SDMS DOCID# 1110545

"Wallin, Sharon"
<WallinSL@cdm.com>
01/19/2007 07:50 PM

To Christopher Lichens/R9/USEPA/US@EPA
cc LParnass@dtsc.ca.gov, tperina@ch2m.com, Ed Modiano <edm@demaximis.com>, "Smith, Michael J" <SmithMJ@cdm.com>, "Eisenbeis, John"
bcc
Subject RI Report - Part 2 of 2

History: This message has been forwarded.

Chris - Part 2 of 2 of the RI Report is attached.

Part 1 consisted of the following pdf files:

Cover letter
Report text
Section 4 tables
Appendix A - Lith Logs
Appendix A - Analytical Summary Tables
Appendix B - GW Partitioning Calcs

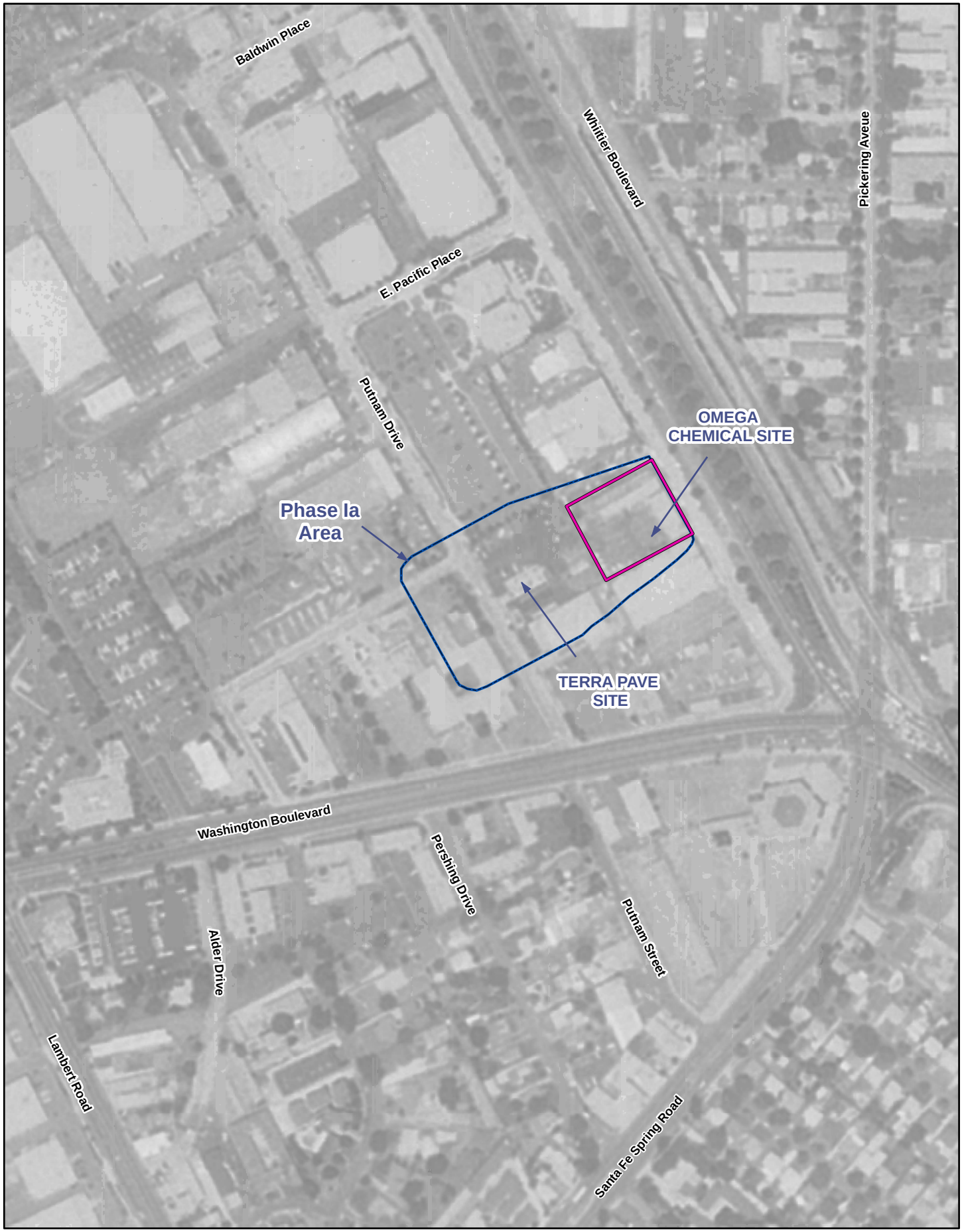
Part 2 consists of the following pdf files:

Sections 1, 2, 3, and 5 Figures
Appendix A - MIP Logs
Appendix A - Physical Properties Results

Part 3 - Section 4 Figures will be transmitted Monday, January 22

Regards, Sharon

AppA_MIP_Logs.pdf S1_S2_S3_S5_Figs.pdf AppA_PhysicalProp.pdf



Omega Chemical Superfund Site

CDM

Legend

- Omega Chemical
- Phase Ia Area

N
W E
S

0 100 200 400
Feet

Site Location Map

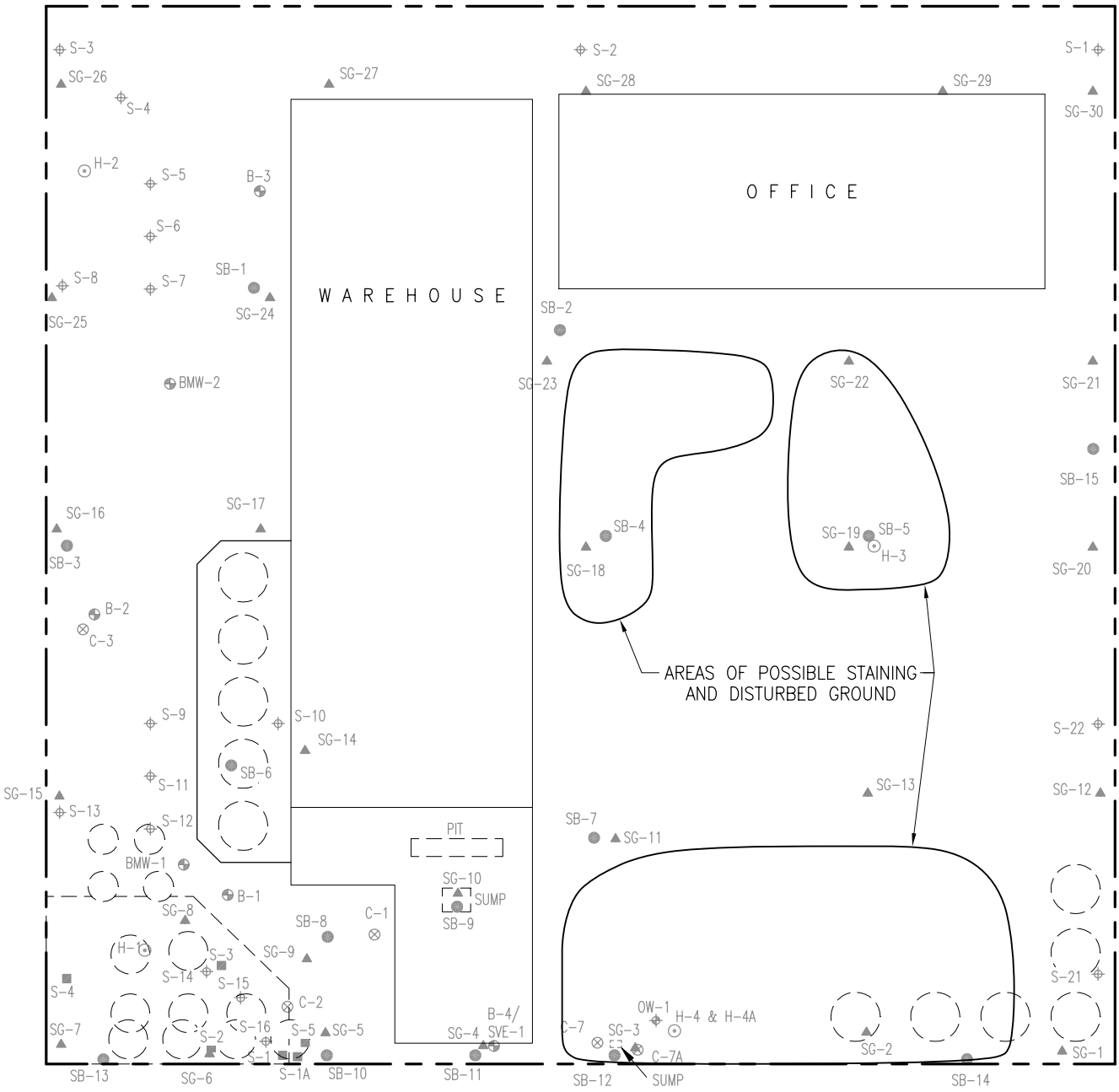
Figure 1-1

OMEGA CHEMICAL

SITE VICINITY MAP

CDM

FIGURE 1-2



LEGEND

- Leroy Crandall Soil Boring (1985)
- ENSR Soil Boring (1988)
- ENSR Groundwater Monitoring Well (1988)
- England/Hargis Soil Boring (January 1996)
- England/Hargis Soil Gas Sample (December 1995)
- England/Hargis Monitoring Well (June 1996)
- England/Hargis Hydropunch (March 1996)
- England/Hargis Soil Boring (March 1996)
- ERT Soil Gas Sample (1988)
- Feature Removed

Note: All locations approximate.

OMEGA CHEMICAL

Potential Source Areas And Historic Sample Locations

CDM

Figure 2-1

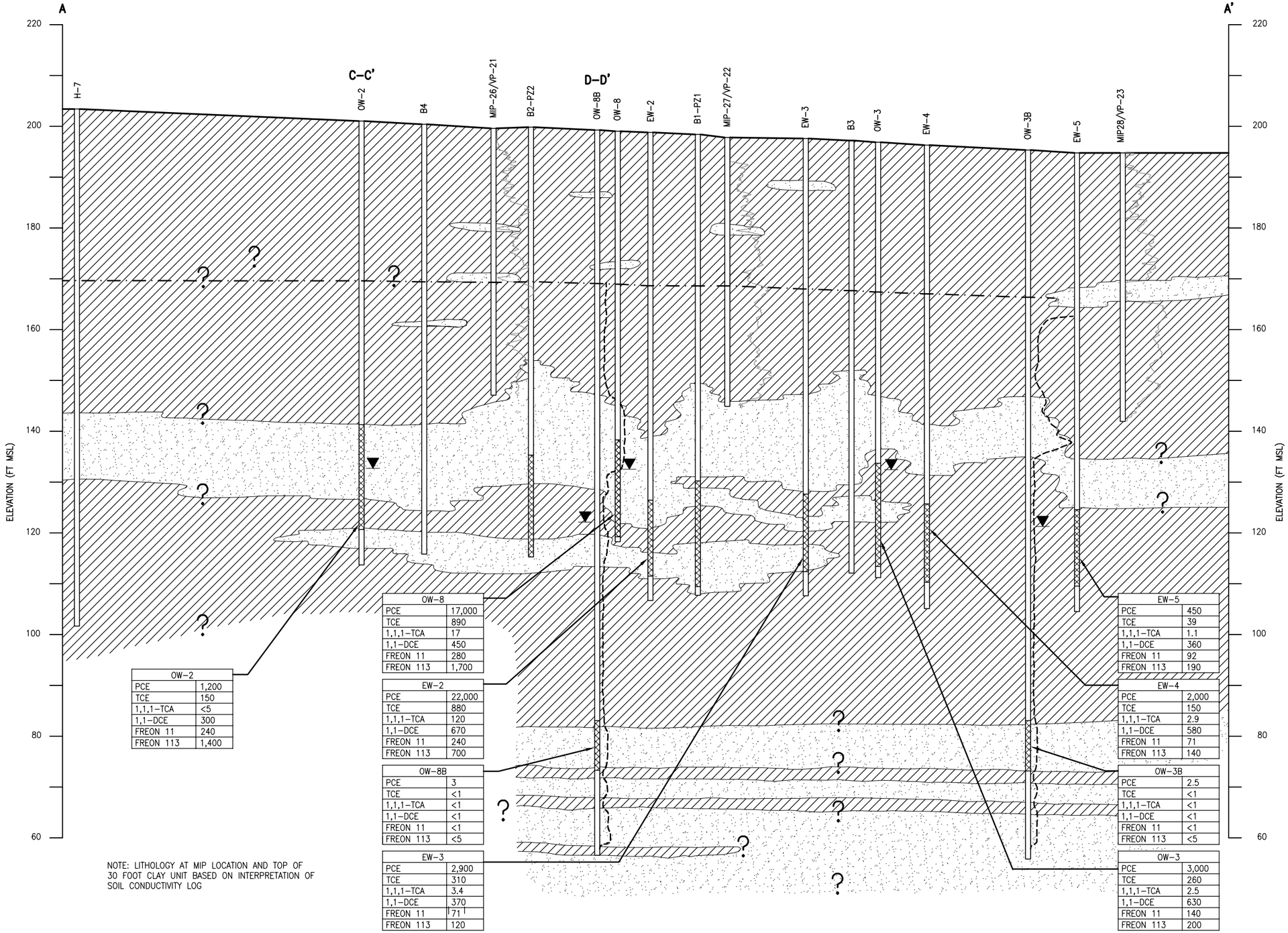
DATE: Dec 06, 2006 11:55am XREFS: PropSamp USER: nguyens
DWG: C:\Documents and Settings\nguyens\Desktop\Omega\00-sheets\PSAO-HistPhot.dwg

OMEGA CHEMICAL

GEOLOGIC CROSS-SECTION PLAN VIEW

CDM

FIGURE 2-2



NOTE: LITHOLOGY AT MIP LOCATION AND TOP OF 30 FOOT CLAY UNIT BASED ON INTERPRETATION OF SOIL CONDUCTIVITY LOG

HORIZONTAL SCALE
1" = 60'
30 0 60

VERTICAL SCALE
1" = 20'
10 0 20

LEGEND

FT MSL — FEET ABOVE MEAN SEA LEVEL

GROUND SURFACE

RESISTIVITY LATEROLOG

TOP OF 30 FT CLAY UNIT

MEMBRANE INTERFACE PROBE SOIL CONDUCTIVITY PROFILE

SAND/SILTY SAND

SILT/CLAY

STATIC WATER LEVEL AUGUST 2006

SCREENED INTERVAL

NOTES

GROUNDWATER SAMPLES COLLECTED AUGUST & SEPTEMBER 2006

CONCENTRATIONS ARE REPORTED IN MICROGRAMS PER LITER (UG/L)

PCE = TETRACHLOROETHENE

TCE = TRICHLOROETHENE

TCA = TRICHLOROETHANE

DCE = DICHLOROETHENE

FREON 11 = TRICHLOROFLUOROMETHANE

FREON113 = 1,1,2–TRICHLORO–1,2,2–TRIFLUOROETHANE

OMEGA CHEMICAL

GENERALIZED CROSS-SECTION A-A'

FIGURE 2-3

CDM

DATE: Jan 18, 2007 11:44am XREFS:
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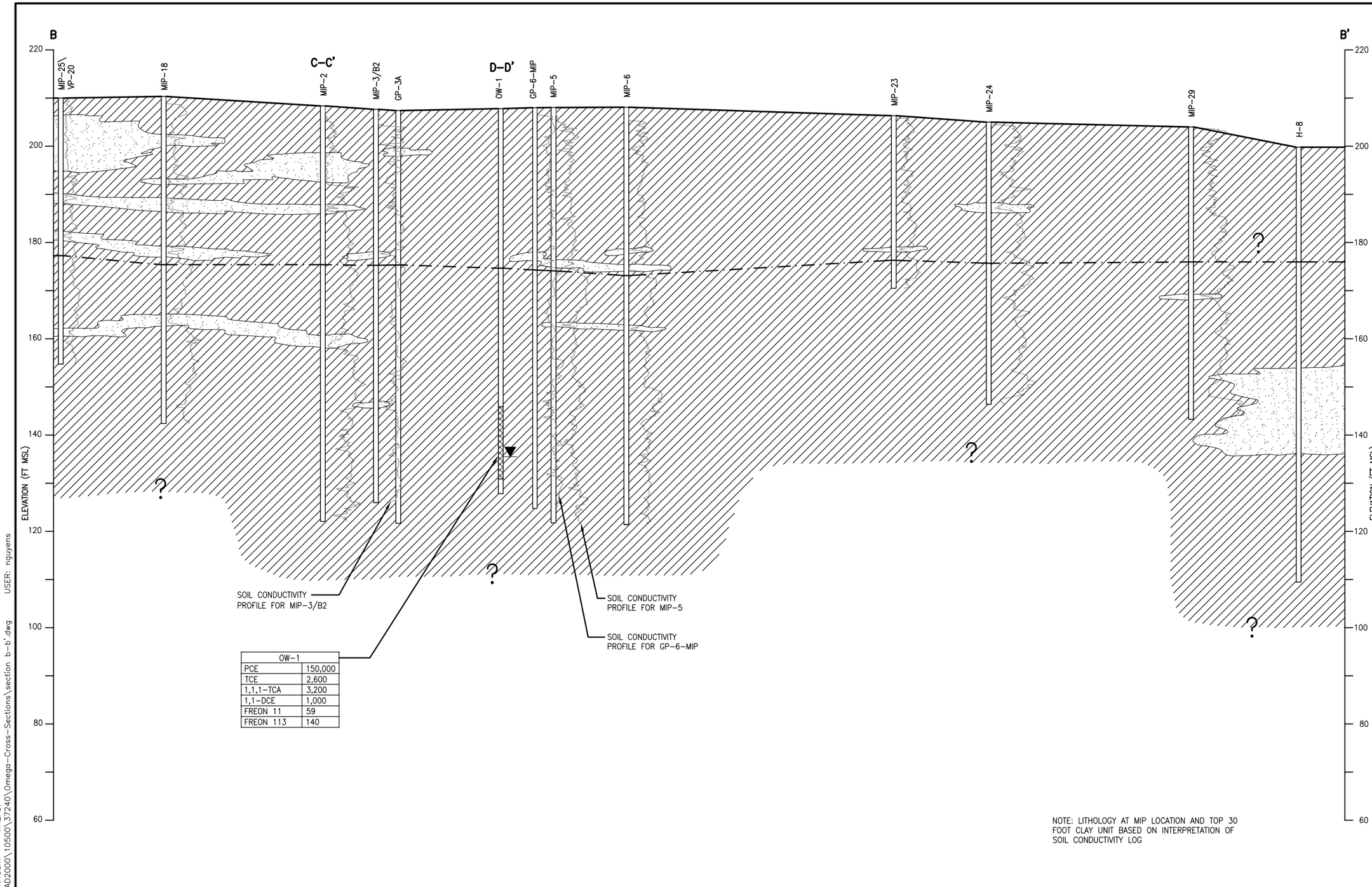

OW–1	
PCE	150,000
TCE	2,600
1,1,1–TCA	3,200
1,1–DCE	1,000
FREON 11	59
FREON 113	140

NOTE: LITHOLOGY AT MIP LOCATION AND TOP 30 FOOT CLAY UNIT BASED ON INTERPRETATION OF SOIL CONDUCTIVITY LOG

HORIZONTAL SCALE

1" = 60'

30 0 60

VERTICAL SCALE

1" = 20'

10 0 20

LEGEND

FT MSL FEET ABOVE MEAN SEA LEVEL

GROUND SURFACE

TOP OF 30 FT CLAY UNIT

MEMBRANE INTERFACE PROBE SOIL CONDUCTIVITY PROFILE

SAND/SILTY SAND

SILT/CLAY

STATIC WATER LEVEL AUGUST 2006

SCREENED INTERVAL

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TCA = TRICHLOROETHANE

DCE = DICHLOROETHENE

FREON 11 = TRICHLOROFLUOROMETHANE

FREON113 = 1,1,2–TRICHLORO–1,2,2–TRIFLUOROETHANE

OMEGA CHEMICAL

GENERALIZED CROSS-SECTION B-B'

FIGURE 2-4

CDM

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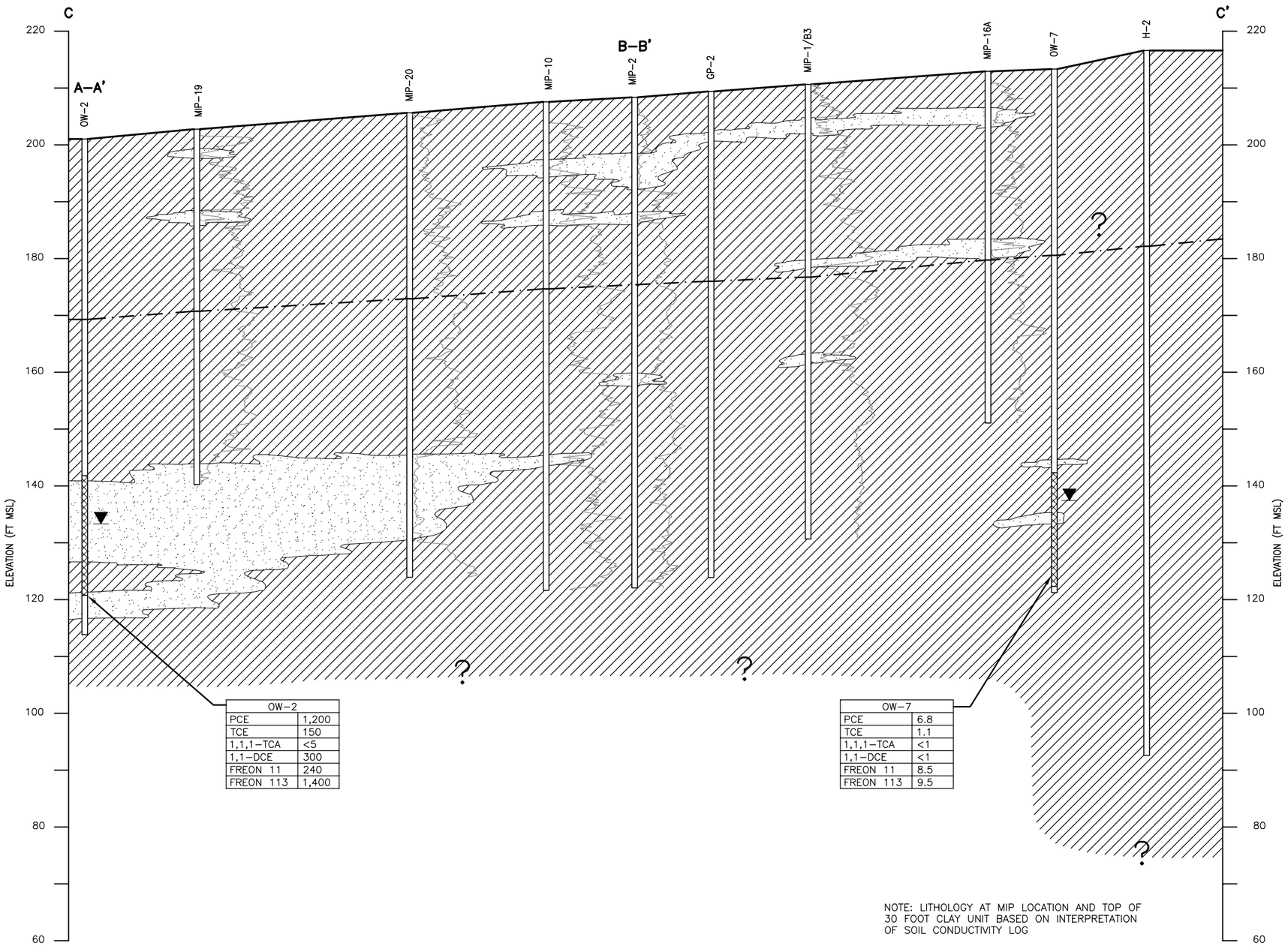

HORIZONTAL SCALE

1" = 60'

30 0 60

VERTICAL SCALE

1" = 20'

10 0 20

LEGEND

FT MSL — FEET ABOVE MEAN SEA LEVEL

GROUND SURFACE

TOP OF 30 FT CLAY UNIT

MEMBRANE INTERFACE PROBE SOIL CONDUCTIVITY PROFILE

SAND/SILTY SAND

SILT/CLAY

STATIC WATER LEVEL AUGUST 2006

SCREENED INTERVAL

NOTES

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TCA = TRICHLOROETHANE

DCE = DICHLOROETHENE

FREON 11 = TRICHLOROFLUOROMETHANE

FREON113 = 1,1,2–TRICHLORO–1,2,2–TRIFLUOROETHANE

OMEGA CHEMICAL

GENERALIZED CROSS-SECTION C-C'

FIGURE 2-5

CDM

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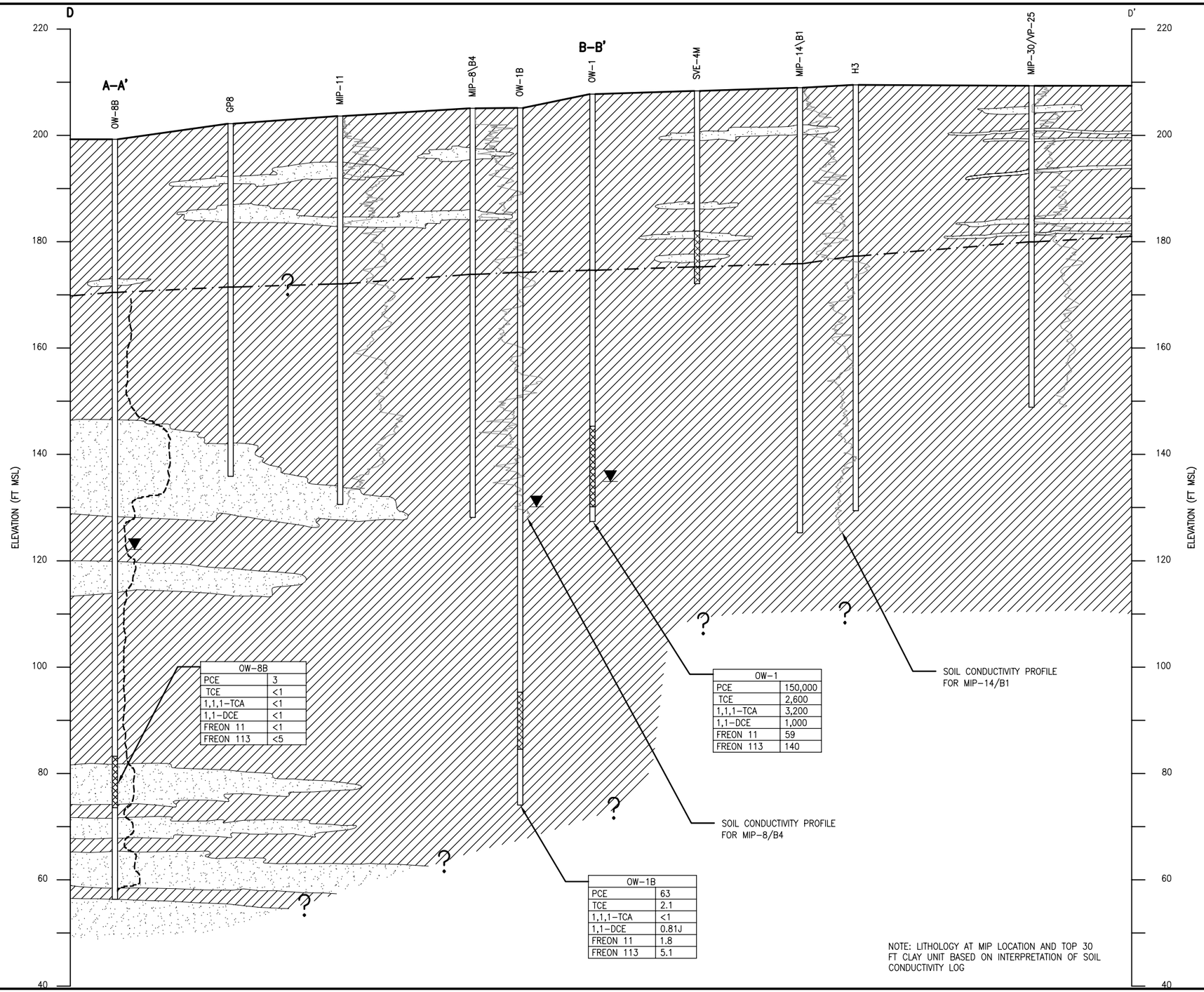

HORIZONTAL SCALE
1" = 60'
30 0 60

VERTICAL SCALE
1" = 20'
10 0 20

LEGEND

FT MSL	FEET ABOVE MEAN SEA LEVEL
———	GROUND SURFACE
- - - -	RESISTIVITY LATEROLOG
— · —	TOP OF 30 FT CLAY UNIT
	MEMBRANE INTERFACE PROBE SOIL CONDUCTIVITY PROFILE
	SAND/SILTY SAND
	SILT/CLAY
▼	STATIC WATER LEVEL AUGUST 2006
	SCREENED INTERVAL

NOTES

GROUNDWATER SAMPLES COLLECTED AUGUST & SEPTEMBER 2006

CONCENTRATIONS ARE REPORTED IN MICROGRAMS PER LITER (UG/L)

PCE = TETRACHLOROETHENE

TCE = TRICHLOROETHENE

TCA = TRICHLOROETHANE

DCE = DICHLOROETHENE

FREON 11 = TRICHLOROFLUOROMETHANE

FREON113 = 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE

OMEGA CHEMICAL

CDM

GENERALIZED CROSS-SECTION D-D'

FIGURE 2-6

DATE: Jan 18, 2007 1:18pm XREFS:
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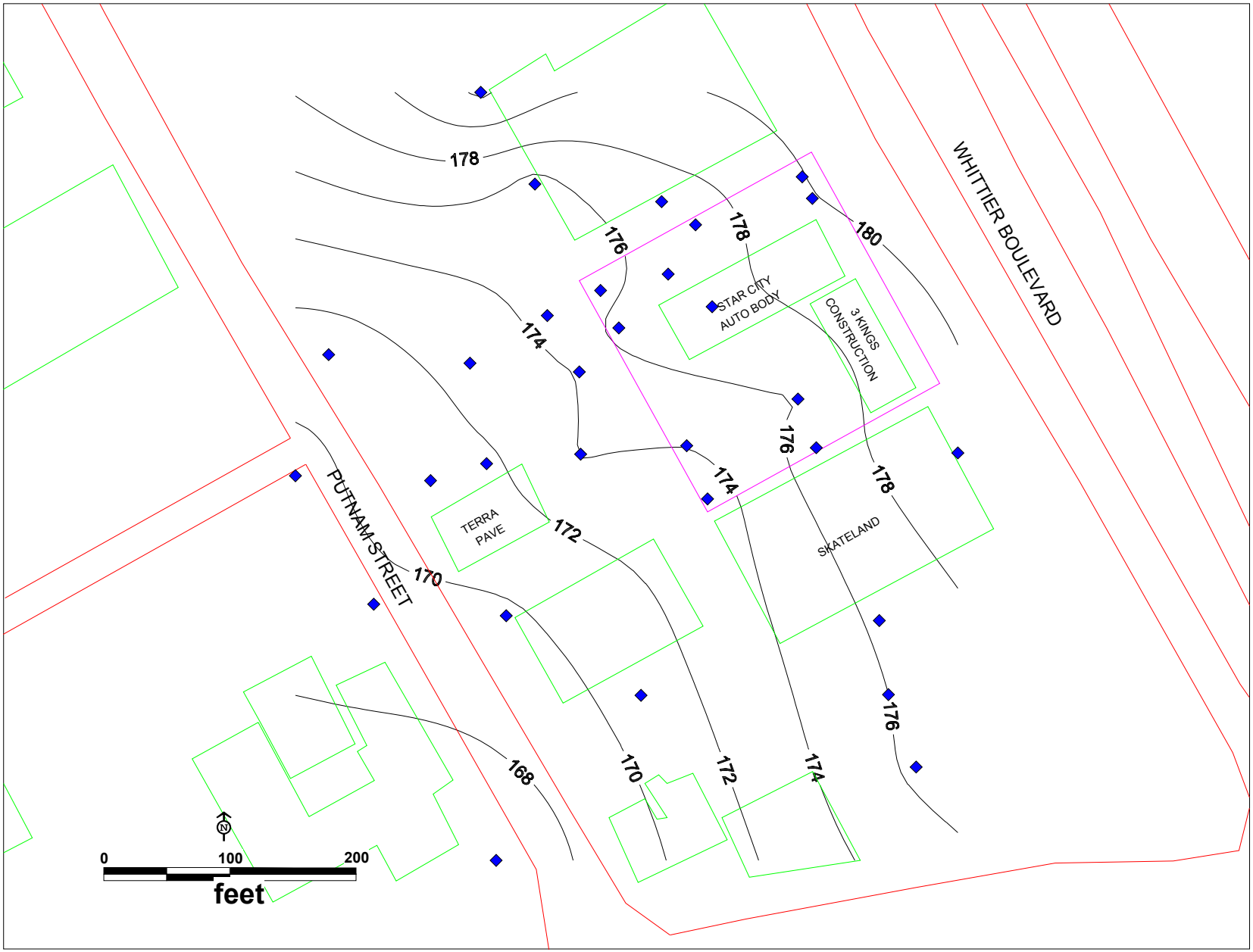
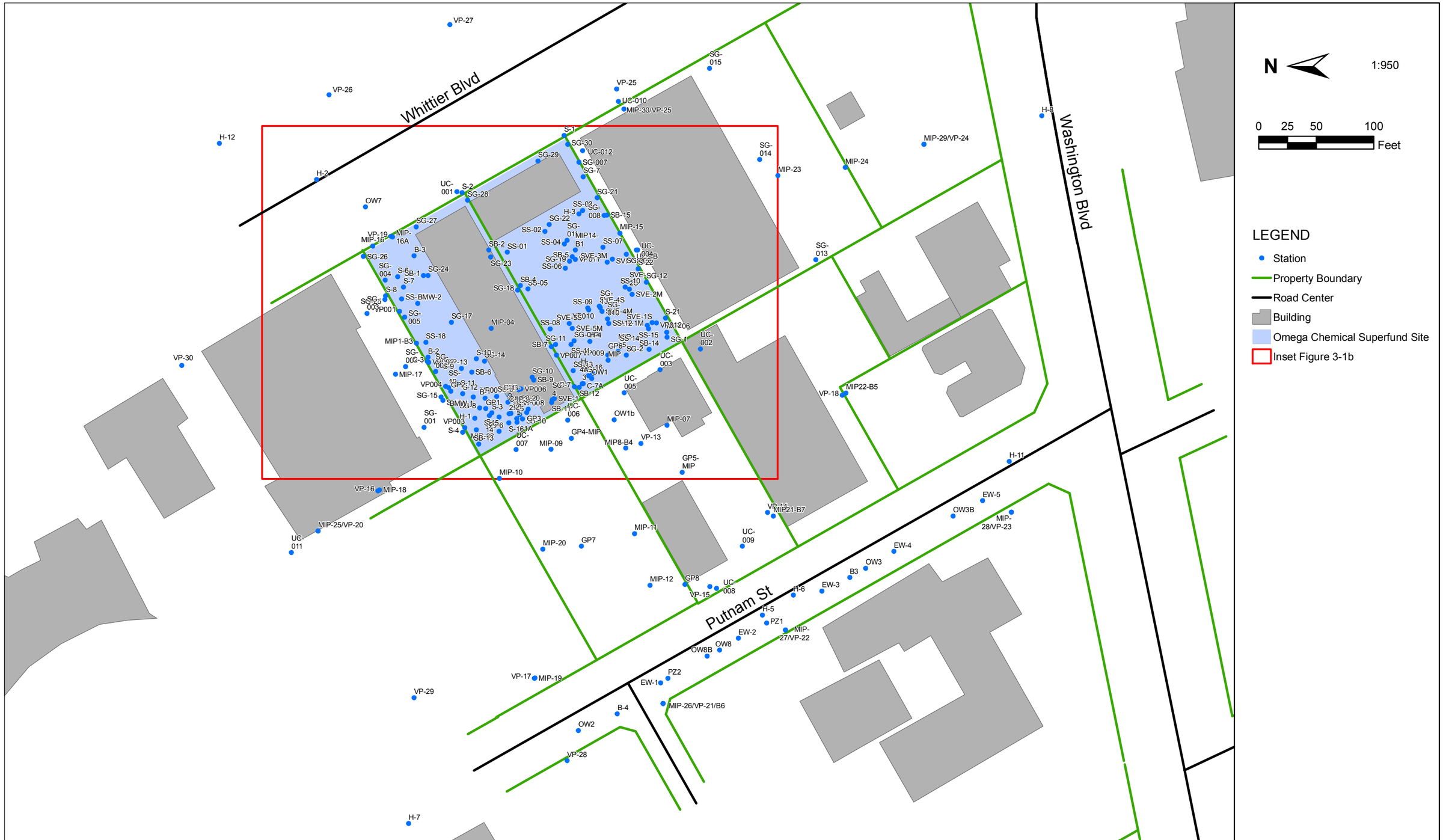


Figure 2-7 Elevation Top of 30-Foot Clay Unit

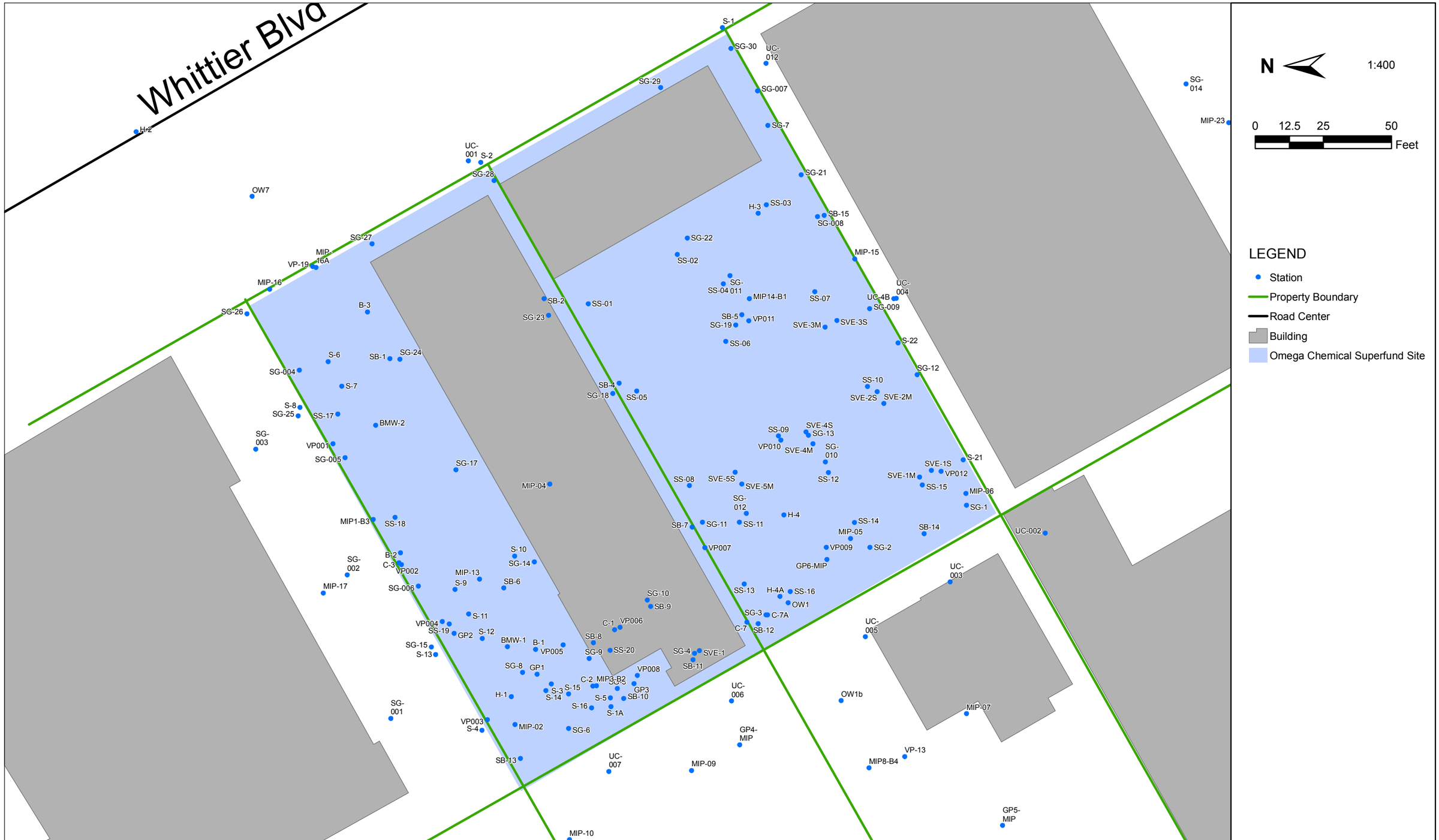


OMEGA CHEMICAL

SAMPLE LOCATIONS

CDM

FIGURE 3-1



OMEGA CHEMICAL

SAMPLE LOCATIONS (INSET)

CDM

FIGURE 3-1b

OMEGA CHEMICAL

SURFACE SOIL SAMPLE LOCATIONS

CDM

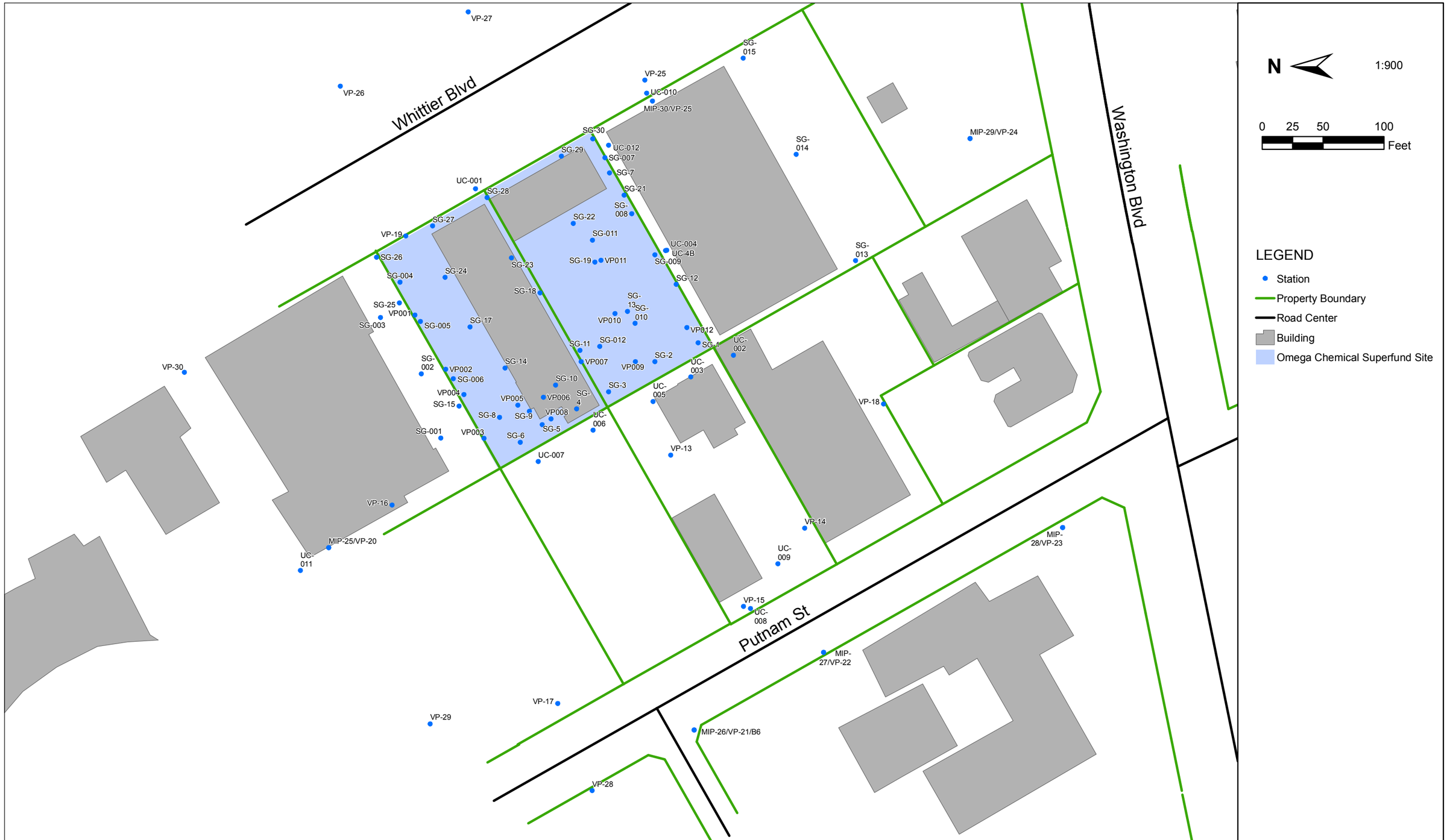
FIGURE 3-2

OMEGA CHEMICAL

SUBSURFACE SOIL SAMPLE LOCATIONS

CDM

FIGURE 3-3



OMEGA CHEMICAL

SOIL VAPOR SAMPLE LOCATIONS

CDM

FIGURE 3-4

OMEGA CHEMICAL

MEMBRANE INTERFACE PROBE LOCATIONS

CDM

FIGURE 3-5

OMEGA CHEMICAL

SOIL VAPOR EXTRACTION WELL LOCATIONS

CDM

FIGURE 3-6

OMEGA CHEMICAL

GROUNDWATER SAMPLE LOCATIONS

CDM

FIGURE 3-7

OMEGA CHEMICAL

Locations with Soil PCE HBRG Exceedances from 0 to 30 Feet

FIGURE 5-1

CDM

PTS Laboratories

CDM
PTS FILE NO: 33735

PHYSICAL PROPERTIES DATA

PROJECT NAME: n/a
PROJECT NO: 10500-37240-T2.0SS.Field

		METHODOLOGY:	ASTM D2216	SM 2580B	EPA 9081	WALKLEY-BLACK	ASTM D5084	
							25.0 PSI CONFINING STRESS	
SAMPLE ID.	DEPTH, ft.	SAMPLE ORIENT. (1)	MOISTURE CONTENT (% wt)	REDOX (mV)	CATION EXCHANGE (meq/100g)	TOTAL ORGANIC CARBON (mg/kg)	NATIVE STATE EFFECTIVE PERMEABILITY TO WATER (2,3) (millidarcy)	NATIVE STATE EFFECTIVE HYDRAULIC CONDUCTIVITY (2,3) (cm/s)
GP3A-015	15	v	18.2	260	10.0	2450	0.838	7.89E-07
GP3A-030	30	v	22.6	310	18.0	2900	0.035	3.32E-08
GP3A-057	57	v	35.9	260	11.0	1450	0.227	2.14E-07
GP3A-070	70	v	23.3	300	13.0	1750	0.051	4.66E-08
GP3A-084	84	v	20.8	270	10.0	1400	0.206	1.90E-07
GP2-015	15	v	16.3	260	6.1	1850	0.326	3.01E-07
GP2-033	33	v	17.0	280	10.0	970	0.390	3.62E-07
GP2-045	45	v	19.6	300	13.0	1250	0.042	3.92E-08
GP2-060	60	v	18.8	320	14.0	1500	0.015	1.39E-08
GP2-085	85	v	19.8	300	13.0	1100	0.311	2.92E-07
GP1-015	15	v	25.6	230	8.7	2700	0.461	4.35E-07
GP1-035	35	v	6.1	250	2.6	790	103	9.38E-05
GP1-055	55	v	19.0	290	14.0	2450	0.051	4.72E-08
GP1-070	70	v	24.5	260	14.0	2700	0.125	1.15E-07
GP1-080	80	v	17.4	240	17.0	2100	0.031	2.87E-08

(1) Sample Orientation: H = horizontal; V = vertical (2) Native State = As received with pore fluids in place (3) Permeability to water and conductivity measured at saturated conditions

PTS Laboratories, Inc.

CDM
PTS File No: 33735

PARTICLE SIZE SUMMARY

(METHODOLOGY: ASTM D422/D4464M)

PROJECT NAME: N/A
PROJECT NO: 10500-37240-T2.0SS. Field

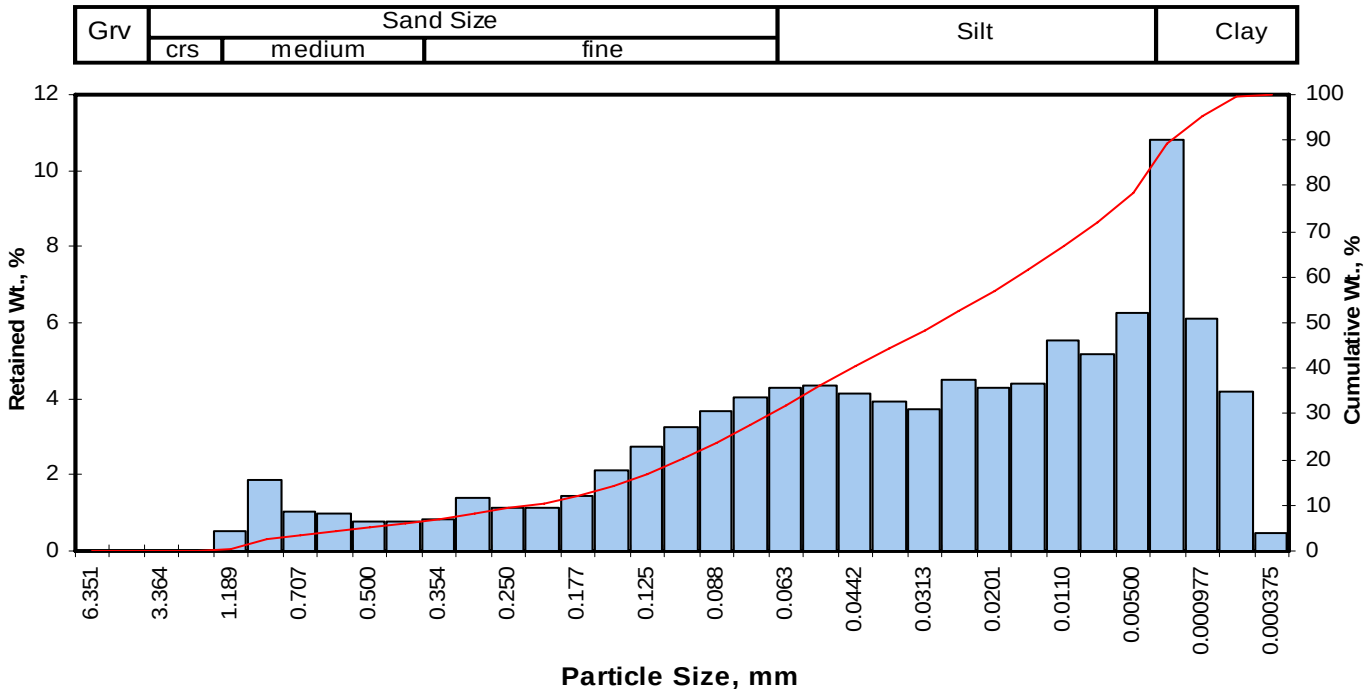
Sample ID	Depth, ft.	Mean Grain Size Description (1)	Median Grain Size mm	Particle Size Distribution, wt. percent						Silt & Clay
				Gravel	Sand Size			Silt	Clay	
					Coarse	Medium	Fine			
GP3A-015	15	Silt	0.026	0.00	0.00	1.85	22.17	53.24	22.73	75.97
GP3A-030	30	Silt	0.024	0.00	0.00	0.46	19.03	58.66	21.84	80.50
GP3A-057	57	Silt	0.029	0.00	0.00	5.96	21.84	50.64	21.56	72.20
GP3A-070	70	Silt	0.020	0.00	0.00	1.78	21.47	52.95	23.81	76.75
GP3A-084	84	Silt	0.026	0.00	0.00	0.50	20.94	55.90	22.65	78.55
GP2-015	15	Silt	0.031	0.00	0.00	3.71	23.54	52.53	20.22	72.75
GP2-033	33	Silt	0.024	0.00	0.00	2.99	18.47	55.23	23.31	78.54
GP2-045	45	Silt	0.026	0.00	0.00	0.98	22.05	54.92	22.05	76.97
GP2-060	60	Silt	0.028	0.00	0.00	2.93	25.13	50.28	21.66	71.94
GP2-085	85	Silt	0.032	0.00	0.00	0.22	24.15	56.43	19.21	75.63
GP1-015	15	Silt	0.023	0.00	0.00	1.92	19.07	55.13	23.88	79.01
GP1-035	35	Medium sand	0.441	0.00	0.00	51.78	34.98	9.89	3.35	13.24
GP1-055	55	Silt	0.013	0.00	0.00	0.00	10.34	59.23	30.43	89.66
GP1-070	70	Silt	0.019	0.00	0.00	0.04	15.27	58.69	26.00	84.69
GP1-080	80	Silt	0.023	0.00	0.00	3.25	21.70	48.44	26.62	75.05

(1) Based on Mean from Trask

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	CDM	**PTS File No:**	33735
Project:	N/A	**Sample ID:**	GP3A-057
Project No:	10500-37240-T2.0SS. Field	**Depth, ft:**	57.00



Opening Inches	Opening Millimeters	Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.52	0.52	0.52
0.0331	0.841	0.25	20	1.86	1.86	2.38
0.0278	0.707	0.50	25	1.04	1.04	3.42
0.0234	0.595	0.75	30	0.96	0.96	4.38
0.0197	0.500	1.00	35	0.79	0.79	5.17
0.0166	0.420	1.25	40	0.79	0.79	5.96
0.0139	0.354	1.50	45	0.83	0.83	6.79
0.0117	0.297	1.75	50	1.38	1.38	8.17
0.0098	0.250	2.00	60	1.16	1.16	9.33
0.0083	0.210	2.25	70	1.15	1.15	10.48
0.0070	0.177	2.50	80	1.45	1.45	11.93
0.0059	0.149	2.75	100	2.14	2.14	14.07
0.0049	0.125	3.00	120	2.76	2.76	16.83
0.0041	0.105	3.25	140	3.26	3.26	20.09
0.0035	0.088	3.50	170	3.66	3.66	23.75
0.0029	0.074	3.75	200	4.05	4.05	27.80
0.0025	0.063	4.00	230	4.29	4.29	32.09
0.0021	0.053	4.25	270	4.32	4.32	36.41
0.00174	0.0442	4.50	325	4.16	4.16	40.57
0.00146	0.0372	4.75	400	3.93	3.93	44.50
0.00123	0.0313	5.00	450	3.72	3.72	48.22
0.000986	0.0250	5.32	500	4.52	4.52	52.74
0.000790	0.0201	5.64	635	4.30	4.30	57.04
0.000615	0.0156	6.00		4.42	4.42	61.46
0.000435	0.0110	6.50		5.53	5.53	66.99
0.000308	0.00781	7.00		5.17	5.17	72.16
0.000197	0.00500	7.65		6.28	6.28	78.44
0.000077	0.00195	9.00		10.80	10.80	89.24
0.000038	0.000977	10.00		6.12	6.12	95.36
0.000019	0.000488	11.00		4.17	4.17	99.53
0.000015	0.000375	11.38		0.47	0.47	100.00
TOTALS				**100.00**	**100.00**	**100.00**

Cumulative Weight Percent greater than

Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	0.95	0.0204	0.519
10	2.15	0.0089	0.226
16	2.92	0.0052	0.132
25	3.58	0.0033	0.084
40	4.47	0.0018	0.045
50	5.13	0.0011	0.029
60	5.88	0.0007	0.017
75	7.29	0.0003	0.006
84	8.34	0.0001	0.003
90	9.12	0.0001	0.002
95	9.94	0.0000	0.001

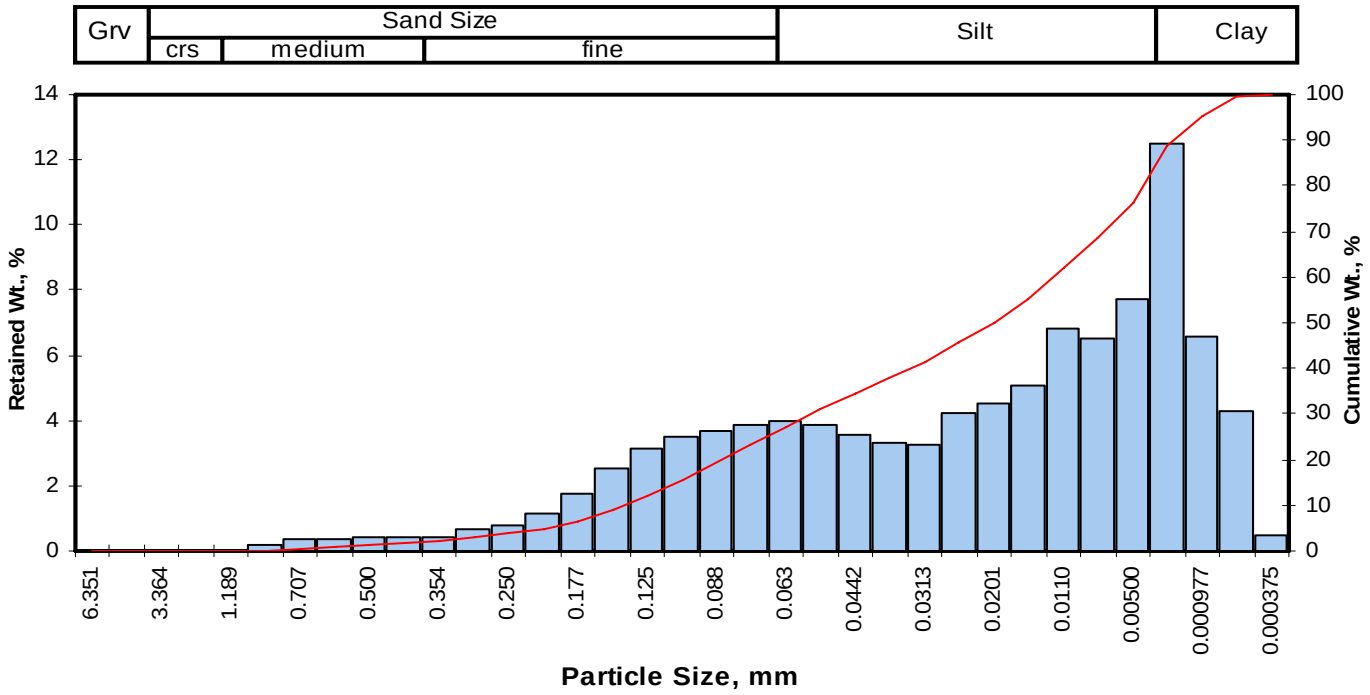
Measure	Trask	Inman	Folk-Ward
Median, phi	5.13	5.13	5.13
Median, in.	0.0011	0.0011	0.0011
Median, mm	0.029	0.029	0.029
Mean, phi	4.47	5.63	5.46
Mean, in.	0.0018	0.0008	0.0009
Mean, mm	0.045	0.020	0.023
Sorting	3.623	2.709	2.717
Skewness	0.808	0.187	0.129
Kurtosis	0.173	0.660	0.992
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	5.96
Fine Sand	200	21.84
Silt	>0.005 mm	50.64
Clay	<0.005 mm	21.56
	Total	**100**

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	CDM	**PTS File No:**	33735
Project:	N/A	**Sample ID:**	GP3A-070
Project No:	10500-37240-T2.0SS. Field	**Depth, ft:**	70.00



Opening Inches	Opening Millimeters	Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.20	0.20	0.20
0.0278	0.707	0.50	25	0.37	0.37	0.57
0.0234	0.595	0.75	30	0.39	0.39	0.96
0.0197	0.500	1.00	35	0.40	0.40	1.36
0.0166	0.420	1.25	40	0.42	0.42	1.78
0.0139	0.354	1.50	45	0.40	0.40	2.18
0.0117	0.297	1.75	50	0.69	0.69	2.87
0.0098	0.250	2.00	60	0.80	0.80	3.67
0.0083	0.210	2.25	70	1.16	1.16	4.83
0.0070	0.177	2.50	80	1.72	1.72	6.55
0.0059	0.149	2.75	100	2.52	2.52	9.07
0.0049	0.125	3.00	120	3.13	3.13	12.20
0.0041	0.105	3.25	140	3.47	3.47	15.67
0.0035	0.088	3.50	170	3.68	3.68	19.36
0.0029	0.074	3.75	200	3.89	3.89	23.25
0.0025	0.063	4.00	230	3.99	3.99	27.24
0.0021	0.053	4.25	270	3.86	3.86	31.10
0.00174	0.0442	4.50	325	3.58	3.58	34.68
0.00146	0.0372	4.75	400	3.33	3.33	38.01
0.00123	0.0313	5.00	450	3.24	3.24	41.25
0.000986	0.0250	5.32	500	4.25	4.25	45.50
0.000790	0.0201	5.64	635	4.52	4.52	50.03
0.000615	0.0156	6.00		5.08	5.08	55.11
0.000435	0.0110	6.50		6.82	6.82	61.93
0.000308	0.00781	7.00		6.52	6.52	68.45
0.000197	0.00500	7.65		7.74	7.74	76.19
0.000077	0.00195	9.00		12.50	12.50	88.70
0.000038	0.000977	10.00		6.55	6.55	95.25
0.000019	0.000488	11.00		4.27	4.27	99.52
0.000015	0.000375	11.38		0.48	0.48	100.00
TOTALS				**100.00**	**100.00**	**100.00**

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	2.27	0.0081	0.207
10	2.82	0.0056	0.141
16	3.27	0.0041	0.104
25	3.86	0.0027	0.069
40	4.90	0.0013	0.033
50	5.64	0.0008	0.020
60	6.36	0.0005	0.012
75	7.55	0.0002	0.005
84	8.49	0.0001	0.003
90	9.20	0.0001	0.002
95	9.96	0.0000	0.001

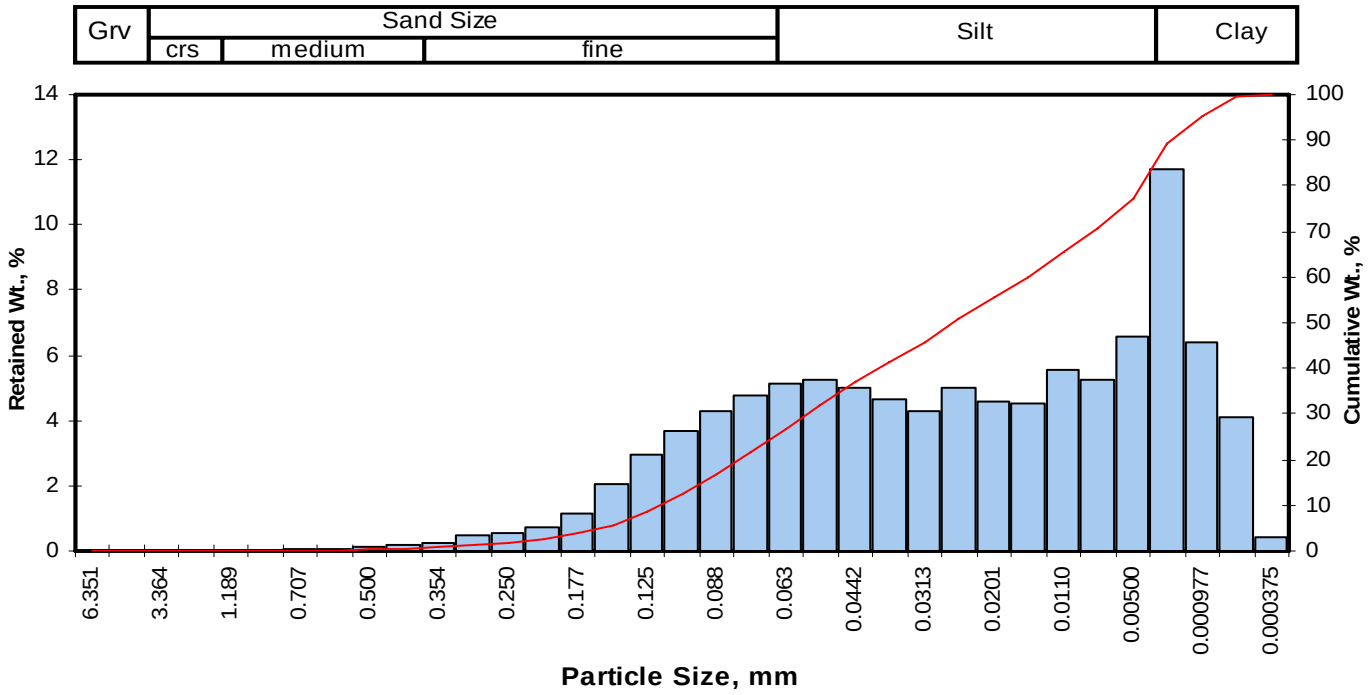
Measure	Trask	Inman	Folk-Ward
Median, phi	5.64	5.64	5.64
Median, in.	0.0008	0.0008	0.0008
Median, mm	0.020	0.020	0.020
Mean, phi	4.75	5.88	5.80
Mean, in.	0.0015	0.0007	0.0007
Mean, mm	0.037	0.017	0.018
Sorting	3.587	2.609	2.470
Skewness	0.956	0.093	0.109
Kurtosis	0.228	0.473	0.855
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	1.78
Fine Sand	200	21.47
Silt	>0.005 mm	52.95
Clay	<0.005 mm	23.81
	Total	**100**

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	CDM	**PTS File No:**	33735
Project:	N/A	**Sample ID:**	GP3A-084
Project No:	10500-37240-T2.0SS. Field	**Depth, ft:**	84.00



Opening Inches	Opening Millimeters	Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.02	0.02	0.02
0.0278	0.707	0.50	25	0.04	0.04	0.06
0.0234	0.595	0.75	30	0.09	0.09	0.15
0.0197	0.500	1.00	35	0.15	0.15	0.30
0.0166	0.420	1.25	40	0.20	0.20	0.50
0.0139	0.354	1.50	45	0.24	0.24	0.74
0.0117	0.297	1.75	50	0.50	0.50	1.24
0.0098	0.250	2.00	60	0.57	0.57	1.81
0.0083	0.210	2.25	70	0.74	0.74	2.55
0.0070	0.177	2.50	80	1.16	1.16	3.71
0.0059	0.149	2.75	100	2.03	2.03	5.74
0.0049	0.125	3.00	120	2.96	2.96	8.70
0.0041	0.105	3.25	140	3.71	3.71	12.41
0.0035	0.088	3.50	170	4.27	4.27	16.68
0.0029	0.074	3.75	200	4.77	4.77	21.45
0.0025	0.063	4.00	230	5.15	5.15	26.60
0.0021	0.053	4.25	270	5.25	5.25	31.85
0.00174	0.0442	4.50	325	5.04	5.04	36.89
0.00146	0.0372	4.75	400	4.65	4.65	41.53
0.00123	0.0313	5.00	450	4.27	4.27	45.80
0.000986	0.0250	5.32	500	5.04	5.04	50.84
0.000790	0.0201	5.64	635	4.59	4.59	55.43
0.000615	0.0156	6.00		4.53	4.53	59.96
0.000435	0.0110	6.50		5.56	5.56	65.52
0.000308	0.00781	7.00		5.27	5.27	70.79
0.000197	0.00500	7.65		6.56	6.56	77.35
0.000077	0.00195	9.00		11.70	11.70	89.04
0.000038	0.000977	10.00		6.41	6.41	95.45
0.000019	0.000488	11.00		4.10	4.10	99.55
0.000015	0.000375	11.38		0.45	0.45	100.00
TOTALS				**100.00**	**100.00**	**100.00**

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	2.66	0.0062	0.158
10	3.09	0.0046	0.118
16	3.46	0.0036	0.091
25	3.92	0.0026	0.066
40	4.67	0.0015	0.039
50	5.27	0.0010	0.026
60	6.00	0.0006	0.016
75	7.41	0.0002	0.006
84	8.42	0.0001	0.003
90	9.15	0.0001	0.002
95	9.93	0.0000	0.001

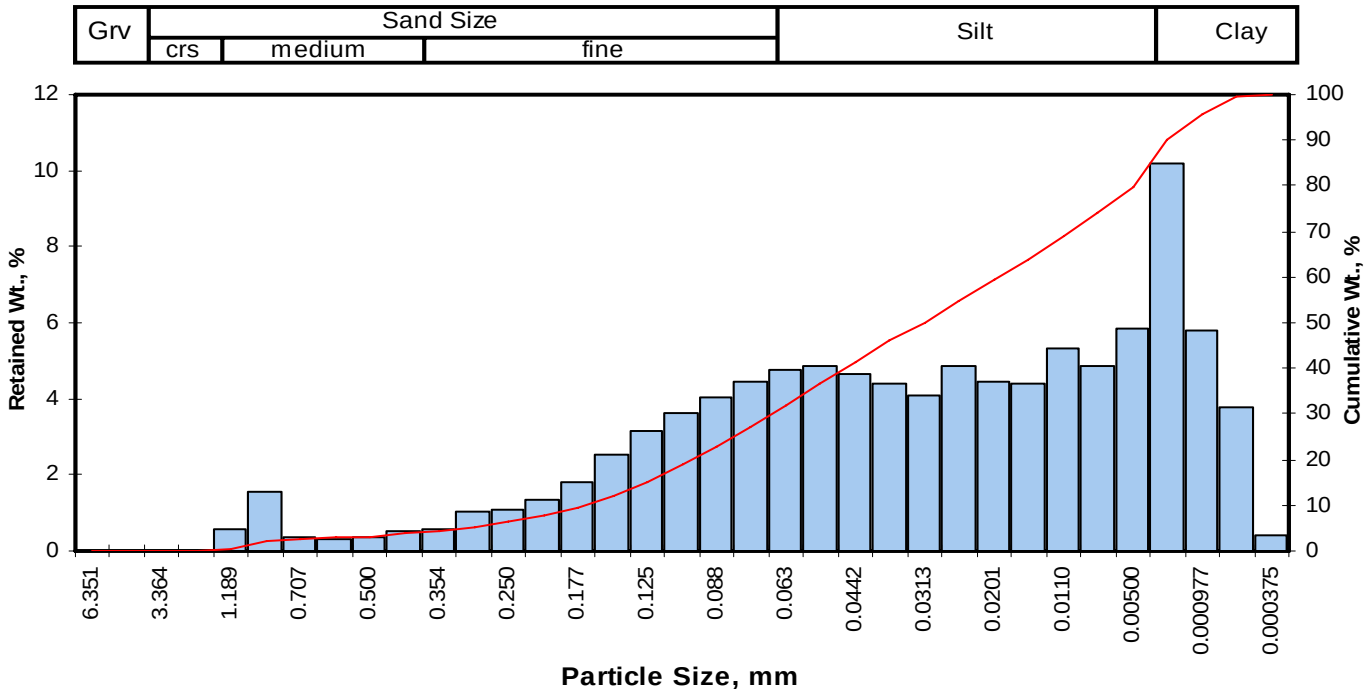
Measure	Trask	Inman	Folk-Ward
Median, phi	5.27	5.27	5.27
Median, in.	0.0010	0.0010	0.0010
Median, mm	0.026	0.026	0.026
Mean, phi	4.80	5.94	5.71
Mean, in.	0.0014	0.0006	0.0007
Mean, mm	0.036	0.016	0.019
Sorting	3.354	2.478	2.341
Skewness	0.757	0.271	0.277
Kurtosis	0.259	0.467	0.853
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.50
Fine Sand	200	20.94
Silt	>0.005 mm	55.90
Clay	<0.005 mm	22.65
	Total	**100**

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	CDM	**PTS File No:**	33735
Project:	N/A	**Sample ID:**	GP2-015
Project No:	10500-37240-T2.0SS. Field	**Depth, ft:**	15.00



Opening Inches	Opening Millimeters	Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.58	0.58	0.58
0.0331	0.841	0.25	20	1.56	1.56	2.14
0.0278	0.707	0.50	25	0.38	0.38	2.52
0.0234	0.595	0.75	30	0.30	0.30	2.82
0.0197	0.500	1.00	35	0.37	0.37	3.19
0.0166	0.420	1.25	40	0.52	0.52	3.71
0.0139	0.354	1.50	45	0.58	0.58	4.29
0.0117	0.297	1.75	50	1.03	1.03	5.32
0.0098	0.250	2.00	60	1.07	1.07	6.39
0.0083	0.210	2.25	70	1.34	1.34	7.73
0.0070	0.177	2.50	80	1.80	1.80	9.53
0.0059	0.149	2.75	100	2.51	2.51	12.04
0.0049	0.125	3.00	120	3.13	3.13	15.17
0.0041	0.105	3.25	140	3.61	3.61	18.78
0.0035	0.088	3.50	170	4.02	4.02	22.80
0.0029	0.074	3.75	200	4.45	4.45	27.25
0.0025	0.063	4.00	230	4.76	4.76	32.01
0.0021	0.053	4.25	270	4.84	4.84	36.85
0.00174	0.0442	4.50	325	4.68	4.68	41.53
0.00146	0.0372	4.75	400	4.40	4.40	45.93
0.00123	0.0313	5.00	450	4.10	4.10	50.03
0.000986	0.0250	5.32	500	4.87	4.87	54.90
0.000790	0.0201	5.64	635	4.46	4.46	59.36
0.000615	0.0156	6.00		4.40	4.40	63.76
0.000435	0.0110	6.50		5.31	5.31	69.07
0.000308	0.00781	7.00		4.86	4.86	73.93
0.000197	0.00500	7.65		5.85	5.85	79.78
0.000077	0.00195	9.00		10.20	10.20	89.98
0.000038	0.000977	10.00		5.80	5.80	95.78
0.000019	0.000488	11.00		3.80	3.80	99.58
0.000015	0.000375	11.38		0.42	0.42	100.00
TOTALS				**100.00**	**100.00**	**100.00**

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	1.67	0.0124	0.314
10	2.55	0.0067	0.171
16	3.06	0.0047	0.120
25	3.62	0.0032	0.081
40	4.42	0.0018	0.047
50	5.00	0.0012	0.031
60	5.69	0.0008	0.019
75	7.12	0.0003	0.007
84	8.21	0.0001	0.003
90	9.00	0.0001	0.002
95	9.87	0.0000	0.001

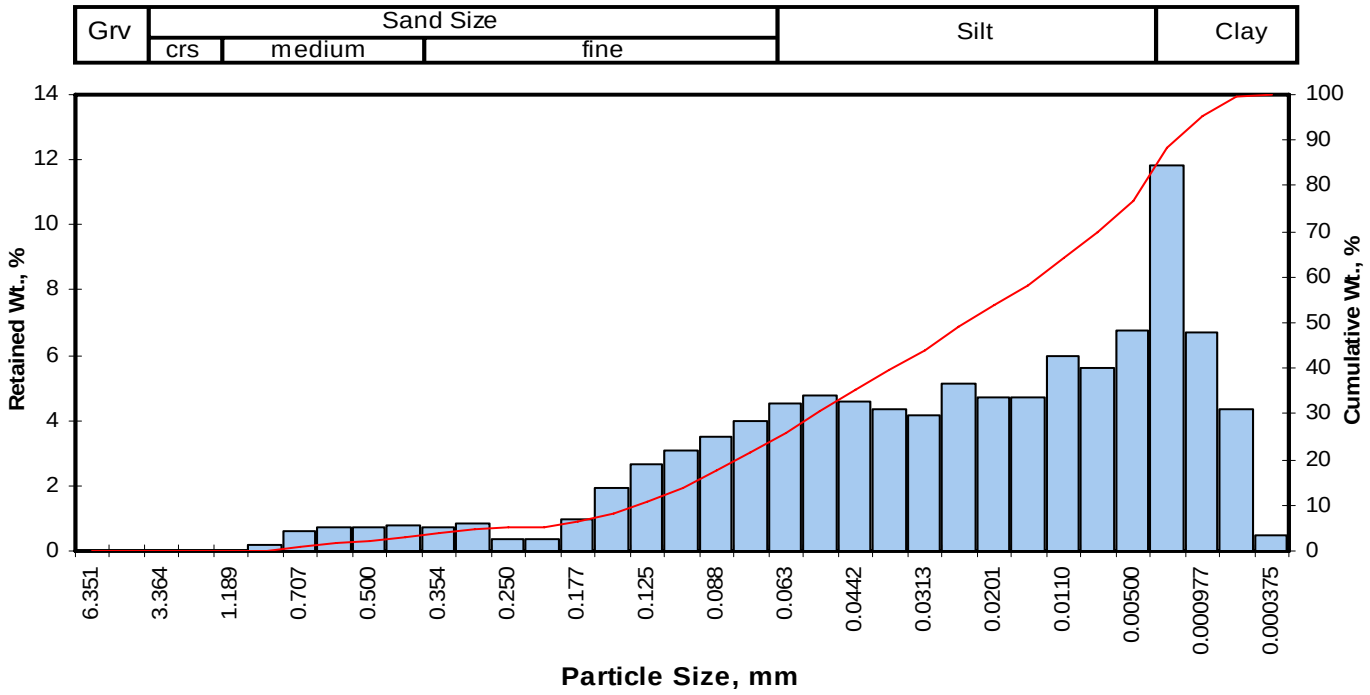
Measure	Trask	Inman	Folk-Ward
Median, phi	5.00	5.00	5.00
Median, in.	0.0012	0.0012	0.0012
Median, mm	0.031	0.031	0.031
Mean, phi	4.50	5.63	5.42
Mean, in.	0.0017	0.0008	0.0009
Mean, mm	0.044	0.020	0.023
Sorting	3.357	2.574	2.528
Skewness	0.772	0.246	0.217
Kurtosis	0.218	0.591	0.961
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	3.71
Fine Sand	200	23.54
Silt	>0.005 mm	52.53
Clay	<0.005 mm	20.22
	Total	**100**

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	CDM	**PTS File No:**	33735
Project:	N/A	**Sample ID:**	GP2-033
Project No:	10500-37240-T2.0SS. Field	**Depth, ft:**	33.00



Opening Inches	Opening Millimeters	Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.20	0.20	0.20
0.0278	0.707	0.50	25	0.58	0.58	0.78
0.0234	0.595	0.75	30	0.74	0.74	1.52
0.0197	0.500	1.00	35	0.70	0.70	2.22
0.0166	0.420	1.25	40	0.77	0.77	2.99
0.0139	0.354	1.50	45	0.74	0.74	3.73
0.0117	0.297	1.75	50	0.86	0.86	4.59
0.0098	0.250	2.00	60	0.37	0.37	4.96
0.0083	0.210	2.25	70	0.37	0.37	5.33
0.0070	0.177	2.50	80	0.95	0.95	6.28
0.0059	0.149	2.75	100	1.96	1.96	8.24
0.0049	0.125	3.00	120	2.66	2.66	10.90
0.0041	0.105	3.25	140	3.09	3.09	13.99
0.0035	0.088	3.50	170	3.47	3.47	17.46
0.0029	0.074	3.75	200	4.00	4.00	21.46
0.0025	0.063	4.00	230	4.52	4.52	25.98
0.0021	0.053	4.25	270	4.74	4.74	30.72
0.00174	0.0442	4.50	325	4.61	4.61	35.33
0.00146	0.0372	4.75	400	4.37	4.37	39.70
0.00123	0.0313	5.00	450	4.19	4.19	43.89
0.000986	0.0250	5.32	500	5.12	5.12	49.01
0.000790	0.0201	5.64	635	4.69	4.69	53.70
0.000615	0.0156	6.00		4.69	4.69	58.39
0.000435	0.0110	6.50		5.97	5.97	64.36
0.000308	0.00781	7.00		5.59	5.59	69.95
0.000197	0.00500	7.65		6.74	6.74	76.69
0.000077	0.00195	9.00		11.80	11.80	88.49
0.000038	0.000977	10.00		6.72	6.72	95.21
0.000019	0.000488	11.00		4.32	4.32	99.53
0.000015	0.000375	11.38		0.47	0.47	100.00
TOTALS				**100.00**	**100.00**	**100.00**

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	2.03	0.0097	0.245
10	2.92	0.0052	0.133
16	3.39	0.0037	0.095
25	3.95	0.0026	0.065
40	4.77	0.0014	0.037
50	5.39	0.0009	0.024
60	6.13	0.0006	0.014
75	7.48	0.0002	0.006
84	8.48	0.0001	0.003
90	9.22	0.0001	0.002
95	9.97	0.0000	0.001

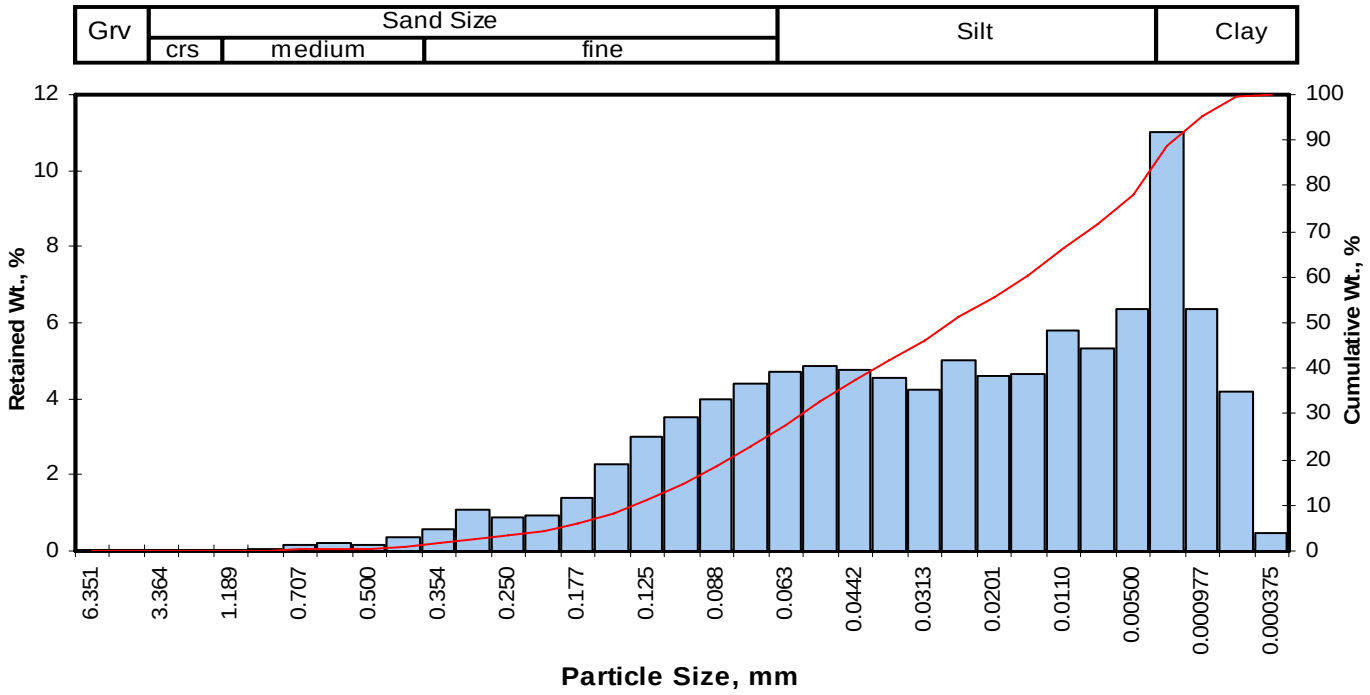
Measure	Trask	Inman	Folk-Ward
Median, phi	5.39	5.39	5.39
Median, in.	0.0009	0.0009	0.0009
Median, mm	0.024	0.024	0.024
Mean, phi	4.83	5.94	5.76
Mean, in.	0.0014	0.0006	0.0007
Mean, mm	0.035	0.016	0.019
Sorting	3.408	2.545	2.476
Skewness	0.797	0.217	0.185
Kurtosis	0.227	0.560	0.920
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	2.99
Fine Sand	200	18.47
Silt	>0.005 mm	55.23
Clay	<0.005 mm	23.31
	Total	**100**

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	CDM	**PTS File No:**	33735
Project:	N/A	**Sample ID:**	GP2-045
Project No:	10500-37240-T2.0SS. Field	**Depth, ft:**	45.00



Opening Inches	Opening Millimeters	Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.06	0.06	0.06
0.0278	0.707	0.50	25	0.18	0.18	0.24
0.0234	0.595	0.75	30	0.20	0.20	0.44
0.0197	0.500	1.00	35	0.18	0.18	0.62
0.0166	0.420	1.25	40	0.36	0.36	0.98
0.0139	0.354	1.50	45	0.58	0.58	1.56
0.0117	0.297	1.75	50	1.08	1.08	2.64
0.0098	0.250	2.00	60	0.89	0.89	3.53
0.0083	0.210	2.25	70	0.94	0.94	4.47
0.0070	0.177	2.50	80	1.38	1.38	5.85
0.0059	0.149	2.75	100	2.25	2.25	8.11
0.0049	0.125	3.00	120	2.99	2.99	11.10
0.0041	0.105	3.25	140	3.54	3.54	14.64
0.0035	0.088	3.50	170	3.98	3.98	18.62
0.0029	0.074	3.75	200	4.41	4.41	23.03
0.0025	0.063	4.00	230	4.72	4.72	27.76
0.0021	0.053	4.25	270	4.85	4.85	32.61
0.00174	0.0442	4.50	325	4.77	4.77	37.38
0.00146	0.0372	4.75	400	4.53	4.53	41.91
0.00123	0.0313	5.00	450	4.23	4.23	46.14
0.000986	0.0250	5.32	500	5.02	5.02	51.17
0.000790	0.0201	5.64	635	4.62	4.62	55.79
0.000615	0.0156	6.00		4.65	4.65	60.44
0.000435	0.0110	6.50		5.78	5.78	66.22
0.000308	0.00781	7.00		5.34	5.34	71.57
0.000197	0.00500	7.65		6.38	6.38	77.95
0.000077	0.00195	9.00		11.00	11.01	88.95
0.000038	0.000977	10.00		6.38	6.38	95.34
0.000019	0.000488	11.00		4.20	4.20	99.54
0.000015	0.000375	11.38		0.46	0.46	100.00
TOTALS				**100.00**	**100.00**	**100.00**

Cumulative Weight Percent greater than

Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	2.35	0.0077	0.197
10	2.91	0.0052	0.133
16	3.34	0.0039	0.099
25	3.85	0.0027	0.069
40	4.64	0.0016	0.040
50	5.25	0.0010	0.026
60	5.97	0.0006	0.016
75	7.35	0.0002	0.006
84	8.39	0.0001	0.003
90	9.16	0.0001	0.002
95	9.95	0.0000	0.001

Measure	Trask	Inman	Folk-Ward
Median, phi	5.25	5.25	5.25
Median, in.	0.0010	0.0010	0.0010
Median, mm	0.026	0.026	0.026
Mean, phi	4.73	5.86	5.66
Mean, in.	0.0015	0.0007	0.0008
Mean, mm	0.038	0.017	0.020
Sorting	3.355	2.527	2.415
Skewness	0.782	0.244	0.241
Kurtosis	0.240	0.504	0.892

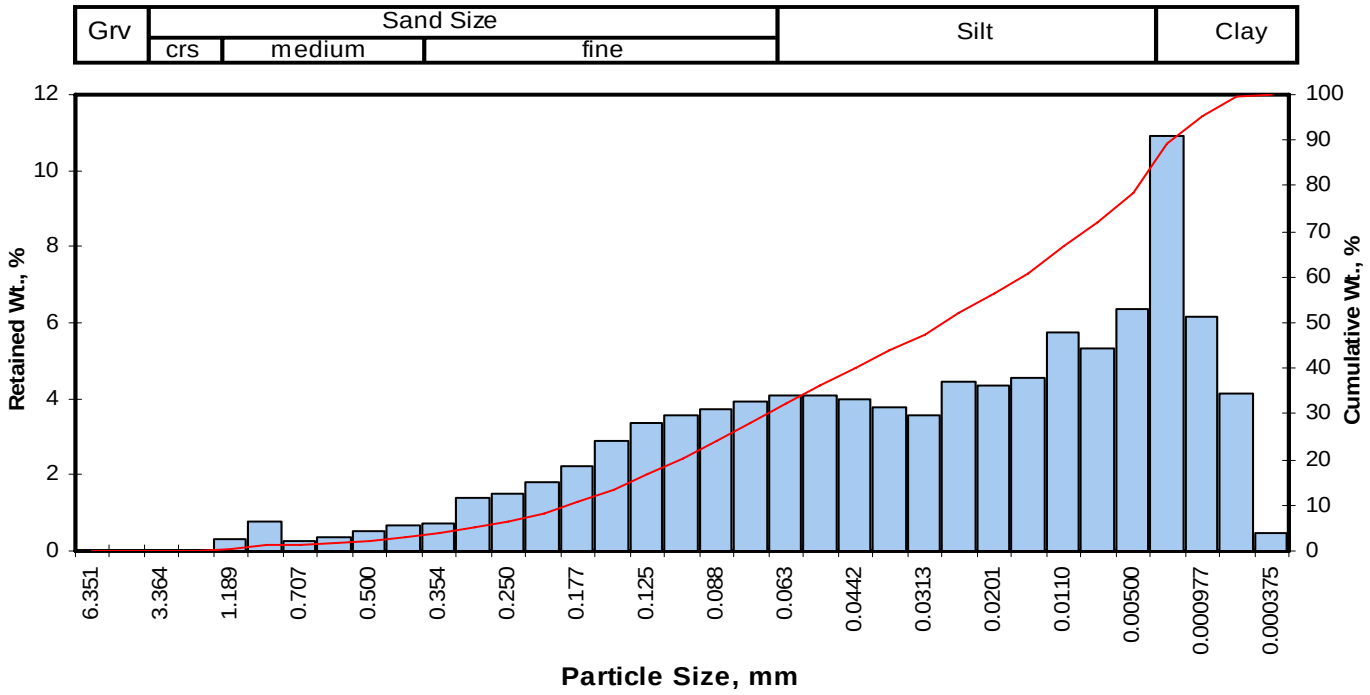
Grain Size Description (ASTM-USCS Scale)	Silt (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.98
Fine Sand	200	22.05
Silt	>0.005 mm	54.92
Clay	<0.005 mm	22.05
	Total	**100**

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	CDM	**PTS File No:**	33735
Project:	N/A	**Sample ID:**	GP2-060
Project No:	10500-37240-T2.0SS. Field	**Depth, ft:**	60.00



Opening Inches	Opening Millimeters	Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.32	0.32	0.32
0.0331	0.841	0.25	20	0.80	0.80	1.12
0.0278	0.707	0.50	25	0.26	0.26	1.38
0.0234	0.595	0.75	30	0.35	0.35	1.73
0.0197	0.500	1.00	35	0.51	0.51	2.24
0.0166	0.420	1.25	40	0.69	0.69	2.93
0.0139	0.354	1.50	45	0.75	0.75	3.68
0.0117	0.297	1.75	50	1.38	1.38	5.06
0.0098	0.250	2.00	60	1.49	1.49	6.55
0.0083	0.210	2.25	70	1.81	1.81	8.36
0.0070	0.177	2.50	80	2.24	2.24	10.60
0.0059	0.149	2.75	100	2.89	2.89	13.49
0.0049	0.125	3.00	120	3.35	3.35	16.84
0.0041	0.105	3.25	140	3.59	3.59	20.43
0.0035	0.088	3.50	170	3.72	3.72	24.15
0.0029	0.074	3.75	200	3.91	3.91	28.06
0.0025	0.063	4.00	230	4.08	4.08	32.14
0.0021	0.053	4.25	270	4.11	4.11	36.25
0.00174	0.0442	4.50	325	3.97	3.97	40.22
0.00146	0.0372	4.75	400	3.76	3.76	43.98
0.00123	0.0313	5.00	450	3.59	3.59	47.57
0.000986	0.0250	5.32	500	4.46	4.46	52.02
0.000790	0.0201	5.64	635	4.35	4.35	56.37
0.000615	0.0156	6.00		4.55	4.55	60.92
0.000435	0.0110	6.50		5.75	5.75	66.67
0.000308	0.00781	7.00		5.32	5.32	71.99
0.000197	0.00500	7.65		6.35	6.35	78.34
0.000077	0.00195	9.00		10.90	10.90	89.24
0.000038	0.000977	10.00		6.16	6.16	95.40
0.000019	0.000488	11.00		4.14	4.14	99.54
0.000015	0.000375	11.38		0.46	0.46	100.00
TOTALS				**100.00**	**100.00**	**100.00**

Cumulative Weight Percent greater than

Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	1.74	0.0118	0.300
10	2.43	0.0073	0.185
16	2.94	0.0051	0.131
25	3.55	0.0034	0.085
40	4.49	0.0018	0.045
50	5.17	0.0011	0.028
60	5.93	0.0006	0.016
75	7.31	0.0002	0.006
84	8.35	0.0001	0.003
90	9.12	0.0001	0.002
95	9.93	0.0000	0.001

Measure	Trask	Inman	Folk-Ward
Median, phi	5.17	5.17	5.17
Median, in.	0.0011	0.0011	0.0011
Median, mm	0.028	0.028	0.028
Mean, phi	4.45	5.64	5.49
Mean, in.	0.0018	0.0008	0.0009
Mean, mm	0.046	0.020	0.022
Sorting	3.669	2.705	2.595
Skewness	0.838	0.173	0.167
Kurtosis	0.215	0.515	0.895

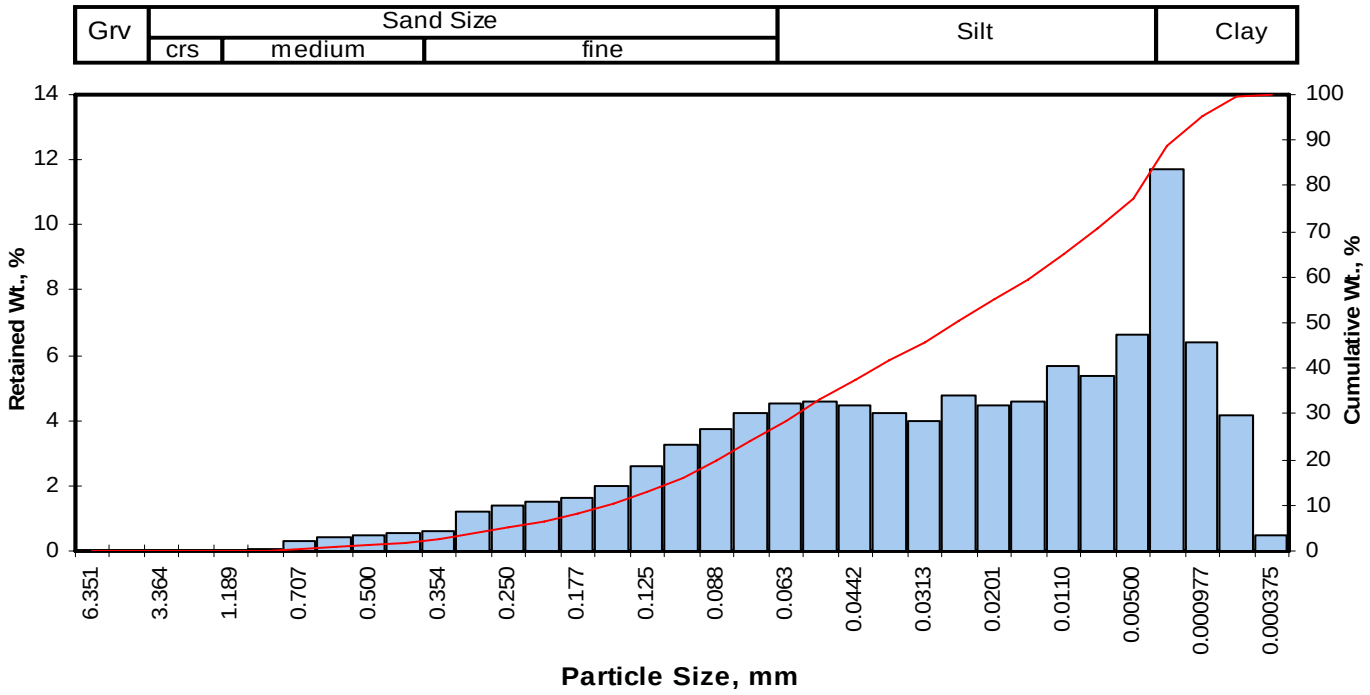
Grain Size Description (ASTM-USCS Scale)	Silt (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	2.93
Fine Sand	200	25.13
Silt	>0.005 mm	50.28
Clay	<0.005 mm	21.66
	Total	**100**

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	CDM	**PTS File No:**	33735
Project:	N/A	**Sample ID:**	GP3A-015
Project No:	10500-37240-T2.0SS. Field	**Depth, ft:**	15.00



Opening Inches	Opening Millimeters	Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.07	0.07	0.07
0.0278	0.707	0.50	25	0.28	0.28	0.35
0.0234	0.595	0.75	30	0.45	0.45	0.80
0.0197	0.500	1.00	35	0.50	0.50	1.30
0.0166	0.420	1.25	40	0.55	0.55	1.85
0.0139	0.354	1.50	45	0.60	0.60	2.45
0.0117	0.297	1.75	50	1.23	1.23	3.68
0.0098	0.250	2.00	60	1.38	1.38	5.06
0.0083	0.210	2.25	70	1.51	1.51	6.58
0.0070	0.177	2.50	80	1.61	1.61	8.19
0.0059	0.149	2.75	100	2.02	2.02	10.21
0.0049	0.125	3.00	120	2.62	2.62	12.83
0.0041	0.105	3.25	140	3.24	3.24	16.07
0.0035	0.088	3.50	170	3.75	3.75	19.82
0.0029	0.074	3.75	200	4.21	4.21	24.03
0.0025	0.063	4.00	230	4.50	4.50	28.53
0.0021	0.053	4.25	270	4.57	4.57	33.10
0.00174	0.0442	4.50	325	4.45	4.45	37.55
0.00146	0.0372	4.75	400	4.22	4.22	41.77
0.00123	0.0313	5.00	450	3.96	3.96	45.73
0.000986	0.0250	5.32	500	4.76	4.76	50.49
0.000790	0.0201	5.64	635	4.49	4.49	54.98
0.000615	0.0156	6.00		4.56	4.56	59.54
0.000435	0.0110	6.50		5.69	5.69	65.23
0.000308	0.00781	7.00		5.38	5.38	70.62
0.000197	0.00500	7.65		6.65	6.65	77.27
0.000077	0.00195	9.00		11.70	11.70	88.97
0.000038	0.000977	10.00		6.40	6.40	95.37
0.000019	0.000488	11.00		4.17	4.17	99.54
0.000015	0.000375	11.38		0.46	0.46	100.00
TOTALS				**100.00**	**100.00**	**100.00**

Cumulative Weight Percent greater than

Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	1.99	0.0099	0.252
10	2.72	0.0060	0.151
16	3.24	0.0042	0.105
25	3.80	0.0028	0.072
40	4.65	0.0016	0.040
50	5.29	0.0010	0.026
60	6.04	0.0006	0.015
75	7.43	0.0002	0.006
84	8.42	0.0001	0.003
90	9.16	0.0001	0.002
95	9.94	0.0000	0.001

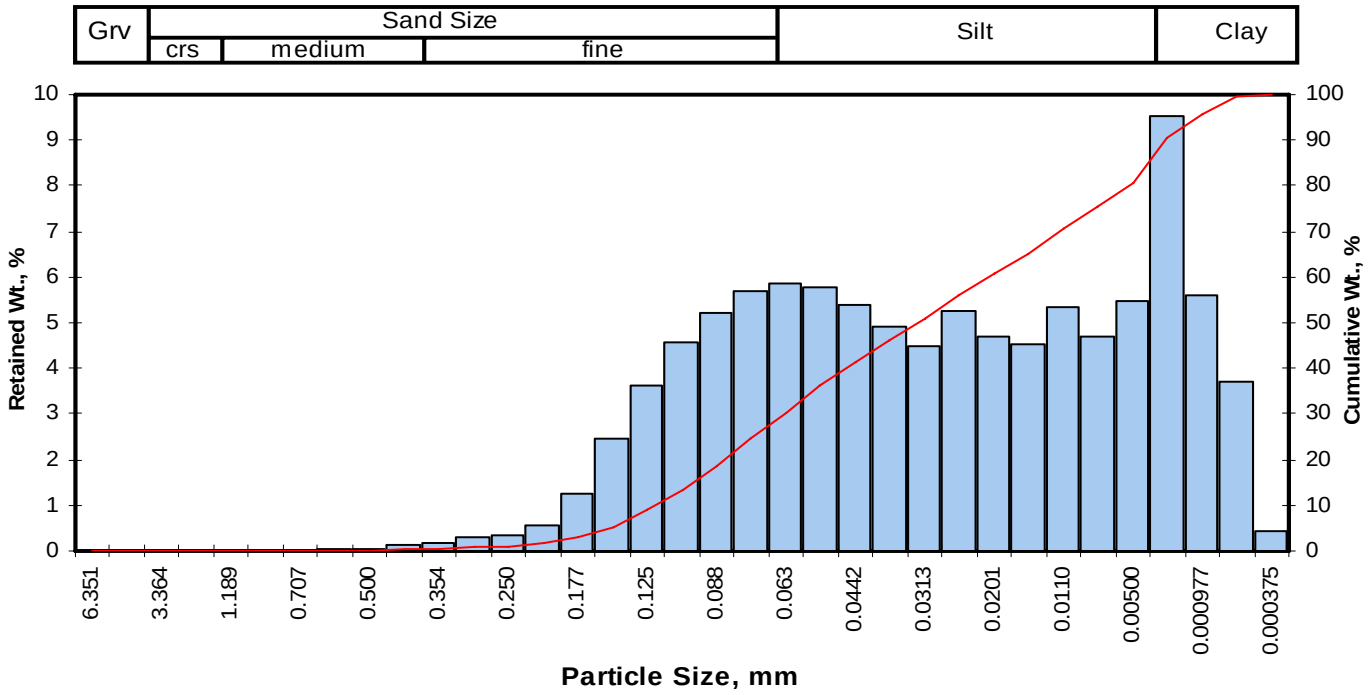
Measure	Trask	Inman	Folk-Ward
Median, phi	5.29	5.29	5.29
Median, in.	0.0010	0.0010	0.0010
Median, mm	0.026	0.026	0.026
Mean, phi	4.69	5.83	5.65
Mean, in.	0.0015	0.0007	0.0008
Mean, mm	0.039	0.018	0.020
Sorting	3.508	2.590	2.500
Skewness	0.797	0.212	0.191
Kurtosis	0.220	0.536	0.900
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	1.85
Fine Sand	200	22.17
Silt	>0.005 mm	53.24
Clay	<0.005 mm	22.73
	Total	**100**

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	CDM	**PTS File No:**	33735
Project:	N/A	**Sample ID:**	GP2-085
Project No:	10500-37240-T2.0SS. Field	**Depth, ft:**	85.00



Opening Inches	Opening Millimeters	Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.01	0.01	0.01
0.0234	0.595	0.75	30	0.03	0.03	0.04
0.0197	0.500	1.00	35	0.06	0.06	0.10
0.0166	0.420	1.25	40	0.12	0.12	0.22
0.0139	0.354	1.50	45	0.17	0.17	0.39
0.0117	0.297	1.75	50	0.32	0.32	0.71
0.0098	0.250	2.00	60	0.33	0.33	1.04
0.0083	0.210	2.25	70	0.57	0.57	1.61
0.0070	0.177	2.50	80	1.23	1.23	2.84
0.0059	0.149	2.75	100	2.44	2.44	5.28
0.0049	0.125	3.00	120	3.64	3.64	8.92
0.0041	0.105	3.25	140	4.57	4.57	13.49
0.0035	0.088	3.50	170	5.21	5.21	18.70
0.0029	0.074	3.75	200	5.67	5.67	24.37
0.0025	0.063	4.00	230	5.87	5.87	30.24
0.0021	0.053	4.25	270	5.76	5.76	35.99
0.00174	0.0442	4.50	325	5.39	5.39	41.38
0.00146	0.0372	4.75	400	4.93	4.93	46.31
0.00123	0.0313	5.00	450	4.50	4.50	50.81
0.000986	0.0250	5.32	500	5.24	5.24	56.05
0.000790	0.0201	5.64	635	4.68	4.68	60.73
0.000615	0.0156	6.00		4.53	4.53	65.26
0.000435	0.0110	6.50		5.34	5.34	70.60
0.000308	0.00781	7.00		4.70	4.70	75.30
0.000197	0.00500	7.65		5.49	5.49	80.79
0.000077	0.00195	9.00		9.52	9.52	90.31
0.000038	0.000977	10.00		5.59	5.59	95.90
0.000019	0.000488	11.00		3.69	3.69	99.59
0.000015	0.000375	11.38		0.41	0.41	100.00
TOTALS				**100.00**	**100.00**	**100.00**

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	2.72	0.0060	0.152
10	3.06	0.0047	0.120
16	3.37	0.0038	0.097
25	3.78	0.0029	0.073
40	4.44	0.0018	0.046
50	4.95	0.0013	0.032
60	5.59	0.0008	0.021
75	6.97	0.0003	0.008
84	8.10	0.0001	0.004
90	8.96	0.0001	0.002
95	9.84	0.0000	0.001

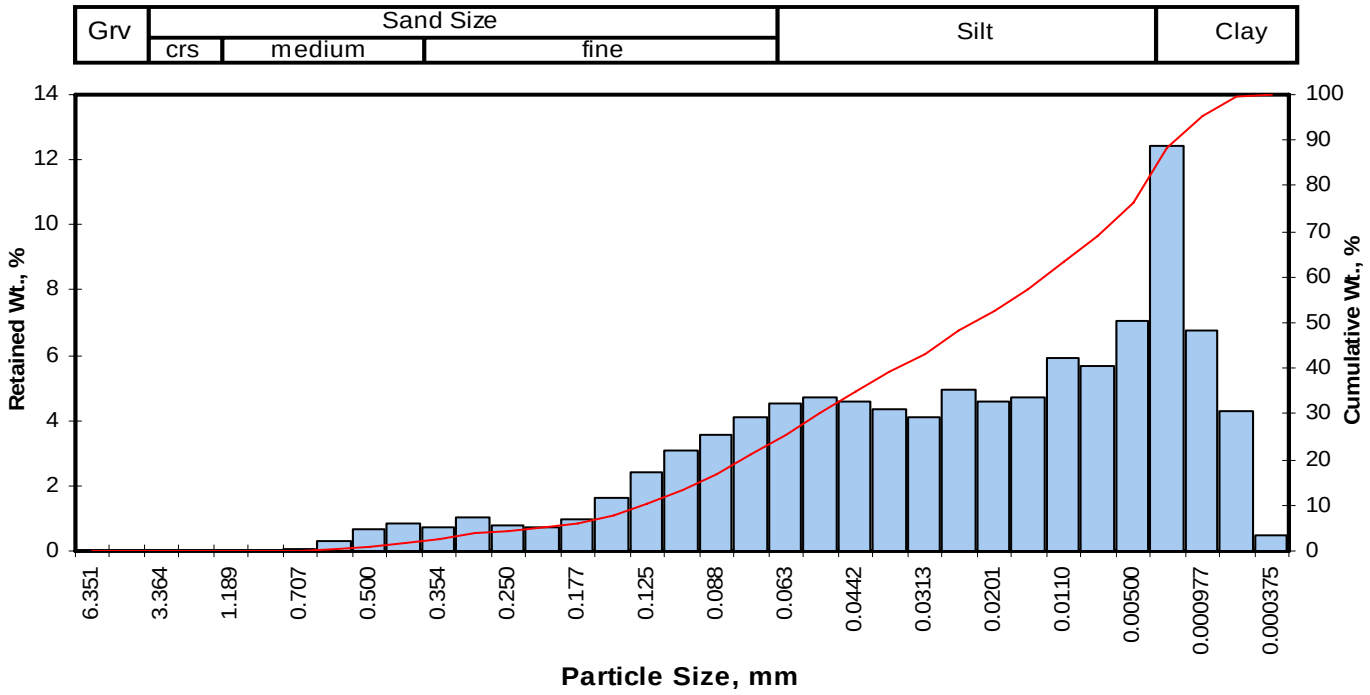
Measure	Trask	Inman	Folk-Ward
Median, phi	4.95	4.95	4.95
Median, in.	0.0013	0.0013	0.0013
Median, mm	0.032	0.032	0.032
Mean, phi	4.63	5.74	5.48
Mean, in.	0.0016	0.0007	0.0009
Mean, mm	0.040	0.019	0.022
Sorting	3.022	2.366	2.261
Skewness	0.749	0.330	0.351
Kurtosis	0.275	0.504	0.914
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.22
Fine Sand	200	24.15
Silt	>0.005 mm	56.43
Clay	<0.005 mm	19.21
	Total	**100**

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	CDM	**PTS File No:**	33735
Project:	N/A	**Sample ID:**	GP1-015
Project No:	10500-37240-T2.0SS. Field	**Depth, ft:**	15.00



Opening Inches	Opening Millimeters	Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.06	0.06	0.06
0.0234	0.595	0.75	30	0.32	0.32	0.38
0.0197	0.500	1.00	35	0.69	0.69	1.07
0.0166	0.420	1.25	40	0.85	0.85	1.92
0.0139	0.354	1.50	45	0.75	0.75	2.67
0.0117	0.297	1.75	50	1.01	1.01	3.68
0.0098	0.250	2.00	60	0.78	0.78	4.46
0.0083	0.210	2.25	70	0.75	0.75	5.21
0.0070	0.177	2.50	80	0.98	0.98	6.19
0.0059	0.149	2.75	100	1.64	1.64	7.83
0.0049	0.125	3.00	120	2.41	2.41	10.24
0.0041	0.105	3.25	140	3.05	3.05	13.29
0.0035	0.088	3.50	170	3.58	3.58	16.87
0.0029	0.074	3.75	200	4.12	4.12	20.99
0.0025	0.063	4.00	230	4.54	4.54	25.53
0.0021	0.053	4.25	270	4.69	4.69	30.22
0.00174	0.0442	4.50	325	4.57	4.57	34.79
0.00146	0.0372	4.75	400	4.34	4.34	39.14
0.00123	0.0313	5.00	450	4.09	4.09	43.23
0.000986	0.0250	5.32	500	4.93	4.93	48.16
0.000790	0.0201	5.64	635	4.60	4.60	52.76
0.000615	0.0156	6.00		4.69	4.69	57.45
0.000435	0.0110	6.50		5.94	5.94	63.39
0.000308	0.00781	7.00		5.68	5.68	69.07
0.000197	0.00500	7.65		7.05	7.05	76.12
0.000077	0.00195	9.00		12.40	12.40	88.53
0.000038	0.000977	10.00		6.73	6.73	95.26
0.000019	0.000488	11.00		4.27	4.27	99.53
0.000015	0.000375	11.38		0.47	0.47	100.00
TOTALS				**100.00**	**100.00**	**100.00**

Cumulative Weight Percent greater than

Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	2.18	0.0087	0.221
10	2.98	0.0050	0.127
16	3.44	0.0036	0.092
25	3.97	0.0025	0.064
40	4.80	0.0014	0.036
50	5.45	0.0009	0.023
60	6.21	0.0005	0.013
75	7.54	0.0002	0.005
84	8.51	0.0001	0.003
90	9.22	0.0001	0.002
95	9.96	0.0000	0.001

Measure	Trask	Inman	Folk-Ward
Median, phi	5.45	5.45	5.45
Median, in.	0.0009	0.0009	0.0009
Median, mm	0.023	0.023	0.023
Mean, phi	4.85	5.97	5.80
Mean, in.	0.0014	0.0006	0.0007
Mean, mm	0.035	0.016	0.018
Sorting	3.448	2.533	2.445
Skewness	0.808	0.207	0.184
Kurtosis	0.233	0.536	0.893

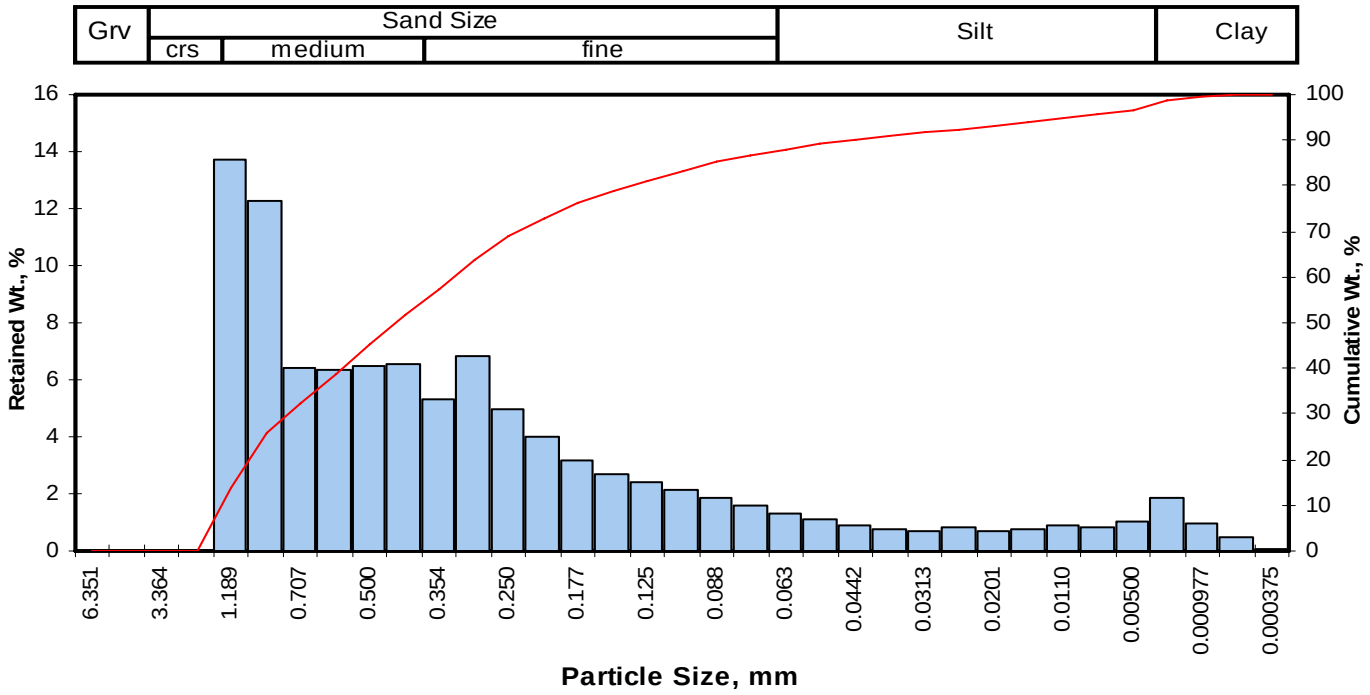
Grain Size Description (ASTM-USCS Scale)	Silt (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	1.92
Fine Sand	200	19.07
Silt	>0.005 mm	55.13
Clay	<0.005 mm	23.88
	Total	**100**

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	CDM	**PTS File No:**	33735
Project:	N/A	**Sample ID:**	GP1-035
Project No:	10500-37240-T2.0SS. Field	**Depth, ft:**	35.00



Opening Inches	Opening Millimeters	Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	13.70	13.70	13.70
0.0331	0.841	0.25	20	12.30	12.30	26.00
0.0278	0.707	0.50	25	6.42	6.42	32.42
0.0234	0.595	0.75	30	6.37	6.37	38.79
0.0197	0.500	1.00	35	6.46	6.46	45.25
0.0166	0.420	1.25	40	6.53	6.53	51.78
0.0139	0.354	1.50	45	5.34	5.34	57.12
0.0117	0.297	1.75	50	6.84	6.84	63.96
0.0098	0.250	2.00	60	4.96	4.96	68.92
0.0083	0.210	2.25	70	4.03	4.03	72.95
0.0070	0.177	2.50	80	3.20	3.20	76.15
0.0059	0.149	2.75	100	2.70	2.70	78.85
0.0049	0.125	3.00	120	2.38	2.38	81.23
0.0041	0.105	3.25	140	2.12	2.12	83.35
0.0035	0.088	3.50	170	1.84	1.84	85.19
0.0029	0.074	3.75	200	1.57	1.57	86.76
0.0025	0.063	4.00	230	1.32	1.32	88.08
0.0021	0.053	4.25	270	1.10	1.10	89.18
0.00174	0.0442	4.50	325	0.93	0.93	90.11
0.00146	0.0372	4.75	400	0.79	0.79	90.90
0.00123	0.0313	5.00	450	0.70	0.70	91.60
0.000986	0.0250	5.32	500	0.80	0.80	92.40
0.000790	0.0201	5.64	635	0.72	0.72	93.12
0.000615	0.0156	6.00		0.73	0.73	93.85
0.000435	0.0110	6.50		0.92	0.92	94.77
0.000308	0.00781	7.00		0.85	0.85	95.62
0.000197	0.00500	7.65		1.03	1.03	96.65
0.000077	0.00195	9.00		1.85	1.85	98.50
0.000038	0.000977	10.00		0.96	0.96	99.46
0.000019	0.000488	11.00		0.49	0.49	99.95
0.000015	0.000375	11.38		0.05	0.05	100.00
TOTALS				**100.00**	**100.00**	**100.00**

Cumulative Weight Percent greater than

Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	-0.73	0.0651	1.654
10	-0.45	0.0539	1.368
16	-0.16	0.0439	1.115
25	0.21	0.0341	0.865
40	0.80	0.0227	0.576
50	1.18	0.0174	0.441
60	1.61	0.0129	0.329
75	2.41	0.0074	0.188
84	3.34	0.0039	0.099
90	4.47	0.0018	0.045
95	6.63	0.0004	0.010

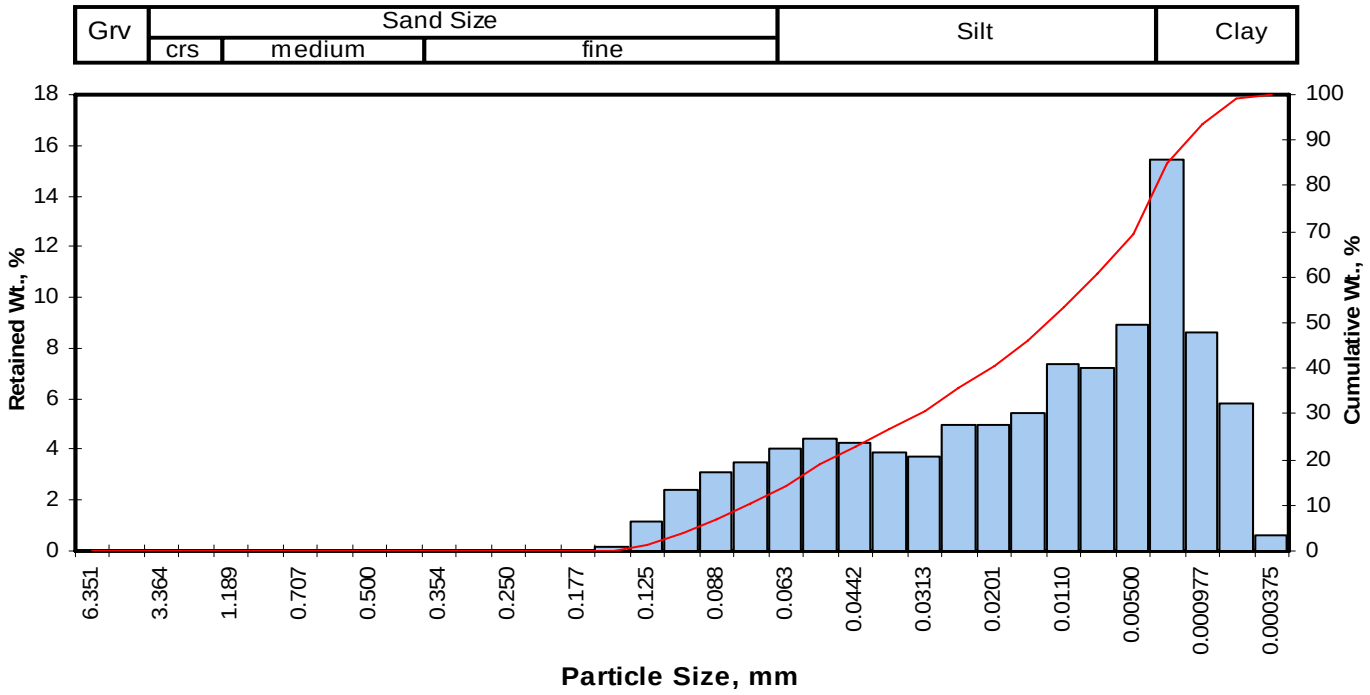
Measure	Trask	Inman	Folk-Ward
Median, phi	1.18	1.18	1.18
Median, in.	0.0174	0.0174	0.0174
Median, mm	0.441	0.441	0.441
Mean, phi	0.93	1.59	1.45
Mean, in.	0.0207	0.0131	0.0144
Mean, mm	0.527	0.332	0.365
Sorting	2.144	1.747	1.989
Skewness	0.915	0.234	0.358
Kurtosis	0.256	1.106	1.371
Grain Size Description (ASTM-USCS Scale)		Medium sand (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	51.78
Fine Sand	200	34.98
Silt	>0.005 mm	9.89
Clay	<0.005 mm	3.35
	Total	**100**

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	CDM	**PTS File No:**	33735
Project:	N/A	**Sample ID:**	GP1-055
Project No:	10500-37240-T2.0SS. Field	**Depth, ft:**	55.00



Opening Inches	Opening Millimeters	Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.00	0.00	0.00
0.0139	0.354	1.50	45	0.00	0.00	0.00
0.0117	0.297	1.75	50	0.00	0.00	0.00
0.0098	0.250	2.00	60	0.00	0.00	0.00
0.0083	0.210	2.25	70	0.00	0.00	0.00
0.0070	0.177	2.50	80	0.00	0.00	0.00
0.0059	0.149	2.75	100	0.17	0.17	0.17
0.0049	0.125	3.00	120	1.14	1.14	1.31
0.0041	0.105	3.25	140	2.41	2.41	3.72
0.0035	0.088	3.50	170	3.10	3.10	6.82
0.0029	0.074	3.75	200	3.52	3.52	10.34
0.0025	0.063	4.00	230	4.04	4.04	14.39
0.0021	0.053	4.25	270	4.40	4.40	18.79
0.00174	0.0442	4.50	325	4.25	4.25	23.04
0.00146	0.0372	4.75	400	3.90	3.90	26.94
0.00123	0.0313	5.00	450	3.76	3.76	30.70
0.000986	0.0250	5.32	500	4.93	4.93	35.63
0.000790	0.0201	5.64	635	5.00	5.00	40.63
0.000615	0.0156	6.00		5.41	5.41	46.04
0.000435	0.0110	6.50		7.37	7.37	53.42
0.000308	0.00781	7.00		7.22	7.22	60.64
0.000197	0.00500	7.65		8.93	8.93	69.57
0.000077	0.00195	9.00		15.40	15.40	84.98
0.000038	0.000977	10.00		8.59	8.59	93.57
0.000019	0.000488	11.00		5.78	5.78	99.35
0.000015	0.000375	11.38		0.65	0.65	100.00
TOTALS				**100.00**	**100.00**	**100.00**

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	3.35	0.0039	0.098
10	3.73	0.0030	0.076
16	4.09	0.0023	0.059
25	4.63	0.0016	0.041
40	5.60	0.0008	0.021
50	6.27	0.0005	0.013
60	6.96	0.0003	0.008
75	8.12	0.0001	0.004
84	8.91	0.0001	0.002
90	9.58	0.0001	0.001
95	10.25	0.0000	0.001

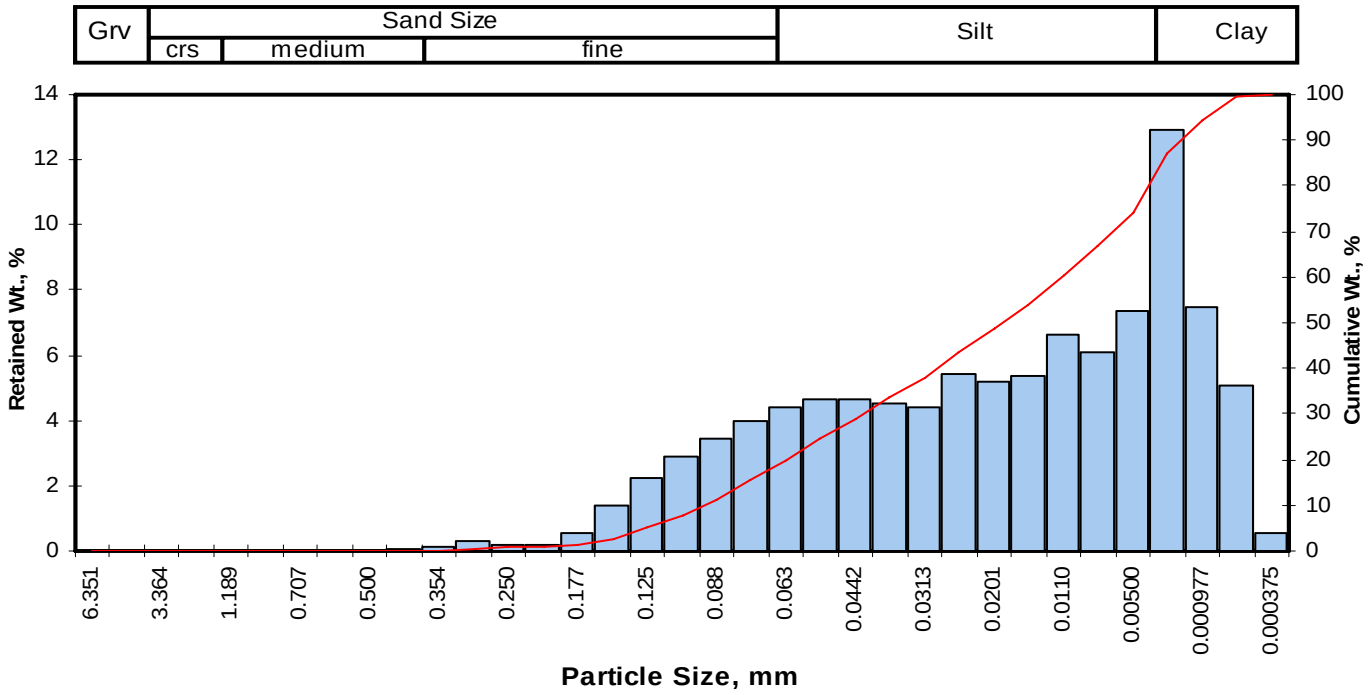
Measure	Trask	Inman	Folk-Ward
Median, phi	6.27	6.27	6.27
Median, in.	0.0005	0.0005	0.0005
Median, mm	0.013	0.013	0.013
Mean, phi	5.50	6.50	6.42
Mean, in.	0.0009	0.0004	0.0005
Mean, mm	0.022	0.011	0.012
Sorting	3.360	2.411	2.250
Skewness	0.929	0.097	0.126
Kurtosis	0.248	0.430	0.808
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.00
Fine Sand	200	10.34
Silt	>0.005 mm	59.23
Clay	<0.005 mm	30.43
	Total	**100**

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	CDM	**PTS File No:**	33735
Project:	N/A	**Sample ID:**	GP1-070
Project No:	10500-37240-T2.0SS. Field	**Depth, ft:**	70.00



Opening Inches	Opening Millimeters	Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.00	0.00	0.00
0.0278	0.707	0.50	25	0.00	0.00	0.00
0.0234	0.595	0.75	30	0.00	0.00	0.00
0.0197	0.500	1.00	35	0.00	0.00	0.00
0.0166	0.420	1.25	40	0.04	0.04	0.04
0.0139	0.354	1.50	45	0.14	0.14	0.18
0.0117	0.297	1.75	50	0.31	0.31	0.49
0.0098	0.250	2.00	60	0.20	0.20	0.69
0.0083	0.210	2.25	70	0.20	0.20	0.89
0.0070	0.177	2.50	80	0.52	0.52	1.41
0.0059	0.149	2.75	100	1.36	1.36	2.77
0.0049	0.125	3.00	120	2.23	2.23	5.00
0.0041	0.105	3.25	140	2.90	2.90	7.90
0.0035	0.088	3.50	170	3.44	3.44	11.34
0.0029	0.074	3.75	200	3.98	3.98	15.31
0.0025	0.063	4.00	230	4.42	4.42	19.73
0.0021	0.053	4.25	270	4.64	4.64	24.37
0.00174	0.0442	4.50	325	4.65	4.65	29.02
0.00146	0.0372	4.75	400	4.54	4.54	33.55
0.00123	0.0313	5.00	450	4.38	4.38	37.93
0.000986	0.0250	5.32	500	5.41	5.41	43.34
0.000790	0.0201	5.64	635	5.19	5.19	48.53
0.000615	0.0156	6.00		5.35	5.35	53.87
0.000435	0.0110	6.50		6.65	6.65	60.52
0.000308	0.00781	7.00		6.12	6.12	66.64
0.000197	0.00500	7.65		7.37	7.37	74.00
0.000077	0.00195	9.00		12.90	12.89	86.90
0.000038	0.000977	10.00		7.46	7.46	94.35
0.000019	0.000488	11.00		5.08	5.08	99.43
0.000015	0.000375	11.38		0.57	0.57	100.00
TOTALS				**100.10**	**100.00**	**100.00**

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	3.00	0.0049	0.125
10	3.40	0.0037	0.095
16	3.79	0.0028	0.072
25	4.28	0.0020	0.051
40	5.12	0.0011	0.029
50	5.74	0.0007	0.019
60	6.46	0.0004	0.011
75	7.75	0.0002	0.005
84	8.70	0.0001	0.002
90	9.42	0.0001	0.001
95	10.13	0.0000	0.001

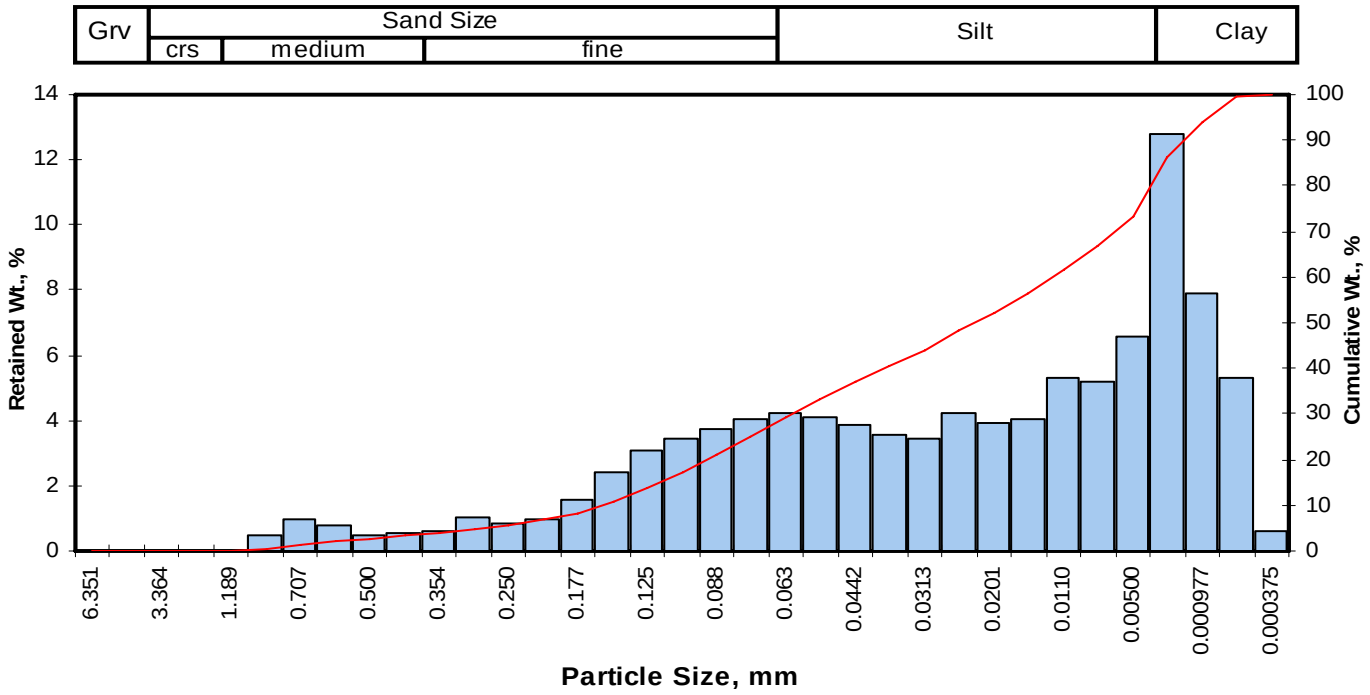
Measure	Trask	Inman	Folk-Ward
Median, phi	5.74	5.74	5.74
Median, in.	0.0007	0.0007	0.0007
Median, mm	0.019	0.019	0.019
Mean, phi	5.16	6.24	6.07
Mean, in.	0.0011	0.0005	0.0006
Mean, mm	0.028	0.013	0.015
Sorting	3.324	2.453	2.307
Skewness	0.825	0.205	0.218
Kurtosis	0.251	0.453	0.843
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.04
Fine Sand	200	15.27
Silt	>0.005 mm	58.69
Clay	<0.005 mm	26.00
	Total	**100**

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	CDM	**PTS File No:**	33735
Project:	N/A	**Sample ID:**	GP1-080
Project No:	10500-37240-T2.0SS. Field	**Depth, ft:**	80.00



Opening Inches	Opening Millimeters	Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.48	0.48	0.48
0.0278	0.707	0.50	25	0.94	0.94	1.42
0.0234	0.595	0.75	30	0.77	0.77	2.19
0.0197	0.500	1.00	35	0.51	0.51	2.70
0.0166	0.420	1.25	40	0.55	0.55	3.25
0.0139	0.354	1.50	45	0.63	0.63	3.88
0.0117	0.297	1.75	50	1.01	1.01	4.89
0.0098	0.250	2.00	60	0.83	0.83	5.72
0.0083	0.210	2.25	70	0.99	0.99	6.71
0.0070	0.177	2.50	80	1.56	1.56	8.27
0.0059	0.149	2.75	100	2.43	2.43	10.70
0.0049	0.125	3.00	120	3.05	3.05	13.75
0.0041	0.105	3.25	140	3.43	3.43	17.18
0.0035	0.088	3.50	170	3.73	3.73	20.91
0.0029	0.074	3.75	200	4.04	4.04	24.95
0.0025	0.063	4.00	230	4.20	4.20	29.15
0.0021	0.053	4.25	270	4.12	4.12	33.27
0.00174	0.0442	4.50	325	3.84	3.84	37.11
0.00146	0.0372	4.75	400	3.58	3.58	40.69
0.00123	0.0313	5.00	450	3.43	3.43	44.12
0.000986	0.0250	5.32	500	4.22	4.22	48.34
0.000790	0.0201	5.64	635	3.95	3.95	52.28
0.000615	0.0156	6.00		4.05	4.05	56.33
0.000435	0.0110	6.50		5.31	5.31	61.64
0.000308	0.00781	7.00		5.16	5.16	66.80
0.000197	0.00500	7.65		6.58	6.58	73.38
0.000077	0.00195	9.00		12.80	12.80	86.18
0.000038	0.000977	10.00		7.88	7.88	94.06
0.000019	0.000488	11.00		5.34	5.34	99.40
0.000015	0.000375	11.38		0.60	0.60	100.00
TOTALS				**100.00**	**100.00**	**100.00**

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	1.78	0.0114	0.291
10	2.68	0.0062	0.156
16	3.16	0.0044	0.112
25	3.75	0.0029	0.074
40	4.70	0.0015	0.038
50	5.45	0.0009	0.023
60	6.35	0.0005	0.012
75	7.82	0.0002	0.004
84	8.77	0.0001	0.002
90	9.48	0.0001	0.001
95	10.18	0.0000	0.001

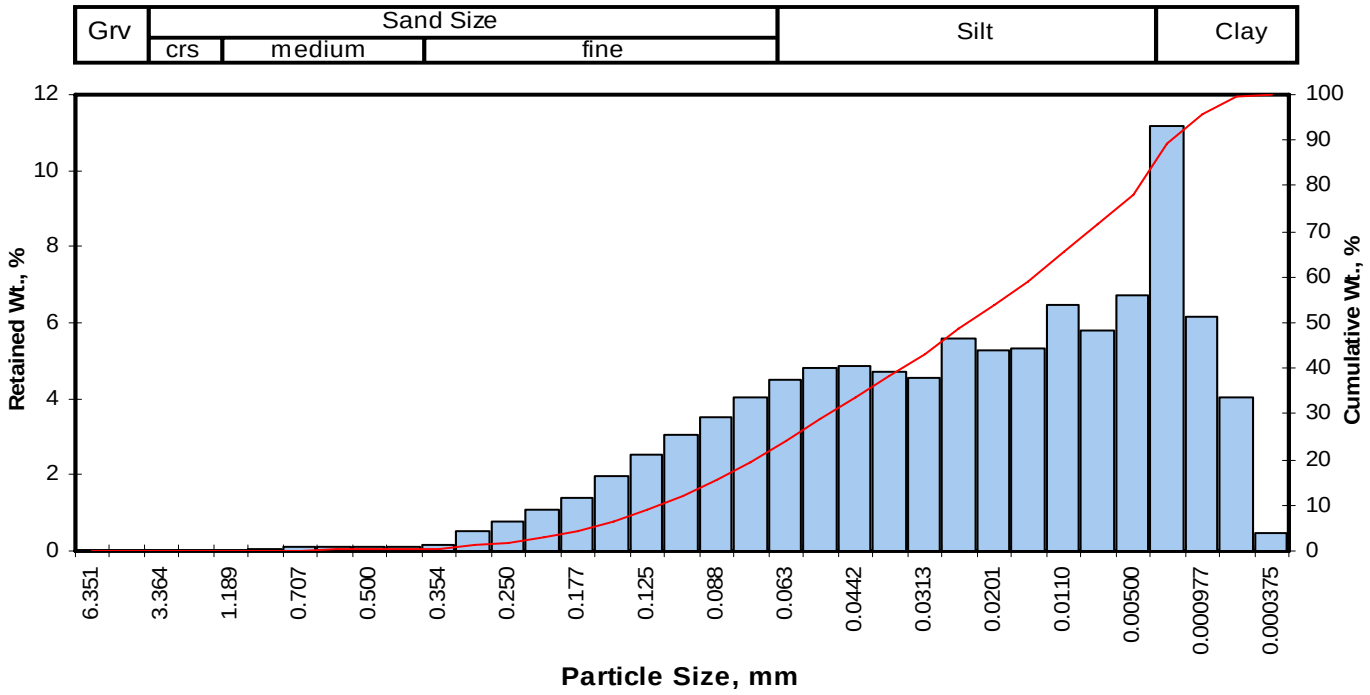
Measure	Trask	Inman	Folk-Ward
Median, phi	5.45	5.45	5.45
Median, in.	0.0009	0.0009	0.0009
Median, mm	0.023	0.023	0.023
Mean, phi	4.67	5.97	5.80
Mean, in.	0.0015	0.0006	0.0007
Mean, mm	0.039	0.016	0.018
Sorting	4.088	2.802	2.673
Skewness	0.796	0.183	0.154
Kurtosis	0.225	0.497	0.847
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	3.25
Fine Sand	200	21.70
Silt	>0.005 mm	48.44
Clay	<0.005 mm	26.62
	Total	**100**

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	CDM	**PTS File No:**	33735
Project:	N/A	**Sample ID:**	GP3A-030
Project No:	10500-37240-T2.0SS. Field	**Depth, ft:**	30.00



Opening Inches	Opening Millimeters	Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.07	0.07	0.07
0.0278	0.707	0.50	25	0.11	0.11	0.18
0.0234	0.595	0.75	30	0.09	0.09	0.26
0.0197	0.500	1.00	35	0.09	0.09	0.35
0.0166	0.420	1.25	40	0.11	0.11	0.46
0.0139	0.354	1.50	45	0.16	0.16	0.62
0.0117	0.297	1.75	50	0.51	0.51	1.13
0.0098	0.250	2.00	60	0.78	0.78	1.91
0.0083	0.210	2.25	70	1.07	1.07	2.98
0.0070	0.177	2.50	80	1.39	1.39	4.37
0.0059	0.149	2.75	100	1.96	1.96	6.33
0.0049	0.125	3.00	120	2.55	2.55	8.88
0.0041	0.105	3.25	140	3.06	3.06	11.94
0.0035	0.088	3.50	170	3.52	3.52	15.46
0.0029	0.074	3.75	200	4.04	4.04	19.50
0.0025	0.063	4.00	230	4.52	4.52	24.01
0.0021	0.053	4.25	270	4.81	4.81	28.82
0.00174	0.0442	4.50	325	4.86	4.86	33.68
0.00146	0.0372	4.75	400	4.73	4.73	38.41
0.00123	0.0313	5.00	450	4.56	4.56	42.97
0.000986	0.0250	5.32	500	5.59	5.59	48.55
0.000790	0.0201	5.64	635	5.29	5.29	53.84
0.000615	0.0156	6.00		5.35	5.35	59.19
0.000435	0.0110	6.50		6.49	6.49	65.68
0.000308	0.00781	7.00		5.78	5.78	71.45
0.000197	0.00500	7.65		6.71	6.71	78.16
0.000077	0.00195	9.00		11.20	11.20	89.35
0.000038	0.000977	10.00		6.18	6.18	95.53
0.000019	0.000488	11.00		4.03	4.03	99.56
0.000015	0.000375	11.38		0.44	0.44	100.00
TOTALS				**100.00**	**100.00**	**100.00**

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	2.58	0.0066	0.167
10	3.09	0.0046	0.117
16	3.53	0.0034	0.086
25	4.05	0.0024	0.060
40	4.84	0.0014	0.035
50	5.41	0.0009	0.024
60	6.06	0.0006	0.015
75	7.34	0.0002	0.006
84	8.35	0.0001	0.003
90	9.10	0.0001	0.002
95	9.91	0.0000	0.001

Measure	Trask	Inman	Folk-Ward
Median, phi	5.41	5.41	5.41
Median, in.	0.0009	0.0009	0.0009
Median, mm	0.024	0.024	0.024
Mean, phi	4.91	5.94	5.76
Mean, in.	0.0013	0.0006	0.0007
Mean, mm	0.033	0.016	0.018
Sorting	3.127	2.409	2.316
Skewness	0.819	0.222	0.226
Kurtosis	0.234	0.522	0.914
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	0.46
Fine Sand	200	19.03
Silt	>0.005 mm	58.66
Clay	<0.005 mm	21.84
	Total	**100**

PHYSICAL PROPERTIES DATA

PROJECT NAME N/A
PROJECT NO: 10500-37240-T2.OSS.Field

	METHODOLOGY:		ASTM D2216	WALKLEY-BLACK	EPA 9081	ASTM D1498	ASTM D5084	
							25.0 PSI CONFINING STRESS	
SAMPLE ID.	DEPTH, ft.	SAMPLE ORIENT. (1)	MOISTURE CONTENT (% wt)	TOTAL ORGANIC CARBON (mg/kg)	CATION EXCHANGE CAPACITY (meq/100g)	OXIDATION REDUCTION POTENTIAL (mV)	NATIVE STATE EFFECTIVE PERMEABILITY TO WATER (2,3) (millidarcy)	NATIVE STATE EFFECTIVE HYDRAULIC CONDUCTIVITY (2,3) (cm/s)
GP6-15	N/A	V	22.4	2550	11	340	0.943	8.96E-07
GP6-30	N/A	V	22.4	2000	12	320	0.868	8.27E-07
GP6-45	N/A	V	25.9	1750	9	340	0.756	7.22E-07
GP6-60	N/A	V	20.6	1400	14	330	0.599	5.73E-07
GP6-80	N/A	V	22.1	1950	14	320	0.575	5.48E-07

(1) Sample Orientation: H = horizontal; V = vertical (2) Native State = As received with pore fluids in place (3) Permeability to water and conductivity measured at saturated conditions

PTS Laboratories

CDM
PTS File No: 34070

PARTICLE SIZE SUMMARY

(METHODOLOGY: ASTM D422/D4464M)

PROJECT NAME: N/A
PROJECT NO: 10500-37240-T2.OSS.Field

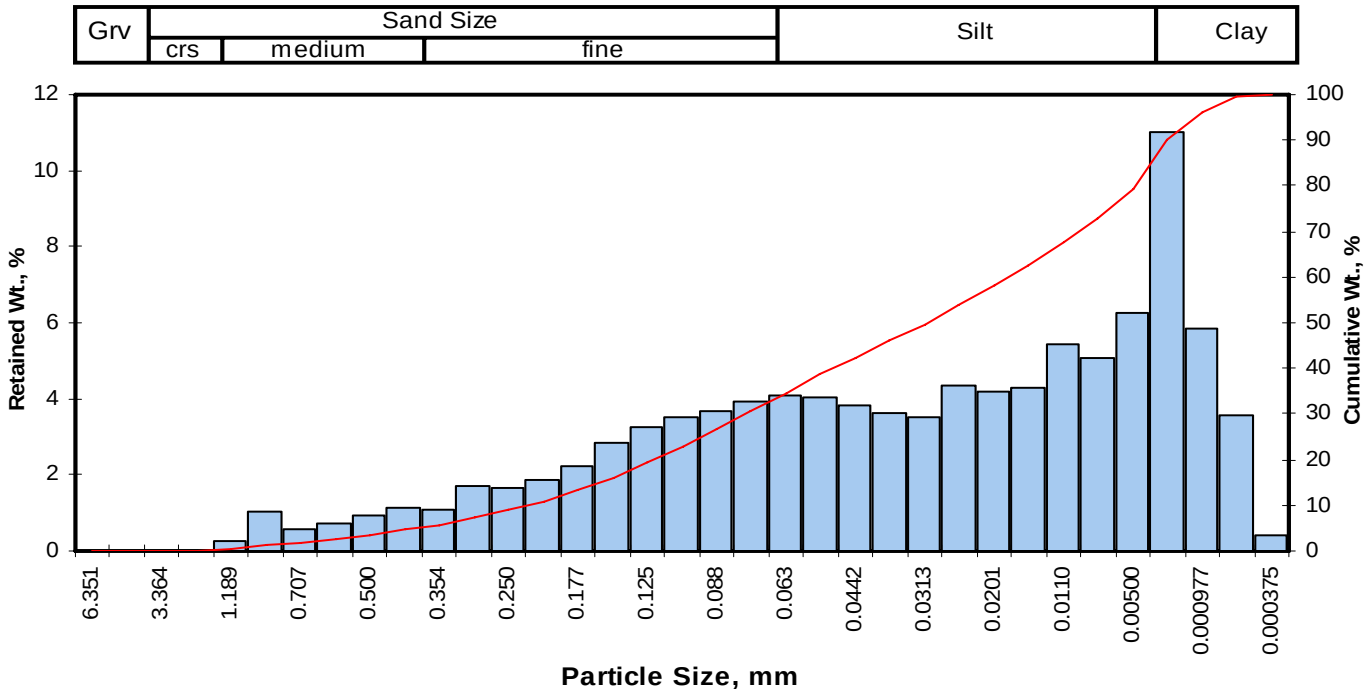
Sample ID	Depth, ft.	Mean Grain Size Description (1)	Median Grain Size mm	Particle Size Distribution, wt. percent						Silt & Clay
				Gravel	Sand Size			Silt	Clay	
					Coarse	Medium	Fine			
GP6-15	N/A	Silt	0.031	0.00	0.00	4.65	25.81	48.71	20.83	69.54
GP6-30	N/A	Silt	0.022	0.00	0.00	9.28	12.68	56.04	22.00	78.04
GP6-45	N/A	Silt	0.027	0.00	0.00	6.08	23.29	49.75	20.89	70.64
GP6-60	N/A	Silt	0.023	0.00	0.00	7.38	19.04	49.38	24.20	73.58
GP6-80	N/A	Silt	0.021	0.00	0.00	4.90	19.22	50.20	25.68	75.88

(1) Based on Mean from Trask

PTS Laboratories

Particle Size Analysis - ASTM D4464M

Client:	CDM	**PTS File No:**	34070
Project:	N/A	**Sample ID:**	GP6-15
Project No:	10500-37240-T2.OSS.Field	**Depth, ft:**	N/A



Opening Inches	Opening Millimeters	Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.26	0.26	0.26
0.0331	0.841	0.25	20	1.05	1.05	1.31
0.0278	0.707	0.50	25	0.56	0.56	1.87
0.0234	0.595	0.75	30	0.72	0.72	2.59
0.0197	0.500	1.00	35	0.94	0.94	3.53
0.0166	0.420	1.25	40	1.12	1.12	4.65
0.0139	0.354	1.50	45	1.08	1.08	5.73
0.0117	0.297	1.75	50	1.73	1.73	7.46
0.0098	0.250	2.00	60	1.65	1.65	9.11
0.0083	0.210	2.25	70	1.87	1.87	10.98
0.0070	0.177	2.50	80	2.24	2.24	13.22
0.0059	0.149	2.75	100	2.84	2.84	16.06
0.0049	0.125	3.00	120	3.27	3.27	19.33
0.0041	0.105	3.25	140	3.51	3.51	22.84
0.0035	0.088	3.50	170	3.69	3.69	26.53
0.0029	0.074	3.75	200	3.93	3.93	30.46
0.0025	0.063	4.00	230	4.09	4.09	34.55
0.0021	0.053	4.25	270	4.05	4.05	38.60
0.00174	0.0442	4.50	325	3.85	3.85	42.45
0.00146	0.0372	4.75	400	3.64	3.64	46.09
0.00123	0.0313	5.00	450	3.50	3.50	49.59
0.000986	0.0250	5.32	500	4.35	4.35	53.94
0.000790	0.0201	5.64	635	4.18	4.18	58.12
0.000615	0.0156	6.00		4.30	4.30	62.42
0.000435	0.0110	6.50		5.42	5.42	67.84
0.000308	0.00781	7.00		5.09	5.09	72.93
0.000197	0.00500	7.65		6.24	6.24	79.17
0.000077	0.00195	9.00		11.00	11.00	90.17
0.000038	0.000977	10.00		5.87	5.87	96.04
0.000019	0.000488	11.00		3.57	3.57	99.61
0.000015	0.000375	11.38		0.39	0.39	100.00
TOTALS				**100.00**	**100.00**	**100.00**

Cumulative Weight Percent greater than

Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	1.33	0.0156	0.397
10	2.12	0.0091	0.230
16	2.74	0.0059	0.149
25	3.40	0.0037	0.095
40	4.34	0.0019	0.049
50	5.03	0.0012	0.031
60	5.80	0.0007	0.018
75	7.21	0.0003	0.007
84	8.24	0.0001	0.003
90	8.98	0.0001	0.002
95	9.82	0.0000	0.001

Measure	Trask	Inman	Folk-Ward
Median, phi	5.03	5.03	5.03
Median, in.	0.0012	0.0012	0.0012
Median, mm	0.031	0.031	0.031
Mean, phi	4.30	5.49	5.34
Mean, in.	0.0020	0.0009	0.0010
Mean, mm	0.051	0.022	0.025
Sorting	3.755	2.748	2.660
Skewness	0.826	0.168	0.148
Kurtosis	0.193	0.545	0.912

Grain Size Description (ASTM-USCS Scale)	Silt (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	4.65
Fine Sand	200	25.81
Silt	>0.005 mm	48.71
Clay	<0.005 mm	20.83
	Total	**100**

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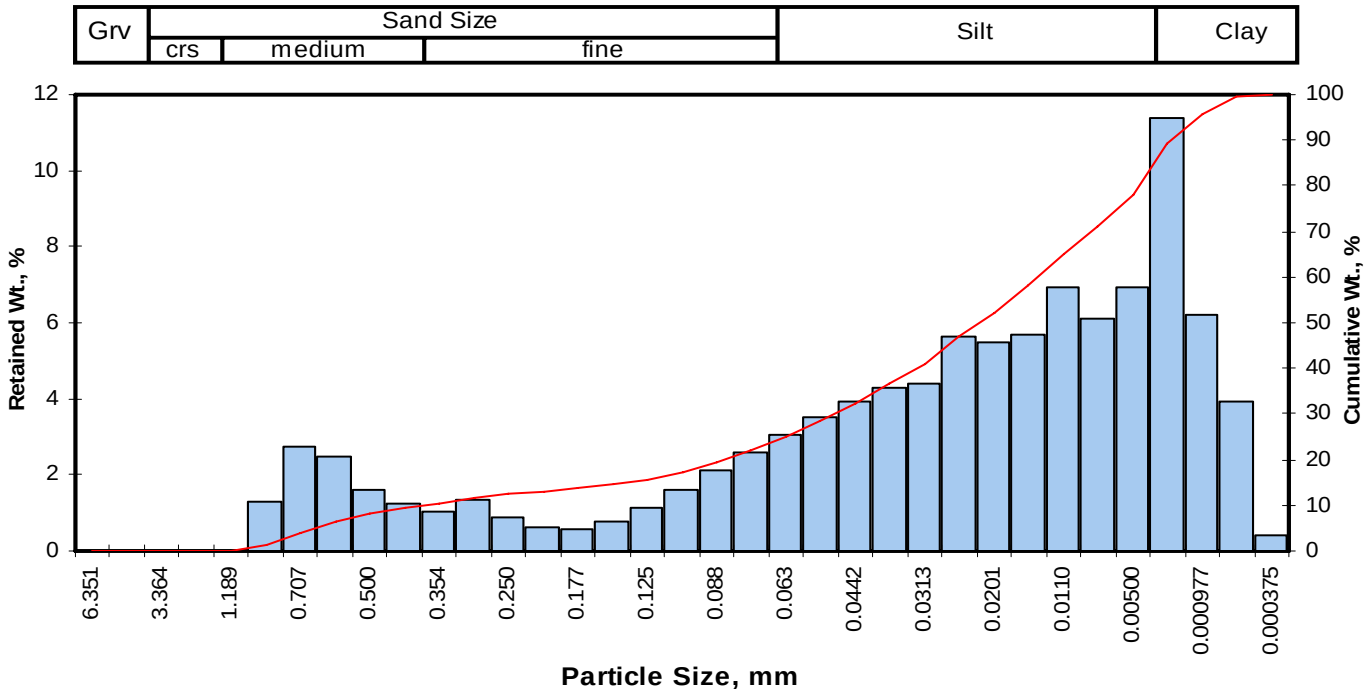
Particle Size Analysis - ASTM D4464M

Client:	CDM	**PTS File No:**	34070
Project:	N/A	**Sample ID:**	GP6-30
Project No:	10500-37240-T2.OSS.Field	**Depth, ft:**	N/A



Opening Inches	Opening Millimeters	Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	1.27	1.27	1.27
0.0278	0.707	0.50	25	2.74	2.74	4.01
0.0234	0.595	0.75	30	2.46	2.46	6.47
0.0197	0.500	1.00	35	1.58	1.58	8.05
0.0166	0.420	1.25	40	1.23	1.23	9.28
0.0139	0.354	1.50	45	1.02	1.02	10.30
0.0117	0.297	1.75	50	1.34	1.34	11.64
0.0098	0.250	2.00	60	0.87	0.87	12.52
0.0083	0.210	2.25	70	0.62	0.62	13.14
0.0070	0.177	2.50	80	0.55	0.55	13.69
0.0059	0.149	2.75	100	0.77	0.77	14.46
0.0049	0.125	3.00	120	1.15	1.15	15.61
0.0041	0.105	3.25	140	1.62	1.62	17.23
0.0035	0.088	3.50	170	2.12	2.12	19.35
0.0029	0.074	3.75	200	2.61	2.61	21.96
0.0025	0.063	4.00	230	3.06	3.06	25.02
0.0021	0.053	4.25	270	3.50	3.50	28.52
0.00174	0.0442	4.50	325	3.95	3.95	32.47
0.00146	0.0372	4.75	400	4.27	4.27	36.74
0.00123	0.0313	5.00	450	4.41	4.41	41.16
0.000986	0.0250	5.32	500	5.64	5.64	46.80
0.000790	0.0201	5.64	635	5.50	5.50	52.30
0.000615	0.0156	6.00		5.68	5.68	57.98
0.000435	0.0110	6.50		6.95	6.95	64.94
0.000308	0.00781	7.00		6.11	6.11	71.05
0.000197	0.00500	7.65		6.95	6.95	78.00
0.000077	0.00195	9.00		11.40	11.40	89.41
0.000038	0.000977	10.00		6.22	6.22	95.63
0.000019	0.000488	11.00		3.94	3.94	99.57
0.000015	0.000375	11.38		0.43	0.43	100.00
TOTALS				**100.00**	**100.00**	**100.00**

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	0.60	0.0260	0.660
10	1.43	0.0147	0.372
16	3.06	0.0047	0.120
25	4.00	0.0025	0.063
40	4.93	0.0013	0.033
50	5.51	0.0009	0.022
60	6.15	0.0006	0.014
75	7.37	0.0002	0.006
84	8.36	0.0001	0.003
90	9.10	0.0001	0.002
95	9.90	0.0000	0.001

Measure	Trask	Inman	Folk-Ward
Median, phi	5.51	5.51	5.51
Median, in.	0.0009	0.0009	0.0009
Median, mm	0.022	0.022	0.022
Mean, phi	4.87	5.71	5.64
Mean, in.	0.0014	0.0008	0.0008
Mean, mm	0.034	0.019	0.020
Sorting	3.213	2.648	2.733
Skewness	0.885	0.077	0.011
Kurtosis	0.076	0.755	1.131
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	9.28
Fine Sand	200	12.68
Silt	>0.005 mm	56.04
Clay	<0.005 mm	22.00
	Total	**100**

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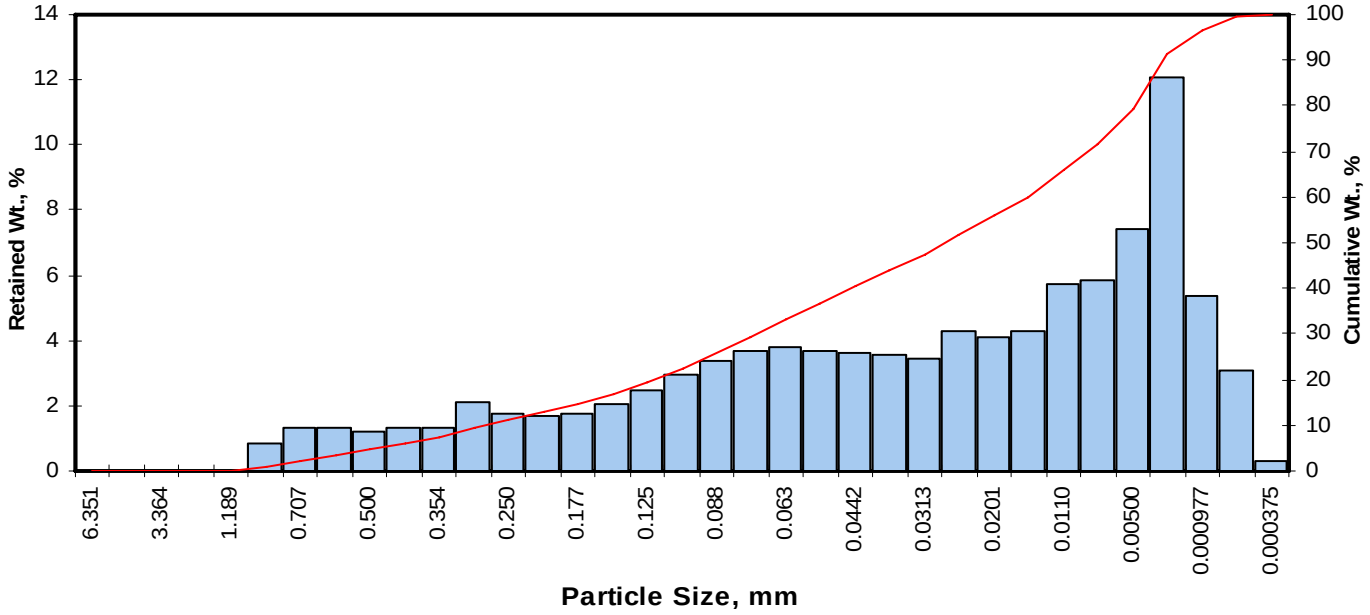
Particle Size Analysis - ASTM D4464M

Client:	CDM	**PTS File No:**	34070
Project:	N/A	**Sample ID:**	GP6-45
Project No:	10500-37240-T2.OSS.Field	**Depth, ft:**	N/A

Grv	Sand Size			Silt	Clay
	crs	medium	fine		



Opening Inches	Opening Millimeters	Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.87	0.87	0.87
0.0278	0.707	0.50	25	1.33	1.33	2.20
0.0234	0.595	0.75	30	1.35	1.35	3.55
0.0197	0.500	1.00	35	1.21	1.21	4.76
0.0166	0.420	1.25	40	1.32	1.32	6.08
0.0139	0.354	1.50	45	1.33	1.33	7.41
0.0117	0.297	1.75	50	2.09	2.09	9.50
0.0098	0.250	2.00	60	1.78	1.78	11.28
0.0083	0.210	2.25	70	1.70	1.70	12.97
0.0070	0.177	2.50	80	1.76	1.76	14.73
0.0059	0.149	2.75	100	2.08	2.08	16.81
0.0049	0.125	3.00	120	2.49	2.49	19.30
0.0041	0.105	3.25	140	2.96	2.96	22.26
0.0035	0.088	3.50	170	3.40	3.40	25.66
0.0029	0.074	3.75	200	3.71	3.71	29.36
0.0025	0.063	4.00	230	3.78	3.78	33.14
0.0021	0.053	4.25	270	3.71	3.71	36.85
0.00174	0.0442	4.50	325	3.63	3.63	40.48
0.00146	0.0372	4.75	400	3.56	3.56	44.03
0.00123	0.0313	5.00	450	3.46	3.46	47.49
0.000986	0.0250	5.32	500	4.27	4.27	51.76
0.000790	0.0201	5.64	635	4.09	4.09	55.85
0.000615	0.0156	6.00		4.26	4.26	60.10
0.000435	0.0110	6.50		5.72	5.72	65.82
0.000308	0.00781	7.00		5.86	5.86	71.68
0.000197	0.00500	7.65		7.44	7.44	79.11
0.000077	0.00195	9.00		12.10	12.09	91.21
0.000038	0.000977	10.00		5.38	5.38	96.58
0.000019	0.000488	11.00		3.09	3.09	99.67
0.000015	0.000375	11.38		0.33	0.33	100.00
TOTALS				**100.10**	**100.00**	**100.00**

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	1.05	0.0191	0.484
10	1.82	0.0111	0.283
16	2.65	0.0063	0.159
25	3.45	0.0036	0.091
40	4.47	0.0018	0.045
50	5.19	0.0011	0.027
60	5.99	0.0006	0.016
75	7.29	0.0003	0.006
84	8.19	0.0001	0.003
90	8.86	0.0001	0.002
95	9.71	0.0000	0.001

Measure	Trask	Inman	Folk-Ward
Median, phi	5.19	5.19	5.19
Median, in.	0.0011	0.0011	0.0011
Median, mm	0.027	0.027	0.027
Mean, phi	4.35	5.42	5.34
Mean, in.	0.0019	0.0009	0.0010
Mean, mm	0.049	0.023	0.025
Sorting	3.780	2.770	2.697
Skewness	0.882	0.085	0.064
Kurtosis	0.151	0.563	0.925
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	6.08
Fine Sand	200	23.29
Silt	>0.005 mm	49.75
Clay	<0.005 mm	20.89
	Total	**100**

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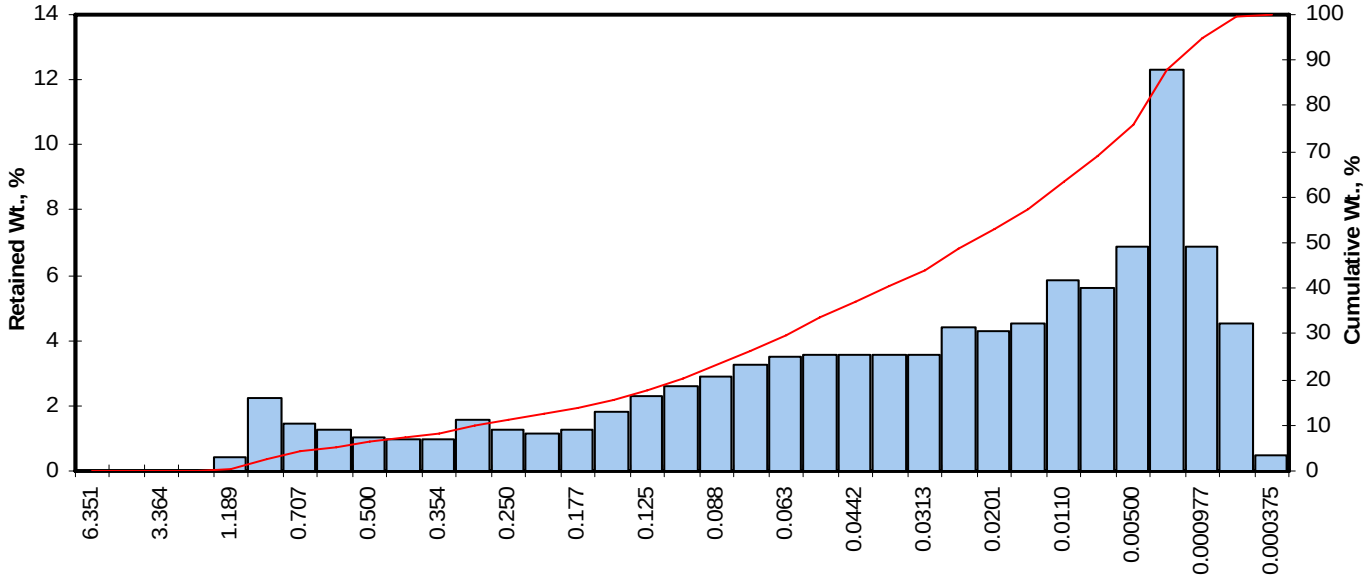
Particle Size Analysis - ASTM D4464M

Client:	CDM	**PTS File No:**	34070
Project:	N/A	**Sample ID:**	GP6-60
Project No:	10500-37240-T2.OSS.Field	**Depth, ft:**	N/A

Grv	Sand Size			Silt	Clay
	crs	medium	fine		



Opening Inches	Opening Millimeters	Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.41	0.41	0.41
0.0331	0.841	0.25	20	2.24	2.24	2.65
0.0278	0.707	0.50	25	1.46	1.46	4.11
0.0234	0.595	0.75	30	1.28	1.28	5.39
0.0197	0.500	1.00	35	1.01	1.01	6.40
0.0166	0.420	1.25	40	0.98	0.98	7.38
0.0139	0.354	1.50	45	0.97	0.97	8.35
0.0117	0.297	1.75	50	1.58	1.58	9.93
0.0098	0.250	2.00	60	1.29	1.29	11.22
0.0083	0.210	2.25	70	1.15	1.15	12.37
0.0070	0.177	2.50	80	1.27	1.27	13.63
0.0059	0.149	2.75	100	1.79	1.79	15.42
0.0049	0.125	3.00	120	2.28	2.28	17.70
0.0041	0.105	3.25	140	2.60	2.60	20.30
0.0035	0.088	3.50	170	2.89	2.89	23.19
0.0029	0.074	3.75	200	3.23	3.23	26.42
0.0025	0.063	4.00	230	3.48	3.48	29.90
0.0021	0.053	4.25	270	3.57	3.57	33.47
0.00174	0.0442	4.50	325	3.58	3.58	37.05
0.00146	0.0372	4.75	400	3.58	3.58	40.62
0.00123	0.0313	5.00	450	3.55	3.55	44.17
0.000986	0.0250	5.32	500	4.43	4.43	48.60
0.000790	0.0201	5.64	635	4.29	4.29	52.89
0.000615	0.0156	6.00		4.53	4.53	57.42
0.000435	0.0110	6.50		5.88	5.88	63.29
0.000308	0.00781	7.00		5.60	5.60	68.89
0.000197	0.00500	7.65		6.91	6.91	75.80
0.000077	0.00195	9.00		12.30	12.30	88.09
0.000038	0.000977	10.00		6.89	6.89	94.98
0.000019	0.000488	11.00		4.52	4.52	99.50
0.000015	0.000375	11.38		0.50	0.50	100.00
TOTALS				**100.00**	**100.00**	**100.00**

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	0.67	0.0247	0.627
10	1.76	0.0116	0.294
16	2.81	0.0056	0.142
25	3.64	0.0032	0.080
40	4.71	0.0015	0.038
50	5.42	0.0009	0.023
60	6.22	0.0005	0.013
75	7.57	0.0002	0.005
84	8.55	0.0001	0.003
90	9.28	0.0001	0.002
95	10.00	0.0000	0.001

Measure	Trask	Inman	Folk-Ward
Median, phi	5.42	5.42	5.42
Median, in.	0.0009	0.0009	0.0009
Median, mm	0.023	0.023	0.023
Mean, phi	4.55	5.68	5.60
Mean, in.	0.0017	0.0008	0.0008
Mean, mm	0.043	0.019	0.021
Sorting	3.904	2.868	2.847
Skewness	0.882	0.089	0.036
Kurtosis	0.128	0.627	0.973
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	7.38
Fine Sand	200	19.04
Silt	>0.005 mm	49.38
Clay	<0.005 mm	24.20
	Total	**100**

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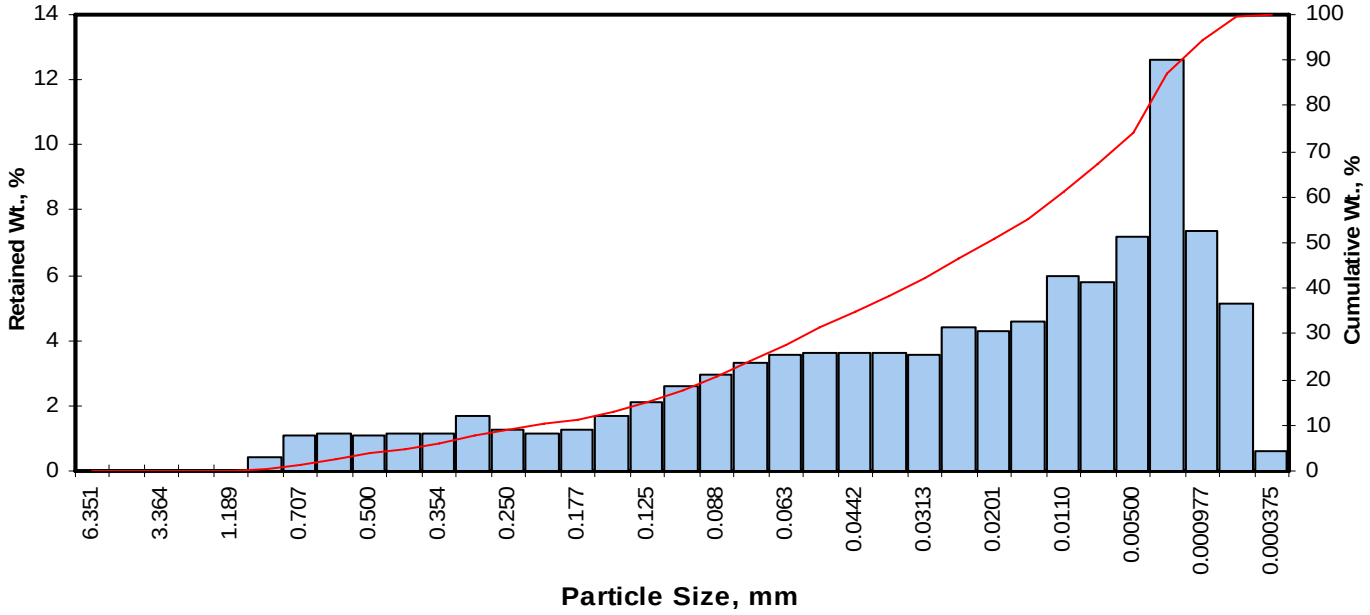
Particle Size Analysis - ASTM D4464M

Client:	CDM	**PTS File No:**	34070
Project:	N/A	**Sample ID:**	GP6-80
Project No:	10500-37240-T2.OSS.Field	**Depth, ft:**	N/A

Grv	Sand Size			Silt	Clay
	crs	medium	fine		



Opening Inches	Opening Millimeters	Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.44	0.44	0.44
0.0278	0.707	0.50	25	1.06	1.06	1.50
0.0234	0.595	0.75	30	1.17	1.17	2.67
0.0197	0.500	1.00	35	1.07	1.07	3.74
0.0166	0.420	1.25	40	1.16	1.16	4.90
0.0139	0.354	1.50	45	1.14	1.14	6.04
0.0117	0.297	1.75	50	1.68	1.68	7.72
0.0098	0.250	2.00	60	1.27	1.27	8.99
0.0083	0.210	2.25	70	1.14	1.14	10.14
0.0070	0.177	2.50	80	1.26	1.26	11.40
0.0059	0.149	2.75	100	1.69	1.69	13.09
0.0049	0.125	3.00	120	2.14	2.14	15.23
0.0041	0.105	3.25	140	2.57	2.57	17.80
0.0035	0.088	3.50	170	2.98	2.98	20.78
0.0029	0.074	3.75	200	3.34	3.34	24.12
0.0025	0.063	4.00	230	3.53	3.53	27.65
0.0021	0.053	4.25	270	3.60	3.60	31.26
0.00174	0.0442	4.50	325	3.62	3.62	34.88
0.00146	0.0372	4.75	400	3.62	3.62	38.50
0.00123	0.0313	5.00	450	3.55	3.55	42.05
0.000986	0.0250	5.32	500	4.42	4.42	46.47
0.000790	0.0201	5.64	635	4.31	4.31	50.79
0.000615	0.0156	6.00		4.57	4.57	55.36
0.000435	0.0110	6.50		5.98	5.98	61.34
0.000308	0.00781	7.00		5.80	5.80	67.14
0.000197	0.00500	7.65		7.17	7.17	74.32
0.000077	0.00195	9.00		12.60	12.61	86.92
0.000038	0.000977	10.00		7.37	7.37	94.30
0.000019	0.000488	11.00		5.12	5.12	99.42
0.000015	0.000375	11.38		0.58	0.58	100.00
TOTALS				**100.00**	**100.00**	**100.00**

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	1.27	0.0163	0.414
10	2.22	0.0084	0.215
16	3.08	0.0047	0.119
25	3.81	0.0028	0.071
40	4.86	0.0014	0.035
50	5.58	0.0008	0.021
60	6.39	0.0005	0.012
75	7.72	0.0002	0.005
84	8.69	0.0001	0.002
90	9.42	0.0001	0.001
95	10.14	0.0000	0.001

Measure	Trask	Inman	Folk-Ward
Median, phi	5.58	5.58	5.58
Median, in.	0.0008	0.0008	0.0008
Median, mm	0.021	0.021	0.021
Mean, phi	4.72	5.88	5.78
Mean, in.	0.0015	0.0007	0.0007
Mean, mm	0.038	0.017	0.018
Sorting	3.872	2.805	2.746
Skewness	0.881	0.106	0.067
Kurtosis	0.156	0.580	0.930
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	4.90
Fine Sand	200	19.22
Silt	>0.005 mm	50.20
Clay	<0.005 mm	25.68
	Total	**100**

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PHYSICAL PROPERTIES DATA

PROJECT NAME: Omega Chemical
PROJECT NO: 10500-37240

METHODOLOGY: **API RP40**

SAMPLE ID.	DEPTH, ft.	SAMPLE ORIENT. (1)	BULK DENSITY (g/cc)	TOTAL POROSITY, % Vb
B-1 (33-33.5)	33-33.5	V	1.63	38.3
B-1 (74-75)	74-75	V	1.61	39.6
B-2 (29.5-30)	29.5-30	V	1.55	41.4
B-2 (44.5-45)	44.5-45	V	1.61	39.3
B-2 (67.5-68)	67.5-68	V	1.65	37.4
B-3 (33-33.5)	33-33.5	V	1.70	36.1
B-3 (57-57.5)	57-57.5	V	1.73	35.0

(1) Sample Orientation: H = horizontal; V = vertical (2) Total Porosity = no pore fluids in place; all interconnected pore channels Vb = Bulk Volume, cc

PTS Laboratories

CDM, Inc.
PTS File No: 36178

PHYSICAL PROPERTIES DATA

PROJECT NAME: Omega Chemical
PROJECT NO: 10500-37240

		METHODOLOGY:	ASTM D2216	API RP40		WALKLEY-BLACK	ASTM D5084	
							25.0 PSI CONFINING STRESS	
SAMPLE ID.	DEPTH, ft.	SAMPLE ORIENT. (1)	MOISTURE CONTENT (% wt)	BULK DENSITY (g/cc)	TOTAL POROSITY, % Vb (2)	TOTAL ORGANIC CARBON mg/kg	NATIVE STATE EFFECTIVE PERMEABILITY TO WATER (3,4) (millidarcy)	NATIVE STATE EFFECTIVE HYDRAULIC CONDUCTIVITY (3,4) (cm/s)
MIP8-B4-8	8.70	V	21.4	1.52	42.8	1750	--	--
MIP8-B4-29	29.15	V	25.6	1.52	42.4	2150	--	--
MIP8-B4-33	33.15	V	20.3	1.77	33.0	1750	0.884	8.33E-07
MIP8-B4-40	39.15	V	24.9	1.56	40.9	910	--	--
MIP8-B4-56	56.85	V	19.8	1.68	36.7	770	--	--
MIP22-B5-26	26.80	V	15.8	1.64	38.2	790	--	--
MIP22-B5-36	37.90	V	18.8	1.66	37.6	690	--	--
VP21-B6-20	20.90	V	22.1	1.59	40.2	760	--	--
VP21-B6-29	29.15	V	22.7	1.57	40.9	670	--	--
VP21-B6-35	35.80	V	18.2	1.66	37.4	740	0.887	8.30E-07
VP21-B6-43	43.30	V	19.6	1.58	40.3	640	--	--
VP21-B6-48	49.90	V	22.6	1.65	38.0	1300	--	--
MIP21-B7-29	29.30	V	23.5	1.54	41.6	1200	--	--
MIP21-B7-35	35.80	V	21.8	1.59	39.6	1700	0.706	6.63E-07
MIP21-B7-44	44.20	V	27.5	1.55	49.1	1200	--	--
MIP21-B7-55	53.80	V	12.0	1.63	39.7	510	--	--

(1) Sample Orientation: H = horizontal; V = vertical (2) Total Porosity = no pore fluids in place; all interconnected pore channels; Air Filled = pore chan not occupied by pore fluids (3) Native State = As received with pore fluids in place (4) Permeability to water and conductivity measured at saturated conditions Vb = Bulk Volume, cc; Pv = Pore Volume, cc; ND = Not Detected

PHYSICAL PROPERTIES DATA

PROJECT NAME: N/A
PROJECT NO: 10500-37240-T2.0SS.Field

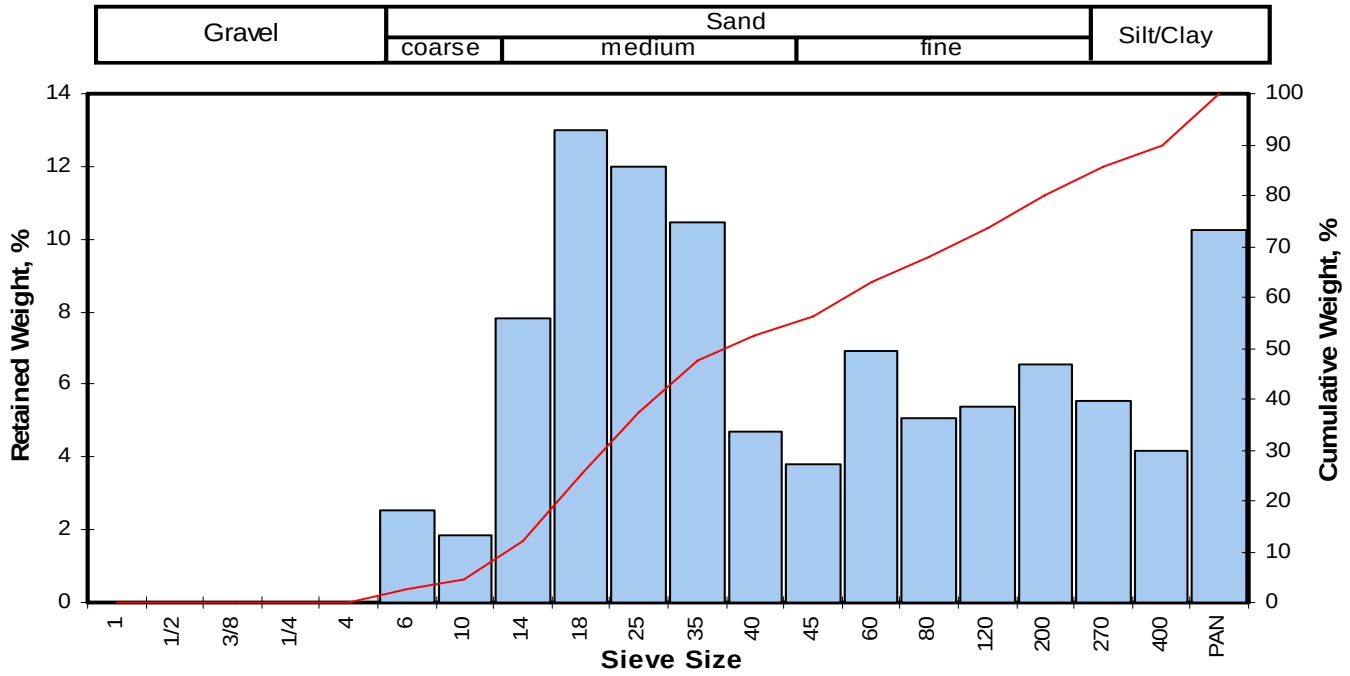
			METHODOLOGY: ASTM D2216	ASTM D5084	
				25.0 PSI CONFINING STRESS	
SAMPLE ID.	DEPTH, ft.	SAMPLE ORIENT. (1)	MOISTURE CONTENT (% wt)	NATIVE STATE EFFECTIVE PERMEABILITY TO WATER (2,3) (millidarcy)	NATIVE STATE EFFECTIVE HYDRAULIC CONDUCTIVITY (2,3) (cm/s)
OC-SS-000-20-040604	N/A	V	26.4	0.268	2.62E-07
OC-SS-000-13-040604	N/A	V	19.8	2.49	2.38E-06
OC-SG-06-04-041204	N/A	V	12.0	9.80	9.41E-06
OC-SG-06-08-041304	N/A	V	19.7	0.829	8.04E-07

(1) Sample Orientation: H = horizontal; V = vertical (2) Native State = As received with pore fluids in place (3) Permeability to water and conductivity measured at saturated conditions

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D422M

Client:	CDM	**PTS File No:**	34256
Project:	N/A	**Sample ID:**	OC-SS-000-13-040604
Project No:	10500-37240-T2.0SS.Field	**Depth, ft:**	N/A



Opening Inches	Opening Millimeters	Phi of Screen	U.S. Sieve No.	Sample Weight grams	Incremental Weight, percent	Cumulative Weight, percent
0.9844	25.002	-4.64	1	0.00	0.00	0.00
0.4922	12.501	-3.64	1/2	0.00	0.00	0.00
0.3740	9.500	-3.25	3/8	0.00	0.00	0.00
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.26	2.54	2.54
0.0787	2.000	-1.00	10	0.19	1.85	4.39
0.0557	1.414	-0.50	14	0.80	7.80	12.20
0.0394	1.000	0.00	18	1.33	12.98	25.17
0.0278	0.707	0.50	25	1.23	12.00	37.17
0.0197	0.500	1.00	35	1.07	10.44	47.61
0.0166	0.420	1.25	40	0.48	4.68	52.29
0.0139	0.354	1.50	45	0.39	3.80	56.10
0.0098	0.250	2.00	60	0.71	6.93	63.02
0.0070	0.177	2.50	80	0.52	5.07	68.10
0.0049	0.125	3.00	120	0.55	5.37	73.46
0.0029	0.074	3.75	200	0.67	6.54	80.00
0.0021	0.053	4.25	270	0.57	5.56	85.56
0.0015	0.037	4.75	400	0.43	4.20	89.76
			PAN	1.05	10.24	100.00
TOTALS				10.25	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	-0.96	0.0766	1.947
10	-0.64	0.0614	1.559
16	-0.35	0.0503	1.278
25	-0.01	0.0396	1.005
40	0.64	0.0253	0.644
50	1.13	0.0180	0.458
60	1.78	0.0115	0.291
75	3.18	0.0044	0.111
84	4.11	0.0023	0.058
90	4.64	0.0016	0.040
95	2.32	0.0079	0.200

Measure	Trask	Inman	Folk-Ward
Median, phi	1.13	1.13	1.13
Median, in.	0.0180	0.0180	0.0180
Median, mm	0.458	0.458	0.458
Mean, phi	0.84	1.88	1.63
Mean, in.	0.0220	0.0107	0.0127
Mean, mm	0.558	0.272	0.324
Sorting	3.014	2.232	1.613
Skewness	0.728	0.336	0.031
Kurtosis	0.294	-0.265	0.422
Grain Size Description (ASTM-USCS Scale)		Medium sand (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	4.39
Medium Sand	40	47.90
Fine Sand	200	27.71
Silt/Clay	<200	20.00
	Total	100

SOIL CHEMISTRY DATA

PROJECT NAME: N/A
PROJECT NO: 10500-37240-T2.0SS.Field

		METHODOLOGY:	WALKLEY-BLACK	EPA 9081	ASTM D1498
SAMPLE ID.	DEPTH, ft.	SAMPLE ORIENT. (1)	TOTAL ORGANIC CARBON (mg/kg)	CATION EXCHANGE CAPACITY (meq/100g)	OXIDATION REDUCTION POTENTIAL (mV)
OC-SS-000-20-040604	N/A	V	7300	15	310
OC-SS-000-13-040604	N/A	V	4600	13	300
OC-SG-06-04-041204	N/A	V	1600	15	300
OC-SG-06-08-041304	N/A	V	1750	14	280

(1) Sample Orientation: H = horizontal; V = vertical

PTS Laboratories, Inc.

CDM
PTS File No: 34256

PARTICLE SIZE SUMMARY

(METHODOLOGY: ASTM D422/D4464M)

PROJECT NAME: N/A
PROJECT NO: 10500-37240-T2.0SS.Field

Sample ID	Depth, ft.	Mean Grain Size Description (1)	Median Grain Size mm	Particle Size Distribution, wt. percent						Silt & Clay
				Gravel	Sand Size			Silt	Clay	
					Coarse	Medium	Fine			
OC-SS-000-20-040604	N/A	Silt	0.033	0.00	0.00	2.71	32.30	41.34	23.65	64.99
OC-SS-000-13-040604	N/A	Medium sand	0.458	0.00	4.39	47.90	27.71	(2)	(2)	20.00
OC-SG-06-04-041204	N/A	Medium sand	0.633	6.19	16.31	36.04	26.07	(2)	(2)	15.39
OC-SG-06-08-041304	N/A	Silt	0.022	0.00	0.00	7.70	17.29	51.10	23.90	75.01

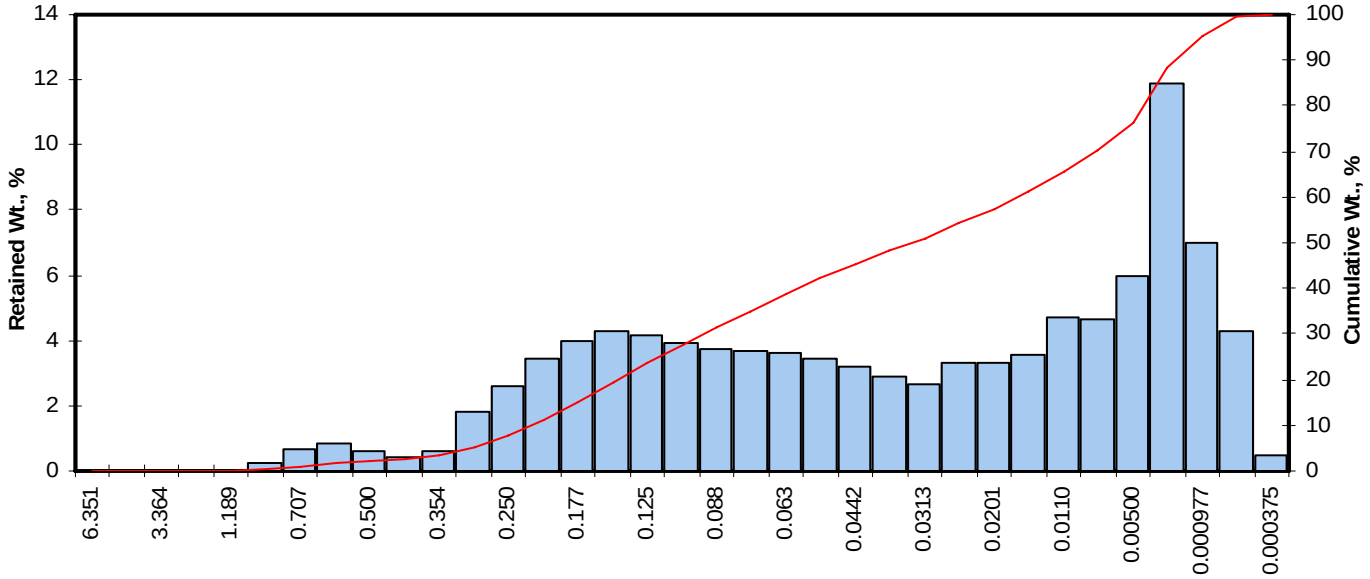
(1) Based on Mean from Trask
(2) Dry sieve data does not differentiate silt/clay fractions

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	CDM	**PTS File No:**	34256
Project:	N/A	**Sample ID:**	OC-SS-000-20-040604
Project No:	10500-37240-T2.0SS.Field	**Depth, ft:**	N/A

Grv	Sand Size			Silt	Clay
	crs	medium	fine		



Opening Inches	Opening Millimeters	Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.22	0.22	0.22
0.0278	0.707	0.50	25	0.65	0.65	0.87
0.0234	0.595	0.75	30	0.82	0.82	1.69
0.0197	0.500	1.00	35	0.58	0.58	2.27
0.0166	0.420	1.25	40	0.44	0.44	2.71
0.0139	0.354	1.50	45	0.60	0.60	3.31
0.0117	0.297	1.75	50	1.80	1.80	5.11
0.0098	0.250	2.00	60	2.62	2.62	7.73
0.0083	0.210	2.25	70	3.45	3.45	11.18
0.0070	0.177	2.50	80	3.98	3.98	15.17
0.0059	0.149	2.75	100	4.31	4.31	19.48
0.0049	0.125	3.00	120	4.19	4.19	23.67
0.0041	0.105	3.25	140	3.93	3.93	27.60
0.0035	0.088	3.50	170	3.73	3.73	31.33
0.0029	0.074	3.75	200	3.68	3.68	35.01
0.0025	0.063	4.00	230	3.61	3.61	38.63
0.0021	0.053	4.25	270	3.44	3.44	42.07
0.00174	0.0442	4.50	325	3.17	3.17	45.24
0.00146	0.0372	4.75	400	2.89	2.89	48.13
0.00123	0.0313	5.00	450	2.68	2.68	50.81
0.000986	0.0250	5.32	500	3.30	3.30	54.11
0.000790	0.0201	5.64	635	3.30	3.30	57.41
0.000615	0.0156	6.00		3.58	3.58	60.99
0.000435	0.0110	6.50		4.72	4.72	65.72
0.000308	0.00781	7.00		4.63	4.63	70.35
0.000197	0.00500	7.65		6.00	6.00	76.35
0.000077	0.00195	9.00		11.90	11.90	88.26
0.000038	0.000977	10.00		7.00	7.00	95.26
0.000019	0.000488	11.00		4.28	4.28	99.54
0.000015	0.000375	11.38		0.46	0.46	100.00
TOTALS				**100.00**	**100.00**	**100.00**

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	1.73	0.0118	0.301
10	2.16	0.0088	0.223
16	2.55	0.0067	0.171
25	3.08	0.0046	0.118
40	4.10	0.0023	0.058
50	4.92	0.0013	0.033
60	5.90	0.0007	0.017
75	7.50	0.0002	0.006
84	8.52	0.0001	0.003
90	9.25	0.0001	0.002
95	9.96	0.0000	0.001

Measure	Trask	Inman	Folk-Ward
Median, phi	4.92	4.92	4.92
Median, in.	0.0013	0.0013	0.0013
Median, mm	0.033	0.033	0.033
Mean, phi	4.02	5.53	5.33
Mean, in.	0.0024	0.0009	0.0010
Mean, mm	0.062	0.022	0.025
Sorting	4.619	2.984	2.739
Skewness	0.775	0.204	0.214
Kurtosis	0.254	0.379	0.764
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

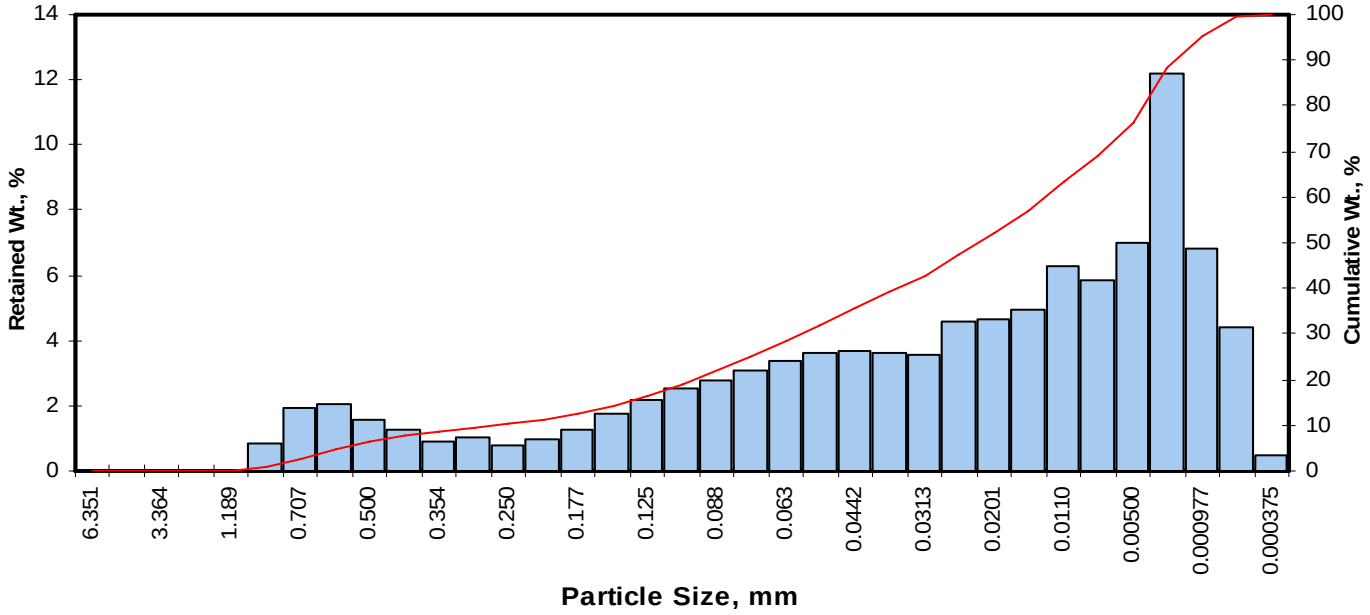
Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	2.71
Fine Sand	200	32.30
Silt	>0.005 mm	41.34
Clay	<0.005 mm	23.65
	Total	**100**

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	CDM	**PTS File No:**	34256
Project:	N/A	**Sample ID:**	OC-SG-06-08-041304
Project No:	10500-37240-T2.0SS.Field	**Depth, ft:**	N/A

Grv	Sand Size			Silt	Clay
	crs	medium	fine		



Opening Inches	Opening Millimeters	Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.00	0.00	0.00
0.0331	0.841	0.25	20	0.84	0.84	0.84
0.0278	0.707	0.50	25	1.96	1.96	2.80
0.0234	0.595	0.75	30	2.03	2.03	4.83
0.0197	0.500	1.00	35	1.58	1.58	6.41
0.0166	0.420	1.25	40	1.29	1.29	7.70
0.0139	0.354	1.50	45	0.93	0.93	8.63
0.0117	0.297	1.75	50	1.04	1.04	9.67
0.0098	0.250	2.00	60	0.76	0.76	10.43
0.0083	0.210	2.25	70	0.94	0.94	11.37
0.0070	0.177	2.50	80	1.29	1.29	12.66
0.0059	0.149	2.75	100	1.75	1.75	14.41
0.0049	0.125	3.00	120	2.18	2.18	16.59
0.0041	0.105	3.25	140	2.55	2.55	19.13
0.0035	0.088	3.50	170	2.80	2.80	21.93
0.0029	0.074	3.75	200	3.06	3.06	24.99
0.0025	0.063	4.00	230	3.36	3.36	28.35
0.0021	0.053	4.25	270	3.61	3.61	31.96
0.00174	0.0442	4.50	325	3.70	3.70	35.66
0.00146	0.0372	4.75	400	3.65	3.65	39.31
0.00123	0.0313	5.00	450	3.58	3.58	42.89
0.000986	0.0250	5.32	500	4.58	4.58	47.47
0.000790	0.0201	5.64	635	4.63	4.63	52.09
0.000615	0.0156	6.00		4.92	4.92	57.01
0.000435	0.0110	6.50		6.26	6.26	63.27
0.000308	0.00781	7.00		5.83	5.83	69.10
0.000197	0.00500	7.65		7.00	7.00	76.10
0.000077	0.00195	9.00		12.20	12.20	88.29
0.000038	0.000977	10.00		6.85	6.85	95.14
0.000019	0.000488	11.00		4.38	4.38	99.52
0.000015	0.000375	11.38		0.48	0.48	100.00
TOTALS				**100.00**	**100.00**	**100.00**

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	0.78	0.0230	0.584
10	1.86	0.0108	0.276
16	2.93	0.0052	0.131
25	3.75	0.0029	0.074
40	4.80	0.0014	0.036
50	5.50	0.0009	0.022
60	6.24	0.0005	0.013
75	7.54	0.0002	0.005
84	8.52	0.0001	0.003
90	9.25	0.0001	0.002
95	9.98	0.0000	0.001

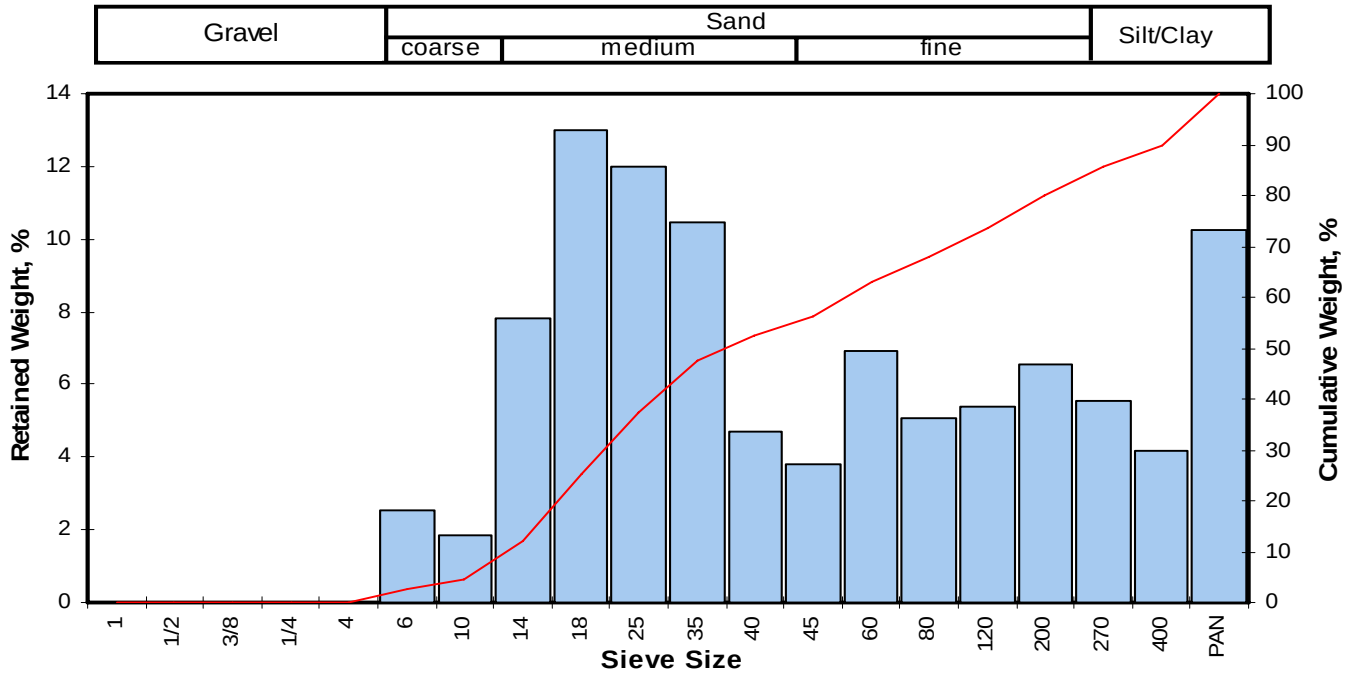
Measure	Trask	Inman	Folk-Ward
Median, phi	5.50	5.50	5.50
Median, in.	0.0009	0.0009	0.0009
Median, mm	0.022	0.022	0.022
Mean, phi	4.65	5.73	5.65
Mean, in.	0.0016	0.0007	0.0008
Mean, mm	0.040	0.019	0.020
Sorting	3.723	2.795	2.792
Skewness	0.900	0.083	0.029
Kurtosis	0.126	0.646	0.994
Grain Size Description (ASTM-USCS Scale)		Silt (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	7.70
Fine Sand	200	17.29
Silt	>0.005 mm	51.10
Clay	<0.005 mm	23.90
	Total	**100**

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D422M

Client:	CDM	**PTS File No:**	34256
Project:	N/A	**Sample ID:**	OC-SS-000-13-040604
Project No:	10500-37240-T2.0SS.Field	**Depth, ft:**	N/A



Opening Inches	Opening Millimeters	Phi of Screen	U.S. Sieve No.	Sample Weight grams	Incremental Weight, percent	Cumulative Weight, percent
0.9844	25.002	-4.64	1	0.00	0.00	0.00
0.4922	12.501	-3.64	1/2	0.00	0.00	0.00
0.3740	9.500	-3.25	3/8	0.00	0.00	0.00
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.26	2.54	2.54
0.0787	2.000	-1.00	10	0.19	1.85	4.39
0.0557	1.414	-0.50	14	0.80	7.80	12.20
0.0394	1.000	0.00	18	1.33	12.98	25.17
0.0278	0.707	0.50	25	1.23	12.00	37.17
0.0197	0.500	1.00	35	1.07	10.44	47.61
0.0166	0.420	1.25	40	0.48	4.68	52.29
0.0139	0.354	1.50	45	0.39	3.80	56.10
0.0098	0.250	2.00	60	0.71	6.93	63.02
0.0070	0.177	2.50	80	0.52	5.07	68.10
0.0049	0.125	3.00	120	0.55	5.37	73.46
0.0029	0.074	3.75	200	0.67	6.54	80.00
0.0021	0.053	4.25	270	0.57	5.56	85.56
0.0015	0.037	4.75	400	0.43	4.20	89.76
			PAN	1.05	10.24	100.00
TOTALS				10.25	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	-0.96	0.0766	1.947
10	-0.64	0.0614	1.559
16	-0.35	0.0503	1.278
25	-0.01	0.0396	1.005
40	0.64	0.0253	0.644
50	1.13	0.0180	0.458
60	1.78	0.0115	0.291
75	3.18	0.0044	0.111
84	4.11	0.0023	0.058
90	4.64	0.0016	0.040
95	2.32	0.0079	0.200

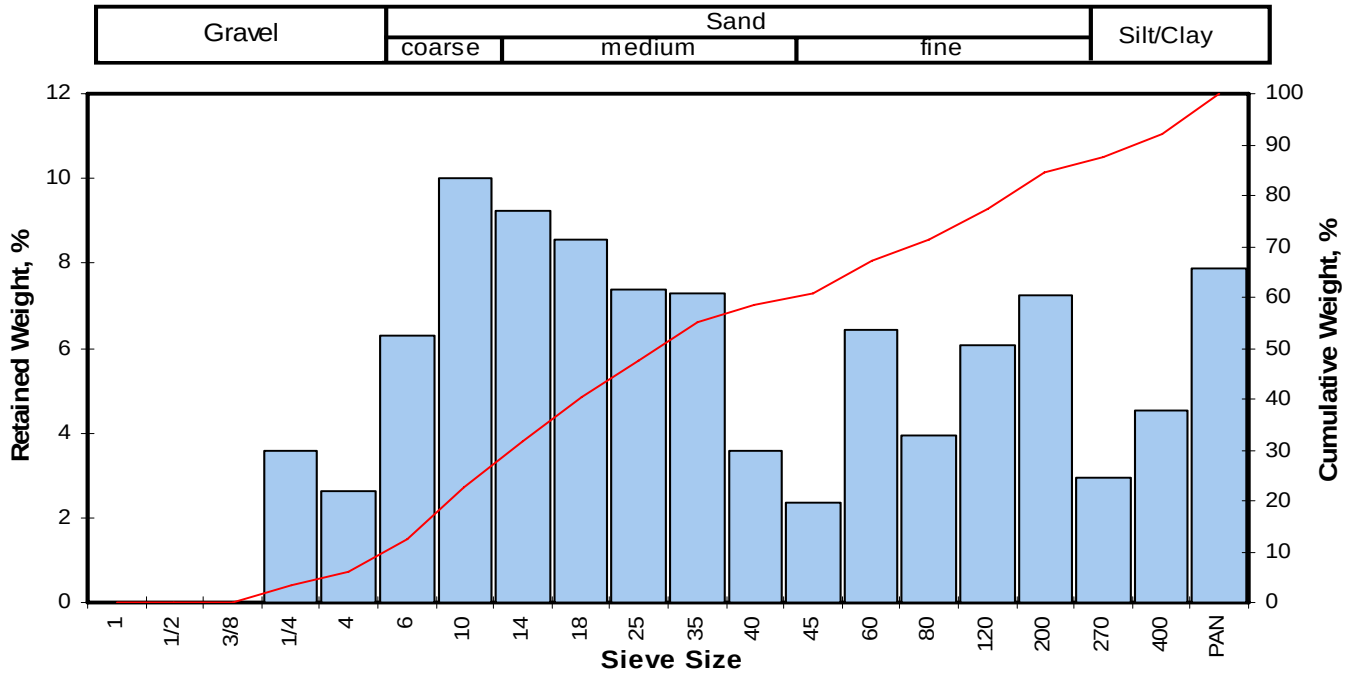
Measure	Trask	Inman	Folk-Ward
Median, phi	1.13	1.13	1.13
Median, in.	0.0180	0.0180	0.0180
Median, mm	0.458	0.458	0.458
Mean, phi	0.84	1.88	1.63
Mean, in.	0.0220	0.0107	0.0127
Mean, mm	0.558	0.272	0.324
Sorting	3.014	2.232	1.613
Skewness	0.728	0.336	0.031
Kurtosis	0.294	-0.265	0.422
Grain Size Description (ASTM-USCS Scale)		Medium sand (based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	4.39
Medium Sand	40	47.90
Fine Sand	200	27.71
Silt/Clay	<200	20.00
	Total	100

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D422M

Client:	CDM	**PTS File No:**	34256
Project:	N/A	**Sample ID:**	OC-SG-06-04-041204
Project No:	10500-37240-T2.0SS.Field	**Depth, ft:**	N/A



Opening Inches	Opening Millimeters	Phi of Screen	U.S. Sieve No.	Sample Weight grams	Incremental Weight, percent	Cumulative Weight, percent
0.9844	25.002	-4.64	1	0.00	0.00	0.00
0.4922	12.501	-3.64	1/2	0.00	0.00	0.00
0.3740	9.500	-3.25	3/8	0.00	0.00	0.00
0.2500	6.351	-2.67	1/4	0.70	3.58	3.58
0.1873	4.757	-2.25	4	0.51	2.61	6.19
0.1324	3.364	-1.75	6	1.23	6.29	12.47
0.0787	2.000	-1.00	10	1.96	10.02	22.49
0.0557	1.414	-0.50	14	1.81	9.25	31.75
0.0394	1.000	0.00	18	1.67	8.54	40.29
0.0278	0.707	0.50	25	1.44	7.36	47.65
0.0197	0.500	1.00	35	1.43	7.31	54.96
0.0166	0.420	1.25	40	0.70	3.58	58.54
0.0139	0.354	1.50	45	0.46	2.35	60.89
0.0098	0.250	2.00	60	1.26	6.44	67.33
0.0070	0.177	2.50	80	0.77	3.94	71.27
0.0049	0.125	3.00	120	1.19	6.08	77.35
0.0029	0.074	3.75	200	1.42	7.26	84.61
0.0021	0.053	4.25	270	0.58	2.97	87.58
0.0015	0.037	4.75	400	0.89	4.55	92.13
			PAN	1.54	7.87	100.00
TOTALS				19.56	100.00	100.00

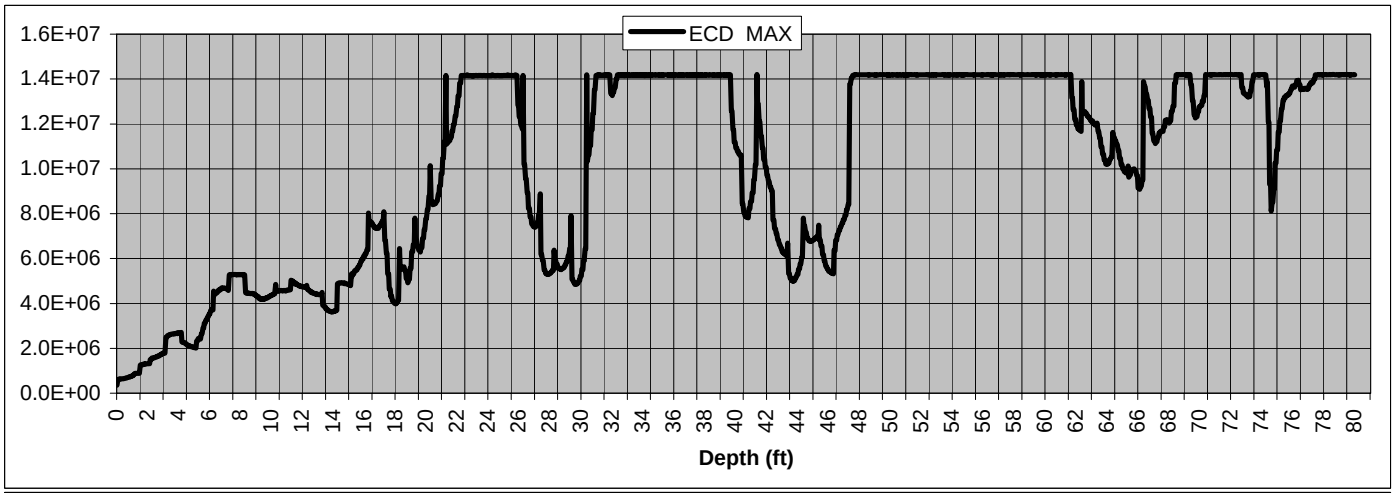
Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	-2.44	0.2136	5.425
10	-1.95	0.1518	3.855
16	-1.49	0.1103	2.801
25	-0.86	0.0717	1.821
40	-0.02	0.0398	1.012
50	0.66	0.0249	0.633
60	1.41	0.0149	0.378
75	2.81	0.0056	0.143
84	3.69	0.0031	0.078
90	4.52	0.0017	0.044
95	3.02	0.0049	0.124

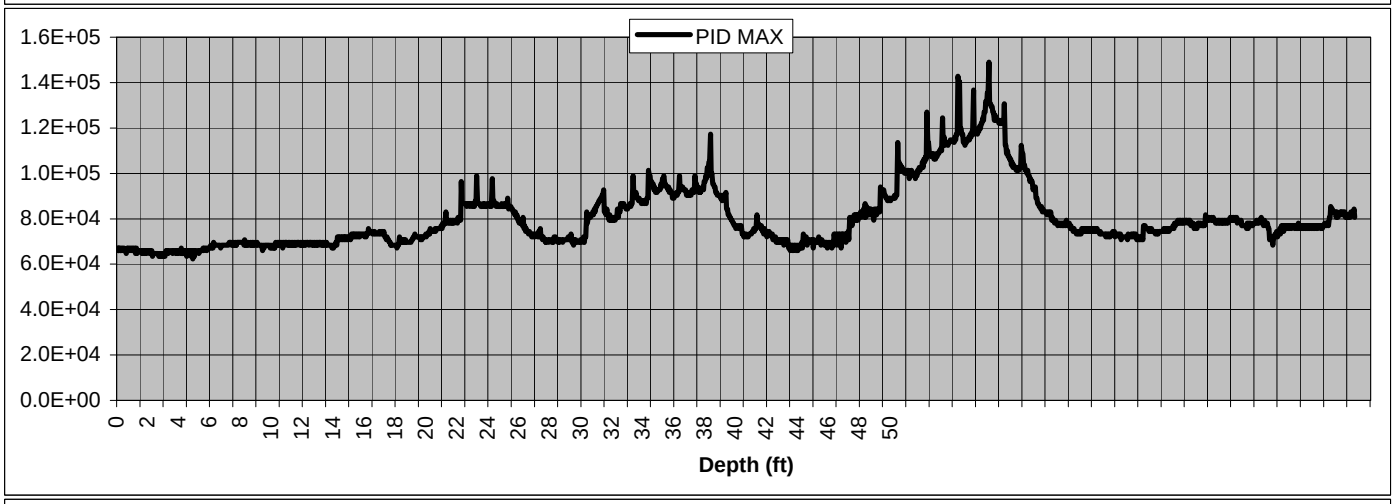
Measure	Trask	Inman	Folk-Ward
Median, phi	0.66	0.66	0.66
Median, in.	0.0249	0.0249	0.0249
Median, mm	0.633	0.633	0.633
Mean, phi	0.03	1.10	0.95
Mean, in.	0.0387	0.0184	0.0203
Mean, mm	0.982	0.466	0.516
Sorting	3.569	2.586	2.120
Skewness	0.807	0.170	0.017
Kurtosis	0.220	0.055	0.609
Grain Size Description (ASTM-USCS Scale)		Medium sand (based on Mean from Trask)	

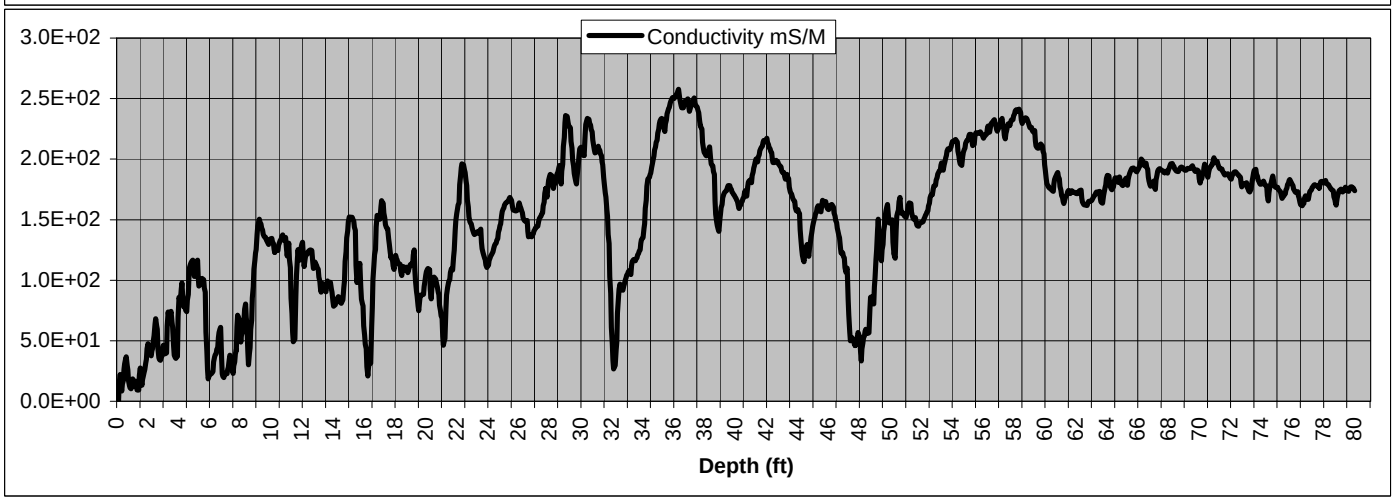
Description	Retained on Sieve #	Weight Percent
Gravel	4	6.19
Coarse Sand	10	16.31
Medium Sand	40	36.04
Fine Sand	200	26.07
Silt/Clay	<200	15.39
	Total	100

MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-1	Detector 1 :	Electron Capture (ECD)
Project:	0.00	Date:	Sep 26 2005	Detector 2 :	Photo Ionization (PID)
Job Number:	0.00	Time:	12:08	Detector 3 :	Electrical Conductance (EC)

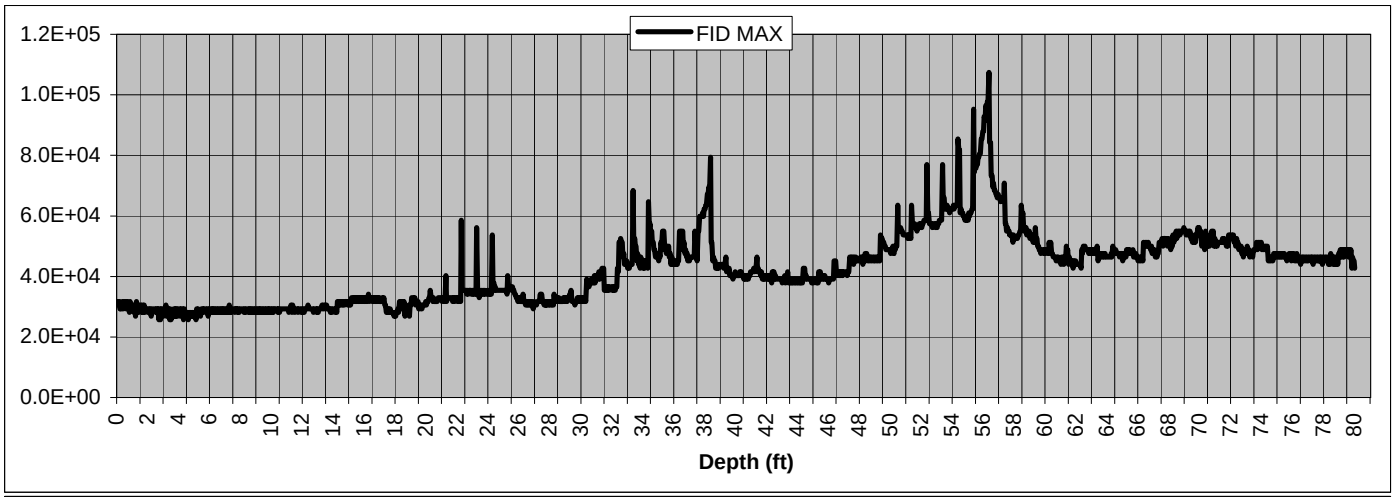


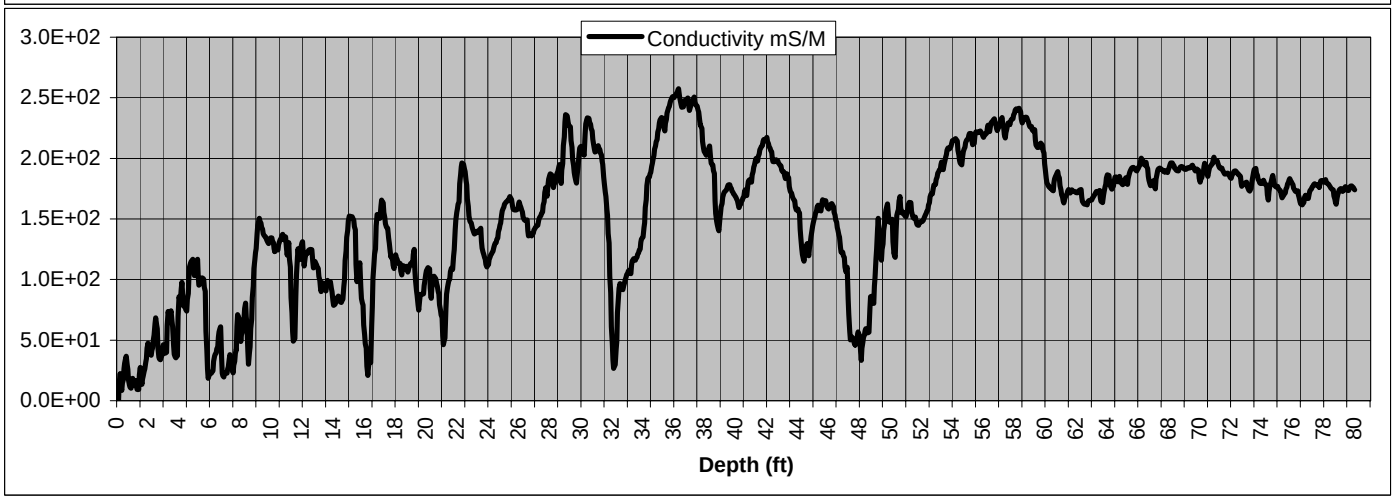




MIP Log Results by Boring - Detector Reading vs. Depth

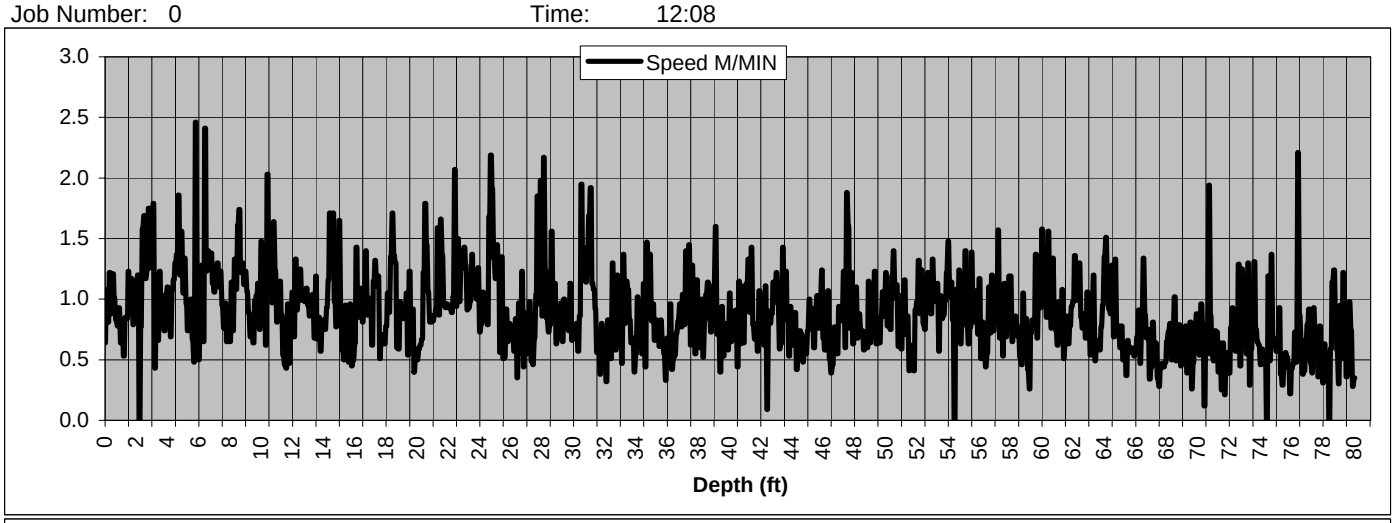
Client:	0	Boring I.D.:	MIP-1	Detector 1 :	Flame Ionization Det. (FID)
Project:	0	Date:	Sep 26 2005	Detector 2 :	Electrical Conductance (EC)
Job Number:	0	Time:	12:08		

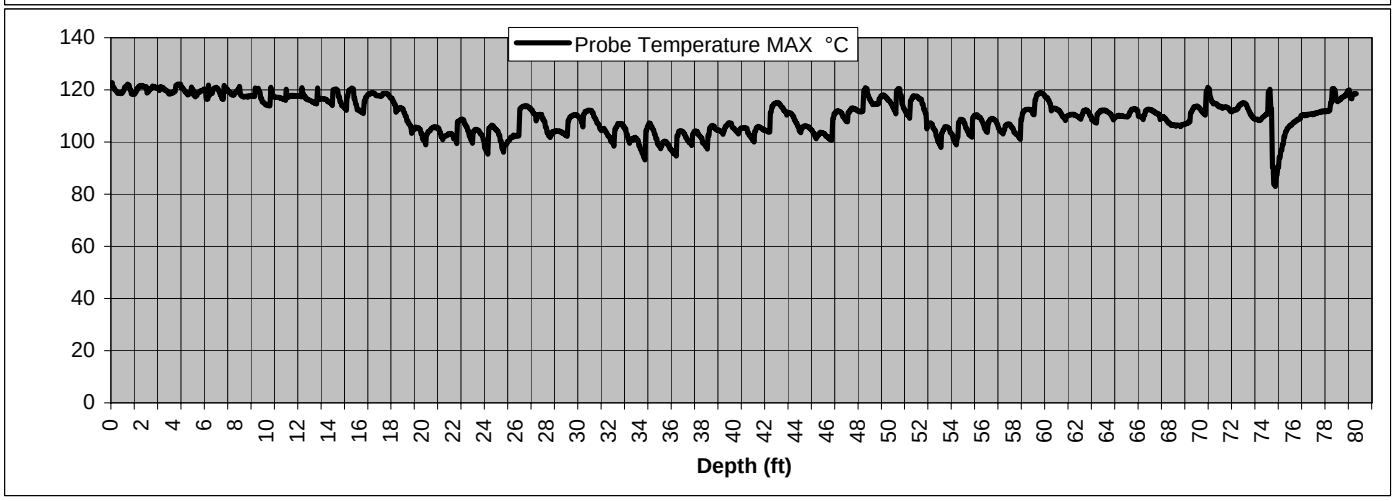




MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-1	Detector 1 :	Probe Speed
Project:	0	Date:	Sep 26 2005	Detector 2 :	Probe Temperature
Job Number:	0	Time:	12:08		

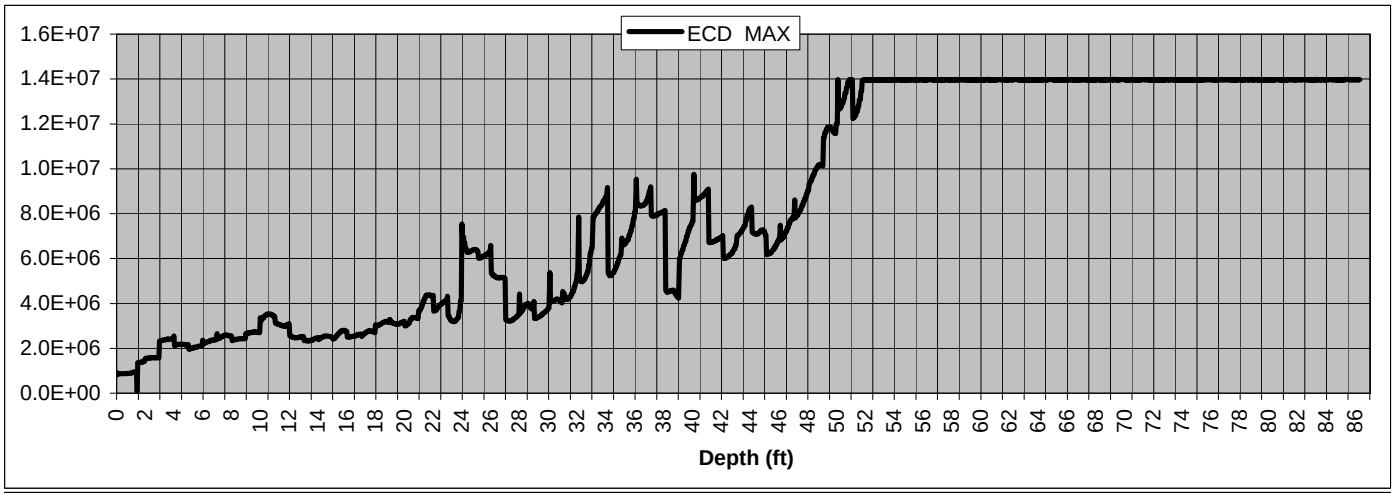


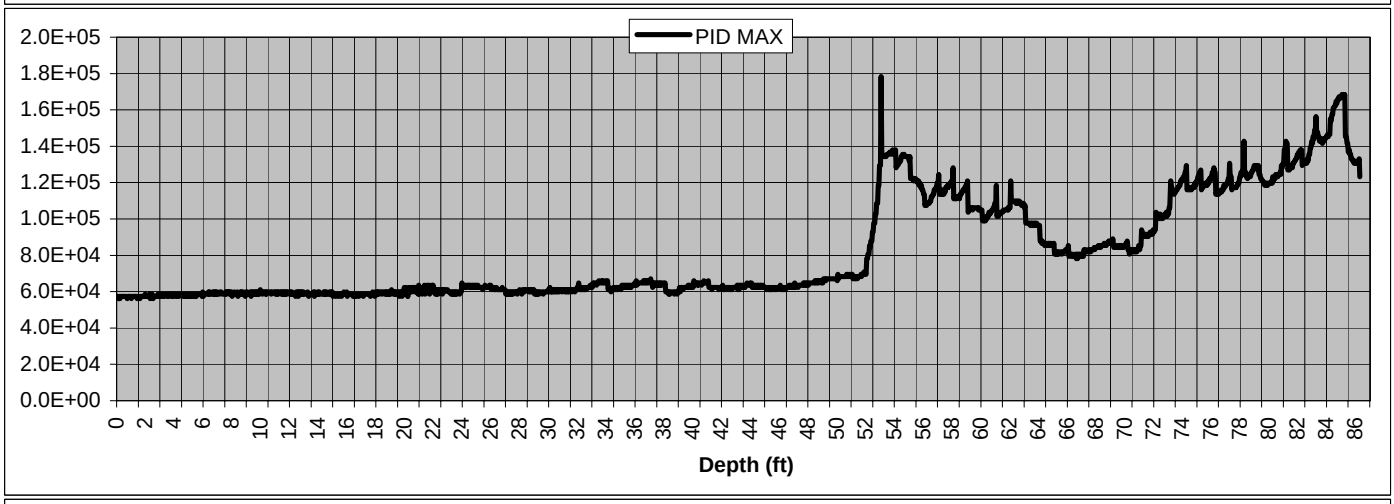


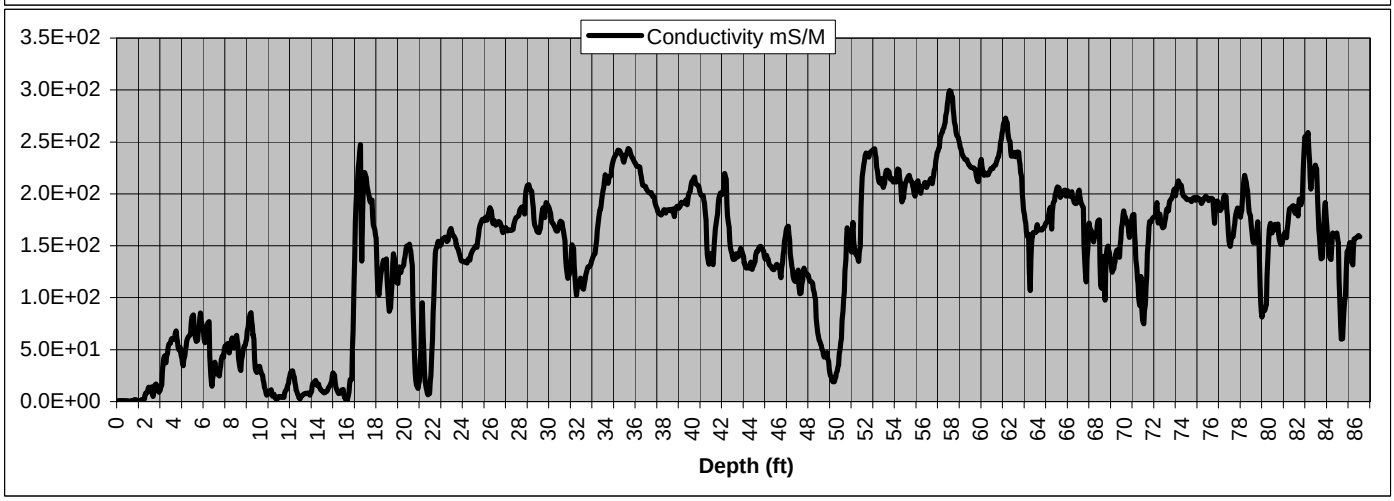
Explanation: Rod broken during removal. MIP probe lost.

MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-2	Detector 1 :	Electron Capture (ECD)
Project:	0.00	Date:	Sep 27 2005	Detector 2 :	Photo Ionization (PID)
Job Number:	0.00	Time:	14:35	Detector 3 :	Electrical Conductance (EC)

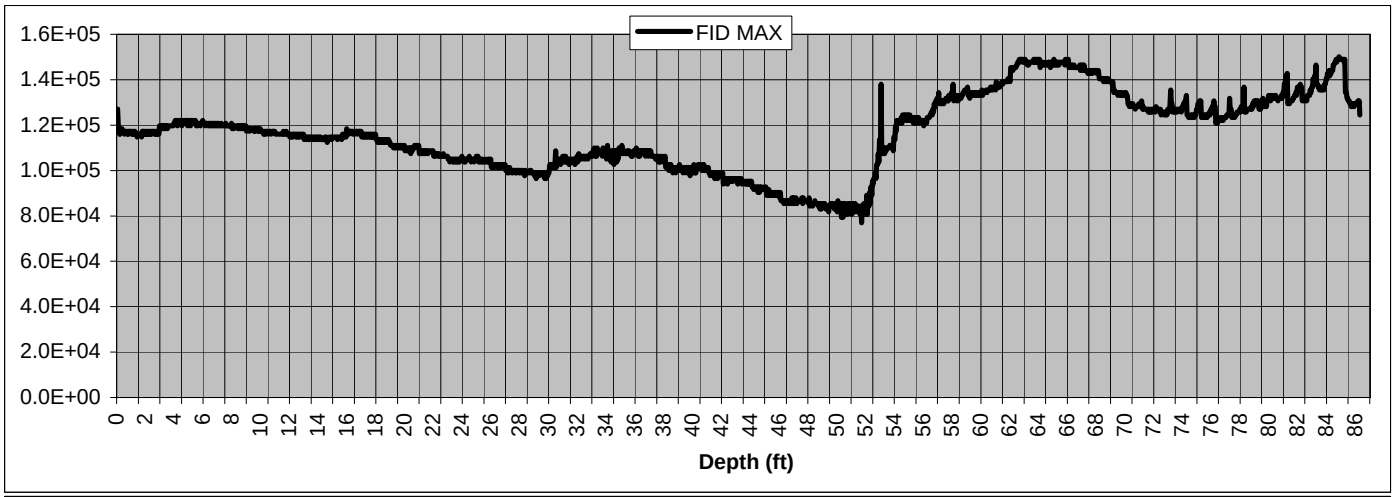


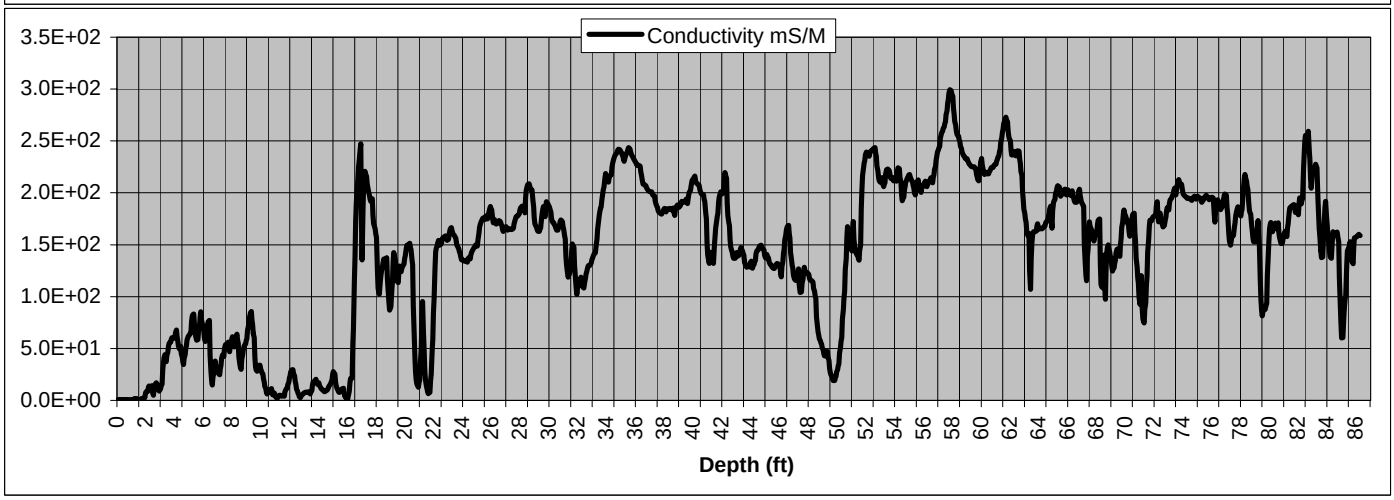




MIP Log Results by Boring - Detector Reading vs. Depth

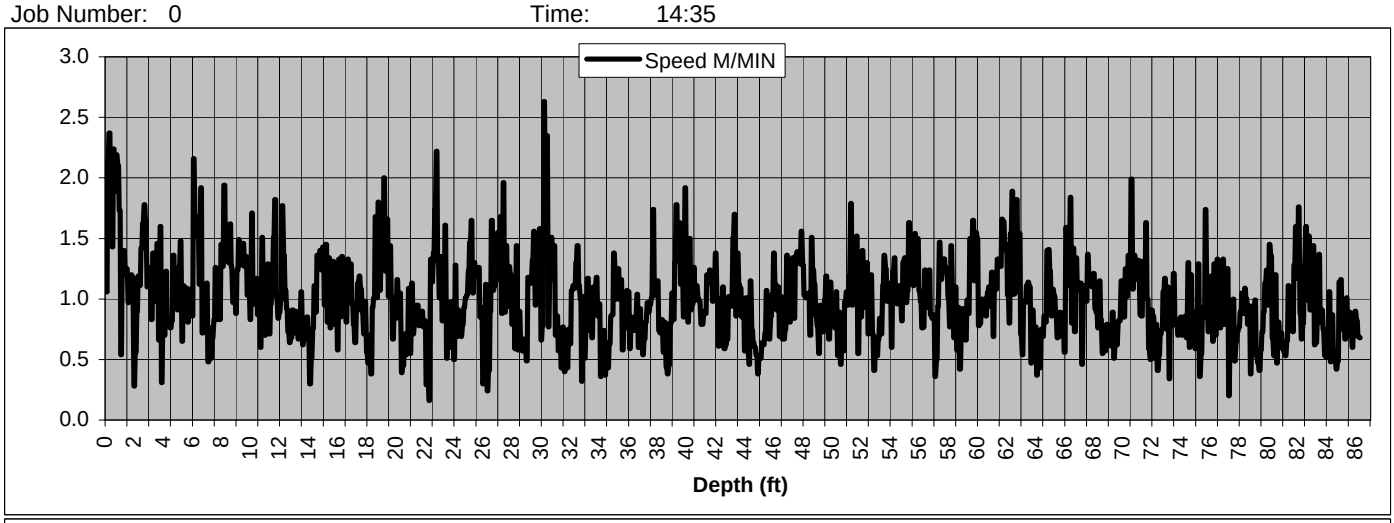
Client:	0	Boring I.D.:	MIP-2	Detector 1 :	Flame Ionization Det. (FID)
Project:	0	Date:	Sep 27 2005	Detector 2 :	Electrical Conductance (EC)
Job Number:	0	Time:	14:35		

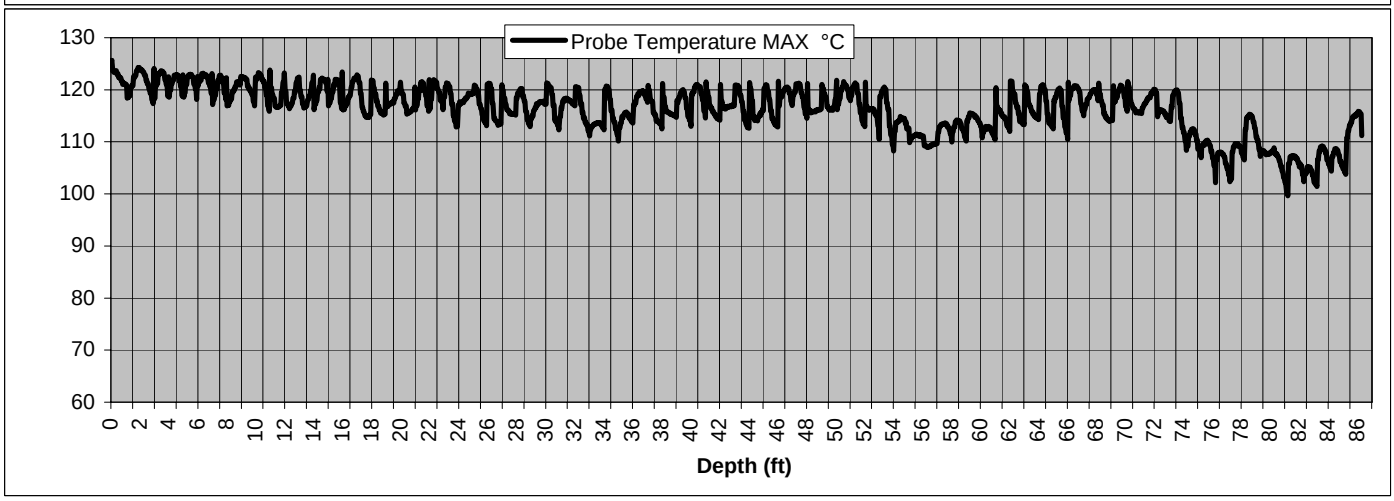




MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-2	Detector 1 :	Probe Speed
Project:	0	Date:	Sep 27 2005	Detector 2 :	Probe Temperature
Job Number:	0	Time:	14:35		

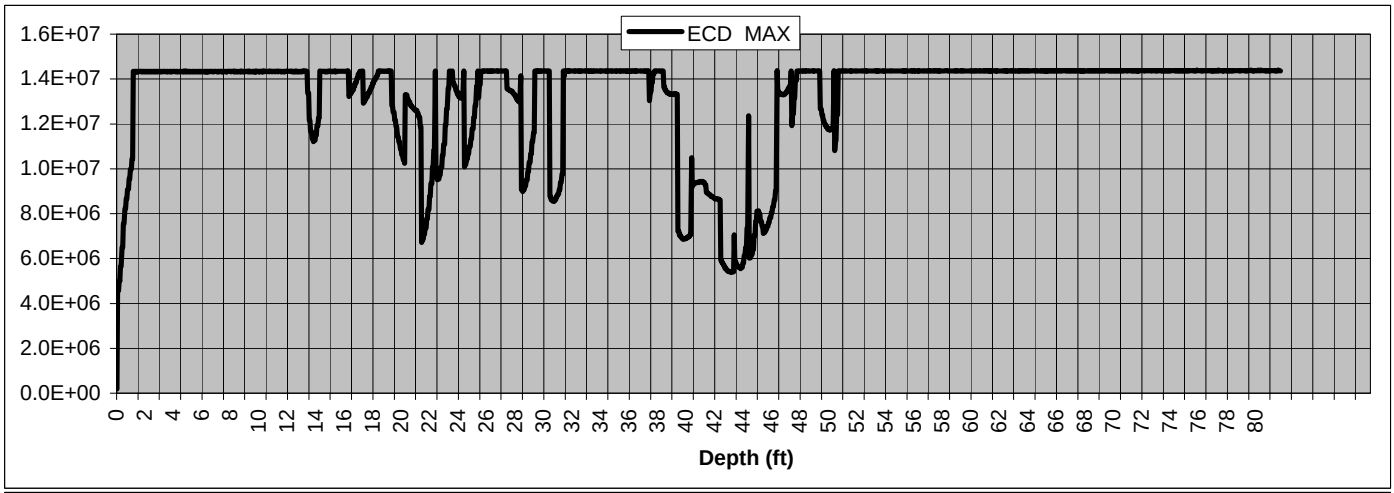


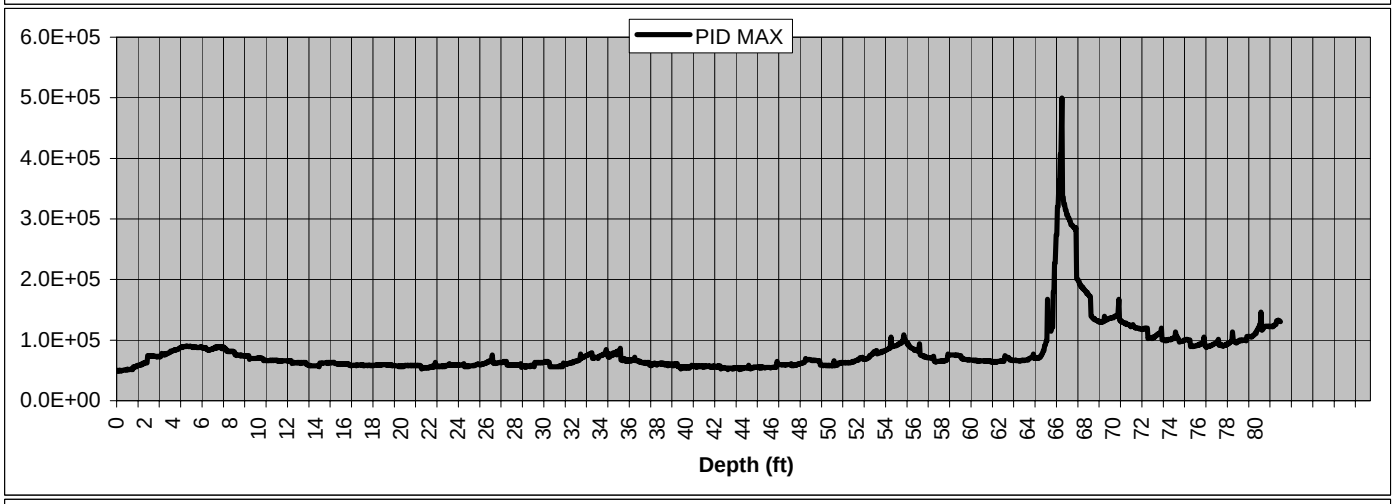


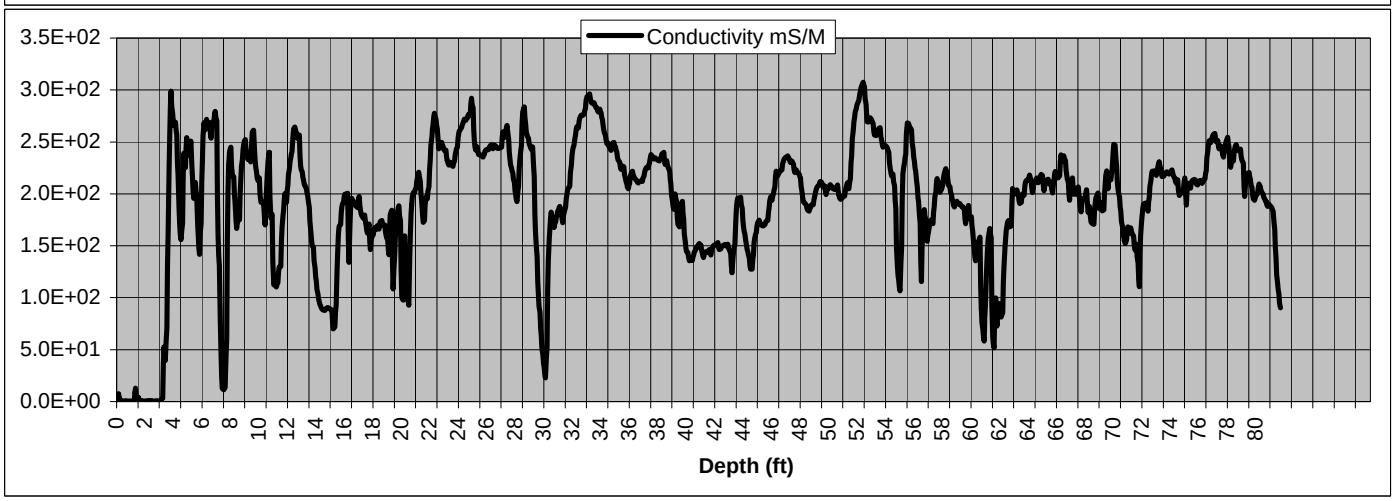
Explanation:

MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-3	Detector 1 :	Electron Capture (ECD)
Project:	0.00	Date:	Sep 29 2005	Detector 2 :	Photo Ionization (PID)
Job Number:	0.00	Time:	09:22	Detector 3 :	Electrical Conductance (EC)

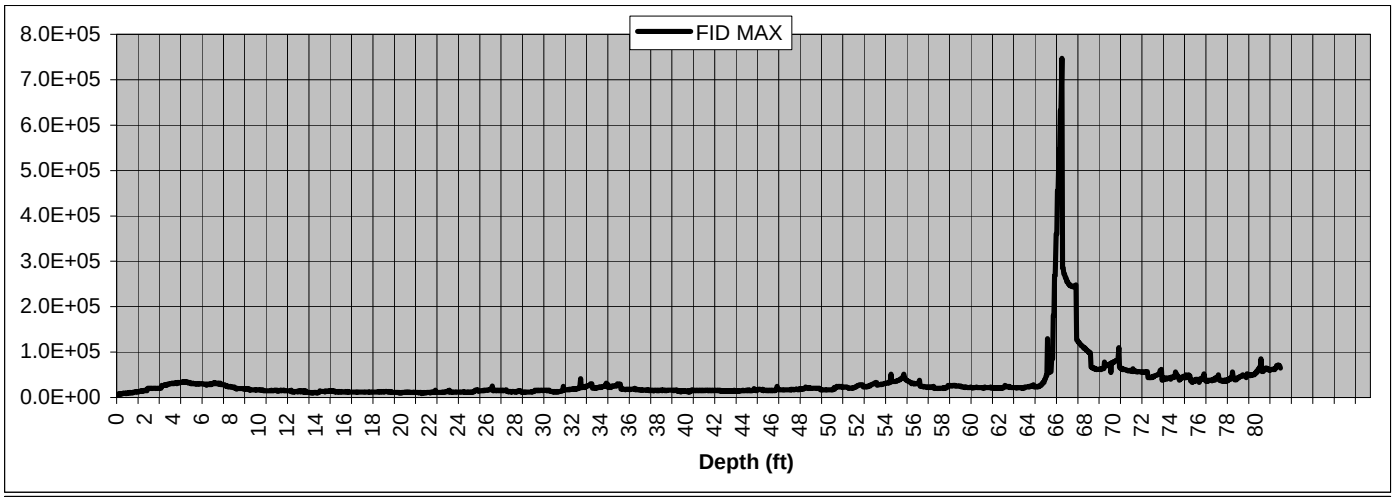


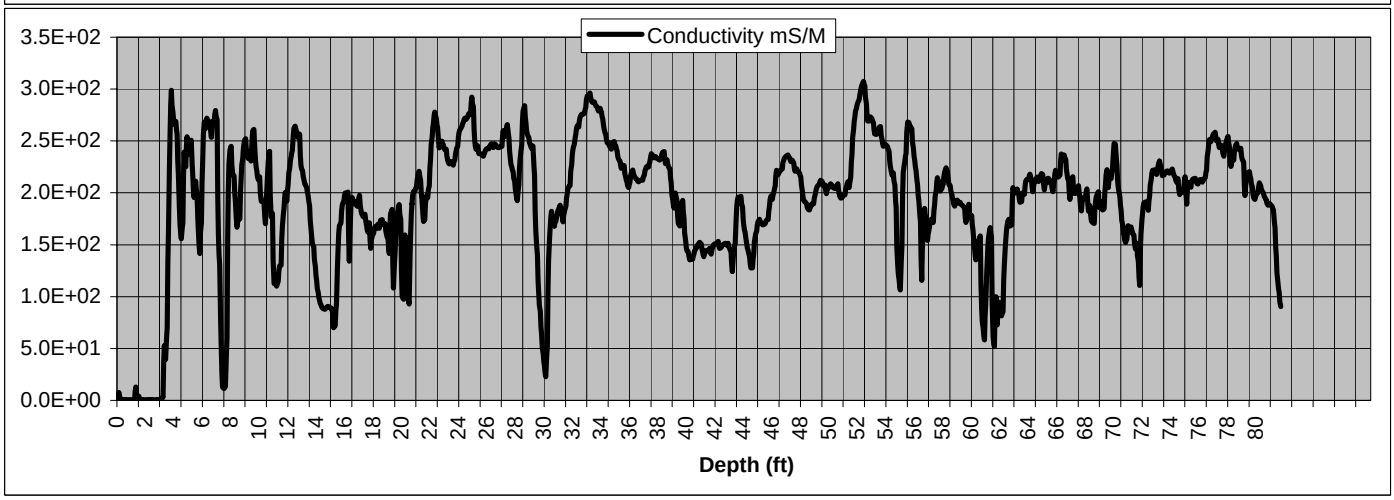




MIP Log Results by Boring - Detector Reading vs. Depth

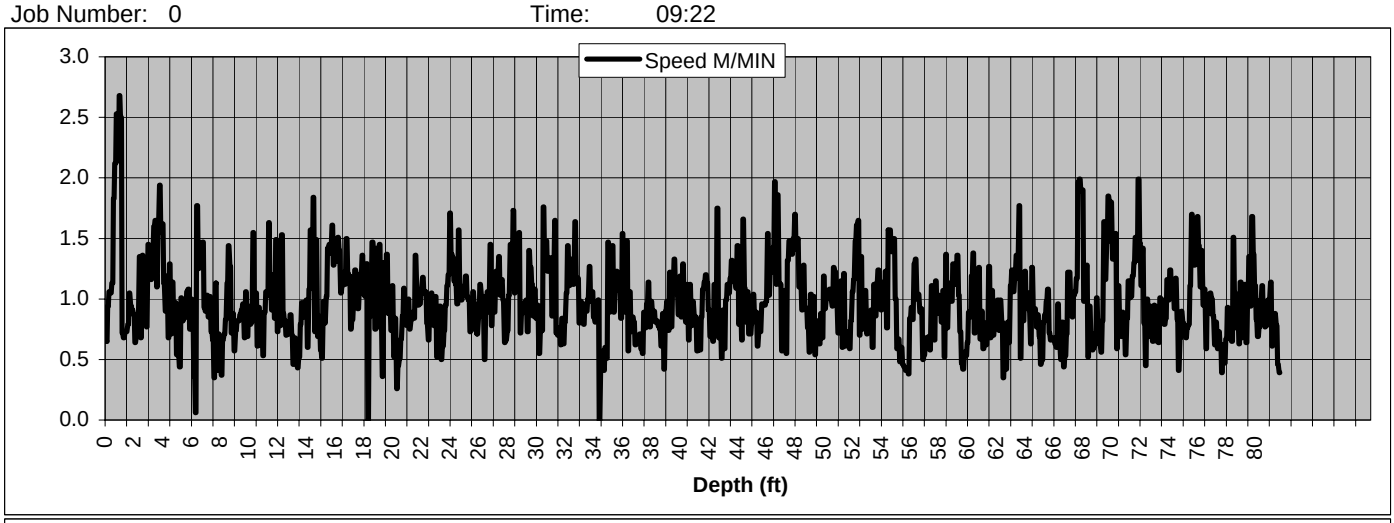
Client:	0	Boring I.D.:	MIP-3	Detector 1 :	Flame Ionization Det. (FID)
Project:	0	Date:	Sep 29 2005	Detector 2 :	Electrical Conductance (EC)
Job Number:	0	Time:	09:22		

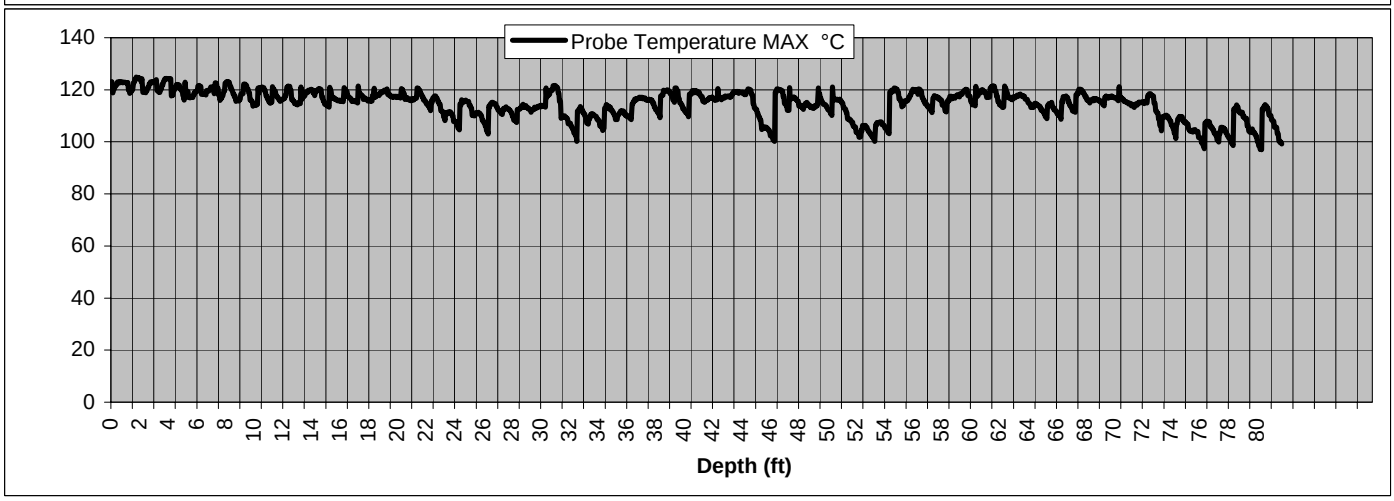




MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-3	Detector 1 :	Probe Speed
Project:	0	Date:	Sep 29 2005	Detector 2 :	Probe Temperature
Job Number:	0	Time:	09:22		

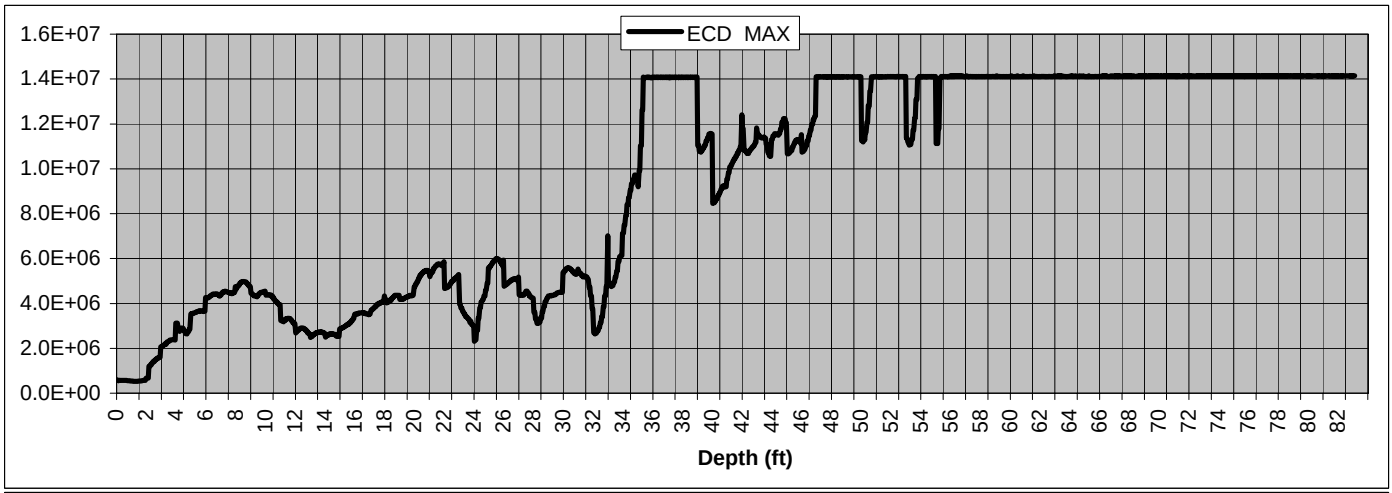


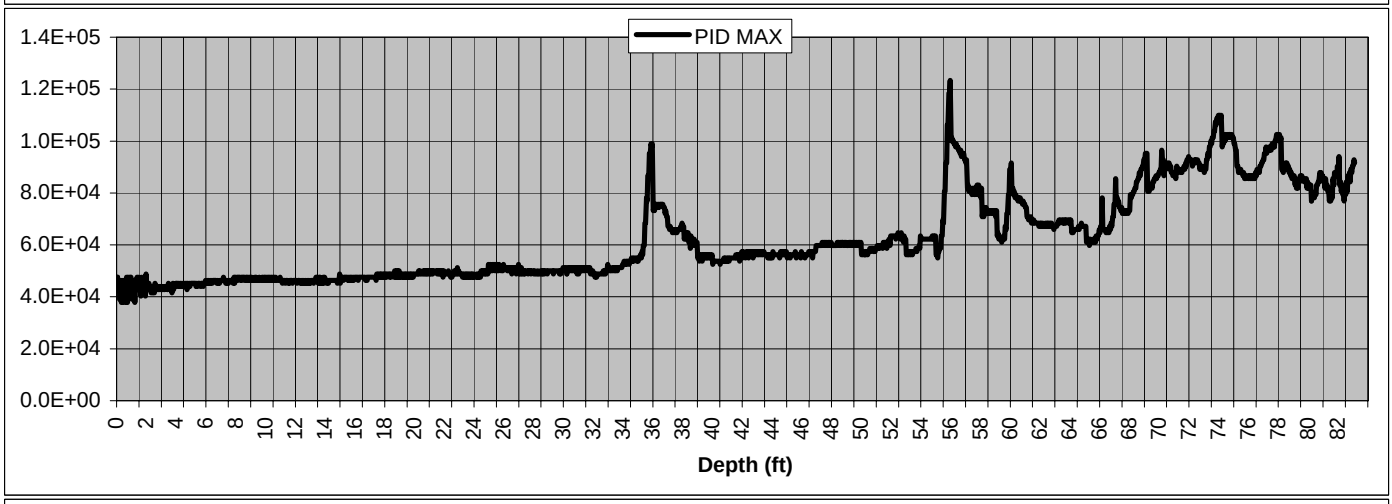


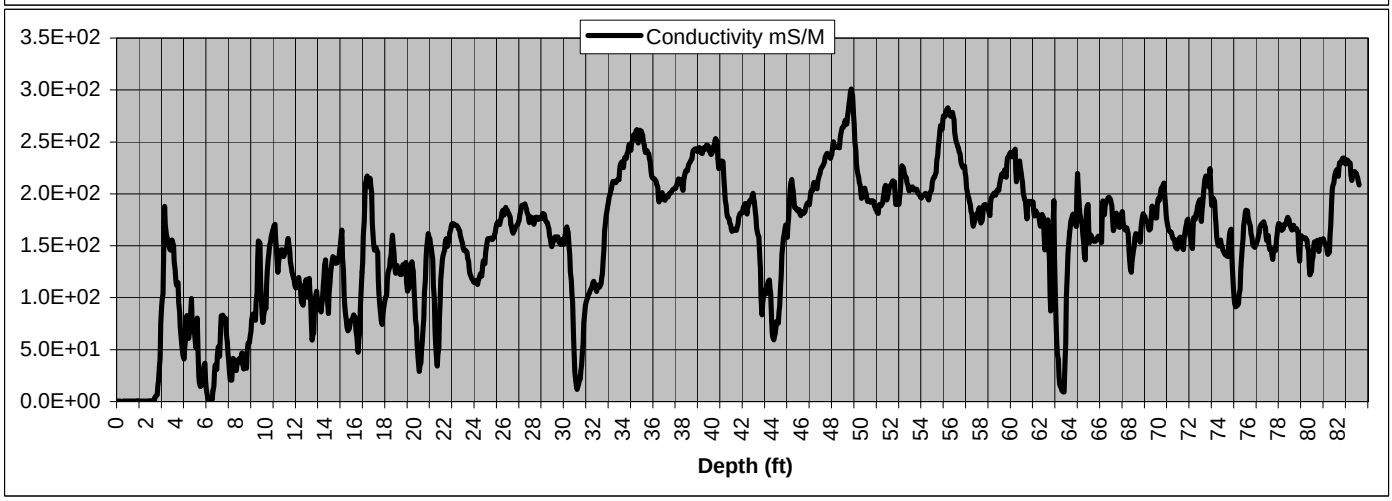
Explanation:

MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-4	Detector 1 :	Electron Capture (ECD)
Project:	0	Date:	Sep 30 2005	Detector 2 :	Photo Ionization (PID)
Job Number:	0.00	Time:	06:32	Detector 3 :	Electrical Conductance (EC)

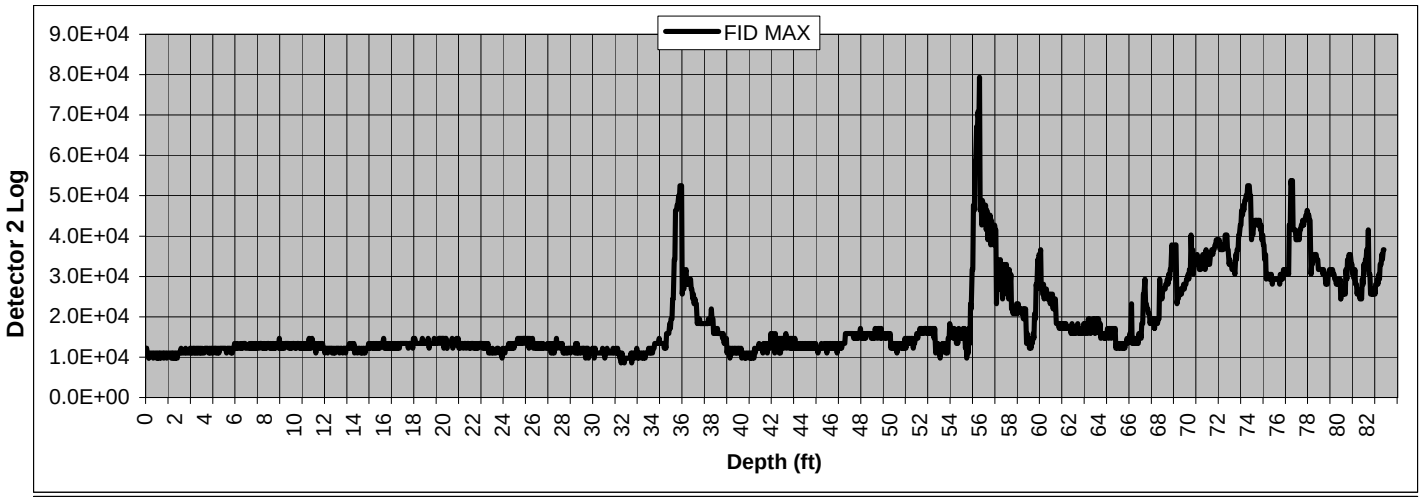


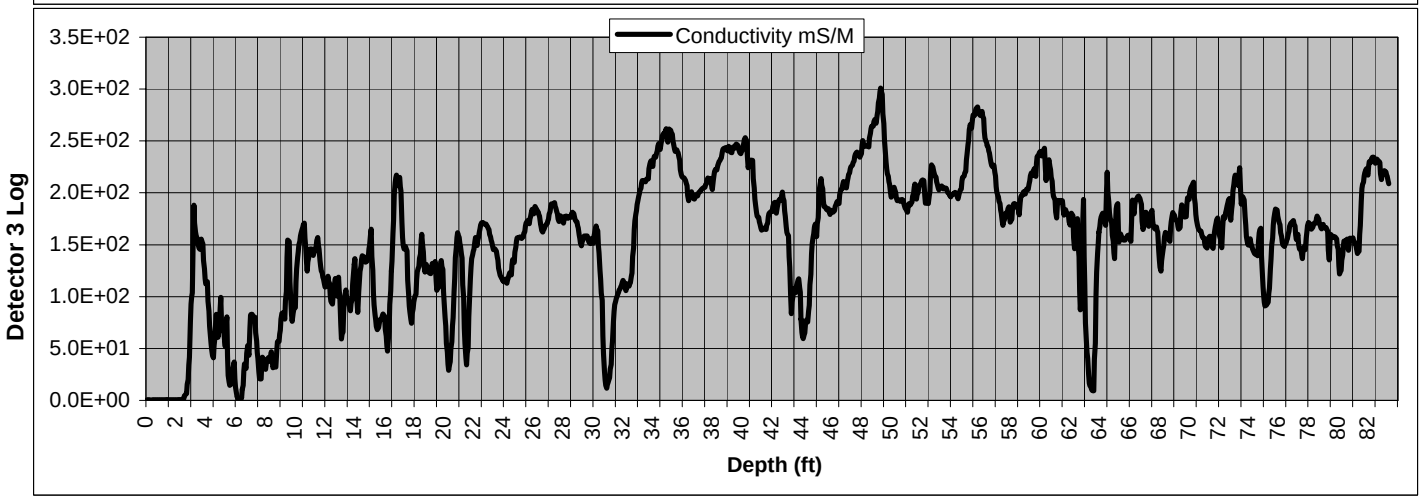




MIP Log Results by Boring - Detector Reading vs. Depth

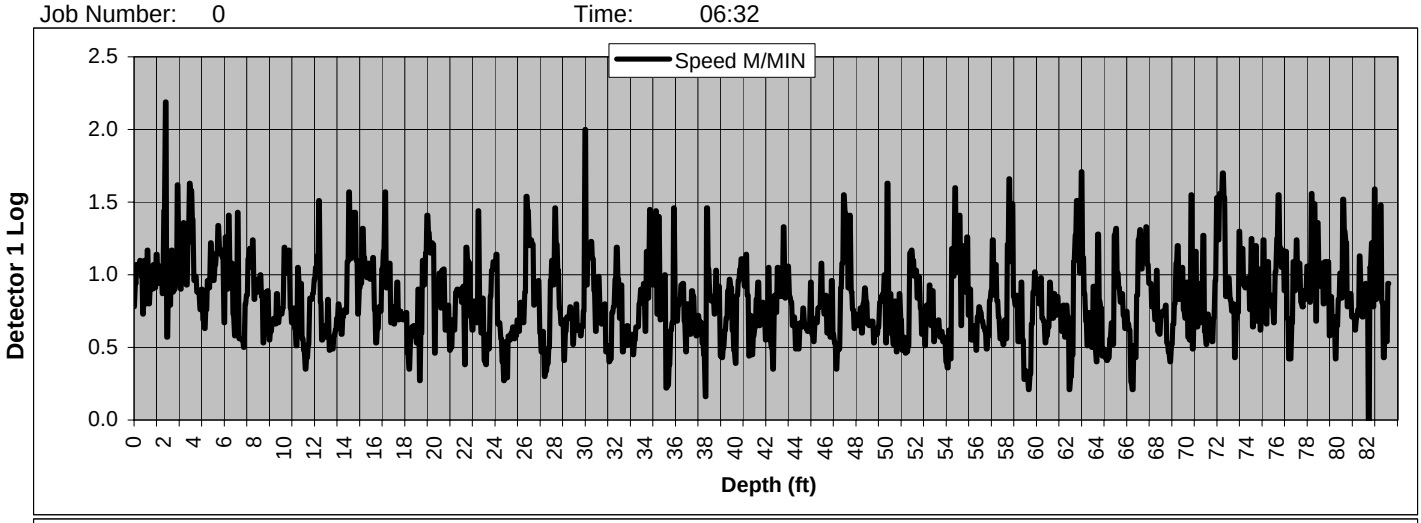
Client:	0	Boring I.D.:	MIP-4	Detector 1 :	Flame Ionization Det. (FID)
Project:	0	Date:	Sep 30 2005	Detector 2 :	Electrical Conductance (EC)
Job Number:	0	Time:	06:32		

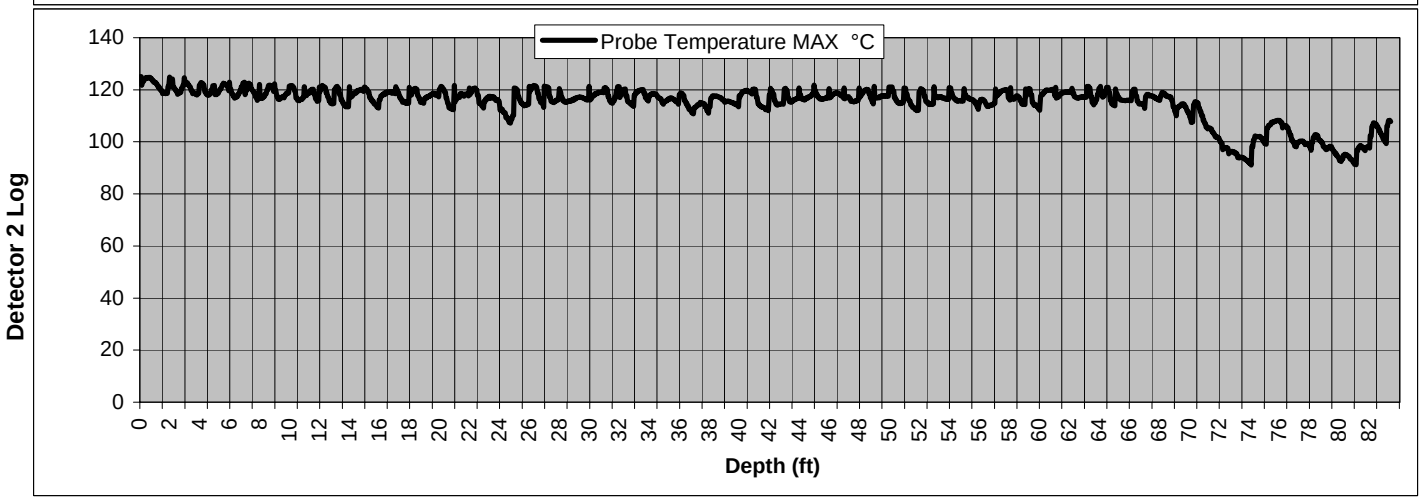




MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-4	Detector 1 :	Probe Speed
Project:	0	Date:	Sep 30 2005	Detector 2 :	Probe Temperature
Job Number:	0	Time:	06:32		

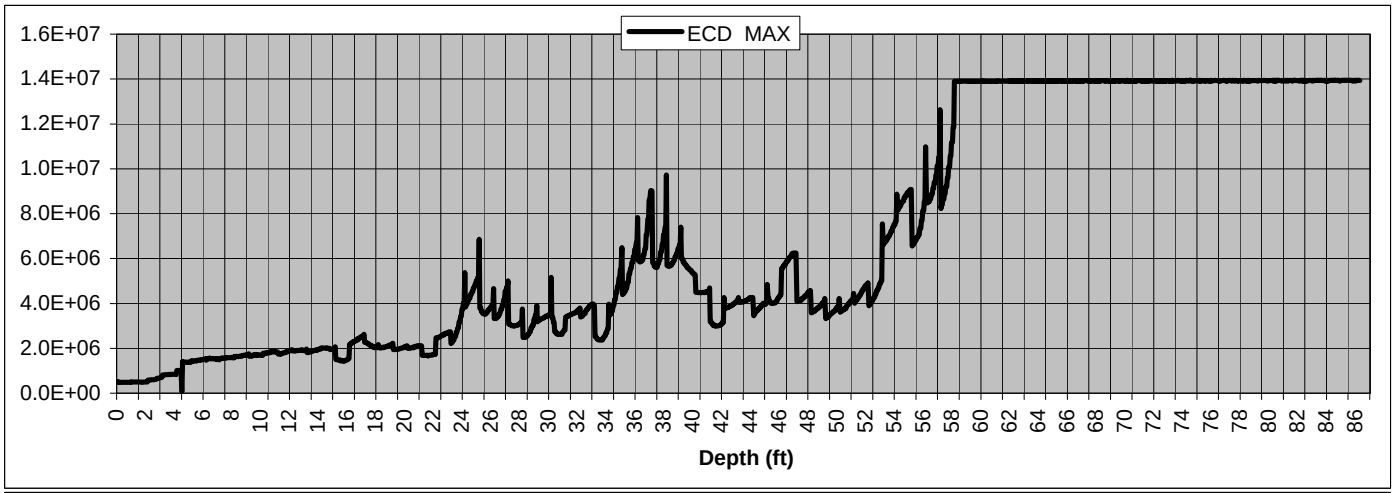


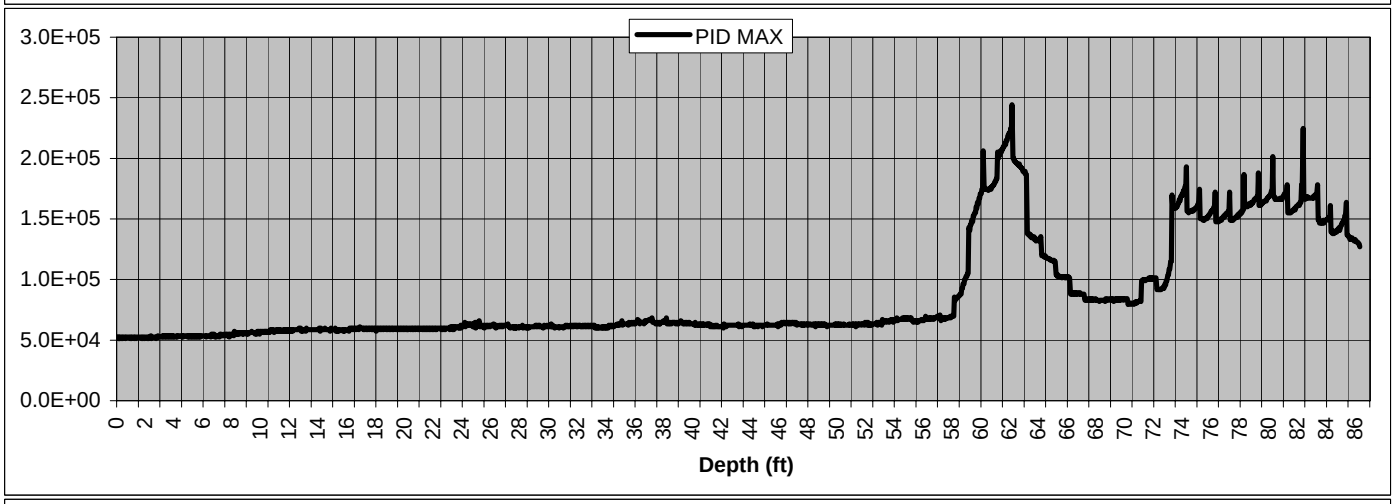


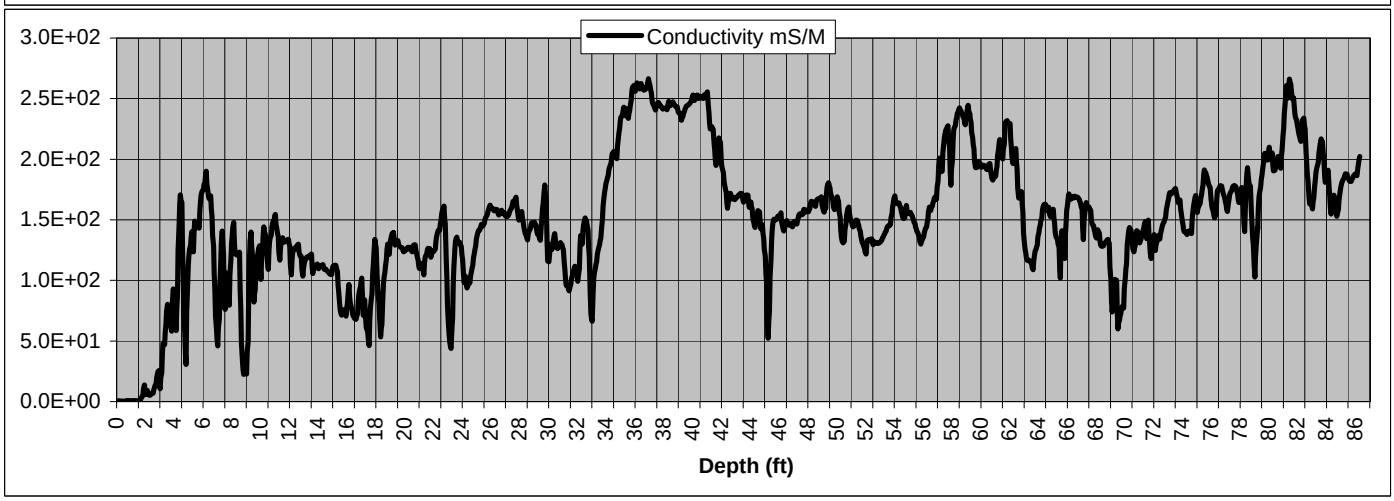
Explanation:

MIP Log Results by Boring - Detector Reading vs. Depth

Client:	CDM	Boring I.D.:	MIP-5	Detector 1 :	Electron Capture (ECD)
Project:	0.00	Date:	Sep 27 2005	Detector 2 :	Photo Ionization (PID)
Job Number:	0.00	Time:	11:13	Detector 3 :	Electrical Conductance (EC)

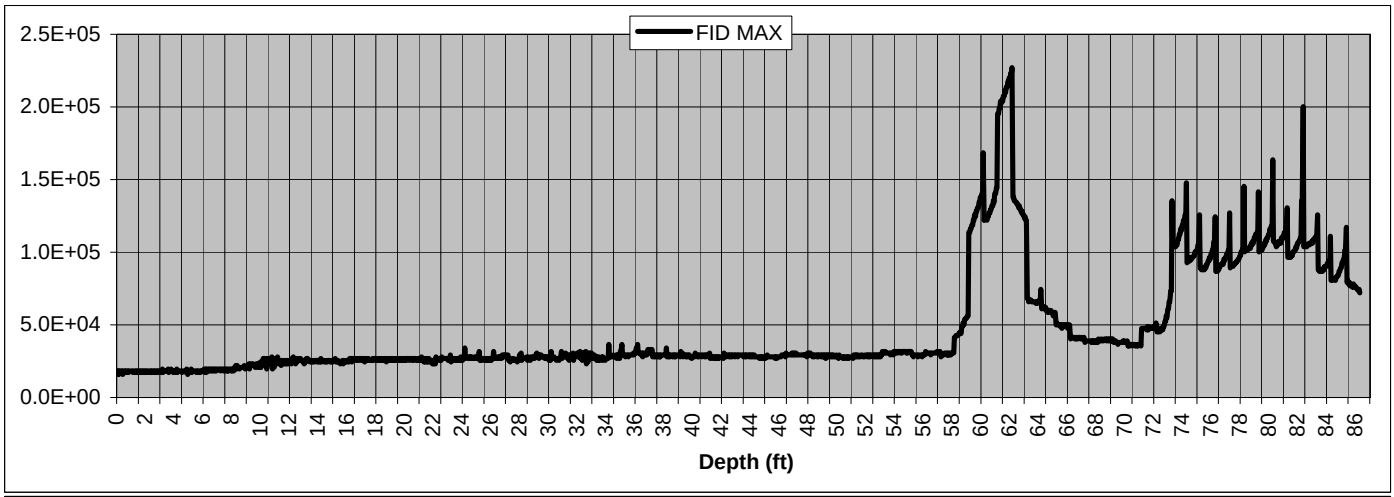


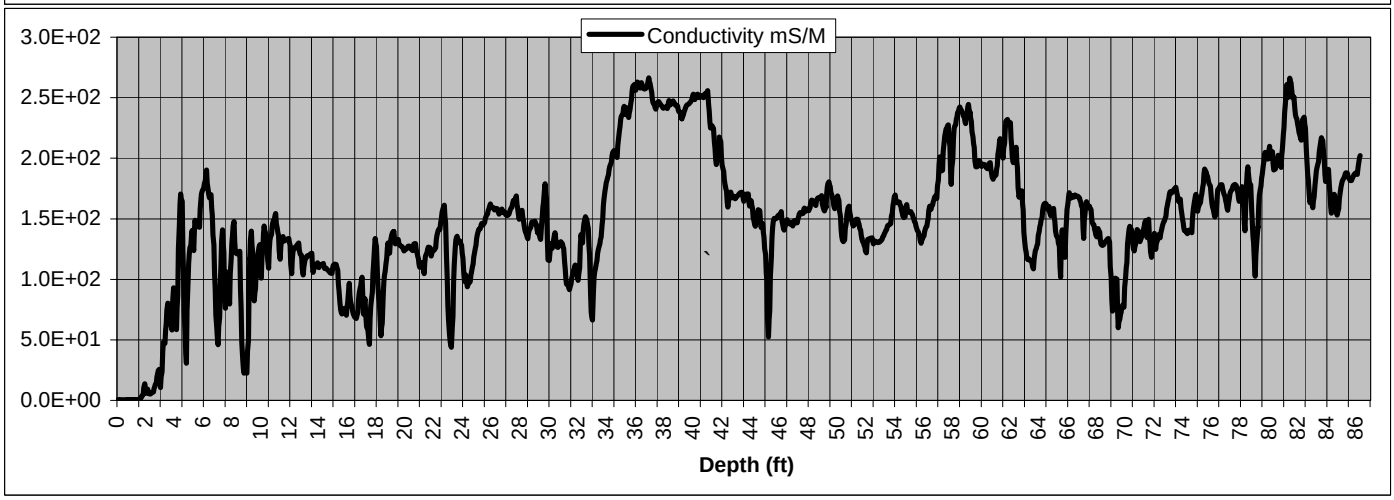




MIP Log Results by Boring - Detector Reading vs. Depth

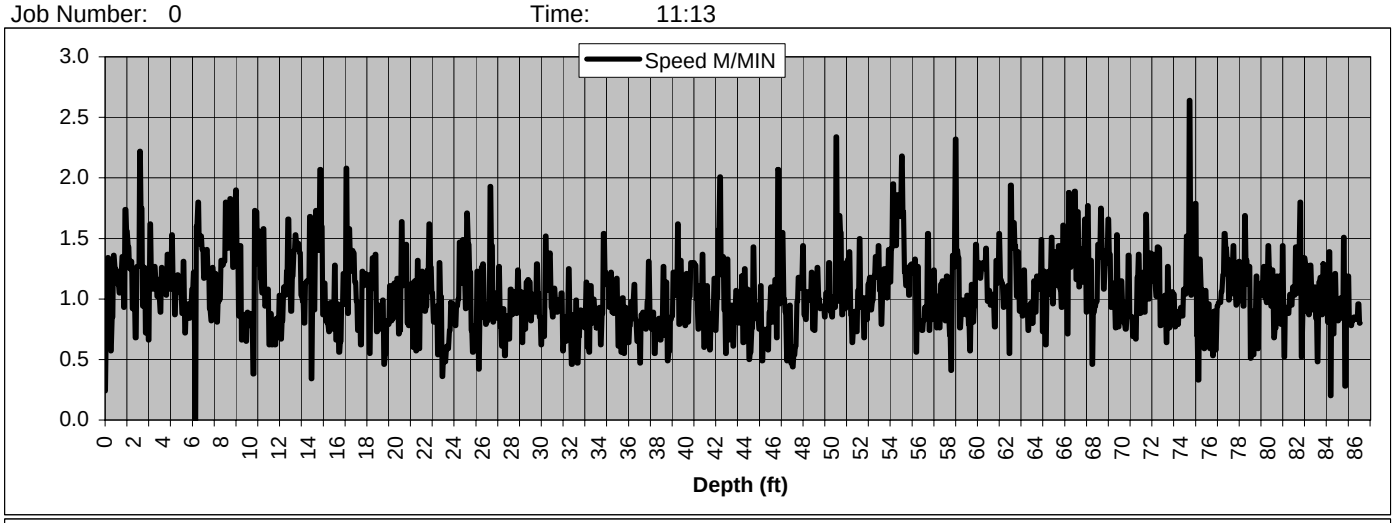
Client:	CDM	Boring I.D.:	MIP-5	Detector 1 :	Flame Ionization Det. (FID)
Project:	0	Date:	Sep 27 2005	Detector 2 :	Electrical Conductance (EC)
Job Number:	0	Time:	11:13		

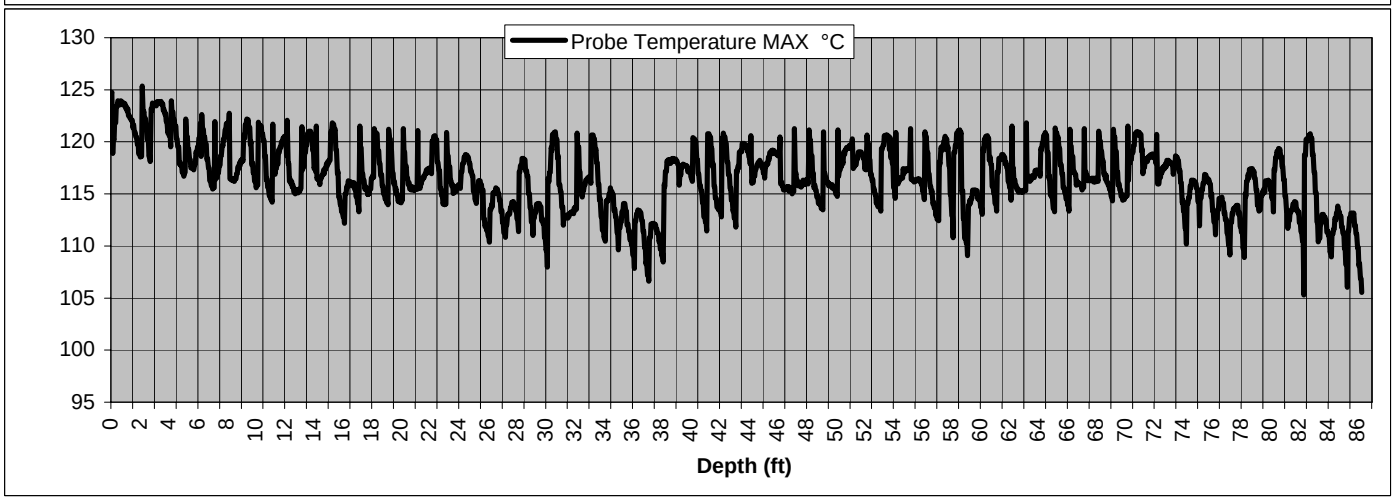




MIP Log Results by Boring - Detector Reading vs. Depth

Client:	CDM	Boring I.D.:	MIP-5	Detector 1 :	Probe Speed
Project:	0	Date:	Sep 27 2005	Detector 2 :	Probe Temperature
Job Number:	0	Time:	11:13		

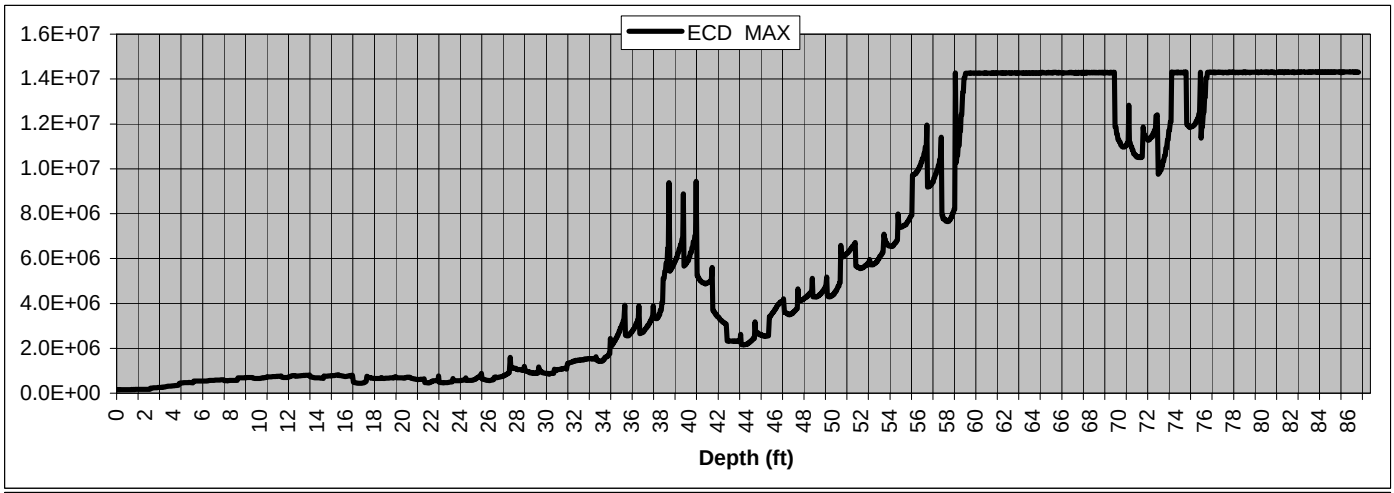


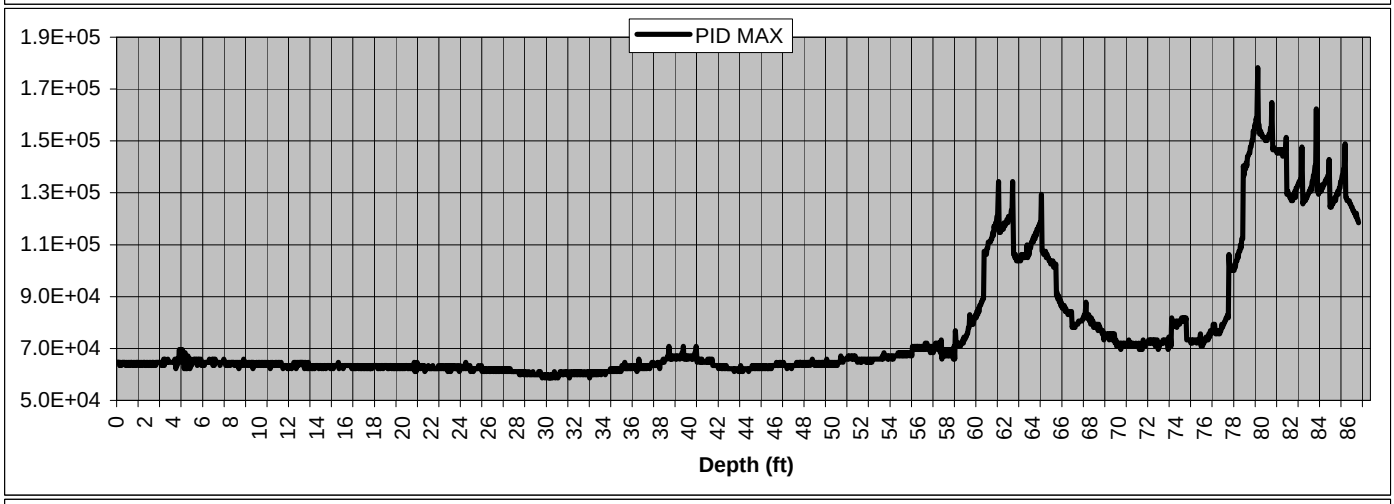


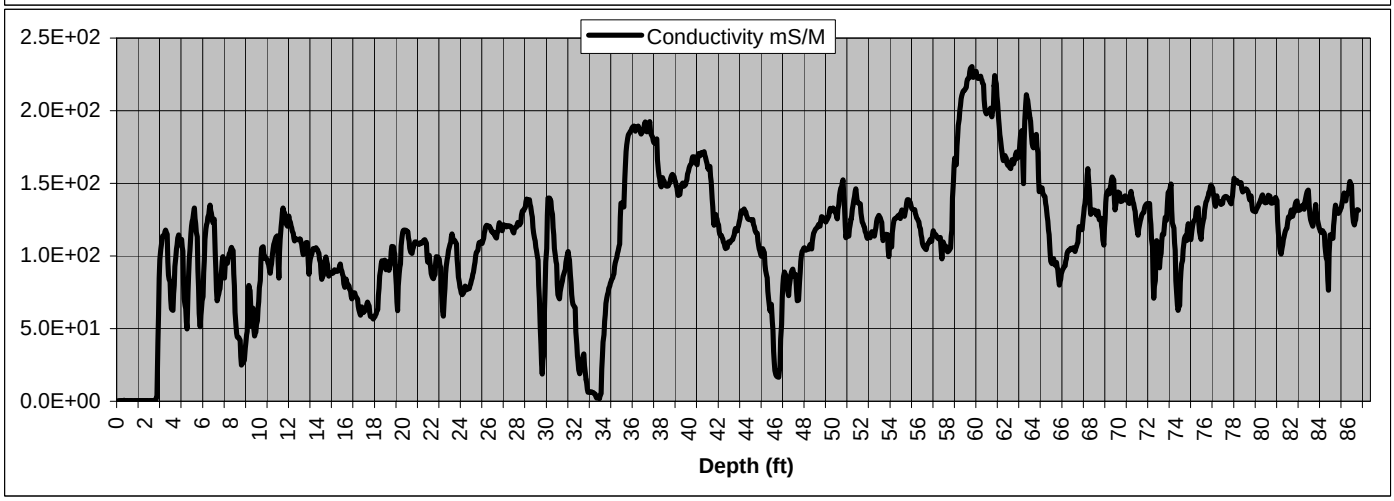
Explanation:

MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	0	Detector 1 :	Electron Capture (ECD)
Project:	0.00	Date:	Sep 27 2005	Detector 2 :	Photo Ionization (PID)
Job Number:	0.00	Time:	08:00	Detector 3 :	Electrical Conductance (EC)

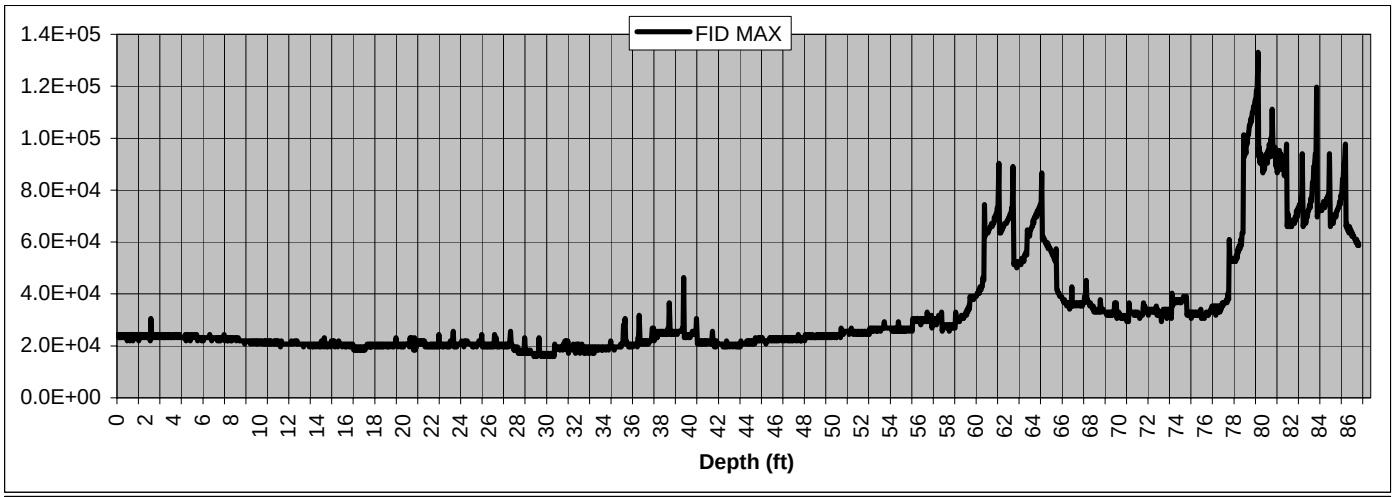


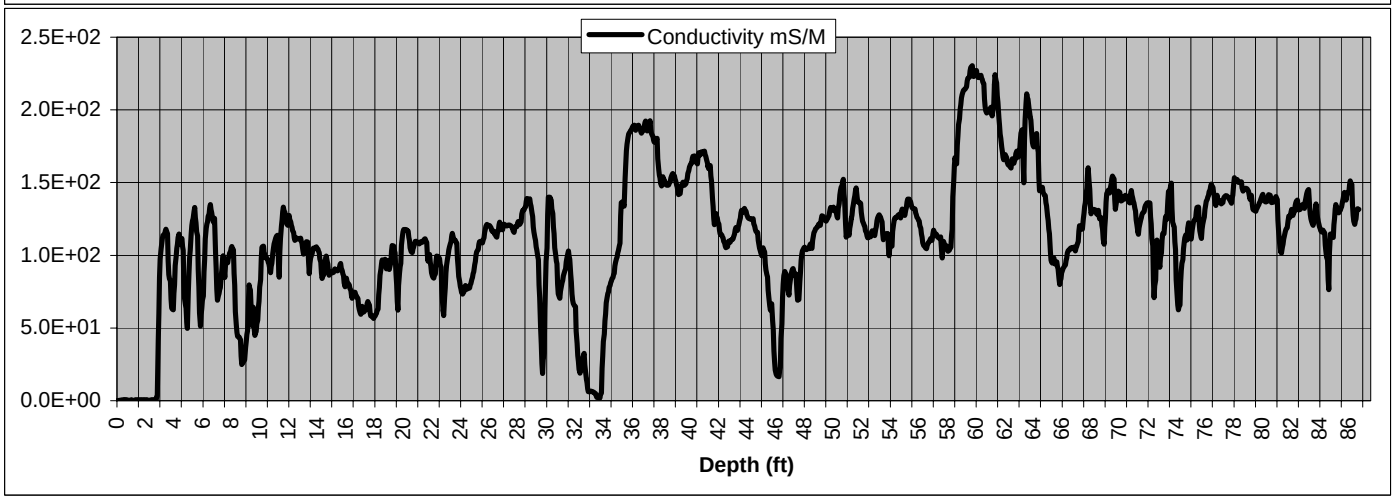




MIP Log Results by Boring - Detector Reading vs. Depth

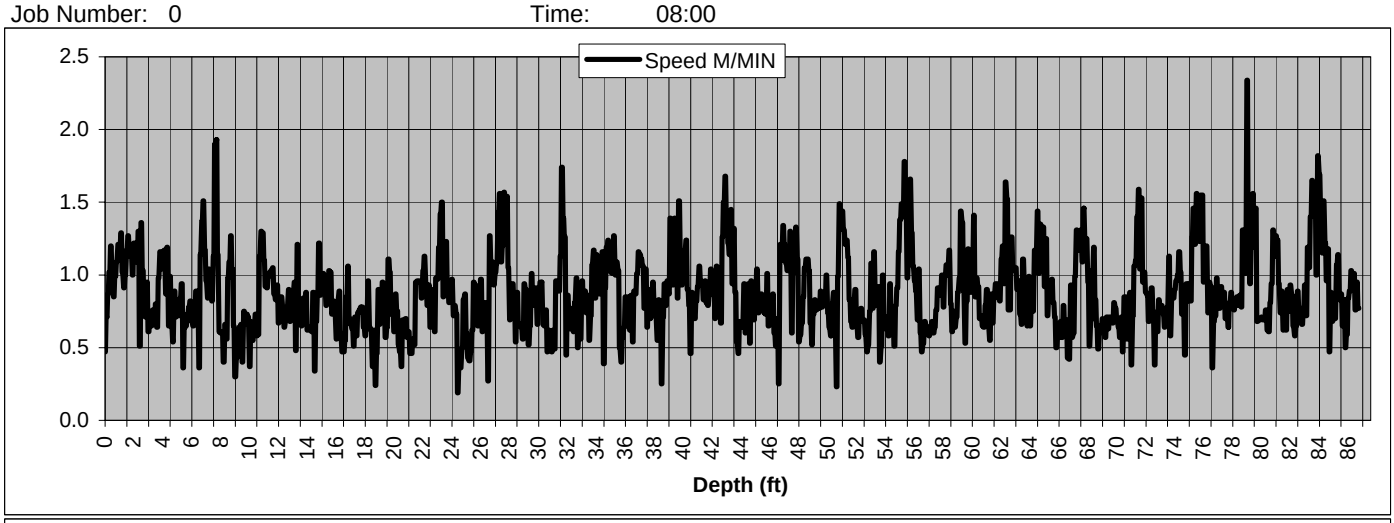
Client:	0	Boring I.D.:	0	Detector 1 :	Flame Ionization Det. (FID)
Project:	0	Date:	Sep 27 2005	Detector 2 :	Electrical Conductance (EC)
Job Number:	0	Time:	08:00		

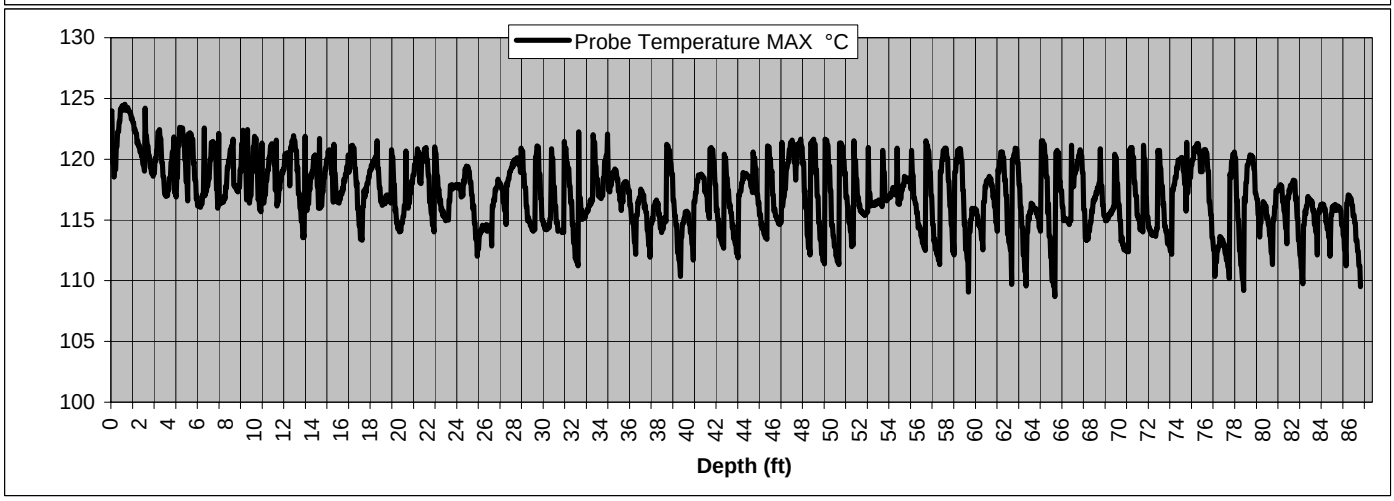




MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	0	Detector 1 :	Probe Speed
Project:	0	Date:	Sep 27 2005	Detector 2 :	Probe Temperature
Job Number:	0	Time:	08:00		

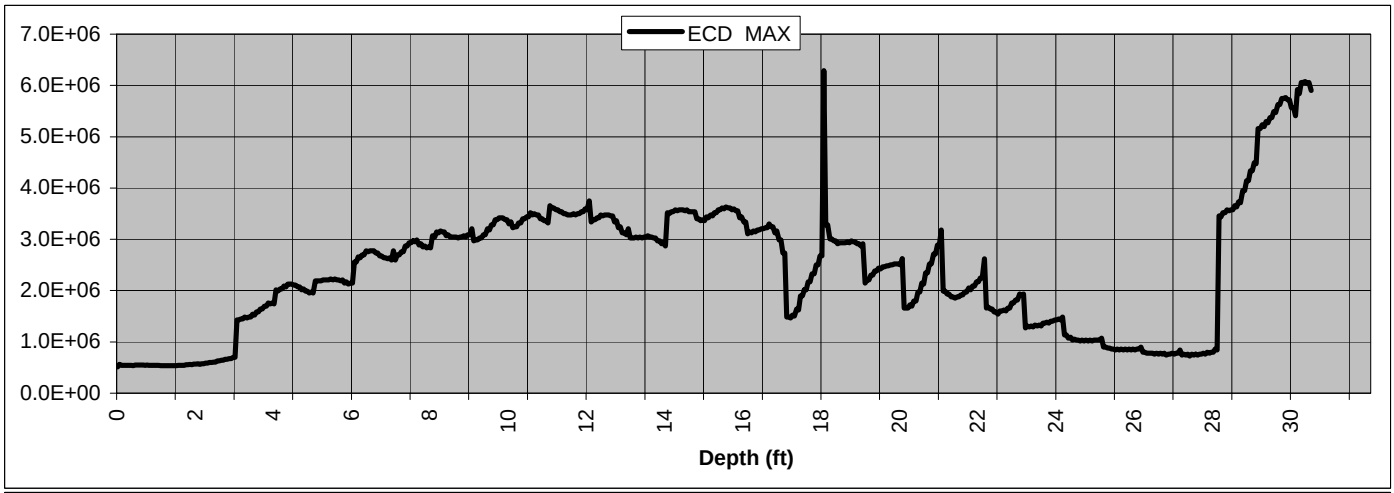


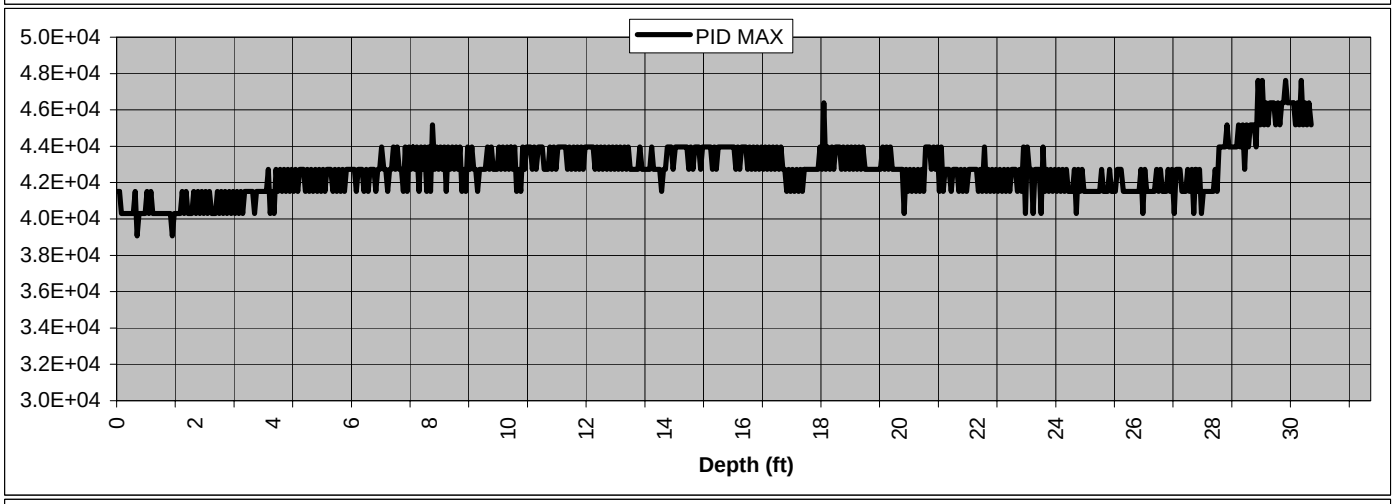


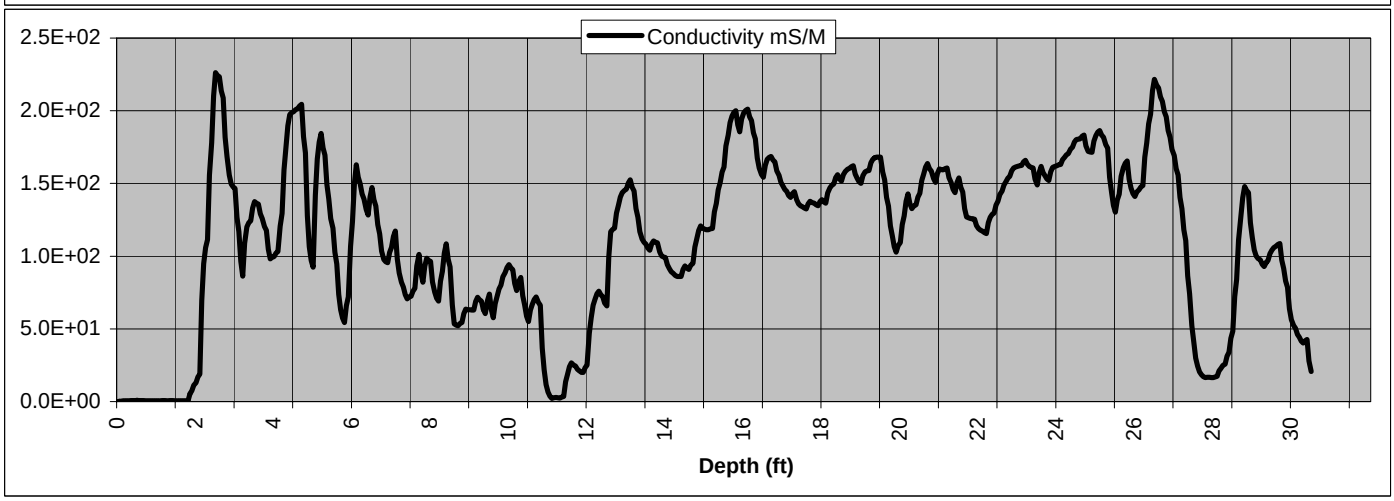
Explanation:

MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-7	Detector 1 :	Electron Capture (ECD)
Project:	0	Date:	Sep 30 2005	Detector 2 :	Photo Ionization (PID)
Job Number:	0.00	Time:	14:03	Detector 3 :	Electrical Conductance (EC)

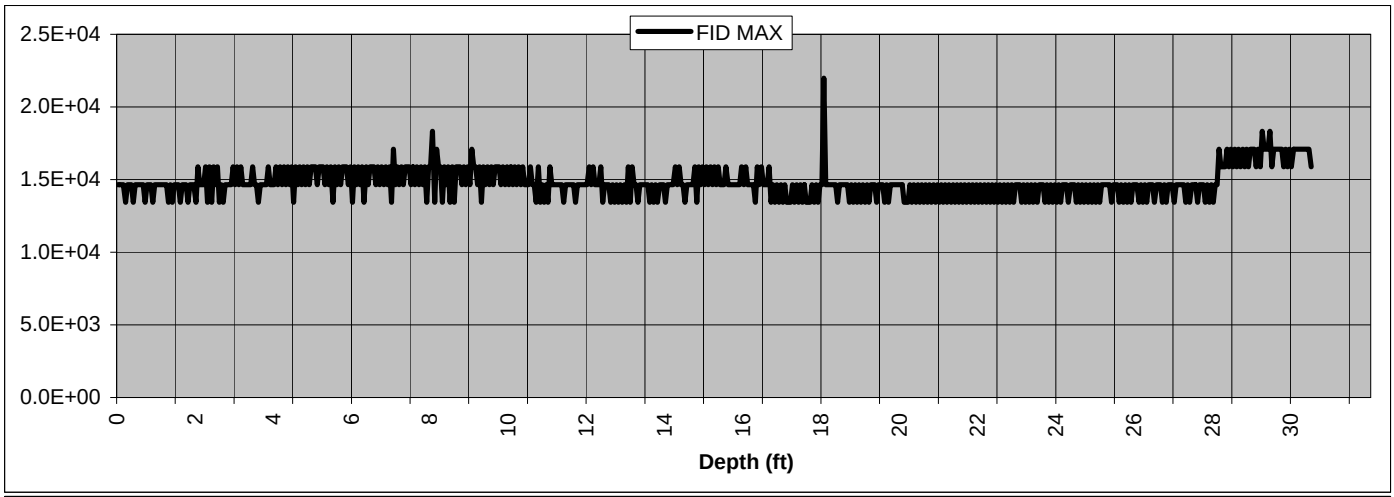


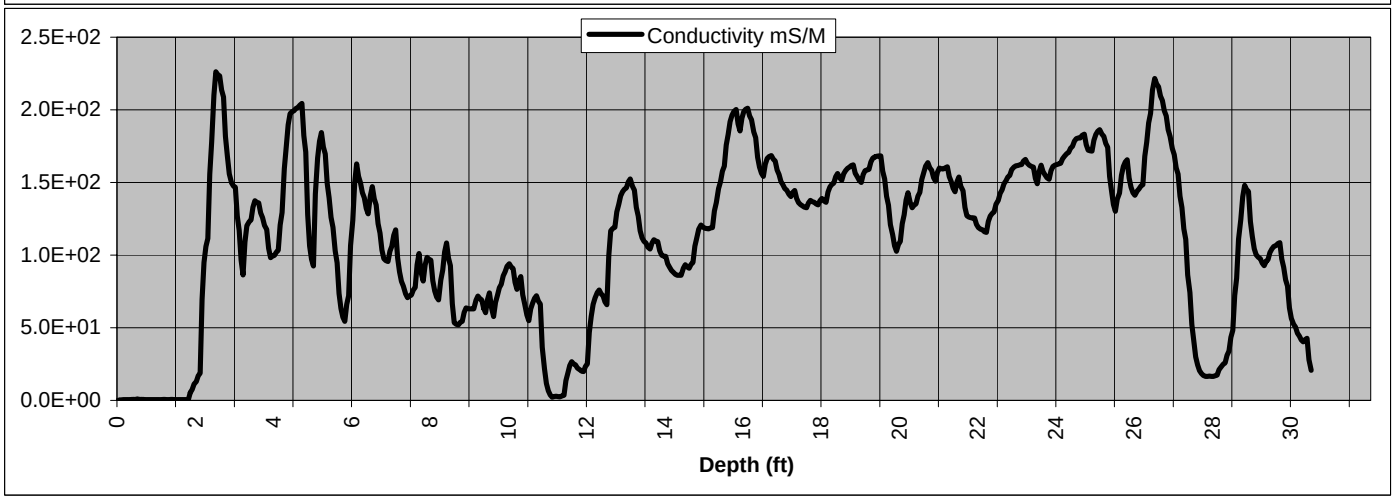




MIP Log Results by Boring - Detector Reading vs. Depth

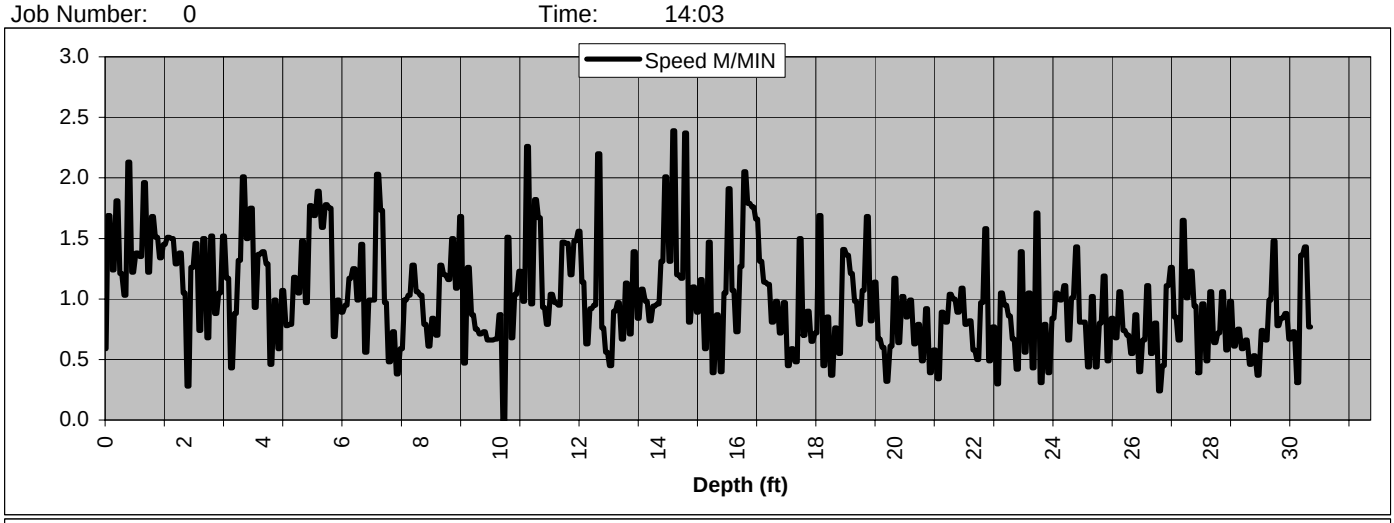
Client:	0	Boring I.D.:	MIP-7	Detector 1 :	Flame Ionization Det. (FID)
Project:	0	Date:	Sep 30 2005	Detector 2 :	Electrical Conductance (EC)
Job Number:	0	Time:	14:03		

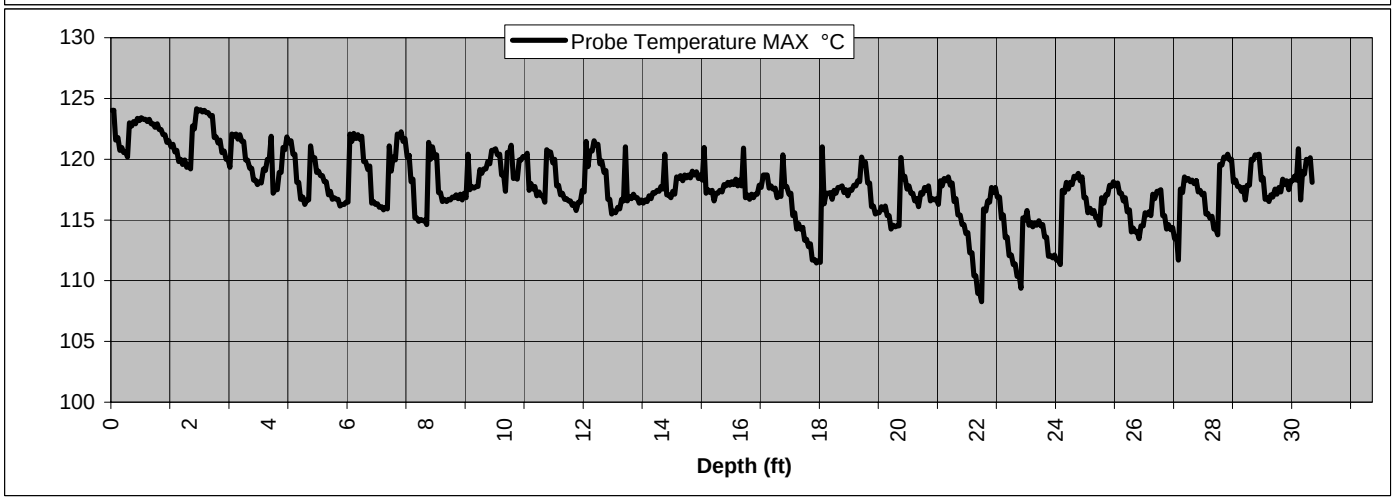




MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-7	Detector 1 :	Probe Speed
Project:	0	Date:	Sep 30 2005	Detector 2 :	Probe Temperature
Job Number:	0	Time:	14:03		

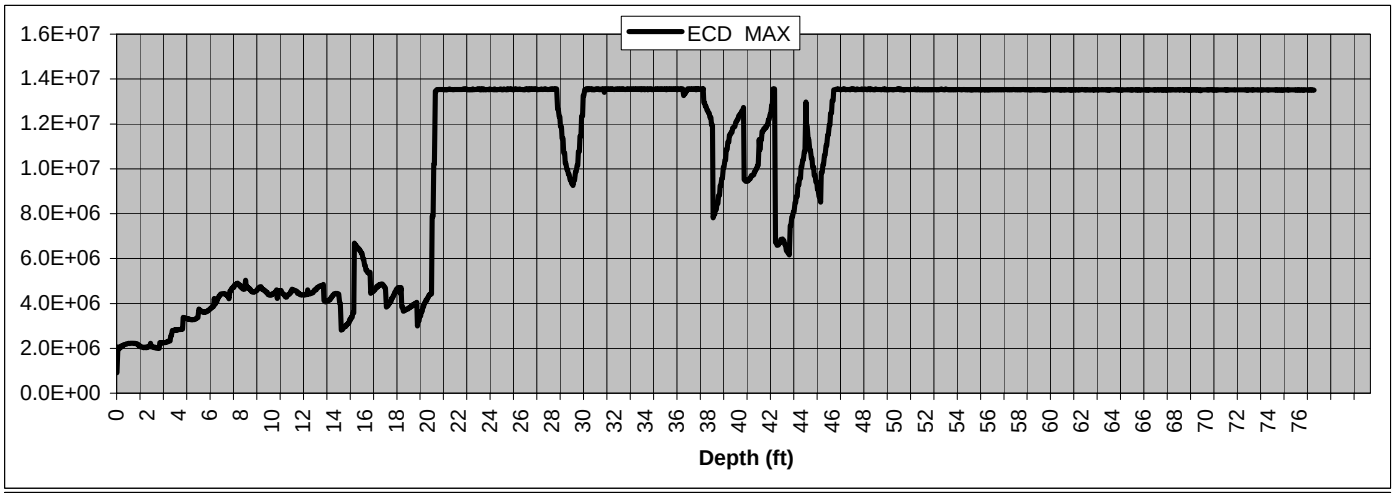


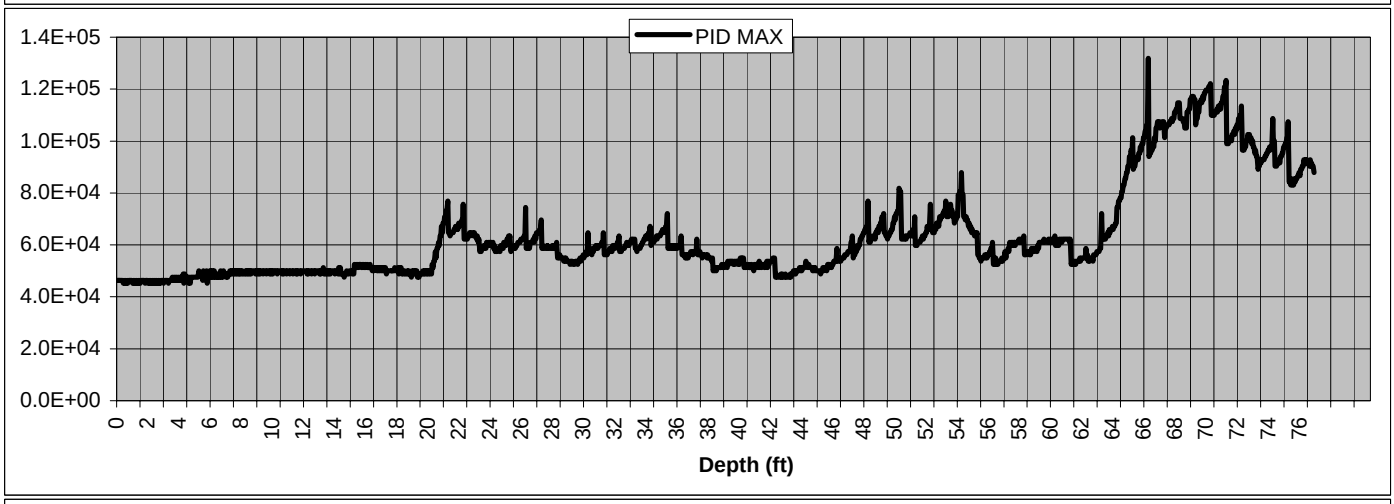


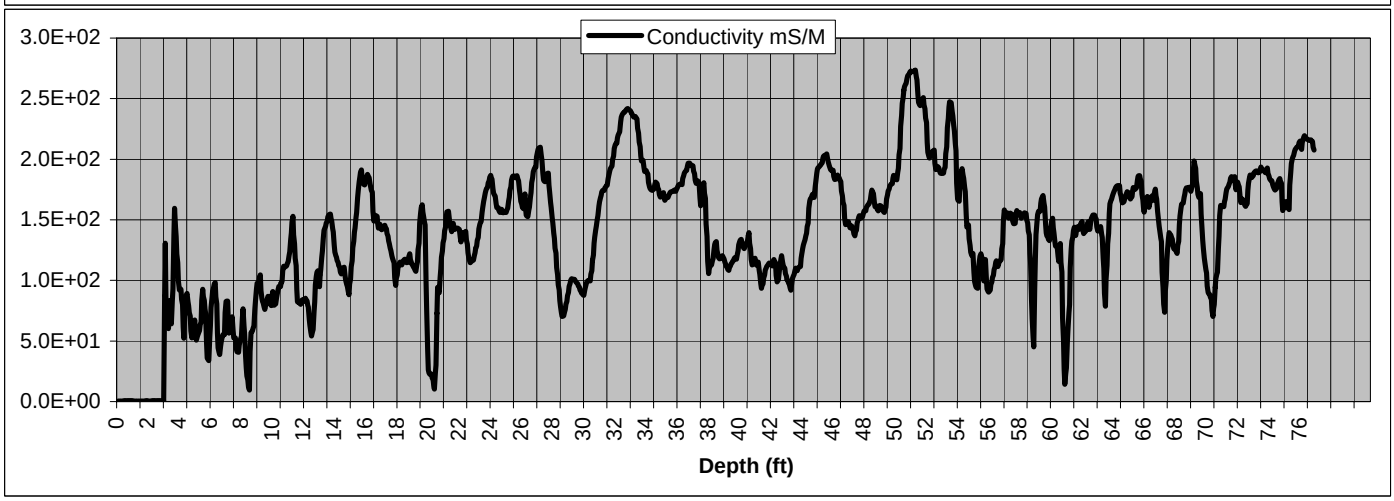
Explanation:

MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-8	Detector 1 :	Electron Capture (ECD)
Project:	0.00	Date:	Sep 29 2005	Detector 2 :	Photo Ionization (PID)
Job Number:	0.00	Time:	14:18	Detector 3 :	Electrical Conductance (EC)

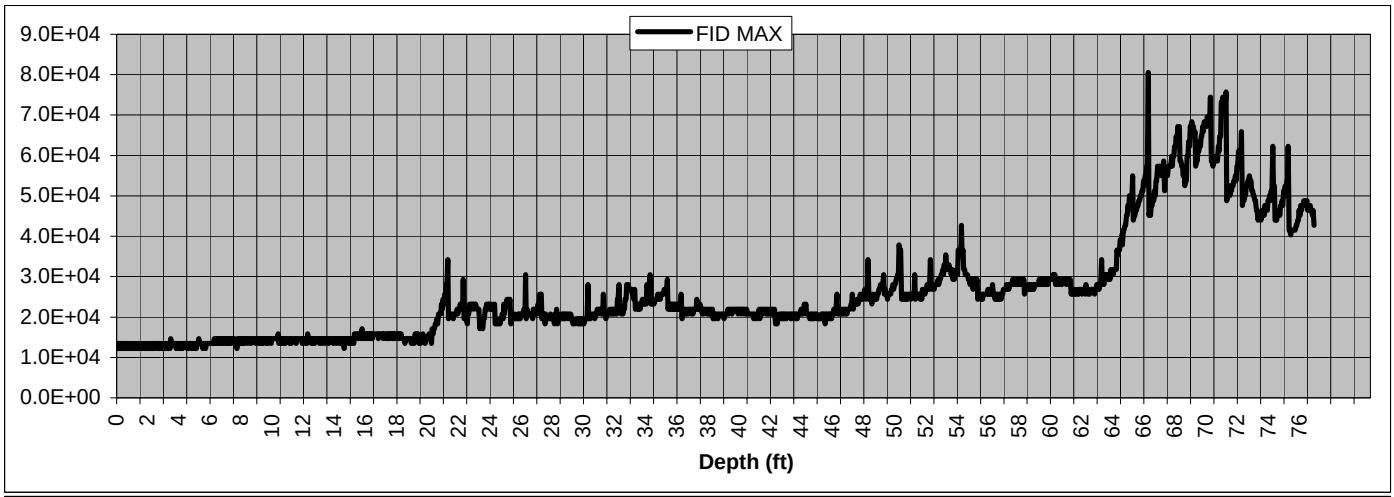


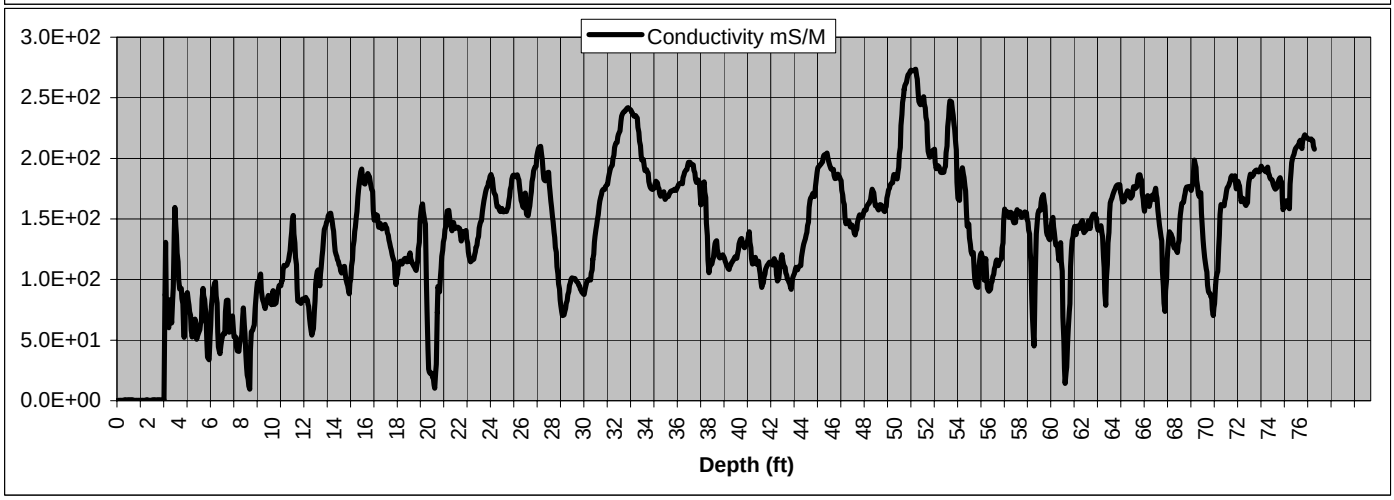




MIP Log Results by Boring - Detector Reading vs. Depth

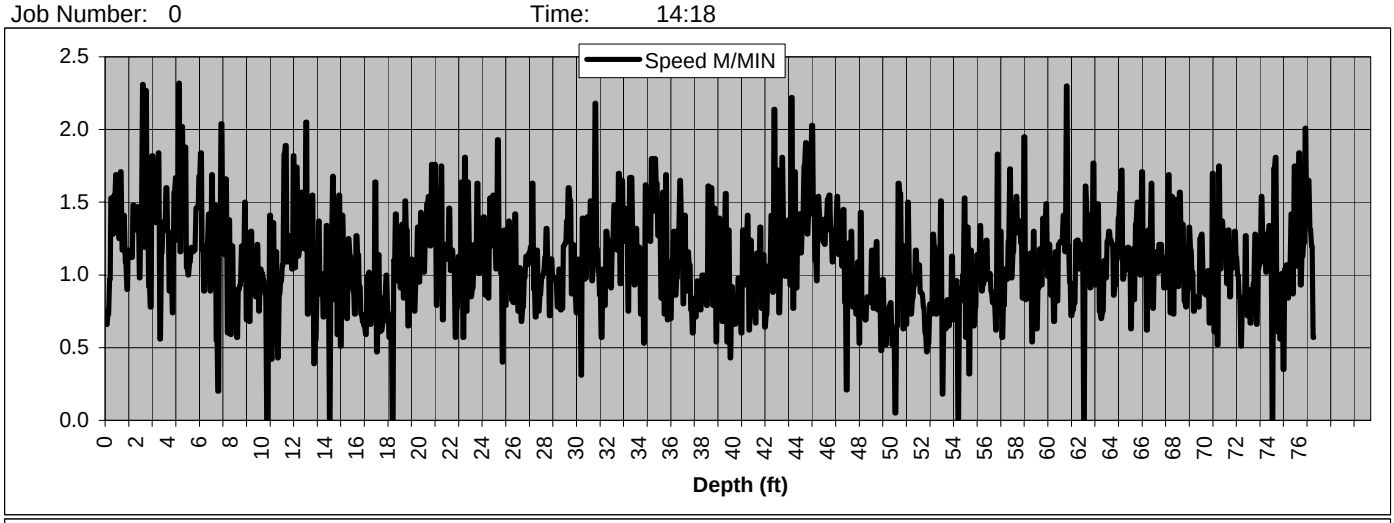
Client:	0	Boring I.D.:	MIP-8	Detector 1 :	Flame Ionization Det. (FID)
Project:	0	Date:	Sep 29 2005	Detector 2 :	Electrical Conductance (EC)
Job Number:	0	Time:	14:18		

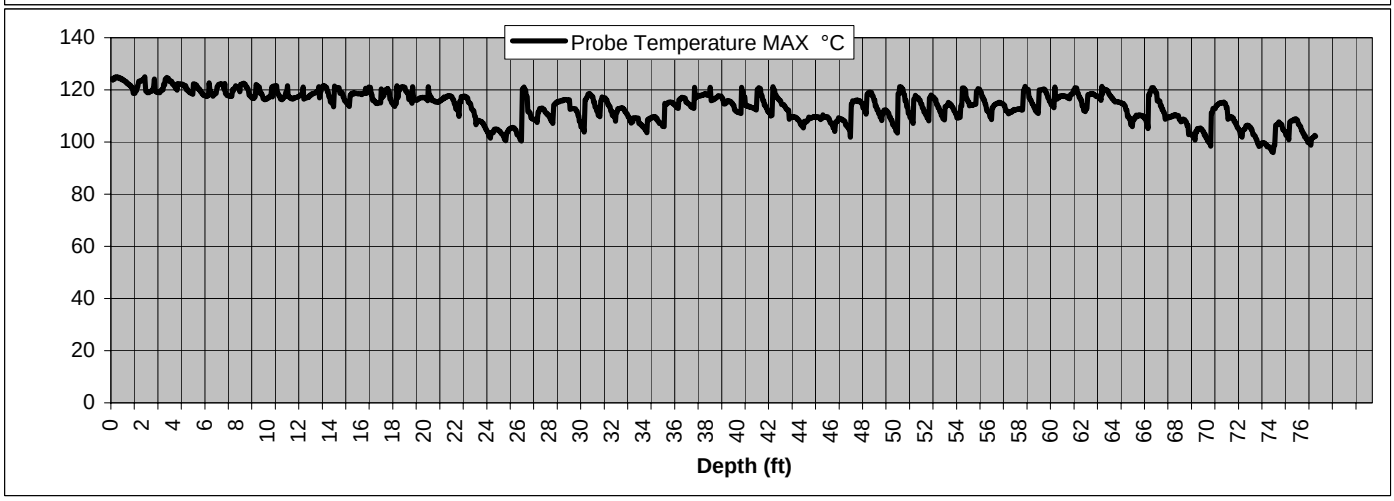




MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-8	Detector 1 :	Probe Speed
Project:	0	Date:	Sep 29 2005	Detector 2 :	Probe Temperature
Job Number:	0	Time:	14:18		

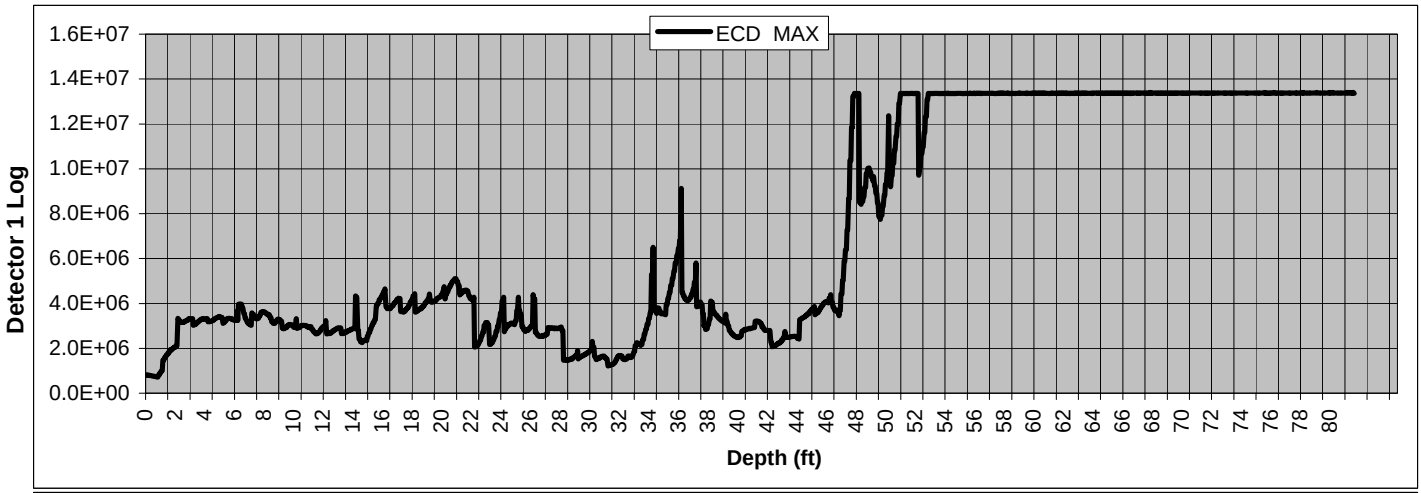


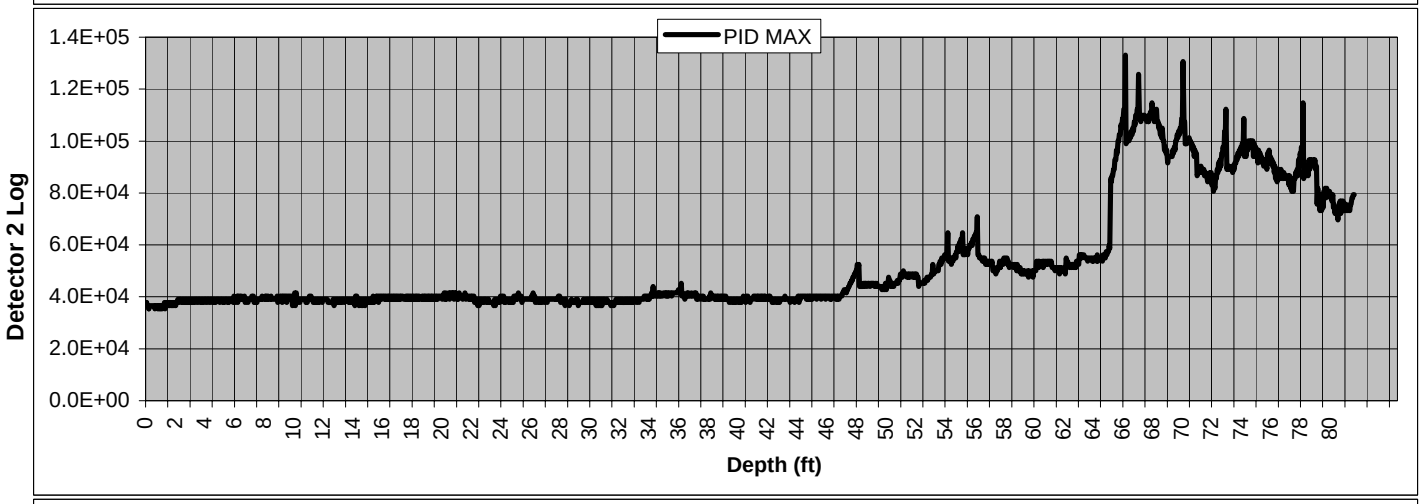


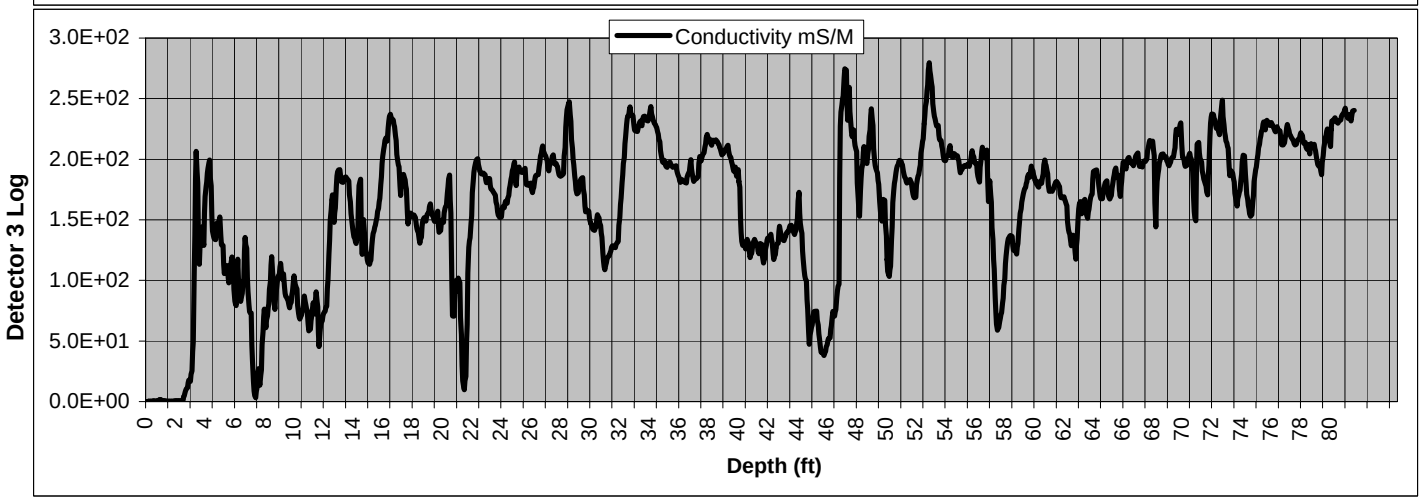
Explanation: Refusal at 76.9 feet

MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-9	Detector 1 :	Electron Capture (ECD)
Project:	0	Date:	Sep 30 2005	Detector 2 :	Photo Ionization (PID)
Job Number:	0.00	Time:	09:08	Detector 3 :	Electrical Conductance (EC)

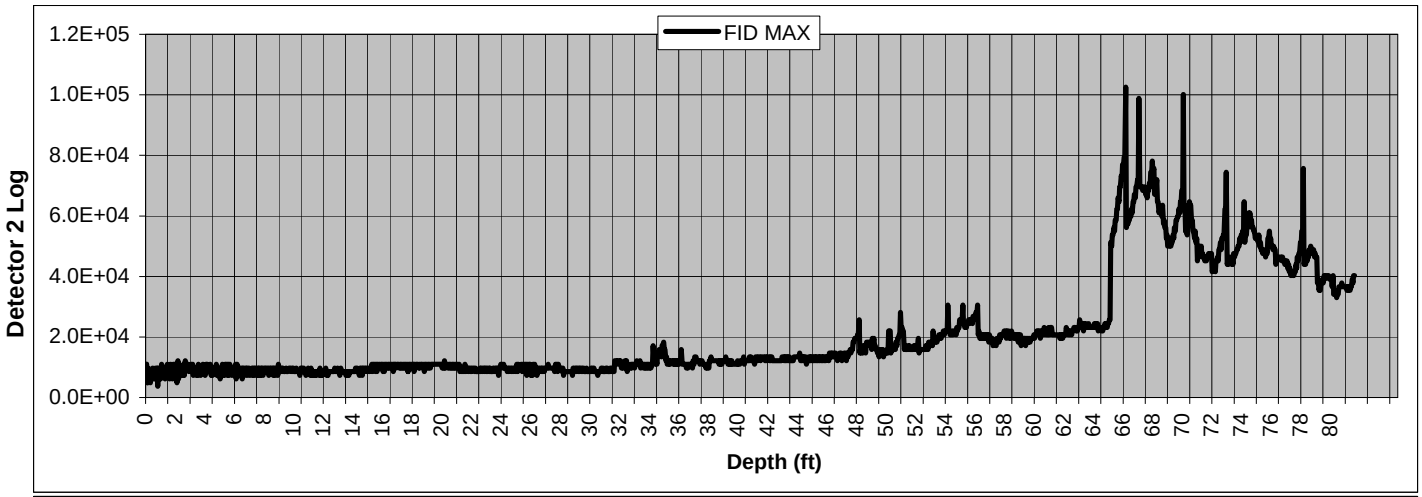


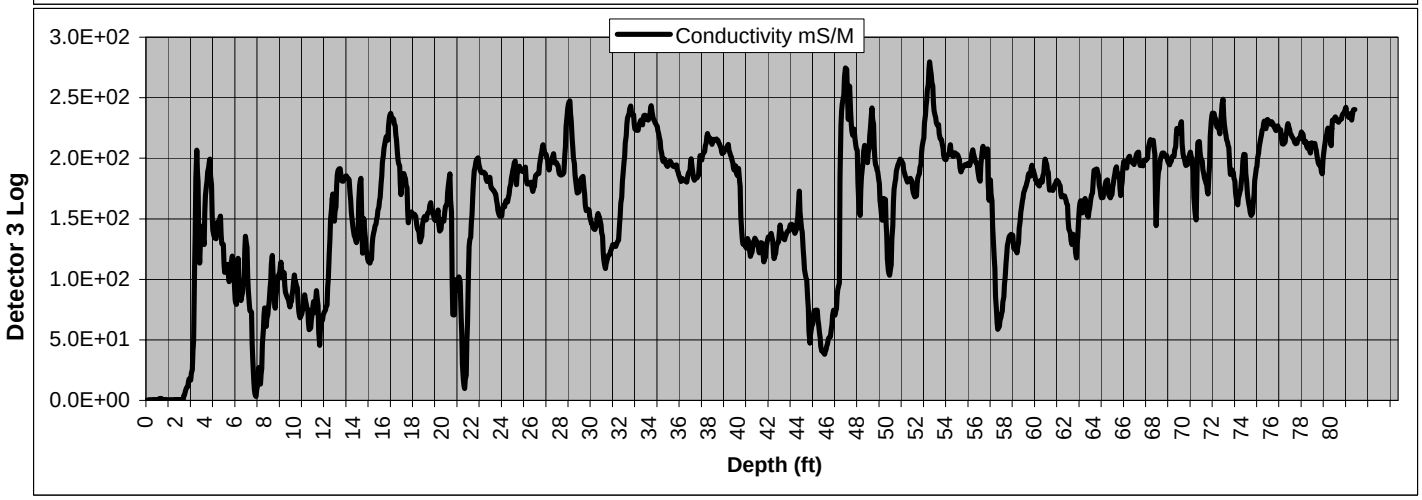




MIP Log Results by Boring - Detector Reading vs. Depth

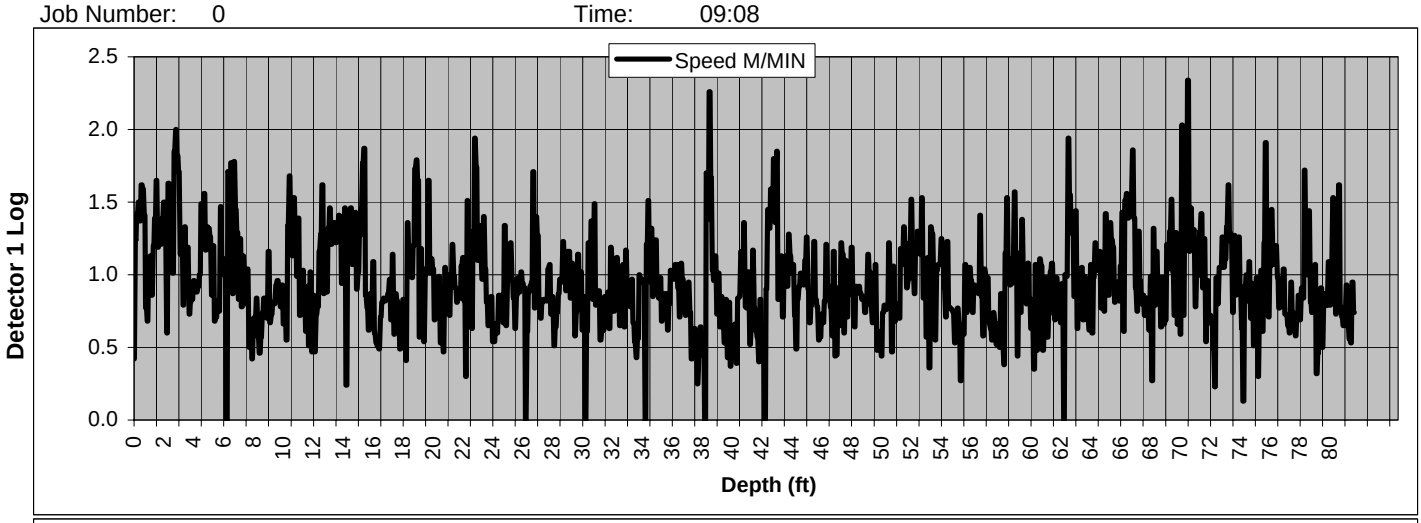
Client:	0	Boring I.D.:	MIP-9	Detector 1 :	Flame Ionization Det. (FID)
Project:	0	Date:	Sep 30 2005	Detector 2 :	Electrical Conductance (EC)
Job Number:	0	Time:	09:08		

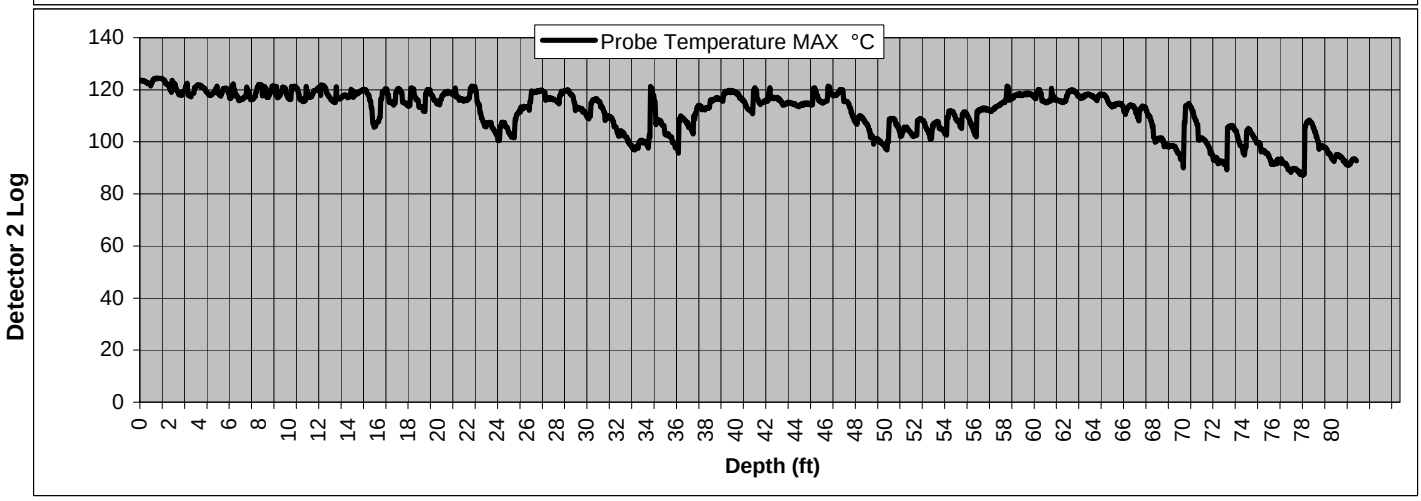




MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-9	Detector 1 :	Probe Speed
Project:	0	Date:	Sep 30 2005	Detector 2 :	Probe Temperature
Job Number:	0	Time:	09:08		

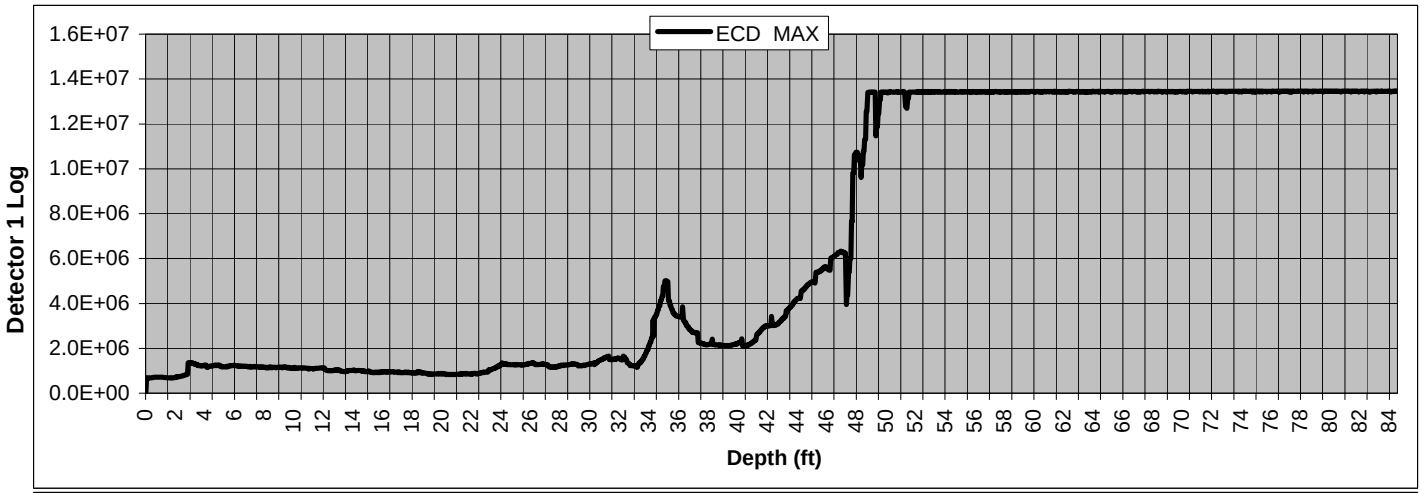


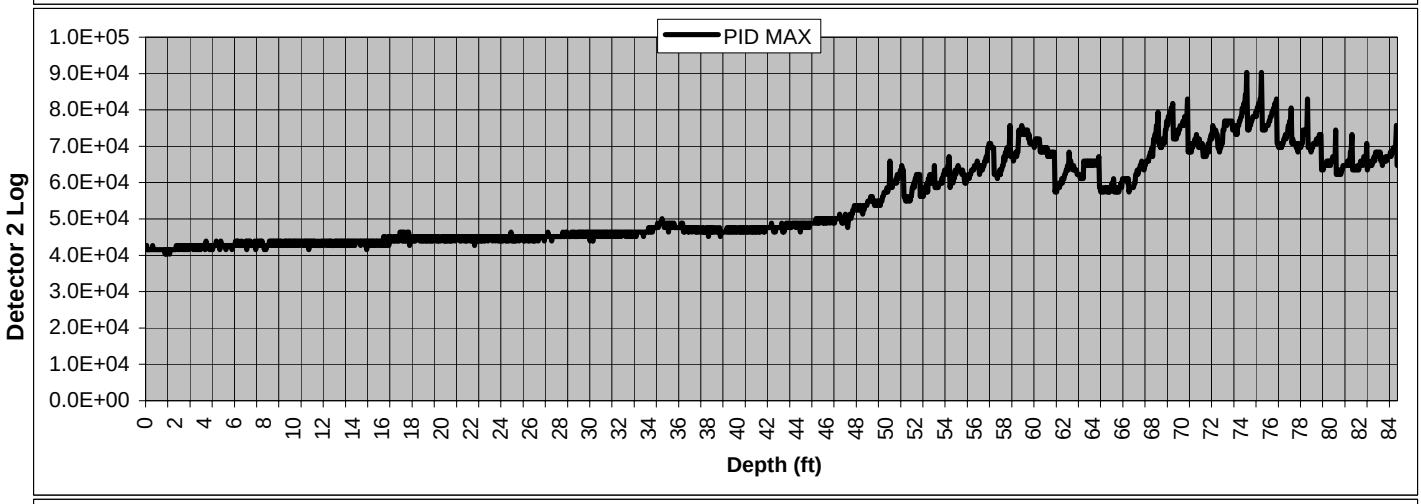


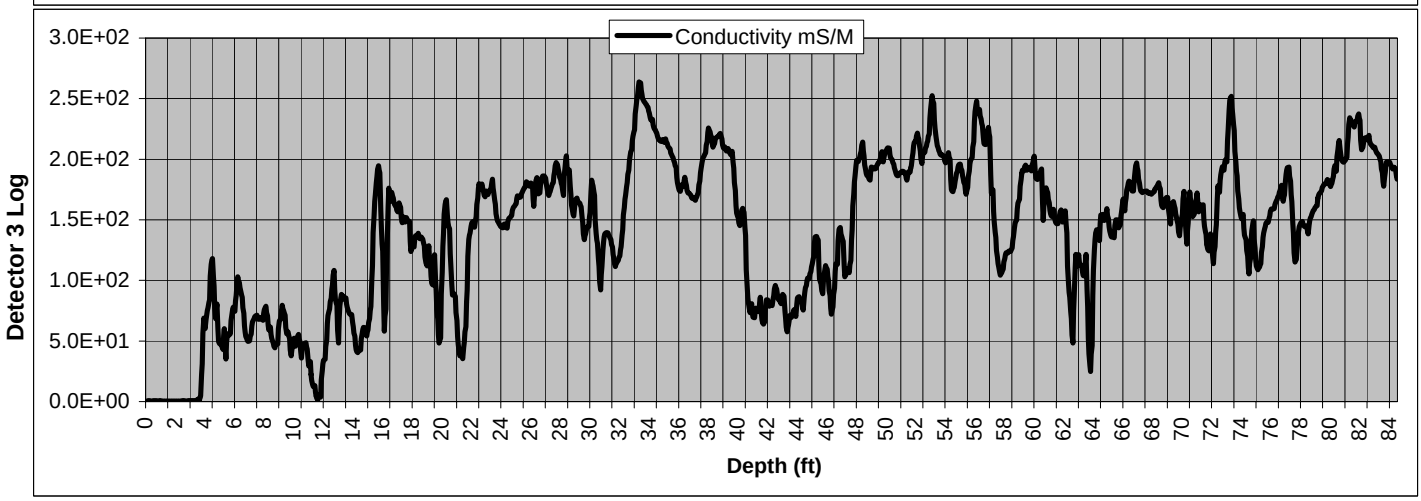
Explanation:

MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-10	Detector 1 :	Electron Capture (ECD)
Project:	0	Date:	Sep 30 2005	Detector 2 :	Photo Ionization (PID)
Job Number:	0.00	Time:	11:35	Detector 3 :	Electrical Conductance (EC)

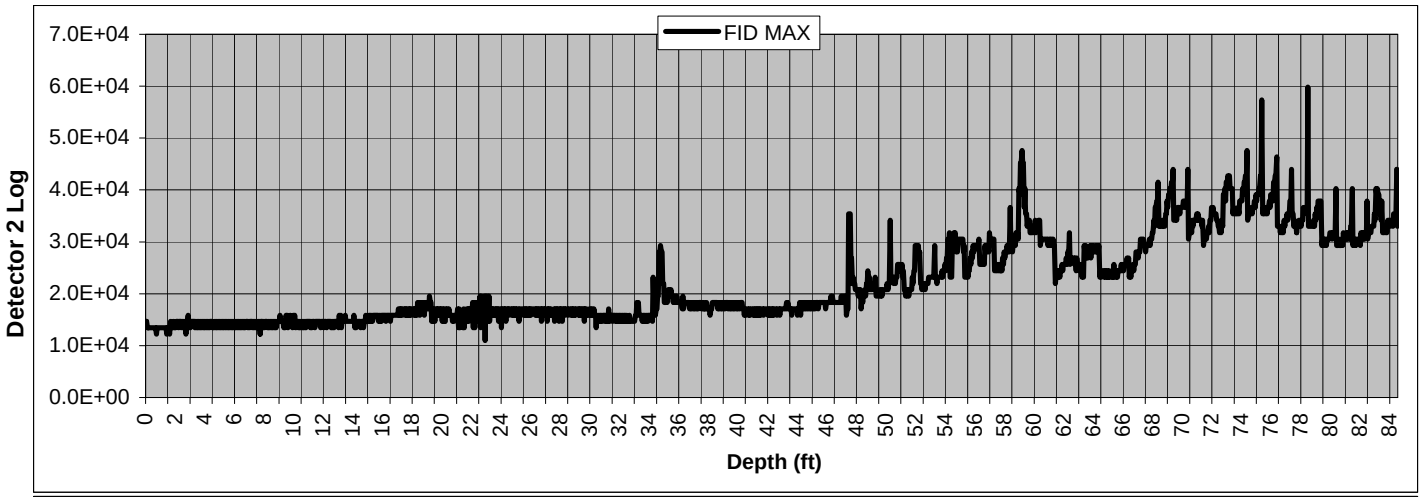


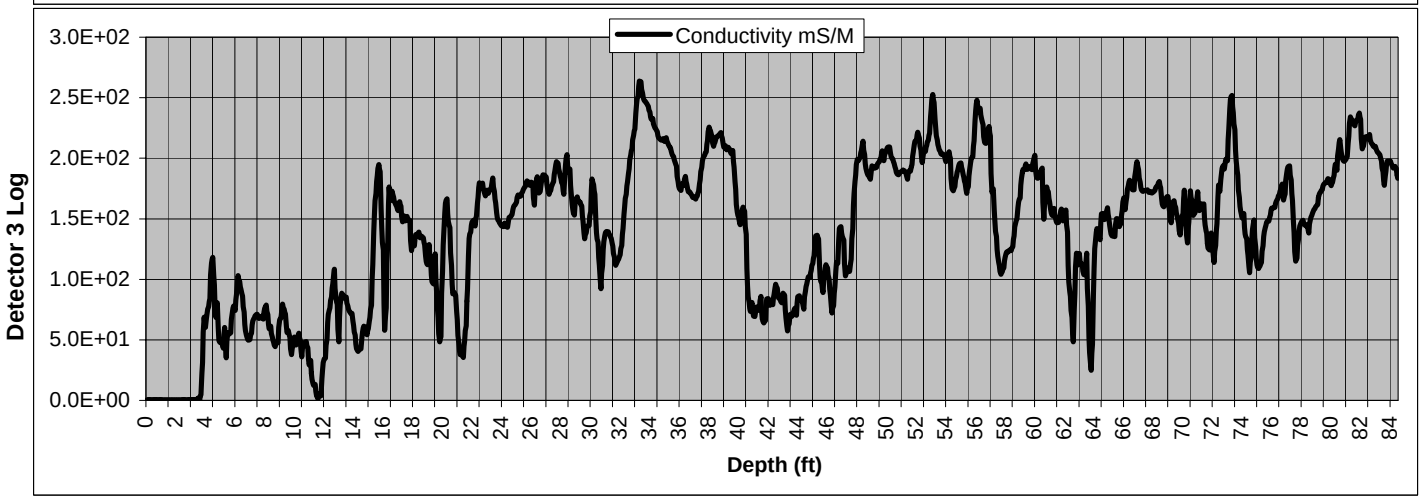




MIP Log Results by Boring - Detector Reading vs. Depth

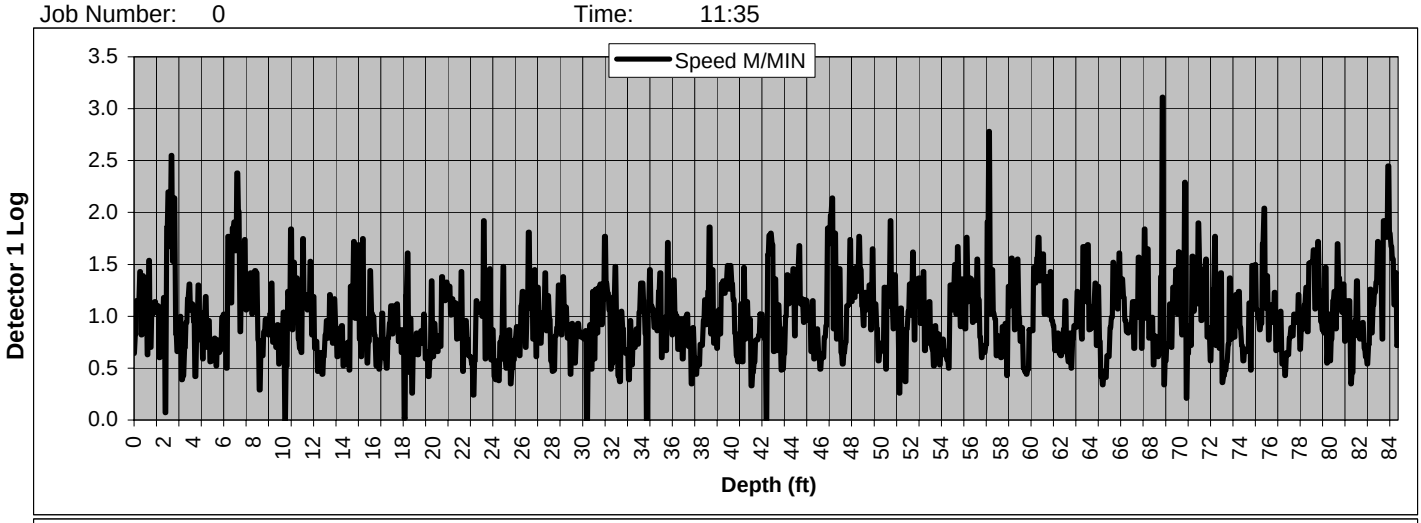
Client:	0	Boring I.D.:	MIP-10	Detector 1 :	Flame Ionization Det. (FID)
Project:	0	Date:	Sep 30 2005	Detector 2 :	Electrical Conductance (EC)
Job Number:	0	Time:	11:35		

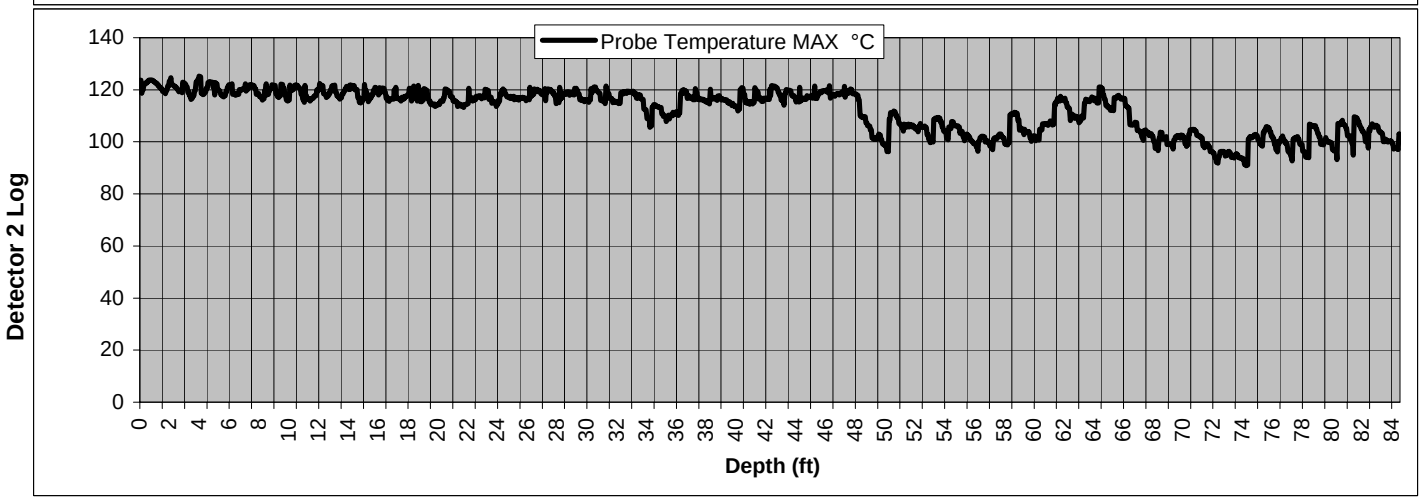




MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-10	Detector 1 :	Probe Speed
Project:	0	Date:	Sep 30 2005	Detector 2 :	Probe Temperature
Job Number:	0	Time:	11:35		

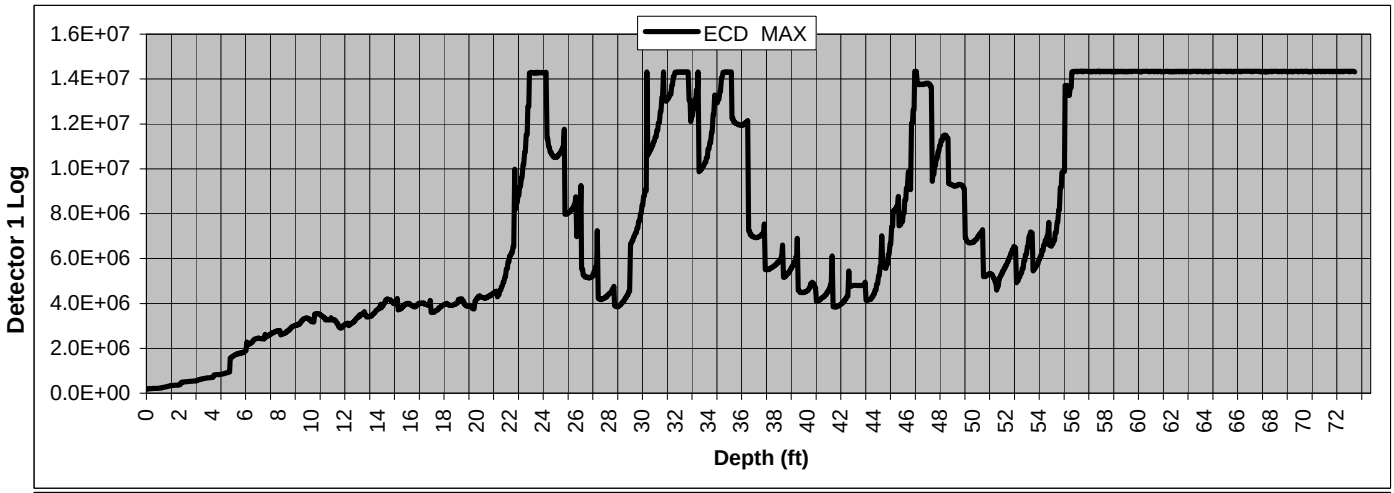


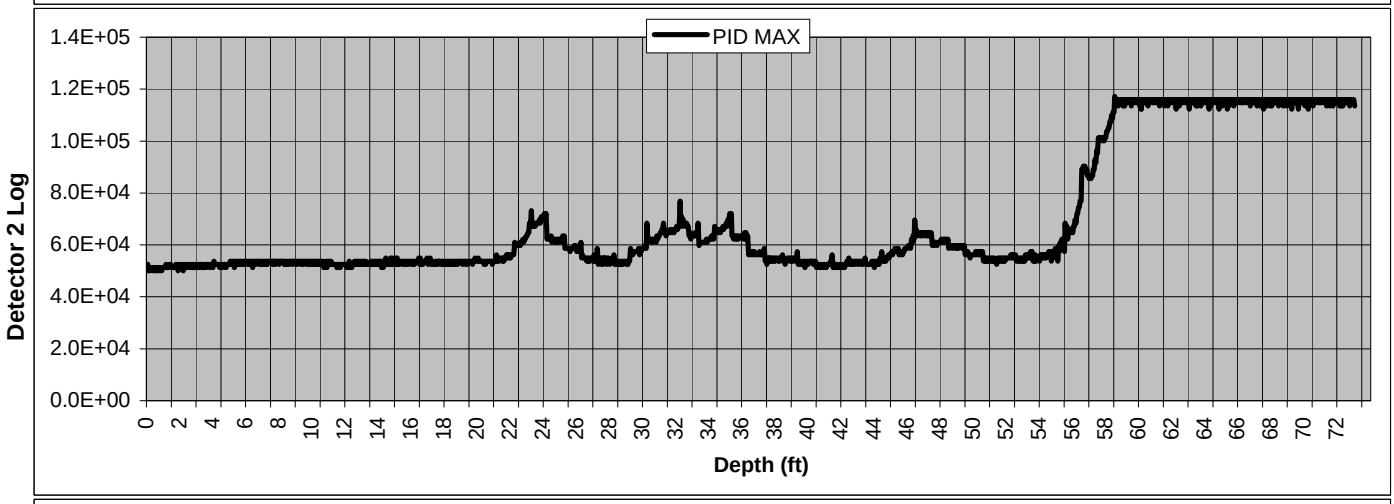


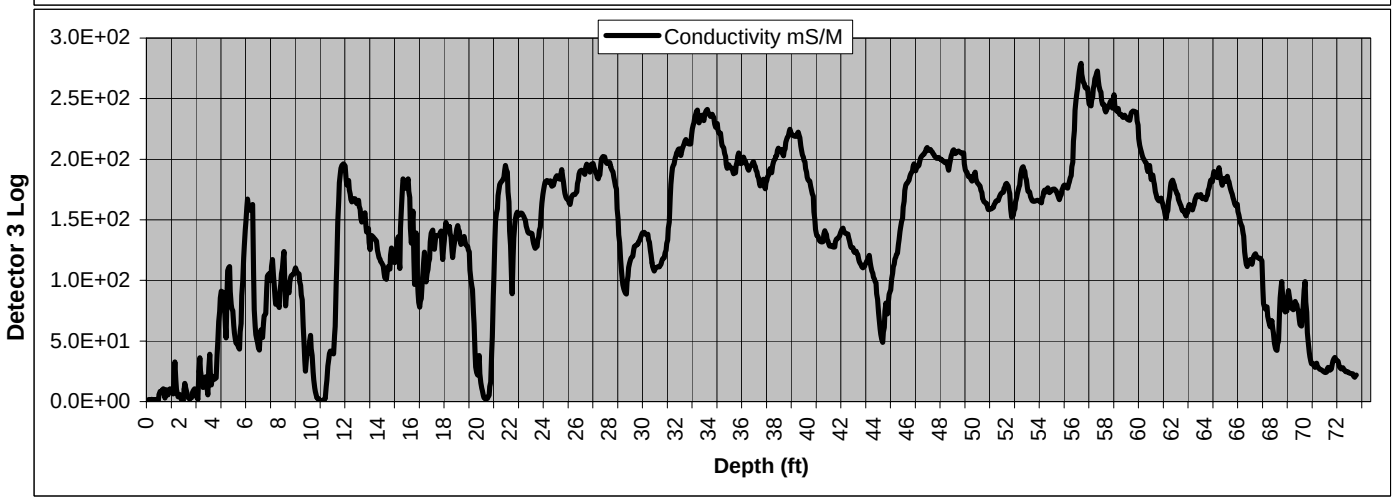
Explanation:

MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-11	Detector 1 :	Electron Capture (ECD)
Project:	0.00	Date:	Sep 24 2005	Detector 2 :	Photo Ionization (PID)
Job Number:	0.00	Time:	11:33	Detector 3 :	Electrical Conductance (EC)

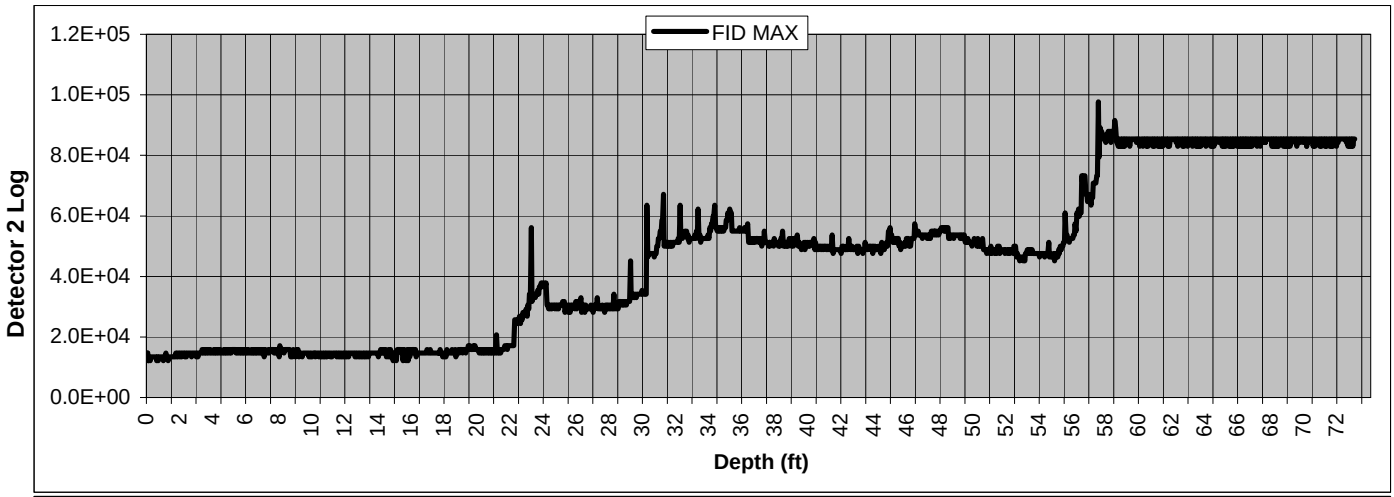


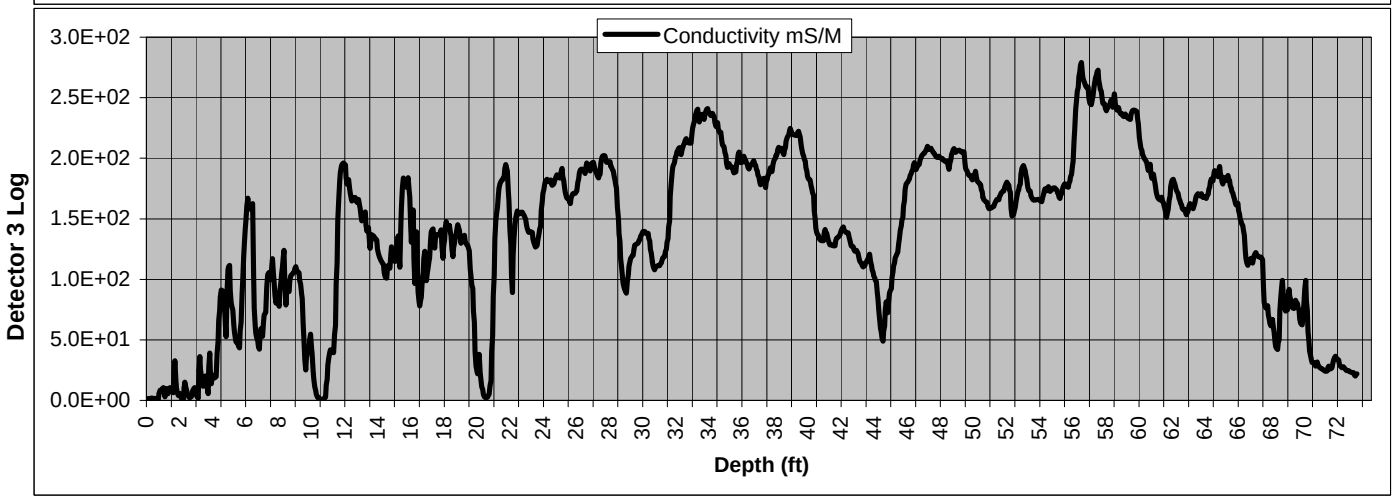




MIP Log Results by Boring - Detector Reading vs. Depth

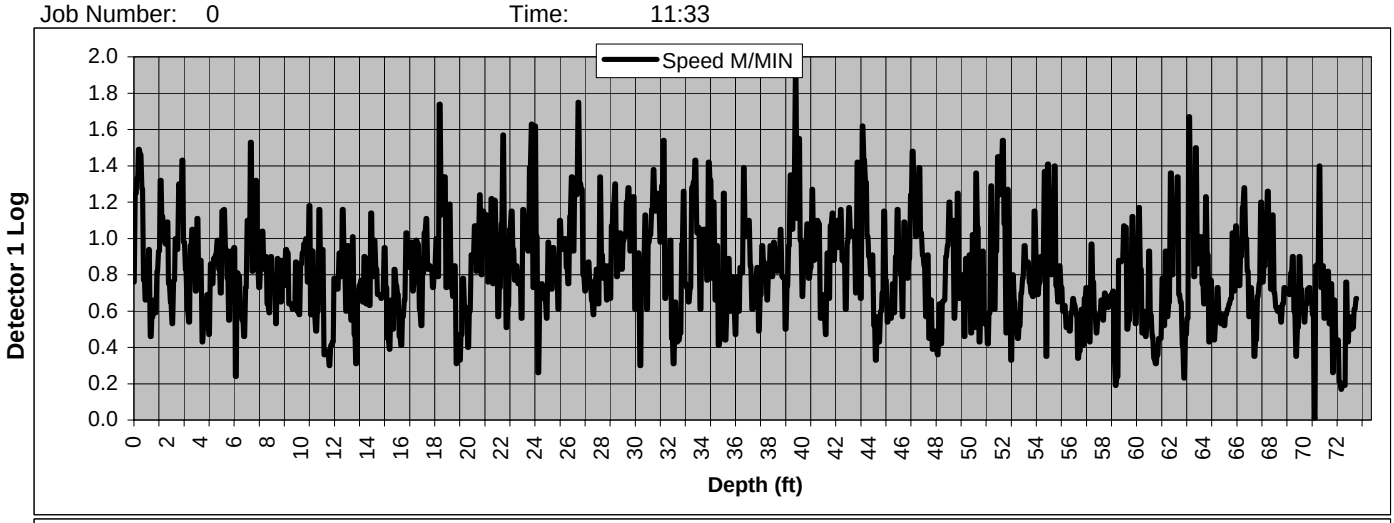
Client:	0	Boring I.D.:	MIP-11	Detector 1 :	Flame Ionization Det. (FID)
Project:	0	Date:	Sep 24 2005	Detector 2 :	Electrical Conductance (EC)
Job Number:	0	Time:	11:33		

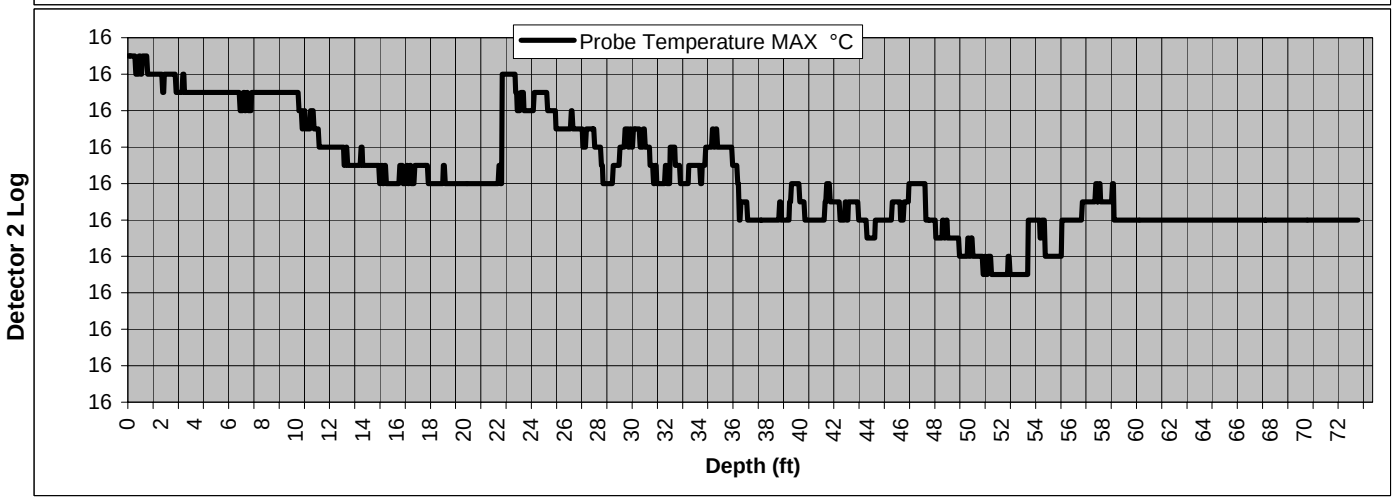




MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-11	Detector 1 :	Probe Speed
Project:	0	Date:	Sep 24 2005	Detector 2 :	Probe Temperature
Job Number:	0	Time:	11:33		

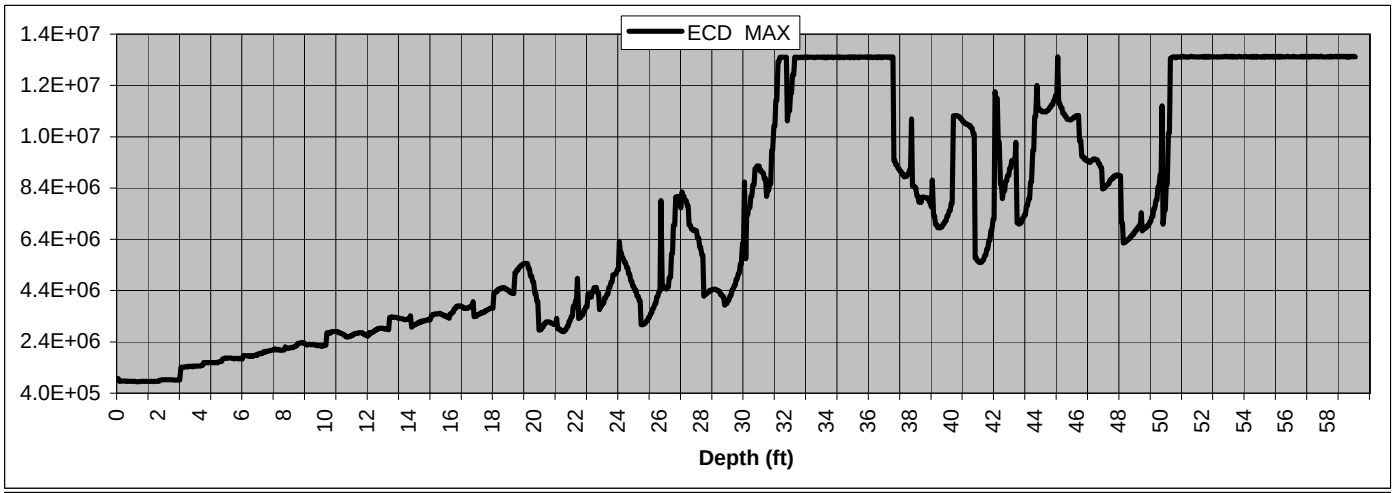


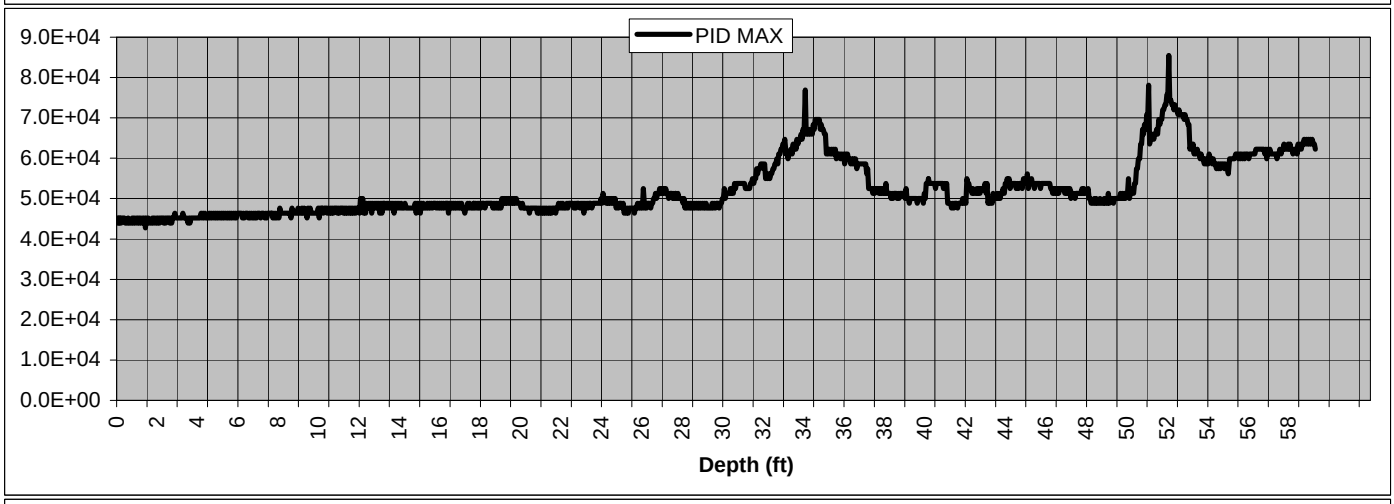


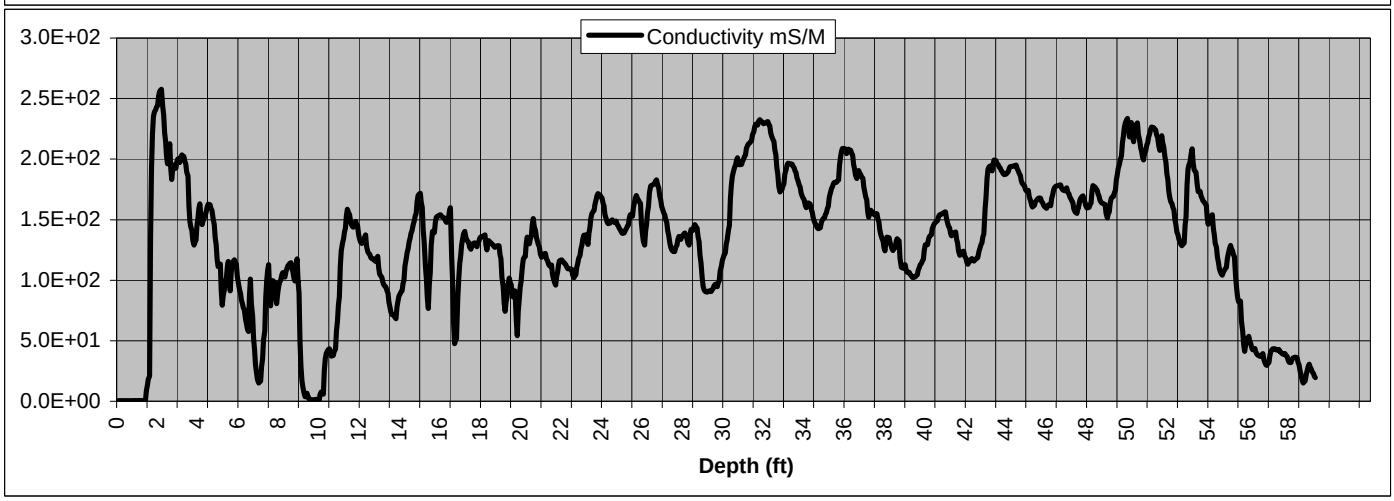
Explanation: Disregard data after 59' bgs. Stringpot broke. Probe and 3 rods broke upon completion of boring.

MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-12	Detector 1 :	Electron Capture (ECD)
Project:	0.00	Date:	Sep 29 2005	Detector 2 :	Photo Ionization (PID)
Job Number:	0.00	Time:	13:18	Detector 3 :	Electrical Conductance (EC)

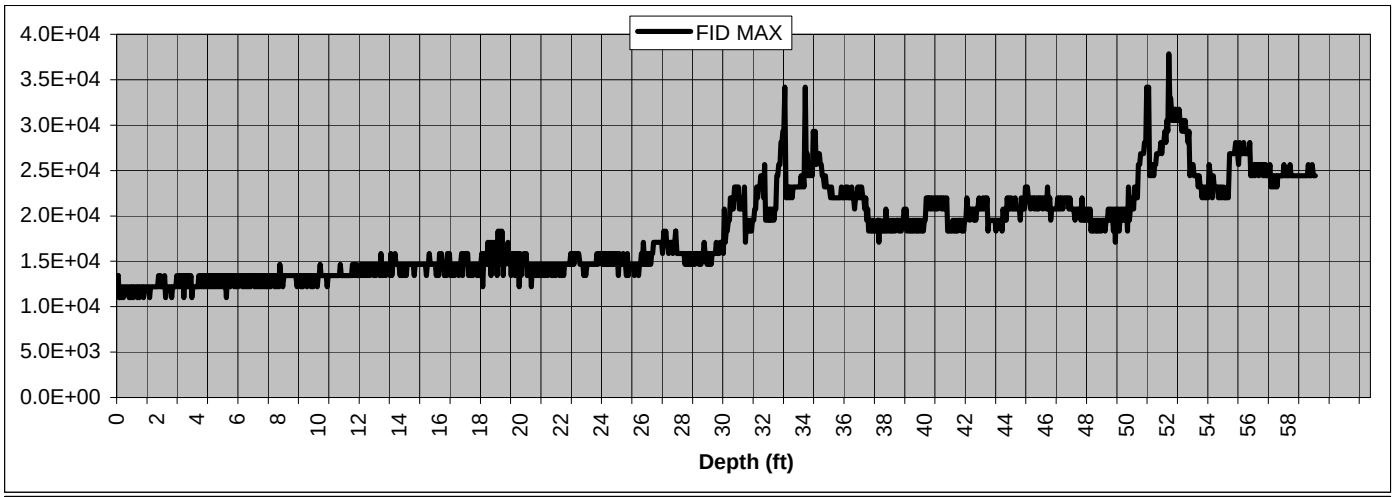


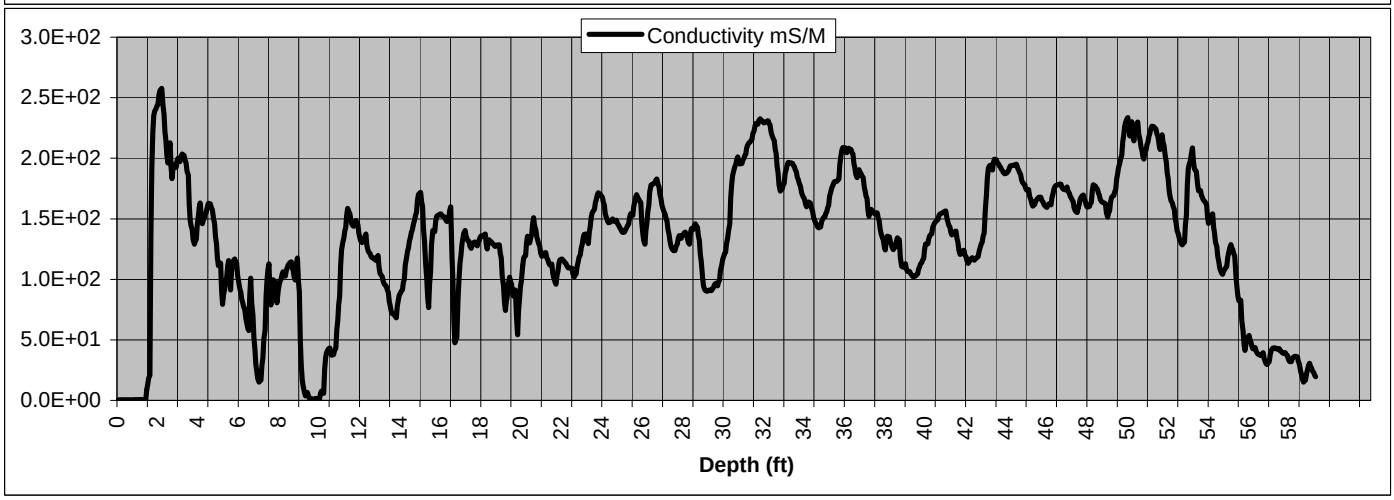




MIP Log Results by Boring - Detector Reading vs. Depth

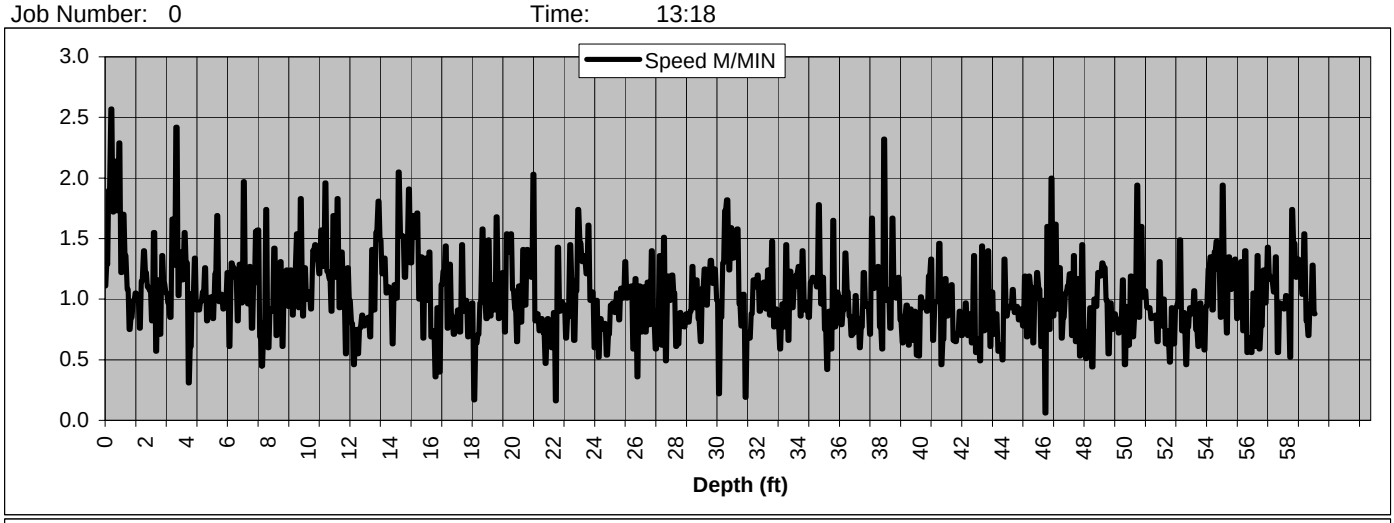
Client:	0	Boring I.D.:	MIP-12	Detector 1 :	Flame Ionization Det. (FID)
Project:	0	Date:	Sep 29 2005	Detector 2 :	Electrical Conductance (EC)
Job Number:	0	Time:	13:18		

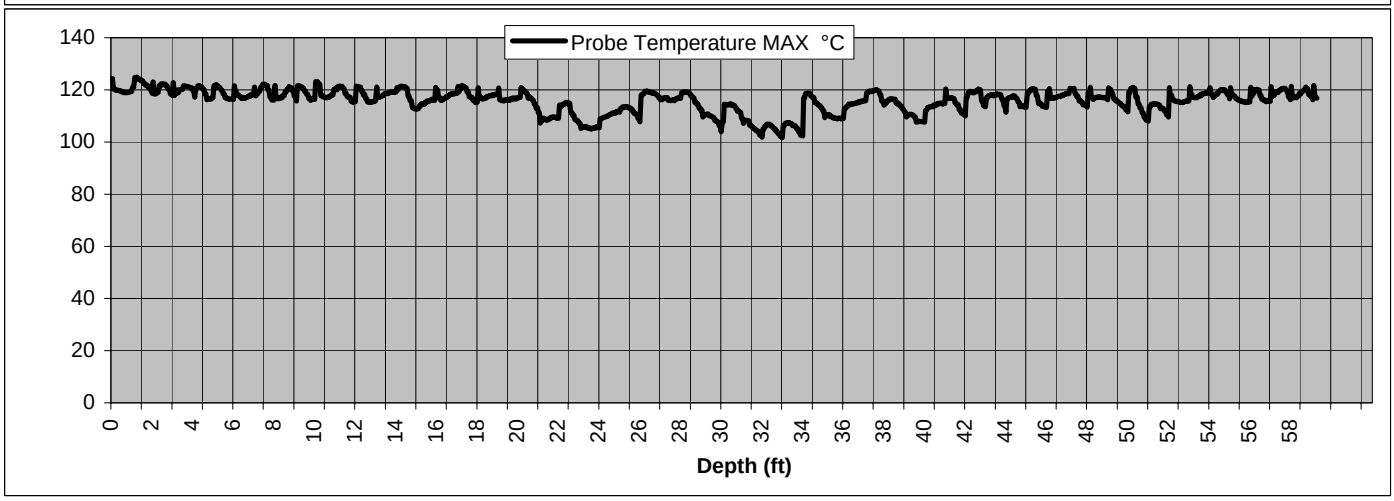




MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-12	Detector 1 :	Probe Speed
Project:	0	Date:	Sep 29 2005	Detector 2 :	Probe Temperature
Job Number:	0	Time:	13:18		

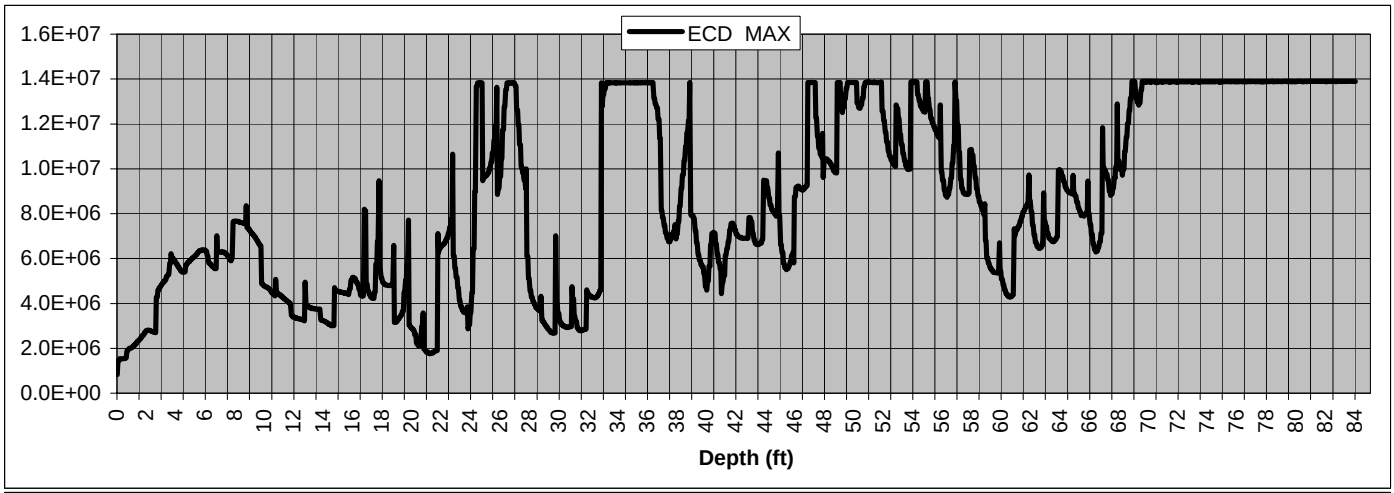


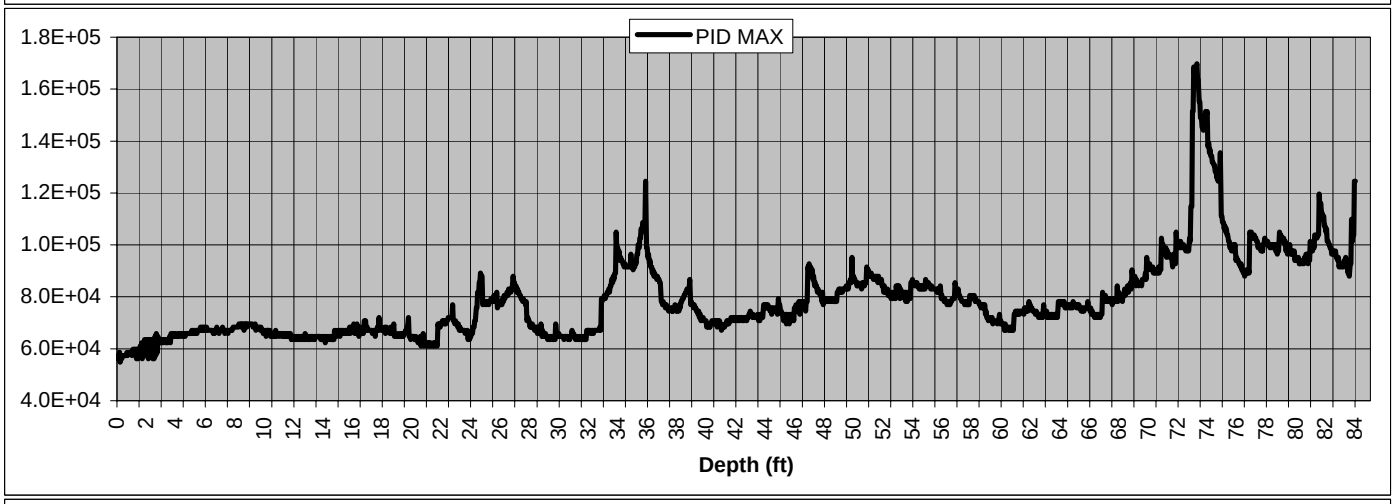


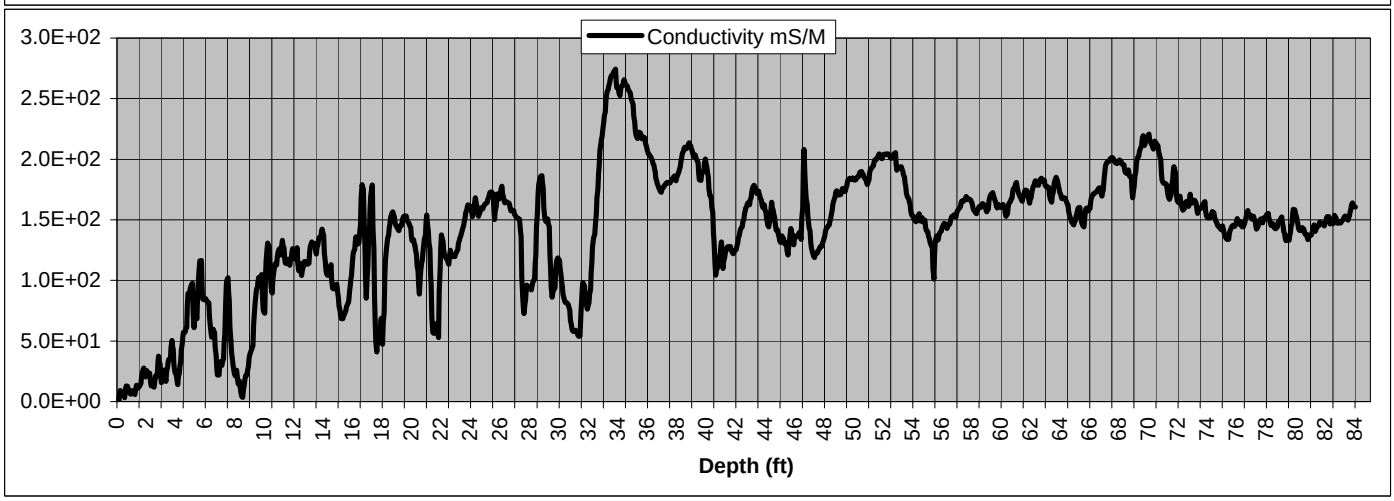
Explanation: Refusal at 58.3 feet.

MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-14	Detector 1 :	Electron Capture (ECD)
Project:	0.00	Date:	Sep 24 2005	Detector 2 :	Photo Ionization (PID)
Job Number:	0.00	Time:	08:40	Detector 3 :	Electrical Conductance (EC)

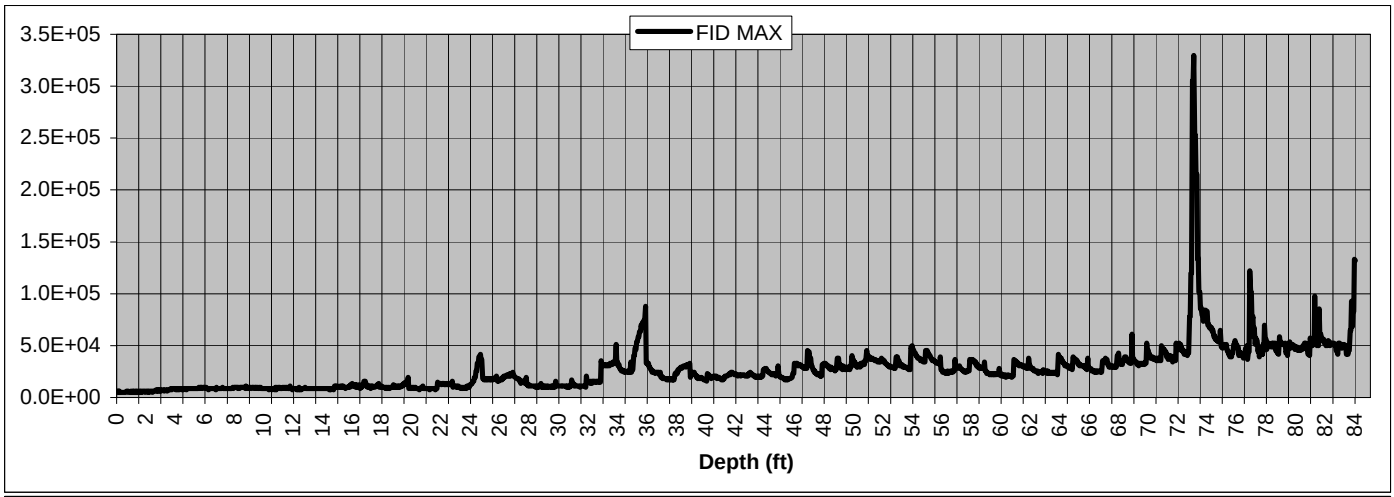


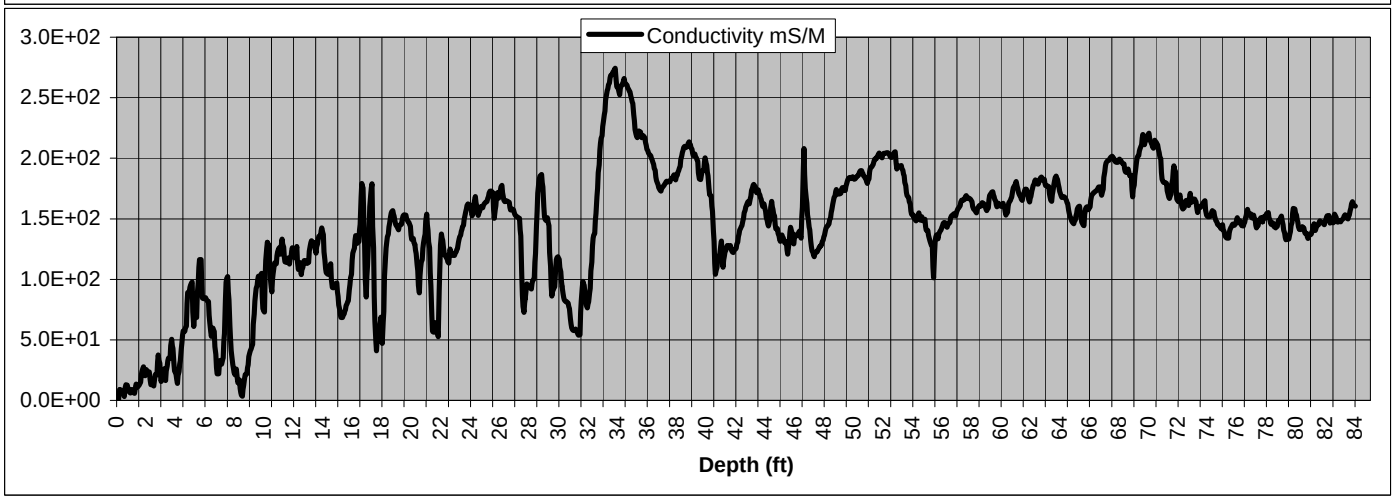




MIP Log Results by Boring - Detector Reading vs. Depth

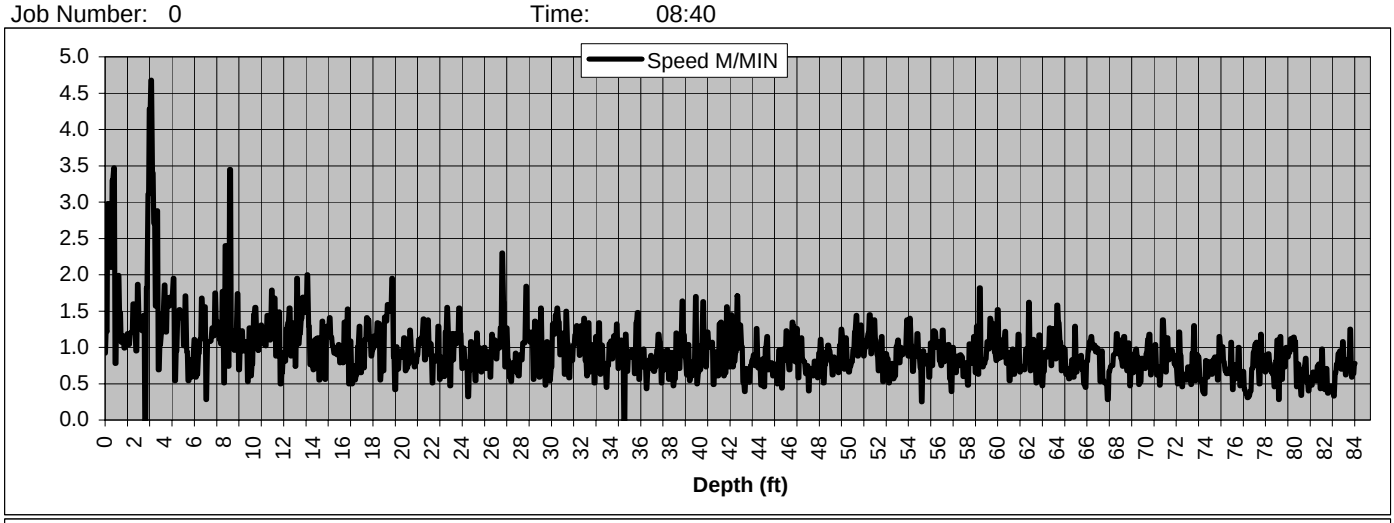
Client:	0	Boring I.D.:	MIP-14	Detector 1 :	Flame Ionization Det. (FID)
Project:	0	Date:	Sep 24 2005	Detector 2 :	Electrical Conductance (EC)
Job Number:	0	Time:	08:40		

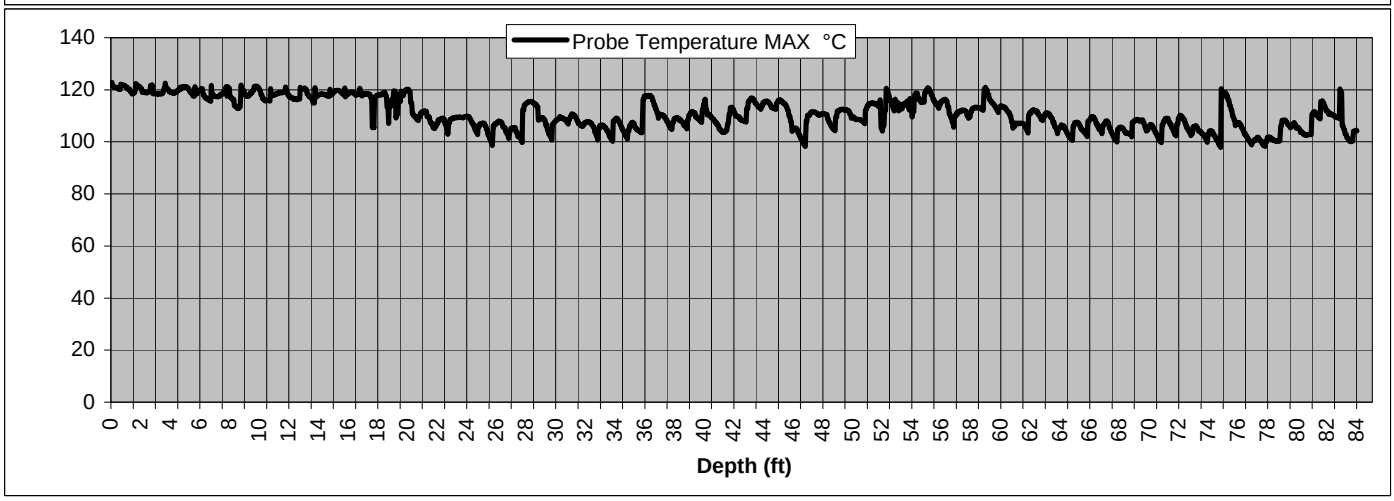




MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-14	Detector 1 :	Probe Speed
Project:	0	Date:	Sep 24 2005	Detector 2 :	Probe Temperature
Job Number:	0	Time:	08:40		

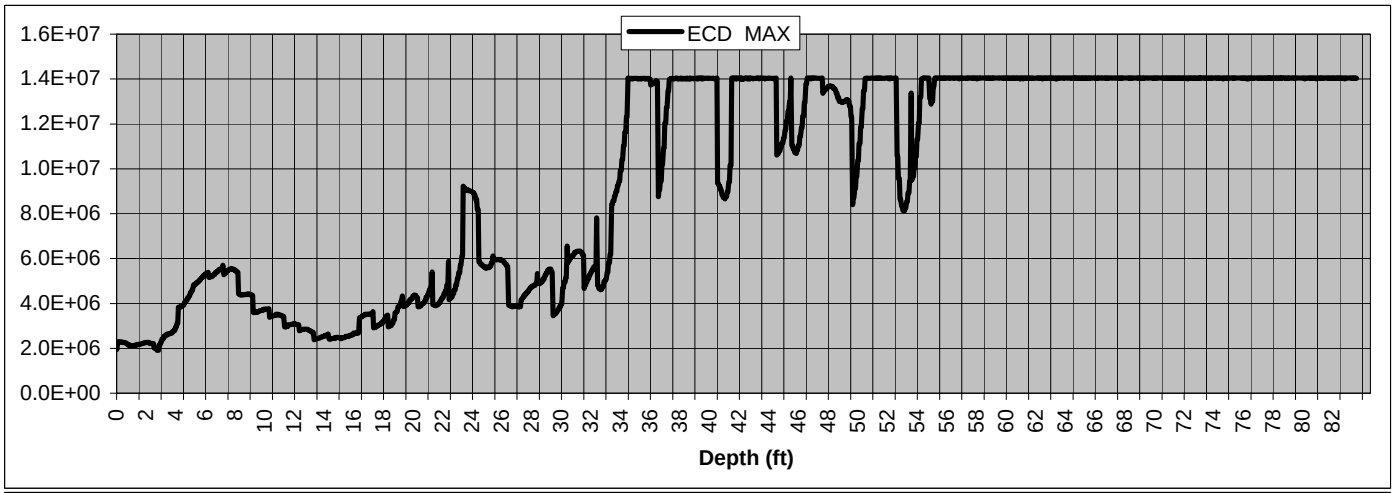


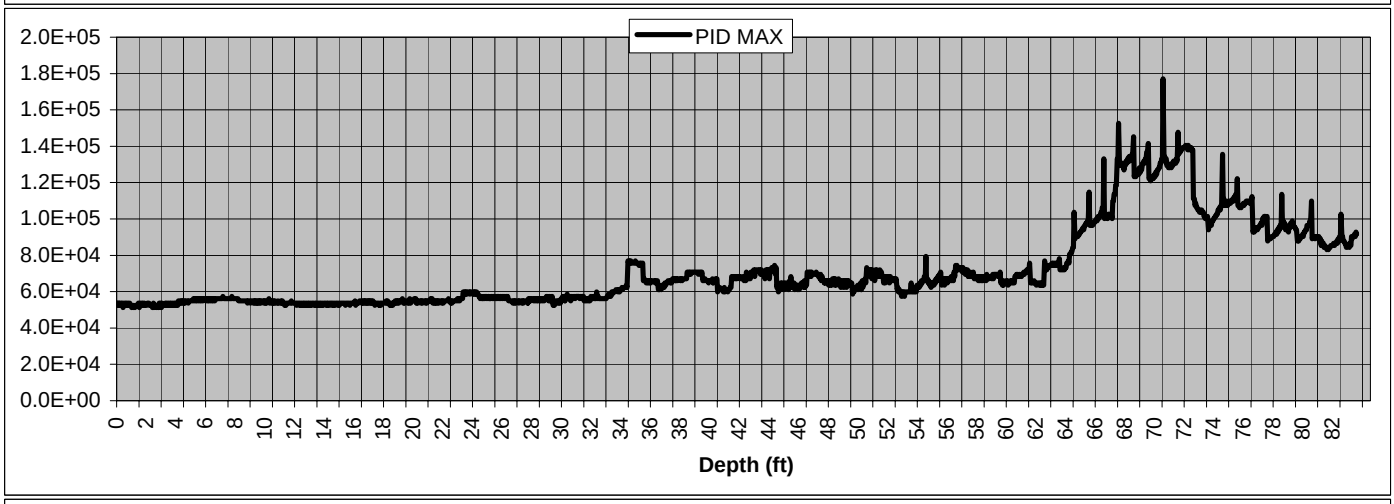


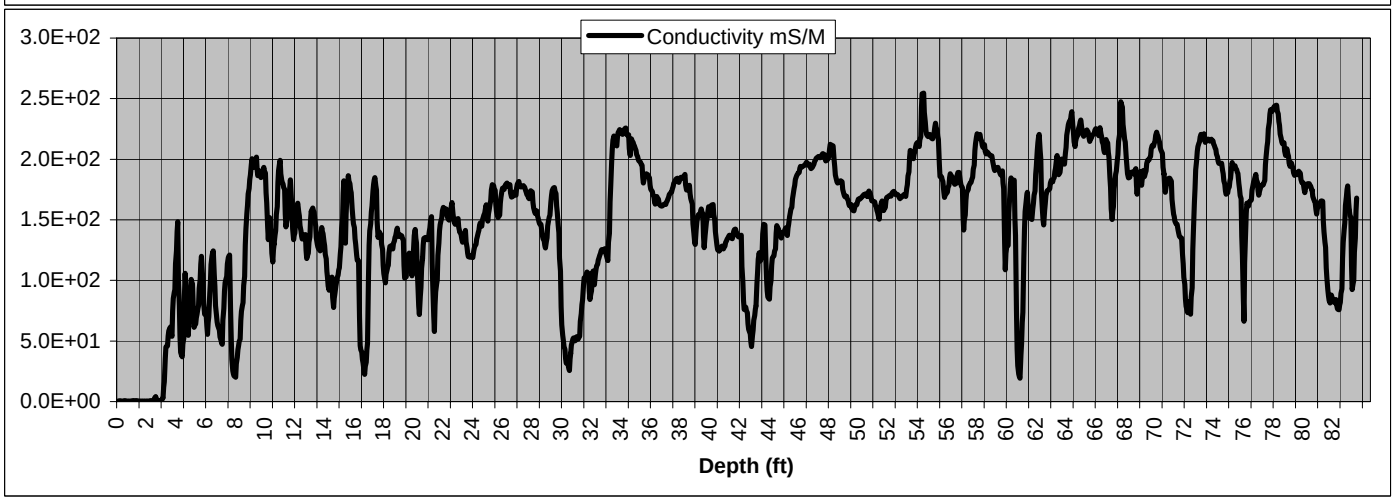
Explanation: FID/PID spike at 21.5 feet due to attenuation change. Hand auger to 5 feet.

MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-13	Detector 1 :	Electron Capture (ECD)
Project:	0.00	Date:	Sep 28 2005	Detector 2 :	Photo Ionization (PID)
Job Number:	0.00	Time:	15:42	Detector 3 :	Electrical Conductance (EC)

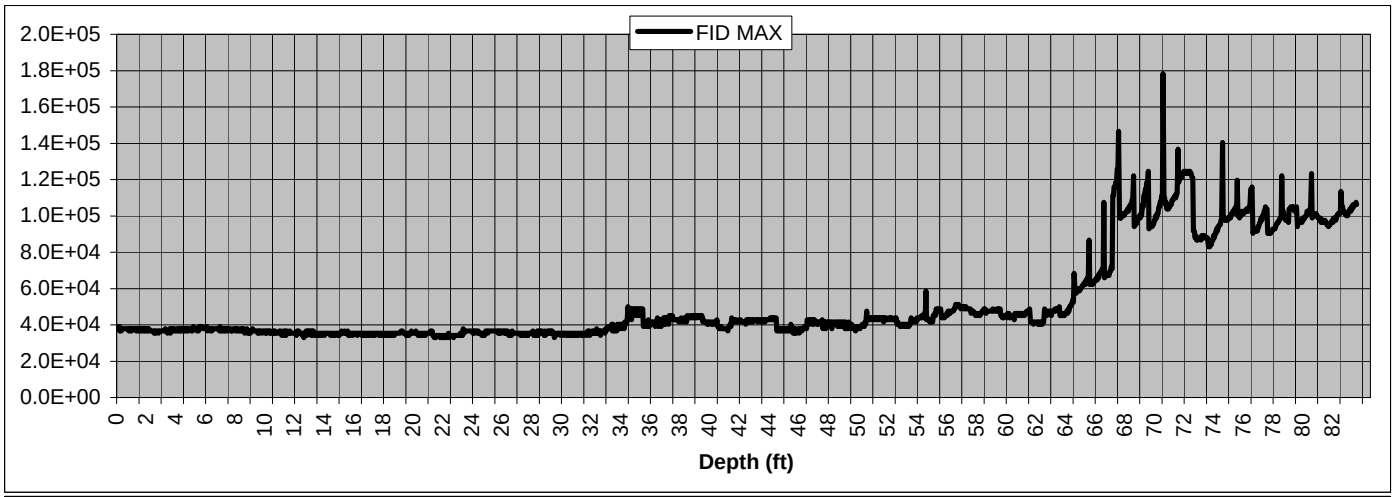


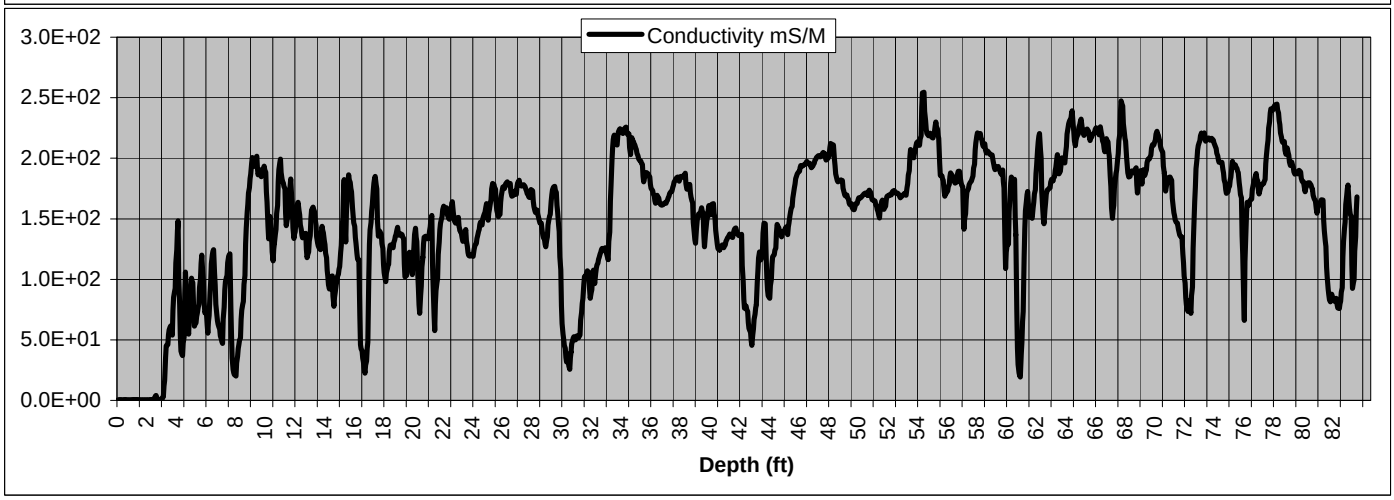




MIP Log Results by Boring - Detector Reading vs. Depth

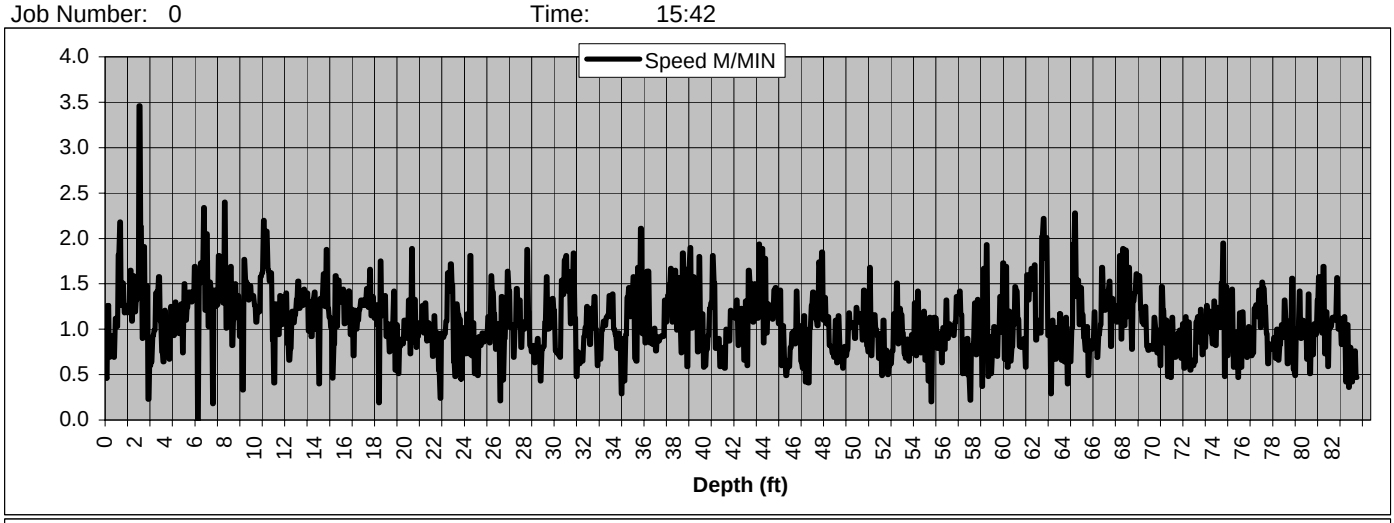
Client:	0	Boring I.D.:	MIP-13	Detector 1 :	Flame Ionization Det. (FID)
Project:	0	Date:	Sep 28 2005	Detector 2 :	Electrical Conductance (EC)
Job Number:	0	Time:	15:42		

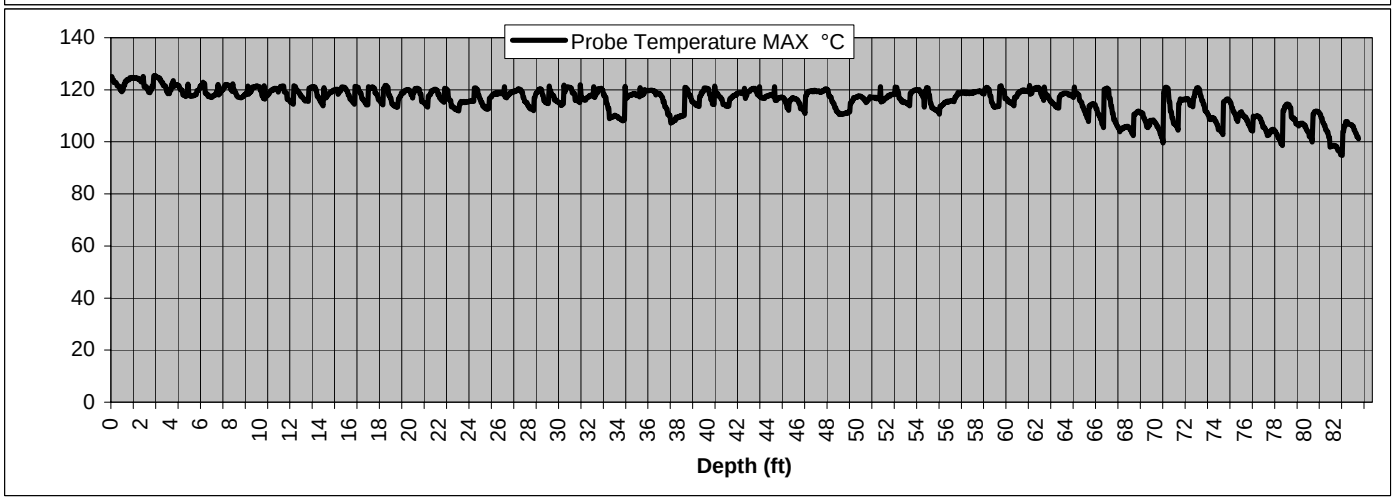




MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-13	Detector 1 :	Probe Speed
Project:	0	Date:	Sep 28 2005	Detector 2 :	Probe Temperature
Job Number:	0	Time:	15:42		

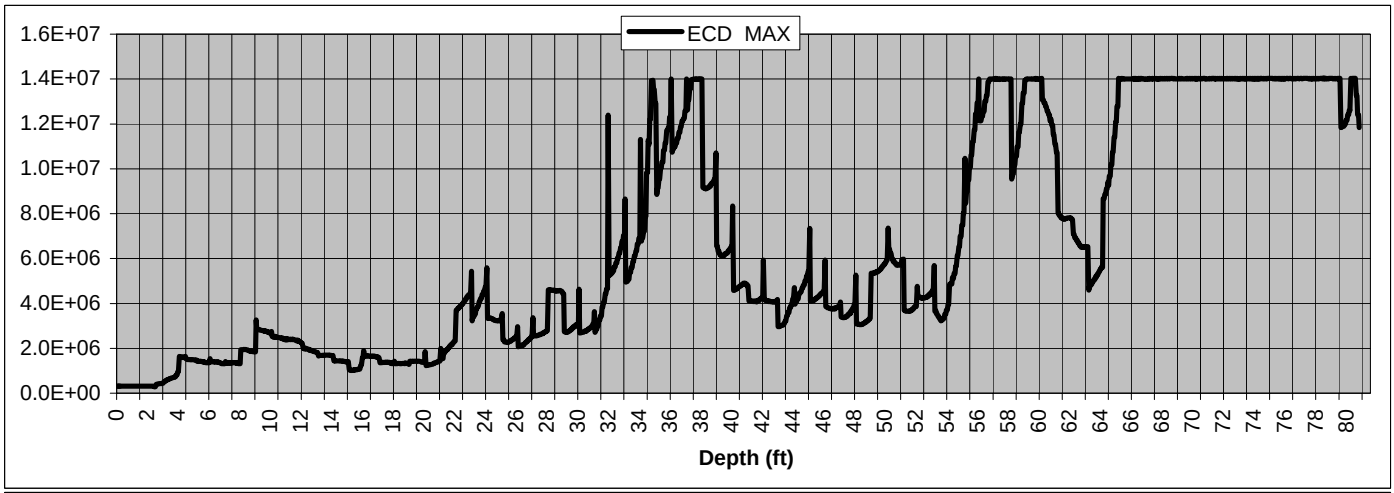


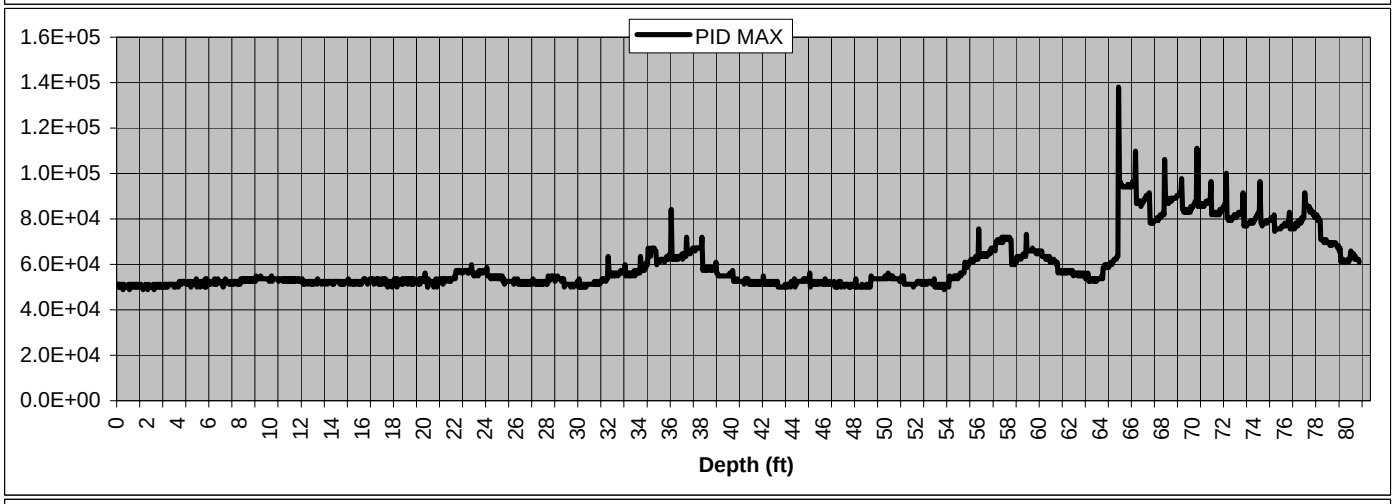


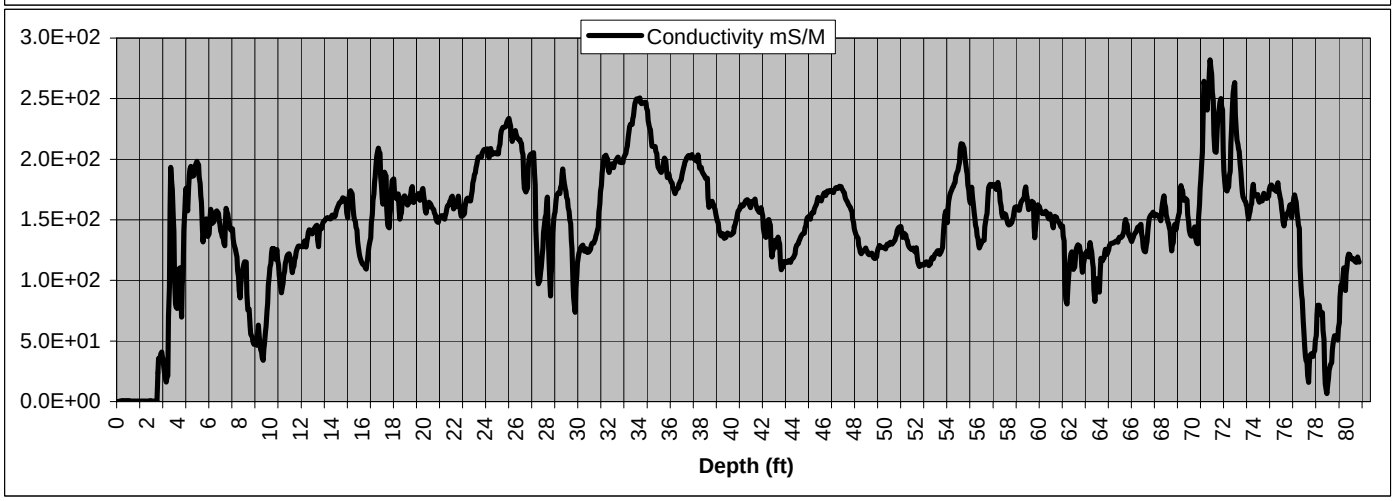
Explanation:

MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-15	Detector 1 :	Electron Capture (ECD)
Project:	0.00	Date:	Sep 28 2005	Detector 2 :	Photo Ionization (PID)
Job Number:	0.00	Time:	13:20	Detector 3 :	Electrical Conductance (EC)

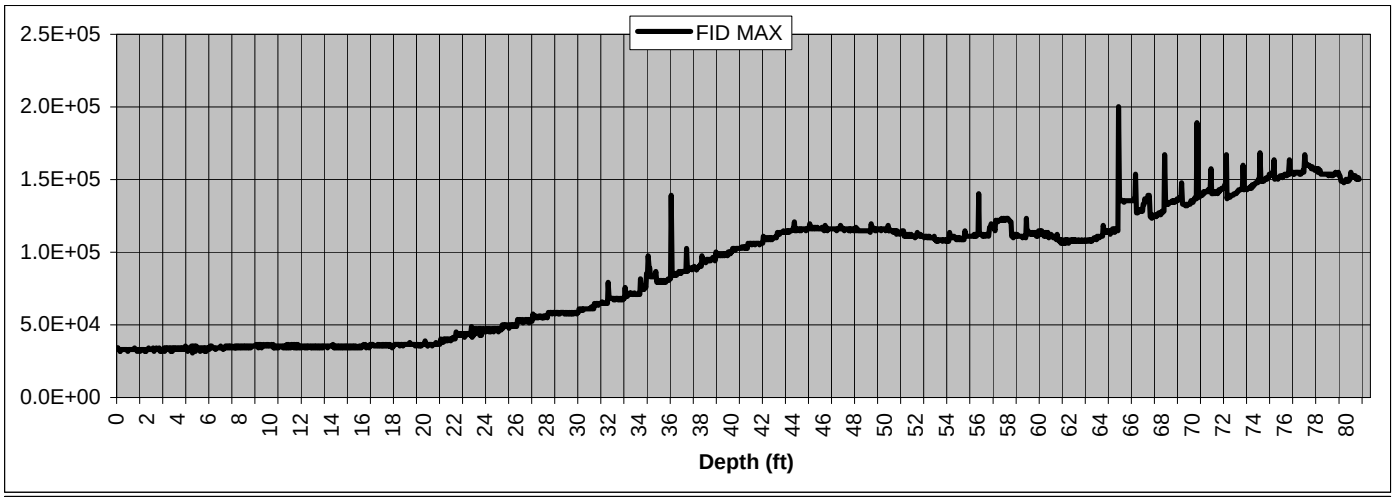


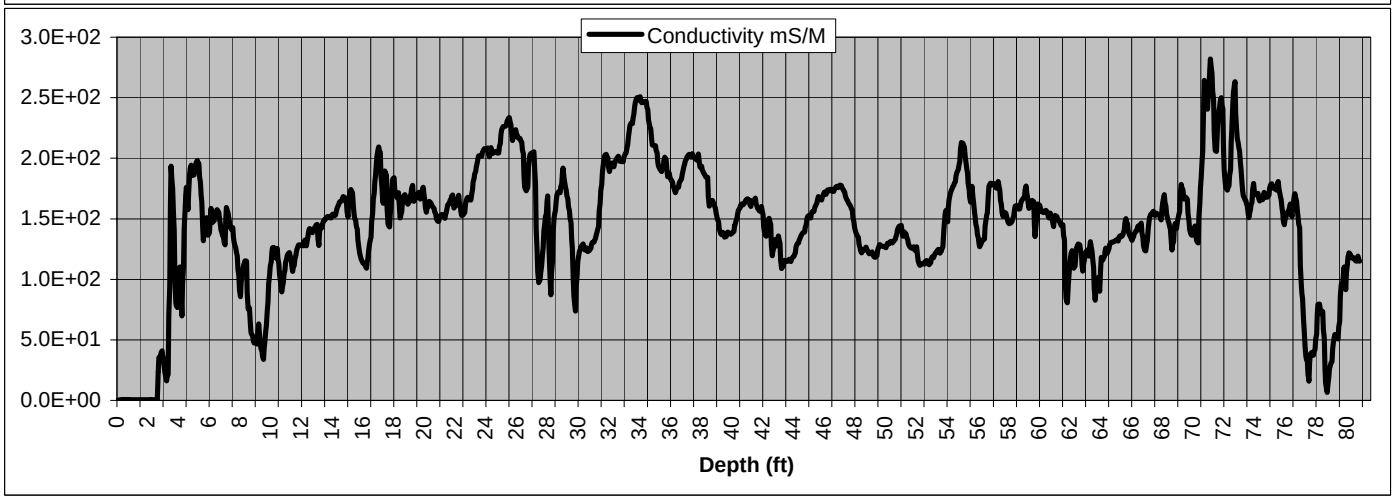




MIP Log Results by Boring - Detector Reading vs. Depth

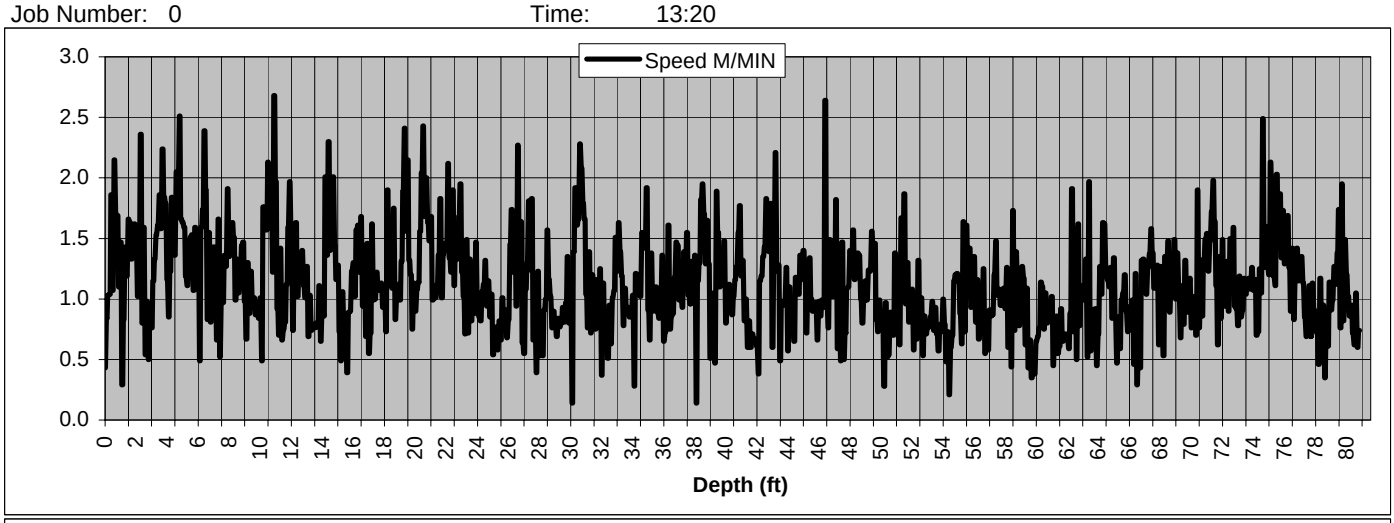
Client:	0	Boring I.D.:	MIP-15	Detector 1 :	Flame Ionization Det. (FID)
Project:	0	Date:	Sep 28 2005	Detector 2 :	Electrical Conductance (EC)
Job Number:	0	Time:	13:20		

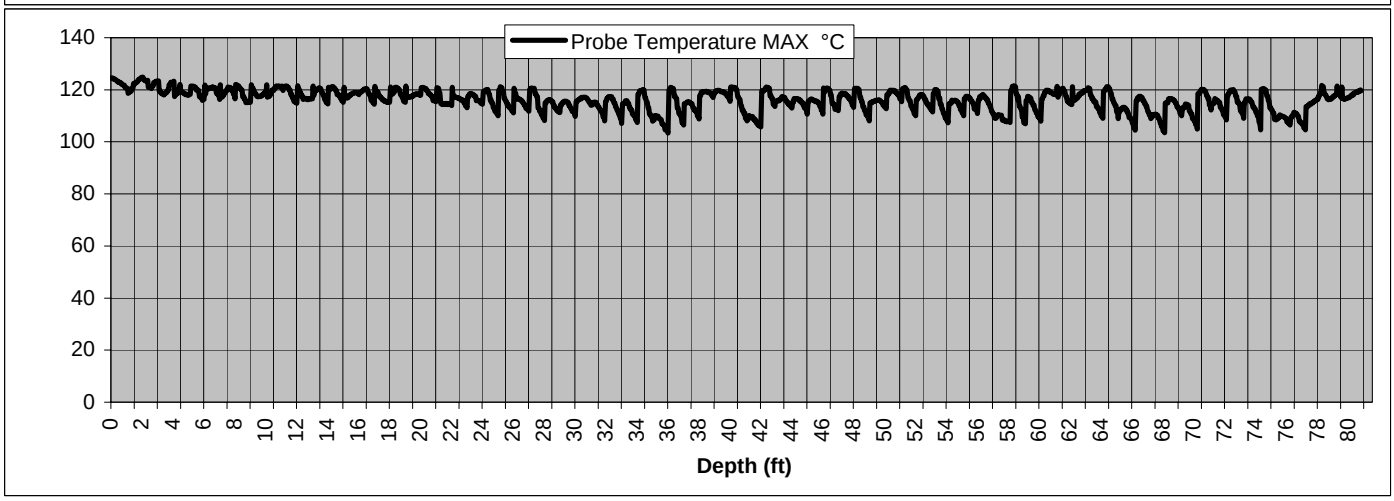




MIP Log Results by Boring - Detector Reading vs. Depth

Client:	0	Boring I.D.:	MIP-15	Detector 1 :	Probe Speed
Project:	0	Date:	Sep 28 2005	Detector 2 :	Probe Temperature
Job Number:	0	Time:	13:20		

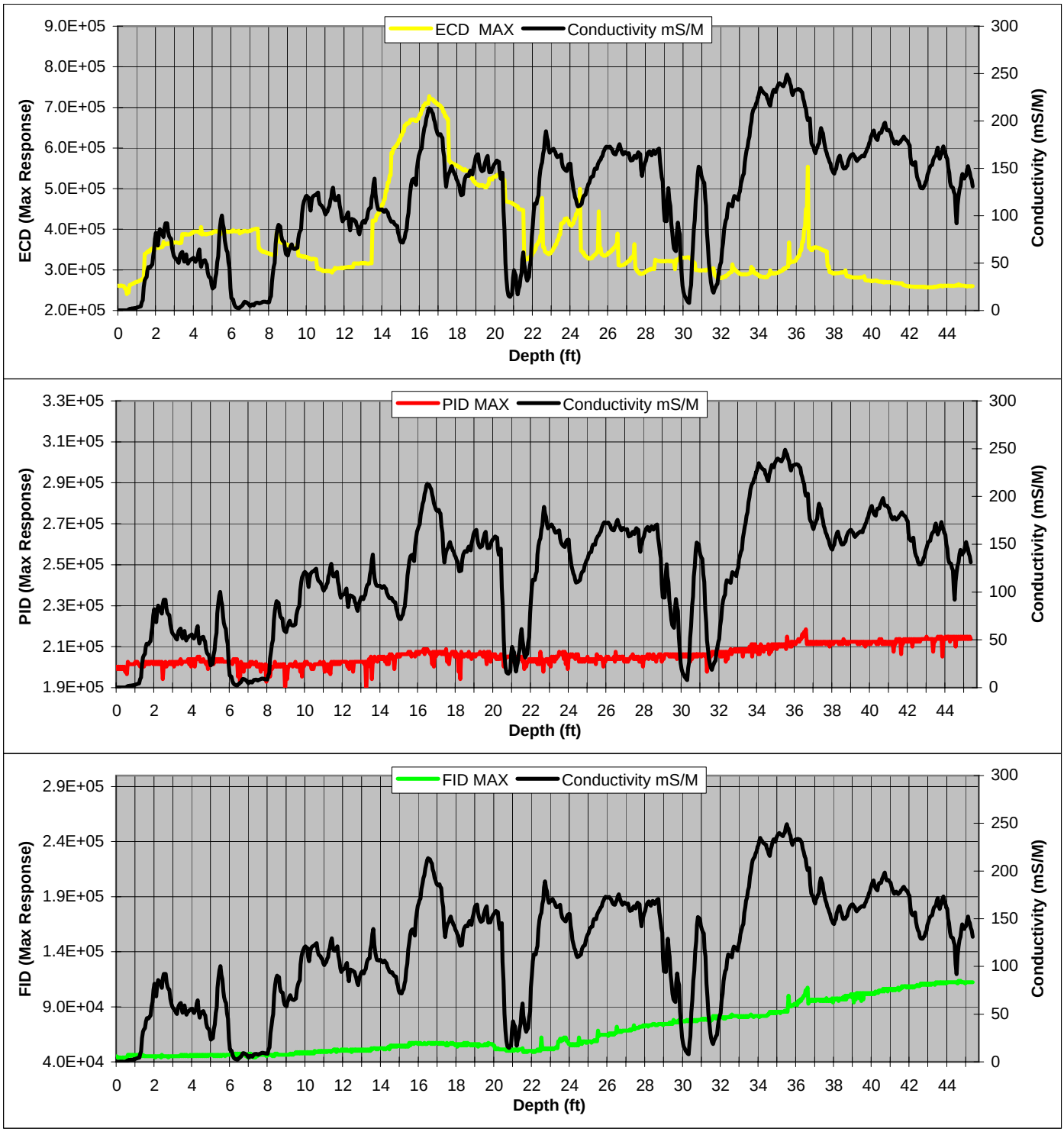




Explanation:

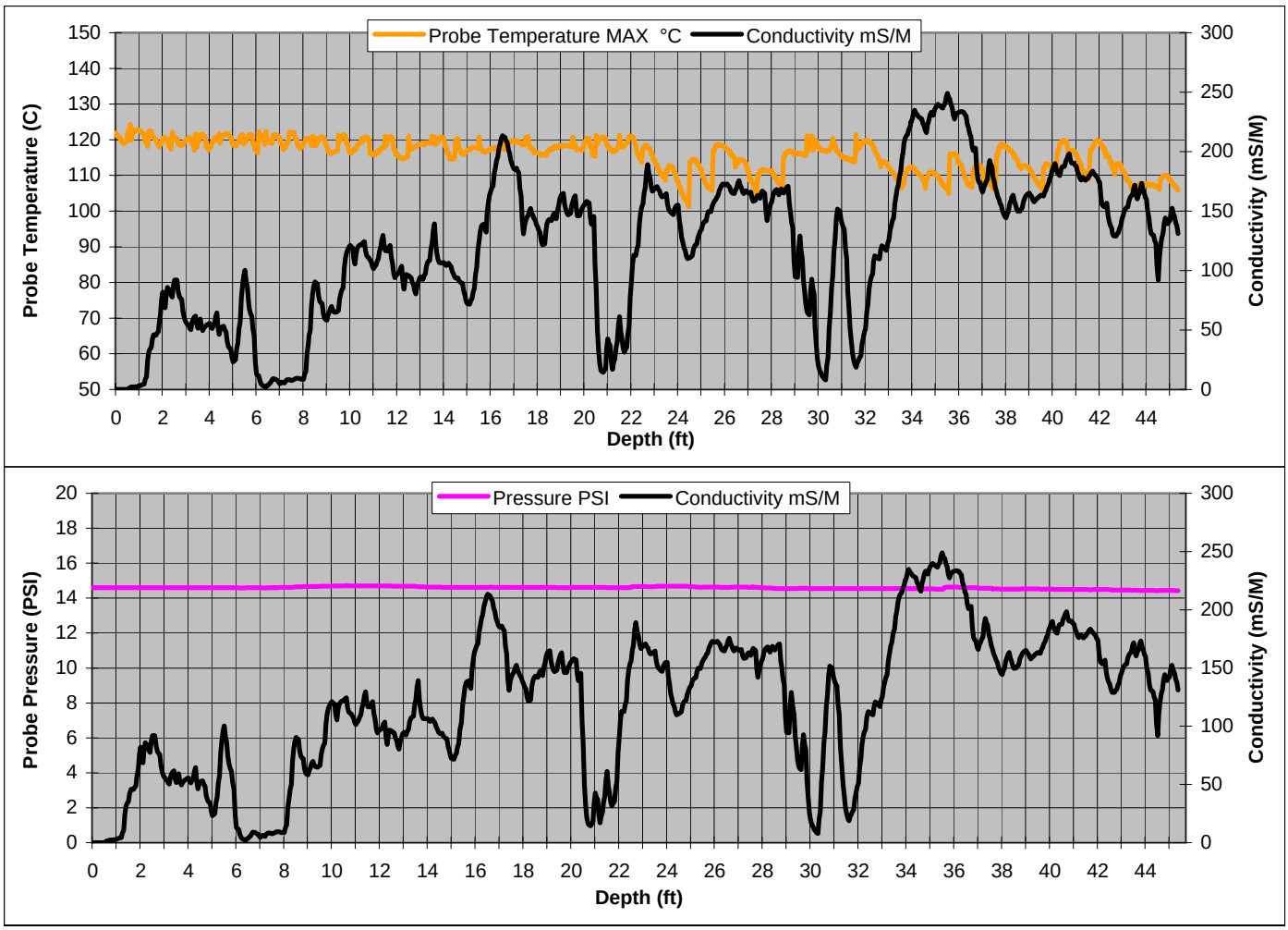
MIP Log Results by Boring - Detector Reading vs. Depth

Client:	CDM	Boring I.D.:	MIP-16	Detector 1 :	Electron Capture (ECD)
		Date:	Dec 05 2005	Detector 2 :	Photo Ionization (PID)
		Time:	10:02	Detector 3 :	Flame Ionization (FID)



MIP Log Results by Boring - Detector Reading vs. Depth

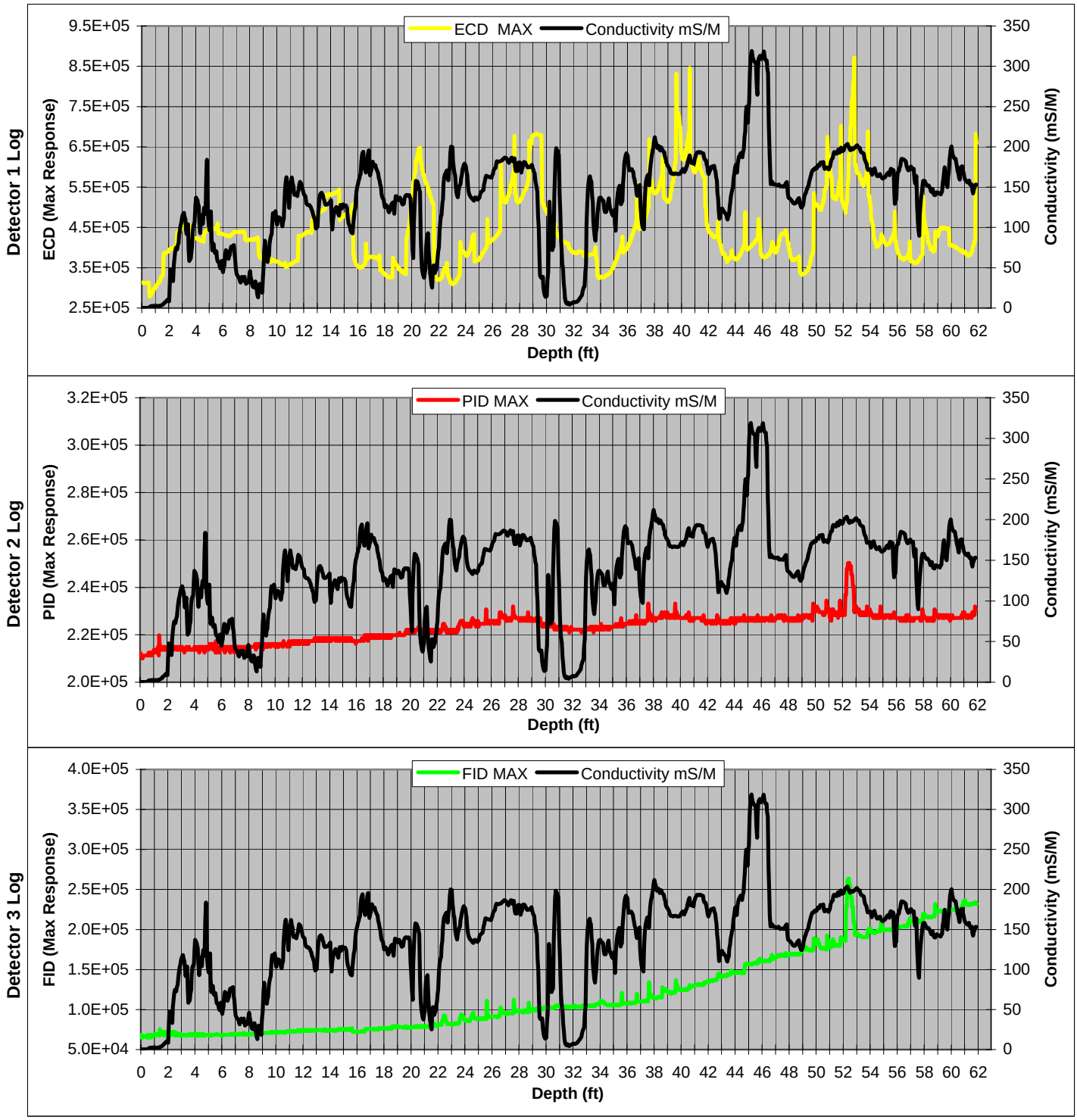
Client:	CDM	Boring I.D.:	MIP-16	Graph 1 :	Probe Temperature (C)
		Date:	Dec 05 2005	Graph 2 :	Probe Pressure (PSI)
		Time:	10:02		



Explanation: Refusal was reached at 45.35 feet bgs.

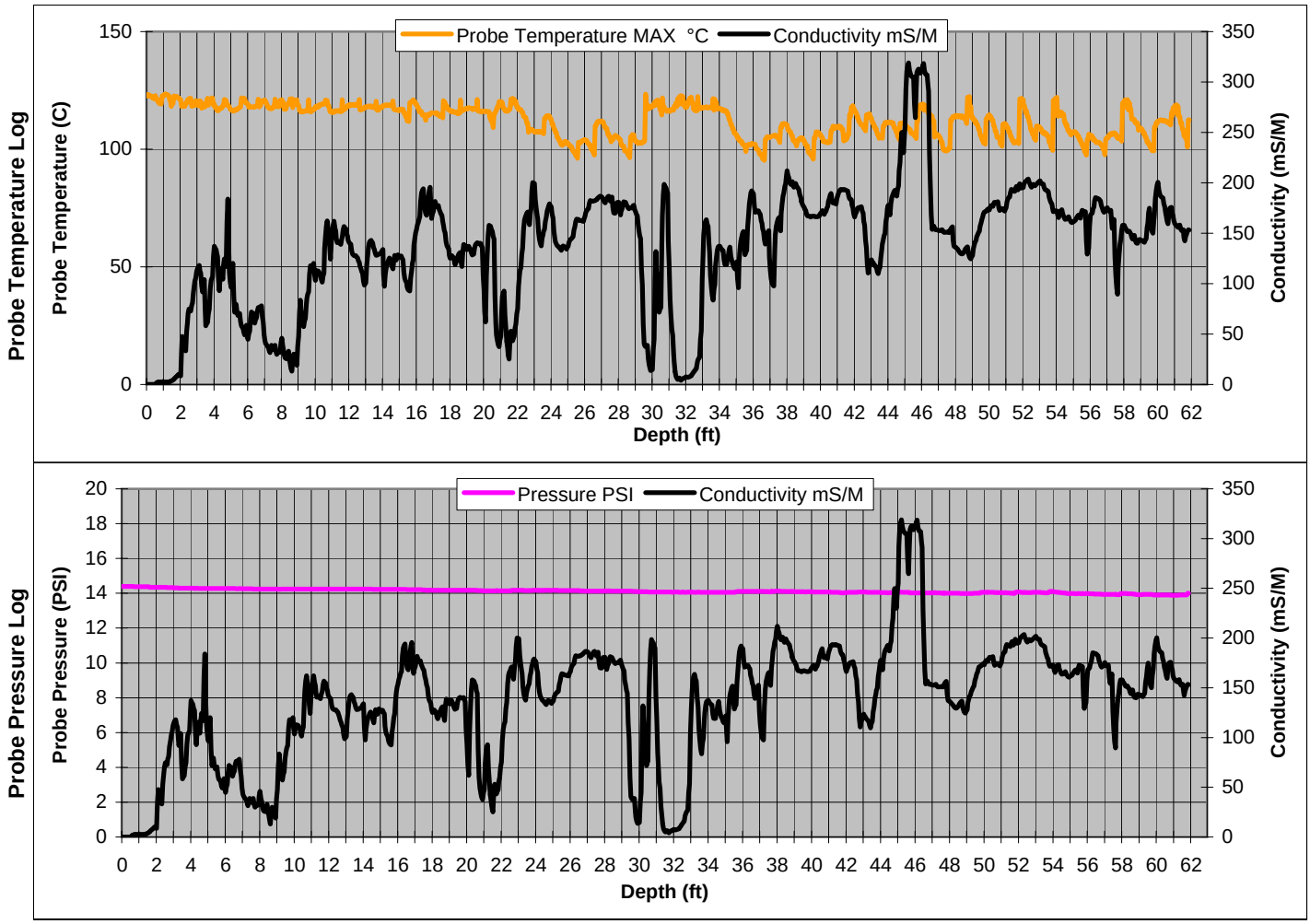
MIP Log Results by Boring - Detector Reading vs. Depth

Client:	CDM	Boring I.D.:	MIP-16a	Detector 1 :	Electron Capture (ECD)
		Date:	Dec 05 2005	Detector 2 :	Photo Ionization (PID)
		Time:	12:41	Detector 3 :	Flame Ionization (FID)



MIP Log Results by Boring - Detector Reading vs. Depth

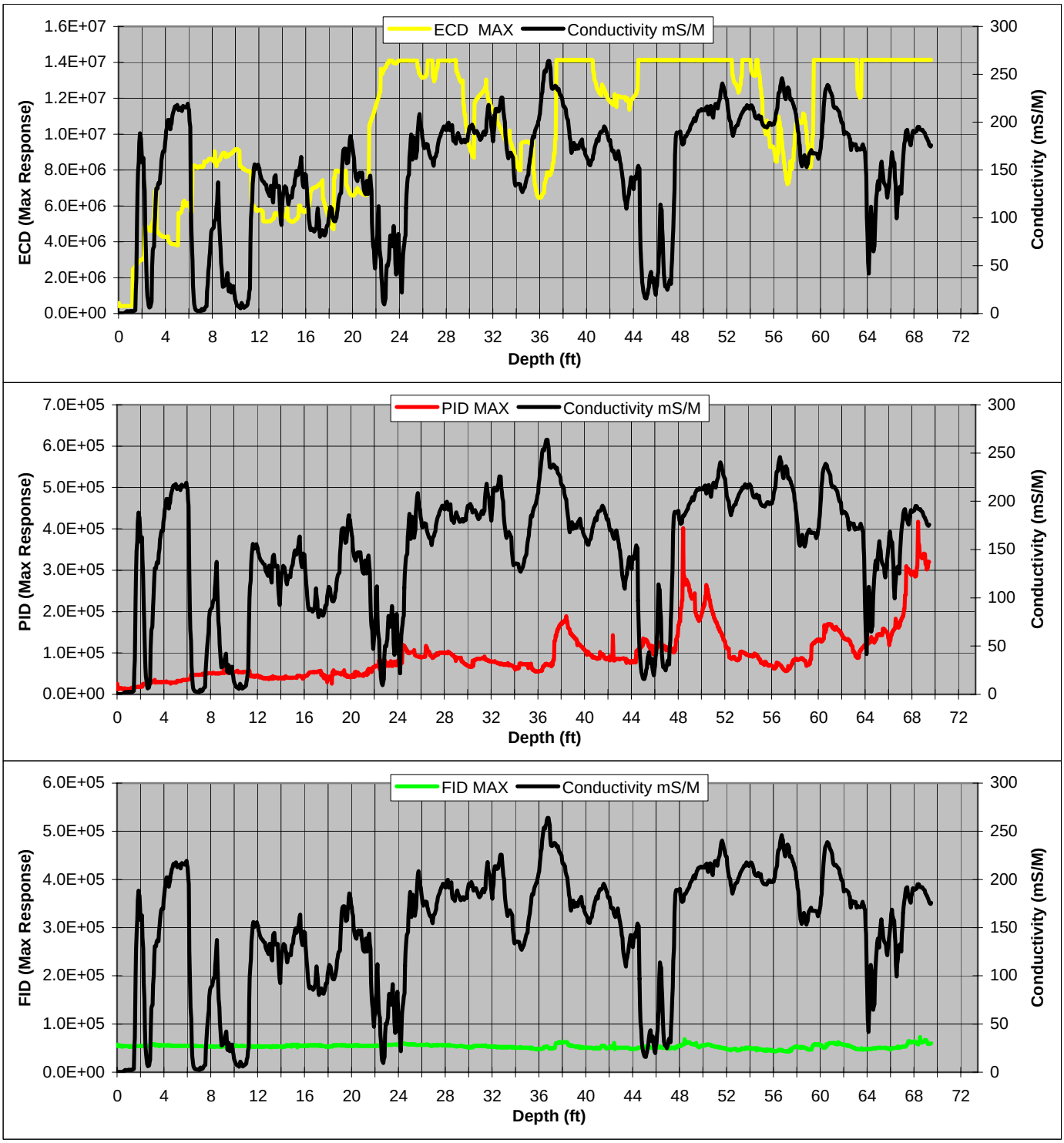
Client:	CDM	Boring I.D.:	MIP-16a	Graph 1 :	Probe Temperature (C)
		Date:	Dec 05 2005	Graph 2 :	Probe Pressure (PSI)
		Time:	12:41		



Explanatio

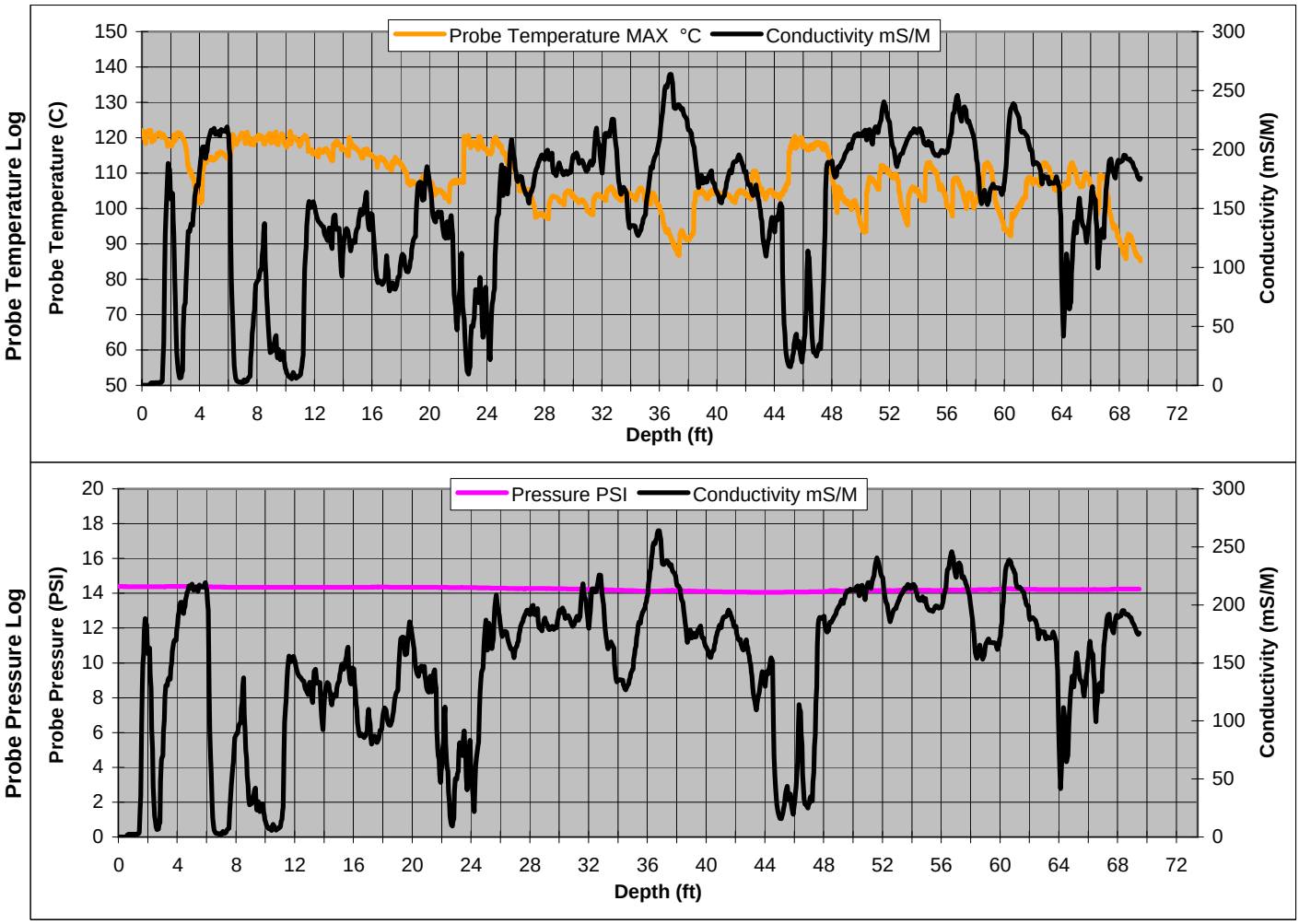
MIP Log Results by Boring - Detector Reading vs. Depth

Client:	CDM	Boring I.D.:	MIP-17	Detector 1 :	Electron Capture (ECD)
		Date:	Dec 09 2005	Detector 2 :	Photo Ionization (PID)
		Time:	10:59	Detector 3 :	Flame Ionization (FID)



MIP Log Results by Boring - Detector Reading vs. Depth

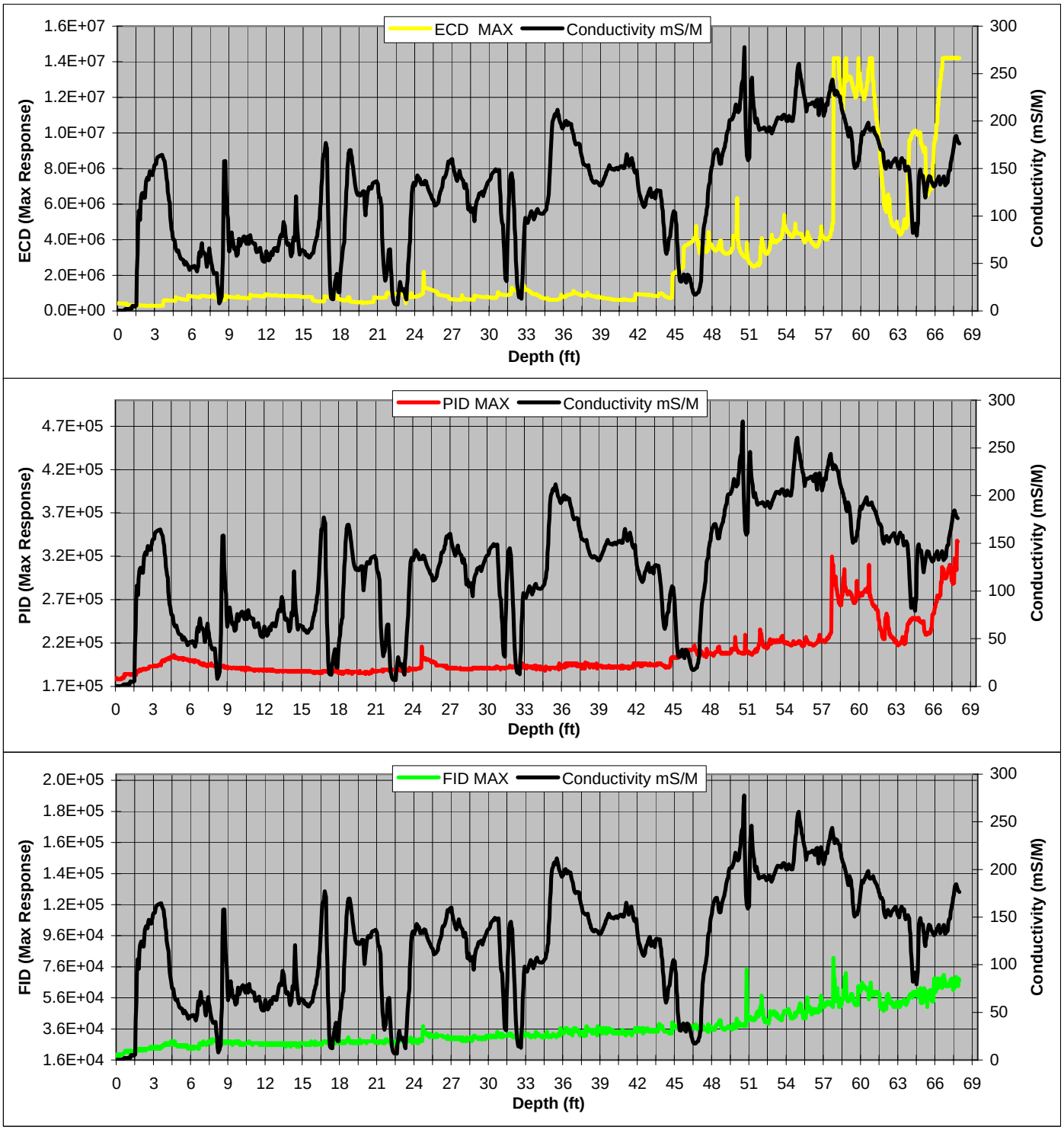
Client:	CDM	Boring I.D.:	MIP-17	Graph 1 :	Probe Temperature (C)
		Date:	Dec 09 2005	Graph 2 :	Probe Pressure (PSI)
		Time:	10:59		



Explanation: Refusal was reached at 69.45 feet bgs. End of day response test not completed due to baseline. PID baseline set at 200.

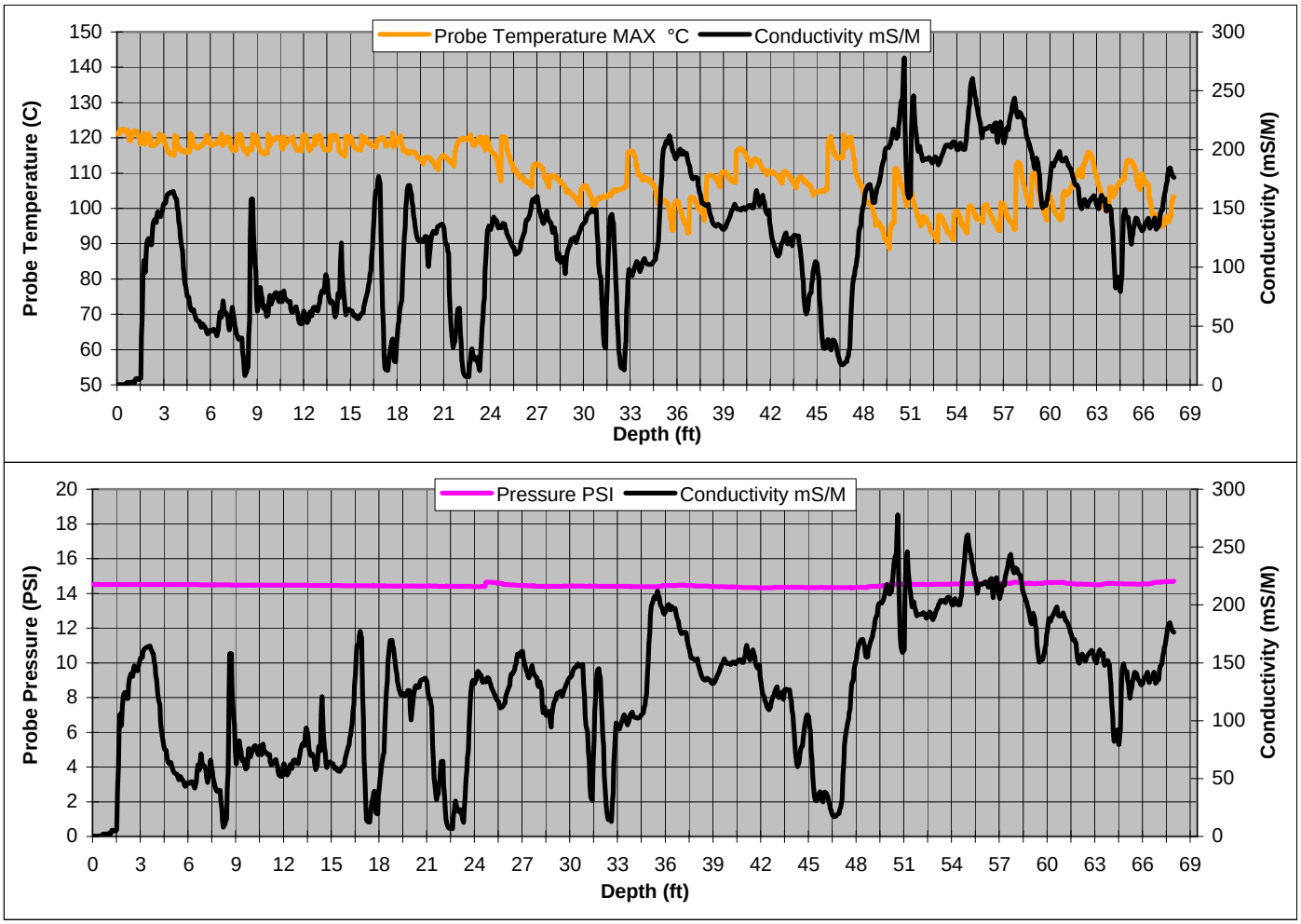
MIP Log Results by Boring - Detector Reading vs. Depth

Client:	CDM	Boring I.D.:	MIP-18	Detector 1 :	Electron Capture (ECD)
		Date:	Dec 09 2005	Detector 2 :	Photo Ionization (PID)
		Time:	08:03	Detector 3 :	Flame Ionization (FID)



MIP Log Results by Boring - Detector Reading vs. Depth

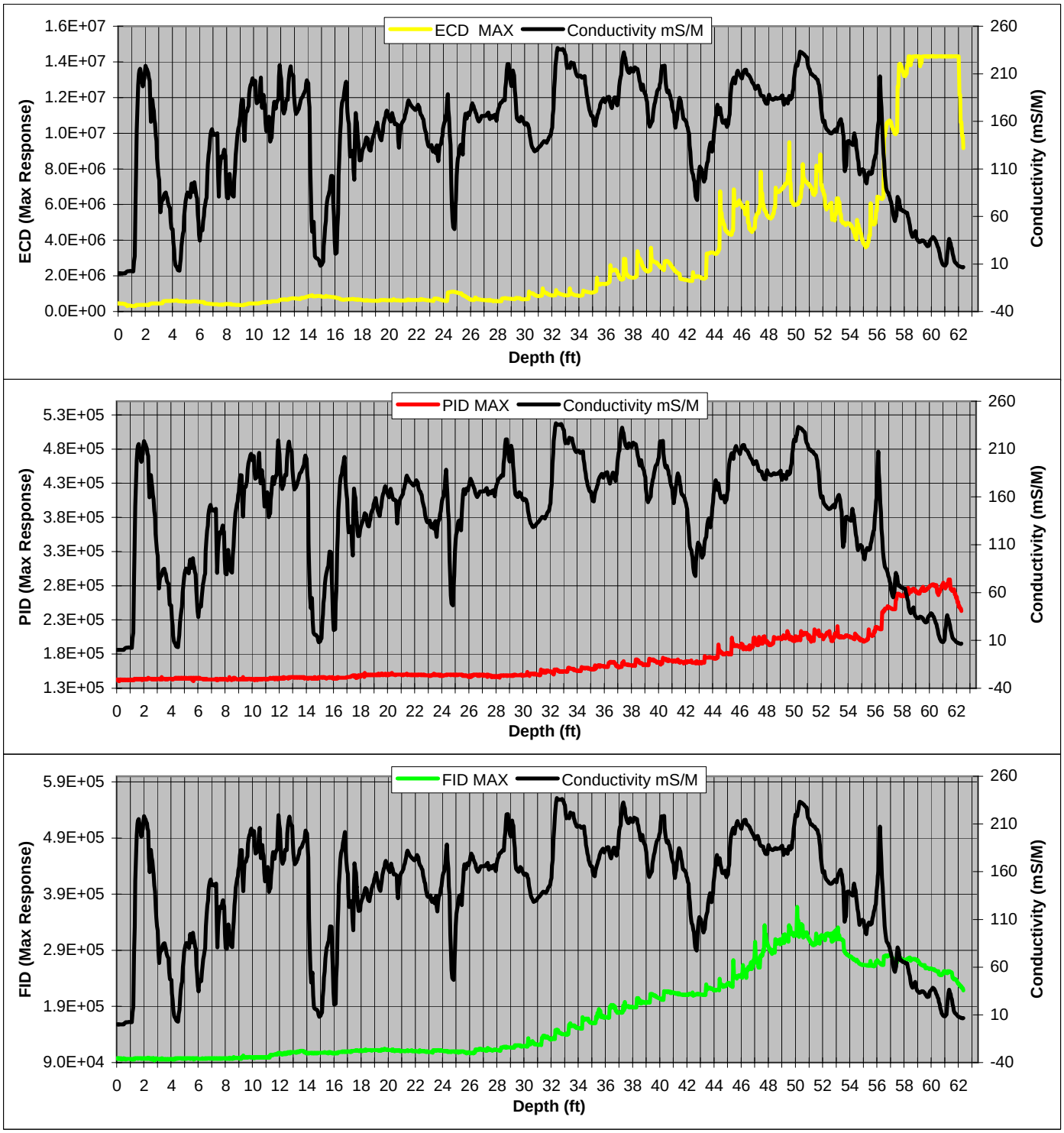
Client:	CDM	Boring I.D.:	MIP-18	Graph 1 :	Probe Temperature (C)
		Date:	Dec 09 2005	Graph 2 :	Probe Pressure (PSI)
		Time:	08:03		



Explanation: Refusal was reached at 67.95 feet bgs.

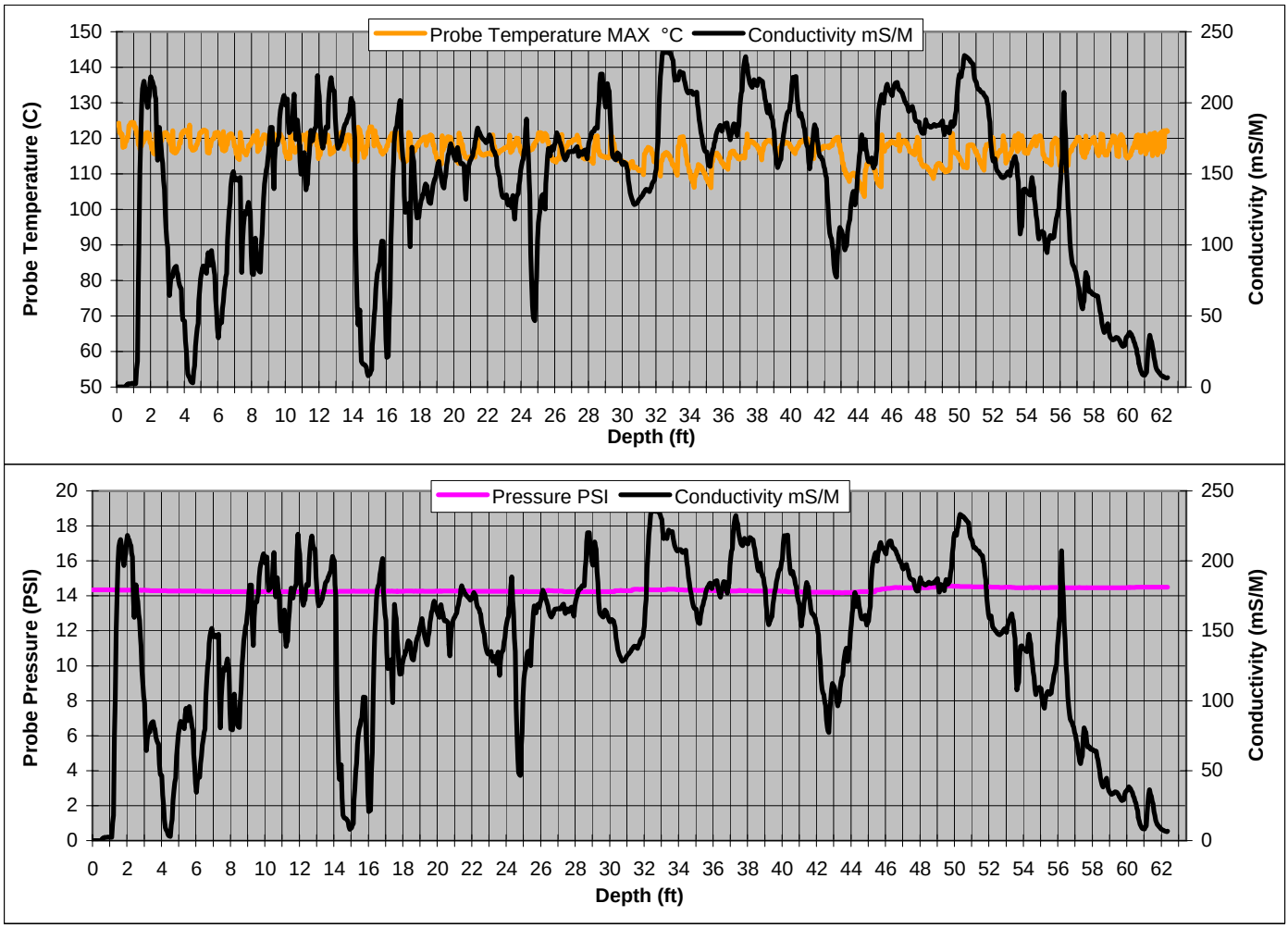
MIP Log Results by Boring - Detector Reading vs. Depth

Client:	CDM	Boring I.D.:	MIP-19	Detector 1 :	Electron Capture (ECD)
		Date:	Dec 07 2005	Detector 2 :	Photo Ionization (PID)
		Time:	08:59	Detector 3 :	Flame Ionization (FID)



MIP Log Results by Boring - Detector Reading vs. Depth

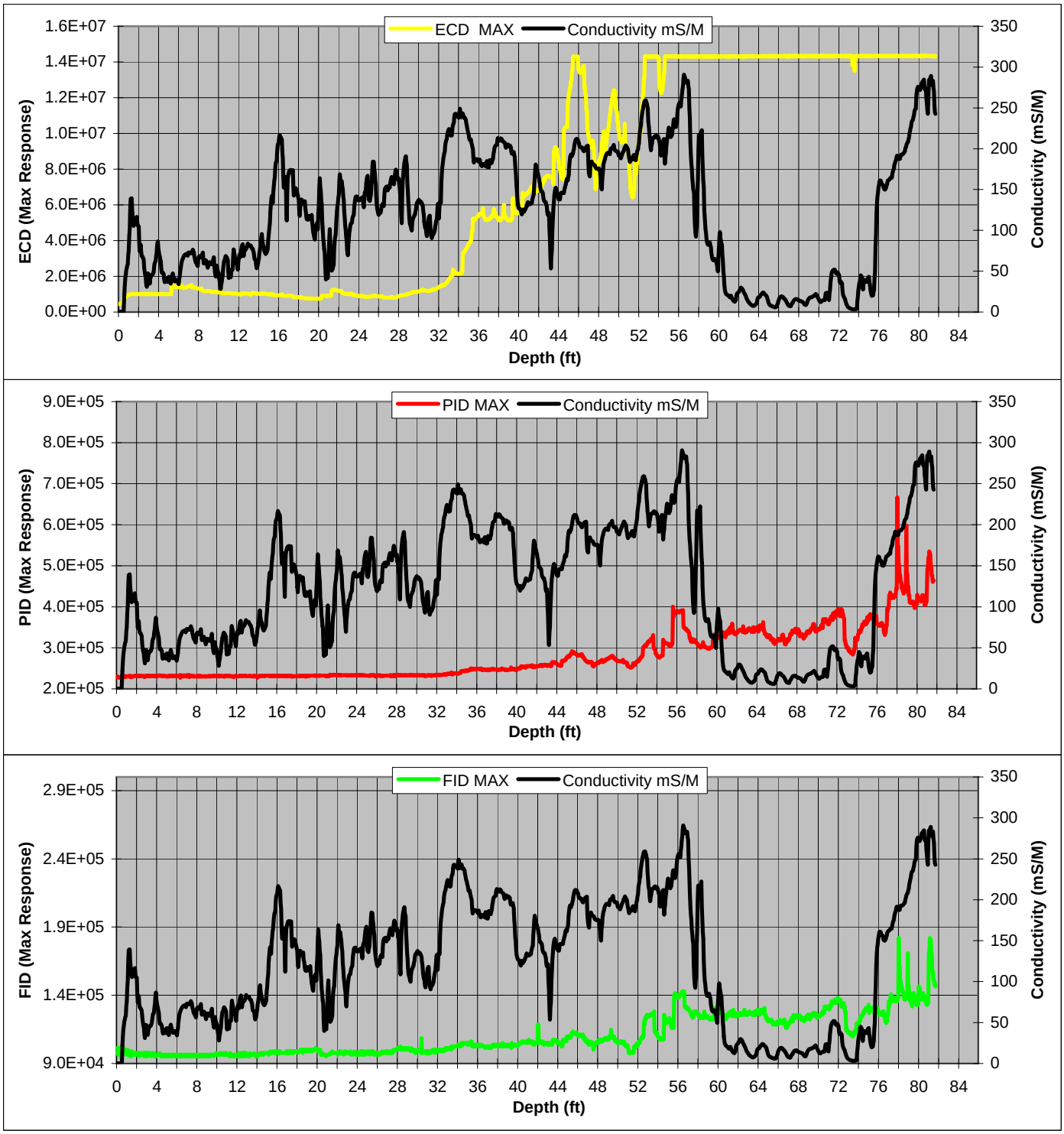
Client:	CDM	Boring I.D.:	MIP-19	Graph 1 :	Probe Temperature (C)
		Date:	Dec 07 2005	Graph 2 :	Probe Pressure (PSI)
		Time:	08:59		



Explanation: Refusal was reached at 62.35 feet bgs.

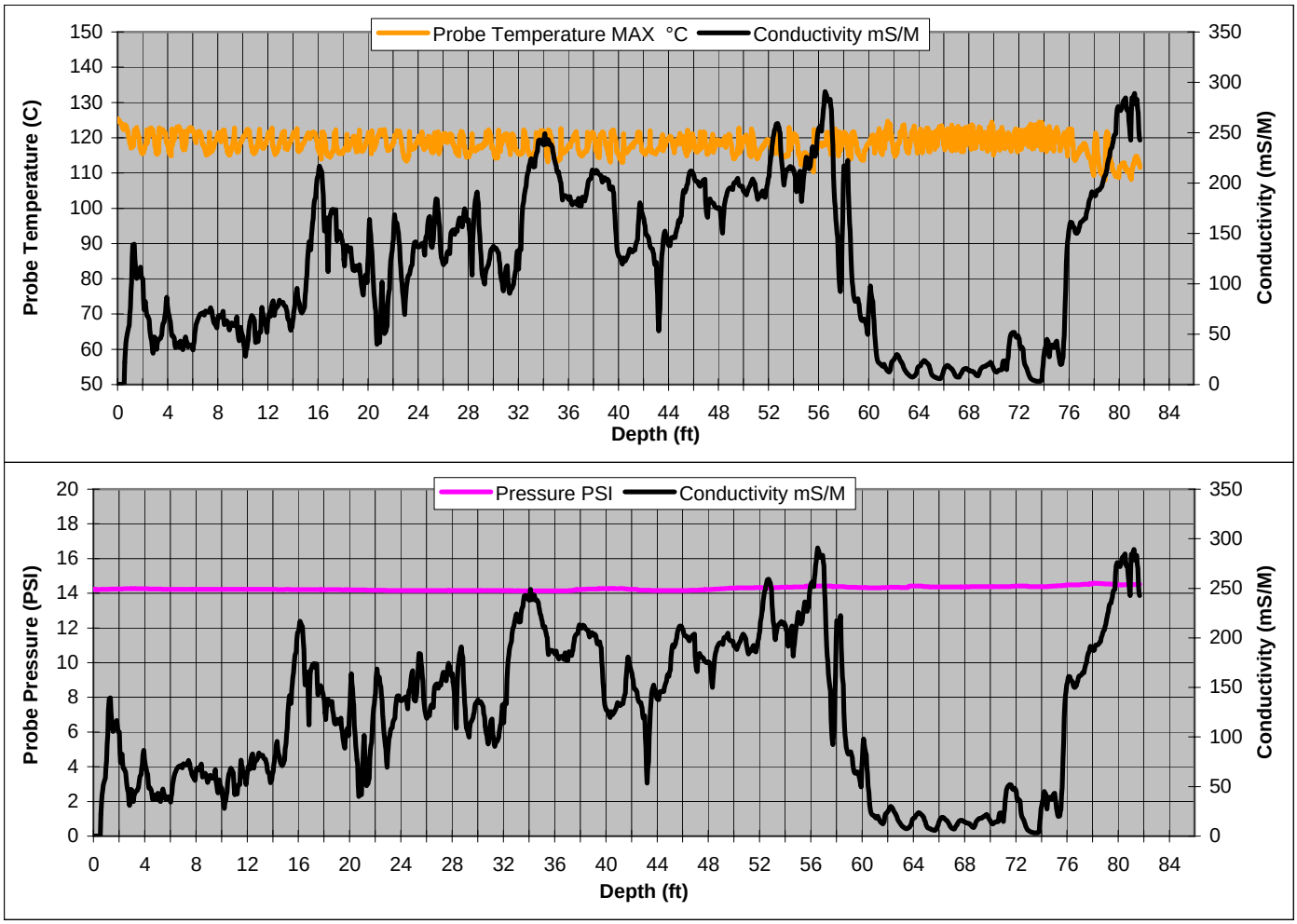
MIP Log Results by Boring - Detector Reading vs. Depth

Client:	CDM	Boring I.D.:	MIP-20	Detector 1 :	Electron Capture (ECD)
		Date:	Dec 07 2005	Detector 2 :	Photo Ionization (PID)
		Time:	12:08	Detector 3 :	Flame Ionization (FID)



MIP Log Results by Boring - Detector Reading vs. Depth

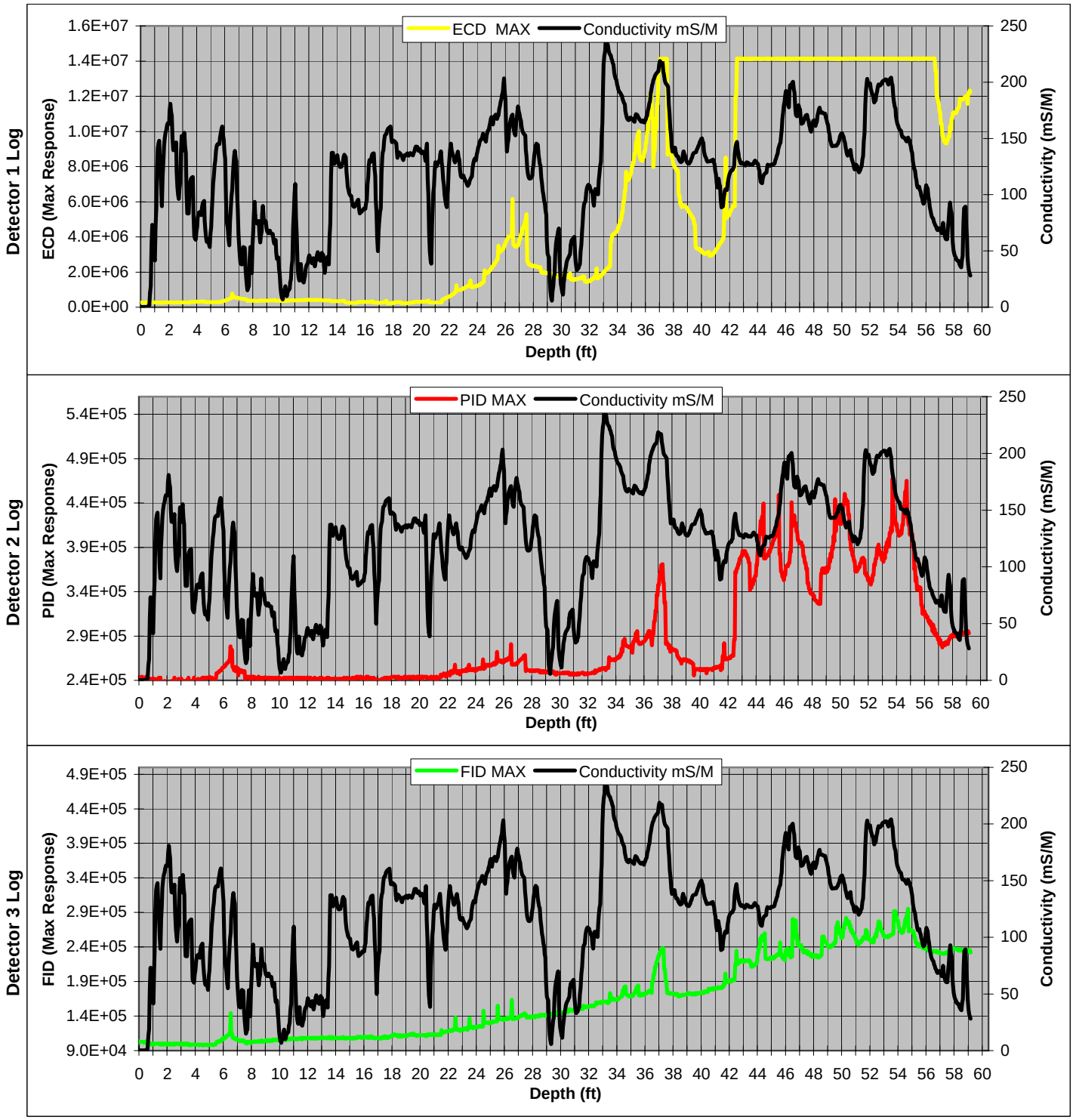
Client:	CDM	Boring I.D.:	MIP-20	Graph 1 :	Probe Temperature (C)
		Date:	Dec 07 2005	Graph 2 :	Probe Pressure (PSI)
		Time:	12:08		



Explanation: Rod broke upon removal.

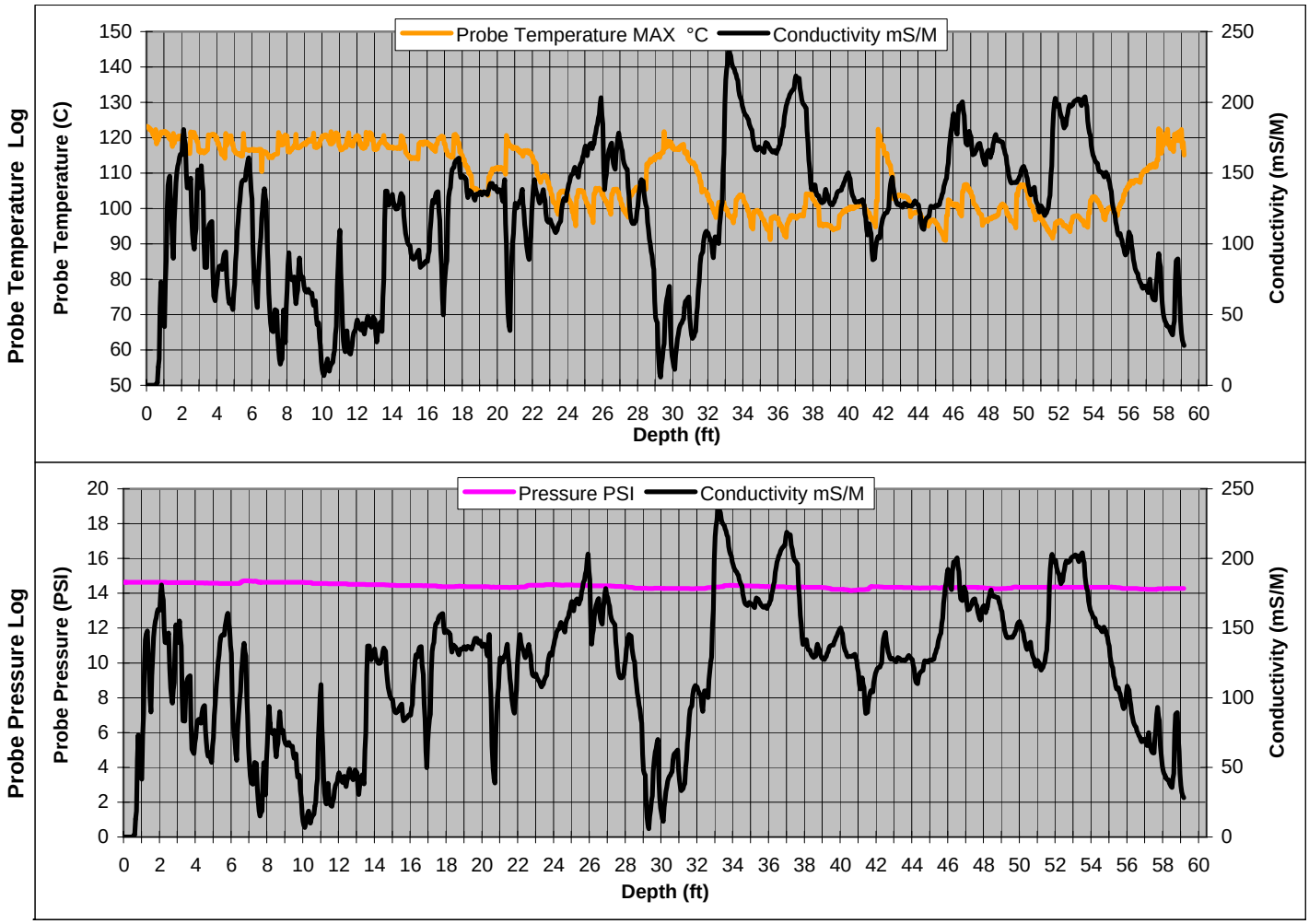
MIP Log Results by Boring - Detector Reading vs. Depth

Client:	CDM	Boring I.D.:	MIP-21	Detector 1 :	Electron Capture (ECD)
		Date:	Dec 06 2005	Detector 2 :	Photo Ionization (PID)
		Time:	14:41	Detector 3 :	Flame Ionization (FID)



MIP Log Results by Boring - Detector Reading vs. Depth

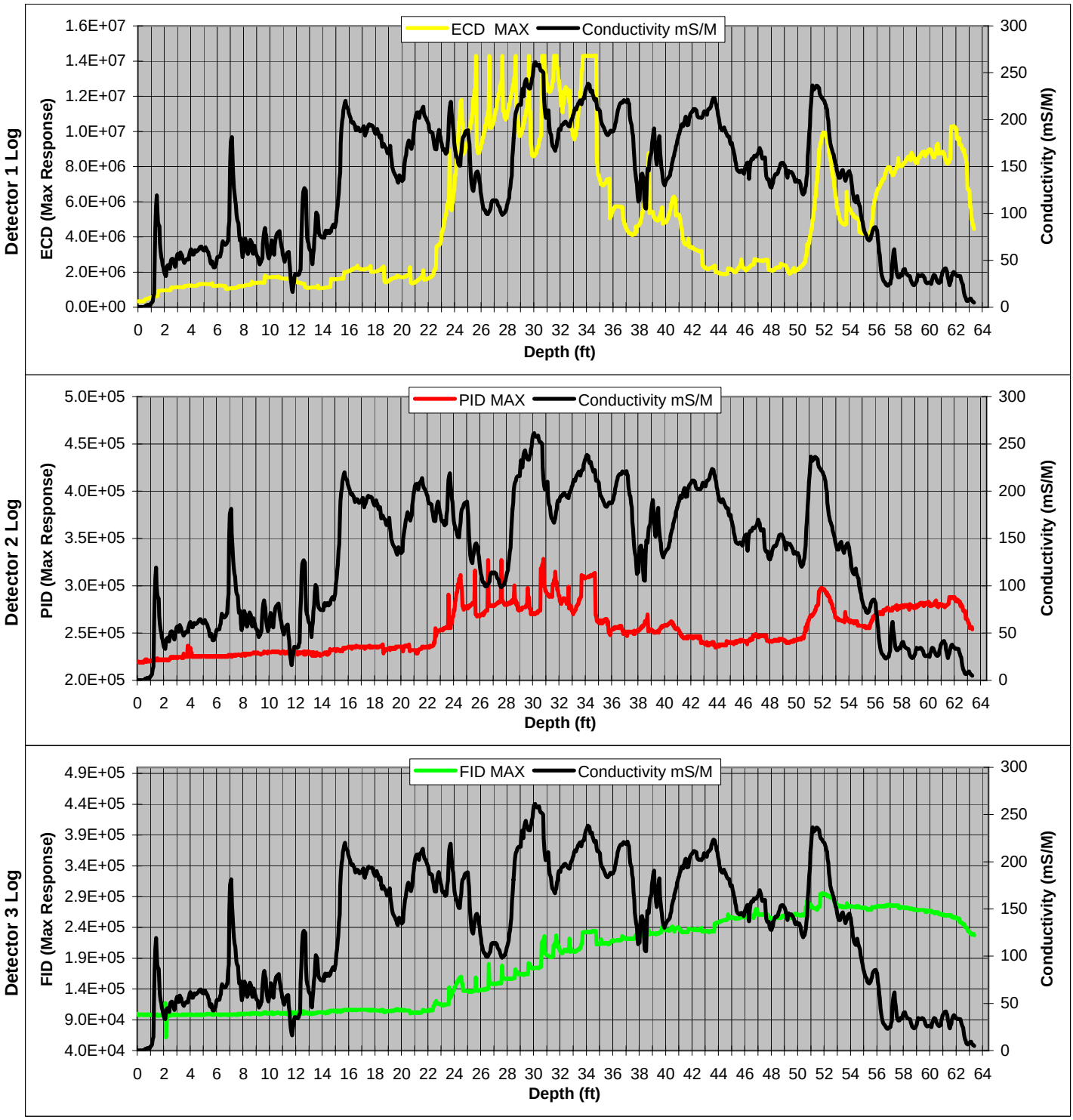
Client:	CDM	Boring I.D.:	MIP-21	Graph 1 :	Probe Temperature (C)
		Date:	Dec 06 2005	Graph 2 :	Probe Pressure (PSI)
		Time:	14:41		



Explanation: Refusal was reached at 59.15 feet bgs.

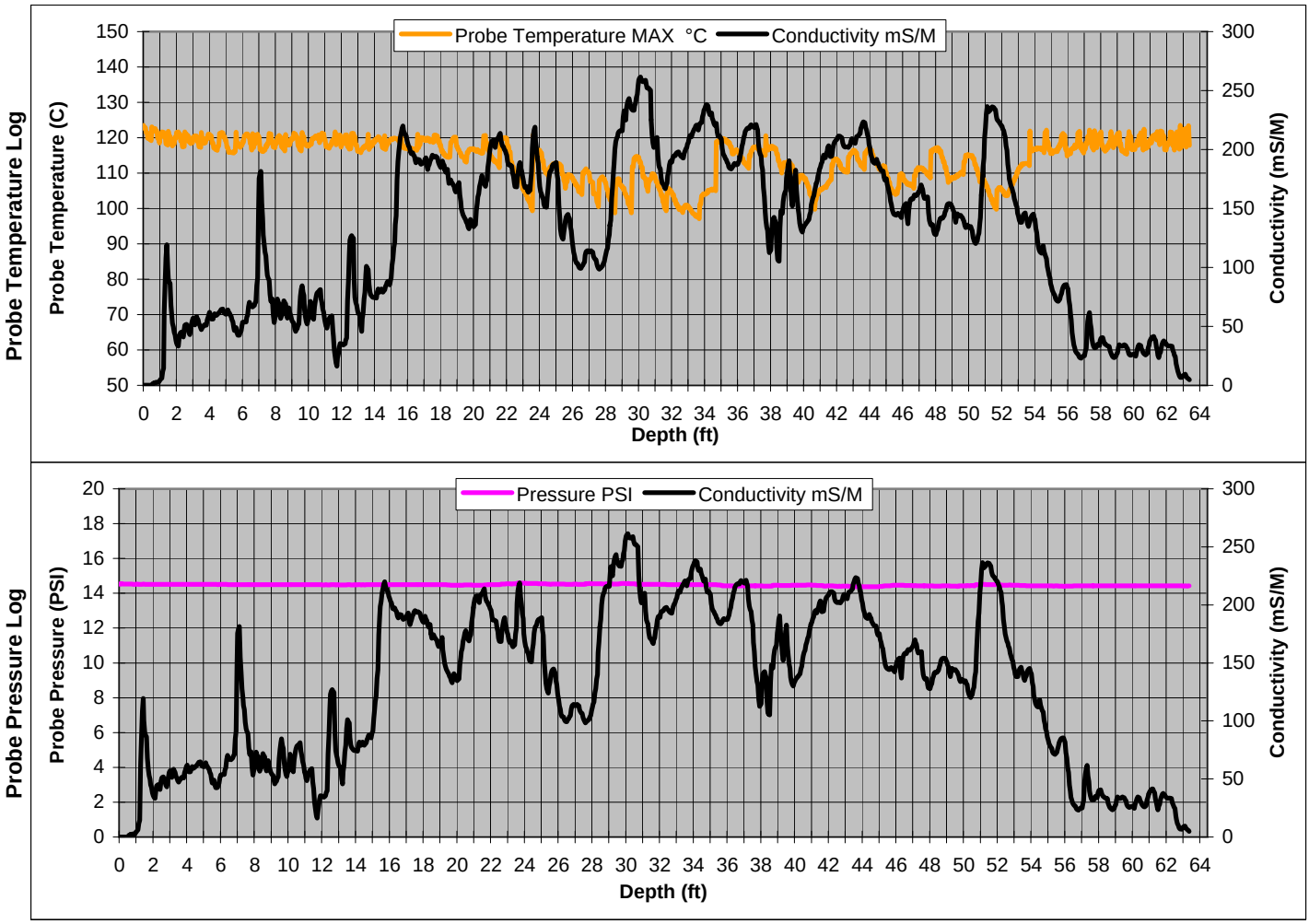
MIP Log Results by Boring - Detector Reading vs. Depth

Client:	CDM	Boring I.D.:	MIP-22	Detector 1 :	Electron Capture (ECD)
		Date:	Dec 06 2005	Detector 2 :	Photo Ionization (PID)
		Time:	12:09	Detector 3 :	Flame Ionization (FID)



MIP Log Results by Boring - Detector Reading vs. Depth

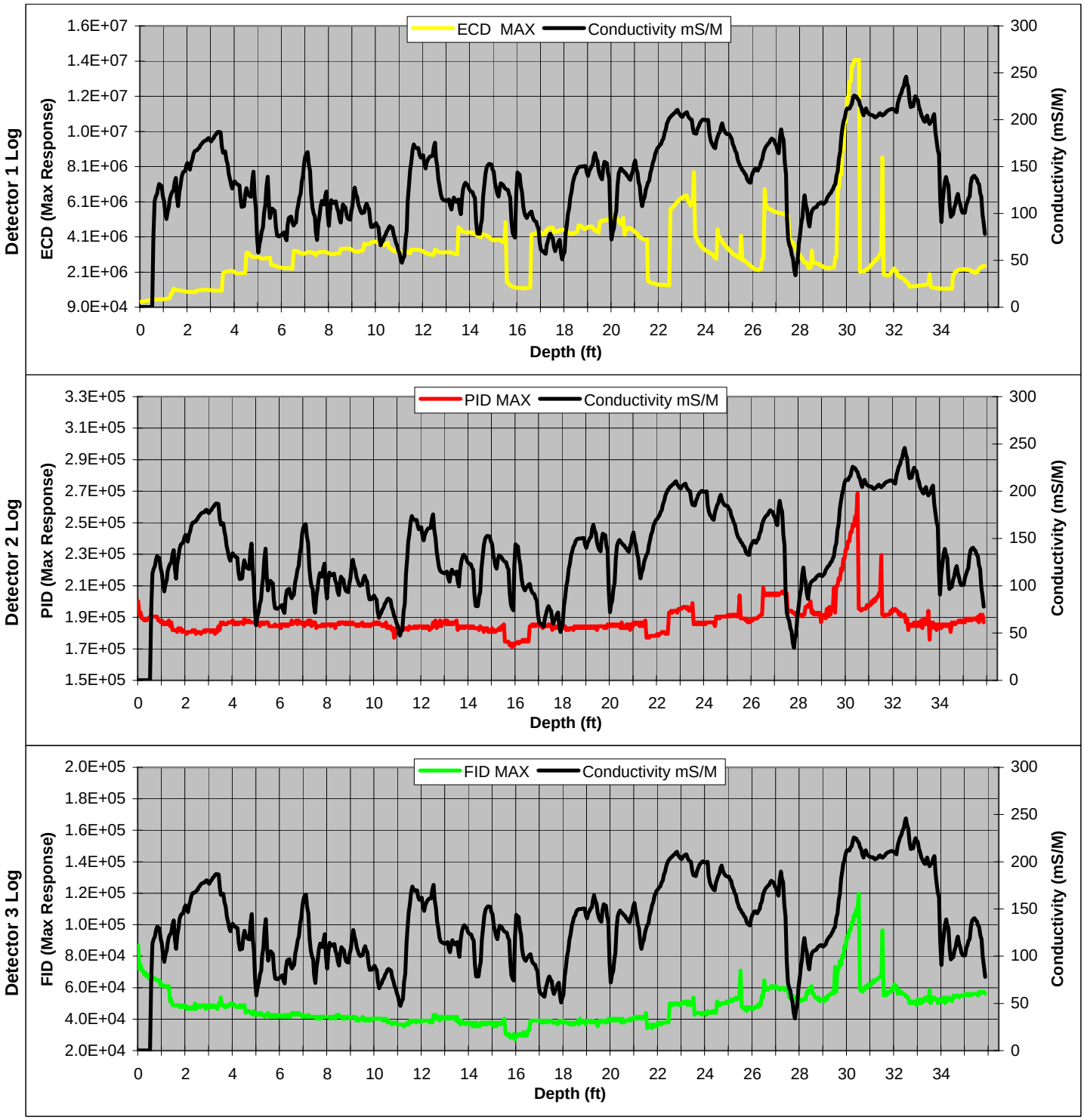
Client:	CDM	Boring I.D.:	MIP-22	Graph 1 :	Probe Temperature (C)
		Date:	Dec 06 2005	Graph 2 :	Probe Pressure (PSI)
		Time:	12:09		



Explanation:

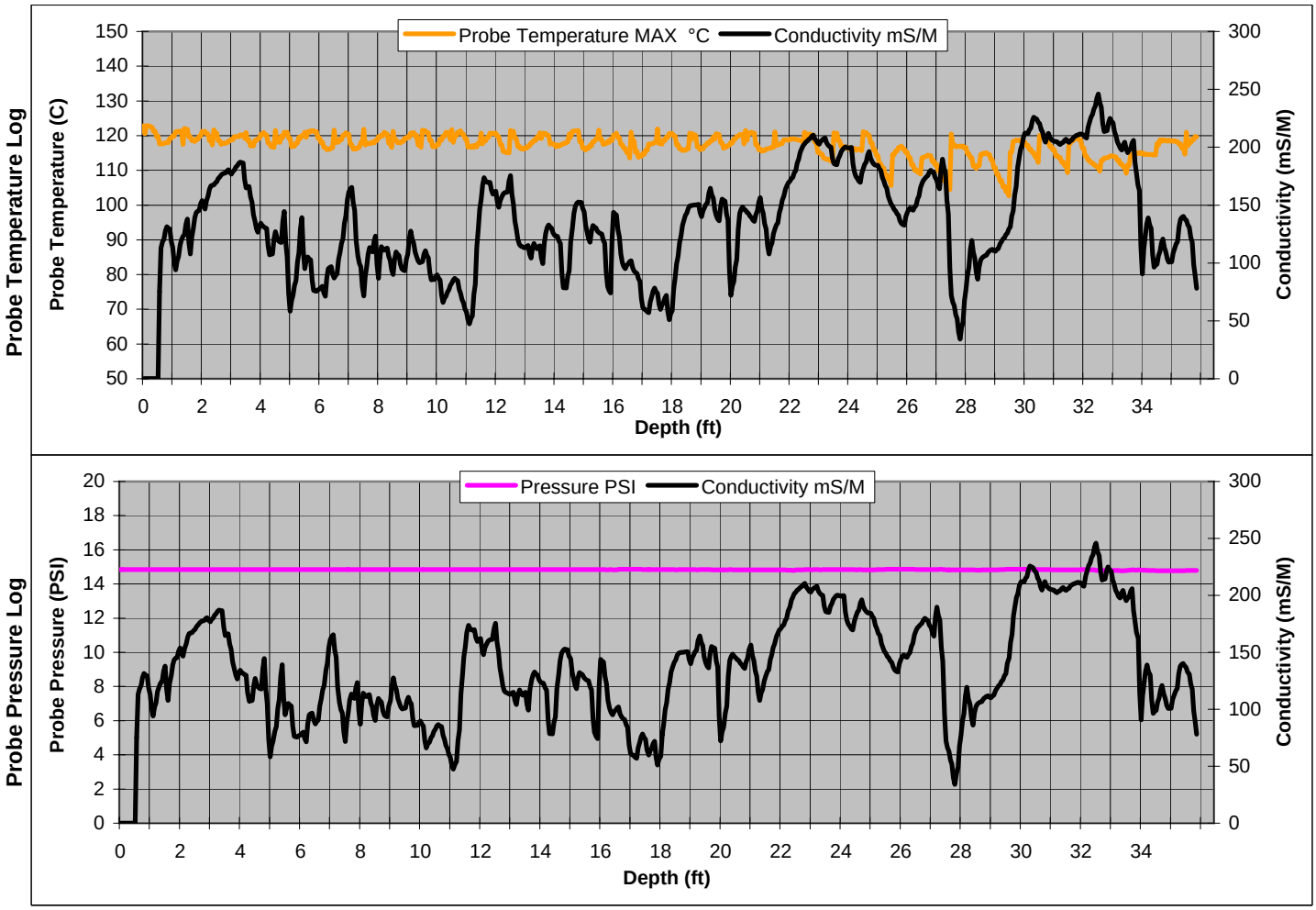
MIP Log Results by Boring - Detector Reading vs. Depth

Client:	CDM	Boring I.D.:	MIP-23	Detector 1 :	Electron Capture (ECD)
		Date:	Dec 05 2005	Detector 2 :	Photo Ionization (PID)
		Time:	08:00	Detector 3 :	Flame Ionization (FID)



MIP Log Results by Boring - Detector Reading vs. Depth

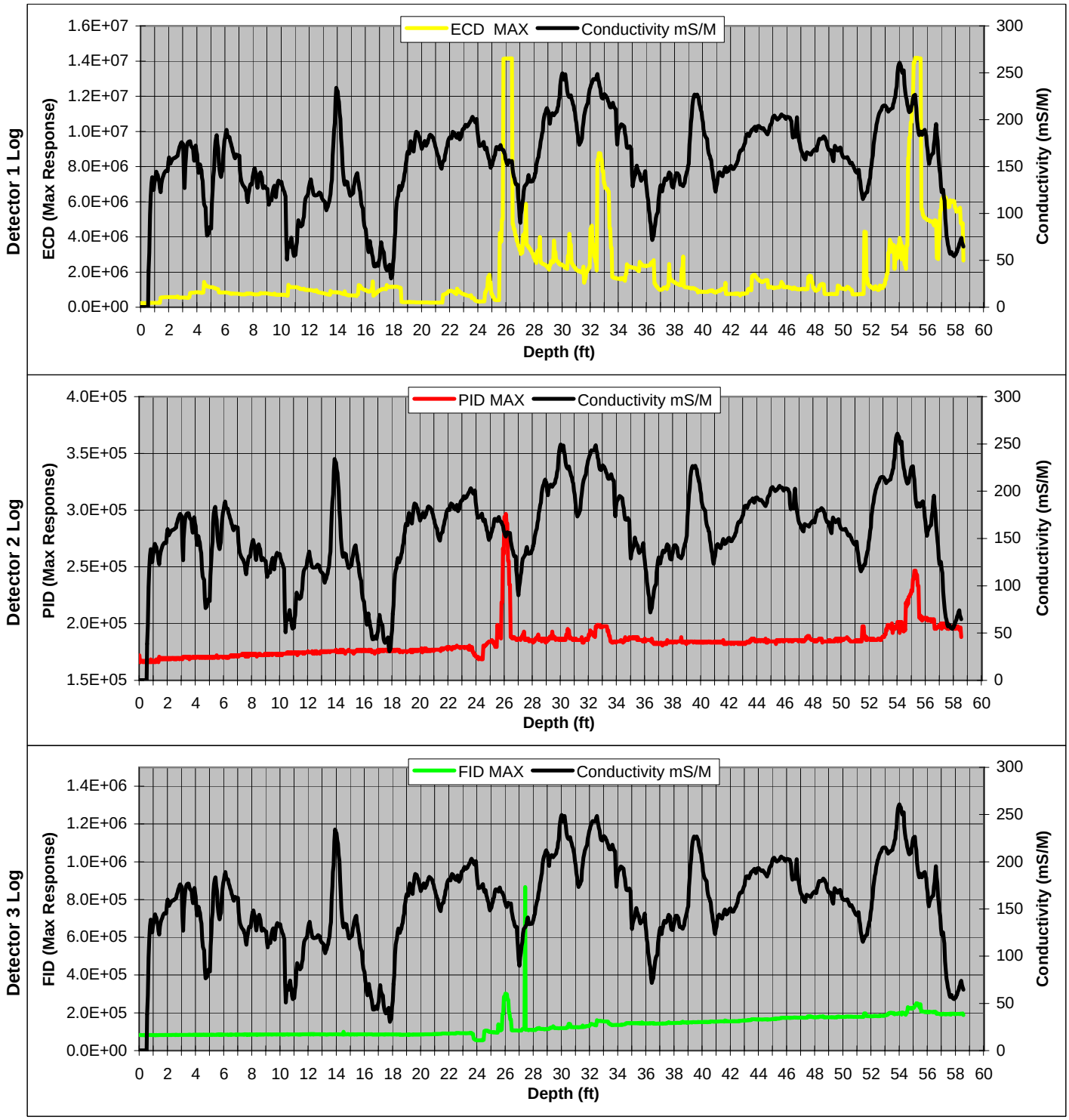
Client:	CDM	Boring I.D.:	MIP-23	Graph 1 :	Probe Temperature (C)
		Date:	Dec 05 2005	Graph 2 :	Probe Pressure (PSI)
		Time:	08:00		



Explanation: Refusal was reached at 35.85 feet bgs.

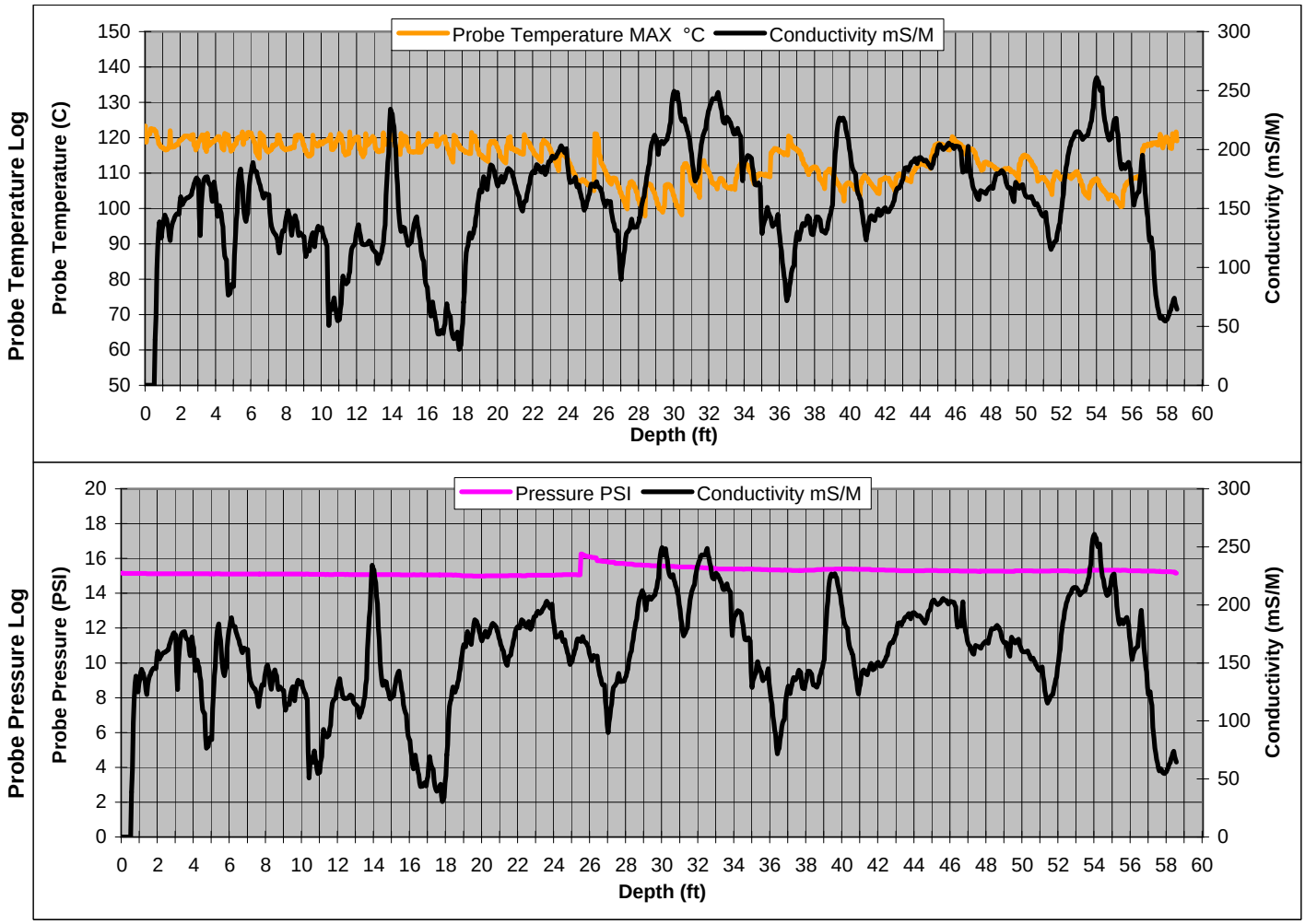
MIP Log Results by Boring - Detector Reading vs. Depth

Client:	CDM	Boring I.D.:	MIP-24	Detector 1 :	Electron Capture (ECD)
		Date:	Dec 06 2005	Detector 2 :	Photo Ionization (PID)
		Time:	08:54	Detector 3 :	Flame Ionization (FID)



MIP Log Results by Boring - Detector Reading vs. Depth

Client:	CDM	Boring I.D.:	MIP-24	Graph 1 :	Probe Temperature (C)
		Date:	Dec 06 2005	Graph 2 :	Probe Pressure (PSI)
		Time:	08:54		



Explanation: Refusal was reached at 58.55 feet bgs.

MIP REPORT

Omega
Whittier, CA

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Client: CDM
18581 Teller Ave., Suite 200
Irvine, CA 92612

Start Date: 2/27/2006
Completed Date: 3/1/2006

Site Address: 12504 East Whittier Blvd., Whittier, CA
Project Name Omega

Project Scope: Collected Membrane Interface Probe logs from 6 boring locations from approximately surface to as deep as 61 feet bgs to identify possible DNAPL plume, and contaminante plume.

Project Information: ~ MIP-30 = Probe broke while retracting.

MIP Boring and Confirmation Sampling Summary

Date Sampled	Time Sampled	Boring Name	Total Depth	Confirmation Samples Soil	Confirmation Samples Groundwater
Feb 27 2006	08:48	MIP-25	55.3		
Feb 27 2006	13:36	MIP-26	52.5		
Feb 28 2006	07:57	MIP-29	60.9		
Feb 28 2006	10:43	MIP-30	60.6		
Mar 01 2006	08:37	MIP-28	52.8		
Mar 01 2006	11:10	MIP-27	53.1		

1225 East McFadden Avenue ● Santa Ana ● CA 92705 ● USA ● Phone 714-647-6290 ● Fax 714-647-6291
San Francisco CA Los Angeles Washington DC Fredericksburg VA Raleigh NC Wilmington DE

Quality Control: Vironex utilizes a response test* prior to each MIP boring. A solution containing water, Trichloroethene & Toluene are mixed and transferred into a galvanized test pipe. The MIP is then lowered into the test pipe for 45 seconds and then extracted. The trip time** is then noted and entered into the SC4000 MIP computer.

**Response Test - A test that ensures that the MIP system is working correctly.*
***Trip Time - Time it takes for the standard to enter the MIP probe, at the probe membrane, till the time a significant response is noticed on the SC 4000 Computer*

MIP Components Used:
- Geoprobe 6600
- FC 4000 MIP Computer
- Flow Control Box
- HP Gas Chromatograph
- ECD (Electron Capture Detector)
- PID (Photo Ionization Detector)
- FID (Flame Ionization Detector)
- 150' Trunk Line
- 1.5" MIP Probe
- 1.5" Drive Rods

Soil Confirmation No confirmation samples were collected

Qualitative Analysis (Identification): The MIP system will detect most VOC's (Volatile Organic Compounds) which have the capability of migrating through the membrane. The ECD (Electron Capture Detector) will typically detect chlorinated compounds. The PID will typically detect aromatic and double bonded compounds, typical of gasoline components and some solvents. At high concentrations the ECD, PID and FID may detect other compounds not normally associated with the detector. Physical soil samples which are prepared by EPA Method 5035, and analyzed by EPA Method 8260, may be semi correlated with the MIP responses. The MIP responses are semi-correlated with most detected compounds, even those which are not reported nor detected by EPA Method 8260.

Lithology: The conductivity of soils is different for each type of media. Finer grained sediments, such as silts or clays, will have a higher EC signal. While coarser grained sediments, sands and gravel, will have a lower EC signal. Lithology should be correlated with a physical soil sample.

Frank Stolfi
National Director of MIP Serivces

1225 East McFadden Avenue ● Santa Ana ● CA 92705 ● USA ● Phone 714-647-6290 ● Fax 714-647-6291
San Francisco CA Los Angeles Washington DC Fredericksburg VA Raleigh NC Wilmington DE

Client: CDM
18581 Teller Ave., Suite 200
Irvine, CA 92612

Start Date: 2/27/2006
Completed Date: 3/1/2006

Site Address: 12504 East Whittier Blvd., Whittier, CA
Project Name: Omega

MIP Quality Control

Standard Summary

Boring Name	Date	Time	Standard	PID Response	ECD Response	Pressure (PSI)	Response Time (s)
QA/QC1	Feb 27 2006	08:18	1ppm TCE & Toluene	Yes	Yes	13.44	65
MIP-25	Feb 27 2006	08:48				13.30	65
QA/QC2	Feb 27 2006	13:27	1ppm TCE & Toluene	Yes	Yes	13.13	68
MIP-26	Feb 27 2006	13:36				13.05	68
QA/QC3	Feb 28 2006	07:50	1ppm TCE & Toluene	Yes	Yes	13.71	70
MIP-29	Feb 28 2006	07:57				13.43	70
QA/QC4	Feb 28 2006	10:20	1ppm TCE & Toluene	Yes	Yes	13.18	70
MIP-30	Feb 28 2006	10:43				13.01	70
QA/QC5	Mar 01 2006	07:59	1ppm TCE & Toluene	Yes	Yes	11.33	83
MIP-28	Mar 01 2006	08:37				11.25	83
QA/QC6	Mar 01 2006	10:09	1ppm TCE & Toluene	Yes	Yes	11.51	83
MIP-27	Mar 01 2006	11:10				11.76	83

End of Day QA QC Summary

Boring Name	Date	Time	Standard	PID Response	ECD Response	Pressure (PSI)	Response Time (s)
End of Day 1	Feb 27 2006	15:18	1ppm TCE & Toluene	Yes	Yes	12.87	70
	None done due to broke probe						
End of Day 3	Mar 01 2006	14:09	1ppm TCE & Toluene	Yes	Yes	11.51	85

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SITE MAP

Map provided by CDM

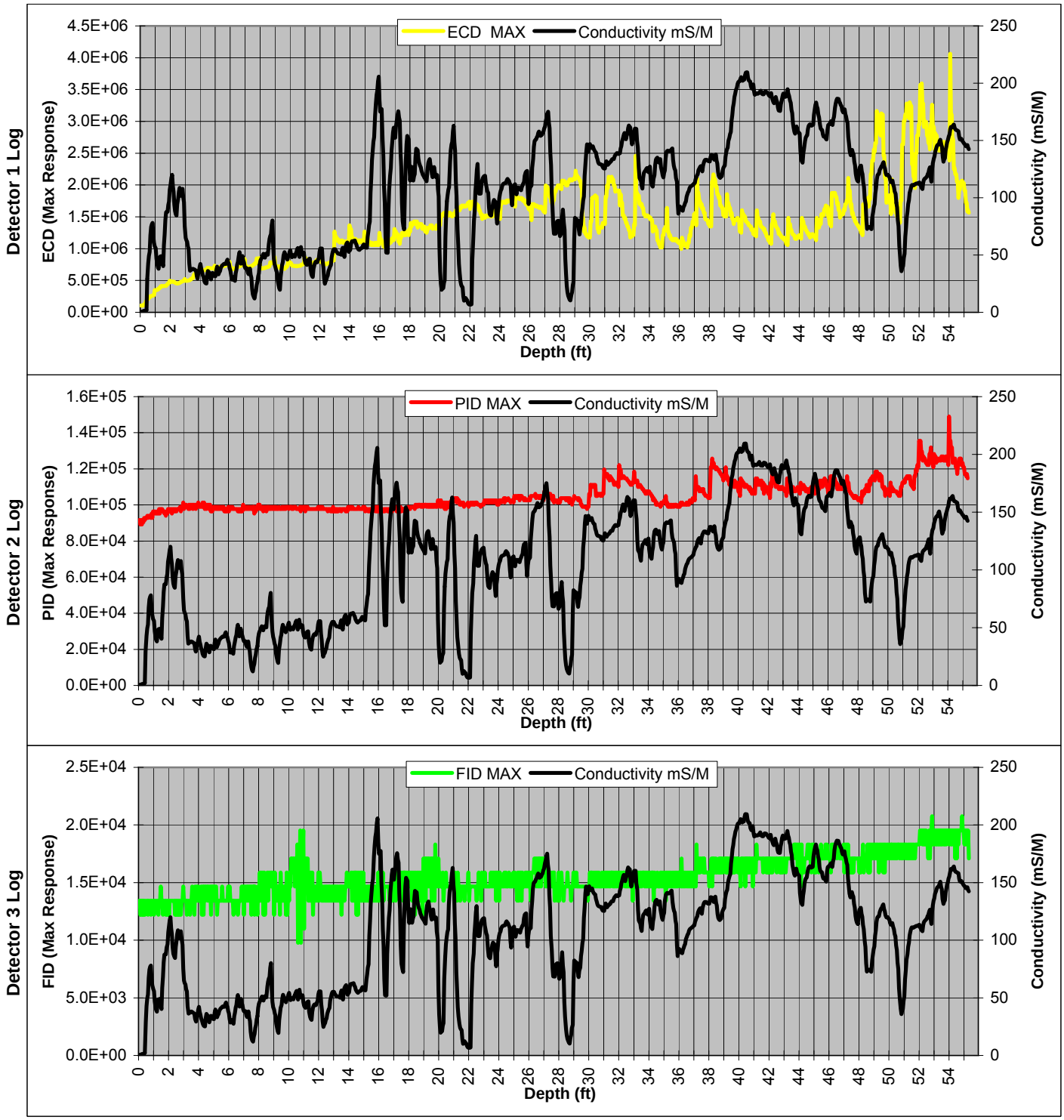
Confirmation Locations

Sample ID	TPHg mg/Kg*	PID Response	Soil Conductivity Response	Comments
			Not Data Provided	

** TPHg = Total Petroleum Hydrocarbons Gas*

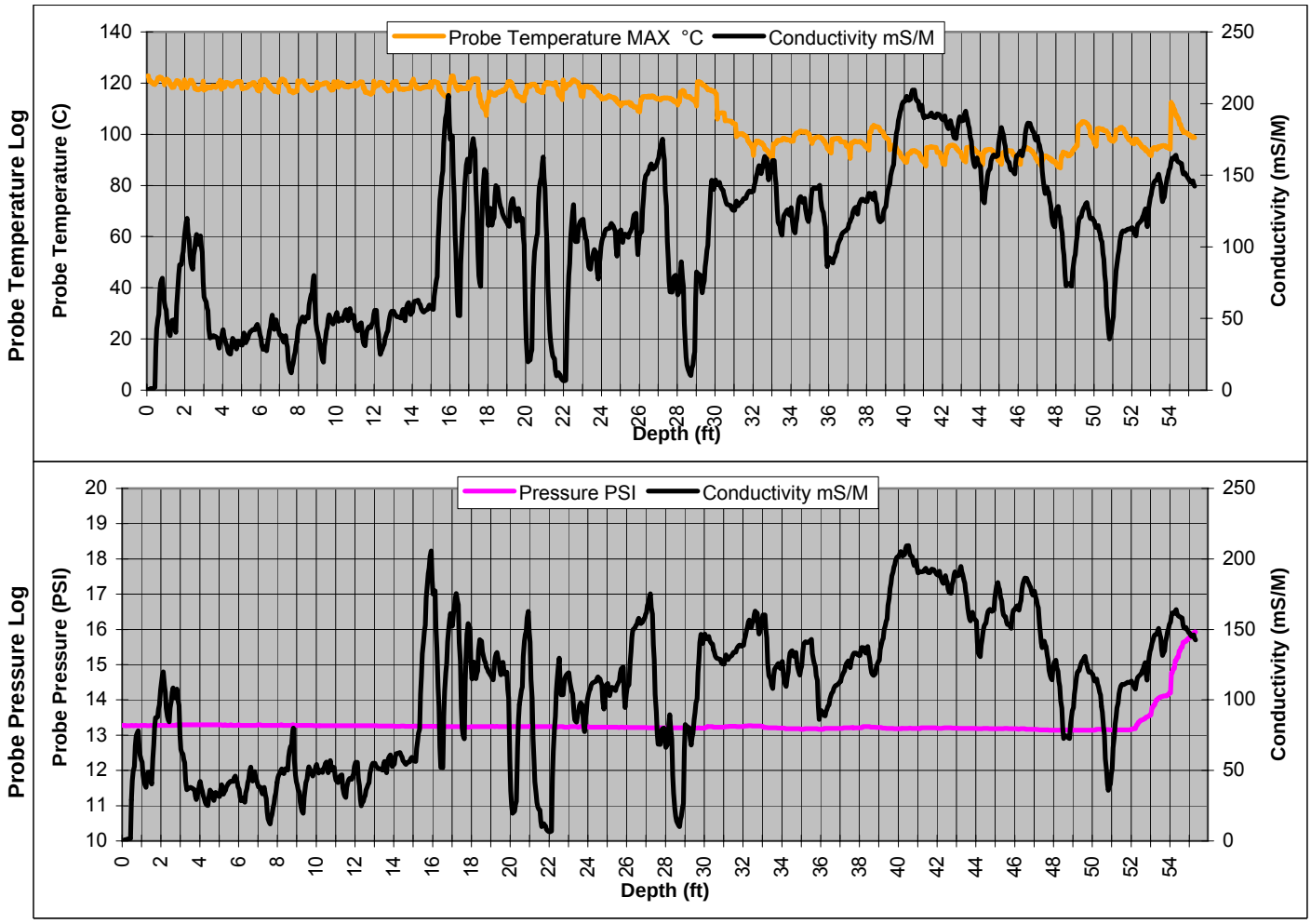
MIP Log Results by Boring - Detector Reading vs. Depth

Client	CDM	Boring I.D.:	MIP-25	Detector 1 :	Electron Capture (ECD)
		Date:	Feb 27 2006	Detector 2 :	Photo Ionization (PID)
		Time:	08:48	Detector 3 :	Flame Ionization (FID)



MIP Log Results by Boring - Detector Reading vs. Depth

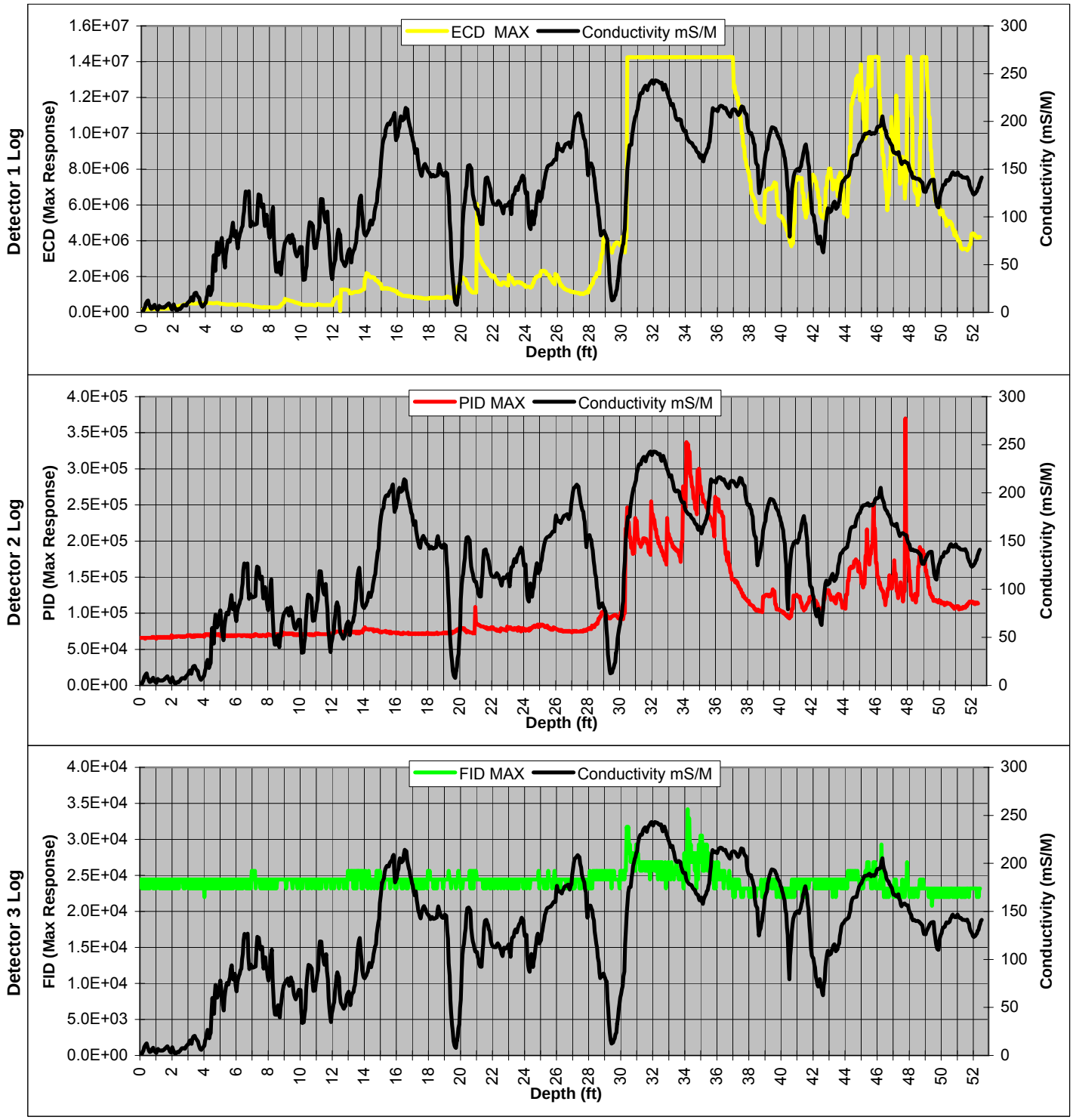
Client	#REF!	CDM	Boring I.D.: MIP-25	Graph 1 :	Probe Temperature (C)
			Date: Feb 27 2006	Graph 2 :	Probe Pressure (PSI)
			Time: 08:48		



Explanation: None

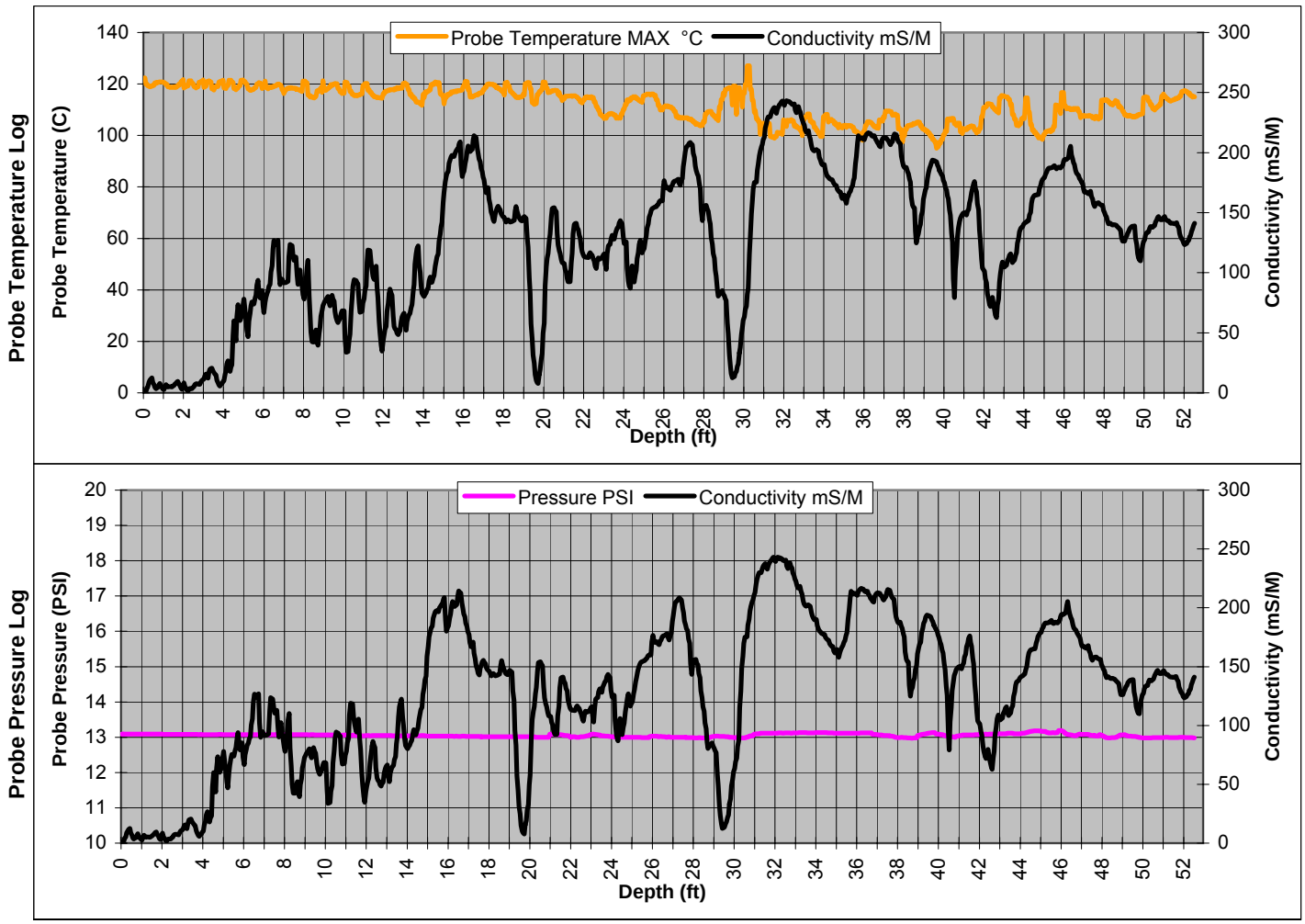
MIP Log Results by Boring - Detector Reading vs. Depth

Client:	CDM	Boring I.D.:	MIP-26	Detector 1 :	Electron Capture (ECD)
		Date:	Feb 27 2006	Detector 2 :	Photo Ionization (PID)
		Time:	13:36	Detector 3 :	Flame Ionization (FID)



MIP Log Results by Boring - Detector Reading vs. Depth

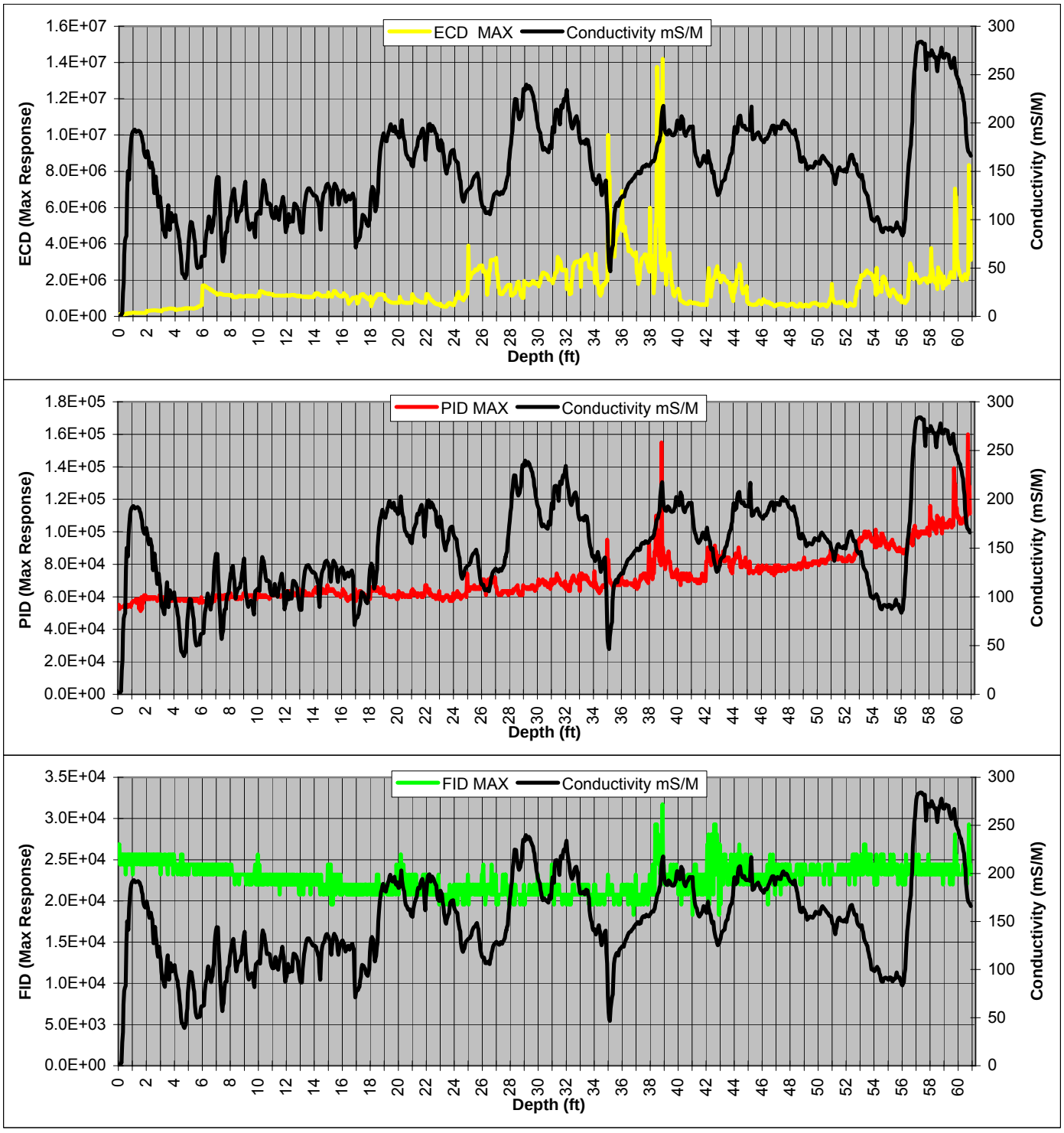
Client:	CDM	Boring I.D.:	MIP-26	Graph 1 :	Probe Temperature (C)
		Date:	Feb 27 2006	Graph 2 :	Probe Pressure (PSI)
		Time:	13:36		



Explanation Cleared to 5 ft. with hand auger by Vironex.

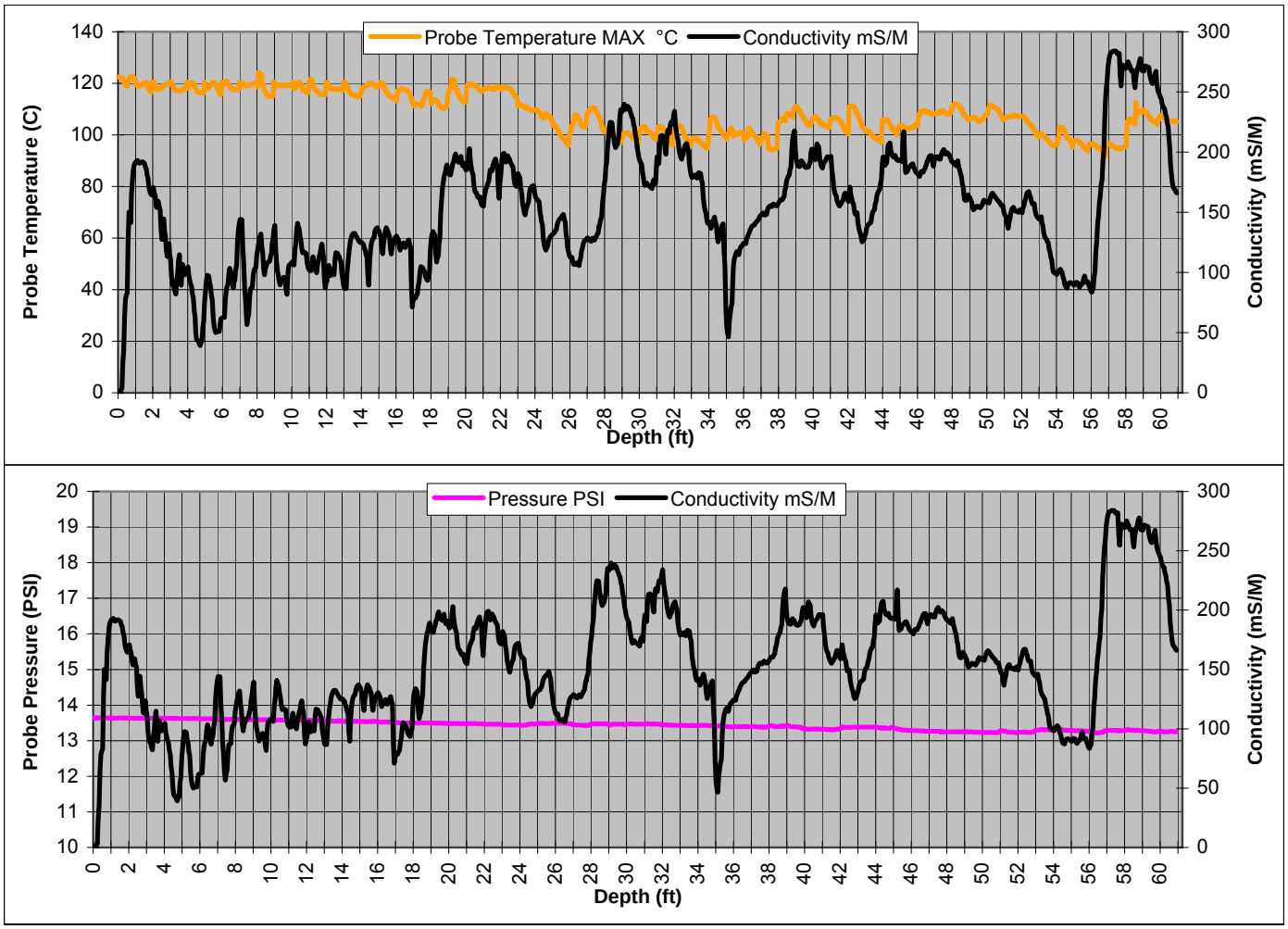
MIP Log Results by Boring - Detector Reading vs. Depth

Client:	CDM	Boring I.D.:	MIP-29	Detector 1 :	Electron Capture (ECD)
		Date:	Feb 28 2006	Detector 2 :	Photo Ionization (PID)
		Time:	07:57	Detector 3 :	Flame Ionization (FID)



MIP Log Results by Boring - Detector Reading vs. Depth

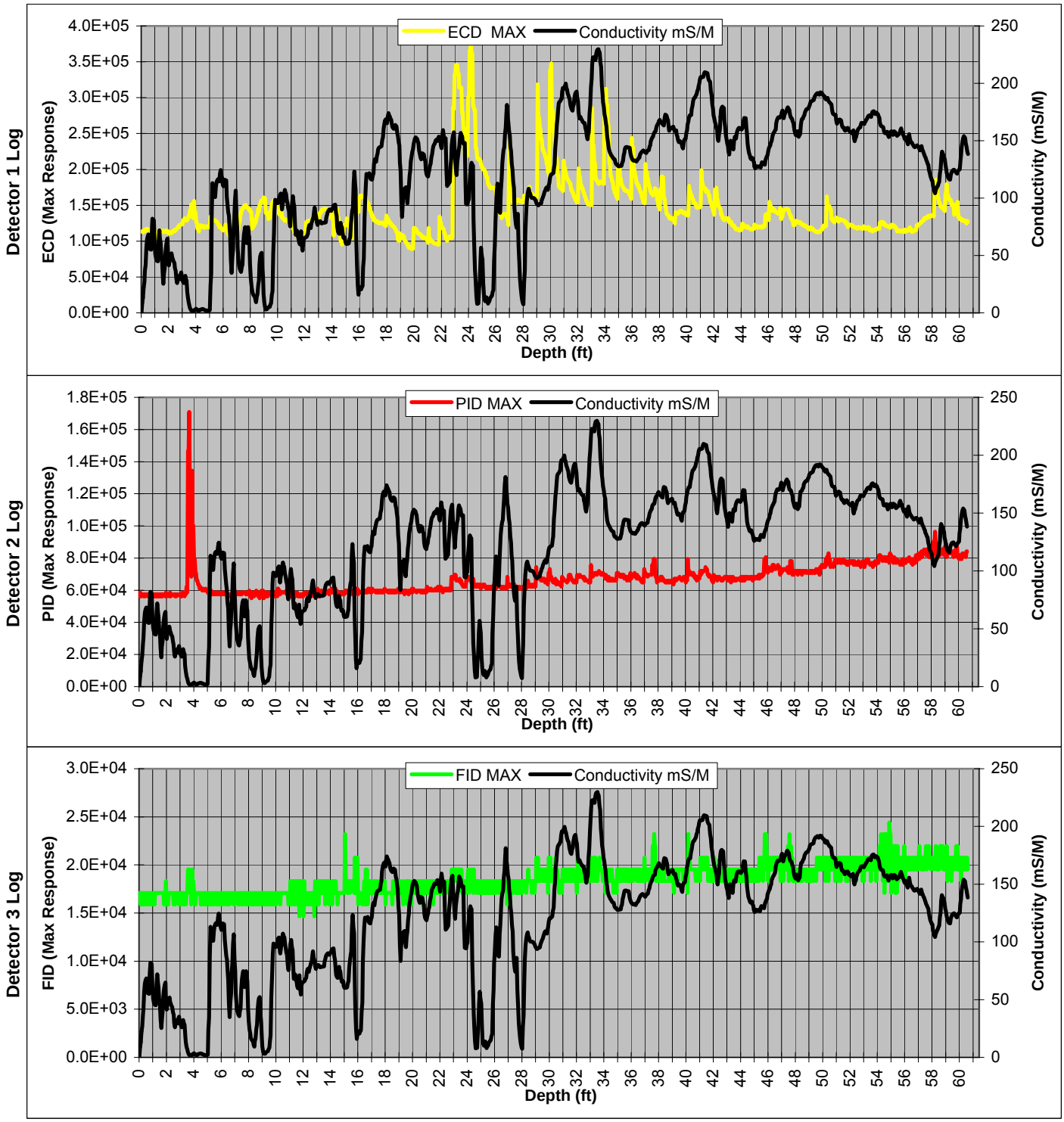
Client:	CDM	Boring I.D.:	MIP-29	Graph 1 :	Probe Temperature (C)
		Date:	Feb 28 2006	Graph 2 :	Probe Pressure (PSI)
		Time:	07:57		



Explanation: None

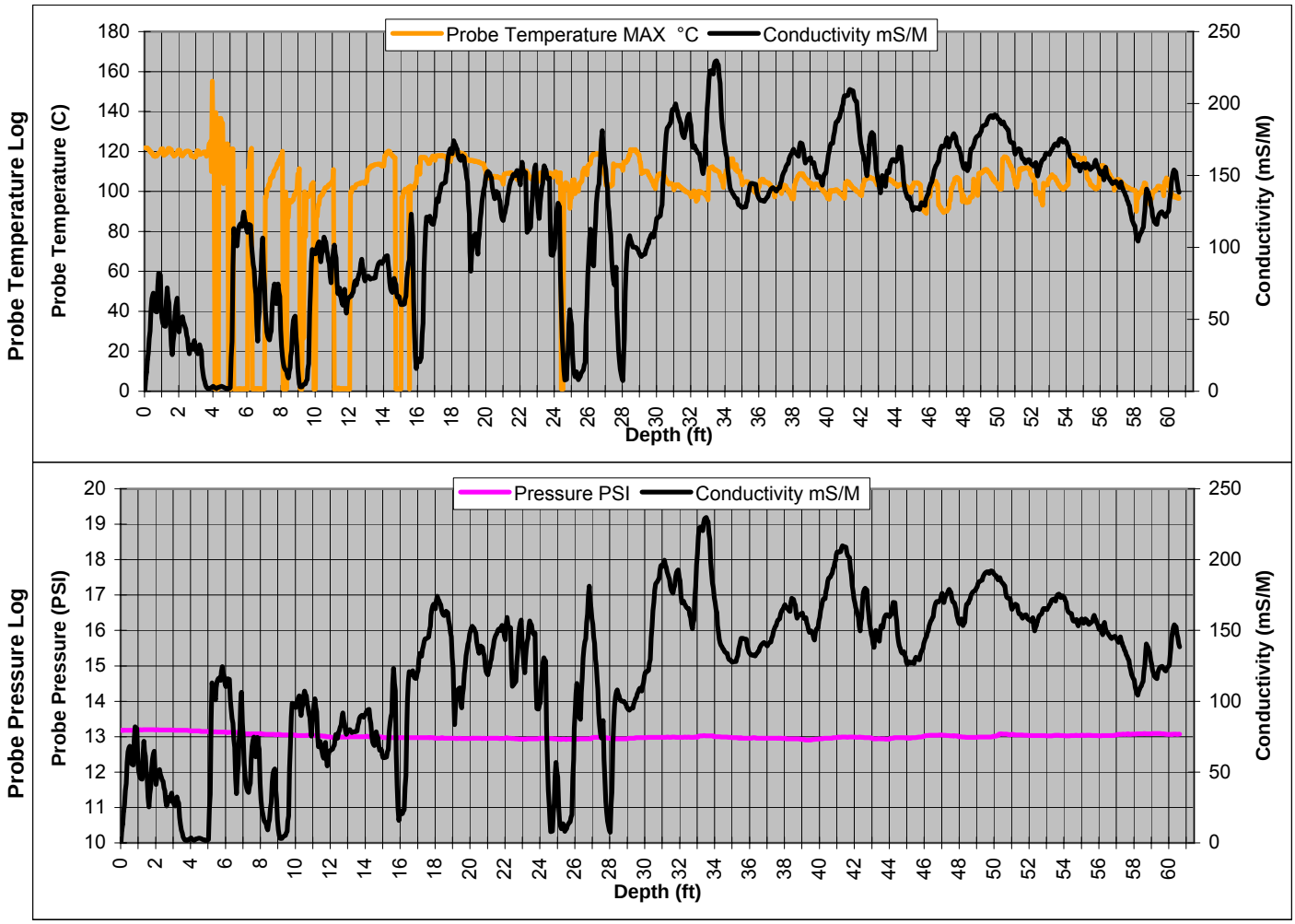
MIP Log Results by Boring - Detector Reading vs. Depth

Client:	CDM	Boring I.D.:	MIP-30	Detector 1 :	Electron Capture (ECD)
		Date:	Feb 28 2006	Detector 2 :	Photo Ionization (PID)
		Time:	10:43	Detector 3 :	Flame Ionization (FID)



MIP Log Results by Boring - Detector Reading vs. Depth

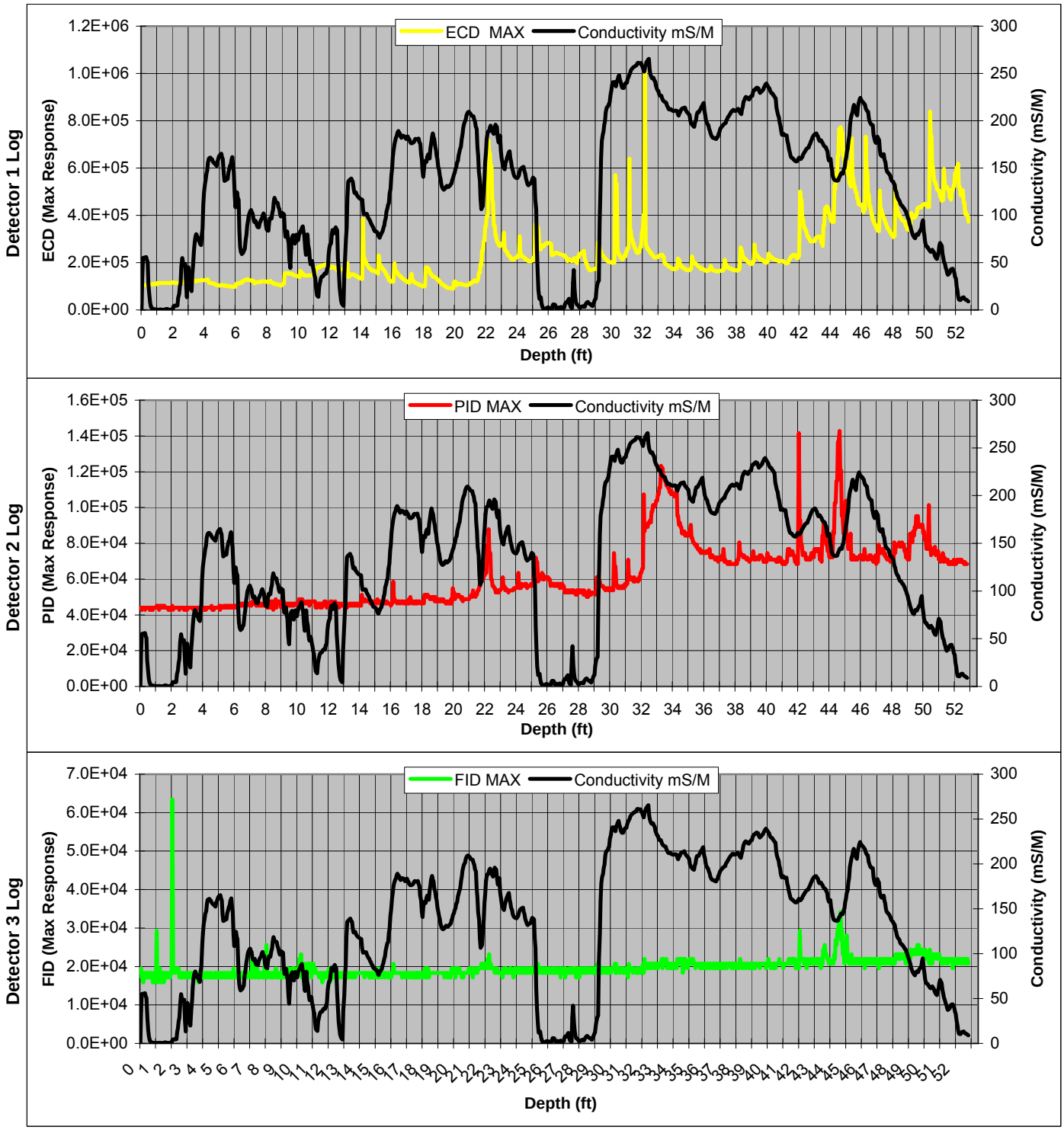
Client:	CDM	Boring I.D.:	MIP-30	Graph 1 :	Probe Temperature (C)
		Date:	Feb 28 2006	Graph 2 :	Probe Pressure (PSI)
		Time:	10:43		



Explanation: While retracting probe lost 28 ft of 4ft. Rods and MIP Probe.

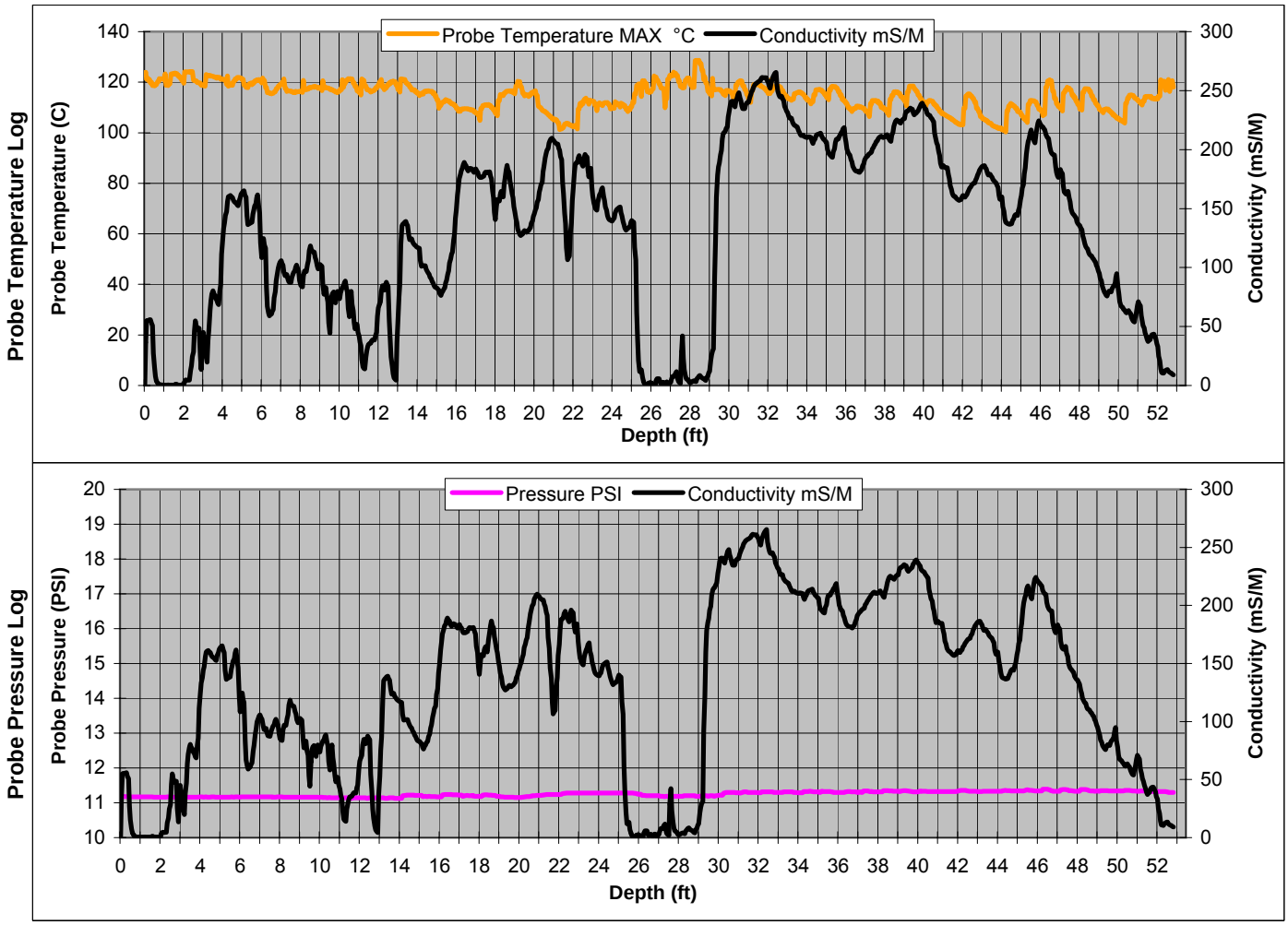
MIP Log Results by Boring - Detector Reading vs. Depth

Client:	CDM	Boring I.D.:	MIP-28	Detector 1 :	Electron Capture (ECD)
		Date:	Mar 01 2006	Detector 2 :	Photo Ionization (PID)
		Time:	08:37	Detector 3 :	Flame Ionization (FID)



MIP Log Results by Boring - Detector Reading vs. Depth

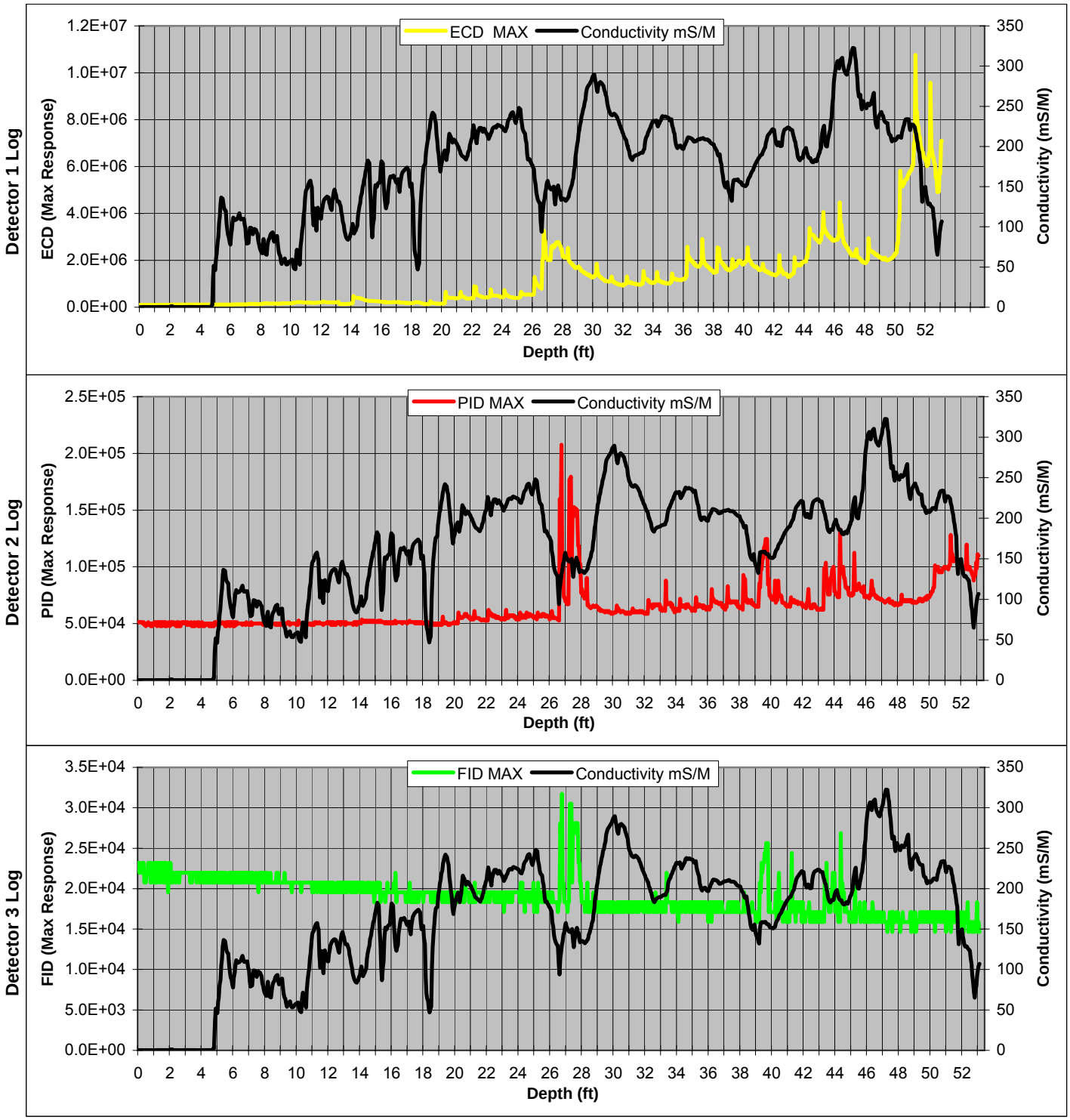
Client:	CDM	Boring I.D.:	MIP-28	Graph 1 :	Probe Temperature (C)
		Date:	Mar 01 2006	Graph 2 :	Probe Pressure (PSI)
		Time:	08:37		



Explanation: Hand auger to 5 ft. By Vironex.

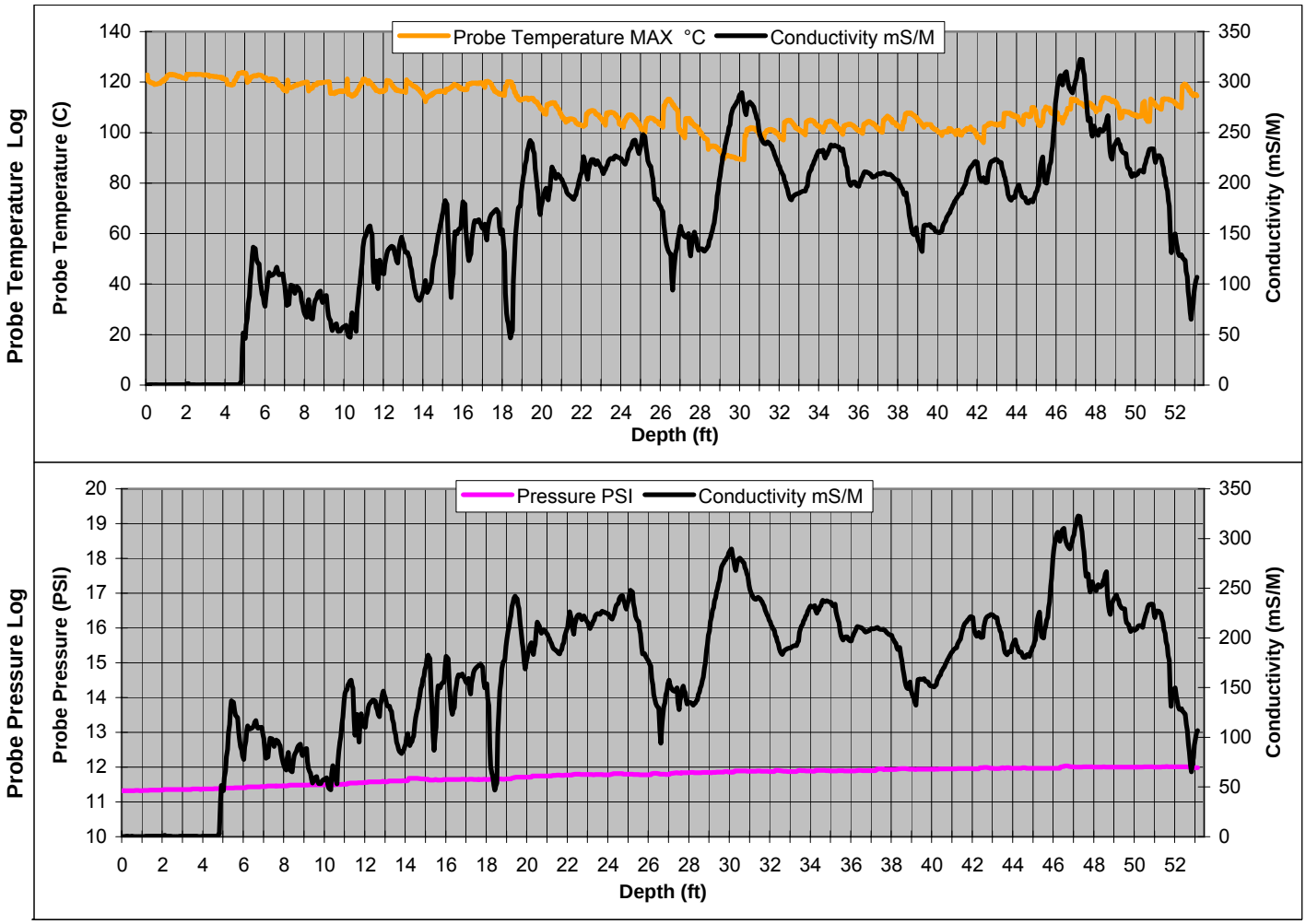
MIP Log Results by Boring - Detector Reading vs. Depth

Client:	CDM	Boring I.D.:	MIP-27	Detector 1 :	Electron Capture (ECD)
		Date:	Mar 01 2006	Detector 2 :	Photo Ionization (PID)
		Time:	11:10	Detector 3 :	Flame Ionization (FID)



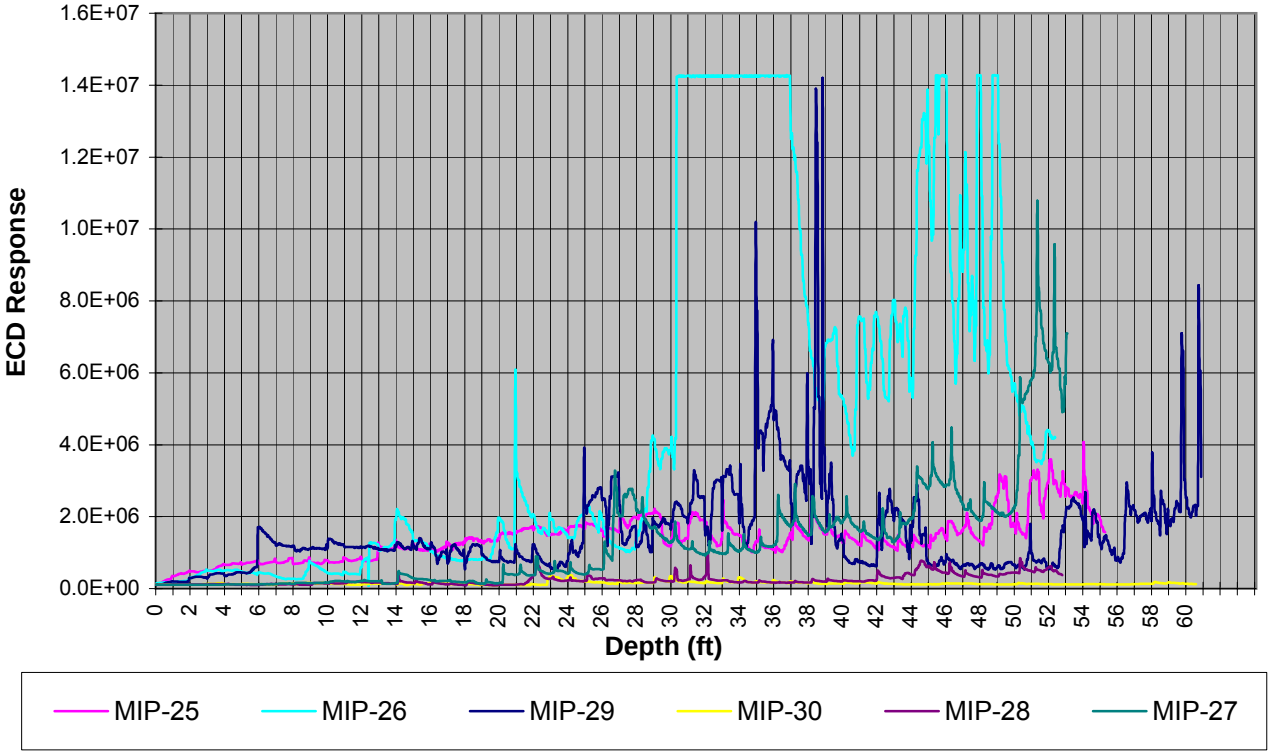
MIP Log Results by Boring - Detector Reading vs. Depth

Client:	CDM	Boring I.D.:	MIP-27	Graph 1 :	Probe Temperature (C)
		Date:	Mar 01 2006	Graph 2 :	Probe Pressure (PSI)
		Time:	11:10		

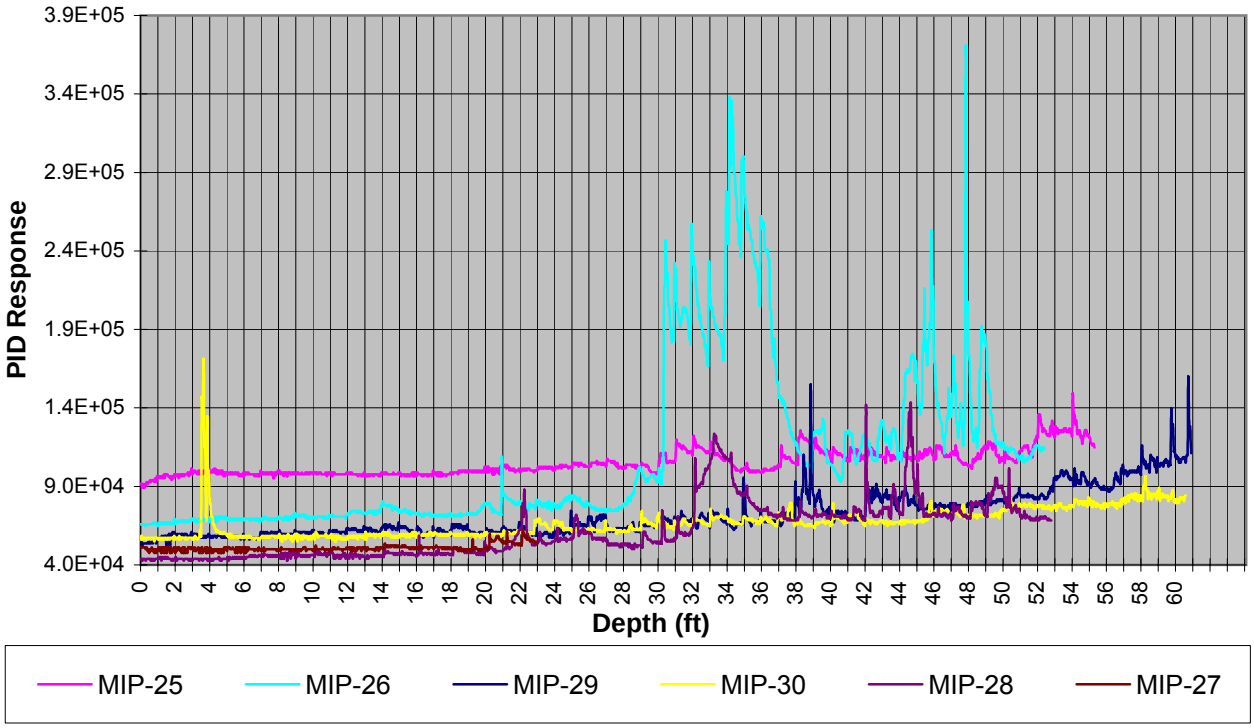


Explanation: Hand auger to 5ft. By Vironex.

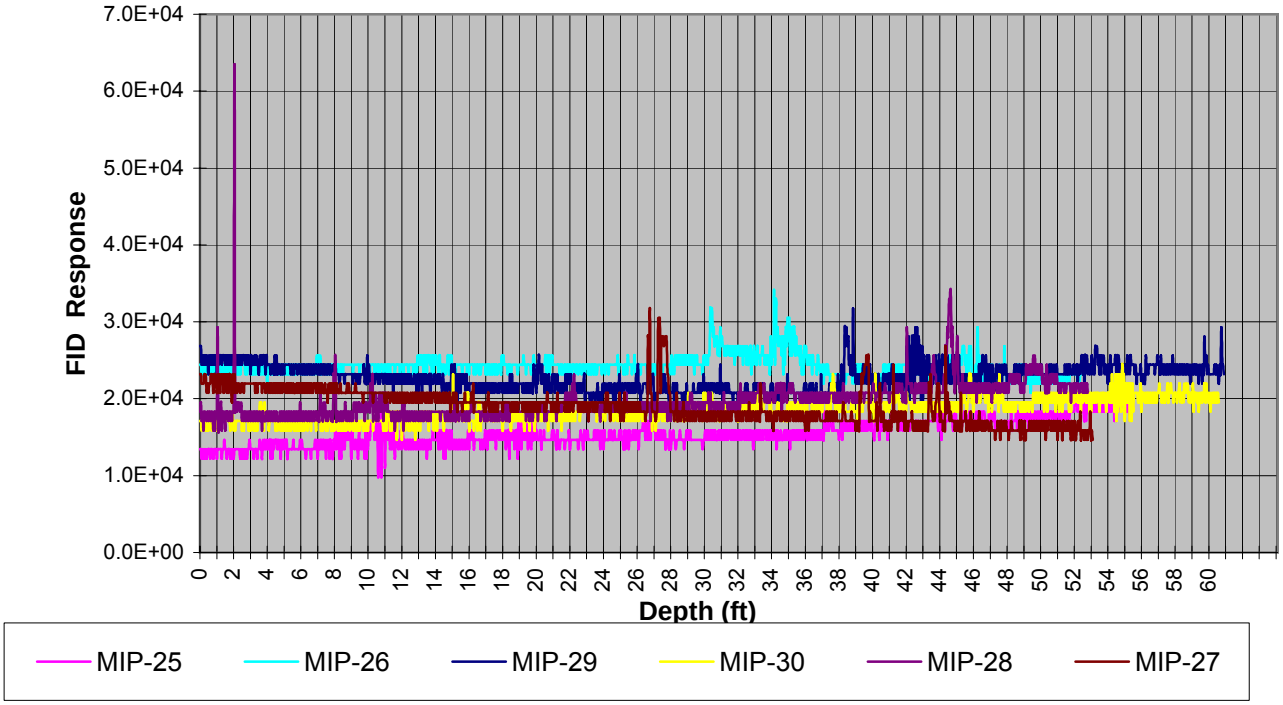
Maximum ECD Response Same Scale



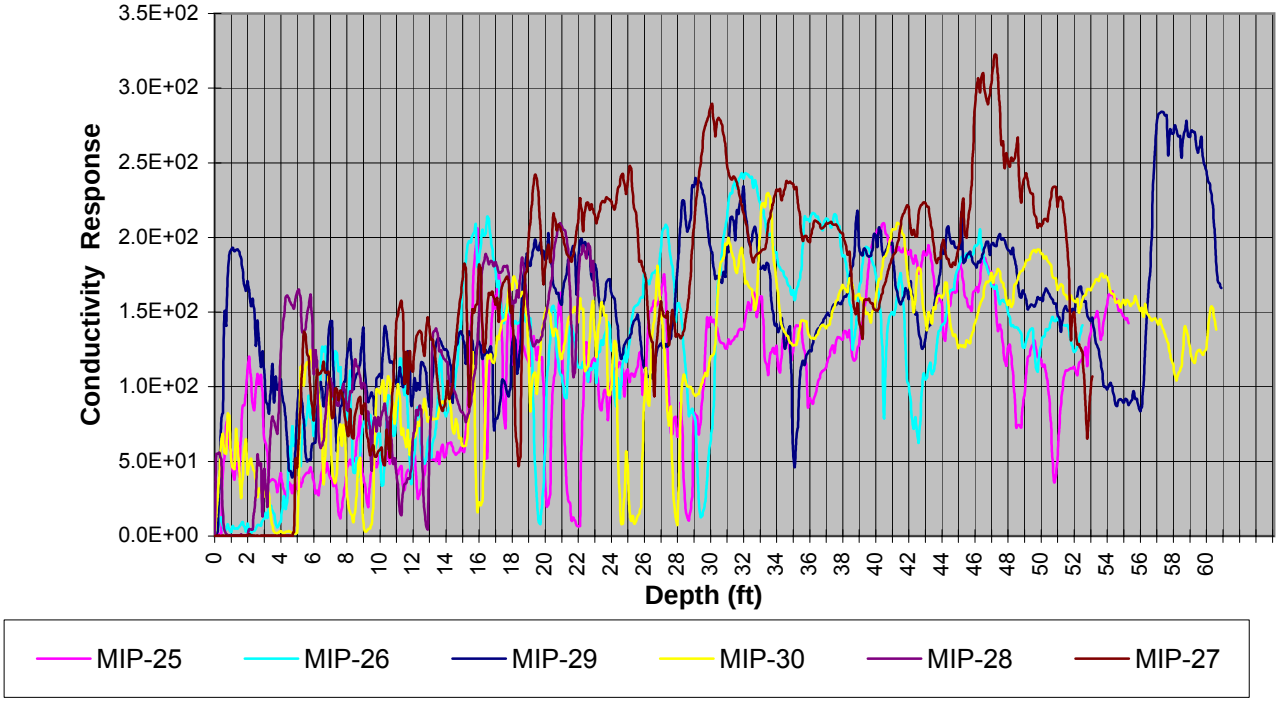
Maximum PID Response Same Scale



Maximum FID Response Same Scale



Conductivity Response Same Scale



MIP Data Summary:

Client:	Camp Dresser & McKee Inc. 18581 Teller Avenue, Suite 200 Irvine, CA 92612	Project Dates: Site Address:	01/19/04 12511 Putnam Whittier, CA
Project:	Omega Chemical	Job Number:	M1-560

CASE NARRATIVE

The following information applies to readings that were taken by Centrum Analytical Mobile Environmental Laboratory Number One (MEL #1) on 01/19/04 at the above-mentioned Site Address.

The results reported herein represent data that was collected by MEL #1 using a Membrane Interface Probe (MIP). This data includes, but is not limited to, Electrical Conductivity, and readings taken by both ECD (Electron Capture) and PID (Photo Ionization) Detectors.

Unless otherwise noted below, the Quality Control acceptance criteria were met for all samples for every analysis requested. The date of issue for this report is 01/23/04.

Report approved by:

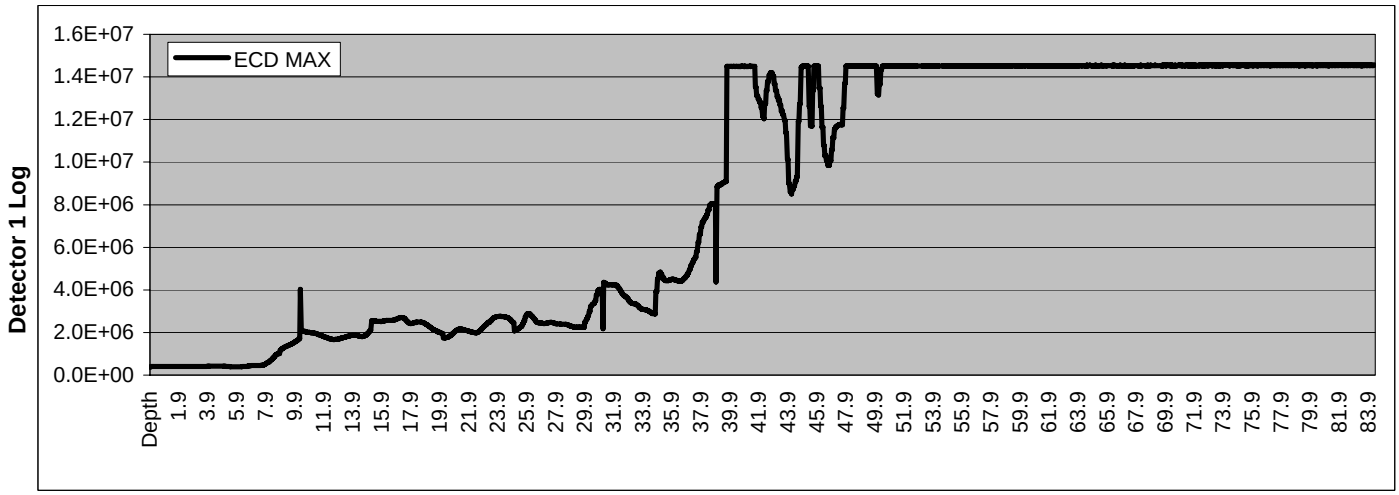
Mark B. Horan
Mobile Laboratories Supervisor

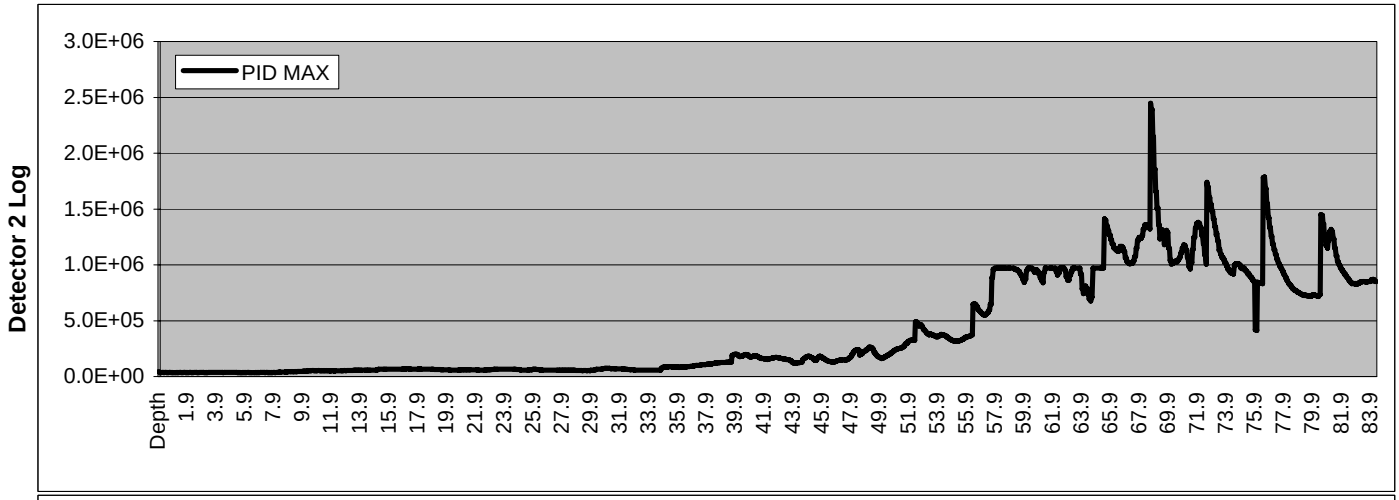
Rodolfo Vergara, Jr.
Quality Assurance Manager

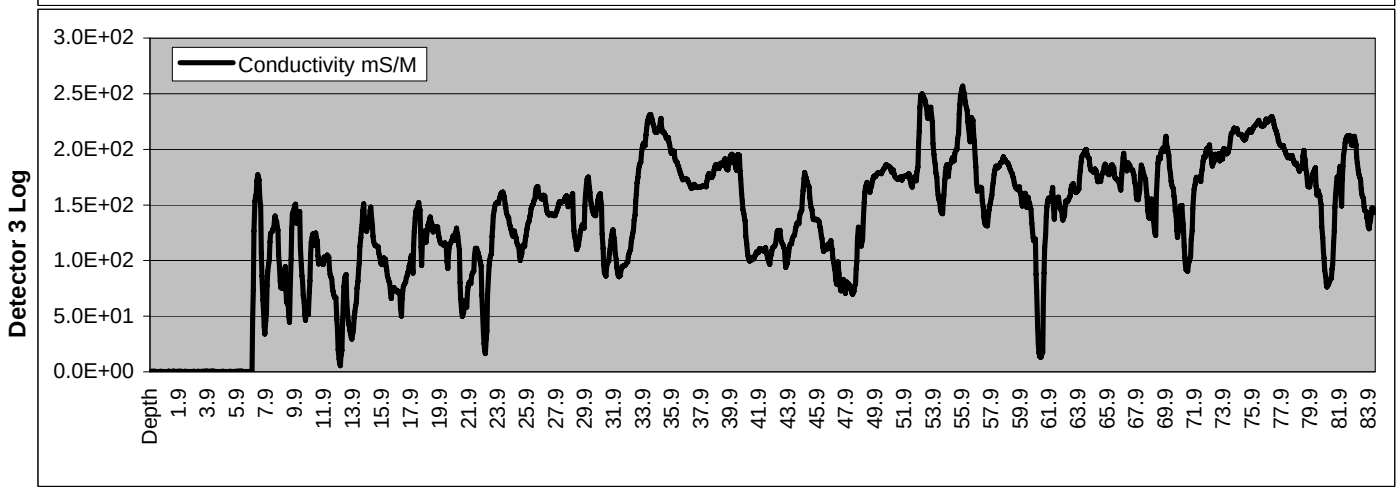
RL: Reporting Limit -- The lowest level at which the compound can be reliably detected under normal laboratory conditions.
ND: Not Detected -- The compound was analyzed for, but was not found to be present at or above the reporting limit.
NA: Not Analyzed -- This compound was not on the list of compounds requested for analysis.

MIP Log Results by Boring - Detector Reading vs. Depth

Client:	CDM	Job No.:	M1-560	Detector 1 :	Electron Capture (ECD)
Project:	Omega Chemical	Log Date:	01/19/04	Detector 2 :	Photo Ionization (PID)
Boring I.D.:	GP4	Analyst:	SMC	Detector 3 :	Electrical Conductance (EC)

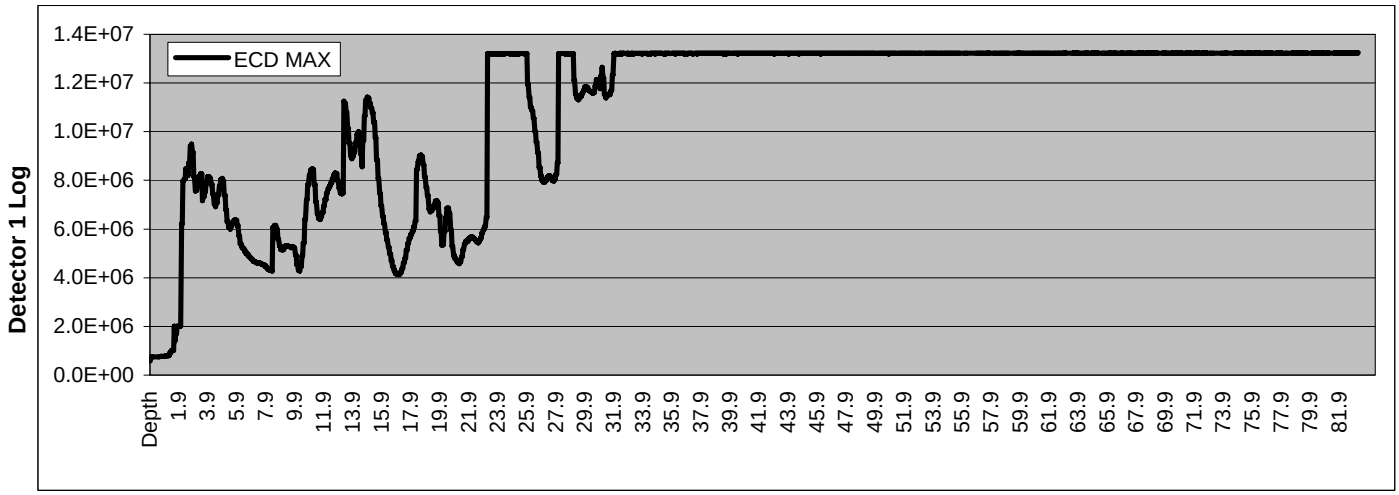


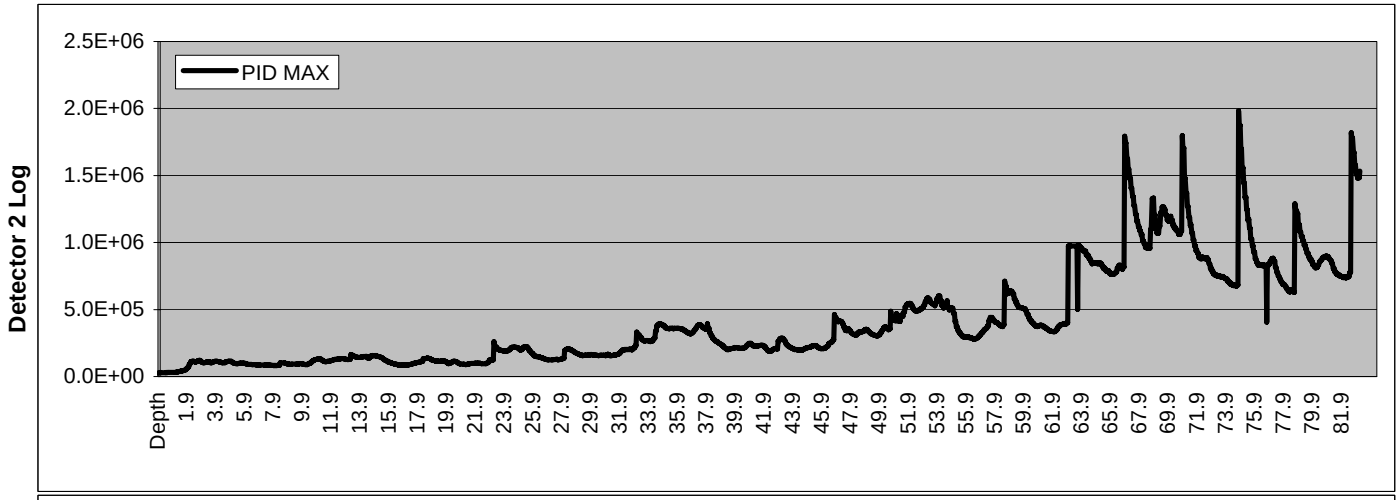


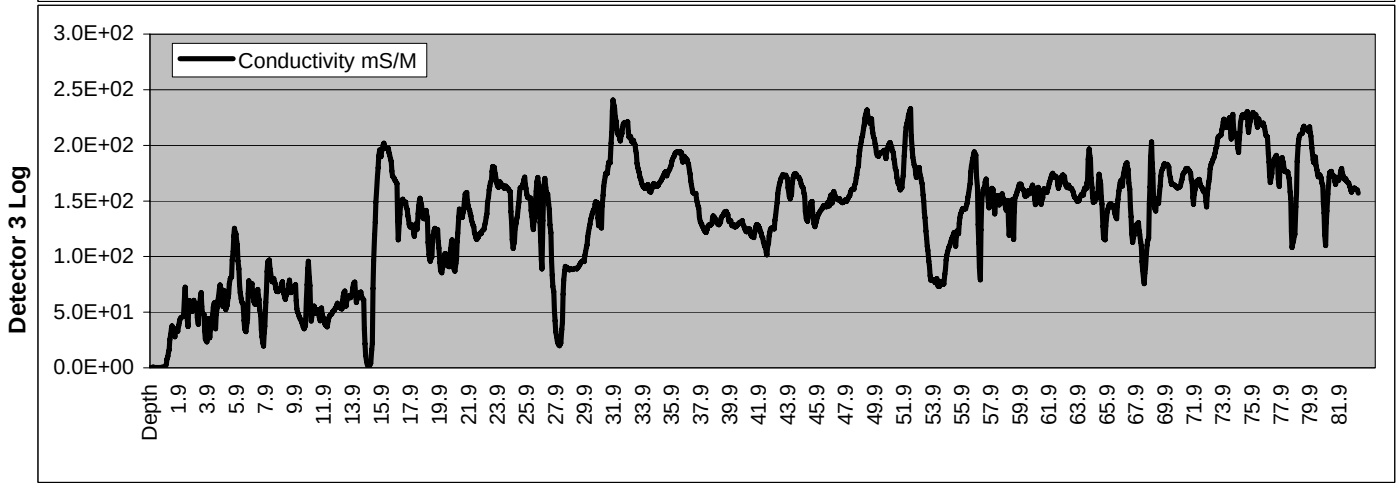


MIP Log Results by Boring - Detector Reading vs. Depth

Client:	CDM	Job No.:	M1-560	Detector 1 :	Electron Capture (ECD)
Project:	Omega Chemical	Log Date:	01/19/04	Detector 2 :	Photo Ionization (PID)
Boring I.D.:	GP5	Analyst:	SMC	Detector 3 :	Electrical Conductance (EC)

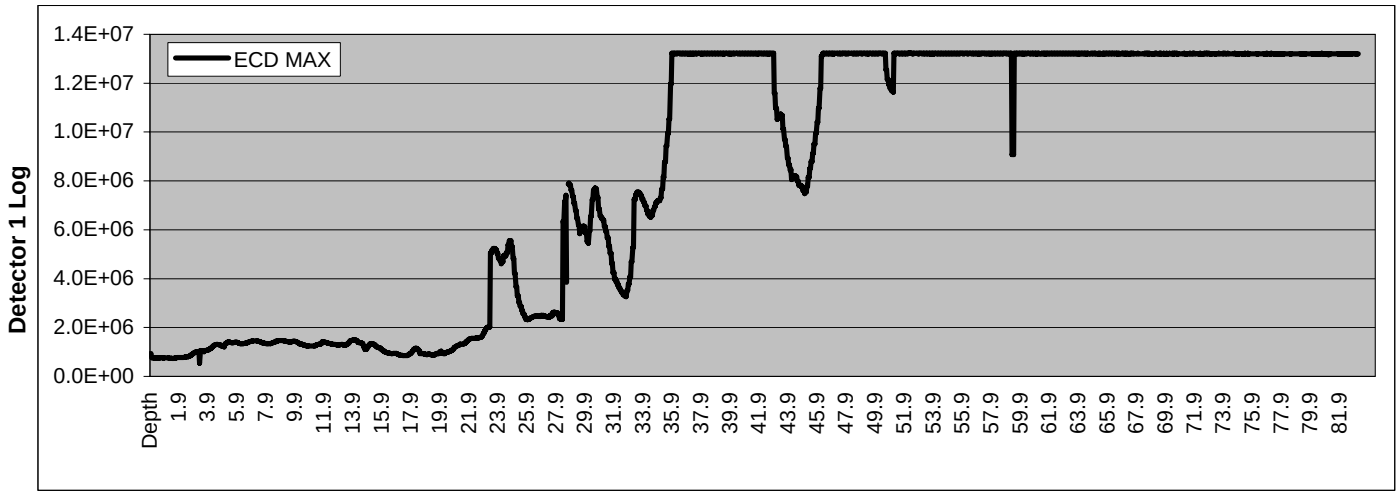


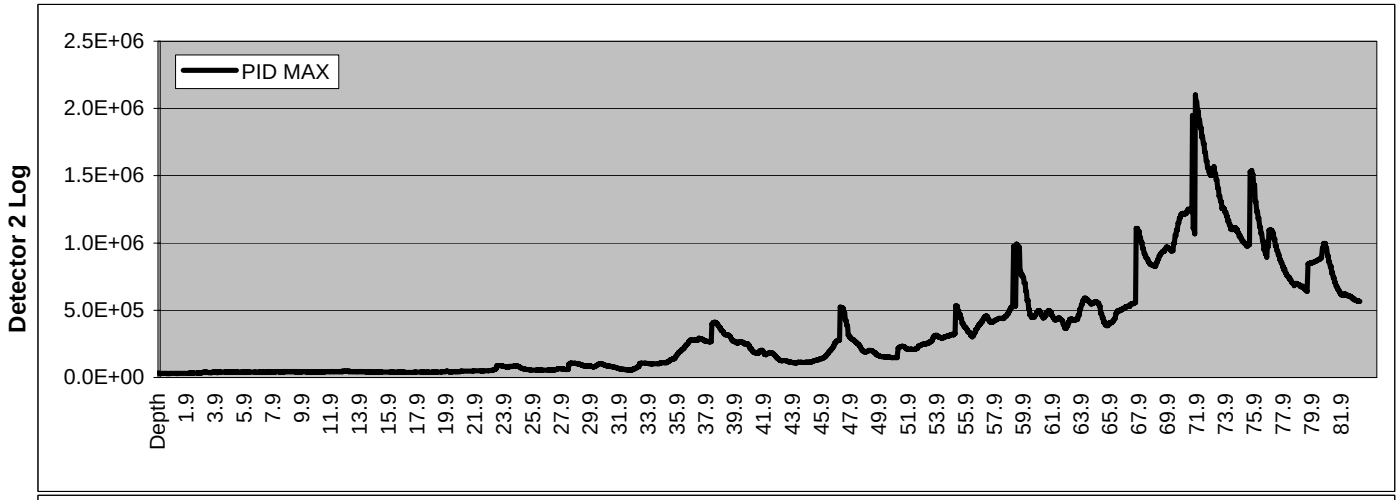


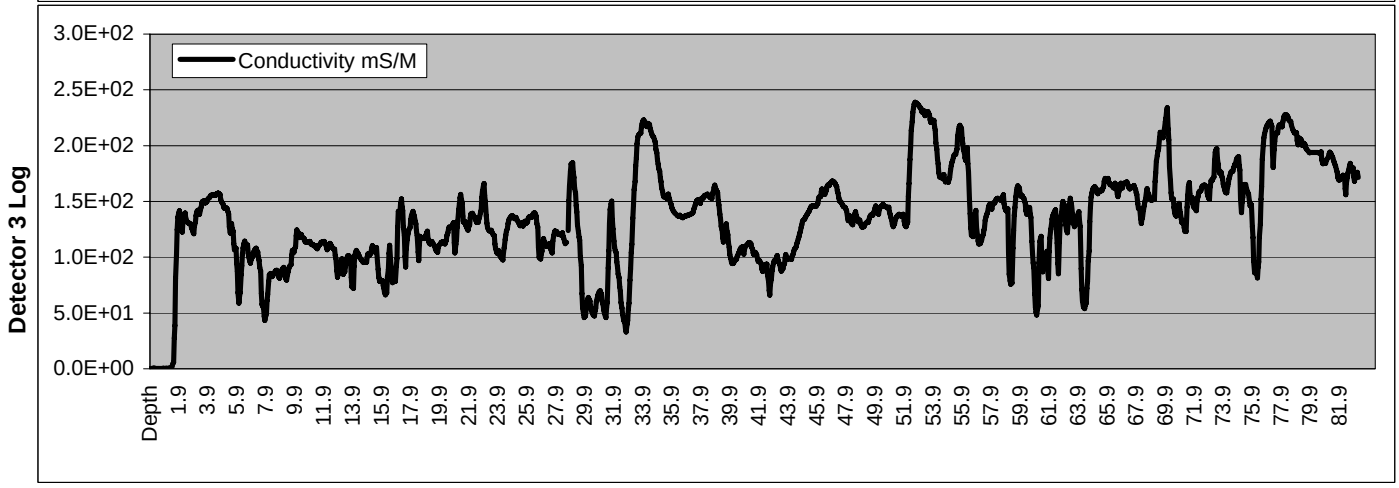


MIP Log Results by Boring - Detector Reading vs. Depth

Client:	CDM	Job No.:	M1-560	Detector 1 :	Electron Capture (ECD)
Project:	Omega Chemical	Log Date:	01/19/04	Detector 2 :	Photo Ionization (PID)
Boring I.D.:	GP6	Analyst:	SMC	Detector 3 :	Electrical Conductance (EC)





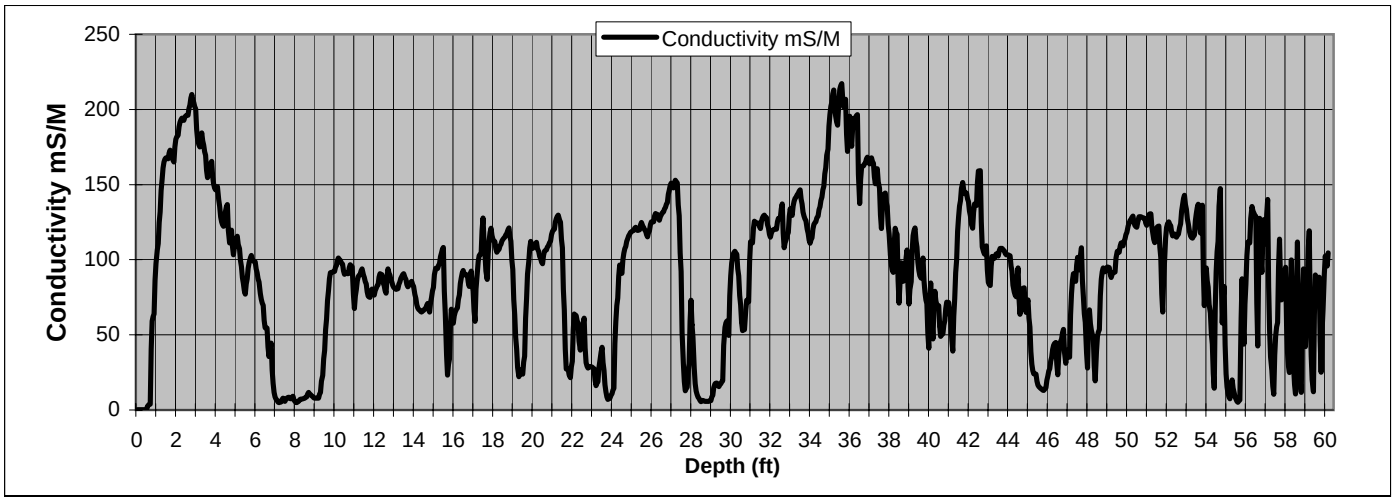


EC Log Results by Boring - EC Reading vs. Depth

Client: Camp, Dresser & Mckee, Inc.

Boring I.D.: VP-30
Date: Jun 01 2006
Time: 15:59

Detector 1 : Electrical Conductivity (EC)



Explanation: None