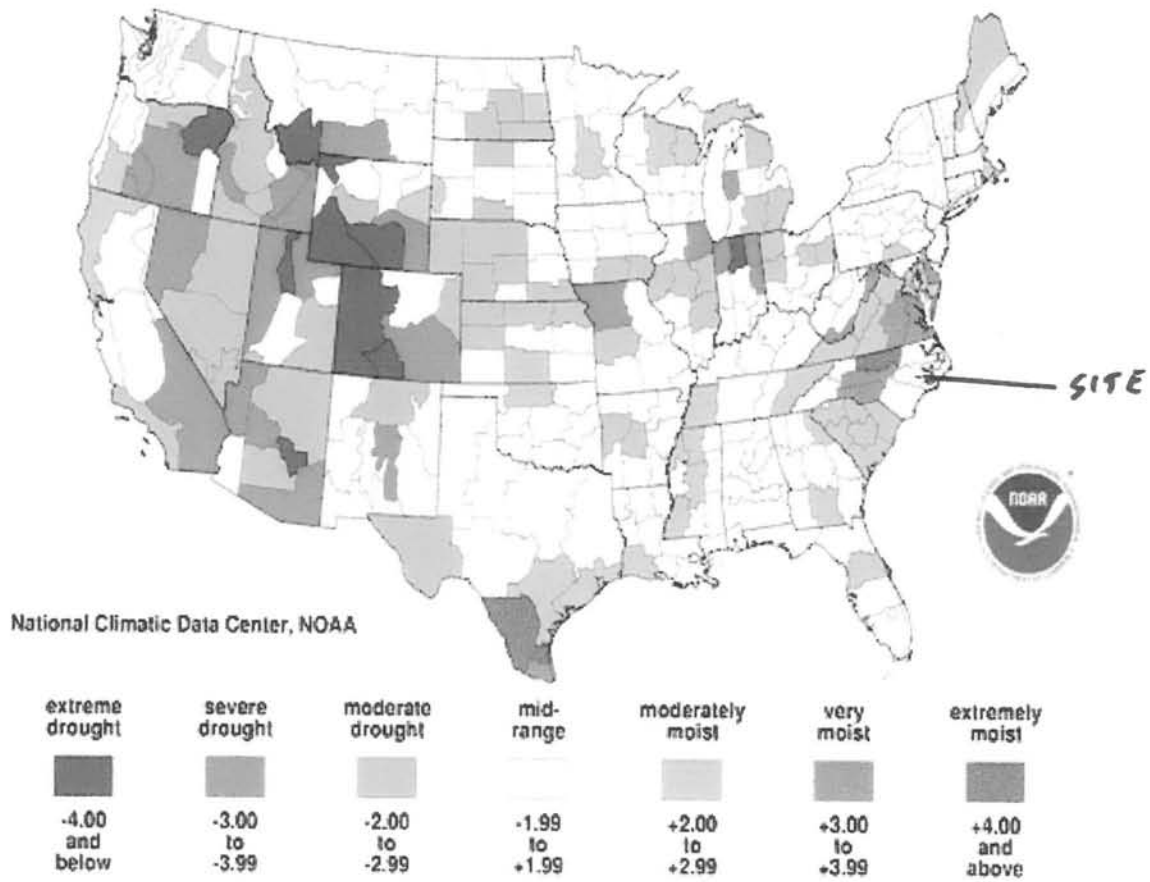
Adjust Speed:
Slow | Fast

Advance One:
< | >

Frame No: 10

Palmer Hydrological Drought Index
Long-Term (Hydrological) Conditions

April 2003



Palmer Hydrological Drought Index - July 2002 to June 2003

NOAA/NESDIS/NCDC
Climate Monitoring Group

Loop Mode:
Fwd | Swp

Animate Frames:
<< | Stop | >>

Dwell First:
-First | +First

Dwell Last:
-Last | +Last

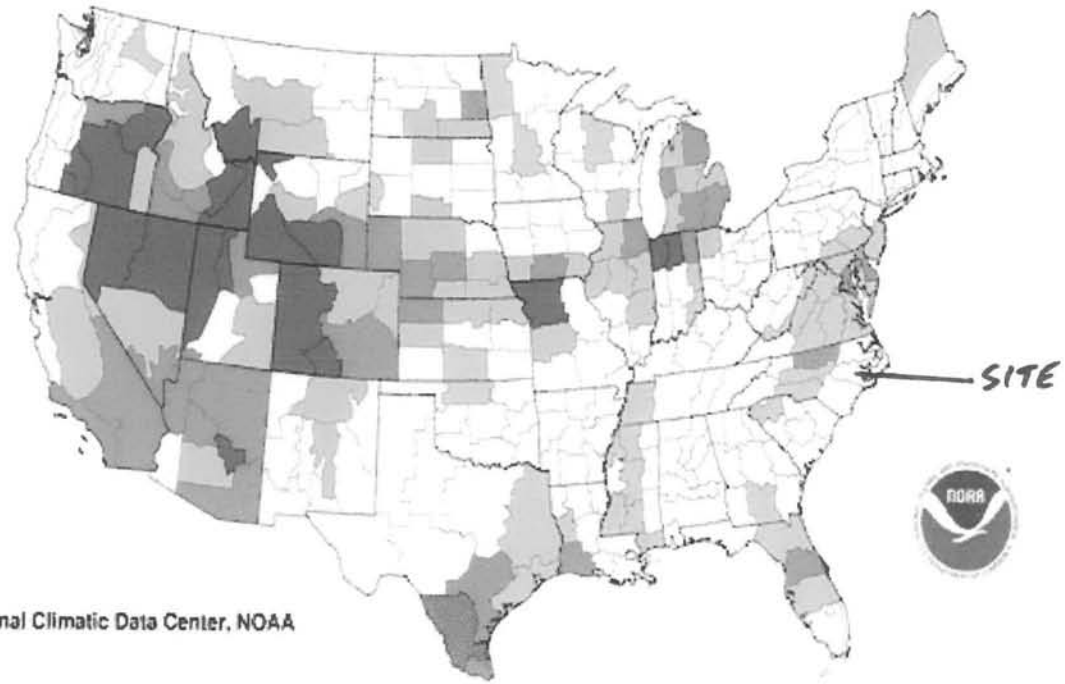
Adjust Speed:
Slow | Fast

Advance One:
< | >

Frame No: 9

Palmer Hydrological Drought Index
Long-Term (Hydrological) Conditions

March 2003



National Climatic Data Center, NOAA

extreme drought	severe drought	moderate drought	mid-range	moderately moist	very moist	extremely moist
-4.00 and below	-3.00 to -3.99	-2.00 to -2.99	-1.99 to +1.99	+2.00 to +2.99	+3.00 to +3.99	+4.00 and above

Palmer Hydrological Drought Index - July 2002 to June 2003

NOAA/NESDIS/NCDC
Climate Monitoring Group

Loop Mode:
Fwd | Swp

Animate Frames:
<< | Stop | >>

Dwell First:
-First | +First

Dwell Last:
-Last | +Last

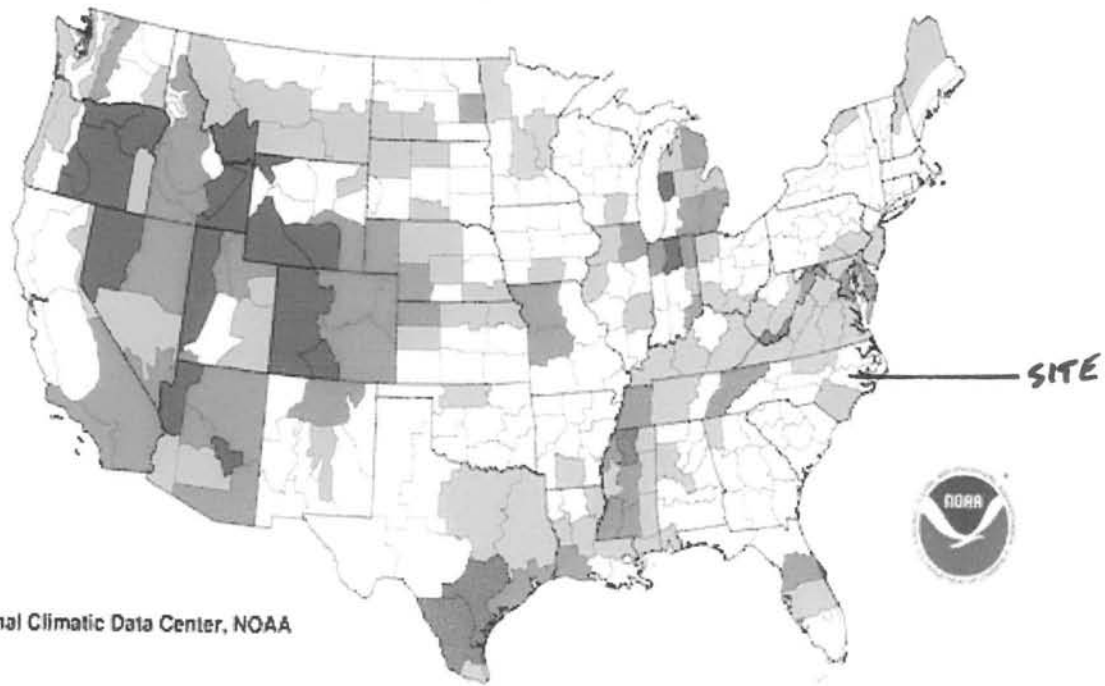
Adjust Speed:
Slow | Fast

Advance One:
< | >

Frame No: 8

Palmer Hydrological Drought Index
Long-Term (Hydrological) Conditions

February 2003



National Climatic Data Center, NOAA

extreme drought	severe drought	moderate drought	mid-range	moderately moist	very moist	extremely moist
-4.00 and below	-3.00 to -3.99	-2.00 to -2.99	-1.99 to +1.99	+2.00 to +2.99	+3.00 to +3.99	+4.00 and above

Palmer Hydrological Drought Index - July 2002 to June 2003

NOAA/NESDIS/NCDC
Climate Monitoring Group

Loop Mode:
Fwd | Swp

Animate Frames:
<< | Stop | >>

Dwell First:
-First | +First
Dwell Last:
-Last | +Last

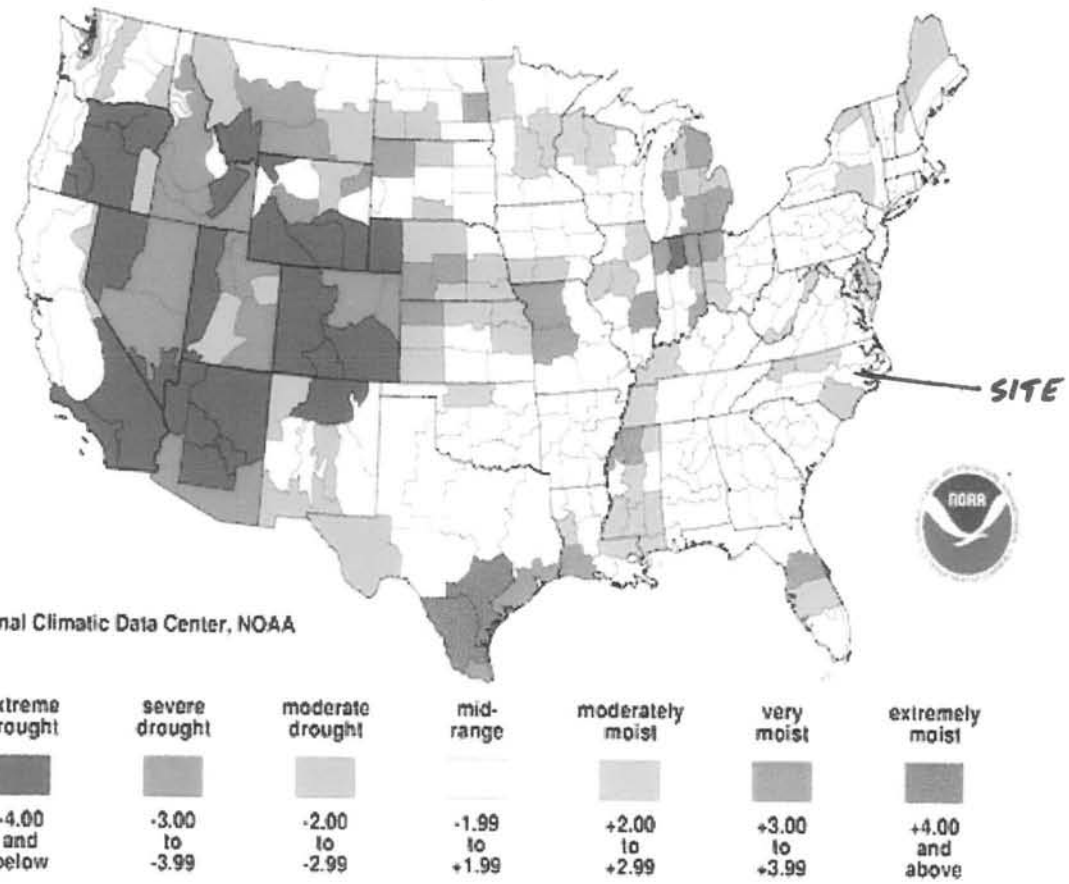
Adjust Speed:
Slow | Fast

Advance One:
< | >

Frame No: 7

Palmer Hydrological Drought Index
Long-Term (Hydrological) Conditions

January 2003



Palmer Hydrological Drought Index - July 2002 to June 2003

NOAA/NESDIS/NCDC
Climate Monitoring Group

Loop Mode:
Fwd | Swp

Animate Frames:
<< | Stop | >>

Dwell First:
-First | +First

Dwell Last:
-Last | +Last

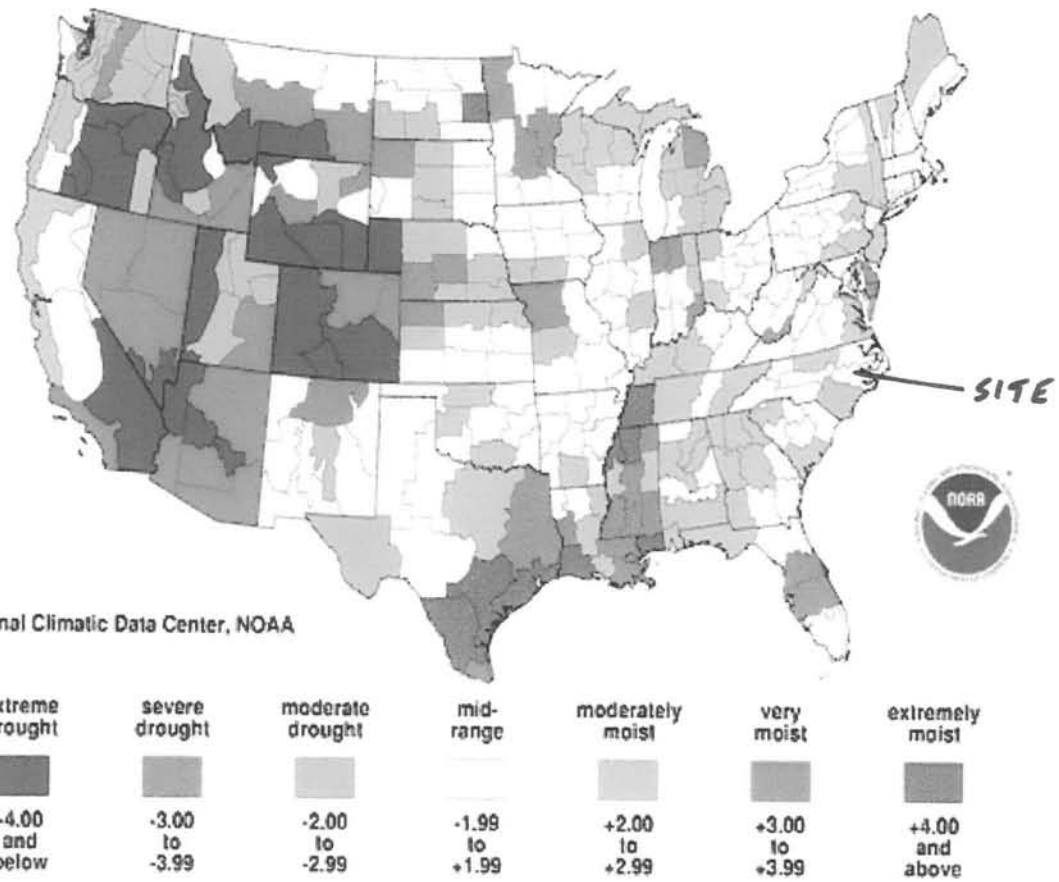
Adjust Speed:
Slow | Fast

Advance One:
< | >

Frame No: 6

Palmer Hydrological Drought Index
Long-Term (Hydrological) Conditions

December 2002



Palmer Hydrological Drought Index - July 2002 to June 2003

NOAA/NESDIS/NCDC
Climate Monitoring Group

Loop Mode:
Fwd | Swp

Animate Frames:
<< | Stop | >>

Dwell First:
-First | +First
Dwell Last:
-Last | +Last

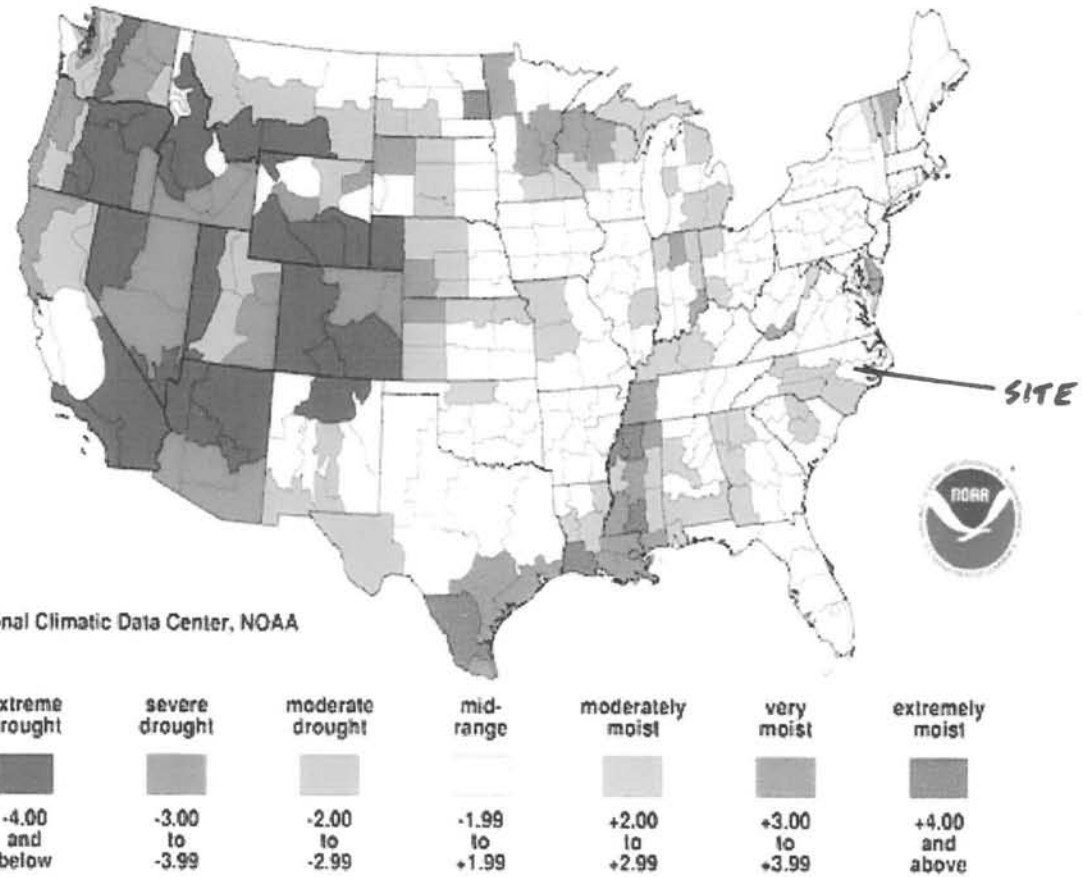
Adjust Speed:
Slow | Fast

Advance One:
< | >

Frame No: 5

Palmer Hydrological Drought Index
Long-Term (Hydrological) Conditions

November 2002



Palmer Hydrological Drought Index - July 2002 to June 2003

NOAA/NESDIS/NCDC
Climate Monitoring Group

Loop Mode:
Fwd | Swp

Animate Frames:
<< | Stop | >>

Dwell First:
-First | +First
Dwell Last:
-Last | +Last

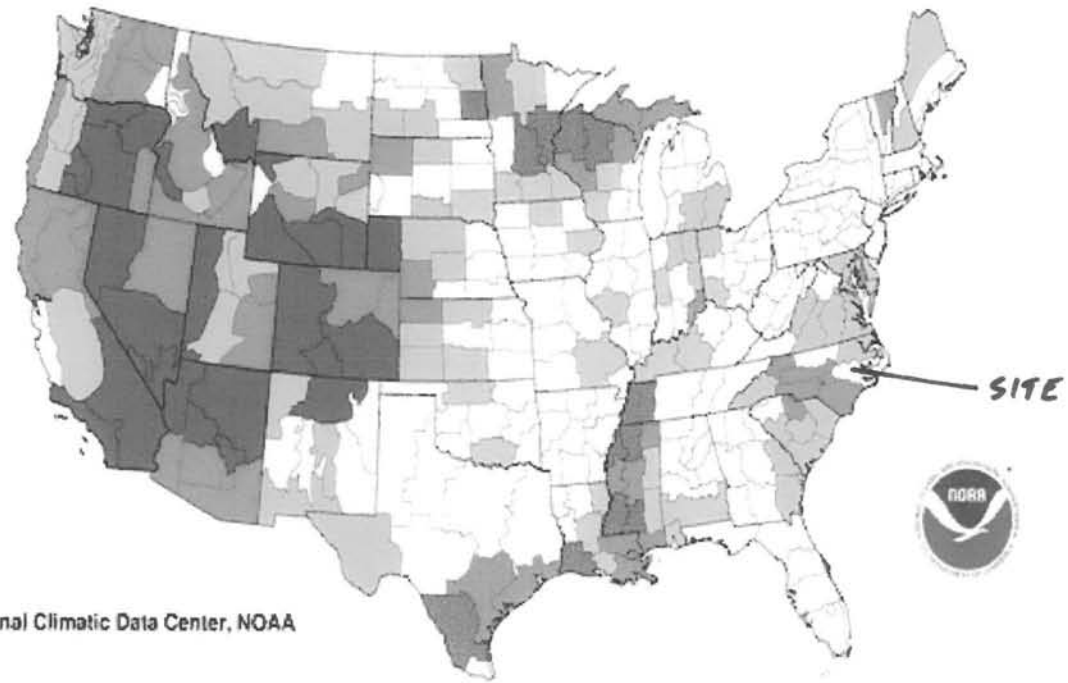
Adjust Speed:
Slow | Fast

Advance One:
< | >

Frame No: 4

Palmer Hydrological Drought Index
Long-Term (Hydrological) Conditions

October 2002



National Climatic Data Center, NOAA

extreme drought	severe drought	moderate drought	mid-range	moderately moist	very moist	extremely moist
-4.00 and below	-3.00 to -3.99	-2.00 to -2.99	-1.99 to +1.99	+2.00 to +2.99	+3.00 to +3.99	+4.00 and above

Palmer Hydrological Drought Index - July 2002 to June 2003

NOAA/NESDIS/NCDC
Climate Monitoring Group

Loop Mode:
Fwd | Swp

Animate Frames:
<< | Stop | >>

Dwell First:
-First | +First

Dwell Last:
-Last | +Last

Adjust Speed:
Slow | Fast

Advance One:
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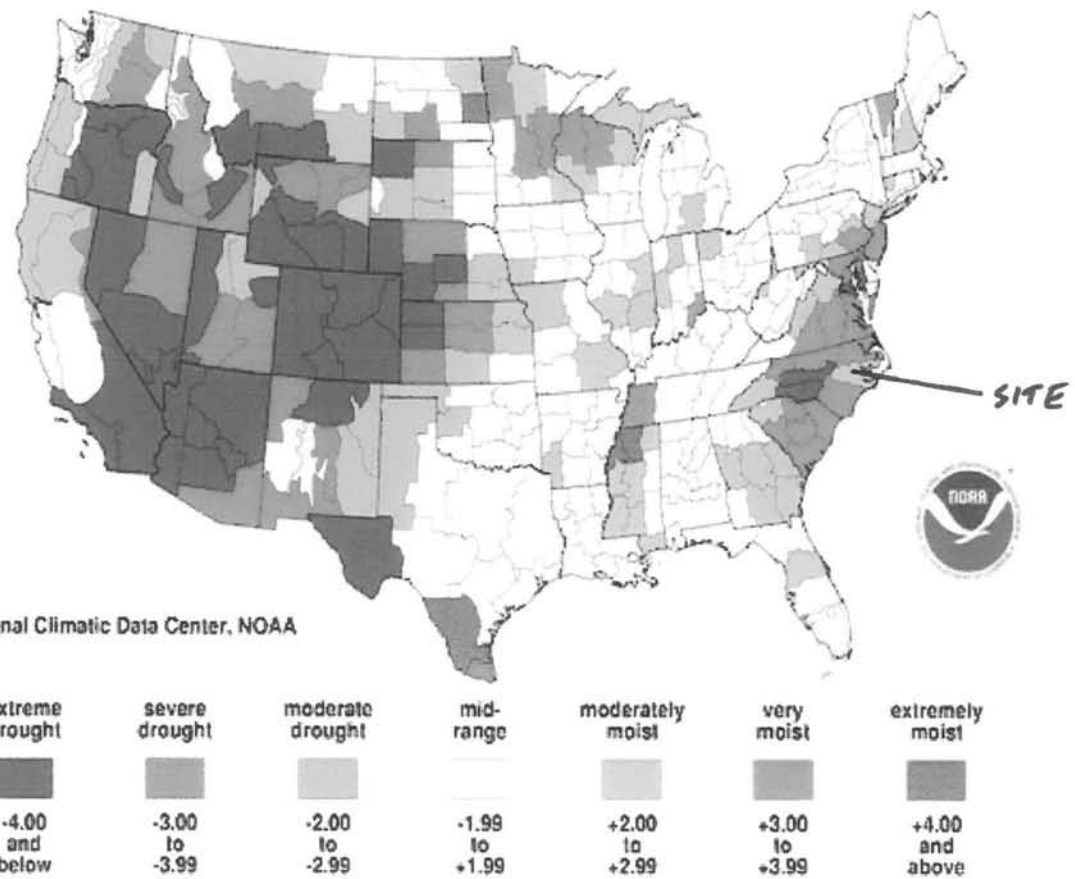
Frame No: 3

Palmer Hydrological Drought Index
Long-Term (Hydrological) Conditions

September 2002



Palmer Hydrological Drought Index - July 2002 to June 2003

NOAA/NESDIS/NCDC
Climate Monitoring Group

Loop Mode:
Fwd | Swp

Animate Frames:
<< | Stop | >>

Dwell First:
-First | +First
Dwell Last:
-Last | +Last

Adjust Speed:
Slow | Fast

Advance One:
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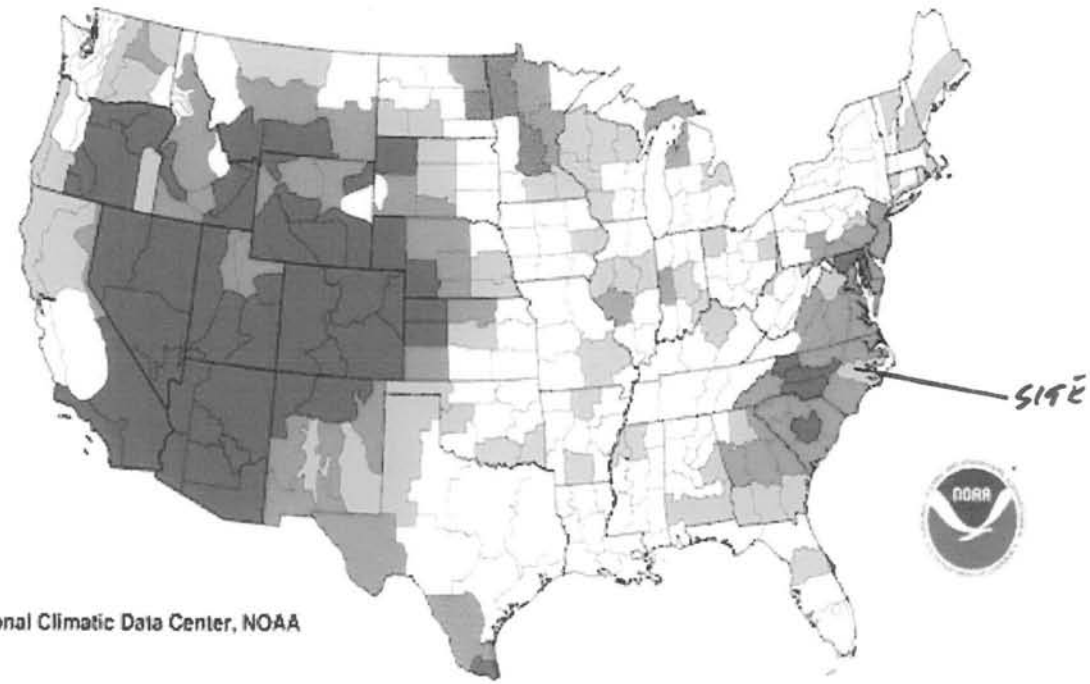
Frame No: 2

Palmer Hydrological Drought Index
Long-Term (Hydrological) Conditions

August 2002



National Climatic Data Center, NOAA

extreme drought	severe drought	moderate drought	mid-range	moderately moist	very moist	extremely moist
-4.00 and below	-3.00 to -3.99	-2.00 to -2.99	-1.99 to +1.99	+2.00 to +2.99	+3.00 to +3.99	+4.00 and above

Palmer Hydrological Drought Index - July 2002 to June 2003

NOAA/NESDIS/NCDC
Climate Monitoring Group

Loop Mode:
Fwd | Swp

Animate Frames:
<< | Stop | >>

Dwell First:
-First | +First

Dwell Last:
-Last | +Last

Adjust Speed:
Slow | Fast

Advance One:
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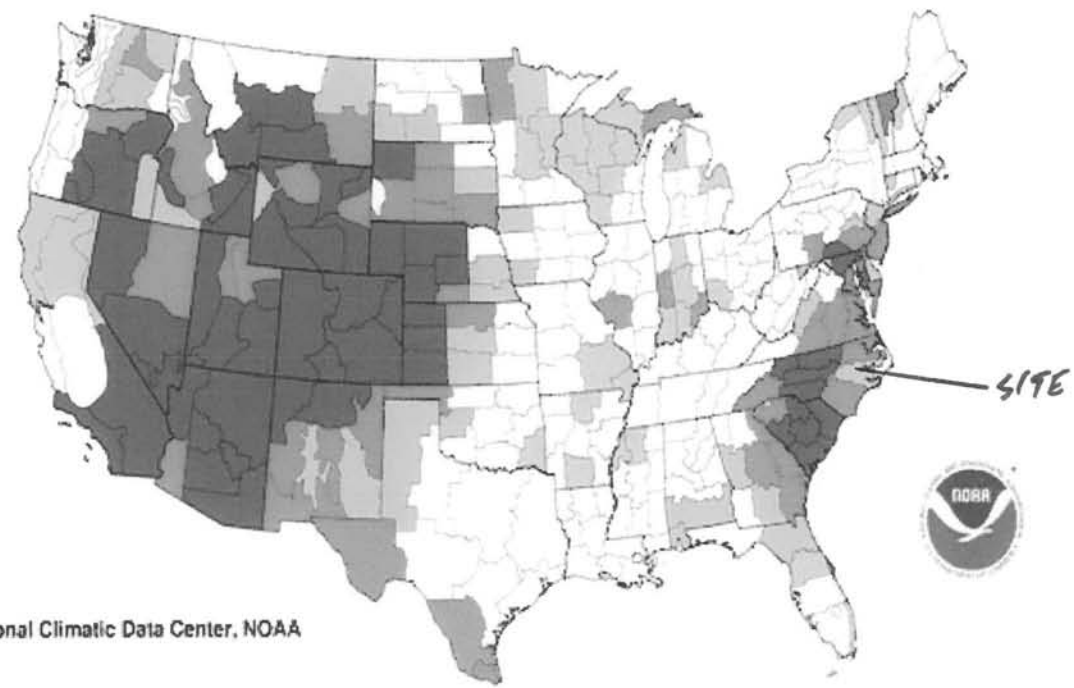
Frame No: 1

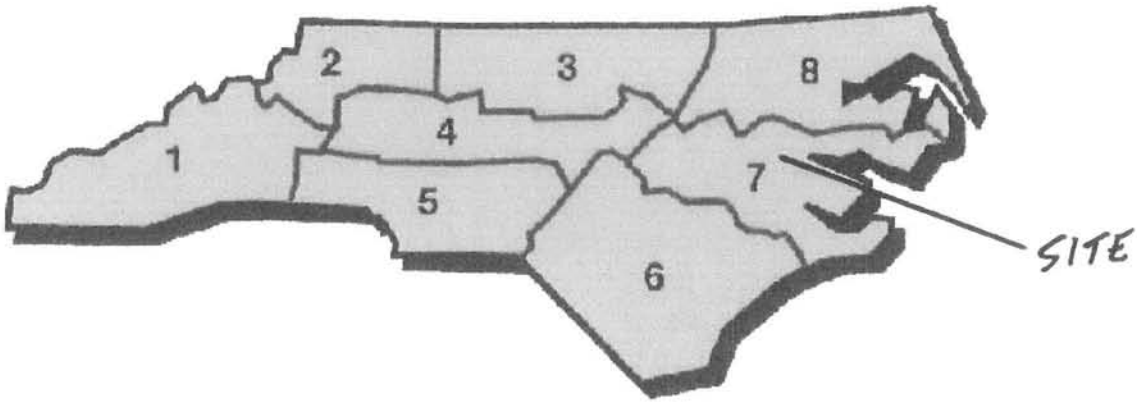
Palmer Hydrological Drought Index
Long-Term (Hydrological) Conditions

July 2002



National Climatic Data Center, NOAA

extreme drought	severe drought	moderate drought	mid-range	moderately moist	very moist	extremely moist
-4.00 and below	-3.00 to -3.99	-2.00 to -2.99	-1.99 to +1.99	+2.00 to +2.99	+3.00 to +3.99	+4.00 and above


1
2
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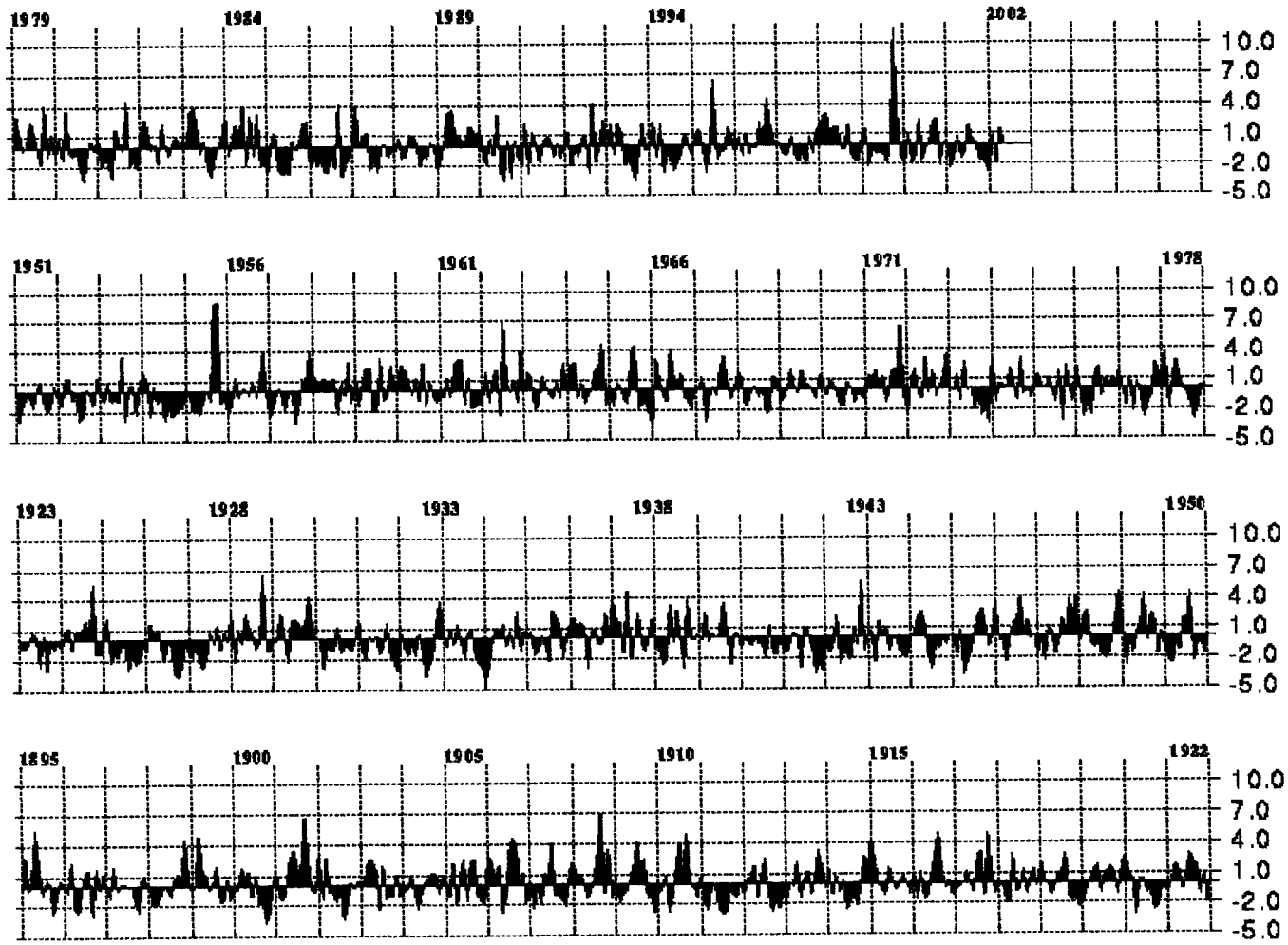
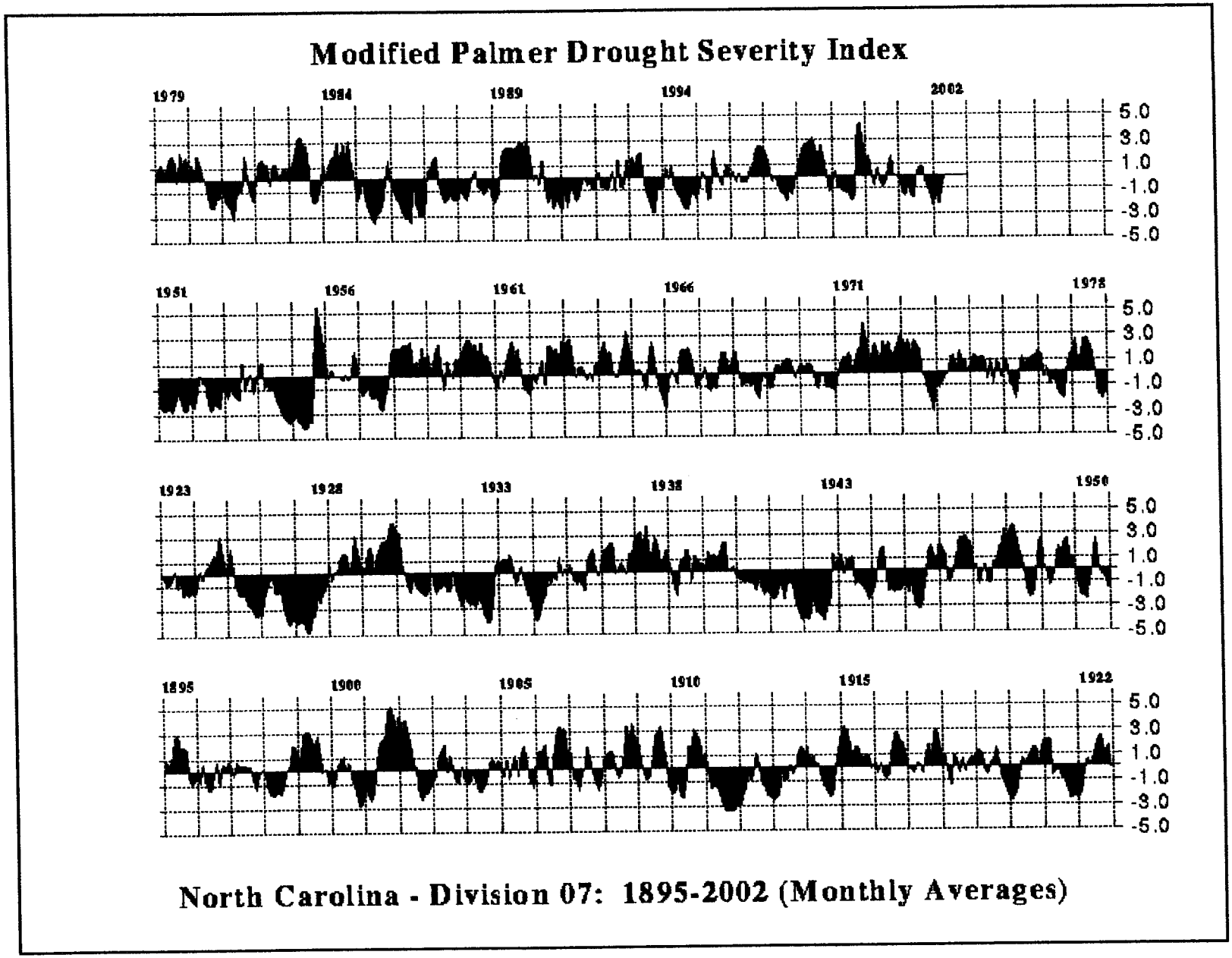
5
6
7
8
SITE

Palmer Z Index



North Carolina - Division 07: 1895-2002 (Monthly Averages)


Modified Palmer Drought Severity Index
1979
1984
1989
1994
2002
1951
1956
1961
1966
1971
1976
1923
1928
1933
1938
1943
1950
1895
1900
1905
1910
1915
1922
5.0
3.0
1.0
-1.0
-3.0
-5.0
North Carolina - Division 07: 1895-2002 (Monthly Averages)

Time Bias Corrected Divisional Temperature-Precipitation-Drought Index

(TD-9640) MARCH 1994

The major parameters in this file are sequential "Time Biased Corrected" state climatic division monthly Average Temperatures (Deg.F. to 10ths), Precipitation (Inches to 100ths), and Palmer Drought Indices (PDSI, PHDI, PMDI, and ZNDX). Period of record is 1895 through latest month available, updated monthly.

Monthly averages within a climatic division have been calculated by giving equal weight to stations reporting both temperature and precipitation within a division. In the U.S., observers at cooperative stations often take one observation per day, and the ending time of the climatological day at any station can vary from station-to-station as well as year-to-year. Differences of the 24-hour period over which each observer reports his or her maximum and minimum temperature as well as the average temperature [(max + min)/2] affects the calculated monthly mean temperature. Karl, et al. (1986), describe the biases that this introduces. These potential biases were rectified by adjusting for these varying observation times. The model described by Karl, et al. (1986), was used to adjust the climate division averages such that all stations end their climatological day at midnight; i.e., climatological day coincides with calendar day. The time of observation was determined at each station within a climate division during January of the years 1931, 1941, 1951, 1965, 1975, and 1984 for the states of California, Colorado, Illinois, Indiana, New York, North Carolina, and Washington. The fraction of observers recording at various hours of the day was calculated and interpolated for intervening years (extrapolated for subsequent years). For these seven states, the ending time of observation was grouped into three categories: AM, PM, and MD. The AM category included observers who ended their climatological day between 3 AM and 11AM; the PM category between noon and 9 PM; and the MD category between 10 PM and 2 AM; all local standard time. The fraction of observers in these categories was calculated, and it was assumed the 7 AM observation time best represented the AM category; the 5 PM observation time, the PM category; and midnight for the MD category. The reason for the simplification was to test if a faster method, requiring significantly less bookkeeping and keypunching, could not provide nearly as good results as calculating the fraction of observers at each of the 24 hours of the day.

The time of observation bias model was run by using the latitude and longitude of each of the centroids of the climate divisions. The output from the model was the time of observation bias, with respect to a midnight-to-midnight climatological day, for each of the possible ending hours of the climatological day. Each climate division's monthly average was then adjusted by weighting the bias at any given hour by the fraction of stations within the climate division observing at that hour, and subtracting the result for the reported monthly mean temperature.

Differences of the biases were small (< 0.3 Deg. F.) for those calculated by categorizing the ending time of observation into three categories compared to those obtained from calculating the fraction of stations with observation times at each of the 24 hours of the day. This is attributed to the preponderance of AM observation times falling between 6 AM and 9 AM, and PM observation times falling between 4 PM and 7 PM. As a result, by assuming 7 AM observation for all AM stations and 5 PM for all PM stations, a good estimate of the median bias is obtained for all AM or PM observations. Furthermore, nearly all the MD

It should also be noted that the borders of the climate divisions in 1951 were not consistent with those defined in 1965. Due to the substantial additional effort it would have required locating each station within three or four climate divisions, as defined today, the change in the statewide percentage of AM, PM, and MD observation times was applied in equal proportions to all climate divisions prior to and including 1951.

Based on small differences between the two methods of estimating the time of observation bias, the simpler categorical procedure was used for all climate divisions. This should effectively eliminate most of the biases (over 2 Deg.F) in some climate divisions that have become part of the divisional averages. These biases affect both trends and actual estimates of divisional averages. Reference Karl, et al. (1986): "A model to estimate the time of observation bias associated with monthly mean maximum, minimum, and mean temperatures for the United States" (Thomas R. Karl, Claude N. Williams, Jr., and Pamela J. Young, National Climatic Data Center, and Wayne M. Wendland, Illinois State Water Survey, Journal of Climate and Applied Meteorology, January 1986, American Meteorological Society, Boston, MA). The time of observation bias model which can be used for the maximum, minimum, and mean monthly temperature at any location in the contiguous U.S. [program NCC*F11SRC (OBTBIAS Code) and NCC*F11REL (OBTBIAS)], is available from the NCDC.

Historical drought data have been added to this file for the period 1895 to present. The file is updated monthly. All drought data are calibrated using the period 1895-1990 (cf. Karl, 1986; Journal of Climate and Applied Meteorology, Vol. 25, No. 1, January 1986). Drought data include:

1. **Palmer Drought Severity Index (PDSI)**

   This is the monthly value (index) that is generated indicating the severity of a wet or dry spell. This index is based on the principles of a balance between moisture supply and demand. Man-made changes were not considered in this calculation. The index generally ranges from -6 to +6, with negative values denoting dry spells and positive values indicating wet spells. There are a few values in the magnitude of +7 or -7. PDSI values 0 to -.5 = normal; -0.5 to -1.0 = incipient drought; -1.0 to -2.0 = mild drought; -2.0 to -3.0 = moderate drought; -3.0 to -4.0 = severe drought; and greater than - 4.0 = extreme drought. Similar adjectives are attached to positive values of wet spells. This is a meteorological drought index used to assess the severity of dry or wet spells of weather.

2. **Palmer Hydrological Drought Index (PHDI)**

   This is the monthly value (index) generated monthly that indicates the severity of a wet or dry spell. This index is based on the principles of a balance between moisture supply and demand. Man-made changes such as increased irrigation, new reservoirs, and added industrial water use were not included in the computation of this index. The index generally ranges from - 6 to +6, with negative values denoting dry spells, and positive values indicating wet spells. There are a few values in the magnitude of +7 or -7. PHDI values 0 to -0.5 = normal; -0.5 to -1.0 = incipient drought; -1.0 to - 2.0 = mild drought; -2.0 to -3.0 = moderate drought; -3.0 to -4.0 = severe drought; and greater than -4.0 = extreme drought. Similar adjectives are attached to positive values of wet spells. This is a hydrological drought index used to assess long-term moisture supply.

3. Palmer "Z" Index (ZNDX)

This is the generated monthly Z values, and they can be expressed as the "Moisture Anomaly Index." Each monthly Z value is a measure of the departure from normal of the moisture climate for that month. This index can respond to a month of above-normal precipitation, even during periods of drought. Table 1 contains expected values of the Z index and other drought parameters. See Historical Climatology Series 3-6 through 3-9 for a detailed description of the drought indices.

4. Modified Palmer Drought Severity Index (PMDI)

This is a modification of the Palmer Drought Severity Index. The modification was made by the National Weather Service Climate Analysis Center for operational meteorological purposes. The Palmer drought program calculates three intermediate parallel index values each month. Only one value is selected as the PDSI drought index for the month. This selection is made internally by the program on the basis of probabilities. If the probability that a drought is over is 100%, then one index is used. If the probability that a wet spell is over is 100%, then another index is used. If the probability is between 0% and 100%, the third index is assigned to the PDSI. The modification (PMDI) incorporates a weighted average of the wet and dry index terms, using the probability as the weighting factor. (Thomas R. Heddinghause and Paul Sabol, 1991; "A Review of the Palmer Drought Severity Index and Where Do We Go From Here?," Proceedings of the Seventh Conference on Applied Climatology, pp. 242-246, American Meteorological Society, Boston, MA). The PMDI and PDSI will have the same value during an established drought or wet spell (i.e., when the probability is 100%), but they will have different values during transition periods.

Table 1 Classes for Wet and Dry Periods

Approximate Cumulative Frequency %	Range PHDI	Category	Range Z
> 96	> 4.00	Extreme wetness	> 3.50
90-95	3.00, 3.99	Severe wetness	2.50, 3.49
73-89	1.50, 2.99	Mild to moderate wetness	1.00, 2.49
28-72	-1.49, 1.49	Near normal	-1.24, 0.99
11-27	-1.50, -2.99	Mild to moderate drought	-1.25, -1.99
5-10	-3.00, -3.99	Severe drought	-2.00, -2.74
< 4	<-4.00	Extreme drought	<-2.75

State Code Table.

Range of values of 01-91.

01 Alabama
02 Arizona
03 Arkansas
04 California
05 Colorado
06 Connecticut
07 Delaware
08 Florida
09 Georgia
10 Idaho
11 Illinois
12 Indiana
13 Iowa
14 Kansas
15 Kentucky
16 Louisiana
17 Maine
18 Maryland
19 Massachusetts
20 Michigan
21 Minnesota
22 Mississippi
23 Missouri
24 Montana
25 Nebraska
26 Nevada
27 New Hampshire
28 New Jersey
29 New Mexico
30 New York
31 North Carolina
32 North Dakota
33 Ohio
34 Oklahoma
35 Oregon
36 Pennsylvania
37 Rhode Island
38 South Carolina
39 South Dakota
40 Tennessee
41 Texas
42 Utah
43 Vermont
44 Virginia
45 Washington
46 West Virginia
47 Wisconsin
48 Wyoming

FILE FORMAT

Element Name	Record Position	Element Description
STATE-CODE	1-2	STATE-CODE as indicated in State Code Table as described in FILE 1. Range of values is 01-91.
DIVISION-NUMBER	3-4	DIVISION NUMBER - Assigned by NCDC. Range of values 01-10.
ELEMENT CODE	5	1 = Precipitation 2 = Temperature 5 = PDSI 6 = PHDI 7 = ZNDX 8 = PMDI

YEAR	6-9	This is the year of record. Range is 1895 to current year processed.
JAN-VALUE	10-16	Palmer Drought Index format. Range of values b-20.00 to bb20.00. Decimal point retains a position in 7-character field. Missing values in the latest year are indicated by -999.99. Monthly Divisional Temperature format. Range of values b-50.00 to b140.00 degrees Fahrenheit. Decimals retain a position in the 5-character field. Missing values in the latest year are indicated by b-99.90. Monthly Divisional Precipitation format. Range of values 00.00 to 99.99. Decimal point retains a position in the 5-character field. Missing values in the latest year are indicated by bb-9.99.
FEB-VALUE	17-23	
MAR-VALUE	24-30	
APR-VALUE	31-37	
MAY-VALUE	38-44	
JUNE-VALUE	45-51	
JULY-VALUE	52-58	
AUG-VALUE	59-65	
SEPT-VALUE	66-72	
OCT-VALUE	73-79	
NOV-VALUE	80-86	
DEC-VALUE	87-93	

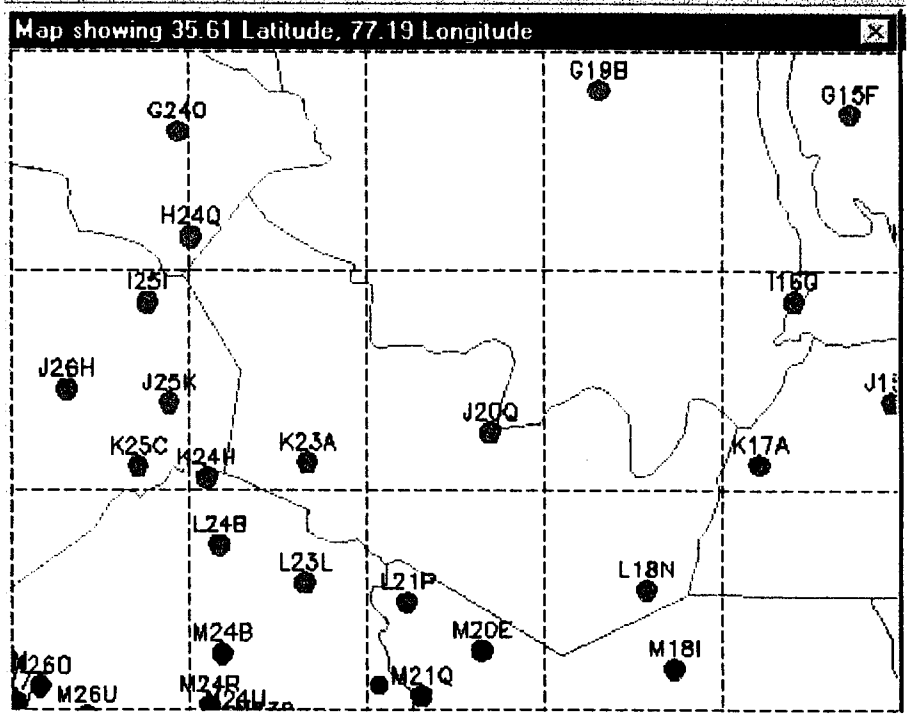
Return to CLIMVIS

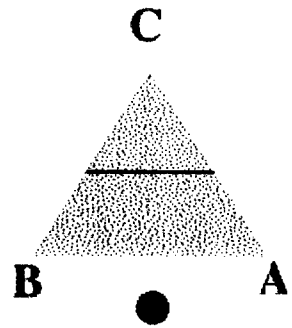
Return to FTP Screen

FrameWork Query Results

** Scroll to bottom half of page for cross-section.
** Map is labeled with quad designations.
** Refer to borehole descriptions to the right for quad designations of boreholes A, B & C.
** Triangle shows relative position of three boreholes to one another and the position of the cross-section line in the triangle created by the three boreholes.

**** 0.2 degree grid on map**





Boreholes

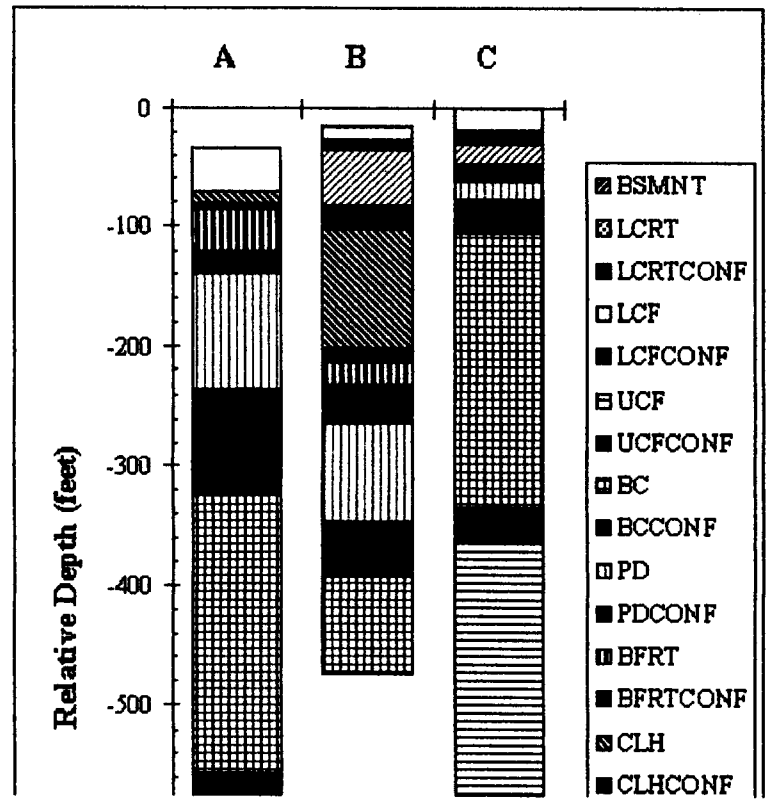
A: City of Washington Test 2, M 21Q, land surface: 15.00 feet

B: EHNR Chocowinity, N 21M, land surface: 33.00 feet

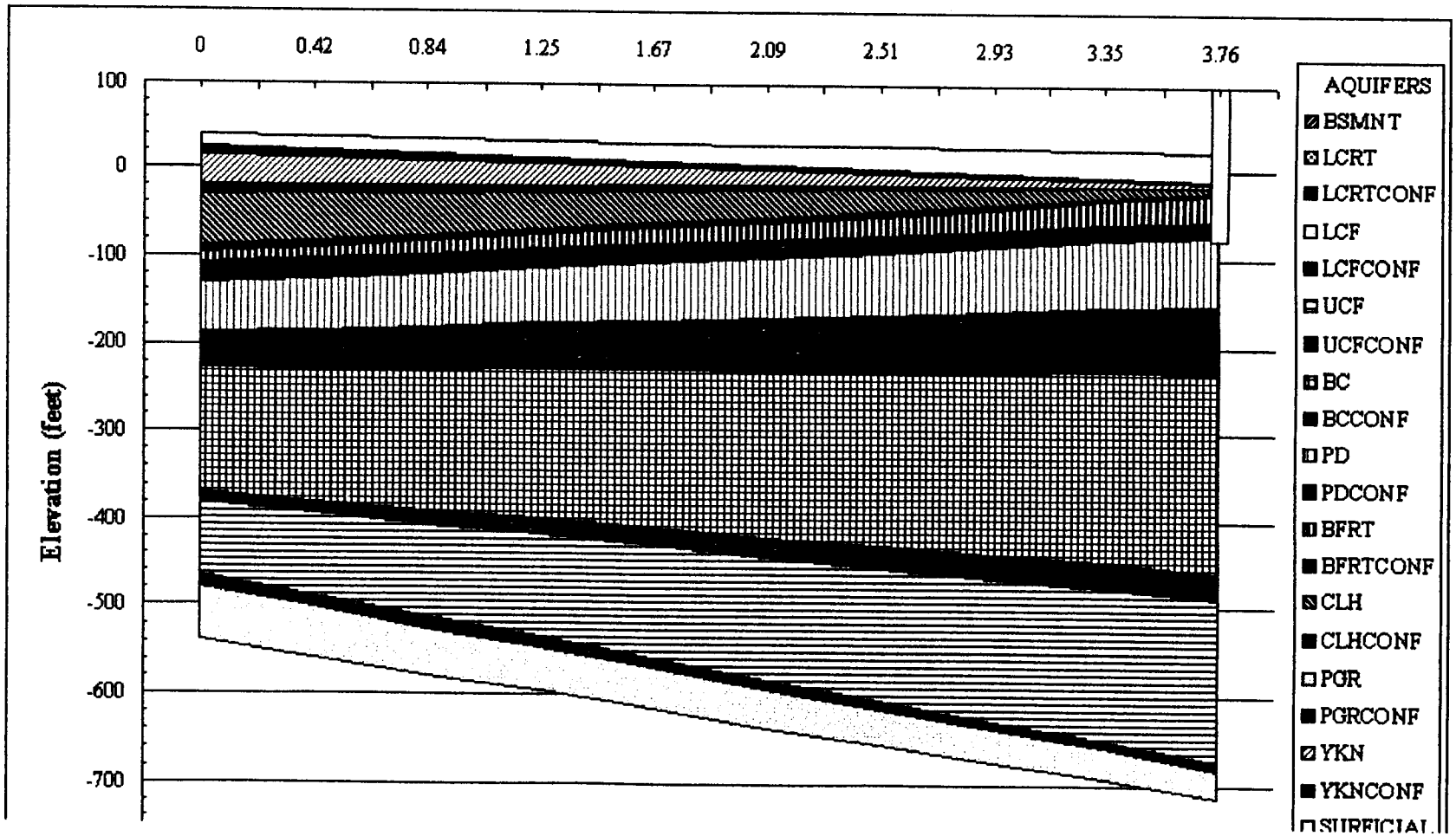
C: City of Greenville 2, M 24R, land surface: 49.00 feet

Direction that cross-section line is oriented: **SSW-NNE**

Borehole Hydrology



Calculated Cross-Section



Aquifer Framework Database

Resstafr.dbf Contents

County	Quad	Name	Depth
Pamlico	Q 15U	EHNR Hobucken	1003
Pamlico	S 15Y	EHNR Whortonsville	1521
Pamlico	S 16W	E. Edwards	234
Pamlico	S 17I	Bayboro Chevrolet Co	210
Pamlico	S 18U	EHNR Arapahoe	1050
Pamlico	T 15D	Carolina Petroleum Co (API# 32-137-1)	3666
Pasquotank	C 12P	PA-T1-62	700
Pasquotank	C 12W	NCDENR Morgans Corner	1530
Pasquotank	D 11V	NCDENR Elizabeth City Forest Srv.	500
Pasquotank	D 12V	Waldorf #1 (API# 32-139-1)	2714
Pasquotank	E 10U	NCDENR Elizabeth City CGS	200
Pasquotank	E 11I	Elizabeth City RO Test	898
Pasquotank	E 11Q	NCDENR Okiska	200
Pasquotank	F 10K	NCDENR Weeksville	221
Pasquotank	F 10Q	PA-T2-62	704
Pasquotank	F 11I	NCDENR Halls Creek	199
Pasquotank	G 9C	NCDENR Big Flatty Creek	731
Pender	AA 26X	NC Oil and Gas Corp. (API# 32-141-4)	1462
Pender	AA 27W	NC Oil and Gas Corp. (API# 32-141-5) Mac	1421
Pender	AA 33L	Moores Creek National Park Test	650
Pender	BB 28J	EHNR Topsail	1348
Pender	BB 28N	NC Oil and Gas Corp. (API# 32-141-6)	1253
Pender	X 28W	NC Oil and Gas Corp. (API# 32-141-5) Cow	1000
Pender	Y 30S	NCDENR Burgaw	931
Perquimans	E 13M	EHNR Parkville	1210
Perquimans	F 13W	DWR Perquimans Test	1143
Pitt	K 24H	Town of Bethel	523
Pitt	L 23L	Stokes School	85
Pitt	L 24B	EHNR Bethel	690
Pitt	L 27X	Town of Fountain	269
Pitt	M 24B	City of Greenville 1	502
Pitt	M 24R	City of Greenville 2	754

Pitt	M 24U	City of Greenville 3	711
Pitt	M 26O	Town of Farmville 1	396
Pitt	M 26U	Bell Arthur Water Association 1	497
Pitt	M 27M	Town of Farmville 3	396
Pitt	M 27T	Town of Farmville 2	514
Pitt	M 27V	Town of Farmville 4	392
Pitt	M 27X	Town of Farmville 5	335
Pitt	N 22I	Town of Grimesland	250
Pitt	N 23B	Eastern Pines Water Association 1	440
Pitt	N 23D	Eastern Pines Water Association 2	432
Pitt	N 23G	Eastern Pines Water Association 3	456
Pitt	N 23O	Eastern Pines Water Association 4	480
Pitt	N 23P	EHNR Conley	802
Pitt	N 24P1	Town of Winterville 1	400
Pitt	N 24P2	Town of Winterville 2	654
Pitt	N 24Q	Town of Winterville 3	444
Pitt	N 24Y	Town of Winterville 4	440
Pitt	N 25G	Bell Arthur Water Association 2	408
Pitt	N 26H	Town of Farmville 6	440
Pitt	O 22H	U.S. Information Agency 2	470
Pitt	O 23A	Eastern Pines Water Association 5	514
Pitt	O 23L	EHNR Gardner-Chicod	1092
Pitt	O 25J	Town of Ayden	570
Pitt	P 23K	R.P. Gaskins	308
Pitt	P 25L	Town of Grifton	600

Aquifer Framework Database Detail for M 20E

Resstafr.dbf

Field	Data
County	Beaufort
Latitude	35.653889
Longitude	-77.070278
Location Accuracy	
Quad	M 20E
Name	City of Washington Test 1
Complete	Y
Depth	516.00
Land Surface	45.00
Yorktown CU	10000
Yorktown	17
Pungo River CU	10000
Pungo River	10000
Castle Hayne CU	-9
Castle Hayne	-29
Beaufort CU	-115
Beaufort	-134
Peedee CU	-145
Peedee	-155
Black Creek CU	-265
Black Creek	-303
Upper Cape Fear CU	10000

Upper Cape Fear	10000
Lower Cape Fear CU	10000
Lower Cape Fear	10000
Lower Cretaceous CU	10000
Lower Cretaceous	10000
Basement	10000

Aquifer Framework Database Detail for M 18I

Resstafr.dbf

Field	Data
County	Beaufort
Latitude	35.637500
Longitude	-76.854167
Location Accuracy	
Quad	M 18I
Name	Coastal Plains Oil Co. (API# 32-013-5)
Complete	Y
Depth	1526.00
Land Surface	40.00
Yorktown CU	10000
Yorktown	10000
Pungo River CU	10000
Pungo River	-63
Castle Hayne CU	-73
Castle Hayne	-90
Beaufort CU	-222
Beaufort	-245
Peedee CU	-348
Peedee	-367
Black Creek CU	-453
Black Creek	-570
Upper Cape Fear CU	-647
Upper Cape Fear	-692

Lower Cape Fear CU	-1173
Lower Cape Fear	-1243
Lower Cretaceous CU	10000
Lower Cretaceous	10000
Basement	10000

Aquifer Framework Database Detail for N 23B

Resstafr.dbf

Field	Data
County	Pitt
Latitude	35.575000
Longitude	-77.278611
Location Accuracy	
Quad	N 23B
Name	Eastern Pines Water Association 1
Complete	Y
Depth	440.00
Land Surface	62.00
Yorktown CU	36
Yorktown	28
Pungo River CU	10000
Pungo River	10000
Castle Hayne CU	10000
Castle Hayne	10000
Beaufort CU	4
Beaufort	-26
Peedee CU	-40
Peedee	-52
Black Creek CU	-113
Black Creek	-182
Upper Cape Fear CU	10000
Upper Cape Fear	10000
Lower Cape Fear CU	10000
Lower Cape Fear	10000
Lower Cretaceous CU	10000
Lower Cretaceous	10000
Basement	10000

Aquifer Framework Database Detail for N 23D

Resstafr.dbf

Field	Data
County	Pitt
Latitude	35.580278
Longitude	-77.314722
Location Accuracy	
Quad	N 23D
Name	Eastern Pines Water Association 2
Complete	Y
Depth	432.00
Land Surface	56.00
Yorktown CU	38
Yorktown	28
Pungo River CU	10000
Pungo River	10000
Castle Hayne CU	10000
Castle Hayne	10000
Beaufort CU	16
Beaufort	2
Peedee CU	-8
Peedee	-26
Black Creek CU	-54
Black Creek	-98
Upper Cape Fear CU	-328
Upper Cape Fear	-360
Lower Cape Fear CU	10000
Lower Cape Fear	10000
Lower Cretaceous CU	10000
Lower Cretaceous	10000
Basement	10000

Aquifer Framework Database Detail for N 23G

Resstafr.dbf

Field	Data
County	Pitt
Latitude	35.557778
Longitude	-77.310556
Location Accuracy	
Quad	N 23G
Name	Eastern Pines Water Association 3
Complete	Y
Depth	456.00
Land Surface	68.00
Yorktown CU	56
Yorktown	40
Pungo River CU	10000
Pungo River	10000
Castle Hayne CU	10000
Castle Hayne	10000
Beaufort CU	31
Beaufort	3
Peedee CU	-22
Peedee	-40
Black Creek CU	-67
Black Creek	-120
Upper Cape Fear CU	-326
Upper Cape Fear	-345
Lower Cape Fear CU	10000
Lower Cape Fear	10000
Lower Cretaceous CU	10000
Lower Cretaceous	10000
Basement	10000

Aquifer Framework Database Detail for N 23O

Resstafr.dbf

Field	Data
County	Pitt
Latitude	35.536667
Longitude	-77.320833
Location Accuracy	
Quad	N 23O
Name	Eastern Pines Water Association 4
Complete	Y
Depth	480.00
Land Surface	67.00
Yorktown CU	47
Yorktown	37
Pungo River CU	10000
Pungo River	10000
Castle Hayne CU	10000
Castle Hayne	10000
Beaufort CU	24
Beaufort	15
Peedee CU	-5
Peedee	-17
Black Creek CU	-71
Black Creek	-111
Upper Cape Fear CU	-347
Upper Cape Fear	-375
Lower Cape Fear CU	10000
Lower Cape Fear	10000
Lower Cretaceous CU	10000
Lower Cretaceous	10000
Basement	10000

Aquifer Framework Database Detail for O 23A

Resstafr.dbf

Field	Data
County	Pitt
Latitude	35.499444
Longitude	-77.263611
Location Accuracy	
Quad	O 23A
Name	Eastern Pines Water Association 5
Complete	Y
Depth	514.00
Land Surface	50.00
Yorktown CU	36
Yorktown	28
Pungo River CU	10000
Pungo River	10000
Castle Hayne CU	10000
Castle Hayne	10000
Beaufort CU	-28
Beaufort	-39
Peedee CU	-94
Peedee	-116
Black Creek CU	-204
Black Creek	-218
Upper Cape Fear CU	-430
Upper Cape Fear	10000
Lower Cape Fear CU	10000
Lower Cape Fear	10000
Lower Cretaceous CU	10000
Lower Cretaceous	10000
Basement	10000

Aquifer Framework Database
Detail for M 24R

Resstafr.dbf

Field	Data
County	Pitt
Latitude	35.604167
Longitude	-77.376944
Location Accuracy	
Quad	M 24R
Name	City of Greenville 2
Complete	Y
Depth	754.00
Land Surface	49.00
Yorktown CU	30
Yorktown	19
Pungo River CU	10000
Pungo River	10000
Castle Hayne CU	10000
Castle Hayne	10000
Beaufort CU	10000
Beaufort	10000
Peedee CU	1
Peedee	-14
Black Creek CU	-29
Black Creek	-56
Upper Cape Fear CU	-286
Upper Cape Fear	-316
Lower Cape Fear CU	-524
Lower Cape Fear	-559
Lower Cretaceous CU	10000
Lower Cretaceous	10000
Basement	-705

Aquifer Framework Database
Detail for M 24B

Resstafr.dbf

Field	Data
County	Pitt
Latitude	35.651111
Longitude	-77.361944
Location Accuracy	
Quad	M 24B
Name	City of Greenville 1
Complete	Y
Depth	502.00
Land Surface	26.00
Yorktown CU	18
Yorktown	6
Pungo River CU	10000
Pungo River	10000
Castle Hayne CU	10000
Castle Hayne	10000
Beaufort CU	10000
Beaufort	10000
Peedee CU	-6
Peedee	-12
Black Creek CU	-20
Black Creek	-51
Upper Cape Fear CU	-241
Upper Cape Fear	-254
Lower Cape Fear CU	10000
Lower Cape Fear	10000
Lower Cretaceous CU	10000
Lower Cretaceous	10000
Basement	10000

Aquifer Framework Database Detail for O 23L

Resstafr.dbf

Field	Data
County	Pitt
Latitude	35.463889
Longitude	-77.275556
Location Accuracy	
Quad	O 23L
Name	EHNR Gardner-Chicod
Complete	Y
Depth	1092.00
Land Surface	42.00
Yorktown CU	32
Yorktown	24
Pungo River CU	10000
Pungo River	10000
Castle Hayne CU	7
Castle Hayne	-2
Beaufort CU	-26
Beaufort	-32
Peedee CU	-48
Peedee	-76
Black Creek CU	-138
Black Creek	-178
Upper Cape Fear CU	-410
Upper Cape Fear	-446
Lower Cape Fear CU	-690
Lower Cape Fear	-726
Lower Cretaceous CU	10000
Lower Cretaceous	10000
Basement	-1050

Aquifer Framework Database Detail for O 22H

Resstafr.dbf

Field	Data
County	Pitt
Latitude	35.466944
Longitude	-77.200833
Location Accuracy	
Quad	O 22H
Name	U.S. Information Agency 2
Complete	Y
Depth	470.00
Land Surface	46.00
Yorktown CU	26
Yorktown	10
Pungo River CU	10000
Pungo River	10000
Castle Hayne CU	-2
Castle Hayne	-14
Beaufort CU	-20
Beaufort	-60
Peedee CU	-114
Peedee	-152
Black Creek CU	-234
Black Creek	-265
Upper Cape Fear CU	10000
Upper Cape Fear	10000
Lower Cape Fear CU	10000
Lower Cape Fear	10000
Lower Cretaceous CU	10000
Lower Cretaceous	10000
Basement	10000

Aquifer Framework Database
Detail for N 23P

Resstafr.dbf

Field	Data
County	Pitt
Latitude	35.529964
Longitude	-77.326652
Location Accuracy	G
Quad	N 23P
Name	EHNR Conley
Complete	Y
Depth	802.00
Land Surface	70.00
Yorktown CU	60
Yorktown	48
Pungo River CU	10000
Pungo River	10000
Castle Hayne CU	10000
Castle Hayne	10000
Beaufort CU	32
Beaufort	10
Peedee CU	-8
Peedee	-20
Black Creek CU	-78
Black Creek	-116
Upper Cape Fear CU	-344
Upper Cape Fear	-386
Lower Cape Fear CU	-584
Lower Cape Fear	-610
Lower Cretaceous CU	10000
Lower Cretaceous	10000
Basement	10000

Aquifer Framework Database
Detail for M 24U

Resstafr.dbf

Field	Data
County	Pitt
Latitude	35.590556
Longitude	-77.347500
Location Accuracy	
Quad	M 24U
Name	City of Greenville 3
Complete	Y
Depth	711.00
Land Surface	65.00
Yorktown CU	44
Yorktown	25
Pungo River CU	10000
Pungo River	10000
Castle Hayne CU	10000
Castle Hayne	10000
Beaufort CU	10000
Beaufort	10000
Peedee CU	-1
Peedee	-21
Black Creek CU	-49
Black Creek	-65
Upper Cape Fear CU	-332
Upper Cape Fear	-355
Lower Cape Fear CU	-528
Lower Cape Fear	-564
Lower Cretaceous CU	10000
Lower Cretaceous	10000
Basement	10000

DENR Monitoring Database Detail
for M 21Q2 in ehnr.dbf

Field	Data
County	Beaufort
USGS ID	
Latitude	35.604722
Longitude	-77.140000
Location Accuracy	
Quad	M 21Q2
Name	Washington RSq
Aquifer	Castle Hayne
Land Surface	16.02
Date Constructed	/ /
Original Stickup	1.00
Most Recent Stickup, / /	1.00
Depth	155.00
Diameter	2.00
Yield	10.00
Exists?	n
Recorder Box?	
Top of Screen	150.00
Bottom of Screen	155.00
Number of Water Levels Ehnr-watlev.dbf data (ft below land surface) tab delimited ascii 01/07/1966 to 01/14/1987	117
Number of Chlorides Ehnr-chlor.dbf (mg/l)	

Aquifer Framework Database
Detail for N 22I

Resstafr.dbf

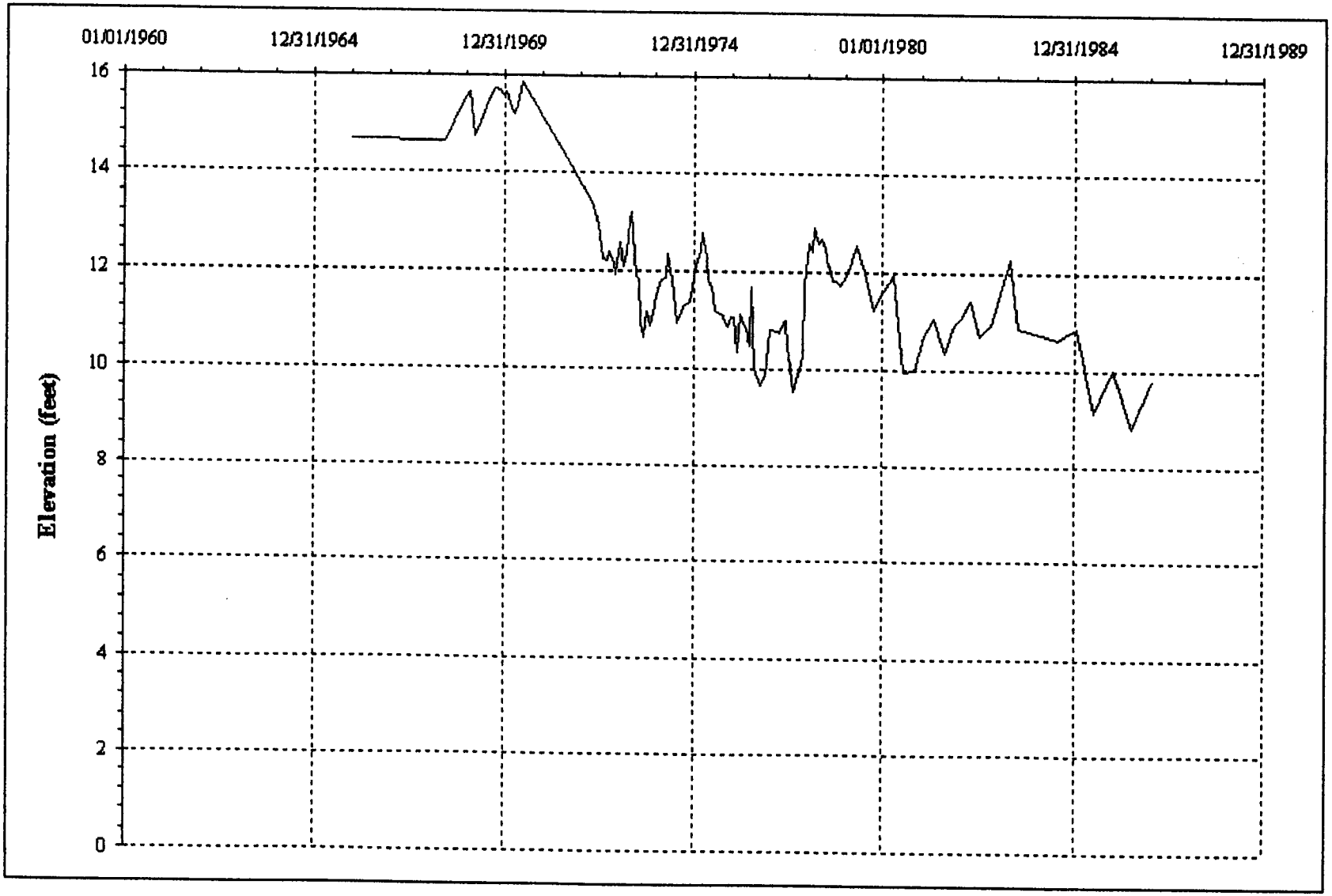
Field	Data
County	Pitt
Latitude	35.562222
Longitude	-77.190556
Location Accuracy	
Quad	N 22I
Name	Town of Grimesland
Complete	Y
Depth	250.00
Land Surface	42.00
Yorktown CU	34
Yorktown	18
Pungo River CU	10000
Pungo River	10000
Castle Hayne CU	-8
Castle Hayne	-33
Beaufort CU	-45
Beaufort	-90
Peedee CU	-104
Peedee	-124
Black Creek CU	10000
Black Creek	10000
Upper Cape Fear CU	10000
Upper Cape Fear	10000
Lower Cape Fear CU	10000
Lower Cape Fear	10000
Lower Cretaceous CU	10000
Lower Cretaceous	10000
Basement	10000

M21Q2

tab delimited ascii text
{date, chlorppm, spcond_us, salin_ppt}

40

117 data points plotted



ATTACHMENT 3

Aquifer Framework Database Detail for M 21Q

Resstafr.dbf

Field	Data
County	Beaufort
Latitude	35.612500
Longitude	-77.137778
Location Accuracy	
Quad	M 21Q
Name	City of Washington Test 2
Complete	Y
Depth	730.00
Land Surface	15.00
Yorktown CU	10000
Yorktown	10000
Pungo River CU	10000
Pungo River	10000
Castle Hayne CU	10000
Castle Hayne	-22
Beaufort CU	-32
Beaufort	-37
Peedee CU	-71
Peedee	-90
Black Creek CU	-188
Black Creek	-275
Upper Cape Fear CU	-507

This is not M21Q

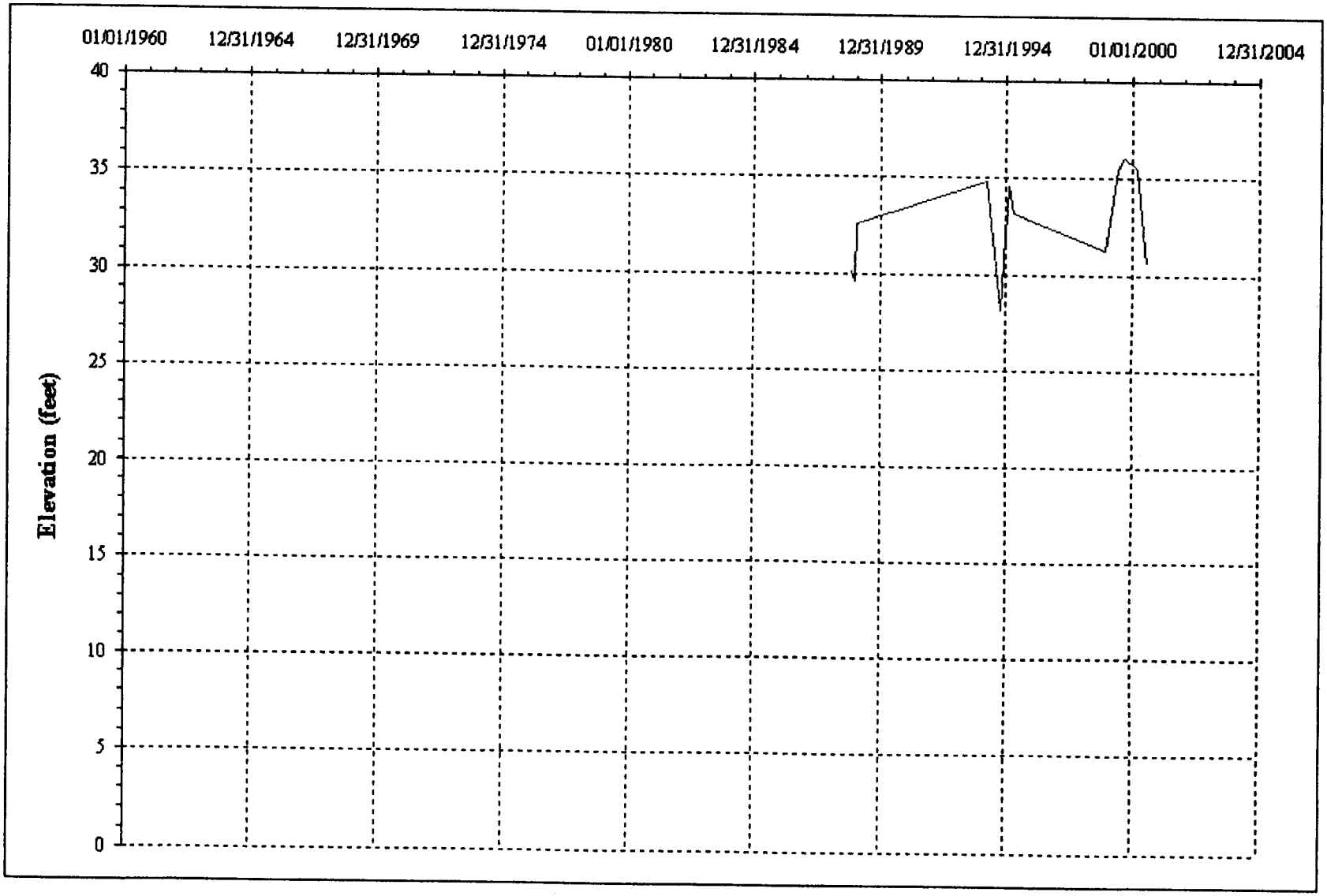
Upper Cape Fear	-538
Lower Cape Fear CU	10000
Lower Cape Fear	10000
Lower Cretaceous CU	10000
Lower Cretaceous	10000
Basement	10000

DENR Monitoring Database Detail for O 23L2 in ehnr.dbf

Field	Data
County	Pitt
USGS ID	
Latitude	35.463640
Longitude	-77.275232
Location Accuracy	G
Quad	O 23L2
Name	Chicod
Aquifer	Surficial
Land Surface	39.00
Date Constructed	04/30/1986
Original Stickup	1.80
Most Recent Stickup, 07/13/2000	1.37
Depth	12.00
Diameter	4.00
Yield	0.25
Exists?	y
Recorder Box?	n
Top of Screen	7.00
Bottom of Screen	12.00
Number of Water Levels Ehnr-watlev.dbf data (ft below land surface) tab delimited ascii 11/08/1988 to 07/13/2000	12
Number of Chlorides Ehnr-chlor.dbf (mg/l)	

tab delimited ascii text
{date, chlorppm, spcond_us, salin_ppt}

12 data points plotted

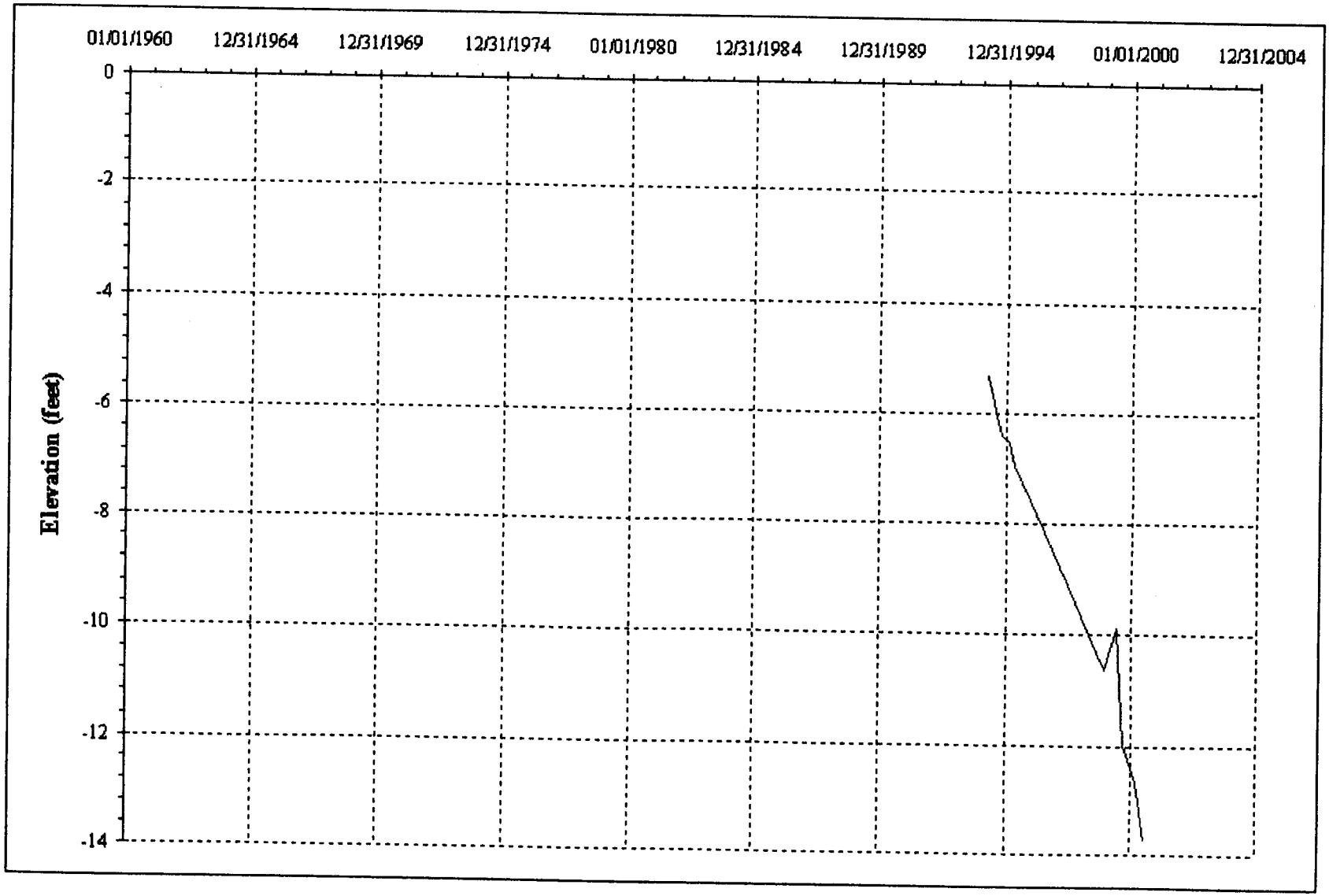


DENR Monitoring Database Detail for O 23L1 in ehnr.dbf

Field	Data
County	Pitt
USGS ID	
Latitude	35.463640
Longitude	-77.275232
Location Accuracy	G
Quad	O 23L1
Name	Chicod
Aquifer	Lower Cape Fear
Land Surface	39.00
Date Constructed	04/24/1986
Original Stickup	1.90
Most Recent Stickup, 07/13/2000	1.47
Depth	831.00
Diameter	4.00
Yield	5.00
Exists?	y
Recorder Box?	n
Top of Screen	821.00
Bottom of Screen	831.00
Number of Water Levels Ehnr-watlev.dbf data (ft below land surface) tab delimited ascii 03/23/1994 to 07/13/2000	9
Number of Chlorides Ehnr-chlor.dbf (mg/l)	

tab delimited ascii text
{date, chlorppm, spcond_us, salin_ppt}

9 data points plotted

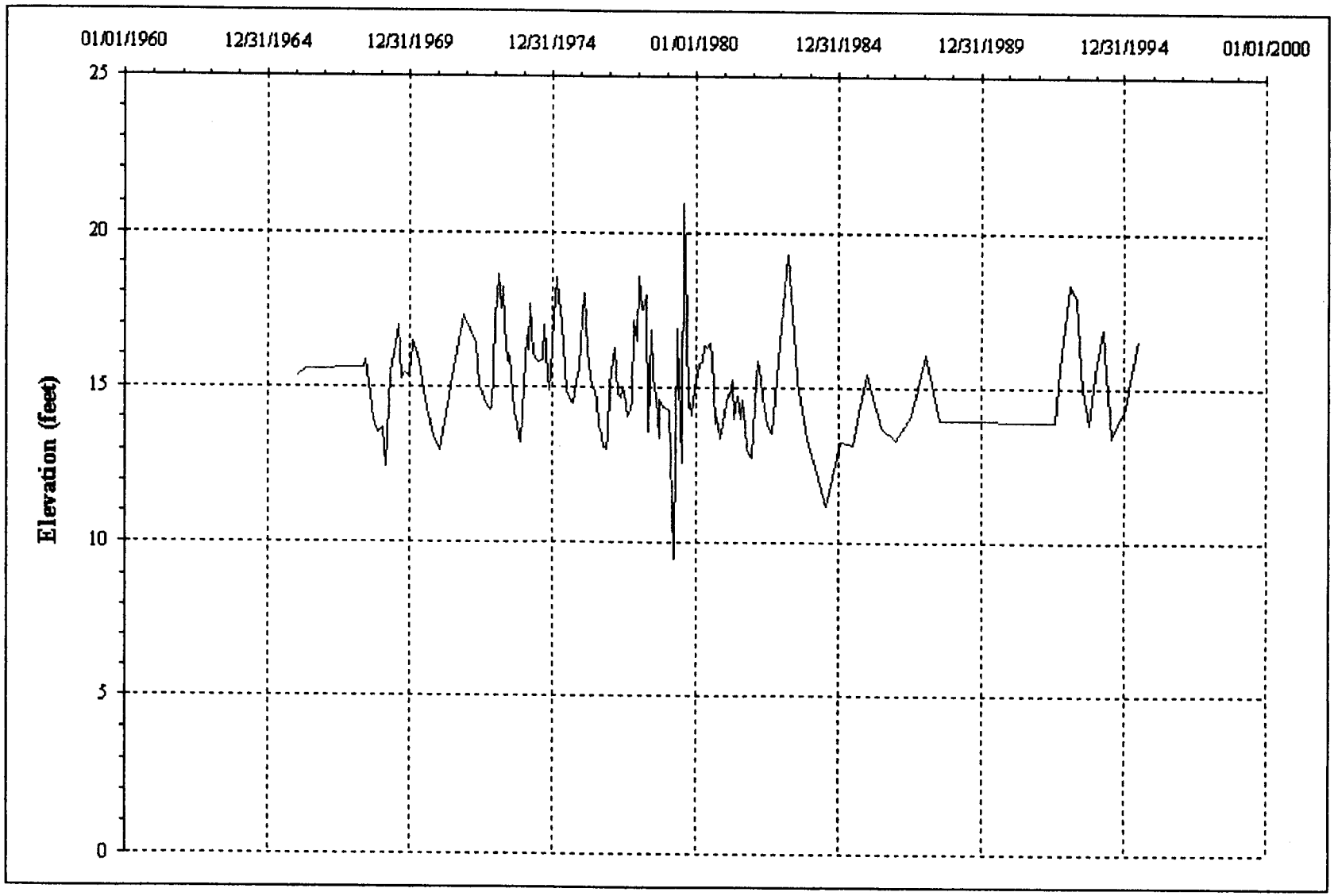


DENR Monitoring Database Detail for N 21M1 in ehnr.dbf

Field	Data
County	Beaufort
USGS ID	
Latitude	35.536399
Longitude	-77.119290
Location Accuracy	G
Quad	N 21M1
Name	Chocowinity
Aquifer	Castle Hayne
Land Surface	28.34
Date Constructed	01/01/1961
Original Stickup	1.00
Most Recent Stickup, 01/01/1961	1.00
Depth	192.00
Diameter	4.00
Yield	90.00
Exists?	y
Recorder Box?	
Top of Screen	90.00
Bottom of Screen	192.00
Number of Water Levels Ehnr-watlev.dbf data (ft below land surface) tab delimited ascii 02/07/1966 to 07/10/1995	167
Number of Chlorides Ehnr-chlor.dbf (mg/l)	0

tab delimited ascii text
{date, chlorppm, spcond_us, salin_ppt}

167 data points plotted



Aquifer Framework Database
Detail for N 21M

Resstafr.dbf

Field	Data
County	Beaufort
Latitude	35.536399
Longitude	-77.119290
Location Accuracy	
Quad	N 21M
Name	EHNR Chocowinity
Complete	Y
Depth	458.00
Land Surface	33.00
Yorktown CU	21
Yorktown	13
Pungo River CU	10000
Pungo River	10000
Castle Hayne CU	-34
Castle Hayne	-55
Beaufort CU	-153
Beaufort	-166
Peedee CU	-185
Peedee	-214
Black Creek CU	-299
Black Creek	-344
Upper Cape Fear CU	10000

Upper Cape Fear	10000
Lower Cape Fear CU	10000
Lower Cape Fear	10000
Lower Cretaceous CU	10000
Lower Cretaceous	10000
Basement	10000

Groundwater and Wells

Second Edition

Fletcher G. Driscoll, Ph.D.
Principal Author and Editor

Published by Johnson Division, St. Paul, Minnesota 55112

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Table 5.1 Porosities for Common Consolidated and Unconsolidated Materials

Unconsolidated Sediments	η (%)	Consolidated Rocks	η (%)
Clay	45–55	Sandstone	5–30
Silt	35–50	Limestone/dolomite (original &	
Sand	25–40	secondary porosity	1–20
Gravel	25–40	Shale	0–10
Sand & gravel mixes	10–35	Fractured crystalline rock	0–10
Glacial till	10–25	Vesicular basalt	10–50
		Dense, solid rock	< 1

volume of water an aquifer can hold, it does not indicate how much water the aquifer will yield.

When water is drained from a saturated material under the force of gravity, the material releases only part of the total volume stored in its pores. The quantity of water that a unit volume of unconfined aquifer gives up by gravity is called its specific yield (Figure 5.5). Specific yields for certain rocks and sediment types are presented in Table 5.2. Some water is retained in the pores by molecular attraction and capillarity. The amount of water that a unit volume of aquifer retains after gravity drainage is called its specific retention. The smaller the average grain size, the greater is the percent of retention; the coarser the sediment, the greater will be the specific yield when compared to the porosity. The surface area for different-size sand grains is shown in Table 5.3. Note the large increase in surface area for the finest sediment. As the surface area increases, a larger percentage of the water in the pores is held by surface tension or other adhesive forces. Therefore, finer sediments have lower specific yields compared to coarser sediments, even if they both have the same porosity.

Specific yield plus specific retention equals the porosity of an aquifer. Both specific yield and specific retention are expressed as decimal fractions or percentages. Specific yields of unconfined aquifers (equivalent to their storage coefficients*) range from 0.01 to 0.30. Specific yields cannot be determined for confined aquifers because the aquifer materials are not dewatered during pumping.

Storage coefficients are much lower in confined aquifers because they are not drained during pumping, and any water released from storage is obtained primarily by compression of the aquifer and expansion of the water when pumped. During

Table 5.2. Representative Specific Yield Ranges for Selected Earth Materials

Sediment	Specific Yield, %
Clay	1–10
Sand	10–30
Gravel	15–30
Sand and Gravel	15–25
Sandstone	5–15
Shale	0.5– 5
Limestone	0.5– 5

(Walton, 1970)

*The coefficient of storage is fully defined in Chapter 9. Briefly, it is the volume of water taken into or released from storage per unit change in head per unit area.

furthermore, the mathematical analysis of confined aquifers is complicated by certain geologic environments. Confined aquifers occur because the overlying and basal beds are relatively impermeable to water flow; this impermeability varies according to the geologic structure. For example, a water-bearing formation may be overlain by an aquitard which permits water to move slowly upward out of the aquifer or vertically downward into the aquifer, depending on the hydrostatic head in the aquifer. Where the aquitard is under the aquifer, water may be lost to or gained from the rocks below. Thus, confining conditions are sometimes less than perfect, making an accurate mathematical analysis of yields from wells in these aquifers much more difficult. Confined aquifers that lose or receive water from the surrounding formations are called leaky confined aquifers, and special mathematical methods have been devised to analyze them. In Chapter 9, an empirical analysis of the effects of leaky confined aquifer conditions on pumping test data is presented.

AQUIFER FUNCTIONS

An aquifer performs two important functions — a storage function and a conduit function. The interstices of a water-bearing formation act as storage sites and are part of a network of conduits. Groundwater is constantly moving through these conduits under the local hydraulic gradient. Rates of movement vary from feet per year to feet per day. Thus, water contained in any aquifer is in temporary storage, and if not used, will be discharged to springs, lakes, streams, or oceans.

Our previous examination of groundwater environments indicates that openings in aquifers comprise three general classes:

1. Openings between individual particles in sandstone and sand and gravel formations.
2. Crevices, joints, faults, and gas holes in igneous and metamorphic rocks.
3. Solution channels, caverns, and vugs (openings) in limestone and dolomite.

The shape of the openings in the rock or sediment, their size, volume, and interconnection all play a vital part in the hydraulic characteristics of an aquifer.

Storage

Two important properties of an aquifer that are related to the storage function are porosity and specific yield. The porosity of a water-bearing formation is determined by that part of its volume consisting of openings or pores. Porosity is an index of how much groundwater can be stored in a saturated medium and is usually expressed as a percentage of the bulk volume of the material.

$$Porosity = \eta = \frac{Volume\ of\ pore\ space}{Volume\ of\ bulk\ solid} \cdot 100 \qquad (5.5)$$

For example, if 1 ft^3 (1 m^3) of sand contains 0.3 ft^3 (0.3 m^3) of open space or pores, its porosity is 30 percent. Typical porosities for some common materials are presented in Table 5.1.

Although the volume of water contained in a particular segment of aquifer is of interest, of more concern is how much water can be actually released from storage per unit area of aquifer, per unit change in head. Whereas porosity represents the

Geotechnics

LABORATORY TEST REPORT

February 28, 2002

Project No. R02011-01

Mr. David Garrett
1408 Rock Dr.
Raleigh, NC 27610

RE: Soils Testing - Pitt County

Transmitted herein are the results of the soils testing performed for the above referenced project and listed on the Verification Form, submitted February 22, 2002. The testing was performed in general accordance with the ASTM methods listed on the enclosed data sheets. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

Disclaimer

The test results are believed to be representative of the samples submitted but are indicative only of the specimens which were evaluated. Geotechnics has no direct knowledge of the origin of the samples, implies no position with regard to the disposition of the test results, i.e. pass/fail, and makes no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization of the Client and Geotechnics. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please do not hesitate to contact our office.

Respectively submitted,

David R. Backstrom
Laboratory Director

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MOISTURE CONTENT

ASTM D 2216 (SOP-S1)

Client	DAVID GARRETT
Client Reference	PITT COUNTY
Project No.	R02011-01

Lab ID	09	10	11	12	13
Boring No.	B4	B7	B7	B7	B7
Depth (ft)	NA	NA	NA	NA	NA
Sample No.	S-4	S-1	S-2	S-3	S-4
Tare Number	2423	2395	2330	A104	A2054
Wt. of Tare & WS (gm)	27.47	20.1	23.63	31.93	39.29
Wt. of Tare & DS (gm)	23.35	18.83	23	27.04	33.28
Wt. of Tare (gm)	3.61	3.66	3.56	3.73	3.57
Wt. of Water (gm)	4.12	1.27	0.63	4.89	6.01
Wt. of DS (gm)	19.74	15.17	19.44	23.31	29.71
Water Content (%)	**20.9**	**8.4**	**3.2**	**21.0**	**20.2**

Lab ID	14	15	16
Boring No.	B7	B7	B7
Depth (ft)	NA	NA	NA
Sample No.	S-5	S-6	S-7
Tare Number	A214	A102	2427
Wt. of Tare & WS (gm)	32.83	29.48	26.87
Wt. of Tare & DS (gm)	27.18	25.47	21.63
Wt. of Tare (gm)	3.71	3.67	3.63
Wt. of Water (gm)	5.65	4.01	5.24
Wt. of DS (gm)	23.47	21.8	18
Water Content (%)	**24.1**	**18.4**	**29.1**

Notes : *NA*

Tested By *JP* *Date* *2/22/02* *Checked By* *JMO* *Date* *2/27/02*

DCN: CT-S1 DATE 6-30-98 REVISION: 2

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SIEVE ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B4
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-4
Lab ID	R02011-01.009	Soil Color	**GRAY**

	SIEVE ANALYSIS		*HYDROMETER*
USCS	**gravel**	**sand**	**silt and clay**

USCS Symbol	***SP, TESTED***	**D60 =**	**0.6**	**CC =**	**1.1**
USCS Classification	***POORLY GRADED SAND (NON-PLASTIC FINES) (UNABLE TO RUN HYDROMETER)***	**D30 =**	**0.4**	**CU =**	**3.1**
		D10 =	**0.2**		

Tested By JP Date 2/26/02 Checked By Gcm Date 2-28-02

DCN: CT-S3C DATE 6-25-98 REVISION: 2

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WASH SIEVE ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B4
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-4
Lab ID	R02011-01.009	Soil Color	**GRAY**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	2492	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	454.10	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	392.89	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	98.69	Weight of Tare (gm)	NA
Weight of Water (gm)	61.21	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	294.20	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**20.8**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	294.20
Dry Weight - 3/4" Sample (gm)	286.5	Weight of minus #200 material (gm)	7.67
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	286.53
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.50	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.00	0.00	0.00	100.00	**100.00**
#10	2.00	3.47	1.18	1.18	98.82	**98.82**
#20	0.850	47.14	16.02	17.20	82.80	**82.80**
#40	0.425	129.25	43.93	61.14	38.86	**38.86**
#60	0.250	75.50	25.66	86.80	13.20	**13.20**
#140	0.106	28.98	9.85	96.65	3.35	**3.35**
#200	0.075	2.19	0.74	97.39	2.61	**2.61**
Pan	-	7.67	2.61	100.00	-	-

Tested By JP Date 2/26/02 Checked By Jem Date 2-28-02

DCN: CT-S3C DATE 6-25-98 REVISION: 2

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ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

Client	DAVID GARRETT	Boring No.	B4
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-4
Lab ID	R02011-01.009	Visual Description	**GRAY SILT**
			(Minus No. 40 sieve material, Airdried)

NON - PLASTIC MATERIAL

Tested By *JP* *Date* *2/22/02* *Checked By* *Date* 2/22/02

DCN: CT-S4C DATE: 7-11-97 REVISION : 2

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SIEVE ANALYSIS
ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B7
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-1
Lab ID	R02011-01.010	Soil Color	**BROWN**

	SIEVE ANALYSIS		HYDROMETER
USCS	gravel	sand	silt and clay

USCS Symbol ***SM, TESTED***

USCS Classification ***SILTY SAND***
(NON-PLASTIC FINES)
(UNABLE TO RUN HYDROMETER)

Tested By JP Date 2/26/02 Checked By Jam Date 2.28.02

DCN: CT-S3C DATE 6-25-98 REVISION: 2
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WASH SIEVE ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B7
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-1
Lab ID	R02011-01.010	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1069	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	357.68	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	338.49	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	100.42	Weight of Tare (gm)	NA
Weight of Water (gm)	19.19	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	238.07	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**8.1**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	238.07
Dry Weight - 3/4" Sample (gm)	201.8	Weight of minus #200 material (gm)	36.28
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	201.79
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.50	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.28	0.12	0.12	99.88	**99.88**
#10	2.00	1.37	0.58	0.69	99.31	**99.31**
#20	0.850	13.83	5.81	6.50	93.50	**93.50**
#40	0.425	53.61	22.52	29.02	70.98	**70.98**
#60	0.250	46.55	19.55	48.57	51.43	**51.43**
#140	0.106	74.84	31.44	80.01	19.99	**19.99**
#200	0.075	11.31	4.75	84.76	15.24	**15.24**
Pan	-	36.28	15.24	100.00	-	-

Tested By JP Date 2/26/02 Checked By Jm Date 2-28-02

DCN: CT-S3C DATE 6-25-98 REVISION: 2

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ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

Client	DAVID GARRETT	Boring No.	B7
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-1
Lab ID	R02011-01.010	Visual Description	**BROWN SILT**
			(MInus No. 40 sieve material, Airdried)

NON - PLASTIC MATERIAL

Tested By *JP* *Date* *2/22/02* *Checked By* *Date* 2/22/02

page 1 of 1 DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *C:\MSOFFICE\EXCEL\PrintQ\[B37.xls]Sheet1*

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SIEVE ANALYSIS
ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B7
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-2
Lab ID	R02011-01.011	Soil Color	**BROWN**

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay

USCS Symbol	***SP, TESTED***	**D60 =**	**0.4**	**CC =**	**1.2**
USCS Classification	***POORLY GRADED SAND (NON-PLASTIC FINES) (UNABLE TO RUN HYDROMETER)***	**D30 =**	**0.3**	**CU =**	**3.1**
		D10 =	**0.1**		

Tested By JP Date 2/26/02 Checked By Jem Date 2-28-02

 DCN: CT-S3C DATE 6-25-98 REVISION: 2 C:\MSOFFICE\EXCEL\PrintQ\[L955.xls]Sheet1

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WASH SIEVE ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B7
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-2
Lab ID	R02011-01.011	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	644	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	360.50	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	360.50	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	102.24	Weight of Tare (gm)	NA
Weight of Water (gm)	0.00	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	258.26	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**0.0**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	258.26
Dry Weight - 3/4" Sample (gm)	251.6	Weight of minus #200 material (gm)	6.68
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	251.58
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.50	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.00	0.00	0.00	100.00	**100.00**
#10	2.00	1.07	0.41	0.41	99.59	**99.59**
#20	0.850	26.79	10.37	10.79	89.21	**89.21**
#40	0.425	72.20	27.96	38.74	61.26	**61.26**
#60	0.250	87.93	34.05	72.79	27.21	**27.21**
#140	0.106	60.79	23.54	96.33	3.67	**3.67**
#200	0.075	2.80	1.08	97.41	2.59	**2.59**
Pan	-	6.68	2.59	100.00	-	-

Tested By JP Date 2/26/02 Checked By Jam Date 2-28-02

DCN: CT-S3C DATE 6-25-98 REVISION: 2

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ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

Client	DAVID GARRETT	Boring No.	B7
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-2
Lab ID	R02011-01.011	Visual Description	**BROWN SILT**
			(Minus No. 40 sieve material, Airdried)

NON - PLASTIC MATERIAL

Tested By *JP* *Date* *2/22/02* *Checked By* *Date* 2/22/02

DCN: CT-S4C DATE: 7-11-97 REVISION : 2

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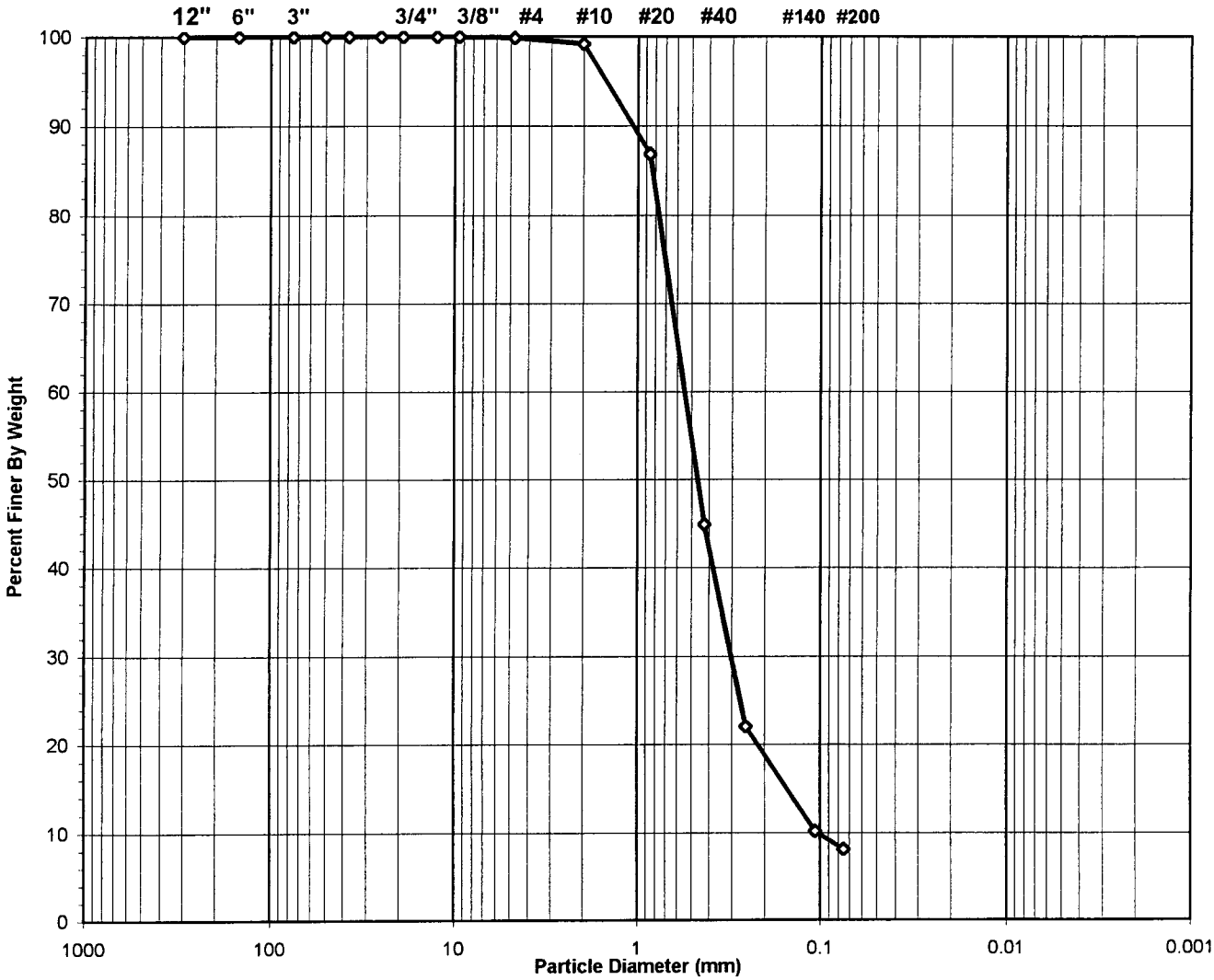
SIEVE ANALYSIS
ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B7
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-3
Lab ID	R02011-01.012	Soil Color	**BROWN**

	SIEVE ANALYSIS		*HYDROMETER*
USCS	**gravel**	**sand**	**silt and clay**



USCS Symbol	***SP-SM, TESTED***	**D60 =**	**0.5**	**CC =**	**1.6**
USCS Classification	***POORLY GRADED SAND WITH SILT (NON-PLASTIC FINES) (UNABLE TO RUN HYDROMETER)***	**D30 =**	**0.3**	**CU =**	**5.3**
		D10 =	**0.1**		

Tested By JP Date 2/26/02 Checked By Jem Date 2-28-02

DCN: CT-S3C DATE 6-25-98 REVISION: 2

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WASH SIEVE ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B7
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-3
Lab ID	R02011-01.012	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	2333	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	383.10	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	337.05	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	101.41	Weight of Tare (gm)	NA
Weight of Water (gm)	46.05	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	235.64	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**19.5**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	235.64
Dry Weight - 3/4" Sample (gm)	216.5	Weight of minus #200 material (gm)	19.11
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	216.53
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.50	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.25	0.11	0.11	99.89	**99.89**
#10	2.00	1.64	0.70	0.80	99.20	**99.20**
#20	0.850	29.05	12.33	13.13	86.87	**86.87**
#40	0.425	98.81	41.93	55.06	44.94	**44.94**
#60	0.250	53.89	22.87	77.93	22.07	**22.07**
#140	0.106	28.02	11.89	89.82	10.18	**10.18**
#200	0.075	4.87	2.07	91.89	8.11	**8.11**
Pan	-	19.11	8.11	100.00	-	-

Tested By JP Date 2/26/02 Checked By Jan Date 2-28-02

DCN: CT-S3C DATE 6-25-98 REVISION: 2

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ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

Client	DAVID GARRETT	Boring No.	B7
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-3
Lab ID	R02011-01.012	Visual Description	**BROWN SILT**
			(Minus No. 40 sieve material, Airdried)

NON - PLASTIC MATERIAL

Tested By *JP* *Date* *2/22/02* *Checked By* *Date* 2/22/02

DCN: CT-S4C DATE: 7-11-97 REVISION : 2

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SIEVE ANALYSIS
ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B7
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-4
Lab ID	R02011-01.013	Soil Color	**BROWN**

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay

USCS Symbol	***SP, TESTED***	**D60 =**	**0.6**	**CC =**	**1.1**
USCS Classification	***POORLY GRADED SAND (NON-PLASTIC FINES) (UNABLE TO RUN HYDROMETER)***	**D30 =**	**0.3**	**CU =**	**3.7**
		D10 =	**0.2**		

Tested By JP Date 2/26/02 Checked By JCM Date 2-28-02

DCN: CT-S3C DATE 6-25-98 REVISION: 2

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WASH SIEVE ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B7
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-4
Lab ID	R02011-01.013	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	638	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	459.00	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	403.90	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	101.33	Weight of Tare (gm)	NA
Weight of Water (gm)	55.10	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	302.57	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**18.2**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	302.57
Dry Weight - 3/4" Sample (gm)	295.2	Weight of minus #200 material (gm)	7.36
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	295.21
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.50	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	1.10	0.36	0.36	99.64	**99.64**
#10	2.00	9.72	3.21	3.58	96.42	**96.42**
#20	0.850	64.76	21.40	24.98	75.02	**75.02**
#40	0.425	96.00	31.73	56.71	43.29	**43.29**
#60	0.250	81.45	26.92	83.63	16.37	**16.37**
#140	0.106	39.77	13.14	96.77	3.23	**3.23**
#200	0.075	2.41	0.80	97.57	2.43	**2.43**
Pan	-	7.36	2.43	100.00	-	-

Tested By JP Date 2/26/02 Checked By Jcm Date 2-28-02

DCN: CT-S3C DATE 6-25-98 REVISION: 2

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ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

Client	DAVID GARRETT	Boring No.	B7
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-4
Lab ID	R02011-01.013	Visual Description	**BROWN SILT**
			(Minus No. 40 sieve material, Airdried)

NON - PLASTIC MATERIAL

Tested By *JP* *Date* *2/22/02* *Checked By* *Date* 2/22/02

page 1 of 1 DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *C:\MSOFFICE\EXCEL\PrintQ\[B40.xls]Sheet1*

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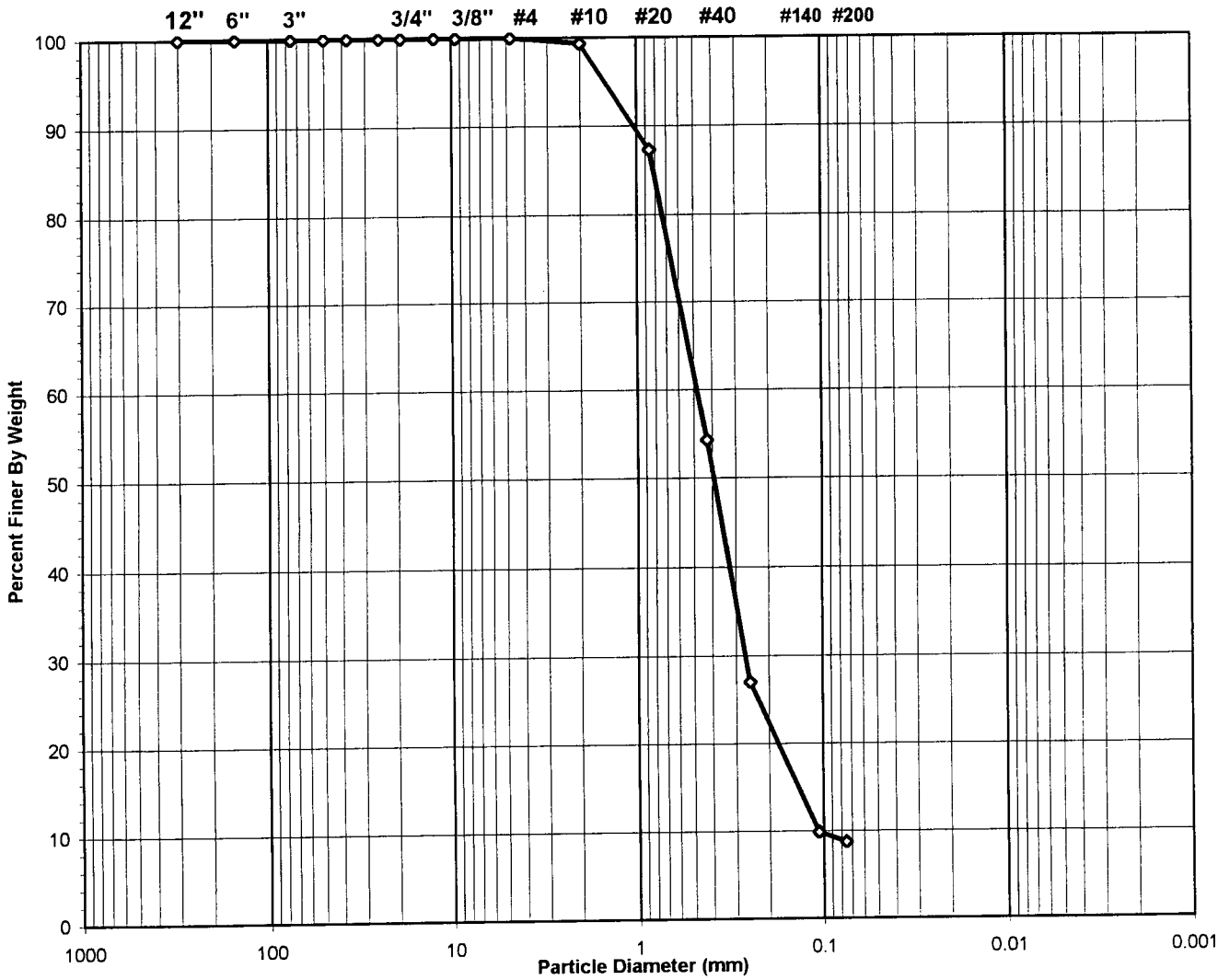
SIEVE ANALYSIS
ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B7
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-5
Lab ID	R02011-01.014	Soil Color	**GRAY**

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol	***SP-SM, TESTED***	**D60 =**	**0.5**	**CC =**	**1.4**
USCS Classification	***POORLY GRADED SAND WITH SILT (NON-PLASTIC FINES) (UNABLE TO RUN HYDROMETER)***	**D30 =**	**0.3**	**CU =**	**4.5**
		D10 =	**0.1**		

Tested By JP Date 2/26/02 Checked By Jam Date 2-28-02

DCN: CT-S3C DATE 6-25-98 REVISION: 2

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WASH SIEVE ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B7
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-5
Lab ID	R02011-01.014	Soil Color	**GRAY**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	516	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	403.50	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	351.12	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	98.34	Weight of Tare (gm)	NA
Weight of Water (gm)	52.38	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	252.78	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**20.7**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	252.78
Dry Weight - 3/4" Sample (gm)	230.8	Weight of minus #200 material (gm)	21.98
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	230.80
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.50	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.00	0.00	0.00	100.00	**100.00**
#10	2.00	1.61	0.64	0.64	99.36	**99.36**
#20	0.850	30.46	12.05	12.69	87.31	**87.31**
#40	0.425	83.63	33.08	45.77	54.23	**54.23**
#60	0.250	68.78	27.21	72.98	27.02	**27.02**
#140	0.106	43.35	17.15	90.13	9.87	**9.87**
#200	0.075	2.97	1.17	91.30	8.70	**8.70**
Pan	-	21.98	8.70	100.00	-	-

Tested By JP Date 2/26/02 Checked By Jcm Date 2-28-02

DCN: CT-S3C DATE 6-25-98 REVISION: 2

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ATTERBERG LIMIT

ASTM D 4318-00/AASHTO T89-96, T90-00 (SOP - S4)

Client	DAVID GARRETT	Boring No.	B-7
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-5
Lab ID	R02011-01.014	Visual Description	**GRAY SILT**
			(MInus No. 40 sieve material, Airdried)

NON - PLASTIC MATERIAL

Tested By *JP* *Date* *2/22/02* *Checked By* Jom *Date* 2-28-02

page 1 of 1 DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *C:\MSOffice\Excel\QA\[NPLIMIT.XLS]Sheet1*

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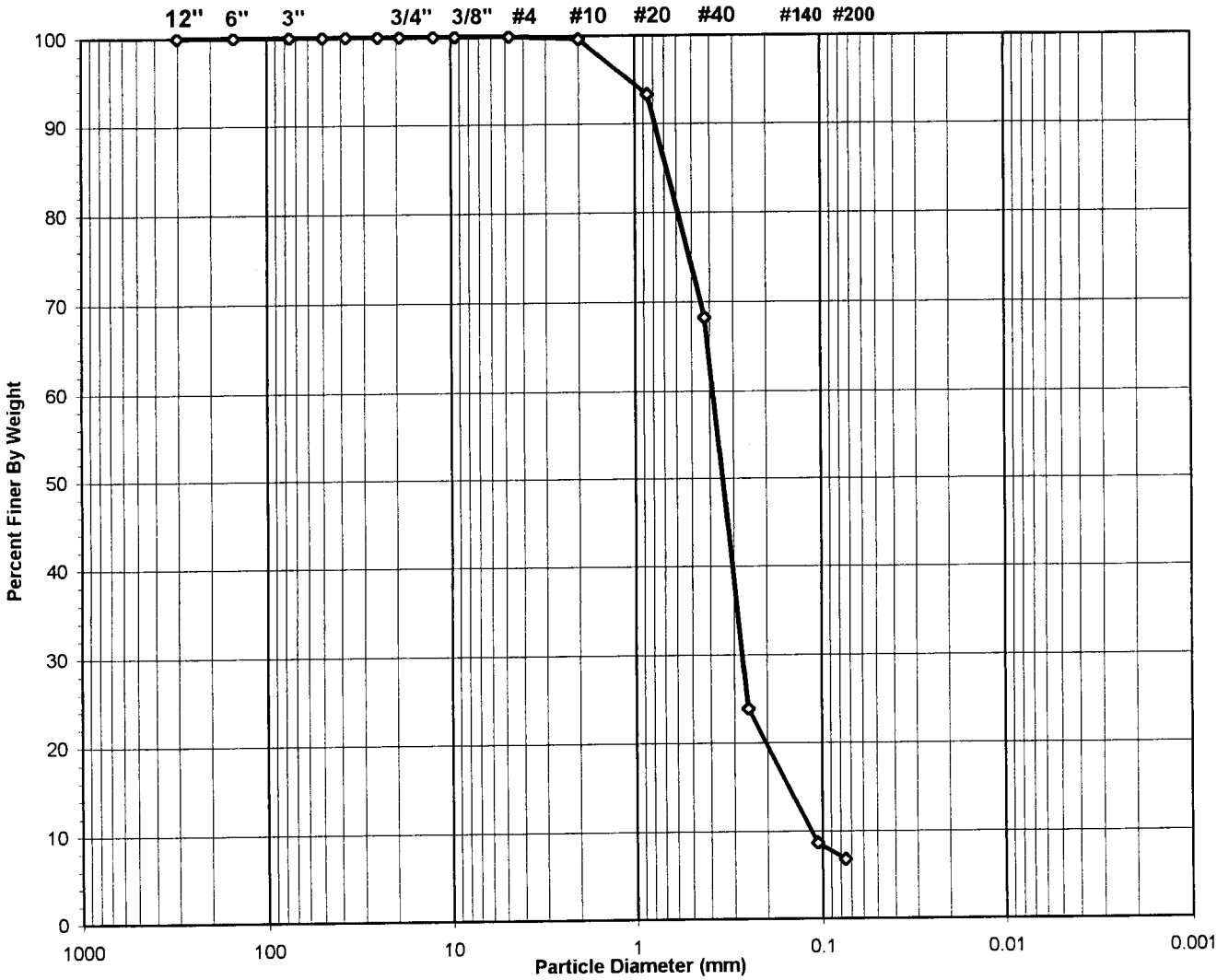
SIEVE ANALYSIS
ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B7
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-6
Lab ID	R02011-01.015	Soil Color	**GRAY**

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol	***SP-SM, TESTED***	**D60 =**	**0.4**	**CC =**	**1.6**
USCS Classification	***POORLY GRADED SAND WITH SILT (NON-PLASTIC FINES) (UNABLE TO RUN HYDROMETER)***	**D30 =**	**0.3**	**CU =**	**3.4**
		D10 =	**0.1**		

Tested By JP Date 2/26/02 Checked By Jm Date 2-28-02

 DCN: CT-S3C DATE 6-25-98 REVISION: 2 C:\MSOFFICE\EXCEL\PrintQ\[L959.xls]Sheet1

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WASH SIEVE ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B7
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-6
Lab ID	R02011-01.015	Soil Color	**GRAY**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1658	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	296.47	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	266.42	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	88.66	Weight of Tare (gm)	NA
Weight of Water (gm)	30.05	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	177.76	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**16.9**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	177.76
Dry Weight - 3/4" Sample (gm)	165.7	Weight of minus #200 material (gm)	12.04
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	165.72
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.50	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.00	0.00	0.00	100.00	**100.00**
#10	2.00	0.64	0.36	0.36	99.64	**99.64**
#20	0.850	11.14	6.27	6.63	93.37	**93.37**
#40	0.425	44.60	25.09	31.72	68.28	**68.28**
#60	0.250	78.95	44.41	76.13	23.87	**23.87**
#140	0.106	27.11	15.25	91.38	8.62	**8.62**
#200	0.075	3.28	1.85	93.23	6.77	**6.77**
Pan	-	12.04	6.77	100.00	-	-

Tested By JP Date 2/26/02 Checked By Jm Date 2-28-02

DCN: CT-S3C DATE 6-25-98 REVISION: 2

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ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

Client	DAVID GARRETT	Boring No.	B7
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-6
Lab ID	R02011-01.015	Visual Description	**BROWN SILT** (MInus No. 40 sieve material, Airdried)

NON - PLASTIC MATERIAL

Tested By *JP* *Date* *2/22/02* *Checked By* *Date* 2/22/02

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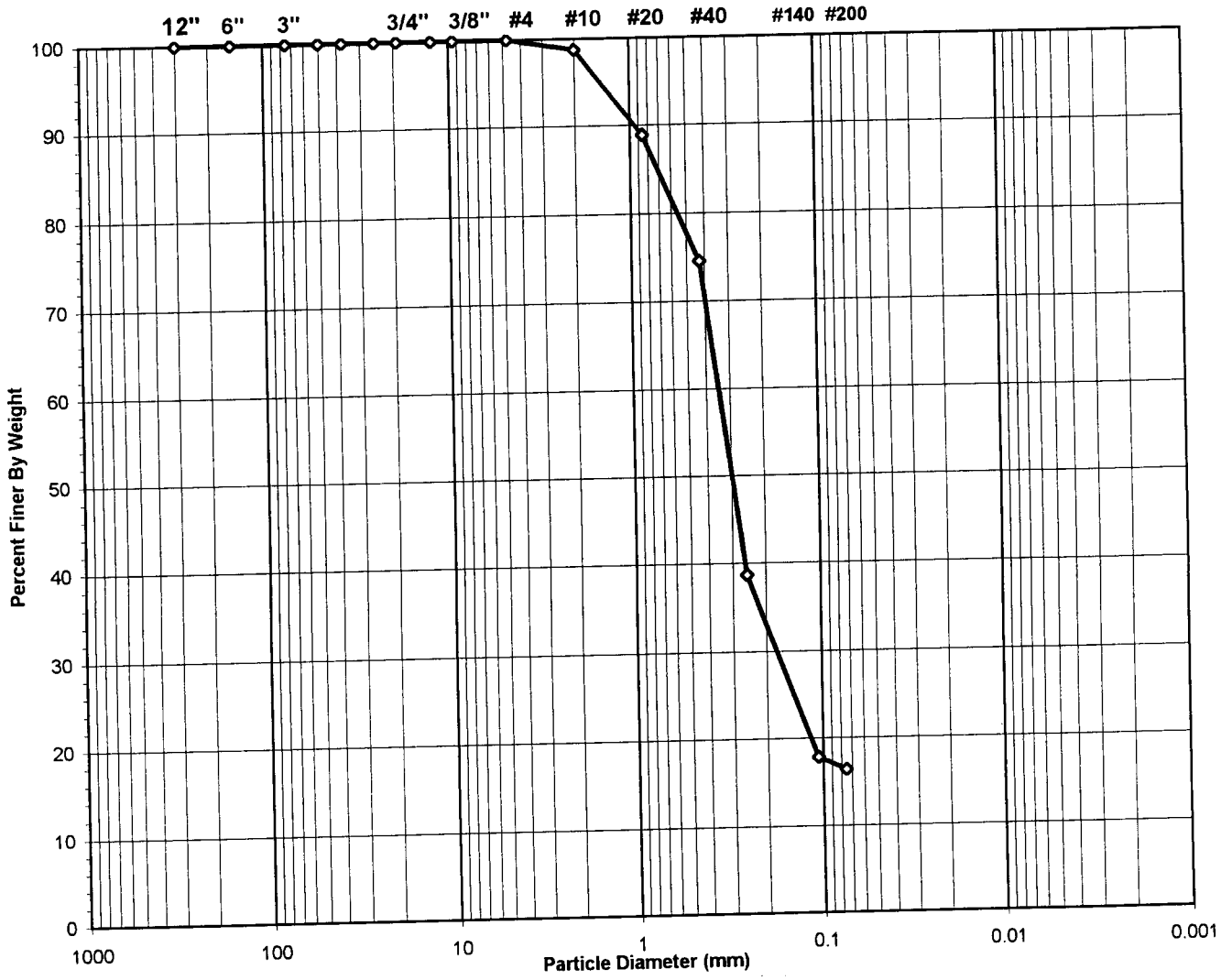
SIEVE ANALYSIS
ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B7
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-7
Lab ID	R02011-01.016	Soil Color	**GRAY**

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol ***SM, TESTED***

USCS Classification ***SILTY SAND***
(NON-PLASTIC FINES)
(UNABLE TO RUN HYDROMETER)

Tested By JP Date 2/26/02 Checked By Jcm Date 2-28-02

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WASH SIEVE ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B7
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-7
Lab ID	R02011-01.016	Soil Color	**GRAY**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	2332	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	338.96	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	291.84	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	102.50	Weight of Tare (gm)	NA
Weight of Water (gm)	47.12	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	189.34	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**24.9**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	189.34
Dry Weight - 3/4" Sample (gm)	158.4	Weight of minus #200 material (gm)	30.91
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	158.43
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.50	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.00	0.00	0.00	100.00	**100.00**
#10	2.00	2.38	1.26	1.26	98.74	**98.74**
#20	0.850	18.70	9.88	11.13	88.87	**88.87**
#40	0.425	27.08	14.30	25.44	74.56	**74.56**
#60	0.250	67.91	35.87	61.30	38.70	**38.70**
#140	0.106	39.55	20.89	82.19	17.81	**17.81**
#200	0.075	2.81	1.48	83.67	16.33	**16.33**
Pan	-	30.91	16.33	100.00	-	-

Tested By JP Date 2/26/02 Checked By Jem Date 2-28-02

DCN: CT-S3C DATE 6-25-98 REVISION: 2

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ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

Client	DAVID GARRETT	Boring No.	B7
Client Reference	PITT COUNTY	Depth (ft)	NA
Project No.	R02011-01	Sample No.	S-7
Lab ID	R02011-01.016	Visual Description	**BROWN SILT**
			(Minus No. 40 sieve material, Airdried)

NON - PLASTIC MATERIAL

Tested By JP *Date* 2/22/02 *Checked By* *Date* 2/22/02

DCN: CT-S4C DATE: 7-11-97 REVISION : 2

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SHELBY TUBE UNIT WEIGHT

(SOP - S37)

Client	DAVID GARRETT	Boring No.	B-1
Client Reference	PITT COUNTY	Depth Pushed(ft)	11.0-13.0
Project No.	R02011-01	Shelby Tube No.	NA
Lab ID	R02011-01.003	Recovery(ft)	2.1

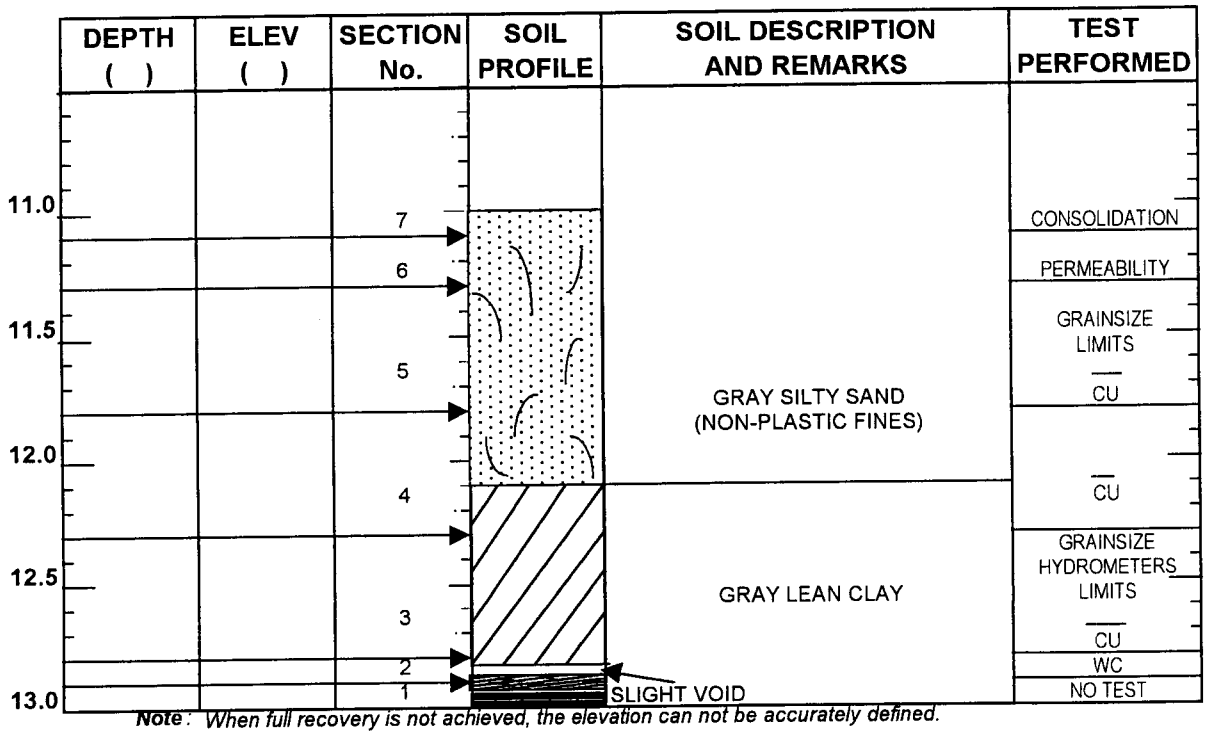
MOISTURE CONTENT

Section Number	1	2	3	4	5
Tare Number		544			
Wt. Tare & WS(gm.)		305.58			
Wt. Tare & DS(gm.)		235.58			
Wt. Tare(gm.)		84.76			
Moisture Content(%)		46.41			

UNIT WEIGHT

Wt. Tube & WS.(gms.)	1540.50	1668.60	1749.60
Wt. Of Tube(gms.)	463.30	465.30	465.30
Wt. Of WS.(gms.)	1077.20	1203.30	1284.30
Length 1 (in.)	6.024	6.081	6.083
Length 2 (in.)	6.039	6.088	6.061
Length 3 (in.)	6.016	6.080	6.083
Top Diameter (in.)	2.885	2.869	2.879
Middle Diameter (in.)	2.867	2.875	2.862
Bottom Diameter (in.)	2.872	2.874	2.875
Sample Volume (cc)	640.94	646.07	644.99
Moisture Content(%)	46.41	46.41	46.41
Unit Wet Wt.(gms/cc)	1.68	1.86	1.99
Unit Wet Wt.(pcf.)	104.9	116.2	124.3
Unit Dry Wt.(gms/cc)	**1.15**	**1.27**	**1.36**
Unit Dry Wt.(pcf.)	**71.6**	**79.4**	**84.9**

SOIL PROFILE AND SAMPLING



Note: *When full recovery is not achieved, the elevation can not be accurately defined.*
Indicate each cut of the tube with an arrow.
Indicate dividing line between soil types with a solid line.
Indicate wax by cross-hatching. Indicate soil types by standard symbols.

Tested By *JCM* Date *2/6/02* Checked By *GR* Date *3-11-02*

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SHELBY TUBE UNIT WEIGHT

(SOP - S37)

Client	DAVID GARRETT	Boring No.	B-1
Client Reference	PITT COUNTY	Depth Pushed(ft)	11.0-13.0
Project No.	R02011-01	Shelby Tube No.	NA
Lab ID	R02011-01.003	Recovery(ft)	2.1

MOISTURE CONTENT

Section Number	6	7	8	9	10
Tare Number		1393			
Wt. Tare & WS(gm.)		168.53			
Wt. Tare & DS(gm.)		149.36			
Wt. Tare(gm.)		50.49			
Moisture Content(%)		19.39			

UNIT WEIGHT

Wt. Tube & WS.(gms.)	631.20	206.59
Wt. Of Tube(gms.)	167.50	76.67
Wt. Of WS.(gms.)	463.70	129.92
Length 1 (in.)	2.186	0.750
Length 2 (in.)	2.194	0.750
Length 3 (in.)	2.196	0.750
Top Diameter (in.)	2.873	2.500
Middle Diameter (in.)	2.870	2.500
Bottom Diameter (in.)	2.867	2.500
Sample Volume (cc)	232.38	60.33
Moisture Content(%)	46.41	19.39
Unit Wet Wt.(gms/cc)	2.00	2.15
Unit Wet Wt.(pcf.)	124.5	134.4
Unit Dry Wt.(gms/cc)	**1.36**	**1.80**
Unit Dry Wt.(pcf.)	**85.0**	**112.6**

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
11.0		7			CONSOLIDATION
		6			PERMEABILTY
11.5		5		GRAY SILTY SAND (NON-PLASTIC FINES)	GRAINSIZE LIMITS CU
12.0		4			CU
12.5		3		GRAY LEAN CLAY	GRAINSIZE HYDROMETERS LIMITS CU
		2			WC
13.0		1		SLIGHT VOID	NO TEST

Note: *When full recovery is not achieved, the elevation can not be accurately defined.*
Indicate each cut of the tube with an arrow.
Indicate dividing line between soil types with a solid line.
Indicate wax by cross-hatching. Indicate soil types by standard symbols.

Tested By *JCM* Date *2/6/02* Checked By KGl Date 3-11-02

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DCN: CT-S37 DATE:1-29-98 REVISION: 2 C:\MSOffice\Excel\PRINTOVL945.xls]Sheet1

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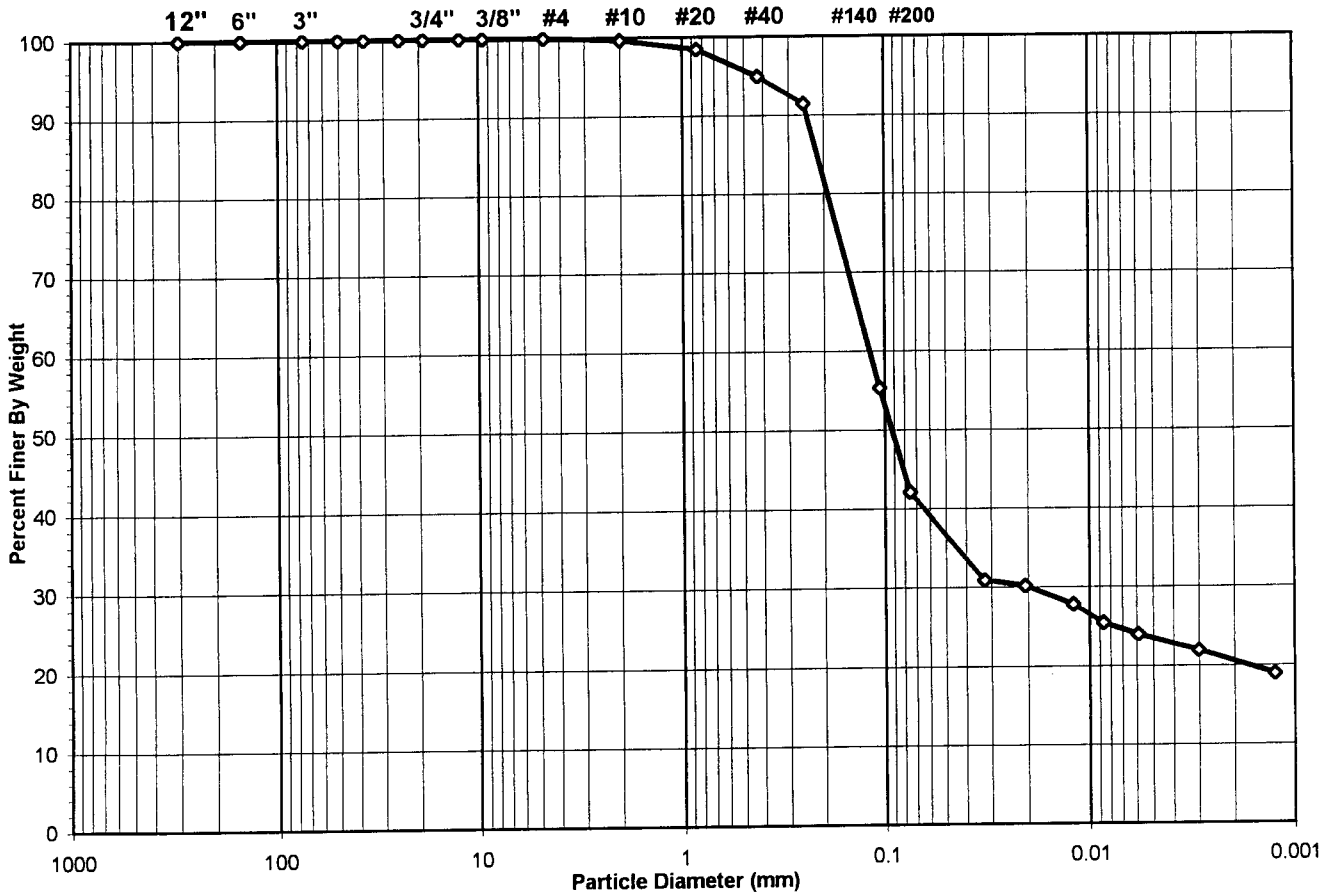
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B-1
Client Reference	PITT COUNTY	Depth (ft)	12.3-12.8
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.003	Soil Color	**GRAY**

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary		
Sieve Sizes (mm)		**Percentage**
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	57.89
Finer Than #200	*Silt & Clay*	42.11

USCS Symbol ***SC, TESTED***

USCS Classification ***CLAYEY SAND***

DCN: CT-S3A DATE:02/06/01 REVISION: 4

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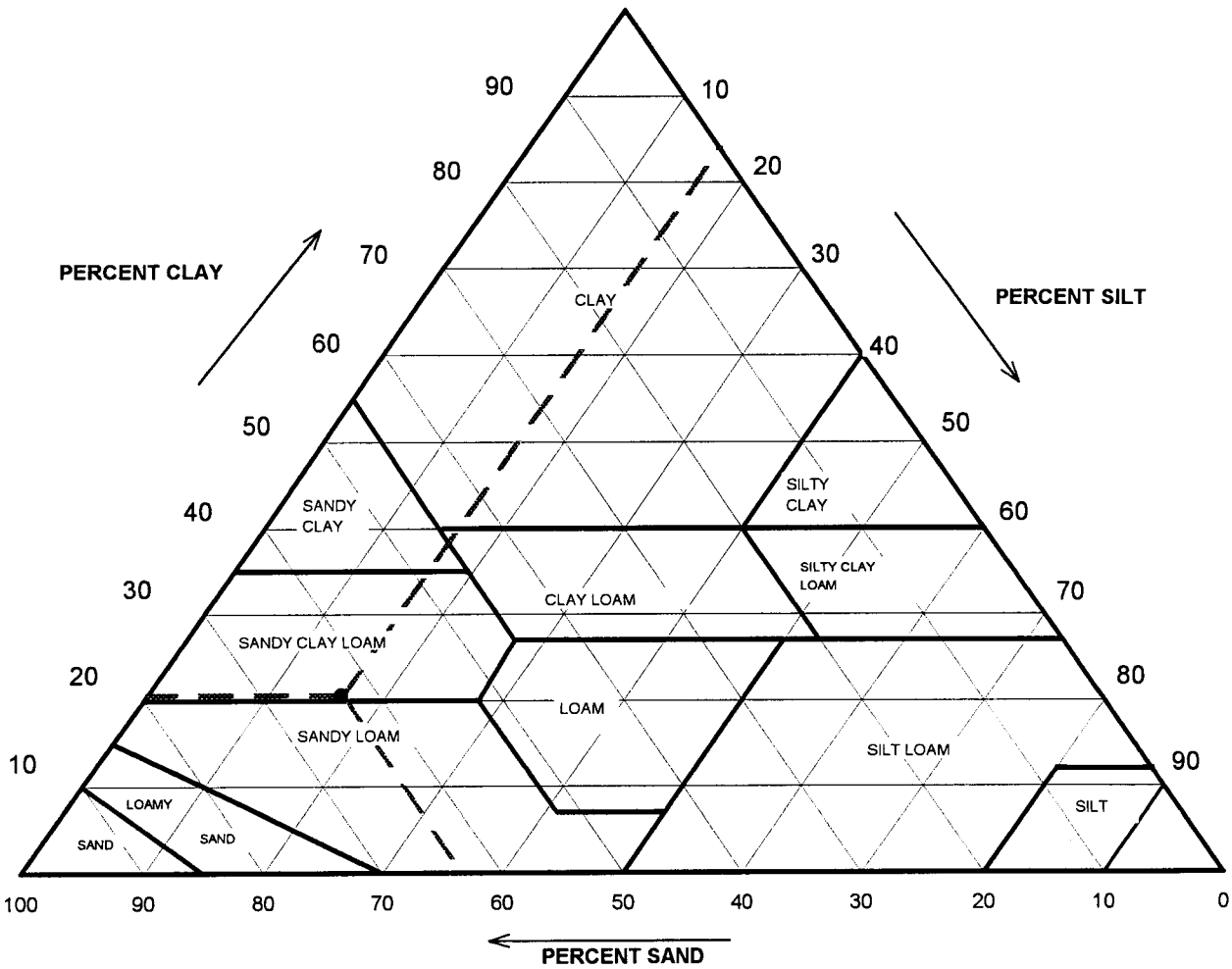
USDA CLASSIFICATION CHART

Client	DAVID GARRETT	Boring No.	B-1
Client Reference	PITT COUNTY	Depth (ft)	12.3-12.8
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.003	Soil Color	GRAY



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
		Gravel	0.30	**0.00**
2	99.70	*Sand*	62.99	**63.18**
0.05	36.71	*Silt*	16.14	**16.19**
0.002	20.57	*Clay*	20.57	**20.63**

USDA Classification ***SANDY CLAY LOAM***

DCN: CT-S3A DATE:02/06/01 REVISION: 4

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WASH SIEVE ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B-1
Client Reference	PITT COUNTY	Depth (ft)	12.3-12.8
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.003	Soil Color	**GRAY**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	2461	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	516.40	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	391.38	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	95.26	Weight of Tare (gm)	NA
Weight of Water (gm)	125.02	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	296.12	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**42.2**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	296.12
Dry Weight - 3/4" Sample (gm)	171.42	Weight of minus #200 material (gm)	124.70
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	171.42
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.00	0.00	0.00	100.00	**100.00**
#10	2.00	0.90	0.30	0.30	99.70	**99.70**
#20	0.85	3.56	1.20	1.51	98.49	**98.49**
#40	0.425	10.51	3.55	5.06	94.94	**94.94**
#60	0.250	10.35	3.50	8.55	91.45	**91.45**
#140	0.106	107.11	36.17	44.72	55.28	**55.28**
#200	0.075	38.99	13.17	57.89	42.11	**42.11**
Pan	-	124.70	42.11	100.00	-	-

Tested By JP Date 2/21/02 Checked By Jam Date 2-28-02

DCN: CT-S3A DATE:02/06/01 REVISION: 4

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HYDROMETER ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B-1
Client Reference	PITT COUNTY	Depth (ft)	12.3-12.8
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.003	Soil Color	**GRAY**

Elapsed Time (min)		R Measured	Temp. (° C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	28.0	28.5	20.0	8.54	20.0	73.4	0.01344	0.0324	**30.9**
5		28.0	20.0	8.54	19.5	71.6	0.01344	0.0206	**30.2**
15		26.5	20.0	8.54	18.0	66.1	0.01344	0.0120	**27.8**
30		25.0	20.0	8.54	16.5	60.6	0.01344	0.0086	**25.5**
64		24.0	20.3	8.46	15.5	57.2	0.01340	0.0059	**24.1**
250		22.5	20.8	8.33	14.2	52.2	0.01332	0.0030	**22.0**
1440		20.5	21.0	8.27	12.2	45.0	0.01328	0.0013	**19.0**

Soil Specimen Data		**Other Corrections**	
Tare No.	2497		
Tare + Dry Material (gm)	126.27	a - Factor	0.99
Weight of Tare (gm)	94.37		
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	42.11
Weight of Dry Material (gm)	26.9		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 2/25/02 Checked By Gem Date 2-28-02

DCN: CT-S3A DATE:02/06/01 REVISION: 4

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ATTERBERG LIMITS

ASTM D 4318-00 / AASHTO T89 (SOP - S4A)

Client	DAVID GARRETT	Boring No.	B-1
Client Reference	PITT COUNTY	Depth (ft)	12.3-12.8
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Soil Description	**GRAY LEAN CLAY**

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Airdried)

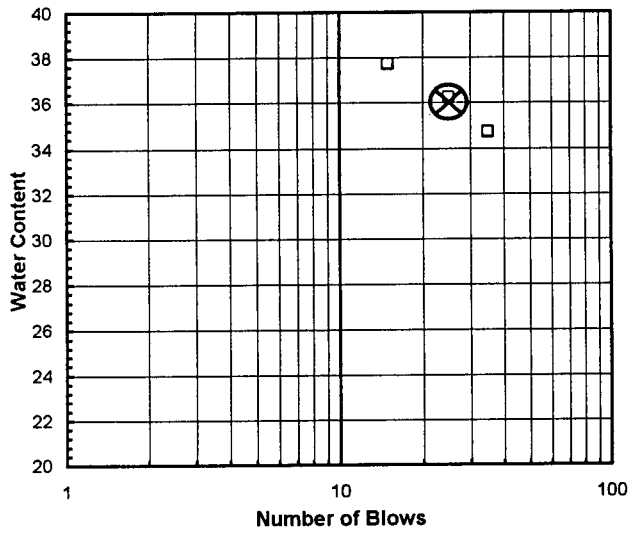
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	71	29	179	M U L T I P O I N T
Wt. of Tare & WS (gm)	42.18	40.97	41.74	
Wt. of Tare & DS (gm)	35.61	34.65	35.78	
Wt. of Tare (gm)	18.20	17.21	18.62	
Wt. of Water (gm)	6.6	6.3	6.0	
Wt. of DS (gm)	17.4	17.4	17.2	
Moisture Content (%)	**37.7**	**36.2**	**34.7**	
Number of Blows	**15**	**25**	**35**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	162	2314	
Wt. of Tare & WS (gm)	25.69	24.38	
Wt. of Tare & DS (gm)	24.48	23.41	
Wt. of Tare (gm)	18.13	18.23	
Wt. of Water (gm)	1.2	1.0	
Wt. of DS (gm)	6.4	5.2	
Moisture Content (%)	**19.1**	**18.7**	**0.3**

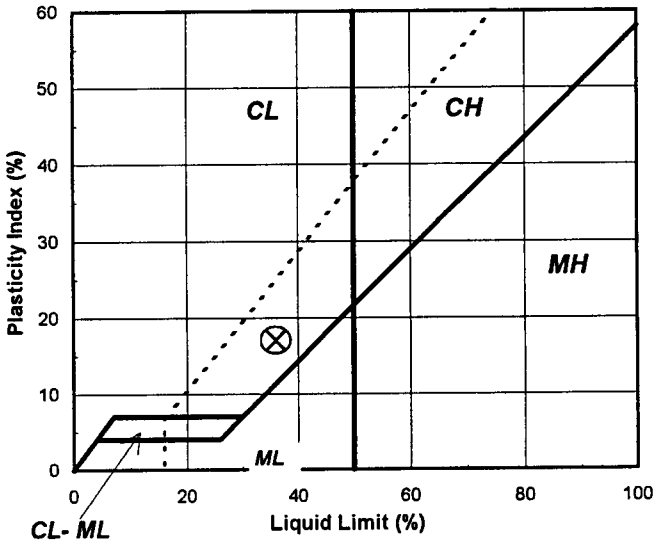
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**36**
Plastic Limit (%)	**19**
Plasticity Index (%)	**17**
USCS Symbol	**CL**

Flow Curve



Plasticity Chart



Tested By DA *Date* 2/25/02 *Checked By* JMO *Date* 2/27/02

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SIEVE ANALYSIS
ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B-1
Client Reference	PITT COUNTY	Depth (ft)	11.3-11.8
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.003	Soil Color	**GRAY**

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay

USCS Symbol ***SM, TESTED***

USCS Classification ***SILTY SAND (NON-PLASTIC FINES)***

Tested By JP Date 3/8/02 Checked By Jcm Date 3-11-02

DCN: CT-S3C DATE 6-25-98 REVISION: 2

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WASH SIEVE ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B-1
Client Reference	PITT COUNTY	Depth (ft)	11.3-11.8
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.003	Soil Color	**GRAY**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	514	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	390.12	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	388.06	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	100.52	Weight of Tare (gm)	NA
Weight of Water (gm)	2.06	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	287.54	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**0.7**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	287.54
Dry Weight - 3/4" Sample (gm)	223.6	Weight of minus #200 material (gm)	63.91
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	223.63
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.50	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.19	0.07	0.07	99.93	**99.93**
#10	2.00	1.20	0.42	0.48	99.52	**99.52**
#20	0.850	13.51	4.70	5.18	94.82	**94.82**
#40	0.425	37.36	12.99	18.17	81.83	**81.83**
#60	0.250	62.67	21.80	39.97	60.03	**60.03**
#140	0.106	84.65	29.44	69.41	30.59	**30.59**
#200	0.075	24.05	8.36	77.77	22.23	**22.23**
Pan	-	63.91	22.23	100.00	-	-

Tested By JP Date 3/8/02 Checked By Jam Date 3-11-02

DCN: CT-S3C DATE 6-25-98 REVISION: 2

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ATTERBERG LIMIT

ASTM D 4318-00/AASHTO T89-96, T90-00 (SOP - S4)

Client	DAVID GARRETT	Boring No.	B-1
Client Reference	PITT COUNTY	Depth (ft)	11.3-11.8
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.003	Visual Description	**GRAY SILT**
			(MInus No. 40 sieve material, Airdried)

NON - PLASTIC MATERIAL

Tested By *TO* *Date* *3/8/02* *Checked By* Jam *Date* 3-11-02

page 1 of 1 DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *C:\MSOFFICE\EXCEL\PrintQ\[M108.xls]Sheet1*

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PERMEABILITY TEST

ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

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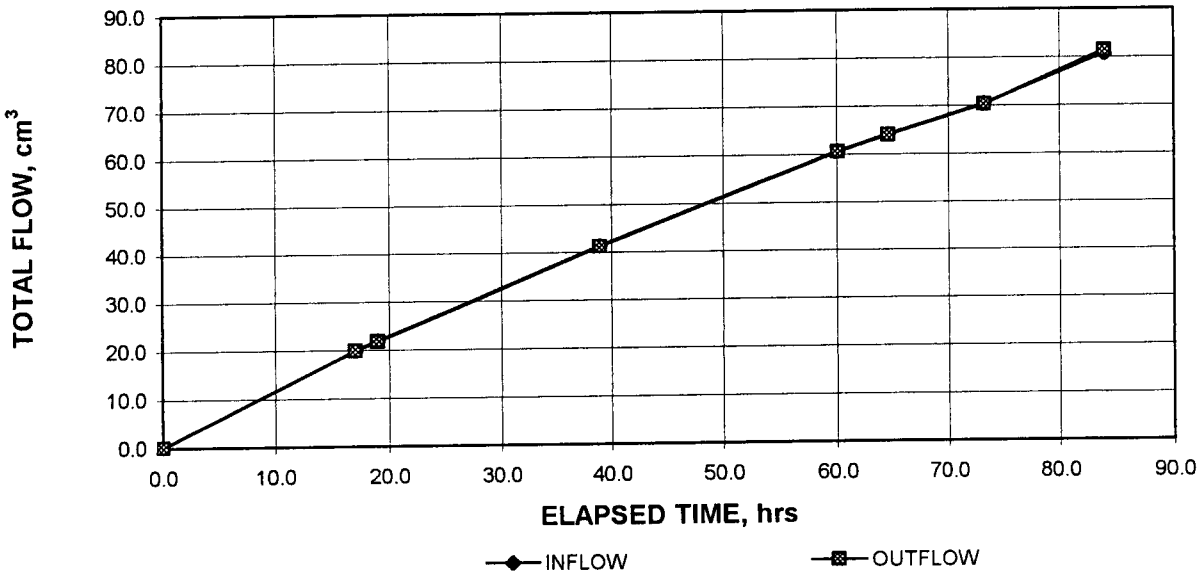
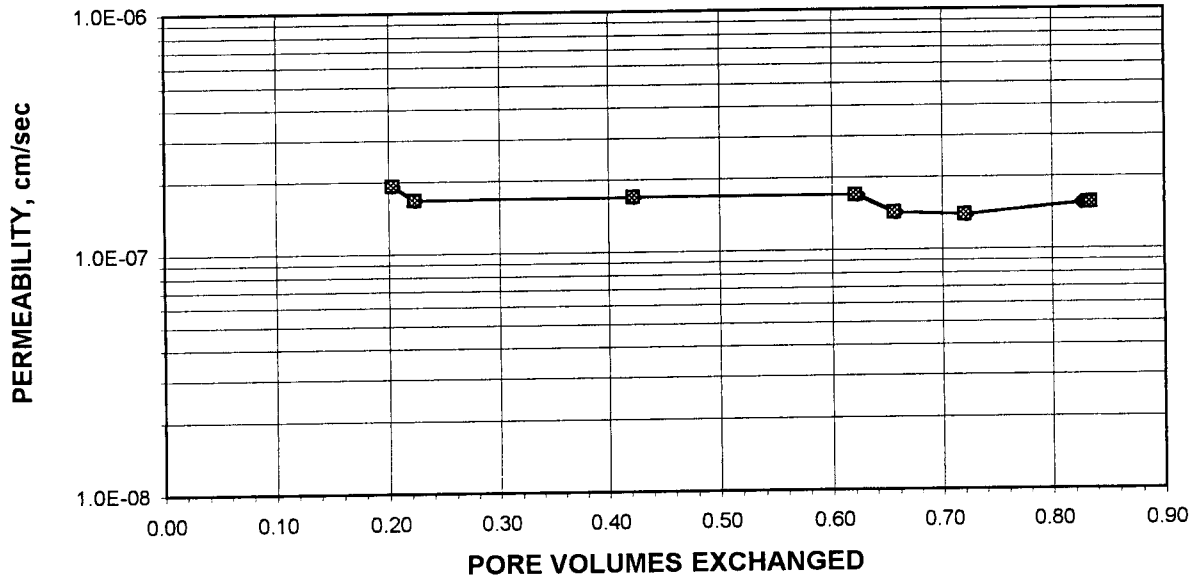
Client	DAVID GARRETT	Boring No.	B-1
Client Project	PITT COUNTY	Depth (ft.)	11.1-11.3
Project No.	R02011-01	Sample No.	NA
Lab ID No.	R02011-01.003		

AVERAGE PERMEABILITY = 1.5E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 1.5E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: JCM Date: 2/6/02 Checked By: JMO Date: 2/15/02

DCN: CT-22C DATE: 01-11-99 REVISION:3 C:\MSOffice\Excel\Perms\February02\[011P1.xls]Sheet1

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PERMEABILITY TEST

ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

geotechnics

Client	DAVID GARRETT	Boring No.	B-1
Client Project	PITT COUNTY	Depth (ft.)	11.1-11.3
Project No.	R02011-01	Sample No.	NA
Lab ID No.	R02011-01.003		
		Specific Gravity	2.70 Assumed
		Sample Condition	Undisturbed

Visual Description: GRAY SILTY SAND

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	544	540
Wt. of Tare & WS (gm.)	305.58	534.30
Wt. of Tare & DS (gm.)	235.58	468.00
Wt. of Tare (gm.)	84.76	83.51
Wt. of Water (gm.)	70.00	66.30
Wt. of DS (gm.)	150.82	384.49
Moisture Content (%)	**46.4**	**17.2**

SPECIMEN:	BEFORE TEST	AFTER TEST
Wt. of Tube & WS (gm.)	631.20	NA
Wt. of Tube (gm.)	167.50	NA
Wt. of WS (gm.)	463.70	371.32
Length 1 (in.)	2.186	1.897
Length 2 (in.)	2.194	1.918
Length 3 (in.)	2.196	1.886
Top Diameter (in.)	2.873	2.950
Middle Diameter (in.)	2.873	2.960
Bottom Diameter (in.)	2.873	2.980
Average Length (in.)	2.19	1.90
Average Area (in.^{2})	6.48	6.90
Sample Volume (cm^3)	232.86	214.77
Unit Wet Wt. (gm./ cm^3)	1.99	1.73
Unit Wet Wt. (pcf)	124.3	107.9
Unit Dry Wt. (pcf)	84.9	92.0
Unit Dry Wt. (gm./ cm^3)	1.36	1.47
Void Ratio, e	0.99	0.83
Porosity, n	0.50	0.45
Pore Volume (cm^3)	115.6	97.5

Tested By: JCM Date: 2/6/02 Checked By: JMO Date: 2/15/02

DCN: CT-22C DATE: 01-11-99 REVISION:3 C:\MSOffice\Excel\Perms\February02\[011P1.xls]Sheet1

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PERMEABILITY TEST

ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

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Client	DAVID GARRETT	Boring No.	B-1
Client Project	PITT COUNTY	Depth (ft.)	11.1-11.3
Project No.	R02011-01	Sample No.	NA
Lab ID No.	R02011-01.003		

Pressure Heads (Constant)

Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions

Sample Length (cm), L	4.83
Sample Diameter (cm)	7.53
Sample Area (cm^2), A	44.50
Inflow Burette Area (cm^2), a-in	4.484
Outflow Burette Area (cm^2), a-out	4.471
B Parameter (%)	97

AVERAGE PERMEABILITY = 1.5E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 1.5E-09 m/sec @ 20°C

DATE (mm/dd/yy)	TIME (hr)	TIME (min)	ELAPSED TIME t (hr)	TOTAL INFLOW (cm^3)	TOTAL OUTFLOW (cm^3)	TOTAL HEAD h (cm)	FLOW (0 flow) (1 stop)	TEMP. (°C)	INCREMENTAL PERMEABILITY @ 20°C (cm/sec)
2/8/02	19	15	0.0	0.0	0.0	187.1	0	19.5	NA
2/9/02	12	20	17.1	19.9	19.9	178.2	0	20.0	1.9E-07
2/9/02	14	18	19.1	21.9	21.8	177.4	0	20.0	1.7E-07
2/10/02	10	15	39.0	41.3	41.2	168.7	0	20.0	1.7E-07
2/11/02	7	20	60.1	60.7	60.5	160.0	0	20.0	1.7E-07
2/11/02	11	51	64.6	64.1	63.9	158.5	0	20.0	1.4E-07
2/11/02	20	32	73.3	70.4	70.2	155.7	1	20.0	1.4E-07
2/11/02	20	35	73.3	70.4	70.2	197.7	0	20.0	NA
2/12/02	7	14	83.9	80.6	81.4	193.0	1	19.8	1.6E-07

Tested By: JCM Date: 2/6/02 Checked By: JMO Date: 2/15/02

DCN: CT-22C DATE: 01-11-99 REVISION:3
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MOHR TOTAL STRENGTH ENVELOPE

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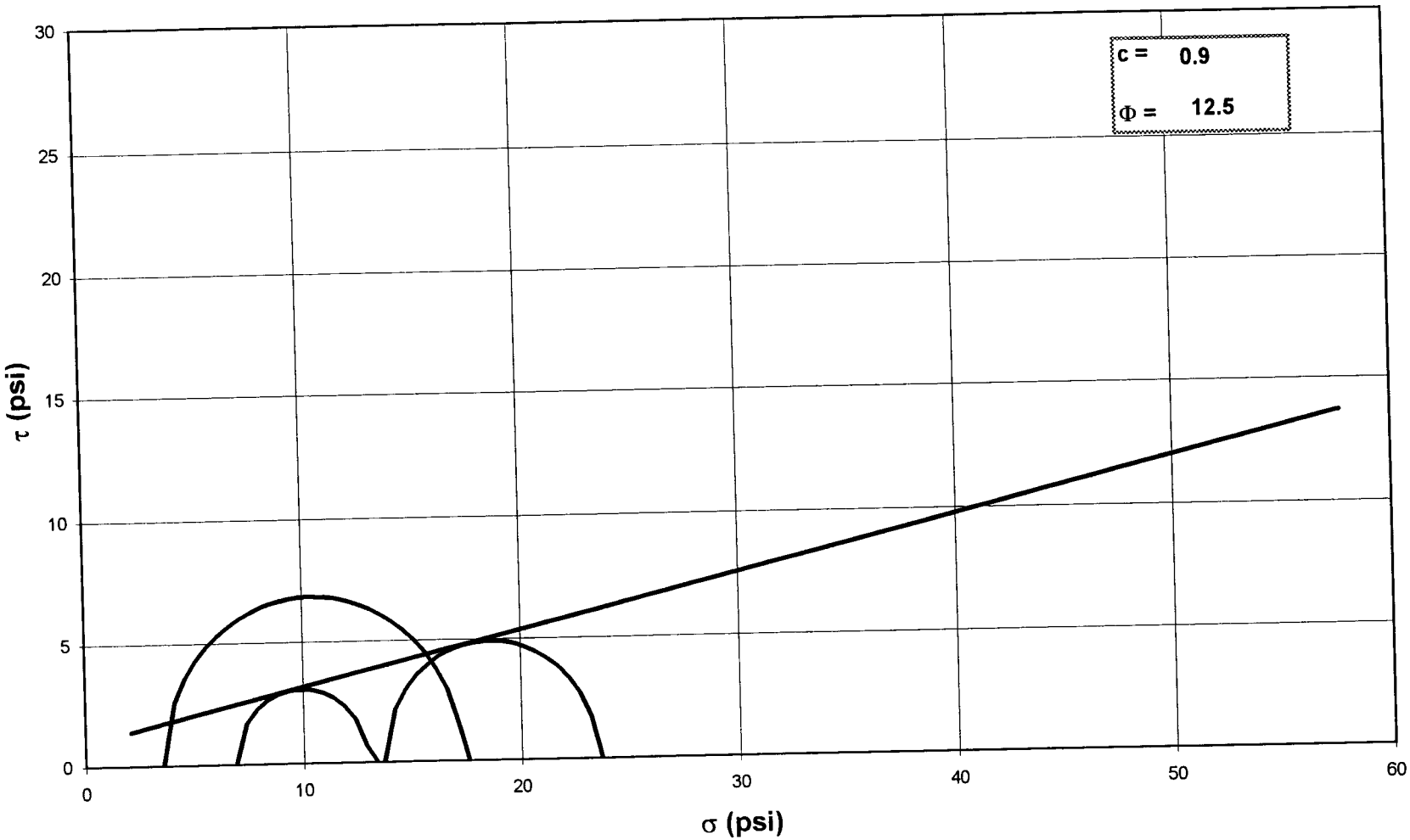
Client	DAVID GARRETT	Boring No.	B-1
Client Ref. No.	PITT COUNTY	Depth(ft.)	11.0-13.0
Project no.	R02011-01	Sample No.	NA
Lab ID	R02011-01.003	Visual Description	GRAY SILTY CLAYEY SAND (UNDISTURBED)



NOTE: GRAPH NOT TO SCALE

Tested By: JCM *Date:* 2/6/02 *Approved By:* JB *Date:* 2/22/02

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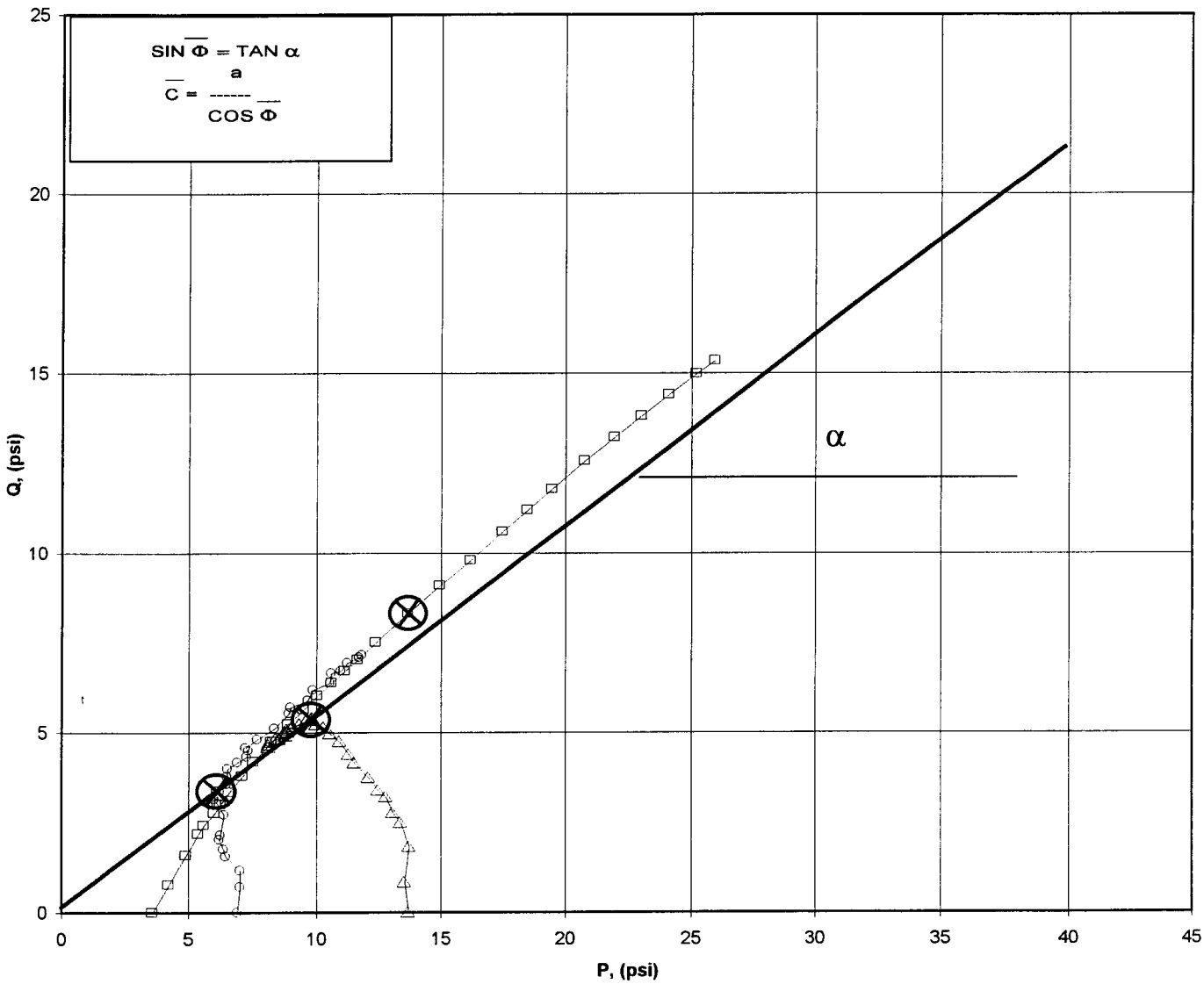
CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	DAVID GARRETT	Lab ID	R02011-01.003
Client Reference	PITT COUNTY	Boring No.	B-1
Project No.	R02011-01	Depth(ft.)	11.0-13.0
		Sample No.	NA

Consolidated Undrained Triaxial Test with Pore Pressure



⊗ Max. Effec. Stress Ratio Points — Failure Envelope — Test No. 4 — Test No. 5 — Test No. 6

a	=	0.16	$\overline{C}$	=	0.19
α	=	28.0	$\overline{\Phi}$	=	32.06

Tested By JCM Date 2/6/02 Approved By ZMO Date 2/22/02

DCN: CT-S28 DATE 6-25-98 REVISION 1

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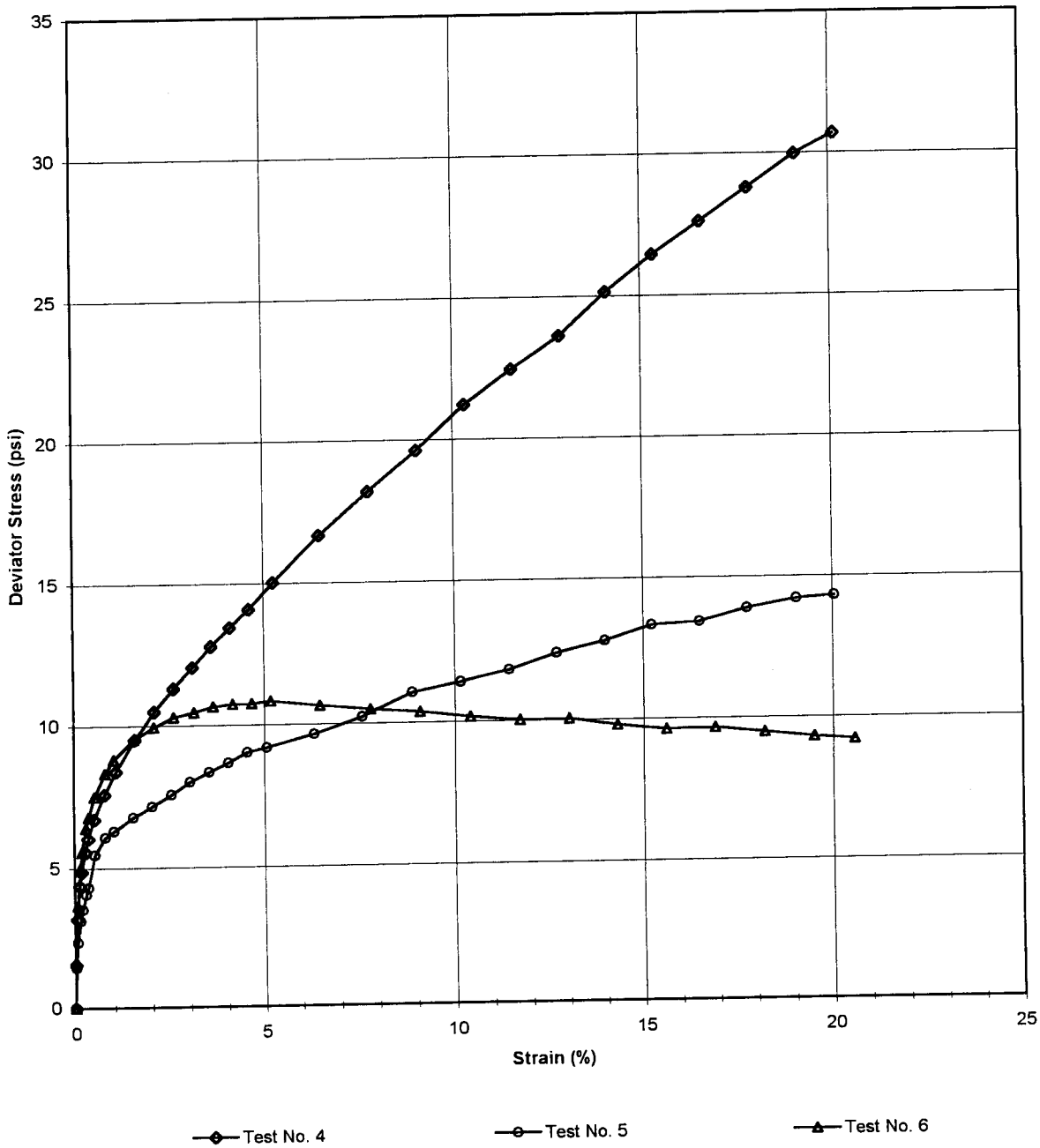
CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	DAVID GARRETT	Lab ID	R02011-01.003
Client Reference	PITT COUNTY	Boring No.	B-1
Project No.	R02011-01	Depth(ft.)	11.0-13.0
		Sample No.	NA

Visual Description: GRAY SILTY SAND (UNDISTURBED)



Tested By JCM Date 2/6/02 Approved By JMO Date 2/22/02

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CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

geotechnics

Client	DAVID GARRETT	Boring No.	B-1
Client Reference	PITT COUNTY	Depth(ft.)	11.3-11.8
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.003		

Visual Description: GRAY SILTY SAND (UNDISTURBED)

Stage No.	1
Test No	4

PRESSURES (psi)

Cell Pressure(psi)	63.8
Back Pressure(psi)	60.2
Eff. Cons. Pressure(psi)	3.6
Pore Pressure Response (%)	97

MAXIMUM OBLIQUITY POINTS

$\overline{P}$	=	13.68
Q	=	8.32

INITIAL SAMPLE DIMENSIONS (in)

Length 1	6.083	Diameter 1	2.879
Length 2	6.061	Diameter 2	2.862
Length 3	6.083	Diameter 3	2.875
Avg Leng.	6.076	Avg. Diam.	2.872

VOLUME CHANGE

Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	23.6
Final Change (ml)	0.4

Initial Dial Reading (D.R.), mils	55
D.R. After Saturation, mils	62
D.R. After Consolidation, mils	71

LOAD (LBS)	DEFORMATION (DIVISIONS)	PORE PRESSURE (PSI)
8.0	0.0	60.2
18.0	0.6	60.4
28.6	3.5	60.5
36.2	7.9	60.6
39.4	10.9	60.6
44.0	17.0	60.6
47.1	21.6	60.6
51.6	30.7	60.6
57.5	47.3	60.5
62.9	65.4	60.5
70.5	95.6	60.3
77.2	126.2	60.1
83.0	157.3	59.9
88.4	188.1	59.8
93.7	218.3	59.6
98.6	249.0	59.4
103.4	280.0	59.2
110.5	319.8	58.9
123.2	394.6	58.4
135.6	472.7	57.9
147.5	548.6	57.4
161.1	624.8	56.9
172.1	700.2	56.5
183.2	777.6	56.1
197.3	853.0	55.6
210.1	929.7	55.1
222.2	1006.3	54.6
234.8	1082.3	54.1
247.6	1158.0	53.6
256.5	1219.6	53.2

Tested By JCM Date 2/6/02 Input Checked By JMO Date 2/22/02

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DCN: CT-S28 DATE 6-25-98 REVISION 1

CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

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Client	DAVID GARRETT	Boring No.	B-1
Client Reference	PITT COUNTY	Depth(ft.)	11.3-11.8
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.003		

Visual Description: GRAY SILTY SAND (UNDISTURBED)

Effective Confining Pressure (psi)	4	*Stage No.*	1
		Test No	4

INITIAL DIMENSIONS

Initial Sample Length (in.)	6.08
Initial Sample Diameter (in.)	2.87
Initial Sample Area (in^2)	6.48
Initial Sample Volume (in^3)	39.36

VOLUME CHANGE

Volume After Consolidation (in^3)	39.20
Length After Consolidation (in)	6.06
Area After Consolidation (in^2)	6.469

Strain (%)	Deviation Stress	ΔU	$\overline{\sigma}_1$	$\overline{\sigma}_3$	Effective Principle Stress Ratio	$\overline{A}$	$\overline{P}$	Q
0.01	1.55	0.15	5.00	3.4	1.450	0.10	4.23	0.78
0.06	3.18	0.27	6.51	3.3	1.957	0.09	4.92	1.59
0.13	4.36	0.39	7.57	3.2	2.356	0.09	5.39	2.18
0.18	4.85	0.42	8.03	3.2	2.524	0.09	5.61	2.42
0.28	5.56	0.36	8.79	3.2	2.717	0.07	6.01	2.78
0.36	6.03	0.37	9.26	3.2	2.868	0.06	6.24	3.02
0.51	6.71	0.36	9.95	3.2	3.069	0.05	6.60	3.35
0.78	7.59	0.29	10.91	3.3	3.293	0.04	7.11	3.80
1.08	8.39	0.25	11.74	3.3	3.506	0.03	7.55	4.20
1.58	9.51	0.11	13.00	3.5	3.724	0.01	8.24	4.75
2.08	10.48	-0.06	14.14	3.7	3.864	-0.01	8.90	5.24
2.60	11.29	-0.25	15.14	3.9	3.932	-0.02	9.50	5.65
3.10	12.05	-0.43	16.08	4.0	3.988	-0.04	10.06	6.02
3.60	12.77	-0.62	17.00	4.2	4.025	-0.05	10.61	6.39
4.11	13.44	-0.82	17.85	4.4	4.042	-0.06	11.13	6.72
4.62	14.07	-1.02	18.69	4.6	4.047	-0.07	11.65	7.04
5.28	15.01	-1.27	19.88	4.9	4.083	-0.09	12.37	7.51
6.51	16.65	-1.75	22.00	5.4	4.109	-0.11	13.68	8.32
7.80	18.19	-2.27	24.06	5.9	4.098	-0.13	14.97	9.09
9.05	19.62	-2.80	26.02	6.4	4.063	-0.15	16.21	9.81
10.31	21.23	-3.29	28.12	6.9	4.081	-0.16	17.50	10.61
11.56	22.44	-3.70	29.74	7.3	4.075	-0.17	18.52	11.22
12.83	23.60	-4.09	31.29	7.7	4.071	-0.18	19.49	11.80
14.08	25.14	-4.62	33.36	8.2	4.059	-0.19	20.79	12.57
15.34	26.45	-5.13	35.18	8.7	4.031	-0.20	21.95	13.23
16.61	27.61	-5.62	36.84	9.2	3.995	-0.21	23.03	13.81
17.86	28.80	-6.12	38.51	9.7	3.964	-0.22	24.11	14.40
19.11	29.96	-6.61	40.17	10.2	3.933	-0.23	25.19	14.98
20.13	30.69	-6.99	41.27	10.6	3.899	-0.23	25.93	15.34

Tested By JCM Date 2/6/02 Input Checked By JMO Date 2/22/02

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CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

geotechnics

Client	DAVID GARRETT	Boring No.	B-1
Client Reference	PITT COUNTY	Depth(ft.)	11.8-12.3
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.003		

Visual Description: GRAY SILTY CLAYEY SAND (UNDISTURBED)

Stage No.	1
Test No	5

PRESSURES (psi)

Cell Pressure(psi)	37
Back Pressure(psi)	30.1
Eff. Cons. Pressure(p	6.9
Pore Pressure Response (%)	97

MAXIMUM OBLIQUITY POINTS

$\overline{P}$	=	6.08
Q	=	3.38

INITIAL SAMPLE DIMENSIONS (in)

Length 1	6.081	Diameter 1	2.869
Length 2	6.088	Diameter 2	2.875
Length 3	6.080	Diameter 3	2.874
Avg Leng.	6.083	Avg. Diam.	2.873

VOLUME CHANGE

Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	19.3
Final Change (ml)	4.7

Initial Dial Reading (D.R.), mils	48
D.R. After Saturation, mils	84
D.R. After Consolidation, mils	103

LOAD (LBS)	DEFORMATION (DIVISIONS)	PORE PRESSURE (PSI)
7.6	0.0	30.1
16.7	1.4	30.7
22.6	4.5	31.2
27.5	9.1	32.1
30.1	12.2	32.4
33.5	18.4	32.8
35.1	22.0	32.9
42.6	31.2	33.4
46.6	48.0	33.9
48.2	61.6	34.1
51.4	91.8	34.3
54.1	122.3	34.1
57.1	152.7	34.3
60.2	182.8	34.5
62.8	213.3	34.3
65.2	243.9	34.1
67.9	275.1	34.2
69.2	306.0	34.4
73.3	382.1	34.2
78.1	457.9	33.8
85.1	536.3	33.6
88.5	612.6	33.7
92.5	689.8	33.2
98.0	765.0	33.3
102.3	842.9	32.8
107.7	918.9	33.1
110.1	995.7	32.7
115.2	1071.6	32.7
119.4	1149.2	32.4
121.7	1209.0	32.3

Tested By JCM Date 2/6/02 Input Checked By JMO Date 2/22/02

DCN: CT-S28 DATE 6-25-98 REVISION 1

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CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

geotechnics

Client	DAVID GARRETT	Boring No.	B-1
Client Reference	PITT COUNTY	Depth(ft.)	11.8-12.3
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.003		

Visual Description: GRAY SILTY CLAYEY SAND (UNDISTURBED)

Effective Confining Pressure (psi)	7	*Stage No.*	1
		Test No	5

INITIAL DIMENSIONS

Initial Sample Length (in.)	6.08
Initial Sample Diameter (in.)	2.87
Initial Sample Area (in^2)	6.48
Initial Sample Volume (in^3)	39.43

VOLUME CHANGE

Volume After Consolidation (in^3)	38.44
Length After Consolidation (in)	6.03
Area After Consolidation (in^2)	6.377

Strain (%)	Deviation Stress	ΔU	$\overline{\sigma}_1$	$\overline{\sigma}_3$	Effective Principle Stress Ratio	$\overline{A}$	$\overline{P}$	Q
0.02	1.43	0.59	7.74	6.3	1.227	0.43	7.02	0.72
0.08	2.35	1.06	8.19	5.8	1.402	0.47	7.01	1.17
0.15	3.12	2.01	8.01	4.9	1.637	0.66	6.45	1.56
0.20	3.52	2.30	8.12	4.6	1.766	0.67	6.36	1.76
0.30	4.05	2.71	8.23	4.2	1.967	0.69	6.21	2.02
0.36	4.30	2.81	8.39	4.1	2.051	0.67	6.24	2.15
0.52	5.46	3.25	9.11	3.6	2.497	0.61	6.38	2.73
0.80	6.07	3.82	9.14	3.1	2.973	0.65	6.11	3.03
1.02	6.30	4.04	9.16	2.9	3.201	0.66	6.01	3.15
1.52	6.77	4.21	9.46	2.7	3.513	0.64	6.08	3.38
2.03	7.15	4.00	10.05	2.9	3.464	0.58	6.48	3.57
2.53	7.56	4.19	10.27	2.7	3.793	0.57	6.49	3.78
3.03	8.00	4.38	10.52	2.5	4.177	0.56	6.52	4.00
3.54	8.35	4.18	11.07	2.7	4.071	0.52	6.89	4.18
4.05	8.67	3.96	11.61	2.9	3.952	0.47	7.27	4.33
4.56	9.02	4.07	11.85	2.8	4.183	0.46	7.34	4.51
5.08	9.17	4.26	11.81	2.6	4.476	0.48	7.23	4.59
6.34	9.65	4.06	12.49	2.8	4.396	0.43	7.66	4.82
7.60	10.22	3.66	13.46	3.2	4.158	0.37	8.35	5.11
8.90	11.07	3.53	14.44	3.4	4.282	0.33	8.91	5.53
10.16	11.39	3.61	14.69	3.3	4.458	0.33	8.99	5.70
11.44	11.80	3.14	15.55	3.8	4.140	0.27	9.65	5.90
12.69	12.37	3.23	16.05	3.7	4.366	0.27	9.86	6.19
13.98	12.78	2.75	16.93	4.2	4.077	0.22	10.54	6.39
15.24	13.31	2.96	17.25	3.9	4.379	0.23	10.59	6.66
16.52	13.42	2.62	17.70	4.3	4.138	0.20	10.99	6.71
17.78	13.88	2.61	18.17	4.3	4.235	0.19	11.23	6.94
19.06	14.19	2.29	18.81	4.6	4.076	0.17	11.71	7.10
20.06	14.31	2.24	18.96	4.7	4.070	0.16	11.81	7.15

Tested By JCM Date 2/6/02 Input Checked By JMO Date 2/22/02

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CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

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Client	DAVID GARRETT	Boring No.	B-1
Client Reference	PITT COUNTY	Depth(ft.)	12.3-12.8
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.003		

Visual Description: GRAY SILTY SAND (UNDISTURBED)

Stage No.	1
Test No	6

PRESSURES (psi)

Cell Pressure(psi)	43.9
Back Pressure(psi)	30.2
Eff. Cons. Pressure(p	13.7
Pore Pressure Response (%)	99

MAXIMUM OBLIQUITY POINTS

$\overline{P}$	=	9.81
Q	=	5.36

INITIAL SAMPLE DIMENSIONS (in)

Length 1	6.024	Diameter 1	2.885
Length 2	6.039	Diameter 2	2.867
Length 3	6.016	Diameter 3	2.872
Avg Leng.	6.026	Avg. Diam.	2.875

VOLUME CHANGE

Initial Burette Reading (ml)	144.0
Final Burette Reading (ml)	107.1
Final Change (ml)	37.0

Initial Dial Reading (D.R.), mils	80
D.R. After Saturation, mils	142
D.R. After Consolidation, mils	287

LOAD (LBS)	DEFORMATION (DIVISIONS)	PORE PRESSURE (PSI)
12.9	0.0	30.2
23.2	1.2	31.2
35.3	4.1	32.0
43.6	8.5	33.0
47.0	11.4	33.6
52.3	17.5	34.3
54.6	21.9	34.8
59.1	30.7	35.6
64.4	46.5	36.5
67.4	59.5	37.0
72.0	89.5	37.7
75.1	120.6	38.3
77.5	151.3	38.7
79.0	181.9	39.1
80.6	212.0	39.4
81.5	242.3	39.5
82.0	272.3	39.4
82.9	302.1	39.5
82.7	377.7	39.6
82.6	454.5	39.8
82.7	529.2	40.0
82.3	605.4	40.1
82.4	681.0	40.1
83.6	757.3	40.1
83.0	831.7	40.0
82.8	908.7	40.2
84.1	984.0	40.3
83.9	1059.7	40.5
83.7	1135.0	40.4
83.8	1196.7	40.4

Tested By JCM Date 2/6/02 Input Checked By JMO Date 2/22/02

DCN: CT-S28 DATE 6-25-98 REVISION 1

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CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

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Client	DAVID GARRETT	Boring No.	B-1
Client Reference	PITT COUNTY	Depth(ft.)	12.3-12.8
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.003		

Visual Description: GRAY SILTY SAND (UNDISTURBED)

Effective Confining Pressure (psi)	14	*Stage No.*	1
		Test No	6

INITIAL DIMENSIONS

Initial Sample Length (in.)	6.03
Initial Sample Diameter (in.)	2.87
Initial Sample Area (in^2)	6.49
Initial Sample Volume (in^3)	39.11

VOLUME CHANGE

Volume After Consolidation (in^3)	35.65
Length After Consolidation (in)	5.82
Area After Consolidation (in^2)	6.126

Strain (%)	Deviation Stress	ΔU	$\overline{\sigma}_1$	$\overline{\sigma}_3$	Effective Principle Stress Ratio	$\overline{A}$	$\overline{P}$	Q
0.02	1.68	1.00	14.38	12.7	1.132	0.60	13.54	0.84
0.07	3.65	1.82	15.53	11.9	1.307	0.50	13.71	1.83
0.15	5.00	2.82	15.88	10.9	1.459	0.57	13.38	2.50
0.20	5.56	3.41	15.85	10.3	1.540	0.62	13.07	2.78
0.30	6.41	4.11	16.00	9.6	1.668	0.65	12.80	3.20
0.38	6.79	4.62	15.87	9.1	1.747	0.69	12.48	3.39
0.53	7.50	5.37	15.83	8.3	1.900	0.72	12.08	3.75
0.80	8.33	6.34	15.69	7.4	2.132	0.77	11.53	4.17
1.02	8.80	6.81	15.69	6.9	2.277	0.78	11.29	4.40
1.54	9.50	7.53	15.68	6.2	2.540	0.80	10.92	4.75
2.07	9.94	8.12	15.52	5.6	2.779	0.82	10.55	4.97
2.60	10.28	8.55	15.43	5.2	2.995	0.84	10.29	5.14
3.13	10.45	8.92	15.22	4.8	3.188	0.86	10.00	5.22
3.64	10.65	9.16	15.18	4.5	3.346	0.87	9.86	5.32
4.16	10.73	9.26	15.17	4.4	3.414	0.87	9.81	5.36
4.68	10.75	9.24	15.20	4.5	3.411	0.87	9.83	5.37
5.19	10.83	9.27	15.25	4.4	3.445	0.87	9.84	5.41
6.49	10.65	9.41	14.93	4.3	3.484	0.89	9.61	5.32
7.81	10.49	9.59	14.60	4.1	3.551	0.92	9.36	5.24
9.09	10.36	9.78	14.28	3.9	3.642	0.95	9.10	5.18
10.40	10.15	9.93	13.92	3.8	3.692	0.99	8.85	5.08
11.70	10.02	9.95	13.78	3.8	3.670	1.00	8.76	5.01
13.01	10.04	9.86	13.88	3.8	3.611	0.99	8.86	5.02
14.29	9.81	9.83	13.69	3.9	3.532	1.01	8.78	4.91
15.62	9.63	9.98	13.34	3.7	3.589	1.05	8.53	4.81
16.91	9.66	10.11	13.25	3.6	3.692	1.06	8.42	4.83
18.21	9.47	10.27	12.90	3.4	3.765	1.10	8.16	4.74
19.50	9.31	10.22	12.78	3.5	3.678	1.11	8.13	4.65
20.56	9.20	10.17	12.73	3.5	3.606	1.12	8.13	4.60

Tested By JCM Date 2/6/02 Input Checked By JMO Date 2/22/02

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CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	DAVID GARRETT		
Client Reference	PITT COUNTY		
Project No.	R02011-01		
Lab ID	R02011-01.003	Specific Gravity (assumed)	2.7

Visual Description: GRAY SILTY CLAYEY SAND (UNDISTURBED)

SAMPLE CONDITION SUMMARY

Boring No.	B-1	B-1	B-1
Depth (ft)	11.3-11.8	11.8-12.3	12.3-12.8
Sample No.	NA	NA	NA
Test No.	T4	T5	T6
Deformation Rate (in/min)	0.00048	0.00048	0.00048
Back Pressure (psi)	60.2	30.1	30.2
Consolidation Time (days)	1	1	1
Initial State (w%)	46.4	46.4	46.4
Total Unit Weight (pcf)	124.3	116.3	104.9
Dry Unit Weight (pcf)	84.9	79.4	71.7
Final State (w%)	17.5	28.6	42.2
Initial State Void Ratio,e	0.985	1.122	1.352

Tested By JCM Date 2/6/02 Input Checked By JMO Date 2/22/02

DCN: CT-S28 DATE 6-25-98 REVISION: 1

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ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24)

Client	DAVID GARRETT	Boring No.	B-1
Client Reference	PITT COUNTY	Depth (ft)	11.0-11.1
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Visual Description	GRAY SILTY SAND

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

Tested By TM *Date* 2/11/02 *Approved By* DB *Date* 2/20/02

DCN: CT-S24F Date: 11/9/00 Revision: 4

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ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24)

Client	DAVID GARRETT	Boring No.	B-1
Client Reference	PITT COUNTY	Depth (ft)	11.0-11.1
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Visual Description	GRAY SILTY SAND

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED
Consolidometer No. 4
1 Division = 0.0001 (in)

Sample Properties	Initial	Final
Water Content		
Tare Number	1393	1310
Wt. Tare & WS (gm)	168.53	226.07
Wt. Tare & DS (gm)	149.36	211.66
Wt. Water (gm)	19.17	14.41
Wt. Tare (gm)	50.49	102.66
Wt. DS (gm)	98.87	109.00
Water Content (%)	19.39	13.22
Sample Parameters		
Sample Diameter (in)	2.5	2.5
Sample Height (in)	0.75	0.678
Sample Volume (cc)	60.33	54.50
Wt. Wet Sample + Ring (gm)	206.59	199.88
Wt. of Ring (gm)	76.67	76.67
Wt. of Wet Sample (gm)	129.92	123.21
Wet Density (pcf)	134.38	141.07
Wet Density (g/cc)	2.15	2.26
Water Content (%)	19.39	13.22
Wt. of Dry Sample (gm)	108.82	108.82
Dry Density (pcf)	112.55	124.59
Dry Density (g/cc)	1.80	2.00
Void Ratio	0.4969	0.3522
Saturation (%)	105.36	101.34
Specific Gravity	2.70	*Assumed*

Test Data Summary

Applied Pressure (tsf)	Final Dial Reading (div)	Machine Deflection (div)	Corrected Reading (div)	Height of Sample (mm)	Volume (cc)	Dry Density (g/cc)	Void Ratio
Seating	0	0	0	19.050	60.330	1.80376	**0.49687**
0.125	332.1	3.2	328.9	18.215	57.684	1.88649	**0.43123**
0.25	361.7	6.6	355.1	18.148	57.473	1.89341	**0.42600**
0.5	414.6	11.7	402.9	18.027	57.089	1.90616	**0.41646**
1	482.4	18.5	463.9	17.872	56.598	1.92269	**0.40429**
2	561.0	28.5	532.5	17.697	56.046	1.94162	**0.39059**
4	655.3	41.2	614.1	17.490	55.390	1.96462	**0.37431**
1	631.1	30.8	600.3	17.525	55.501	1.96070	**0.37706**
0.125	591.5	14.6	576.9	17.585	55.689	1.95407	**0.38173**
0.25	593.9	9.7	584.2	17.566	55.631	1.95613	**0.38028**
0.5	604.0	13.3	590.7	17.550	55.578	1.95797	**0.37898**
1	621.2	17.5	603.7	17.517	55.474	1.96166	**0.37638**
2	639.2	21.6	617.6	17.481	55.362	1.96562	**0.37361**
4	677.3	29.4	647.9	17.404	55.118	1.97432	**0.36756**
8	759.0	41.6	717.4	17.228	54.559	1.99455	**0.35369**
16	877.8	53.3	824.5	16.956	53.698	2.02655	**0.33232**
4	837.1	63.7	773.4	17.086	54.109	2.01115	**0.34251**
1	798.9	51.3	747.6	17.151	54.316	2.00347	**0.34766**
0.125	761.4	36.7	724.7	17.209	54.500	1.99670	**0.35223**

Tested By TM *Date* 2/11/02 *Input Checked By* GU *Date* 2/20/02

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DCN: CT-S24F Date: 11/9/00 Revision: 4

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DCN: CT-S24F
DATE: 3/29/99
REVISION: 3

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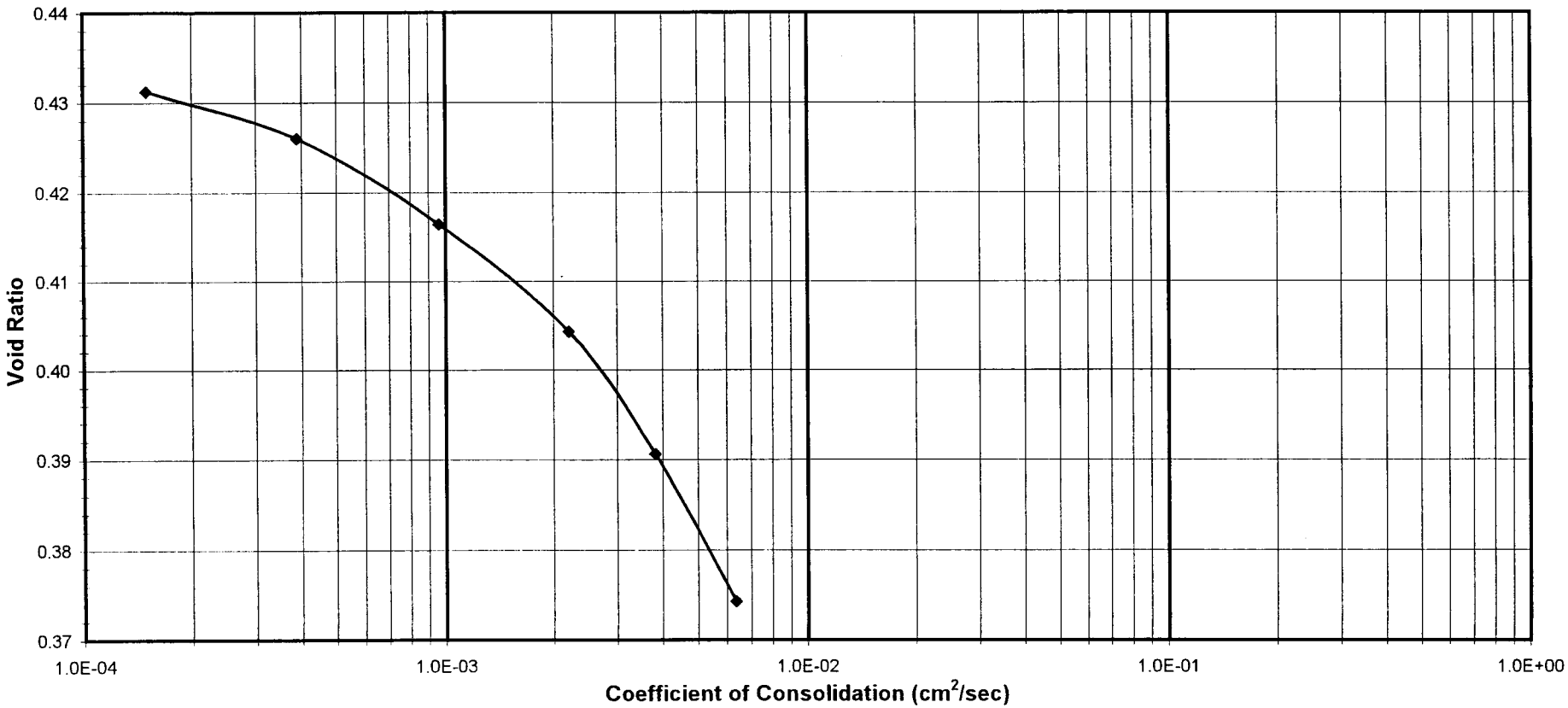
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24)

Client	DAVID GARRETT	Boring No.	B-1
Client Reference	PITT COUNTY	Depth (ft)	11.0-11.1
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Visual Description	GRAY SILTY SAND

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



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DCN: CT-S24F
DATE: 03/29/99
REVISION: 3

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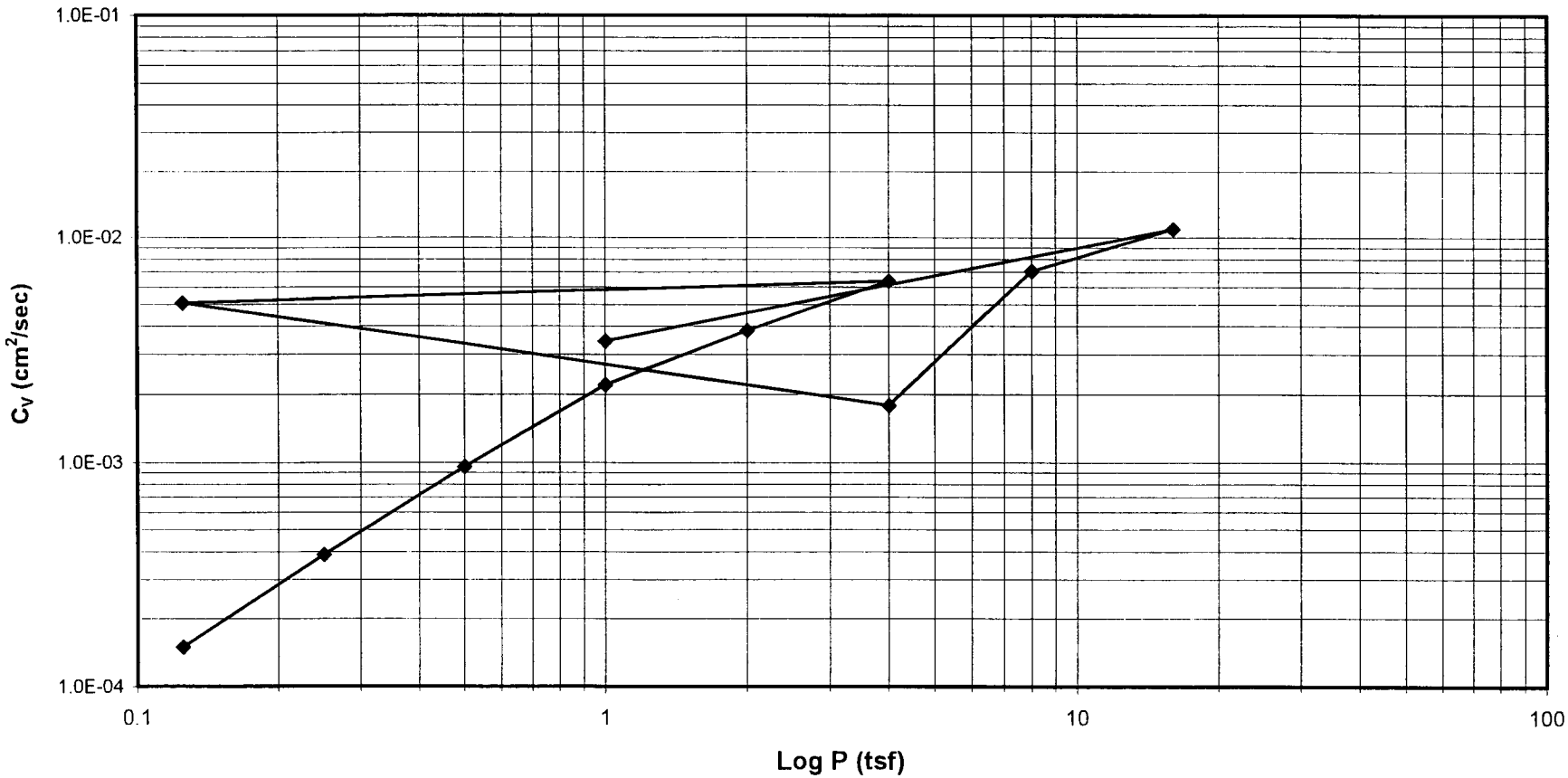
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24)

Client	DAVID GARRETT	Boring No.	B-1
Client Reference	PITT COUNTY	Depth (ft)	11.0-11.1
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Visual Description	GRAY SILTY SAND

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Tested By TM *Date* 4/3/02 *Approved By* DB *Date* 4/5/02

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DCN: CT-S24F
DATE: 03/29/99
REVISION: 3

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ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24)

Client	DAVID GARRETT	Boring No.	B-1
Client Reference	PITT COUNTY	Depth (ft)	11.0-11.1
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Visual Description	GRAY SILTY SAND

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED
Consolidometer No. 4
1 Division = 0.0001 (in)

Sample Properties	Initial	Final
Water Content		
Tare Number	1393	1310
Wt. Tare & WS (gm)	168.53	226.07
Wt. Tare & DS (gm)	149.36	211.66
Wt. Water (gm)	19.17	14.41
Wt. Tare (gm)	50.49	102.66
Wt. DS (gm)	98.87	109.00
Water Content (%)	19.39	13.22
Sample Parameters		
Sample Diameter (in)	2.5	2.5
Sample Height (in)	0.75	0.675
Sample Volume (cc)	60.33	54.29
Wt. Wet Sample + Ring (gm)	206.59	199.88
Wt. of Ring (gm)	76.67	76.67
Wt. of Wet Sample (gm)	129.92	123.21
Wet Density (pcf)	134.38	141.61
Wet Density (g/cc)	2.15	2.27
Water Content (%)	19.39	13.22
Wt. of Dry Sample (gm)	108.82	108.82
Dry Density (pcf)	112.55	125.08
Dry Density (g/cc)	1.80	2.00
Void Ratio	0.4969	0.3470
Saturation (%)	105.36	102.87
Specific Gravity	2.70	*Assumed*

C_v Test Data Summary

Load Increment (tsf)	Dial Reading @ t_{50} (div)	Machine Deflection (div)	Corrected Dial Reading @ t_{50} (div)	Sample Height @ t_{50} (cm)	Time t_{50} (min.)	C_v (cm^2/sec)
0 - 0.125	175.5	3.2	172.3	1.861	**19**	**0.00015**
0.125-0.25	348.4	6.6	341.8	1.818	**7**	**0.00039**
0.25-0.5	392.0	11.7	380.3	1.808	**2.8**	**0.00096**
0.5-1.0	453.2	18.5	434.7	1.795	**1.2**	**0.00220**
1.0-2.0	529.8	28.5	501.3	1.778	**0.68**	**0.00381**
2.0-4.0	617.4	41.2	576.2	1.759	**0.4**	**0.00635**
4.0-1.0	NA	30.8	NA	NA	**NA**	**NA**
1.0-0.125	606.4	9.7	596.7	1.753	**0.5**	**0.00505**
0.125-0.25	NA	13.3	NA	NA	**NA**	**NA**
0.25-0.5	NA	17.5	NA	NA	**NA**	**NA**
0.5-1.0	NA	21.6	NA	NA	**NA**	**NA**
1.0-2.0	NA	29.4	NA	NA	**NA**	**NA**
2.0-4.0	665.3	41.6	623.7	1.747	**1.4**	**0.00179**
4.0-8.0	730.0	53.3	676.7	1.733	**0.35**	**0.00704**
8.0-16.0	838.5	63.7	774.8	1.708	**0.22**	**0.01089**
16.0-4.0	NA	51.3	NA	NA	**NA**	**NA**
4.0-1.0	807.6	36.7	770.9	1.709	**0.7**	**0.00343**
1.0-0.125	NA	10.4	NA	NA	**NA**	**NA**

Tested By TM *Date* 4/3/02 *Checked By* GO *Date* 4-3-02

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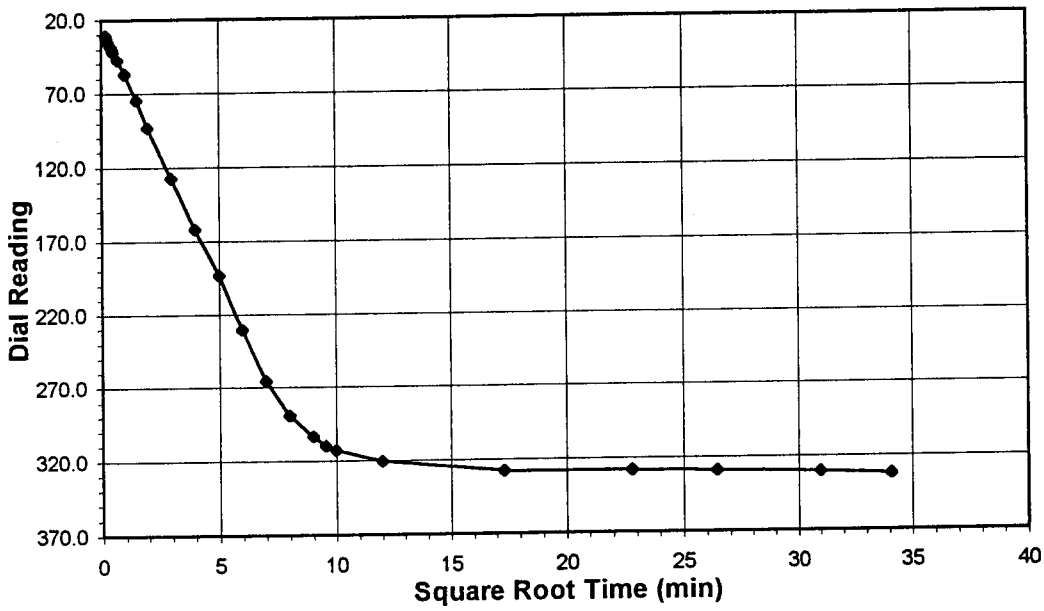
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

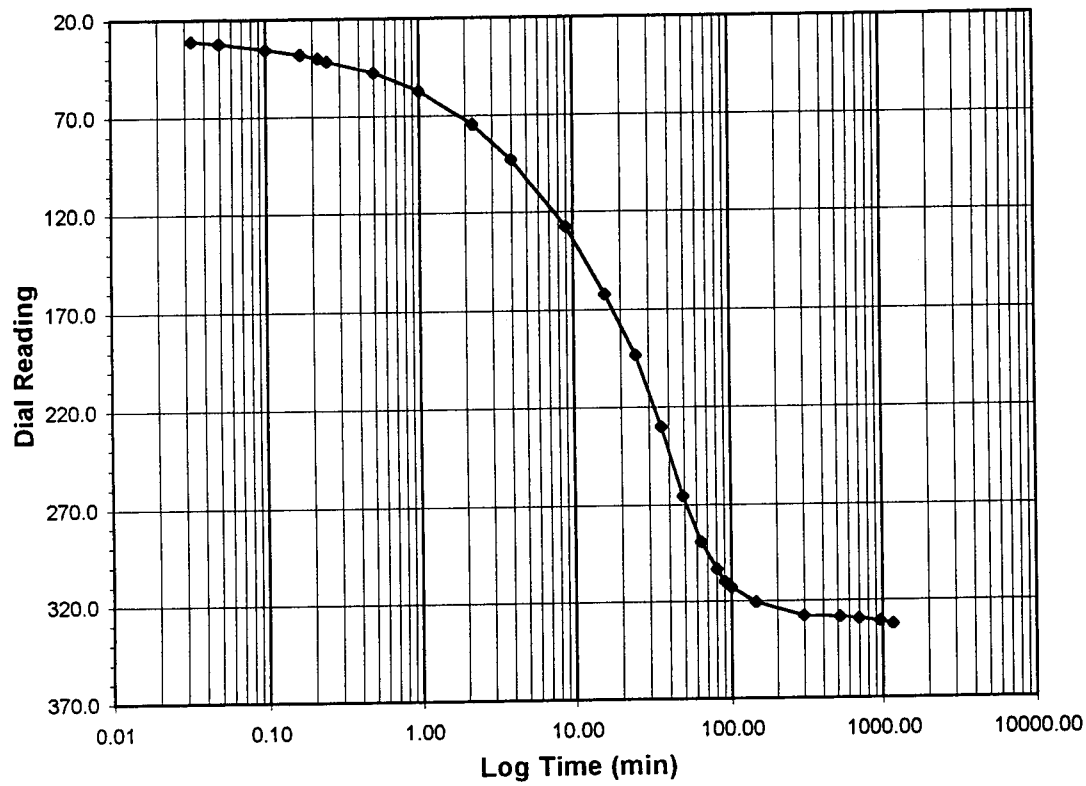
Client	DAVID GARRETT	Boring No.	B-1
Client Project	PITT COUNTY	Depth (ft)	11.0-11.1
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Visual Description	GRAY SILTY SAND

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**0-0.125**
Final Reading	**(div)**	**332.1**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/11/02
Start Time		14:18:06

Elapsed Time (min)	Dial Reading (div)
Initial	**0.0**
0.03	30.9
0.05	32.3
0.10	35.5
0.17	38.3
0.22	40.1
0.25	41.9
0.50	47.6
1.00	57.0
2.25	74.8
4.00	93.0
9.02	127.3
16.02	162.0
25.00	193.2
36.00	230.2
49.00	265.5
64.00	289.3
81.00	303.4
91.07	309.8
100.00	312.7
144.00	320.4
300.02	327.7
520.00	328.5
700.00	329.2
960.00	330.5
1163.08	332.1



Tested By TM *Date* 2/11/02 *Checked By* GO *Date* 2/20/02

DCN: CT-24E Date: 3/2/98 Revision: 2

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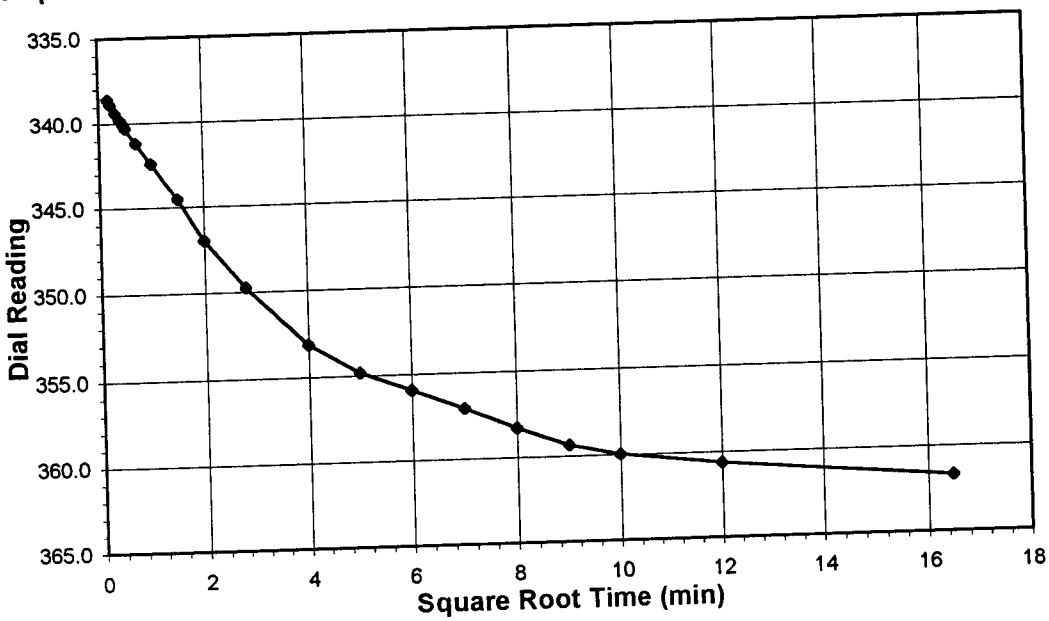
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

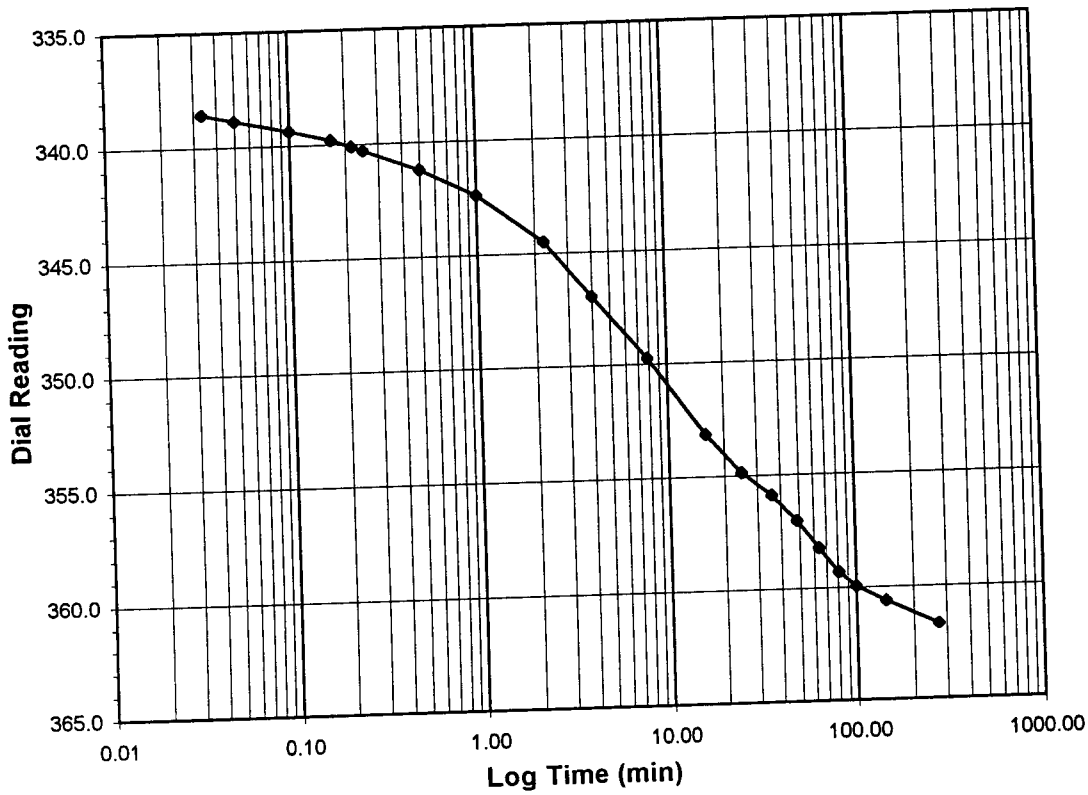
Client	DAVID GARRETT	Boring No.	B-1
Client Project	PITT COUNTY	Depth (ft)	11.0-11.1
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Visual Description	GRAY SILTY SAND

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**0.125-0.25**
Final Reading	**(div)**	**361.7**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/12/02
Start Time		9:50:23

Elapsed Time (min)	Dial Reading (div)
Initial	**332.1**
0.03	338.6
0.05	338.9
0.10	339.4
0.17	339.8
0.22	340.1
0.25	340.3
0.50	341.2
1.00	342.4
2.25	344.5
4.00	347.0
7.85	349.8
16.00	353.1
25.00	354.8
36.00	355.9
49.00	357.0
64.00	358.2
81.00	359.3
100.00	360.0
144.00	360.6
272.07	361.7



Tested By TM *Date* 2/12/02 *Checked By* GU *Date* 2/20/02

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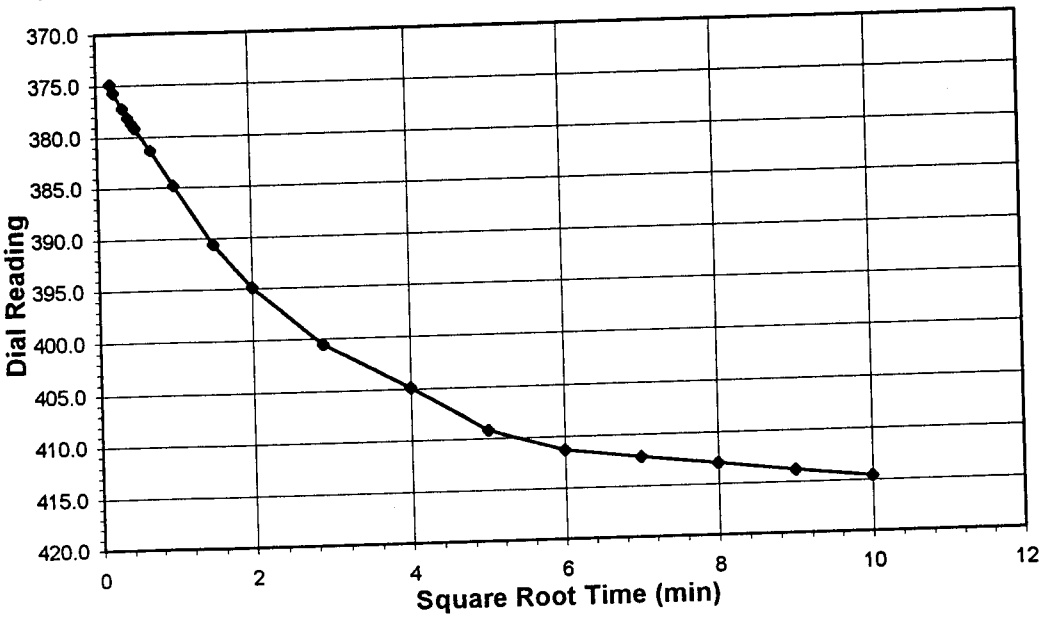
ASTM D 2435-96 (SOP-S24A)

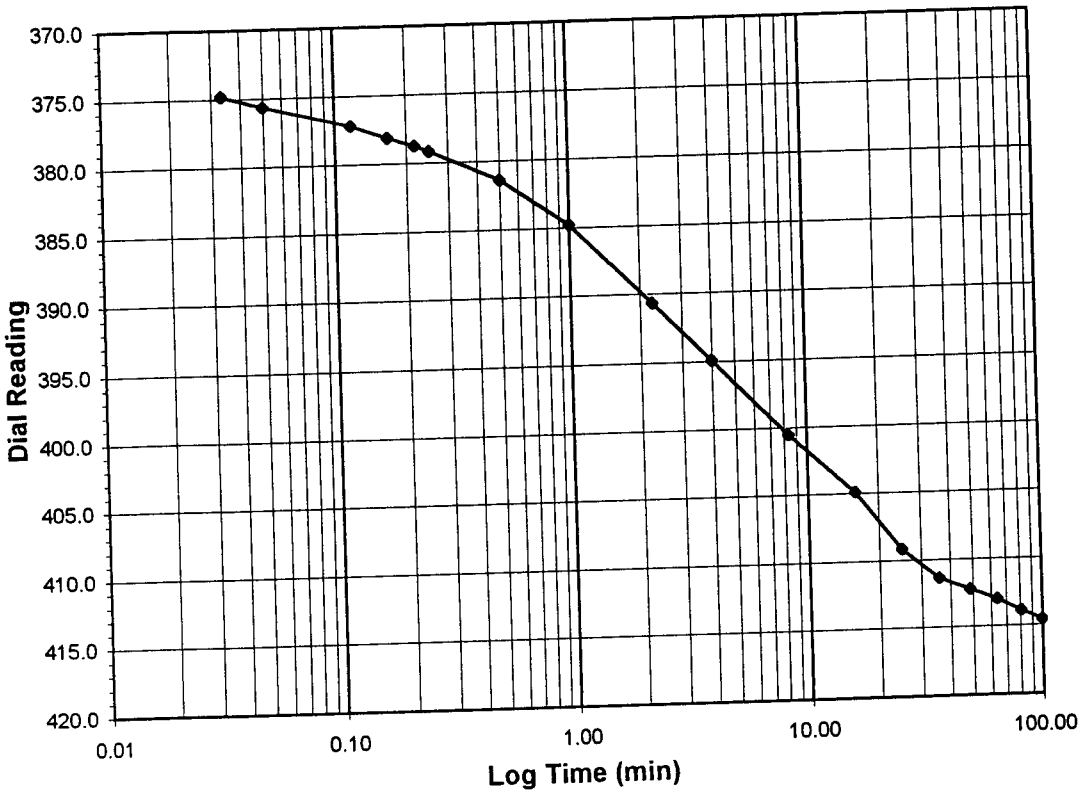
Client	DAVID GARRETT	Boring No.	B-1
Client Project	PITT COUNTY	Depth (ft)	11.0-11.1
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Visual Description	GRAY SILTY SAND

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**0.25-0.5**
Final Reading	**(div)**	**414.6**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/12/02
Start Time		14:31:17

Elapsed Time (min)	Dial Reading (div)
Initial	**361.7**
0.03	374.8
0.05	375.7
0.12	377.2
0.17	378.1
0.22	378.7
0.25	379.1
0.50	381.4
1.00	384.8
2.25	390.6
4.00	394.9
8.35	400.5
16.00	404.9
25.00	409.2
36.00	411.4
49.00	412.2
64.00	413.0
81.00	413.9
100.00	414.6



Tested By TM *Date* 2/12/02 *Checked By* GU *Date* 2/20/02

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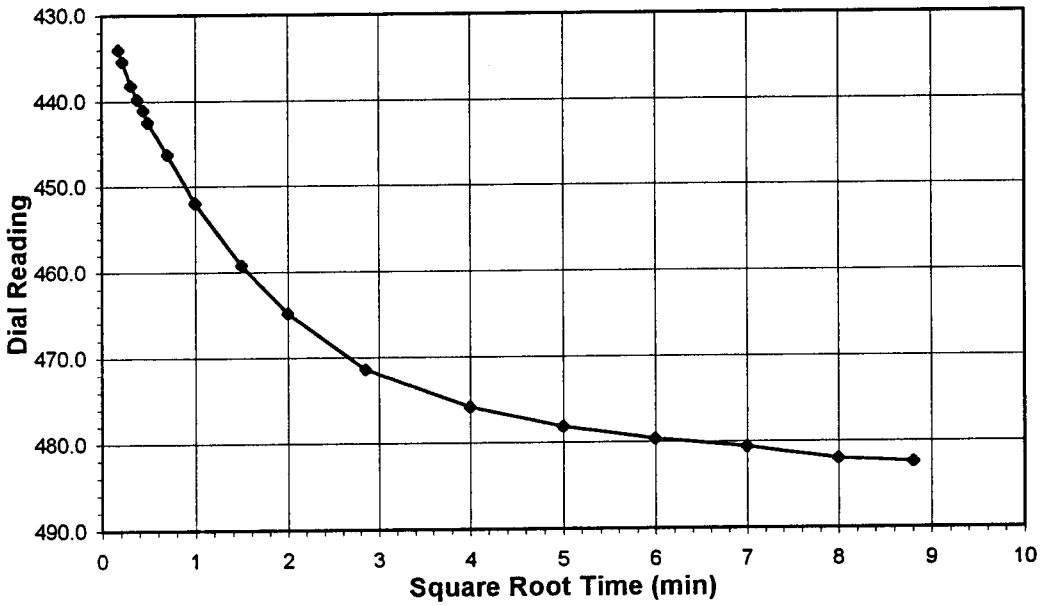
ASTM D 2435-96 (SOP-S24A)

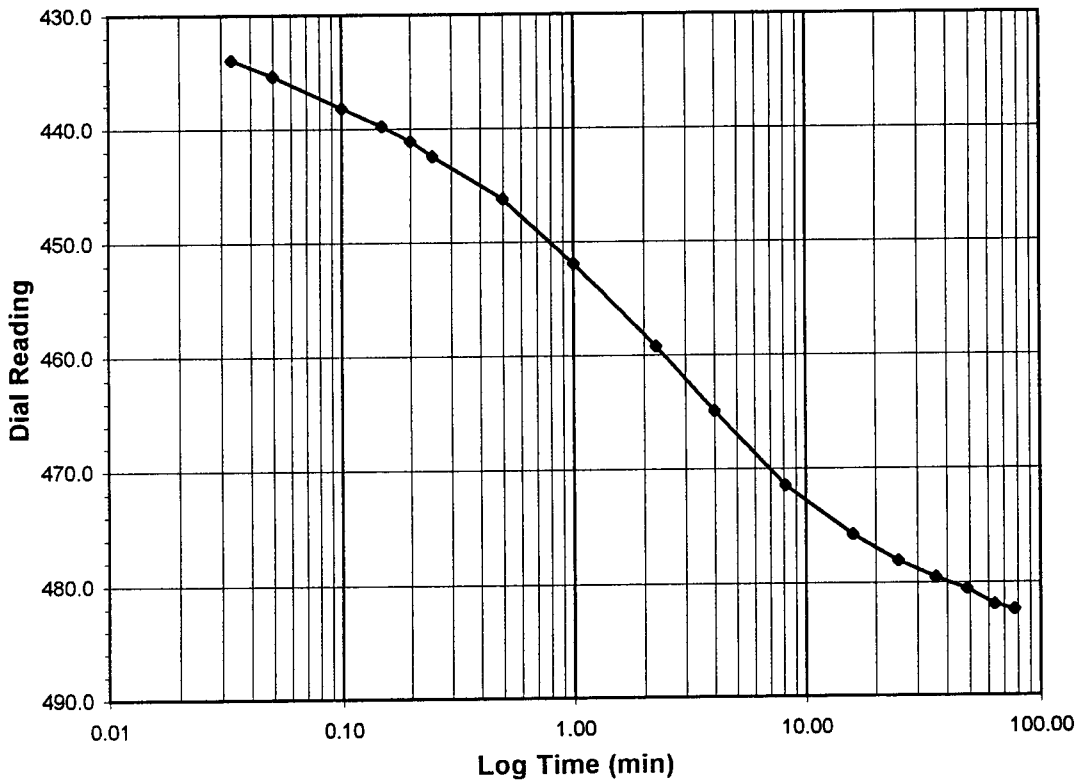
Client	DAVID GARRETT	Boring No.	B-1
Client Project	PITT COUNTY	Depth (ft)	11.0-11.1
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Visual Description	GRAY SILTY SAND

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**0.5-1.0**
Final Reading	**(div)**	**482.4**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/12/02
Start Time		16:21:12

Elapsed Time (min)	Dial Reading (div)
Initial	**414.6**
0.03	434.0
0.05	435.4
0.10	438.2
0.15	439.8
0.20	441.1
0.25	442.5
0.50	446.2
1.00	451.9
2.25	459.2
4.00	464.9
8.15	471.4
16.00	475.8
25.00	478.2
36.00	479.6
49.00	480.6
64.00	482.0
77.62	482.4



Tested By TM *Date* 2/12/02 *Checked By* GU *Date* 2/20/02

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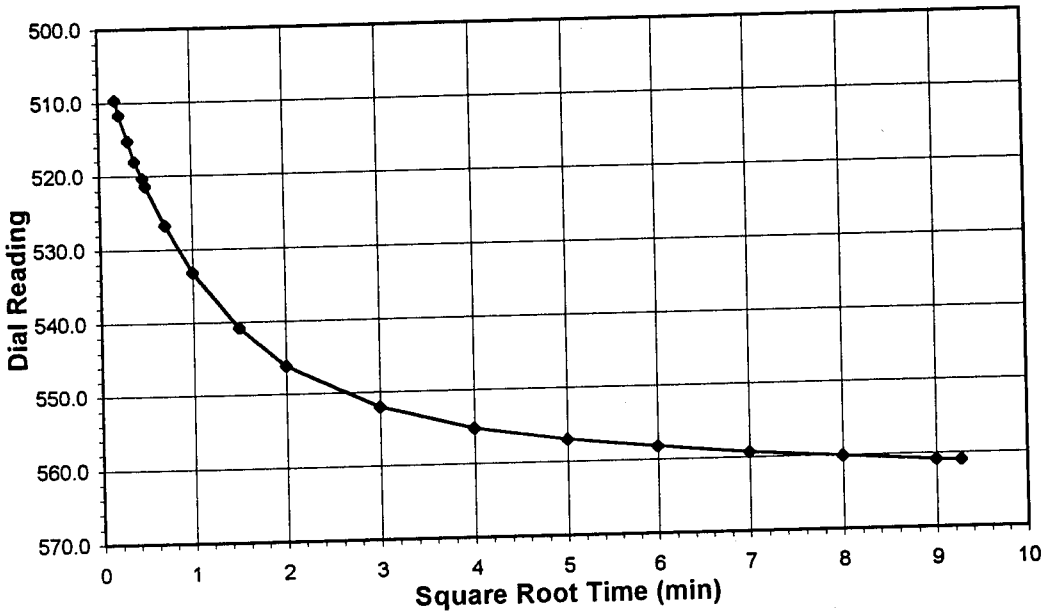
ASTM D 2435-96 (SOP-S24A)

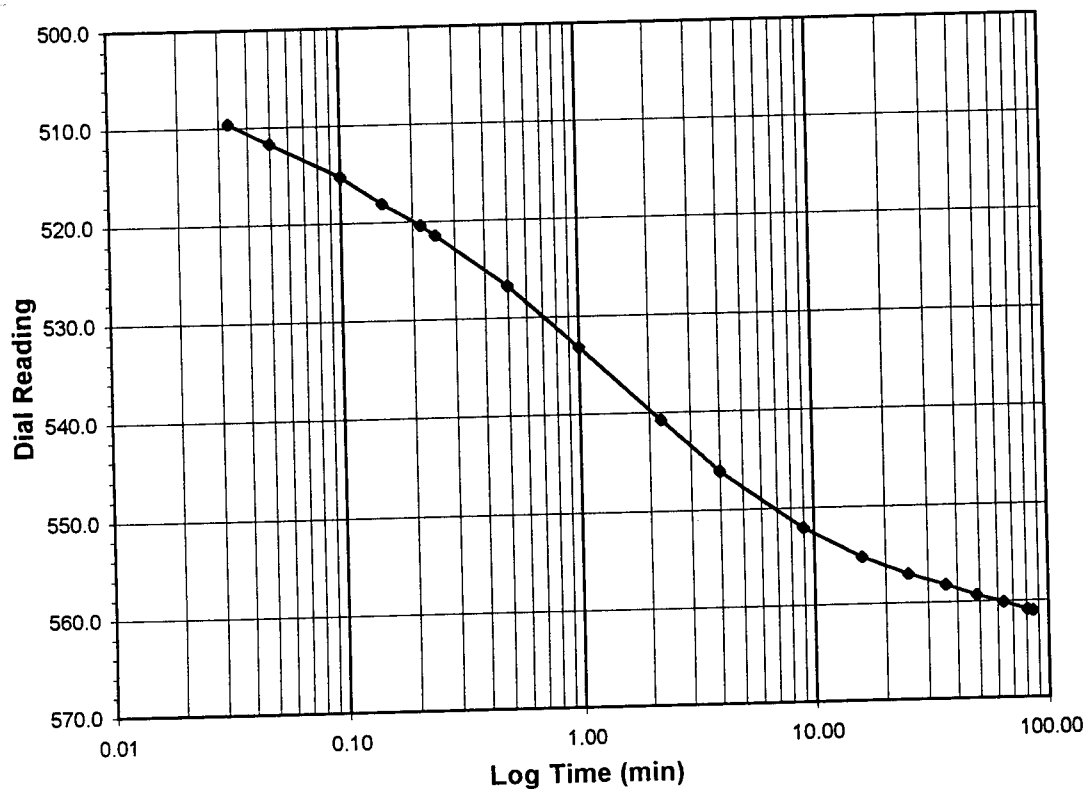
Client	DAVID GARRETT	Boring No.	B-1
Client Project	PITT COUNTY	Depth (ft)	11.0-11.1
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Visual Description	GRAY SILTY SAND

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**1.0-2.0**
Final Reading	**(div)**	**561.0**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/13/02
Start Time		9:26:27

Elapsed Time (min)	Dial Reading (div)
Initial	**482.4**
0.03	509.7
0.05	511.7
0.10	515.3
0.15	518.1
0.22	520.4
0.25	521.4
0.50	526.8
1.00	533.2
2.25	540.8
4.00	546.1
9.02	552.0
16.00	555.2
25.00	557.0
36.00	558.3
49.00	559.3
64.00	560.1
81.00	560.9
86.02	561.0



Tested By *TM* *Date* *2/13/02* *Checked By* GU *Date* 2/20/02

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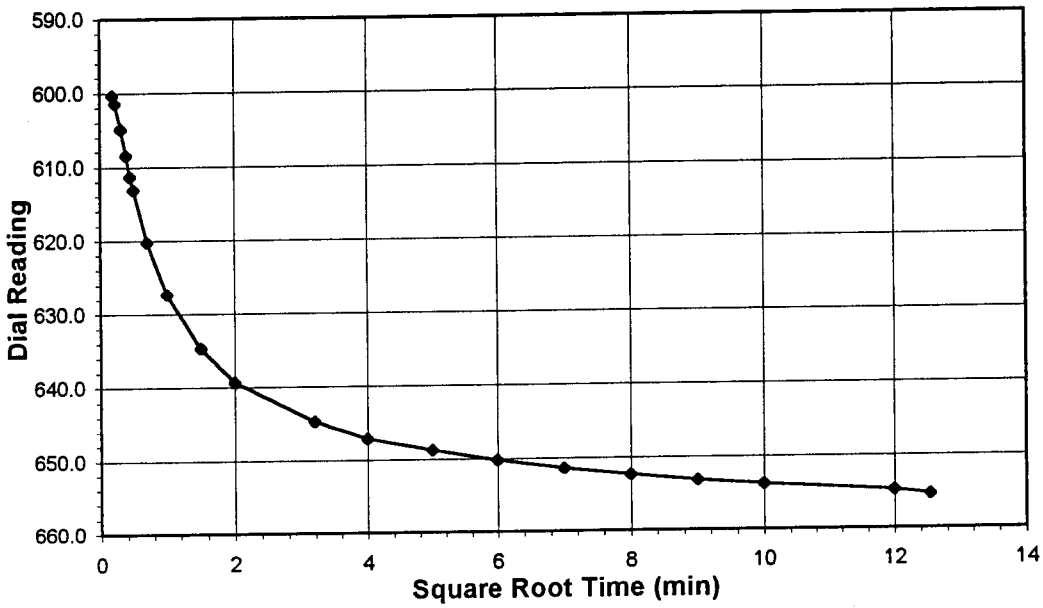
ASTM D 2435-96 (SOP-S24A)

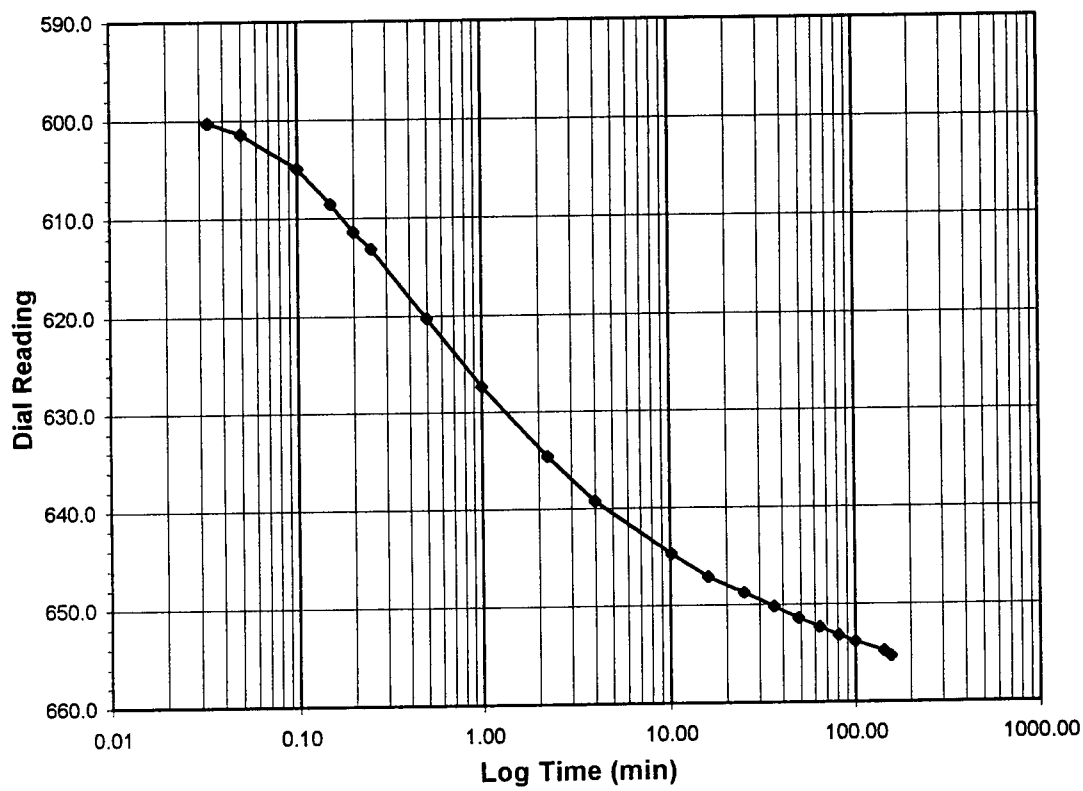
Client	DAVID GARRETT	Boring No.	B-1
Client Project	PITT COUNTY	Depth (ft)	11.0-11.1
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Visual Description	GRAY SILTY SAND

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**2.0-4.0**
Final Reading	**(div)**	**655.3**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/13/02
Start Time		10:54:55

Elapsed Time (min)	Dial Reading (div)
Initial	**561.0**
0.03	600.3
0.05	601.4
0.10	604.9
0.15	608.5
0.20	611.3
0.25	613.1
0.50	620.3
1.00	627.3
2.25	634.6
4.00	639.3
10.18	644.7
16.00	647.1
25.00	648.8
36.00	650.2
49.02	651.4
64.00	652.3
81.00	653.2
100.00	653.8
144.00	654.8
157.57	655.3



Tested By TM *Date* 2/13/02 *Checked By* GU *Date* 2/20/02

DCN: CT-24E Date: 3/2/98 Revision: 2

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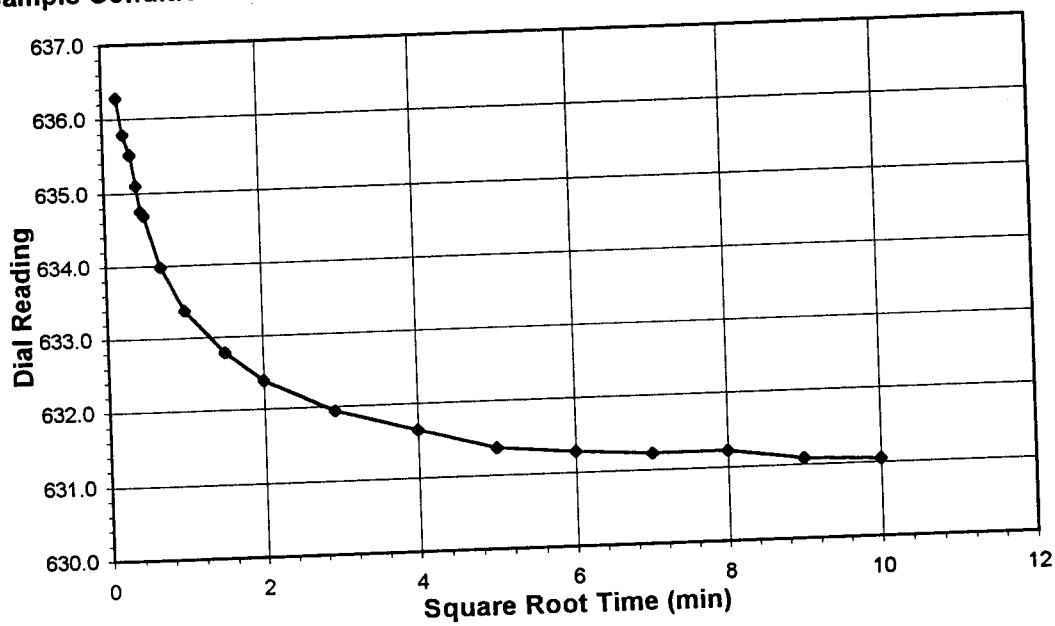
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

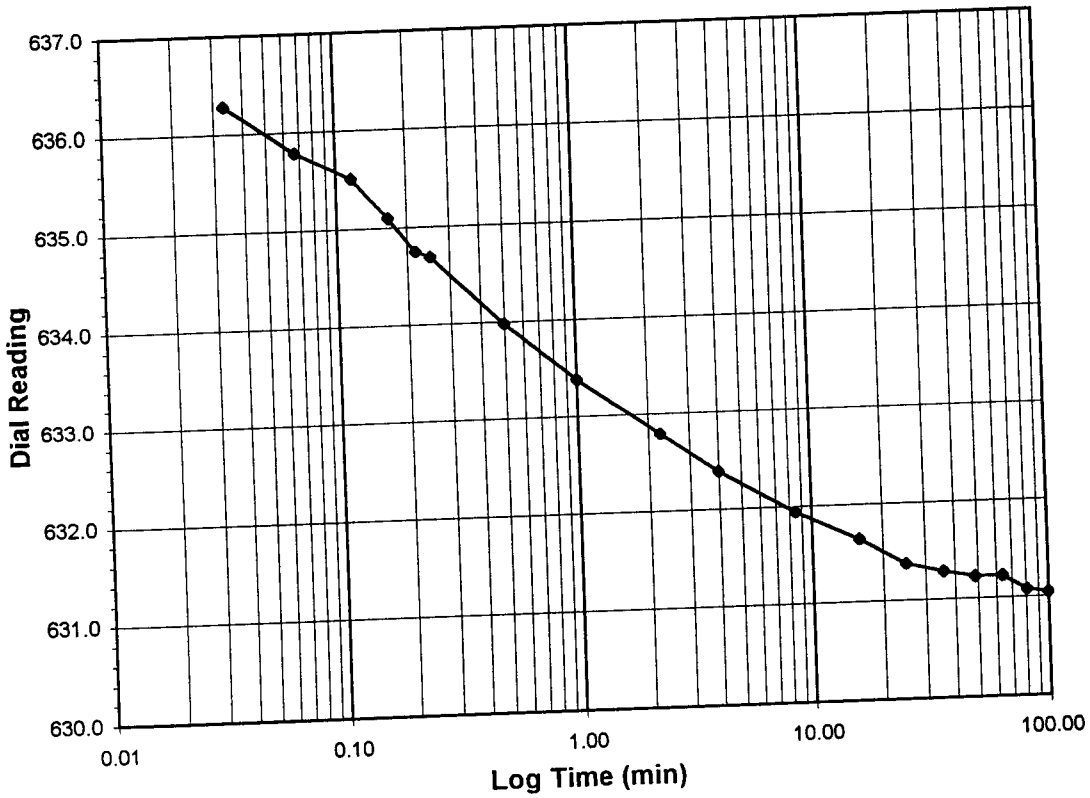
Client	DAVID GARRETT	Boring No.	B-1
Client Project	PITT COUNTY	Depth (ft)	11.0-11.1
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Visual Description	GRAY SILTY SAND

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**4.0-1.0**
Final Reading	**(div)**	**631.1**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/13/02
Start Time		13:34:22

Elapsed Time (min)	Dial Reading (div)
Initial	**655.3**
0.03	636.3
0.07	635.8
0.12	635.5
0.17	635.1
0.22	634.8
0.25	634.7
0.50	634.0
1.00	633.4
2.25	632.8
4.00	632.4
8.52	631.9
16.00	631.6
25.00	631.4
36.00	631.3
49.00	631.2
64.00	631.2
81.00	631.1
100.00	631.1



Tested By *TM* *Date* *2/13/02* *Checked By* GU *Date* 2/20/02

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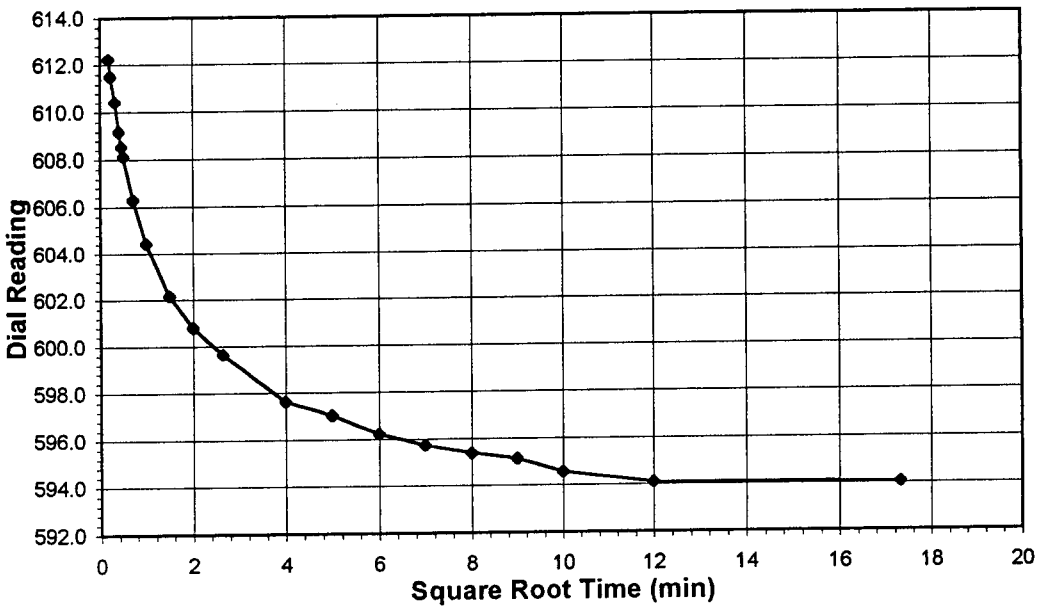
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

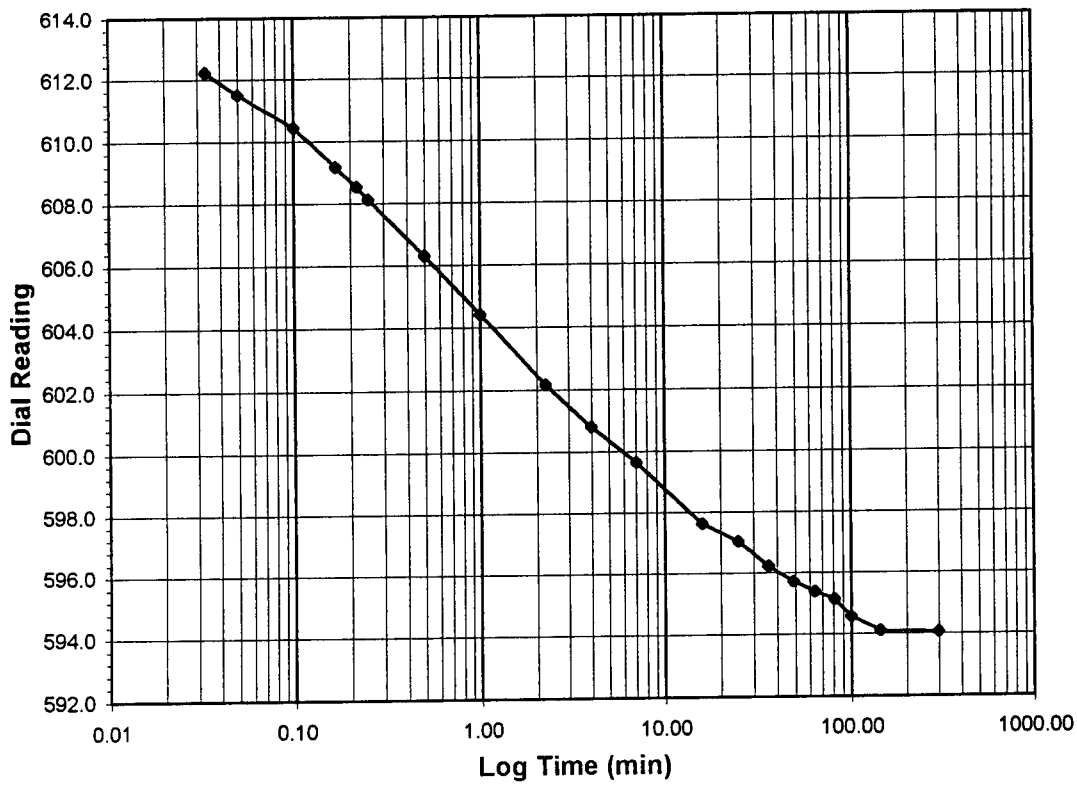
Client	DAVID GARRETT	Boring No.	B-1
Client Project	PITT COUNTY	Depth (ft)	11.0-11.1
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Visual Description	GRAY SILTY SAND

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**1.0-0.125**
Final Reading	**(div)**	**591.5**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/13/02
Start Time		15:18:42

Elapsed Time (min)	Dial Reading (div)
Initial	**631.1**
0.03	612.2
0.05	611.5
0.10	610.4
0.17	609.2
0.22	608.5
0.25	608.1
0.50	606.3
1.00	604.4
2.25	602.2
4.00	600.8
7.03	599.6
16.00	597.6
25.00	597.0
36.00	596.2
49.00	595.7
64.00	595.4
81.00	595.1
100.00	594.6
144.00	594.1
300.00	594.1
700.00	592.3
960.00	591.5



Tested By TM *Date* 2/13/02 *Checked By* GO *Date* 2/20/02

DCN: CT-24E Date: 3/2/98 Revision: 2

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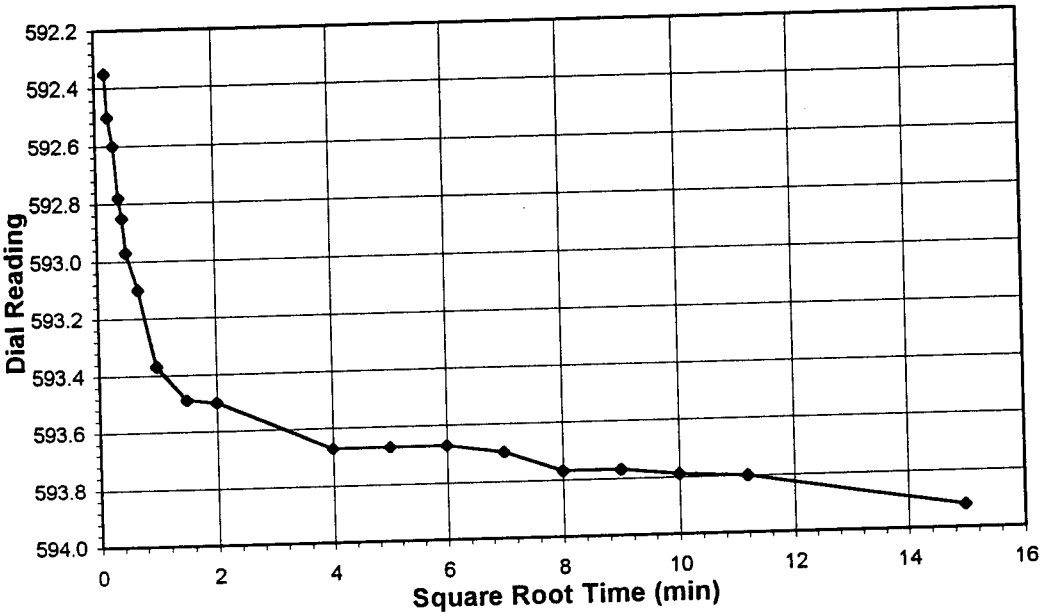
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

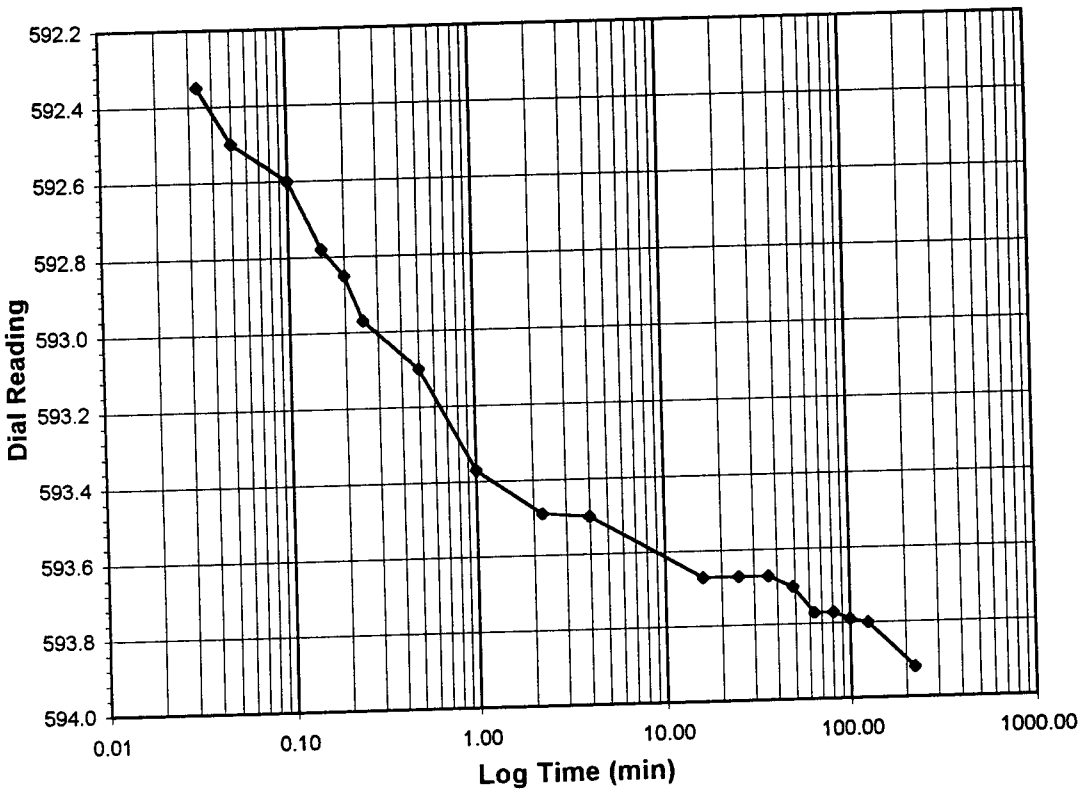
Client	DAVID GARRETT	Boring No.	B-1
Client Project	PITT COUNTY	Depth (ft)	11.0-11.1
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Visual Description	GRAY SILTY SAND

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**0.125-0.25**
Final Reading	**(div)**	**593.9**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/14/02
Start Time		9:58:18

Elapsed Time (min)	Dial Reading (div)
Initial	**591.5**
0.03	592.4
0.05	592.5
0.10	592.6
0.15	592.8
0.20	592.9
0.25	593.0
0.50	593.1
1.00	593.4
2.25	593.5
4.00	593.5
16.00	593.7
25.00	593.7
36.00	593.7
49.02	593.7
64.00	593.8
81.00	593.8
100.02	593.8
125.10	593.8
224.43	593.9



Tested By TM *Date* 2/14/02 *Checked By* GO *Date* 2/20/02

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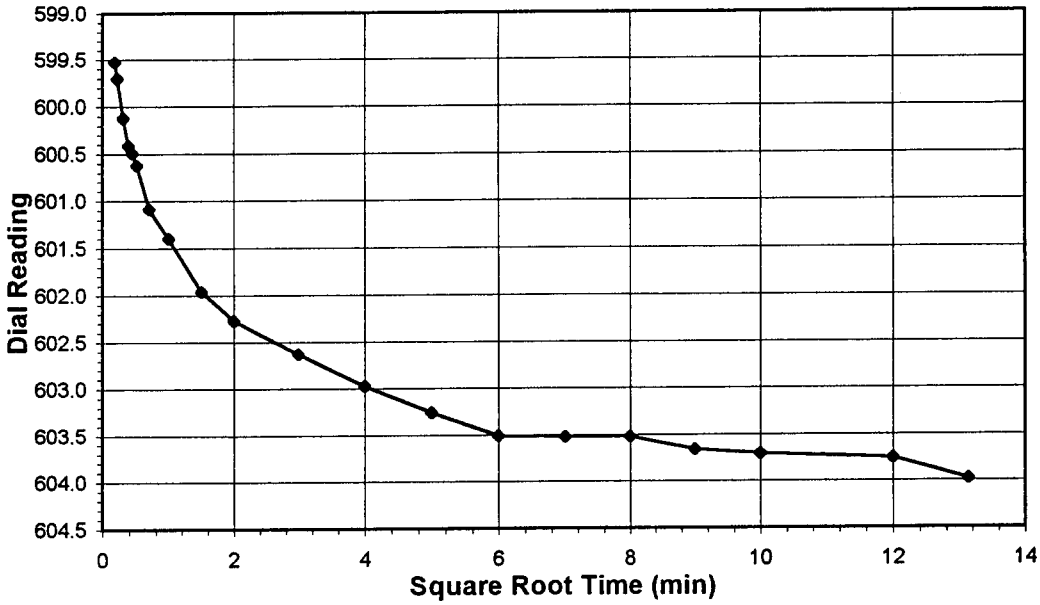
ASTM D 2435-96 (SOP-S24A)

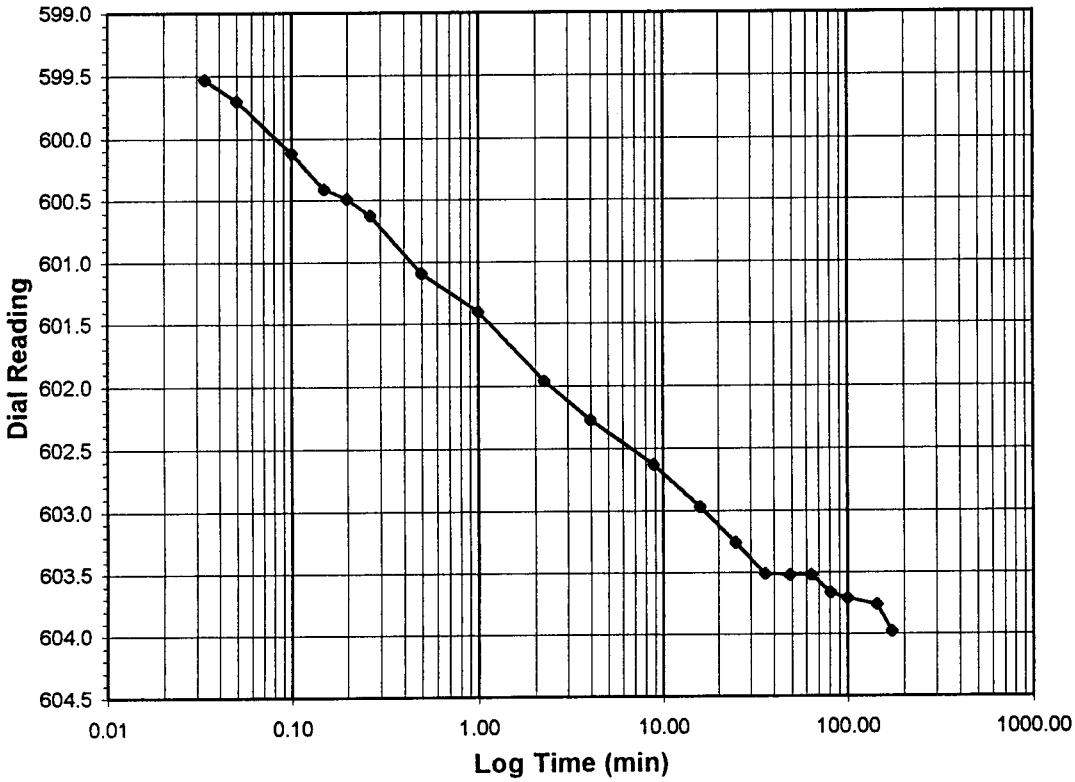
Client	DAVID GARRETT	Boring No.	B-1
Client Project	PITT COUNTY	Depth (ft)	11.0-11.1
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Visual Description	GRAY SILTY SAND

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**0.25-0.5**
Final Reading	**(div)**	**604.0**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/14/02
Start Time		13:57:17

Elapsed Time (min)	Dial Reading (div)
Initial	**593.9**
0.03	599.5
0.05	599.7
0.10	600.1
0.15	600.4
0.20	600.5
0.27	600.6
0.50	601.1
1.00	601.4
2.25	602.0
4.00	602.3
8.92	602.6
16.00	603.0
25.00	603.3
36.00	603.5
49.00	603.5
64.00	603.5
81.00	603.7
100.00	603.7
144.00	603.8
172.70	604.0



Tested By TM *Date* 2/14/02 *Checked By* GU *Date* 2/20/02

 DCN: CT-24E Date: 3/2/98 Revision: 2 *C:\My Documents\CONSOL\MACHINE4\[GARRETTR02011_01_03-10.xls]Sheet1*

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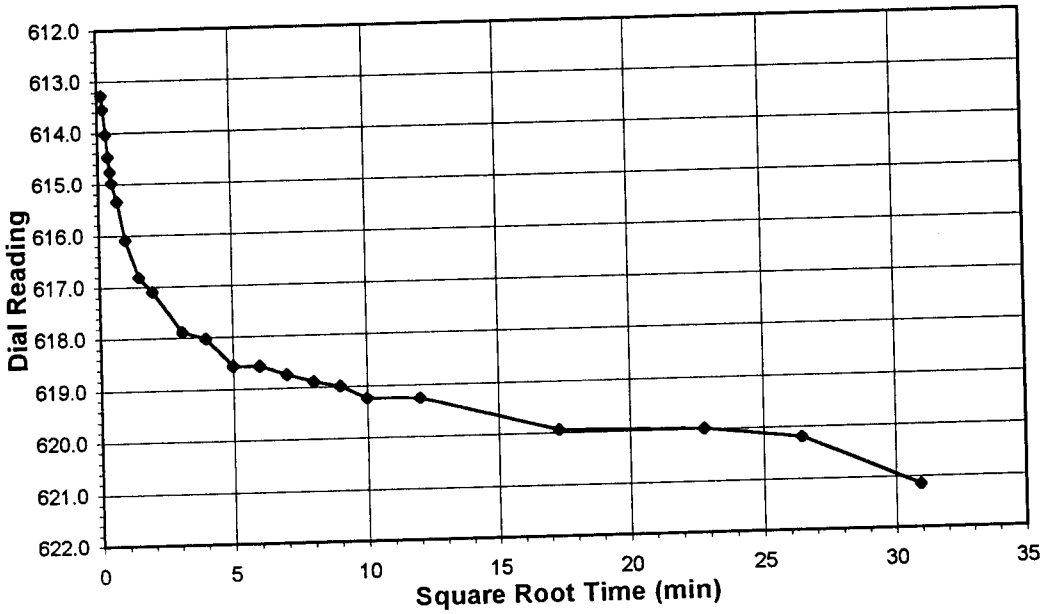
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

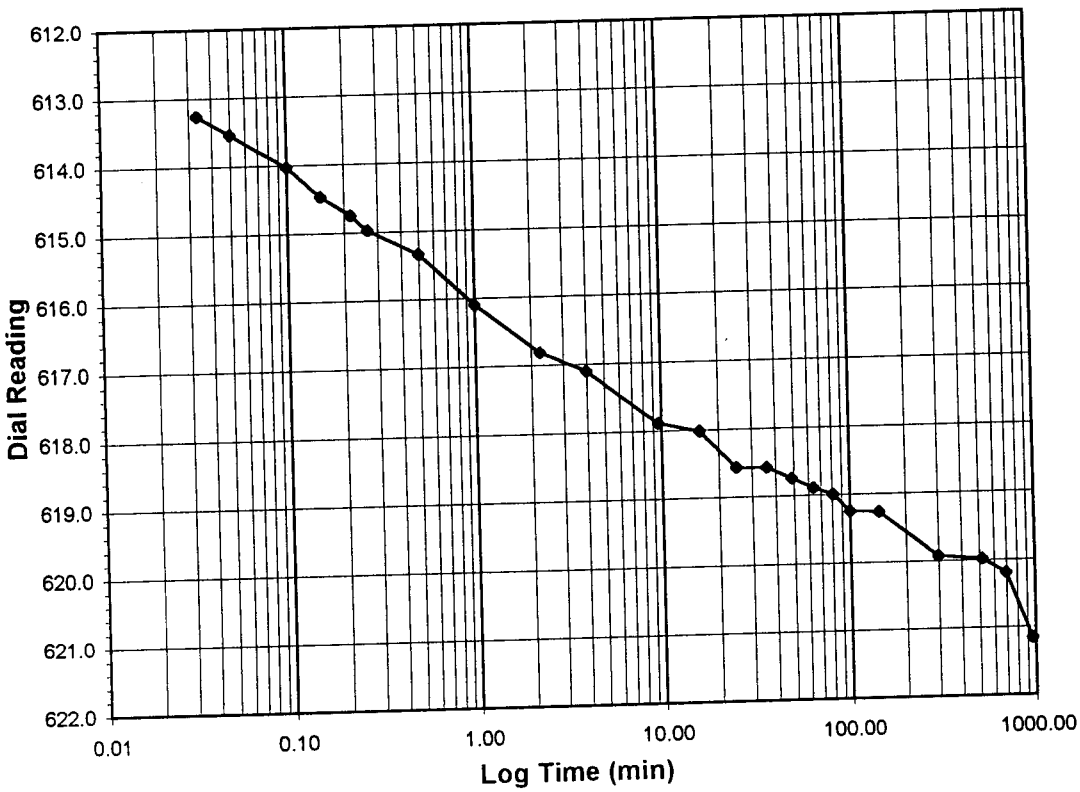
Client	DAVID GARRETT	Boring No.	B-1
Client Project	PITT COUNTY	Depth (ft)	11.0-11.1
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Visual Description	GRAY SILTY SAND

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**0.5-1.0**
Final Reading	**(div)**	**621.2**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/14/02
Start Time		16:58:36

Elapsed Time (min)	Dial Reading (div)
Initial	**604.0**
0.03	613.3
0.05	613.5
0.10	614.0
0.15	614.5
0.22	614.8
0.27	615.0
0.50	615.3
1.00	616.1
2.25	616.8
4.00	617.1
9.60	617.9
16.00	618.0
25.00	618.6
36.00	618.6
49.00	618.7
64.00	618.9
81.00	619.0
100.00	619.2
144.00	619.3
300.00	619.9
520.00	620.0
700.00	620.2
959.12	621.2



Tested By TM *Date* 2/14/02 *Checked By* GU *Date* 2/20/02

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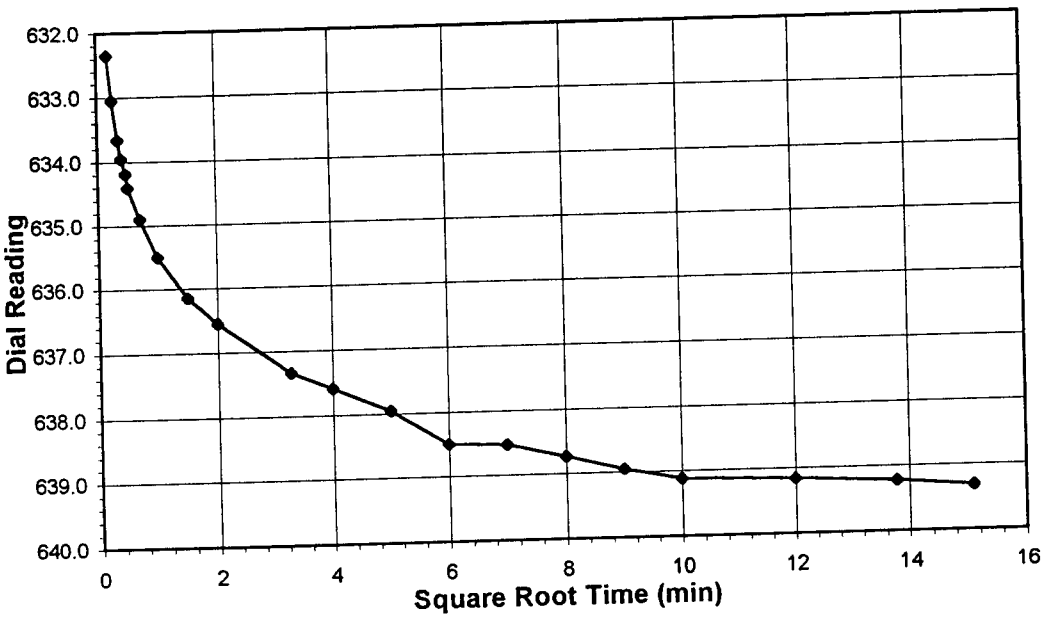
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

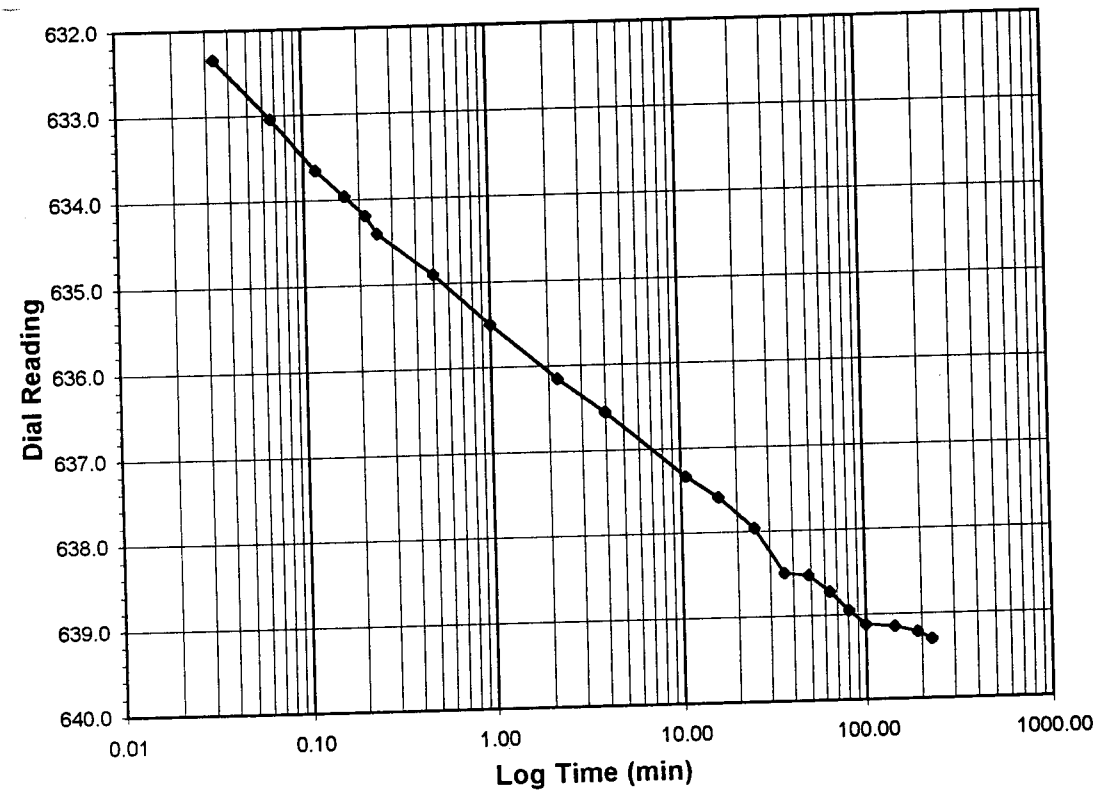
Client	DAVID GARRETT	Boring No.	B-1
Client Project	PITT COUNTY	Depth (ft)	11.0-11.1
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Visual Description	GRAY SILTY SAND

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**1.0-2.0**
Final Reading	**(div)**	**639.3**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/15/02
Start Time		9:14:46

Elapsed Time (min)	Dial Reading (div)
Initial	**621.2**
0.03	632.4
0.07	633.1
0.12	633.7
0.17	634.0
0.22	634.2
0.25	634.4
0.50	634.9
1.00	635.5
2.25	636.2
4.00	636.6
10.72	637.3
16.00	637.6
25.00	638.0
36.00	638.5
49.00	638.5
64.00	638.7
81.00	639.0
100.00	639.1
144.00	639.2
190.03	639.2
228.23	639.3



Tested By TM *Date* 2/15/02 *Checked By* GW *Date* 2/20/02

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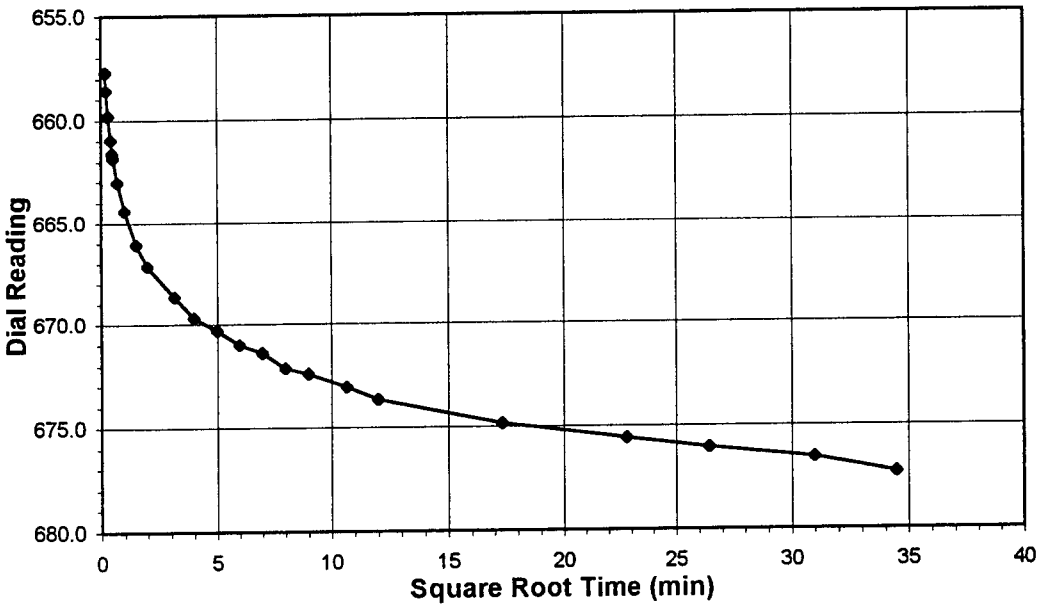
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

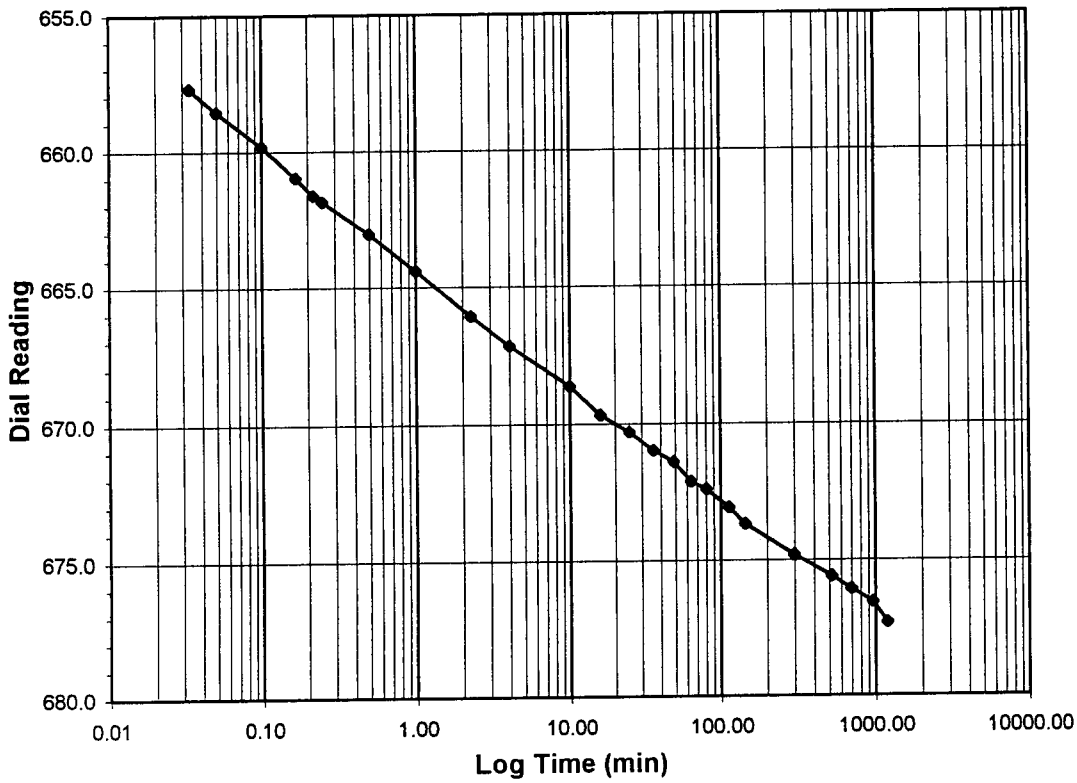
Client	DAVID GARRETT	Boring No.	B-1
Client Project	PITT COUNTY	Depth (ft)	11.0-11.1
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Visual Description	GRAY SILTY SAND

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**2.0-4.0**
Final Reading	**(div)**	**677.3**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/15/02
Start Time		13:07:44

Elapsed Time (min)	Dial Reading (div)
Initial	**639.3**
0.03	657.7
0.05	658.6
0.10	659.8
0.17	661.0
0.22	661.6
0.25	661.8
0.50	663.0
1.00	664.4
2.27	666.1
4.00	667.1
9.97	668.6
16.00	669.7
25.00	670.3
36.00	671.0
49.00	671.4
64.00	672.1
81.00	672.4
113.62	673.1
144.00	673.7
300.00	674.8
520.00	675.6
700.00	676.1
960.00	676.5
1188.40	677.3



Tested By TM *Date* 2/15/02 *Checked By* GU *Date* 2/20/02

DCN: CT-24E Date: 3/2/98 Revision: 2

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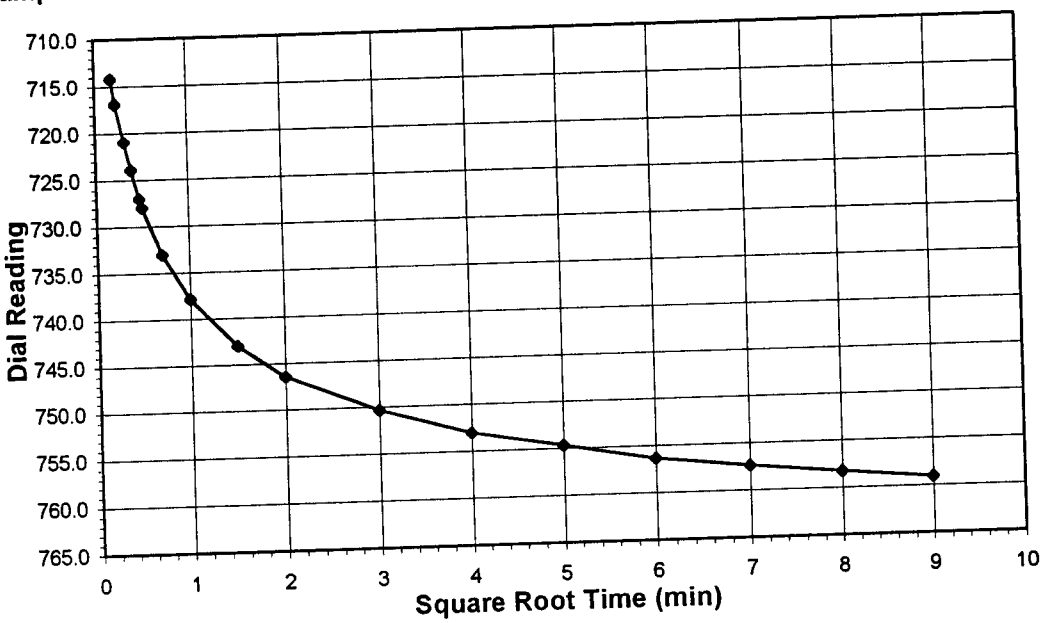
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

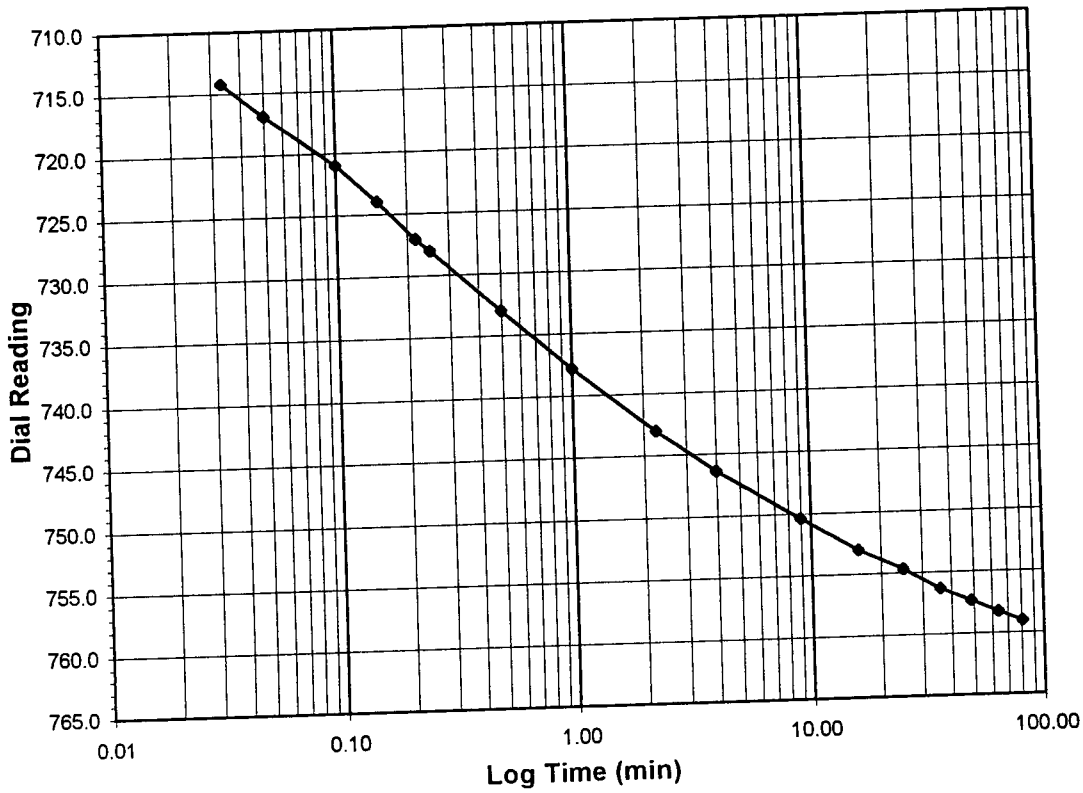
Client	DAVID GARRETT	Boring No.	B-1
Client Project	PITT COUNTY	Depth (ft)	11.0-11.1
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Visual Description	GRAY SILTY SAND

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**4.0-8.0**
Final Reading	**(div)**	**759.0**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/16/02
Start Time		9:13:27

Elapsed Time (min)	Dial Reading (div)
Initial	**677.3**
0.03	714.2
0.05	716.9
0.10	721.0
0.15	724.0
0.22	727.0
0.25	728.0
0.50	733.0
1.00	737.8
2.25	743.0
4.00	746.4
9.02	750.4
16.00	753.0
25.00	754.7
36.00	756.3
49.00	757.4
64.00	758.3
81.00	759.0



Tested By *TM* *Date* *2/16/02* *Checked By* GW *Date* 2/20/02

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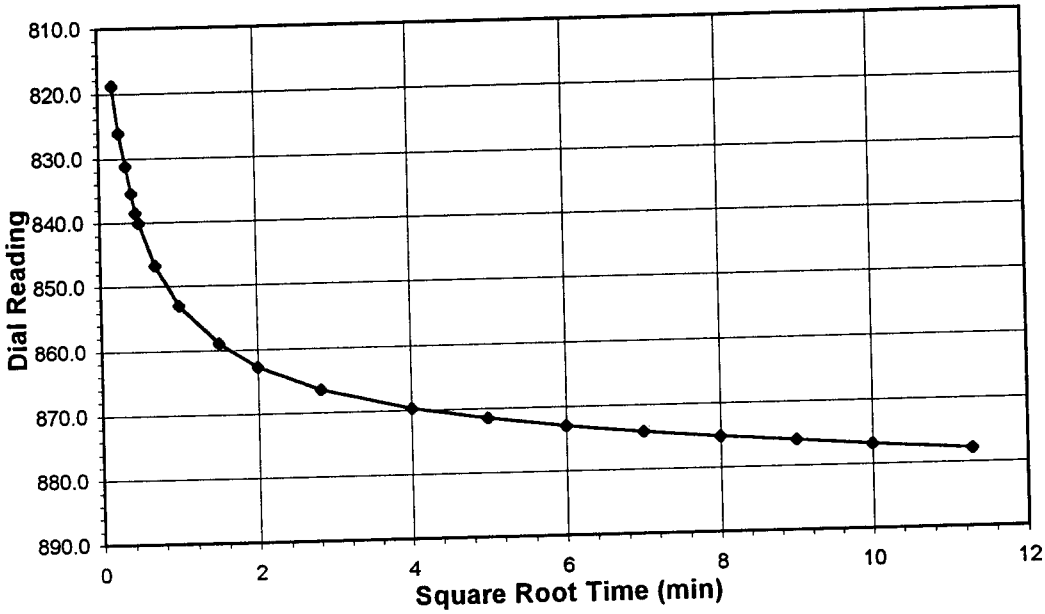
ASTM D 2435-96 (SOP-S24A)

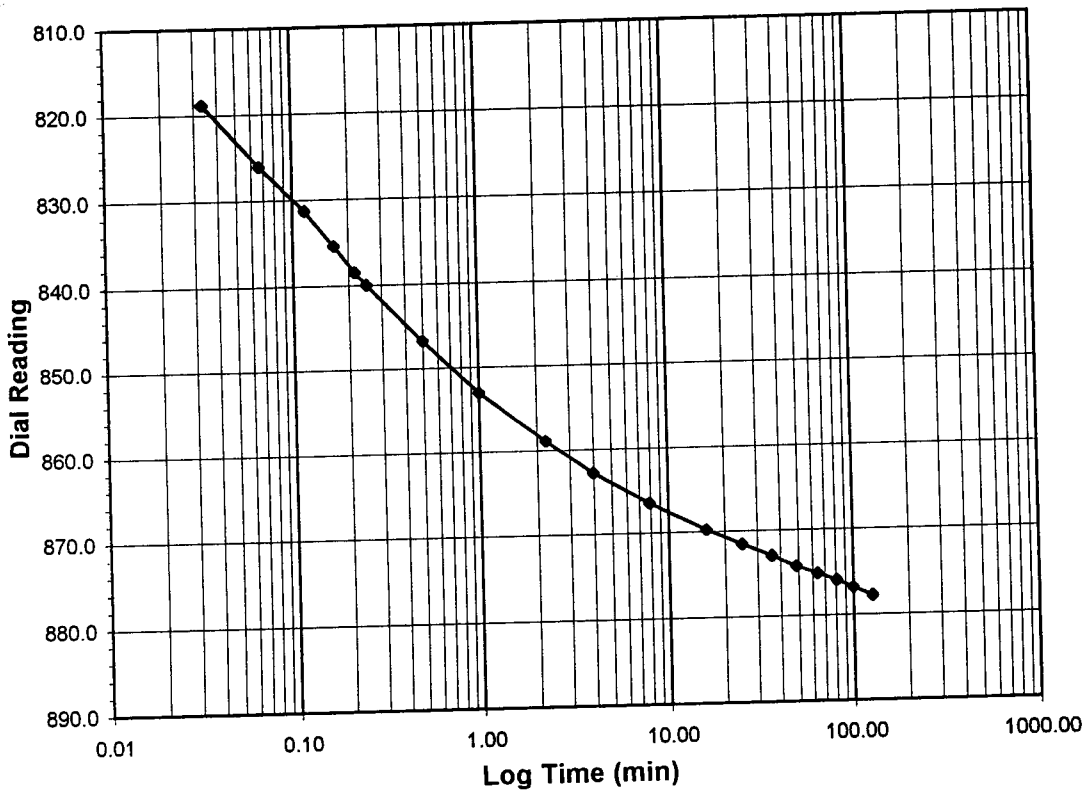
Client	DAVID GARRETT	Boring No.	B-1
Client Project	PITT COUNTY	Depth (ft)	11.0-11.1
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Visual Description	GRAY SILTY SAND

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**8.0-16.0**
Final Reading	**(div)**	**877.8**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/18/02
Start Time		9:18:05

Elapsed Time (min)	Dial Reading (div)
Initial	**759.0**
0.03	818.8
0.07	826.1
0.12	831.3
0.17	835.4
0.22	838.5
0.25	840.1
0.50	846.7
1.00	853.1
2.25	859.0
4.00	862.8
7.93	866.5
16.02	869.8
25.00	871.6
36.00	873.0
49.00	874.2
64.00	875.2
81.00	875.9
100.00	876.9
127.50	877.8



Tested By TM *Date* 2/18/02 *Checked By* GO *Date* 2/20/02

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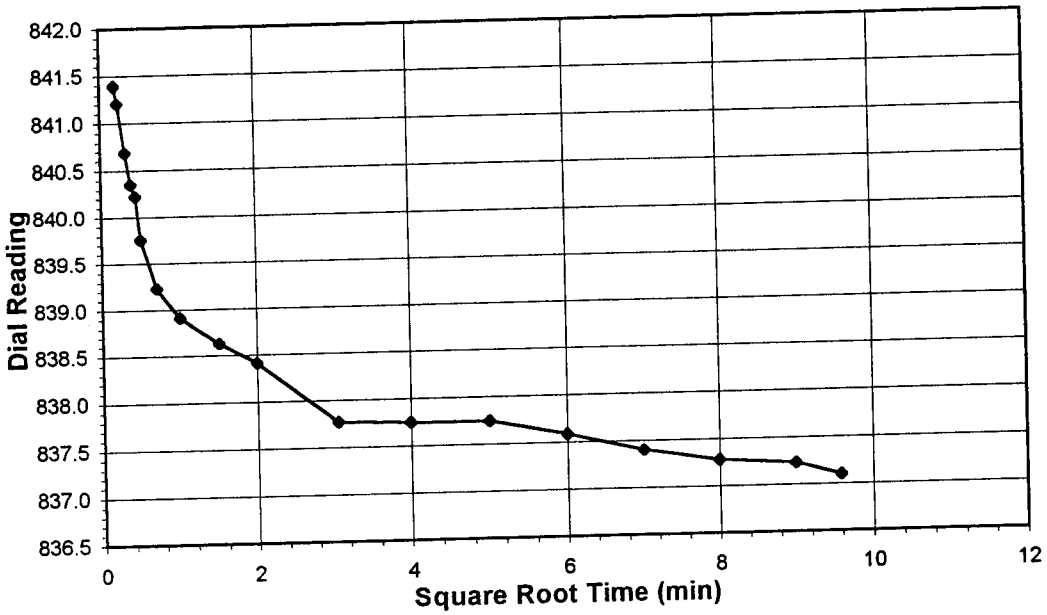
ASTM D 2435-96 (SOP-S24A)

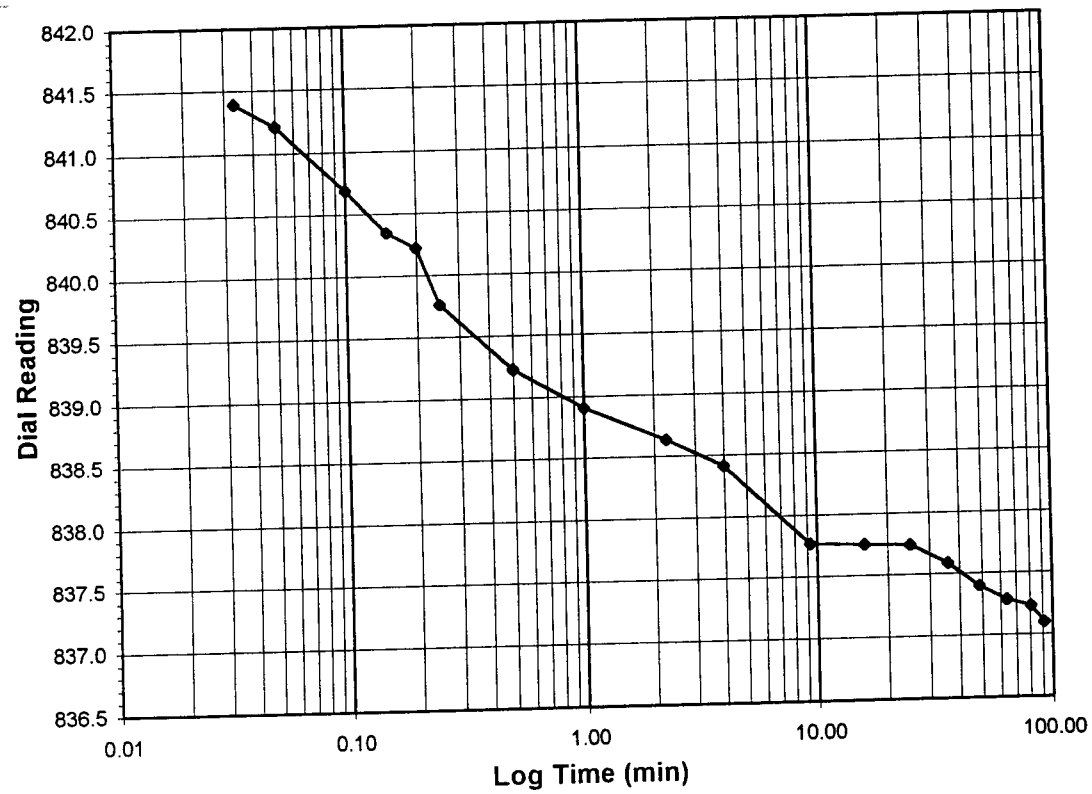
Client	DAVID GARRETT	Boring No.	B-1
Client Project	PITT COUNTY	Depth (ft)	11.0-11.1
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Visual Description	GRAY SILTY SAND

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**16.0-4.0**
Final Reading	**(div)**	**837.1**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/18/02
Start Time		11:28:31

Elapsed Time (min)	Dial Reading (div)
Initial	**877.8**
0.03	841.4
0.05	841.2
0.10	840.7
0.15	840.4
0.20	840.2
0.25	839.8
0.50	839.2
1.00	838.9
2.25	838.6
4.00	838.4
9.35	837.8
16.00	837.8
25.02	837.7
36.00	837.6
49.00	837.4
64.00	837.3
81.00	837.2
91.97	837.1



Tested By TM *Date* 2/18/02 *Checked By* GU *Date* 2/20/02

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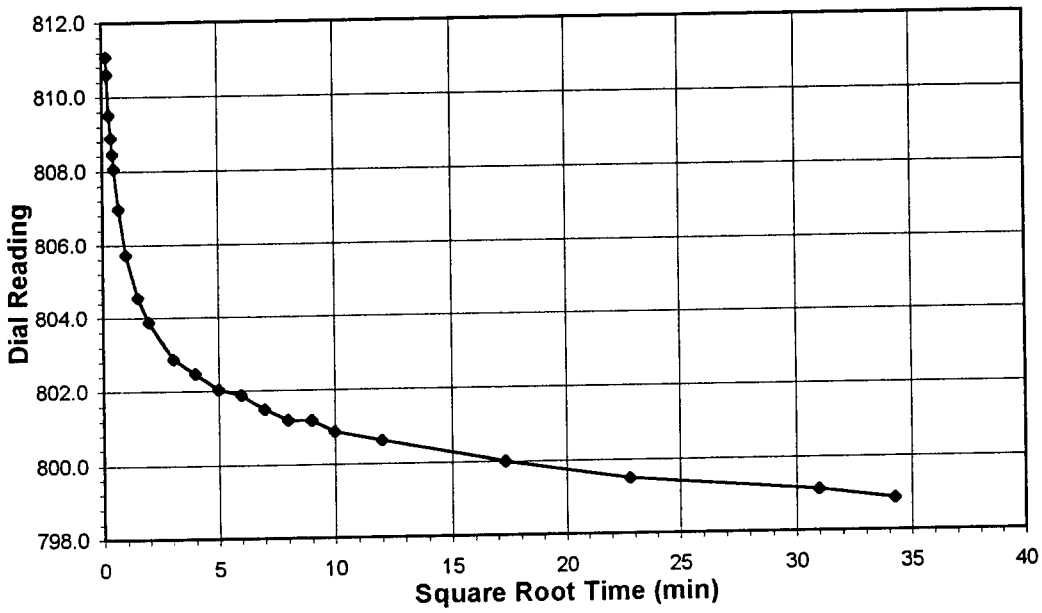
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

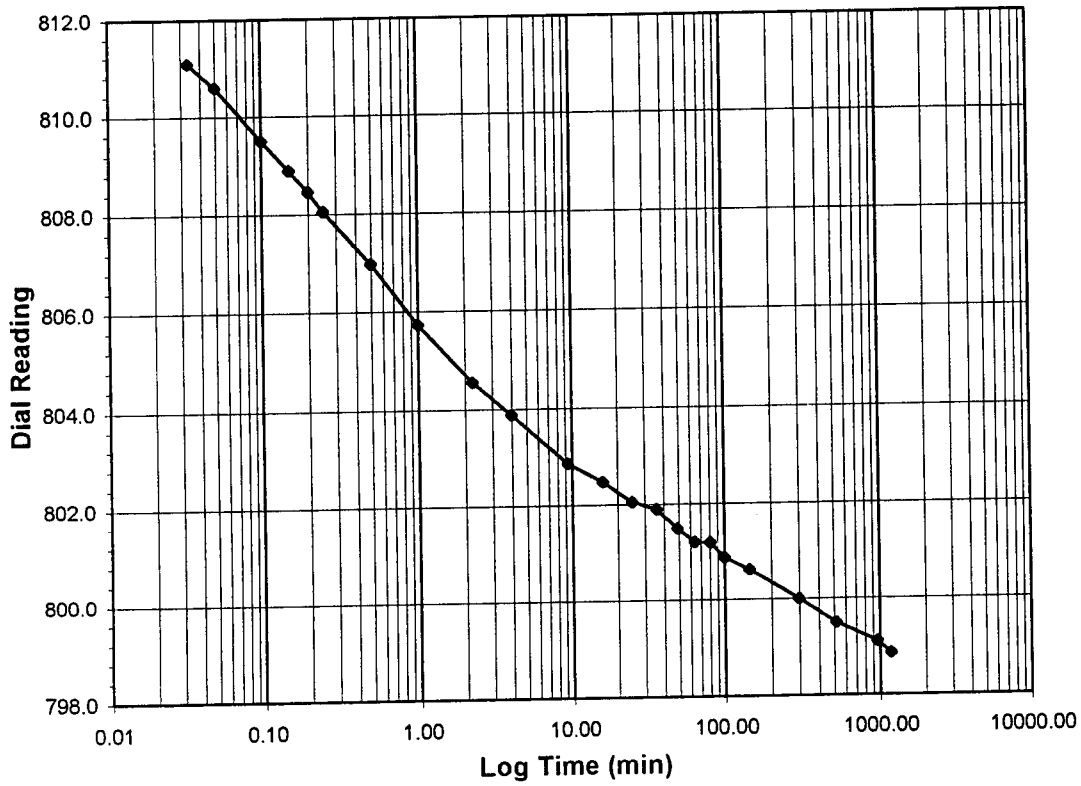
Client	DAVID GARRETT	Boring No.	B-1
Client Project	PITT COUNTY	Depth (ft)	11.0-11.1
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Visual Description	GRAY SILTY SAND

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**4.0-1.0**
Final Reading	**(div)**	**798.9**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/18/02
Start Time		13:03:20

Elapsed Time (min)	Dial Reading (div)
Initial	**837.1**
0.03	811.1
0.05	810.6
0.10	809.5
0.15	808.9
0.20	808.5
0.25	808.1
0.50	807.0
1.00	805.7
2.25	804.6
4.00	803.9
9.32	802.9
16.00	802.5
25.00	802.0
36.00	801.9
49.00	801.5
64.00	801.2
81.00	801.2
100.00	800.9
144.02	800.6
300.00	800.0
520.00	799.5
960.00	799.1
1174.35	798.9



Tested By *TM* *Date* *2/18/02* *Checked By* GU *Date* 2/20/02

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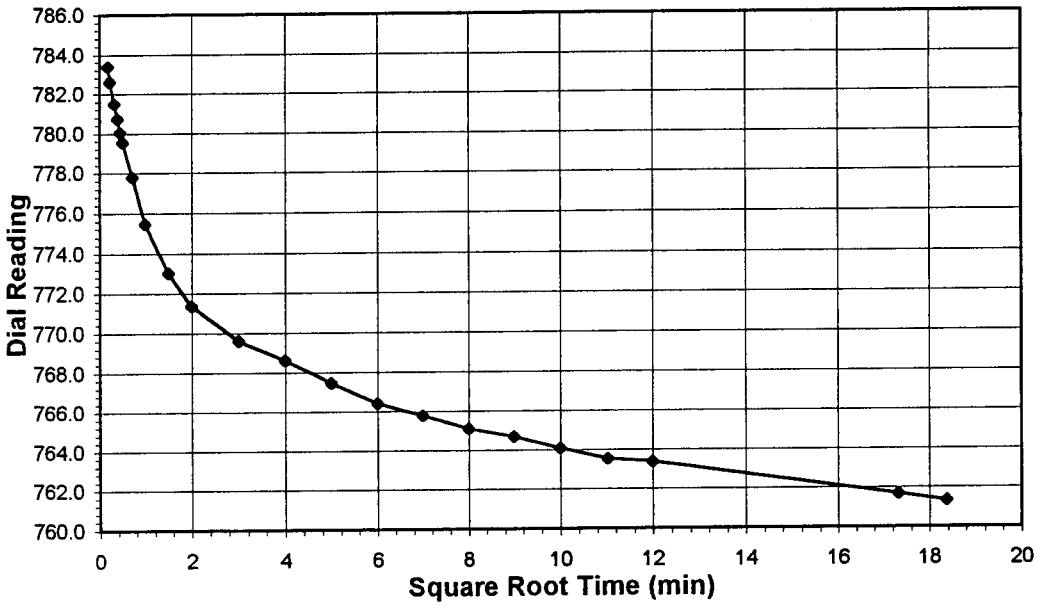
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

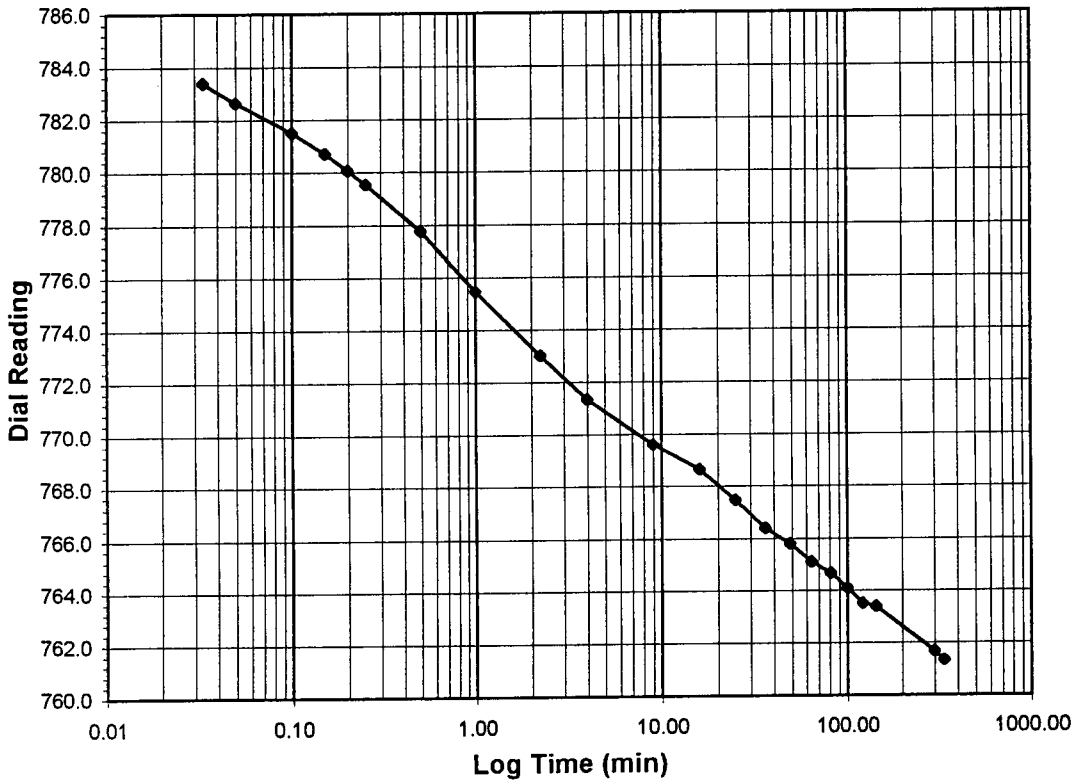
Client	DAVID GARRETT	Boring No.	B-1
Client Project	PITT COUNTY	Depth (ft)	11.0-11.1
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-003	Visual Description	GRAY SILTY SAND

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**1.0-0.125**
Final Reading	**(div)**	**761.4**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/19/02
Start Time		8:41:55

Elapsed Time (min)	Dial Reading (div)
Initial	**798.9**
0.03	783.4
0.05	782.6
0.10	781.5
0.15	780.7
0.20	780.1
0.25	779.6
0.50	777.8
1.00	775.5
2.25	773.0
4.00	771.4
9.02	769.6
16.00	768.6
25.00	767.5
36.00	766.4
49.00	765.8
64.00	765.1
81.00	764.7
100.00	764.1
121.57	763.5
144.00	763.4
300.00	761.7
337.62	761.4



Tested By TM *Date* 2/19/02 *Checked By* GO *Date* 2/20/02

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MOISTURE CONTENT

ASTM D 2216 (SOP-S1)

Client	DAVID GARRETT
Client Reference	PITT COUNTY
Project No.	R02011-01

Lab ID	01	02
Boring No.	B-2	B-8
Depth (ft)	1-5	1-5
Sample No.	NA	NA
Tare Number	1711	400
Wt. of Tare & WS (gm)	311.73	385.55
Wt. of Tare & DS (gm)	256.71	353.64
Wt. of Tare (gm)	83.58	156.65
Wt. of Water (gm)	55.02	31.91
Wt. of DS (gm)	173.13	196.99
Water Content (%)	**31.8**	**16.2**

Notes : *NA*

Tested By *JP* *Date* *2/4/02* *Checked By* *Date* *2/6/02*

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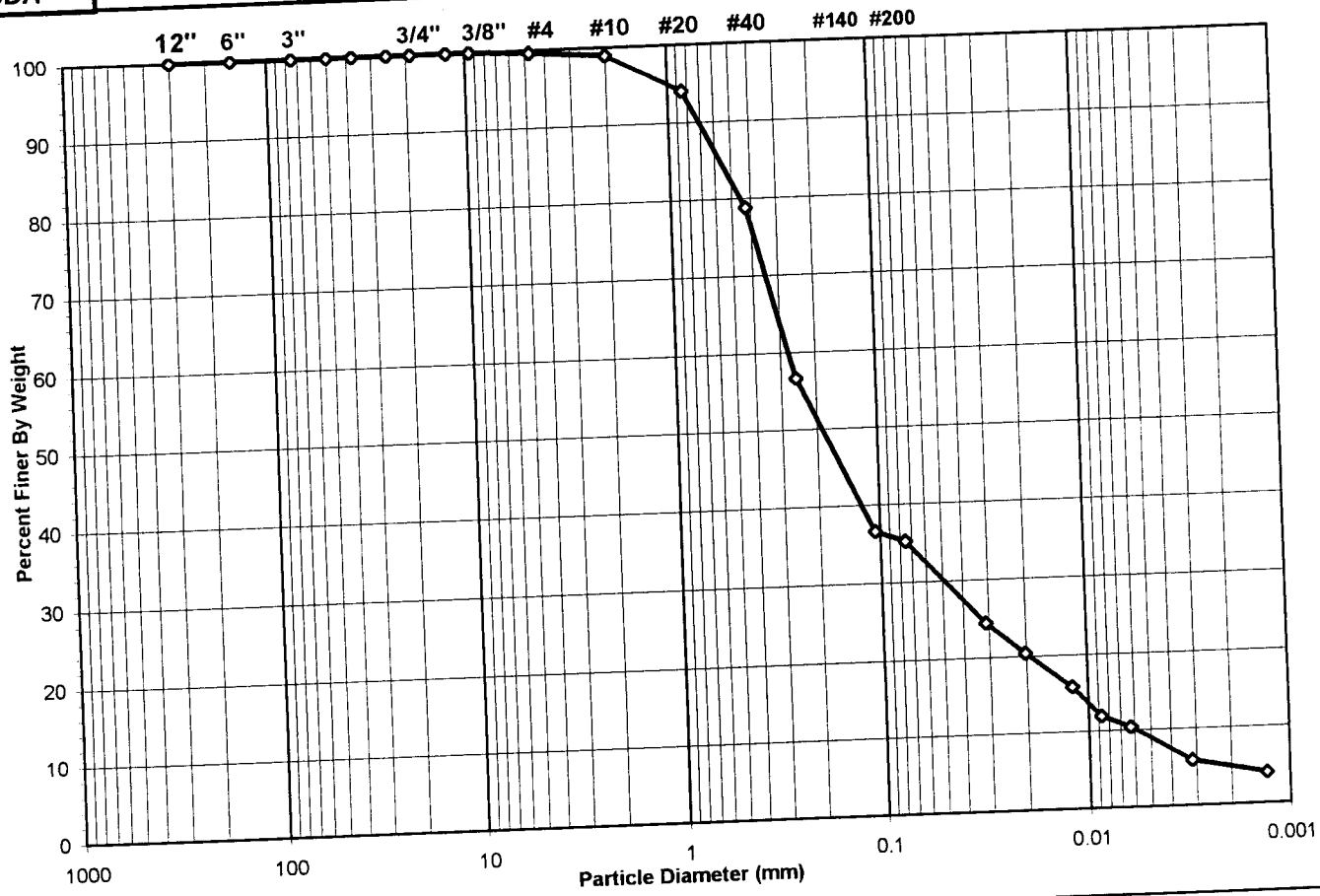
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B-2
Client Reference	PITT COUNTY	Depth (ft)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.001	Soil Color	**BROWN**

	SIEVE ANALYSIS			HYDROMETER	
				silt and clay fraction	
USCS	cobbles	gravel	sand	silt	clay
USDA	cobbles	gravel	sand		



USCS Summary		
Sieve Sizes (mm)		**Percentage**
Greater Than #4	*Gravel*	0.31
#4 To #200	*Sand*	64.46
Finer Than #200	*Silt & Clay*	35.23
USCS Symbol	***SM, TESTED***	
USCS Classification	***SILTY SAND (NON-PLASTIC FINES)***	

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DCN: CT-S3A DATE:02/06/01 REVISION: 4

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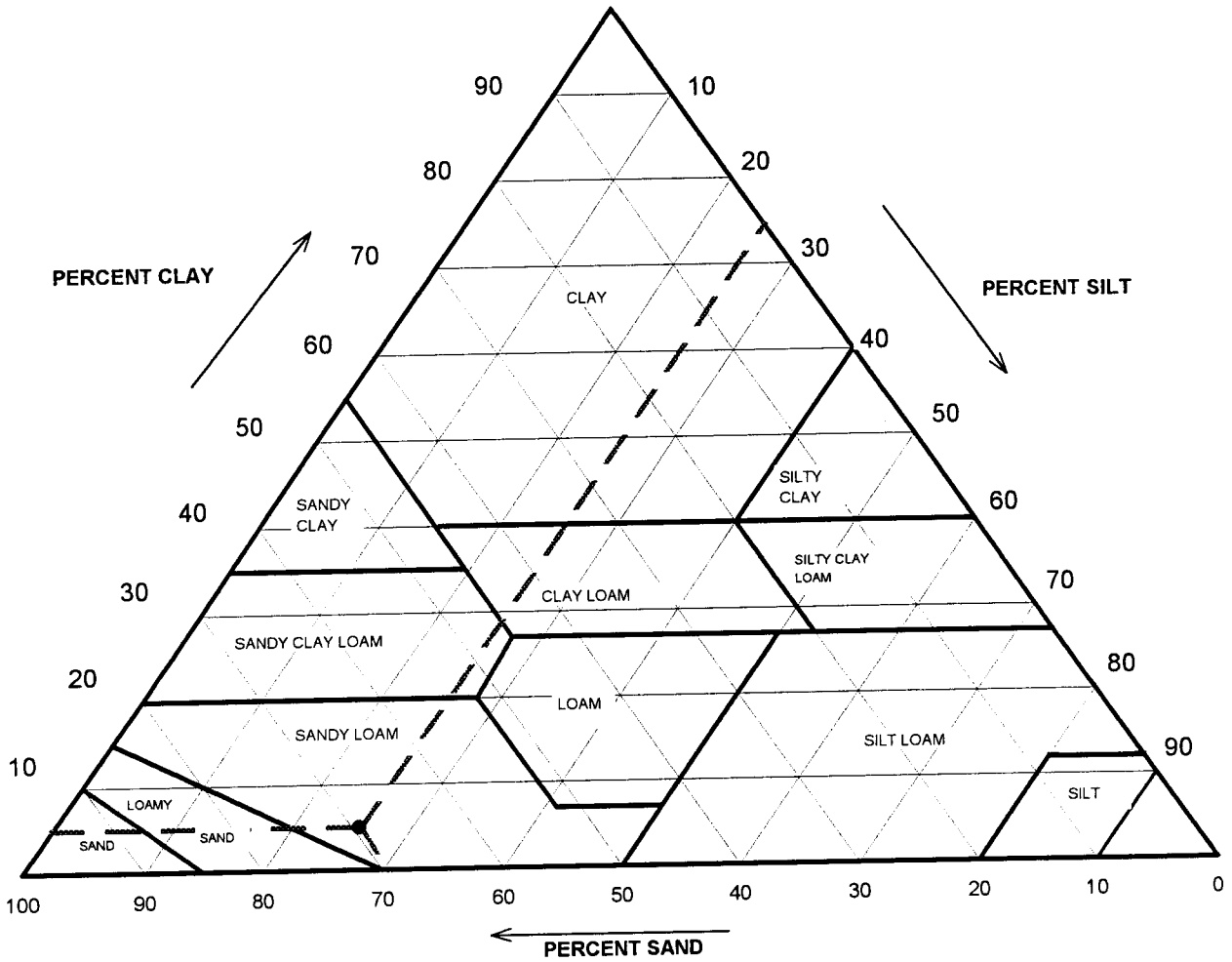
USDA CLASSIFICATION CHART

Client	DAVID GARRETT	Boring No.	B-2
Client Reference	PITT COUNTY	Depth (ft)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.001	Soil Color	BROWN



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
		Gravel	0.95	**0.00**
2	99.05	*Sand*	68.75	**69.42**
0.05	30.29	*Silt*	25.36	**25.61**
0.002	4.93	*Clay*	4.93	**4.98**

USDA Classification ***SANDY LOAM***

DCN: CT-S3A DATE:02/06/01 REVISION: 4

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WASH SIEVE ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B-2
Client Reference	PITT COUNTY	Depth (ft)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.001	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	2467	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	1140.80	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	857.90	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	98.67	Weight of Tare (gm)	NA
Weight of Water (gm)	282.90	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	759.23	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**37.3**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	759.23
Dry Weight - 3/4" Sample (gm)	491.74	Weight of minus #200 material (gm)	267.49
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	491.74
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	2.33	0.31	0.31	99.69	**99.69**
#10	2.00	4.92	0.65	0.95	99.05	**99.05**
#20	0.85	37.37	4.92	5.88	94.12	**94.12**
#40	0.425	116.33	15.32	21.20	78.80	**78.80**
#60	0.250	168.49	22.19	43.39	56.61	**56.61**
#140	0.106	151.53	19.96	63.35	36.65	**36.65**
#200	0.075	10.77	1.42	64.77	35.23	**35.23**
Pan	-	267.49	35.23	100.00	-	-

Tested By JP Date 2/6/02 Checked By Jm Date 2-14-02

DCN: CT-S3A DATE:02/06/01 REVISION: 4

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HYDROMETER ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B-2
Client Reference	PITT COUNTY	Depth (ft)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.001	Soil Color	**BROWN**

Elapsed Time (min)		R Measured	Temp. (° C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	32.5	32.5	21.6	8.11	24.4	69.3	0.01319	0.0309	**24.4**
5		28.5	21.6	8.11	20.4	57.9	0.01319	0.0201	**20.4**
15		24.0	21.6	8.11	15.9	45.2	0.01319	0.0120	**15.9**
30		20.0	21.6	8.11	11.9	33.8	0.01319	0.0087	**11.9**
60		18.5	21.5	8.13	10.4	29.5	0.01321	0.0062	**10.4**
250		14.0	21.5	8.13	5.9	16.7	0.01321	0.0031	**5.9**
1440		12.0	22.1	7.97	4.0	11.4	0.01311	0.0013	**4.0**

Soil Specimen Data		Other Corrections	
Tare No.	528		
Tare + Dry Material (gm)	137.43	a - Factor	0.99
Weight of Tare (gm)	97.59		
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	35.23
Weight of Dry Material (gm)	34.84		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 2/7/02 Checked By Jam Date 2.14.02

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DCN: CT-S3A DATE:02/06/01 REVISION: 4

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ATTERBERG LIMIT

ASTM D 4318-00/AASHTO T89-96, T90-00 (SOP - S4)

Client	DAVID GARRETT	Boring No.	B-2
Client Reference	PITT COUNTY	Depth (ft)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.001	Visual Description	**BROWN SILT**
			(MInus No. 40 sieve material, Airdried)

NON - PLASTIC MATERIAL

Tested By BS *Date* 2/11/02 *Checked By* JMO *Date* 2/13/02

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DCN: CT-S4C DATE: 7-11-97 REVISION : 2

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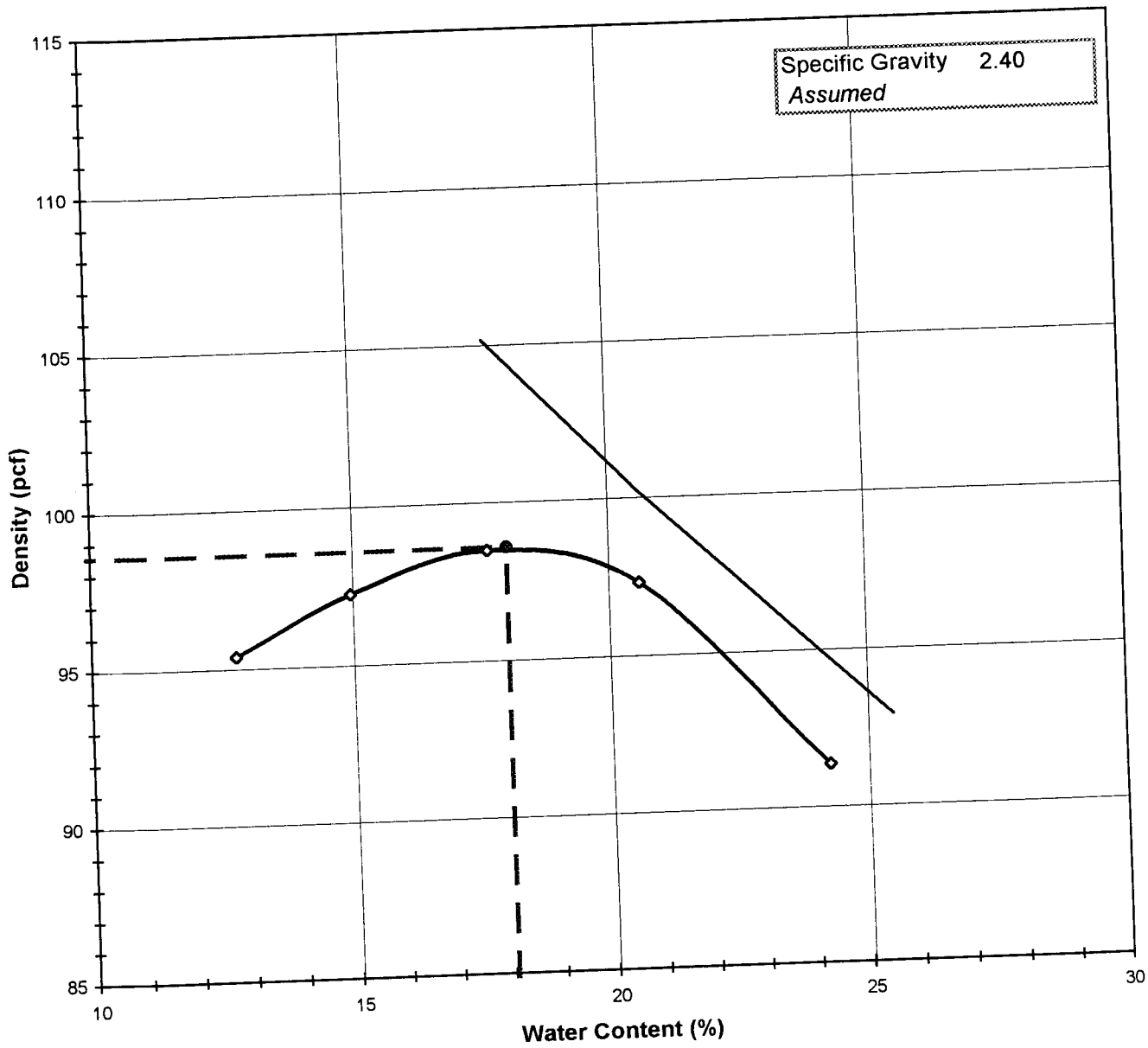
MOISTURE DENSITY RELATIONSHIP

ASTM D698-91 SOP-S12

Client	DAVID GARRETT	Boring No.	B-2
Client Reference	PITT COUNTY	Depth (ft)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.001	Test Method	**STANDARD**

Visual Description BROWN SILTY CLAY WITH ORGANIC MATERIAL

Optimum Water Content **18.1**
Maximum Dry Density **98.6**



Tested By *BF* *Date* *2/5/02* *Checked By* Jam *Date* 2.6.02

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DCN:CT-S12 DATE:11/17/00 REVISION 4

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MOISTURE - DENSITY RELATIONSHIP

ASTM D698-91 SOP-S12

Client	DAVID GARRETT	Boring No.	B-2
Client Reference	PITT COUNTY	Depth (ft)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.001		

Visual Description BROWN SILTY CLAY WITH ORGANIC MATERIAL

Total Weight of the Sample (gm)	NA
As Received Water Content(%)	NA
Assumed Specific Gravity	2.40
Percent Retained on 3/4"	NA
Percent Retained on 3/8"	NA
Percent Retained on #4	NA
Oversize Material	Not included
Procedure Used	B

TestType		STANDARD
Rammer Weight (lbs)		5.5
Rammer Drop (in)		12
Rammer Type		MECHANICAL
Machine ID	G	774
Mold ID	G	606
Mold diameter		4"
Weight of the Mold		4228
Volume of the Mold(cc)		940

Mold / Specimen

Point No.	**1**	**2**	**3**	**4**	**5**
Wt. of Mold & WS (gm)	5848	5912	5974	5996	5938
Wt.of Mold (gm)	4228	4228	4228	4228	4228
Wt. of WS	1620	1684	1746	1768	1710
Mold Volume (cc)	940	940	940	940	940

Moisture Content / Density

Tare Number	538	ZY	585	673	611
Wt. of Tare & WS (gm)	417.20	427.50	438.50	450.10	484.40
Wt. of Tare & DS (gm)	379.33	382.99	385.52	385.70	406.10
Wt. of Tare (gm)	82.06	85.49	85.68	72.90	83.08
Wt. of Water (gm)	37.87	44.51	52.98	64.40	78.30
Wt. of DS (gm)	297.27	297.50	299.84	312.80	323.02
Wet Density (gm/cc)	1.72	1.79	1.86	1.88	1.82
Wet Density (pcf)	107.5	111.8	115.9	117.4	113.5
Moisture Content (%)	**12.7**	**15.0**	**17.7**	**20.6**	**24.2**
Dry Density (pcf)	**95.4**	**97.2**	**98.5**	**97.3**	**91.4**

Zero Air Voids

Moisture Content (%)	17.7	20.6	25.5
Dry Unit Weight (pcf)	105.2	100.2	92.9

Tested By BF *Date* 2/5/02 *Checked By* ycm *Date* 2.6.02

DCN:CT-S12 DATE:11/17/00 REVISION 4

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MOHR TOTAL STRENGTH ENVELOPE

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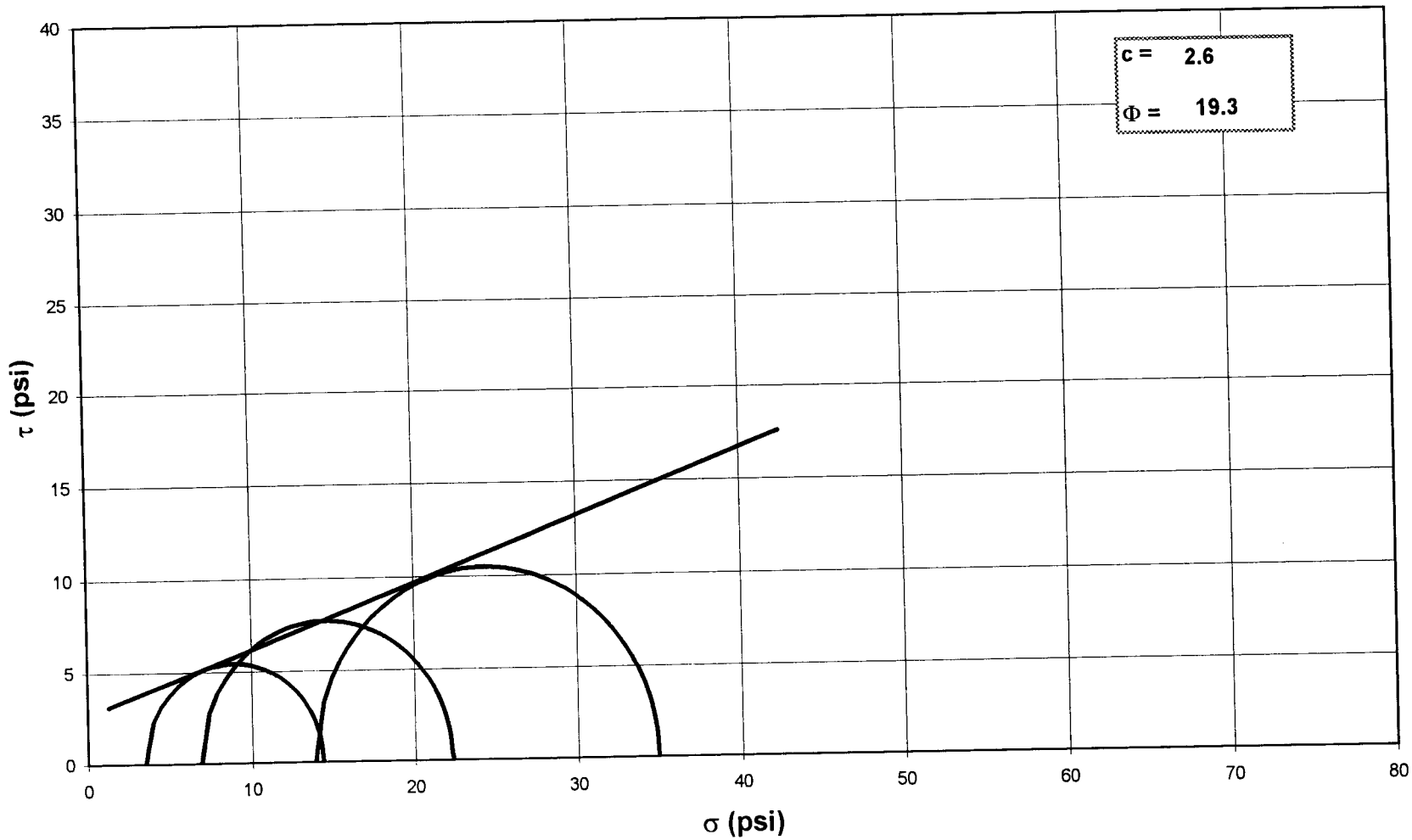
Client	DAVID GARRETT	Boring No.	B-2
Client Ref. No.	PITT COUNTY	Depth(ft.)	1-5
Project no.	R02011-01	Sample No.	NA
Lab ID	R02011-01.001	Visual Description	BROWN SILT WITH ORGANIC MATERIAL (REMOLDED)



NOTE: GRAPH NOT TO SCALE

Tested By: JCM *Date:* 2/19/02 *Approved By:* DB *Date:* 3/1/02

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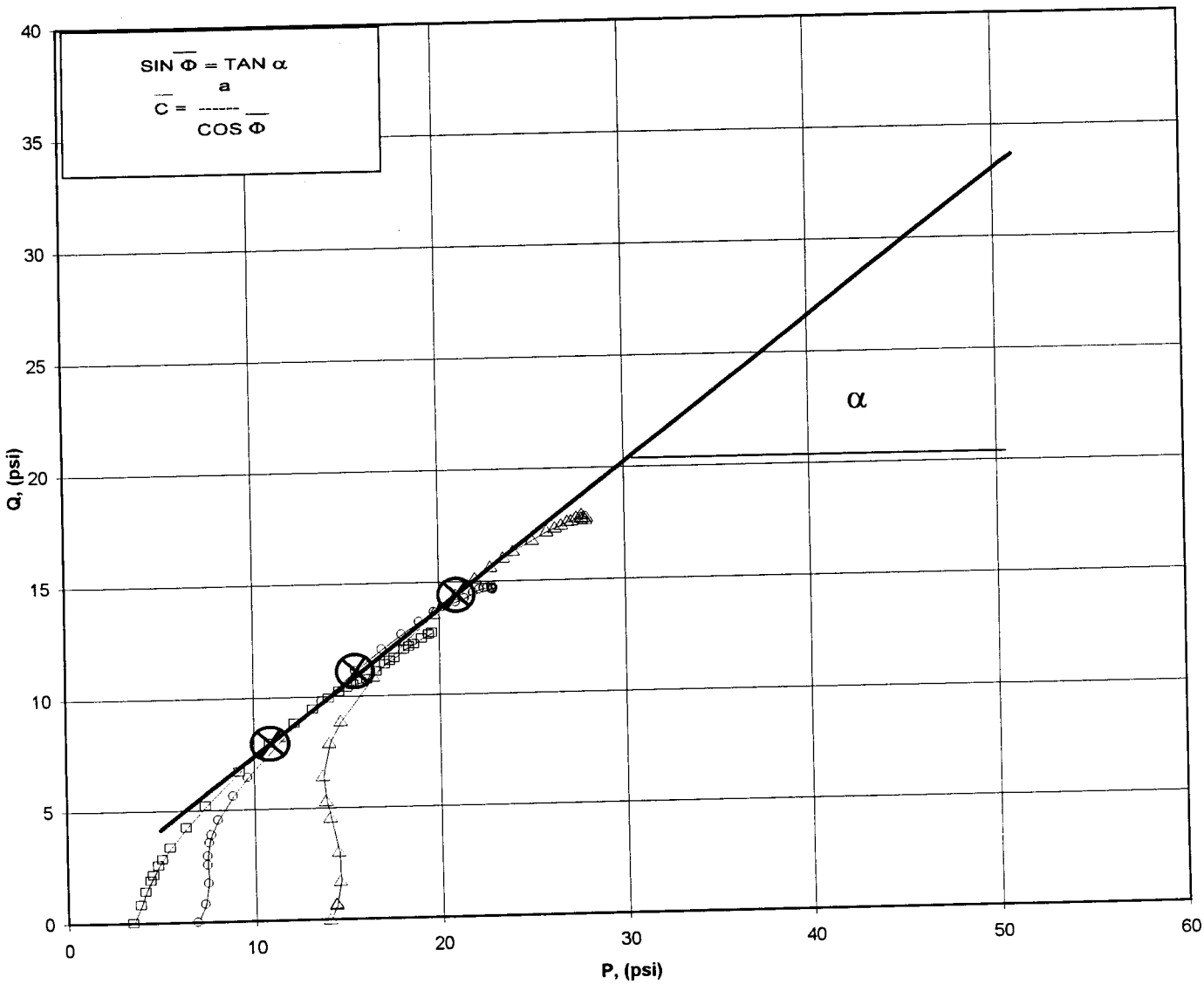
CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	DAVID GARRETT	Lab ID	R02011-01.001
Client Reference	PITT COUNTY	Boring No.	B-2
Project No.	R02011-01	Depth(ft.)	1-5
		Sample No.	NA

Consolidated Undrained Triaxial Test with Pore Pressure



⊗ Max. Effec. Stress Ratio Points — Failure Envelope — Test No. 7 — Test No. 8 — Test No. 9

a	=	0.00	$\overline{C}$	=	0.00
α	=	32.7	$\overline{\Phi}$	=	39.92

Tested By JCM Date 2/19/02 Approved By DB Date 3/1/02

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DCN: CT-S28 DATE 6-25-98 REVISION 1

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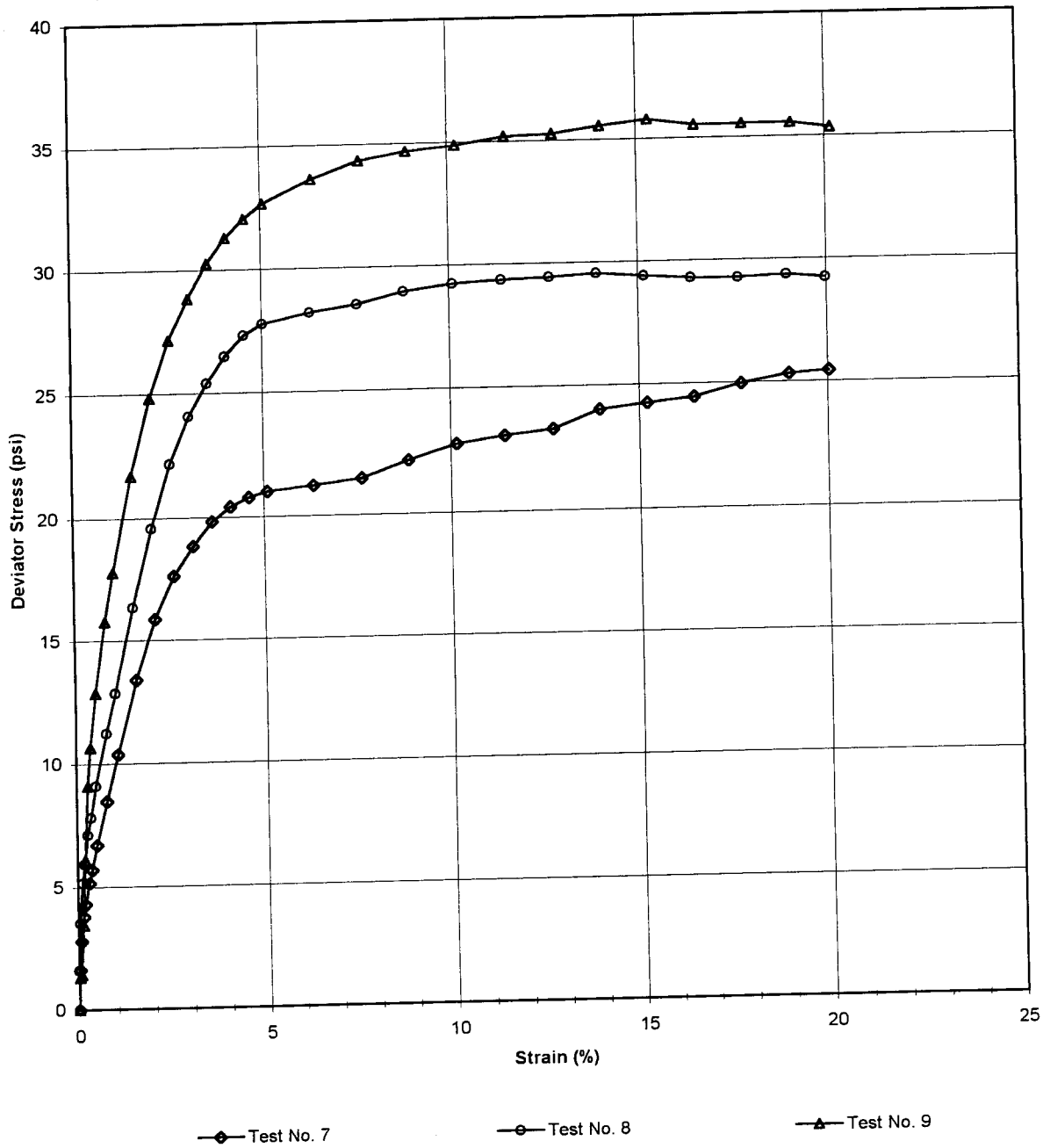
CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	DAVID GARRETT	Lab ID	R02011-01.001
Client Reference	PITT COUNTY	Boring No.	B-2
Project No.	R02011-01	Depth(ft.)	1-5
		Sample No.	NA

Visual Description: BROWN SILT WITH ORGANIC MATERIAL (REMOLDED)



Tested By JCM Date 2/19/02 Approved By DB Date 3/1/02

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CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

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Client	DAVID GARRETT	Boring No.	B-2
Client Reference	PITT COUNTY	Depth(ft.)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.001		

Visual Description: BROWN SILT WITH ORGANIC MATERIAL (REMOLDED)

Stage No.	1
Test No	7

PRESSURES (psi)

Cell Pressure(psi)	79.6
Back Pressure(psi)	76.1
Eff. Cons. Pressure(psi)	3.5
Pore Pressure Response (%)	98

MAXIMUM OBLIQUITY POINTS

$\overline{P}$	=	10.87
Q	=	7.93

INITIAL SAMPLE DIMENSIONS (in)

Length 1	6.014	Diameter 1	2.869
Length 2	6.014	Diameter 2	2.869
Length 3	6.014	Diameter 3	2.869
Avg Leng.	6.014	Avg. Diam.	2.869

VOLUME CHANGE

Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	23.5
Final Change (ml)	0.5

Initial Dial Reading (D.R.), mils	69
D.R. After Saturation, mils	100
D.R. After Consolidation, mils	101

LOAD (LBS)	DEFORMATION (DIVISIONS)	PORE PRESSURE (PSI)
15.8	0.0	76.1
26.1	1.5	76.5
33.6	4.6	76.8
40.0	9.0	77.0
43.3	11.7	77.1
48.9	17.6	77.3
52.4	22.0	77.4
58.9	30.9	77.4
70.5	47.0	77.5
82.9	64.4	77.4
102.7	94.0	77.1
119.3	124.4	76.7
131.4	155.4	76.3
140.1	186.1	75.9
147.2	216.8	75.5
151.8	246.5	75.2
154.9	276.2	75.0
157.2	305.8	74.8
160.5	380.6	74.4
164.3	457.3	74.2
171.1	531.8	74.1
177.7	607.7	73.9
182.1	683.3	73.8
186.2	759.6	73.7
194.2	833.9	73.5
198.8	910.8	73.3
203.1	986.3	73.2
209.8	1061.6	73.0
215.7	1136.9	72.8
219.3	1198.5	72.7

Tested By JCM Date 2/19/02 Input Checked By JMO Date 2/28/02

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CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	DAVID GARRETT	Boring No.	B-2
Client Reference	PITT COUNTY	Depth(ft.)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.001		

Visual Description: BROWN SILT WITH ORGANIC MATERIAL (REMOLDED)

Effective Confining Pressure (psi)	4	*Stage No.*	1
		Test No	7

INITIAL DIMENSIONS

Initial Sample Length (in.)	6.01
Initial Sample Diameter (in.)	2.87
Initial Sample Area (in^2)	6.46
Initial Sample Volume (in^3)	38.88

VOLUME CHANGE

Volume After Consolidation (in^3)	38.25
Length After Consolidation (in)	5.98
Area After Consolidation (in^2)	6.394

Strain (%)	Deviation Stress	ΔU	$\overline{\sigma}_1$	$\overline{\sigma}_3$	Effective Principle Stress Ratio	$\overline{A}$	$\overline{P}$	Q
0.02	1.61	0.39	4.71	3.1	1.518	0.25	3.91	0.80
0.08	2.77	0.68	5.59	2.8	1.984	0.25	4.21	1.39
0.15	3.78	0.93	6.34	2.6	2.469	0.25	4.46	1.89
0.20	4.30	1.04	6.76	2.5	2.747	0.25	4.61	2.15
0.29	5.16	1.19	7.47	2.3	3.229	0.23	4.89	2.58
0.37	5.71	1.26	7.95	2.2	3.542	0.22	5.10	2.85
0.52	6.70	1.34	8.86	2.2	4.110	0.20	5.51	3.35
0.79	8.49	1.36	10.63	2.1	4.961	0.16	6.39	4.24
1.08	10.38	1.27	12.61	2.2	5.657	0.12	7.42	5.19
1.57	13.38	0.96	15.92	2.5	6.270	0.07	9.23	6.69
2.08	15.85	0.56	18.79	2.9	6.393	0.04	10.87	7.93
2.60	17.61	0.15	20.96	3.3	6.261	0.01	12.16	8.81
3.11	18.83	-0.25	22.58	3.7	6.026	-0.01	13.16	9.42
3.62	19.80	-0.59	23.90	4.1	5.837	-0.03	14.00	9.90
4.12	20.39	-0.88	24.77	4.4	5.658	-0.04	14.57	10.20
4.62	20.76	-1.12	25.37	4.6	5.497	-0.05	14.99	10.38
5.11	20.98	-1.34	25.82	4.8	5.338	-0.07	15.33	10.49
6.36	21.19	-1.67	26.36	5.2	5.101	-0.08	15.77	10.60
7.64	21.46	-1.87	26.82	5.4	4.997	-0.09	16.10	10.73
8.89	22.13	-2.03	27.66	5.5	5.000	-0.09	16.59	11.06
10.16	22.75	-2.17	28.41	5.7	5.014	-0.10	17.04	11.37
11.42	23.04	-2.30	28.84	5.8	4.972	-0.10	17.32	11.52
12.70	23.26	-2.44	29.20	5.9	4.918	-0.11	17.57	11.63
13.94	24.02	-2.59	30.10	6.1	4.945	-0.11	18.10	12.01
15.23	24.26	-2.76	30.52	6.3	4.878	-0.12	18.39	12.13
16.49	24.46	-2.93	30.89	6.4	4.804	-0.12	18.66	12.23
17.75	24.95	-3.11	31.56	6.6	4.774	-0.13	19.09	12.48
19.01	25.32	-3.30	32.12	6.8	4.722	-0.13	19.46	12.66
20.04	25.45	-3.42	32.37	6.9	4.677	-0.14	19.64	12.72

Tested By JCM Date 2/19/02 Input Checked By JMC Date 2/28/02

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CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	DAVID GARRETT	Boring No.	B-2
Client Reference	PITT COUNTY	Depth(ft.)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.001		

Visual Description: BROWN SILT WITH ORGANIC MATERIAL (REMOLDED)

Stage No.	1
Test No	8

PRESSURES (psi)

Cell Pressure(psi)	82.4
Back Pressure(psi)	75.5
Eff. Cons. Pressure(p	6.9
Pore Pressure Response (%)	98

MAXIMUM OBLIQUITY POINTS

$\overline{P}$	=	15.41
Q	=	11.08

INITIAL SAMPLE DIMENSIONS (in)

Length 1	6.014	Diameter 1	2.869
Length 2	6.014	Diameter 2	2.869
Length 3	6.014	Diameter 3	2.869
Avg Leng.	6.014	Avg. Diam.	2.869

VOLUME CHANGE

Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	20.1
Final Change (ml)	3.9

Initial Dial Reading (D.R.), mils	70
D.R. After Saturation, mils	105
D.R. After Consolidation, mils	118

LOAD (LBS)	DEFORMATION (DIVISIONS)	PORE PRESSURE (PSI)
15.6	0.0	75.5
25.8	0.2	75.9
37.9	2.9	76.7
48.4	7.4	77.5
53.4	10.5	77.9
61.0	16.5	78.4
65.6	21.1	78.6
73.8	29.9	78.9
87.6	46.8	79.1
98.2	60.4	79.2
121.2	90.6	79.0
142.6	120.9	78.6
160.3	151.4	78.1
173.5	181.3	77.6
183.1	210.8	77.1
191.1	240.0	76.7
197.6	270.0	76.3
201.6	300.3	76.0
207.0	376.5	75.5
211.7	451.9	75.2
217.8	526.2	75.0
222.6	602.7	74.8
226.4	678.7	74.6
229.8	753.4	74.4
234.0	829.2	74.3
236.2	905.8	74.2
238.6	980.7	74.1
241.8	1056.1	74.1
246.2	1131.8	74.1
247.9	1192.3	74.0

Tested By JCM Date 2/19/02 Input Checked By JMC Date 2/28/02

DCN: CT-S28 DATE 6-25-98 REVISION 1

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CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

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Client	DAVID GARRETT	Boring No.	B-2
Client Reference	PITT COUNTY	Depth(ft.)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.001		

Visual Description: BROWN SILT WITH ORGANIC MATERIAL (REMOLDED)

Effective Confining Pressure (psi)	7	*Stage No.*	1
		Test No	8

INITIAL DIMENSIONS

Initial Sample Length (in.)	6.01
Initial Sample Diameter (in.)	2.87
Initial Sample Area (in^2)	6.46
Initial Sample Volume (in^3)	38.88

VOLUME CHANGE

Volume After Consolidation (in^3)	37.96
Length After Consolidation (in)	5.97
Area After Consolidation (in^2)	6.363

Strain (%)	Deviation Stress	ΔU	$\overline{\sigma}_1$	$\overline{\sigma}_3$	Effective Principle Stress Ratio	$\overline{A}$	$\overline{P}$	Q
0.00	1.60	0.36	8.14	6.5	1.244	0.23	7.34	0.80
0.05	3.50	1.15	9.25	5.7	1.610	0.34	7.50	1.75
0.12	5.14	1.98	10.06	4.9	2.046	0.39	7.49	2.57
0.18	5.93	2.36	10.46	4.5	2.307	0.41	7.50	2.96
0.28	7.11	2.87	11.14	4.0	2.767	0.41	7.58	3.56
0.35	7.82	3.11	11.62	3.8	3.063	0.41	7.70	3.91
0.50	9.11	3.39	12.62	3.5	3.593	0.38	8.06	4.55
0.78	11.23	3.63	14.50	3.3	4.435	0.33	8.88	5.61
1.01	12.85	3.67	16.08	3.2	4.979	0.29	9.65	6.42
1.52	16.35	3.48	19.77	3.4	5.787	0.22	11.59	8.18
2.03	19.55	3.06	23.39	3.8	6.093	0.16	13.61	9.78
2.54	22.16	2.57	26.49	4.3	6.114	0.12	15.41	11.08
3.04	24.06	2.07	28.89	4.8	5.981	0.09	16.86	12.03
3.53	25.39	1.62	30.67	5.3	5.811	0.07	17.97	12.70
4.02	26.47	1.20	32.17	5.7	5.647	0.05	18.93	13.24
4.52	27.31	0.83	33.38	6.1	5.497	0.03	19.72	13.65
5.03	27.76	0.55	34.11	6.4	5.370	0.02	20.23	13.88
6.31	28.18	0.04	35.05	6.9	5.107	0.00	20.95	14.09
7.57	28.48	-0.29	35.67	7.2	4.962	-0.01	21.43	14.24
8.82	28.98	-0.53	36.40	7.4	4.902	-0.02	21.91	14.49
10.10	29.24	-0.74	36.88	7.6	4.829	-0.03	22.26	14.62
11.38	29.36	-0.92	37.18	7.8	4.753	-0.03	22.50	14.68
12.63	29.42	-1.08	37.40	8.0	4.686	-0.04	22.69	14.71
13.90	29.55	-1.22	37.67	8.1	4.639	-0.04	22.89	14.77
15.18	29.40	-1.31	37.61	8.2	4.583	-0.05	22.91	14.70
16.44	29.28	-1.37	37.55	8.3	4.542	-0.05	22.91	14.64
17.70	29.26	-1.40	37.55	8.3	4.526	-0.05	22.93	14.63
18.97	29.36	-1.43	37.69	8.3	4.526	-0.05	23.01	14.68
19.98	29.21	-1.46	37.57	8.4	4.495	-0.05	22.97	14.61

Tested By JCM Date 2/19/02 Input Checked By JMO Date 2/28/02

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CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	DAVID GARRETT	Boring No.	B-2
Client Reference	PITT COUNTY	Depth(ft.)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.001		

Visual Description: BROWN SILT WITH ORGANIC MATERIAL (REMOLDED)

Stage No.	1
Test No	9

PRESSURES (psi)

Cell Pressure(psi)	89.3
Back Pressure(psi)	75.4
Eff. Cons. Pressure(p	13.9
Pore Pressure Response (%)	98

MAXIMUM OBLIQUITY POINTS

$\overline{P}$	=	20.98
Q	=	14.42

INITIAL SAMPLE DIMENSIONS (in)

Length 1	6.014	Diameter 1	2.869
Length 2	6.014	Diameter 2	2.869
Length 3	6.014	Diameter 3	2.869
Avg Leng.	6.014	Avg. Diam.	2.869

VOLUME CHANGE

Initial Burette Reading (ml)	48.0
Final Burette Reading (ml)	36.6
Final Change (ml)	11.4

Initial Dial Reading (D.R.), mils	72
D.R. After Saturation, mils	106
D.R. After Consolidation, mils	147

LOAD (LBS)	DEFORMATION (DIVISIONS)	PORE PRESSURE (PSI)
13.1	0.0	75.4
21.3	1.0	75.7
22.0	3.9	75.7
34.7	8.3	76.5
51.6	11.2	77.9
70.8	16.7	79.9
80.6	21.2	80.8
94.8	30.0	82.1
113.6	46.5	83.2
126.5	60.0	83.5
152.2	90.3	83.7
173.1	120.5	83.5
189.1	150.6	83.1
201.0	181.5	82.7
211.2	211.5	82.4
219.1	240.9	82.1
225.3	270.6	81.8
230.4	301.0	81.5
240.0	378.8	81.0
248.0	454.9	80.6
253.5	529.7	80.3
258.5	606.3	80.0
264.4	682.4	79.8
268.4	757.5	79.7
274.3	832.9	79.5
279.9	909.3	79.4
282.1	984.6	79.2
286.3	1059.9	79.1
290.6	1135.7	79.0
292.6	1196.4	79.0

Tested By JCM Date 2/19/02 Input Checked By JMO Date 2/28/02

DCN: CT-S28 DATE 6-25-98 REVISION 1

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CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	DAVID GARRETT	Boring No.	B-2
Client Reference	PITT COUNTY	Depth(ft.)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.001		

Visual Description: BROWN SILT WITH ORGANIC MATERIAL (REMOLDED)

Effective Confining Pressure (psi)	14	*Stage No.*	1
		Test No	9

INITIAL DIMENSIONS

Initial Sample Length (in.)	6.01
Initial Sample Diameter (in.)	2.87
Initial Sample Area (in^2)	6.46
Initial Sample Volume (in^3)	38.88

VOLUME CHANGE

Volume After Consolidation (in^3)	37.52
Length After Consolidation (in)	5.94
Area After Consolidation (in^2)	6.318

Strain (%)	Deviation Stress	ΔU	$\overline{\sigma}_1$	$\overline{\sigma}_3$	Effective Principle Stress Ratio	$\overline{A}$	$\overline{P}$	Q
0.02	1.30	0.27	14.93	13.6	1.095	0.21	14.28	0.65
0.07	1.40	0.33	14.98	13.6	1.103	0.24	14.28	0.70
0.14	3.42	1.13	16.19	12.8	1.268	0.34	14.48	1.71
0.19	6.08	2.51	17.46	11.4	1.534	0.42	14.42	3.04
0.28	9.10	4.46	18.54	9.4	1.965	0.50	13.99	4.55
0.36	10.64	5.44	19.10	8.5	2.258	0.52	13.78	5.32
0.51	12.86	6.68	20.08	7.2	2.783	0.53	13.65	6.43
0.78	15.78	7.79	21.89	6.1	3.583	0.50	14.00	7.89
1.01	17.77	8.14	23.53	5.8	4.085	0.47	14.64	8.88
1.52	21.69	8.32	27.27	5.6	4.884	0.39	16.43	10.84
2.03	24.81	8.09	30.63	5.8	5.269	0.33	18.22	12.41
2.54	27.15	7.71	33.34	6.2	5.384	0.29	19.77	13.57
3.06	28.83	7.34	35.40	6.6	5.393	0.26	20.98	14.42
3.56	30.24	7.00	37.14	6.9	5.380	0.24	22.02	15.12
4.06	31.28	6.67	38.51	7.2	5.324	0.22	22.87	15.64
4.56	32.05	6.37	39.58	7.5	5.253	0.20	23.56	16.02
5.07	32.65	6.10	40.46	7.8	5.186	0.19	24.13	16.33
6.38	33.62	5.56	41.96	8.3	5.029	0.17	25.15	16.81
7.66	34.33	5.15	43.08	8.7	4.925	0.15	25.91	17.17
8.92	34.66	4.86	43.69	9.0	4.835	0.14	26.37	17.33
10.21	34.87	4.63	44.14	9.3	4.762	0.14	26.71	17.44
11.49	35.20	4.45	44.65	9.5	4.724	0.13	27.05	17.60
12.76	35.26	4.28	44.88	9.6	4.664	0.12	27.25	17.63
14.02	35.54	4.13	45.31	9.8	4.639	0.12	27.54	17.77
15.31	35.76	3.98	45.68	9.9	4.606	0.11	27.80	17.88
16.58	35.51	3.85	45.57	10.1	4.532	0.11	27.81	17.76
17.85	35.52	3.74	45.69	10.2	4.496	0.11	27.92	17.76
19.12	35.53	3.63	45.79	10.3	4.459	0.10	28.03	17.76
20.14	35.33	3.60	45.63	10.3	4.430	0.10	27.97	17.67

Tested By JCM Date 2/19/02 Input Checked By JMC Date 2/28/02

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CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	DAVID GARRETT		
Client Reference	PITT COUNTY		
Project No.	R02011-01		
Lab ID	R02011-01.001	Specific Gravity (assumed)	2.7

Visual Description: BROWN SILT WITH ORGANIC MATERIAL (REMOLDED)

SAMPLE CONDITION SUMMARY

Boring No.	B-2	B-2	B-2
Depth (ft)	1-5	1-5	1-5
Sample No.	NA	NA	NA
Test No.	T7	T8	T9
Deformation Rate (in/min)	0.002	0.002	0.002
Back Pressure (psi)	76.1	75.5	75.4
Consolidation Time (days)	1	1	1
Initial State (w%)	19.5	19.5	19.5
Total Unit Weight (pcf)	112.8	112.3	112.3
Dry Unit Weight (pcf)	94.4	93.9	93.9
Final State (w%)	27.4	27.0	26.4
Initial State Void Ratio,e	0.786	0.794	0.794

Tested By JCM Date 2/19/02 Input Checked By JMV Date 2/28/02

DCN: CT-S28 DATE 6-25-98 REVISION: 1

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PERMEABILITY TEST

ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

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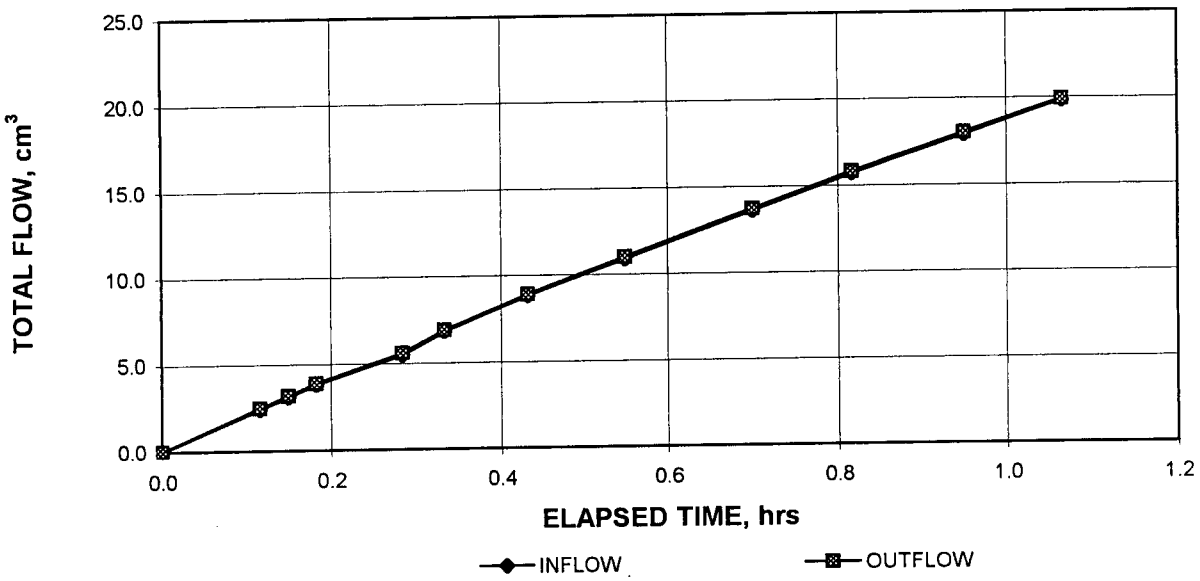
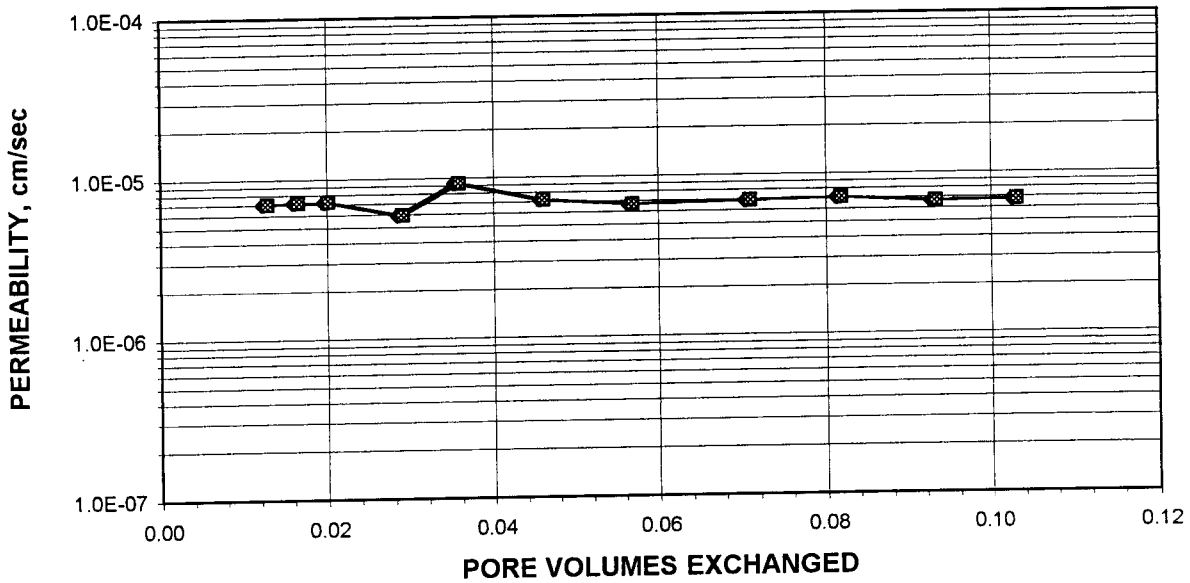
Client	DAVID GARRETT	Boring No.	B-2
Client Project	PITT COUNTY	Depth (ft.)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID No.	R02011-01.001		

AVERAGE PERMEABILITY = 6.8E-06 cm/sec @ 20°C
AVERAGE PERMEABILITY = 6.8E-08 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: JCM Date: 2/19/02 Checked By: JMO Date: 2/22/02

DCN: CT-22C DATE: 01-11-99 REVISION:3 C:\MSOffice\Excel\Perms\February02\[011P2.xls]Sheet1

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PERMEABILITY TEST

ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

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Client	DAVID GARRETT	Boring No.	B-2
Client Project	PITT COUNTY	Depth (ft.)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID No.	R02011-01.001		
		Specific Gravity	2.70 Assumed
		Sample Condition	Remolded

Visual Description: BROWN SILTY CLAY WITH ORGANIC MATERIAL

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	1131A	1703
Wt. of Tare & WS (gm.)	323.32	421.30
Wt. of Tare & DS (gm.)	284.33	350.79
Wt. of Tare (gm.)	84.57	83.94
Wt. of Water (gm.)	38.99	70.51
Wt. of DS (gm.)	199.76	266.85
Moisture Content (%)	**19.5**	**26.4**

SPECIMEN:	BEFORE TEST	AFTER TEST
Wt. of Tube & WS (gm.)	2111.30	NA
Wt. of Tube (gm.)	1348.60	NA
Wt. of WS (gm.)	762.70	806.76
Length 1 (in.)	4.000	4.006
Length 2 (in.)	4.000	3.990
Length 3 (in.)	4.000	3.988
Top Diameter (in.)	2.867	2.891
Middle Diameter (in.)	2.867	2.900
Bottom Diameter (in.)	2.867	2.878
Average Length (in.)	4.00	3.99
Average Area (in.^{2})	6.46	6.56
Sample Volume (cm^3)	423.24	429.31
Unit Wet Wt. (gm./ cm^3)	1.80	1.88
Unit Wet Wt. (pcf)	112.5	117.3
Unit Dry Wt. (pcf)	94.1	92.8
Unit Dry Wt. (gm./ cm^3)	1.51	1.49
Void Ratio, e	0.79	0.82
Porosity, n	0.44	0.45
Pore Volume (cm^3)	186.9	193.0

Tested By: JCM Date: 2/19/02 Checked By: JMO Date: 2/22/02

DCN: CT-22C DATE: 01-11-99 REVISION:3

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PERMEABILITY TEST

ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

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Client	DAVID GARRETT	Boring No.	B-2
Client Project	PITT COUNTY	Depth (ft.)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID No.	R02011-01.001		

Pressure Heads (Constant)

Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions

Sample Length (cm), L	10.15
Sample Diameter (cm)	7.34
Sample Area (cm^2), A	42.31
Inflow Burette Area (cm^2), a-in	0.983
Outflow Burette Area (cm^2), a-out	0.886
B Parameter (%)	97

AVERAGE PERMEABILITY = 6.8E-06 cm/sec @ 20°C
AVERAGE PERMEABILITY = 6.8E-08 m/sec @ 20°C

DATE (mm/dd/yy)	TIME (hr)	TIME (min)	ELAPSED TIME t (hr)	TOTAL INFLOW (cm^3)	TOTAL OUTFLOW (cm^3)	TOTAL HEAD h (cm)	FLOW (0 flow) (1 stop)	TEMP. (°C)	INCREMENTAL PERMEABILITY @ 20°C (cm/sec)
2/21/02	9	28	0.0	0.0	0.0	196.9	0	21.0	NA
2/21/02	9	35	0.1	2.4	2.5	191.7	0	21.0	7.0E-06
2/21/02	9	37	0.2	3.1	3.2	190.2	0	21.0	7.1E-06
2/21/02	9	39	0.2	3.8	3.9	188.7	0	21.0	7.2E-06
2/21/02	9	45	0.3	5.5	5.6	185.1	0	21.0	5.9E-06
2/21/02	9	48	0.3	6.8	6.9	182.3	0	21.0	9.2E-06
2/21/02	9	54	0.4	8.8	8.9	178.0	0	21.0	7.2E-06
2/21/02	10	1	0.6	10.9	11.0	173.5	0	21.0	6.6E-06
2/21/02	10	10	0.7	13.6	13.7	167.7	0	21.0	6.8E-06
2/21/02	10	17	0.8	15.7	15.8	163.2	0	21.0	7.1E-06
2/21/02	10	25	0.9	17.9	18.0	158.5	0	21.0	6.7E-06
2/21/02	10	32	1.1	19.8	19.9	154.4	1	21.0	6.8E-06

Tested By: JCM Date: 2/19/02 Checked By: JMO Date: 2/22/02

DCN: CT-22C DATE: 01-11-99 REVISION:3

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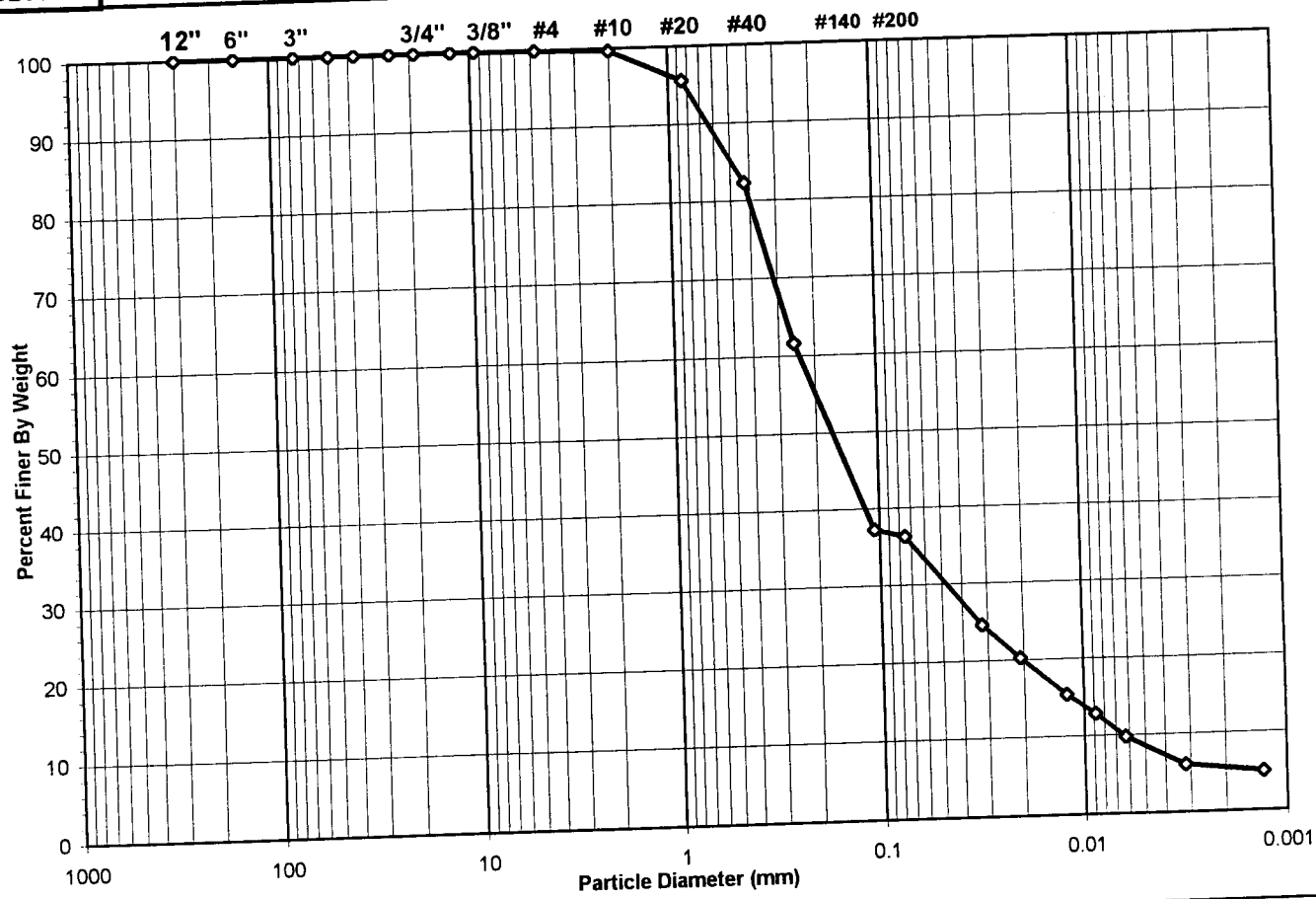
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth (ft)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.002	Soil Color	**BROWN**

	SIEVE ANALYSIS			HYDROMETER	
				silt and clay fraction	
USCS	cobbles	gravel	sand	silt	clay
USDA	cobbles	gravel	sand		



USCS Summary		
Sieve Sizes (mm)		**Percentage**
Greater Than #4	*Gravel*	0.06
#4 To #200	*Sand*	63.62
Finer Than #200	*Silt & Clay*	36.33

USCS Symbol ***SM, TESTED***

USCS Classification ***SILTY SAND (NON-PLASTIC FINES)***

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DCN: CT-S3A DATE:02/06/01 REVISION: 4

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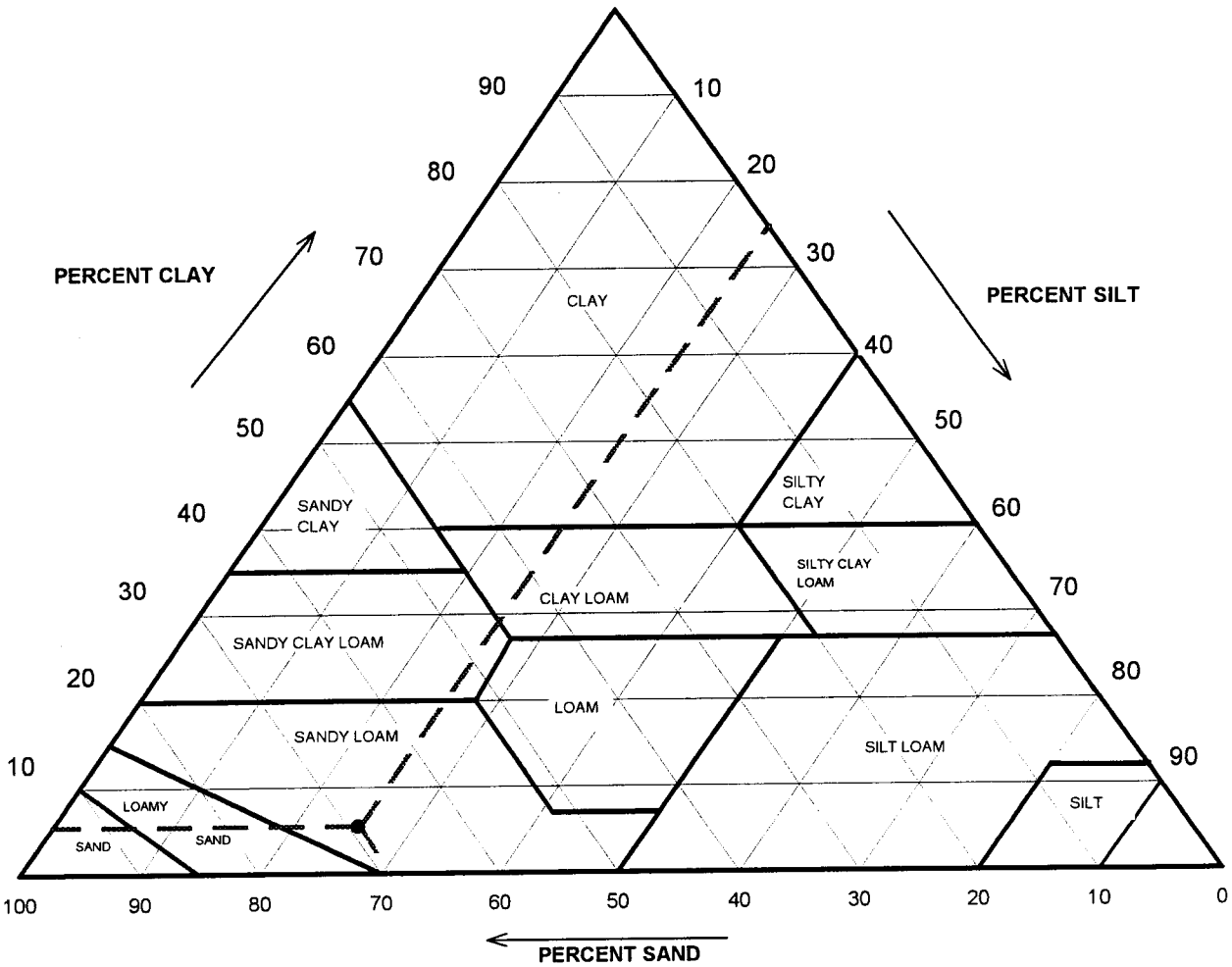
USDA CLASSIFICATION CHART

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth (ft)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.002	Soil Color	BROWN



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
		Gravel	0.36	**0.00**
2	99.64	*Sand*	68.87	**69.12**
0.05	30.77	*Silt*	25.28	**25.37**
0.002	5.49	*Clay*	5.49	**5.51**

USDA Classification ***SANDY LOAM***

DCN: CT-S3A DATE:02/06/01 REVISION: 4

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WASH SIEVE ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth (ft)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.002	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	2324	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	996.10	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	775.00	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	101.29	Weight of Tare (gm)	NA
Weight of Water (gm)	221.10	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	673.71	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**32.8**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	673.71
Dry Weight - 3/4" Sample (gm)	428.97	Weight of minus #200 material (gm)	244.74
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	428.97
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.38	0.06	0.06	99.94	**99.94**
#10	2.00	2.05	0.30	0.36	99.64	**99.64**
#20	0.85	27.68	4.11	4.47	95.53	**95.53**
#40	0.425	89.70	13.31	17.78	82.22	**82.22**
#60	0.250	139.13	20.65	38.43	61.57	**61.57**
#140	0.106	163.32	24.24	62.68	37.32	**37.32**
#200	0.075	6.71	1.00	63.67	36.33	**36.33**
Pan	-	244.74	36.33	100.00	-	-

Tested By JP Date 2/6/02 Checked By JMC Date 2/13/02

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DCN: CT-S3A DATE:02/06/01 REVISION: 4

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HYDROMETER ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth (ft)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.002	Soil Color	**BROWN**

Elapsed Time (min)		R Measured	Temp. (° C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	28.0	28.0	21.6	8.11	19.9	67.7	0.01319	0.0319	**24.6**
5		24.5	21.6	8.11	16.4	55.8	0.01319	0.0207	**20.3**
15		20.5	21.6	8.11	12.4	42.2	0.01319	0.0122	**15.3**
30		18.5	21.6	8.11	10.4	35.4	0.01319	0.0088	**12.9**
61		16.0	21.5	8.13	7.9	26.8	0.01321	0.0063	**9.7**
250		13.0	21.5	8.13	4.9	16.6	0.01321	0.0031	**6.0**
1461		12.0	22.1	7.97	4.0	13.7	0.01311	0.0013	**5.0**

Soil Specimen Data		Other Corrections	
Tare No.	2495		
Tare + Dry Material (gm)	129.43	a - Factor	0.99
Weight of Tare (gm)	95.36		
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	36.33
Weight of Dry Material (gm)	29.07		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 2/7/02 Checked By JMO Date 2/13/02

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DCN: CT-S3A DATE:02/06/01 REVISION: 4

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ATTERBERG LIMIT

ASTM D 4318-00/AASHTO T89-96, T90-00 (SOP - S4)

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth (ft)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.002	Visual Description	**BROWN SILT** (MInus No. 40 sieve material, Airdried)

NON - PLASTIC MATERIAL

Tested By JAC *Date* 2/12/02 *Checked By* JMO *Date* 2/13/02

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DCN: CT-S4C DATE: 7-11-97 REVISION : 2

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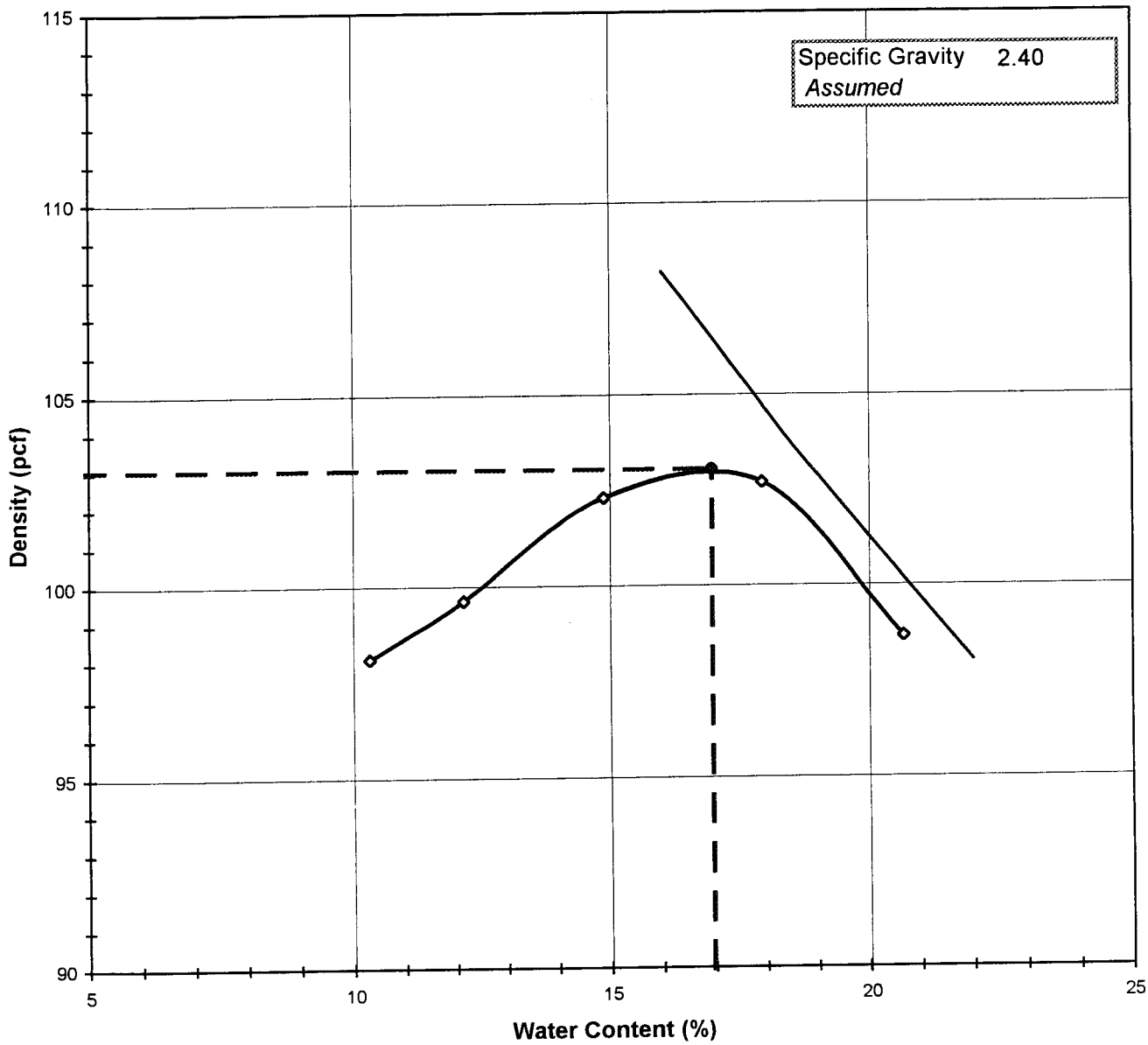
MOISTURE DENSITY RELATIONSHIP

ASTM D698-91 SOP-S12

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth (ft)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.002	Test Method	**STANDARD**

Visual Description BROWN CLAY WITH SOME ORGANIC MATERIAL

Optimum Water Content **17.0**
Maximum Dry Density **103.1**



Tested By JP *Date* 2/5/02 *Checked By* JCM *Date* 2-6-02

DCN:CT-S12 DATE:11/17/00 REVISION 4

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MOISTURE - DENSITY RELATIONSHIP

ASTM D698-91 SOP-S12

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth (ft)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.002		

Visual Description: BROWN CLAY WITH SOME ORGANIC MATERIAL

Total Weight of the Sample (gm)	NA
As Received Water Content(%)	NA
Assumed Specific Gravity	2.40
Percent Retained on 3/4"	NA
Percent Retained on 3/8"	NA
Percent Retained on #4	NA
Oversize Material	Not included
Procedure Used	B

TestType		STANDARD
Rammer Weight (lbs)		5.5
Rammer Drop (in)		12
Rammer Type		MECHANICAL
Machine ID	G	442
Mold ID	G	777
Mold diameter		4"
Weight of the Mold		4199
Volume of the Mold(cc)		945

Mold / Specimen

Point No.	1	2	3	4	5
Wt. of Mold & WS (gm)	5838	5891	5979	6033	6002
Wt.of Mold (gm)	4199	4199	4199	4199	4199
Wt. of WS	1639	1692	1780	1834	1803
Mold Volume (cc)	945	945	945	945	945

Moisture Content / Density

Tare Number	558	621	627	592	555
Wt. of Tare & WS (gm)	496.10	372.34	446.40	415.60	427.50
Wt. of Tare & DS (gm)	457.30	341.43	399.81	364.86	368.33
Wt. of Tare (gm)	81.51	87.07	86.66	81.64	82.08
Wt. of Water (gm)	38.80	30.91	46.59	50.74	59.17
Wt. of DS (gm)	375.79	254.36	313.15	283.22	286.25

Wet Density (gm/cc)	1.73	1.79	1.88	1.94	1.91
Wet Density (pcf)	108.2	111.7	117.5	121.1	119.1
Moisture Content (%)	**10.3**	**12.2**	**14.9**	**17.9**	**20.7**
Dry Density (pcf)	**98.1**	**99.6**	**102.3**	**102.7**	**98.7**

Zero Air Voids

Moisture Content (%)	16.0	18.5	22.0
Dry Unit Weight (pcf)	108.2	103.7	98.0

Tested By JP *Date* 2/5/02 *Checked By* jm *Date* 2-6-02

DCN:CT-S12 DATE:11/17/00 REVISION 4

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MOHR TOTAL STRENGTH ENVELOPE

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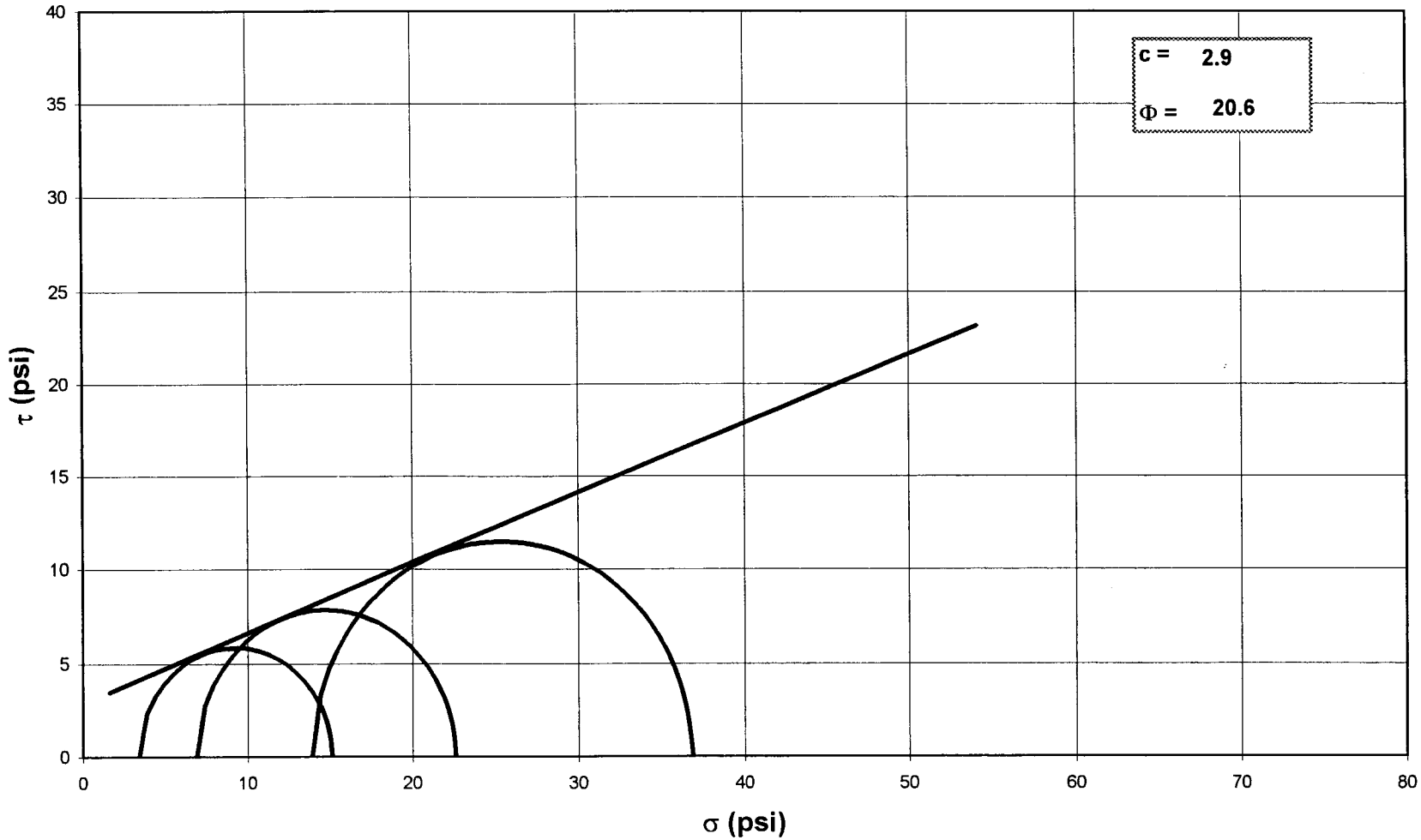
Client	DAVID GARRETT	Boring No.	B-8
Client Ref. No.	PITT COUNTY	Depth(ft.)	1-5
Project no.	R02011-01	Sample No.	NA
Lab ID	R02011-01.002	Visual Description	BROWN SILT (REMOLDED)



NOTE: GRAPH NOT TO SCALE

Tested By: JCM *Date:* 2/25/02 *Approved By:* DB *Date:* 3/7/02

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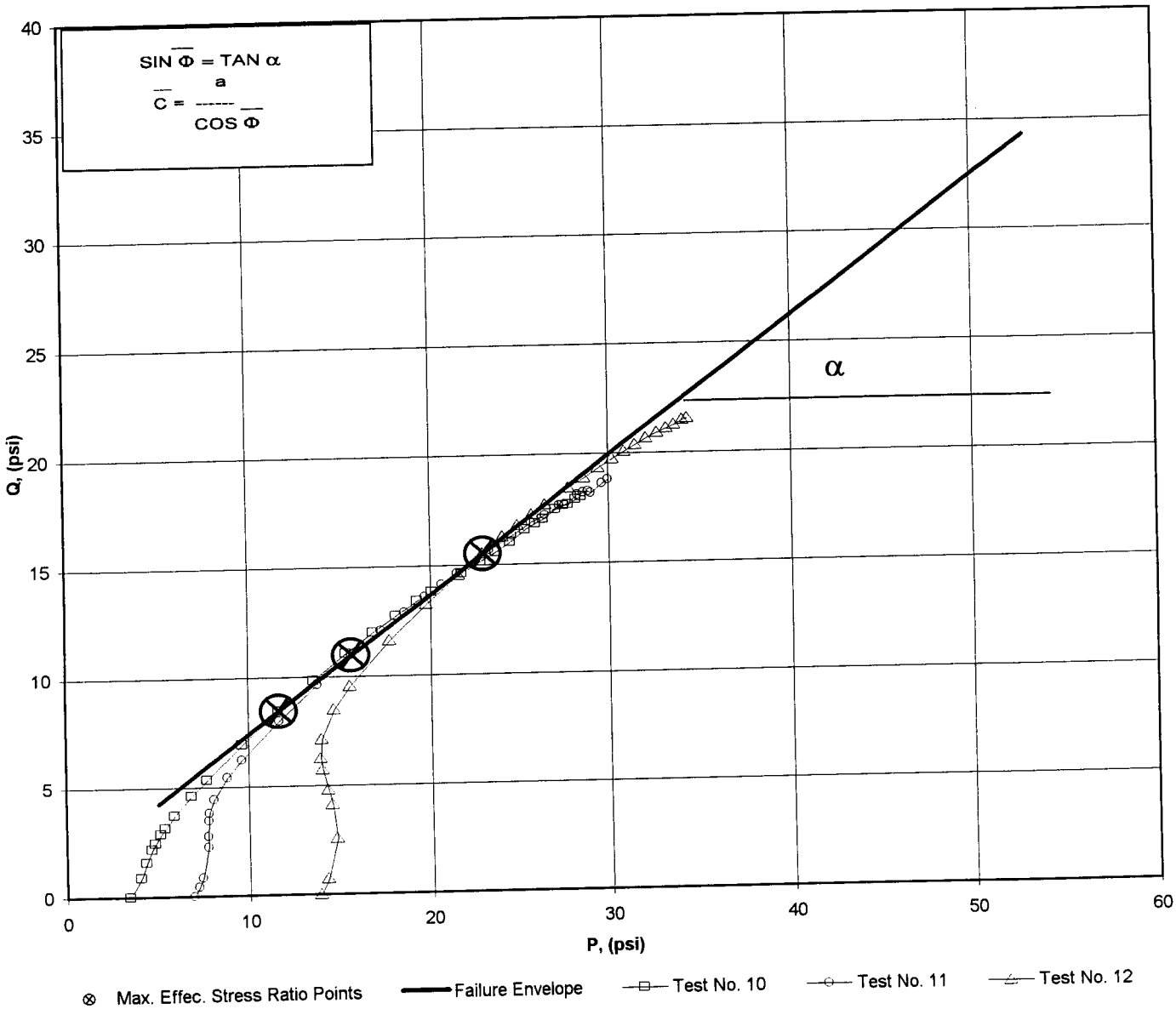
CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth(ft.)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.002		

Consolidated Undrained Triaxial Test with Pore Pressure



a	=	0.00	$\overline{C}$	=	0.00
α	=	32.1	$\overline{\Phi}$	=	38.80

Tested By JCM Date 2/25/02 Approved By DB Date 3/7/02

DCN: CT-S28 DATE 6-25-98 REVISION 1
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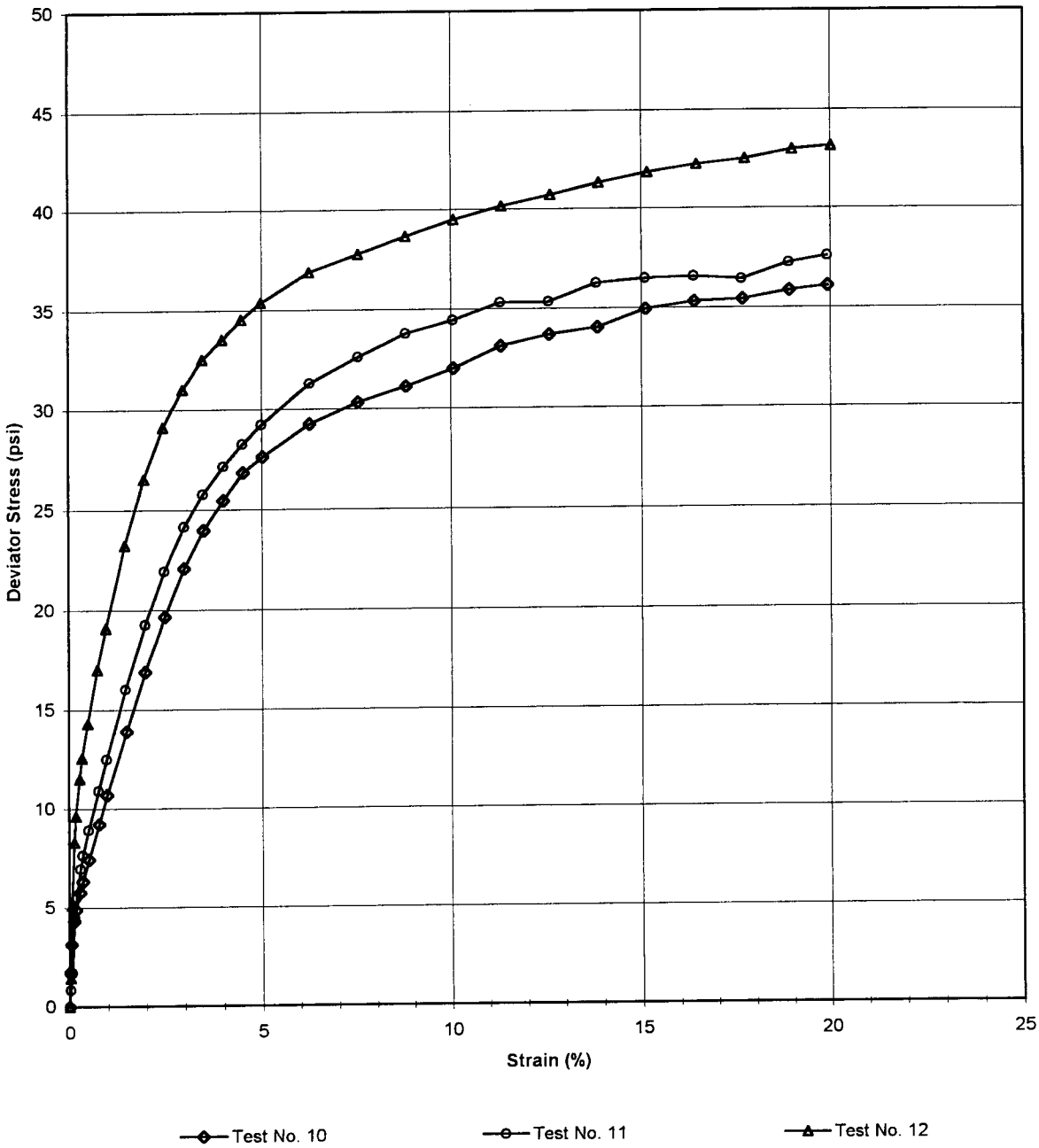
CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth(ft.)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.002		
Visual Description:	BROWN SILT (REMOLDED)		



Tested By JCM Date 2/25/02 Approved By DB Date 3/7/02

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CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

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Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth(ft.)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.002		

Visual Description: BROWN SILT (REMOLDED)

Stage No.	1
Test No	10

PRESSURES (psi)

Cell Pressure(psi)	78.7
Back Pressure(psi)	75.3
Eff. Cons. Pressure(psi)	3.4
Pore Pressure Response (%)	97

MAXIMUM OBLIQUITY POINTS

$\overline{P}$	=	11.68
Q	=	8.45

INITIAL SAMPLE DIMENSIONS (in)

Length 1	6.014	Diameter 1	2.869
Length 2	6.014	Diameter 2	2.869
Length 3	6.014	Diameter 3	2.869
Avg Leng.	6.014	Avg. Diam.	2.869

VOLUME CHANGE

Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	23.7
Final Change (ml)	0.3

Initial Dial Reading (D.R.), mils	55
D.R. After Saturation, mils	100
D.R. After Consolidation, mils	102

LOAD (LBS)	DEFORMATION (DIVISIONS)	PORE PRESSURE (PSI)
13.4	0.0	75.3
24.5	0.5	75.6
33.3	3.5	75.9
40.9	7.9	76.2
44.5	11.1	76.3
50.1	17.2	76.5
53.6	21.8	76.5
60.8	30.9	76.5
72.5	47.2	76.5
82.1	60.3	76.3
103.1	89.9	76.0
123.2	119.3	75.5
141.7	149.1	74.9
158.2	179.3	74.3
171.5	209.6	73.8
182.2	239.9	73.3
192.3	270.2	72.8
198.6	300.6	72.4
212.2	374.3	71.6
222.2	450.0	71.0
230.6	525.9	70.6
239.9	601.0	70.2
251.1	676.1	69.9
258.6	752.2	69.6
264.9	827.4	69.4
275.3	902.4	69.1
282.1	978.3	68.9
287.2	1054.4	68.6
294.8	1128.6	68.4
300.3	1189.6	68.2

Tested By JCM Date 2/25/02 Input Checked By JR Date 3/7/02

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CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth(ft.)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.002		

Visual Description: BROWN SILT (REMOLDED)

Effective Confining Pressure (psi)	3.4	*Stage No.*	1
		Test No	10

INITIAL DIMENSIONS

Initial Sample Length (in.)	6.01
Initial Sample Diameter (in.)	2.87
Initial Sample Area (in^2)	6.46
Initial Sample Volume (in^3)	38.88

VOLUME CHANGE

Volume After Consolidation (in^3)	37.99
Length After Consolidation (in)	5.97
Area After Consolidation (in^2)	6.366

Strain (%)	Deviation Stress	ΔU	$\overline{\sigma}_1$	$\overline{\sigma}_3$	Effective Principle Stress Ratio	$\overline{A}$	$\overline{P}$	Q
0.01	1.74	0.25	4.89	3.1	1.554	0.15	4.02	0.87
0.06	3.13	0.65	5.88	2.8	2.137	0.21	4.32	1.56
0.13	4.31	0.94	6.77	2.5	2.754	0.22	4.62	2.16
0.19	4.88	1.05	7.23	2.4	3.074	0.22	4.79	2.44
0.29	5.74	1.16	7.98	2.2	3.564	0.21	5.11	2.87
0.37	6.30	1.20	8.49	2.2	3.866	0.20	5.35	3.15
0.52	7.41	1.24	9.57	2.2	4.429	0.17	5.87	3.71
0.79	9.21	1.19	11.42	2.2	5.167	0.13	6.81	4.60
1.01	10.68	1.05	13.03	2.4	5.544	0.10	7.69	5.34
1.51	13.87	0.68	16.59	2.7	6.099	0.05	9.66	6.94
2.00	16.90	0.17	20.13	3.2	6.238	0.01	11.68	8.45
2.50	19.66	-0.39	23.44	3.8	6.187	-0.02	13.62	9.83
3.01	22.07	-0.96	26.43	4.4	6.056	-0.05	15.40	11.03
3.51	23.96	-1.50	28.86	4.9	5.895	-0.06	16.88	11.98
4.02	25.45	-2.01	30.87	5.4	5.702	-0.08	18.14	12.73
4.53	26.82	-2.48	32.71	5.9	5.559	-0.10	19.30	13.41
5.04	27.62	-2.90	33.92	6.3	5.387	-0.11	20.11	13.81
6.27	29.27	-3.72	36.39	7.1	5.112	-0.13	21.75	14.64
7.54	30.32	-4.27	37.99	7.7	4.955	-0.15	22.83	15.16
8.81	31.12	-4.72	39.23	8.1	4.834	-0.16	23.67	15.56
10.07	31.99	-5.07	40.46	8.5	4.776	-0.16	24.47	16.00
11.33	33.11	-5.38	41.89	8.8	4.772	-0.17	25.33	16.56
12.61	33.66	-5.67	42.73	9.1	4.713	-0.17	25.90	16.83
13.87	34.02	-5.94	43.36	9.3	4.645	-0.18	26.35	17.01
15.12	34.92	-6.19	44.52	9.6	4.640	-0.18	27.06	17.46
16.40	35.29	-6.44	45.13	9.8	4.588	-0.19	27.48	17.65
17.67	35.40	-6.66	45.47	10.1	4.518	-0.19	27.77	17.70
18.91	35.83	-6.87	46.11	10.3	4.488	-0.20	28.19	17.92
19.94	36.08	-7.06	46.53	10.5	4.450	-0.20	28.50	18.04

Tested By JCM Date 2/25/02 Input Checked By JR Date 3/7/02

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CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth(ft.)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.002		

Visual Description: BROWN SILT (REMOLDED)

Stage No.	1
Test No	11

PRESSURES (psi)

Cell Pressure(psi)	82.2
Back Pressure(psi)	75.3
Eff. Cons. Pressure(p	6.9
Pore Pressure Response (%)	97

MAXIMUM OBLIQUITY POINTS

$\overline{P}$	=	15.67
Q	=	10.97

INITIAL SAMPLE DIMENSIONS (in)

Length 1	6.014	Diameter 1	2.869
Length 2	6.014	Diameter 2	2.869
Length 3	6.014	Diameter 3	2.869
Avg Leng.	6.014	Avg. Diam.	2.869

VOLUME CHANGE

Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	21.8
Final Change (ml)	2.2

Initial Dial Reading (D.R.), mils	61
D.R. After Saturation, mils	93
D.R. After Consolidation, mils	104

LOAD (LBS)	DEFORMATION (DIVISIONS)	PORE PRESSURE (PSI)
13.6	0.0	75.3
19.0	1.9	75.4
24.5	4.7	75.7
42.3	9.0	76.7
48.8	11.9	77.2
57.9	17.7	77.9
62.4	21.9	78.2
70.6	30.6	78.6
83.6	46.4	78.8
94.0	59.4	78.8
117.4	89.0	78.5
139.1	119.0	78.0
157.2	148.9	77.5
172.4	178.6	77.0
184.0	208.8	76.5
194.2	239.4	76.1
202.6	269.6	75.7
210.1	299.3	75.3
226.7	374.0	74.5
238.7	450.0	73.9
249.9	525.4	73.4
257.9	600.8	73.0
267.8	675.5	72.6
271.6	752.1	72.3
282.0	826.0	72.0
287.8	902.4	71.8
292.7	977.8	71.6
295.8	1053.2	71.4
306.8	1128.2	71.1
313.1	1189.4	71.0

Tested By JCM Date 2/25/02 Input Checked By JR Date 3/7/02

DCN: CT-S28 DATE 6-25-98 REVISION 1

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CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth(ft.)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.002		

Visual Description: BROWN SILT (REMOLDED)

Effective Confining Pressure (psi)	6.9	*Stage No.*	1
		Test No	11

INITIAL DIMENSIONS

Initial Sample Length (in.)	6.01
Initial Sample Diameter (in.)	2.87
Initial Sample Area (in^2)	6.46
Initial Sample Volume (in^3)	38.88

VOLUME CHANGE

Volume After Consolidation (in^3)	38.12
Length After Consolidation (in)	5.97
Area After Consolidation (in^2)	6.385

Strain (%)	Deviation Stress	ΔU	$\overline{\sigma}_1$	$\overline{\sigma}_3$	Effective Principle Stress Ratio	$\overline{A}$	$\overline{P}$	Q
0.03	0.84	0.13	7.61	6.8	1.125	0.16	7.19	0.42
0.08	1.70	0.36	8.24	6.5	1.260	0.22	7.39	0.85
0.15	4.49	1.42	9.97	5.5	1.818	0.33	7.73	2.24
0.20	5.50	1.93	10.46	5.0	2.106	0.36	7.71	2.75
0.30	6.92	2.61	11.21	4.3	2.612	0.39	7.75	3.46
0.37	7.62	2.92	11.60	4.0	2.912	0.39	7.79	3.81
0.51	8.89	3.30	12.49	3.6	3.466	0.38	8.05	4.44
0.78	10.88	3.52	14.26	3.4	4.218	0.33	8.82	5.44
1.00	12.47	3.52	15.85	3.4	4.690	0.29	9.61	6.23
1.49	16.01	3.21	19.70	3.7	5.335	0.21	11.70	8.00
1.99	19.26	2.72	23.44	4.2	5.608	0.15	13.81	9.63
2.49	21.94	2.19	26.64	4.7	5.661	0.10	15.67	10.97
2.99	24.13	1.67	29.37	5.2	5.610	0.07	17.30	12.07
3.50	25.75	1.18	31.47	5.7	5.505	0.05	18.59	12.88
4.01	27.15	0.77	33.28	6.1	5.428	0.03	19.71	13.58
4.51	28.26	0.40	34.77	6.5	5.345	0.01	20.63	14.13
5.01	29.24	0.02	36.11	6.9	5.251	0.00	21.50	14.62
6.26	31.28	-0.76	38.94	7.7	5.084	-0.03	23.30	15.64
7.54	32.60	-1.38	40.88	8.3	4.936	-0.04	24.58	16.30
8.80	33.75	-1.89	42.54	8.8	4.839	-0.06	25.67	16.88
10.06	34.42	-2.34	43.66	9.2	4.724	-0.07	26.45	17.21
11.31	35.31	-2.71	44.91	9.6	4.675	-0.08	27.26	17.65
12.60	35.32	-3.02	45.24	9.9	4.560	-0.09	27.58	17.66
13.83	36.23	-3.28	46.40	10.2	4.559	-0.09	28.29	18.11
15.11	36.46	-3.49	46.85	10.4	4.509	-0.10	28.62	18.23
16.38	36.55	-3.72	47.17	10.6	4.442	-0.10	28.90	18.28
17.64	36.41	-3.95	47.25	10.8	4.356	-0.11	29.05	18.20
18.89	37.24	-4.16	48.30	11.1	4.368	-0.12	29.68	18.62
19.92	37.56	-4.32	48.78	11.2	4.348	-0.12	30.00	18.78

Tested By JCM Date 2/25/02 Input Checked By JR Date 3/7/02

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CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth(ft.)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.002		

Visual Description: BROWN SILT (REMOLDED)

Stage No.	1
Test No	12

PRESSURES (psi)

Cell Pressure(psi)	89.1
Back Pressure(psi)	75.2
Eff. Cons. Pressure(p	13.9
Pore Pressure Response (%)	97

MAXIMUM OBLIQUITY POINTS

$\overline{P}$	=	22.93
Q	=	15.50

INITIAL SAMPLE DIMENSIONS (in)

Length 1	6.014	Diameter 1	2.869
Length 2	6.014	Diameter 2	2.869
Length 3	6.014	Diameter 3	2.869
Avg Leng.	6.014	Avg. Diam.	2.869

VOLUME CHANGE

Initial Burette Reading (ml)	48.0
Final Burette Reading (ml)	40.3
Final Change (ml)	7.7

Initial Dial Reading (D.R.), mils	59
D.R. After Saturation, mils	109
D.R. After Consolidation, mils	136

LOAD (LBS)	DEFORMATION (DIVISIONS)	PORE PRESSURE (PSI)
15.8	0.0	75.2
24.9	1.5	75.5
48.1	4.2	76.8
68.0	8.2	78.7
76.5	11.0	79.5
88.3	16.6	80.8
95.1	20.8	81.4
106.3	29.3	82.2
123.9	44.7	82.9
137.4	57.4	83.0
164.5	87.0	82.9
186.4	116.4	82.5
204.1	146.1	82.1
217.3	176.3	81.7
228.2	206.1	81.3
235.9	236.3	81.0
243.5	266.2	80.6
250.5	296.1	80.3
263.8	371.3	79.7
273.5	447.6	79.3
283.1	522.3	78.9
292.7	598.2	78.6
301.4	673.6	78.2
309.6	750.1	77.9
318.3	824.5	77.6
326.8	900.9	77.3
334.6	977.2	77.0
341.6	1052.5	76.7
350.2	1127.8	76.4
355.9	1189.1	76.3

Tested By JCM Date 2/25/02 Input Checked By JR Date 3/7/02

DCN: CT-S28 DATE 6-25-98 REVISION 1

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CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth(ft.)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.002		

Visual Description: BROWN SILT (REMOLDED)

Effective Confining Pressure (psi)	13.9	*Stage No.*	1
		Test No	12

INITIAL DIMENSIONS

Initial Sample Length (in.)	6.01
Initial Sample Diameter (in.)	2.87
Initial Sample Area (in^2)	6.46
Initial Sample Volume (in^3)	38.88

VOLUME CHANGE

Volume After Consolidation (in^3)	37.44
Length After Consolidation (in)	5.94
Area After Consolidation (in^2)	6.306

Strain (%)	Deviation Stress	ΔU	$\overline{\sigma}_1$	$\overline{\sigma}_3$	Effective Principle Stress Ratio	$\overline{A}$	$\overline{P}$	Q
0.03	1.44	0.30	15.04	13.6	1.106	0.22	14.32	0.72
0.07	5.11	1.62	17.39	12.3	1.417	0.33	14.83	2.56
0.14	8.27	3.46	18.71	10.4	1.792	0.43	14.57	4.13
0.19	9.61	4.35	19.17	9.6	2.006	0.47	14.36	4.81
0.28	11.47	5.57	19.80	8.3	2.377	0.50	14.06	5.73
0.35	12.53	6.20	20.23	7.7	2.627	0.51	13.96	6.26
0.49	14.27	7.01	21.16	6.9	3.072	0.51	14.03	7.14
0.75	17.01	7.68	23.23	6.2	3.735	0.47	14.72	8.50
0.97	19.09	7.83	25.16	6.1	4.147	0.42	15.61	9.55
1.47	23.23	7.73	29.40	6.2	4.767	0.34	17.78	11.62
1.96	26.52	7.35	33.07	6.6	5.047	0.29	19.81	13.26
2.46	29.13	6.89	36.14	7.0	5.153	0.24	21.58	14.56
2.97	31.00	6.47	38.43	7.4	5.174	0.22	22.93	15.50
3.47	32.51	6.09	40.32	7.8	5.165	0.19	24.06	16.26
3.98	33.51	5.77	41.64	8.1	5.120	0.18	24.89	16.76
4.48	34.49	5.44	42.95	8.5	5.077	0.16	25.70	17.24
4.99	35.37	5.13	44.14	8.8	5.033	0.15	26.45	17.68
6.25	36.87	4.54	46.23	9.4	4.940	0.13	27.79	18.44
7.54	37.79	4.11	47.57	9.8	4.860	0.11	28.68	18.89
8.80	38.66	3.75	48.81	10.2	4.808	0.10	29.48	19.33
10.08	39.49	3.37	50.01	10.5	4.751	0.09	30.27	19.74
11.35	40.14	3.05	50.99	10.9	4.700	0.08	30.92	20.07
12.63	40.71	2.72	51.89	11.2	4.640	0.07	31.54	20.35
13.89	41.30	2.40	52.81	11.5	4.591	0.06	32.16	20.65
15.17	41.84	2.08	53.66	11.8	4.540	0.05	32.74	20.92
16.46	42.23	1.77	54.36	12.1	4.481	0.04	33.25	21.12
17.73	42.51	1.49	54.92	12.4	4.424	0.04	33.67	21.25
19.00	42.96	1.24	55.62	12.7	4.393	0.03	34.14	21.48
20.03	43.12	1.07	55.96	12.8	4.361	0.03	34.39	21.56

Tested By JCM Date 2/25/02 Input Checked By JR Date 3/7/02

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CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	DAVID GARRETT		
Client Reference	PITT COUNTY		
Project No.	R02011-01		
Lab ID	R02011-01.002	Specific Gravity (assumed)	2.7

Visual Description: BROWN SILT (REMOLDED)

SAMPLE CONDITION SUMMARY

Boring No.	B-8	B-8	B-8
Depth (ft)	1-5	1-5	1-5
Sample No.	NA	NA	NA
Test No.	T10	T11	T12
Deformation Rate (in/min)	0.002	0.002	0.002
Back Pressure (psi)	75.3	75.3	75.2
Consolidation Time (days)	1	1	1
Initial State (w%)	19.2	19.2	19.2
Total Unit Weight (pcf)	117.6	117.5	117.5
Dry Unit Weight (pcf)	98.7	98.6	98.6
Final State (w%)	24.0	23.9	22.8
Initial State Void Ratio,e	0.708	0.709	0.710

Tested By JCM Date 2/25/02 Input Checked By JR Date 3/7/02

DCN: CT-S28 DATE 6-25-98 REVISION: 1

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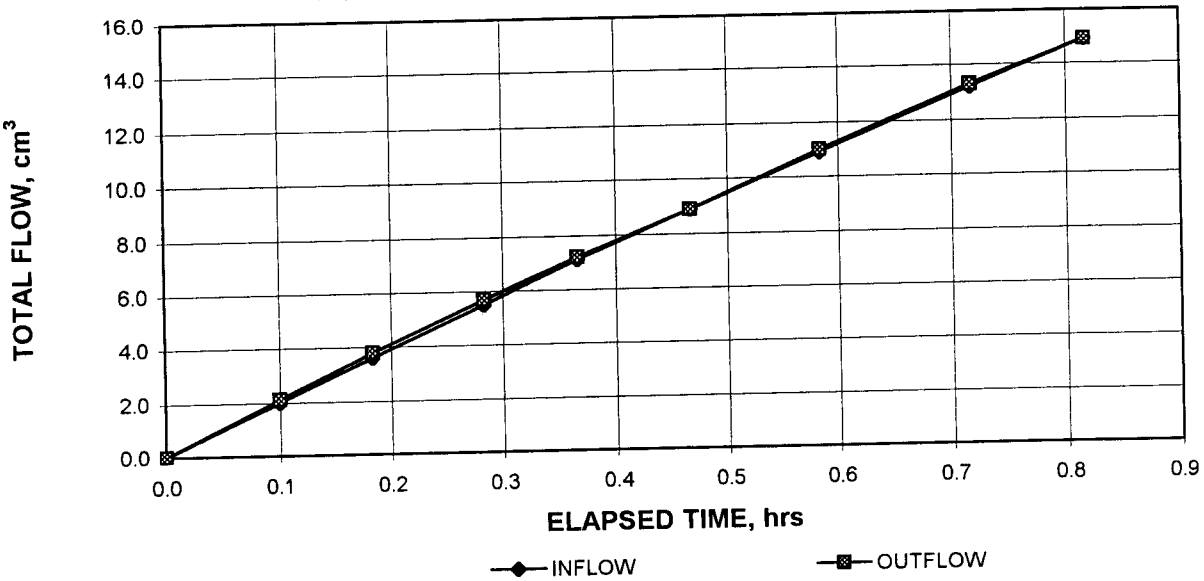
PERMEABILITY TEST

ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

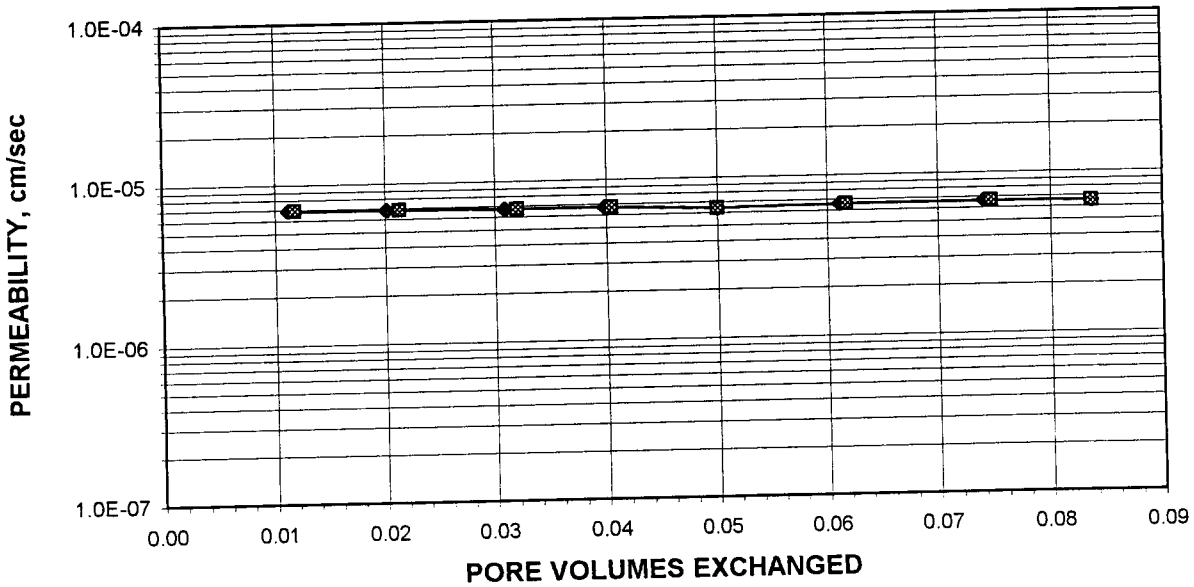
Client	DAVID GARRETT	Boring No.	B-8
Client Project	PITT COUNTY	Depth (ft.)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID No.	R02011-01.002		

AVERAGE PERMEABILITY = 6.5E-06 cm/sec @ 20°C
AVERAGE PERMEABILITY = 6.5E-08 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: JCM Date: 2/25/02 Checked By: KRL Date: 3-1-02

DCN: CT-22C DATE: 01-11-99 REVISION:3 C:\MSOffice\Excel\Perms\February02\[011P4.xls]Sheet1
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PERMEABILITY TEST

ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

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Client	DAVID GARRETT	Boring No.	B-8
Client Project	PITT COUNTY	Depth (ft.)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID No.	R02011-01.002		
		Specific Gravity	2.70 Assumed
		Sample Condition	Remolded

Visual Description: BROWN SILT

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	1128	608
Wt. of Tare & WS (gm.)	325.06	452.60
Wt. of Tare & DS (gm.)	286.25	381.54
Wt. of Tare (gm.)	84.14	82.10
Wt. of Water (gm.)	38.81	71.06
Wt. of DS (gm.)	202.11	299.44
Moisture Content (%)	**19.2**	**23.7**

SPECIMEN:	BEFORE TEST	AFTER TEST
Wt. of Tube & WS (gm.)	2143.20	NA
Wt. of Tube (gm.)	1348.60	NA
Wt. of WS (gm.)	794.60	824.79
Length 1 (in.)	4.000	3.981
Length 2 (in.)	4.000	3.955
Length 3 (in.)	4.000	3.943
Top Diameter (in.)	2.867	2.884
Middle Diameter (in.)	2.867	2.892
Bottom Diameter (in.)	2.867	2.887
Average Length (in.)	4.00	3.96
Average Area (in.^{2})	6.46	6.55
Sample Volume (cm^3)	423.24	424.96
Unit Wet Wt. (gm./ cm^3)	1.88	1.94
Unit Wet Wt. (pcf)	117.2	121.2
Unit Dry Wt. (pcf)	98.3	97.9
Unit Dry Wt. (gm./ cm^3)	1.57	1.57
Void Ratio, e	0.71	0.72
Porosity, n	0.42	0.42
Pore Volume (cm^3)	176.4	178.1

Tested By: JCM Date: 2/25/02 Checked By: KBL Date: 3-1-02

DCN: CT-22C DATE: 01-11-99 REVISION:3 C:\MSOffice\Excel\Perms\February02\[011P4.xls]Sheet1
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PERMEABILITY TEST

ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

Client	DAVID GARRETT	Boring No.	B-8
Client Project	PITT COUNTY	Depth (ft.)	1-5
Project No.	R02011-01	Sample No.	NA
Lab ID No.	R02011-01.002		

Pressure Heads (Constant)

Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions

Sample Length (cm), L	10.06
Sample Diameter (cm)	7.33
Sample Area (cm^2), A	42.25
Inflow Burette Area (cm^2), a-in	0.872
Outflow Burette Area (cm^2), a-out	0.896
B Parameter (%)	95

AVERAGE PERMEABILITY = 6.5E-06 cm/sec @ 20°C
AVERAGE PERMEABILITY = 6.5E-08 m/sec @ 20°C

DATE (mm/dd/yy)	TIME (hr)	TIME (min)	ELAPSED TIME t (hr)	TOTAL INFLOW (cm^3)	TOTAL OUTFLOW (cm^3)	TOTAL HEAD h (cm)	FLOW (0 flow) (1 stop)	TEMP. (°C)	INCREMENTAL PERMEABILITY @ 20°C (cm/sec)
2/27/02	11	33	0.0	0.0	0.0	199.0	0	20.0	NA
2/27/02	11	39	0.1	2.0	2.1	194.4	0	20.0	6.9E-06
2/27/02	11	44	0.2	3.6	3.8	190.6	0	20.0	6.8E-06
2/27/02	11	50	0.3	5.5	5.7	186.3	0	20.0	6.7E-06
2/27/02	11	55	0.4	7.1	7.2	182.8	0	20.0	6.7E-06
2/27/02	12	1	0.5	8.9	8.9	178.9	0	20.0	6.4E-06
2/27/02	12	8	0.6	10.9	11.0	174.2	0	20.0	6.6E-06
2/27/02	12	16	0.7	13.2	13.3	169.0	0	20.0	6.6E-06
2/27/02	12	22	0.8	14.9	14.9	165.3	1	20.0	6.5E-06

Tested By: JCM Date: 2/25/02 Checked By: RM Date: 3-1-02

DCN: CT-22C DATE: 01-11-99 REVISION:3
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SHELBY TUBE UNIT WEIGHT

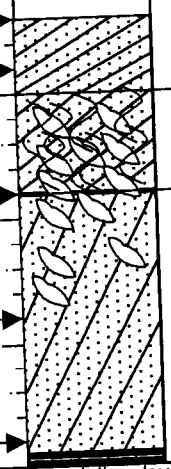
(SOP - S37)

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth Pushed(ft)	13.0-15.0
Project No.	R02011-01	Shelby Tube No.	NA
Lab ID	R02011-01.004	Recovery(ft)	1.9

MOISTURE CONTENT	1	2	3	4	5
Section Number	1713				
Tare Number	173.76				
Wt. Tare & WS(gm.)	149.96				
Wt. Tare & DS(gm.)	83.20				
Wt. Tare(gm.)	35.65				
Moisture Content(%)					
UNIT WEIGHT					
Wt. Tube & WS.(gms.)		1677.40	1679.00	1675.20	
Wt. Of Tube(gms.)		461.40	463.90	466.70	
Wt. Of WS.(gms.)		1216.00	1215.10	1208.50	
Length 1 (in.)		6.039	6.085	6.086	
Length 2 (in.)		6.048	6.083	6.087	
Length 3 (in.)		6.057	6.088	6.085	
Top Diameter (in.)		2.874	2.875	2.871	
Middle Diameter (in.)		2.878	2.874	2.870	
Bottom Diameter (in.)		2.863	2.871	2.870	
Sample Volume (cc)		641.91	646.62	645.34	
Moisture Content(%)		35.65	35.65	35.65	
Unit Wet Wt.(gms/cc)		1.89	1.88	1.87	
Unit Wet Wt.(pcf.)		118.2	117.3	116.9	
Unit Dry Wt.(gms/cc)		**1.40**	**1.39**	**1.38**	
Unit Dry Wt.(pcf.)		**87.1**	**86.4**	**86.1**	

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
13.0					
		5		POSSIBLE CAVE IN	NO TEST
13.5		4		SEA SHELL FRAGMENTS GRAY SILTY, CLAYEY SAND	GRAINSIZE LIMITS CU
14.0		3		GRAY CLAYEY SAND	CU
14.5		2			GRAINSIZE HYDROMETERS LIMITS CU
15.0		1			WC



Note: *When full recovery is not achieved, the elevation can not be accurately defined.*
Indicate each cut of the tube with an arrow.
Indicate dividing line between soil types with a solid line.
Indicate wax by cross-hatching. Indicate soil types by standard symbols.

Tested By *JCM* Date *2/6/02* Checked By *KCl* Date *3-11-02*

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DCN: CT-S37 DATE: 1-29-98 REVISION: 2 C:\MSOffice\Excel\PRINTQ\L943.xls]Sheet1

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WASH SIEVE ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth (ft)	14.4-14.9
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.004	Soil Color	**GRAY**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1092	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	664.10	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	531.30	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	103.56	Weight of Tare (gm)	NA
Weight of Water (gm)	132.80	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	427.74	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**31.0**	**Moisture Content (%)**	NA

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	427.74
Dry Weight - 3/4" Sample (gm)	263.26	Weight of minus #200 material (gm)	164.48
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	263.26
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	4.53	1.06	1.06	98.94	**98.94**
#10	2.00	6.41	1.50	2.56	97.44	**97.44**
#20	0.85	6.48	1.51	4.07	95.93	**95.93**
#40	0.425	5.78	1.35	5.42	94.58	**94.58**
#60	0.250	18.05	4.22	9.64	90.36	**90.36**
#140	0.106	196.73	45.99	55.64	44.36	**44.36**
#200	0.075	25.28	5.91	61.55	38.45	**38.45**
Pan	-	164.48	38.45	100.00	-	-

Tested By JP Date 2/19/02 Checked By Date 2/22/02

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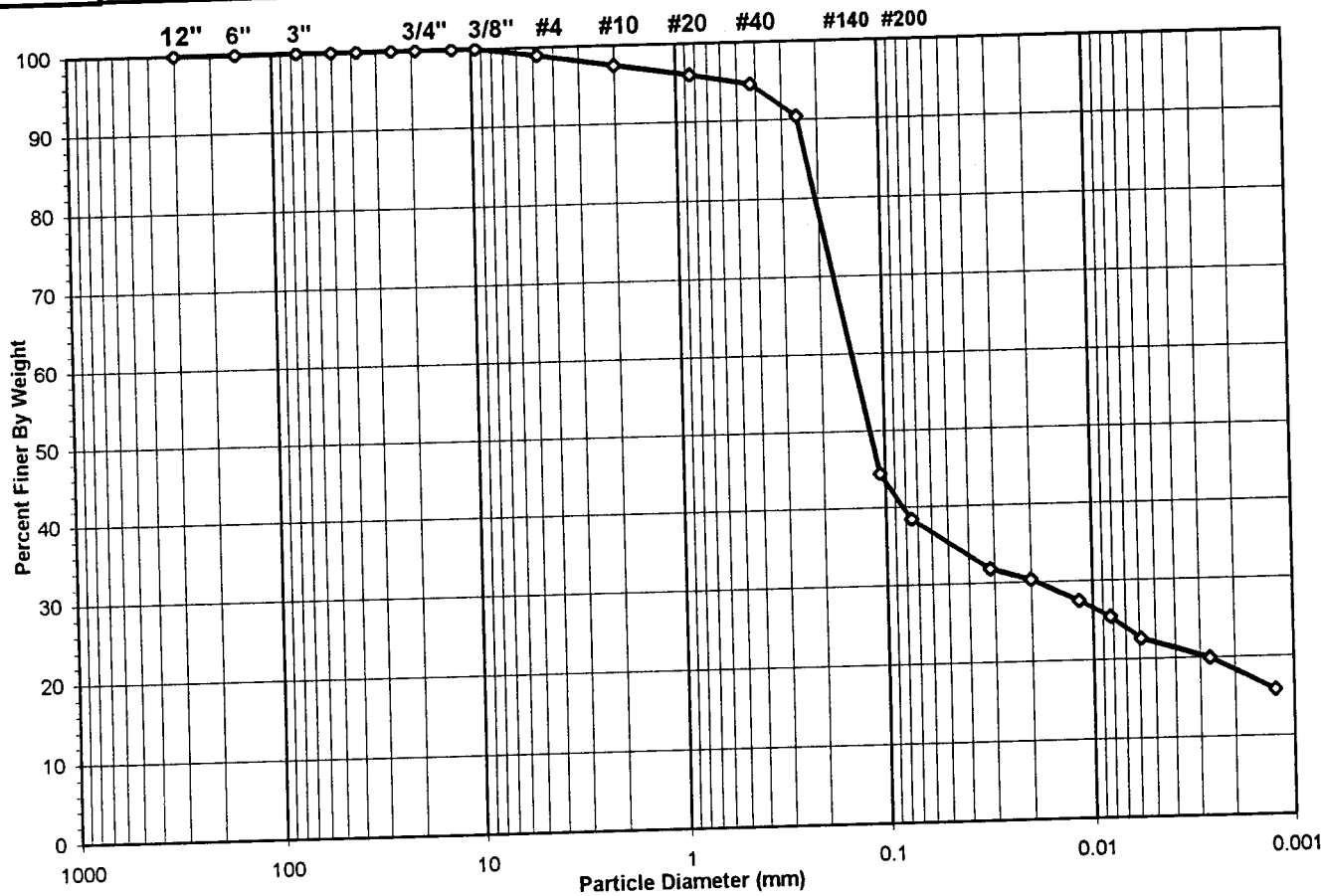
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth (ft)	14.4-14.9
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.004	Soil Color	GRAY

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary		
Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	1.06
#4 To #200	*Sand*	60.49
Finer Than #200	*Silt & Clay*	38.45

USCS Symbol ***SC, TESTED***

USCS Classification ***CLAYEY SAND***

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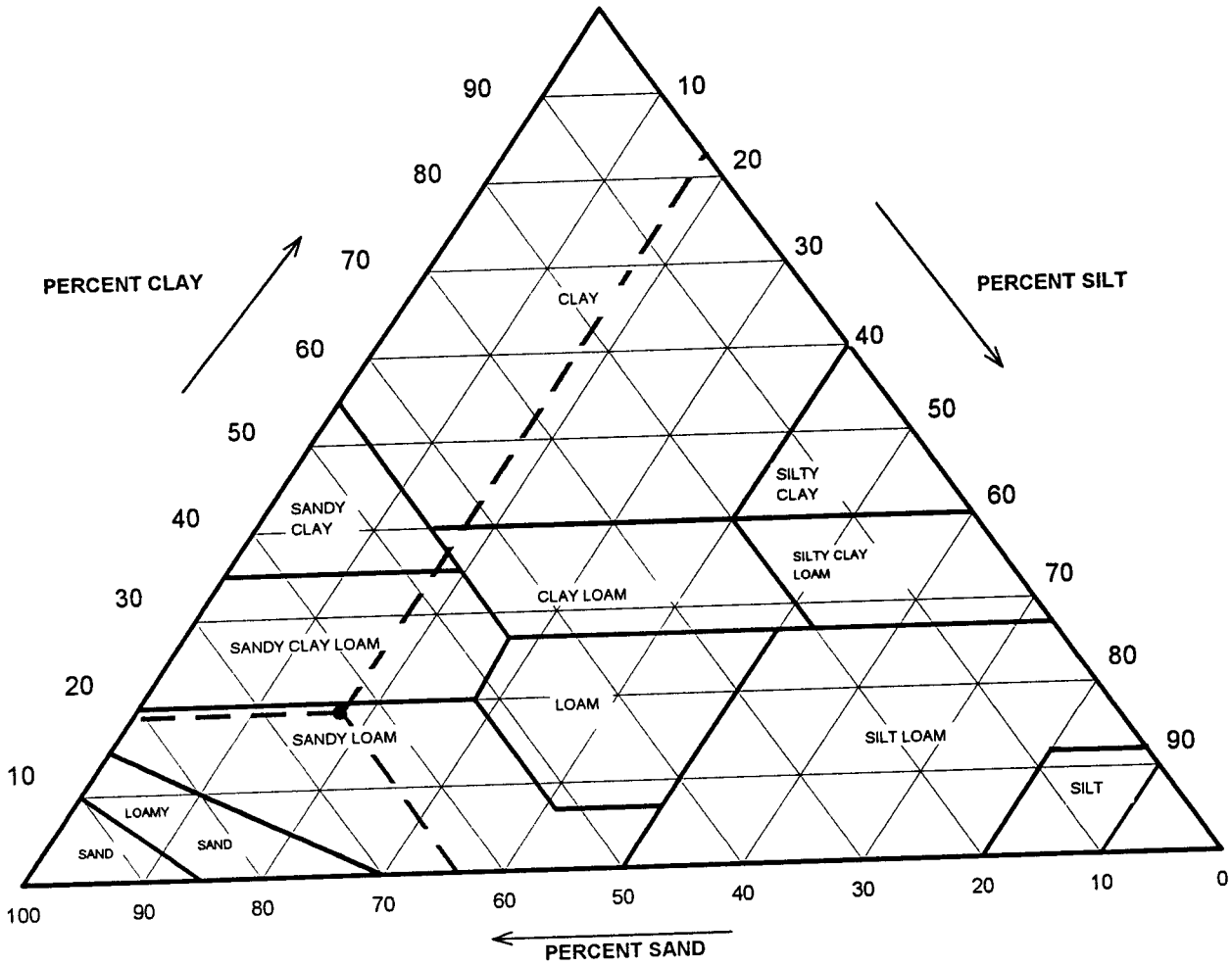
USDA CLASSIFICATION CHART

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth (ft)	14.4-14.9
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.004	Soil Color	GRAY



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
		Gravel	2.56	**0.00**
2	97.44	*Sand*	62.09	**63.72**
0.05	35.35	*Silt*	16.97	**17.41**
0.002	18.38	*Clay*	18.38	**18.87**

USDA Classification ***SANDY LOAM***

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HYDROMETER ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth (ft)	14.4-14.9
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.004	Soil Color	**GRAY**

Elapsed Time (min)		R Measured	Temp. (° C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	30.0	30.5	21.4	8.16	22.3	82.7	0.01322	0.0314	**31.8**
5		29.5	21.4	8.16	21.3	79.0	0.01322	0.0200	**30.4**
15		27.5	21.4	8.16	19.3	71.6	0.01322	0.0117	**27.5**
31		26.0	21.4	8.16	17.8	66.0	0.01322	0.0082	**25.4**
63		24.0	21.4	8.16	15.8	58.6	0.01322	0.0059	**22.5**
308		22.0	22.0	8.00	14.0	51.8	0.01313	0.0027	**19.9**
1440		19.0	22.5	7.86	11.1	41.2	0.01305	0.0012	**15.8**

Soil Specimen Data		Other Corrections	
Tare No.	2467		
Tare + Dry Material (gm)	130.43	a - Factor	0.99
Weight of Tare (gm)	98.68		
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	38.45
Weight of Dry Material (gm)	26.75		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 2/20/02 Checked By Date 3/22/02

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DCN: CT-S3A DATE:02/06/01 REVISION: 4

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ATTERBERG LIMITS

ASTM D 4318-98 / AASHTO T89 (SOP - S4A)

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth (ft)	14.4-14.9
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.004	Soil Description	**GRAY LEAN CLAY**

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Airdried)

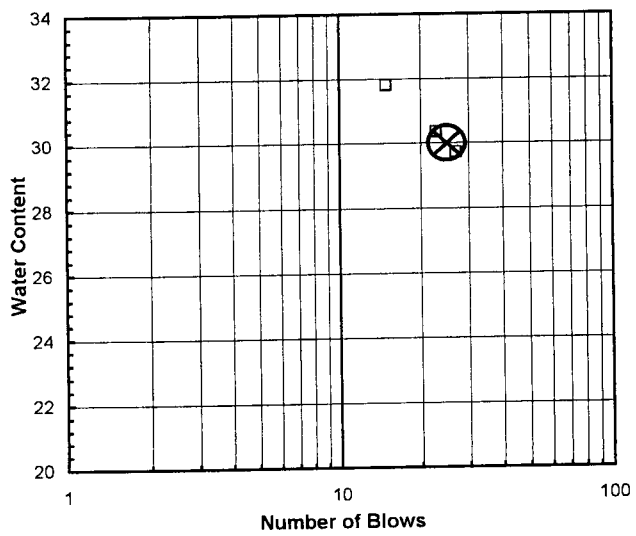
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	41	130	35	MULTIPOINT
Wt. of Tare & WS (gm)	48.68	48.71	46.04	
Wt. of Tare & DS (gm)	41.64	41.82	39.09	
Wt. of Tare (gm)	17.94	19.12	17.23	
Wt. of Water (gm)	7.0	6.9	7.0	
Wt. of DS (gm)	23.7	22.7	21.9	
Moisture Content (%)	**29.7**	**30.4**	**31.8**	
Number of Blows	**27**	**23**	**15**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	2230	165	
Wt. of Tare & WS (gm)	24.85	19.72	
Wt. of Tare & DS (gm)	23.89	18.90	
Wt. of Tare (gm)	18.12	13.62	
Wt. of Water (gm)	1.0	0.8	
Wt. of DS (gm)	5.8	5.3	
Moisture Content (%)	**16.6**	**15.5**	**1.1**

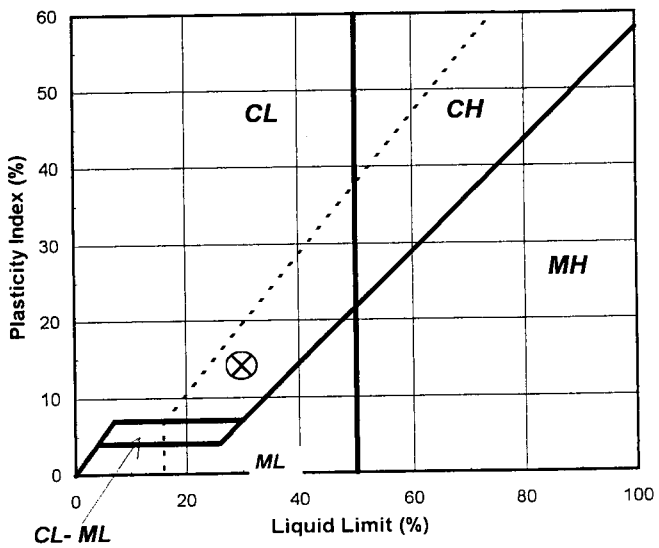
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**30**
Plastic Limit (%)	**16**
Plasticity Index (%)	**14**
USCS Symbol	**CL**

Flow Curve



Plasticity Chart



Tested By TO *Date* 2/20/02 *Checked By* JMO *Date* 2/22/02

page 1 of 1 **DCN:** CT-S4B **DATE:** 10/8/01 **REVISION:** 2

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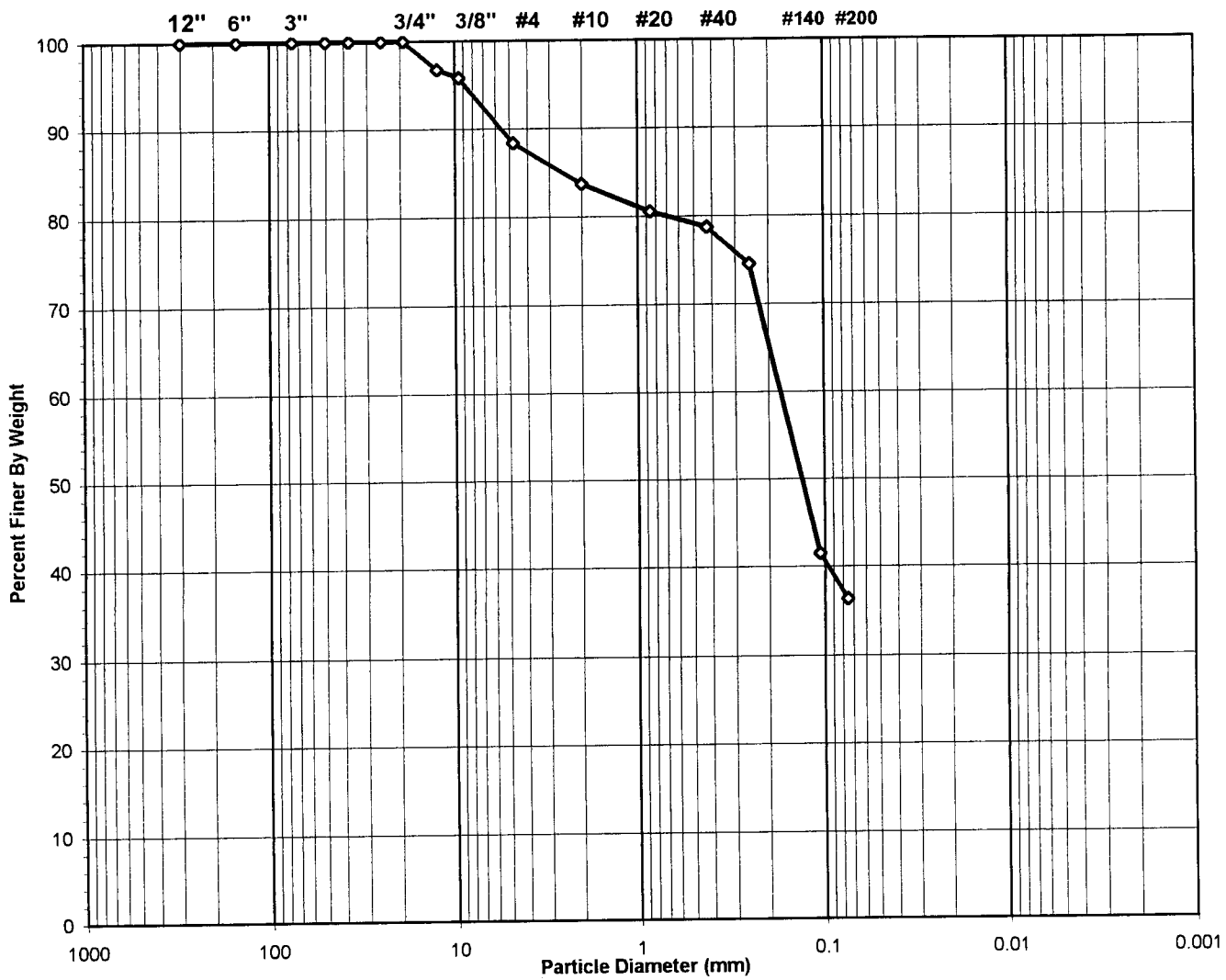
SIEVE ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth (ft)	13.4-13.9
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.004	Soil Color	**GRAY**

	SIEVE ANALYSIS		HYDROMETER
USCS	gravel	sand	silt and clay



USCS Symbol ***SC-SM, TESTED***

USCS Classification ***SILTY, CLAYEY SAND (SEA SHELLS)***

Tested By JP Date 3/8/02 Checked By Jem Date 3-11-02

DCN: CT-S3C DATE 6-25-98 REVISION: 2

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WASH SIEVE ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth (ft)	13.4-13.9
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.004	Soil Color	**GRAY**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	640	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	675.40	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	669.60	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	102.31	Weight of Tare (gm)	NA
Weight of Water (gm)	5.80	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	567.29	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**1.0**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	567.29
Dry Weight - 3/4" Sample (gm)	361.1	Weight of minus #200 material (gm)	206.24
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	361.05
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.50	18.62	3.28	3.28	96.72	**96.72**
3/8"	9.50	4.97	0.88	4.16	95.84	**95.84**
#4	4.75	42.31	7.46	11.62	88.38	**88.38**
#10	2.00	26.43	4.66	16.28	83.72	**83.72**
#20	0.850	18.25	3.22	19.49	80.51	**80.51**
#40	0.425	10.26	1.81	21.30	78.70	**78.70**
#60	0.250	23.78	4.19	25.49	74.51	**74.51**
#140	0.106	187.17	32.99	58.49	41.51	**41.51**
#200	0.075	29.26	5.16	63.64	36.36	**36.36**
Pan	-	206.24	36.36	100.00	-	-

Tested By JP Date 3/8/02 Checked By Jm Date 3-11-02

DCN: CT-S3C DATE 6-25-98 REVISION: 2

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ATTERBERG LIMITS

ASTM D 4318-98 / AASHTO T89 (SOP - S4A)

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth (ft)	13.4-13.9
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.004	Soil Description	**GRAY SILTY CLAY**
			(Minus No. 40 sieve material, Airdried)

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.

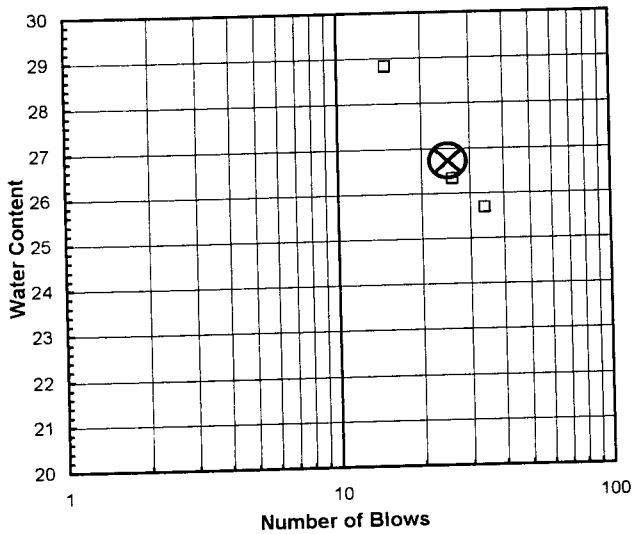
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	186	108	67	MULTIPOINT
Wt. of Tare & WS (gm)	42.99	39.45	44.99	
Wt. of Tare & DS (gm)	37.90	34.53	38.99	
Wt. of Tare (gm)	18.08	15.84	18.17	
Wt. of Water (gm)	5.1	4.9	6.0	
Wt. of DS (gm)	19.8	18.7	20.8	
Moisture Content (%)	**25.7**	**26.3**	**28.8**	
Number of Blows	**34**	**26**	**15**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	202	145	
Wt. of Tare & WS (gm)	21.67	26.46	
Wt. of Tare & DS (gm)	20.60	25.44	
Wt. of Tare (gm)	15.22	20.22	
Wt. of Water (gm)	1.1	1.0	
Wt. of DS (gm)	5.4	5.2	
Moisture Content (%)	**19.9**	**19.5**	**0.3**

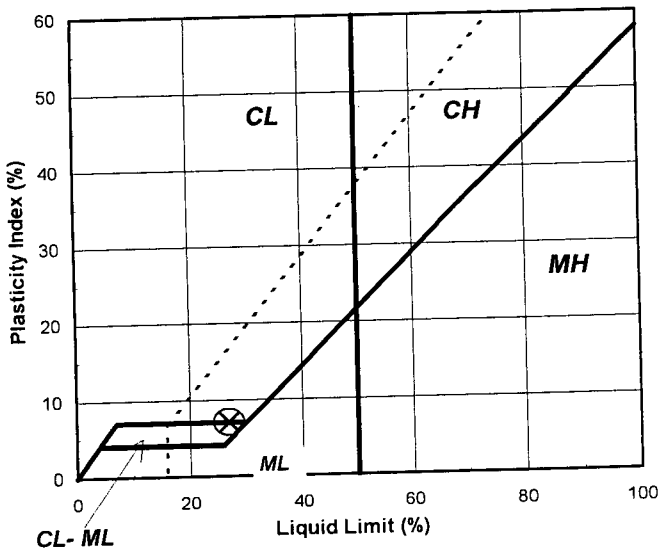
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**27**
Plastic Limit (%)	**20**
Plasticity Index (%)	**7**
USCS Symbol	**CL-ML**

Flow Curve



Plasticity Chart



Tested By TO *Date* 3/8/02 *Checked By* Jcm *Date* 3-11-02

page 1 of 1 **DCN:** CT-S4B **DATE:** 10/8/01 **REVISION:** 2

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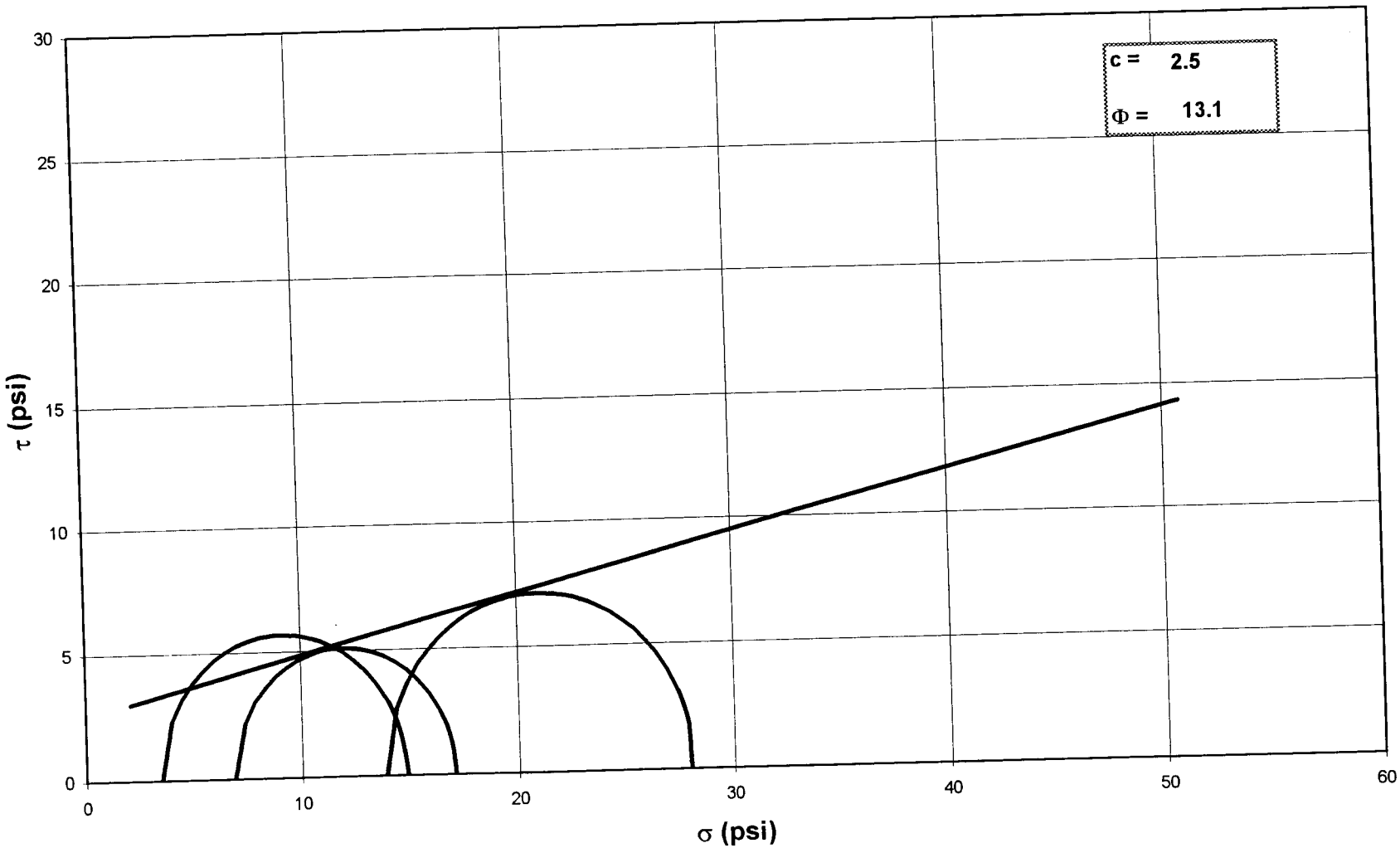
MOHR TOTAL STRENGTH ENVELOPE

Client	DAVID GARRETT	Boring No.	B-8
Client Ref. No.	PITT COUNTY	Depth(ft.)	13.0-15.0
Project no.	R02011-01	Sample No.	NA
Lab ID	R02011-01.004	Visual Description	GRAY CLAY AND SEA SHELL FRAGMENTS (UNDISTURBED)



NOTE: GRAPH NOT TO SCALE

Tested By: JCM *Date:* 2/6/02 *Approved By:* DB *Date:* 2/22/02

#N/A

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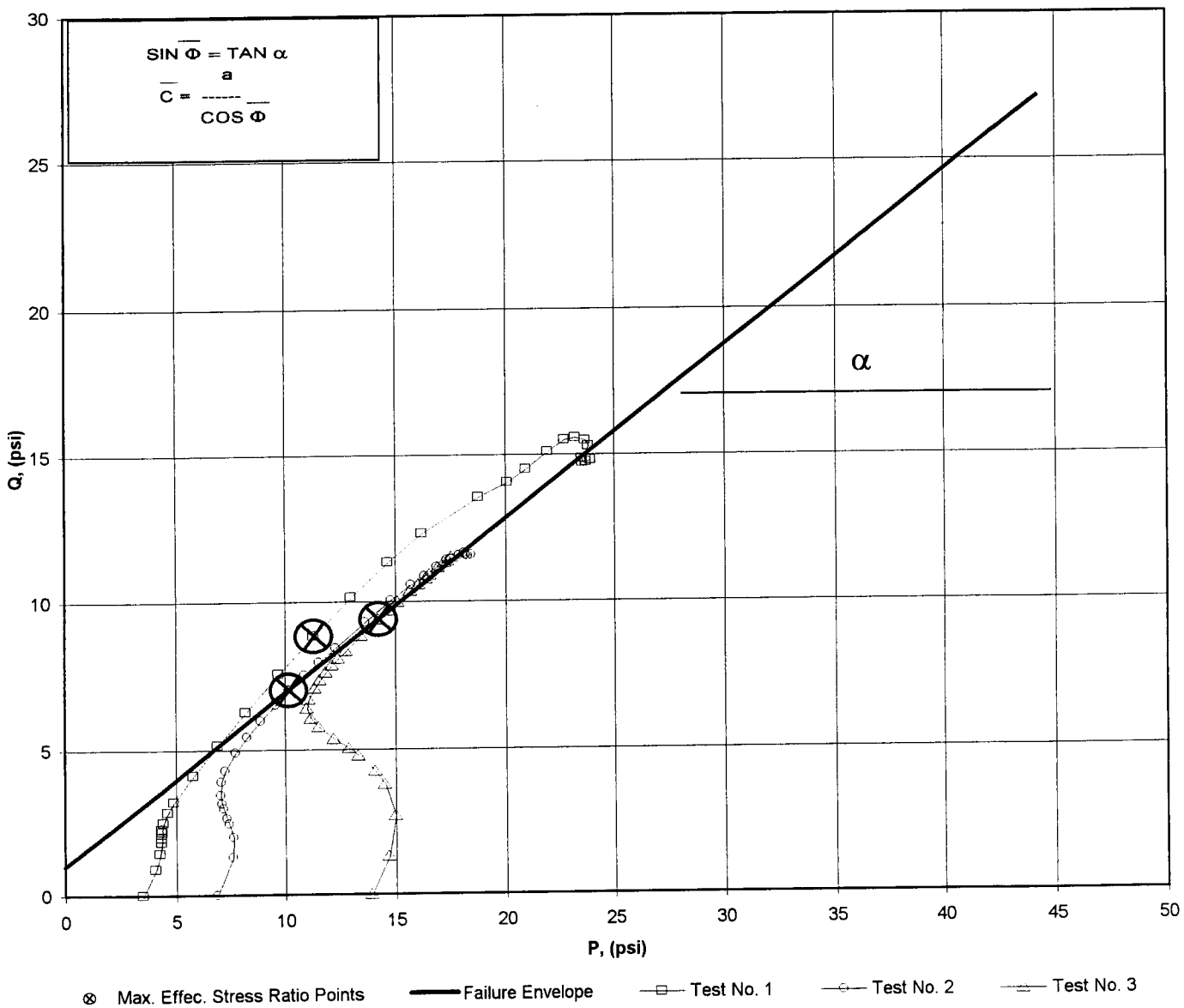
CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	DAVID GARRETT	Lab ID	R02011-01.004
Client Reference	PITT COUNTY	Boring No.	B-8
Project No.	R02011-01	Depth(ft.)	13.0-15.0
		Sample No.	NA

Consolidated Undrained Triaxial Test with Pore Pressure



a	=	1.00	$\overline{C}$	=	1.24
α	=	30.6	$\overline{\Phi}$	=	36.22

Tested By JCM Date 2/6/02 Approved By DB Date 2/22/02

DCN: CT-S28 DATE 6-25-98 REVISION 1
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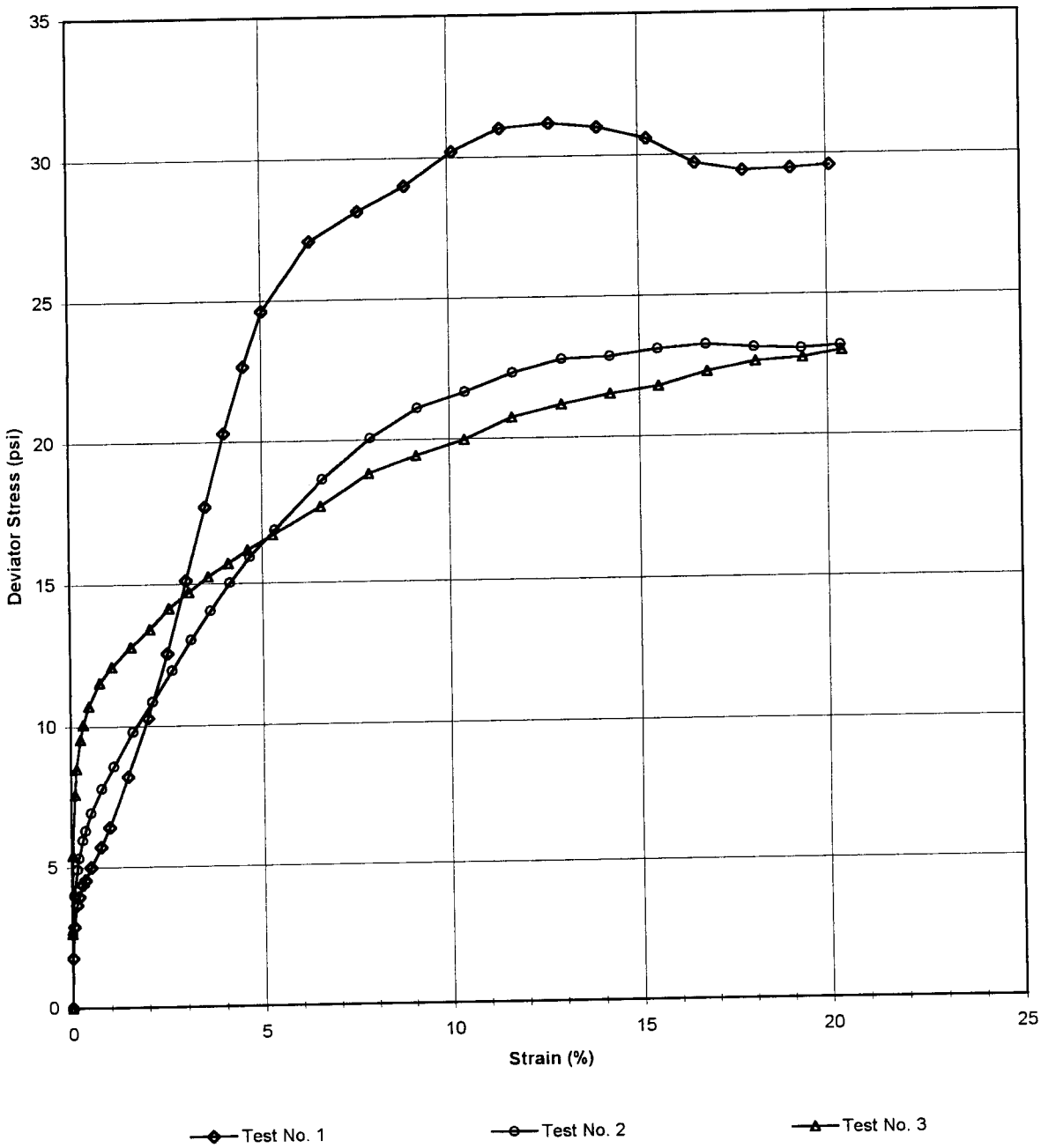
CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	DAVID GARRETT	Lab ID	R02011-01.004
Client Reference	PITT COUNTY	Boring No.	B-8
Project No.	R02011-01	Depth(ft.)	13.0-15.0
		Sample No.	NA

Visual Description: GRAY CLAY (UNDISTURBED)



Tested By JCM Date 2/6/02 Approved By DB Date 2/22/02

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CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

geotechnics

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth(ft.)	14.4-14.9
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.004		

Visual Description: GRAY CLAY (UNDISTURBED)

Stage No.	1
Test No	1

INITIAL SAMPLE DIMENSIONS (in)

Length 1	6.039	Diameter 1	2.874
Length 2	6.048	Diameter 2	2.878
Length 3	6.057	Diameter 3	2.863
Avg Leng.	6.048	Avg. Diam.	2.872

PRESSURES (psi)

Cell Pressure(psi)	43.4
Back Pressure(psi)	39.9
Eff. Cons. Pressure(psi)	3.5
Pore Pressure Response (%)	97

VOLUME CHANGE

Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	23.6
Final Change (ml)	0.4

MAXIMUM OBLIQUITY POINTS

$\overline{P}$	=	11.33
Q	=	8.85

Initial Dial Reading (D.R.), mils	46
D.R. After Saturation, mils	124
D.R. After Consolidation, mils	128

LOAD (LBS)	DEFORMATION (DIVISIONS)	PORE PRESSURE (PSI)
6.8	0.0	39.9
18.0	1.2	40.2
25.0	4.0	40.6
30.0	8.4	40.9
31.8	11.4	41.0
34.6	17.3	41.2
35.6	21.8	41.3
38.5	30.6	41.5
43.2	46.7	41.6
47.7	59.8	41.7
59.4	89.6	41.7
72.9	120.3	41.6
87.9	150.7	41.4
105.1	180.8	41.2
122.6	210.7	40.9
140.2	240.9	40.6
156.6	271.0	40.1
170.4	300.7	39.5
189.1	376.4	38.2
198.7	452.9	37.4
207.5	528.9	36.9
218.7	604.4	36.5
227.5	680.9	36.2
231.9	757.2	35.7
234.0	832.7	35.2
234.3	909.3	34.8
231.2	985.1	34.7
232.6	1061.3	34.5
236.5	1137.3	34.4
240.2	1198.7	34.2

Tested By JCM Date 2/6/02 Input Checked By JMO Date 2/22/04

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DCN: CT-S28 DATE 6-25-98 REVISION 1

CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

geotechnics

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth(ft.)	14.4-14.9
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.004		

Visual Description: GRAY CLAY (UNDISTURBED)

Effective Confining Pressure (psi)	4	*Stage No.*	1
		Test No	1

INITIAL DIMENSIONS

Initial Sample Length (in.)	6.05
Initial Sample Diameter (in.)	2.87
Initial Sample Area (in^2)	6.48
Initial Sample Volume (in^3)	39.17

VOLUME CHANGE

Volume After Consolidation (in^3)	37.63
Length After Consolidation (in)	5.97
Area After Consolidation (in^2)	6.308

Strain (%)	Deviation Stress	ΔU	$\overline{\sigma}_1$	$\overline{\sigma}_3$	Effective Principle Stress Ratio	$\overline{A}$	$\overline{P}$	Q
0.02	1.78	0.31	4.97	3.2	1.559	0.18	4.08	0.89
0.07	2.89	0.68	5.71	2.8	2.022	0.24	4.27	1.44
0.14	3.67	0.99	6.18	2.5	2.460	0.28	4.35	1.83
0.19	3.96	1.12	6.34	2.4	2.660	0.29	4.36	1.98
0.29	4.39	1.31	6.57	2.2	3.008	0.31	4.38	2.19
0.37	4.56	1.43	6.62	2.1	3.202	0.32	4.35	2.28
0.51	5.00	1.58	6.92	1.9	3.608	0.33	4.42	2.50
0.78	5.73	1.73	7.50	1.8	4.245	0.31	4.63	2.87
1.00	6.42	1.80	8.11	1.7	4.783	0.29	4.90	3.21
1.50	8.21	1.80	9.92	1.7	5.822	0.23	5.81	4.11
2.02	10.27	1.70	12.07	1.8	6.703	0.17	6.94	5.14
2.53	12.54	1.54	14.50	2.0	7.397	0.13	8.23	6.27
3.03	15.11	1.31	17.30	2.2	7.908	0.09	9.74	7.56
3.53	17.71	1.03	20.18	2.5	8.159	0.06	11.33	8.85
4.04	20.30	0.65	23.14	2.8	8.128	0.03	13.00	10.15
4.54	22.67	0.17	26.00	3.3	7.801	0.01	14.67	11.33
5.04	24.63	-0.38	28.51	3.9	7.350	-0.02	16.19	12.31
6.31	27.08	-1.71	32.29	5.2	6.195	-0.07	18.75	13.54
7.59	28.11	-2.53	34.14	6.0	5.662	-0.09	20.09	14.06
8.86	29.00	-2.96	35.46	6.5	5.489	-0.11	20.96	14.50
10.13	30.20	-3.36	37.05	6.9	5.405	-0.11	21.95	15.10
11.41	31.00	-3.73	38.23	7.2	5.288	-0.12	22.73	15.50
12.69	31.16	-4.17	38.83	7.7	5.062	-0.14	23.25	15.58
13.96	30.99	-4.70	39.19	8.2	4.782	-0.16	23.69	15.50
15.24	30.58	-5.05	39.13	8.6	4.575	-0.17	23.84	15.29
16.51	29.70	-5.20	38.40	8.7	4.414	-0.18	23.55	14.85
17.79	29.42	-5.36	38.28	8.9	4.321	-0.19	23.57	14.71
19.06	29.47	-5.52	38.48	9.0	4.268	-0.19	23.75	14.73
20.09	29.57	-5.65	38.73	9.2	4.231	-0.20	23.94	14.79

Tested By JCM Date 2/6/02 Input Checked By JMO Date 2/22/02

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CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

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Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth(ft.)	13.9-14.4
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.004		

Visual Description: GRAY CLAY AND SEA SHELL FRAGMENTS (UNDISTURBED)

Stage No.	1
Test No	2

PRESSURES (psi)

Cell Pressure(psi)	47
Back Pressure(psi)	40.1
Eff. Cons. Pressure(p	6.9
Pore Pressure Response (%)	97

MAXIMUM OBLIQUITY POINTS

$\overline{P}$	=	10.18
Q	=	7.02

INITIAL SAMPLE DIMENSIONS (in)

Length 1	6.085	Diameter 1	2.875
Length 2	6.083	Diameter 2	2.874
Length 3	6.088	Diameter 3	2.871
Avg Leng.	6.085	Avg. Diam.	2.873

VOLUME CHANGE

Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	20.9
Final Change (ml)	3.1

Initial Dial Reading (D.R.), mils	59
D.R. After Saturation, mils	124
D.R. After Consolidation, mils	140

LOAD (LBS)	DEFORMATION (DIVISIONS)	PORE PRESSURE (PSI)
8.0	0.0	40.1
24.6	1.0	40.7
33.3	4.0	41.3
39.2	8.7	42.0
41.8	11.8	42.3
45.9	18.1	42.8
48.1	22.6	43.0
52.1	31.9	43.4
57.8	49.0	43.8
62.9	67.5	44.0
71.0	98.2	44.2
78.1	128.7	44.2
85.7	159.0	44.1
93.2	189.3	43.9
100.2	219.9	43.8
107.3	250.6	43.6
113.7	281.3	43.4
120.8	321.2	43.1
134.2	397.1	42.7
145.9	473.7	42.2
155.2	549.8	41.9
161.3	626.5	41.6
168.1	701.7	41.3
173.8	779.0	41.1
176.8	855.0	40.9
181.1	930.9	40.7
184.9	1007.2	40.5
186.8	1084.6	40.4
189.0	1159.9	40.3
192.1	1221.7	40.2

Tested By JCM Date 2/6/02 Input Checked By JMO Date 2/22/02

DCN: CT-S28 DATE 6-25-98 REVISION 1

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CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

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Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth(ft.)	13.9-14.4
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.004		

Visual Description: GRAY CLAY AND SEA SHELL FRAGMENTS (UNDISTURBED)

Effective Confining Pressure (psi)	7	*Stage No.*	1
		Test No	2

INITIAL DIMENSIONS

Initial Sample Length (in.)	6.09
Initial Sample Diameter (in.)	2.87
Initial Sample Area (in^2)	6.48
Initial Sample Volume (in^3)	39.46

VOLUME CHANGE

Volume After Consolidation (in^3)	38.01
Length After Consolidation (in)	6.00
Area After Consolidation (in^2)	6.330

Strain (%)	Deviation Stress	ΔU	$\overline{\sigma}_1$	$\overline{\sigma}_3$	Effective Principle Stress Ratio	$\overline{A}$	$\overline{P}$	Q
0.02	2.62	0.60	8.92	6.3	1.417	0.24	7.61	1.31
0.07	4.00	1.24	9.65	5.7	1.707	0.32	7.65	2.00
0.15	4.92	1.91	9.91	5.0	1.986	0.40	7.45	2.46
0.20	5.32	2.22	10.00	4.7	2.139	0.43	7.34	2.66
0.30	5.97	2.69	10.18	4.2	2.417	0.46	7.20	2.98
0.38	6.31	2.93	10.28	4.0	2.590	0.48	7.12	3.16
0.53	6.93	3.30	10.53	3.6	2.929	0.49	7.06	3.47
0.82	7.80	3.71	10.99	3.2	3.448	0.49	7.09	3.90
1.12	8.58	3.91	11.56	3.0	3.873	0.47	7.27	4.29
1.64	9.80	4.06	12.63	2.8	4.455	0.43	7.73	4.90
2.14	10.84	4.06	13.68	2.8	4.817	0.39	8.26	5.42
2.65	11.95	3.97	14.88	2.9	5.077	0.34	8.90	5.97
3.15	13.03	3.84	16.09	3.1	5.253	0.30	9.58	6.51
3.66	14.04	3.74	17.20	3.2	5.437	0.27	10.18	7.02
4.17	15.03	3.51	18.41	3.4	5.435	0.24	10.90	7.51
4.68	15.91	3.32	19.50	3.6	5.439	0.21	11.54	7.96
5.35	16.87	3.04	20.72	3.9	5.374	0.19	12.29	8.43
6.61	18.62	2.58	22.94	4.3	5.305	0.14	13.63	9.31
7.89	20.07	2.14	24.83	4.8	5.216	0.11	14.80	10.04
9.16	21.12	1.77	26.26	5.1	5.115	0.09	15.69	10.56
10.43	21.69	1.46	27.13	5.4	4.984	0.07	16.29	10.84
11.69	22.34	1.23	28.02	5.7	4.940	0.06	16.84	11.17
12.97	22.80	1.01	28.69	5.9	4.870	0.05	17.29	11.40
14.24	22.87	0.83	28.94	6.1	4.766	0.04	17.51	11.43
15.50	23.11	0.60	29.41	6.3	4.670	0.03	17.85	11.56
16.78	23.26	0.45	29.72	6.5	4.604	0.02	18.09	11.63
18.06	23.14	0.31	29.73	6.6	4.511	0.01	18.16	11.57
19.32	23.08	0.17	29.80	6.7	4.430	0.01	18.27	11.54
20.35	23.17	0.09	29.99	6.8	4.401	0.00	18.40	11.59

Tested By JCM Date 2/6/02 Input Checked By JHO Date 2/22/02

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CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth(ft.)	13.4-13.9
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.004		

Visual Description: GRAY CLAY AND SEA SHELL FRAGMENTS (UNDISTURBED)

Stage No.	1
Test No	3

PRESSURES (psi)

Cell Pressure(psi)	53.9
Back Pressure(psi)	40
Eff. Cons. Pressure(p	13.9
Pore Pressure Response (%)	98

MAXIMUM OBLIQUITY POINTS

$\overline{P}$	=	14.22
Q	=	9.41

INITIAL SAMPLE DIMENSIONS (in)

Length 1	6.086	Diameter 1	2.871
Length 2	6.087	Diameter 2	2.870
Length 3	6.085	Diameter 3	2.870
Avg Leng.	6.086	Avg. Diam.	2.870

VOLUME CHANGE

Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	16.2
Final Change (ml)	7.8

Initial Dial Reading (D.R.), mils	47
D.R. After Saturation, mils	101
D.R. After Consolidation, mils	170

LOAD (LBS)	DEFORMATION (DIVISIONS)	PORE PRESSURE (PSI)
8.4	0.0	40.0
25.1	0.1	40.5
42.8	2.2	41.6
56.7	6.3	43.2
62.4	9.3	44.1
69.1	15.2	45.3
72.5	19.8	46.0
76.8	28.9	47.0
82.2	45.5	48.1
86.0	63.9	48.7
90.9	94.5	49.3
95.3	124.4	49.5
100.6	154.0	49.6
104.6	183.9	49.6
108.8	214.4	49.6
112.3	245.9	49.6
115.9	276.5	49.5
120.3	315.5	49.5
128.5	390.7	49.3
138.0	467.1	49.1
144.1	543.5	48.9
149.8	620.2	48.8
157.4	695.6	48.6
162.9	772.7	48.4
167.8	849.0	48.3
172.2	925.3	48.2
178.5	1001.6	48.1
183.8	1078.3	48.0
187.5	1154.2	47.9
191.8	1215.4	47.9

Tested By JCM Date 2/6/02 Input Checked By MO Date 2/22/02

DCN: CT-S28 DATE 6-25-98 REVISION 1

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CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	DAVID GARRETT	Boring No.	B-8
Client Reference	PITT COUNTY	Depth(ft.)	13.4-13.9
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.004		

Visual Description: GRAY CLAY AND SEA SHELL FRAGMENTS (UNDISTURBED)

Effective Confining Pressure (psi)	14	*Stage No.*	1
		Test No	3

INITIAL DIMENSIONS

Initial Sample Length (in.)	6.09
Initial Sample Diameter (in.)	2.87
Initial Sample Area (in^2)	6.47
Initial Sample Volume (in^3)	39.38

VOLUME CHANGE

Volume After Consolidation (in^3)	37.86
Length After Consolidation (in)	5.96
Area After Consolidation (in^2)	6.349

Strain (%)	Deviation Stress	ΔU	$\overline{\sigma}_1$	$\overline{\sigma}_3$	Effective Principle Stress Ratio	$\overline{A}$	$\overline{P}$	Q
0.00	2.63	0.52	16.01	13.4	1.197	0.20	14.69	1.32
0.04	5.42	1.63	17.69	12.3	1.441	0.31	14.98	2.71
0.11	7.60	3.20	18.31	10.7	1.710	0.43	14.51	3.80
0.16	8.49	4.06	18.33	9.8	1.862	0.49	14.08	4.24
0.25	9.53	5.32	18.11	8.6	2.112	0.57	13.34	4.77
0.33	10.06	6.04	17.92	7.9	2.279	0.61	12.89	5.03
0.48	10.72	7.04	17.57	6.9	2.563	0.67	12.21	5.36
0.76	11.54	8.13	17.31	5.8	3.000	0.72	11.54	5.77
1.07	12.09	8.74	17.24	5.2	3.344	0.74	11.20	6.04
1.58	12.79	9.28	17.41	4.6	3.769	0.74	11.01	6.39
2.09	13.40	9.51	17.80	4.4	4.050	0.72	11.09	6.70
2.58	14.15	9.61	18.44	4.3	4.295	0.69	11.37	7.07
3.08	14.69	9.65	18.94	4.3	4.455	0.67	11.60	7.35
3.60	15.24	9.64	19.50	4.3	4.582	0.65	11.88	7.62
4.12	15.70	9.60	20.00	4.3	4.649	0.62	12.15	7.85
4.64	16.15	9.55	20.50	4.4	4.711	0.60	12.43	8.07
5.29	16.69	9.48	21.12	4.4	4.773	0.58	12.77	8.35
6.55	17.68	9.28	22.29	4.6	4.831	0.54	13.45	8.84
7.83	18.82	9.08	23.63	4.8	4.906	0.49	14.22	9.41
9.11	19.43	8.91	24.42	5.0	4.891	0.47	14.71	9.71
10.40	19.96	8.75	25.11	5.1	4.877	0.45	15.13	9.98
11.67	20.73	8.59	26.04	5.3	4.904	0.42	15.68	10.37
12.96	21.19	8.44	26.65	5.5	4.879	0.41	16.05	10.59
14.24	21.54	8.31	27.13	5.6	4.851	0.39	16.36	10.77
15.52	21.80	8.25	27.45	5.7	4.855	0.39	16.55	10.90
16.80	22.29	8.11	28.08	5.8	4.852	0.37	16.93	11.15
18.08	22.63	8.00	28.53	5.9	4.836	0.36	17.21	11.32
19.36	22.75	7.92	28.73	6.0	4.803	0.36	17.36	11.37
20.38	23.00	7.87	29.04	6.0	4.814	0.35	17.53	11.50

Tested By JCM Date 2/6/02 Input Checked By JMO Date 2/22/02

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CONSOLIDATED UNDRAINED TRIAXIAL TEST WITH PORE PRESSURE READINGS

ASTM D4767-95 / AASHTO T297-94 (SOP-S28)

Client	DAVID GARRETT		
Client Reference	PITT COUNTY		
Project No.	R02011-01		
Lab ID	R02011-01.004	Specific Gravity (assumed)	2.7

Visual Description: GRAY CLAY AND SEA SHELL FRAGMENTS (UNDISTURBED)

SAMPLE CONDITION SUMMARY

Boring No.	B-8	B-8	B-8
Depth (ft)	14.4-14.9	13.9-14.4	13.4-13.9
Sample No.	NA	NA	NA
Test No.	T1	T2	T3
Deformation Rate (in/min)	0.002	0.002	0.002
Back Pressure (psi)	39.9	40.1	40
Consolidation Time (days)	1	1	1
Initial State (w%)	35.7	35.7	35.7
Total Unit Weight (pcf)	118.3	117.3	116.9
Dry Unit Weight (pcf)	87.2	86.5	86.2
Final State (w%)	31.0	29.5	24.1
Initial State Void Ratio,e	0.933	0.949	0.956

Tested By JCM Date 2/6/02 Input Checked By JMO Date 2/22/02

 DCN: CT-S28 DATE 6-25-98 REVISION: 1 C:\MSOFFICE\EXCEL\PrintQ\[L935.xls]Sheet1

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SHELBY TUBE UNIT WEIGHT

(SOP - S37)

Client	DAVID GARRETT	Boring No.	B-1
Client Reference	PITT COUNTY	Depth Pushed(ft)	13.0-15.0
Project No.	R02011-01	Shelby Tube No.	NA
Lab ID	R02011-01.005	Recovery(ft)	NA

MOISTURE CONTENT

	1	2	3	4	5
Section Number					
Tare Number	604				
Wt. Tare & WS(gm.)	154.07				
Wt. Tare & DS(gm.)	117.37				
Wt. Tare(gm.)	87.44				
Moisture Content(%)	122.62				

UNIT WEIGHT

Wt. Tube & WS.(gms.)
Wt. Of Tube(gms.)
Wt. Of WS.(gms.)
Length 1 (in.)
Length 2 (in.)
Length 3 (in.)
Top Diameter (in.)
Middle Diameter (in.)
Bottom Diameter (in.)
Sample Volume (cc)
Moisture Content(%)
Unit Wet Wt.(gms/cc)
Unit Wet Wt.(pcf.)
Unit Dry Wt.(gms/cc)
Unit Dry Wt.(pcf.)

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
13.0					
13.5					
14.0					
14.5					
15.0		1		BROWN SILT (ASSUMED)	WC

Note: *When full recovery is not achieved, the elevation can not be accurately defined.*
Indicate each cut of the tube with an arrow.
Indicate dividing line between soil types with a solid line.
Indicate wax by cross-hatching. Indicate soil types by standard symbols.

Tested By *JCM* Date *2/19/02* Checked By KSL Date 3-11-02

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DCN: CT-S37 DATE: 1-29-98 REVISION: 2. C:\MSOffice\Excel\PRINTOUT\948.xls]Sheet1

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SHELBY TUBE UNIT WEIGHT

(SOP - S37)

Client	DAVID GARRETT	Boring No.	B-10 S
Client Reference	PITT COUNTY	Depth Pushed(ft)	13.0-15.0
Project No.	R02011-01	Shelby Tube No.	NA
Lab ID	R02011-01.006	Recovery(ft)	2

MOISTURE CONTENT

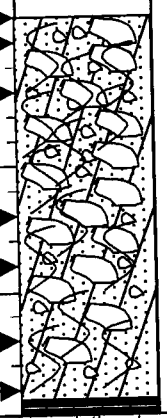
	1	2	3	4	5
Section Number	1719A	725		19	1221
Tare Number	110.78	531.20		183.65	764.50
Wt. Tare & WS(gm.)	106.05	468.00		164.27	633.40
Wt. Tare & DS(gm.)	84.84	86.87		90.95	101.01
Wt. Tare(gm.)	22.30	16.58		26.43	24.62
Moisture Content(%)					

UNIT WEIGHT

Wt. Tube & WS.(gms.)	1049.40	667.47	1698.20
Wt. Of Tube(gms.)	275.39	185.76	461.80
Wt. Of WS.(gms.)	774.01	481.71	1236.40
Length 1 (in.)	3.609	2.409	6.017
Length 2 (in.)	3.602	2.435	6.043
Length 3 (in.)	3.598	2.411	6.011
Top Diameter (in.)	2.870	2.873	2.873
Middle Diameter (in.)	2.878	2.879	2.868
Bottom Diameter (in.)	2.878	2.877	2.867
Sample Volume (cc)	383.38	257.41	638.28
Moisture Content(%)	16.58	26.43	24.62
Unit Wet Wt.(gms/cc)	2.02	1.87	1.94
Unit Wet Wt.(pcf.)	126.0	116.8	120.9
Unit Dry Wt.(gms/cc)	**1.73**	**1.48**	**1.55**
Unit Dry Wt.(pcf.)	**108.1**	**92.4**	**97.0**

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
13.0					
13.5		7			CONSOLIDATION
		6			NO TEST
14.0		5			GRAINSIZE HYDROMETER LIMITS
		4			UNIT WGT. WC.
14.5		3		GRAY SILTY, CLAYEY SAND WITH GRAVEL AND SEA SHELL FRAGMENTS	PERMEABILITY
		2			WC
15.0		1			WC



Note: *When full recovery is not achieved, the elevation can not be accurately defined.*
Indicate each cut of the tube with an arrow.
Indicate dividing line between soil types with a solid line.
Indicate wax by cross-hatching. Indicate soil types by standard symbols.

Tested By *JCM/TM* Date *2/19/02* Checked By KRL Date 3-12-02

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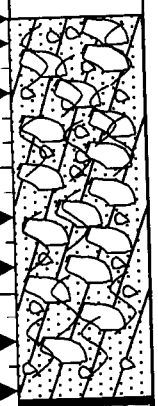
SHELBY TUBE UNIT WEIGHT

(SOP - S37)

Client	DAVID GARRETT	Boring No.	B-10 S
Client Reference	PITT COUNTY	Depth Pushed(ft)	13.0-15.0
Project No.	R02011-01	Shelby Tube No.	NA
Lab ID	R02011-01.006	Recovery(ft)	2

MOISTURE CONTENT	6	7	8	9	10
Section Number		1310			
Tare Number		181.43			
Wt. Tare & WS(gm.)		164.34			
Wt. Tare & DS(gm.)		102.67			
Wt. Tare(gm.)		27.71			
Moisture Content(%)					
UNIT WEIGHT					
Wt. Tube & WS.(gms.)		192.98			
Wt. Of Tube(gms.)		76.71			
Wt. Of WS.(gms.)		116.27			
Length 1 (in.)		0.750			
Length 2 (in.)		0.750			
Length 3 (in.)		0.750			
Top Diameter (in.)		2.500			
Middle Diameter (in.)		2.500			
Bottom Diameter (in.)		2.500			
Sample Volume (cc)		60.33			
Moisture Content(%)		27.71			
Unit Wet Wt.(gms/cc)		1.93			
Unit Wet Wt.(pcf.)		120.3			
Unit Dry Wt.(gms/cc)		**1.51**			
Unit Dry Wt.(pcf.)		**94.2**			

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
13.0					
13.5		7		GRAY SILTY, CLAYEY SAND WITH GRAVEL AND SEA SHELL FRAGMENTS	CONSOLIDATION
		6			NO TEST
14.0		5			GRAINSIZE HYDROMETER LIMITS
		4			UNIT WGT. WC.
14.5		3			PERMEABILITY
		2			WC
15.0		1			WC

Note: When full recovery is not achieved, the elevation can not be accurately defined.
Indicate each cut of the tube with an arrow.
Indicate dividing line between soil types with a solid line.
Indicate wax by cross-hatching. Indicate soil types by standard symbols.

Tested By *JCM/TM* Date *2/19/02* Checked By KH Date 3-11-02

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SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B-10 S
Client Reference	PITT COUNTY	Depth (ft)	13.7-14.2
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.006	Soil Color	**GRAY**

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay

USCS Summary		
Sieve Sizes (mm)		**Percentage**
Greater Than #4	*Gravel*	29.10
#4 To #200	*Sand*	52.10
Finer Than #200	*Silt & Clay*	18.80

USCS Symbol ***SC-SM, TESTED***

USCS Classification ***SILTY, CLAYEY SAND WITH GRAVEL (SEA SHELLS)***

DCN: CT-S3A DATE:02/06/01 REVISION: 4

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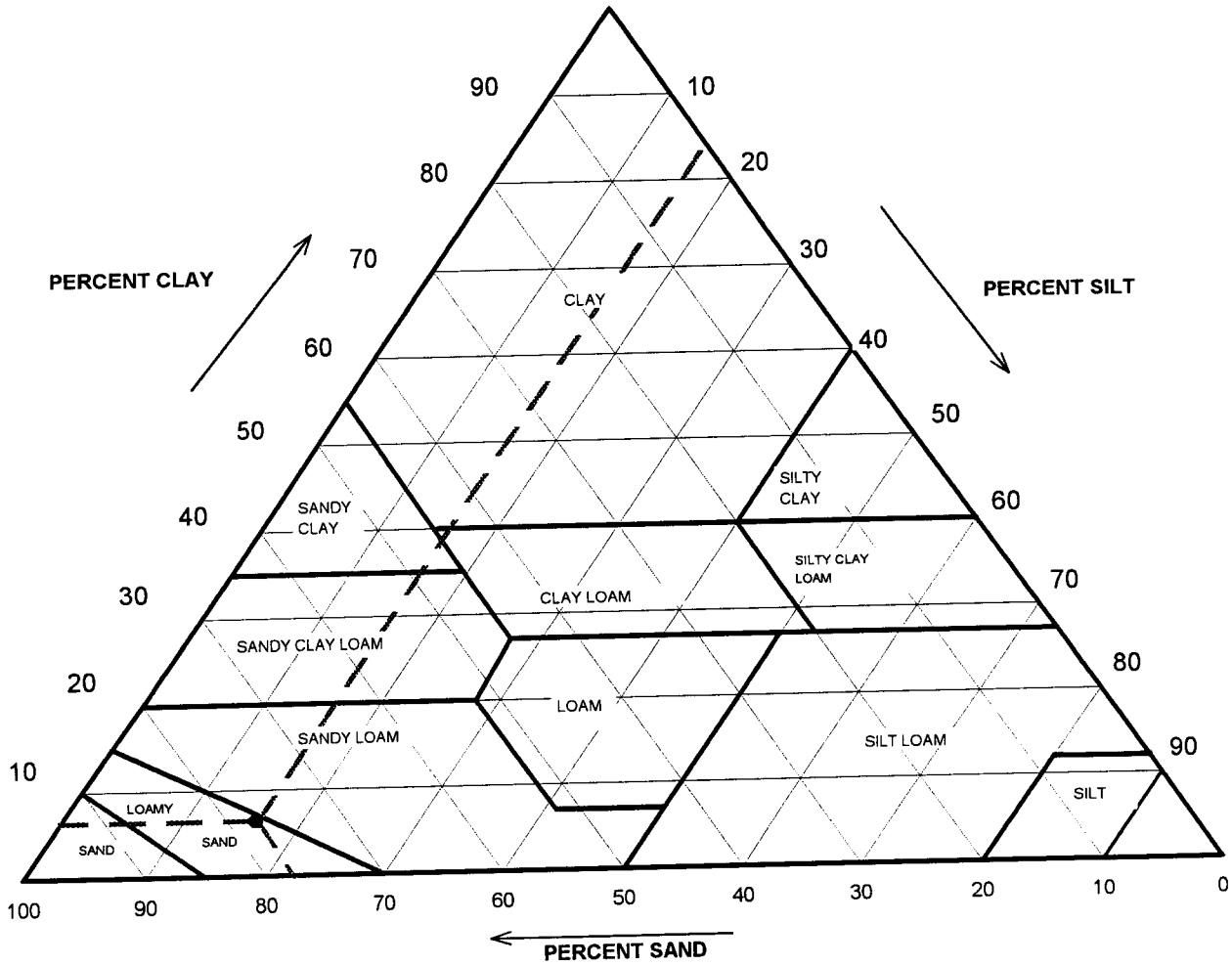
USDA CLASSIFICATION CHART

Client	DAVID GARRETT	Boring No.	B-10 S
Client Reference	PITT COUNTY	Depth (ft)	13.7-14.2
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.006	Soil Color	GRAY



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
		Gravel	37.38	**0.00**
2	62.62	*Sand*	48.60	**77.60**
0.05	14.03	*Silt*	10.04	**16.04**
0.002	3.98	*Clay*	3.98	**6.36**

USDA Classification ***LOAMY SAND***

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DCN: CT-S3A DATE:02/06/01 REVISION: 4

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WASH SIEVE ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B-10 S
Client Reference	PITT COUNTY	Depth (ft)	13.7-14.2
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.006	Soil Color	**GRAY**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1221	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	764.50	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	633.40	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	101.01	Weight of Tare (gm)	NA
Weight of Water (gm)	131.10	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	532.39	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**24.6**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	532.39
Dry Weight - 3/4" Sample (gm)	367.93	Weight of minus #200 material (gm)	100.09
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	432.30
Dry Weight + 3/4" Sample (gm)	64.37		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	52.67	9.89	9.89	90.11	**90.11**
3/4"	19.0	11.70	2.20	12.09	87.91	**87.91**
1/2"	12.5	1.81	0.34	12.43	87.57	**87.57**
3/8"	9.50	16.66	3.13	15.56	84.44	**84.44**
#4	4.75	72.06	13.54	29.10	70.90	**70.90**
#10	2.00	44.10	8.28	37.38	62.62	**62.62**
#20	0.85	27.81	5.22	42.60	57.40	**57.40**
#40	0.425	11.86	2.23	44.83	55.17	**55.17**
#60	0.250	27.73	5.21	50.04	49.96	**49.96**
#140	0.106	155.26	29.16	79.20	20.80	**20.80**
#200	0.075	10.64	2.00	81.20	18.80	**18.80**
Pan	-	100.09	18.80	100.00	-	-

Tested By JP Date 2/27/02 Checked By JR Date 3/7/02

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DCN: CT-S3A DATE:02/06/01 REVISION: 4

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HYDROMETER ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	DAVID GARRETT	Boring No.	B-10 S
Client Reference	PITT COUNTY	Depth (ft)	13.7-14.2
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.006	Soil Color	**GRAY**

Elapsed Time (min)		R Measured	Temp. (° C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	12.5	13.0	20.9	8.30	4.7	53.0	0.01330	0.0354	**10.0**
5		13.0	20.9	8.30	4.7	53.0	0.01330	0.0224	**10.0**
15		12.0	20.9	8.30	3.7	41.7	0.01330	0.0130	**7.8**
31		12.0	20.9	8.30	3.7	41.7	0.01330	0.0090	**7.8**
66		11.5	21.1	8.24	3.3	36.7	0.01327	0.0062	**6.9**
289		10.5	20.8	8.33	2.2	24.5	0.01332	0.0030	**4.6**
1440		10.0	20.5	8.41	1.6	17.9	0.01336	0.0013	**3.4**

Soil Specimen Data		**Other Corrections**	
Tare No.	1646		
Tare + Dry Material (gm)	110.67	a - Factor	0.99
Weight of Tare (gm)	96.88		
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	18.80
Weight of Dry Material (gm)	8.79		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 2/28/02 Checked By JR Date 3/7/02

DCN: CT-S3A DATE:02/06/01 REVISION: 4

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ATTERBERG LIMITS

ASTM D 4318-98 / AASHTO T89 (SOP - S4A)

Client	DAVID GARRETT	Boring No.	B-10 S
Client Reference	PITT COUNTY	Depth (ft)	13.7-14.2
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01.006	Soil Description	**GRAY SILTY CLAY**
			(Minus No. 40 sieve material, Airdried)

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.

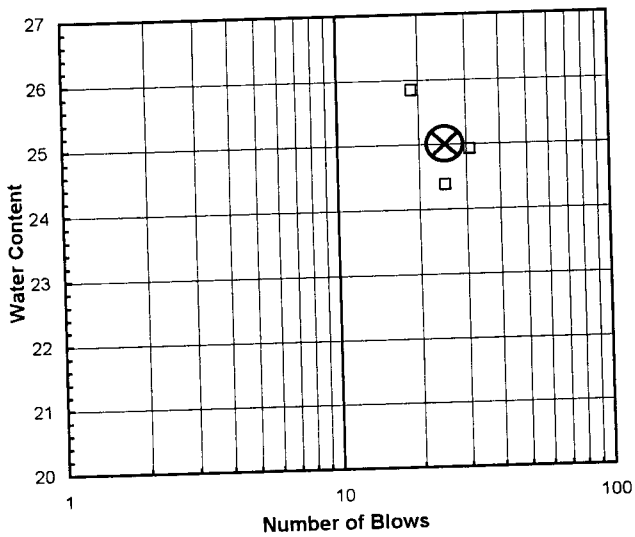
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	179	151	35	MULTIPOINT
Wt. of Tare & WS (gm)	53.80	45.76	43.72	
Wt. of Tare & DS (gm)	46.78	40.55	38.28	
Wt. of Tare (gm)	18.62	19.18	17.23	
Wt. of Water (gm)	7.0	5.2	5.4	
Wt. of DS (gm)	28.2	21.4	21.1	
Moisture Content (%)	**24.9**	**24.4**	**25.8**	
Number of Blows	**31**	**25**	**19**	

Plastic Limit Tes	**1**	**2**	**Range**
Tare Number	163	195	
Wt. of Tare & WS (gm)	21.32	23.44	
Wt. of Tare & DS (gm)	20.31	22.41	
Wt. of Tare (gm)	15.23	17.18	
Wt. of Water (gm)	1.0	1.0	
Wt. of DS (gm)	5.1	5.2	
Moisture Content (%)	**19.9**	**19.7**	**0.2**

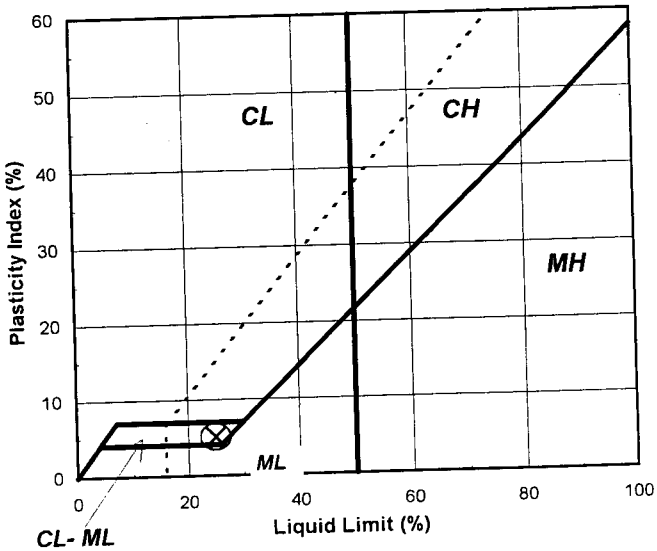
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**25**
Plastic Limit (%)	**20**
Plasticity Index (%)	**5**
USCS Symbol	**CL-ML**

Flow Curve



Plasticity Chart



Tested By TO *Date* 3/5/02 *Checked By* JR *Date* 3/7/02

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PERMEABILITY TEST

ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

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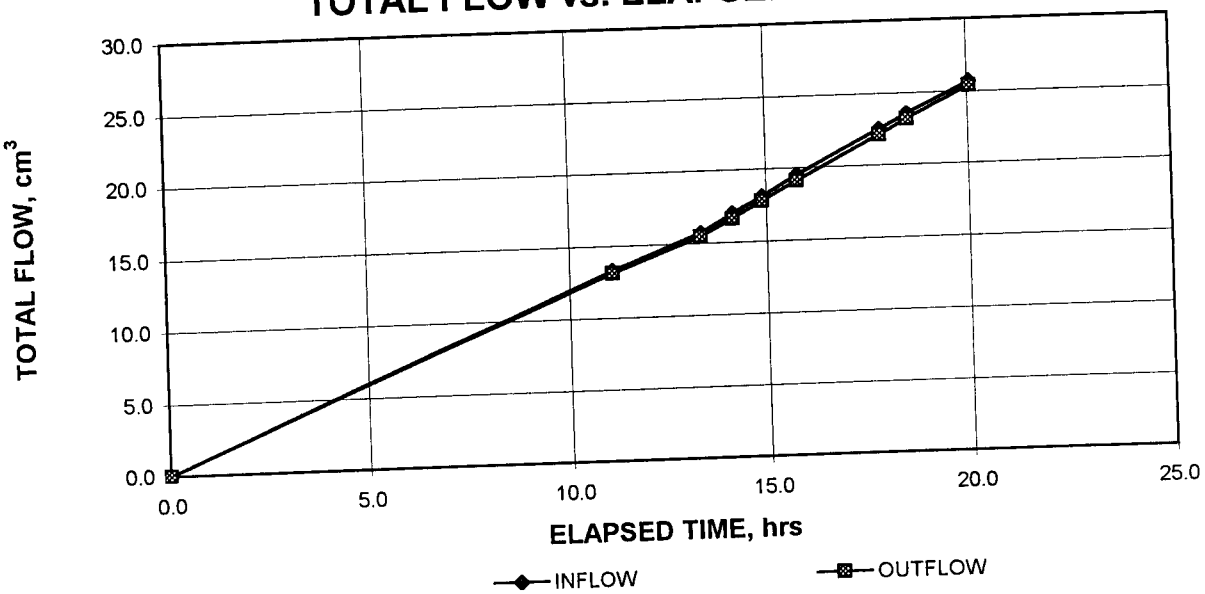
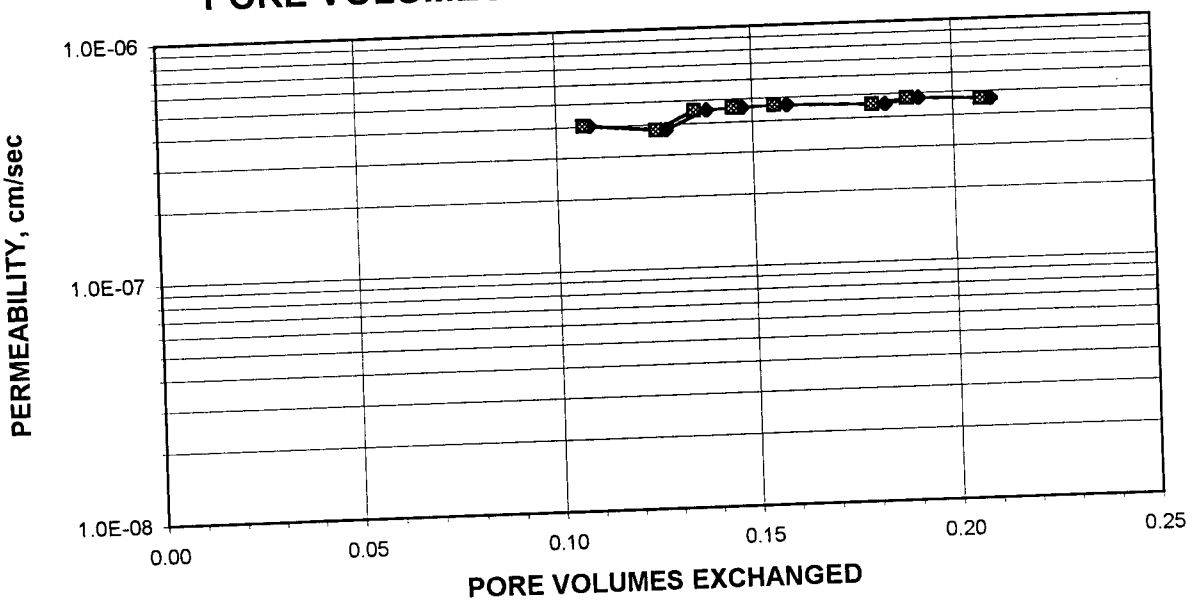
Client	DAVID GARRETT	Boring No.	B-10 S
Client Project	PITT COUNTY	Depth (ft.)	14.4-14.7
Project No.	R02011-01	Sample No.	NA
Lab ID No.	R02011-01.006		

AVERAGE PERMEABILITY = 4.6E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 4.6E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: JCM Date: 2/19/02 Checked By: JMO Date: 2/22/02

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DCN: CT-22C DATE: 01-11-99 REVISION:3

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PERMEABILITY TEST

ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

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Client	DAVID GARRETT	Boring No.	B-10 S
Client Project	PITT COUNTY	Depth (ft.)	14.4-14.7
Project No.	R02011-01	Sample No.	NA
Lab ID No.	R02011-01.006		
		Specific Gravity	2.70 Assumed
		Sample Condition	Undisturbed

Visual Description: GRAY SANDY SILT WITH SEA SHELL FRAGMENTS

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	725	1710
Wt. of Tare & WS (gm.)	531.20	480.80
Wt. of Tare & DS (gm.)	468.00	413.20
Wt. of Tare (gm.)	86.67	82.65
Wt. of Water (gm.)	63.20	67.60
Wt. of DS (gm.)	381.33	330.55
Moisture Content (%)	**16.6**	**20.5**

SPECIMEN:	BEFORE TEST	AFTER TEST
Wt. of Tube & WS (gm.)	1049.40	NA
Wt. of Tube (gm.)	275.39	NA
Wt. of WS (gm.)	774.01	799.75
Length 1 (in.)	3.609	3.558
Length 2 (in.)	3.602	3.457
Length 3 (in.)	3.598	3.532
Top Diameter (in.)	2.870	2.857
Middle Diameter (in.)	2.878	2.853
Bottom Diameter (in.)	2.878	2.852
Average Length (in.)	3.60	3.52
Average Area (in.^{2})	6.49	6.40
Sample Volume (cm^3)	383.38	368.56
Unit Wet Wt. (gm./ cm^3)	2.02	2.17
Unit Wet Wt. (pcf)	126.0	135.5
Unit Dry Wt. (pcf)	108.1	112.5
Unit Dry Wt. (gm./ cm^3)	1.73	1.80
Void Ratio, e	0.56	0.50
Porosity, n	0.36	0.33
Pore Volume (cm^3)	137.5	122.6

Tested By: JCM Date: 2/19/02 Checked By: JMO Date: 2/22/02

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DCN: CT-22C DATE: 01-11-99 REVISION:3

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PERMEABILITY TEST

ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

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Client	DAVID GARRETT	Boring No.	B-10 S
Client Project	PITT COUNTY	Depth (ft.)	14.4-14.7
Project No.	R02011-01	Sample No.	NA
Lab ID No.	R02011-01.006		

Pressure Heads (Constant)

Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions

Sample Length (cm), L	8.93
Sample Diameter (cm)	7.25
Sample Area (cm^2), A	41.27
Inflow Burette Area (cm^2), a-in	0.980
Outflow Burette Area (cm^2), a-out	0.976
B Parameter (%)	96

AVERAGE PERMEABILITY = 4.6E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 4.6E-09 m/sec @ 20°C

DATE (mm/dd/yy)	TIME (hr)	TIME (min)	ELAPSED TIME t (hr)	TOTAL INFLOW (cm^3)	TOTAL OUTFLOW (cm^3)	TOTAL HEAD h (cm)	FLOW (0 flow) (1 stop)	TEMP. (°C)	INCREMENTAL PERMEABILITY @ 20°C (cm/sec)
2/20/02	20	5	0.0	0.0	0.0	189.8	0	20.0	NA
2/21/02	7	10	11.1	13.3	13.1	162.9	0	20.0	4.0E-07
2/21/02	9	25	13.3	15.7	15.4	158.2	1	21.0	3.8E-07
2/21/02	9	28	13.3	15.7	15.4	198.8	0	21.0	NA
2/21/02	10	17	14.2	17.0	16.6	196.3	0	21.0	4.5E-07
2/21/02	11	2	14.9	18.1	17.8	194.0	0	21.0	4.6E-07
2/21/02	11	55	15.8	19.5	19.1	191.2	0	21.0	4.6E-07
2/21/02	13	58	17.8	22.5	22.1	185.1	0	21.0	4.5E-07
2/21/02	14	39	18.5	23.5	23.2	183.0	0	21.0	4.8E-07
2/21/02	16	12	20.1	25.7	25.4	178.5	1	21.0	4.6E-07

Tested By: JCM Date: 2/19/02 Checked By: JMO Date: 2/22/02

DCN: CT-22C DATE: 01-11-99 REVISION:3

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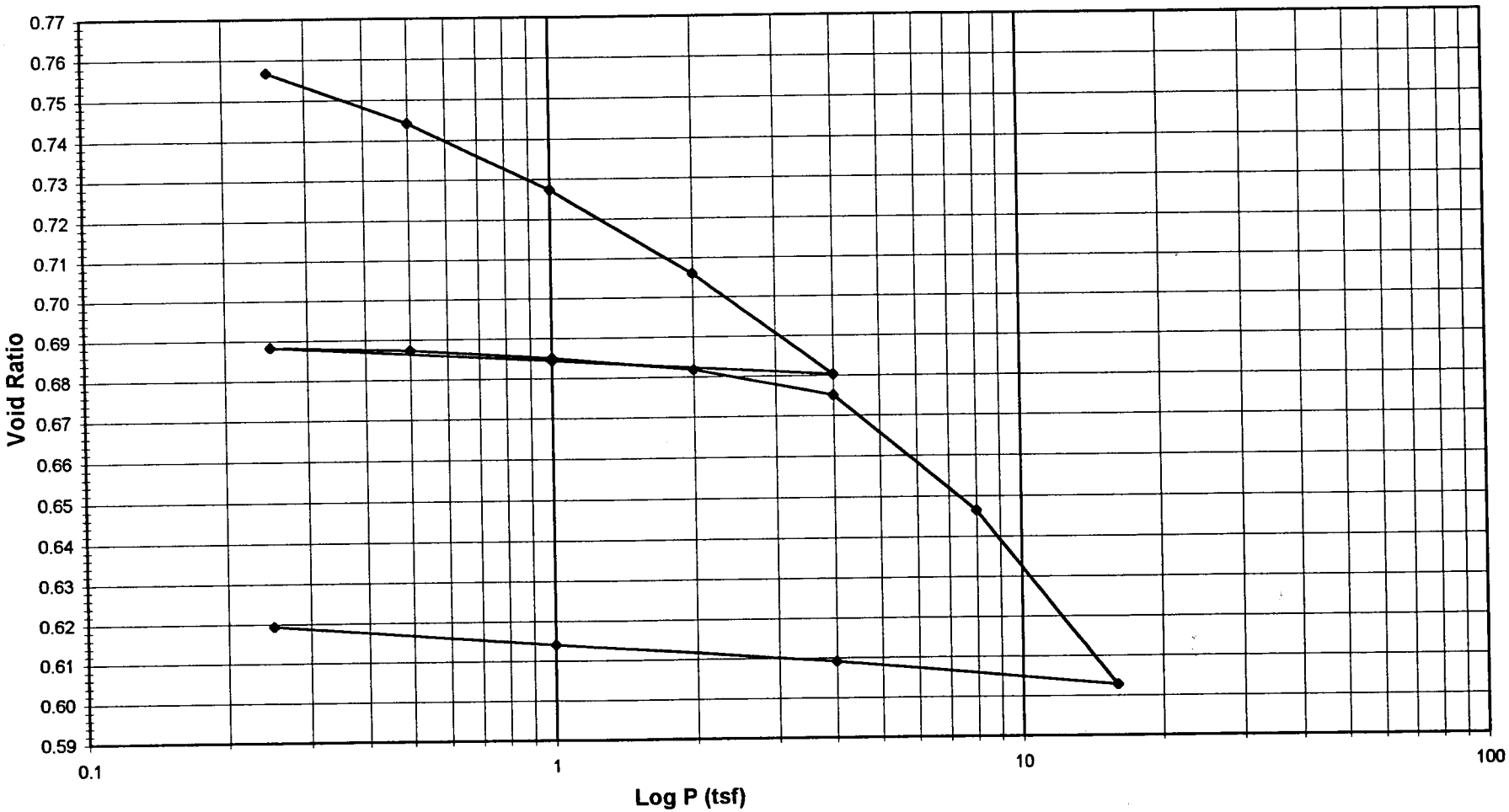
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24)

Client	DAVID GARRETT	Boring No.	B-10S
Client Reference	PITT COUNTY	Depth (ft)	13.4-13.5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-006	Visual Description	GRAY SANDY SILT WITH SEA SHELL FRAGMENTS

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Tested By TM *Date* 2/20/02 *Approved By* DB *Date* 2/27/02

DCN: CT-S24F Date: 11/9/00 Revision: 4
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ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24)

Client	DAVID GARRETT	Boring No.	B-10S
Client Reference	PITT COUNTY	Depth (ft)	13.4-13.5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-006	Visual Description	GRAY SANDY SILT WITH SEA SHELL FRAGMENTS

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED
Consolidometer No. 4
1 Division = 0.0001 (in)

Sample Properties	Initial	Final
Water Content		
Tare Number	1310	456
Wt. Tare & WS (gm)	181.43	209.88
Wt. Tare & DS (gm)	164.34	187.82
Wt. Water (gm)	17.09	22.06
Wt. Tare (gm)	102.67	99.46
Wt. DS (gm)	61.67	88.36
Water Content (%)	27.71	24.97
Sample Parameters		
Sample Diameter (in)	2.5	2.5
Sample Height (in)	0.75	0.679
Sample Volume (cc)	60.33	54.60
Wt. Wet Sample + Ring (gm)	192.98	190.48
Wt. of Ring (gm)	76.71	76.71
Wt. of Wet Sample (gm)	116.27	113.77
Wet Density (pcf)	120.26	130.02
Wet Density (g/cc)	1.93	2.08
Water Content (%)	27.71	24.97
Wt. of Dry Sample (gm)	91.04	91.04
Dry Density (pcf)	94.16	104.05
Dry Density (g/cc)	1.51	1.67
Void Ratio	0.7892	0.6193
Saturation (%)	94.81	108.85
Specific Gravity	2.70	*Assumed*

Test Data Summary

Applied Pressure (tsf)	Final Dial Reading (div)	Machine Deflection (div)	Corrected Reading (div)	Height of Sample (mm)	Volume (cc)	Dry Density (g/cc)	Void Ratio
Seating	0	0	0	19.050	60.330	1.50905	**0.78921**
0.25	142.8	6.6	136.2	18.704	59.234	1.53696	**0.75671**
0.5	200.4	11.7	188.7	18.571	58.812	1.54800	**0.74419**
1	277.8	18.5	259.3	18.391	58.244	1.56309	**0.72735**
2	377.3	28.5	348.8	18.164	57.524	1.58265	**0.70600**
4	498.3	41.2	457.1	17.889	56.653	1.60699	**0.68016**
1	470.6	30.8	439.8	17.933	56.792	1.60305	**0.68429**
0.25	438.1	14.6	423.5	17.974	56.923	1.59936	**0.68817**
0.5	445.0	17.5	427.5	17.964	56.891	1.60027	**0.68722**
1	458.5	21.6	436.9	17.940	56.815	1.60239	**0.68498**
2	480.2	29.4	450.8	17.905	56.704	1.60555	**0.68166**
4	520.2	41.6	478.6	17.834	56.480	1.61191	**0.67503**
8	651.7	53.3	598.4	17.530	55.516	1.63989	**0.64645**
16	845.5	63.7	781.8	17.064	54.041	1.68466	**0.60270**
4	806.3	51.3	755.0	17.132	54.257	1.67797	**0.60909**
1	771.2	36.7	734.5	17.184	54.422	1.67288	**0.61398**
0.25	732.1	19.7	712.4	17.241	54.599	1.66743	**0.61925**

Tested By TM *Date* 2/20/02 *Input Checked By* SO *Date* 2/27/02

DCN: CT-S24F Date: 11/9/00 Revision: 4

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DCN: CT-S24F
DATE: 03/29/99
REVISION: 3

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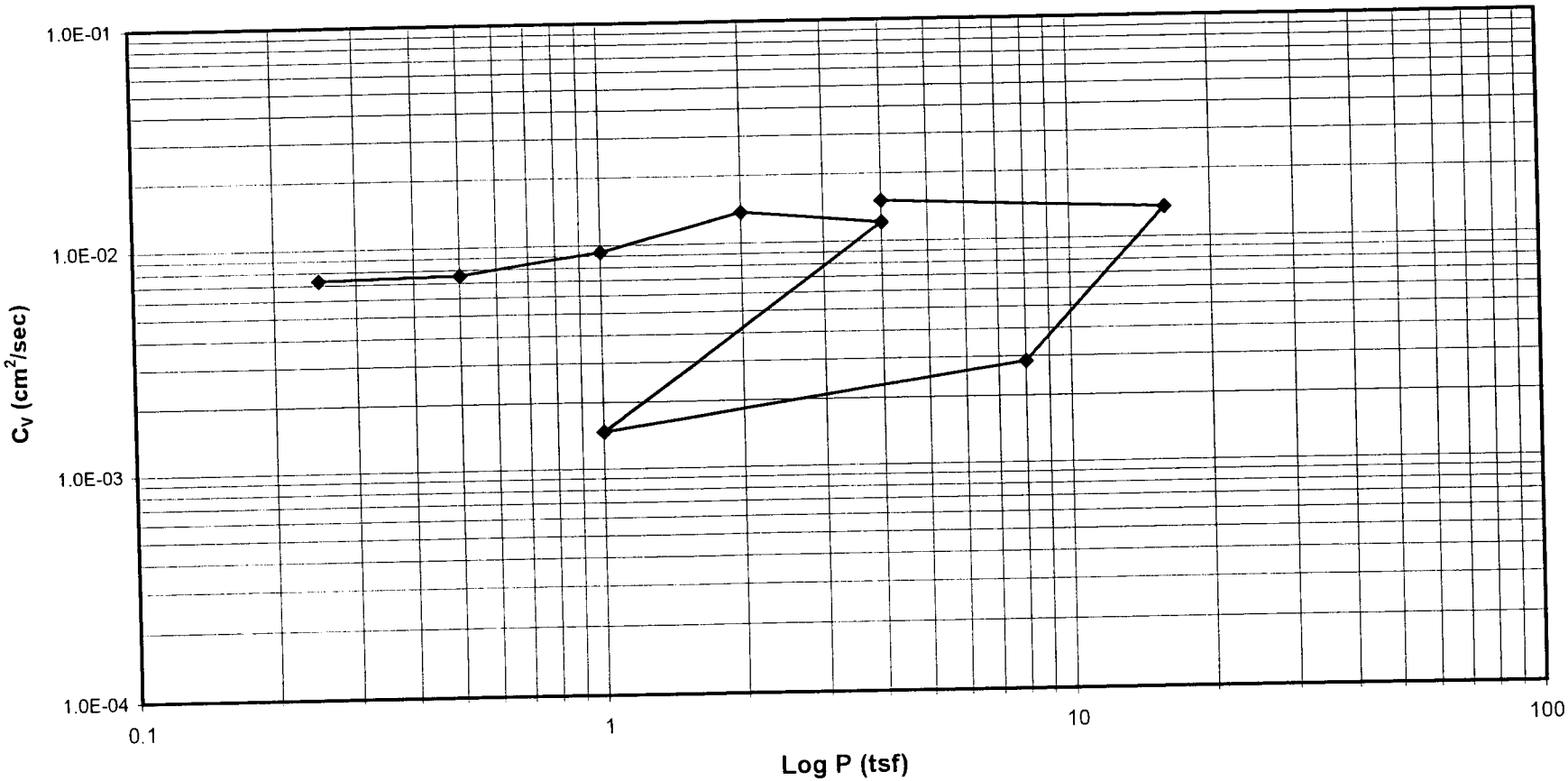
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24)

Client	DAVID GARRETT	Boring No.	B-10S
Client Reference	PITT COUNTY	Depth (ft)	13.4-13.5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-006	Visual Description	GRAY SANDY SILT WITH SEA SHELL FRAGMENTS

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



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DCN: CT-S24F
DATE: 3/29/99
REVISION: 3

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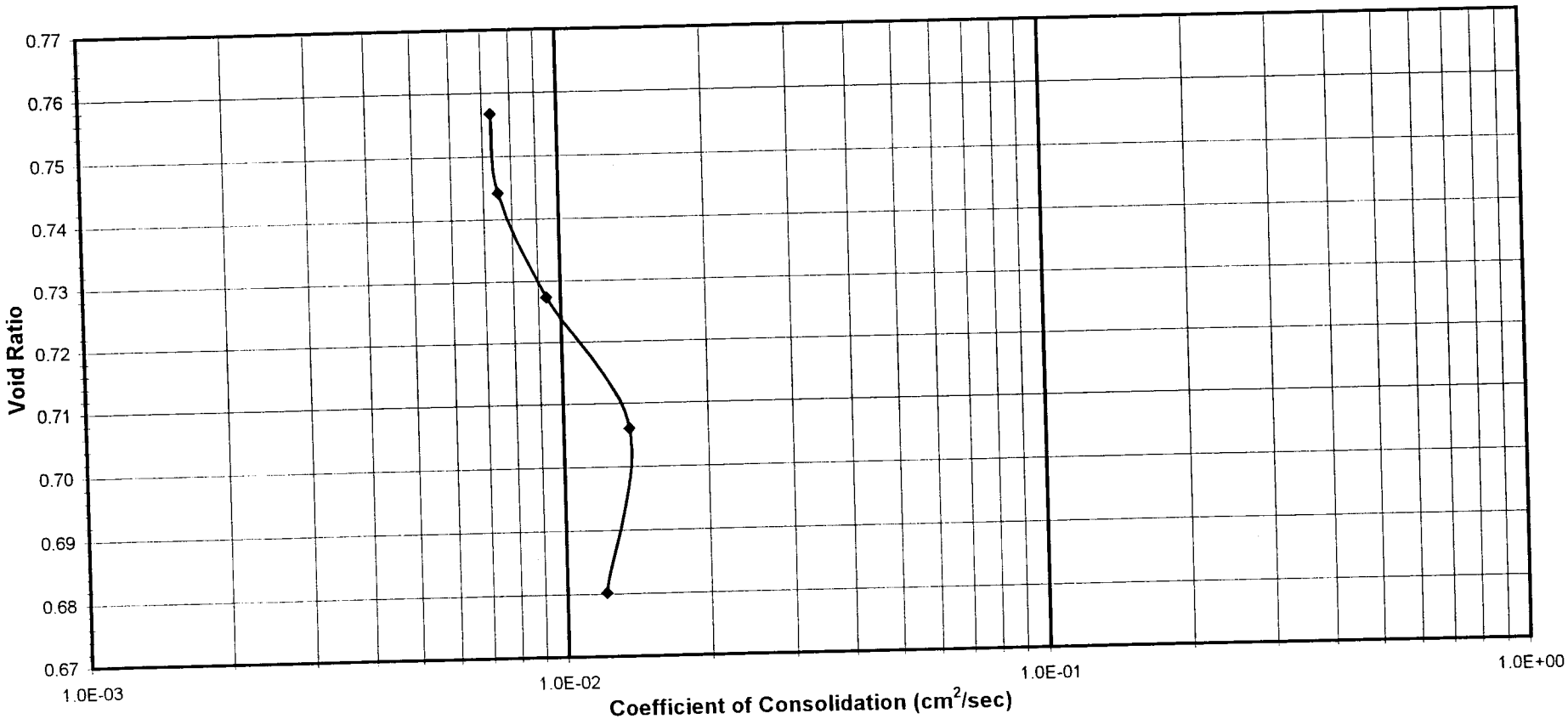
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24)

Client	DAVID GARRETT	Boring No.	B-10S
Client Reference	PITT COUNTY	Depth (ft)	13.4-13.5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-006	Visual Description	GRAY SANDY SILT WITH SEA SHELL FRAGMENTS

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



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DCN: CT-S24F
DATE: 03/29/99
REVISION: 3

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ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24)

Client	DAVID GARRETT	Boring No.	B-10S
Client Reference	PITT COUNTY	Depth (ft)	13.4-13.5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-006	Visual Description	GRAY SANDY SILT WITH SEA SHELL FRAGMENTS

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED
Consolidometer No. 4
1 Division = 0.0001 (in)

Sample Properties	Initial	Final
Water Content		
Tare Number	1310	456
Wt. Tare & WS (gm)	181.43	209.88
Wt. Tare & DS (gm)	164.34	187.82
Wt. Water (gm)	17.09	22.06
Wt. Tare (gm)	102.67	99.46
Wt. DS (gm)	61.67	88.36
Water Content (%)	27.71	24.97
Sample Parameters		
Sample Diameter (in)	2.5	2.5
Sample Height (in)	0.75	0.679
Sample Volume (cc)	60.33	54.60
Wt. Wet Sample + Ring (gm)	192.98	190.48
Wt. of Ring (gm)	76.71	76.71
Wt. of Wet Sample (gm)	116.27	113.77
Wet Density (pcf)	120.26	130.02
Wet Density (g/cc)	1.93	2.08
Water Content (%)	27.71	24.97
Wt. of Dry Sample (gm)	91.04	91.04
Dry Density (pcf)	94.16	104.05
Dry Density (g/cc)	1.51	1.67
Void Ratio	0.7892	0.6193
Saturation (%)	94.81	108.85
Specific Gravity	2.70	*Assumed*

C_v Test Data Summary

Load Increment (tsf)	Dial Reading @ t_{50} (div)	Machine Deflection (div)	Corrected Dial Reading @ t_{50} (div)	Sample Height @ t_{50} (cm)	Time t_{50} (min.)	C_v (cm^2/sec)
0-0.25	83.5	6.6	76.9	1.885	**0.4**	**0.00730**
0.25-0.5	173.3	11.7	161.6	1.864	**0.38**	**0.00750**
0.5-1.0	243.5	18.5	225.0	1.848	**0.3**	**0.00934**
1.0-2.0	336.0	28.5	307.5	1.827	**0.2**	**0.01370**
2.0-4.0	453.0	41.2	411.8	1.800	**0.22**	**0.01209**
4.0-1.0	472.8	30.8	442.0	1.793	**1.8**	**0.00147**
1.0-0.25	NA	14.6	NA	NA	**NA**	**NA**
0.25-0.5	NA	17.5	NA	NA	**NA**	**NA**
0.5-1.0	NA	21.6	NA	NA	**NA**	**NA**
1.0-2.0	NA	29.4	NA	NA	**NA**	**NA**
2.0-4.0	506.5	41.6	464.9	1.787	**NA**	**NA**
4.0-8.0	597.0	53.3	543.7	1.767	**0.9**	**0.00285**
8.0-16.0	780.0	63.7	716.3	1.723	**0.18**	**0.01354**
16.0-4.0	809.1	51.3	757.8	1.713	**0.16**	**0.01505**
4.0-1.0	NA	36.7	NA	NA	**1.5**	**NA**
1.0-0.25	NA	19.7	NA	NA	**NA**	**NA**

Tested By TM *Date* 4/3/02 *Checked By* GU *Date* 4-3-02

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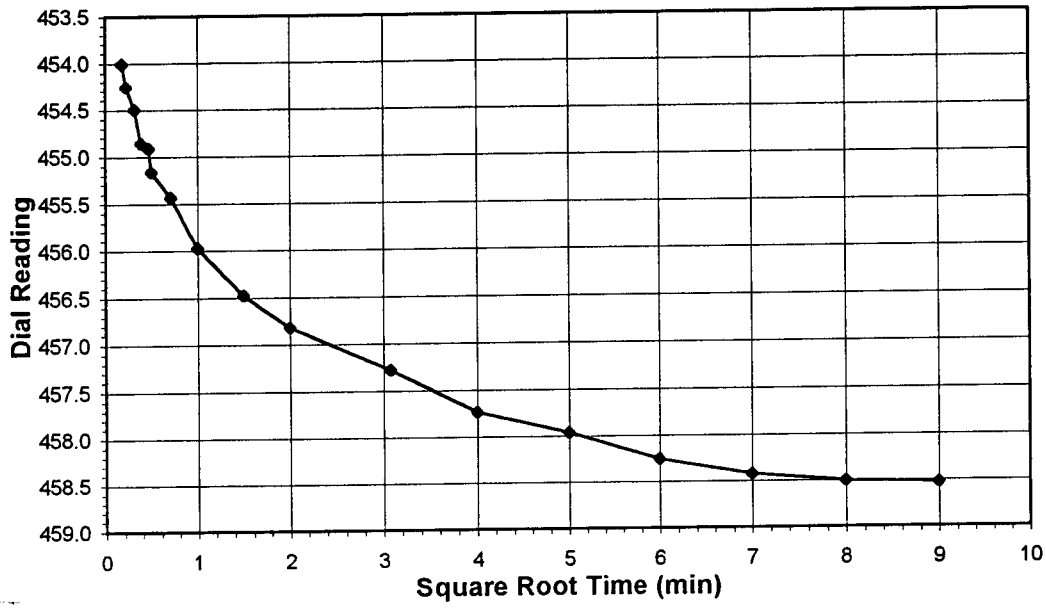
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

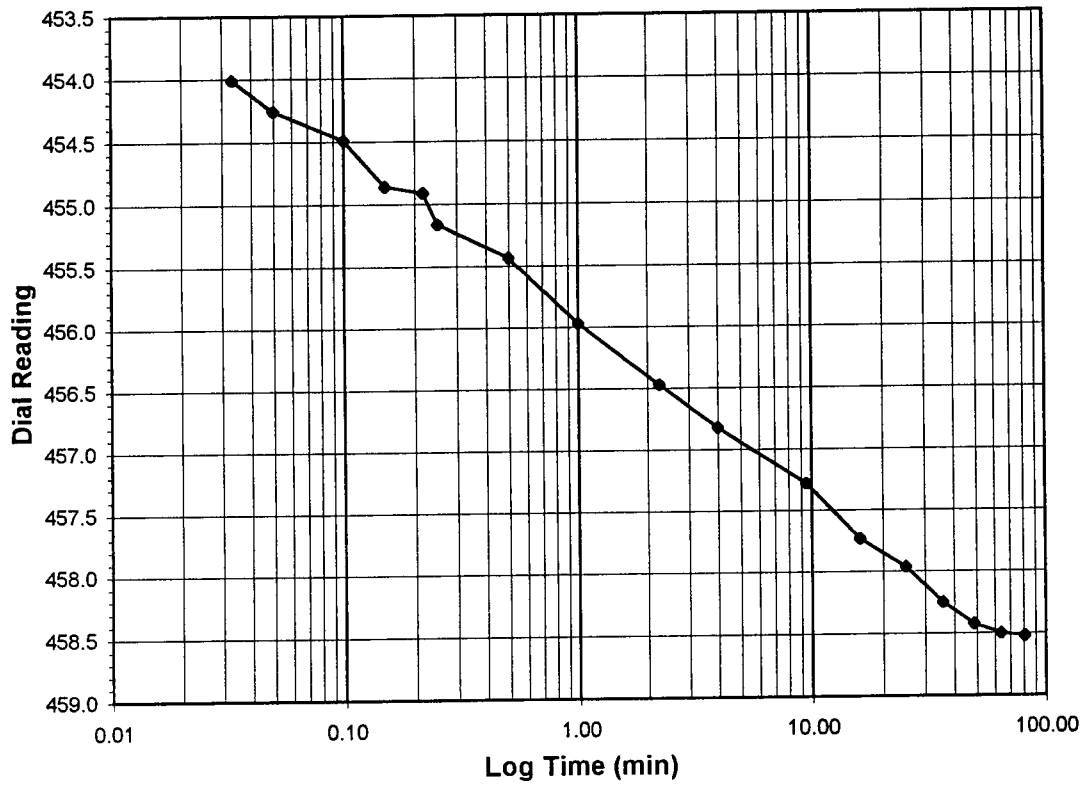
Client	DAVID GARRETT	Boring No.	B-10S
Client Project	PITT COUNTY	Depth (ft)	13.4-13.5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-006	Visual Description	GRAY SANDY SILT WITH SEA SHELL FRAGMENTS

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**0.5-1.0**
Final Reading	**(div)**	**458.5**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/22/02
Start Time		12:15:20

Elapsed Time (min)	Dial Reading (div)
Initial	**445.0**
0.03	454.0
0.05	454.3
0.10	454.5
0.15	454.9
0.22	454.9
0.25	455.2
0.50	455.4
1.00	456.0
2.25	456.5
4.00	456.8
9.50	457.3
16.00	457.7
25.00	458.0
36.00	458.3
49.00	458.4
64.00	458.5
81.00	458.5



Tested By TM *Date* 2/22/02 *Checked By* GU *Date* 2/27/02

DCN: CT-24E Date: 3/2/98 Revision: 2 *C:\My Documents\CONSOL\Printfiles4\GARRETTR02011_01_06-09.xls]Sheet1*

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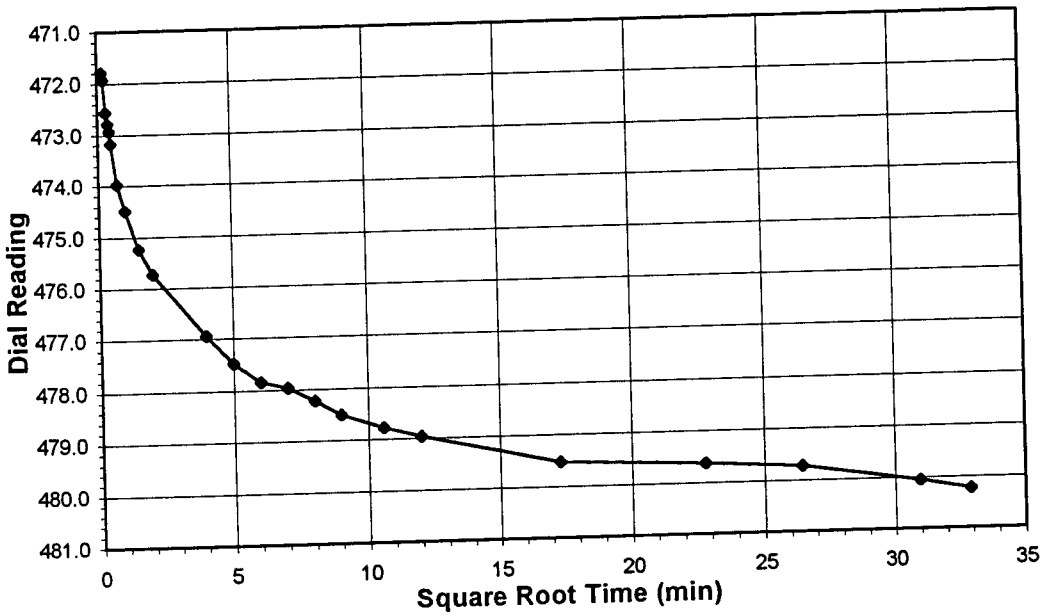
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

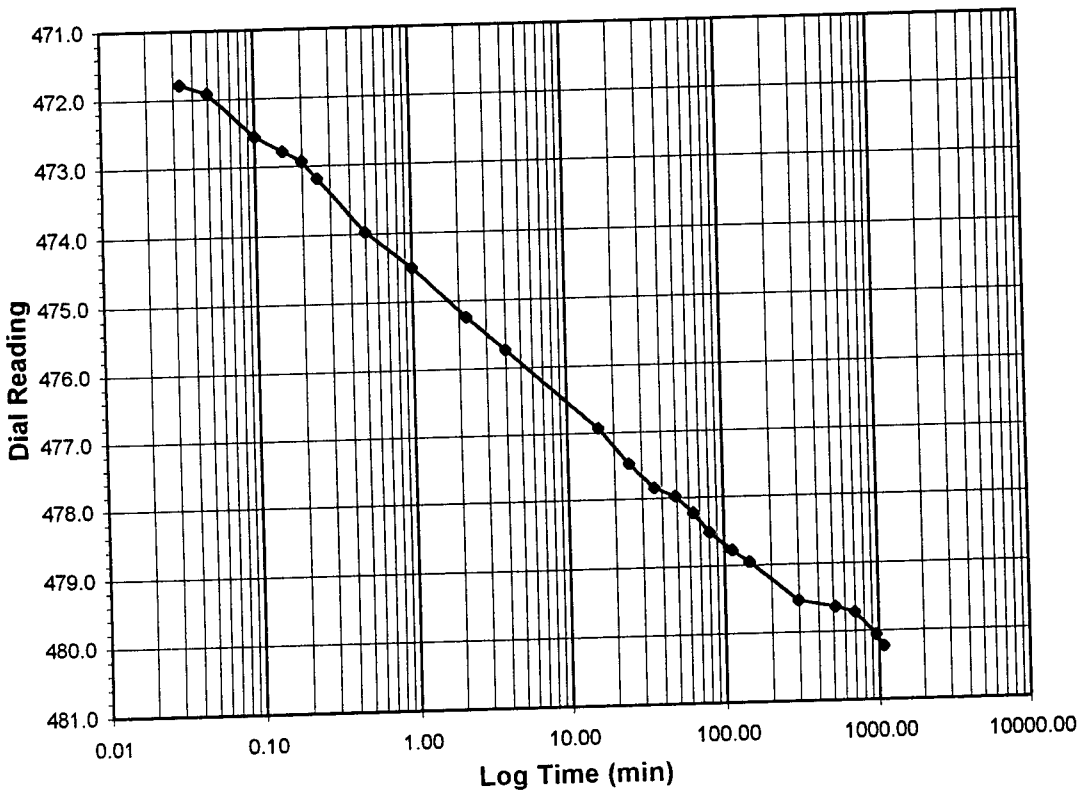
Client	DAVID GARRETT	Boring No.	B-10S
Client Project	PITT COUNTY	Depth (ft)	13.4-13.5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-006	Visual Description	GRAY SANDY SILT WITH SEA SHELL FRAGMENTS

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**1.0-2.0**
Final Reading	**(div)**	**480.2**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/22/02
Start Time		13:41:46

Elapsed Time (min)	Dial Reading (div)
Initial	**458.5**
0.03	471.8
0.05	471.9
0.10	472.6
0.15	472.8
0.20	472.9
0.25	473.2
0.50	474.0
1.00	474.5
2.25	475.2
4.00	475.7
16.00	476.9
25.00	477.5
36.00	477.8
49.00	478.0
64.00	478.2
81.00	478.5
111.93	478.8
144.00	479.0
300.00	479.5
520.00	479.6
700.00	479.7
960.00	480.1
1082.97	480.2



Tested By TM *Date* 2/22/02 *Checked By* GU *Date* 2/27/02

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DCN: CT-24E Date: 3/2/98 Revision: 2
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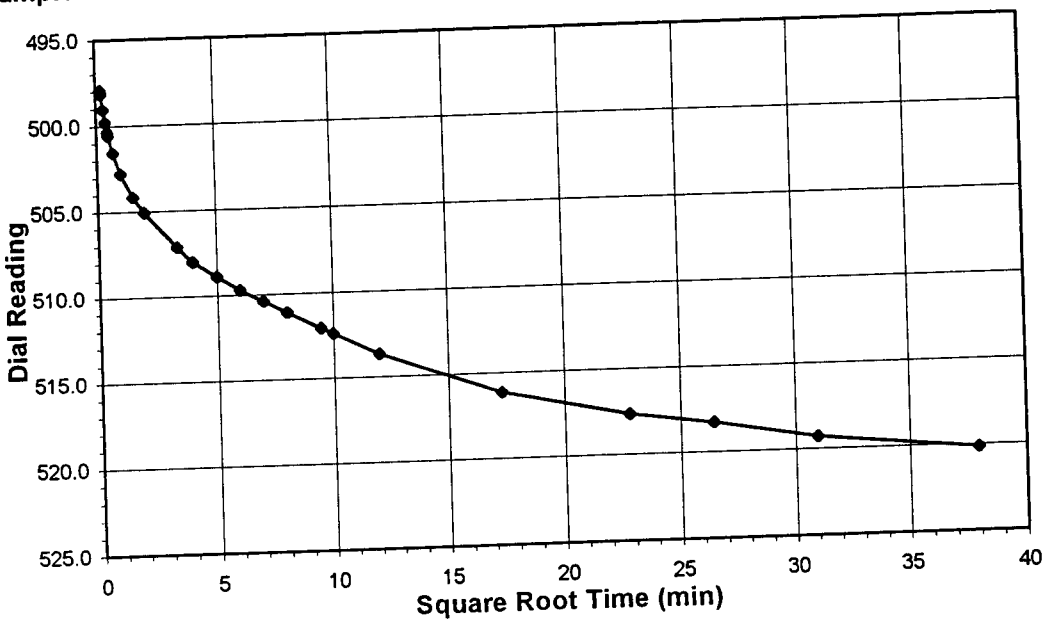
ASTM D 2435-96 (SOP-S24A)

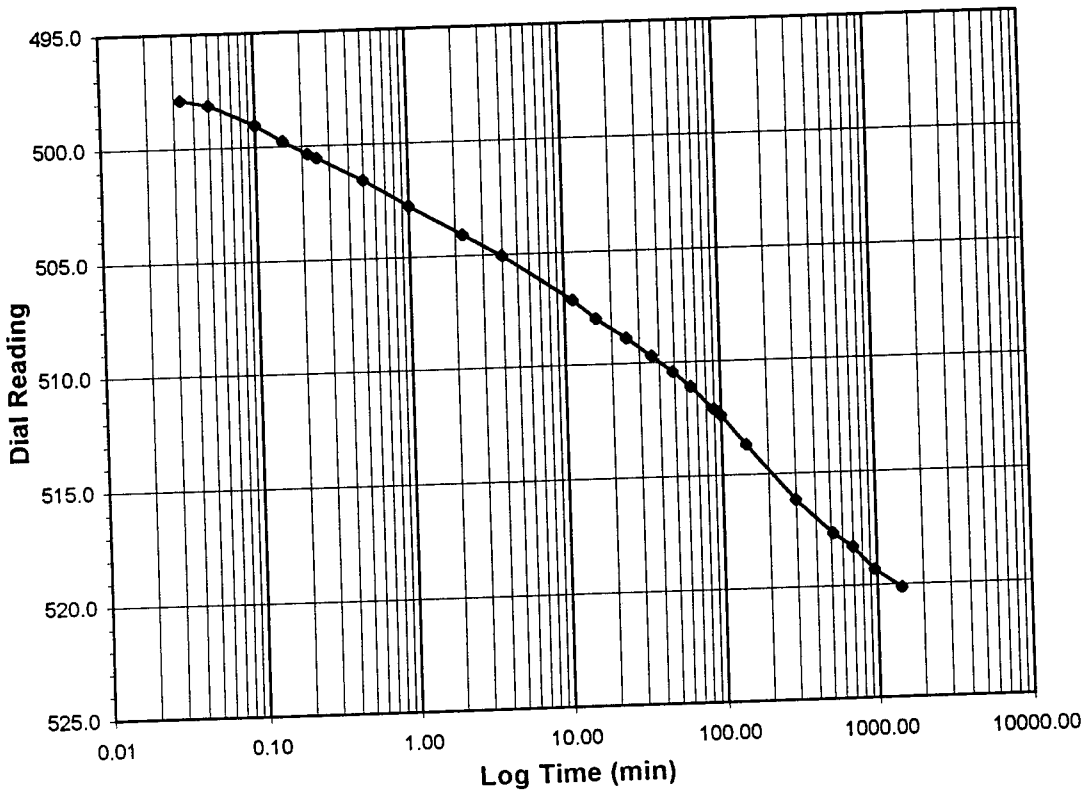
Client	DAVID GARRETT	Boring No.	B-10S
Client Project	PITT COUNTY	Depth (ft)	13.4-13.5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-006	Visual Description	GRAY SANDY SILT WITH SEA SHELL FRAGMENTS

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**2.0-4.0**
Final Reading	**(div)**	**520.2**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/23/02
Start Time		7:57:45

Elapsed Time (min)	Dial Reading (div)
Initial	**480.2**
0.03	497.9
0.05	498.2
0.10	499.0
0.15	499.8
0.22	500.4
0.25	500.6
0.50	501.6
1.00	502.8
2.25	504.1
4.00	505.1
11.32	507.1
16.00	508.0
25.00	508.9
36.00	509.7
49.00	510.4
64.00	511.1
89.58	512.1
100.00	512.4
144.00	513.7
300.00	516.2
520.00	517.7
700.00	518.3
960.00	519.3
1440.00	520.2



Tested By TM *Date* 2/23/02 *Checked By* GU *Date* 2/27/02

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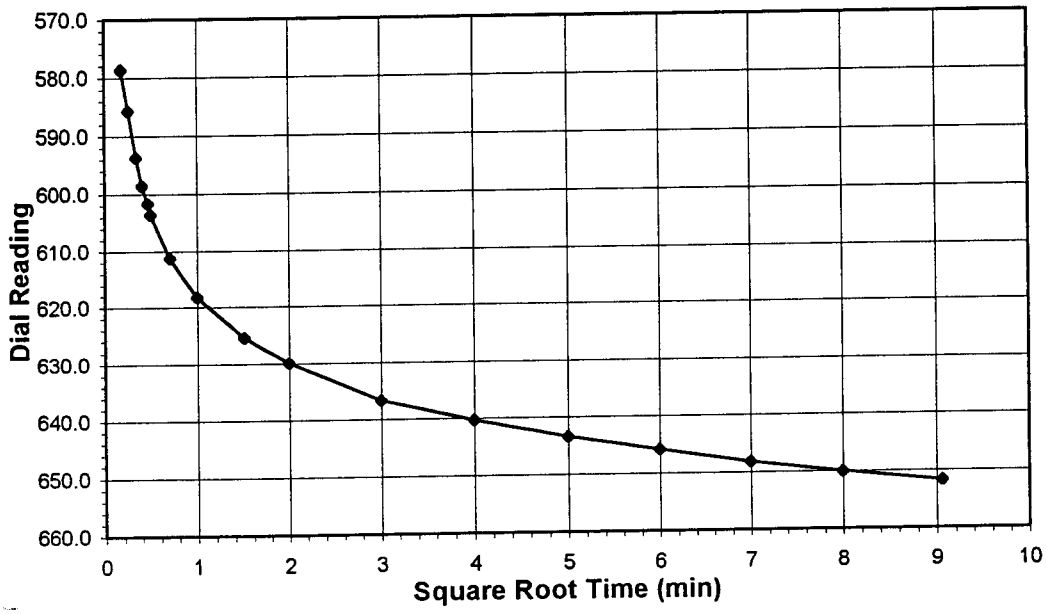
ASTM D 2435-96 (SOP-S24A)

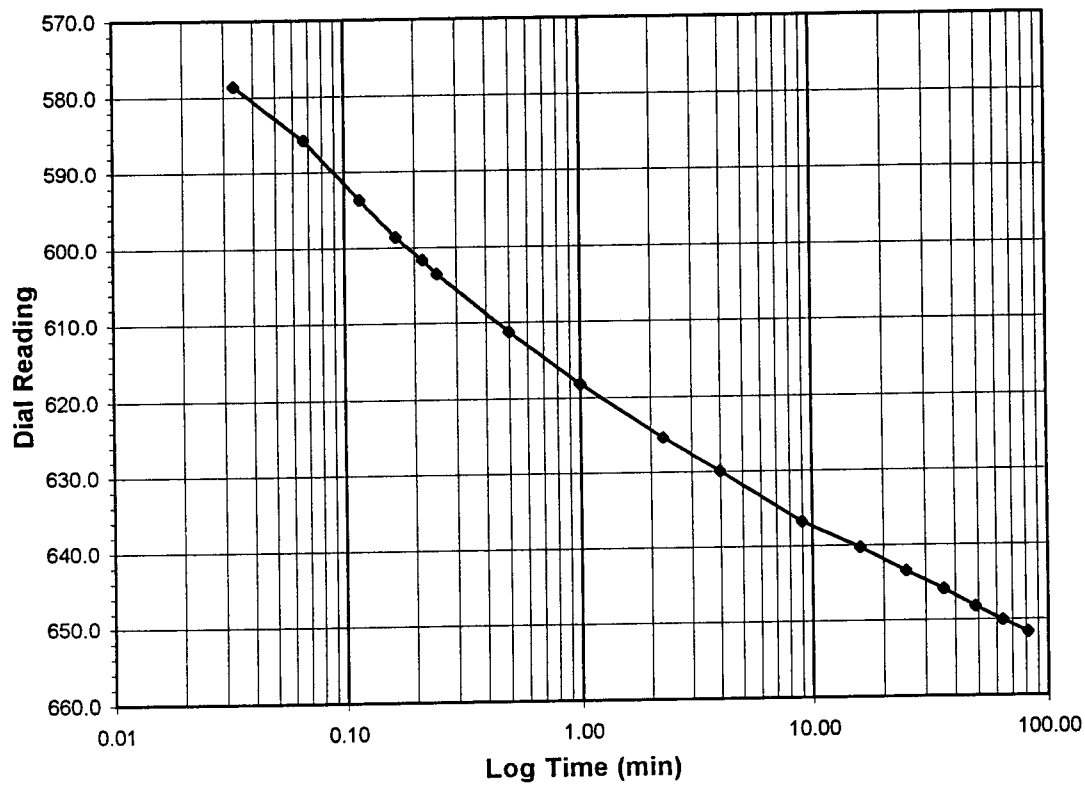
Client	DAVID GARRETT	Boring No.	B-10S
Client Project	PITT COUNTY	Depth (ft)	13.4-13.5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-006	Visual Description	GRAY SANDY SILT WITH SEA SHELL FRAGMENTS

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**4.0-8.0**
Final Reading	**(div)**	**651.7**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/24/02
Start Time		8:08:07

Elapsed Time (min)	Dial Reading (div)
Initial	**520.2**
0.03	578.6
0.07	585.7
0.12	593.7
0.17	598.6
0.22	601.7
0.25	603.6
0.50	611.2
1.00	618.2
2.27	625.4
4.00	629.9
9.02	636.7
16.00	640.3
25.00	643.4
36.00	645.9
49.00	648.2
64.00	650.0
82.15	651.7



Tested By TM *Date* 2/24/02 *Checked By* GO *Date* 2/27/02

DCN: CT-24E Date: 3/2/98 Revision: 2

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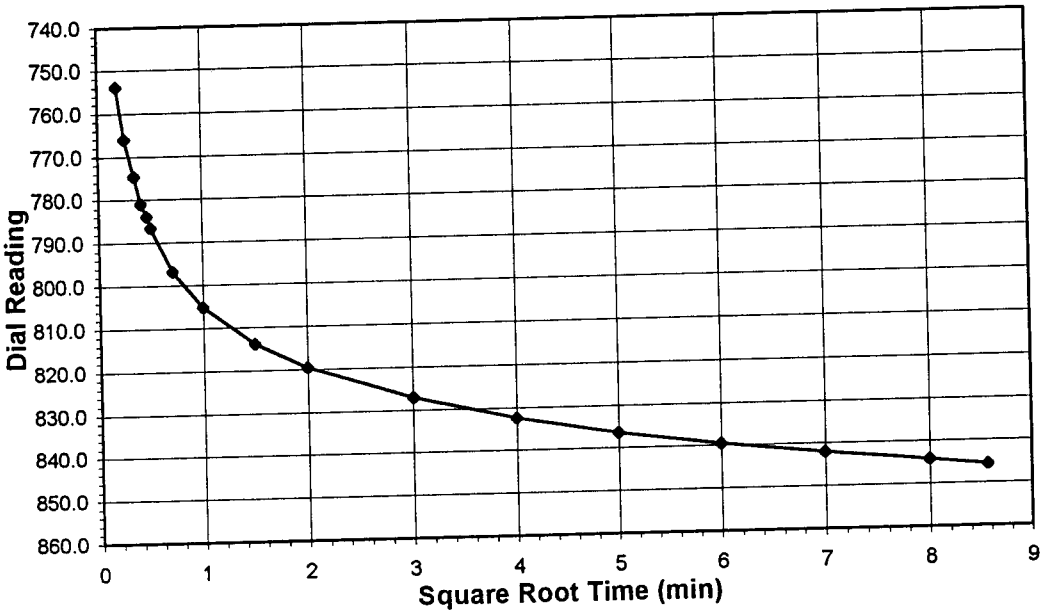
ASTM D 2435-96 (SOP-S24A)

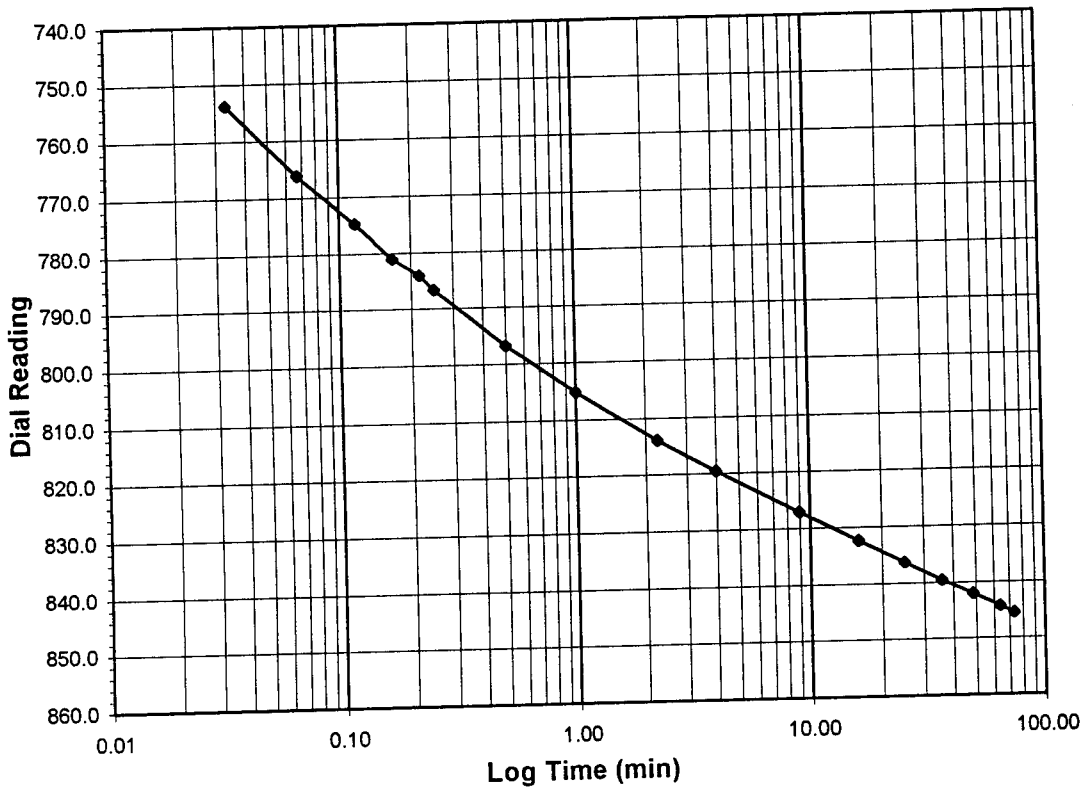
Client	DAVID GARRETT	Boring No.	B-10S
Client Project	PITT COUNTY	Depth (ft)	13.4-13.5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-006	Visual Description	GRAY SANDY SILT WITH SEA SHELL FRAGMENTS

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**8.0-16.0**
Final Reading	**(div)**	**845.5**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/24/02
Start Time		9:32:04

Elapsed Time (min)	Dial Reading (div)
Initial	**651.7**
0.03	753.9
0.07	766.1
0.12	774.7
0.17	781.1
0.22	784.0
0.25	786.6
0.50	796.7
1.00	805.1
2.25	813.9
4.00	819.5
9.03	827.1
16.00	832.4
25.00	836.4
36.00	839.6
49.00	842.0
64.00	844.2
73.38	845.5



Tested By TM *Date* 2/24/02 *Checked By* GU *Date* 2/27/02

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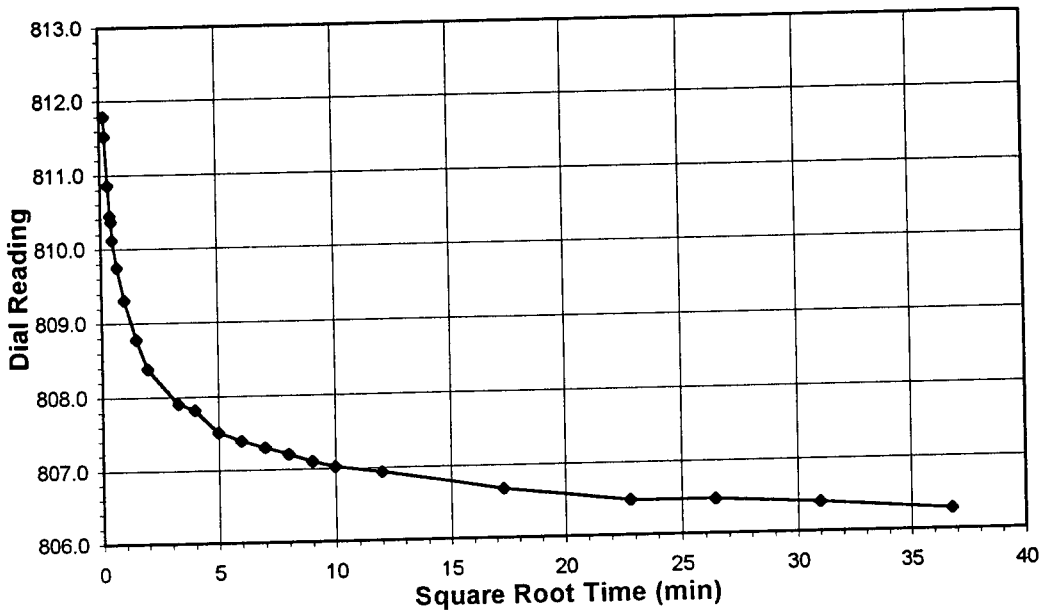
ASTM D 2435-96 (SOP-S24A)

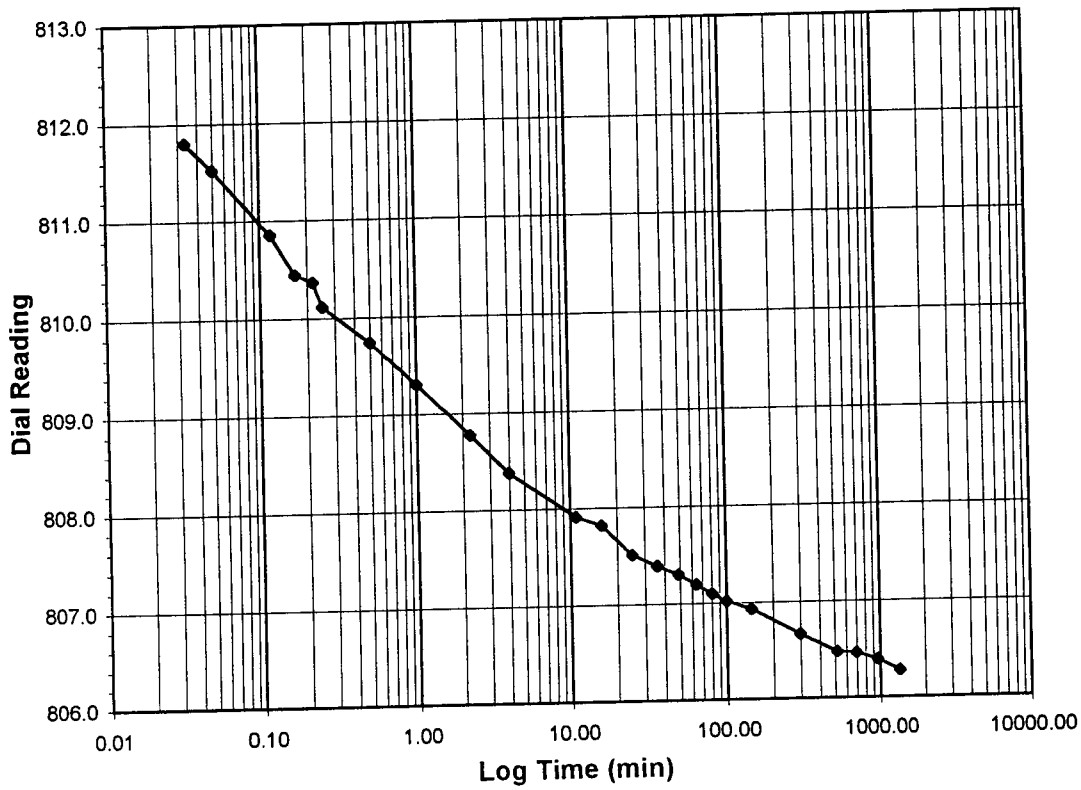
Client	DAVID GARRETT	Boring No.	B-10S
Client Project	PITT COUNTY	Depth (ft)	13.4-13.5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-006	Visual Description	GRAY SANDY SILT WITH SEA SHELL FRAGMENTS

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**16.0-4.0**
Final Reading	**(div)**	**806.3**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/24/02
Start Time		10:47:27

Elapsed Time (min)	Dial Reading (div)
Initial	**845.5**
0.03	811.8
0.05	811.5
0.12	810.9
0.17	810.5
0.22	810.4
0.25	810.1
0.50	809.8
1.00	809.3
2.25	808.8
4.00	808.4
10.95	807.9
16.00	807.8
25.00	807.5
36.02	807.4
49.00	807.3
64.00	807.2
81.00	807.1
100.00	807.0
144.00	806.9
300.00	806.7
520.00	806.5
700.00	806.5
960.00	806.4
1353.05	806.3



Tested By TM *Date* 2/24/02 *Checked By* GU *Date* 2/27/02

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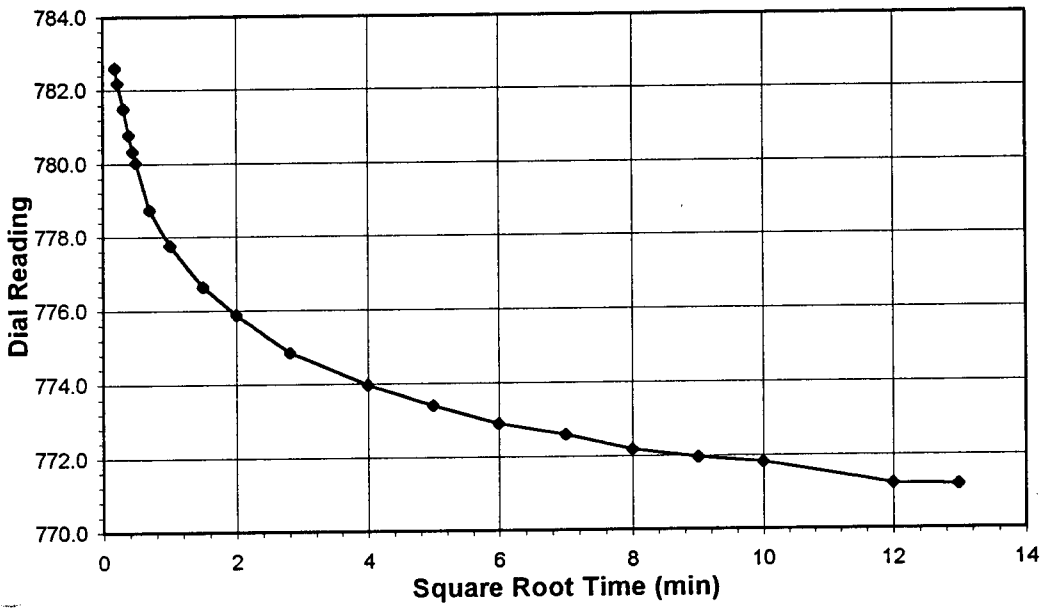
ASTM D 2435-96 (SOP-S24A)

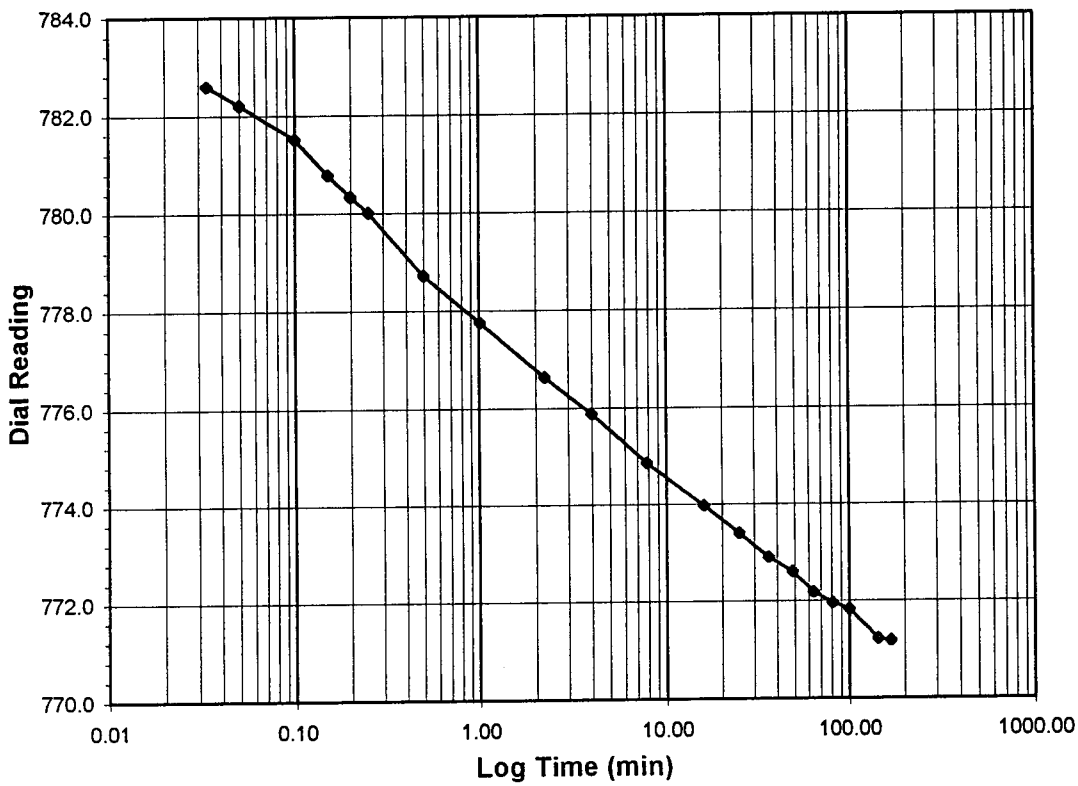
Client	DAVID GARRETT	Boring No.	B-10S
Client Project	PITT COUNTY	Depth (ft)	13.4-13.5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-006	Visual Description	GRAY SANDY SILT WITH SEA SHELL FRAGMENTS

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**4.0-1.0**
Final Reading	**(div)**	**771.2**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/25/02
Start Time		9:34:49

Elapsed Time (min)	Dial Reading (div)
Initial	**806.3**
0.03	782.6
0.05	782.2
0.10	781.5
0.15	780.8
0.20	780.3
0.25	780.0
0.50	778.7
1.02	777.8
2.25	776.6
4.00	775.9
7.89	774.9
16.00	774.0
25.00	773.4
36.00	772.9
49.00	772.6
64.00	772.2
81.00	772.0
100.02	771.8
144.00	771.2
168.83	771.2



Tested By TM *Date* 2/25/02 *Checked By* GU *Date* 2/27/02

DCN: CT-24E Date: 3/2/98 Revision: 2

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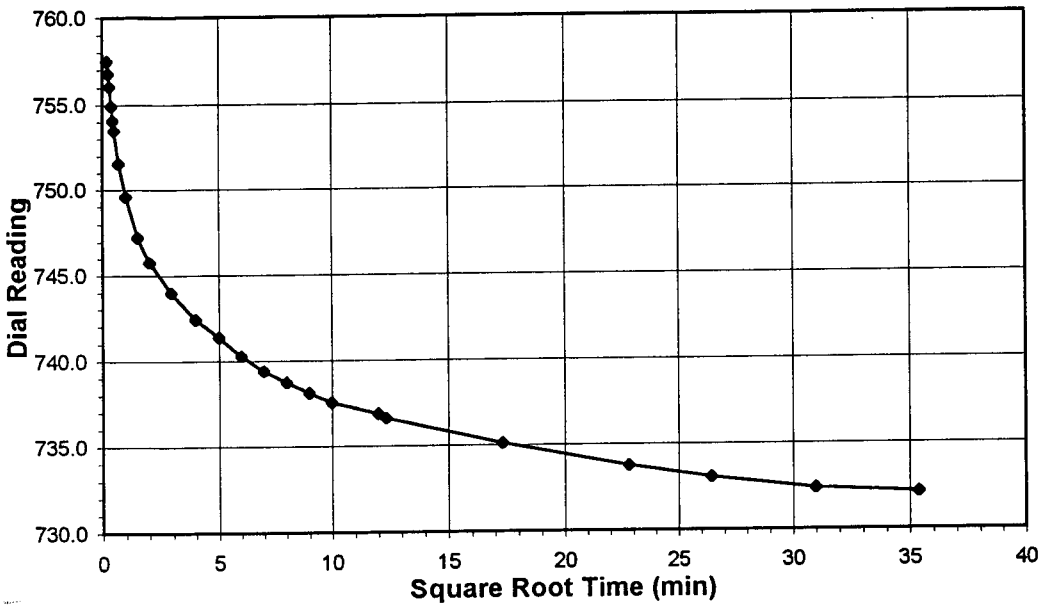
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

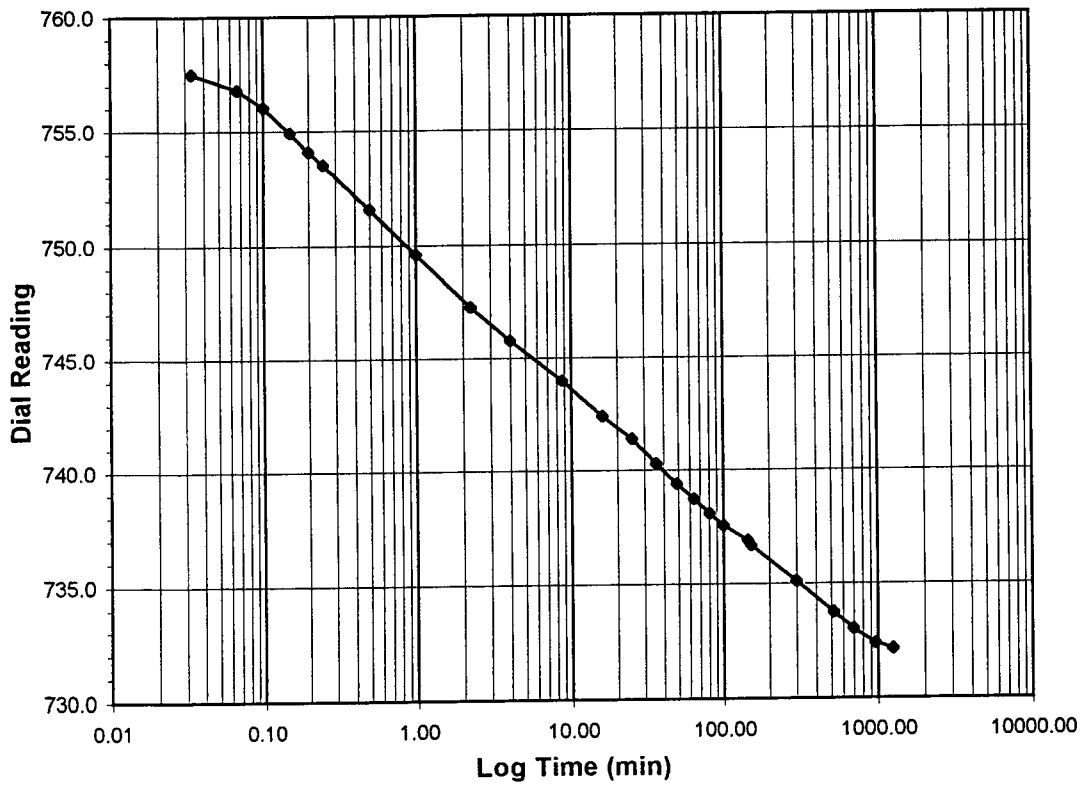
Client	DAVID GARRETT	Boring No.	B-10S
Client Project	PITT COUNTY	Depth (ft)	13.4-13.5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-006	Visual Description	GRAY SANDY SILT WITH SEA SHELL FRAGMENTS

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**1.0-0.25**
Final Reading	**(div)**	**732.1**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/25/02
Start Time		12:28:27

Elapsed Time (min)	Dial Reading (div)
Initial	**771.2**
0.03	757.5
0.07	756.8
0.10	756.0
0.15	754.9
0.20	754.1
0.25	753.5
0.50	751.6
1.00	749.6
2.25	747.3
4.02	745.8
8.70	744.0
16.00	742.4
25.00	741.4
36.00	740.3
49.00	739.4
64.00	738.7
81.00	738.1
100.00	737.6
144.00	736.9
152.45	736.7
300.00	735.1
520.00	733.8
700.00	733.1
960.00	732.4
1251.07	732.1



Tested By TM *Date* 2/25/02 *Checked By* GU *Date* 2/27/02

DCN: CT-24E Date: 3/2/98 Revision: 2

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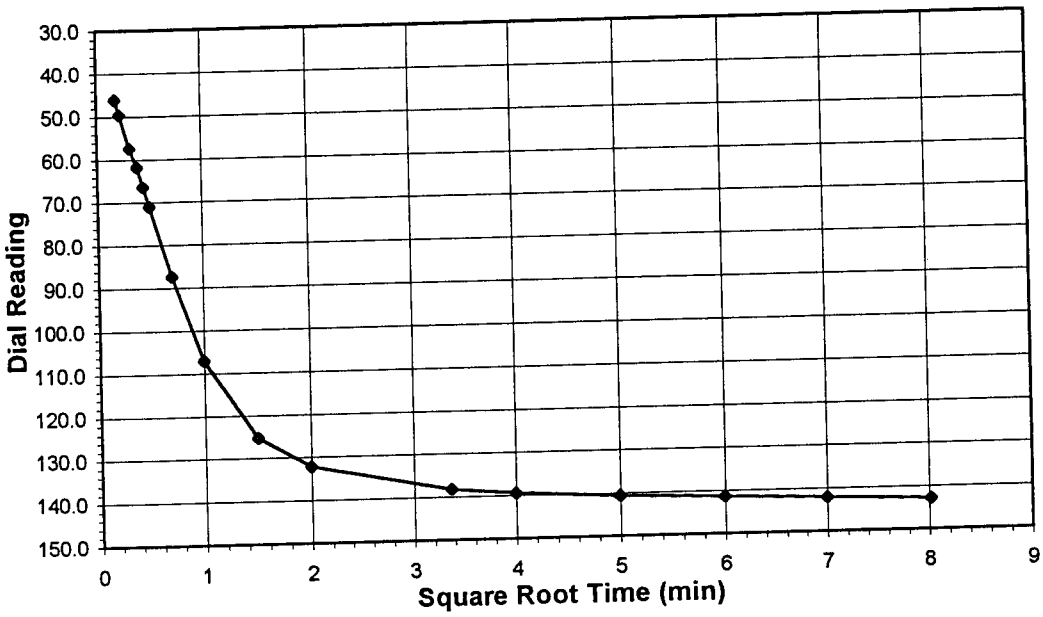
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

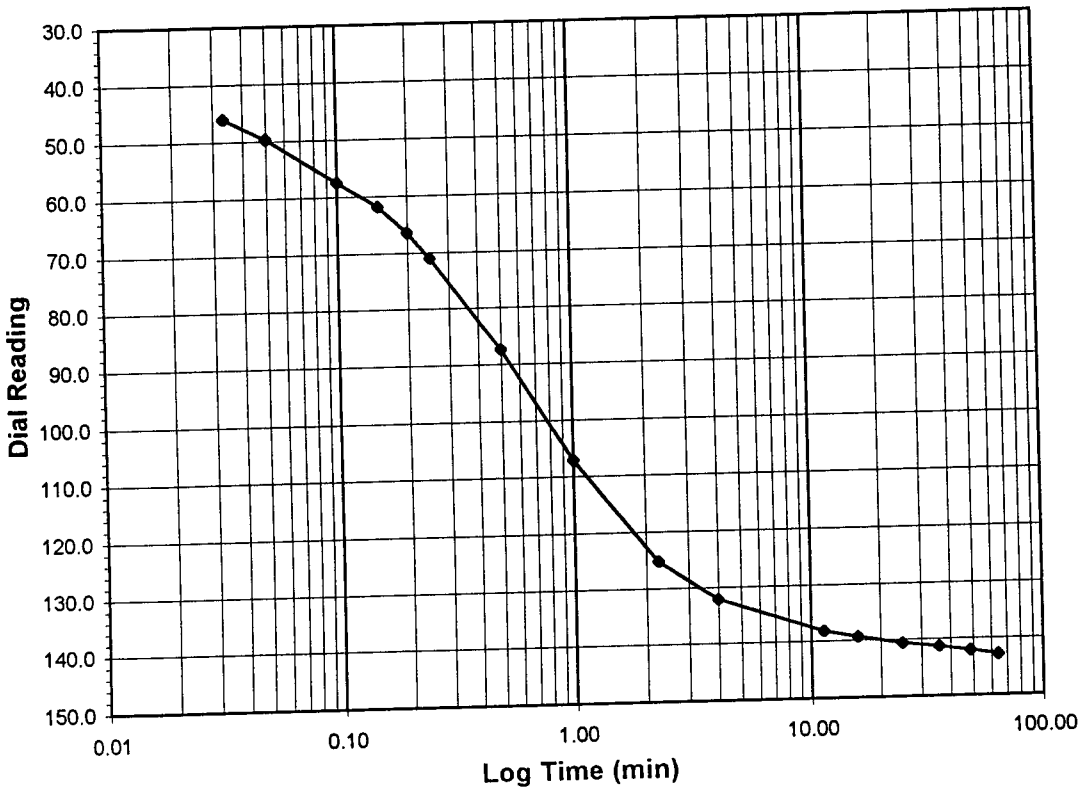
Client	DAVID GARRETT	Boring No.	B-10S
Client Project	PITT COUNTY	Depth (ft)	13.4-13.5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-006	Visual Description	GRAY SANDY SILT WITH SEA SHELL FRAGMENTS

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**0-0.25**
Final Reading	**(div)**	**142.8**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/20/02
Start Time		15:44:03

Elapsed Time (min)	Dial Reading (div)
Initial	**0.0**
0.03	46.1
0.05	49.6
0.10	57.5
0.15	61.8
0.20	66.5
0.25	71.0
0.50	87.3
1.00	107.1
2.25	125.3
4.00	132.1
11.35	138.2
16.00	139.3
25.00	140.6
36.00	141.3
49.00	142.1
64.25	142.8



Tested By TM *Date* 2/20/02 *Checked By* GU *Date* 2/27/02

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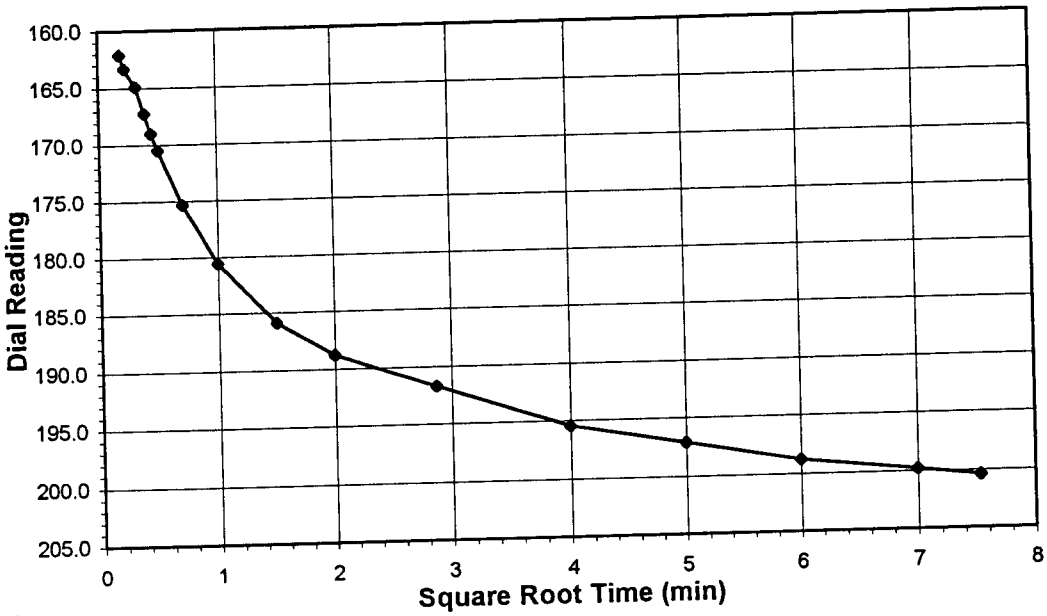
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

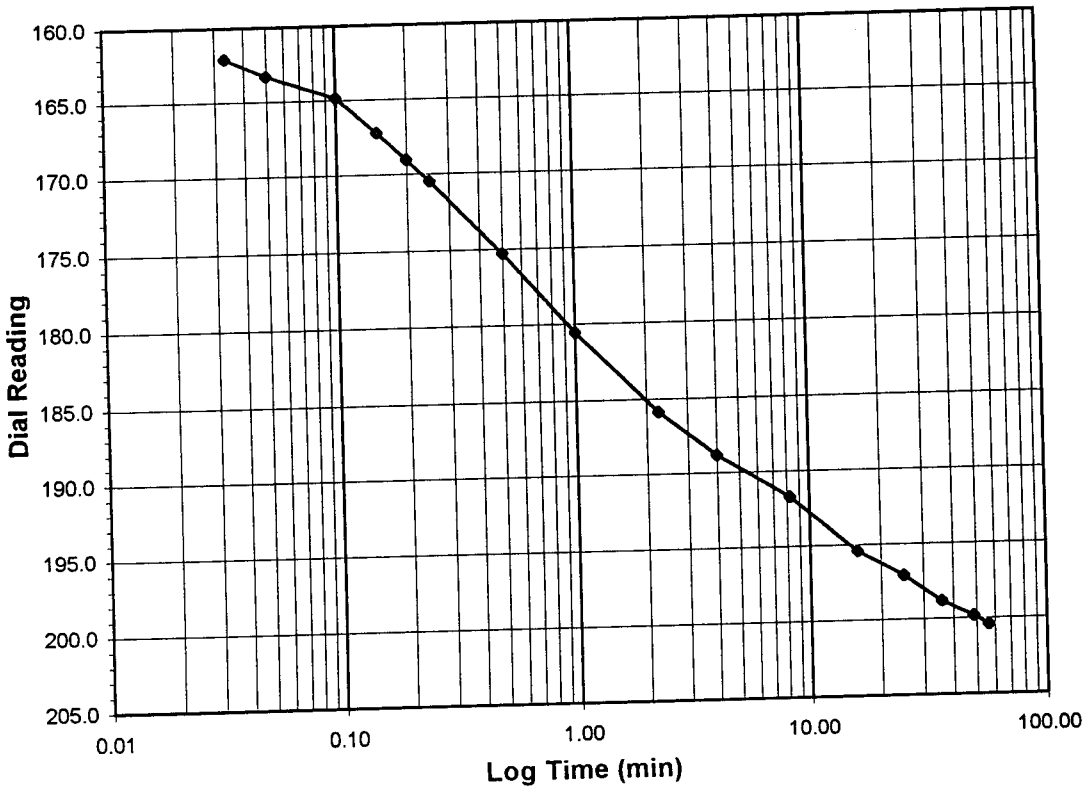
Client	DAVID GARRETT	Boring No.	B-10S
Client Project	PITT COUNTY	Depth (ft)	13.4-13.5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-006	Visual Description	GRAY SANDY SILT WITH SEA SHELL FRAGMENTS

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**0.25-0.5**
Final Reading	**(div)**	**200.4**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/20/02
Start Time		16:50:28

Elapsed Time (min)	Dial Reading (div)
Initial	**142.8**
0.03	162.1
0.05	163.3
0.10	164.8
0.15	167.3
0.20	169.0
0.25	170.5
0.50	175.3
1.00	180.5
2.25	185.9
4.00	188.8
8.23	191.7
16.00	195.4
25.00	197.1
36.00	198.8
49.00	199.8
56.73	200.4



Tested By TM *Date* 2/20/02 *Checked By* GU *Date* 2/27/02

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DCN: CT-24E Date: 3/2/98 Revision: 2

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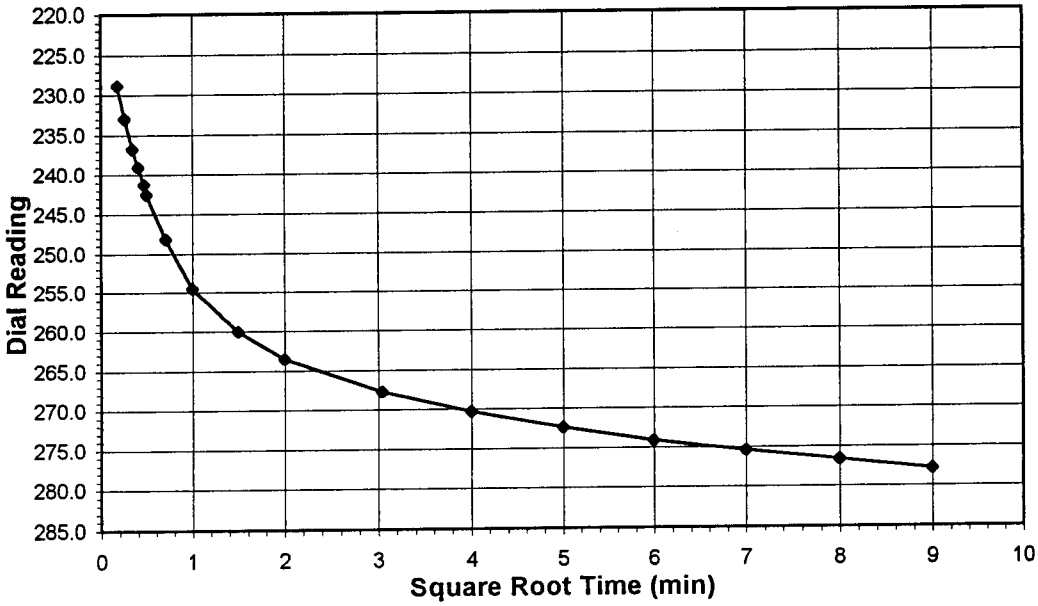
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

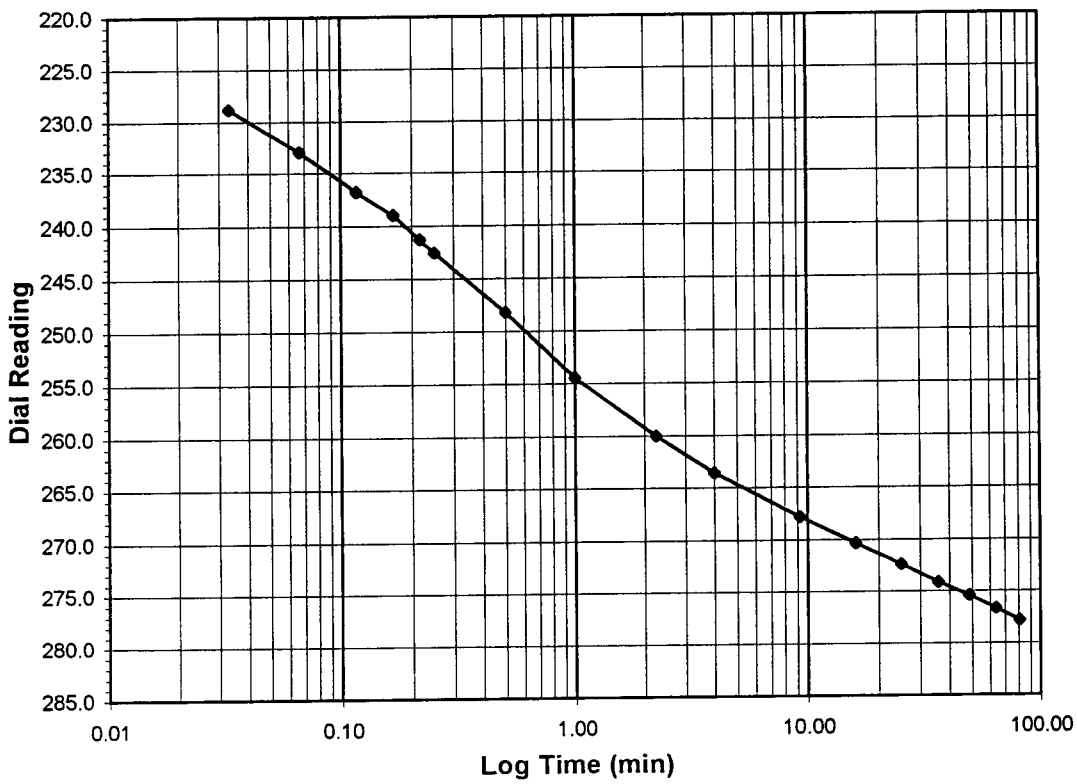
Client	DAVID GARRETT	Boring No.	B-10S
Client Project	PITT COUNTY	Depth (ft)	13.4-13.5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-006	Visual Description	GRAY SANDY SILT WITH SEA SHELL FRAGMENTS

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**0.5-1.0**
Final Reading	**(div)**	**277.8**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/21/02
Start Time		9:18:21

Elapsed Time (min)	Dial Reading (div)
Initial	**200.4**
0.03	228.8
0.07	232.9
0.12	236.8
0.17	239.0
0.22	241.2
0.25	242.6
0.50	248.2
1.00	254.5
2.25	260.0
4.00	263.5
9.27	267.8
16.00	270.3
25.00	272.4
36.00	274.1
49.00	275.4
64.00	276.6
81.00	277.8



Tested By TM *Date* 2/21/02 *Checked By* GU *Date* 2/27/02

DCN: CT-24E Date: 3/2/98 Revision: 2

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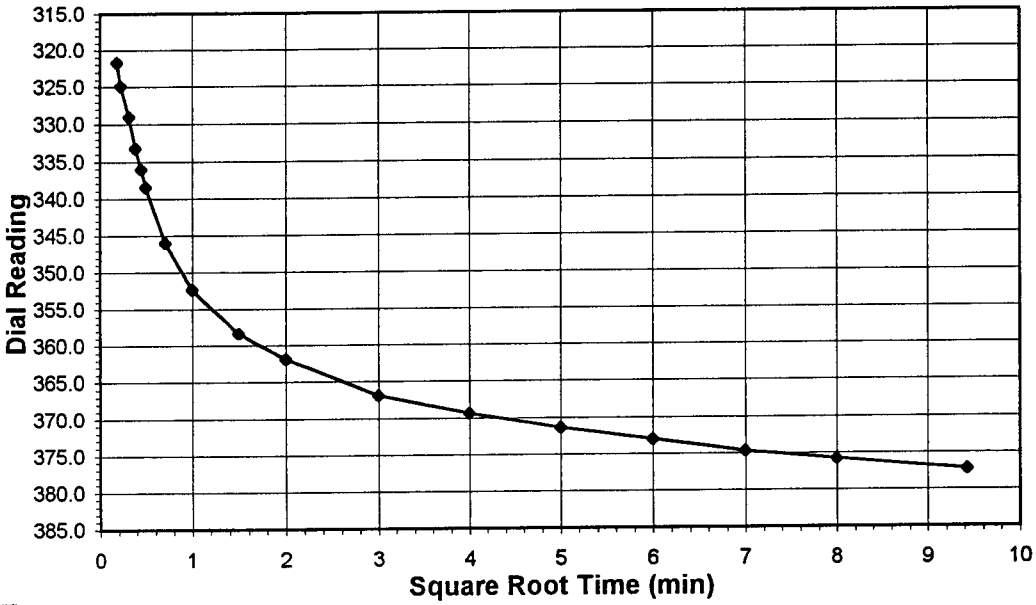
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

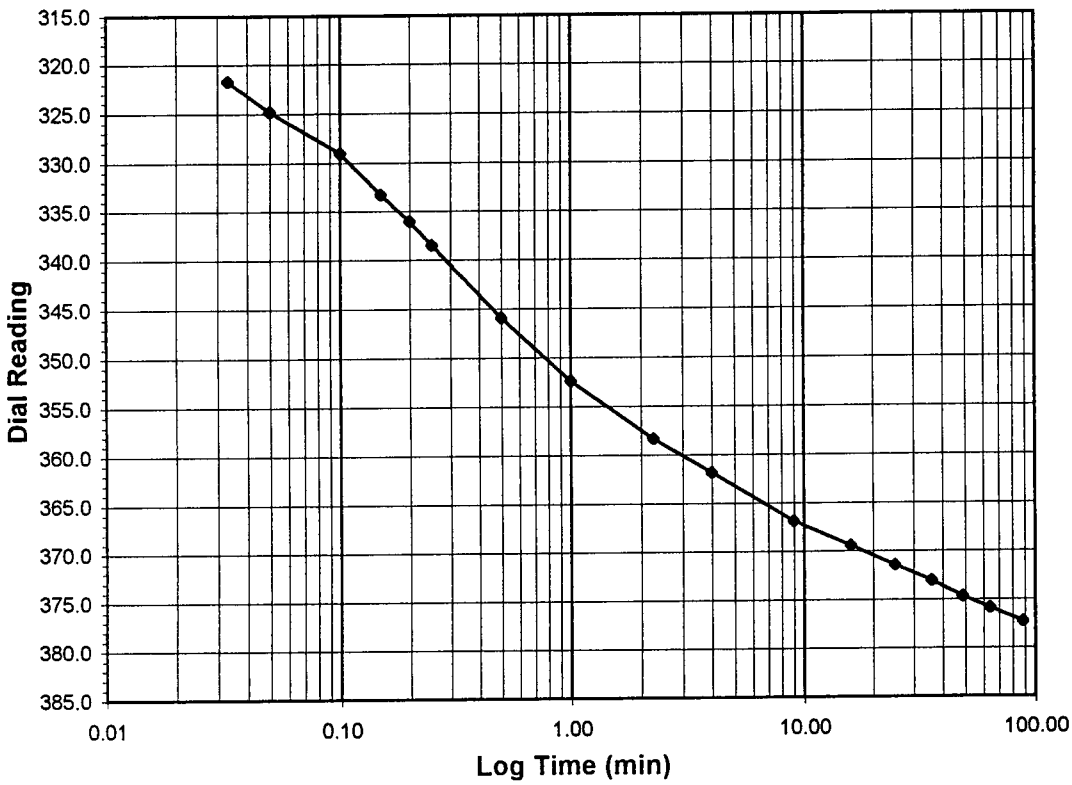
Client	DAVID GARRETT	Boring No.	B-10S
Client Project	PITT COUNTY	Depth (ft)	13.4-13.5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-006	Visual Description	GRAY SANDY SILT WITH SEA SHELL FRAGMENTS

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**1.0-2.0**
Final Reading	**(div)**	**377.3**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/21/02
Start Time		10:41:58

Elapsed Time (min)	Dial Reading (div)
Initial	**277.8**
0.03	321.7
0.05	324.9
0.10	329.0
0.15	333.3
0.20	336.0
0.25	338.5
0.50	345.9
1.00	352.3
2.25	358.3
4.00	361.9
9.02	366.9
16.00	369.4
25.00	371.4
36.00	373.0
49.00	374.7
64.00	375.8
88.80	377.3



Tested By TM *Date* 2/21/02 *Checked By* GU *Date* 2/27/02

DCN: CT-24E Date: 3/2/98 Revision: 2

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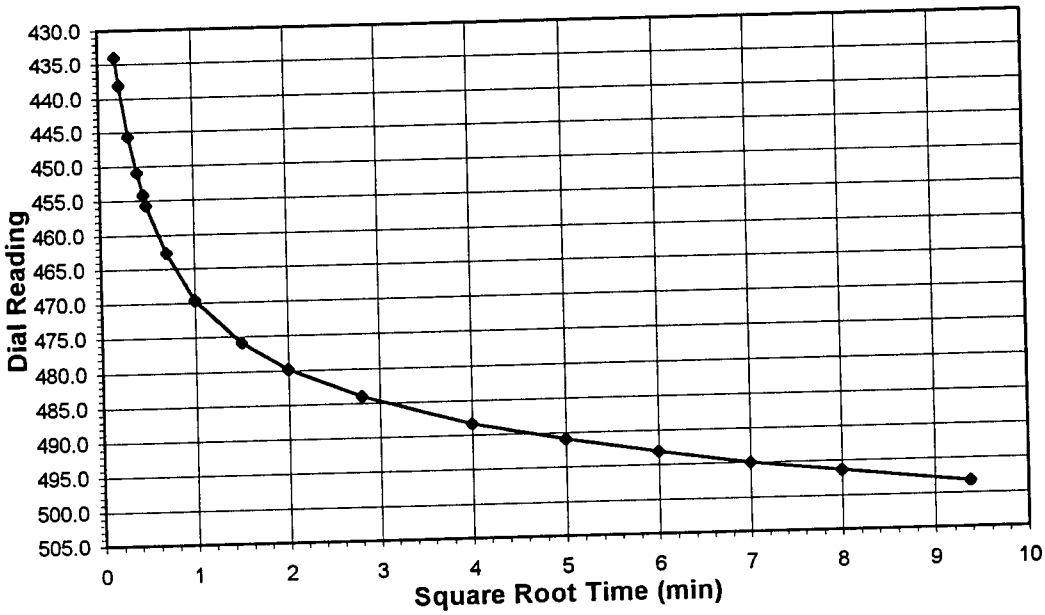
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

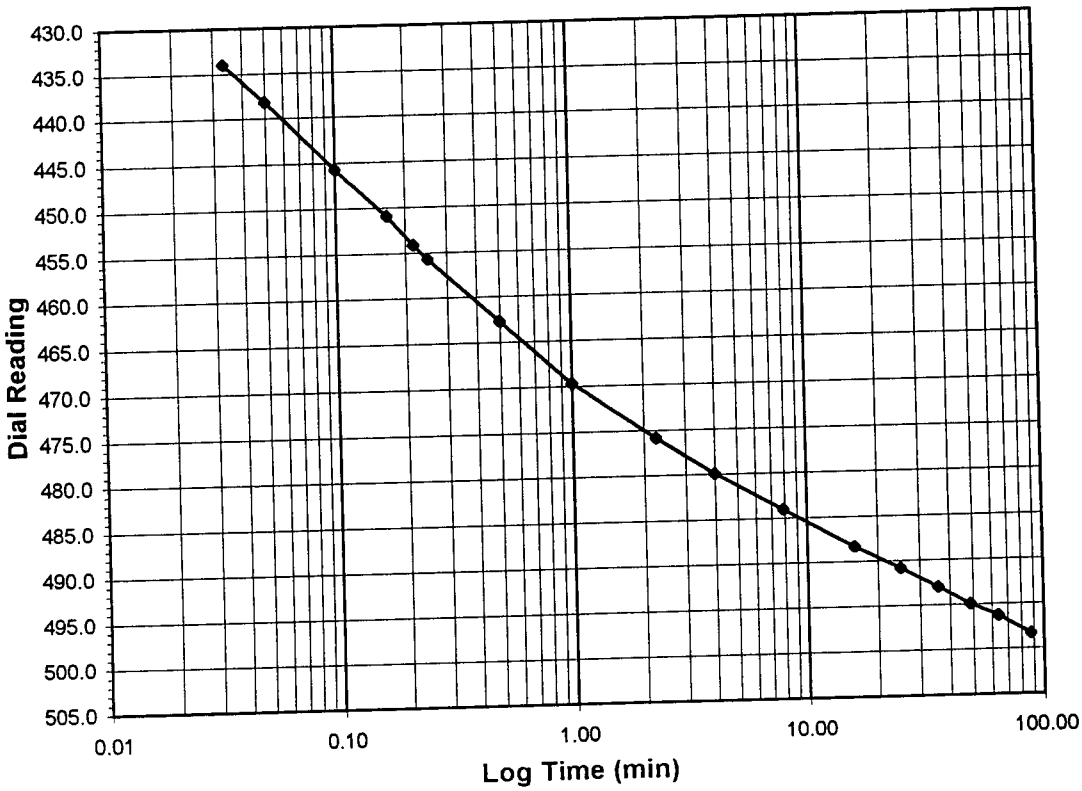
Client	DAVID GARRETT	Boring No.	B-10S
Client Project	PITT COUNTY	Depth (ft)	13.4-13.5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-006	Visual Description	GRAY SANDY SILT WITH SEA SHELL FRAGMENTS

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**2.0-4.0**
Final Reading	**(div)**	**498.3**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/21/02
Start Time		12:12:39

Elapsed Time (min)	Dial Reading (div)
Initial	**377.3**
0.03	434.0
0.05	438.1
0.10	445.7
0.17	450.9
0.22	454.1
0.25	455.8
0.50	462.7
1.00	469.6
2.25	475.9
4.00	479.9
7.89	484.0
16.00	488.4
25.00	490.9
36.00	493.0
49.00	494.9
64.00	496.3
87.98	498.3



Tested By TM *Date* 2/21/02 *Checked By* GU *Date* 2/27/02

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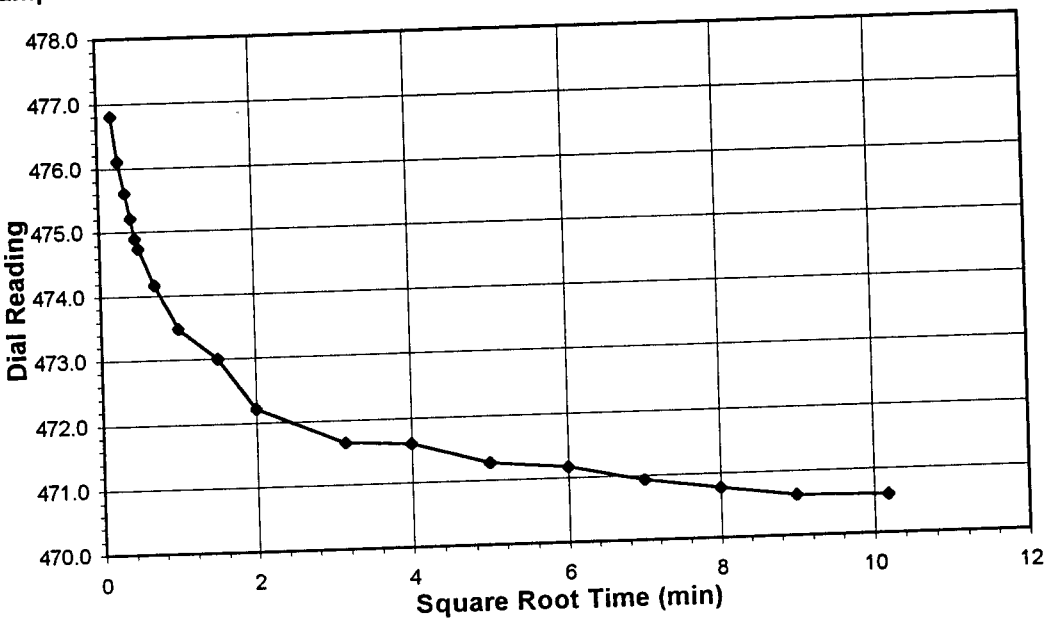
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

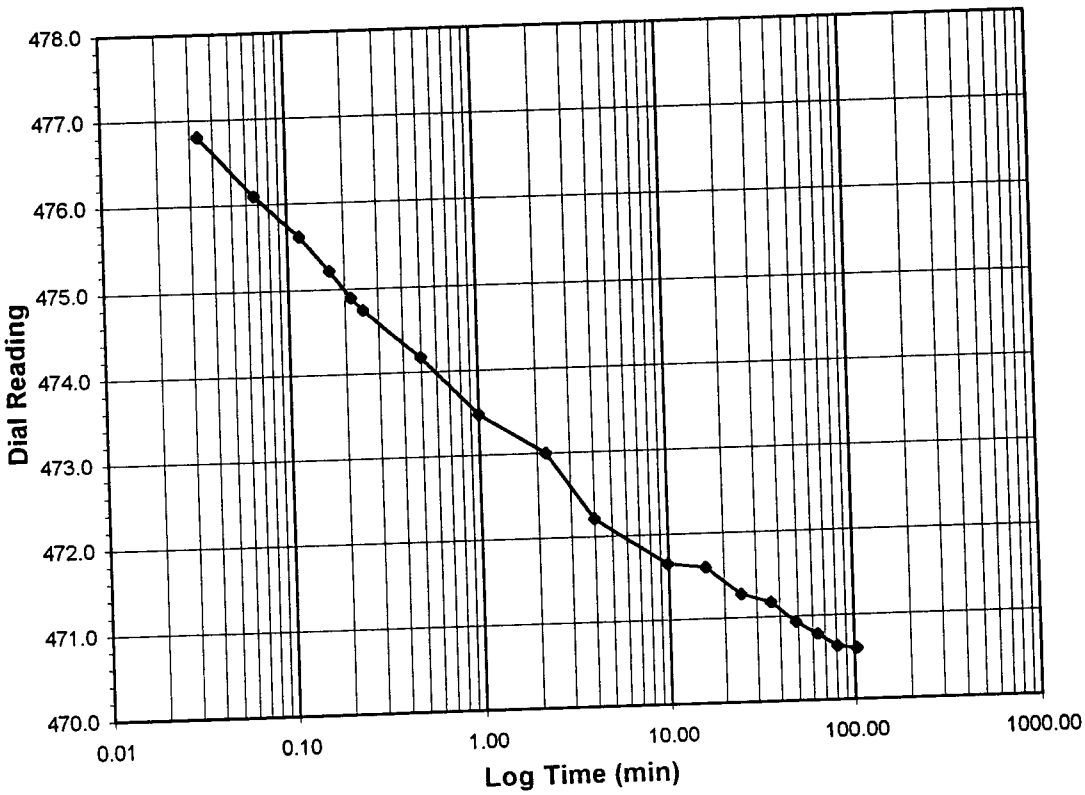
Client	DAVID GARRETT	Boring No.	B-10S
Client Project	PITT COUNTY	Depth (ft)	13.4-13.5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-006	Visual Description	GRAY SANDY SILT WITH SEA SHELL FRAGMENTS

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**4.0-1.0**
Final Reading	**(div)**	**470.6**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/21/02
Start Time		13:43:20

Elapsed Time (min)	Dial Reading (div)
Initial	**498.3**
0.03	476.8
0.07	476.1
0.12	475.6
0.17	475.2
0.22	474.9
0.25	474.7
0.50	474.2
1.00	473.5
2.25	473.0
4.00	472.2
9.93	471.7
16.00	471.6
25.00	471.3
36.00	471.2
49.00	470.9
64.00	470.8
81.00	470.6
103.70	470.6



Tested By TM *Date* 2/21/02 *Checked By* GU *Date* 2/27/02

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DCN: CT-24E Date: 3/2/98 Revision: 2
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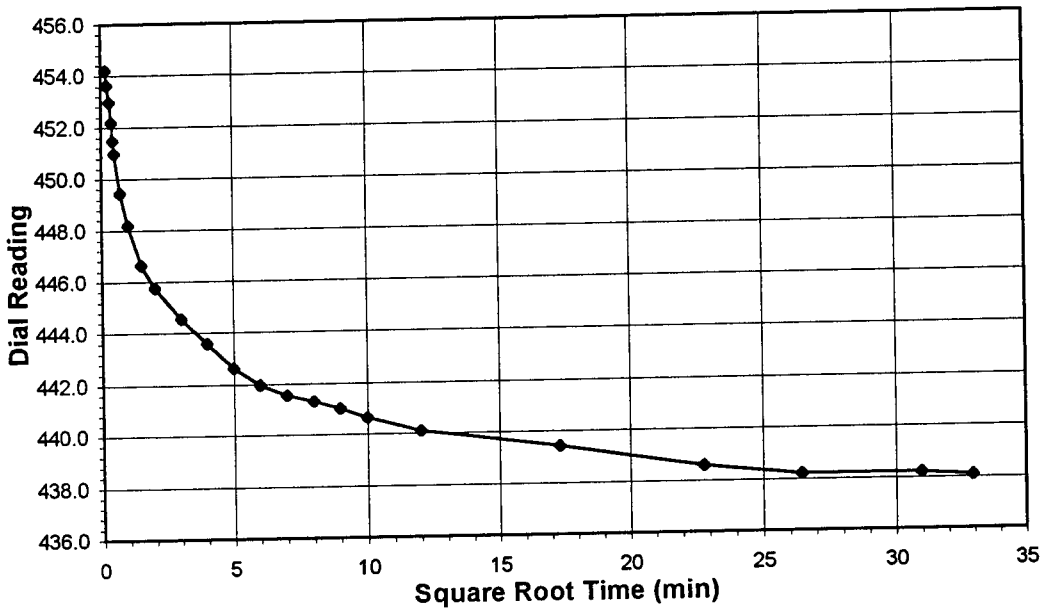
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

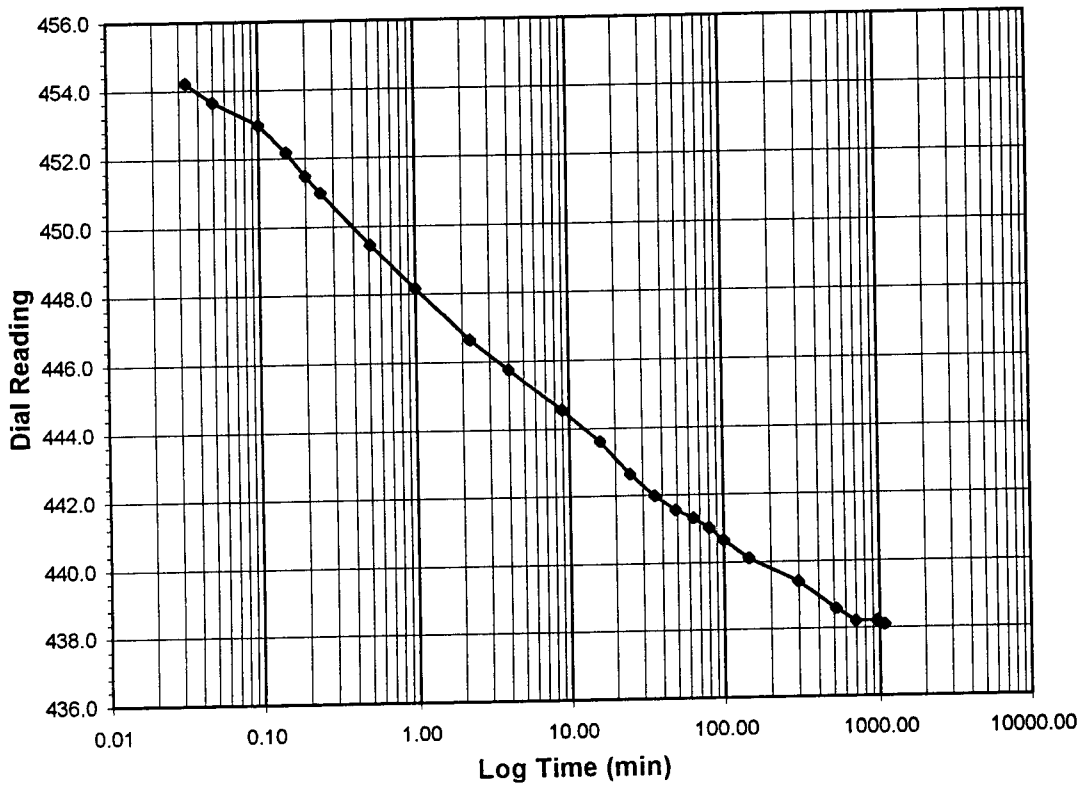
Client	DAVID GARRETT	Boring No.	B-10S
Client Project	PITT COUNTY	Depth (ft)	13.4-13.5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-006	Visual Description	GRAY SANDY SILT WITH SEA SHELL FRAGMENTS

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**1.0-0.25**
Final Reading	**(div)**	**438.1**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/21/02
Start Time		15:29:15

Elapsed Time (min)	Dial Reading (div)
Initial	**470.6**
0.03	454.2
0.05	453.6
0.10	453.0
0.15	452.2
0.20	451.5
0.25	451.0
0.52	449.5
1.00	448.2
2.25	446.7
4.00	445.8
9.02	444.6
16.00	443.6
25.00	442.6
36.00	442.0
49.00	441.6
64.00	441.3
81.00	441.0
100.00	440.6
144.00	440.1
300.00	439.4
520.00	438.6
700.00	438.2
960.00	438.2
1085.17	438.1



Tested By TM *Date* 2/21/02 *Checked By* GU *Date* 2/27/02

DCN: CT-24E Date: 3/2/98 Revision: 2

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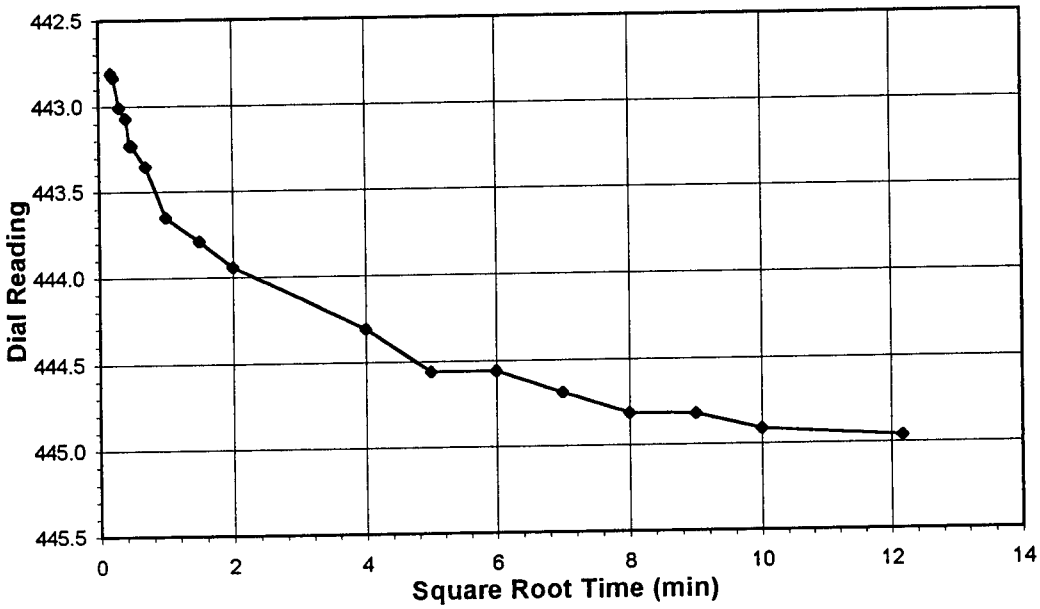
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

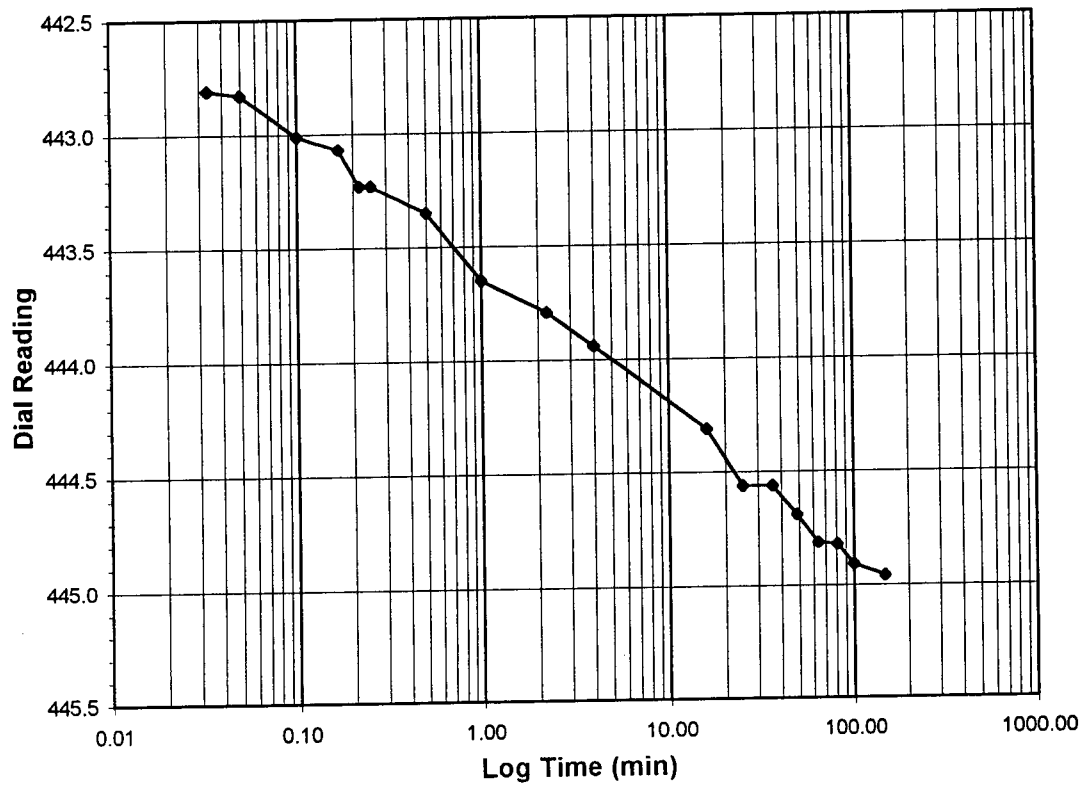
Client	DAVID GARRETT	Boring No.	B-10S
Client Project	PITT COUNTY	Depth (ft)	13.4-13.5
Project No.	R02011-01	Sample No.	NA
Lab ID	R02011-01-006	Visual Description	GRAY SANDY SILT WITH SEA SHELL FRAGMENTS

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**0.25-0.5**
Final Reading	**(div)**	**445.0**
Consolidometer No.		4
1 Division	(in)	0.0001
Start Date		2/22/02
Start Time		9:44:15

Elapsed Time (min)	Dial Reading (div)
Initial	**438.1**
0.03	442.8
0.05	442.8
0.10	443.0
0.17	443.1
0.22	443.2
0.25	443.2
0.50	443.4
1.00	443.7
2.25	443.8
4.00	443.9
16.00	444.3
25.00	444.6
36.00	444.6
49.00	444.7
64.00	444.8
81.00	444.8
100.00	444.9
148.22	445.0



Tested By TM *Date* 2/22/02 *Checked By* GU *Date* 2/27/02

DCN: CT-24E Date: 3/2/98 Revision: 2

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FRANCHISE RENEWAL

FOR: A Construction and Demolition Debris Landfill

GRANTED BY: Pitt County Board of Commissioners
1717 West Fifth Street
Greenville, North Carolina 27834
Contact: Phil Dickerson
Deputy County Manager/Public Services

GRANTED TO: C & D Landfill, Inc.
802 Recycling Lane
Greenville, North Carolina 27834
Contact: Judson Whitehurst, President

TERM OF FRANCHISE: The renewal term of this Franchise shall be one (1) year from the date of granting of the Franchise Renewal. The Franchise may renew and extend for seven (7) subsequent one (1) year terms, contingent upon County Commissioner approval pursuant to G. S. §153A-46. The Board of Commissioners may, at its sole option, require that the Franchisee meet additional terms and conditions in order to secure the renewal of the Franchise at the end of any one year term.

POPULATION AND AREA TO BE SERVED: The Site is located on US264 near the Pitt County/Beaufort County line. It is expected that the site will serve an area up to 50 miles in radius from the center of the waste area. This area will include all or portions of Pitt, Beaufort, Pamlico, Craven, Lenoir, Greene, Jones, Wayne, Wilson, Nash, Edgecombe, Halifax, Northampton, Bertie, Martin, Chowan, Washington, Tyrrell and Hyde Counties.

TYPE, QUANTITY AND SOURCE OF WASTE: Construction of new commercial and residential projects will be the main source of waste. Typical components of the waste stream are gypsum board, lumber, shingles, paper products, plastics and other miscellaneous materials. The most likely average daily rate is 50 tons per day. The Applicant is granted the authority to receive up to 200 tons per calendar day in order to accommodate future growth or other natural disasters such as Hurricane Floyd.

ANTICIPATED LIFE OF SITE: On the next page is a table of calculations of the potential useful life of the site. The useful life is based on the estimated tonnage per year arriving at the facility. It is estimated the proposed facility will have a useful life of approximately 20 years.

Annual Growth	Daily Tonnage		
	50	100	200
0%	25 years	13 years	7 years
2%	21 tears	11 years	6 years
5%	17 years	9 years	5.5 years
10%	13 years	8 years	5 years

DESCRIPTION OF SITE: Beginning at North Carolina Geodetic Survey Monument "BEACHUM-1979" with NAD '83 state plane coordinates NORTHING 209495.130 meters EASTING 774558.210 meters proceed on a magnetic bearing (July 22, 2000) SOUTH 28 degrees 46 minutes 00 seconds WEST 467.22 ft. to an existing iron stake, thence SOUTH 68 degrees 17 minutes 21 seconds WEST 1317.66 ft. to an existing iron pipe, thence SOUTH 24 degrees 28 minutes, 54 seconds, WEST 870.40 ft. to an existing iron pipe, thence SOUTH 19 degrees 17 minutes 19 seconds WEST 620.11 ft. to an existing iron pipe in the center of an abandoned railroad bed, thence SOUTH 22 degrees 50 minutes 42 seconds WEST 700.25 ft. to an existing iron pipe and being the TRUE POINT OF BEGINNING.

Thence from the TRUE POINT OF BEGINNING the following courses and distances:
SOUTH 44 degrees 44 minutes 42 seconds EAST 677.72 ft. to an existing iron pipe, thence SOUTH 15 degrees 30 minutes 38 seconds EAST 495.60 ft. to an existing iron pipe, thence SOUTH 66 degrees 08 minutes 47 seconds WEST 1182.37 ft. to an existing iron pipe, a corner with Davenport Farms DEED BOOK K-37 PAGE 457, thence NORTH 01 degrees 05 minutes 14 seconds WEST 122.65 ft. to an existing iron pipe, thence NORTH 33 degrees 05 minutes 14 seconds WEST 1312.98 ft. to an existing railroad iron on the south bank of WOLF PITT BRANCH, thence along the branch NORTH 27 degrees 36 minutes 05 seconds EAST 51.55 ft. (no point set) to the center line intersection of WOLF PITT BRANCH and a CANAL HEADING NORTH, thence along the centerline of the canal NORTH 04 degrees 28 minutes 05 seconds WEST 62.82 ft. (no point set), thence NORTH 19 degrees 30 minutes 45 seconds EAST 26.87 ft. (no point set), thence NORTH 36 degrees 34 minutes 19 seconds WEST 81.04 ft. (no point set), thence NORTH 37 degrees 17 minutes 08 seconds WEST 154.38 ft. to a set iron pipe in the centerline of the canal, thence leaving the canal SOUTH 82 degrees 23 minutes 10 seconds EAST 723.01 ft. (no point set), thence NORTH 54 degrees 18 minutes 09 seconds EAST 414.81 ft. (no point set), thence SOUTH 44 degrees 44 minutes 42 seconds EAST 210.00 ft. (no point set), thence SOUTH 44 degrees 44 minutes 42 seconds EAST 146.84 ft. back to THE TRUE POINT OF BEGINNINGS and having and containing 40.14 acres by the coordinate method.

CONDITIONS: The conditions upon which the Franchise renewal is granted are the following:

1. The franchisee shall cause any public road leading to the landfill to be cleared of debris at least twice per month for a distance of two miles on both sides of the landfill

entrance onto the public road.

2. The franchisee shall require that all trucks transporting debris be adequately covered or secured to prevent the spillage of debris.

3. The franchisee shall pay to the Pitt County Solid Waste Enterprise Fund a certain sum to be set each year in the fee schedules approved by the Board of County Commissioners for every ton of debris taken into the landfill. These funds shall be utilized by the County to insure that the landfill operates in accordance with all Federal, State, and local regulations and the franchise.

4. The franchisee shall comply with all fire prevention regulations and sedimentation and erosion control regulations.

5. The franchisee shall provide dust control measures that will not allow dust to leave his property.

6. The franchisee hereby gives the County the right to seek up to $500 per calendar day in damages, for violation of the franchise agreement.

Beth Ward, Chairman

ATTEST:

Susan J. Banks, CMC
Clerk to the Board

APPROVED
Pitt County Legal Department
Date: 2/26/03
By: Linne Burgdorff
Attorney

PITT COUNTY NORTH CAROLINA

PITT COUNTY
BOARD OF COMMISSIONERS
1717 W. 5TH STREET
GREENVILLE, NC 27834-1696
TELEPHONE: (252) 830-6302
FAX: (252) 830-6311

BOARD OF COUNTY COMMISSIONERS
Glenn Bowen
Charles P. Gaskins
David Hammond
Ann Huggins
Eugene James
Tom Johnson
Mark W. Owens, Jr
Theresa (Terry) Shank
Beth B. Ward

PITT COUNTY BOARD OF COMMISSIONERS

GREENVILLE, NORTH CAROLINA

OCTOBER 23, 2000

I, Susan J. Banks, Clerk to the Board, do hereby certify that the attached copies are true and accurate copies of the minutes from the August 7, 2000 Pitt County Board of Commissioners' meetings.

Susan J. Banks

Susan J. Banks, CMC
Clerk to the Board

October 23, 2000
Date

PITT COUNTY BOARD OF COMMISSIONERS
MINUTES FOR AUGUST 7, 2000

The Pitt County Board of Commissioners met in a regular session on Monday, August 7, 2000, at 9:00 a.m. in the Commissioners' Auditorium, Pitt County Office Building, 1717 W. 5th Street, Greenville, North Carolina.

Commissioners present:

Charles P. Gaskins, Chairman
David Hammond, Vice Chairman
Glenn Bowen, Commissioner
Ann Huggins, Commissioner
Eugene James, Commissioner
Tom Johnson, Sr., Commissioner
Mark W. Owens, Jr., Commissioner
M. Theresa Shank, Commissioner
Beth B. Ward, Commissioner

Others present were:

Thomas B. Robinson, County Manager
JoAnne Burgdorff, County Attorney
Susan J. Banks, Clerk to the Board
Melonie Bryan, Director of Financial Services
Arlen Holt, Public Information Officer

CALL TO ORDER – Chairman Gaskins

INVOCATION AND PLEDGE

The invocation was offered by Vice Chairman Hammond.

The Pledge of Allegiance was led by Commissioner Johnson.

APPROVAL OF AGENDA

Mr. Robinson stated that Margaret Hardee was present and would like to add a report on early voting procedures that will begin this year. In addition, Mr. Robinson stated that he needed to add an item for decision about the County joining the Coastal Plains committee.

UPON MOTION by Commissioner James, seconded by Vice Chairman Hammond, the Board voted unanimously to approve the agenda as amended.

APPROVAL OF MINUTES - June 19, 2000 and July 10, 2000

Vice Chairman Hammond stated that there was a meeting at Pitt Community College and he wanted to be recorded as a no vote on leasing property for classrooms at Pitt Community College. Commissioner Bowen stated this item was not in either set of minutes proposed for approval at this meeting and Vice Chairman Hammond would need to address it when the appropriate minutes are presented for approval.

UPON MOTION by Commissioner Bowen, seconded by Commissioner James, the Board voted unanimously to approve the minutes of the June 19, 2000 and the July 10, 2000 meetings.

PUBLIC HEARING ON 2000-2001 RURAL OPERATING ASSISTANCE PROGRAM ALLOCATION

Mr. Bulow stated that funding was provided by the General Assembly for the Rural Operating Assistance Program and he was bringing the recommendation for the funding to the Board. Mr. Bulow stated that the Pitt Area Transit System provides the recommendation:

Council on Aging	$30,141
Department of Social Services	9,419
GREAT	5,023
Mental Health	5,652
Eastern Carolina Vocational Center	7,535
Creative Living Center	5,023
Total	$62,793

Chairman Gaskins opened the public hearing. Vice Chairman Hammond asked if there was an increase in this funding. Mr. Bulow stated there was actually a modest decrease.

Vice Chairman Hammond motioned to close the public hearing. Commissioner James seconded the motion and the motion passed unanimously.

UPON MOTION by Commissioner Ward, seconded by Commissioner James, the Board voted unanimously to accept the recommendation from the PATS Board for the Fiscal Year 2000-2001 Rural Operating Assistance Program.

PUBLIC COMMENTS ON SITING OF TWO CONSTRUCTION AND DEMOLITION LANDFILLS

Phil Dickerson stated there were two applications for site approval for C&D landfills. He explained the three types of landfills as follows:

a. inert debris - limbs, asphalt, brick
b. construction/demolition - demolishing buildings and construction materials
c. sanitary landfill – household garbage

Mr. Dickerson stated that the Board has the duty to approve or disapprove landfills and there are no guidelines for this decision. He stated there is proposed franchise ordinance for the Board's review and approval at a subsequent meeting. The Board can approve, disapprove or schedule a public hearing as well as ask for modifications to the franchise ordinance.

Vice Chairman Hammond asked if there were controls available for the County without a zoning ordinance in place. Ms. Burgdorff stated that this is the purpose of the franchise ordinance. She said this ordinance would actually provide the zoning of this particular site. Commissioner James stated that if zoning had been in place, this process would not be necessary. However, Mr. Dickerson stated that this process would have to be gone through regardless of whether the County was zoned. The County has to provide this information in writing to the State. Mr. Robinson stated that the franchise ordinance would be necessary also.

UPON MOTION by Vice Chairman Hammond, seconded by Commissioner Huggins, the Board voted to open the floor for public comments on the Construction and Demolition Debris Landfills.

Mr. Robinson asked speakers to limit their comments to three minutes and state their residence.

Public Comments

- Kenneth K. Dews stated he had lived in Pitt County for over fifty years. After reviewing the materials on the landfill he asked that the Board not approve the Moore Proposal. He said they had property owned by his family and named the individuals. He stated that they had over 500 acres in this area and he had personally helped clear this piece of property. They are totally opposed to any facility of this kind being placed on this road. He stated he respectfully requests this site not be located on Satterwhite Road.
- Vernon Morrison stated he was against this proposal because there is already a landfill nearby. He said he did not understand why another one was needed so close by.
- Paul Davenport, 2692 Yankee Hall Road, Pactolus Township. Mr. Davenport said he lives within a two-mile radius of both proposed sites. He shared a petition with 85 names on it. He

said they do not need a second site. The Whitehurst site has adequate room for expansion and that is all that is needed.

- Susie Sugg - 1602 NC 30, said there is another landfill within three miles and it is nothing but swampland. She said they are very opposed to it.
- Kathy Paz- 1526 NC 30, said the Moore site backs up to her property. This property is very watery and swampy. When the hurricane came through, the property was flooded from the creek. If the dirt and trees are removed, she is afraid of what would happen to her property.
- Kevin Hawkins , EJE Recycling Yard Manager, said he had seen a lot of positive growth in this area. He stated he had educated himself on the solid waste field. He stated he owns a home within two miles from the site. He is in favor of this landfill. They follow all the rules and regulations and do not propose any threat to the environment. He stated the Whitehurst site would be able to handle large amounts of debris. The County had to pay to have all of this type of debris transported to Bertie County. He said if this site is not approved, his job and 14 other employees will have jobs that are in jeopardy. He said their environmental record speaks for itself.
- Bobby Harrington said he supports the Whitehurst request and that there have been no complaints. He noted the other landfill location. He said there have been enough problems across the river.
- Judson Whitehurst, 802 Recycling Lane and owner of EJE Recycling, stated that there is not enough waste for two construction and demolition debris landfills. He said he would appreciate the opportunity to expand and they have been good citizens of the County. He stated that they worked very hard during the flood and clean up.
- Linda Whitehurst, 1148 Sheppard Mill Road, said her husband has chronic bronchitis and there was a fire down at the landfill, and they could not leave their house without his oxygen. She was opposed to the Pactolus Site.
- Janet White, 1056 Sheppard Mill Road, said she lives 500 feet from the existing recycling site. After Floyd came, the trash stayed on the roadside for a while. Any time she goes outside and works for a while in her yard, she becomes physically sick. She said she only gets sick when she goes outside and has become a prisoner in her own home. She does not see expanding around the residential houses as being a good alternative when there is any other alternative.
- Billy Langley, Sheppard Mill Road, lives 100 acres from the proposed site, said there are two streams that feed directly from this landfill. Many of the people feel the same way and it is very personal. Many people live on ancestral land. He was opposed to this site for a landfill.
- C.J. Harris, representing the Dennis Harris Estate, said he realizes that there are needs and the County is continuing to grow. He said they understood that the EJE site has local support but there has been some opposition. The Moore site adjoins property that has not been committed. He said the Langleys, Tripps, Brileys, Woolards and many other families have their roots in the Pactolus area. Their family has a farm that joins the Moore site. There are two creeks and he reviewed their drainage pattern. He said if zoning was in place, it would be questionable if this site would be approved.
- Vance Moore, resides and works in Raleigh, said he would like to dispel some of the misconceptions that have been spoken today concerning the Moore site. He said when they presented their project they did not know there was another project being proposed. He said he would like to outline their project specifications, location and proposed tipping fee. He said they have not gone out to drive up support of their project. He said the read the petition. There is not a site within a two-mile area. He said there is not a construction and demolition debris landfill in Pitt County. He said that the value of the land is not a problem, which you can check by looking at the existing landfill on Allen Road. He and his brother have proposed and they are committed to this project. He said they would offer a show of support for the community by pledging that for every ton they receive $1.0 will go to the Pactolus Elementary School. If you look at a site map, it is clear that this property is for agriculture purposes. There will be a 300-foot buffer. He said the State requires a sediment & erosion control plan. This landfill is 70 acres but there would not be that much area upset. He asked that he be allowed to meet with the responsible parties and discuss this at a later time when his time is not limited.

UPON MOTION by Vice Chairman Hammond, seconded by Commissioner James, the Board voted unanimously to close the public comments section of the meeting.

Mr. Dickerson said that EJE does have a permit to accept and transport this waste to Bertie County Landfill. Commissioner Bowen asked how much of the debris is received from Pitt County. Mr. Whitehurst stated that 78% of the debris is received from Pitt County. Commissioner James thanked Mr. Moore for his donation offer to the Pitt County Schools and said he was setting a good example. He also stated that he had compassion for the people of Pactolus and does not want it known as a landfill area. Commissioner James stated that staging areas were placed in front of landfill in Belvoir. The C&D landfill could have taken this debris in while Pitt County did not have a C&D landfill. It was stock piled and overlaps. The flood related debris was moved twice at a cost of over $600,000. Commissioner Johnson said the citizens' request should be considered. He stated that some spoke to expansion of the current landfill.

Vice Chairman Hammond said the County will always have this problem without zoning. These things will be needed as long as the County continues to grow. He said the people of this community have expressed that their neighborhood would be disturbed with this landfill.

Commissioner Johnson **motioned** for the Moore site to be denied as a C&D operation and allow the EJE to expand. Vice Chairman Hammond seconded the motion. Commissioner Bowen offered a substitute motion to grant a franchise to EJE but not deny Mr. Moore's request for a C&D landfill. No second was offered to the substitute motion so it died.

Chairman Gaskins called for a vote on the motion to deny the Moore site and approve the expansion of EJE which received an eight to one vote. Commissioner Bowen opposed the motion. Mr. Robinson said they need to schedule a public hearing for the franchise ordinance.

UPON MOTION by Commissioner Owens, seconded by Commissioner Ward, to schedule the public hearing on the franchise ordinance.

Vice Chairman Hammond asked if Mr. Moore could speak at this public hearing. Mr. Robinson said anyone would be able to speak on this subject at the public hearing. Commissioner Ward asked if the State's study had been completed. Mr. Dickerson said this would have to be done. Commissioner James called for the question. The motion was approved unanimously.

Mr. Robinson asked if there were any comments or changes to the draft ordinance. Commissioner Shank noted the $2 fee for each ton and asked how this fee was established. Mr. Dickerson said they estimated how much debris would be coming in and they wanted to have enough income to cover keeping the landfill clean. Commissioner James said there should be strict enforcement of cleanliness and tickets should be written for violations of the cleanliness issue.

PUBLIC ADDRESSES TO THE BOARD

- Vernon Morrison spoke about Alton Thomas and problems he was having getting his property approved for septic tanks. He said Ernie Nichols, Environmental Health staff, had turned down every lot on this man's property upon inspection. He approved all the requests on the other side of the road. He said even the City turned him down on the sewer. He also spoke about overtime paid by U.S. government and the reimbursement from FEMA. One doctor got $12,000 in 11 days.

Commissioner Owens asked the Manager to review the situation with Mr. Thomas and give a follow up report to the Board. Vice Chairman Hammond said he would like for the public making public addresses to the Board to refrain from attacking individuals, especially if the individual is not present.

ITEMS FOR REPORT

Manager's Report – Tom Robinson

DRAFT

APPLICATION FOR FRANCHISE TO OPERATE CONSTRUCTION AND DEMOLITION DEBRIS (C&D) LANDFILL

The Applicant, C&D Landfill, Inc. hereby petitions the Pitt County Board of Commissioners for the grant of a franchise to operate a construction and demolition debris (C&D) landfill on a site owned by C&D Landfill, Inc. and located in Pitt County, North Carolina, pursuant to the Pitt County C&D Landfill Franchise Ordinance. The Applicant in support of this Application hereby states as follows:

1. The name of the Applicant is C&D Landfill, Inc., a North Carolina corporation with its principle office located at 802 Recycling Lane, Greenville, Pitt County, North Carolina.

2. The owner of the proposed site is C&D Landfill, Inc.

3. Annexed hereto as Exhibit A is a copy of the Articles of Incorporation of C&D Landfill, Inc.

4. Annexed hereto as Exhibit B, a legal description of the site, and Exhibit C, a map of the site on which C&D Landfill, Inc. proposes to operate the C&D landfill.

5. Population and Area to be Served: The site is located on US 264 near the Pitt County/Beaufort County line. It is expected that the site will serve an area up to 50 miles in radius from the center of the waste area. This area will include all or portions of Pitt, Beaufort, Pamilco, Craven, Lenoir, Greene, Jones, Greene, Wayne, Wilson, Nash, Edgecombe, Halifax, Northampton, Bertie, Martin, Chowan, Washington, Tyrrell and Hyde Counties. Exhibit C, a map of the service area, is attached.

6. Type, Quantity and Source of Waste: Waste from construction of new commercial and residential projects will be the main source of waste. It is also anticipated that the initial waste stream will include debris from the demolition of flood damaged homes and business. Typical components of the waste stream are gypsum board, lumber, shingles, paper products, plastics and other miscellaneous materials.

   It is anticipate that the initial volume will be approximately 100 tons per day during the period when flood damaged buildings are being demolished. The most likely average daily rate after demolition of flood damaged buildings is 50 tons per day. The Applicant request the authority to receive up to 200 tons per calendar day in order to accommodate future growth or other natural disasters such Hurricane Floyd.

7. Anticipated Useful Life of the Site: Attached hereto is Exhibit D, a table of calculations of the potential useful life of the site. The useful life is based on the estimated tonnage

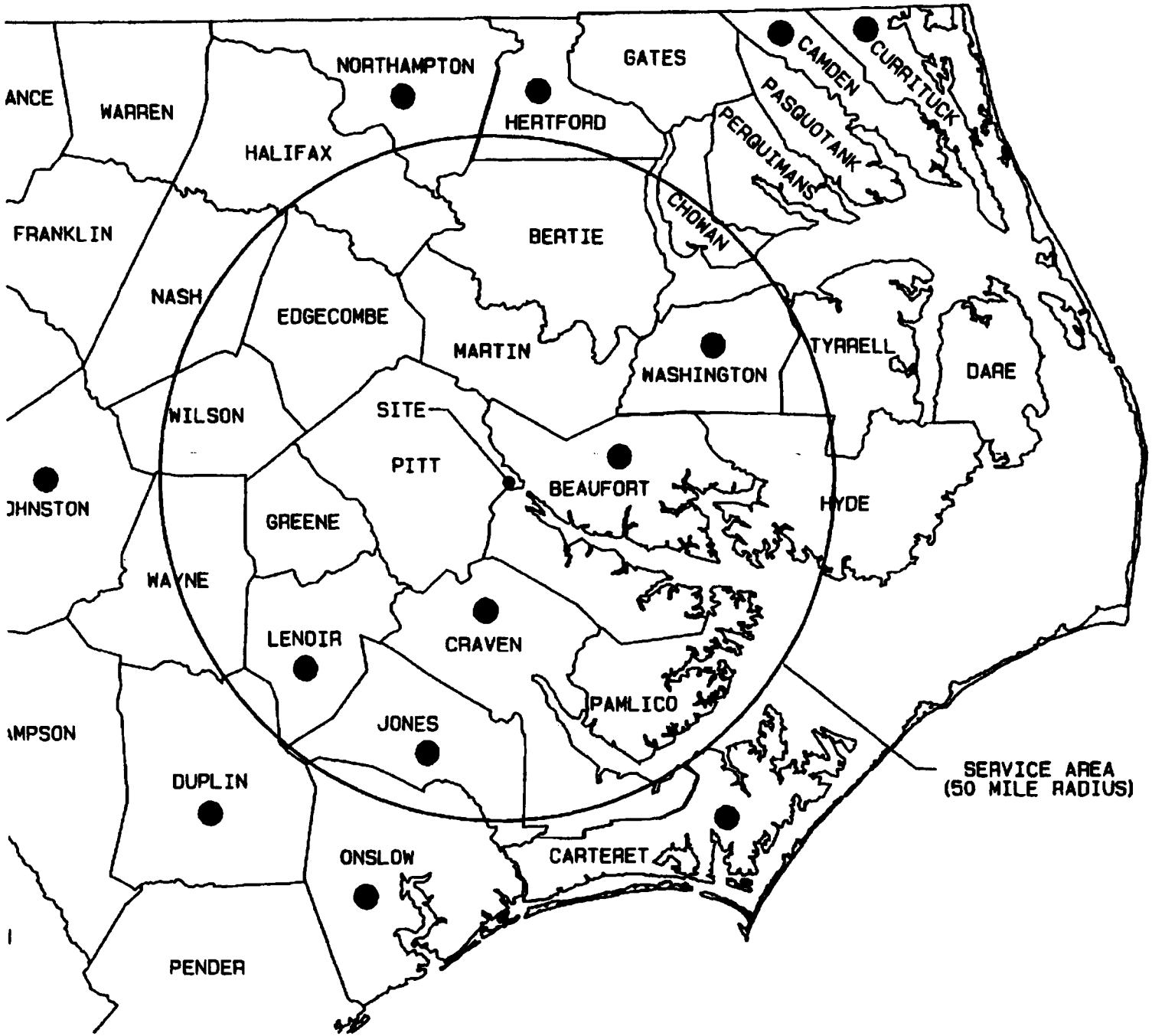
per year arriving at the facility. It is estimated the proposed facility will have a useful life of approximately 20 years.

8. Evidence of Pitt County Commissioners: Annexed hereto is as Exhibit E is a copy of the minutes of Pitt County Commissioners where approval for this site was granted.

WHEREFORE, the Applicant, C&D Landfill, Inc., respectfully requests that the Pitt County Board of Commissioners grant to C&D Landfill, Inc. a franchise for operation of a construction and demolition debris (C&D) landfill at the site, in accordance with the Franchise Ordinance adopted bye the Pitt County Board of Commissioners on _____.

Respectfully submitted this 16th day of October, 2000.

_____


ANCE
WARREN
NORTHAMPTON
GATES
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PASQUOTANK
PERQUIMANS
HALIFAX
CHOWAN
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BERTIE
NASH
EDGECOMBE
MARTIN
WASHINGTON
TYRRELL
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HYDE
JOHNSTON
GREENE
WAYNE
LENOIR
CRAVEN
PAMLICO
JONES
AMPSON
DUPLIN
ONSLOW
CARTERET
PENDER
SERVICE AREA
(50 MILE RADIUS)

Exhibit C

BOOK 1098 PAGE 156

685.00 CK

Pitt COUNTY NC
ss
01/12/2001
$685.00
STATE OF NORTH CAROLINA
Real Estate Excise Tax

FILED
JUDY J. TART
REGISTER OF DEEDS
2001 JAN 12 PM 3:09
Deborah Bauington, Asst.
PITT COUNTY, N.C.

Excise Tax

Recording Time, Book and Page

Tax Lot No. ..... Parcel Identifier No. .....

Verified by ..... County on the ..... day of ....., 19 .....

by .....

~~Mail~~ File after recording to Danny A. Harrington, P.O. Box 1726, Greenville, NC 27835

This instrument was prepared by Danny A. Harrington, Attorney at Law

Brief description for the Index

NORTH CAROLINA GENERAL WARRANTY DEED

THIS DEED made this 28TH day of DECEMBER, ~~19~~ XX2000, by and between

GRANTOR	GRANTEE
Ed A. Whitehurst, Sr., unmarried	C & D Landfill, Inc. A North Carolina Corporation

Enter in appropriate block for each party: name, address, and, if appropriate, character of entity, e.g. corporation or partnership.

The designation Grantor and Grantee as used herein shall include said parties, their heirs, successors, and assigns, and shall include singular, plural, masculine, feminine or neuter as required by context.

WITNESSETH, that the Grantor, for a valuable consideration paid by the Grantee, the receipt of which is hereby acknowledged, has and by these presents does grant, bargain, sell and convey unto the Grantee in fee simple, all that certain lot or parcel of land situated in the City of ....., Pactolus Township, Pitt County, North Carolina and more particularly described as follows:

SEE EXHIBIT "A" ATTACHED HERETO AND MADE A PART HEREOF.

ALL CROP ALLOTMENTS ARE RESERVED UNTO GRANTOR AND ARE NOT INCLUDED IN THIS CONVEYANCE.

FEB 2001
Received
Solid Waste
Section

N. C. Bar Assoc. Form No. 3 © 1976, Revised © 1977 — James Williams & Co., Inc. Box 127, Yanceyville, N. C. 27379
Printed by Agreement with the N. C. Bar Assoc. - 1981

The property hereinabove described was acquired by Grantor by instrument recorded in .....

A map showing the above described property is recorded in Plat Book 54 page 148.

TO HAVE AND TO HOLD the aforesaid lot or parcel of land and all privileges and appurtenances thereto belonging to the Grantee in fee simple.

And the Grantor covenants with the Grantee, that Grantor is seized of the premises in fee simple, has the right to convey the same in fee simple, that title is marketable and free and clear of all encumbrances, and that Grantor will warrant and defend the title against the lawful claims of all persons whomsoever except for the exceptions hereinafter stated. Title to the property hereinabove described is subject to the following exceptions:

1. 2001 ad valorem taxes.

2. Easements and restrictions of record.

IN WITNESS WHEREOF, the Grantor has hereunto set his hand and seal, or if corporate, has caused this instrument to be signed in its corporate name by its duly authorized officers and its seal to be hereunto affixed by authority of its Board of Directors, the day and year first above written.

USE BLACK INK ONLY

..... (Corporate Name)

..... President

ATTEST:

..... Secretary (Corporate Seal)

Ed A. Whitehurst (SEAL)
Ed A. Whitehurst, Sr.

..... (SEAL)

..... (SEAL)

..... (SEAL)

SEAL-STAMP

OFFICIAL SEAL
Notary Public, North Carolina
County of Pitt
Tracey W Bunch
My Commission Expires 11/23/2003

NORTH CAROLINA, Pitt County.

Use Black Ink

I, a Notary Public of the County and State aforesaid, certify that Ed A. Whitehurst, Sr. Grantor, personally appeared before me this day and acknowledged the execution of the foregoing instrument. Witness my hand and official stamp or seal, this 28 day of December 2000, ~~19~~

My commission expires: 11/23/03 Tracey W Bunch Notary Public

SEAL-STAMP

NORTH CAROLINA, ... County.

Use Black Ink

I, a Notary Public of the County and State aforesaid, certify that ..... personally came before me this day and acknowledged that .... he is ..... Secretary of ..... a North Carolina corporation, and that by authority duly given and as the act of the corporation, the foregoing instrument was signed in its name by its ..... President, sealed with its corporate seal and attested by ..... as its ..... Secretary. Witness my hand and official stamp or seal, this ..... day of ....., 19.....

My commission expires: ..... Notary Public

The foregoing Certificate(s) of Tracey W. Bunch, a Notary Public of Pitt County, NC

is/are certified to be correct. This instrument and this certificate are duly registered at the date and time and in the Book and Page shown on the first page hereof.

Judy J. Dart REGISTER OF DEEDS FOR Pitt COUNTY

By Deborah T. Barrington ~~Deputy~~/Assistant - Register of Deeds

N. C. Bar Assoc. Form No. 3 © 1976, Revised © 1977 -- James Williams & Co., Inc. Box 127 Yorkinville, N. C. 27055
Printed by Agreement with the N. C. Bar Assoc. - 1981

EXHIBIT "A"

That certain tract of land situated in Pactolus Township, Pitt County, North Carolina containing 34.21 acres and being a portion of that land described in deed book 70 page 268, more particularly described as follows:

Beginning at North Carolina Geodetic Survey Monument Beacham – 1979 which is located at or near the edge of asphalt of the north east quadrant of the intersection of State Road 1550 with US Highway 264 west, and being more precisely located at NAD 1983 state plane coordinates NORTH 687318.6064 feet, EAST 2541196.3919 feet. Proceed on an NAD 1983 bearing of SOUTH 18 degrees 11 minutes 58 seconds WEST 467.22 feet to a set iron rod, thence SOUTH 57 degrees 43 minutes 19 seconds WEST 1,317.66 feet to a set iron pipe, thence SOUTH 13 degrees 54 minutes 52 seconds WEST 870.40 feet to a set iron pipe, thence SOUTH 08 degrees 43 minutes 9 seconds WEST 620.08 feet to a set iron pipe, thence SOUTH 12 degrees 16 minutes 46 seconds WEST 700.28 feet to a set iron pipe and the True Point of Beginning. Said True Point of Beginning is a control corner and located at NAD 1983 state plane coordinates NORTH 684029.3194 feet EAST 2539484.3042 feet with a combined factor of 0.99989217 applied.

Thence from the True Point of Beginning SOUTH 55 degrees 18 minutes 44 seconds EAST 677.72 feet to a set iron pipe and also a control corner NAD 1983 state plane coordinates NORTH 683643.6255 feet EAST 2540041.5692 feet combined factor of 0.99989217 applied. Thence SOUTH 26 degrees 04 minutes 40 seconds EAST 495.60 feet to a set iron pipe, thence SOUTH 55 degrees 34 minutes 45 seconds WEST 1182.37 feet to a set iron pipe, thence NORTH 11 degrees 39 minutes 16 seconds WEST 122.65 feet to a set iron pipe in the center of a ditch, thence NORTH 43 degrees 39 minutes 16 seconds WEST 1312.98 feet to an existing railroad iron on the SOUTHEAST bank of Wolf Pitt Branch, thence with the branch the following courses and distances NORTH 17 degrees 02 minutes 03 seconds EAST 51.55 feet thence NORTH 47 degrees 12 minutes 59 seconds EAST 40.03 feet , thence NORTH 58 degrees 04 minutes 00 seconds EAST 48.64 feet, thence NORTH 85 degrees 31 minutes 02 seconds EAST 22.37 feet, thence SOUTH 76 degrees 29 minutes 18 seconds EAST 40.74 feet, thence SOUTH 57 degrees 11 minutes 53 seconds EAST 46.67 feet, thence NORTH 73 degrees 12 minutes 35 seconds EAST 49.21 feet, thence NORTH 74 degrees 45 minutes 45 seconds EAST 57.61 feet, thence NORTH 76 degrees 40 minutes 57 seconds EAST 29.31 feet, thence SOUTH 85 degrees 28 minutes 28 seconds EAST 144.17 feet, thence NORTH 50 degrees 34 minutes 43 seconds 8.73 feet, thence NORTH 77 degrees 17 minutes 41 seconds EAST 117.68 feet, thence NORTH 87 degrees 03 minutes 14 seconds EAST 27.35 feet, thence NORTH 51 degrees 13 minutes 06 seconds EAST 60.46 feet, thence NORTH 74 degrees 42 minutes 00 seconds EAST 94.51 feet, thence NORTH 50 degrees 28 minutes 34 seconds EAST 113.15 feet, thence NORTH 48 degrees 00 minutes 57 seconds EAST 40.17 feet, thence NORTH 33 degrees 40 minutes 06 seconds EAST 45.94 feet, thence NORTH 16 degrees 38 minutes 15 seconds EAST 20.46 feet, thence NORTH 33 degrees 56 minutes 04 seconds EAST 182.75 feet, thence NORTH 36 degrees 54 minutes 27 seconds EAST 18.52 feet, thence leaving Pitt Branch SOUTH 55 degrees 18 minutes 44 seconds EAST 146.84 feet back to the True Point of Beginning, having and containing 34.21 acres by the coordinate method. This is the same parcel as shown on survey plat made by Burgess Land Surveying, P.A. entitled "Boundary Map for C & D Landfill, Inc." dated 12/15/00 and recorded at the Pitt County Register of Deeds. Refernce being made to that certain map of record in Map Book 54, Page 148 of the Pitt County Registry.