

Appendix G

Middle Clay Physical Properties Analysis



8100 Secura Way • Santa Fe Springs, CA 90670
Telephone (562) 347-2500 • Fax (562) 907-3610

August 13, 2013

Mark Taylor
Weston Solutions, Inc.
94072 Summer Breeze Drive
Fernandina Beach, FL 32034

Re: PTS File No: 43320
Physical Properties Data
Hawthorn Investigation; 05791.004.007.0007

Dear Mr. Taylor:

Please find enclosed report for Physical Properties analyses conducted upon the sample received from your Hawthorn Investigation; 05791.004.007.0007 project. All analyses were performed by applicable ASTM, EPA, or API methodologies. An electronic version of the report has previously been sent to your attention via the internet. The sample is currently in storage and will be retained for thirty days past completion of testing at no charge. Please note that the sample will be disposed of at that time. You may contact me regarding storage, disposal, or return of the sample.

PTS Laboratories appreciates the opportunity to be of service. If you have any questions or require additional information, please contact Rachel Spitz at (562) 347-2504.

Sincerely,
PTS Laboratories

Michael Mark Brady, P.G.
District Manager

Encl.

PTS Laboratories

Project Name: Hawthorn Investigation
 Project Number: 05791.004.007.0007

PTS File No: 43320
 Client: Weston Solutions

TEST PROGRAM - 20130722

CORE ID	Depth ft.	Core Recovery ft.	Slab and Core Photo	Grain Size Analyses	A/W Drng. Capillarity Pkg.	Total Porosity API RP40	TOC/foc Walkley-Black	Notes
Method:		Plugs:	1/4:3/4	Grab	Vert. 1"	Vert. 1.5"	Grab	Keep core frozen
Date Received: 20130515								
SB12-65-70	65-70	5.15	6	65.4-65.6, 68.5-68.7	65.2-65.4, 68.3-68.5	65.6-65.8, 68.7-68.9	65.8-66.0, 69.9-70.1	
TOTALS:	1 core	5.15	6	2	2	2	2	6

Laboratory Test Program Notes

Contaminant identification: _____

Sample locations to be selected by Weston Solutions personnel from core photography.

PTS File No: 43320
Client: Weston Solutions
Report Date: August 13, 2013

PHYSICAL PROPERTIES DATA

Project Name: Hawthorn Investigation
Project No: 05791.004.007.0007

SAMPLE ID.	DEPTH, ft.	METHODS:		API RP 40
		SAMPLE ORIENTATION (1)	ANALYSIS DATE	TOTAL POROSITY, %Vb (2)
SB12-65-70	65.70	H	20130726	64.1
SB12-65-70	68.80	H	20130726	63.5

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

(2) Total Porosity = all interconnected pore channels.

Vb = Bulk Volume, cc.

PTS File No: 43320
 Client: Weston Solutions
 Report Date: August 13, 2013

SAMPLE PROPERTIES - AIR/WATER CAPILLARY PRESSURE

Project Name: Hawthorn Investigation
 Project No: 05791.004.007.0007

SAMPLE ID.	DEPTH, ft.	METHODS: SAMPLE ORIENTATION (1)	API RP 40 / ASTM D2216	API RP 40		API RP 40		API RP 40
			MOISTURE CONTENT, % weight	DENSITY		POROSITY, %Vb (2)		TOTAL PORE FLUID SATURATIONS (3), % Pv
				DRY BULK, g/cc	GRAIN, g/cc	TOTAL	AIR FILLED	
SB12-65-70	65.3	H	53.1	1.00	2.64	62.1	8.9	85.6
SB12-65-70	68.4	H	72.3	0.80	2.64	69.8	12.1	82.7

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

(2) Total Porosity = all interconnected pore channels; Air Filled = pore channels not occupied by pore fluids.

(3) Fluid density used to calculate pore fluid saturations: Water = 0.9996 g/cc.

Vb = Bulk Volume, cc; Pv = Pore Volume, cc; ND = Not Detected

PTS File No: 43320
 Client: Weston Solutions
 Report Date: August 13, 2013

PERMEABILITY DATA - AIR/WATER CAPILLARY PRESSURE

Project Name: Hawthorn Investigation
 Project No: 05791.004.007.0007

METHODS:			API RP 40; EPA 9100		
SAMPLE ID.	DEPTH, ft.	SAMPLE ORIENTATION (1)	25 PSI CONFINING STRESS		HYDRAULIC CONDUCTIVITY, cm/s (4)
			SPECIFIC PERMEABILITY TO AIR, millidarcy (2)	EFFECTIVE PERMEABILITY TO WATER, millidarcy (3,4)	
SB12-65-70	65.3	H	341	1.16	1.15E-06
SB12-65-70	68.4	H	13.4	1.03	1.03E-06

(1) Sample Orientation: H = horizontal; V = vertical; R = remold
 (2) Specific = No pore fluids in place.
 (3) Effective (Native) = With as-received pore fluids in place.
 (4) Permeability to water and hydraulic conductivity measured at saturated conditions.
 Air = Nitrogen gas, Water = filtered Laboratory Fresh (tap) or Site water.

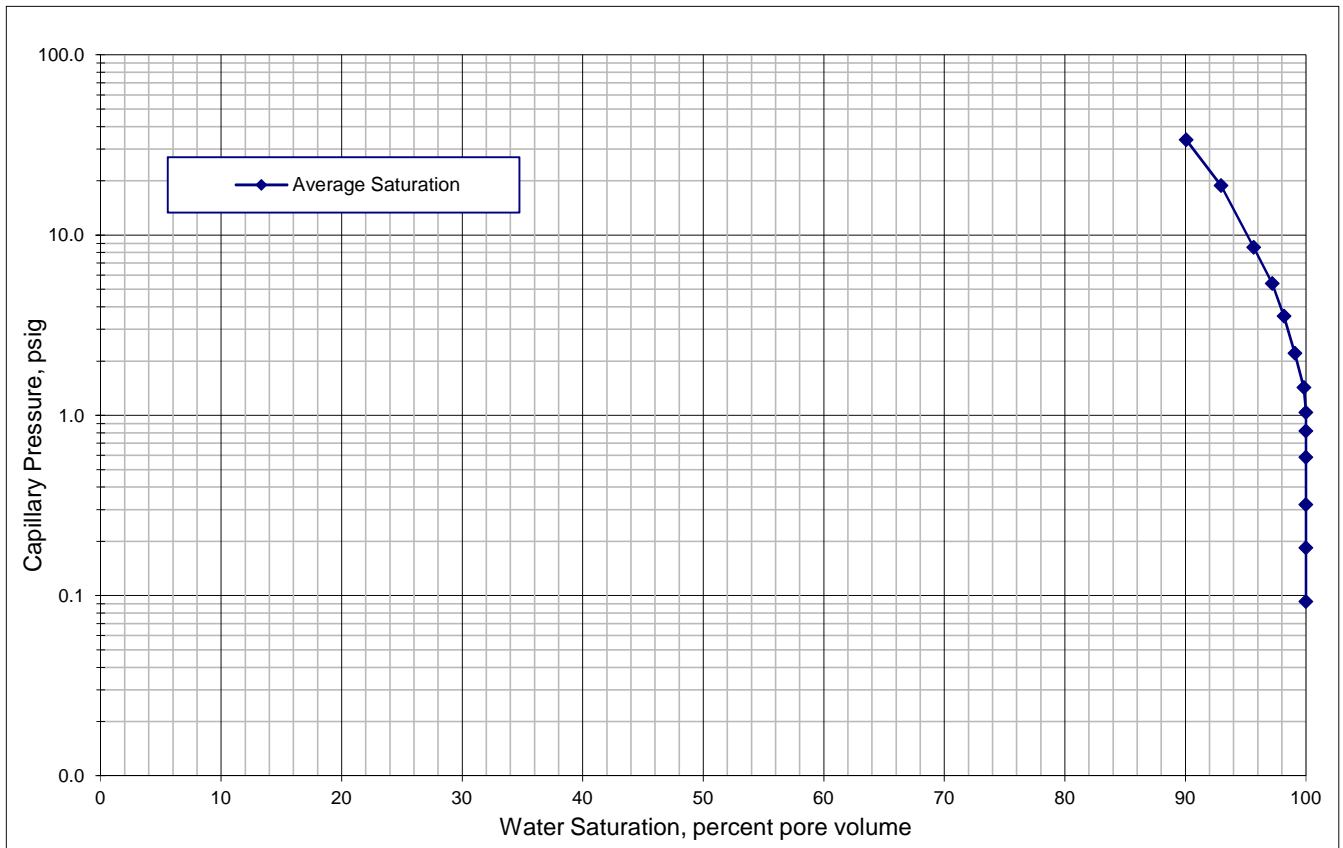
PTS File No: 43320
 Client: Weston Solutions
 Report Date: August 13, 2013

AIR/WATER CAPILLARY PRESSURE TABULAR DATA

ASTM D6836; Method E (Centrifugal Method: air displacing water)

Project Name: Hawthorn Investigation
 Project No: 05791.004.007.0007

Capillary Pressure		Height Above Water Table, ft	Sample ID	
			SB12-65-70 at 65.3 ft.	
psi	cm water		Average Saturation % pore volume	Moisture, % dry weight
0.000	0.00	0.000	100.0	59.9
0.093	6.53	0.215	100.0	59.9
0.184	13.0	0.427	100.0	59.9
0.320	22.5	0.741	100.0	59.9
0.587	41.3	1.36	100.0	59.9
0.819	57.6	1.90	100.0	59.9
1.04	72.9	2.40	100.0	59.9
1.43	100	3.31	99.8	59.8
2.22	156	5.13	99.1	59.3
3.55	249	8.21	98.2	58.8
5.40	380	12.5	97.2	58.2
8.57	603	19.8	95.7	57.3
18.9	1326	43.7	92.9	55.7
33.8	2377	78.2	90.1	53.9



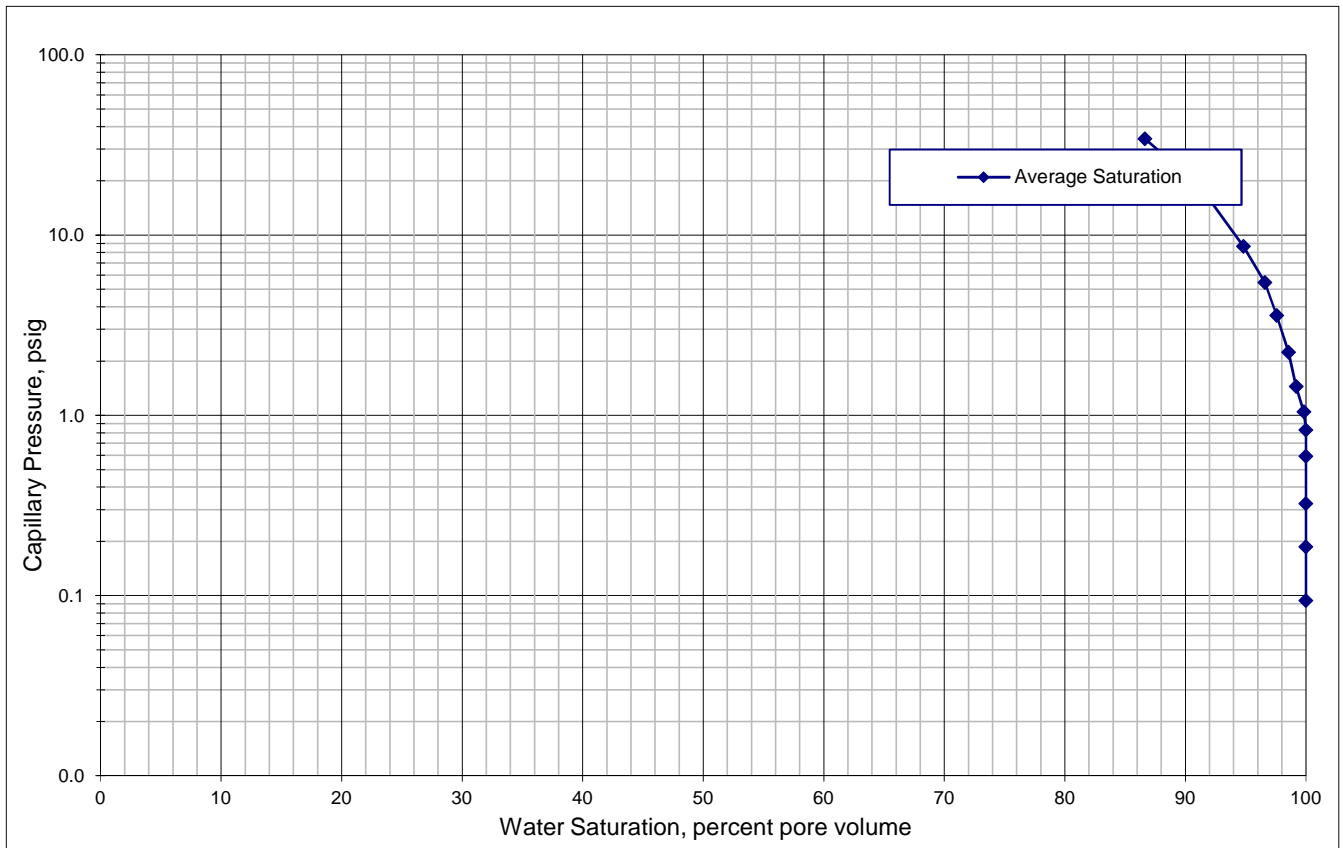
PTS File No: 43320
 Client: Weston Solutions
 Report Date: August 13, 2013

AIR/WATER CAPILLARY PRESSURE TABULAR DATA

ASTM D6836; Method E (Centrifugal Method: air displacing water)

Project Name: Hawthorn Investigation
 Project No: 05791.004.007.0007

Capillary Pressure		Height Above Water Table, ft	Sample ID	
			SB12-65-70 at 68.4 ft.	
psi	cm water		Average Saturation % pore volume	Moisture, % dry weight
0.000	0.00	0.000	100.0	81.1
0.094	6.60	0.217	100.0	81.1
0.186	13.1	0.431	100.0	81.1
0.324	22.8	0.749	100.0	81.1
0.593	41.7	1.37	100.0	81.1
0.829	58.3	1.92	100.0	81.1
1.05	73.7	2.43	99.8	81.0
1.44	102	3.34	99.2	80.4
2.24	157	5.18	98.5	79.9
3.58	252	8.30	97.6	79.1
5.46	384	12.6	96.6	78.3
8.66	609	20.1	94.8	76.9
19.1	1341	44.1	91.1	73.9
34.2	2403	79.1	86.6	70.3



PTS File No: 43320
 Client: Weston Solutions
 Report Date: August 13, 2013

ORGANIC CARBON DATA - TOC (foc)

(Methodology: Walkley-Black)

Project Name: Hawthorn Investigation
 Project No: 05791.004.007.0007

SAMPLE ID.	DEPTH, ft.	ANALYSIS DATE	ANALYSIS TIME	SAMPLE MATRIX	TOTAL ORGANIC CARBON, mg/kg	FRACTION ORGANIC CARBON, g/g
SB12-65-70	65.9	20130729	0955	SOIL	8300	8.30E-03
SB12-65-70	70	20130729	0955	SOIL	10400	1.04E-02

Blank	N/A	20130729	0955	BLANK	ND	ND
SRM D079-542	N/A	20130729	0955	SRM	3440	3.44E-03

Reporting Limit: 100 1.00E-04

QC DATA

SRM ID/Lot No.	REC (%)	Control Limits	Certified Concentration mg/kg	QC Performance	
				Acceptance Limits, mg/kg	
				Lower	Upper
SRM D079-542	101	75-125	3400	2550	4250

ND = Not Detected

PARTICLE SIZE SUMMARY
(METHODOLOGY: ASTM D422/D4464M)

PROJECT NAME: Hawthorn Investigation
PROJECT NO: 05791.004.007.0007

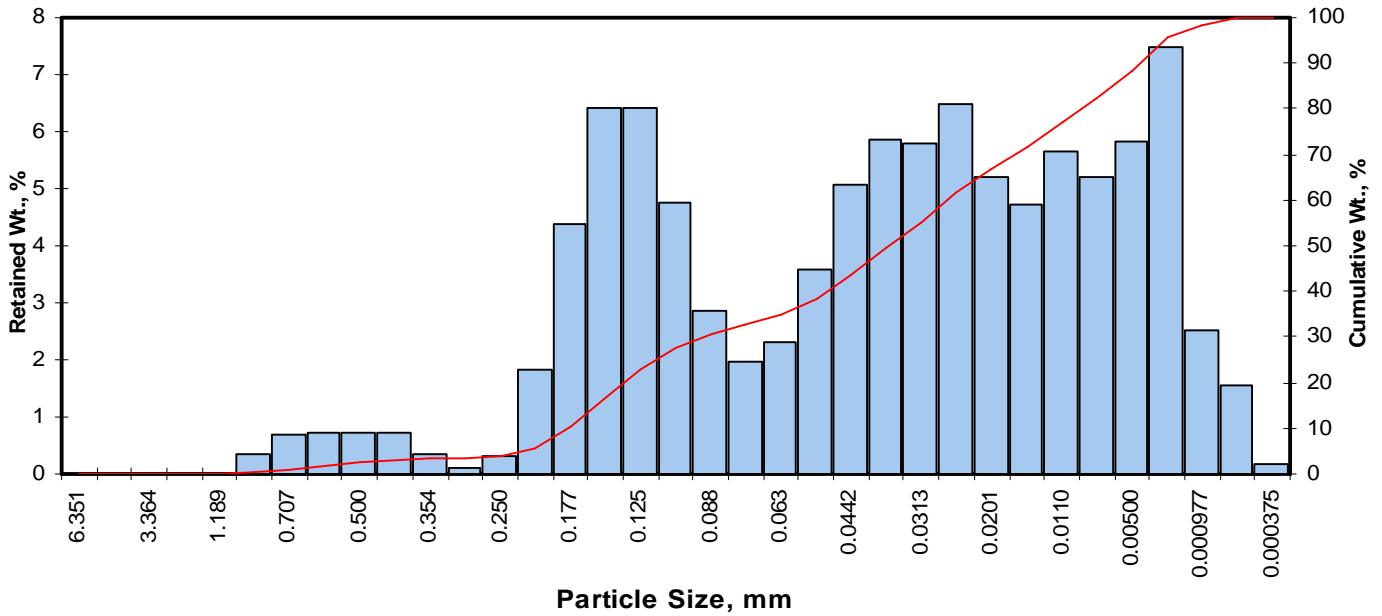
Sample ID	Depth, ft.	Mean Grain Size Description (1)	Median Grain Size mm	Particle Size Distribution, wt. percent						Silt & Clay
				Gravel	Sand Size			Silt	Clay	
					Coarse	Medium	Fine			
SB12-65-70	65.5	Silt	0.036	0.00	0.00	3.21	29.36	55.71	11.72	67.43
SB12-65-70	68.6	Silt	0.029	0.00	0.00	0.00	4.42	83.17	12.41	95.58

(1) Based on Mean from Trask

Client: Weston Solutions
Project: Hawthorn Investigation
Project No: 05791.004.007.0007

PTS File No: 43320
Sample ID: SB12-65-70
Depth, ft: 65.5

Grv	Sand Size			Silt	Clay
	crs	medium	fine		



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
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	0.34	0.34	0.34
0.0278	0.707	0.50	25	0.70	0.70	1.04
0.0234	0.595	0.75	30	0.72	0.72	1.76
0.0197	0.500	1.00	35	0.74	0.74	2.50
0.0166	0.420	1.25	40	0.71	0.71	3.21
0.0139	0.354	1.50	45	0.34	0.34	3.55
0.0117	0.297	1.75	50	0.11	0.11	3.66
0.0098	0.250	2.00	60	0.32	0.32	3.98
0.0083	0.210	2.25	70	1.83	1.83	5.81
0.0070	0.177	2.50	80	4.38	4.38	10.19
0.0059	0.149	2.75	100	6.41	6.41	16.60
0.0049	0.125	3.00	120	6.41	6.41	23.01
0.0041	0.105	3.25	140	4.75	4.75	27.76
0.0035	0.088	3.50	170	2.86	2.86	30.62
0.0029	0.074	3.75	200	1.95	1.95	32.57
0.0025	0.063	4.00	230	2.30	2.30	34.87
0.0021	0.053	4.25	270	3.57	3.57	38.44
0.00174	0.0442	4.50	325	5.07	5.07	43.51
0.00146	0.0372	4.75	400	5.85	5.85	49.36
0.00123	0.0313	5.00	450	5.80	5.80	55.16
0.000986	0.0250	5.32	500	6.48	6.48	61.64
0.000790	0.0201	5.64	635	5.22	5.22	66.86
0.000615	0.0156	6.00		4.74	4.74	71.60
0.000435	0.0110	6.50		5.65	5.65	77.25
0.000308	0.00781	7.00		5.21	5.21	82.46
0.000197	0.00500	7.65		5.82	5.82	88.28
0.000077	0.00195	9.00		7.47	7.47	95.75
0.000038	0.000977	10.00		2.53	2.53	98.28
0.000019	0.000488	11.00		1.54	1.54	99.82
0.000015	0.000375	11.38		0.18	0.18	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	2.14	0.0089	0.227
10	2.49	0.0070	0.178
16	2.73	0.0059	0.151
25	3.10	0.0046	0.116
40	4.33	0.0020	0.050
50	4.78	0.0014	0.036
60	5.24	0.0010	0.026
75	6.30	0.0005	0.013
84	7.17	0.0003	0.007
90	7.96	0.0002	0.004
95	8.86	0.0001	0.002

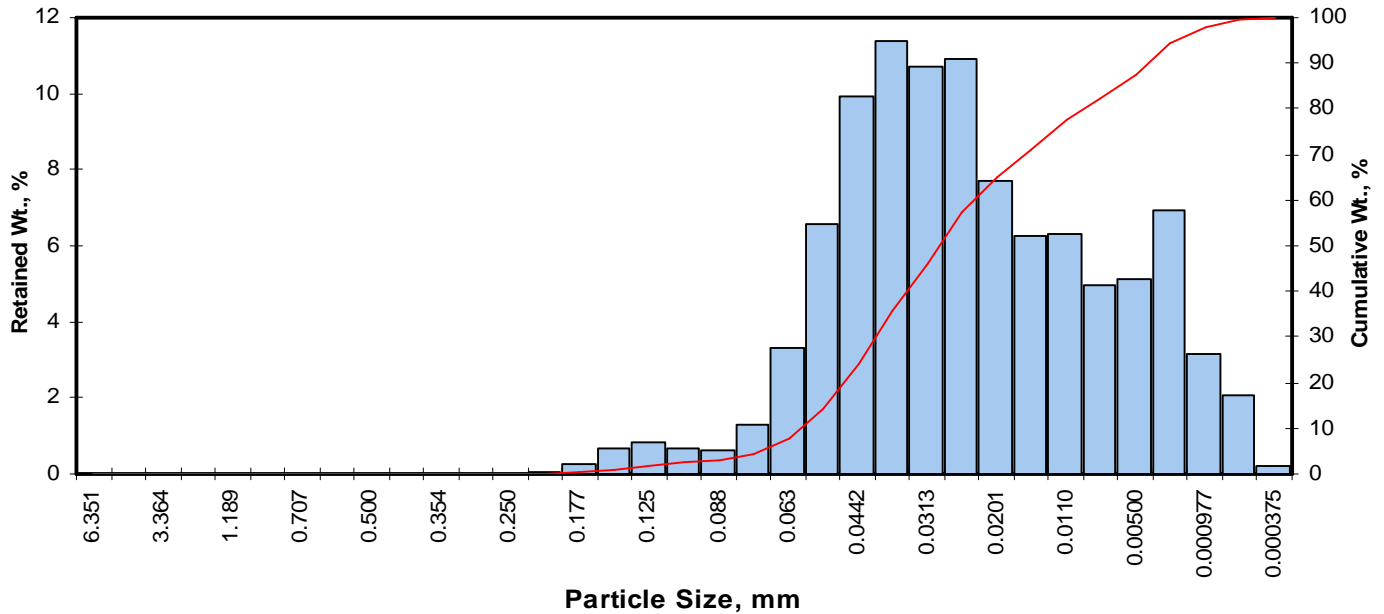
Measure	Trask	Inman	Folk-Ward
Median, phi	4.78	4.78	4.78
Median, in.	0.0014	0.0014	0.0014
Median, mm	0.036	0.036	0.036
Mean, phi	3.96	4.95	4.89
Mean, in.	0.0025	0.0013	0.0013
Mean, mm	0.064	0.032	0.034
Sorting	3.027	2.222	2.130
Skewness	1.053	0.077	0.146
Kurtosis	0.297	0.513	0.862
Grain Size Description		Silt	
(ASTM-USCS Scale)		(based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	3.21
Fine Sand	200	29.36
Silt	>0.005 mm	55.71
Clay	<0.005 mm	11.72
Total		100

Client: Weston Solutions
Project: Hawthorn Investigation
Project No: 05791.004.007.0007

PTS File No: 43320
Sample ID: SB12-65-70
Depth, ft: 68.6

Grv	Sand Size			Silt	Clay
	crs	medium	fine		



Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
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	0.04	0.04	0.04
0.0070	0.177	2.50	80	0.26	0.26	0.30
0.0059	0.149	2.75	100	0.65	0.65	0.95
0.0049	0.125	3.00	120	0.83	0.83	1.78
0.0041	0.105	3.25	140	0.69	0.69	2.47
0.0035	0.088	3.50	170	0.64	0.64	3.11
0.0029	0.074	3.75	200	1.31	1.31	4.42
0.0025	0.063	4.00	230	3.33	3.33	7.75
0.0021	0.053	4.25	270	6.56	6.56	14.31
0.00174	0.0442	4.50	325	9.91	9.91	24.21
0.00146	0.0372	4.75	400	11.40	11.40	35.61
0.00123	0.0313	5.00	450	10.70	10.70	46.31
0.000986	0.0250	5.32	500	10.90	10.90	57.20
0.000790	0.0201	5.64	635	7.73	7.73	64.93
0.000615	0.0156	6.00		6.27	6.27	71.20
0.000435	0.0110	6.50		6.33	6.33	77.53
0.000308	0.00781	7.00		4.96	4.96	82.49
0.000197	0.00500	7.65		5.11	5.11	87.59
0.000077	0.00195	9.00		6.94	6.94	94.53
0.000038	0.000977	10.00		3.15	3.15	97.68
0.000019	0.000488	11.00		2.09	2.09	99.77
0.000015	0.000375	11.38		0.23	0.23	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	3.79	0.0028	0.072
10	4.09	0.0023	0.059
16	4.29	0.0020	0.051
25	4.52	0.0017	0.044
40	4.85	0.0014	0.035
50	5.11	0.0011	0.029
60	5.44	0.0009	0.023
75	6.30	0.0005	0.013
84	7.19	0.0003	0.007
90	8.11	0.0001	0.004
95	9.15	0.0001	0.002

Measure	Trask	Inman	Folk-Ward
Median, phi	5.11	5.11	5.11
Median, in.	0.0011	0.0011	0.0011
Median, mm	0.029	0.029	0.029
Mean, phi	5.15	5.74	5.53
Mean, in.	0.0011	0.0007	0.0009
Mean, mm	0.028	0.019	0.022
Sorting	1.855	1.449	1.536
Skewness	0.812	0.437	0.473
Kurtosis	0.280	0.848	1.231
Grain Size Description		Silt	
(ASTM-USCS Scale)		(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	4.42
Silt	>0.005 mm	83.17
Clay	<0.005 mm	12.41
Total		100

COMPANY Weston Solutions ADDRESS: 9010 Summer Breeze Dr, Ft. Lauderdale, FL 33334 PROJECT MANAGER: Mark Taylor PHONE NUMBER: 904-261-3085 FAX NUMBER: 904-261-0007 SITE LOCATION: GAINESVILLE FL SAMPLER SIGNATURE: <i>[Signature]</i>				ANALYSIS REQUEST											
NUMBER OF SAMPLES: 1				SOIL PROPERTIES PACKAGE HYDRAULIC CONDUCTIVITY PACKAGE PORE FLUID SATURATIONS PACKAGE TCEQ/NRCC PROPERTIES PACKAGE CAPILLARITY PACKAGE FLUID PROPERTIES PACKAGE PHOTOLOG: CORE PHOTOGRAPHY MOISTURE CONTENT, ASTM D2216 POROSITY: TOTAL, API RP40 POROSITY: EFFECTIVE, ASTM D425M SPECIFIC GRAVITY, ASTM D854 BULK DENSITY (DRY), API RP40 or ASTM D2937 AIR PERMEABILITY, API RP40 HYDRAULIC CONDUCTIVITY, EPA9100, API RP40, D5084 GRAIN SIZE DISTRIBUTION, ASTM D422/4464M TOC: WALKLEY-BLACK ATTERBERG LIMITS, ASTM D4318											
SAMPLE ID NUMBER: SB12-05-70 DATE: 5-7-2013 TIME: 1640 DEPTH, FT: 65-70				TURNAROUND TIME: 24 HOURS <input type="checkbox"/> 5 DAYS <input checked="" type="checkbox"/> 48 HOURS <input type="checkbox"/> NORMAL <input checked="" type="checkbox"/> 72 HOURS <input type="checkbox"/> OTHER: _____ SAMPLE INTEGRITY (CHECK): INTACT <input checked="" type="checkbox"/> ON ICE <input type="checkbox"/> PTS QUOTE NO.: _____ PTS FILE: 43320 COMMENTS: For photography 2											
RELINQUISHED BY: <i>[Signature]</i> COMPANY: PTS LABS DATE: 5/14/13 TIME: 10:09				RECEIVED BY: _____ COMPANY: _____ DATE: _____ TIME: _____											