APPENDIX B1.2

GEOTECHNICAL TEST RESULTS

ADVANCED TERRA TESTING

IMPOUNDMENT GEOTECHNICAL TEST RESULTS

Moisture Content Determinations
ASTM D 2216

CLIENT:	MWH	JOB NO.	2512-77
PROJECT	Church Rock		
PROJECT NO.	--		

BORING NO.	CS-5	CS-6	CS-7	CS-8
DEPTH	9-24"	7-24"	0-20"	8-28"
SAMPLE NO.	TI-CS05-04A(9-24")	TI-CS06-04A(7-24")	TI-CS07-02A(0-20")	TI-CS08-04A(8-28")
DATE SAMPLED	11/12/13 MWH	11/13/13 MWH	11/13/13 MWH	11/13/13 MWH
DATE TESTED	11/22/13 CAL	11/22/13 CAL	11/22/13 CAL	11/22/13 CAL
LOCATION	Tailings Impoundment	Tailings Impoundment	Tailings Impoundment	Tailings Impoundment
MOISTURE DETERMINATIONS				
Wt. of Wet Soil & Dish (gms)	414.50	391.13	532.93	528.02
Wt. of Dry Soil & Dish (gms)	378.91	352.93	494.69	489.34
Net Loss of Moisture (gms)	35.59	38.20	38.24	38.68
Wt. of Dish (gms)	6.62	6.56	6.55	9.27
Wt. of Dry Soil (gms)	372.29	346.37	488.14	480.07
Moisture Content (%)	9.6	11.0	7.8	8.1

BORING NO.	CS-9
DEPTH	9-26"
SAMPLE NO.	TI-CS09-04A(9-26")
DATE SAMPLED	11/13/13 MWH
DATE TESTED	11/22/13 CAL
LOCATION	Tailings Impoundment
MOISTURE DETERMINATIONS	
Wt. of Wet Soil & Dish (gms)	461.42
Wt. of Dry Soil & Dish (gms)	428.77
Net Loss of Moisture (gms)	32.65
Wt. of Dish (gms)	6.57
Wt. of Dry Soil (gms)	422.20
Moisture Content (%)	7.7

Data entry by: CAL Date: 12/3/2013
Checked by: KP Date: 12/5/13
File name: 2512-77-M&D-ASTMD-2216-2937-R0-AS3-P1.xls

ATT
ADVANCED TERRA TESTING

Moisture Content Determinations
ASTM D 2216

CLIENT:	MWH		JOB NO.
PROJECT	Church Rock		
PROJECT NO.	--		
BORING NO.	CS-11	CS-1	CS-4
DEPTH	9-24"	11-24"	10-24"
SAMPLE NO.	TI-CS11-04A(9-24")	TI-CS01-04A(11-24")	TI-CS04-04A(10-24")
DATE SAMPLED	11/13/13 MWH	11/12/13 MWH	11/12/13 MWH
DATE TESTED	12/3/13 CAL	12/4/13 KMR	12/4/13 KMR
LOCATION	Tailings Impoundment	Tailings Impoundment	Tailings Impoundment
MOISTURE DETERMINATIONS			
Wt. of Wet Soil & Dish (gms)	241.48	312.07	402.15
Wt. of Dry Soil & Dish (gms)	222.88	286.52	350.83
Net Loss of Moisture (gms)	18.60	25.55	51.32
Wt. of Dish (gms)	6.72	9.23	9.26
Wt. of Dry Soil (gms)	216.16	277.29	341.57
Moisture Content (%)	8.6	9.2	15.0

Data entry by: CAL Date: 12/5/2013
Checked by: KR Date: 12/5/13
File name: 2512-77-M&D-ASTMD-2216-2937-R0-7.xls

Moisture Content Determinations
ASTM D 2216

CLIENT:	MWH	JOB NO.	2512-77
PROJECT	Church Rock	LOCATION	Tailings Impoundment
PROJECT NO.	--		

BORING NO.	CS-12	CS-2	CS-10
DEPTH	0-14"	10-24"	7-25"
SAMPLE NO.	TI-CS12-02A(0-14")	TI-CS2-04A(10-24")	TI-CS10-04A(7-25")
DATE SAMPLED	11/13/2013	11/12/2013	11/13/2013
DATE TESTED	12/6/2013 KMR	12/10/2013 DPM	12/10/2013 DPM
SOIL DESCRIPTION	--	--	--
MOISTURE DETERMINATIONS			
Wt. of Wet Soil & Dish (gms)	244.75	495.60	597.59
Wt. of Dry Soil & Dish (gms)	225.12	445.63	555.15
Net Loss of Moisture (gms)	19.63	49.97	42.44
Wt. of Dish (gms)	9.24	6.58	6.66
Wt. of Dry Soil (gms)	215.88	439.05	548.49
Moisture Content (%)	9.1	11.4	7.7

Data entry by: KMR Date: 12/11/2013
Checked by: DPM Date: 12/12/13
File name: 2512-77-M&D-ASTMD-2216-2937-R0-8.xls

ATT
ADVANCED TERRA TESTING

Moisture Content Determinations
ASTM D 2216

CLIENT:	MWH	JOB NO.	2512-77
PROJECT	Church Rock	LOCATION	Tailings Impoundment
PROJECT NO.	-		

BORING NO.	CS-3
DEPTH	6-24"
SAMPLE NO.	TI-CS03-04A(6-24")
DATE SAMPLED	11/12/13 MWH
DATE TESTED	12/19/13 DPM
SOIL DESCRIPTION	-

MOISTURE DETERMINATIONS	
Wt. of Wet Soil & Dish (gms)	1331.96
Wt. of Dry Soil & Dish (gms)	1257.37
Net Loss of Moisture (gms)	74.59
Wt. of Dish (gms)	15.79
Wt. of Dry Soil (gms)	1241.58
Moisture Content (%)	6.0

Data entry by: DPM Date: 12/20/2013
Checked by: DPM Date: 12/20/13
File name: 2512-77- M&D-ASTMD-2216-2937-R0-10.xls

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number: -

Boring Number: CS-1
Depth: 11-24"
Sample Number: TI-CS01-04A(11-24")
Test Date: 12/20/2013
Technician: MLM
Sampled Date: 11/12/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 0860
Material Size of Fines: -#40

Plastic Limits

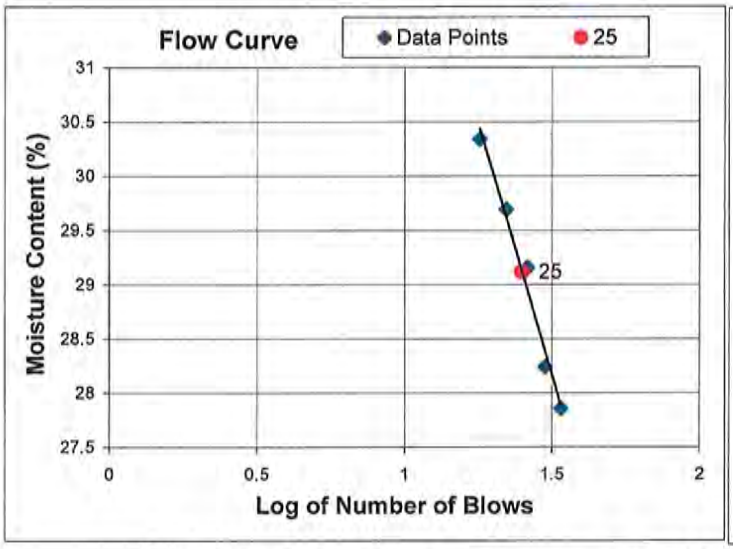
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	9.611	9.535	10.520
Weight of Dry Soil & Pan (g):	8.503	8.431	9.319
Weight of Water (g):	1.108	1.104	1.201
Weight of Pan (g):	1.135	1.117	1.133
Moisture Content (%):	15.0	15.1	14.7

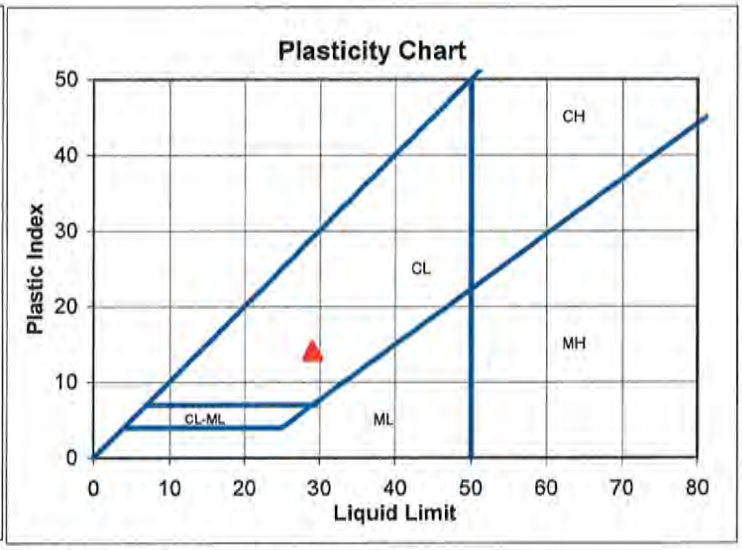
Average: 14.9%
Standard Deviation: 0.2%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Number of Blows:	34	30	26	22	18
Weight of Wet Soil & Pan (g):	16.758	16.257	17.649	17.054	16.046
Weight of Dry Soil & Pan (g):	13.357	12.928	13.924	13.416	12.580
Weight of Water (g):	3.401	3.329	3.725	3.638	3.466
Weight of Pan (g):	1.148	1.140	1.147	1.162	1.155
Moisture Content (%):	27.9	28.2	29.2	29.7	30.3

Plastic Limit: 15
Liquid Limit: 29
Plastic Index: 14
Atterberg Classification CL





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File Name: atterberg-ASTM_4318-R6_1.xls Date: 12/30/13

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number: -

Boring Number: CS-4
Depth: 10-24"
Sample Number: TI-CS04-04A(10-24")
Test Date: 12/20/2013
Technician: MLM
Sampled Date: 11/12/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 0860
Material Size of Fines: -#40

Plastic Limits

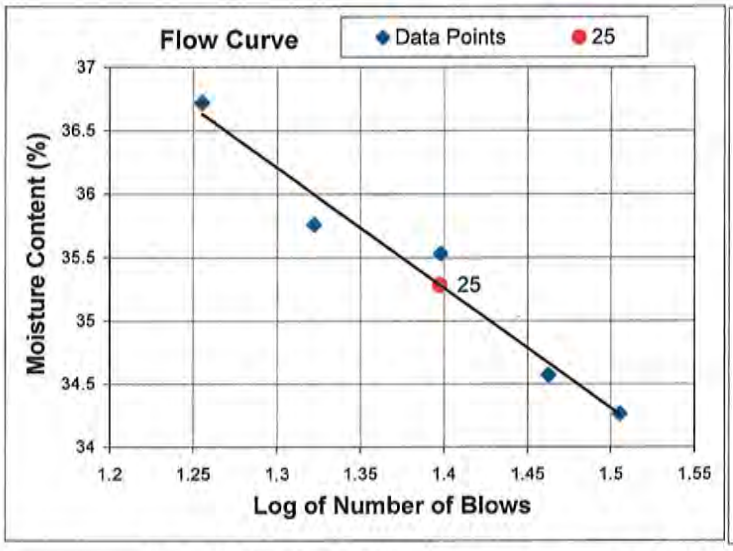
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	9.185	9.680	9.404
Weight of Dry Soil & Pan (g):	8.121	8.543	8.311
Weight of Water (g):	1.064	1.137	1.093
Weight of Pan (g):	1.108	1.136	1.133
Moisture Content (%):	15.2	15.4	15.2

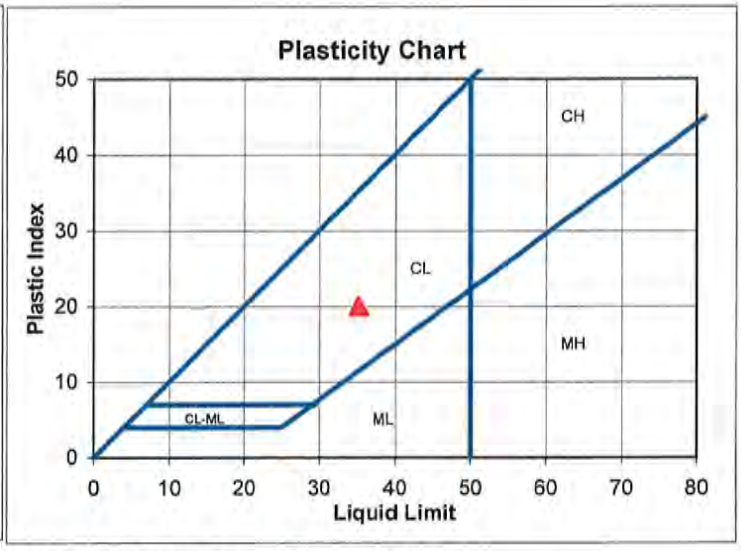
Average: 15.2%
Standard Deviation: 0.1%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Number of Blows:	32	29	25	21	18
Weight of Wet Soil & Pan (g):	15.825	16.545	14.944	16.252	14.906
Weight of Dry Soil & Pan (g):	12.081	12.589	11.303	12.263	11.201
Weight of Water (g):	3.744	3.956	3.641	3.989	3.705
Weight of Pan (g):	1.153	1.145	1.054	1.107	1.111
Moisture Content (%):	34.3	34.6	35.5	35.8	36.7

Plastic Limit: 15
Liquid Limit: 35
Plastic Index: 20
Atterberg Classification CL





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ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-5
Depth: 9-24"
Sample Number: TI-CS05-04A(9-24")
Test Date: 12/3/2013
Technician: CAL
Sampled Date: 11/12/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: #40

Plastic Limits

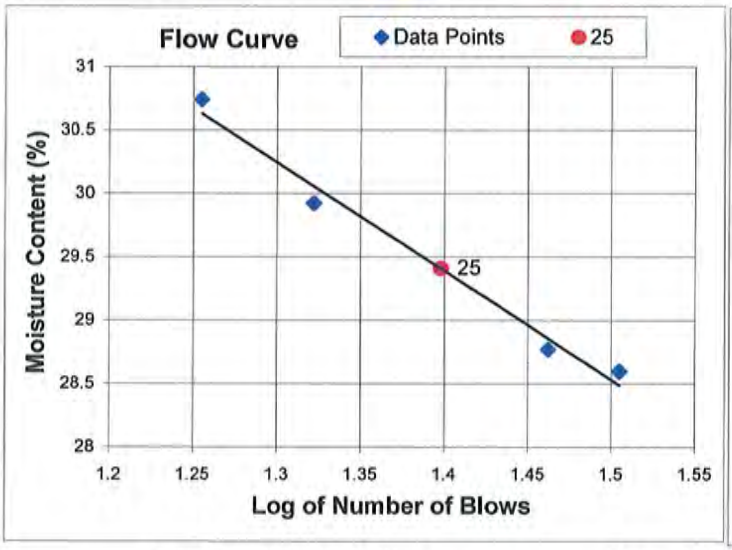
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	8.110	8.158	7.578
Weight of Dry Soil & Pan (g):	7.299	7.357	6.825
Weight of Water (g):	0.811	0.801	0.753
Weight of Pan (g):	0.738	0.763	0.743
Moisture Content (%):	12.4	12.1	12.4

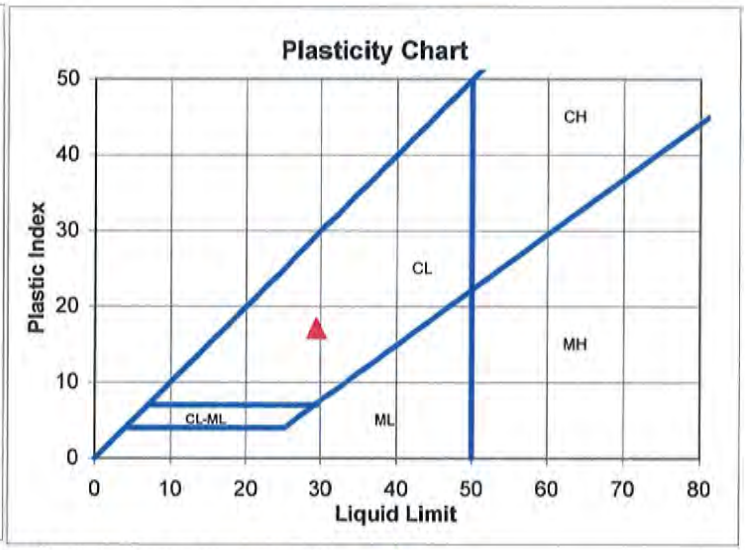
Average: 12.3%
Standard Deviation: 0.1%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4
Number of Blows:	32	29	21	18
Weight of Wet Soil & Pan (g):	11.769	11.305	11.298	9.415
Weight of Dry Soil & Pan (g):	9.315	8.948	8.871	7.382
Weight of Water (g):	2.454	2.357	2.427	2.033
Weight of Pan (g):	0.733	0.755	0.760	0.769
Moisture Content (%):	28.6	28.8	29.9	30.7

Plastic Limit: 12
Liquid Limit: 29
Plastic Index: 17
Atterberg Classification CL





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ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-6
Depth: 7-24"
Sample Number: TI-CS06-04A(7-24")
Test Date: 12/3/2013
Technician: CAL
Sampled Date: 11/13/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

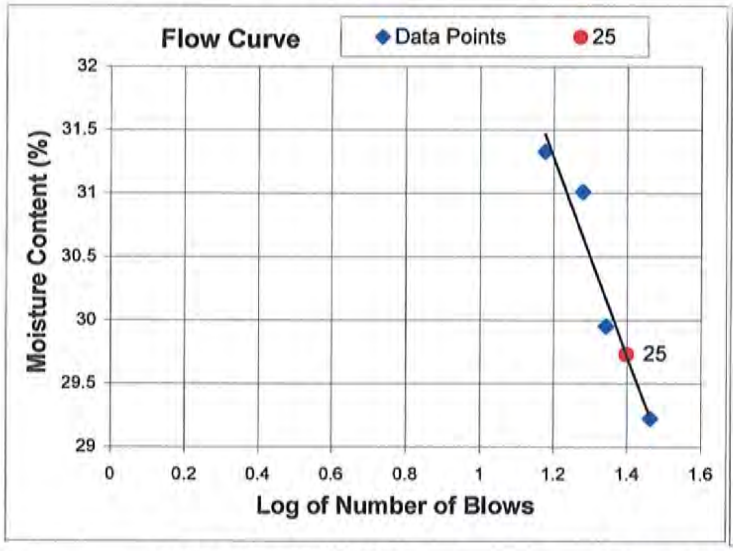
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	8.088	7.135	7.931
Weight of Dry Soil & Pan (g):	7.293	6.417	7.099
Weight of Water (g):	0.795	0.718	0.832
Weight of Pan (g):	0.766	0.746	0.734
Moisture Content (%):	12.2	12.7	13.1

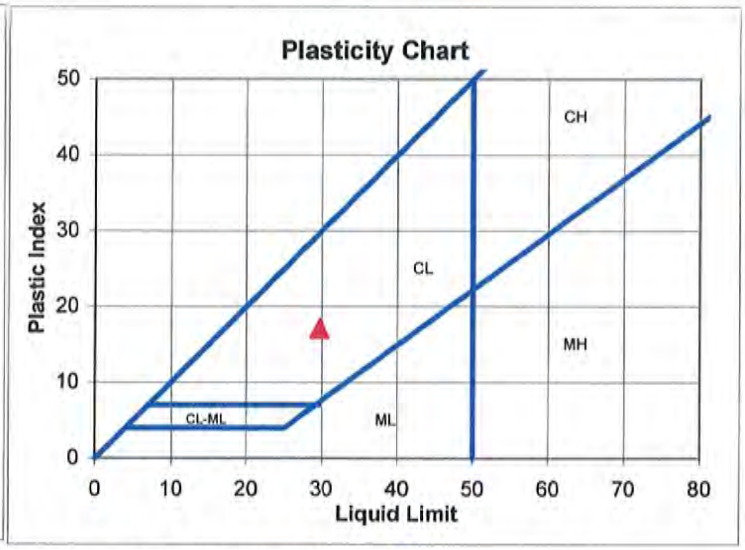
Average: 12.6%
Standard Deviation: 0.4%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4
Number of Blows:	29	22	19	15
Weight of Wet Soil & Pan (g):	11.472	12.036	11.694	10.611
Weight of Dry Soil & Pan (g):	9.043	9.438	9.108	8.261
Weight of Water (g):	2.429	2.598	2.586	2.350
Weight of Pan (g):	0.731	0.764	0.769	0.760
Moisture Content (%):	29.2	30.0	31.0	31.3

Plastic Limit: 13
Liquid Limit: 30
Plastic Index: 17
Atterberg Classification CL





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File Name: atterberg-ASTM_4318-R6_5.xls Date: 12/5/13

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-7
Depth: 0-20"
Sample Number: TI-CS07-02A(0-20")
Test Date: 12/2/2013
Technician: CAL
Sampled Date: 11/13/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: #40

Plastic Limits

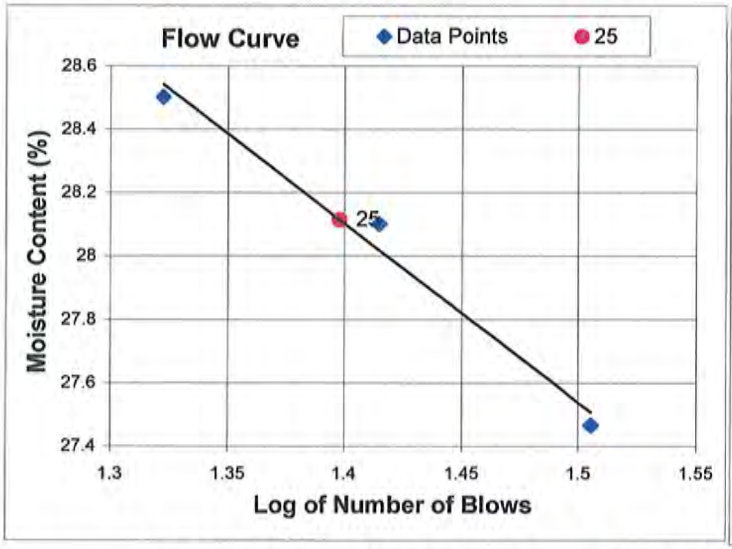
	Sample 1	Sample 2
Weight of Wet Soil & Pan (g):	6.558	7.430
Weight of Dry Soil & Pan (g):	5.888	6.648
Weight of Water (g):	0.670	0.782
Weight of Pan (g):	0.747	0.738
Moisture Content (%):	13.0	13.2

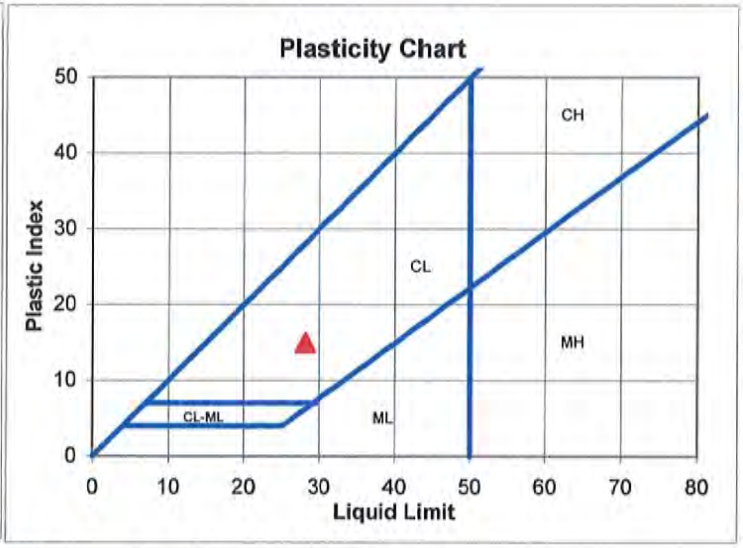
Average: 13.1%
Standard Deviation: 0.1%

Liquid Limits

	Sample 1	Sample 2	Sample 3
Number of Blows:	32	21	26
Weight of Wet Soil & Pan (g):	11.095	10.501	13.216
Weight of Dry Soil & Pan (g):	8.870	8.342	10.484
Weight of Water (g):	2.225	2.159	2.732
Weight of Pan (g):	0.769	0.767	0.762
Moisture Content (%):	27.5	28.5	28.1

Plastic Limit: 13
Liquid Limit: 28
Plastic Index: 15
Atterberg Classification CL





Data Entered By: KR Date: 12/3/2013 Data Checked By: CM
File Name: atterberg-ASTM_4318-R6_0.xls Date: 12/3/13

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-8
Depth: 8-28"
Sample Number: TI-CS08-04A(8-28")
Test Date: 12/2/2013
Technician: CAL
Sampled Date: 11/13/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

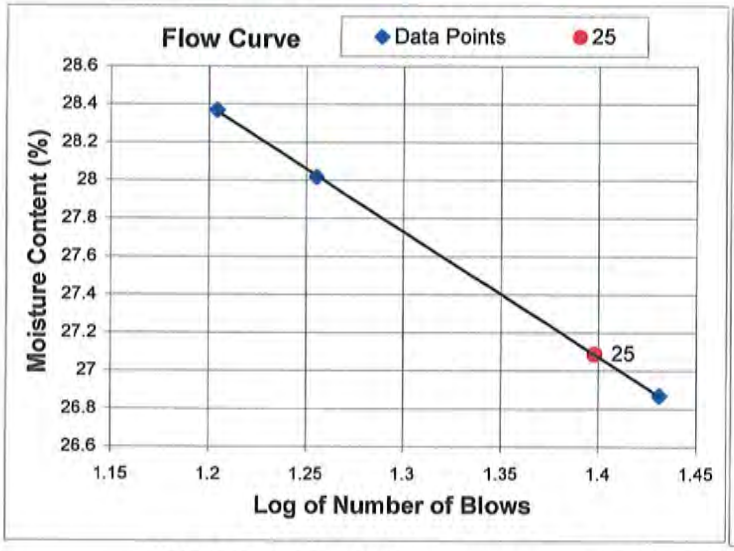
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	7.783	6.527	5.558
Weight of Dry Soil & Pan (g):	7.010	5.904	5.035
Weight of Water (g):	0.773	0.623	0.523
Weight of Pan (g):	0.770	0.763	0.732
Moisture Content (%):	12.4	12.1	12.2

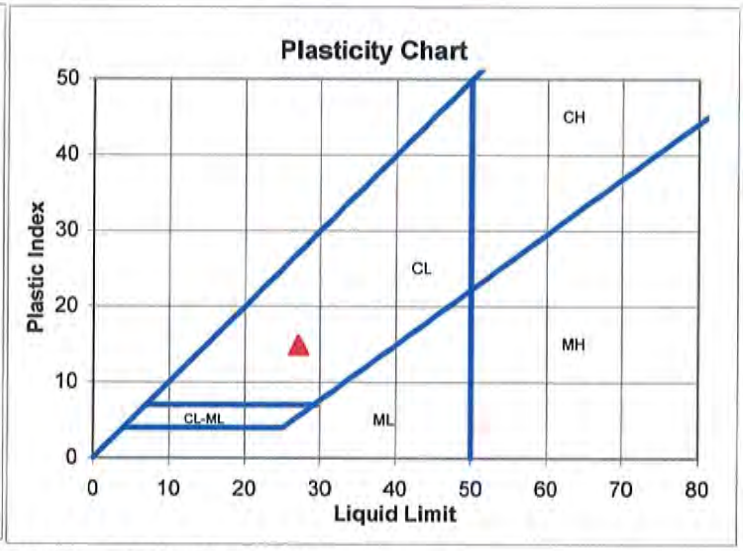
Average: 12.2%
Standard Deviation: 0.1%

Liquid Limits

	Sample 1	Sample 2	Sample 3
Number of Blows:	16	18	27
Weight of Wet Soil & Pan (g):	11.528	9.880	9.560
Weight of Dry Soil & Pan (g):	9.147	7.883	7.691
Weight of Water (g):	2.381	1.997	1.869
Weight of Pan (g):	0.754	0.755	0.735
Moisture Content (%):	28.4	28.0	26.9

Plastic Limit: 12
Liquid Limit: 27
Plastic Index: 15
Atterberg Classification CL





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File Name: atterberg-ASTM_4318-R6_1.xls Date: 12/4/13

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-9
Depth: 9-26"
Sample Number: TI-CS09-04A(9-26")
Test Date: 12/3/2013
Technician: CAL
Sampled Date: 11/13/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

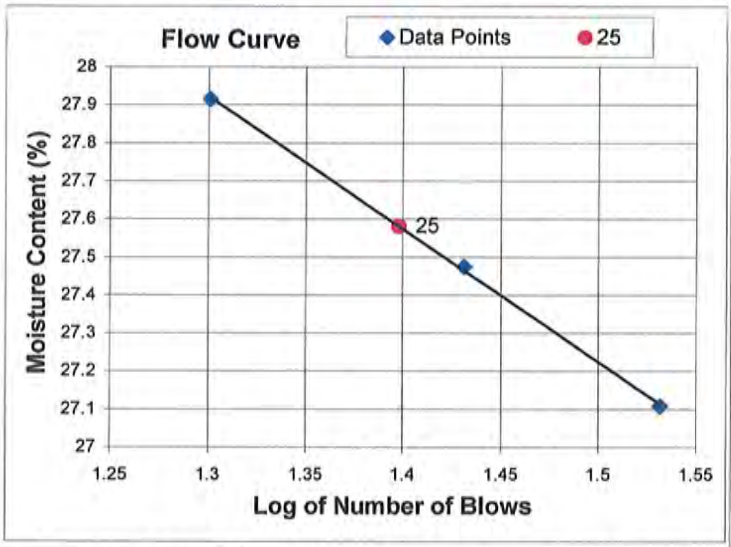
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.448	6.674	6.508
Weight of Dry Soil & Pan (g):	5.800	5.999	5.866
Weight of Water (g):	0.648	0.675	0.642
Weight of Pan (g):	0.744	0.732	0.755
Moisture Content (%):	12.8	12.8	12.6

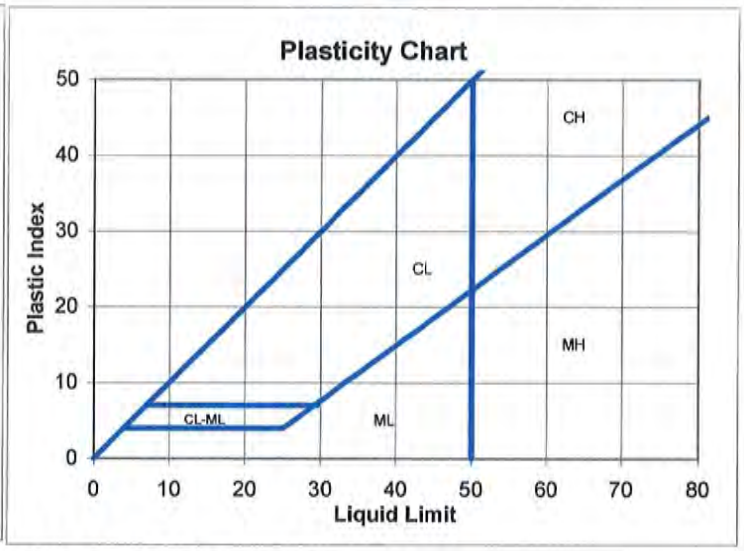
Average: -880.1%
Standard Deviation: 27.5%

Liquid Limits

	Sample 1	Sample 2	Sample 3
Number of Blows:	20	27	34
Weight of Wet Soil & Pan (g):	9.990	9.271	11.723
Weight of Dry Soil & Pan (g):	7.974	7.436	9.386
Weight of Water (g):	2.016	1.835	2.337
Weight of Pan (g):	0.752	0.757	0.765
Moisture Content (%):	27.9	27.5	27.1

Plastic Limit: -880
Liquid Limit: 28
Plastic Index: 908
Atterberg Classification CL





Data Entered By: KR
Date: 12/4/2013
File Name: atterberg-ASTM_4318-R6_3.xls

Data Checked By: CAL
Date: 12/4/13

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-3
Depth: 6-24"
Sample Number: TI-CS03-04A(6-24")
Test Date: 12/11/2013
Technician: KMR
Sampled Date: 11/12/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

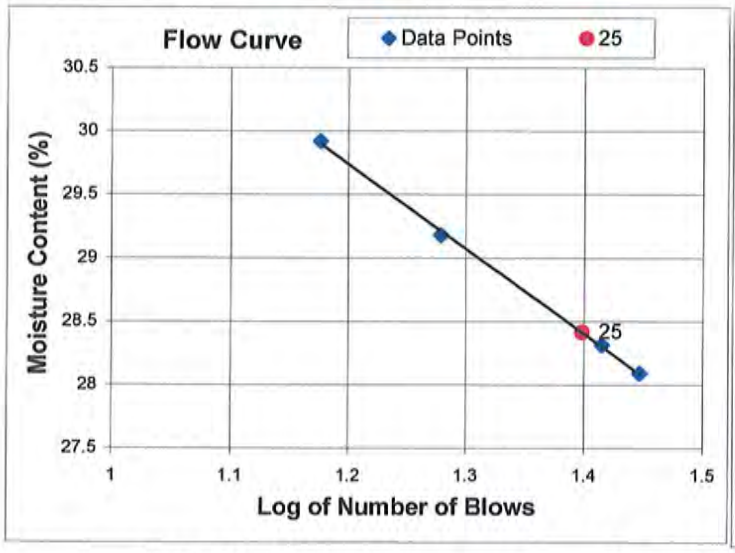
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.623	6.911	6.271
Weight of Dry Soil & Pan (g):	5.911	6.168	5.617
Weight of Water (g):	0.712	0.743	0.654
Weight of Pan (g):	0.735	0.736	0.759
Moisture Content (%):	13.8	13.7	13.5

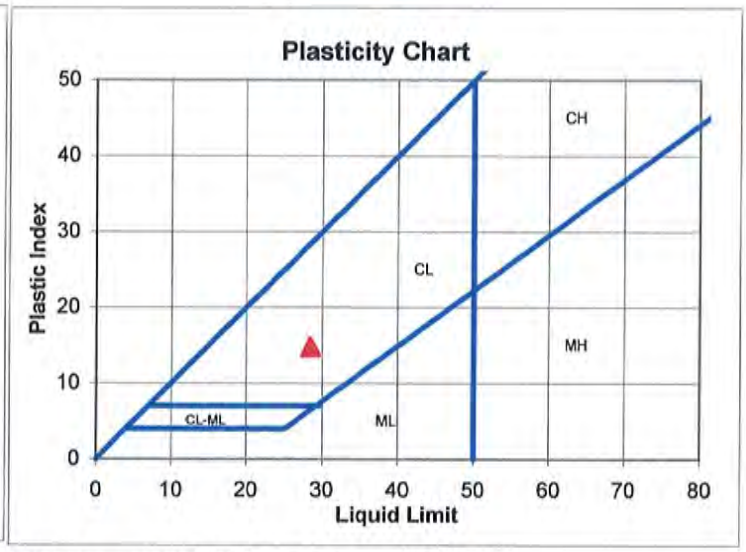
Average: 13.6%
Standard Deviation: 0.2%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4
Number of Blows:	28	26	19	15
Weight of Wet Soil & Pan (g):	11.741	12.307	14.543	12.590
Weight of Dry Soil & Pan (g):	9.334	9.756	11.432	9.870
Weight of Water (g):	2.407	2.551	3.111	2.720
Weight of Pan (g):	0.765	0.746	0.770	0.779
Moisture Content (%):	28.1	28.3	29.2	29.9

Plastic Limit: 14
Liquid Limit: 28
Plastic Index: 15
Atterberg Classification CL





Data Entered By: KMR Date: 12/12/2013 Data Checked By: DP
File Name: atterberg-ASTM_4318-R6_7.xls Date: 12/13/13

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-10
Depth: 7-25"
Sample Number: TI-CS10-04A(7-25")
Test Date: 12/12/2013
Technician: KMR
Sampled Date: 11/13/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

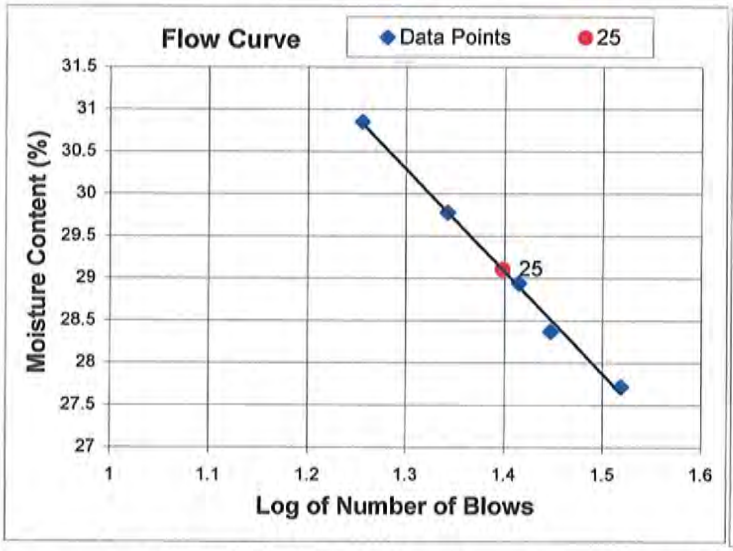
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	5.870	6.032	6.324
Weight of Dry Soil & Pan (g):	5.244	5.397	5.652
Weight of Water (g):	0.626	0.635	0.672
Weight of Pan (g):	0.759	0.771	0.731
Moisture Content (%):	14.0	13.7	13.7

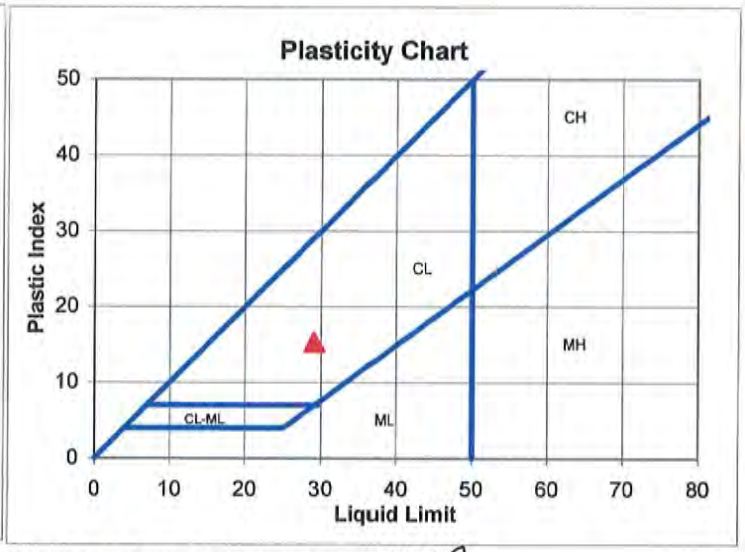
Average: 13.8%
Standard Deviation: 0.2%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Number of Blows:	33	28	26	22	18
Weight of Wet Soil & Pan (g):	14.400	15.122	13.908	18.819	15.267
Weight of Dry Soil & Pan (g):	11.441	11.951	10.958	14.677	11.845
Weight of Water (g):	2.959	3.171	2.950	4.142	3.422
Weight of Pan (g):	0.765	0.773	0.764	0.766	0.752
Moisture Content (%):	27.7	28.4	28.9	29.8	30.8

Plastic Limit: 14
Liquid Limit: 29
Plastic Index: 15
Atterberg Classification CL





Data Entered By: KMR Date: 12/13/2013
File Name: atterberg-ASTM_4318-R6_9.xls

Data Checked By: DPM
Date: 12/13/13

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-11
Depth: 9-24"
Sample Number: TI-CS11-04A(9-24")
Test Date: 12/5/2013
Technician: CAL
Sampled Date: 11/13/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: #40

Plastic Limits

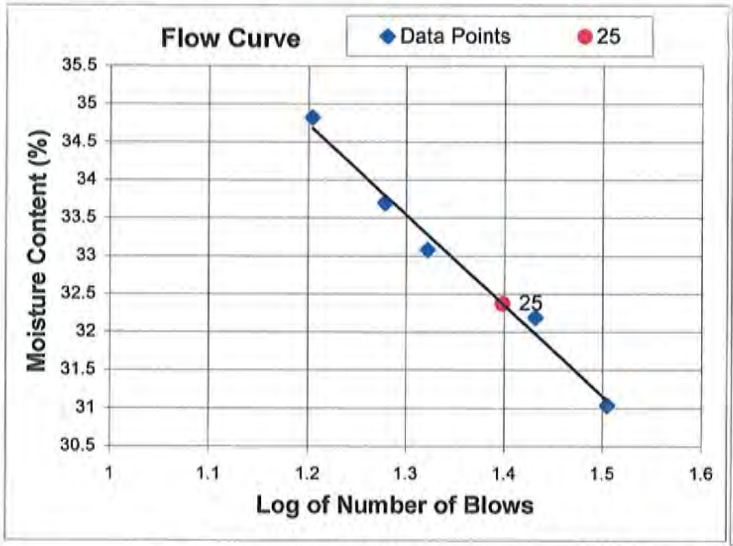
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.818	7.132	7.445
Weight of Dry Soil & Pan (g):	6.139	6.413	6.699
Weight of Water (g):	0.679	0.719	0.746
Weight of Pan (g):	0.735	0.746	0.768
Moisture Content (%):	12.6	12.7	12.6

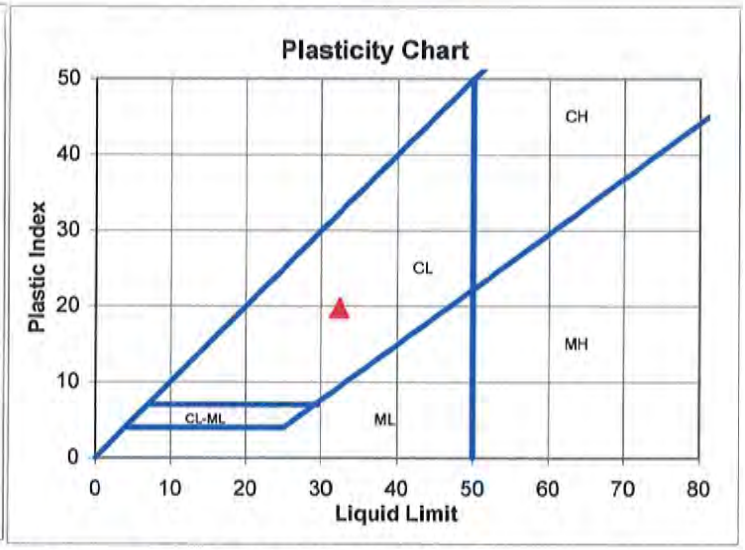
Average: 12.6%
Standard Deviation: 0.1%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Number of Blows:	32	27	21	19	16
Weight of Wet Soil & Pan (g):	10.899	10.245	9.851	10.238	8.958
Weight of Dry Soil & Pan (g):	8.501	7.936	7.590	7.843	6.844
Weight of Water (g):	2.398	2.309	2.261	2.395	2.114
Weight of Pan (g):	0.775	0.763	0.755	0.735	0.773
Moisture Content (%):	31.0	32.2	33.1	33.7	34.8

Plastic Limit: 13
Liquid Limit: 32
Plastic Index: 20
Atterberg Classification CL





Data Entered By: KMR
Date: 12/9/2013
File Name: atterberg-ASTM_4318-R6_6.xls

Data Checked By: DPM
Date: 12/09/13

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-12
Depth: 0-14"
Sample Number: TI-CS12-02A(0-14")
Test Date: 12/11/2013
Technician: KMR
Sampled Date: 11/13/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: #40

Plastic Limits

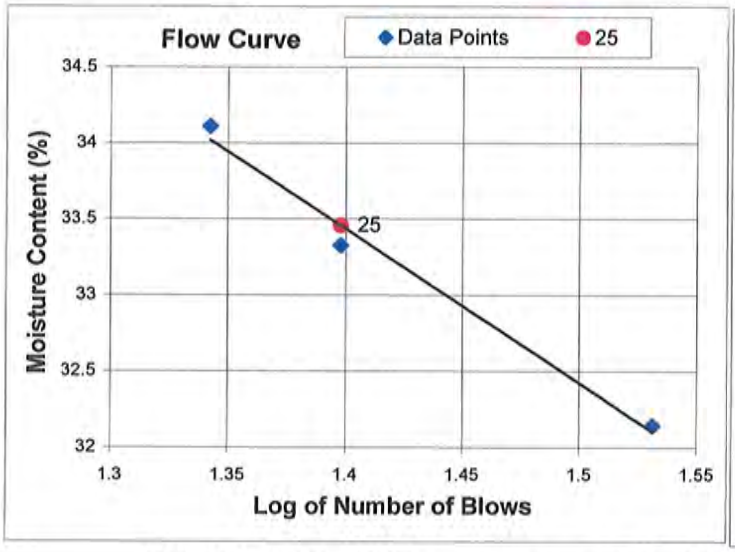
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	5.056	5.335	5.968
Weight of Dry Soil & Pan (g):	4.558	4.790	5.354
Weight of Water (g):	0.498	0.545	0.614
Weight of Pan (g):	0.744	0.724	0.733
Moisture Content (%):	13.1	13.4	13.3

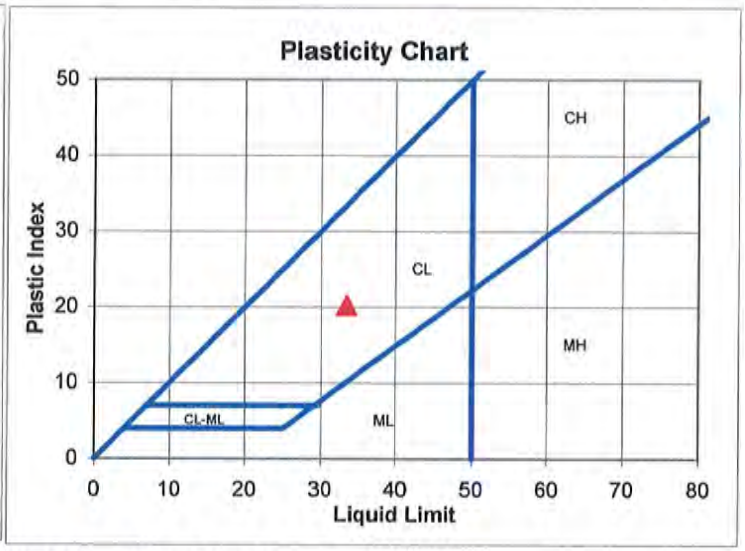
Average: 13.2%
Standard Deviation: 0.2%

Liquid Limits

	Sample 1	Sample 2	Sample 3
Number of Blows:	34	25	22
Weight of Wet Soil & Pan (g):	14.697	12.843	15.671
Weight of Dry Soil & Pan (g):	11.301	9.819	11.877
Weight of Water (g):	3.396	3.024	3.794
Weight of Pan (g):	0.736	0.745	0.754
Moisture Content (%):	32.1	33.3	34.1

Plastic Limit: 13
Liquid Limit: 33
Plastic Index: 20
Atterberg Classification CL





Data Entered By: KMR Date: 12/12/2013 Data Checked By: DPM
File Name: atterberg-ASTM_4318-R6_8.xls Date: 12/13/13

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number: -

Boring Number: CS-2
Depth: 10-24"
Sample Number: TI-CS02-04A(10-24")
Test Date: 12/16/2013
Technician: DPM
Sampled Date: 11/12/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: #40

Plastic Limits

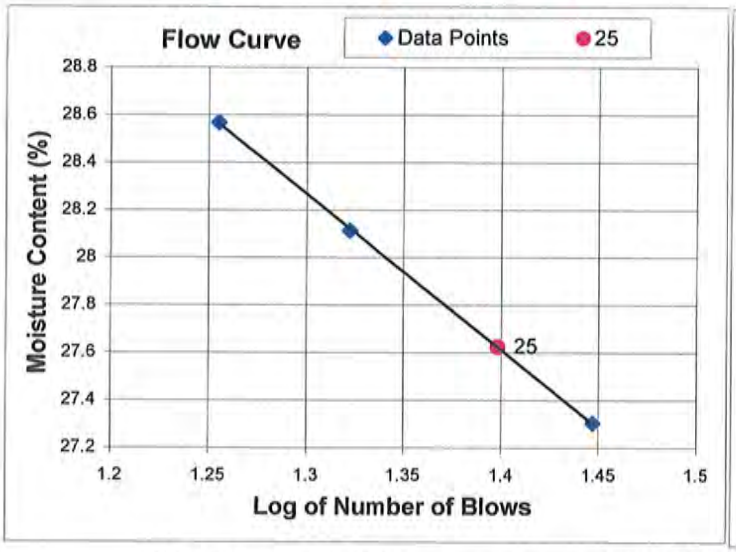
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.531	6.973	6.868
Weight of Dry Soil & Pan (g):	5.892	6.284	6.220
Weight of Water (g):	0.639	0.689	0.648
Weight of Pan (g):	0.766	0.768	0.774
Moisture Content (%):	12.5	12.5	11.9

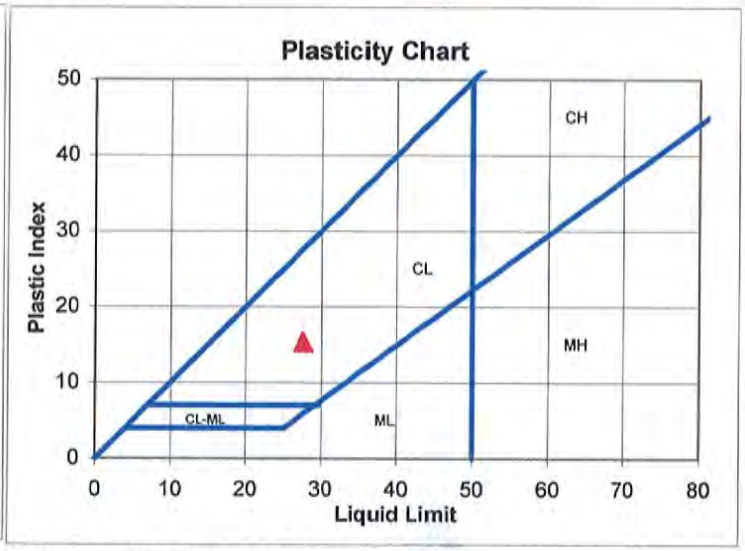
Average: 12.3%
Standard Deviation: 0.3%

Liquid Limits

	Sample 1	Sample 2	Sample 3
Number of Blows:	28	18	21
Weight of Wet Soil & Pan (g):	14.596	14.925	14.115
Weight of Dry Soil & Pan (g):	11.625	11.772	11.180
Weight of Water (g):	2.971	3.153	2.935
Weight of Pan (g):	0.744	0.735	0.740
Moisture Content (%):	27.3	28.6	28.1

Plastic Limit: 12
Liquid Limit: 28
Plastic Index: 15
Atterberg Classification CL





Data Entered By: DPM Date: 12/17/2013 Data Checked By: CJ
File Name: atterberg-ASTM_4318-R6_10.xls Date: 12/17/2013

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number: -

Boring Number: CS-1
Depth: 11-24"
Sample Number: TI-CS01-04A(11-24")
Sampled Date: 11/12/2013
Test Date: 12/20/2013

Sampled By: MWH
Technician: DAW

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 75.37
Weight of Dry Soil & Pan (g): 73.80
Weight of Water (g): 1.57
Weight of Pan (g): 3.20
Weight of Dry Soil (g): 70.60
Moisture (%): 2.2

General Sample Data

Total Wet Weight of Sample (g): 2,163.10
Total Dry Weight of Sample (g): 2,117.52
Calculated Weight Plus #200 (g): 884.35
Moisture of Total Sample (%): 2.2
Percent Retained #200 Sieve (%): 41.8

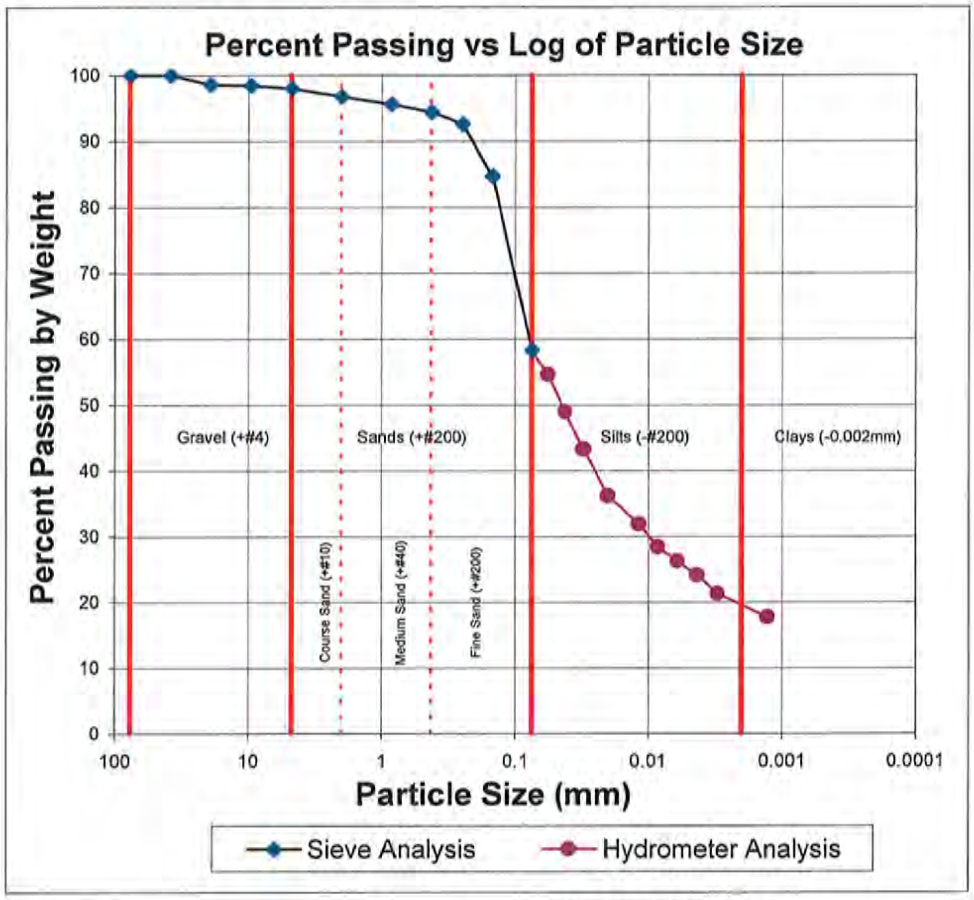
Plus Split Data

Original Weight of +#10 (g): 83.30
Calculated Weight of +#10 (g): 68.05

Minus Split Data

Original Weight of -#10 (g): 2,079.80
Calculated Dry Weight of -#10 (g): 2,049.47

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	30.00	0.00	30.00	30.00	98.6
3/8"	**9.525**	3.47	0.00	3.47	3.47	98.4
#4	**4.750**	8.44	0.00	8.44	8.44	98.0
#10	**2.000**	26.14	0.00	26.14	26.14	96.8
69.406g split out of -#10 material.						
#20	**0.850**	4.01	3.19	0.82	24.84	95.6
#40	**0.425**	3.87	3.03	0.84	25.30	94.4
#60	**0.250**	4.38	3.09	1.29	38.88	92.6
#100	**0.150**	8.64	3.09	5.55	167.47	84.7
#200	**0.075**	21.52	2.97	18.55	559.82	58.2



Data Entered By: SKL
Date: 12/27/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0_0.xls

Checked By: MLM
Date: 12/30/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number: -

Boring Number: CS-1
Depth: 11-24"
Sample Number: TI-CS01-04A(11-24")
Sampled Date: 11/12/2013 Sampled By: MWH
Test Date: 12/19/2013 Technician: MLM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.68
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.5
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 2,163.10
Total Dry Weight of Sample (g): 2,117.52
Wet Weight of Sub-Sample (g): 69.406
Dry Weight of Sub-Sample (g): 67.896
Corrected Dry Weight of Sub-Sample - W(g): 70.141

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	44.0	38.5	22.1	0.0133	9.08	0.0568	54.6	1156.60	54.6
1	40.0	34.5	22.1	0.0133	9.73	0.0416	48.9	1036.43	48.9
2	36.0	30.5	22.1	0.0133	10.39	0.0304	43.3	916.27	43.3
5	31.0	25.5	22.1	0.0133	11.21	0.0199	36.2	766.06	36.2
15	28.0	22.5	22.2	0.0133	11.70	0.0118	31.9	675.93	31.9
30	25.5	20.0	22.2	0.0133	12.11	0.0085	28.4	600.83	28.4
60	24.0	18.5	22.3	0.0133	12.36	0.0060	26.2	555.77	26.2
120	22.5	17.0	22.4	0.0133	12.60	0.0043	24.1	510.71	24.1
250	20.5	15.0	22.7	0.0133	12.93	0.0030	21.3	450.62	21.3
1440	18.0	12.5	22.6	0.0133	13.34	0.0013	17.7	375.52	17.7

Data Entered By: SKL
Date: 12/27/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0_0.xls

Checked By: MLM
Date: 12/30/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number: -

Boring Number: CS-4
Depth: 10-24"
Sample Number: TI-CS04-04A(10-24")
Sampled Date: 11/12/2013
Test Date: 12/20/2013

Sampled By: MWH
Technician: DAW

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 55.14
Weight of Dry Soil & Pan (g): 54.07
Weight of Water (g): 1.07
Weight of Pan (g): 3.13
Weight of Dry Soil (g): 50.94
Moisture (%): 2.1

General Sample Data

Total Wet Weight of Sample (g): 1,557.65
Total Dry Weight of Sample (g): 1,526.04
Calculated Weight Plus #200 (g): 485.81
Moisture of Total Sample (%): 2.1
Percent Retained #200 Sieve (%): 31.8

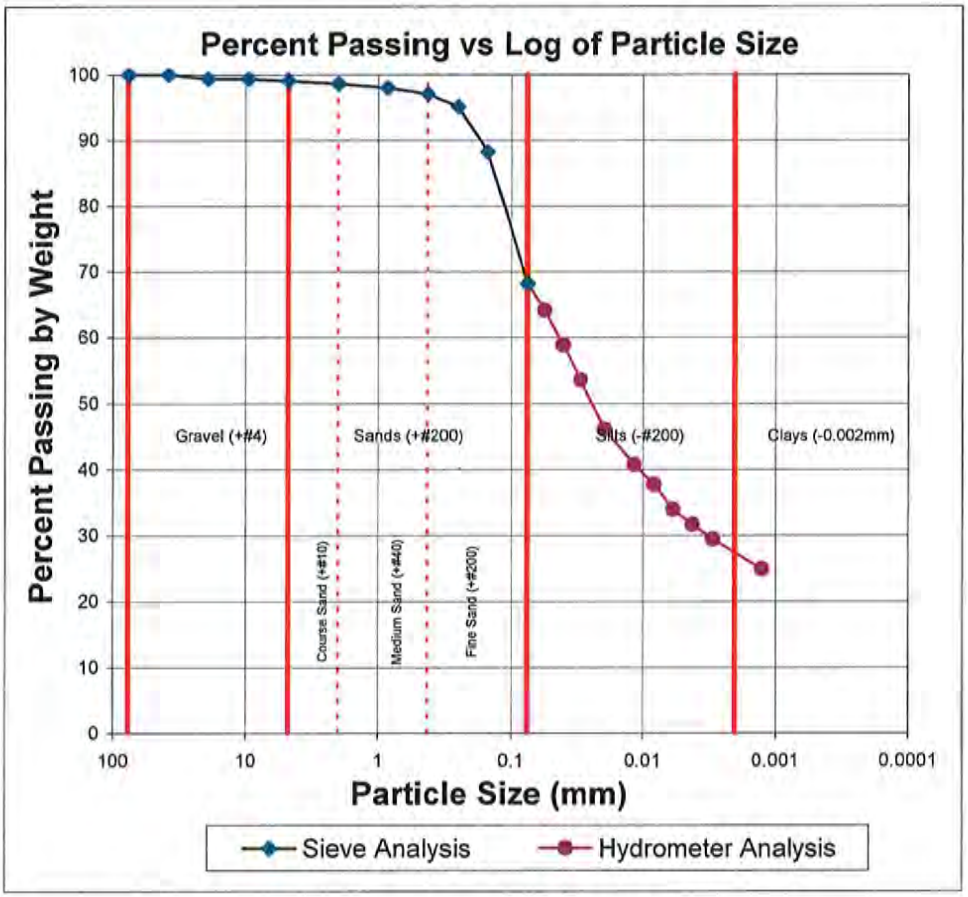
Plus Split Data

Original Weight of +#10 (g): 38.49
Calculated Weight of +#10 (g): 21.12

Minus Split Data

Original Weight of -#10 (g): 1,519.16
Calculated Dry Weight of -#10 (g): 1,504.92

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	9.95	0.00	9.95	9.95	99.3
3/8"	**9.525**	0.00	0.00	0.00	0.00	99.3
#4	**4.750**	3.94	0.00	3.94	3.94	99.1
#10	**2.000**	7.23	0.00	7.23	7.23	98.6
66.413g split out of -#10 material.						
#20	**0.850**	3.42	3.03	0.40	9.16	98.0
#40	**0.425**	3.64	3.03	0.60	13.97	97.1
#60	**0.250**	4.28	2.99	1.29	29.89	95.1
#100	**0.150**	7.58	3.03	4.56	105.41	88.2
#200	**0.075**	16.48	3.24	13.24	306.25	68.2



Data Entered By: SKL
Date: 12/27/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0_1.xls

Checked By: CHL
Date: 12/27/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number: -

Boring Number: CS-4
Depth: 10-24"
Sample Number: TI-CS04-04A(10-24")
Sampled Date: 11/12/2013 Sampled By: MWH
Test Date: 12/19/2013 Technician: MLM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.68
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.5
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 1,557.65
Total Dry Weight of Sample (g): 1,526.04
Wet Weight of Sub-Sample (g): 66.413
Dry Weight of Sub-Sample (g): 65.047
Corrected Dry Weight of Sub-Sample - W(g): 65.970

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	48.0	42.5	21.9	0.0135	8.42	0.0553	64.1	978.29	64.1
1	44.5	39.0	21.9	0.0135	9.00	0.0404	58.8	897.73	58.8
2	41.0	35.5	21.9	0.0135	9.57	0.0295	53.5	817.16	53.5
5	36.0	30.5	21.9	0.0135	10.39	0.0194	46.0	702.07	46.0
15	32.5	27.0	21.9	0.0135	10.96	0.0115	40.7	621.50	40.7
30	30.5	25.0	22.0	0.0133	11.29	0.0082	37.7	575.47	37.7
60	28.0	22.5	22.1	0.0133	11.70	0.0059	33.9	517.92	33.9
120	26.5	21.0	22.2	0.0133	11.95	0.0042	31.7	483.39	31.7
250	25.0	19.5	22.4	0.0133	12.19	0.0029	29.4	448.86	29.4
1440	22.0	16.5	22.3	0.0133	12.69	0.0013	24.9	379.81	24.9

Data Entered By: SKL
Date: 12/27/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0_1.xls

Checked By: _____
Date: _____

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-5
Depth: 9-24"
Sample Number: TI-CS05-04A(9-24")
Sampled Date: 11/12/2013
Test Date: 12/3/2013

Sampled By: MWH
Technician: CAL

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 108.63
Weight of Dry Soil & Pan (g): 105.86
Weight of Water (g): 2.77
Weight of Pan (g): 3.60
Weight of Dry Soil (g): 102.26
Moisture (%): 2.7

General Sample Data

Total Wet Weight of Sample (g): 1,644.61
Total Dry Weight of Sample (g): 1,601.96
Calculated Weight Plus #200 (g): 617.80
Moisture of Total Sample (%): 2.7
Percent Retained #200 Sieve (%): 38.6

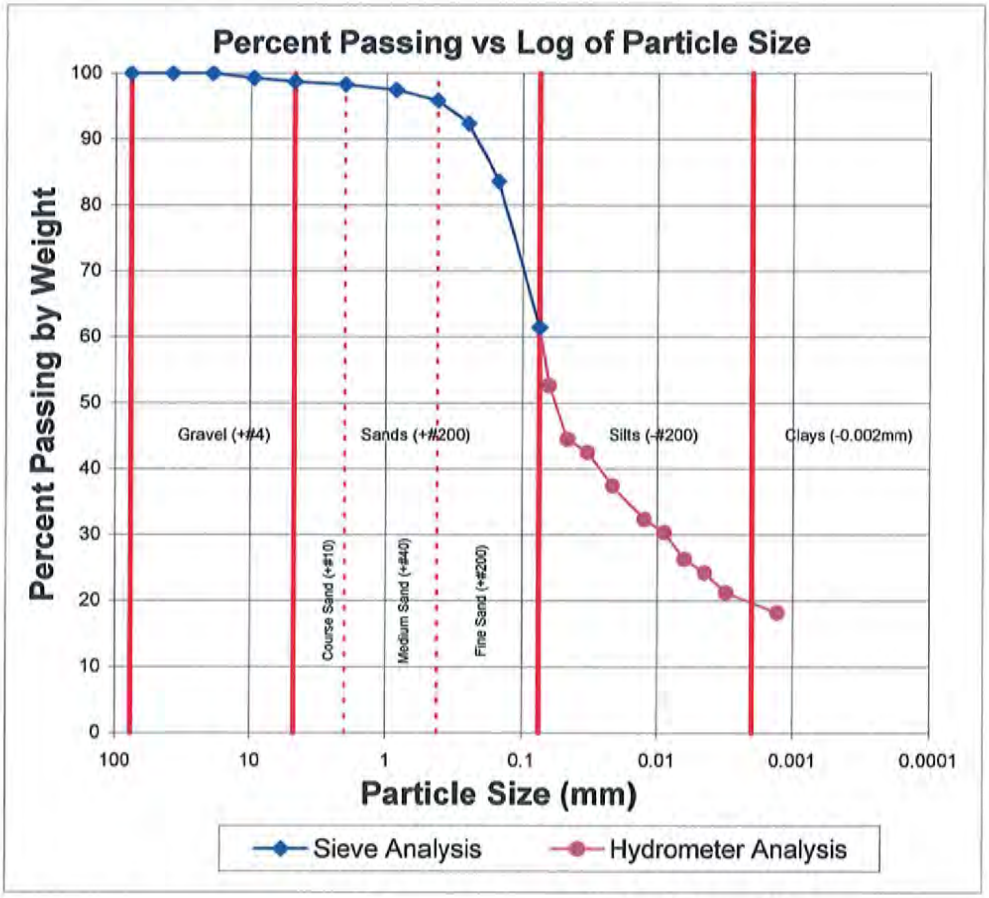
Plus Split Data

Original Weight of +#10 (g): 32.87
Calculated Weight of +#10 (g): 27.24

Minus Split Data

Original Weight of -#10 (g): 1,611.74
Calculated Dry Weight of -#10 (g): 1,574.72

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	76.2	0.00	0.00	0.00	0.00	100.0
1.5"	38.10	0.00	0.00	0.00	0.00	100.0
3/4"	19.05	0.00	0.00	0.00	0.00	100.0
3/8"	9.525	11.73	0.00	11.73	11.73	99.3
#4	4.750	8.37	0.00	8.37	8.37	98.7
#10	2.000	7.14	0.00	7.14	7.14	98.3
49.99g split out of -#10 material.						
#20	0.850	4.27	3.84	0.42	13.69	97.4
#40	0.425	4.55	3.76	0.79	25.62	95.8
#60	0.250	5.41	3.69	1.72	55.58	92.4
#100	0.150	8.01	3.66	4.35	140.67	83.6
#200	0.075	14.51	3.53	10.97	354.99	61.4



Data Entered By: CAL
Date: 12/5/2013
File Name: 2512_77_hydrometer-ASTM-D422-R1_2.xls

Checked By: KR
Date: 12/5/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-5
Depth: 9-24"
Sample Number: TI-CS05-04A(9-24")
Sampled Date: 11/12/2013
Test Date: 12/3/2013

Sampled By: MWH
Technician: CAL

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 8.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 1,644.61
Total Dry Weight of Sample (g): 1,601.96
Wet Weight of Sub-Sample (g): 49.990
Dry Weight of Sub-Sample (g): 48.672
Corrected Dry Weight of Sub-Sample - W(g): 49.513

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	34.0	26.0	19.8	0.0138	10.72	0.0640	52.6	842.35	52.6
1	30.0	22.0	19.8	0.0138	11.37	0.0466	44.5	712.76	44.5
2	29.0	21.0	19.8	0.0138	11.54	0.0332	42.5	680.36	42.5
5	26.5	18.5	19.8	0.0138	11.95	0.0214	37.4	599.37	37.4
15	24.0	16.0	19.8	0.0138	12.36	0.0125	32.4	518.37	32.4
30	23.0	15.0	19.9	0.0138	12.52	0.0089	30.3	485.97	30.3
60	21.0	13.0	20.1	0.0137	12.85	0.0063	26.3	421.18	26.3
120	20.0	12.0	20.5	0.0137	13.01	0.0045	24.3	388.78	24.3
250	18.5	10.5	21.4	0.0135	13.26	0.0031	21.2	340.18	21.2
1440	17.0	9.0	21.2	0.0135	13.51	0.0013	18.2	291.58	18.2

Data Entered By: CAL
Date: 12/5/2013
File Name: 2512_77_hydrometer-ASTM-D422-R1_2.xls

Checked By: KP
Date: 12/5/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-7
Depth: 0-20"
Sample Number: TI-CS07-02A(0-20")
Sampled Date: 11/13/2013
Test Date: 12/2/2013

Sampled By: MWH
Technician: CAL

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 109.74
Weight of Dry Soil & Pan (g): 107.07
Weight of Water (g): 2.66
Weight of Pan (g): 3.56
Weight of Dry Soil (g): 103.52
Moisture (%): 2.6

General Sample Data

Total Wet Weight of Sample (g): 1,976.72
Total Dry Weight of Sample (g): 1,927.70
Calculated Weight Plus #200 (g): 754.57
Moisture of Total Sample (%): 2.5
Percent Retained #200 Sieve (%): 39.1

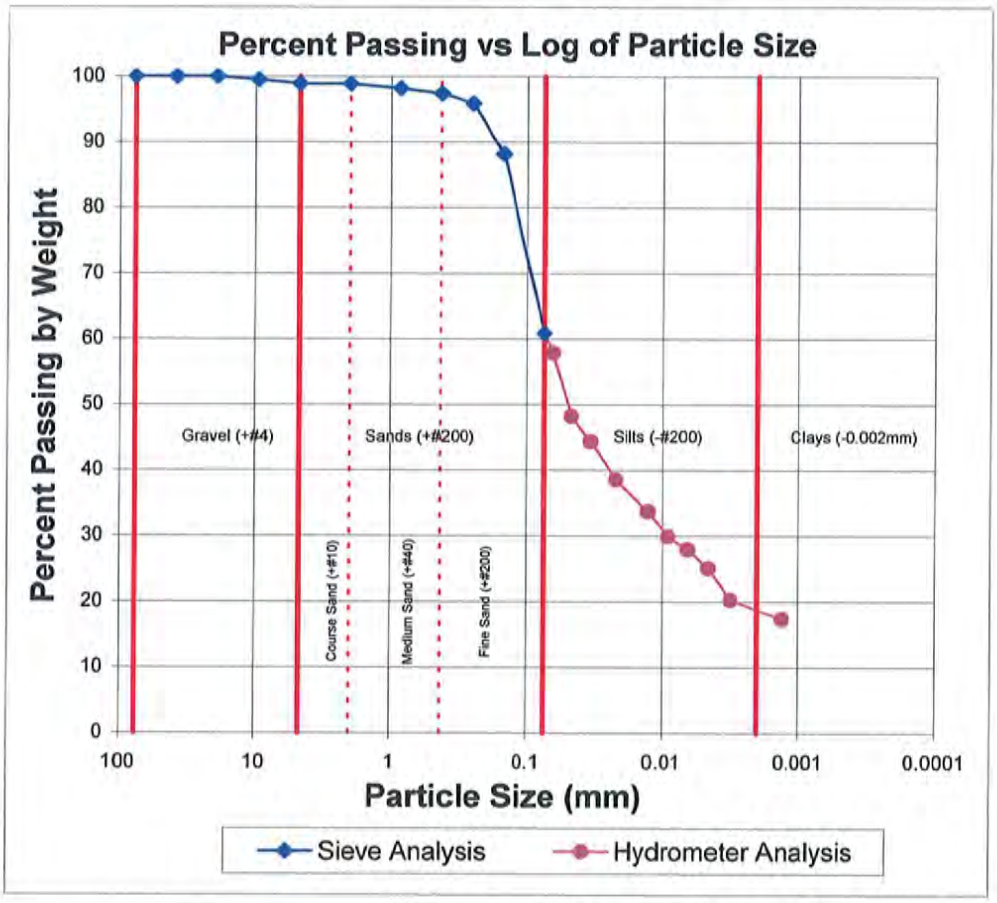
Plus Split Data

Original Weight of +#10 (g): 25.71
Calculated Weight of +#10 (g): 22.06

Minus Split Data

Original Weight of -#10 (g): 1,951.01
Calculated Dry Weight of -#10 (g): 1,905.64

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	0.00	0.00	0.00	0.00	100.0
3/8"	**9.525**	9.33	0.00	9.33	9.33	99.5
#4	**4.750**	11.27	0.00	11.27	11.27	98.9
#10	**2.000**	1.46	0.00	1.46	1.46	98.9
52.654g split out of -#10 material.						
#20	**0.850**	4.05	3.71	0.34	12.58	98.2
#40	**0.425**	4.11	3.70	0.42	15.55	97.4
#60	**0.250**	4.63	3.84	0.79	29.29	95.9
#100	**0.150**	7.83	3.84	3.99	147.97	88.2
#200	**0.075**	17.98	3.78	14.20	527.11	60.9



Data Entered By: CAL
Date: 12/5/2013
File Name: 2512_77_hydrometer-ASTM-D422-R1_1.xls

Checked By: KR
Date: 12/6/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-7
Depth: 0-20"
Sample Number: TI-CS07-02A(0-20")
Sampled Date: 11/13/2013
Test Date: 12/2/2013

Sampled By: MWH
Technician: CAL

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 8.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 1,976.72
Total Dry Weight of Sample (g): 1,927.70
Wet Weight of Sub-Sample (g): 52.654
Dry Weight of Sub-Sample (g): 51.333
Corrected Dry Weight of Sub-Sample - W(g): 51.904

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	38.0	30.0	16.9	0.0144	10.06	0.0644	57.9	1115.70	57.9
1	33.0	25.0	16.9	0.0144	10.88	0.0473	48.2	929.75	48.2
2	31.0	23.0	16.9	0.0144	11.21	0.0340	44.4	855.37	44.4
5	28.0	20.0	16.8	0.0144	11.70	0.0220	38.6	743.80	38.6
15	25.5	17.5	17.1	0.0142	12.11	0.0127	33.8	650.83	33.8
30	23.5	15.5	17.4	0.0142	12.44	0.0091	29.9	576.45	29.9
60	22.5	14.5	17.7	0.0142	12.60	0.0065	28.0	539.26	28.0
120	21.0	13.0	18.3	0.0140	12.85	0.0046	25.1	483.47	25.1
250	18.5	10.5	20.1	0.0137	13.26	0.0031	20.3	390.50	20.3
1440	17.0	9.0	20.2	0.0137	13.51	0.0013	17.4	334.71	17.4

Data Entered By: CAL
Date: 12/5/2013
File Name: 2512_77_hydrometer-ASTM-D422-R1_1.xls

Checked By: KR
Date: 12/5/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-9
Depth: 9-26"
Sample Number: TI-CS09-04A(9-26")
Sampled Date: 11/13/2013
Test Date: 12/2/2013

Sampled By: MWH
Technician: CAL

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 101.03
Weight of Dry Soil & Pan (g): 98.89
Weight of Water (g): 2.14
Weight of Pan (g): 3.77
Weight of Dry Soil (g): 95.12
Moisture (%): 2.3

General Sample Data

Total Wet Weight of Sample (g): 1,718.28
Total Dry Weight of Sample (g): 1,681.98
Calculated Weight Plus #200 (g): 707.36
Moisture of Total Sample (%): 2.2
Percent Retained #200 Sieve (%): 42.1

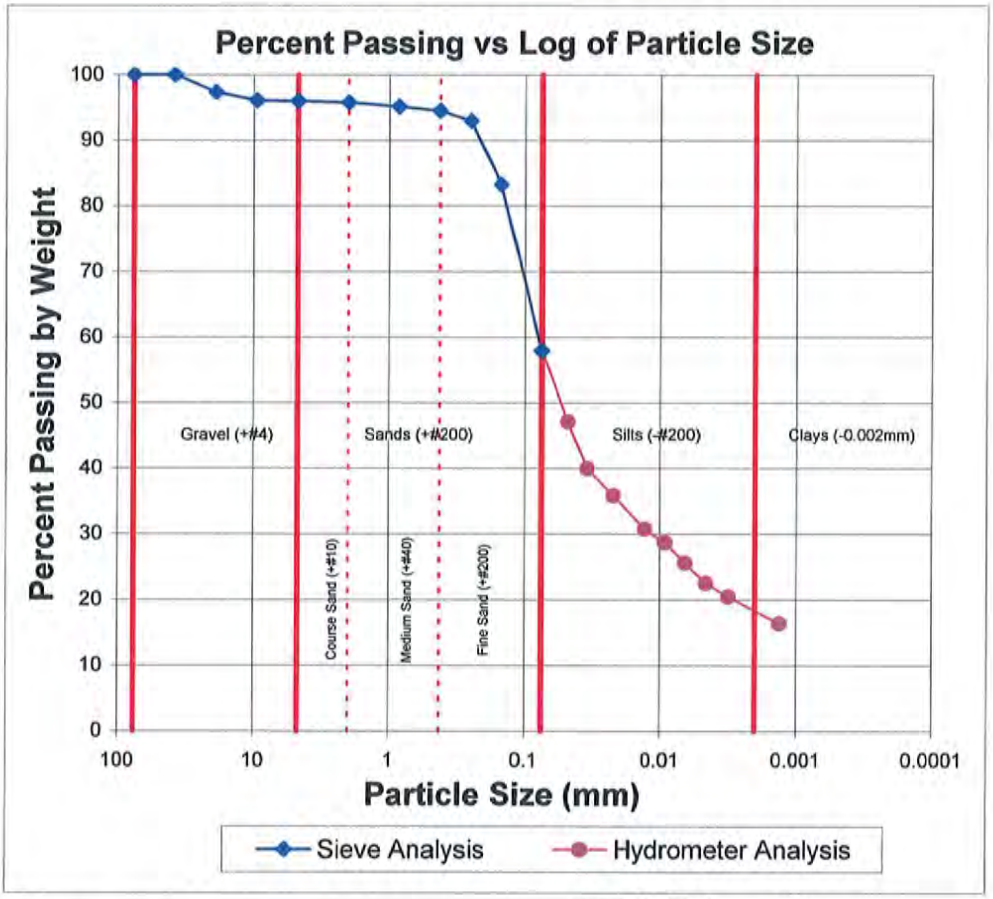
Plus Split Data

Original Weight of +#10 (g): 86.45
Calculated Weight of +#10 (g): 70.98

Minus Split Data

Original Weight of -#10 (g): 1,631.83
Calculated Dry Weight of -#10 (g): 1,611.00

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	44.53	0.00	44.53	44.53	97.4
3/8"	**9.525**	21.02	0.00	21.02	21.02	96.1
#4	**4.750**	1.85	0.00	1.85	1.85	96.0
#10	**2.000**	3.58	0.00	3.58	3.58	95.8
47.875g split out of -#10 material.						
#20	**0.850**	4.13	3.83	0.30	10.22	95.2
#40	**0.425**	4.28	3.96	0.32	10.94	94.5
#60	**0.250**	4.58	3.80	0.77	26.67	92.9
#100	**0.150**	8.56	3.82	4.74	162.92	83.3
#200	**0.075**	15.92	3.55	12.37	425.63	57.9



Data Entered By: CAL
Date: 12/5/2013
File Name: 2512_77_hydrometer-ASTM-D422-R1_0.xls

Checked By: KR
Date: 12/5/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-9
Depth: 9-26"
Sample Number: TI-CS09-04A(9-26")
Sampled Date: 11/13/2013
Test Date: 12/2/2013

Sampled By: MWH
Technician: CAL

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 8.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 1,718.28
Total Dry Weight of Sample (g): 1,681.98
Wet Weight of Sub-Sample (g): 47.875
Dry Weight of Sub-Sample (g): 46.820
Corrected Dry Weight of Sub-Sample - W(g): 48.873

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	31.0	23.0	16.7	0.0144	11.21	0.0480	47.1	792.64	47.1
2	27.5	19.5	16.7	0.0144	11.78	0.0348	40.0	672.02	40.0
5	25.5	17.5	16.7	0.0144	12.11	0.0223	35.9	603.09	35.9
15	23.0	15.0	17.0	0.0142	12.52	0.0129	30.7	516.94	30.7
30	22.0	14.0	17.2	0.0142	12.69	0.0092	28.7	482.47	28.7
60	20.5	12.5	17.7	0.0142	12.93	0.0066	25.6	430.78	25.6
120	19.0	11.0	18.1	0.0140	13.18	0.0046	22.5	379.09	22.5
250	18.0	10.0	20.1	0.0137	13.34	0.0032	20.5	344.62	20.5
1440	16.0	8.0	20.1	0.0137	13.67	0.0013	16.4	275.70	16.4

Data Entered By: CAL
Date: 12/5/2013
File Name: 2512_77_hydrometer-ASTM-D422-R1_0.xls

Checked By: KR
Date: 12/5/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-2
Depth: 0-10"
Sample Number: TI-CS02-02A(0-10")
Sampled Date: 11/12/2013
Test Date: 12/11/2013

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 117.84
Weight of Dry Soil & Pan (g): 112.26
Weight of Water (g): 5.58
Weight of Pan (g): 3.60
Weight of Dry Soil (g): 108.66
Moisture (%): 5.1

General Sample Data

Total Wet Weight of Sample (g): 10,935.00
Total Dry Weight of Sample (g): 10,592.42
Calculated Weight Plus #200 (g): 5,714.14
Moisture of Total Sample (%): 3.2
Percent Retained #200 Sieve (%): 53.9

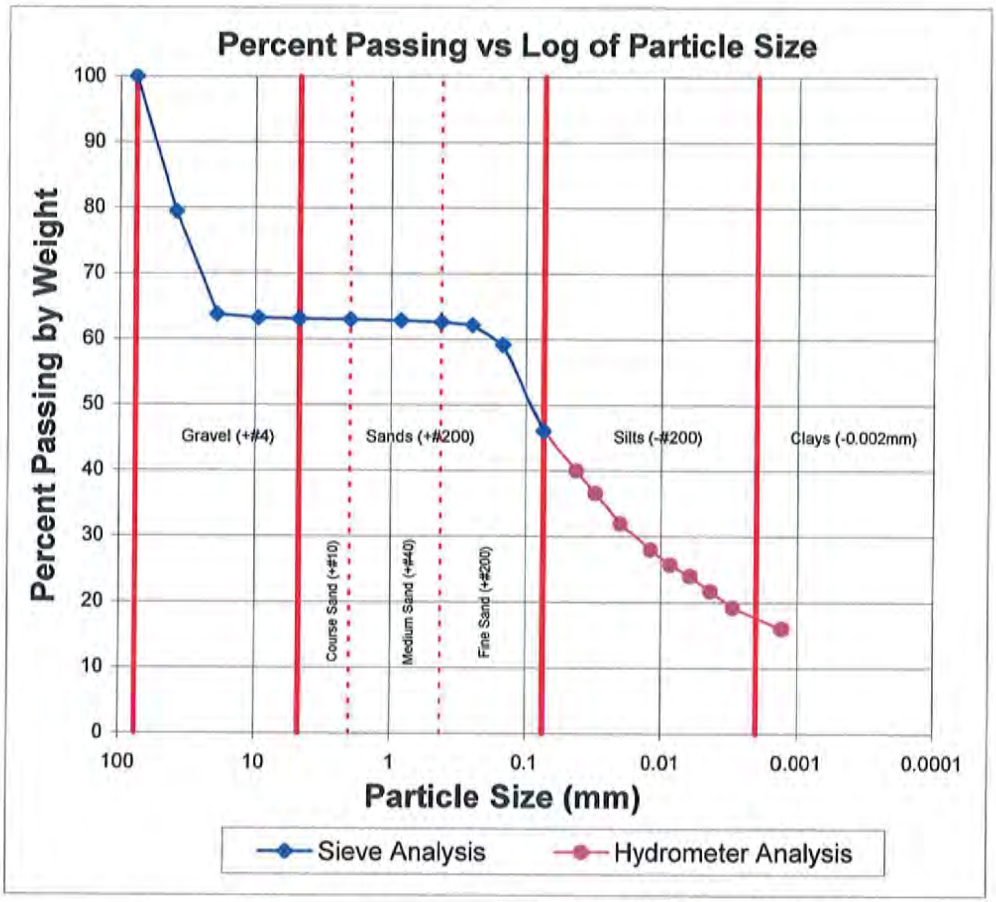
Plus Split Data

Original Weight of +#10 (g): 3,980.00
Calculated Weight of +#10 (g): 3,921.13

Minus Split Data

Original Weight of -#10 (g): 6,955.00
Calculated Dry Weight of -#10 (g): 6,671.29

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	2180.00	0.00	2180.00	2180.00	79.4
3/4"	**19.05**	1660.45	0.00	1660.45	1660.45	63.7
3/8"	**9.525**	54.02	0.00	54.02	54.02	63.2
#4	**4.750**	16.04	0.00	16.04	16.04	63.1
#10	**2.000**	10.62	0.00	10.62	10.62	63.0
58.043g split out of -#10 material.						
#20	**0.850**	3.95	3.80	0.15	18.01	62.8
#40	**0.425**	3.94	3.74	0.20	24.41	62.6
#60	**0.250**	4.15	3.77	0.38	46.16	62.1
#100	**0.150**	6.16	3.56	2.60	314.06	59.2
#200	**0.075**	14.57	3.07	11.51	1390.38	46.1



Data Entered By: KMR
Date: 12/13/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_8.xls

Checked By: DPM
Date: 12/13/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-2
Depth: 0-10"
Sample Number: TI-CS02-02A(0-10")
Sampled Date: 11/12/2013
Test Date: 12/11/2013

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 6.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 10,935.00
Total Dry Weight of Sample (g): 10,592.42
Wet Weight of Sub-Sample (g): 58.043
Dry Weight of Sub-Sample (g): 55.208
Corrected Dry Weight of Sub-Sample - W(g): 87.632

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	41.0	35.0	19.3	0.0138	9.57	0.0428	40.0	4236.37	40.0
2	38.0	32.0	19.3	0.0138	10.06	0.0310	36.6	3873.25	36.6
5	34.0	28.0	19.3	0.0138	10.72	0.0202	32.0	3389.09	32.0
15	30.5	24.5	19.4	0.0138	11.29	0.0120	28.0	2965.46	28.0
30	28.5	22.5	19.6	0.0138	11.62	0.0086	25.7	2723.38	25.7
60	27.0	21.0	19.9	0.0138	11.87	0.0061	24.0	2541.82	24.0
120	25.0	19.0	20.4	0.0137	12.19	0.0044	21.7	2299.74	21.7
250	22.8	16.8	22.0	0.0133	12.56	0.0030	19.2	2033.46	19.2
1440	20.0	14.0	20.1	0.0137	13.01	0.0013	16.0	1694.55	16.0

Data Entered By: KMR
Date: 12/13/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_8.xls

Checked By: DPM
Date: 12/13/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-3
Depth: 0-6"
Sample Number: TI-CS03-02A(0-6")
Sampled Date: 11/12/2013
Test Date: 12/11/2013

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 114.81
Weight of Dry Soil & Pan (g): 107.72
Weight of Water (g): 7.10
Weight of Pan (g): 3.67
Weight of Dry Soil (g): 104.05
Moisture (%): 6.8

General Sample Data

Total Wet Weight of Sample (g): 12,025.00
Total Dry Weight of Sample (g): 11,659.26
Calculated Weight Plus #200 (g): 8,432.80
Moisture of Total Sample (%): 3.1
Percent Retained #200 Sieve (%): 72.3

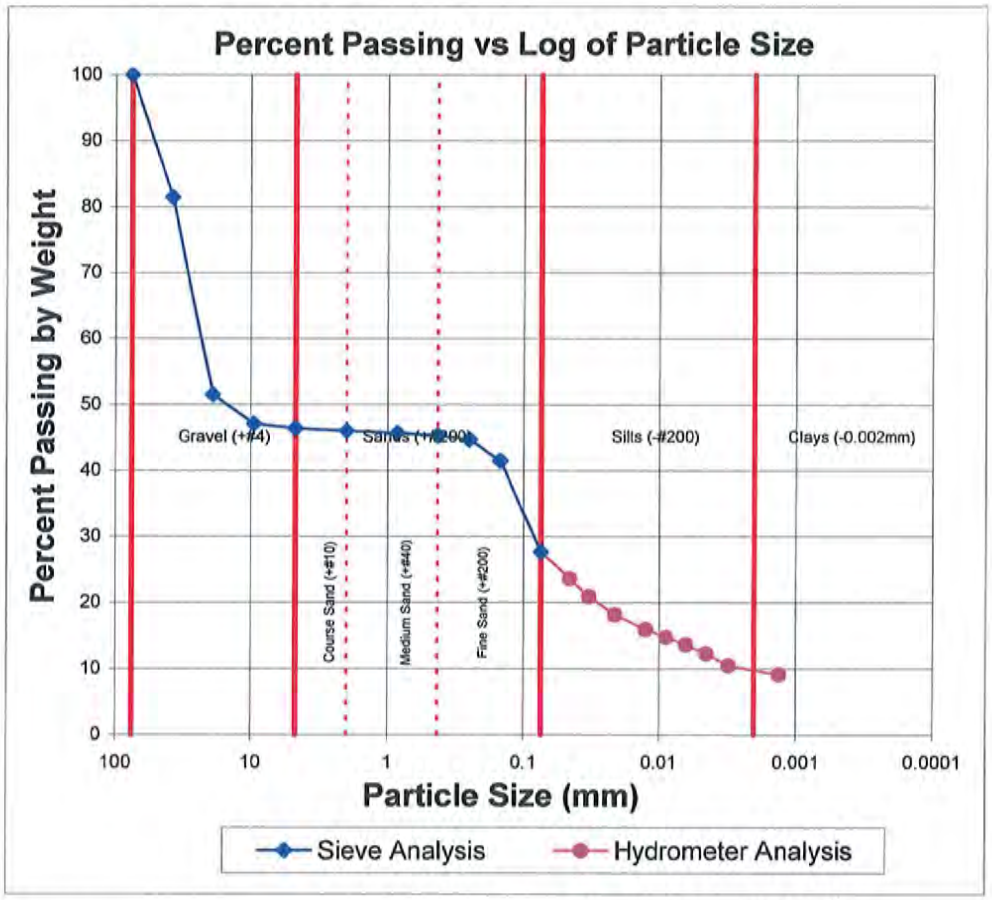
Plus Split Data

Original Weight of +#10 (g): 6,450.00
Calculated Weight of +#10 (g): 6,296.34

Minus Split Data

Original Weight of -#10 (g): 5,575.00
Calculated Dry Weight of -#10 (g): 5,362.92

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	2165.00	0.00	2165.00	2165.00	81.4
3/4"	**19.05**	3490.00	0.00	3490.00	3490.00	51.5
3/8"	**9.525**	516.72	0.00	516.72	516.72	47.1
#4	**4.750**	79.91	0.00	79.91	79.91	46.4
#10	**2.000**	44.71	0.00	44.71	44.71	46.0
54.113g split out of -#10 material.						
#20	**0.850**	4.25	3.89	0.36	38.43	45.7
#40	**0.425**	4.18	3.73	0.45	47.75	45.3
#60	**0.250**	4.22	3.55	0.67	71.25	44.6
#100	**0.150**	7.24	3.72	3.52	372.43	41.5
#200	**0.075**	18.73	3.56	15.18	1606.60	27.7



Data Entered By: KMR
Date: 12/13/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_10.xls

Checked By: DPM
Date: 12/13/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-3
Depth: 0-6"
Sample Number: TI-CS03-02A(0-6")
Sampled Date: 11/12/2013
Test Date: 12/11/2013

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 6.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 12,025.00
Total Dry Weight of Sample (g): 11,659.26
Wet Weight of Sub-Sample (g): 54.113
Dry Weight of Sub-Sample (g): 50.658
Corrected Dry Weight of Sub-Sample - W(g): 110.127

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	32.0	26.0	19.7	0.0138	11.05	0.0459	23.6	2756.41	23.6
2	29.0	23.0	19.7	0.0138	11.54	0.0332	20.9	2438.36	20.9
5	26.0	20.0	19.7	0.0138	12.03	0.0214	18.2	2120.32	18.2
15	23.5	17.5	19.8	0.0138	12.44	0.0126	15.9	1855.28	15.9
30	22.3	16.3	20.0	0.0137	12.65	0.0089	14.8	1722.76	14.8
60	21.0	15.0	20.4	0.0137	12.85	0.0063	13.6	1590.24	13.6
120	19.5	13.5	20.9	0.0137	13.10	0.0045	12.3	1431.21	12.3
250	17.5	11.5	22.4	0.0133	13.42	0.0031	10.5	1219.18	10.5
1440	16.0	10.0	20.4	0.0137	13.67	0.0013	9.1	1060.16	9.1

Data Entered By: KMR
Date: 12/13/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_10.xls

Checked By: DPM
Date: 12/13/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-6
Depth: 0-7"
Sample Number: TI-CS06-02A(0-7")
Sampled Date: 11/13/2013
Test Date: 12/5/2013

Sampled By: MWH
Technician: CAL

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 118.66
Weight of Dry Soil & Pan (g): 112.58
Weight of Water (g): 6.08
Weight of Pan (g): 3.69
Weight of Dry Soil (g): 108.89
Moisture (%): 5.6

General Sample Data

Total Wet Weight of Sample (g): 8,880.00
Total Dry Weight of Sample (g): 8,635.72
Calculated Weight Plus #200 (g): 5,779.94
Moisture of Total Sample (%): 2.8
Percent Retained #200 Sieve (%): 66.9

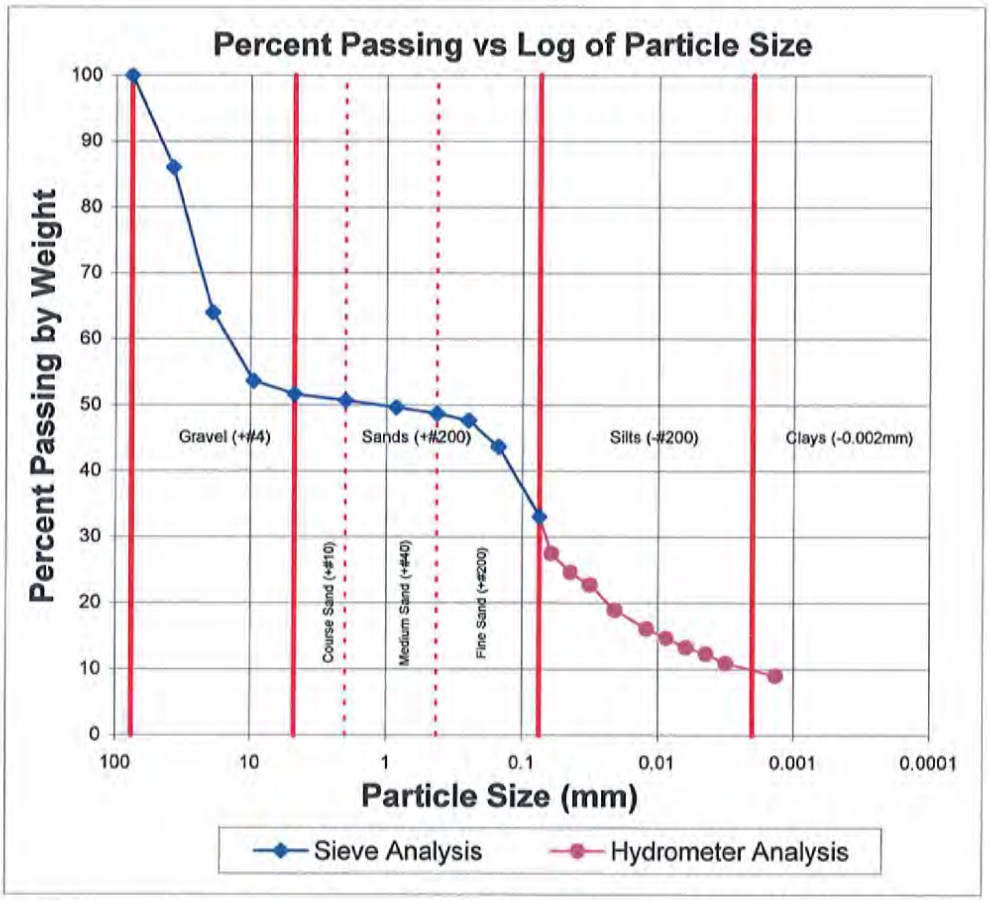
Plus Split Data

Original Weight of +#10 (g): 4,420.00
Calculated Weight of +#10 (g): 4,260.84

Minus Split Data

Original Weight of -#10 (g): 4,460.00
Calculated Dry Weight of -#10 (g): 4,374.88

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	76.2	0.00	0.00	0.00	0.00	100.0
1.5"	38.10	1206.82	0.00	1206.82	1206.82	86.0
3/4"	19.05	1901.60	0.00	1901.60	1901.60	64.0
3/8"	9.525	896.62	0.00	896.62	896.62	53.6
#4	4.750	172.60	0.00	172.60	172.60	51.6
#10	2.000	83.20	0.00	83.20	83.20	50.7
56.524g split out of -#10 material.						
#20	0.850	4.77	3.70	1.07	87.60	49.6
#40	0.425	4.97	3.90	1.07	87.03	48.6
#60	0.250	4.82	3.77	1.05	86.05	47.6
#100	0.150	7.90	3.69	4.21	343.80	43.7
#200	0.075	14.82	3.63	11.19	914.61	33.1



Data Entered By: KMR
Date: 12/11/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_6.xls

Checked By: JDM
Date: 12/11/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-6
Depth: 0-7"
Sample Number: TI-CS06-02A(0-7")
Sampled Date: 11/13/2013
Test Date: 12/5/2013

Sampled By: MWH
Technician: CAL

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 7.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 8,880.00
Total Dry Weight of Sample (g): 8,635.72
Wet Weight of Sub-Sample (g): 56.524
Dry Weight of Sub-Sample (g): 53.535
Corrected Dry Weight of Sub-Sample - W(g): 105.591

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	36.0	29.0	21.3	0.0135	10.39	0.0615	27.5	2374.98	27.5
1	33.0	26.0	21.3	0.0135	10.88	0.0445	24.7	2129.29	24.7
2	31.0	24.0	21.3	0.0135	11.21	0.0319	22.8	1965.50	22.8
5	27.0	20.0	21.6	0.0135	11.87	0.0208	19.0	1637.92	19.0
15	24.0	17.0	21.7	0.0135	12.36	0.0122	16.1	1392.23	16.1
30	22.5	15.5	22.2	0.0133	12.60	0.0086	14.7	1269.39	14.7
60	21.0	14.0	22.0	0.0133	12.85	0.0062	13.3	1146.54	13.3
120	20.0	13.0	21.8	0.0135	13.01	0.0044	12.3	1064.65	12.3
250	18.5	11.5	20.2	0.0137	13.26	0.0031	10.9	941.80	10.9
1440	16.5	9.5	18.7	0.0140	13.59	0.0014	9.0	778.01	9.0

Data Entered By: KMR
Date: 12/11/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_6.xls

Checked By: [signature]
Date: 12/11/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-6
Depth: 7-24"
Sample Number: TI-CS06-04A(7-24")
Sampled Date: 11/13/2013
Test Date: 12/2/2013

Sampled By: MWH
Technician: CAL

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 125.91
Weight of Dry Soil & Pan (g): 120.93
Weight of Water (g): 4.98
Weight of Pan (g): 3.70
Weight of Dry Soil (g): 117.23
Moisture (%): 4.2

General Sample Data

Total Wet Weight of Sample (g): 4,129.13
Total Dry Weight of Sample (g): 3,972.23
Calculated Weight Plus #200 (g): 1,622.70
Moisture of Total Sample (%): 3.9
Percent Retained #200 Sieve (%): 40.9

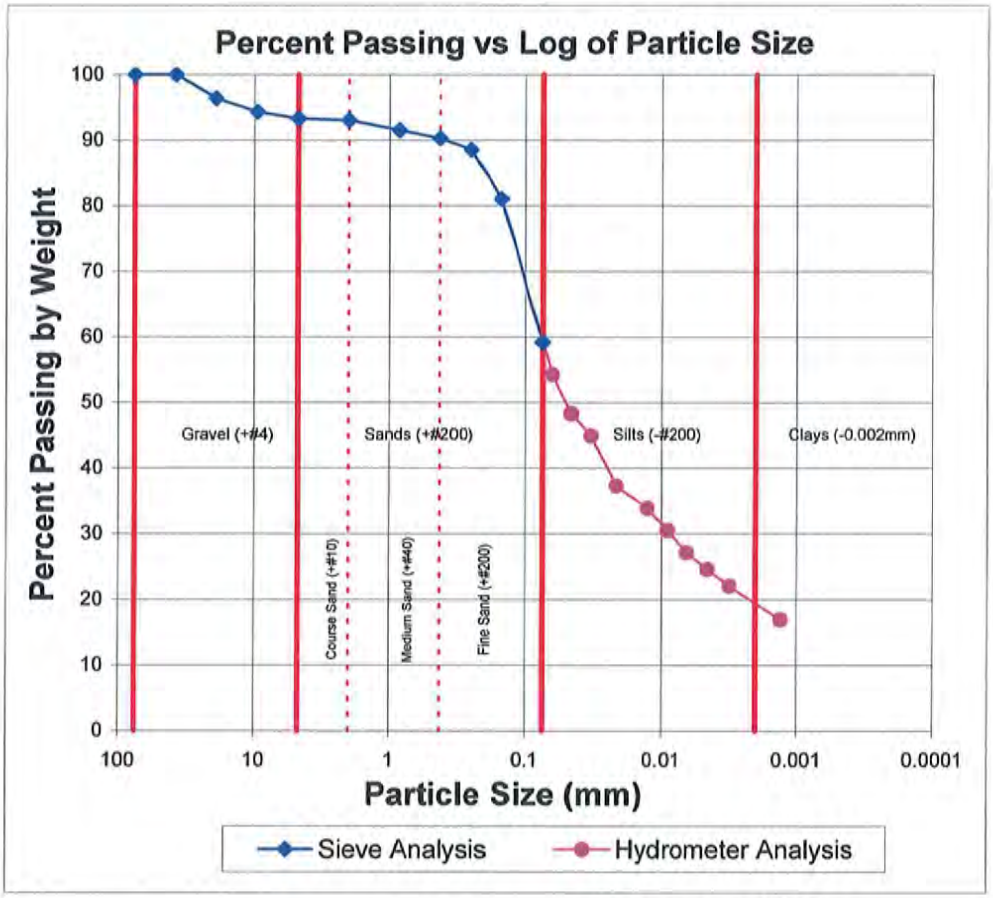
Plus Split Data

Original Weight of +#10 (g): 297.31
Calculated Weight of +#10 (g): 276.49

Minus Split Data

Original Weight of -#10 (g): 3,831.82
Calculated Dry Weight of -#10 (g): 3,695.74

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	76.2	0.00	0.00	0.00	0.00	100.0
1.5"	38.10	0.00	0.00	0.00	0.00	100.0
3/4"	19.05	144.72	0.00	144.72	144.72	96.4
3/8"	9.525	80.77	0.00	80.77	80.77	94.3
#4	4.750	40.75	0.00	40.75	40.75	93.3
#10	2.000	10.25	0.00	10.25	10.25	93.0
57.274g split out of -#10 material.						
#20	0.850	4.50	3.62	0.89	59.53	91.5
#40	0.425	4.45	3.68	0.76	51.39	90.2
#60	0.250	4.58	3.56	1.02	68.48	88.5
#100	0.150	8.04	3.62	4.42	297.25	81.0
#200	0.075	16.69	3.76	12.93	869.56	59.1



Data Entered By: KMR
Date: 12/6/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_0.xls

Checked By: DFM
Date: 11/04/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-6
Depth: 7-24"
Sample Number: TI-CS06-04A(7-24")
Sampled Date: 11/13/2013
Test Date: 12/2/2013

Sampled By: MWH
Technician: CAL

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 8.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 4,129.13
Total Dry Weight of Sample (g): 3,972.23
Wet Weight of Sub-Sample (g): 57.274
Dry Weight of Sub-Sample (g): 54.941
Corrected Dry Weight of Sub-Sample - W(g): 59.077

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	40.0	32.0	16.1	0.0144	9.73	0.0633	54.2	2154.56	54.2
1	36.5	28.5	16.1	0.0144	10.31	0.0461	48.3	1918.91	48.3
2	34.5	26.5	16.1	0.0144	10.64	0.0331	44.9	1784.25	44.9
5	30.0	22.0	16.2	0.0144	11.37	0.0216	37.3	1481.26	37.3
15	28.0	20.0	16.3	0.0144	11.70	0.0127	33.9	1346.60	33.9
30	26.0	18.0	16.7	0.0144	12.03	0.0091	30.5	1211.94	30.5
60	24.0	16.0	17.4	0.0142	12.36	0.0064	27.1	1077.28	27.1
120	22.5	14.5	18.1	0.0140	12.60	0.0045	24.6	976.29	24.6
250	21.0	13.0	19.8	0.0138	12.85	0.0031	22.0	875.29	22.0
1440	18.0	10.0	20.1	0.0137	13.34	0.0013	17.0	673.30	17.0

Data Entered By: KMR
Date: 12/6/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_0.xls

Checked By: DPM
Date: 12/09/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-8
Depth: 0-8"
Sample Number: TI-CS08-02A(0-8")
Sampled Date: 11/13/2013
Test Date: 12/5/2013

Sampled By: MWH
Technician: CAL

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 118.63
Weight of Dry Soil & Pan (g): 115.18
Weight of Water (g): 3.45
Weight of Pan (g): 3.56
Weight of Dry Soil (g): 111.62
Moisture (%): 3.1

General Sample Data

Total Wet Weight of Sample (g): 10,675.00
Total Dry Weight of Sample (g): 10,535.75
Calculated Weight Plus #200 (g): 7,923.68
Moisture of Total Sample (%): 1.3
Percent Retained #200 Sieve (%): 75.2

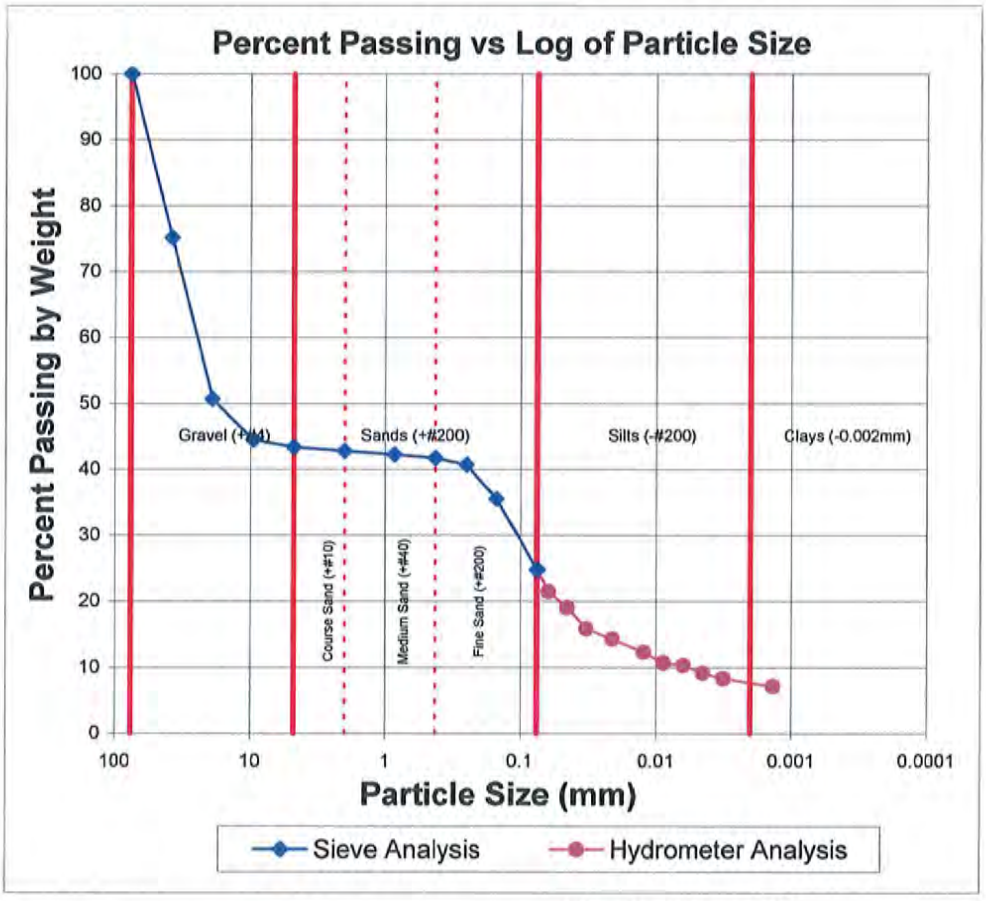
Plus Split Data

Original Weight of +#10 (g): 6,190.00
Calculated Weight of +#10 (g): 6,030.65

Minus Split Data

Original Weight of -#10 (g): 4,485.00
Calculated Dry Weight of -#10 (g): 4,505.10

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	2615.00	0.00	2615.00	2615.00	75.2
3/4"	**19.05**	2585.00	0.00	2585.00	2585.00	50.6
3/8"	**9.525**	650.00	0.00	650.00	650.00	44.5
#4	**4.750**	120.00	0.00	120.00	120.00	43.3
#10	**2.000**	60.65	0.00	60.65	60.65	42.8
55.584g split out of -#10 material.						
#20	**0.850**	4.50	3.82	0.68	57.07	42.2
#40	**0.425**	4.39	3.74	0.65	54.48	41.7
#60	**0.250**	4.85	3.57	1.29	107.54	40.7
#100	**0.150**	10.17	3.63	6.54	546.29	35.5
#200	**0.075**	17.15	3.65	13.50	1127.67	24.8



Data Entered By: KMR
Date: 12/11/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_5.xls

Checked By: DRM
Date: 12/16/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-8
Depth: 0-8"
Sample Number: TI-CS08-02A(0-8")
Sampled Date: 11/13/2013
Test Date: 12/5/2013

Sampled By: MWH
Technician: CAL

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 7.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 10,675.00
Total Dry Weight of Sample (g): 10,535.75
Wet Weight of Sub-Sample (g): 55.584
Dry Weight of Sub-Sample (g): 53.917
Corrected Dry Weight of Sub-Sample - W(g): 125.975

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	34.0	27.0	21.5	0.0135	10.72	0.0624	21.5	2261.18	21.5
1	31.0	24.0	21.5	0.0135	11.21	0.0451	19.1	2009.94	19.1
2	27.0	20.0	21.5	0.0135	11.87	0.0328	15.9	1674.95	15.9
5	25.0	18.0	21.6	0.0135	12.19	0.0211	14.3	1507.45	14.3
15	22.5	15.5	21.7	0.0135	12.60	0.0124	12.3	1298.09	12.3
30	20.5	13.5	21.9	0.0135	12.93	0.0089	10.7	1130.59	10.7
60	20.0	13.0	21.9	0.0135	13.01	0.0063	10.3	1088.72	10.3
120	18.5	11.5	21.1	0.0135	13.26	0.0045	9.1	963.10	9.1
250	17.5	10.5	20.5	0.0137	13.42	0.0032	8.3	879.35	8.3
1440	16.0	9.0	18.9	0.0140	13.67	0.0014	7.2	753.73	7.2

Data Entered By: KMR
Date: 12/11/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_5.xls

Checked By: DPW
Date: 12/11/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-8
Depth: 8-28"
Sample Number: TI-CS08-04A(8-28")
Sampled Date: 11/13/2013
Test Date: 12/2/2013

Sampled By: MWH
Technician: CAL

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 128.22
Weight of Dry Soil & Pan (g): 125.73
Weight of Water (g): 2.49
Weight of Pan (g): 3.72
Weight of Dry Soil (g): 122.01
Moisture (%): 2.0

General Sample Data

Total Wet Weight of Sample (g): 4,694.51
Total Dry Weight of Sample (g): 4,611.22
Calculated Weight Plus #200 (g): 2,135.59
Moisture of Total Sample (%): 1.8
Percent Retained #200 Sieve (%): 46.3

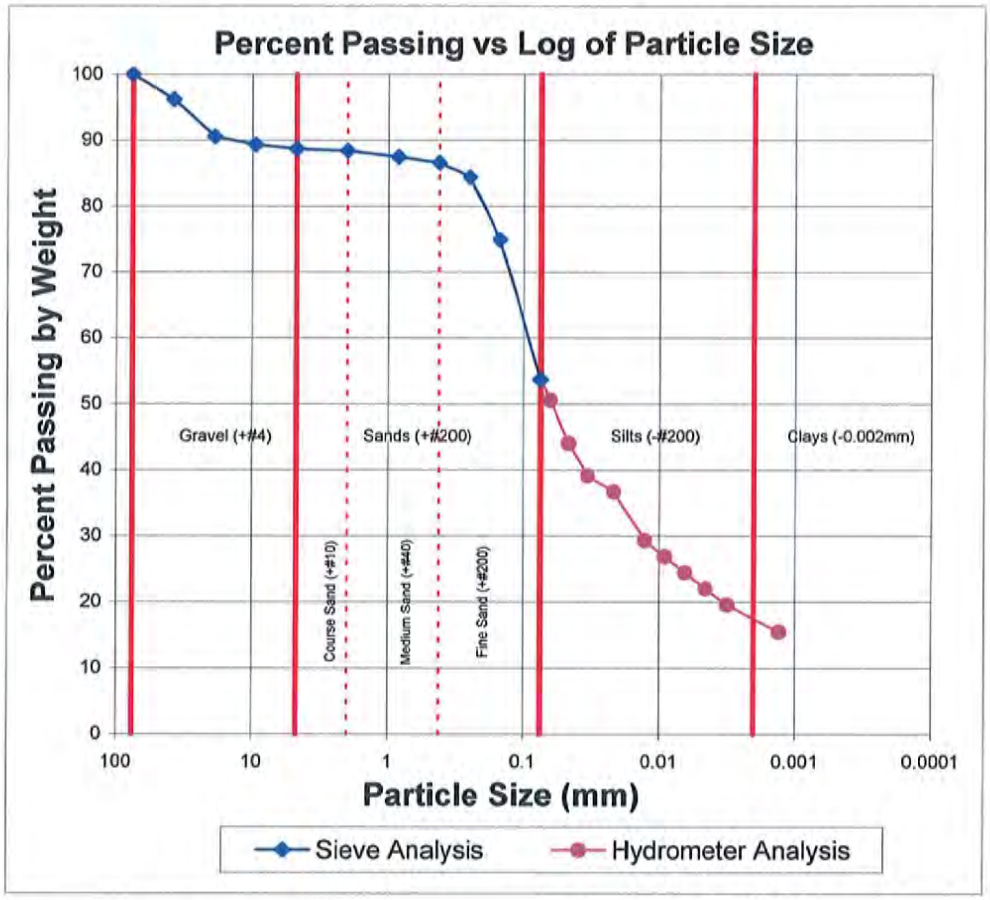
Plus Split Data

Original Weight of +#10 (g): 551.32
Calculated Weight of +#10 (g): 535.20

Minus Split Data

Original Weight of -#10 (g): 4,143.19
Calculated Dry Weight of -#10 (g): 4,076.02

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	76.2	0.00	0.00	0.00	0.00	100.0
1.5"	38.10	175.09	0.00	175.09	175.09	96.2
3/4"	19.05	261.02	0.00	261.02	261.02	90.5
3/8"	9.525	54.75	0.00	54.75	54.75	89.4
#4	4.750	31.10	0.00	31.10	31.10	88.7
#10	2.000	13.24	0.00	13.24	13.24	88.4
55.178g split out of -#10 material.						
#20	0.850	4.34	3.77	0.57	42.67	87.5
#40	0.425	4.22	3.67	0.56	41.99	86.6
#60	0.250	5.06	3.75	1.31	98.82	84.4
#100	0.150	9.65	3.82	5.82	439.01	74.9
#200	0.075	16.77	3.80	12.97	977.90	53.7



Data Entered By: KMR
Date: 12/9/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_1.xls

Checked By: DPm
Date: 12/09/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-8
Depth: 8-28"
Sample Number: TI-CS08-04A(8-28")
Sampled Date: 11/13/2013
Test Date: 12/2/2013

Sampled By: MWH
Technician: CAL

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.67
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 8.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 4,694.51
Total Dry Weight of Sample (g): 4,611.22
Wet Weight of Sub-Sample (g): 55.178
Dry Weight of Sub-Sample (g): 54.073
Corrected Dry Weight of Sub-Sample - W(g): 61.169

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	39.0	31.0	16.3	0.0144	9.90	0.0639	50.5	2330.36	50.5
1	35.0	27.0	16.3	0.0144	10.55	0.0466	44.0	2029.67	44.0
2	32.0	24.0	16.3	0.0144	11.05	0.0337	39.1	1804.15	39.1
5	30.5	22.5	16.4	0.0144	11.29	0.0216	36.7	1691.39	36.7
15	26.0	18.0	16.5	0.0144	12.03	0.0129	29.3	1353.11	29.3
30	24.5	16.5	16.9	0.0144	12.28	0.0092	26.9	1240.35	26.9
60	23.0	15.0	17.6	0.0142	12.52	0.0065	24.5	1127.59	24.5
120	21.5	13.5	18.1	0.0140	12.77	0.0046	22.0	1014.83	22.0
250	20.0	12.0	19.9	0.0138	13.01	0.0032	19.6	902.08	19.6
1440	17.5	9.5	20.1	0.0137	13.42	0.0013	15.5	714.14	15.5

Data Entered By: KMR
Date: 12/9/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_1.xls

Checked By: DBM
Date: 12/09/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-9
Depth: 0-9"
Sample Number: TI-CS09-02A(0-9")
Sampled Date: 11/13/2013
Test Date: 12/5/2013

Sampled By: MWH
Technician: CAL

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 119.55
Weight of Dry Soil & Pan (g): 115.83
Weight of Water (g): 3.72
Weight of Pan (g): 3.58
Weight of Dry Soil (g): 112.25
Moisture (%): 3.3

General Sample Data

Total Wet Weight of Sample (g): 9,180.00
Total Dry Weight of Sample (g): 9,043.04
Calculated Weight Plus #200 (g): 6,131.44
Moisture of Total Sample (%): 1.5
Percent Retained #200 Sieve (%): 67.8

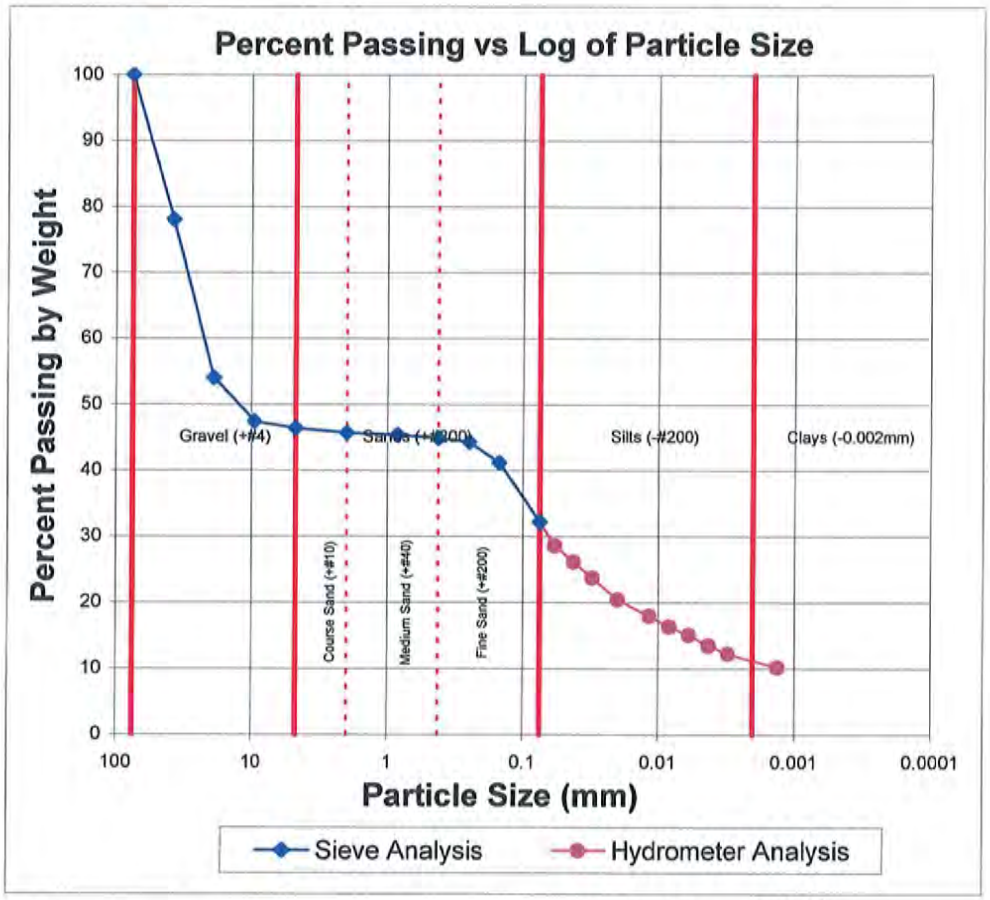
Plus Split Data

Original Weight of +#10 (g): 4,980.00
Calculated Weight of +#10 (g): 4,910.20

Minus Split Data

Original Weight of -#10 (g): 4,200.00
Calculated Dry Weight of -#10 (g): 4,132.84

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	76.2	0.00	0.00	0.00	0.00	100.0
1.5"	38.10	1985.00	0.00	1985.00	1985.00	78.0
3/4"	19.05	2175.00	0.00	2175.00	2175.00	54.0
3/8"	9.525	595.00	0.00	595.00	595.00	47.4
#4	4.750	94.53	0.00	94.53	94.53	46.4
#10	2.000	60.67	0.00	60.67	60.67	45.7
57.839g split out of -#10 material.						
#20	0.850	4.27	3.84	0.43	31.52	45.4
#40	0.425	4.39	3.84	0.55	40.82	44.9
#60	0.250	4.50	3.75	0.75	55.15	44.3
#100	0.150	7.54	3.71	3.83	282.81	41.2
#200	0.075	14.68	3.70	10.99	810.94	32.2



Data Entered By: KMR
Date: 12/11/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_4.xls

Checked By: DPM
Date: 12/11/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-9
Depth: 0-9"
Sample Number: TI-CS09-02A(0-9")
Sampled Date: 11/13/2013
Test Date: 12/5/2013

Sampled By: MWH
Technician: CAL

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 7.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 9,180.00
Total Dry Weight of Sample (g): 9,043.04
Wet Weight of Sub-Sample (g): 57.839
Dry Weight of Sub-Sample (g): 55.984
Corrected Dry Weight of Sub-Sample - W(g): 122.503

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	42.0	35.0	21.5	0.0135	9.41	0.0585	28.6	2587.19	28.6
1	39.0	32.0	21.5	0.0135	9.90	0.0424	26.2	2365.43	26.2
2	36.0	29.0	21.5	0.0135	10.39	0.0307	23.7	2143.67	23.7
5	32.0	25.0	21.5	0.0135	11.05	0.0200	20.4	1848.00	20.4
15	29.0	22.0	22.0	0.0133	11.54	0.0117	18.0	1626.24	18.0
30	27.0	20.0	22.2	0.0133	11.87	0.0084	16.3	1478.40	16.3
60	25.5	18.5	22.1	0.0133	12.11	0.0060	15.1	1367.52	15.1
120	23.5	16.5	22.0	0.0133	12.44	0.0043	13.5	1219.68	13.5
250	22.0	15.0	20.3	0.0137	12.69	0.0031	12.3	1108.80	12.3
1440	19.5	12.5	18.9	0.0140	13.10	0.0013	10.2	924.00	10.2

Data Entered By: KMR
Date: 12/11/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_4.xls

Checked By: DPM
Date: 12/11/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-10
Depth: 0-7"
Sample Number: TI-CS10-02A(0-7")
Sampled Date: 11/13/2013
Test Date: 12/5/2013

Sampled By: MWH
Technician: CAL

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 124.45
Weight of Dry Soil & Pan (g): 120.39
Weight of Water (g): 4.06
Weight of Pan (g): 3.74
Weight of Dry Soil (g): 116.65
Moisture (%): 3.5

General Sample Data

Total Wet Weight of Sample (g): 10,845.00
Total Dry Weight of Sample (g): 10,629.43
Calculated Weight Plus #200 (g): 6,495.99
Moisture of Total Sample (%): 2.0
Percent Retained #200 Sieve (%): 61.1

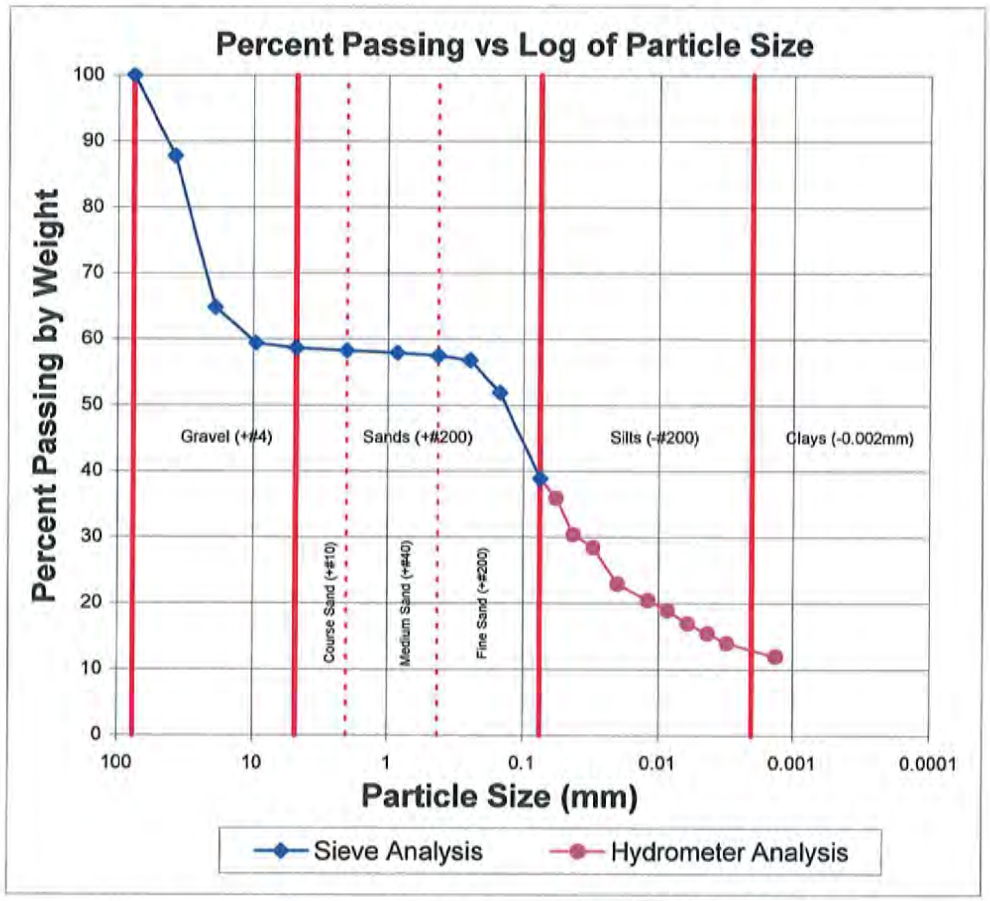
Plus Split Data

Original Weight of +#10 (g): 4,570.00
Calculated Weight of +#10 (g): 4,435.80

Minus Split Data

Original Weight of -#10 (g): 6,275.00
Calculated Dry Weight of -#10 (g): 6,193.63

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	1300.11	0.00	1300.11	1300.11	87.8
3/4"	**19.05**	2445.00	0.00	2445.00	2445.00	64.8
3/8"	**9.525**	570.45	0.00	570.45	570.45	59.4
#4	**4.750**	82.08	0.00	82.08	82.08	58.6
#10	**2.000**	38.16	0.00	38.16	38.16	58.3
60.577g split out of -#10 material.						
#20	**0.850**	4.21	3.84	0.37	39.04	57.9
#40	**0.425**	4.13	3.72	0.41	43.80	57.5
#60	**0.250**	4.26	3.54	0.72	76.18	56.8
#100	**0.150**	8.56	3.66	4.90	518.54	51.9
#200	**0.075**	16.76	3.69	13.07	1382.63	38.9



Data Entered By: KMR
Date: 12/11/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_2.xls

Checked By: DPM
Date: 12/11/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-10
Depth: 0-7"
Sample Number: TI-CS10-02A(0-7")
Sampled Date: 11/13/2013
Test Date: 12/5/2013

Sampled By: MWH
Technician: CAL

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 7.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 10,845.00
Total Dry Weight of Sample (g): 10,629.43
Wet Weight of Sub-Sample (g): 60.577
Dry Weight of Sub-Sample (g): 58.540
Corrected Dry Weight of Sub-Sample - W(g): 100.411

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	43.0	36.0	22.4	0.0133	9.24	0.0573	35.9	3816.13	35.9
1	37.5	30.5	22.4	0.0133	10.14	0.0424	30.4	3233.11	30.4
2	35.5	28.5	22.4	0.0133	10.47	0.0305	28.4	3021.11	28.4
5	30.0	23.0	22.2	0.0133	11.37	0.0201	22.9	2438.09	22.9
15	27.5	20.5	21.5	0.0135	11.78	0.0119	20.4	2173.08	20.4
30	26.0	19.0	21.7	0.0135	12.03	0.0085	18.9	2014.07	18.9
60	24.0	17.0	22.0	0.0133	12.36	0.0060	17.0	1802.06	17.0
120	22.5	15.5	22.3	0.0133	12.60	0.0043	15.5	1643.06	15.5
250	21.0	14.0	20.4	0.0137	12.85	0.0031	14.0	1484.05	14.0
1440	19.0	12.0	18.8	0.0140	13.18	0.0013	12.0	1272.04	12.0

Data Entered By: KMR
Date: 12/11/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_2.xls

Checked By: DPM
Date: 12/11/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-11
Depth: 0-9"
Sample Number: TI-CS11-02A(0-9")
Sampled Date: 11/13/2013
Test Date: 12/11/2013

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 138.61
Weight of Dry Soil & Pan (g): 131.50
Weight of Water (g): 7.11
Weight of Pan (g): 3.79
Weight of Dry Soil (g): 127.71
Moisture (%): 5.6

General Sample Data

Total Wet Weight of Sample (g): 21,550.00
Total Dry Weight of Sample (g): 20,754.50
Calculated Weight Plus #200 (g): 12,625.34
Moisture of Total Sample (%): 3.8
Percent Retained #200 Sieve (%): 60.8

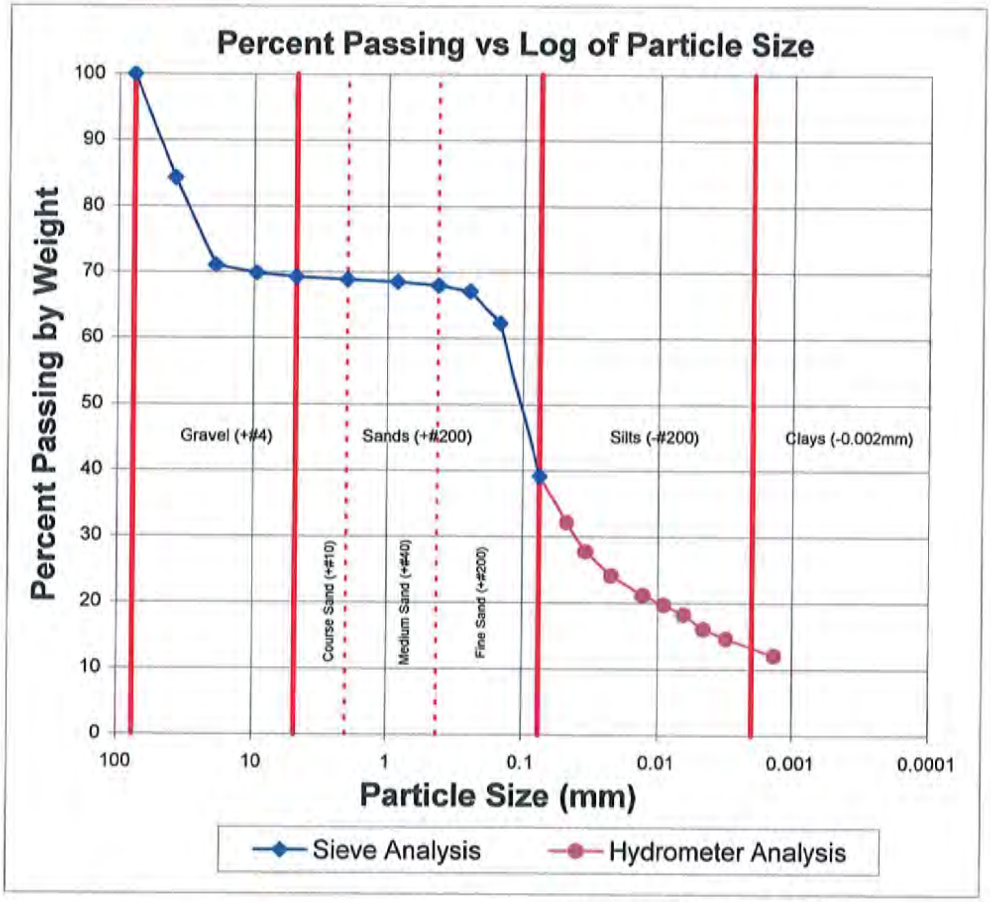
Plus Split Data

Original Weight of +#10 (g): 6,635.00
Calculated Weight of +#10 (g): 6,461.64

Minus Split Data

Original Weight of -#10 (g): 14,915.00
Calculated Dry Weight of -#10 (g): 14,292.86

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	3265.00	0.00	3265.00	3265.00	84.3
3/4"	**19.05**	2755.00	0.00	2755.00	2755.00	71.0
3/8"	**9.525**	236.70	0.00	236.70	236.70	69.9
#4	**4.750**	121.51	0.00	121.51	121.51	69.3
#10	**2.000**	83.43	0.00	83.43	83.43	68.9
49.818g split out of -#10 material.						
#20	**0.850**	4.04	3.82	0.22	66.03	68.5
#40	**0.425**	4.11	3.74	0.37	112.97	68.0
#60	**0.250**	4.21	3.62	0.59	178.39	67.1
#100	**0.150**	6.94	3.64	3.31	1000.98	62.3
#200	**0.075**	19.52	3.66	15.87	4805.33	39.2



Data Entered By: KMR
Date: 12/13/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_9.xls

Checked By: DPM
Date: 12/13/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-11
Depth: 0-9"
Sample Number: TI-CS11-02A(0-9")
Sampled Date: 11/13/2013
Test Date: 12/11/2013

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 6.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 21,550.00
Total Dry Weight of Sample (g): 20,754.50
Wet Weight of Sub-Sample (g): 49.818
Dry Weight of Sub-Sample (g): 47.191
Corrected Dry Weight of Sub-Sample - W(g): 68.493

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	28.0	22.0	19.7	0.0138	11.70	0.0473	32.2	6675.48	32.2
2	25.0	19.0	19.7	0.0138	12.19	0.0341	27.8	5765.19	27.8
5	22.5	16.5	19.7	0.0138	12.60	0.0219	24.1	5006.61	24.1
15	20.5	14.5	19.9	0.0138	12.93	0.0128	21.2	4399.75	21.2
30	19.5	13.5	20.0	0.0137	13.10	0.0090	19.7	4096.32	19.7
60	18.5	12.5	20.3	0.0137	13.26	0.0064	18.3	3792.89	18.3
120	17.0	11.0	20.8	0.0137	13.51	0.0046	16.1	3337.74	16.1
250	16.0	10.0	22.2	0.0133	13.67	0.0031	14.6	3034.31	14.6
1440	14.3	8.3	20.3	0.0137	13.96	0.0013	12.1	2503.31	12.1

Data Entered By: KMR
Date: 12/13/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_9.xls

Checked By: DPM
Date: 12/13/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-11
Depth: 9-24"
Sample Number: TI-CS11-04A(9-24')
Sampled Date: 11/13/2013
Test Date: 12/5/2013

Sampled By: MWH
Technician: CAL

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 130.26
Weight of Dry Soil & Pan (g): 126.16
Weight of Water (g): 4.10
Weight of Pan (g): 3.70
Weight of Dry Soil (g): 122.46
Moisture (%): 3.4

General Sample Data

Total Wet Weight of Sample (g): 4,640.86
Total Dry Weight of Sample (g): 4,498.12
Calculated Weight Plus #200 (g): 1,505.61
Moisture of Total Sample (%): 3.2
Percent Retained #200 Sieve (%): 33.5

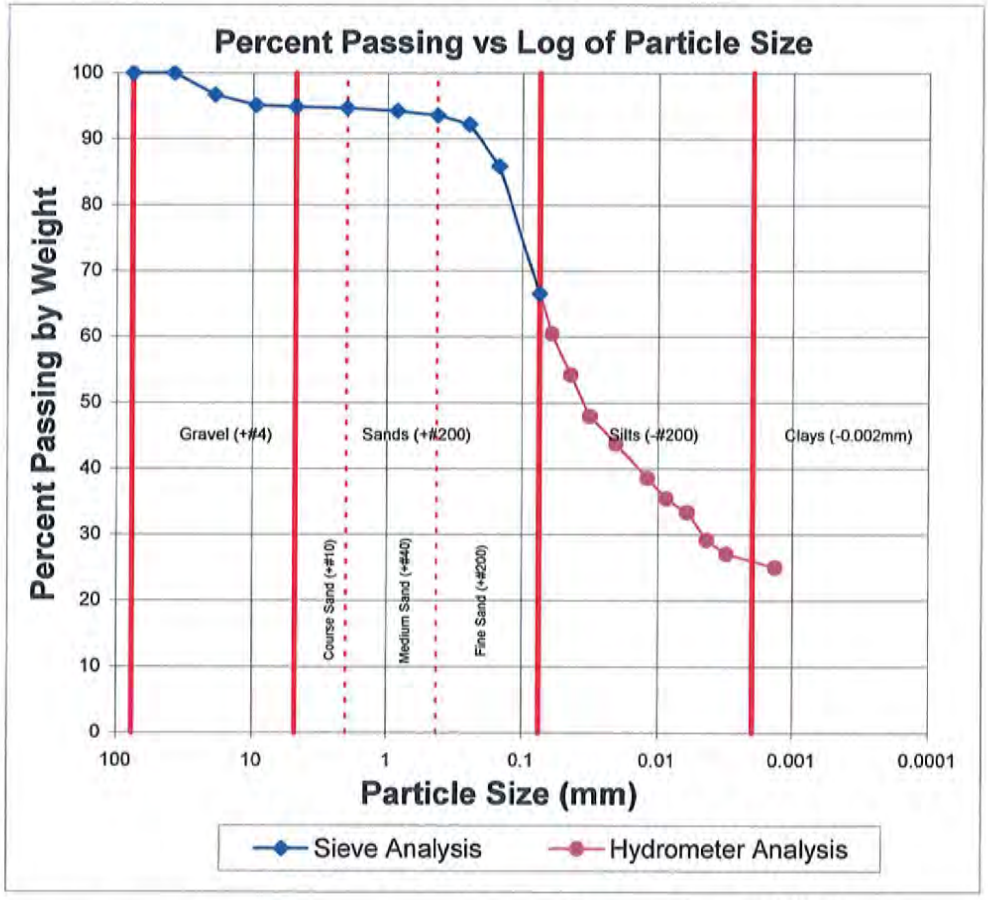
Plus Split Data

Original Weight of +#10 (g): 250.86
Calculated Weight of +#10 (g): 238.09

Minus Split Data

Original Weight of -#10 (g): 4,390.00
Calculated Dry Weight of -#10 (g): 4,260.03

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	76.2	0.00	0.00	0.00	0.00	100.0
1.5"	38.10	0.00	0.00	0.00	0.00	100.0
3/4"	19.05	148.98	0.00	148.98	148.98	96.7
3/8"	9.525	69.50	0.00	69.50	69.50	95.1
#4	4.750	10.77	0.00	10.77	10.77	94.9
#10	2.000	8.84	0.00	8.84	8.84	94.7
46.719g split out of -#10 material.						
#20	0.850	4.17	3.96	0.22	20.54	94.3
#40	0.425	4.16	3.83	0.33	31.10	93.6
#60	0.250	4.45	3.80	0.66	61.82	92.2
#100	0.150	6.74	3.73	3.01	283.85	85.9
#200	0.075	12.79	3.56	9.23	870.21	66.5



Data Entered By: KMR
Date: 12/11/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_3.xls

Checked By: DPM
Date: 12/11/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-11
Depth: 9-24"
Sample Number: TI-CS11-04A(9-24')
Sampled Date: 11/13/2013
Test Date: 12/5/2013

Sampled By: MWH
Technician: CAL

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.68
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 7.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 4,640.86
Total Dry Weight of Sample (g): 4,498.12
Wet Weight of Sub-Sample (g): 46.719
Dry Weight of Sub-Sample (g): 45.204
Corrected Dry Weight of Sub-Sample - W(g): 47.734

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	36.0	29.0	22.0	0.0133	10.39	0.0607	60.5	2719.33	60.5
1	33.0	26.0	22.0	0.0133	10.88	0.0439	54.2	2438.02	54.2
2	30.0	23.0	22.0	0.0133	11.37	0.0318	47.9	2156.71	47.9
5	28.0	21.0	22.3	0.0133	11.70	0.0204	43.8	1969.17	43.8
15	25.5	18.5	22.3	0.0133	12.11	0.0120	38.6	1734.74	38.6
30	24.0	17.0	21.7	0.0135	12.36	0.0087	35.4	1594.09	35.4
60	23.0	16.0	22.0	0.0133	12.52	0.0061	33.4	1500.32	33.4
120	21.0	14.0	22.2	0.0133	12.85	0.0044	29.2	1312.78	29.2
250	20.0	13.0	20.3	0.0137	13.01	0.0031	27.1	1219.01	27.1
1440	19.0	12.0	18.8	0.0140	13.18	0.0013	25.0	1125.24	25.0

Data Entered By: KMR
Date: 12/11/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_3.xls

Checked By: DPM
Date: 12/11/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-12
Depth: 0-14"
Sample Number: TI-CS12-02A(0-14")
Sampled Date: 11/13/2013
Test Date: 12/11/2013

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 87.03
Weight of Dry Soil & Pan (g): 86.61
Weight of Water (g): 0.42
Weight of Pan (g): 3.57
Weight of Dry Soil (g): 83.04
Moisture (%): 0.5

General Sample Data

Total Wet Weight of Sample (g): 1,604.40
Total Dry Weight of Sample (g): 1,596.35
Calculated Weight Plus #200 (g): 479.94
Moisture of Total Sample (%): 0.5
Percent Retained #200 Sieve (%): 30.1

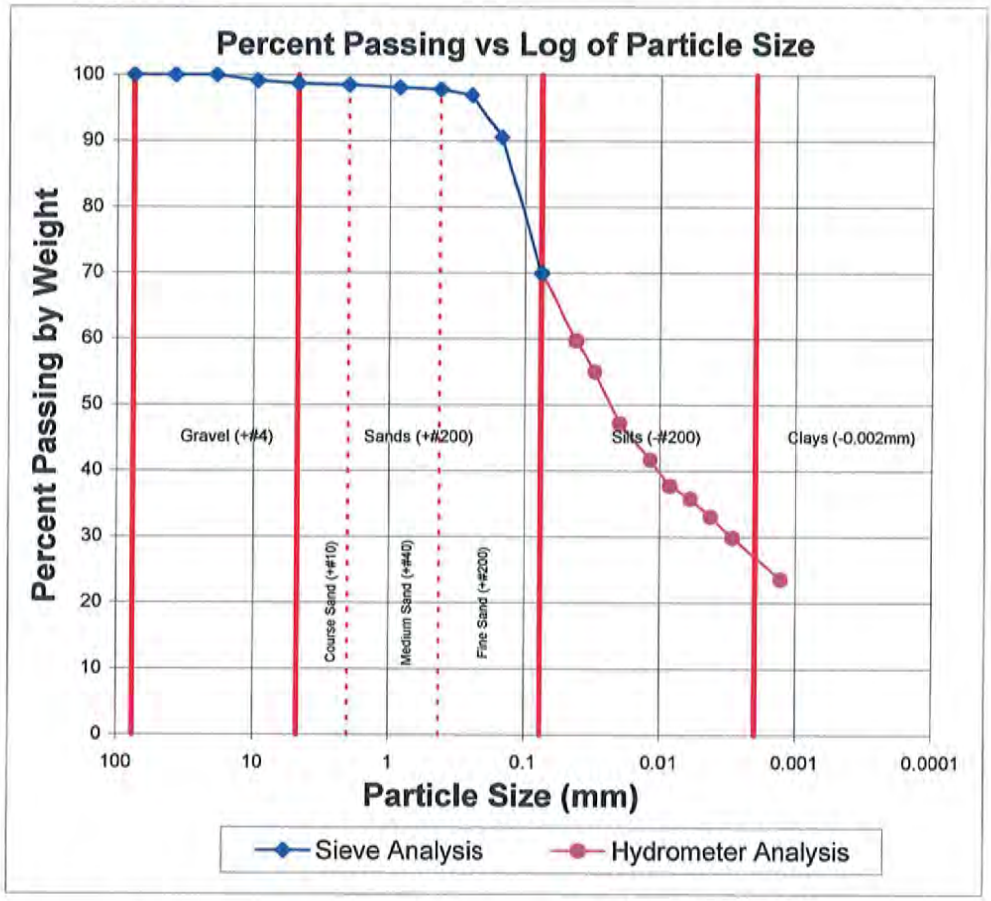
Plus Split Data

Original Weight of +#10 (g): 27.75
Calculated Weight of +#10 (g): 24.31

Minus Split Data

Original Weight of -#10 (g): 1,576.65
Calculated Dry Weight of -#10 (g): 1,572.05

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	0.00	0.00	0.00	0.00	100.0
3/8"	**9.525**	13.72	0.00	13.72	13.72	99.1
#4	**4.750**	7.58	0.00	7.58	7.58	98.7
#10	**2.000**	3.01	0.00	3.01	3.01	98.5
63.085g split out of -#10 material.						
#20	**0.850**	4.04	3.80	0.24	5.91	98.1
#40	**0.425**	4.16	3.97	0.18	4.53	97.8
#60	**0.250**	4.40	3.82	0.58	14.58	96.9
#100	**0.150**	7.62	3.56	4.06	101.72	90.5
#200	**0.075**	16.75	3.62	13.13	328.89	69.9



Data Entered By: KMR
Date: 12/13/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_7.xls

Checked By: DM
Date: 12/13/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-12
Depth: 0-14"
Sample Number: TI-CS12-02A(0-14")
Sampled Date: 11/13/2013
Test Date: 12/11/2013

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 6.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 1,604.40
Total Dry Weight of Sample (g): 1,596.35
Wet Weight of Sub-Sample (g): 63.085
Dry Weight of Sub-Sample (g): 62.764
Corrected Dry Weight of Sub-Sample - W(g): 63.720

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	44.0	38.0	19.5	0.0138	9.08	0.0416	59.7	953.30	59.7
2	41.0	35.0	19.5	0.0138	9.57	0.0302	55.0	878.04	55.0
5	36.0	30.0	19.5	0.0138	10.39	0.0199	47.1	752.61	47.1
15	32.5	26.5	19.6	0.0138	10.96	0.0118	41.6	664.80	41.6
30	30.0	24.0	19.8	0.0138	11.37	0.0085	37.7	602.09	37.7
60	28.8	22.8	20.1	0.0137	11.58	0.0060	35.8	570.73	35.8
120	27.0	21.0	20.7	0.0137	11.87	0.0043	33.0	526.83	33.0
250	25.0	19.0	22.1	0.0133	12.19	0.0029	29.9	476.65	29.9
1440	21.0	15.0	20.3	0.0137	12.85	0.0013	23.6	376.30	23.6

Note: Removed one +3/4" rock out of the total sample weight of 6,280.0 grams.

Data Entered By: KMR
Date: 12/13/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_7.xls

Checked By: RPM
Date: 12/13/13

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number: -

Boring Number: CS-2
Depth: 10-24"
Sample Number: TI-CS02-04A(10-24")
Sampled Date: 11/12/2013
Test Date: 12/16/2013

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 82.68
Weight of Dry Soil & Pan (g): 80.93
Weight of Water (g): 1.75
Weight of Pan (g): 3.72
Weight of Dry Soil (g): 77.21
Moisture (%): 2.3

General Sample Data

Total Wet Weight of Sample (g): 6,233.81
Total Dry Weight of Sample (g): 6,100.35
Calculated Weight Plus #200 (g): 2,948.76
Moisture of Total Sample (%): 2.2
Percent Retained #200 Sieve (%): 48.3

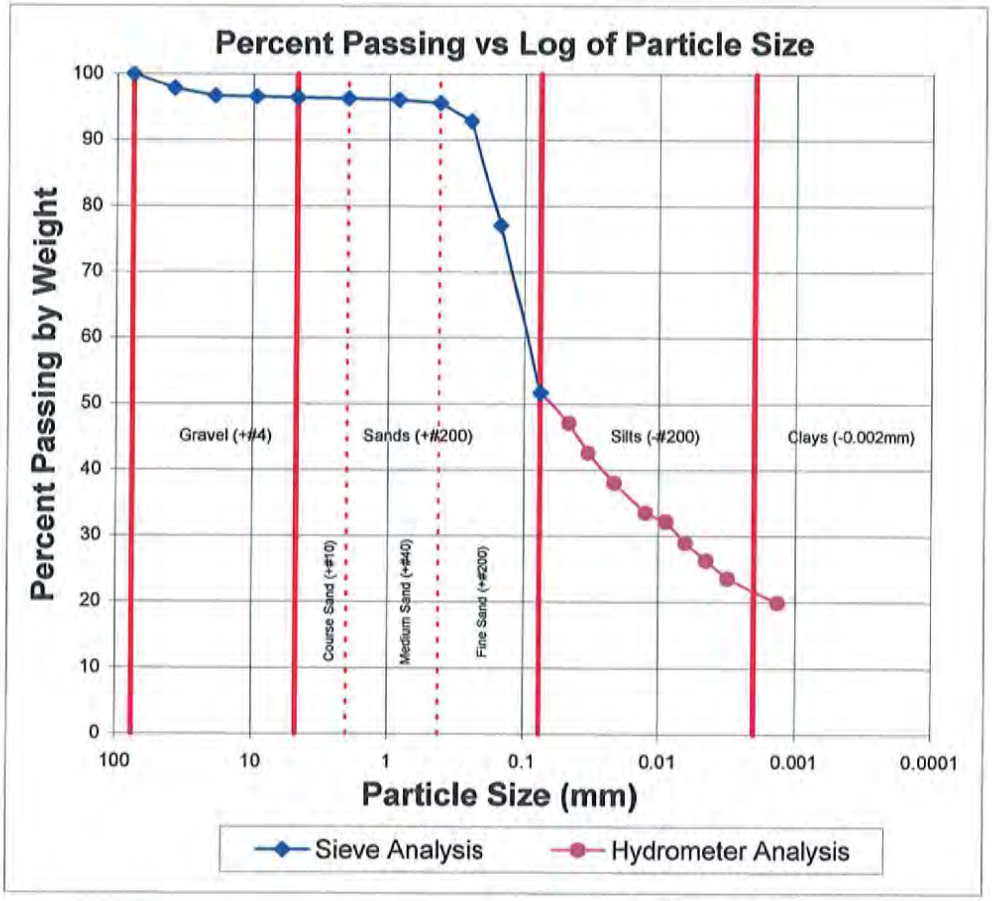
Plus Split Data

Original Weight of +#10 (g): 238.81
Calculated Weight of +#10 (g): 225.84

Minus Split Data

Original Weight of -#10 (g): 5,995.00
Calculated Dry Weight of -#10 (g): 5,874.51

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	129.85	0.00	129.85	129.85	97.9
3/4"	**19.05**	71.91	0.00	71.91	71.91	96.7
3/8"	**9.525**	7.27	0.00	7.27	7.27	96.6
#4	**4.750**	8.47	0.00	8.47	8.47	96.4
#10	**2.000**	8.34	0.00	8.34	8.34	96.3
54.411g split out of -#10 material.						
#20	**0.850**	3.90	3.78	0.12	13.25	96.1
#40	**0.425**	4.02	3.77	0.25	27.60	95.6
#60	**0.250**	5.28	3.74	1.54	170.04	92.8
#100	**0.150**	12.50	3.77	8.73	963.95	77.0
#200	**0.075**	17.62	3.60	14.02	1548.06	51.7



Data Entered By: DPM
Date: 12/18/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_18.xls

Checked By: CJ
Date: 12/18/2013

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number: -

Boring Number: CS-2
Depth: 10-24"
Sample Number: TI-CS02-04A(10-24")
Sampled Date: 11/12/2013
Test Date: 12/16/2013

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 6,233.81
Total Dry Weight of Sample (g): 6,100.35
Wet Weight of Sub-Sample (g): 54.411
Dry Weight of Sub-Sample (g): 53.202
Corrected Dry Weight of Sub-Sample - W(g): 55.246

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	31.0	26.0	19.2	0.0138	11.21	0.0463	47.1	2874.85	47.1
2	28.5	23.5	19.2	0.0138	11.62	0.0333	42.6	2598.42	42.6
5	26.0	21.0	19.2	0.0138	12.03	0.0214	38.1	2322.00	38.1
15	23.5	18.5	19.2	0.0138	12.44	0.0126	33.5	2045.57	33.5
30	22.8	17.8	19.4	0.0138	12.56	0.0089	32.2	1962.64	32.2
60	21.0	16.0	19.8	0.0138	12.85	0.0064	29.0	1769.14	29.0
120	19.5	14.5	20.2	0.0137	13.10	0.0045	26.3	1603.28	26.3
250	18.0	13.0	20.8	0.0137	13.34	0.0032	23.6	1437.43	23.6
1440	16.0	11.0	19.8	0.0138	13.67	0.0013	19.9	1216.28	19.9

Data Entered By: DPM
Date: 12/18/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_18.xls

Checked By: [signature]
Date: 12/18/2013

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number: -

Boring Number: CS-10
Depth: 7-25"
Sample Number: TI-CS10-04A(7-25")
Sampled Date: 11/13/2013
Test Date: 12/16/2013

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 47.42
Weight of Dry Soil & Pan (g): 46.12
Weight of Water (g): 1.30
Weight of Pan (g): 3.69
Weight of Dry Soil (g): 42.44
Moisture (%): 3.1

General Sample Data

Total Wet Weight of Sample (g): 7,040.25
Total Dry Weight of Sample (g): 6,837.34
Calculated Weight Plus #200 (g): 2,855.58
Moisture of Total Sample (%): 3.0
Percent Retained #200 Sieve (%): 41.8

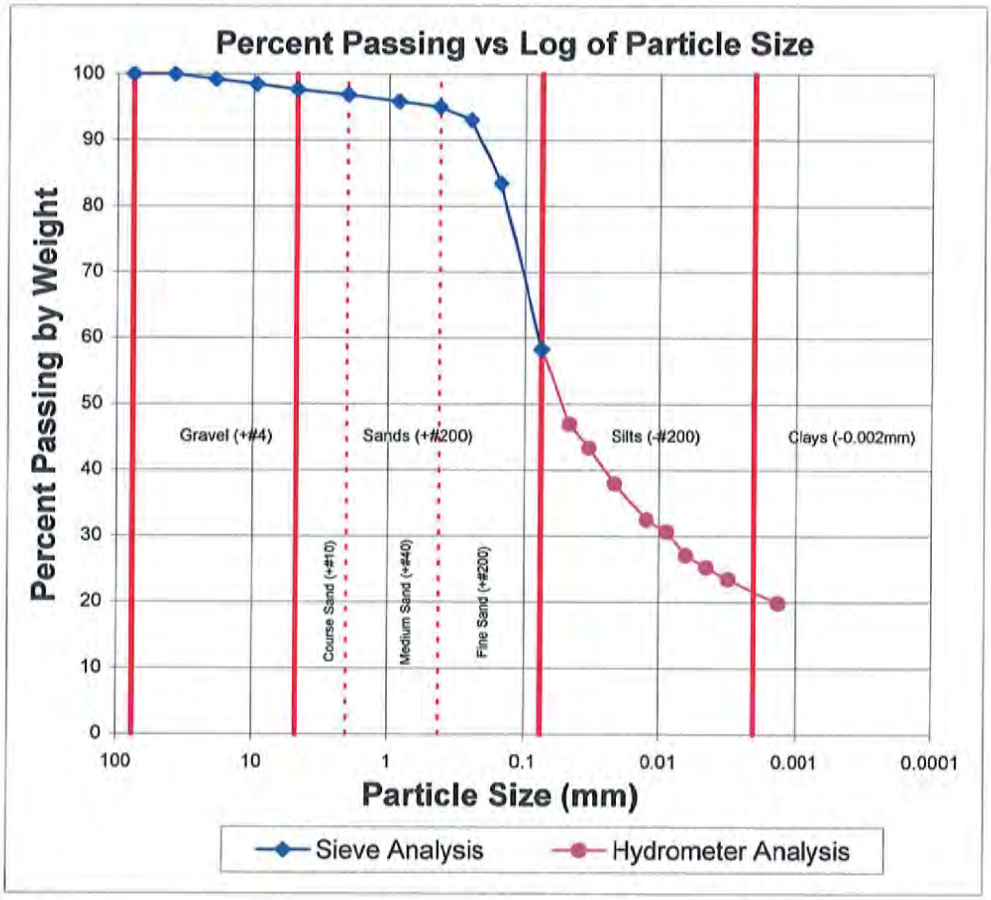
Plus Split Data

Original Weight of +#10 (g): 260.25
Calculated Weight of +#10 (g): 213.97

Minus Split Data

Original Weight of -#10 (g): 6,780.00
Calculated Dry Weight of -#10 (g): 6,623.37

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	76.2	0.00	0.00	0.00	0.00	100.0
1.5"	38.10	0.00	0.00	0.00	0.00	100.0
3/4"	19.05	53.49	0.00	53.49	53.49	99.2
3/8"	9.525	48.97	0.00	48.97	48.97	98.5
#4	4.750	56.68	0.00	56.68	56.68	97.7
#10	2.000	54.82	0.00	54.82	54.82	96.9
55.378g split out of -#10 material.						
#20	0.850	3.63	3.08	0.55	67.80	95.9
#40	0.425	4.28	3.81	0.47	57.94	95.0
#60	0.250	4.85	3.73	1.12	138.06	93.0
#100	0.150	9.08	3.78	5.30	653.31	83.5
#200	0.075	17.56	3.57	13.99	1724.50	58.2



Data Entered By: DPM
Date: 12/18/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_14.xls

Checked By: GJ
Date: 12/18/2013

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number: -

Boring Number: CS-10
Depth: 7-25"
Sample Number: TI-CS10-04A(7-25")
Sampled Date: 11/13/2013
Test Date: 12/16/2013

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 7,040.25
Total Dry Weight of Sample (g): 6,837.34
Wet Weight of Sub-Sample (g): 55.378
Dry Weight of Sub-Sample (g): 53.732
Corrected Dry Weight of Sub-Sample - W(g): 55.451

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	31.0	26.0	19.8	0.0138	11.21	0.0463	47.0	3210.29	47.0
2	29.0	24.0	19.8	0.0138	11.54	0.0332	43.3	2963.34	43.3
5	26.0	21.0	19.8	0.0138	12.03	0.0214	37.9	2592.92	37.9
15	23.0	18.0	20.0	0.0137	12.52	0.0125	32.5	2222.51	32.5
30	22.0	17.0	20.1	0.0137	12.69	0.0089	30.7	2099.03	30.7
60	20.0	15.0	20.4	0.0137	13.01	0.0064	27.1	1852.09	27.1
120	19.0	14.0	20.5	0.0137	13.18	0.0045	25.3	1728.62	25.3
250	18.0	13.0	21.1	0.0135	13.34	0.0031	23.5	1605.14	23.5
1440	16.0	11.0	19.8	0.0138	13.67	0.0013	19.9	1358.20	19.9

Data Entered By: DPM
Date: 12/18/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_14.xls

Checked By: CJ
Date: 12/18/2013

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number: -

Boring Number: CS-5
Depth: 0-9"
Sample Number: TI-CS05-02A(0-9")
Sampled Date: -
Test Date: 12/16/2013

Sampled By: -
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 60.73
Weight of Dry Soil & Pan (g): 57.81
Weight of Water (g): 2.92
Weight of Pan (g): 3.71
Weight of Dry Soil (g): 54.11
Moisture (%): 5.4

General Sample Data

Total Wet Weight of Sample (g): 9,638.02
Total Dry Weight of Sample (g): 9,215.19
Calculated Weight Plus #200 (g): 4,451.48
Moisture of Total Sample (%): 4.6
Percent Retained #200 Sieve (%): 48.3

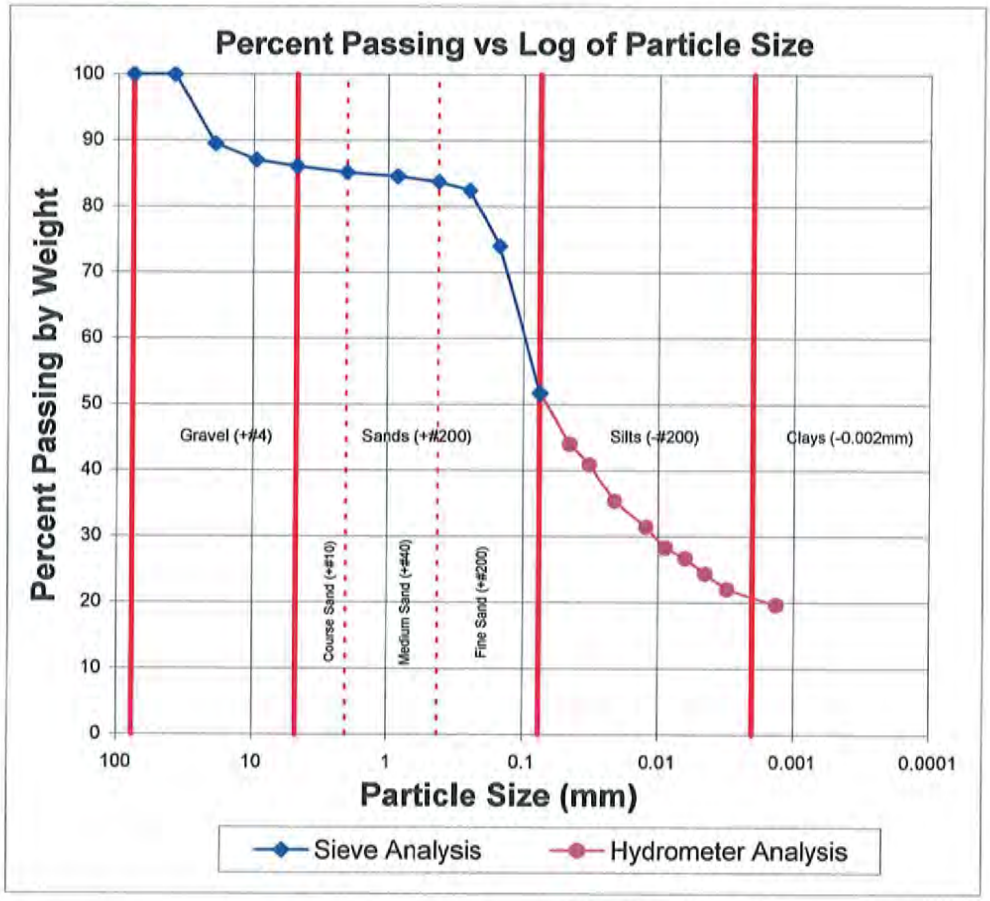
Plus Split Data

Original Weight of +#10 (g): 1,468.02
Calculated Weight of +#10 (g): 1,366.82

Minus Split Data

Original Weight of -#10 (g): 8,170.00
Calculated Dry Weight of -#10 (g): 7,848.37

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	967.87	0.00	967.87	967.87	89.5
3/8"	**9.525**	225.54	0.00	225.54	225.54	87.0
#4	**4.750**	90.53	0.00	90.53	90.53	86.1
#10	**2.000**	82.88	0.00	82.88	82.88	85.2
57.221g split out of -#10 material.						
#20	**0.850**	4.26	3.88	0.38	54.93	84.6
#40	**0.425**	4.24	3.70	0.54	78.06	83.7
#60	**0.250**	4.47	3.63	0.84	121.42	82.4
#100	**0.150**	9.12	3.76	5.36	774.78	74.0
#200	**0.075**	17.93	3.71	14.22	2055.48	51.7



Data Entered By: DPM
Date: 12/18/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_17.xls

Checked By: CJ
Date: 12/18/2013

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number: -

Boring Number: CS-5
Depth: 0-9"
Sample Number: TI-CS05-02A(0-9")
Sampled Date: -
Test Date: 12/16/2013

Sampled By: -
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 9,638.02
Total Dry Weight of Sample (g): 9,215.19
Wet Weight of Sub-Sample (g): 57.221
Dry Weight of Sub-Sample (g): 54.296
Corrected Dry Weight of Sub-Sample - W(g): 63.727

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	33.0	28.0	20.5	0.0137	10.88	0.0450	44.0	4054.41	44.0
2	31.0	26.0	20.5	0.0137	11.21	0.0323	40.9	3764.81	40.9
5	27.5	22.5	20.5	0.0137	11.78	0.0210	35.4	3258.01	35.4
15	25.0	20.0	20.5	0.0137	12.19	0.0123	31.4	2896.01	31.4
30	23.0	18.0	20.6	0.0137	12.52	0.0088	28.3	2606.40	28.3
60	22.0	17.0	20.9	0.0137	12.69	0.0063	26.7	2461.60	26.7
120	20.5	15.5	20.7	0.0137	12.93	0.0045	24.4	2244.40	24.4
250	19.0	14.0	21.2	0.0135	13.18	0.0031	22.0	2027.20	22.0
1440	17.5	12.5	19.9	0.0138	13.42	0.0013	19.6	1810.00	19.6

Data Entered By: DPM
Date: 12/18/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_17.xls

Checked By: CJ
Date: 12/18/2013

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-3
Depth: 6-24"
Sample Number: TI-CS03-04A(6-24")
Sampled Date: 11/12/2013
Test Date: 12/11/2013

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 160.12
Weight of Dry Soil & Pan (g): 155.95
Weight of Water (g): 4.17
Weight of Pan (g): 3.68
Weight of Dry Soil (g): 152.28
Moisture (%): 2.7

General Sample Data

Total Wet Weight of Sample (g): 9,980.00
Total Dry Weight of Sample (g): 9,731.58
Calculated Weight Plus #200 (g): 4,378.08
Moisture of Total Sample (%): 2.6
Percent Retained #200 Sieve (%): 45.0

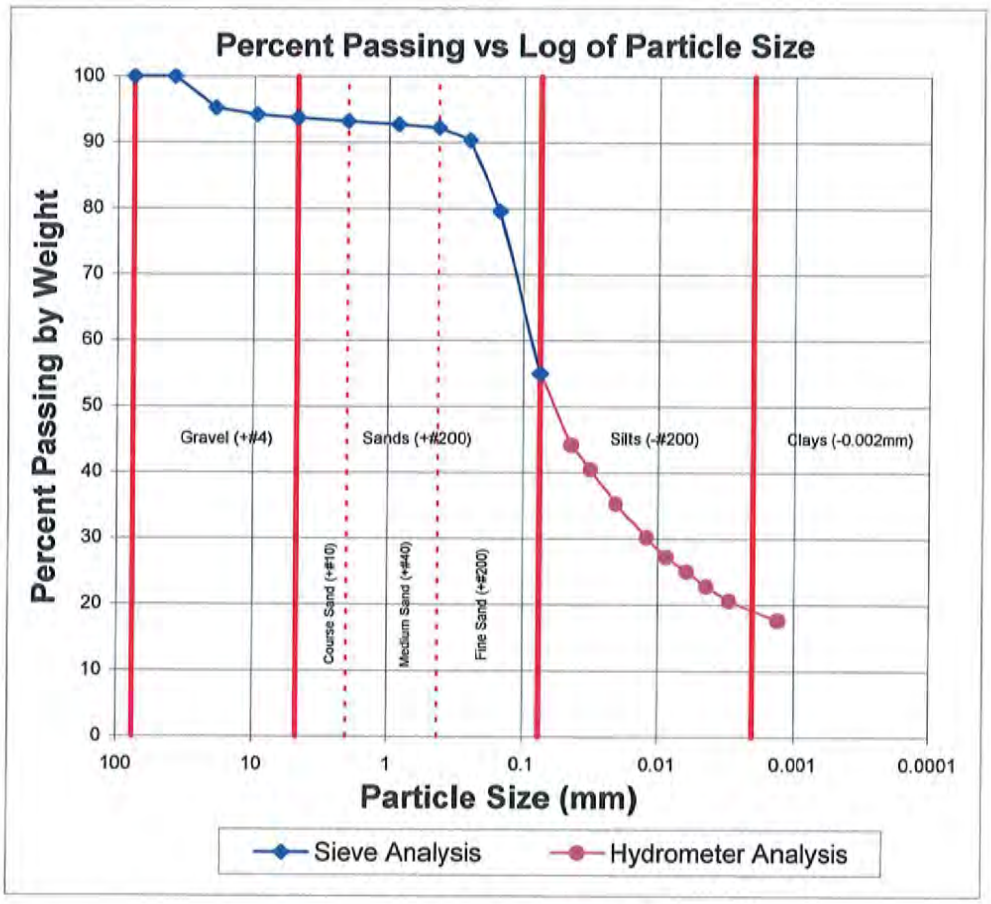
Plus Split Data

Original Weight of +#10 (g): 715.00
Calculated Weight of +#10 (g): 659.87

Minus Split Data

Original Weight of -#10 (g): 9,265.00
Calculated Dry Weight of -#10 (g): 9,071.71

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	465.17	0.00	465.17	465.17	95.2
3/8"	**9.525**	100.35	0.00	100.35	100.35	94.2
#4	**4.750**	48.26	0.00	48.26	48.26	93.7
#10	**2.000**	46.09	0.00	46.09	46.09	93.2
65.132g split out of -#10 material.						
#20	**0.850**	4.18	3.86	0.32	45.22	92.8
#40	**0.425**	4.05	3.70	0.35	50.51	92.2
#60	**0.250**	4.89	3.60	1.29	184.45	90.3
#100	**0.150**	11.01	3.69	7.32	1046.89	79.6
#200	**0.075**	20.27	3.56	16.71	2391.13	55.0



Data Entered By: DPM
Date: 12/16/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_11.xls

Checked By: CJ
Date: 12/16/2013

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-3
Depth: 6-24"
Sample Number: TI-CS03-04A(6-24")
Sampled Date: 11/12/2013
Test Date: 12/11/2013

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 6.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 9,980.00
Total Dry Weight of Sample (g): 9,731.58
Wet Weight of Sub-Sample (g): 65.132
Dry Weight of Sub-Sample (g): 63.396
Corrected Dry Weight of Sub-Sample - W(g): 68.021

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	36.0	30.0	20.6	0.0137	10.39	0.0440	44.2	4297.84	44.2
2	33.5	27.5	20.6	0.0137	10.80	0.0317	40.5	3939.69	40.5
5	30.0	24.0	20.6	0.0137	11.37	0.0206	35.3	3438.28	35.3
15	26.5	20.5	20.7	0.0137	11.95	0.0122	30.2	2936.86	30.2
30	24.5	18.5	20.9	0.0137	12.28	0.0087	27.2	2650.34	27.2
60	23.0	17.0	21.2	0.0135	12.52	0.0062	25.0	2435.45	25.0
120	21.5	15.5	21.9	0.0135	12.77	0.0044	22.8	2220.55	22.8
250	20.0	14.0	23.2	0.0132	13.01	0.0030	20.6	2005.66	20.6
1440	18.0	12.0	20.1	0.0137	13.34	0.0013	17.7	1719.14	17.7

Data Entered By: DPM
Date: 12/16/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_11.xls

Checked By: CJ
Date: 12/16/2013

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-4
Depth: 0-10"
Sample Number: TI-CS04-02A(0-10")
Sampled Date: 11/12/2013
Test Date: 12/11/2013

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 128.86
Weight of Dry Soil & Pan (g): 123.46
Weight of Water (g): 5.40
Weight of Pan (g): 3.77
Weight of Dry Soil (g): 119.70
Moisture (%): 4.5

General Sample Data

Total Wet Weight of Sample (g): 10,960.00
Total Dry Weight of Sample (g): 10,739.81
Calculated Weight Plus #200 (g): 7,713.64
Moisture of Total Sample (%): 2.1
Percent Retained #200 Sieve (%): 71.8

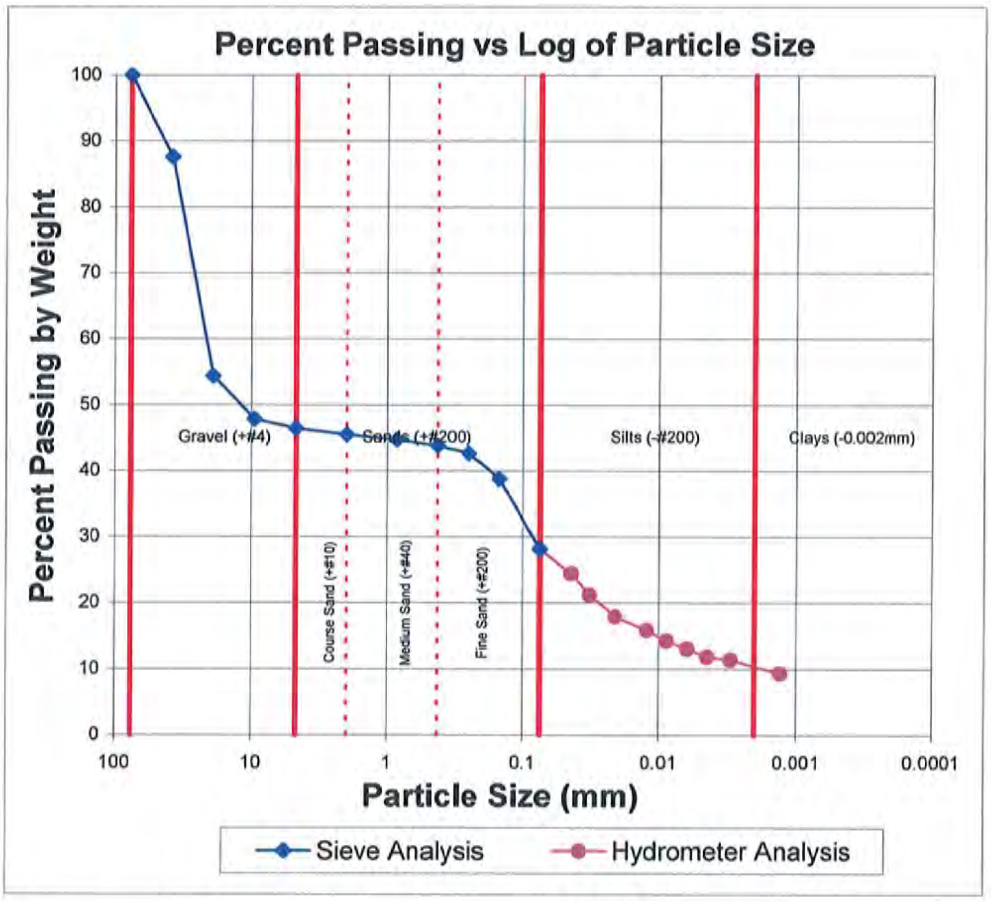
Plus Split Data

Original Weight of +#10 (g): 6,020.00
Calculated Weight of +#10 (g): 5,855.33

Minus Split Data

Original Weight of -#10 (g): 4,940.00
Calculated Dry Weight of -#10 (g): 4,884.48

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	1335.00	0.00	1335.00	1335.00	87.6
3/4"	**19.05**	3565.00	0.00	3565.00	3565.00	54.4
3/8"	**9.525**	701.85	0.00	701.85	701.85	47.8
#4	**4.750**	153.07	0.00	153.07	153.07	46.4
#10	**2.000**	100.41	0.00	100.41	100.41	45.5
58.444g split out of -#10 material.						
#20	**0.850**	4.74	3.78	0.97	84.29	44.7
#40	**0.425**	4.89	3.77	1.12	98.09	43.8
#60	**0.250**	5.13	3.72	1.41	122.89	42.6
#100	**0.150**	8.52	3.77	4.75	414.44	38.8
#200	**0.075**	16.73	3.69	13.04	1138.60	28.2



Data Entered By: DPM
Date: 12/16/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_13.xls

Checked By: CJ
Date: 12/16/2013

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-4
Depth: 0-10"
Sample Number: TI-CS04-02A(0-10")
Sampled Date: 11/12/2013
Test Date: 12/11/2013

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 6.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 10,960.00
Total Dry Weight of Sample (g): 10,739.81
Wet Weight of Sub-Sample (g): 58.444
Dry Weight of Sub-Sample (g): 55.923
Corrected Dry Weight of Sub-Sample - W(g): 122.908

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	36.0	30.0	20.4	0.0137	10.39	0.0440	24.4	2625.01	24.4
2	32.0	26.0	20.4	0.0137	11.05	0.0321	21.2	2275.01	21.2
5	28.0	22.0	20.4	0.0137	11.70	0.0209	17.9	1925.01	17.9
15	25.5	19.5	20.5	0.0137	12.11	0.0123	15.9	1706.25	15.9
30	23.5	17.5	20.7	0.0137	12.44	0.0088	14.3	1531.25	14.3
60	22.0	16.0	21.0	0.0135	12.69	0.0062	13.0	1400.00	13.0
120	20.5	14.5	21.7	0.0135	12.93	0.0044	11.8	1268.75	11.8
250	20.0	14.0	23.0	0.0132	13.01	0.0030	11.4	1225.00	11.4
1440	17.5	11.5	20.1	0.0137	13.42	0.0013	9.4	1006.25	9.4

Data Entered By: DPM
Date: 12/16/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_13.xls

Checked By: CJ
Date: 12/16/2013

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-1
Depth: 0-11"
Sample Number: TI-CS01-02A(0-11")
Sampled Date: 11/12/2013
Test Date: 12/11/2013

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 102.21
Weight of Dry Soil & Pan (g): 95.38
Weight of Water (g): 6.83
Weight of Pan (g): 3.71
Weight of Dry Soil (g): 91.68
Moisture (%): 7.5

General Sample Data

Total Wet Weight of Sample (g): 10,625.00
Total Dry Weight of Sample (g): 10,124.70
Calculated Weight Plus #200 (g): 5,737.76
Moisture of Total Sample (%): 4.9
Percent Retained #200 Sieve (%): 56.7

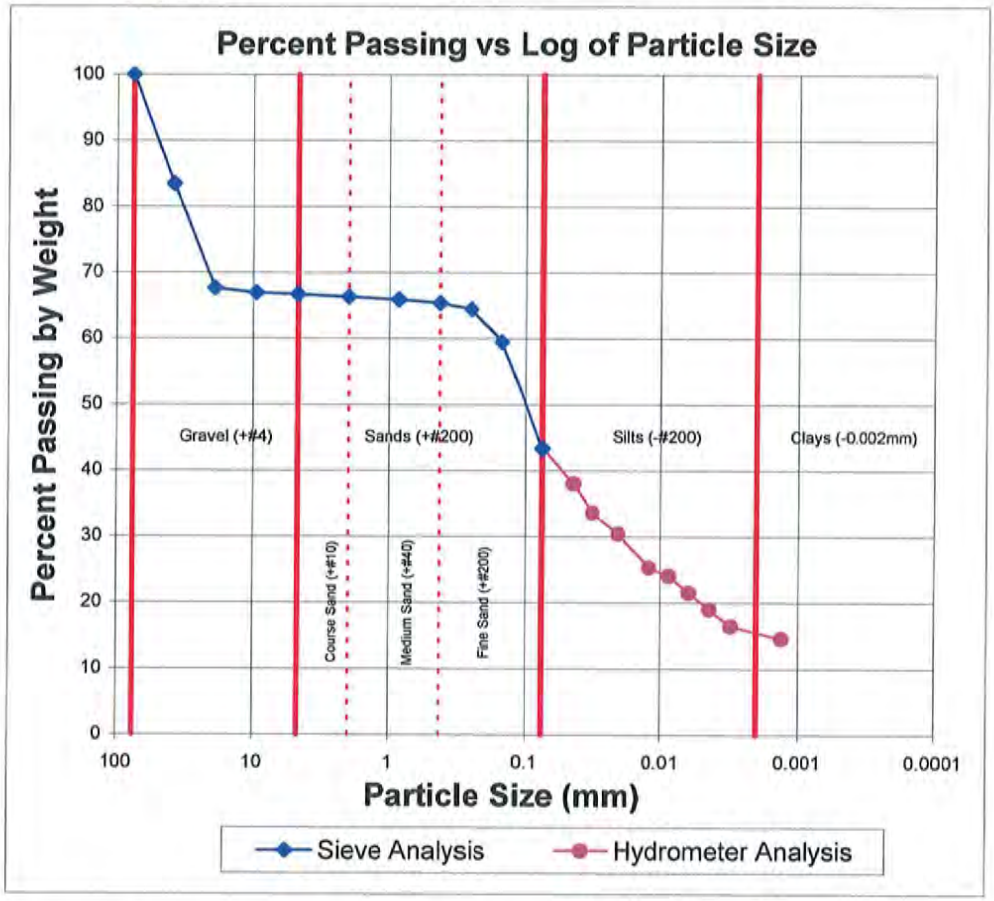
Plus Split Data

Original Weight of +#10 (g): 3,485.00
Calculated Weight of +#10 (g): 3,410.42

Minus Split Data

Original Weight of -#10 (g): 7,140.00
Calculated Dry Weight of -#10 (g): 6,714.28

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	1675.00	0.00	1675.00	1675.00	83.5
3/4"	**19.05**	1605.00	0.00	1605.00	1605.00	67.6
3/8"	**9.525**	69.87	0.00	69.87	69.87	66.9
#4	**4.750**	22.03	0.00	22.03	22.03	66.7
#10	**2.000**	38.52	0.00	38.52	38.52	66.3
56.276g split out of -#10 material.						
#20	**0.850**	4.16	3.83	0.32	41.41	65.9
#40	**0.425**	4.26	3.84	0.42	53.72	65.4
#60	**0.250**	4.48	3.74	0.74	95.00	64.4
#100	**0.150**	7.59	3.68	3.91	501.77	59.5
#200	**0.075**	16.29	3.54	12.76	1635.45	43.3



Data Entered By: DPM
Date: 12/16/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_12.xls

Checked By: CJ
Date: 12/16/2013

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: CS-1
Depth: 0-11"
Sample Number: TI-CS01-02A(0-11")
Sampled Date: 11/12/2013
Test Date: 12/11/2013

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.65
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 6.0
Specific Gravity Correction Factor - α: 1.00

Total Wet Weight of Sample (g): 10,625.00
Total Dry Weight of Sample (g): 10,124.70
Wet Weight of Sub-Sample (g): 56.276
Dry Weight of Sub-Sample (g): 52.374
Corrected Dry Weight of Sub-Sample - W(g): 78.995

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	36.0	30.0	20.1	0.0137	10.39	0.0440	38.0	3850.32	38.0
2	32.5	26.5	20.1	0.0137	10.96	0.0320	33.6	3401.12	33.6
5	30.0	24.0	20.1	0.0137	11.37	0.0206	30.4	3080.26	30.4
15	26.0	20.0	20.2	0.0137	12.03	0.0122	25.4	2566.88	25.4
30	25.0	19.0	20.3	0.0137	12.19	0.0087	24.1	2438.54	24.1
60	23.0	17.0	20.5	0.0137	12.52	0.0062	21.5	2181.85	21.5
120	21.0	15.0	21.3	0.0135	12.85	0.0044	19.0	1925.16	19.0
250	19.0	13.0	22.8	0.0133	13.18	0.0031	16.5	1668.47	16.5
1440	17.5	11.5	20.4	0.0137	13.42	0.0013	14.6	1475.96	14.6

Data Entered By: DPM
Date: 12/16/2013
File Name: 2512_77_hydrometer-ASTM-D422-R0.xls_12.xls

Checked By: CJ
Date: 12/16/2013

ATT
ADVANCED TERRA TESTING

Specific Gravity
ASTM D 854 - Method B

CLIENT:	MWH	JOB NO.	2512-77
PROJECT	Church Rock	LOCATION	Tailings Impoundment
PROJECT NO.	-		

BORING NO.	CS-1	CS-4
DEPTH	11-24"	10-24"
SAMPLE NO.	TI-CS01-04A (11-24")	TI-CS04-041 (10-24")
DATE SAMPLED	11/12/13 MWH	11/12/13 MWH
DATE TESTED	12/20/13 MLM	12/20/13 MLM
Pycnometer #	Big 10	Big 12
Weight of oven dry soil (g) (Wo)	70.52	50.89
Weight of flask, soil, and water. (g) (Wb)	716.14	704.46
Temperature (deg. C) (Tx)	24.3	24.2
Weight of water & flask at Tx (from cal. curve)(Wa)	671.95	672.56
Specific Gravity*	2.68	2.68

*Specific Gravity = Wo/[Wo+(Wa-Wb)]

Data entry by: DAW Date: 12/27/2013
Checked by: CAR Date: 12/27/13
File name: 2512_77_SpecificGravity-ASTM-854-R1_0.xls

ATT
ADVANCED TERRA TESTING

SPECIFIC GRAVITY TESTS ASTM D 854

CLIENT: MWH JOB NO. 2512-77

PROJECT: Church Rock

BORING NO.	CS-8	CS-11
DEPTH	8-28"	9-24"
SAMPLE NO.	TI-CS08-04A(8-28")	TI-CS11-04A(9-24")
DATE SAMPLED	11/13/13 MWH	11/13/13 MWH
DATE TESTED	12/03/13 CAL	12/6/13 KMR
LOCATION	Tailings Impoundment	Tailings Impoundment
Pycnometer #	FF	AA
Weight of oven dry soil (g) (Wo)	30.797	30.853
Weight of flask, soil, and water. (g) (Wb)	184.109	184.409
Temperature (deg. C) (Tx)	20.8	19.0
Weight of water & flask at Tx (from cal. curve)(Wa)	164.828	165.088
Specific Gravity*	2.67	2.68

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*Specific Gravity = Wo/[Wo+(Wa-Wb)]

Data entry by: CAL Date: 12/09/2013

Data checked by: JRM Date: 12/10/13

FileName: MWSGAS31

ADVANCED TERRA TESTING, INC. ATT

COMPACTION TEST
ASTM D 698 A

CLIENT:	MWH		JOB NO. 2512-77
BORING NO.	CS-11	DATE SAMPLED	11/13/13
DEPTH	9-24"	DATE TESTED	12/5/13
SAMPLE NO.	TI-CS11-04A(9-24")	LOCATION	Tailings Impoundment
SOIL DESCR.	Church Rock		

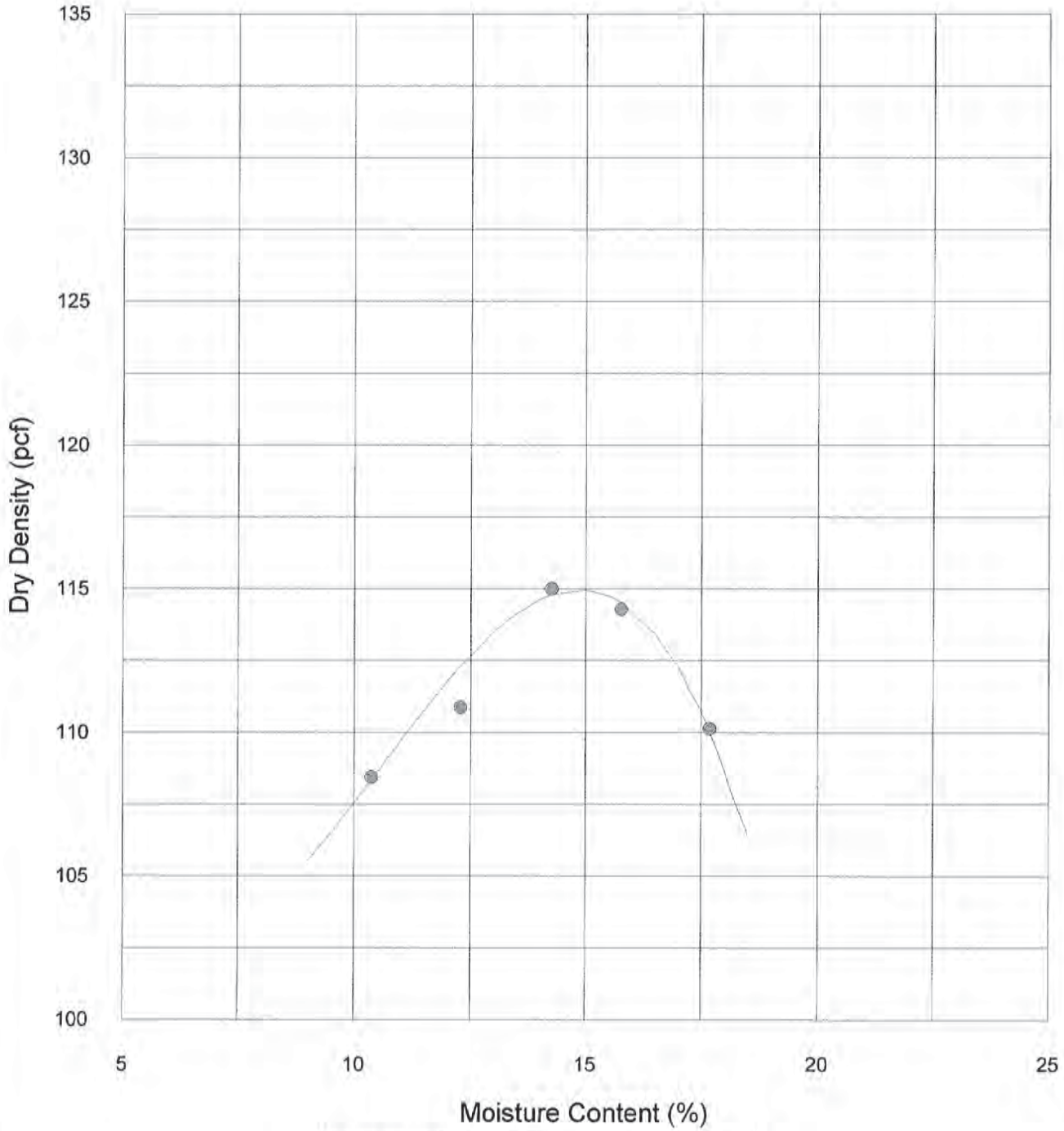
Moisture Determination	1	2	3	4	5
Wt of Moisture added (ml)	240.00	200.00	160.00	120.00	80.00
Wt. of soil & dish (g)	536.48	509.58	585.73	577.59	616.55
Dry wt. soil & dish (g)	456.88	441.11	513.44	515.08	559.20
Net loss of moisture (g)	79.60	68.47	72.29	62.51	57.35
Wt. of dish (g)	6.63	6.57	6.51	6.51	6.56
Net wt. of dry soil (g)	450.25	434.54	506.93	508.57	552.64
Moisture Content (%)	17.68	15.76	14.26	12.29	10.38
Corrected Moisture Content					
Density determination					
Wt of soil & mold (lb)	9.68	9.77	9.74	9.51	9.35
Wt. of mold (lb)	5.36	5.36	5.36	5.36	5.36
Net wt. of wet soil (lb)	4.32	4.41	4.38	4.15	3.99
Net wt of dry soil (lb)	3.67	3.81	3.83	3.70	3.61
Dry Density, (pcf)	110.13	114.29	115.00	110.87	108.45
Corrected Dry Density (pcf)					
Volume Factor	30	30	30	30	30

Data entered by: KMR Date: 12/09/2013
Data checked by: DPM Date: 12/09/13
FileName: MW68913

ADVANCED TERRA TESTING, INC.
ATT

Proctor Compaction Test

CS-11, 9-24", TI-CS11-04A(9-24")



OPTIMUM MOISTURE CONTENT = 14.9 MAXIMUM DRY DENSITY = 115.0
ASTM D 698 A, Rock correction applied? N

COMPACTION TEST
ASTM D 698 A

CLIENT:	MWH		JOB NO. 2512-77
BORING NO.	CS-8	DATE SAMPLED	11/13/13 MWH
DEPTH	8-28"	DATE TESTED	11/26/13 CAL
SAMPLE NO.	TI-CS08-04A(8-28")	LOCATION	Tailings Impoundment
PROJECT	Church Rock		

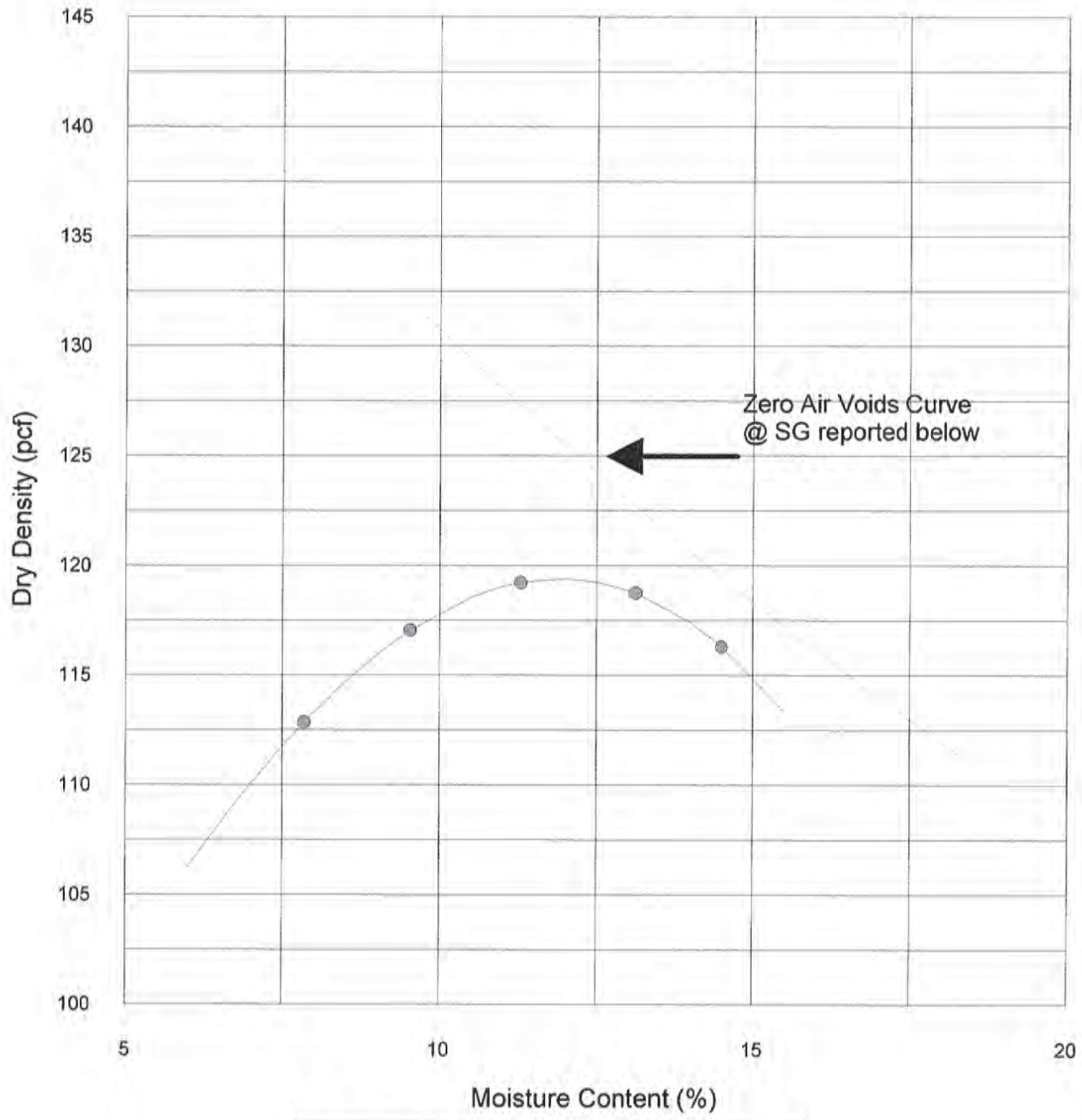
Moisture Determination	1	2	3	4	5
Wt of Moisture added (ml)	200.00	160.00	120.00	80.00	40.00
Wt. of soil & dish (g)	529.30	542.40	549.41	351.60	529.41
Dry wt. soil & dish (g)	456.21	474.04	488.43	318.31	487.18
Net loss of moisture (g)	73.09	68.36	60.98	33.29	42.23
Wt. of dish (g)	6.55	9.25	6.56	6.56	6.62
Net wt. of dry soil (g)	449.66	464.79	481.87	311.75	480.56
Moisture Content (%)	16.25	14.71	12.65	10.68	8.79
Corrected Moisture Content	14.50	13.12	11.29	9.53	7.85
Density determination					
Wt of soil & mold (lb)	9.72	9.76	9.70	9.54	9.31
Wt. of mold (lb)	5.37	5.37	5.37	5.37	5.37
Net wt. of wet soil (lb)	4.35	4.39	4.33	4.17	3.94
Net wt of dry soil (lb)	3.74	3.83	3.84	3.77	3.62
Dry Density, (pcf)	112.25	114.81	115.31	113.03	108.65
Corrected Dry Density (pcf)	116.31	118.75	119.22	117.05	112.85
Volume Factor	30	30	30	30	30

Data entered by: CAL Date: 12/02/2013
Data checked by: KR Date: 12/3/13
FileName: MWD69812

ADVANCED TERRA TESTING, INC. ATT

Proctor Compaction Test

CS-8, 8-28", TI-CS08-04A(8-28")



OPTIMUM MOISTURE CONTENT = 11.9 MAXIMUM DRY DENSITY = 119.4
ASTM D 698 A, Rock correction applied? Y

COMPACTION TEST
ASTM D 698 A

CLIENT:	MWH		JOB NO. 2512-77
BORING NO.	CS-1	DATE SAMPLED	11/12/2013 MWH
DEPTH	11-24"	DATE TESTED	12/18/2013 TMR
SAMPLE NO.	TI-CS01-04A(11-24")	LOCATION	Tailings Impoundment
PROJECT	Church Rock		

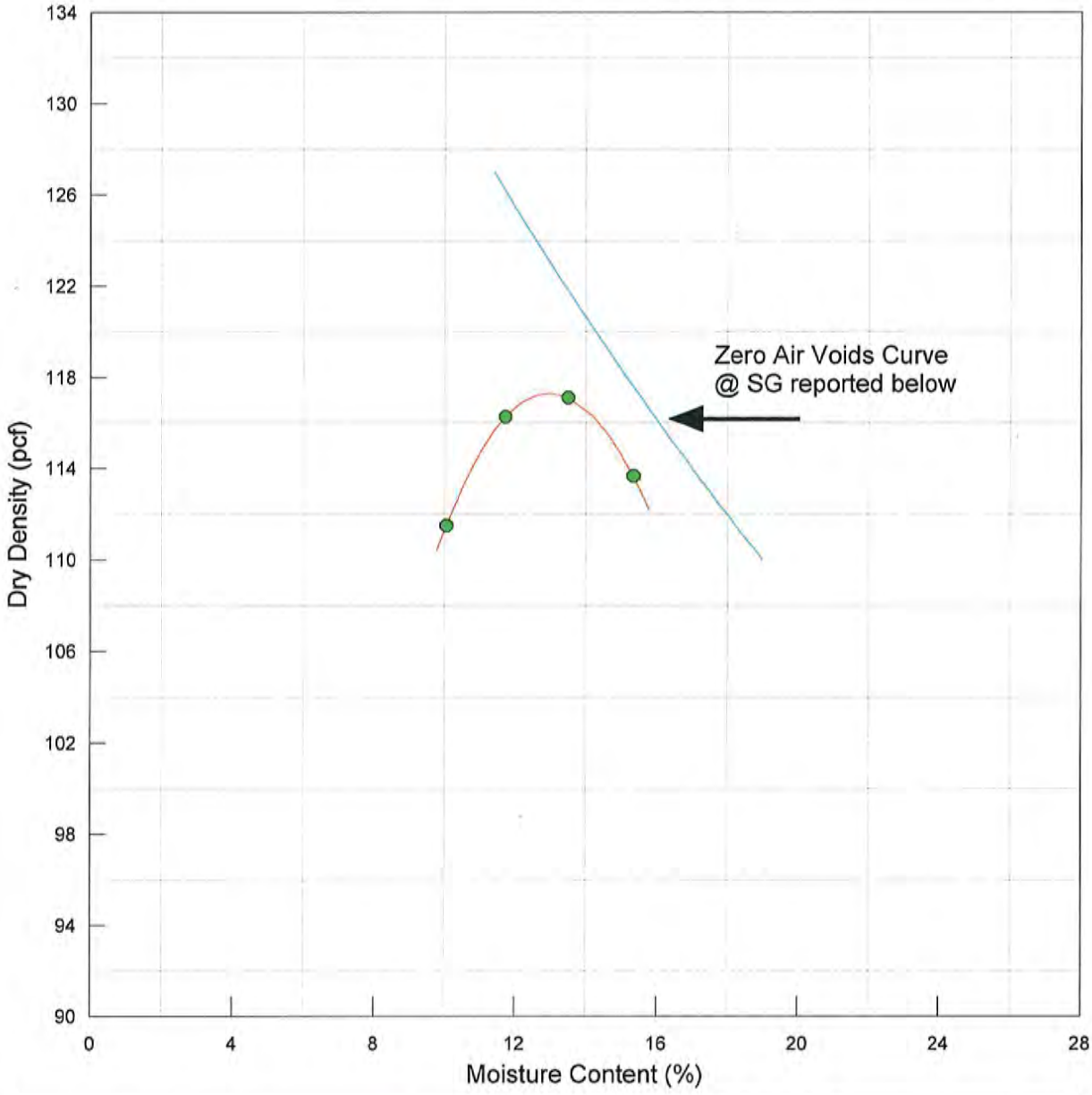
Moisture Determination	1	2	3	4
Wt of Moisture added (ml)	280.00	240.00	200.00	160.00
Wt. of soil & dish (g)	559.52	662.30	586.92	539.94
Dry wt. soil & dish (g)	485.98	584.29	526.00	491.20
Net loss of moisture (g)	73.54	78.01	60.92	48.74
Wt. of dish (g)	6.66	6.57	6.75	6.50
Net wt. of dry soil (g)	479.32	577.72	519.25	484.70
Moisture Content (%)	15.34	13.50	11.73	10.06
Corrected Moisture Content				
Density determination				
Wt of soil & mold (lb)	14.16	14.22	14.12	13.88
Wt. of mold (lb)	9.79	9.79	9.79	9.79
Net wt. of wet soil (lb)	4.37	4.43	4.33	4.09
Net wt of dry soil (lb)	3.79	3.90	3.88	3.72
Dry Density, (pcf)	113.66	117.09	116.26	111.49
Corrected Dry Density (pcf)				
Volume Factor	30	30	30	30

Data entered by: TMR Date: 12/27/2013
Data checked by: Date: 12/29/13
FileName: PRCS0102

ADVANCED TERRA TESTING, INC. ATT

Proctor Compaction Test

CS-1, 11-24", TI-CS01-04A(11-24")



Best Fit Curve | Actual Data | Zero Air VoidsCurve @ SG = 2.65

OPTIMUM MOISTURE CONTENT = 13.0 MAXIMUM DRY DENSITY = 117.3
ASTM D 698 A, Rock correction applied? N

COMPACTION TEST
ASTM D 698 A

CLIENT:	MWH		JOB NO. 2512-77
BORING NO.	CS-4	DATE SAMPLED	11/12/2013 MWH
DEPTH	10-24"	DATE TESTED	12/18/2013 TMR
SAMPLE NO.	TI-CS04-04A(10-24")	LOCATION	Tailings Impoundment
PROJECT	Church Rock		

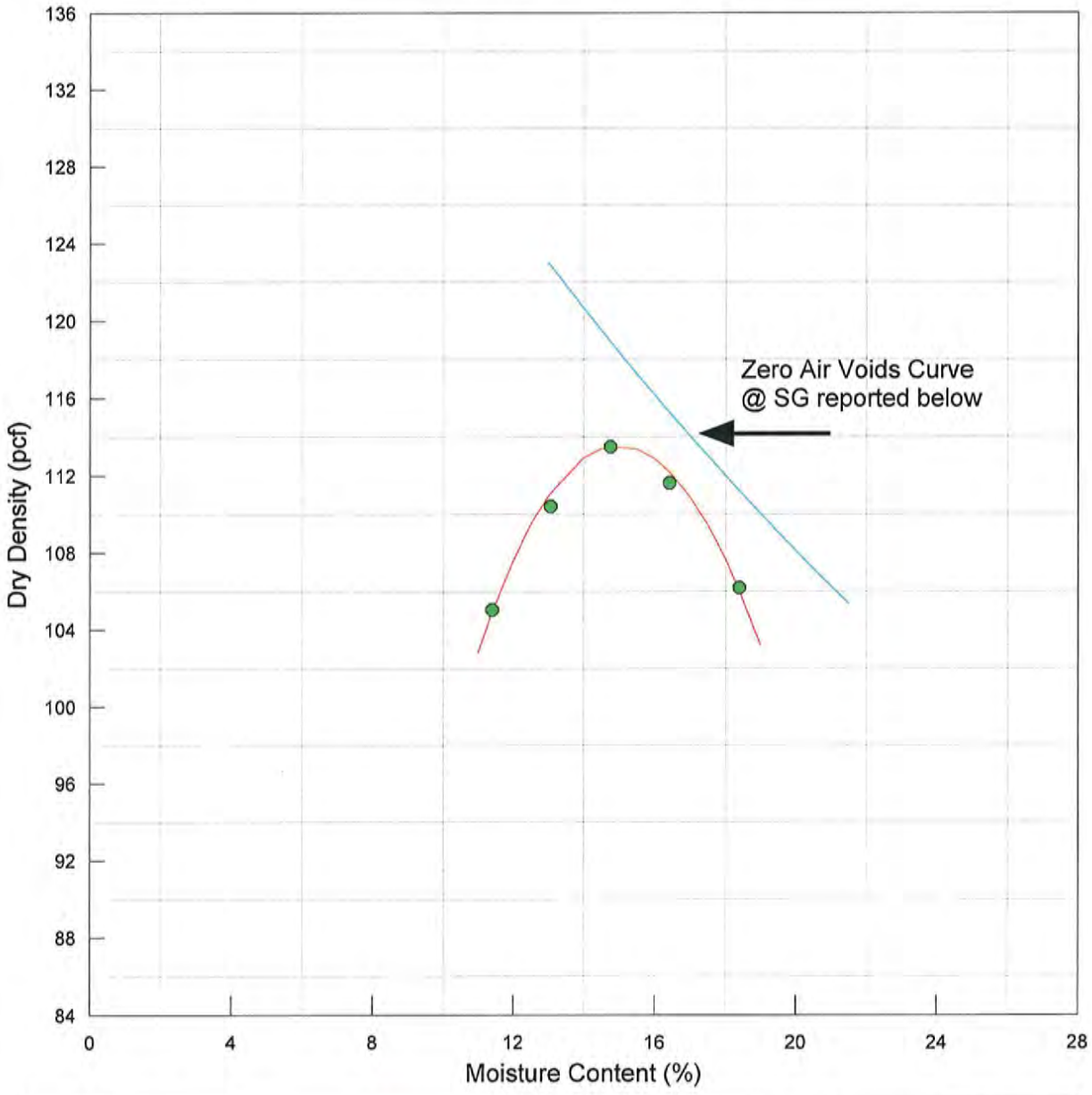
Moisture Determination	1	2	3	4	5
Wt of Moisture added (ml)	320.00	280.00	360.00	240.00	200.00
Wt. of soil & dish (g)	566.98	562.35	626.62	585.89	562.19
Dry wt. soil & dish (g)	487.95	491.15	530.55	518.98	505.52
Net loss of moisture (g)	79.03	71.20	96.07	66.91	56.67
Wt. of dish (g)	6.58	8.20	8.38	6.58	8.22
Net wt. of dry soil (g)	481.37	482.95	522.17	512.40	497.30
Moisture Content (%)	16.42	14.74	18.40	13.06	11.40
Corrected Moisture Content					
Density determination					
Wt of soil & mold (lb)	14.12	14.13	13.98	13.95	13.69
Wt. of mold (lb)	9.79	9.79	9.79	9.79	9.79
Net wt. of wet soil (lb)	4.33	4.34	4.19	4.16	3.90
Net wt of dry soil (lb)	3.72	3.78	3.54	3.68	3.50
Dry Density, (pcf)	111.58	113.47	106.17	110.39	105.03
Corrected Dry Density (pcf)					
Volume Factor	30	30	30	30	30

Data entered by: TMR Date: 12/27/2013
Data checked by: SM Date: 12/29/13
FileName: PRCS401

ADVANCED TERRA TESTING, INC. ATT

Proctor Compaction Test

CS-4, 10-24", TI-CS04-04A(10-24")



Best Fit Curve | Actual Data | Zero Air VoidsCurve @ SG = 2.65

OPTIMUM MOISTURE CONTENT = 15.0 MAXIMUM DRY DENSITY = 113.5
ASTM D 698 A, Rock correction applied? N

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD

ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	--
DEPTH	10-24"	TEST STARTED	01/29/14 CAL
SAMPLE NO.	TI-CS04-04A (10-24")	TEST FINISHED	02/13/14 CAL
LOCATION	Church Rock	CELL NUMBER	16S
PROJECT NO.	--	SATURATED TEST	Yes
SOIL DESCR.	Remolded -#4 @ 90%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	1152

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	420.7	445.7
Wt. Wet Soil & Pan (g)	427.3	452.3
Wt. Dry Soil & Pan (g)	373.9	373.9
Wt. Lost Moisture (g)	53.4	78.4
Wt. of Pan Only (g)	6.7	6.7
Wt. of Dry Soil (g)	367.3	367.3
Moisture Content %	14.5	21.3
Wet Density PCF	117.8	133.6
Dry Density PCF	102.8	110.1

Init. Diameter (in)	2.404	(cm)	6.106
Init. Area (sq in)	4.539	(sq cm)	29.286
Init. Height (in)	2.998	(cm)	7.615
Vol. Bef. Consol. (cu ft)	0.00787		
Vol. After Consol. (cu ft)	0.00735		
Porosity %	37.66		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	8
Percentage of Pump setting	100
Q (cc/s)	5.70E-04
Height	2.963
Diameter	2.336
Pressure (psi)	0.480
Area after consol. (cm*cm)	27.661
Gradient	4.484
Permeability k (cm/s)	4.6E-06
Permeability k (m/s)	4.6E-08
Back Pressure (psi)	88.0
Cell Pressure (psi)	96.0
Ave. Effective Stress (psi)	7.760
Average temperature degree C:	22.1

Data entry by: DAW Date: 02/18/2014
Checked by: CAL Date: 2/18/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_6.xls

ATT
ADVANCED TERRA TESTING

TRIAXAL TEST DATA
ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	--
DEPTH	10-24"	TEST STARTED	01/29/14 CAL
SAMPLE NO.	TI-CS04-04A (10-24")	TEST FINISHED	02/13/14 CAL
LOCATION	Church Rock	SETUP NO.	16S
PROJECT NO.	--	SATURATED TEST	Yes
SOIL DESCR.	Remolded -#4 @ 90%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	1152

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	3.9	17.6				
50.0	48.0	17.8	19.6	38.3	46.6	8.3	0.83
60.0	58.0	19.6	20.7	48.4	57.0	8.6	0.86
70.0	68.0	21.2	22.1	58.5	67.5	9.0	0.90
80.0	78.0	22.2	22.8	68.3	77.7	9.4	0.94
90.0	88.0	23.0	23.7	78.4	87.7	9.3	0.93
100.0		23.7	23.8	88.5	98.1	9.6	0.96

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	0.00	0.00
0.25	0.50	2.50	-2.50
0.5	0.71	3.20	-3.20
1	1.00	3.80	-3.80
2	1.41	4.40	-4.40
4	2.00	5.00	-5.00
9	3.00	5.60	-5.60
16	4.00	5.90	-5.90
30	5.48	6.30	-6.30
60	7.75	6.70	-6.70
120	10.95	6.80	-6.80
240	15.49	7.00	-7.00
360	18.97	7.20	-7.20

Initial Height (in)	2.998	Init. Vol. (CC)	223.033
Height Change (in)	0.035	Vol. Change (CC)	28.400
Ht. After Cons. (in)	2.963	Cell Exp. (CC)	13.585
Initial Area (sq in)	4.539	Net Change (CC)	14.815
Area After Cons. (sq in)	4.288	Cons. Vol. (CC)	208.218

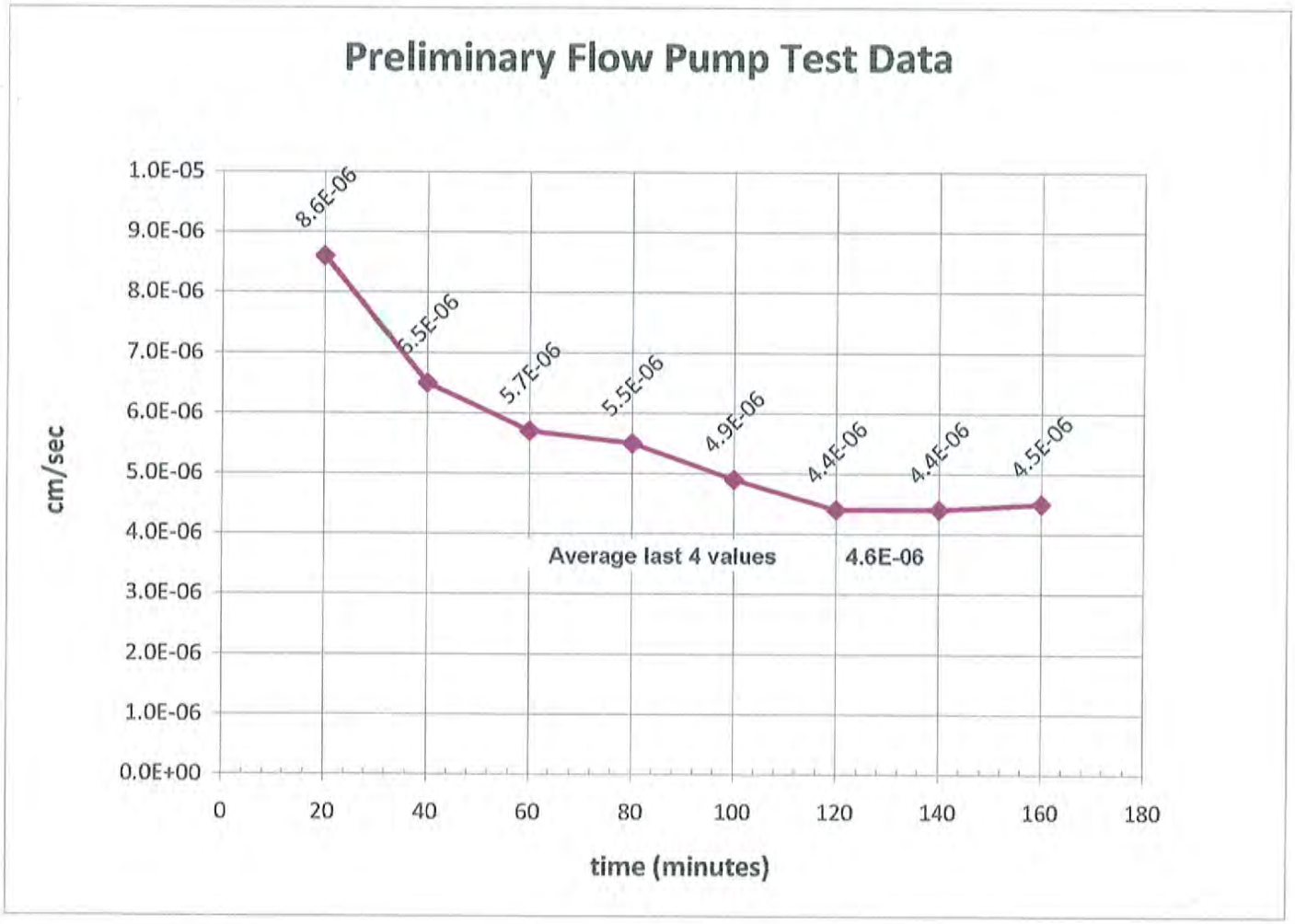
Data entry by: DAW Date: 02/18/2014
Checked by: CAL Date: 2/18/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_6.xls

ATT
ADVANCED TERRA TESTING

ADVANCED TERRA TESTING

Preliminary Flow Pump Test Data
ASTM D5084

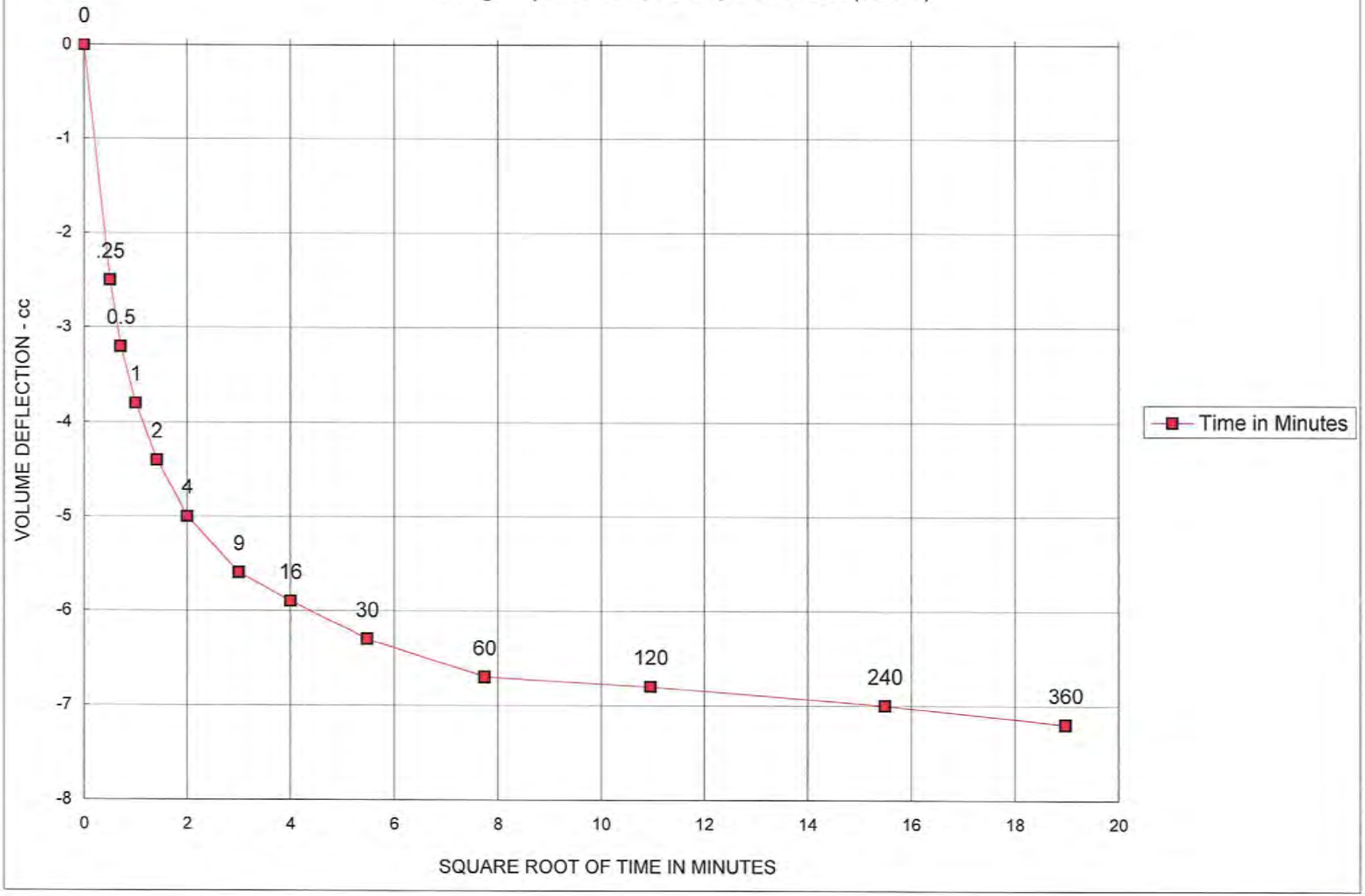
Client:	MWH	Boring Number:	Tailings Impoundment		
Job Number:	2512-77	Depth:	10-24"		
Project:	--	Sample Number:	TI-CS04-04A @ 90% D698		
Location:	Church Rock	Sampled Date:	-	Sampled By:	MWH
Project Number:	--	Test Date:	2/13/2014	Technician:	CAL

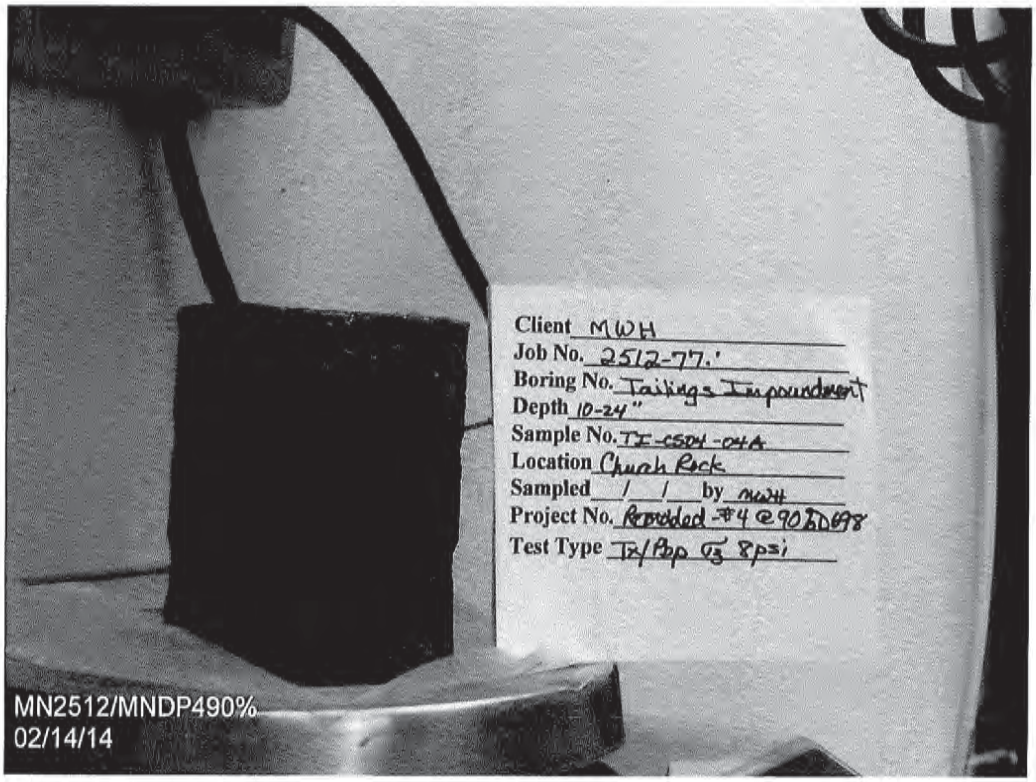


Data Entered By:	CAL		
Date:	2/13/2014	Checked By:	DTW
File Name:	2512_77_PrelimPerm_ASTMD-5084-methodD_8.xls	Date:	02/14/14

CONSOLIDATION DATA

Tailings Impoundment, 10-24", TI-CS04-04A (10-24")




Client MWH
Job No. 2512-77.'
Boring No. Tailings Impoundment
Depth 10-24"
Sample No. TI-CSD4-04A
Location Church Rock
Sampled / / by MWH
Project No. Recorded #4 @ 90% D698
Test Type Tx/Pop @ 8psi
MN2512/MNDP490%
02/14/14

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD

ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	-
DEPTH	10-24"	TEST STARTED	01/29/14 CAL
SAMPLE NO.	TI-CS04-04A (10-24")	TEST FINISHED	02/11/14 CAL
LOCATION	Church Rock	CELL NUMBER	7S
PROJECT NO.	-	SATURATED TEST	Yes
SOIL DESCR.	Remolded -#4 @ 95%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	1152

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	444.0	466.5
Wt. Wet Soil & Pan (g)	450.5	473.0
Wt. Dry Soil & Pan (g)	393.0	393.0
Wt. Lost Moisture (g)	57.6	80.0
Wt. of Pan Only (g)	6.5	6.5
Wt. of Dry Soil (g)	386.5	386.5
Moisture Content %	14.9	20.7
Wet Density PCF	124.2	133.7
Dry Density PCF	108.1	110.8

Init. Diameter (in)	2.404	(cm)	6.106
Init. Area (sq in)	4.539	(sq cm)	29.286
Init. Height (in)	3.000	(cm)	7.620
Vol. Bef. Consol. (cu ft)	0.00788		
Vol. After Consol. (cu ft)	0.00769		
Porosity %	36.72		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	8
Percentage of Pump setting	100
Q (cc/s)	5.70E-04
Height	2.987
Diameter	2.380
Pressure (psi)	0.345
Area after consol. (cm*cm)	28.711
Gradient	3.197
Permeability k (cm/s)	6.2E-06
Permeability k (m/s)	6.2E-08
Back Pressure (psi)	78.0
Cell Pressure (psi)	86.0
Ave. Effective Stress (psi)	7.828
Average temperature degree C:	23.3

Data entry by: SKL Date: 02/12/2014
Checked by: CAL Date: 2/13/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_3.xls

ATT
ADVANCED TERRA TESTING

TRIAXAL TEST DATA
ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	-
DEPTH	10-24"	TEST STARTED	01/29/14 CAL
SAMPLE NO.	TI-CS04-04A (10-24")	TEST FINISHED	02/11/14 CAL
LOCATION	Church Rock	SETUP NO.	7S
PROJECT NO.	-	SATURATED TEST	Yes
SOIL DESCR.	Remolded -#4 @ 95%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	1152

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	2.9	12.9				
50.0	48.0	11.6	13.2	38.0	46.3	8.3	0.83
60.0	58.0	12.9	14.0	48.1	56.9	8.8	0.88
70.0	68.0	14.3	15.2	58.5	67.7	9.2	0.92
80.0	78.0	15.3	16.1	68.4	77.8	9.4	0.94
90.0		16.4	16.5	78.3	87.9	9.6	0.96

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	0.10	0.00
0.25	0.50	1.80	-1.70
0.5	0.71	2.10	-2.00
1	1.00	2.50	-2.40
2	1.41	2.90	-2.80
4	2.00	3.30	-3.20
9	3.00	3.70	-3.60
16	4.00	3.90	-3.80
30	5.48	4.10	-4.00
60	7.75	4.30	-4.20
120	10.95	4.50	-4.40
240	15.49	4.65	-4.55
360	18.97	4.70	-4.60

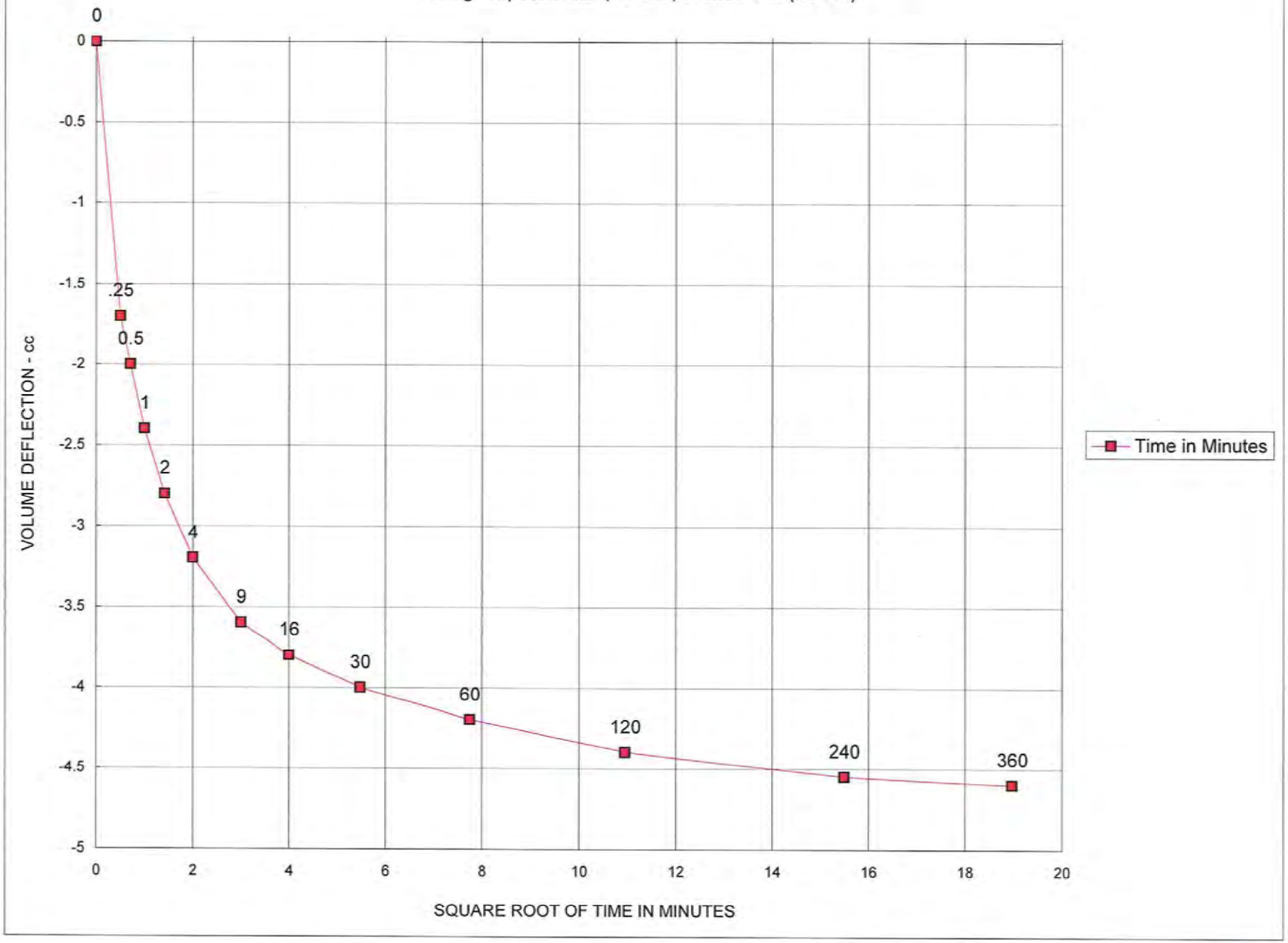
Initial Height (in)	3.000	Init. Vol. (CC)	223.182
Height Change (in)	0.013	Vol. Change (CC)	19.100
Ht. After Cons. (in)	2.987	Cell Exp. (CC)	13.786
Initial Area (sq in)	4.539	Net Change (CC)	5.314
Area After Cons. (sq in)	4.450	Cons. Vol. (CC)	217.868

Data entry by: SKL Date: 02/12/2014
Checked by: DAL Date: 2/13/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_3.xls

ATT
ADVANCED TERRA TESTING

CONSOLIDATION DATA

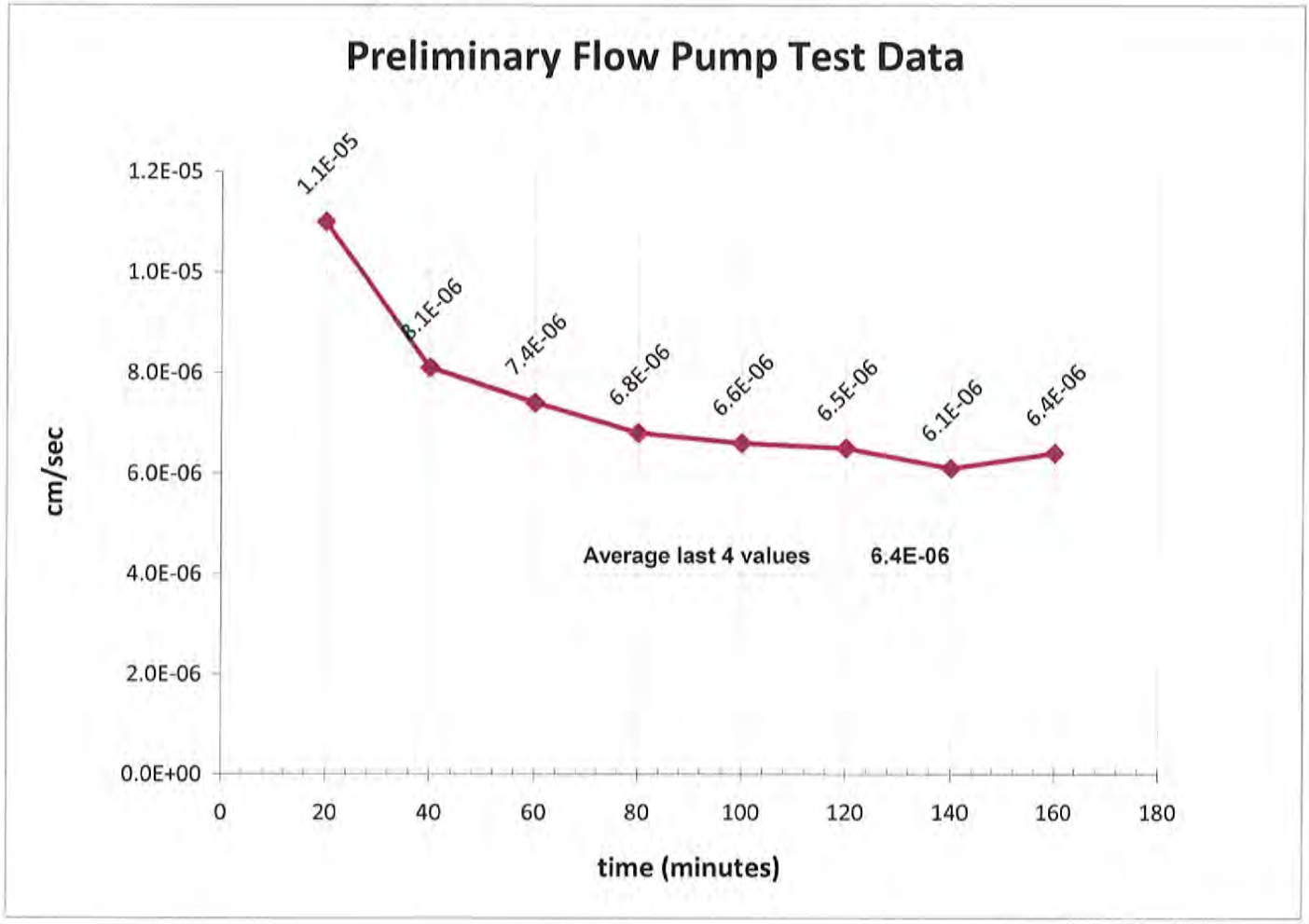
Tailings Impoundment, 10-24", TI-CS04-04A (10-24")



ADVANCED TERRA TESTING

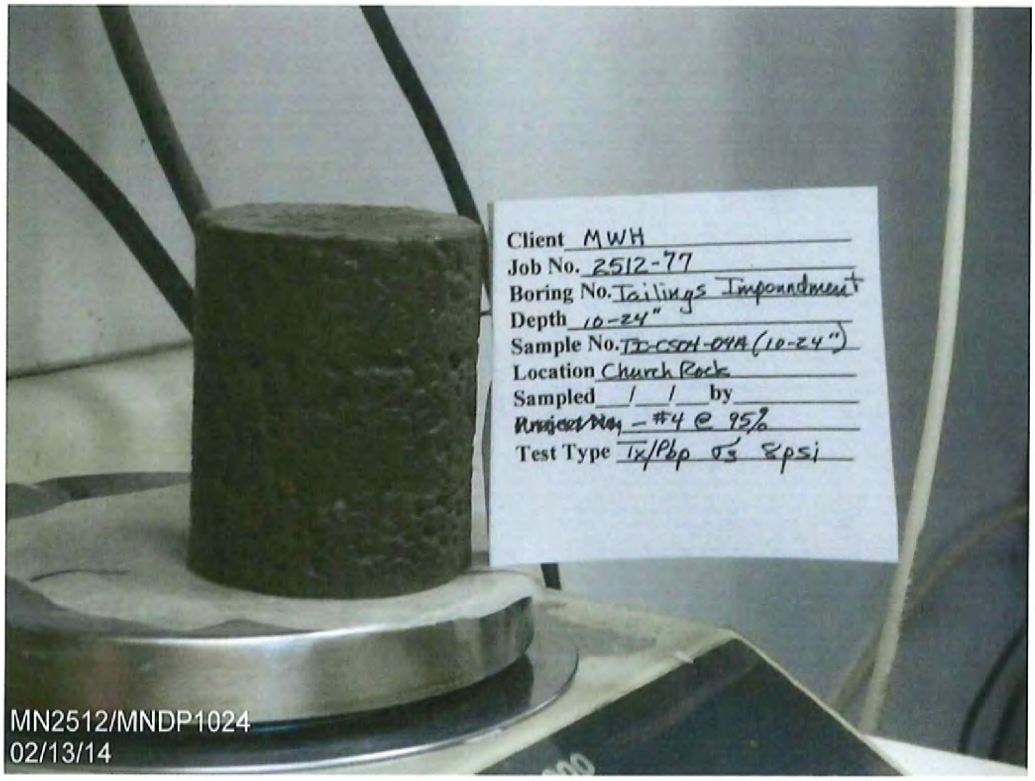
Preliminary Flow Pump Test Data
ASTM D5084

Client:	MWH	Boring Number:	Tailings Impoundment		
Job Number:	2512_77	Depth:	10-24"		
Project:	--	Sample Number:	TI-CS04-04A @ 95% D698		
Location:	Church Rock	Sampled Date:	-	Sampled By:	MWH
Project Number:	--	Test Date:	2/11/2014	Technician:	CAL



Data Entered By: CAL
Date: 2/12/2014
File Name: 2512_77_PrelimPerm_ASTMD-5084-methodD_7.xls

Checked By: CAL
Date: 2/13/14


Client MWH
Job No. 2512-77
Boring No. Tailings Impoundment
Depth 10-24"
Sample No. TI-CSOH-09A (10-24")
Location Church Rock
Sampled / / by
Test Type
MN2512/MNDP1024
02/13/14

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD

ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	--
DEPTH	10-24"	TEST STARTED	01/29/14 CAL
SAMPLE NO.	TI-CS04-04A (10-24")	TEST FINISHED	02/12/14 CAL
LOCATION	Church Rock	CELL NUMBER	21S
PROJECT NO.	--	SATURATED TEST	Yes
SOIL DESCR.	Remolded -#4 @ 100%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	1152

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	467.1	482.6
Wt. Wet Soil & Pan (g)	473.6	489.2
Wt. Dry Soil & Pan (g)	411.6	411.6
Wt. Lost Moisture (g)	62.0	77.6
Wt. of Pan Only (g)	6.5	6.5
Wt. of Dry Soil (g)	405.0	405.0
Moisture Content %	15.3	19.2
Wet Density PCF	130.2	134.7
Dry Density PCF	112.9	113.1

Init. Diameter (in)	2.406	(cm)	6.111
Init. Area (sq in)	4.547	(sq cm)	29.334
Init. Height (in)	3.006	(cm)	7.635
Vol. Bef. Consol. (cu ft)	0.00791		
Vol. After Consol. (cu ft)	0.00790		
Porosity %	34.69		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	11
Percentage of Pump setting	100
Q (cc/s)	5.71E-05
Height	3.007
Diameter	2.404
Pressure (psi)	0.910
Area after consol. (cm*cm)	29.275
Gradient	8.377
Permeability k (cm/s)	2.3E-07
Permeability k (m/s)	2.3E-09
Back Pressure (psi)	68.0
Cell Pressure (psi)	76.0
Ave. Effective Stress (psi)	7.545
Average temperature degree C:	22.6

Data entry by: DAW Date: 02/14/2014
Checked by: CAL Date: 2/18/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_7.xls

ATT
ADVANCED TERRA TESTING

TRIAXAL TEST DATA
ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	--
DEPTH	10-24"	TEST STARTED	01/29/14 CAL
SAMPLE NO.	TI-CS04-04A (10-24")	TEST FINISHED	02/12/14 CAL
LOCATION	Church Rock	SETUP NO.	21S
PROJECT NO.	--	SATURATED TEST	Yes
SOIL DESCR.	Remolded -#4 @ 100%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	1152

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	2.1	14.4				
50.0	48.0	11.1	12.3	37.5	45.9	8.4	0.84
60.0	58.0	12.1	13.0	47.5	56.3	8.8	0.88
70.0	68.0	12.9	13.7	57.3	66.7	9.4	0.94
80.0		13.8	13.8	67.4	76.9	9.5	0.95

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	0.10	0.00
0.25	0.50	0.90	-0.80
0.5	0.71	1.00	-0.90
1	1.00	1.20	-1.10
2	1.41	1.45	-1.35
4	2.00	1.70	-1.60
9	3.00	2.00	-1.90
16	4.00	2.30	-2.20
30	5.48	2.60	-2.50
60	7.75	2.80	-2.70
120	10.95	3.00	-2.90
240	15.49	3.15	-3.05
360	18.97	3.20	-3.10

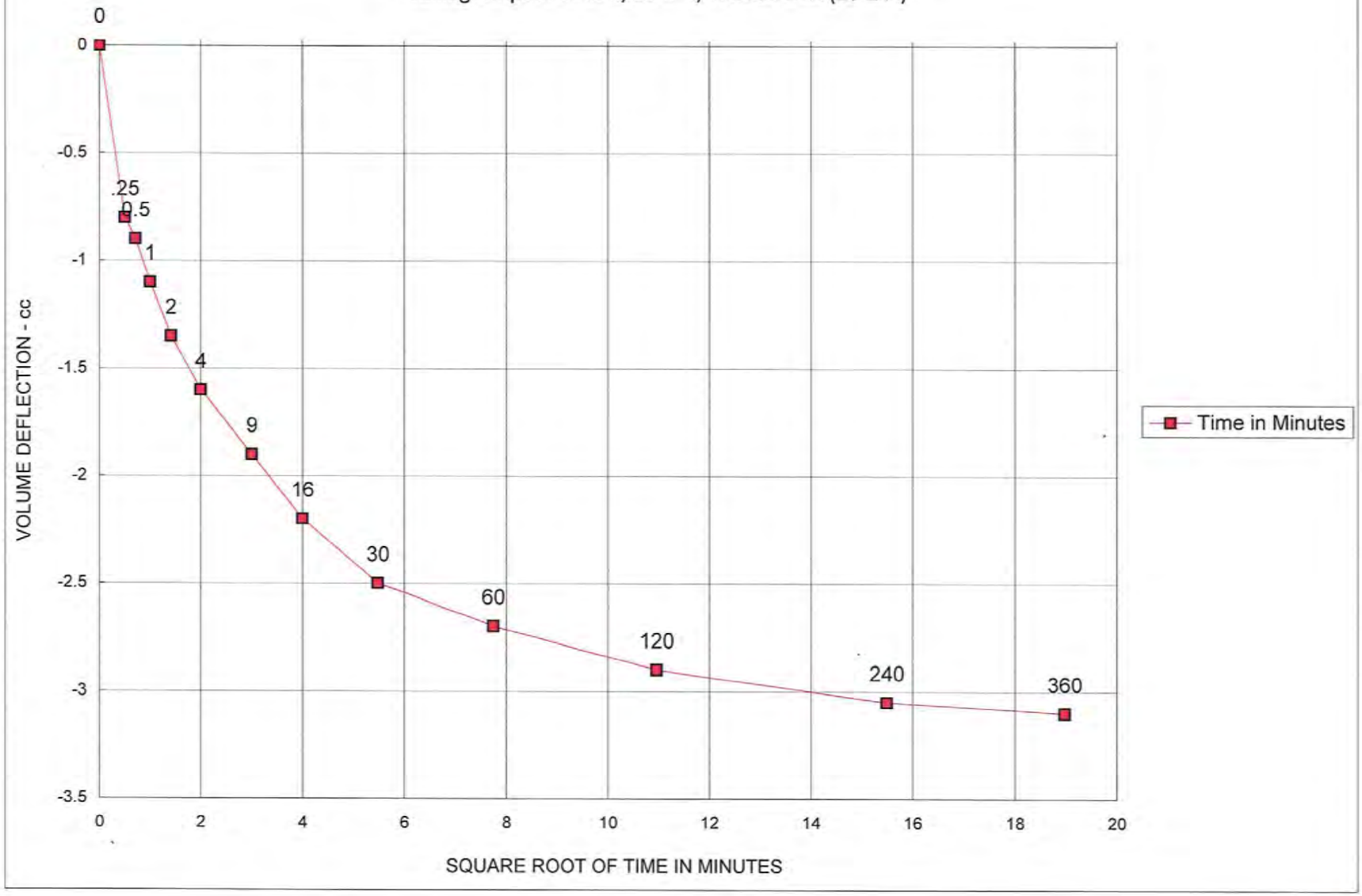
Initial Height (in)	3.006	Init. Vol. (CC)	224.001
Height Change (in)	-0.001	Vol. Change (CC)	15.400
Ht. After Cons. (in)	3.007	Cell Exp. (CC)	15.037
Initial Area (sq in)	4.547	Net Change (CC)	0.363
Area After Cons. (sq in)	4.538	Cons. Vol. (CC)	223.637

Data entry by: DAW Date: 02/14/2014
Checked by: CAL Date: 2/18/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_7.xls

ATT
ADVANCED TERRA TESTING

CONSOLIDATION DATA

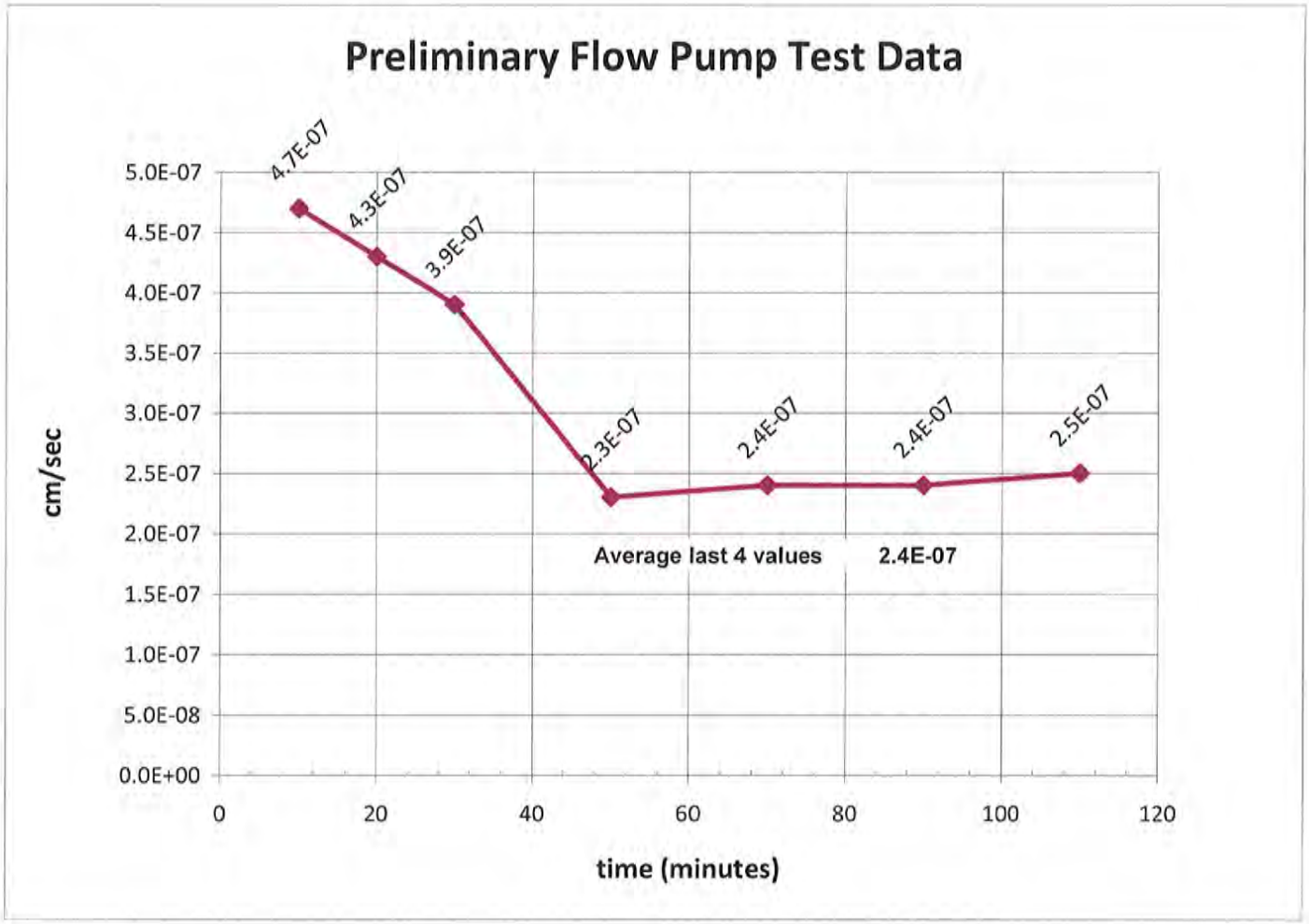
Tailings Impoundment, 10-24", TI-CS04-04A (10-24")



ADVANCED TERRA TESTING

Preliminary Flow Pump Test Data
ASTM D5084

Client:	MWH	Boring Number:	Tailings Impoundment		
Job Number:	2512_77	Depth:	10-24"		
Project:	--	Sample Number:	TI-CS04-04A		
Location:	Church Rock	Sampled Date:	-	Sampled By:	MWH
Project Number:	--	Test Date:	2/12/2014	Technician:	CAL



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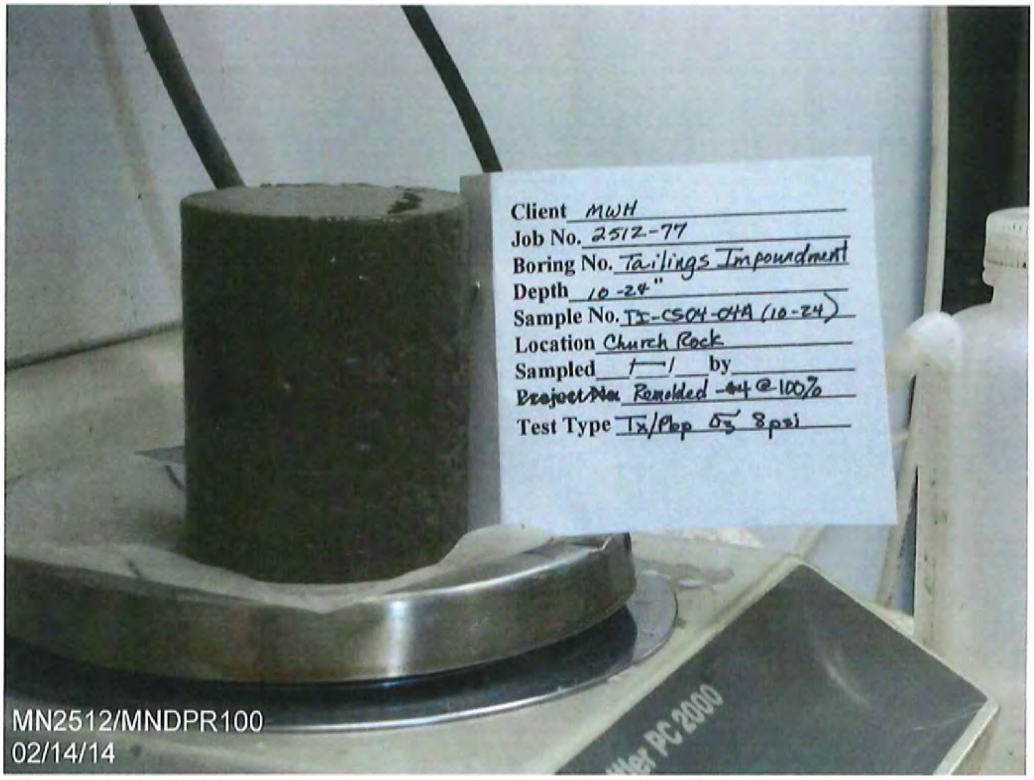
Date: 2/12/2014
File Name: 2512_77_PrelimPerm_ASTMD-5084-methodD_0.xls

Checked By: DAW
Date: 02/14/14


Client MWH
Job No. 2512-77
Boring No. Tailings Impoundment
Depth 10-24"
Sample No. TI-CS04-04A (10-24)
Location Church Rock
Sampled / / by
Project No. Remolded @ 100%
Test Type Tx/Rep 05 8psi
MN2512/MNDPR100
02/14/14

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD

ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	-
DEPTH	11-24"	TEST STARTED	1/28/14 CAL
SAMPLE NO.	TI-CS01-04A	TEST FINISHED	2/14/14 CAL
LOCATION	Church Rock	CELL NUMBER	4P
PROJECT NO.	-	SATURATED TEST	Yes
SOIL DESCR.	Remolded -#4 @90%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	1152

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	427.0	457.9
Wt. Wet Soil & Pan (g)	433.6	464.5
Wt. Dry Soil & Pan (g)	385.1	385.1
Wt. Lost Moisture (g)	48.5	79.4
Wt. of Pan Only (g)	6.6	6.6
Wt. of Dry Soil (g)	378.5	378.5
Moisture Content %	12.8	21.0
Wet Density PCF	119.5	131.3
Dry Density PCF	106.0	108.6

Init. Diameter (in)	2.406	(cm)	6.111
Init. Area (sq in)	4.547	(sq cm)	29.334
Init. Height (in)	2.993	(cm)	7.602
Vol. Bef. Consol. (cu ft)	0.00787		
Vol. After Consol. (cu ft)	0.00769		
Porosity %	36.47		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	4
Percentage of Pump setting	100
Q (cc/s)	1.16E-02
Height	2.977
Diameter	2.383
Pressure (psi)	0.143
Area after consol. (cm*cm)	28.785
Gradient	1.330
Permeability k (cm/s)	3.0E-04
Permeability k (m/s)	3.0E-06
Back Pressure (psi)	68.0
Cell Pressure (psi)	76.0
Ave. Effective Stress (psi)	7.929
Average temperature degree C:	22.0

Data entry by: SKL Date: 02/17/2014
Checked by: CMC Date: 2/18/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_8.xls

ATT
ADVANCED TERRA TESTING

TRIAXAL TEST DATA
ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	-
DEPTH	11-24"	TEST STARTED	1/28/14 CAL
SAMPLE NO.	TI-CS01-04A	TEST FINISHED	2/14/14 CAL
LOCATION	Church Rock	SETUP NO.	4P
PROJECT NO.	-	SATURATED TEST	Yes
SOIL DESCR.	Remolded -#4 @90%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	1152

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	1.9	13.5				
50.0	48.0	13.5	14.7	37.3	45.4	8.1	0.81
60.0	58.0	15.0	15.9	47.4	56.0	8.6	0.86
70.0	68.0	15.8	16.6	57.3	66.4	9.1	0.91
80.0		16.7	17.0	67.0	76.6	9.6	0.96

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	0.20	0.00
0.25	0.50	2.50	-2.30
0.5	0.71	2.65	-2.45
1	1.00	2.80	-2.60
2	1.41	2.90	-2.70
4	2.00	3.10	-2.90
9	3.00	3.20	-3.00
16	4.00	3.35	-3.15
30	5.48	3.40	-3.20
60	7.75	3.60	-3.40
120	10.95	3.75	-3.55
240	15.49	3.90	-3.70
360	18.97	3.90	-3.70

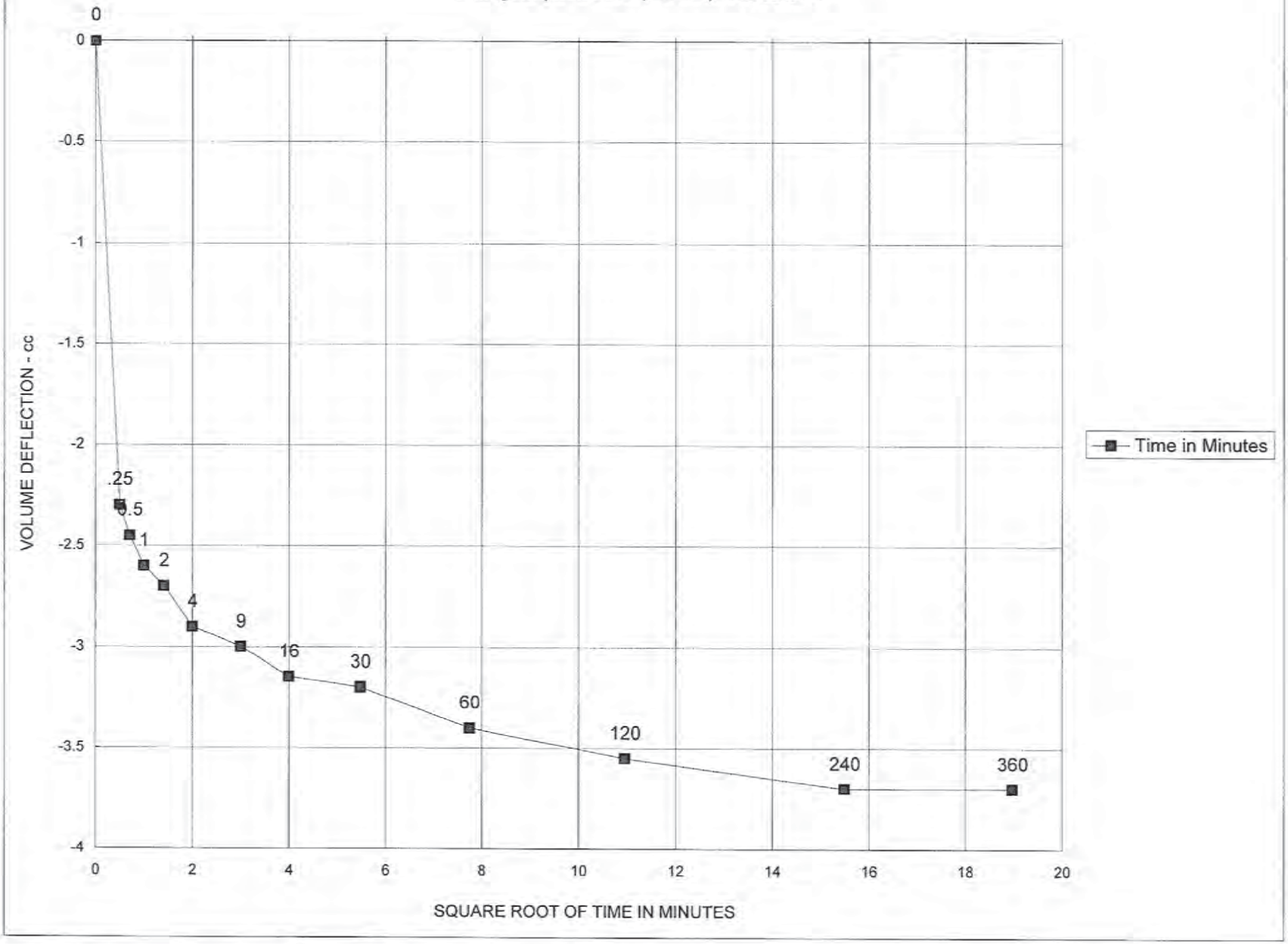
Initial Height (in)	2.993	Init. Vol. (CC)	223.032
Height Change (in)	0.016	Vol. Change (CC)	20.300
Ht. After Cons. (in)	2.977	Cell Exp. (CC)	14.968
Initial Area (sq in)	4.547	Net Change (CC)	5.332
Area After Cons. (sq in)	4.462	Cons. Vol. (CC)	217.700

Data entry by: SKL Date: 02/17/2014
Checked by: OMc Date: 2/18/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_8.xls

ATT
ADVANCED TERRA TESTING

CONSOLIDATION DATA

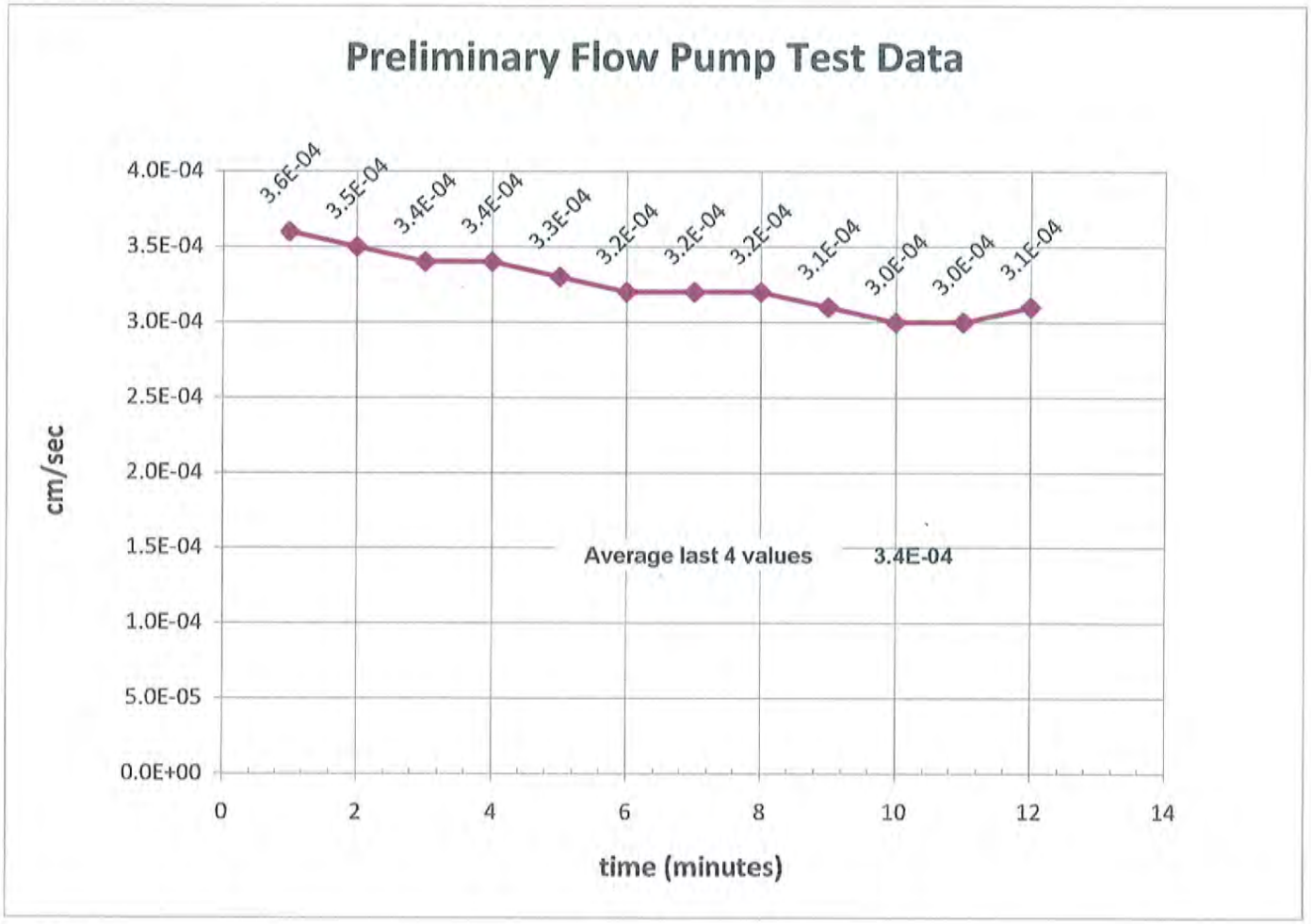
Tailings Impoundment, 11-24", TI-CS01-04A



ADVANCED TERRA TESTING

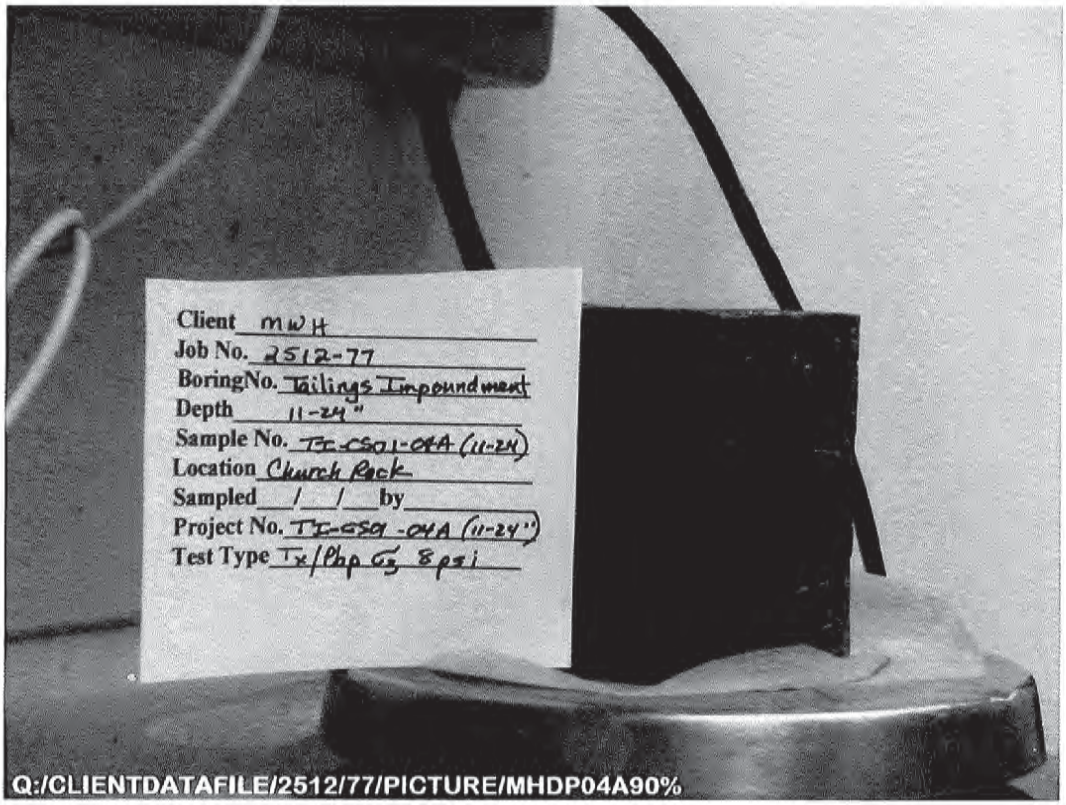
Preliminary Flow Pump Test Data
ASTM D5084

Client:	MWH	Boring Number:	Tailings Impoundment		
Job Number:	2512-77	Depth:	11-24"		
Project:	--	Sample Number:	TI-CS01-04A (11-24)		
Location:	Church Rock	Sampled Date:	--	Sampled By:	MWH
Project Number:	--	Test Date:	2/14/2014	Technician:	CAL



Data Entered By: CAL
Date: 2/14/2014
File Name: 2512_77_PrelimPerm_ASTMD-5084-methodD_9.xls

Checked By: [signature]
Date: 2/17/14


Client MWH
Job No. 2512-77
BoringNo. Tailings Impoundment
Depth 11-24"
Sample No. TI-CS01-04A (11-24)
Location Church Rock
Sampled / / by
Project No. TI-CS01-04A (11-24")
Test Type Tx/Php Cz 8psi
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PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD

ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	-
DEPTH	11-24"	TEST STARTED	1/28/14 CAL
SAMPLE NO.	TI-CS01-04A(11-24")	TEST FINISHED	2/14/14 CAL
LOCATION	Church Rock	CELL NUMBER	2P
PROJECT NO.	-	SATURATED TEST	Yes
SOIL DESCR.	Remolded -#4 @95%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	1152

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	450.8	476.3
Wt. Wet Soil & Pan (g)	457.4	482.8
Wt. Dry Soil & Pan (g)	405.7	405.7
Wt. Lost Moisture (g)	51.7	77.1
Wt. of Pan Only (g)	6.5	6.5
Wt. of Dry Soil (g)	399.2	399.2
Moisture Content %	12.9	19.3
Wet Density PCF	125.6	138.2
Dry Density PCF	111.2	115.8

Init. Diameter	(in)	2.406	(cm)	6.111
Init. Area	(sq in)	4.547	(sq cm)	29.334
Init. Height	(in)	3.008	(cm)	7.640
Vol. Bef. Consol.	(cu ft)	0.00791		
Vol. After Consol.	(cu ft)	0.00760		
Porosity %		35.82		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	6
Percentage of Pump setting	100
Q (cc/s)	2.31E-03
Height	2.993
Diameter	2.363
Pressure (psi)	0.191
Area after consol. (cm*cm)	28.304
Gradient	1.766
Permeability k (cm/s)	4.6E-05
Permeability k (m/s)	4.6E-07
Back Pressure (psi)	88.0
Cell Pressure (psi)	96.0
Ave. Effective Stress (psi)	7.905
Average temperature degree C:	22.9

Data entry by: SKL Date: 02/17/2014
Checked by: CAL Date: 2/18/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_9.xls

ATT
ADVANCED TERRA TESTING

TRIAXAL TEST DATA
ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	-
DEPTH	11-24"	TEST STARTED	1/28/14 CAL
SAMPLE NO.	TI-CS01-04A(11-24")	TEST FINISHED	2/14/14 CAL
LOCATION	Church Rock	SETUP NO.	2P
PROJECT NO.	-	SATURATED TEST	Yes
SOIL DESCR.	Remolded -#4 @95%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	1152

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	3.2	12.4				
50.0	48.0	13.6	15.2	37.4	45.3	7.9	0.79
60.0	58.0	15.7	17.0	47.5	55.9	8.4	0.84
70.0	68.0	17.3	18.6	57.4	66.3	8.9	0.89
80.0	78.0	19.5	20.6	67.1	76.4	9.3	0.93
90.0	88.0	21.0	22.1	77.3	86.7	9.4	0.94
100.0		22.4	22.7	87.3	96.8	9.5	0.95

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	0.00	0.00
0.25	0.50	2.00	-2.00
0.5	0.71	2.20	-2.20
1	1.00	2.40	-2.40
2	1.41	2.50	-2.50
4	2.00	2.60	-2.60
9	3.00	2.70	-2.70
16	4.00	2.80	-2.80
30	5.48	2.90	-2.90
60	7.75	3.00	-3.00
120	10.95	3.10	-3.10
240	15.49	3.10	-3.10
360	18.97	3.10	-3.10

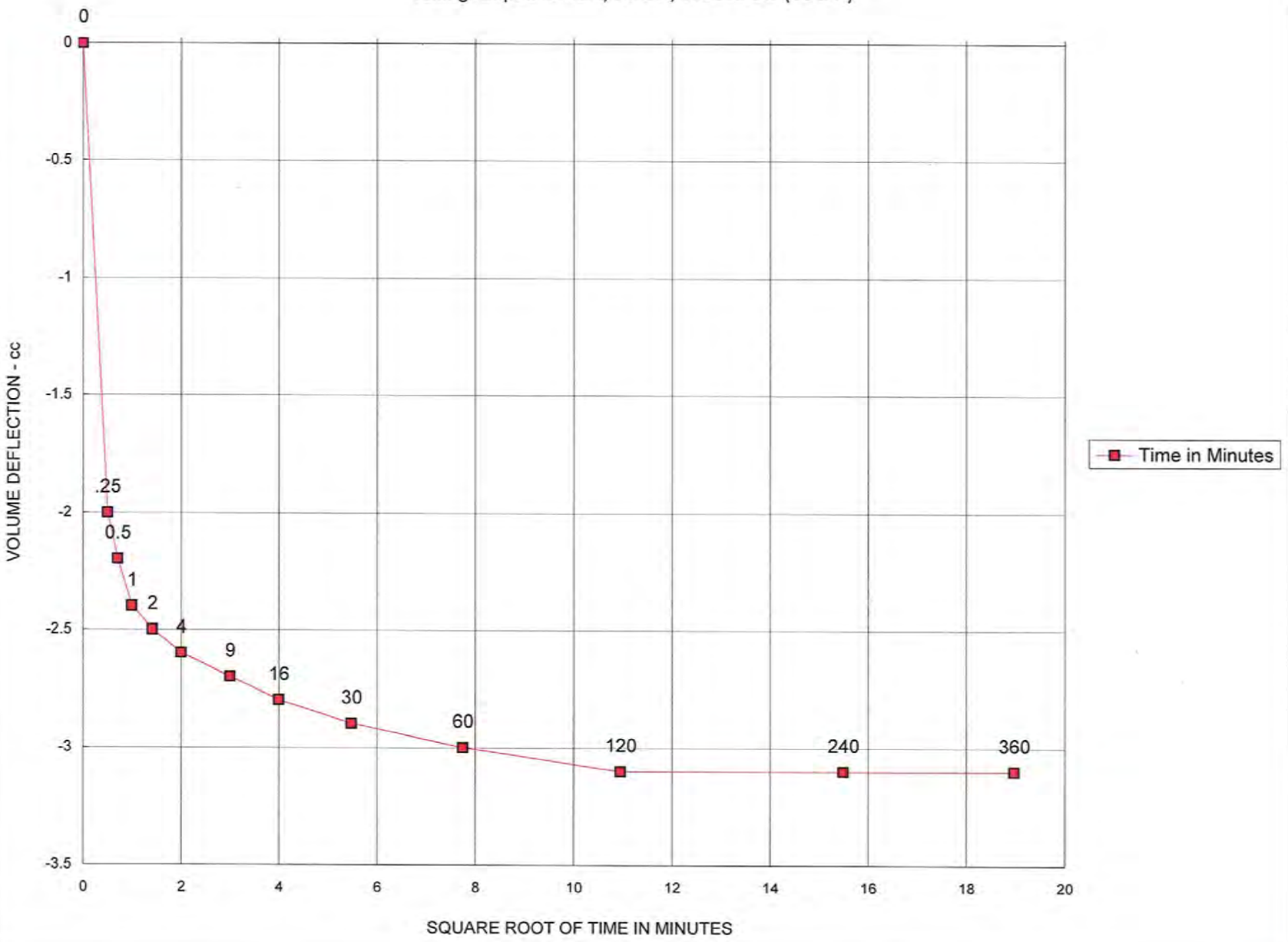
Initial Height (in)	3.008	Init. Vol. (CC)	224.150
Height Change (in)	0.015	Vol. Change (CC)	25.150
Ht. After Cons. (in)	2.993	Cell Exp. (CC)	16.216
Initial Area (sq in)	4.547	Net Change (CC)	8.934
Area After Cons. (sq in)	4.387	Cons. Vol. (CC)	215.216

Data entry by: SKL Date: 02/17/2014
Checked by: CAL Date: 2/18/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_9.xls

ATT
ADVANCED TERRA TESTING

CONSOLIDATION DATA

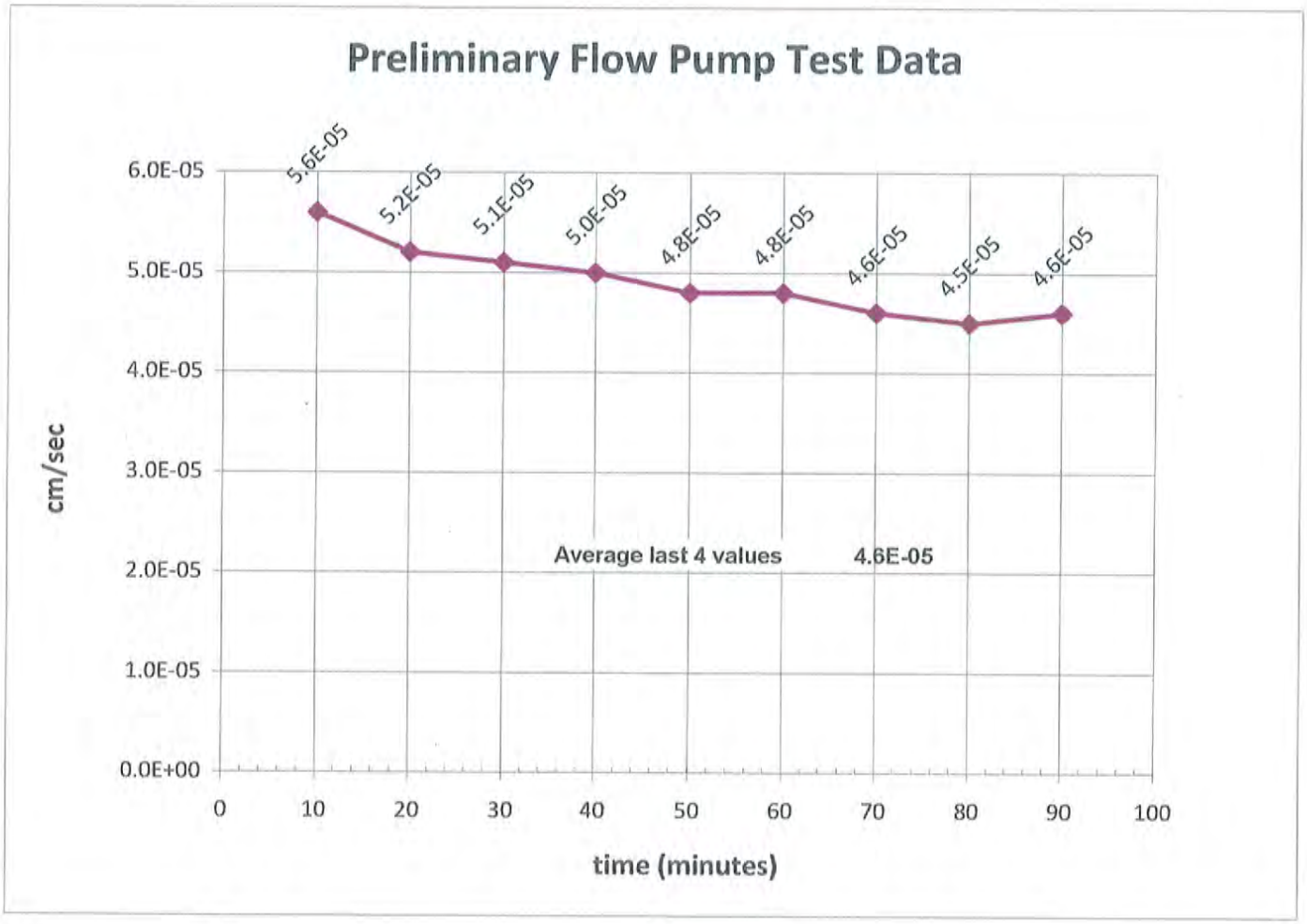
Tailings Impoundment, 11-24", TI-CS01-04A(11-24")



ADVANCED TERRA TESTING

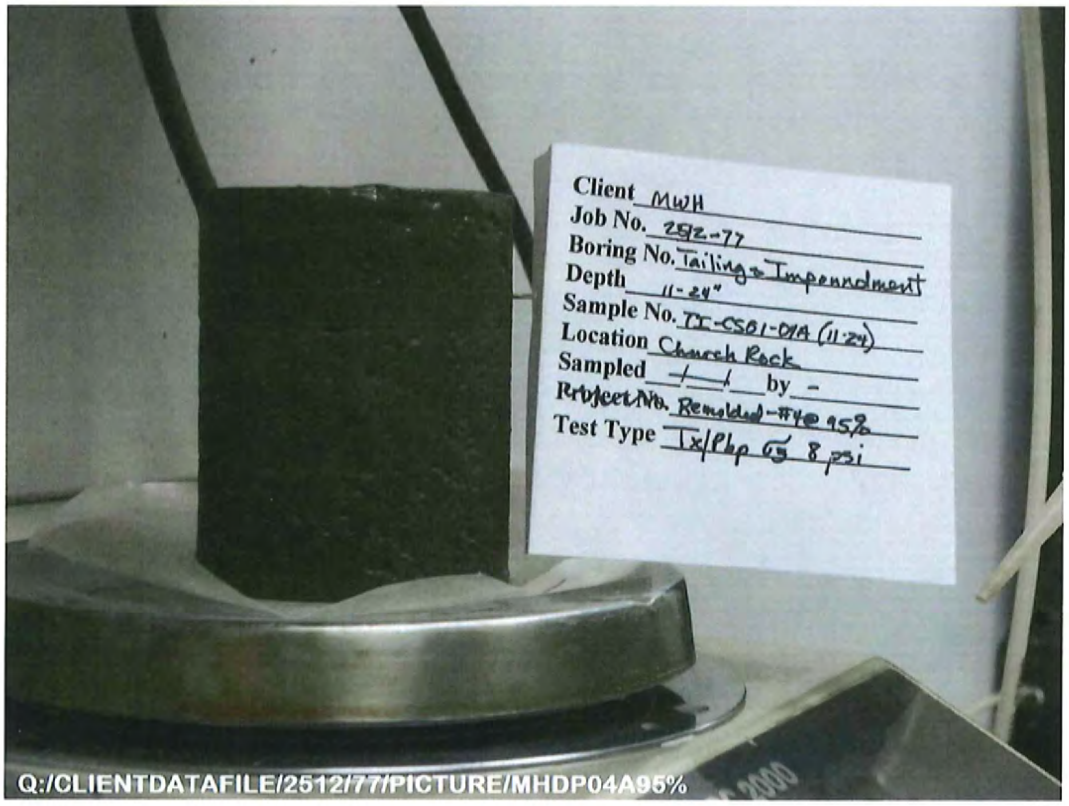
Preliminary Flow Pump Test Data
ASTM D5084

Client:	MWH	Boring Number:	Tailings Impoundment		
Job Number:	2512-77	Depth:	11-24"		
Project:	--	Sample Number:	TI-CS01-04A (11-24)		
Location:	Church Rock	Sampled Date:	--	Sampled By:	MWH
Project Number:	--	Test Date:	2/14/2014	Technician:	CAL



Data Entered By: CAL
Date: 2/14/2014
File Name: PrelimPerm_ASTMD-5084-methodD.XLS

Checked By: SM
Date: 2/17/14


Client MWH
Job No. 2512-77
Boring No. Tailings Impoundment
Depth 11-24"
Sample No. TI-CS01-01A (11-24)
Location Church Rock
Sampled -/-/- by -
Project No. Remolded-#4@ 95%
Test Type Tx/Php @ 8 psi
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PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD

ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	-
DEPTH	11-24"	TEST STARTED	01/28/14 CAL
SAMPLE NO.	TI-CS01-04 (11-24")	TEST FINISHED	02/17/14 CAL
LOCATION	Church Rock	CELL NUMBER	1P
PROJECT NO.	-	SATURATED TEST	Yes
SOIL DESCR.	Remolded -#4 @ 100%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	1152

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	474.5	490.9
Wt. Wet Soil & Pan (g)	488.3	504.7
Wt. Dry Soil & Pan (g)	433.5	433.5
Wt. Lost Moisture (g)	54.8	71.2
Wt. of Pan Only (g)	13.8	13.8
Wt. of Dry Soil (g)	419.7	419.7
Moisture Content %	13.1	17.0
Wet Density PCF	132.0	142.9
Dry Density PCF	116.7	122.1

Init. Diameter (in)	2.406	(cm)	6.111
Init. Area (sq in)	4.547	(sq cm)	29.334
Init. Height (in)	3.013	(cm)	7.653
Vol. Bef. Consol. (cu ft)	0.00793		
Vol. After Consol. (cu ft)	0.00758		
Porosity %	33.18		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	9
Percentage of Pump setting	100
Q (cc/s)	2.28E-04
Height	2.995
Diameter	2.359
Pressure (psi)	1.120
Area after consol. (cm*cm)	28.199
Gradient	10.351
Permeability k (cm/s)	7.8E-07
Permeability k (m/s)	7.8E-09
Back Pressure (psi)	68.0
Cell Pressure (psi)	76.0
Ave. Effective Stress (psi)	7.440
Average temperature degree C:	22.4

Data entry by: DAW Date: 02/18/2014
Checked by: ave Date: 2/18/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_10.xls

ATT
ADVANCED TERRA TESTING

TRIAXAL TEST DATA
ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	-
DEPTH	11-24"	TEST STARTED	01/28/14 CAL
SAMPLE NO.	TI-CS01-04 (11-24")	TEST FINISHED	02/17/14 CAL
LOCATION	Church Rock	SETUP NO.	1P
PROJECT NO.	-	SATURATED TEST	Yes
SOIL DESCR.	Remolded -#4 @ 100%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	1152

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	1.8	12.6				
50.0	48.0	11.6	13.1	37.5	45.7	8.2	0.82
60.0	58.0	13.6	15.0	47.4	56.1	8.7	0.87
70.0	68.0	15.4	16.7	57.6	66.7	9.1	0.91
80.0		17.6	17.8	67.2	76.7	9.5	0.95

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	0.30	0.00
0.25	0.50	1.60	-1.30
0.5	0.71	1.80	-1.50
1	1.00	1.95	-1.65
2	1.41	2.20	-1.90
4	2.00	2.60	-2.30
9	3.00	2.70	-2.40
16	4.00	2.80	-2.50
30	5.48	2.90	-2.60
60	7.75	3.00	-2.70
120	10.95	3.10	-2.80
240	15.49	3.20	-2.90
360	18.97	3.20	-2.90

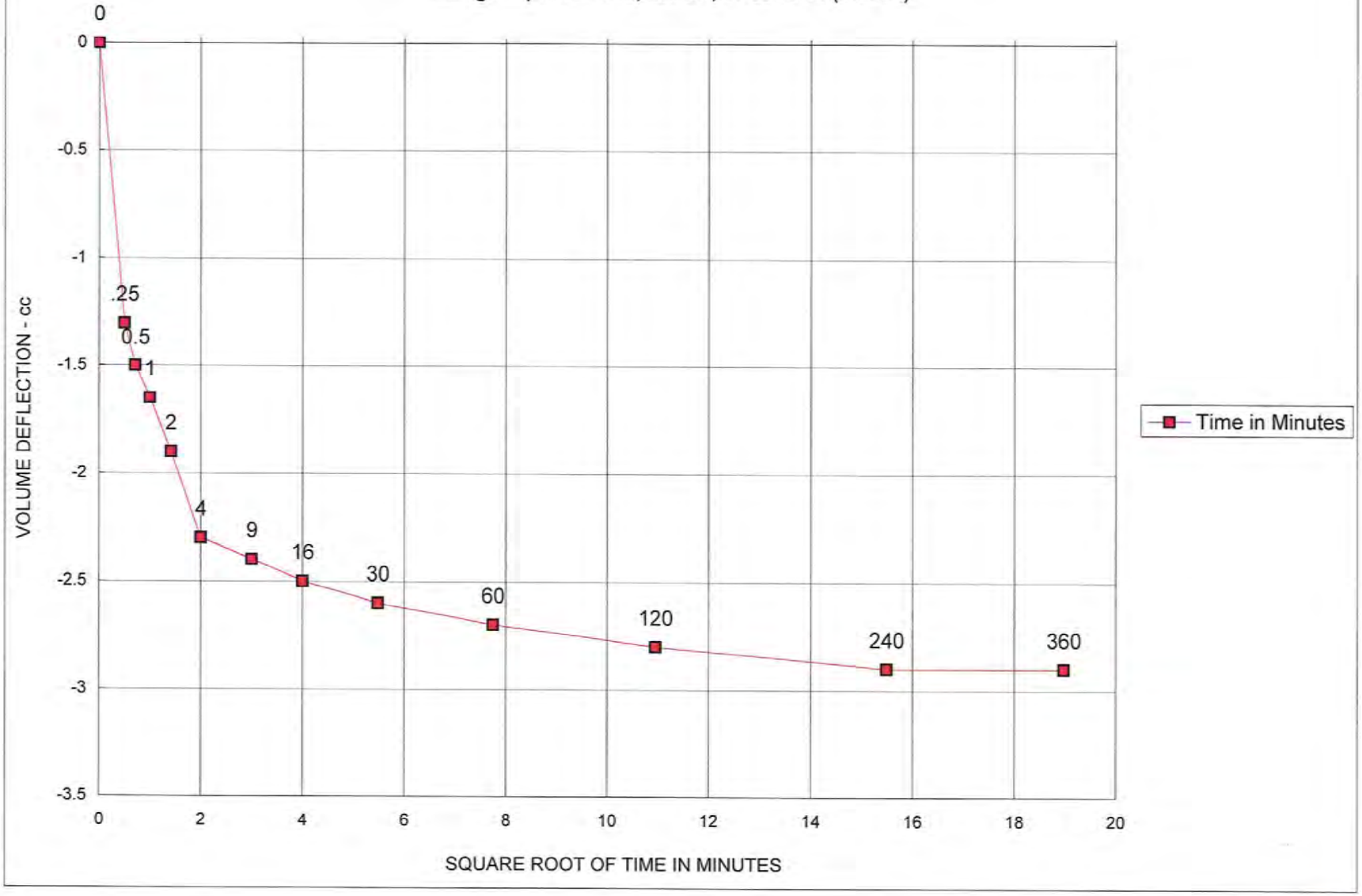
Initial Height (in)	3.013	Init. Vol. (CC)	224.522
Height Change (in)	0.018	Vol. Change (CC)	22.300
Ht. After Cons. (in)	2.995	Cell Exp. (CC)	12.338
Initial Area (sq in)	4.547	Net Change (CC)	9.962
Area After Cons. (sq in)	4.371	Cons. Vol. (CC)	214.560

Data entry by: DAW Date: 02/18/2014
Checked by: CAL Date: 2/18/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_10.xls

ATT
ADVANCED TERRA TESTING

CONSOLIDATION DATA

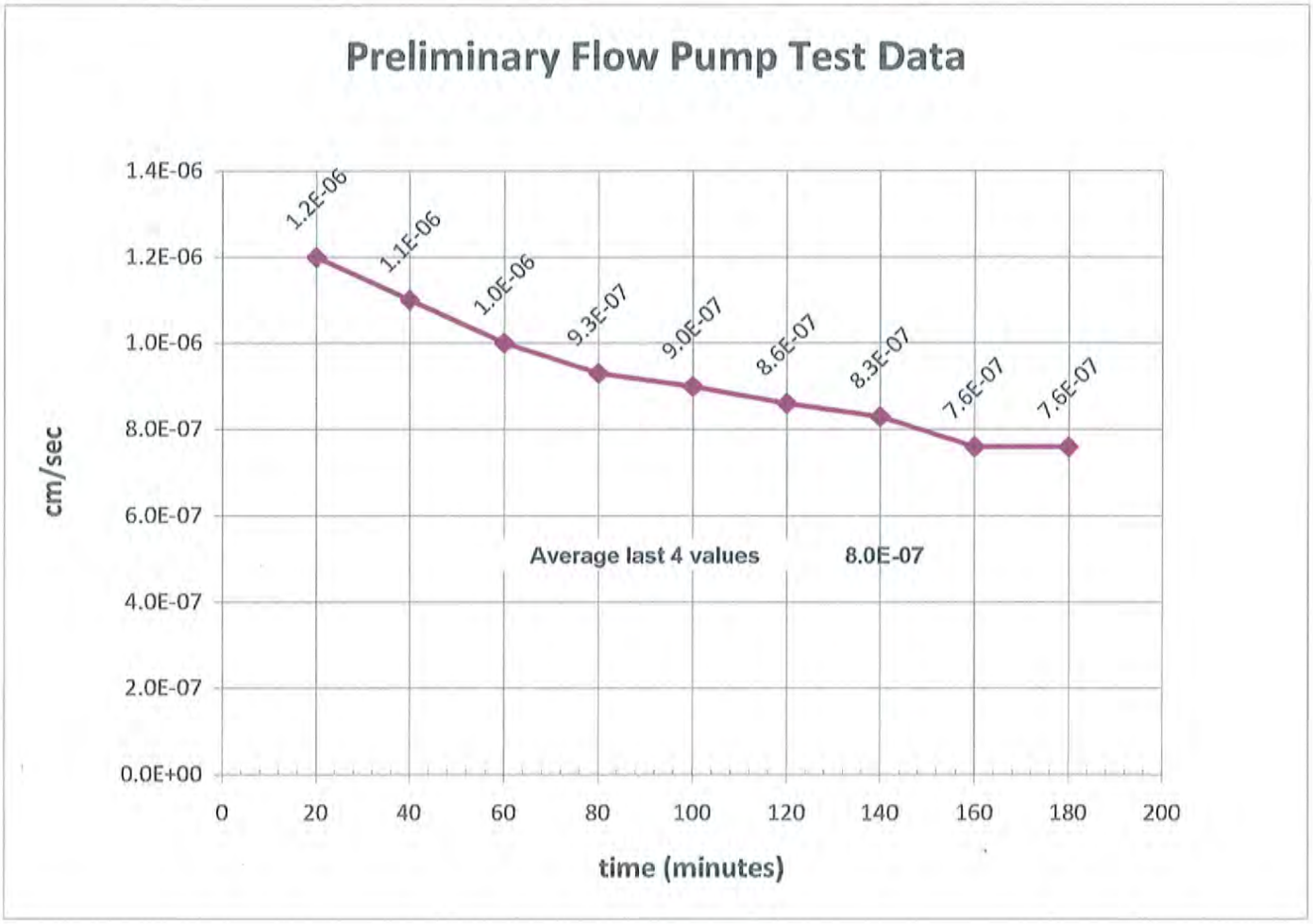
Tailings Impoundment, 11-24", TI-CS01-04 (11-24")



ADVANCED TERRA TESTING

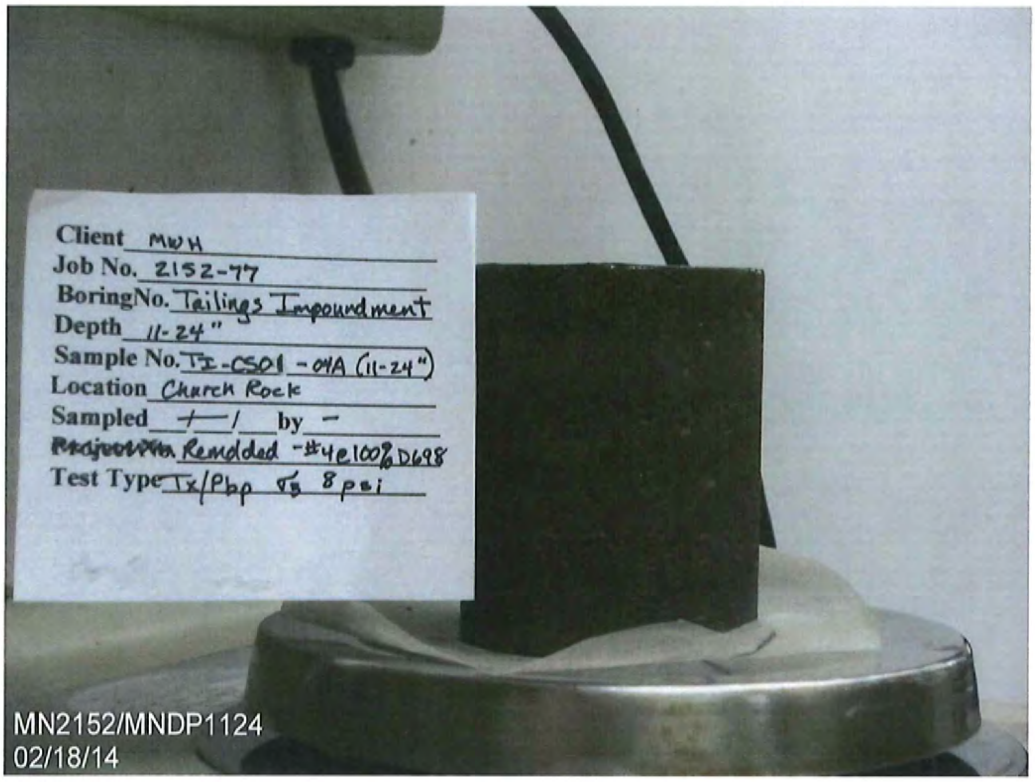
Preliminary Flow Pump Test Data
ASTM D5084

Client:	MWH	Boring Number:	Tailings Impoundment		
Job Number:	2512-77	Depth:	11-24"		
Project:	--	Sample Number:	TI-CS01-04A		
Location:	Church Rock	Sampled Date:	-	Sampled By:	MWH
Project Number:	--	Test Date:	2/17/2014	Technician:	CAL



Data Entered By: CAL
Date: 2/17/2014
File Name: 2512_77_PrelimPerm_ASTMD-5084-methodD_11.xls

Checked By: DAW
Date: 2/18/14


Client MWH
Job No. 2152-77
BoringNo. Tailings Impoundment
Depth 11-24"
Sample No. TI-CS01 - 04A (11-24")
Location Church Rock
Sampled ___/___/___ by ___
Remolded - @ 100% D698
Test Type Tx/Pbp @ 8 psi
MN2152/MNDP1124
02/18/14

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD

ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	--
DEPTH	9-24"	TEST STARTED	01/29/14 CAL
SAMPLE NO.	TI-CS11-04A (9-24")	TEST FINISHED	02/10/14 CAL
LOCATION	Church Rock	CELL NUMBER	9P
PROJECT NO.	--	SATURATED TEST	Yes
SOIL DESCR.	Remolded -#4 @ 90%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	3456

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	425.8	440.7
Wt. Wet Soil & Pan (g)	432.3	447.2
Wt. Dry Soil & Pan (g)	378.2	378.2
Wt. Lost Moisture (g)	54.1	69.0
Wt. of Pan Only (g)	6.5	6.5
Wt. of Dry Soil (g)	371.7	371.7
Moisture Content %	14.6	18.6
Wet Density PCF	119.2	140.6
Dry Density PCF	104.1	118.6

Init. Diameter (in)	2.402	(cm)	6.101
Init. Area (sq in)	4.531	(sq cm)	29.237
Init. Height (in)	3.002	(cm)	7.625
Vol. Bef. Consol. (cu ft)	0.00787		
Vol. After Consol. (cu ft)	0.00691		
Porosity %	35.28		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	11
Percentage of Pump setting	100
Q (cc/s)	5.71E-05
Height	2.917
Diameter	2.283
Pressure (psi)	3.010
Area after consol. (cm*cm)	26.408
Gradient	28.563
Permeability k (cm/s)	7.6E-08
Permeability k (m/s)	7.6E-10
Back Pressure (psi)	68.0
Cell Pressure (psi)	92.0
Ave. Effective Stress (psi)	22.495
Average temperature degree C:	22.2

Data entry by: DAW Date: 02/11/2014
Checked by: CM Date: 2/12/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_2.xls

ATT
ADVANCED TERRA TESTING

TRIAXAL TEST DATA
ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	--
DEPTH	9-24"	TEST STARTED	01/29/14 CAL
SAMPLE NO.	TI-CS11-04A (9-24")	TEST FINISHED	02/10/14 CAL
LOCATION	Church Rock	SETUP NO.	9P
PROJECT NO.	--	SATURATED TEST	Yes
SOIL DESCR.	Remolded -#4 @ 90%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	3456

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	3.4	17.1				
50.0	48.0	16.9	18.4	38.2	46.7	8.5	0.85
60.0	58.0	19.7	20.8	48.3	57.2	8.9	0.89
70.0	68.0	22.3	23.2	58.5	67.9	9.4	0.94
80.0		23.5	23.6	68.6	78.2	9.6	0.96

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	0.50	0.00
0.25	0.50	8.40	-7.90
0.5	0.71	9.70	-9.20
1	1.00	11.10	-10.60
2	1.41	12.55	-12.05
4	2.00	13.90	-13.40
9	3.00	15.45	-14.95
16	4.00	16.50	-16.00
30	5.48	17.60	-17.10
60	7.75	18.80	-18.30
120	10.95	19.80	-19.30
240	15.49	20.40	-19.90
360	18.97	20.70	-20.20

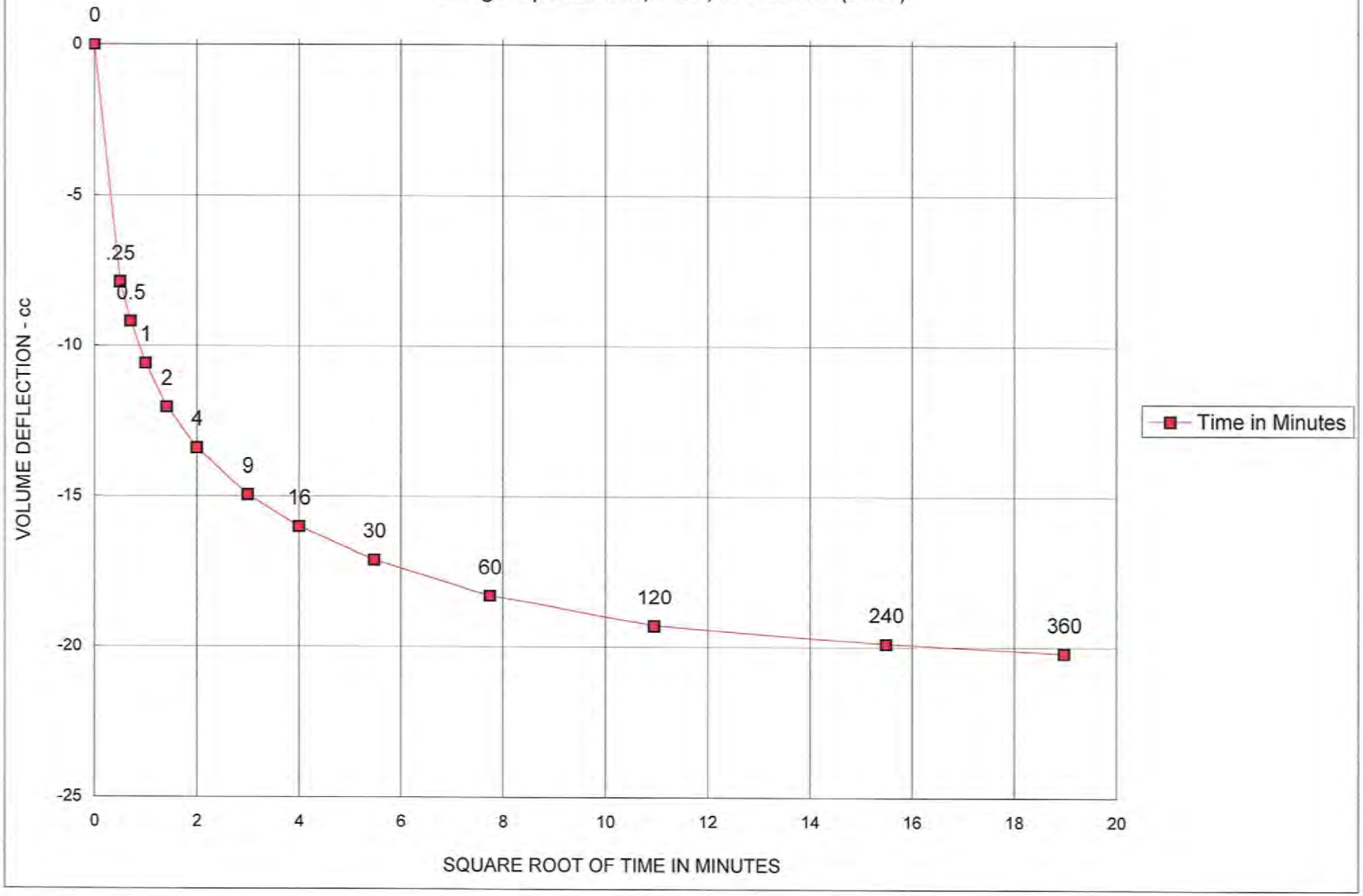
Initial Height (in)	3.002	Init. Vol. (CC)	222.959
Height Change (in)	0.085	Vol. Change (CC)	42.000
Ht. After Cons. (in)	2.917	Cell Exp. (CC)	14.735
Initial Area (sq in)	4.531	Net Change (CC)	27.265
Area After Cons. (sq in)	4.093	Cons. Vol. (CC)	195.694

Data entry by: DAW Date: 02/11/2014
Checked by: CJR Date: 2/12/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_2.xls

ATT
ADVANCED TERRA TESTING

CONSOLIDATION DATA

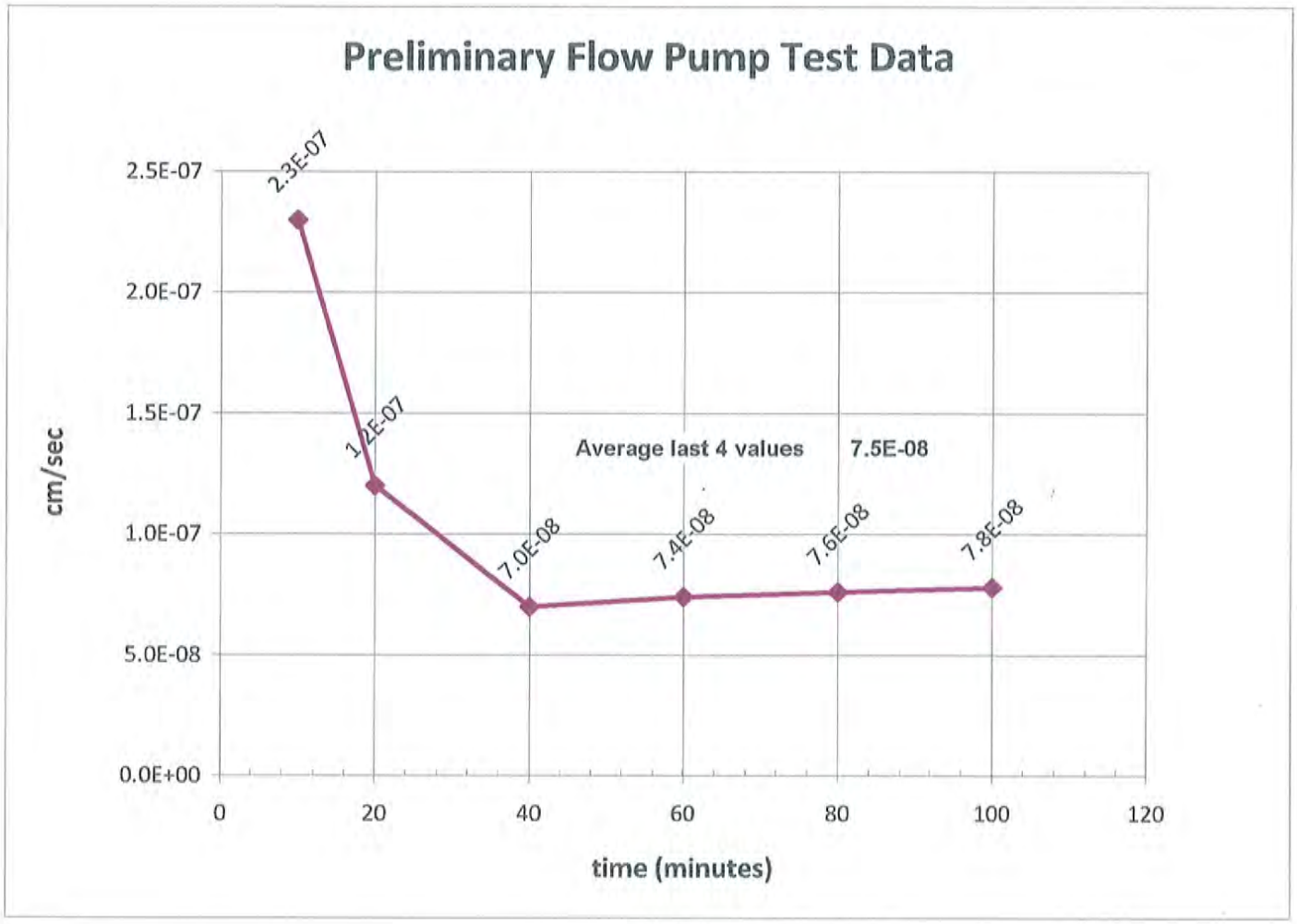
Tailings Impoundment, 9-24", TI-CS11-04A (9-24")



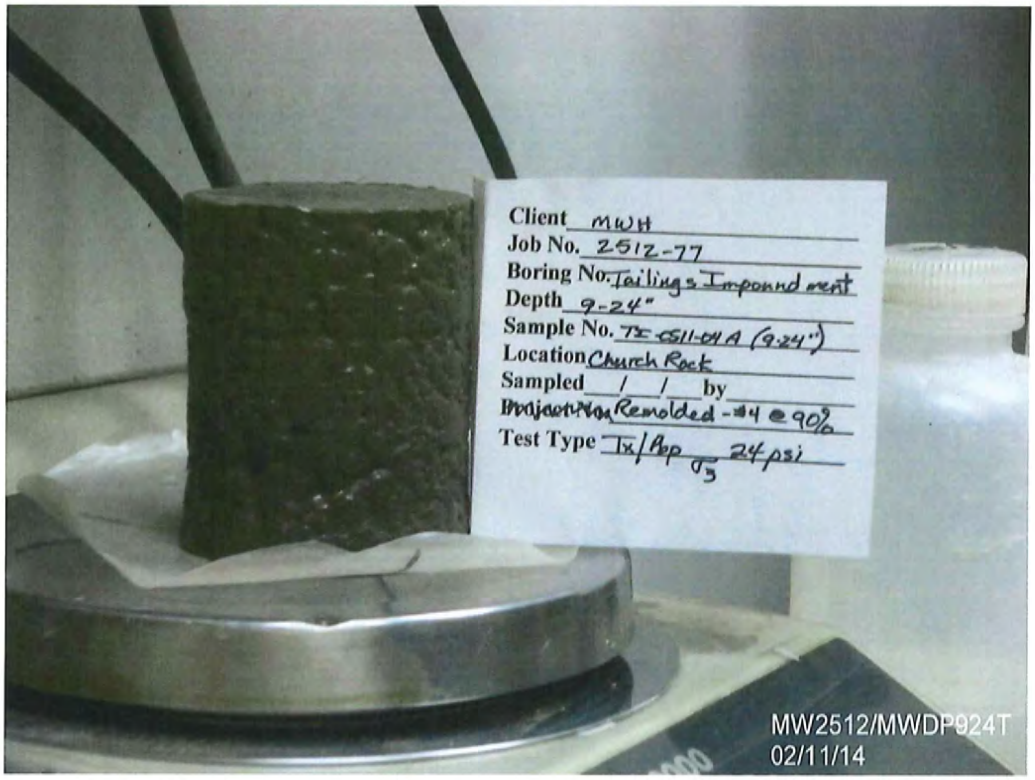
ADVANCED TERRA TESTING

Preliminary Flow Pump Test Data
ASTM D5084

Client:	MWH	Boring Number:	Tailings Impoundment		
Job Number:	2512-77	Depth:	9-24"		
Project:	--	Sample Number:	TI-CS11-04A @90%D698		
Location:	Church Rock	Sampled Date:	-	Sampled By:	MWH
Project Number:	--	Test Date:	2/10/2014	Technician:	CAL



Data Entered By:	CAL		
Date:	2/13/2014	Checked By:	CAL
File Name:	2512_77_PrelimPerm_ASTMD-5084-methodD_1.xls	Date:	2/13/14


Client MWH
Job No. 2512-77
Boring No. Tailings Impoundment
Depth 9-24"
Sample No. TE-CSII-04A (9.24")
Location Church Rock
Sampled / / by
Remolded -#4 @ 90%
Test Type Tx/Rep σ3 24 psi
MW2512/MWDP924T
02/11/14

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD

ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	-
DEPTH	9-24"	TEST STARTED	01/29/14 CAL
SAMPLE NO.	TI-CS11-04A (9-24")	TEST FINISHED	02/11/14 CAL
LOCATION	Church Rock	CELL NUMBER	8P
PROJECT NO.	-	SATURATED TEST	Yes
SOIL DESCR.	Remolded -#4 @ 95%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	3456

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	449.5	463.8
Wt. Wet Soil & Pan (g)	456.3	470.5
Wt. Dry Soil & Pan (g)	398.7	398.7
Wt. Lost Moisture (g)	57.6	71.8
Wt. of Pan Only (g)	6.7	6.7
Wt. of Dry Soil (g)	392.0	392.0
Moisture Content %	14.7	18.3
Wet Density PCF	125.7	137.8
Dry Density PCF	109.6	116.5

Init. Diameter (in)	2.402	(cm)	6.101
Init. Area (sq in)	4.531	(sq cm)	29.237
Init. Height (in)	3.007	(cm)	7.638
Vol. Bef. Consol. (cu ft)	0.00789		
Vol. After Consol. (cu ft)	0.00742		
Porosity %	34.18		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	12
Percentage of Pump setting	100
Q (cc/s)	2.30E-05
Height	2.947
Diameter	2.353
Pressure (psi)	0.643
Area after consol. (cm*cm)	28.066
Gradient	6.040
Permeability k (cm/s)	1.4E-07
Permeability k (m/s)	1.4E-09
Back Pressure (psi)	58.0
Cell Pressure (psi)	82.0
Ave. Effective Stress (psi)	23.679
Average temperature degree C:	22.4

Data entry by: SKL Date: 02/12/2014
Checked by: CAL Date: 2/13/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_5.xls

ATT
ADVANCED TERRA TESTING

TRIAXAL TEST DATA
ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	-
DEPTH	9-24"	TEST STARTED	01/29/14 CAL
SAMPLE NO.	TI-CS11-04A (9-24")	TEST FINISHED	02/11/14 CAL
LOCATION	Church Rock	SETUP NO.	8P
PROJECT NO.	-	SATURATED TEST	Yes
SOIL DESCR.	Remolded -#4 @ 95%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	3456

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	3.0	14.1				
50.0	48.0	13.1	14.4	38.7	47.3	8.6	0.86
60.0	58.0	14.7	15.5	48.1	57.2	9.1	0.91
70.0		15.8	16.1	58.9	68.4	9.5	0.95

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	0.50	0.00
0.25	0.50	6.50	-6.00
0.5	0.71	7.50	-7.00
1	1.00	8.70	-8.20
2	1.41	9.90	-9.40
4	2.00	11.00	-10.50
9	3.00	12.15	-11.65
16	4.00	12.90	-12.40
30	5.48	13.80	-13.30
60	7.75	14.25	-13.75
120	10.95	14.80	-14.30
240	15.49	15.10	-14.60
360	18.97	15.20	-14.70

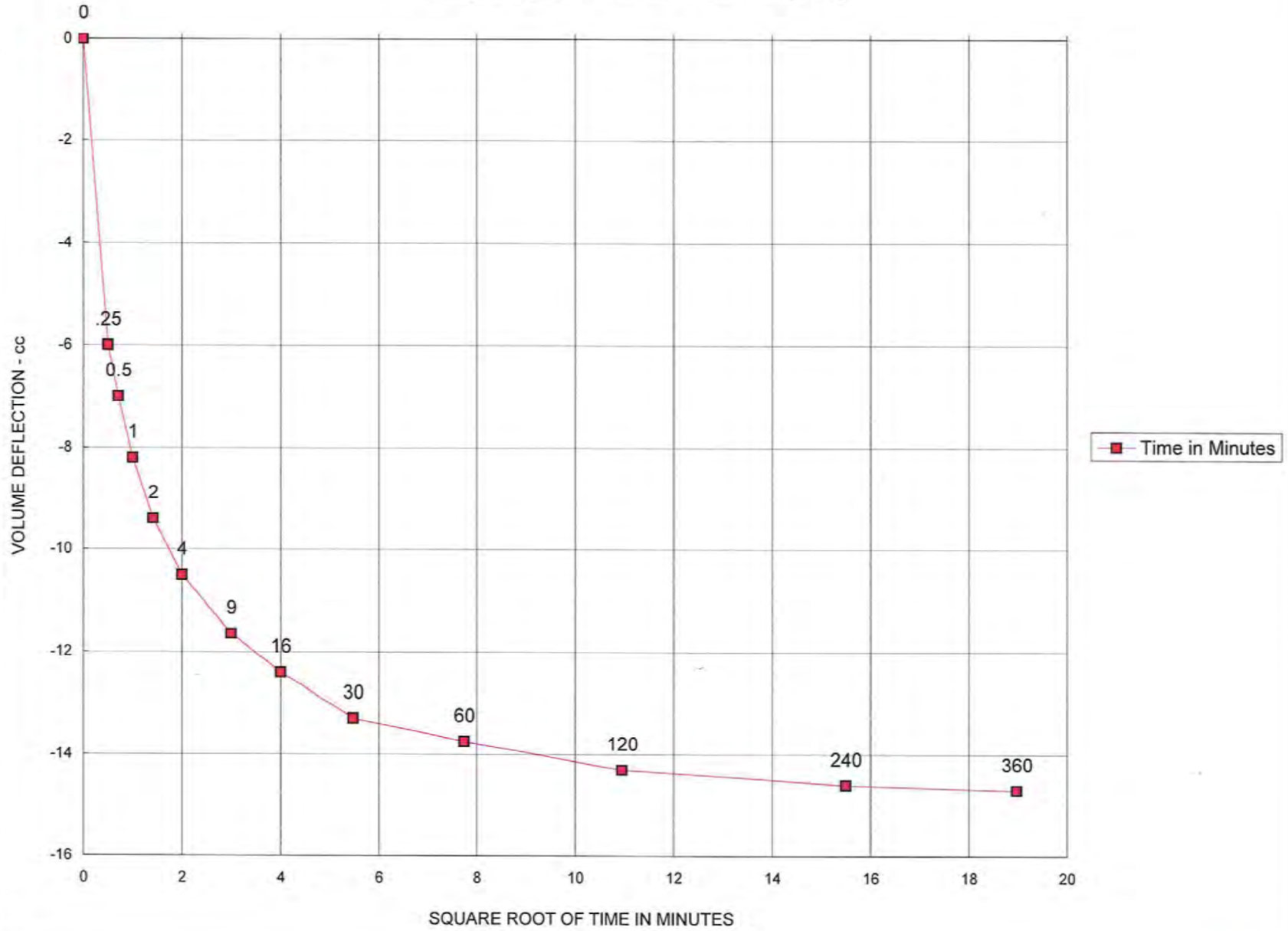
Initial Height (in)	3.007	Init. Vol. (CC)	223.331
Height Change (in)	0.060	Vol. Change (CC)	28.900
Ht. After Cons. (in)	2.947	Cell Exp. (CC)	15.693
Initial Area (sq in)	4.531	Net Change (CC)	13.207
Area After Cons. (sq in)	4.350	Cons. Vol. (CC)	210.123

Data entry by: SKL Date: 02/12/2014
Checked by: CAL Date: 2/13/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_5.xls

ATT
ADVANCED TERRA TESTING

CONSOLIDATION DATA

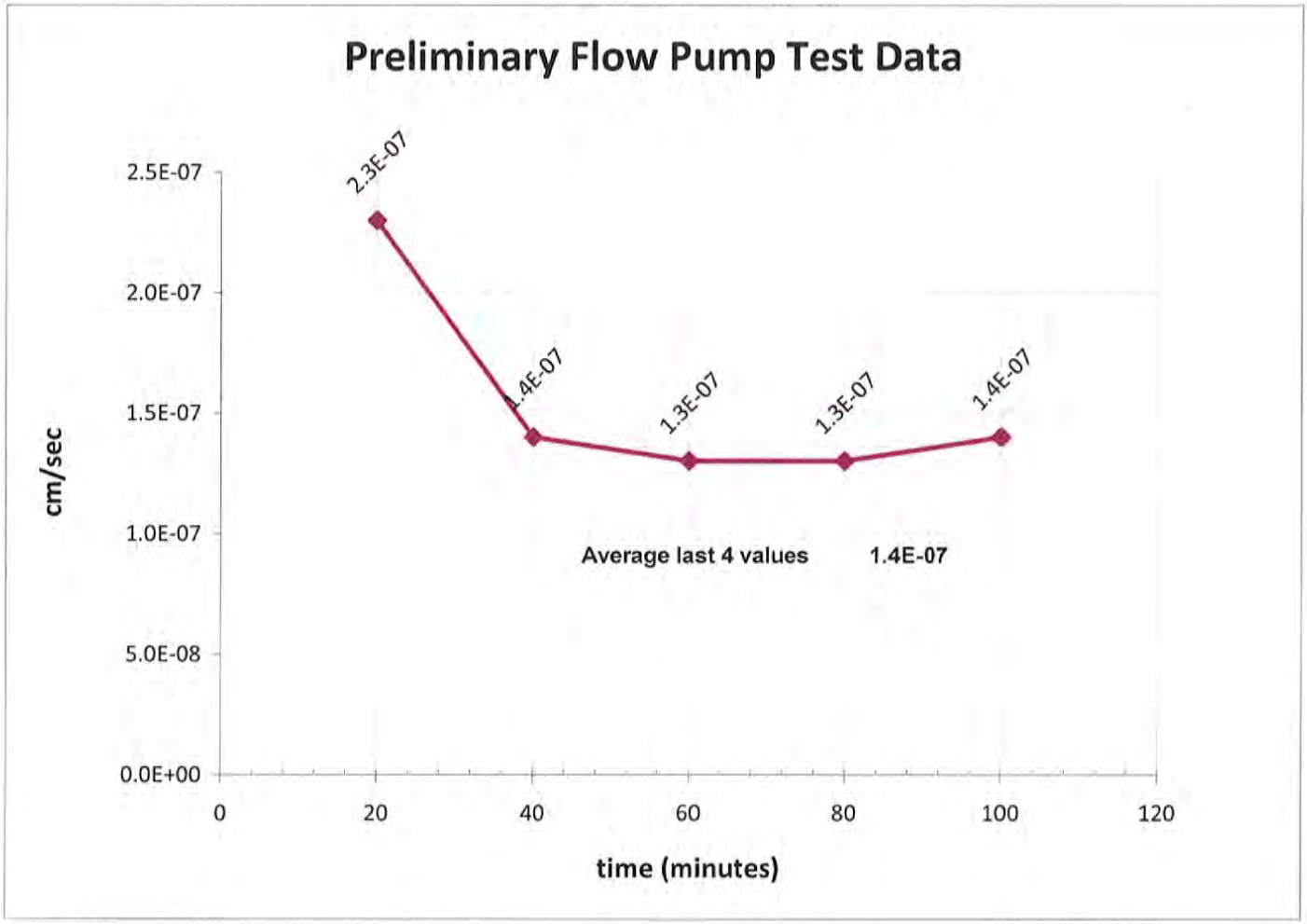
Tailings Impoundment, 9-24", TI-CS11-04A (9-24")



ADVANCED TERRA TESTING

Preliminary Flow Pump Test Data
ASTM D5084

Client:	MWH	Boring Number:	Tailings Impoundment		
Job Number:	2512_77	Depth:	9-24"		
Project:	--	Sample Number:	TI-CS11-04A @ 95% D698		
Location:	Church Rock	Sampled Date:	-	Sampled By:	MWH
Project Number:	--	Test Date:	2/11/2014	Technician:	CAL



Data Entered By: CAL
Date: 2/12/2014
File Name: 2512_77_PrelimPerm_ASTMD-5084-methodD_5.xls

Checked By: CAL
Date: 2/13/14


Client MWH
Job No. 2512-77
Boring No. Tailings Impoundment
Depth 9-24"
Sample No. TI-CS11-01A (9-24")
Location Church Rock
Sampled / / by
Project No. -#4 @ 95%
Test Type Tx/Pop σ3 24 psi
Mettler PC 2000
WO2512/WODPT924
02/13/14

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD

ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	-
DEPTH	9-24"	TEST STARTED	01/29/14 CAL
SAMPLE NO.	TI-CS11-04A (9-24")	TEST FINISHED	02/10/14 CAL
LOCATION	Church Rock	CELL NUMBER	7P
PROJECT NO.	-	SATURATED TEST	Yes
SOIL DESCR.	Remolded -#4 @ 100%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	3456

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	472.9	485.0
Wt. Wet Soil & Pan (g)	479.5	491.6
Wt. Dry Soil & Pan (g)	419.7	419.7
Wt. Lost Moisture (g)	59.8	71.9
Wt. of Pan Only (g)	6.5	6.5
Wt. of Dry Soil (g)	413.1	413.1
Moisture Content %	14.5	17.4
Wet Density PCF	131.9	136.5
Dry Density PCF	115.3	116.2

Init. Diameter (in)	2.405	(cm)	6.109
Init. Area (sq in)	4.543	(sq cm)	29.310
Init. Height (in)	3.006	(cm)	7.635
Vol. Bef. Consol. (cu ft)	0.00790		
Vol. After Consol. (cu ft)	0.00784		
Porosity %	32.39		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	12
Percentage of Pump setting	100
Q (cc/s)	2.30E-05
Height	2.970
Diameter	2.409
Pressure (psi)	0.839
Area after consol. (cm*cm)	29.414
Gradient	7.819
Permeability k (cm/s)	1.0E-07
Permeability k (m/s)	1.0E-09
Back Pressure (psi)	68.0
Cell Pressure (psi)	92.0
Ave. Effective Stress (psi)	23.581
Average temperature degree C:	22.0

Data entry by: SKL Date: 02/12/2014
Checked by: CAL Date: 2/13/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_4.xls

ATT
ADVANCED TERRA TESTING

TRIAXAL TEST DATA
ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	-
DEPTH	9-24"	TEST STARTED	01/29/14 CAL
SAMPLE NO.	TI-CS11-04A (9-24")	TEST FINISHED	02/10/14 CAL
LOCATION	Church Rock	SETUP NO.	7P
PROJECT NO.	-	SATURATED TEST	Yes
SOIL DESCR.	Remolded -#4 @ 100%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	3456

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	3.3	16.3				
50.0	48.0	12.3	13.6	38.8	47.2	8.4	0.84
60.0	58.0	13.7	14.7	48.7	57.6	8.9	0.89
70.0	68.0	14.8	15.6	59.2	68.4	9.2	0.92
80.0		15.7	15.8	69.1	78.6	9.5	0.95

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	0.30	0.00
0.25	0.50	3.60	-3.30
0.5	0.71	3.90	-3.60
1	1.00	4.45	-4.15
2	1.41	5.10	-4.80
4	2.00	5.90	-5.60
9	3.00	7.00	-6.70
16	4.00	7.90	-7.60
30	5.48	8.70	-8.40
60	7.75	9.50	-9.20
120	10.95	10.00	-9.70
240	15.49	10.30	-10.00
360	18.97	10.40	-10.10

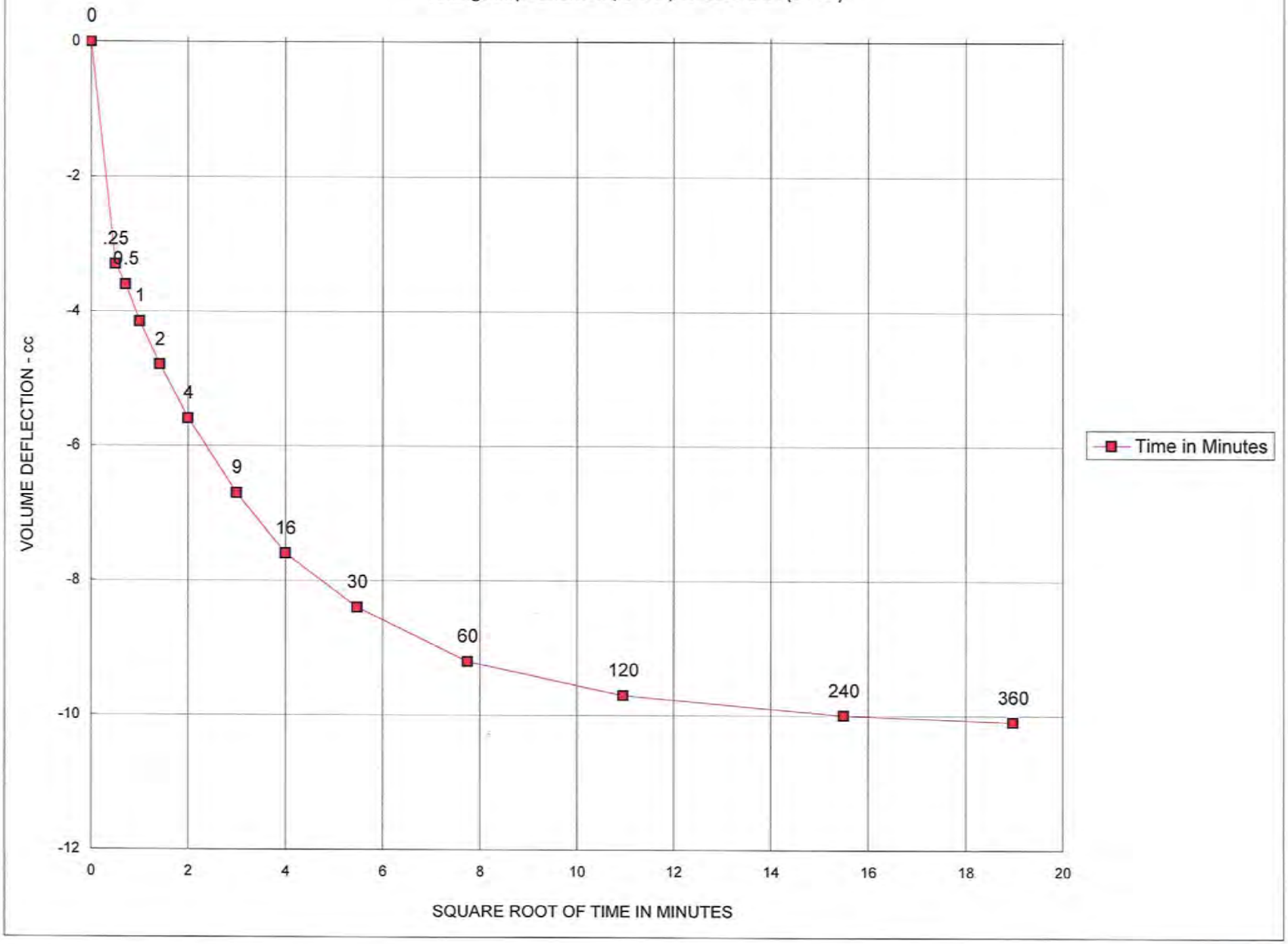
Initial Height (in)	3.006	Init. Vol. (CC)	223.814
Height Change (in)	0.036	Vol. Change (CC)	23.300
Ht. After Cons. (in)	2.970	Cell Exp. (CC)	21.415
Initial Area (sq in)	4.543	Net Change (CC)	1.885
Area After Cons. (sq in)	4.559	Cons. Vol. (CC)	221.930

Data entry by: SKL Date: 02/12/2014
Checked by: CAL Date: 2/13/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_4.xls

ATT
ADVANCED TERRA TESTING

CONSOLIDATION DATA

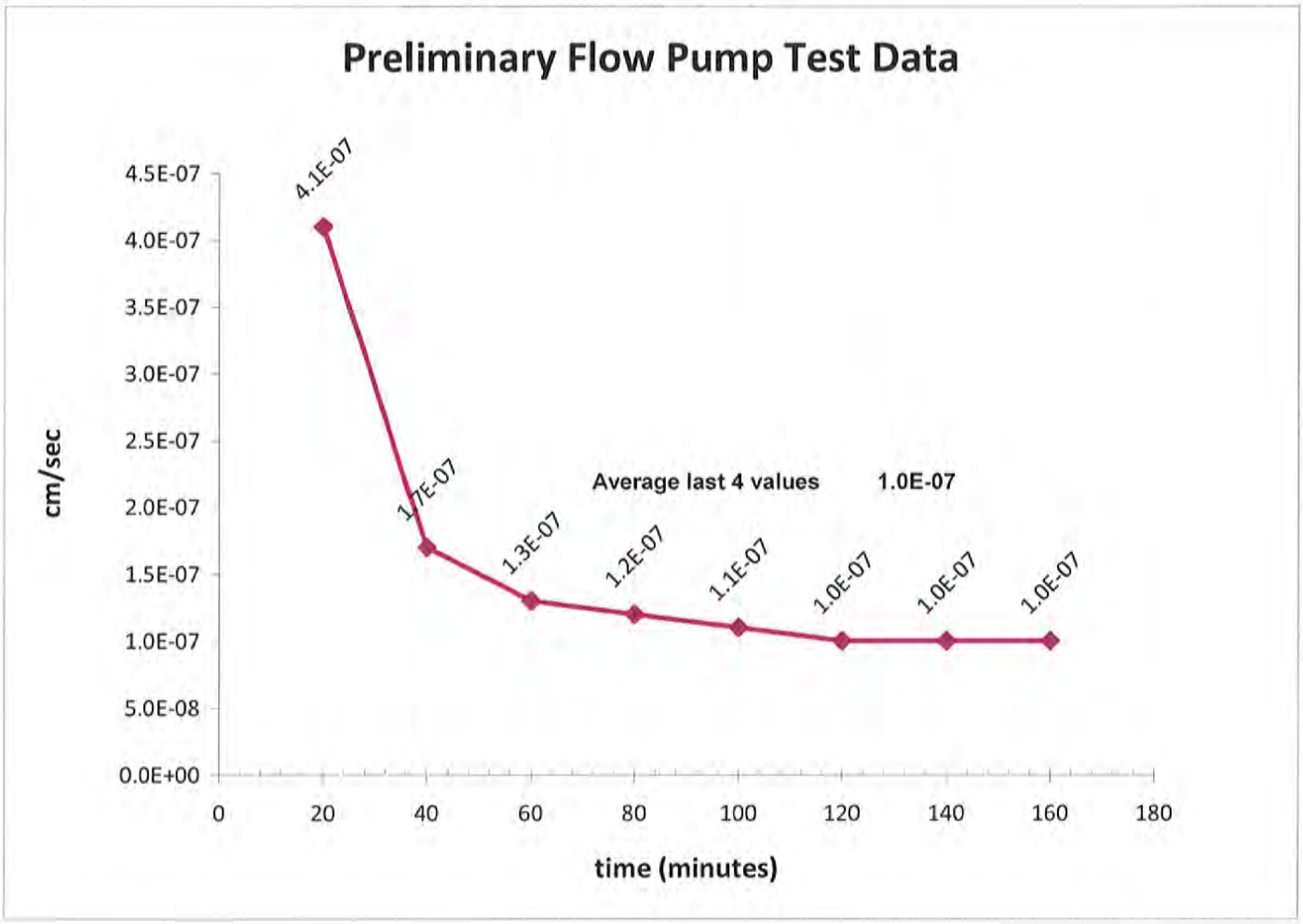
Tailings Impoundment, 9-24", TI-CS11-04A (9-24")



ADVANCED TERRA TESTING

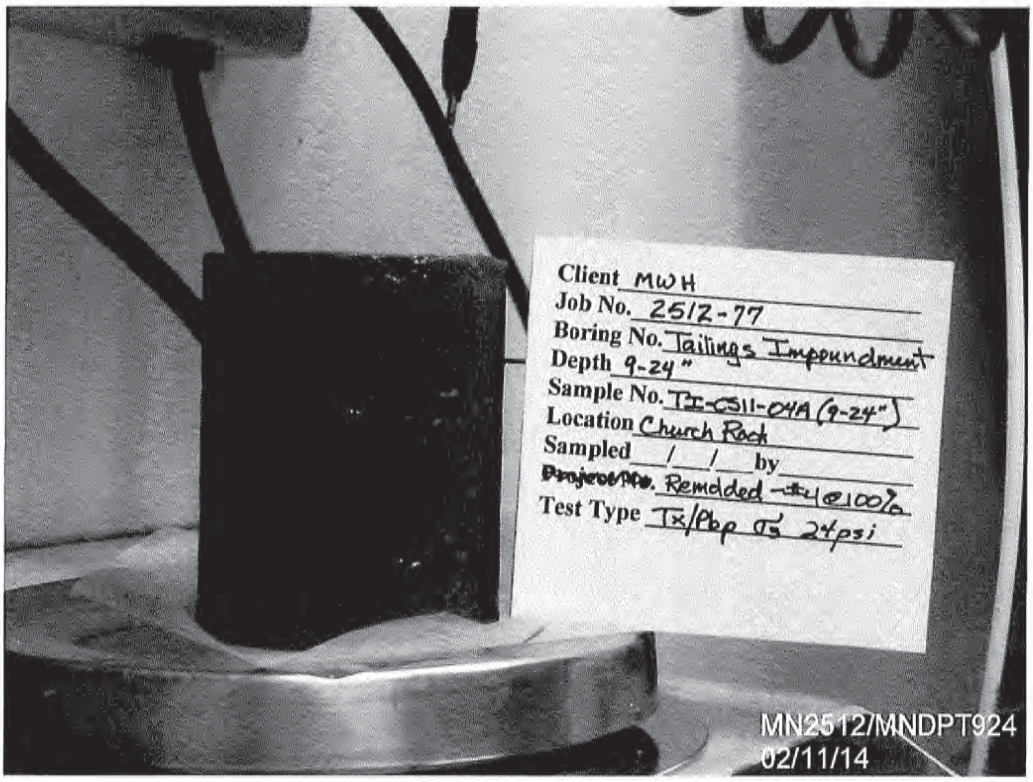
Preliminary Flow Pump Test Data
ASTM D5084

Client:	MWH	Boring Number:	Tailings Impoundment		
Job Number:	2512_77	Depth:	9-24"		
Project:	--	Sample Number:	TI-CS11-04A @ 100%		
Location:	Church Rock	Sampled Date:	-	Sampled By:	MWH
Project Number:	--	Test Date:	2/10/2014	Technician:	CAL



Data Entered By: CAL
Date: 2/13/2014
File Name: 2512_77_PrelimPerm_ASTMD-5084-methodD_7.xls

Checked By: CAL
Date: 2/13/14


Client MWH
Job No. 2512-77
Boring No. Tailings Impoundment
Depth 9-24"
Sample No. TI-CS11-04A (9-24")
Location Church Rock
Sampled / / by
Remolded @100%
Test Type Tx/Pbp @ 24psi
MN2512/MNDPT924
02/11/14

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD

ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	--
DEPTH	8-28"	TEST STARTED	01/27/14 CAL
SAMPLE NO.	TI-CS08-04A (8-28)	TEST FINISHED	02/05/14 CAL
LOCATION	Church Rock	CELL NUMBER	6P
PROJECT NO.	--	SATURATED TEST	Yes
SOIL DESCR.	-#4 @ 90%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	3456

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	430.7	457.7
Wt. Wet Soil & Pan (g)	437.3	464.3
Wt. Dry Soil & Pan (g)	392.3	392.3
Wt. Lost Moisture (g)	45.0	72.0
Wt. of Pan Only (g)	6.7	6.7
Wt. of Dry Soil (g)	385.7	385.7
Moisture Content %	11.7	18.7
Wet Density PCF	120.6	138.2
Dry Density PCF	108.0	116.5

Init. Diameter	(in)	2.406	(cm)	6.111
Init. Area	(sq in)	4.547	(sq cm)	29.334
Init. Height	(in)	2.991	(cm)	7.597
Vol. Bef. Consol.	(cu ft)	0.00787		
Vol. After Consol.	(cu ft)	0.00730		
Porosity %		34.81		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	8
Percentage of Pump setting	100
Q (cc/s)	5.70E-04
Height	2.967
Diameter	2.327
Pressure (psi)	0.244
Area after consol. (cm*cm)	27.432
Gradient	2.276
Permeability k (cm/s)	9.1E-06
Permeability k (m/s)	9.1E-08
Back Pressure (psi)	88.0
Cell Pressure (psi)	112.0
Ave. Effective Stress (psi)	23.878
Average temperature degree C:	21.0

Data entry by: DAW Date: 02/06/2014
Checked by: CM Date: 2/06/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_0.xls

ATT
ADVANCED TERRA TESTING

TRIAXAL TEST DATA
ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	--
DEPTH	8-28"	TEST STARTED	01/27/14 CAL
SAMPLE NO.	TI-CS08-04A (8-28)	TEST FINISHED	02/05/14 CAL
LOCATION	Church Rock	SETUP NO.	6P
PROJECT NO.	--	SATURATED TEST	Yes
SOIL DESCR.	-#4 @ 90%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	3456

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	2.0	13.0				
50.0	48.0	13.7	15.3	37.4	44.9	7.5	0.75
60.0	58.0	15.3	16.3	47.4	55.4	8.0	0.80
70.0	68.0	16.7	17.6	57.5	66.0	8.5	0.85
80.0	78.0	17.7	18.5	67.4	76.4	9.0	0.90
90.0	88.0	19.0	19.9	77.2	86.6	9.4	0.94
100.0		20.0	20.1	87.1	96.7	9.6	0.96

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	0.20	0.00
0.25	0.50	7.70	-7.50
0.5	0.71	9.00	-8.80
1	1.00	10.00	-9.80
2	1.41	10.80	-10.60
4	2.00	11.40	-11.20
9	3.00	12.20	-12.00
16	4.00	12.50	-12.30
30	5.48	12.75	-12.55
60	7.75	13.00	-12.80
120	10.95	13.10	-12.90
240	15.49	13.25	-13.05
360	18.97	13.30	-13.10

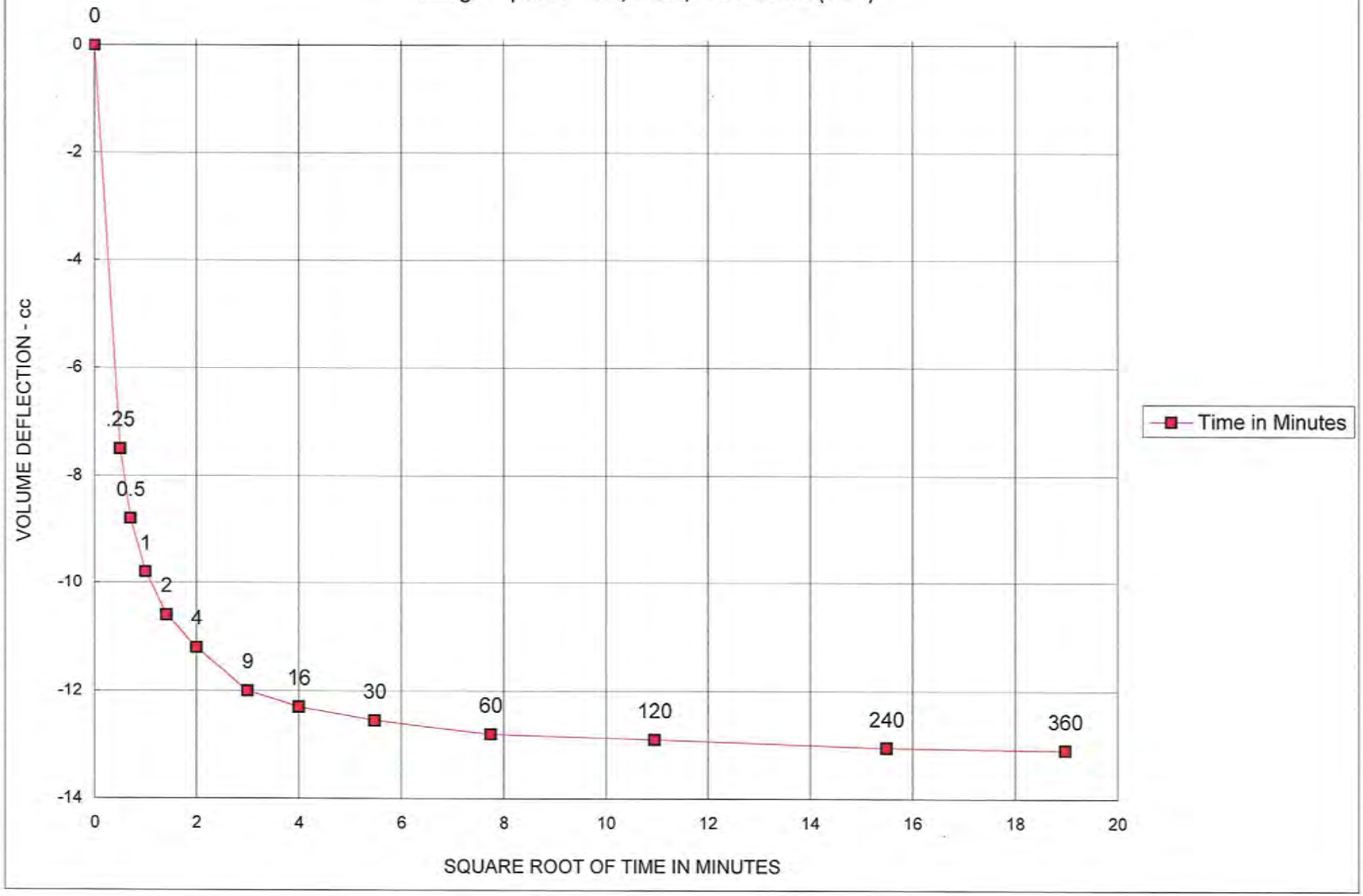
Initial Height (in)	2.991	Init. Vol. (CC)	222.883
Height Change (in)	0.024	Vol. Change (CC)	31.900
Ht. After Cons. (in)	2.967	Cell Exp. (CC)	15.784
Initial Area (sq in)	4.547	Net Change (CC)	16.116
Area After Cons. (sq in)	4.252	Cons. Vol. (CC)	206.767

Data entry by: DAW Date: 02/06/2014
Checked by: ane Date: 2/06/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_0.xls

ATT
ADVANCED TERRA TESTING

CONSOLIDATION DATA

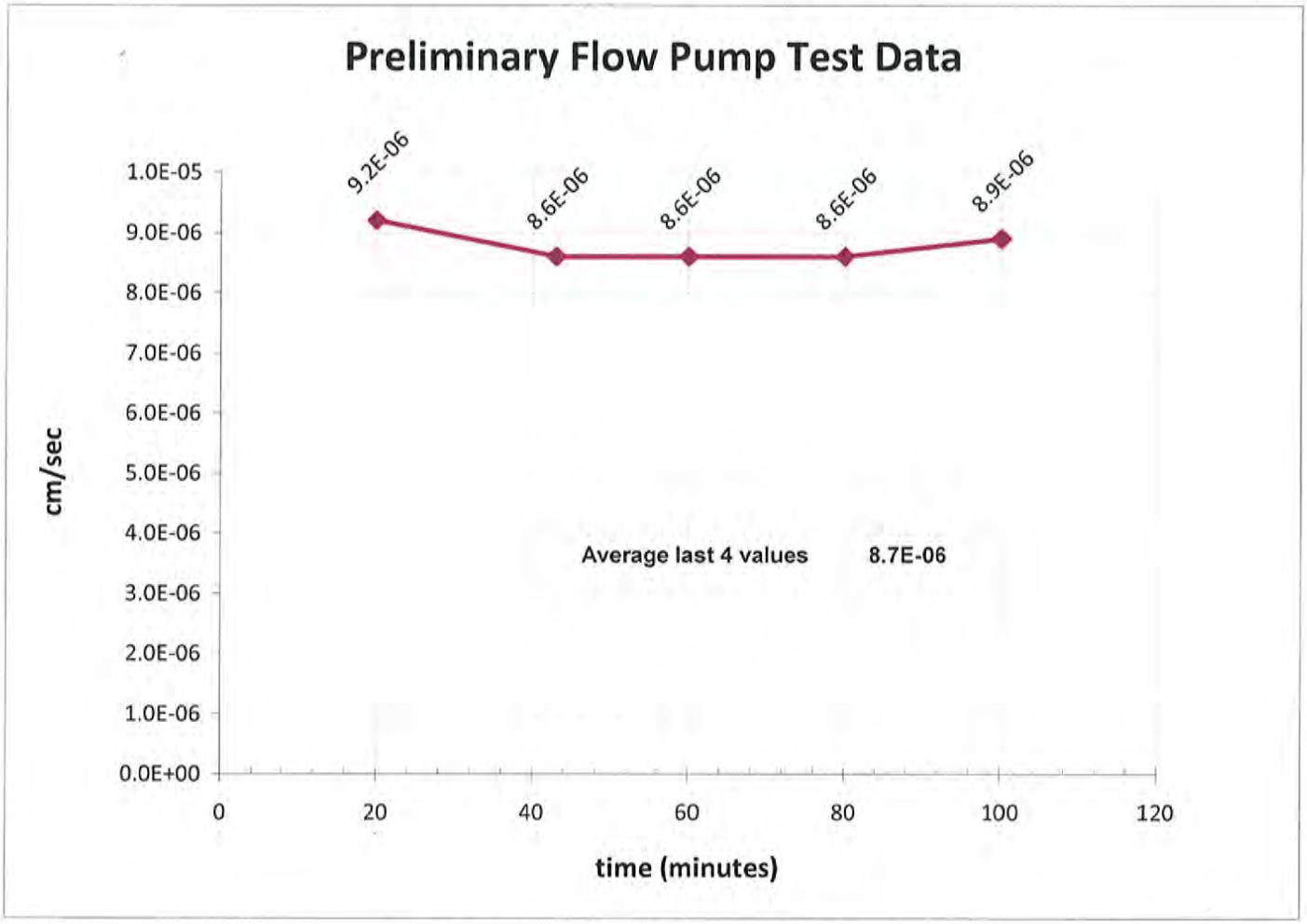
Tailings Impoundment, 8-28", TI-CS08-04A (8-28)



ADVANCED TERRA TESTING

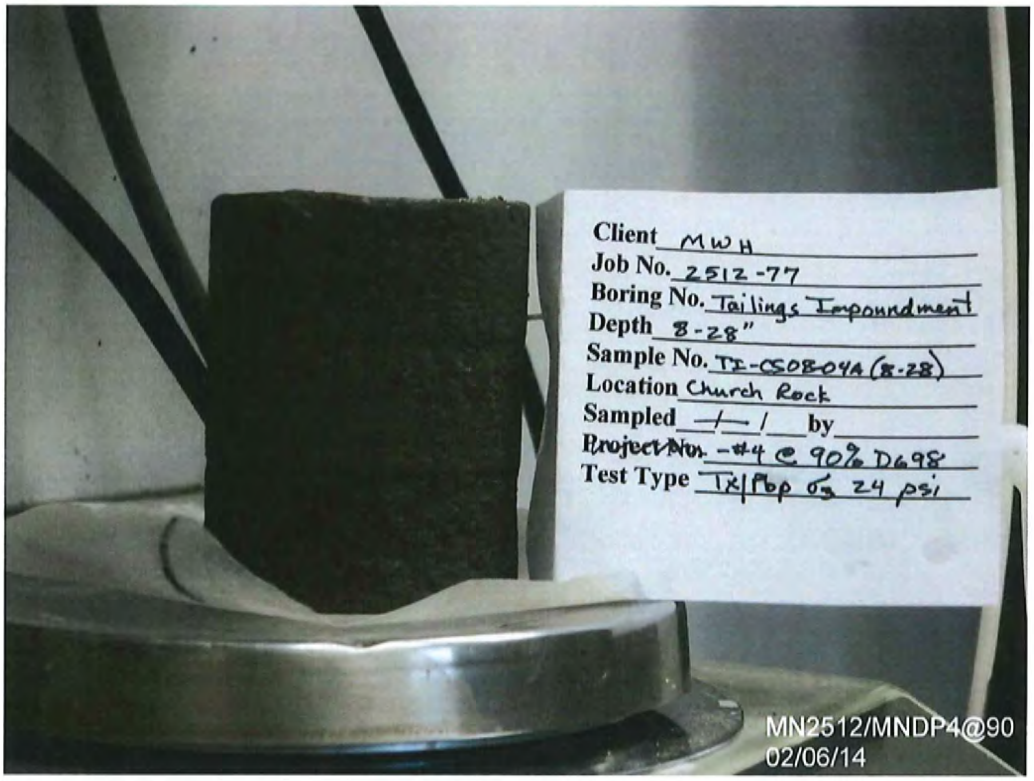
Preliminary Flow Pump Test Data
ASTM D5084

Client:	MWH	Boring Number:	Tailings Impoundment		
Job Number:	2512_77	Depth:	8-28"		
Project:	--	Sample Number:	TI-CS08-04A @90% D698		
Location:	Church Rock	Sampled Date:	-	Sampled By:	MWH
Project Number:	--	Test Date:	2/5/2014	Technician:	CAL



Data Entered By: CAL
Date: 2/12/2014
File Name: 2512_77_PrelimPerm_ASTMD-5084-methodD_2.xls

Checked By: CAL
Date: 2/13/14


Client MWH
Job No. 2512-77
Boring No. Tailings Impoundment
Depth 8-28"
Sample No. TI-CS08-04A (8-28)
Location Church Rock
Sampled —/—/— by
Project No. -#4 @ 90% D698
Test Type TX/Rep σ3 24 psi
MN2512/MNDP4@90
02/06/14

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD

ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	--
DEPTH	8-28"	TEST STARTED	01/27/14 CAL
SAMPLE NO.	TI-CS08-04A (8-28)	TEST FINISHED	02/06/14 CAL
LOCATION	Church Rock	CELL NUMBER	5P
PROJECT NO.	--	SATURATED TEST	Yes
SOIL DESCR.	-#4 @ 95%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	3456

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	454.4	478.6
Wt. Wet Soil & Pan (g)	461.4	485.6
Wt. Dry Soil & Pan (g)	413.4	413.4
Wt. Lost Moisture (g)	48.0	72.2
Wt. of Pan Only (g)	7.0	7.0
Wt. of Dry Soil (g)	406.4	406.4
Moisture Content %	11.8	17.8
Wet Density PCF	127.1	140.5
Dry Density PCF	113.7	119.3

Init. Diameter (in)	2.407	(cm)	6.114
Init. Area (sq in)	4.550	(sq cm)	29.359
Init. Height (in)	2.993	(cm)	7.602
Vol. Bef. Consol. (cu ft)	0.00788		
Vol. After Consol. (cu ft)	0.00751		
Porosity %	33.95		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	8
Percentage of Pump setting	100
Q (cc/s)	5.70E-04
Height	2.932
Diameter	2.374
Pressure (psi)	0.197
Area after consol. (cm*cm)	28.554
Gradient	1.860
Permeability k (cm/s)	1.1E-05
Permeability k (m/s)	1.1E-07
Back Pressure (psi)	78.0
Cell Pressure (psi)	102.0
Ave. Effective Stress (psi)	23.902
Average temperature degree C:	21.6

Data entry by: DAW Date: 02/07/2014
Checked by: CM Date: 2/10/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_0.xls

ATT
ADVANCED TERRA TESTING

TRIAXAL TEST DATA
ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	--
DEPTH	8-28"	TEST STARTED	01/27/14 CAL
SAMPLE NO.	TI-CS08-04A (8-28)	TEST FINISHED	02/06/14 CAL
LOCATION	Church Rock	SETUP NO.	5P
PROJECT NO.	--	SATURATED TEST	Yes
SOIL DESCR.	-#4 @ 95%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	3456

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	2.1	13.1				
50.0	48.0	13.6	15.1	37.3	45.4	8.1	0.81
60.0	58.0	15.2	16.2	47.4	55.9	8.5	0.85
70.0	68.0	16.2	17.1	57.3	66.3	9.0	0.90
80.0	78.0	17.6	18.4	67.1	76.5	9.4	0.94
90.0		18.4	18.6	77.2	86.9	9.7	0.97

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	0.30	0.00
0.25	0.50	6.20	-5.90
0.5	0.71	7.50	-7.20
1	1.00	8.25	-7.95
2	1.41	8.70	-8.40
4	2.00	8.90	-8.60
9	3.00	9.10	-8.80
16	4.00	9.20	-8.90
30	5.48	9.35	-9.05
60	7.75	9.50	-9.20
120	10.95	9.60	-9.30
240	15.49	9.70	-9.40
360	18.97	9.70	-9.40

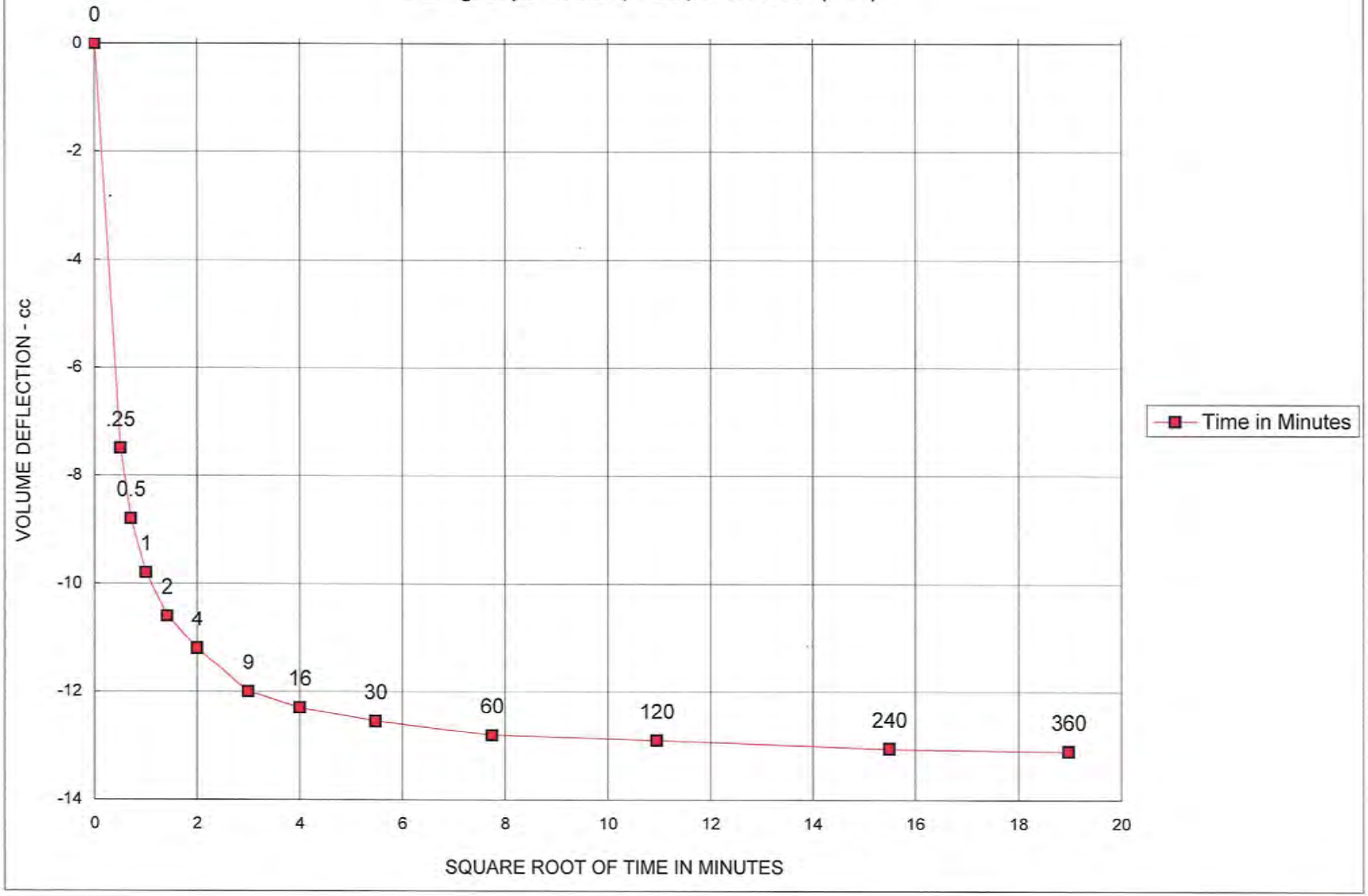
Initial Height (in)	2.993	Init. Vol. (CC)	223.217
Height Change (in)	0.061	Vol. Change (CC)	26.500
Ht. After Cons. (in)	2.932	Cell Exp. (CC)	15.972
Initial Area (sq in)	4.550	Net Change (CC)	10.528
Area After Cons. (sq in)	4.426	Cons. Vol. (CC)	212.689

Data entry by: DAW Date: 02/07/2014
Checked by: cm Date: 2/10/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_0.xls

ATT
ADVANCED TERRA TESTING

CONSOLIDATION DATA

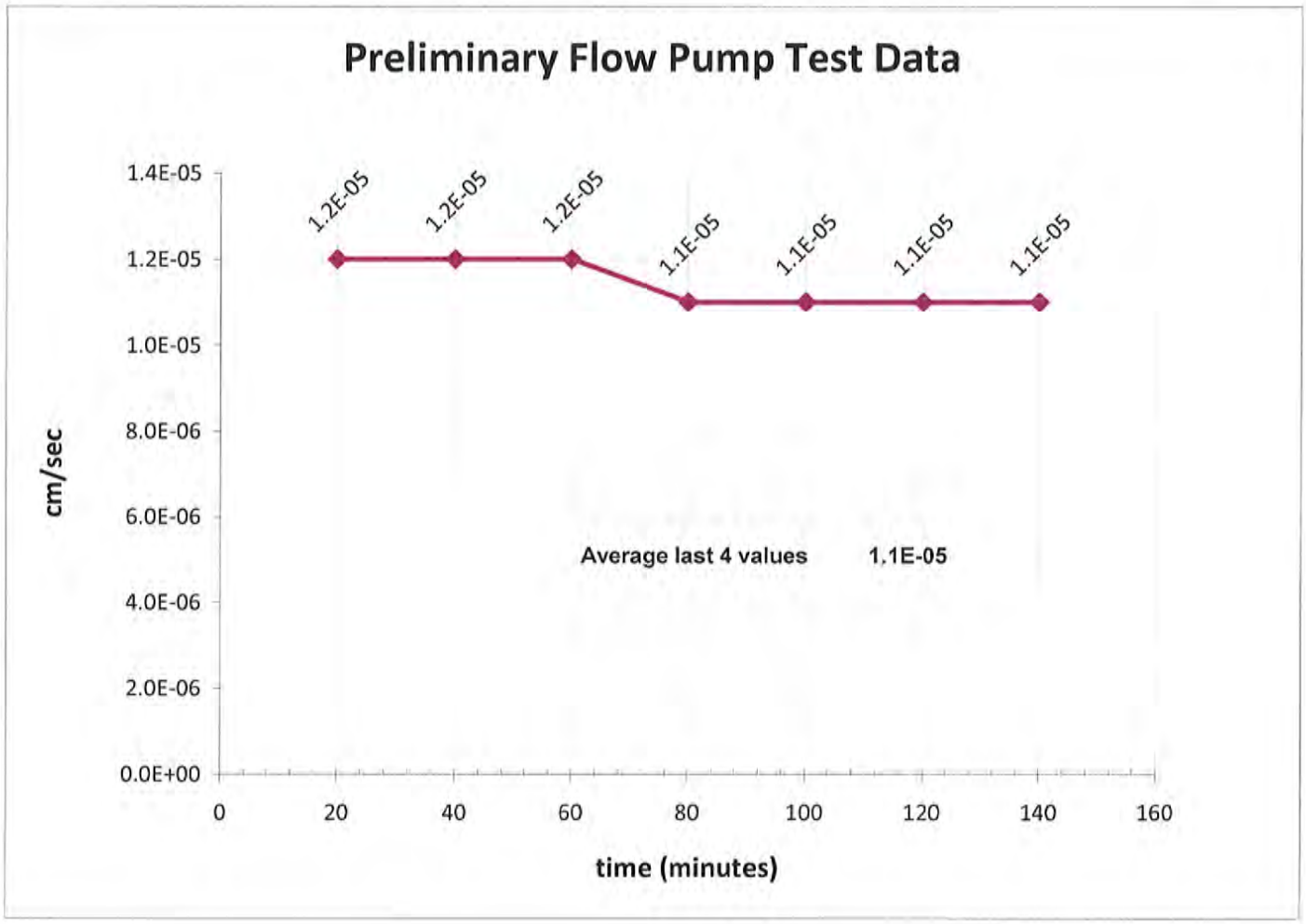
Tailings Impoundment, 8-28", TI-CS08-04A (8-28)



ADVANCED TERRA TESTING

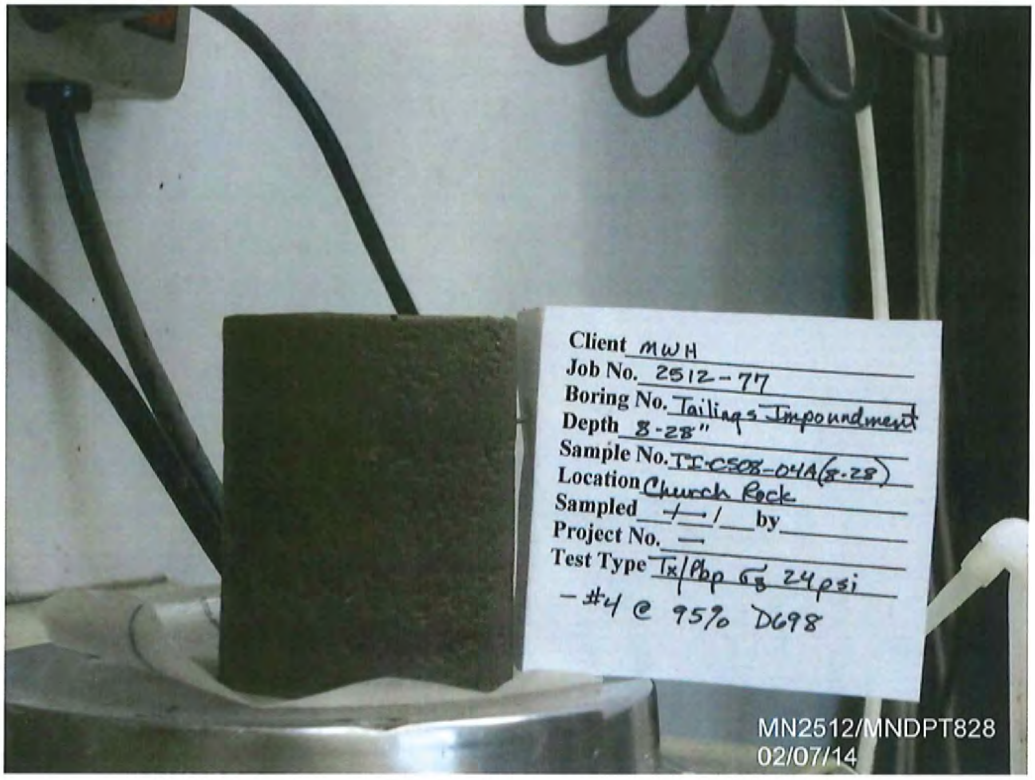
Preliminary Flow Pump Test Data
ASTM D5084

Client:	MWH	Boring Number:	Tailings Impoundment		
Job Number:	2512_77	Depth:	8-28"		
Project:	--	Sample Number:	TI-CS08-04A @ 95% D698		
Location:	Church Rock	Sampled Date:	--	Sampled By:	MWH
Project Number:	--	Test Date:	2/6/2014	Technician:	CAL



Data Entered By: CAL
Date: 2/12/2014
File Name: 2512_77_PrelimPerm_ASTMD-5084-methodD_3.xls

Checked By: CAL
Date: 2/13/14


Client MWH
Job No. 2512-77
Boring No. Tailings Impoundment
Depth 8-28"
Sample No. TI-CSOB-04A(8-28)
Location Church Rock
Sampled ___/___/___ by
Project No. —
Test Type Tx/Pop Gs 24psi
-#4 @ 95% D698
MN2512/MNDPT828
02/07/14

PERMEABILITY TEST - BACK PRESSURE SATURATED - FLOW PUMP METHOD

ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	--
DEPTH	8-28"	TEST STARTED	01/27/14 CAL
SAMPLE NO.	TI-CS08-04A (8-28)	TEST FINISHED	02/05/14 CAL
LOCATION	Church Rock	CELL NUMBER	19S
PROJECT NO.	--	SATURATED TEST	Yes
SOIL DESCR.	-#4 @ 100%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	3456

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	478.2	495.7
Wt. Wet Soil & Pan (g)	484.8	502.4
Wt. Dry Soil & Pan (g)	434.9	434.9
Wt. Lost Moisture (g)	49.9	67.5
Wt. of Pan Only (g)	6.7	6.7
Wt. of Dry Soil (g)	428.2	428.2
Moisture Content %	11.7	15.8
Wet Density PCF	133.3	141.1
Dry Density PCF	119.4	121.9

Init. Diameter (in)	2.408	(cm)	6.116
Init. Area (sq in)	4.554	(sq cm)	29.383
Init. Height (in)	3.000	(cm)	7.620
Vol. Bef. Consol. (cu ft)	0.00791		
Vol. After Consol. (cu ft)	0.00775		
Porosity %	30.76		

FLOW PUMP CALCULATIONS

Pump Setting (gear number)	10
Percentage of Pump setting	100
Q (cc/s)	1.15E-04
Height	2.982
Diameter	2.391
Pressure (psi)	0.293
Area after consol. (cm*cm)	28.957
Gradient	2.720
Permeability k (cm/s)	1.5E-06
Permeability k (m/s)	1.5E-08
Back Pressure (psi)	78.0
Cell Pressure (psi)	102.0
Ave. Effective Stress (psi)	23.854
Average temperature degree C:	21.5

Data entry by: DAW Date: 02/06/2014
Checked by: CH Date: 2/06/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_1.xls

ATT
ADVANCED TERRA TESTING

TRIAXAL TEST DATA
ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	Tailings Impoundment	SAMPLED	--
DEPTH	8-28"	TEST STARTED	01/27/14 CAL
SAMPLE NO.	TI-CS08-04A (8-28)	TEST FINISHED	02/05/14 CAL
LOCATION	Church Rock	SETUP NO.	19S
PROJECT NO.	--	SATURATED TEST	Yes
SOIL DESCR.	-#4 @ 100%	TEST TYPE	TX/Pbp/Tap Water
		CONF. PRES. PSF	3456

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	2.7	12.1				
50.0	48.0	8.7	9.9	37.3	44.8	7.5	0.75
60.0	58.0	9.7	10.7	47.2	55.4	8.2	0.82
70.0	68.0	10.7	11.7	57.4	66.2	8.8	0.88
80.0	78.0	11.7	12.4	67.4	76.4	9.0	0.90
90.0		12.8	12.8	77.2	86.7	9.5	0.95

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	0.30	0.00
0.25	0.50	3.30	-3.00
0.5	0.71	3.80	-3.50
1	1.00	4.60	-4.30
2	1.41	5.45	-5.15
4	2.00	6.25	-5.95
9	3.00	6.80	-6.50
16	4.00	7.00	-6.70
30	5.48	7.05	-6.75
60	7.75	7.15	-6.85
120	10.95	7.20	-6.90
240	15.49	7.35	-7.05
360	18.97	7.35	-7.05

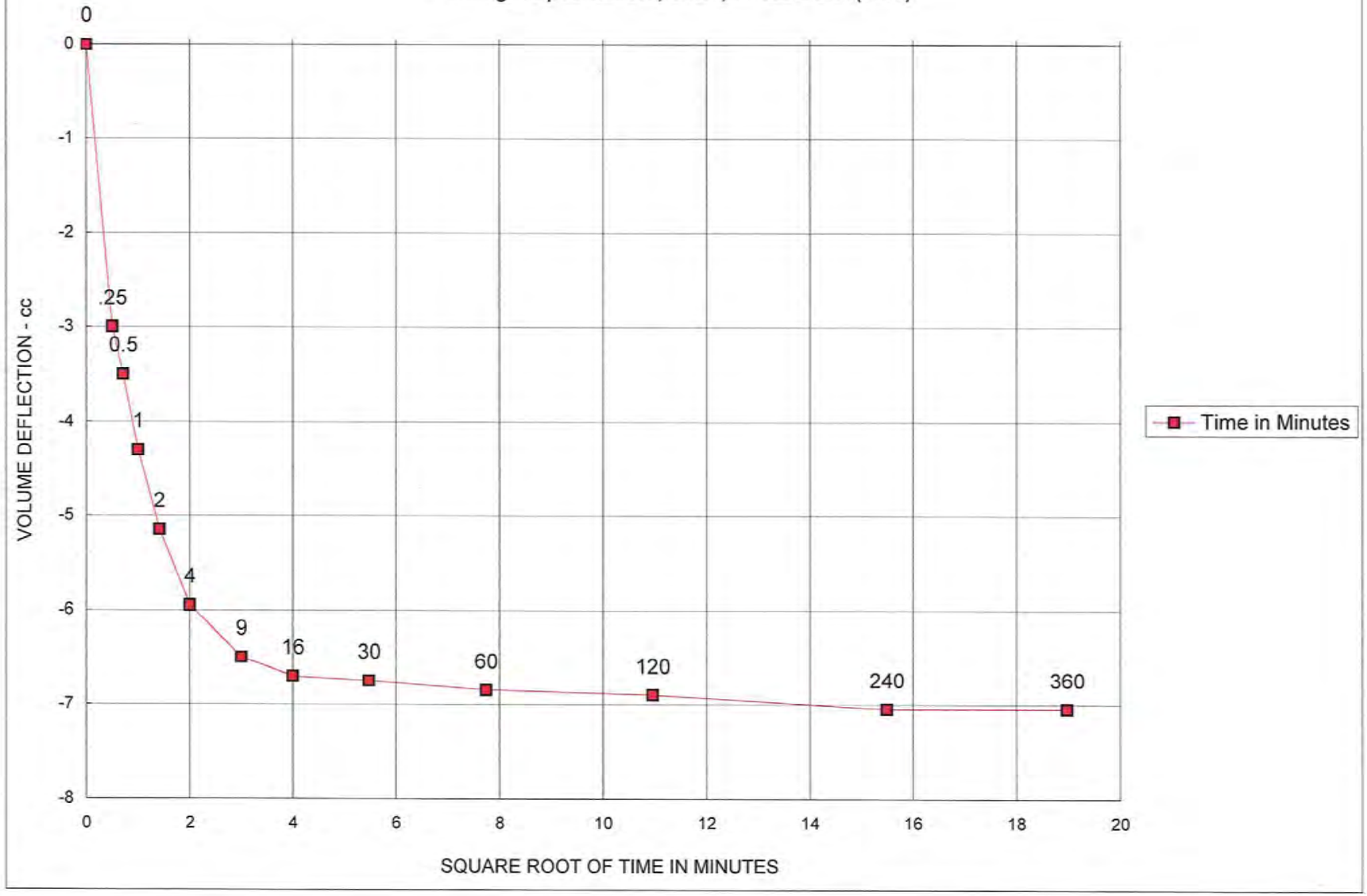
Initial Height (in)	3.000	Init. Vol. (CC)	223.925
Height Change (in)	0.018	Vol. Change (CC)	17.700
Ht. After Cons. (in)	2.982	Cell Exp. (CC)	13.146
Initial Area (sq in)	4.554	Net Change (CC)	4.554
Area After Cons. (sq in)	4.488	Cons. Vol. (CC)	219.371

Data entry by: DAW Date: 02/06/2014
Checked by: CAE Date: 2/06/14
FileName: 2512_77_HarvardFlowPump-Perm-ASTMD-5084-R1_1.xls

ATT
ADVANCED TERRA TESTING

CONSOLIDATION DATA

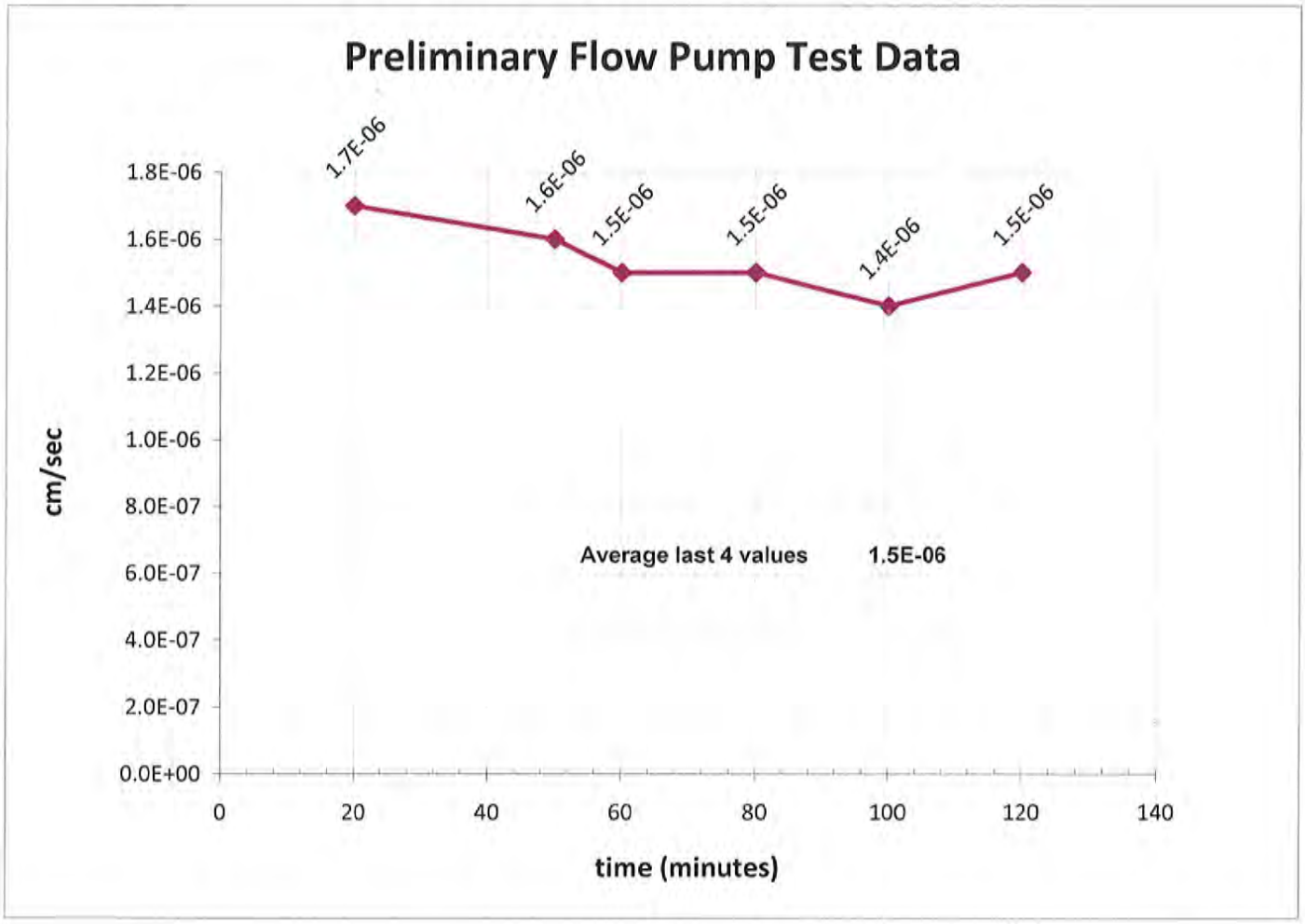
Tailings Impoundment, 8-28", TI-CS08-04A (8-28)



ADVANCED TERRA TESTING

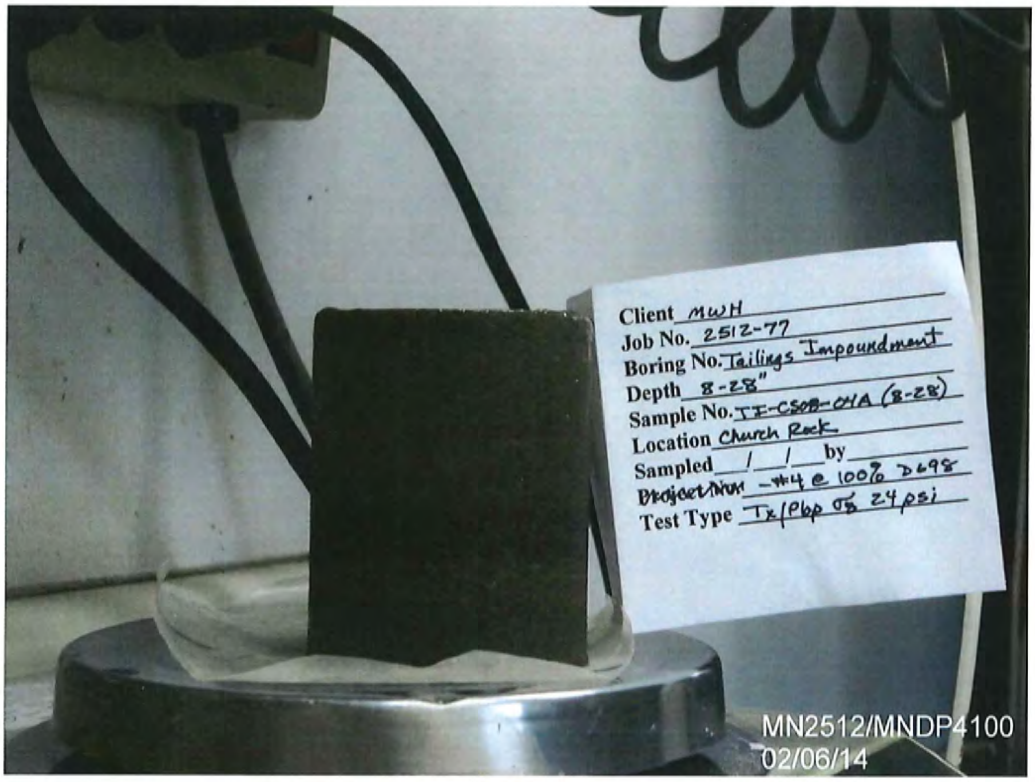
Preliminary Flow Pump Test Data
ASTM D5084

Client:	MWH	Boring Number:	Tailings Impoundment		
Job Number:	2512_77	Depth:	8-28"		
Project:	--	Sample Number:	TI-CS08-04A @ 100% D698		
Location:	Church Rock	Sampled Date:	--	Sampled By:	CAL
Project Number:	--	Test Date:	2/5/2014	Technician:	CAL



Data Entered By: CAL
Date: 2/12/2014
File Name: 2512_77_PrelimPerm_ASTMD-5084-methodD_4.xls

Checked By: CAL
Date: 2/13/14


Client MWH
Job No. 2512-77
Boring No. Tailings Impoundment
Depth 8-28"
Sample No. TI-CSOB-CHA (8-28)
Location Church Rock
Sampled / / by
Projection -#4 @ 100% D698
Test Type Tx/Pbp @ 24 psi
MN2512/MNDP4100
02/06/14

Project Name: Church Rock (ATT Job No. 2512-77)
Quarry Source: Church Rock
Project Number: 143002

Specific Gravity of Coarse Aggregate (ASTM C-127)
Sample: TI-CS02-02A

Trial Number	1	2	3	Average
SSD Aggregate Weight	1399.2	1397.4	1405.9	
Immersed Agg. Weight	742.1	897.5	910.3	
Tare No.	R-16	R-19	R-24	
Dry Agg. & Tare Weight	1512.9	1494.8	1520.4	
Tare Weight	130.2	115.2	124.4	
Dry Aggregate Weight	1382.7	1379.6	1396.0	
Apparent Specific Gravity	2.873	2.862	2.874	2.870
Bulk(SSD) Specific Gravity	2.811	2.795	2.837	2.814
Bulk(Oven Dry) Spec. Gravity	2.778	2.760	2.817	2.785
Percent Absorption	1.193	1.290	0.709	1.064

Specific Gravity of Coarse Aggregate (ASTM C-127)
Sample: TI-CS06-02A

Trial Number	1	2	3	Average
SSD Aggregate Weight	1407.2	1406.1	1402.6	
Immersed Agg. Weight	898.7	898.5	896.2	
Tare No.	R-17	R-20	R-21	
Dry Agg. & Tare Weight	1498.6	1500.4	1503.2	
Tare Weight	117.4	120.6	127.1	
Dry Aggregate Weight	1381.2	1379.8	1376.1	
Apparent Specific Gravity	2.863	2.867	2.867	2.866
Bulk(SSD) Specific Gravity	2.767	2.770	2.770	2.769
Bulk(Oven Dry) Spec. Gravity	2.716	2.718	2.717	2.717
Percent Absorption	1.882	1.906	1.926	1.905

Specific Gravity of Coarse Aggregate (ASTM C-127)

Sample: TI-CS09-02A

Trial Number	1	2	3	Average
SSD Aggregate Weight	1413.5	1414.9	1415.4	
Immersed Agg. Weight	908.2	903.8	903.3	
Tare No.	R-15	R-18	R-23	
Dry Agg. & Tare Weight	1529.5	1527.4	1515.7	
Tare Weight	133.4	132.8	127.2	
Dry Aggregate Weight	1396.1	1394.6	1388.5	
Apparent Specific Gravity	2.861	2.841	2.862	2.855
Bulk(SSD) Specific Gravity	2.797	2.768	2.764	2.776
Bulk(Oven Dry) Spec. Gravity	2.763	2.729	2.711	2.734
Percent Absorption	1.246	1.456	1.937	1.546

CTC-GEOTEK, INC.

155 South Navajo Street
Denver, Colorado 80223

Date: 6-20-2014
Technician: JW

Project Name: Church Rock (ATT Job No. 2512 - 77)
Quarry Source: Church Rock
Project Number: 143002

ASTM C 88-93, "Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate"

Sample Identification: **TI - CS02 - 02A**

Chemical Used: **Sodium Sulfate** (Na_2SO_2)

QUANTITATIVE EXAMINATION

	INITIAL INDEPENDENT GRADING		FINAL COMBINED FRACTION GRADING				
	Required Amount (gm)	Actual Amount (gm)	Grading of Original Sample (%)	Weight of Test Fractions Before Test (gm)	Weight of Test Fractions After Test (gm)	Percent Passing Designated Seive After Test	Weighted Percentage Loss
2 1/2" (63.0 mm) to 1 1/2" (37.5 mm)	**5000 ± 300**	**0.0**	—	—	—	—	—
2 1/2" (63.0 mm) to 2.0" (50.0 mm)	3000 ± 300	—					
2.0" (50.0 mm) to 1 1/2" (37.5 mm)	2000 ± 200	—					
1 1/2" (37.5 mm) to 3/4" (19.0 mm)	**1500 ± 50**	**1503.1**	100.0	1503.1	1498.1	0.3	0.33
1 1/2" (37.5 mm) to 1.0" (25.0 mm)	1000 ± 50	1000.8					
1.0 (25.0 mm) to 3/4" (19.0 mm)	500 ± 30	502.3					
3/4" (19.0 mm) to 3/8" (9.5 mm)	**1000 ± 10**	**1005.3**	100.0	1005.3	1001.6	0.4	0.37
3/4" (19.0 mm) to 1/2" (12.5 mm)	670 ± 10	673.4					
1/2" (12.5 mm) to 3/8" (9.5 mm)	330 ± 10	331.9					
3/8" (9.5 mm) to No. 4 (4.75 mm)	**300 ± 5**	**302.1**	100.0	302.1	298.4	1.2	1.22
3/8" (9.5 mm) to No. 4 (4.75 mm)	300 ± 5	302.1					

* "Grading of Original Sample" is compared to the average grading of No. 467 (Coarse Aggregate) of ASTM C 33-93.

QUALITATIVE EXAMINATION

	Particles Exhibiting Distress								Total Number of Test Particles	
	Splitting		Crumbling		Cracking		Flaking			
	No.	%	No.	%	No.	%	No.	%	Initial	Final
2 1/2" (63.0 mm) to 1 1/2" (37.5 mm)	—	—	—	—	—	—	—	—	—	—
1 1/2" (37.5 mm) to 3/4" 19.0 mm)	0	0.0	0	0.0	0	0.0	0	0.0	41	41

CTC-GEOTEK, INC.

155 South Navajo Street
Denver, Colorado 80223

Date: 6-20-2014
Technician: JW

Project Name: Church Rock (ATT Job No. 2512 - 77)
Quarry Source: Church Rock
Project Number: 143002

ASTM C 88-93, "Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate"

Sample Identification: **TI - CS06 - 02A**

Chemical Used: **Sodium Sulfate (Na_2SO_2)**

QUANTITATIVE EXAMINATION

	INITIAL INDEPENDENT GRADING		FINAL COMBINED FRACTION GRADING				
	Required Amount (gm)	Actual Amount (gm)	Grading of Original Sample (%)	Weight of Test Fractions Before Test (gm)	Weight of Test Fractions After Test (gm)	Percent Passing Designated Seive After Test	Weighted Percentage Loss
2 1/2" (63.0 mm) to 1 1/2" (37.5 mm)	**5000 ± 300**	**0.0**	—	—	—	—	—
2 1/2" (63.0 mm) to 2.0" (50.0 mm)	3000 ± 300	—					
2.0" (50.0 mm) to 1 1/2" (37.5 mm)	2000 ± 200	—					
1 1/2" (37.5 mm) to 3/4" (19.0 mm)	**1500 ± 50**	**1513.2**	100.0	1513.2	1487.8	1.7	1.68
1 1/2" (37.5 mm) to 1.0" (25.0 mm)	1000 ± 50	1012.3					
1.0 (25.0 mm) to 3/4" (19.0 mm)	500 ± 30	500.9					
3/4" (19.0 mm) to 3/8" (9.5 mm)	**1000 ± 10**	**1004.3**	100.0	1004.3	1002.9	0.1	0.14
3/4" (19.0 mm) to 1/2" (12.5 mm)	670 ± 10	670.2					
1/2" (12.5 mm) to 3/8" (9.5 mm)	330 ± 10	334.1					
3/8" (9.5 mm) to No. 4 (4.75 mm)	**300 ± 5**	**301.7**	100.0	301.7	298.7	1.0	0.99
3/8" (9.5 mm) to No. 4 (4.75 mm)	300 ± 5	301.7					

* "Grading of Original Sample" is compared to the average grading of No. 467 (Coarse Aggregate) of ASTM C 33-93.

QUALITATIVE EXAMINATION

	Particles Exhibiting Distress								Total Number of Test Particles	
	Splitting		Crumbling		Cracking		Flaking			
	No.	%	No.	%	No.	%	No.	%	Initial	Final
2 1/2" (63.0 mm) to 1 1/2" (37.5 mm)	—	—	—	—	—	—	—	—	—	—
1 1/2" (37.5 mm) to 3/4" 19.0 mm)	1	1.9	1	1.9	5	9.3	0	0.0	54	54

CTC-GEOTEK, INC.

155 South Navajo Street
Denver, Colorado 80223

Date: 6-20-2014
Technician: JW

Project Name: Church Rock (ATT Job No. 2512 - 77)
Quarry Source: Church Rock
Project Number: 143002

ASTM C 88-93, "Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate"

Sample Identification: **TI - CS09 - 02A**

Chemical Used: **Sodium Sulfate (Na_2SO_2)**

QUANTITATIVE EXAMINATION

	INITIAL INDEPENDENT GRADING		FINAL COMBINED FRACTION GRADING				
	Required Amount (gm)	Actual Amount (gm)	Grading of Original Sample (%)	Weight of Test Fractions Before Test (gm)	Weight of Test Fractions After Test (gm)	Percent Passing Designated Seive After Test	Weighted Percentage Loss
2 1/2" (63.0 mm) to 1 1/2" (37.5 mm)	**5000 ± 300**	**0.0**	—	—	—	—	—
2 1/2" (63.0 mm) to 2.0" (50.0 mm)	3000 ± 300	—					
2.0" (50.0 mm) to 1 1/2" (37.5 mm)	2000 ± 200	—					
1 1/2" (37.5 mm) to 3/4" (19.0 mm)	**1500 ± 50**	**1507.1**	100.0	1507.1	1488.0	1.3	1.27
1 1/2" (37.5 mm) to 1.0" (25.0 mm)	1000 ± 50	1001.1					
1.0 (25.0 mm) to 3/4" (19.0 mm)	500 ± 30	506.0					
3/4" (19.0 mm) to 3/8" (9.5 mm)	**1000 ± 10**	**1001.4**	100.0	1001.4	989.7	1.2	1.17
3/4" (19.0 mm) to 1/2" (12.5 mm)	670 ± 10	669.3					
1/2" (12.5 mm) to 3/8" (9.5 mm)	330 ± 10	332.1					
3/8" (9.5 mm) to No. 4 (4.75 mm)	**300 ± 5**	**301.6**	100.0	301.6	295.1	2.2	2.16
3/8" (9.5 mm) to No. 4 (4.75 mm)	300 ± 5	301.6					

* "Grading of Original Sample" is compared to the average grading of No. 467 (Coarse Aggregate) of ASTM C 33-93.

QUALITATIVE EXAMINATION

	Particles Exhibiting Distress								Total Number of Test Particles	
	Splitting		Crumbling		Cracking		Flaking			
	No.	%	No.	%	No.	%	No.	%	Initial	Final
2 1/2" (63.0 mm) to 1 1/2" (37.5 mm)	—	—	—	—	—	—	—	—	—	—
1 1/2" (37.5 mm) to 3/4" 19.0 mm)	0	0.0	1	2.2	1	2.2	0	0.0	46	46

CTC-GEOTEK, INC.
155 South Navajo Street
Denver, Colorado 80223

Date: 6-20-2014
Technician: JW

Project Name: Church Rock (ATT Job No. 2512 -77)
Quarry Source: Church Rock
Project Number: 143002

ASTM C 131, "Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine"

Grading Used: Grading "A"

Sieve Size		Required Grading (gm)	Actual Grading Weights			
Passing	Retained		TI - CS02 - 02A	TI -CS06 -02A	TI - CS09 - 02A	
1 1/2 in. (37.5 mm)	1.0 in. (25.0 mm)	1250 ± 25	1252.8	1252.5	1250.7	
1.0 in. (25.0 mm)	3/4 in. (19.0 mm)	1250 ± 25	1255.2	1253.8	1249.6	
3/4 in. (19.0 mm)	1/2 in. (12.5 mm)	1250 ± 10	1253.5	1252.9	1253.9	
1/2 in. (12.5 mm)	3/8 in. (9.5 mm)	1250 ± 10	1248.4	1250.0	1250.8	
Total Aggregate Accumulated		5000 ± 10	5009.9	5009.2	5005.0	

Initial Weight (gm)	5009.9	5009.2	5005.0	
Unwashed Weight at 100 Rev. (gm)	4820.0	4724.9	4750.1	
Washed Weight at 500 Rev. (gm)	4157.6	3835.5	3860.2	

Percent Loss at 100 Revolutions	3.8	5.7	5.1	
Percent Loss at 500 Revolutions	17.0	23.4	22.9	
Uniform Hardness Ratio	0.223	0.242	0.223	

*No. 12 (1.70 mm) Sieve was used to determine "Percent Loss"

Moisture Content Determinations
ASTM D 2216

CLIENT:	MWH	JOB NO.	2512-77
PROJECT	Church Rock	LOCATION	Tailings Impoundı
PROJECT NO.	-		

BORING NO.	TI-B10-03
DEPTH	12.5-14'
SAMPLE NO.	-
DATE SAMPLED	11/26/13 MWH
DATE TESTED	12/18/13 DPM
SOIL DESCRIPTION	-

MOISTURE DETERMINATIONS	
Wt. of Wet Soil & Dish (gms)	228.27
Wt. of Dry Soil & Dish (gms)	208.77
Net Loss of Moisture (gms)	19.50
Wt. of Dish (gms)	15.90
Wt. of Dry Soil (gms)	192.87
Moisture Content (%)	10.1

Data entry by: DPM Date: 12/18/2013
Checked by: CJ Date: 12/19/2013
File name: 2512_77_M&D-ASTM-D2216-D2937-R0_0.xls

ATT
ADVANCED TERRA TESTING

Moisture & Density Determinations
ASTM D 2216 & D 2937

CLIENT:	MWH	JOB NO.	2512-77
PROJECT	Church Rock	LOCATION	Tailings Impound
PROJECT NO.	-		

BORING NO.	TI-B10-02
DEPTH	10-12.5'
SAMPLE NO.	-
DATE SAMPLED	11/26/13 MWH
DATE TESTED	12/17/13 DPM
SOIL DESCRIPTION	-

DENSITY DETERMINATIONS	
Sample Height (IN)	0.914
Sample Diameter (IN)	2.875
Wt of Wet Soil (GMs)	143.65
Sample Volume (CU Ft)	0.00343
WET DENSITY (PCF)	92.2
DRY DENSITY (PCF)	85.8

MOISTURE DETERMINATIONS	
Wt. of Wet Soil & Dish (gms)	150.26
Wt. of Dry Soil & Dish (gms)	140.31
Net Loss of Moisture (gms)	9.95
Wt. of Dish (gms)	6.61
Wt. of Dry Soil (gms)	133.70
Moisture Content (%)	7.4

Data entry by:	DPM	Date:	12/18/2013
Checked by:	CJ	Date:	12/18/2013
File name:	2512_77_M&D-ASTM-D2216-D2937-R0_0.xls		

ATT
ADVANCED TERRA TESTING

Moisture Content Determinations
ASTM D 2216

CLIENT:	MWH	JOB NO.	2512-77
PROJECT	Church Rock	LOCATION	
PROJECT NO.	-		Tailings Impoundment

BORING NO.	TI-B15-04	TI-B15-10
DEPTH	13.5-14.0'	28.5-29.5'
SAMPLE NO.	-	-
DATE SAMPLED	12/05/13 MWH	12/05/13 MWH
DATE TESTED	03/20/14 DPM	03/20/14 DPM
SOIL DESCRIPTION	Clayey Sand Tailings	Clayey fine Sand Tails
MOISTURE DETERMINATIONS		
Wt. of Wet Soil & Dish (gms)	208.565	926.32
Wt. of Dry Soil & Dish (gms)	181.732	778.78
Net Loss of Moisture (gms)	26.833	147.54
Wt. of Dish (gms)	6.520	15.84
Wt. of Dry Soil (gms)	175.212	762.94
Moisture Content (%)	15.3	19.3

Data entry by:	DPM	Date:	3/21/2014
Checked by:		Date:	03/24/14
File name:	M&D-ASTMD-2216-2937-R0-15.xls		

ATT
ADVANCED TERRA TESTING

Moisture Content Determinations
ASTM D 2216

CLIENT:	MWH	JOB NO.	2512-77
PROJECT	Church Rock	LOCATION	
PROJECT NO.	-		Tailings Impoundment

BORING NO.	TI-B2-07	TI-B1-12
DEPTH	13.5-14.5'	32-33'
SAMPLE NO.	-	-
DATE SAMPLED	11/20/13 MWH	11/21/13 MWH
DATE TESTED	01/27/14 DPM	03/01/14 DPM
SOIL DESCRIPTION	Sand Tailings	Sand Tailings
MOISTURE DETERMINATIONS		
Wt. of Wet Soil & Dish (gms)	498.44	278.84
Wt. of Dry Soil & Dish (gms)	356.31	217.22
Net Loss of Moisture (gms)	142.13	61.62
Wt. of Dish (gms)	15.82	6.56
Wt. of Dry Soil (gms)	340.49	210.66
Moisture Content (%)	41.7	29.3

Data entry by: DPM Date: 3/13/2014
Checked by: Date: 3/14/14
File name: M&D-ASTMD-2216-2937-R0-14.xls

ATT
ADVANCED TERRA TESTING

Moisture Content Determinations
ASTM D 2216

CLIENT:	MWH		JOB NO.	2512-77
PROJECT	Church Rock		LOCATION	
PROJECT NO.	-		Tailings Impoundment	
BORING NO.	TI-B1-07B	TI-B1-07B	TI-B1-11C	TI-B1-11C
DEPTH	20.5-21.0'	20.5-21.0'	30.0-30.5'	30.0-30.5'
SAMPLE NO.	60c MC	110c MC	60c MC	110c MC
DATE SAMPLED	11/21/13 MWH	11/21/13 MWH	11/21/13 MWH	11/21/13 MWH
DATE TESTED	04/19/14 DPM	04/21/14 DPM	04/19/14 DPM	04/21/14 DPM
SOIL DESCRIPTION	Sand Tailings	Sand Tailings	Sand Tailings (V. Fine)	Sand Tailings (V. Fine)
MOISTURE DETERMINATIONS				
Wt. of Wet Soil & Dish (gms)	543.38	543.38	486.55	486.55
Wt. of Dry Soil & Dish (gms)	514.71	512.95	430.63	429.19
Net Loss of Moisture (gms)	28.67	30.43	55.92	57.36
Wt. of Dish (gms)	15.85	15.85	15.72	15.72
Wt. of Dry Soil (gms)	498.86	497.10	414.91	413.47
Moisture Content (%)	5.7	6.1	13.5	13.9

BORING NO.	TI-B10-08B	TI-B10-08B	TI-B10-12B	TI-B10-12B
DEPTH	25.75-26.0	25.75-26.0	35.5-36'	35.5-36'
SAMPLE NO.	60c MC	110c MC	60c MC	110c MC
DATE SAMPLED	11/26/13 MWH	11/26/13 MWH	11/26/13 MWH	11/26/13 MWH
DATE TESTED	04/19/14 DPM	04/21/14 DPM	04/19/14 DPM	04/21/14 DPM
SOIL DESCRIPTION	Clayey Silt Tailings	Clayey Silt Tailings	Clayey Silt Tailings	Clayey Silt Tailings
MOISTURE DETERMINATIONS				
Wt. of Wet Soil & Dish (gms)	272.86	272.86	497.85	497.85
Wt. of Dry Soil & Dish (gms)	198.08	194.68	334.16	328.44
Net Loss of Moisture (gms)	74.78	78.18	163.69	169.41
Wt. of Dish (gms)	15.81	15.81	15.79	15.79
Wt. of Dry Soil (gms)	182.27	178.87	318.37	312.65
Moisture Content (%)	41.0	43.7	51.4	54.2

BORING NO.	TI-B11-07B	TI-B11-07B	TI-B8-04	TI-B8-04
DEPTH	45.5-46.0'	45.5-46.0'	31.0-31.5'	31.0-31.5'
SAMPLE NO.	60c MC	110c MC	60c MC	110c MC
DATE SAMPLED	12/02/13 MWH	12/02/13 MWH	12/03/13 MWH	12/03/13 MWH
DATE TESTED	04/19/14 DPM	04/21/14 DPM	04/19/14 DPM	04/21/14 DPM
SOIL DESCRIPTION	Clayey Silt Tailings	Clayey Silt Tailings	Clayey Silt/Sand	Clayey Silt/Sand
MOISTURE DETERMINATIONS				
Wt. of Wet Soil & Dish (gms)	432.66	432.66	1281.90	1281.90
Wt. of Dry Soil & Dish (gms)	236.70	207.70	970.10	954.78
Net Loss of Moisture (gms)	195.96	224.96	311.80	327.12
Wt. of Dish (gms)	15.82	15.82	216.52	216.52
Wt. of Dry Soil (gms)	220.88	191.88	753.58	738.26
Moisture Content (%)	88.7	117.2	41.4	44.3

Data entry by: DPM Date: 4/23/2014
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ATT
ADVANCED TERRA TESTING

Moisture Content Determinations - 60c M.C. to 110c M.C.
ASTM D 2216

CLIENT:	MWH		JOB NO.	2512-77
PROJECT	Church Rock		LOCATION	
PROJECT NO.	-		Tailings Impoundment	
BORING NO.	TI-B1-17	TI-B1-17	TI-B1-17	TI-B1-17
DEPTH	45-46'	45-46'	45-46'	45-46'
SAMPLE NO.	Before Test 60c	After Test 60c	Before Test 110c	After Test 110c
DATE SAMPLED	11/21/13 MWH	11/21/13 MWH	11/21/13 MWH	11/21/13 MWH
DATE TESTED	04/23/14 DPM	04/23/14 DPM	05/01/14 DPM	05/01/14 DPM
SOIL DESCRIPTION	Clayey Sand	Clayey Sand	Clayey Sand	Clayey Sand
MOISTURE DETERMINATIONS				
Wt. of Wet Soil & Dish (gms)	803.37	792.43	803.37	792.43
Wt. of Dry Soil & Dish (gms)	665.72	665.72	661.53	661.53
Net Loss of Moisture (gms)	137.65	126.71	141.84	130.90
Wt. of Dish (gms)	15.76	15.76	15.76	15.76
Wt. of Dry Soil (gms)	649.96	649.96	645.77	645.77
Moisture Content (%)	21.2	19.5	22.0	20.3
BORING NO.	TI-B3-03	TI-B3-03	TI-B3-03	TI-B3-03
DEPTH	21-22'	21-22'	21-22'	21-22'
SAMPLE NO.	Before Test 60c	After Test 60c	Before Test 110c	After Test 110c
DATE SAMPLED	11/19/13 MWH	11/19/13 MWH	11/19/13 MWH	11/19/13 MWH
DATE TESTED	04/23/14 DPM	04/23/14 DPM	05/01/14 DPM	05/01/14 DPM
SOIL DESCRIPTION	Silty Clay	Silty Clay	Silty Clay	Silty Clay
MOISTURE DETERMINATIONS				
Wt. of Wet Soil & Dish (gms)	786.84	823.83	786.84	823.83
Wt. of Dry Soil & Dish (gms)	698.27	698.27	694.35	694.35
Net Loss of Moisture (gms)	88.57	125.56	92.49	129.48
Wt. of Dish (gms)	15.79	15.79	15.79	15.79
Wt. of Dry Soil (gms)	682.48	682.48	678.56	678.56
Moisture Content (%)	13.0	18.4	13.6	19.1
BORING NO.	TI-B3-10	TI-B3-10	TI-B3-10	TI-B3-10
DEPTH	56-57'	56-57'	56-57'	56-57'
SAMPLE NO.	Before Test 60c	After Test 60c	Before Test 110c	After Test 110c
DATE SAMPLED	11/19/13 MWH	11/19/13 MWH	11/19/13 MWH	11/19/13 MWH
DATE TESTED	04/22/14 DPM	04/22/14 DPM	05/01/14 DPM	05/01/14 DPM
SOIL DESCRIPTION	Silty Clay	Silty Clay	Silty Clay	Silty Clay
MOISTURE DETERMINATIONS				
Wt. of Wet Soil & Dish (gms)	159.884	158.614	159.884	158.614
Wt. of Dry Soil & Dish (gms)	135.805	135.805	134.591	134.591
Net Loss of Moisture (gms)	24.079	22.809	25.293	24.023
Wt. of Dish (gms)	3.846	3.846	3.846	3.846
Wt. of Dry Soil (gms)	131.959	131.959	130.745	130.745
Moisture Content (%)	18.2	17.3	19.3	18.4

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ADVANCED TERRA TESTING

Moisture & Density Determinations
ASTM D 2216 & D 2937

CLIENT:	MWH	JOB NO.	2512-77
PROJECT	Church Rock	LOCATION	Tailings Impound
PROJECT NO.	-		

BORING NO.	TI-B8-02A	TI-B8-02B	TI-B8-08
DEPTH	26-26.5	25.5-26'	40-42.5
SAMPLE NO.	-	-	-
DATE SAMPLED	12/03/13 MWH	12/03/13 MWH	12/04/13 MWH
DATE TESTED	12/18/13 DPM	12/18/13 DPM	12/18/13 DPM
SOIL DESCRIPTION	-	-	-
DENSITY DETERMINATIONS			
Sample Height (IN)	5.617	5.617	1.411
Sample Diameter (IN)	1.938	1.938	2.876
Wt of Wet Soil (GMs)	465.56	460.21	262.92
Sample Volume (CU Ft)	0.00959	0.00959	0.00530
WET DENSITY (PCF)	107.0	105.8	109.3
DRY DENSITY (PCF)	91.7	99.6	75.4
MOISTURE DETERMINATIONS			
Wt. of Wet Soil & Dish (gms)	40.68	82.88	278.72
Wt. of Dry Soil & Dish (gms)	35.79	78.55	197.18
Net Loss of Moisture (gms)	4.89	4.33	81.54
Wt. of Dish (gms)	6.63	9.25	15.82
Wt. of Dry Soil (gms)	29.16	69.30	181.36
Moisture Content (%)	16.8	6.2	45.0

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ADVANCED TERRA TESTING

Moisture Content Determinations
ASTM D 2216

CLIENT:	MWH	JOB NO.	2512-77
PROJECT	Church Rock	LOCATION	Tailings Impoundı
PROJECT NO.	-		

BORING NO.	TI-B8-09
DEPTH	43.5-44.5'
SAMPLE NO.	-
DATE SAMPLED	12/04/13 MWH
DATE TESTED	12/18/13 DPM
SOIL DESCRIPTION	-

MOISTURE DETERMINATIONS	
Wt. of Wet Soil & Dish (gms)	286.95
Wt. of Dry Soil & Dish (gms)	208.54
Net Loss of Moisture (gms)	78.41
Wt. of Dish (gms)	15.78
Wt. of Dry Soil (gms)	192.76
Moisture Content (%)	40.7

Data entry by: DPM Date: 12/18/2013
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File name: 2512-77-M&D-ASTMD-2216-2937-R0-9.xls

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ADVANCED TERRA TESTING

Moisture & Density Determinations
ASTM D 2216 & D 2937

CLIENT:	MWH	JOB NO.	2512-77
PROJECT	Church Rock	LOCATION	
PROJECT NO.	-		Tailings Impoundment

BORING NO.	TI-B23-03	TI-B23-03
DEPTH	17.25-17.5'	15.5-15.75
SAMPLE NO.	Bottom of Tube	Top of Tube
DATE SAMPLED	12/06/13 MWH	12/06/13 MWH
DATE TESTED	03/27/14 DPM	04/11/14 DPM
SOIL DESCRIPTION	Silty Clay	Sand Tailings
DENSITY DETERMINATIONS		
Sample Height (IN)	2.119	2.901
Sample Diameter (IN)	2.868	2.878
Wt of Wet Soil (GMs)	448.73	524.20
Sample Volume (CU Ft)	0.00792	0.01092
WET DENSITY (PCF)	124.9	105.8
DRY DENSITY (PCF)	101.9	87.7
MOISTURE DETERMINATIONS		
Wt. of Wet Soil & Dish (gms)	129.48	140.34
Wt. of Dry Soil & Dish (gms)	107.22	117.42
Net Loss of Moisture (gms)	22.26	22.92
Wt. of Dish (gms)	8.44	6.65
Wt. of Dry Soil (gms)	98.78	110.77
Moisture Content (%)	22.5	20.7

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ATT ADVANCED TERRA TESTING

Moisture & Density Determinations
ASTM D 2216 & D 2937

CLIENT:	MWH		JOB NO.	2512-77
PROJECT	Church Rock		LOCATION	
PROJECT NO.	-		Tailings Impoundment	
BORING NO.	TI-B8-10A	TI-B8-12A	TI-B11-01A	TI-B11-04A
DEPTH	46.0-46.5'	56.0-56.5'	6.0-6.5'	21.0-21.5'
SAMPLE NO.	-	-	-	-
DATE SAMPLED	12/04/13 MWH	12/04/13 MWH	12/02/13 MWH	12/02/13 MWH
DATE TESTED	03/18/14 DPM	03/18/14 DPM	03/20/14 DPM	03/20/14 DPM
SOIL DESCRIPTION	Silty Clayey Sand	Silty Clayey Sand	Silty Clayey Sand	Sandy Clay
DENSITY DETERMINATIONS				
Sample Height (IN)	5.672	3.442	5.668	5.219
Sample Diameter (IN)	1.926	1.931	1.889	1.876
Wt of Wet Soil (GMs)	503.15	290.63	423.67	457.57
Sample Volume (CU Ft)	0.00956	0.00583	0.00919	0.00835
WET DENSITY (PCF)	116.0	109.8	101.6	120.8
DRY DENSITY (PCF)	95.2	97.6	93.5	107.6
MOISTURE DETERMINATIONS				
Wt. of Wet Soil & Dish (gms)	115.109	72.977	211.667	191.081
Wt. of Dry Soil & Dish (gms)	95.602	65.566	195.348	170.829
Net Loss of Moisture (gms)	19.507	7.411	16.319	20.252
Wt. of Dish (gms)	6.542	6.550	6.520	6.567
Wt. of Dry Soil (gms)	89.060	59.016	188.828	164.262
Moisture Content (%)	21.9	12.6	8.6	12.3

BORING NO.	TI-B11-12A	TI-B11-13A	TI-B11-17A
DEPTH	61.0-61.5'	66.0-66.5'	81.0-81.5'
SAMPLE NO.	-	-	-
DATE SAMPLED	12/02/13 MWH	12/02/13 MWH	12/02/13 MWH
DATE TESTED	03/20/14 DPM	03/20/14 DPM	03/20/14 DPM
SOIL DESCRIPTION	Clayey Sand	Silty Sand	Gravely Sand
DENSITY DETERMINATIONS			
Sample Height (IN)	5.598	5.234	5.303
Sample Diameter (IN)	1.913	1.919	1.918
Wt of Wet Soil (GMs)	467.05	436.67	480.31
Sample Volume (CU Ft)	0.00931	0.00876	0.00887
WET DENSITY (PCF)	110.6	109.9	119.4
DRY DENSITY (PCF)	95.4	96.2	107.6
MOISTURE DETERMINATIONS			
Wt. of Wet Soil & Dish (gms)	122.783	187.577	121.771
Wt. of Dry Soil & Dish (gms)	106.799	165.024	110.540
Net Loss of Moisture (gms)	15.984	22.553	11.231
Wt. of Dish (gms)	6.594	6.619	8.374
Wt. of Dry Soil (gms)	100.205	158.405	102.166
Moisture Content (%)	16.0	14.2	11.0

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ADVANCED TERRA TESTING

Moisture & Density Determinations
ASTM D 2216 & D 2937

CLIENT:	MWH	JOB NO.	2512-77
PROJECT	Church Rock	LOCATION	
PROJECT NO.	-		Tailings Impoundment

BORING NO.	TI-B15-14A	TI-B15-17A	TI-B15-19A
DEPTH	41.0-41.5'	56.0-56.5'	66.0-66.5'
SAMPLE NO.	60c MC	60c MC	60c MC
DATE SAMPLED	12/05/13 MWH	12/05/13 MWH	12/05/13 MWH
DATE TESTED	04/26/14 DPM	04/26/14 DPM	04/26/14 DPM
SOIL DESCRIPTION	Clayey Sand	Silty Clay	Clayey Sand
DENSITY DETERMINATIONS			
Sample Height (IN)	5.612	5.950	5.612
Sample Diameter (IN)	1.938	1.938	1.938
Wt of Wet Soil (GMs)	421.89	535.67	493.18
Sample Volume (CU Ft)	0.00958	0.01016	0.00958
WET DENSITY (PCF)	97.1	116.3	113.5
DRY DENSITY (PCF)	88.1	105.3	101.5
MOISTURE DETERMINATIONS			
Wt. of Wet Soil & Dish (gms)	160.33	541.08	282.13
Wt. of Dry Soil & Dish (gms)	146.16	490.49	253.00
Net Loss of Moisture (gms)	14.17	50.59	29.13
Wt. of Dish (gms)	6.59	6.50	6.63
Wt. of Dry Soil (gms)	139.57	483.99	246.37
Moisture Content (%)	10.1	10.5	11.8

BORING NO.	TI-B15-14A	TI-B15-17A	TI-B15-19A
DEPTH	41.0-41.5'	56.0-56.5'	66.0-66.5'
SAMPLE NO.	110c MC	110c MC	110c MC
DATE SAMPLED	12/05/13 MWH	12/05/13 MWH	12/05/13 MWH
DATE TESTED	04/26/14 DPM	04/26/14 DPM	04/26/14 DPM
SOIL DESCRIPTION	Clayey Sand	Silty Clay	Clayey Sand
DENSITY DETERMINATIONS			
Sample Height (IN)			
Sample Diameter (IN)			
Wt of Wet Soil (GMs)			
Sample Volume (CU Ft)			
WET DENSITY (PCF)			
DRY DENSITY (PCF)			
MOISTURE DETERMINATIONS			
Wt. of Wet Soil & Dish (gms)	160.33	541.08	282.13
Wt. of Dry Soil & Dish (gms)	144.61	485.26	251.13
Net Loss of Moisture (gms)	15.72	55.82	31.00
Wt. of Dish (gms)	6.59	6.50	6.63
Wt. of Dry Soil (gms)	138.02	478.76	244.50
Moisture Content (%)	11.4	11.7	12.7

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ADVANCED TERRA TESTING

Moisture & Density Determinations
ASTM D 2216 & D 2937

CLIENT:	MWH	JOB NO.	2512-77
PROJECT	Church Rock	LOCATION	
PROJECT NO.	-	Tailings Impoundment	

BORING NO.	TI-B15-01A	TI-B15-03A	TI-B15-07A	TI-B15-11A
DEPTH	6.0-6.5'	11.0-11.5'	21.0-21.5	31.0-31.5'
SAMPLE NO.	-	-	-	-
DATE SAMPLED	12/05/13 MWH	12/05/13 MWH	12/05/13 MWH	12/05/13 MWH
DATE TESTED	04/16/14 DPM	04/16/14 DPM	03/27/14 DPM	04/16/14 DPM
SOIL DESCRIPTION	Sand Tailings	Sand Tailings	Fine Sand Tailings	Silty Clay
DENSITY DETERMINATIONS				
Sample Height (IN)	5.613	5.613	5.603	5.602
Sample Diameter (IN)	1.938	1.938	1.925	1.926
Wt of Wet Soil (GMs)	463.13	435.38	481.44	510.64
Sample Volume (CU Ft)	0.00958	0.00958	0.00944	0.00944
WET DENSITY (PCF)	106.6	100.2	112.5	119.2
DRY DENSITY (PCF)	101.1	93.8	99.8	101.8
MOISTURE DETERMINATIONS				
Wt. of Wet Soil & Dish (gms)	235.60	146.64	105.19	89.10
Wt. of Dry Soil & Dish (gms)	223.97	137.67	94.09	77.07
Net Loss of Moisture (gms)	11.64	8.97	11.10	12.02
Wt. of Dish (gms)	6.64	6.65	6.66	6.64
Wt. of Dry Soil (gms)	217.33	131.02	87.43	70.43
Moisture Content (%)	5.4	6.8	12.7	17.1

BORING NO.	TI-B15-15A
DEPTH	46.0-46.5'
SAMPLE NO.	-
DATE SAMPLED	12/05/13 MWH
DATE TESTED	04/20/14 DPM
SOIL DESCRIPTION	Clayey Sand
DENSITY DETERMINATIONS	
Sample Height (IN)	5.613
Sample Diameter (IN)	1.935
Wt of Wet Soil (GMs)	505.04
Sample Volume (CU Ft)	0.00955
WET DENSITY (PCF)	116.6
DRY DENSITY (PCF)	99.3
MOISTURE DETERMINATIONS	
Wt. of Wet Soil & Dish (gms)	65.05
Wt. of Dry Soil & Dish (gms)	56.40
Net Loss of Moisture (gms)	8.65
Wt. of Dish (gms)	6.52
Wt. of Dry Soil (gms)	49.88
Moisture Content (%)	17.3

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ADVANCED TERRA TESTING

Moisture & Density Determinations
ASTM D 2216 & D 2937

CLIENT:	MWH	JOB NO.	2512-77	
PROJECT	Church Rock	LOCATION		
PROJECT NO.	-		Tailings Impoundment	
BORING NO.	TI-B3-01A	TI-B3-05A	TI-B3-07A	TI-B3-08A
DEPTH	11.0-11.5'	31.0-31.5'	41.0-41.5'	46.0-46.5'
SAMPLE NO.	-	-	-	-
DATE SAMPLED	11/19/13 MWH	11/19/13 MWH	11/19/13 MWH	11/19/13 MWH
DATE TESTED	01/23/14 DPM	01/23/14 DPM	01/23/14 DPM	01/23/14 DPM
SOIL DESCRIPTION	Sand	Silty Clay	Silty Clay	Silty Clay
DENSITY DETERMINATIONS				
Sample Height (IN)	5.358	4.454	5.979	5.460
Sample Diameter (IN)	1.938	1.892	1.935	1.895
Wt of Wet Soil (GMs)	473.05	413.46	508.06	499.82
Sample Volume (CU Ft)	0.00915	0.00725	0.01018	0.00891
WET DENSITY (PCF)	114.0	125.8	110.1	123.6
DRY DENSITY (PCF)	108.4	108.4	90.6	104.8
MOISTURE DETERMINATIONS				
Wt. of Wet Soil & Dish (gms)	148.94	421.87	196.17	199.16
Wt. of Dry Soil & Dish (gms)	142.07	364.61	162.63	169.76
Net Loss of Moisture (gms)	6.87	57.27	33.54	29.41
Wt. of Dish (gms)	8.37	8.41	6.61	6.56
Wt. of Dry Soil (gms)	133.70	356.19	156.02	163.20
Moisture Content (%)	5.1	16.1	21.5	18.0

BORING NO.	TI-B3-11A	TI-B3-04A
DEPTH	61.0-61.5'	26.0-26.5'
SAMPLE NO.	-	-
DATE SAMPLED	11/19/13 MWH	11/19/13 MWH
DATE TESTED	01/23/14 DPM	01/23/14 DPM
SOIL DESCRIPTION	Silty Sand	Silty Clay
DENSITY DETERMINATIONS		
Sample Height (IN)	5.610	5.866
Sample Diameter (IN)	1.929	1.900
Wt of Wet Soil (GMs)	536.02	522.33
Sample Volume (CU Ft)	0.00949	0.00962
WET DENSITY (PCF)	124.5	119.7
DRY DENSITY (PCF)	99.0	106.8
MOISTURE DETERMINATIONS		
Wt. of Wet Soil & Dish (gms)	256.64	226.83
Wt. of Dry Soil & Dish (gms)	205.38	203.20
Net Loss of Moisture (gms)	51.26	23.62
Wt. of Dish (gms)	6.58	6.46
Wt. of Dry Soil (gms)	198.80	196.74
Moisture Content (%)	25.8	12.0

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ADVANCED TERRA TESTING

Moisture & Density Determinations
ASTM D 2216 & D 2937

CLIENT:	MWH	JOB NO.	2512-77
PROJECT	Church Rock	LOCATION	
PROJECT NO.	-	Tailings Impoundment	

BORING NO.	TI-B2-02A	TI-B2-05A	TI-B2-11A	TI-B2-8C
DEPTH	6.0-6.5'	11.0-11.5'	21.0-21.5'	15.0-15.5
SAMPLE NO.	-	-	-	-
DATE SAMPLED	11/20/13 MWH	11/20/13 MWH	11/20/13 MWH	11/20/13 MWH
DATE TESTED	01/27/14 DPM	02/05/14 DPM	02/05/14 DPM	02/05/14 DPM
SOIL DESCRIPTION	Silty Sand with Gravel	Clayey Sand	Silty Sand	Silty Sand
DENSITY DETERMINATIONS				
Sample Height (IN)	4.570	5.415	5.680	5.925
Sample Diameter (IN)	1.938	1.938	1.938	1.938
Wt of Wet Soil (GMs)	382.63	396.51	430.30	443.40
Sample Volume (CU Ft)	0.00780	0.00924	0.00970	0.01011
WET DENSITY (PCF)	108.1	94.6	97.8	96.6
DRY DENSITY (PCF)	100.4	75.9	91.4	90.4
MOISTURE DETERMINATIONS				
Wt. of Wet Soil & Dish (gms)	435.86	102.26	147.33	449.49
Wt. of Dry Soil & Dish (gms)	405.77	83.39	138.10	420.93
Net Loss of Moisture (gms)	30.09	18.87	9.24	28.56
Wt. of Dish (gms)	15.85	6.45	6.48	6.48
Wt. of Dry Soil (gms)	389.92	76.93	131.62	414.45
Moisture Content (%)	7.7	24.5	7.0	6.9

BORING NO.	TI-B2-14A
DEPTH	26.0-26.5'
SAMPLE NO.	-
DATE SAMPLED	11/20/13 MWH
DATE TESTED	02/05/14 DPM
SOIL DESCRIPTION	Silty Clay
DENSITY DETERMINATIONS	
Sample Height (IN)	5.392
Sample Diameter (IN)	1.932
Wt of Wet Soil (GMs)	477.52
Sample Volume (CU Ft)	0.00915
WET DENSITY (PCF)	115.1
DRY DENSITY (PCF)	93.2
MOISTURE DETERMINATIONS	
Wt. of Wet Soil & Dish (gms)	90.46
Wt. of Dry Soil & Dish (gms)	74.46
Net Loss of Moisture (gms)	16.00
Wt. of Dish (gms)	6.48
Wt. of Dry Soil (gms)	67.98
Moisture Content (%)	23.5

Data entry by: DPM Date: 2/6/2014
Checked by: bj Date: 02/06/14
File name: 2512_77_M&D-ASTMD-2216-2937-R0-12.xls

ATT
ADVANCED TERRA TESTING

Moisture & Density Determinations
ASTM D 2216 & D 2937

CLIENT:	MWH	JOB NO.	2512-77	
PROJECT	Curch Rock	LOCATION		
PROJECT NO.	-	Tailings Impoundment		
BORING NO.	TI-B10-04C	TI-B10-04A	TI-B10-08A	TI-B10-12C
DEPTH	15.0-15.5'	16.0-16.5'	26.0-26.5'	35.0-35.5'
SAMPLE NO.	-	-	-	-
DATE SAMPLED	11/26/13 MWH	11/26/13 MWH	11/26/13 MWH	11/26/13 MWH
DATE TESTED	02/06/14 DPM	02/06/14 DPM	02/06/14 DPM	02/06/14 DPM
SOIL DESCRIPTION	Sand Tailings	Sand Tailings	Clayey Silt Tailings	Clayey Silt Tailings
DENSITY DETERMINATIONS				
Sample Height (IN)	5.356	5.752	5.685	5.848
Sample Diameter (IN)	1.938	1.938	1.920	1.928
Wt of Wet Soil (GMs)	466.97	474.57	437.41	479.99
Sample Volume (CU Ft)	0.00914	0.00982	0.00953	0.00988
WET DENSITY (PCF)	112.6	106.6	101.2	107.1
DRY DENSITY (PCF)	103.0	100.0	63.1	71.3
MOISTURE DETERMINATIONS				
Wt. of Wet Soil & Dish (gms)	482.57	69.14	58.91	97.86
Wt. of Dry Soil & Dish (gms)	442.76	65.30	39.18	70.46
Net Loss of Moisture (gms)	39.81	3.85	19.73	27.40
Wt. of Dish (gms)	15.77	6.49	6.49	15.88
Wt. of Dry Soil (gms)	426.99	58.81	32.69	54.58
Moisture Content (%)	9.3	6.5	60.4	50.2
BORING NO.	TI-B10-12A	TI-B10-16A	TI-B10-20A	TI-B10-21A
DEPTH	36.0-36.5'	46.0-46.5'	66.0-66.5'	71.0-71.5'
SAMPLE NO.	-	-	-	-
DATE SAMPLED	11/26/13 MWH	11/26/13 MWH	11/26/13 MWH	11/26/13 MWH
DATE TESTED	02/06/14 DPM	02/13/14 DPM	02/13/14 DPM	02/13/14 DPM
SOIL DESCRIPTION	Clayey Silt Tailings	Silty Sand	Silty Sand	Silty Sand w/Clay
DENSITY DETERMINATIONS				
Sample Height (IN)	5.016	5.006	5.902	5.849
Sample Diameter (IN)	1.927	1.938	1.938	1.919
Wt of Wet Soil (GMs)	446.13	406.60	491.75	528.40
Sample Volume (CU Ft)	0.00846	0.00855	0.01008	0.00979
WET DENSITY (PCF)	116.2	104.9	107.6	119.0
DRY DENSITY (PCF)	86.7	95.4	94.5	100.8
MOISTURE DETERMINATIONS				
Wt. of Wet Soil & Dish (gms)	67.61	107.69	110.84	211.84
Wt. of Dry Soil & Dish (gms)	52.13	98.54	98.18	181.86
Net Loss of Moisture (gms)	15.48	9.14	12.67	29.98
Wt. of Dish (gms)	6.52	6.59	6.50	15.84
Wt. of Dry Soil (gms)	45.61	91.95	91.68	166.02
Moisture Content (%)	33.9	9.9	13.8	18.1

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File name: M&D-ASTMD-2216-2937-R0-13.xls

ATT
ADVANCED TERRA TESTING

Moisture & Density Determinations
ASTM D 2216 & D 2937

CLIENT:	MWH		JOB NO.	2512-77
PROJECT	Church Rock		LOCATION	
PROJECT NO.	-		Tailings Impoundment	
BORING NO.	TI-B1-05A	TI-B10-25A	TI-B10-10	TI-B10-10
DEPTH	16.0-16.5'	91.0-91.5'	32.0-32.5'	30.3-30.7'
SAMPLE NO.	-	-	Bottom of Tube	Top of Tube
DATE SAMPLED	11/21/13 MWH	11/26/13 MWH	11/26/13 MWH	11/26/13 MWH
DATE TESTED	02/05/14 DPM	02/13/14 DPM	03/03/14 DPM	03/03/14 DPM
SOIL DESCRIPTION	Silty Clay w/ Sand	Clayey Sand	Coarse	Fine
DENSITY DETERMINATIONS				
Sample Height (IN)	5.687	5.002	4.049	2.632
Sample Diameter (IN)	1.938	1.932	2.876	2.878
Wt of Wet Soil (GMs)	535.63	482.32	797.23	479.45
Sample Volume (CU Ft)	0.00971	0.00849	0.01522	0.00991
WET DENSITY (PCF)	121.6	125.3	115.5	106.7
DRY DENSITY (PCF)	104.7	105.6	100.1	72.2
MOISTURE DETERMINATIONS				
Wt. of Wet Soil & Dish (gms)	76.56	146.63	255.47	86.16
Wt. of Dry Soil & Dish (gms)	66.81	124.69	222.23	60.47
Net Loss of Moisture (gms)	9.74	21.94	33.24	25.69
Wt. of Dish (gms)	6.52	6.86	6.47	6.56
Wt. of Dry Soil (gms)	60.29	117.83	215.76	53.91
Moisture Content (%)	16.2	18.6	15.4	47.7

BORING NO.	TI-B2-16	
DEPTH	38.4-38.7'	
SAMPLE NO.	-	
DATE SAMPLED	11/20/13 MWH	
DATE TESTED	03/03/14 DPM	
SOIL DESCRIPTION	Weathered Sandstone	
DENSITY DETERMINATIONS		
Sample Height (IN)	Density	
Sample Diameter (IN)	Not	
Wt of Wet Soil (GMs)	Possible	
Sample Volume (CU Ft)		
WET DENSITY (PCF)		
DRY DENSITY (PCF)		
MOISTURE DETERMINATIONS		
Wt. of Wet Soil & Dish (gms)	478.55	
Wt. of Dry Soil & Dish (gms)	423.68	
Net Loss of Moisture (gms)	54.87	
Wt. of Dish (gms)	15.81	
Wt. of Dry Soil (gms)	407.87	
Moisture Content (%)	13.5	

Data entry by: DPM Date: 3/13/2014
Checked by: _____ Date: 3/14/14
File name: M&D-ASTMD-2216-2937-R0-14.xls

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B8-12A
Depth: 56.0-56.5'
Sample Number: Silty/Clayey Sand
Test Date: 3/29/2014
Technician: DPM
Sampled Date: 12/4/2013
Sampled By: MWH
Method: Method A

Test Configuration
Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits Non-Plastic

Liquid Limits Non-Plastic

Atterberg Classification NP

Data Entered By: DPM Date: 4/10/2014
File Name: atterberg-ASTM_4318-R6_28.xls

Data Checked By: bj
Date: 4/11/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B15-11A
Depth: 31.0-31.5'
Sample Number: Silty Clay
Test Date: 5/5/2014
Technician: DPM
Sampled Date: 12/5/2013
Sampled By: MWH
Method: Method A

Test Configuration
Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits Non-Plastic

Liquid Limits Non-Plastic

Atterberg Classification NP

Data Entered By: DPM Date: 5/6/2014
File Name: atterberg-ASTM_4318-R6_43.xls

Data Checked By: BDF
Date: 5/7/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B15-04
Depth: 13.5-14.0' (11.5-14')
Sample Number: Clayey Sand Tailings
Test Date: 4/29/2014
Technician: DPM
Sampled Date: 12/5/2013
Sampled By: MWH
Method: Method A

Test Configuration
Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits Non-Plastic

Liquid Limits Non-Plastic

Atterberg Classification NP

Data Entered By: DPM Date: 5/2/2014
File Name: atterberg-ASTM_4318-R6_38.xls

Data Checked By: BDF
Date: 5/7/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B11-08
Depth: 51.5-52.5' (50-52.5')
Sample Number: Fine Tailings
Test Date: 4/30/2014
Technician: DPM
Sampled Date: 12/2/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

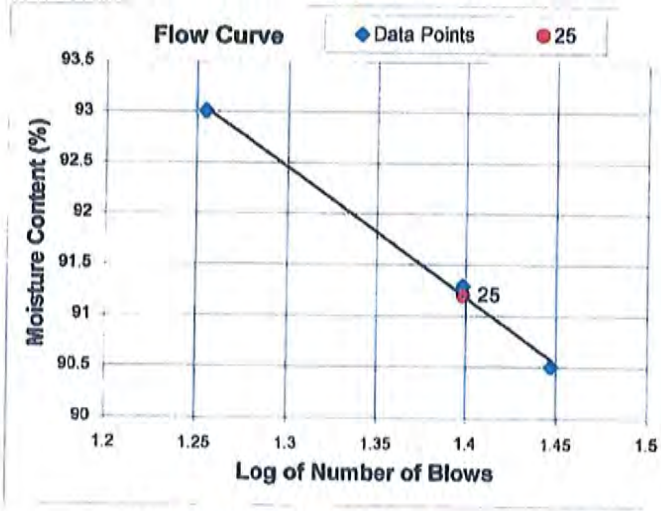
	Sample 1	Sample 2
Weight of Wet Soil & Pan (g):	5.964	5.997
Weight of Dry Soil & Pan (g):	4.847	4.890
Weight of Water (g):	1.117	1.107
Weight of Pan (g):	1.138	1.137
Moisture Content (%):	30.1	29.5

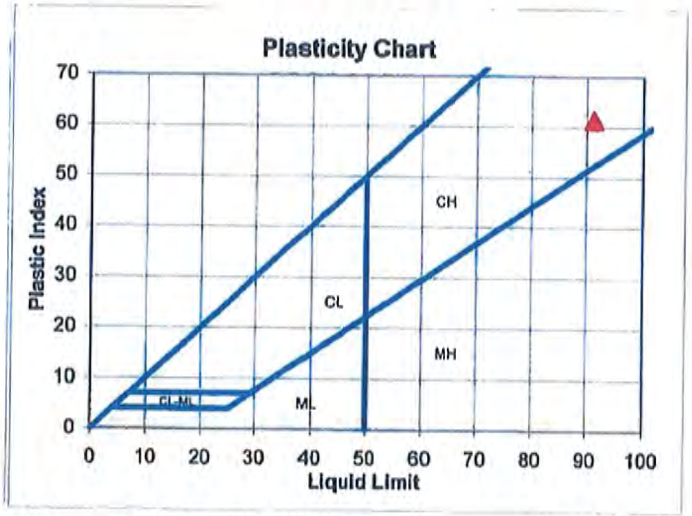
Average: 29.8%
Standard Deviation: 0.4%

Liquid Limits

	Sample 1	Sample 2	Sample 3
Number of Blows:	25	28	18
Weight of Wet Soil & Pan (g):	12.330	12.685	12.216
Weight of Dry Soil & Pan (g):	7.003	7.204	6.884
Weight of Water (g):	5.327	5.481	5.332
Weight of Pan (g):	1.168	1.148	1.151
Moisture Content (%):	91.3	90.5	93.0

Plastic Limit: 30
Liquid Limit: 91
Plastic Index: 61
Atterberg Classification CH





Data Entered By: DPM Date: 5/4/2014
File Name: atterberg-ASTM_4318-R6_40.xls

Data Checked By: BDF
Date: 5/7/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B15-15A
Depth: 46.0-46.5'
Sample Number: Clayey Sand
Test Date: 5/5/2014
Technician: DPM
Sampled Date: 12/5/2013
Sampled By: MWH
Method: Method A

Test Configuration
Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits Non-Plastic

Liquid Limits Non-Plastic

Atterberg Classification NP

Data Entered By: DPM Date: 5/6/2014
File Name: atterberg-ASTM_4318-R6_42.xls

Data Checked By: BDF
Date: 5/7/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B8-08
Depth: 41-42' (40-42.5')
Sample Number: Clayey Silt
Test Date: 3/6/2014
Technician: DPM
Sampled Date: 12/4/2013
Sampled By: MWH
Method: Method A

Test Configuration
Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

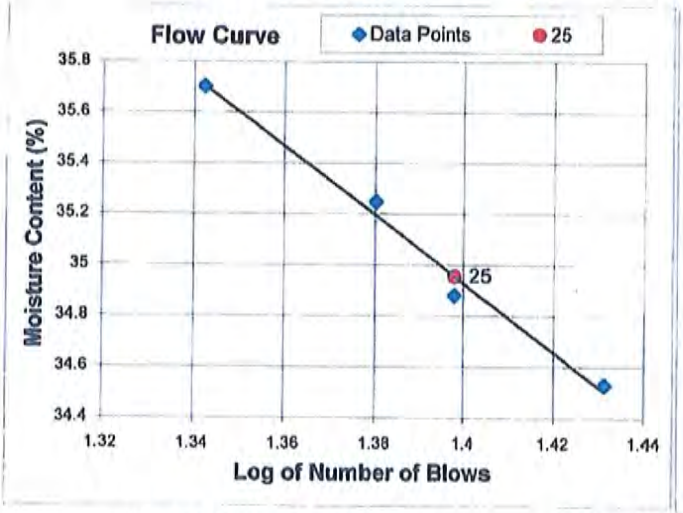
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.571	6.348	6.358
Weight of Dry Soil & Pan (g):	5.787	5.580	5.610
Weight of Water (g):	0.784	0.768	0.748
Weight of Pan (g):	0.758	0.766	0.757
Moisture Content (%):	15.6	16.0	15.4

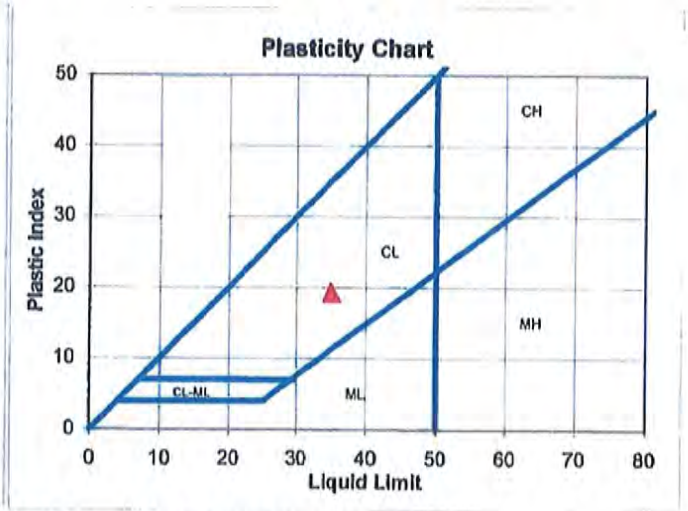
Average: 15.7%
Standard Deviation: 0.3%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4
Number of Blows:	24	25	27	22
Weight of Wet Soil & Pan (g):	11.695	11.436	10.790	11.968
Weight of Dry Soil & Pan (g):	8.841	8.670	8.210	9.013
Weight of Water (g):	2.854	2.766	2.580	2.955
Weight of Pan (g):	0.744	0.740	0.738	0.736
Moisture Content (%):	35.2	34.9	34.5	35.7

Plastic Limit: 16
Liquid Limit: 35
Plastic Index: 19
Atterberg Classification CL





Data Entered By: DPM Date: 3/13/2014
File Name: atterberg-ASTM_4318-R6_19.xls

Data Checked By: KJ
Date: 3/14/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B11-10
Depth: 56-57' (55-57')
Sample Number: Silty Sand
Test Date: 2/28/2014
Technician: DPM
Sampled Date: 12/2/2013
Sampled By: MWH
Method: Method A

Test Configuration
Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits Non-Plastic

Liquid Limits Non-Plastic

Atterberg Classification NP

Data Entered By: DPM Date: 3/4/2014
File Name: atterberg-ASTM_4318-R6_18.xls

Data Checked By: [signature]
Date: 03/06/2014

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B8-02A
Depth: 26.0-26.5'
Sample Number: Clayey Silt
Test Date: 2/28/2014
Technician: DPM
Sampled Date: 12/3/2013
Sampled By: MWH
Method: Method A

Test Configuration
Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits Non-Plastic

Liquid Limits Non-Plastic

Atterberg Classification NP

Data Entered By: DPM Date: 3/4/2014 Data Checked By: bj
File Name: 2512_77_atterberg-ASTM_4318-R6_16.x Date: 03/06/2014

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B11-06
Depth: 30.5-31.5' (30.0-31.7')
Sample Number: Sandy Clay
Test Date: 4/30/2014
Technician: DPM
Sampled Date: 12/2/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

Note: The sample was dried at 60c.

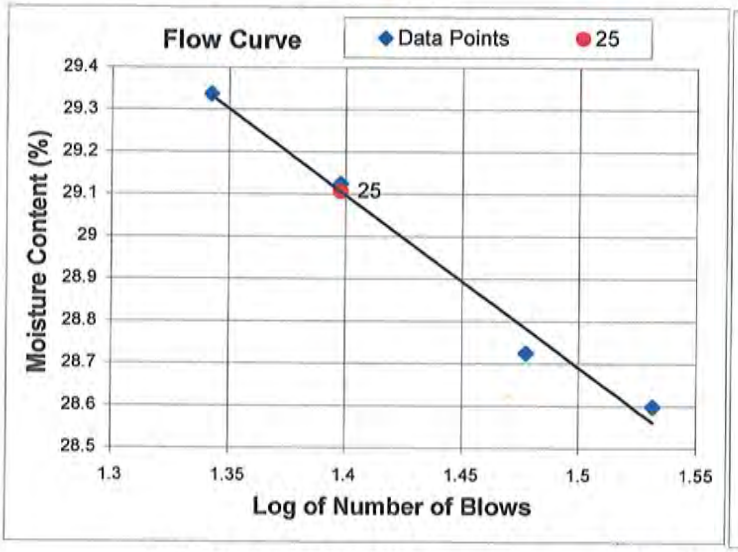
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	7.476	7.494	7.450
Weight of Dry Soil & Pan (g):	6.752	6.788	6.742
Weight of Water (g):	0.724	0.706	0.708
Weight of Pan (g):	1.144	1.146	1.134
Moisture Content (%):	12.9	12.5	12.6

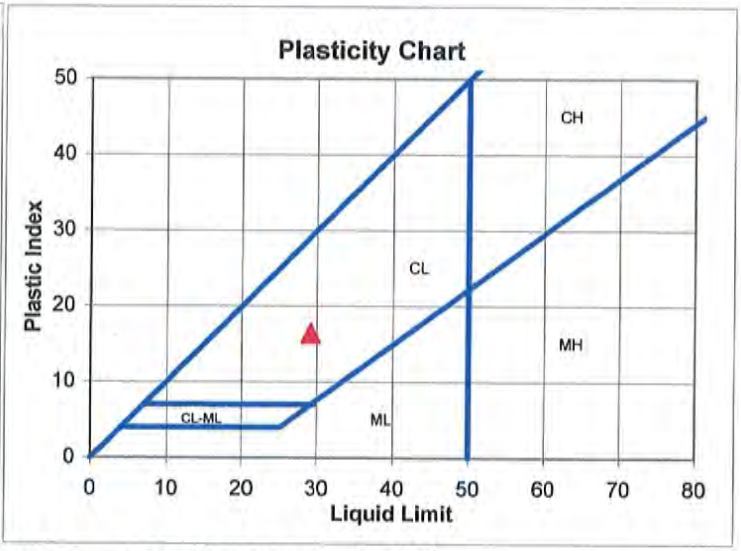
Average: 12.7%
Standard Deviation: 0.2%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4
Number of Blows:	34	25	22	30
Weight of Wet Soil & Pan (g):	17.434	14.027	14.368	14.923
Weight of Dry Soil & Pan (g):	13.812	11.121	11.378	11.846
Weight of Water (g):	3.622	2.906	2.990	3.077
Weight of Pan (g):	1.147	1.143	1.186	1.134
Moisture Content (%):	28.6	29.1	29.3	28.7

Plastic Limit: 13
Liquid Limit: 29
Plastic Index: 16
Atterberg Classification CL





Data Entered By: DPM
Date: 5/9/2014
File Name: atterberg-ASTM_4318-R6_37-60c.xls

Data Checked By: DAW
Date: 05/22/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B11-06
Depth: 30.5-31.5' (30.0-31.7')
Sample Number: Sandy Clay
Test Date: 4/30/2014
Technician: DPM
Sampled Date: 12/2/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

Note: The sample was dried at 110c.

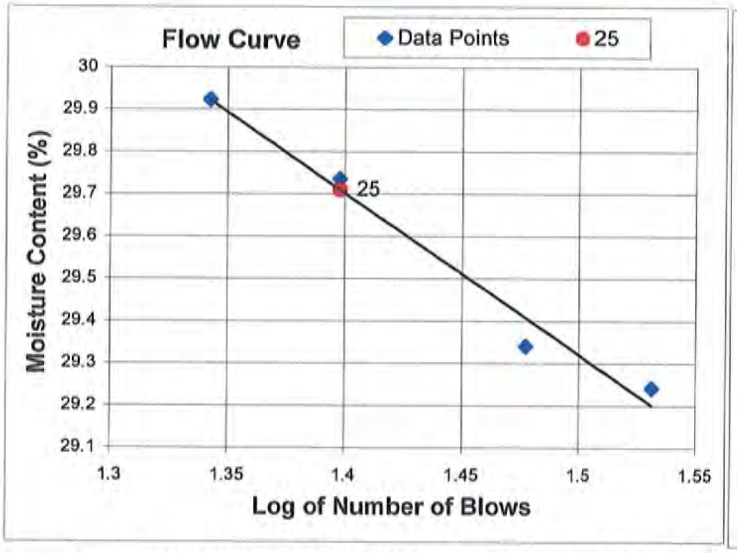
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	7.476	7.494	7.450
Weight of Dry Soil & Pan (g):	6.726	6.765	6.715
Weight of Water (g):	0.750	0.729	0.735
Weight of Pan (g):	1.144	1.146	1.134
Moisture Content (%):	13.4	13.0	13.2

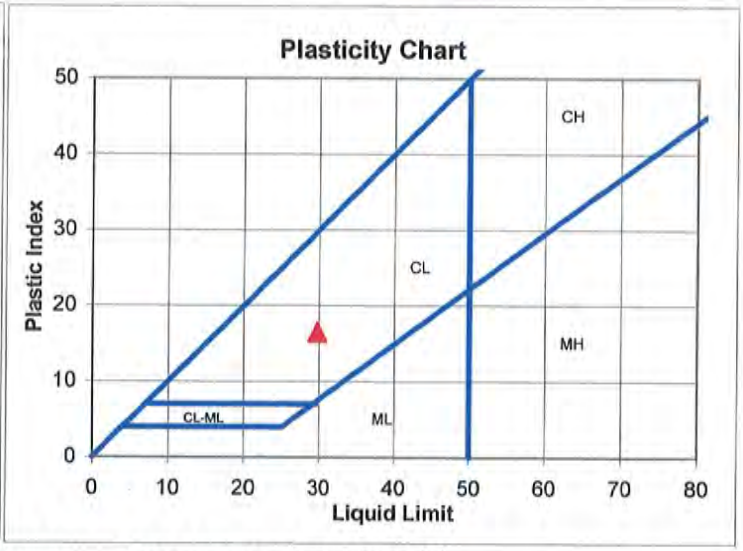
Average: 13.2%
Standard Deviation: 0.2%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4
Number of Blows:	34	25	22	30
Weight of Wet Soil & Pan (g):	17.434	14.027	14.368	14.923
Weight of Dry Soil & Pan (g):	13.749	11.074	11.332	11.795
Weight of Water (g):	3.685	2.953	3.036	3.128
Weight of Pan (g):	1.147	1.143	1.186	1.134
Moisture Content (%):	29.2	29.7	29.9	29.3

Plastic Limit: 13
Liquid Limit: 30
Plastic Index: 17
Atterberg Classification CL





Data Entered By: DPM Date: 5/9/2014
File Name: atterberg-ASTM_4318-R6_37-110c.xls

Data Checked By: JAW
Date: 05/22/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B8-04
Depth: 30.0-31.0' (30-32')
Sample Number: Clayey Silt/Sand
Test Date: 5/3/2014
Technician: DPM
Sampled Date: 12/3/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

Note: The sample was dried at 60c.

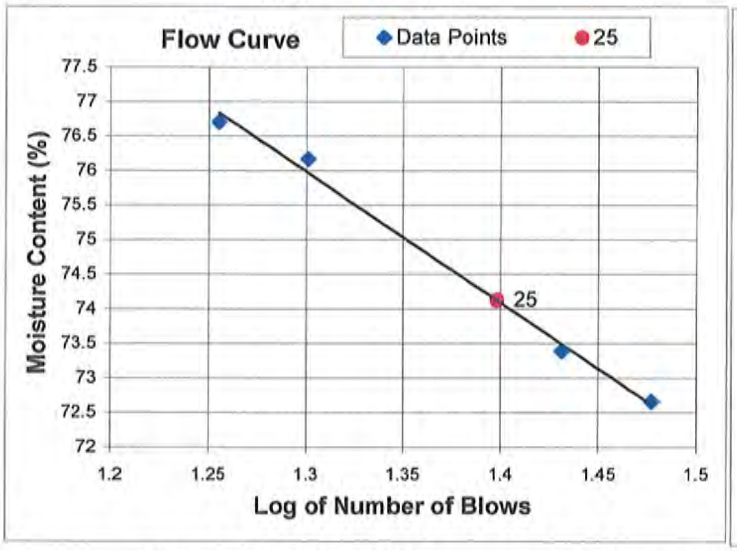
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.384	6.499	6.420
Weight of Dry Soil & Pan (g):	5.325	5.431	5.370
Weight of Water (g):	1.059	1.068	1.050
Weight of Pan (g):	1.174	1.137	1.140
Moisture Content (%):	25.5	24.9	24.8

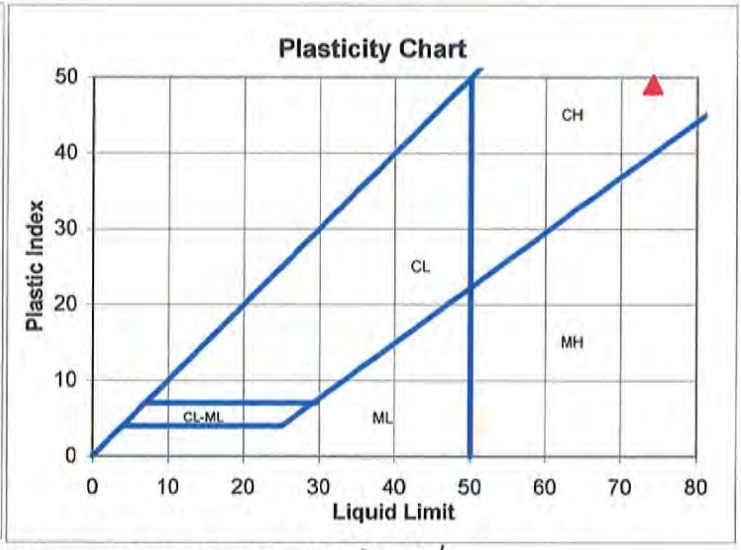
Average: 25.1%
Standard Deviation: 0.4%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4
Number of Blows:	30	27	20	18
Weight of Wet Soil & Pan (g):	11.360	14.173	12.090	12.695
Weight of Dry Soil & Pan (g):	7.055	8.649	7.357	7.685
Weight of Water (g):	4.305	5.524	4.733	5.010
Weight of Pan (g):	1.130	1.122	1.143	1.153
Moisture Content (%):	72.7	73.4	76.2	76.7

Plastic Limit: 25
Liquid Limit: 74
Plastic Index: 49
Atterberg Classification CH





Data Entered By: DPM
Date: 5/8/2014
File Name: atterberg-ASTM_4318-R6_39-60c.xls

Data Checked By: DAV
Date: 05/23/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B8-04
Depth: 30.0-31.0' (30-32')
Sample Number: Clayey Silt/Sand
Test Date: 5/3/2014
Technician: DPM
Sampled Date: 12/3/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

Note: The sample was dried at 110c.

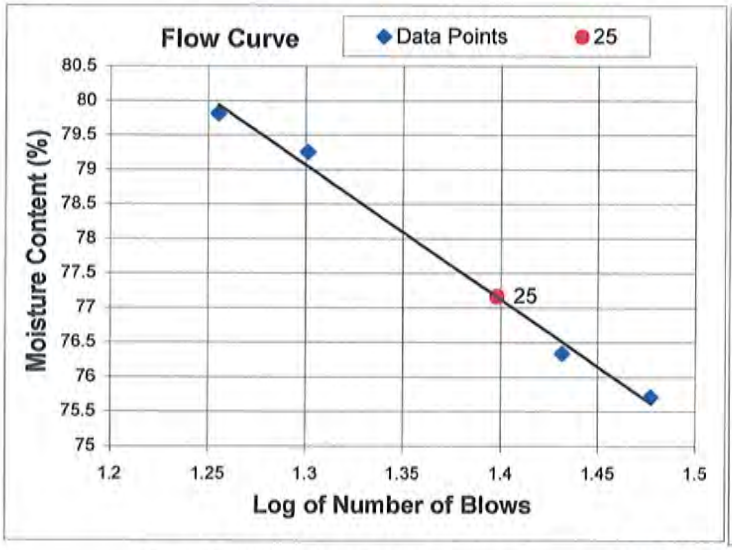
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.384	6.499	6.420
Weight of Dry Soil & Pan (g):	5.257	5.362	5.300
Weight of Water (g):	1.127	1.137	1.120
Weight of Pan (g):	1.174	1.137	1.140
Moisture Content (%):	27.6	26.9	26.9

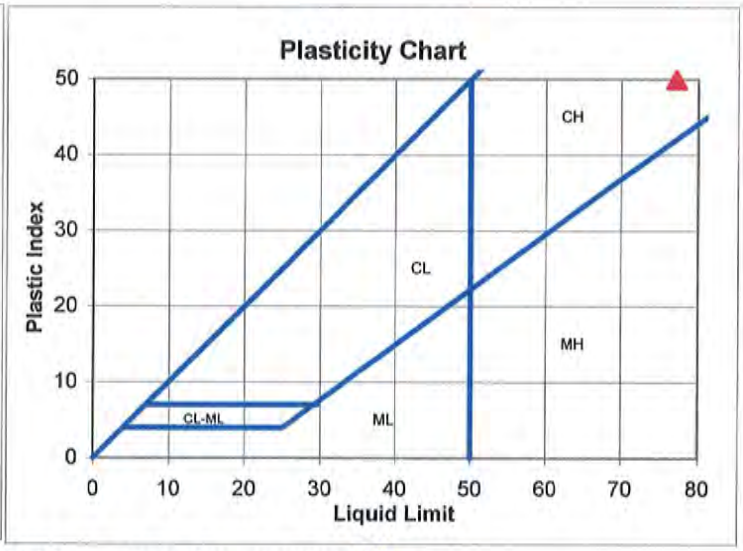
Average: 27.1%
Standard Deviation: 0.4%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4
Number of Blows:	30	27	20	18
Weight of Wet Soil & Pan (g):	11.360	14.173	12.090	12.695
Weight of Dry Soil & Pan (g):	6.952	8.523	7.250	7.572
Weight of Water (g):	4.408	5.650	4.840	5.123
Weight of Pan (g):	1.130	1.122	1.143	1.153
Moisture Content (%):	75.7	76.3	79.3	79.8

Plastic Limit: 27
Liquid Limit: 77
Plastic Index: 50
Atterberg Classification CH





Data Entered By: DPM Date: 5/8/2014
File Name: atterberg-ASTM_4318-R6_39-110c.xls

Data Checked By: [illegible]
Date: 5/23/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B8-10A
Depth: 46.0-46.5'
Sample Number: Silty/Clayey Sand
Test Date: 4/29/2014
Technician: DPM
Sampled Date: 12/4/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

Note: The sample was dried at 60c.

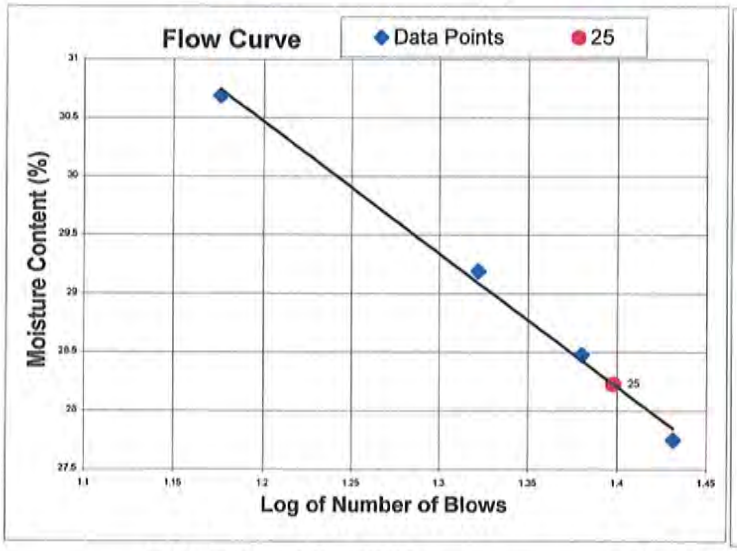
	Sample 1	Sample 2
Weight of Wet Soil & Pan (g):	6.348	6.498
Weight of Dry Soil & Pan (g):	5.602	5.752
Weight of Water (g):	0.746	0.746
Weight of Pan (g):	0.743	0.739
Moisture Content (%):	15.4	14.9

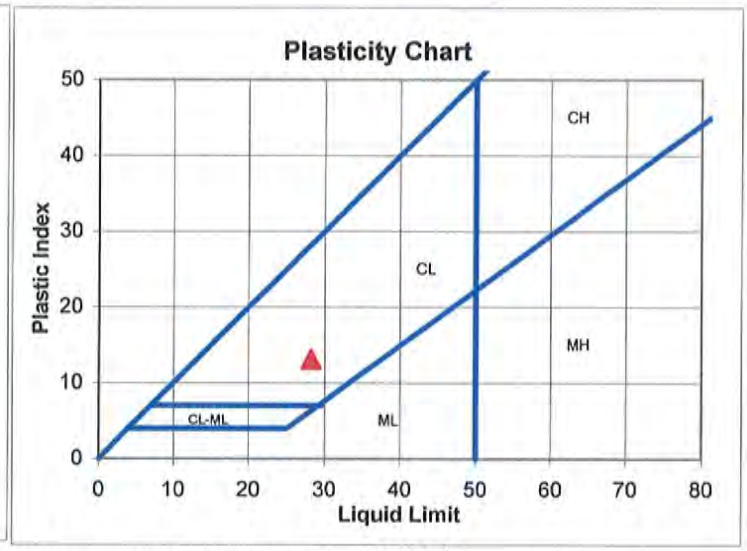
Average: 15.1%
Standard Deviation: 0.3%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4
Number of Blows:	27	24	21	15
Weight of Wet Soil & Pan (g):	14.758	14.824	17.478	14.979
Weight of Dry Soil & Pan (g):	11.718	11.704	13.700	11.641
Weight of Water (g):	3.040	3.120	3.778	3.338
Weight of Pan (g):	0.763	0.741	0.756	0.764
Moisture Content (%):	27.7	28.5	29.2	30.7

Plastic Limit: 15
Liquid Limit: 28
Plastic Index: 13
Atterberg Classification CL





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File Name: atterberg-ASTM_4318-R6_36-60c.xls Date: 5/22/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B8-10A
Depth: 46.0-46.5'
Sample Number: Silty/Clayey Sand
Test Date: 4/29/2014
Technician: DPM
Sampled Date: 12/4/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

Note: The sample was dried at 110c.

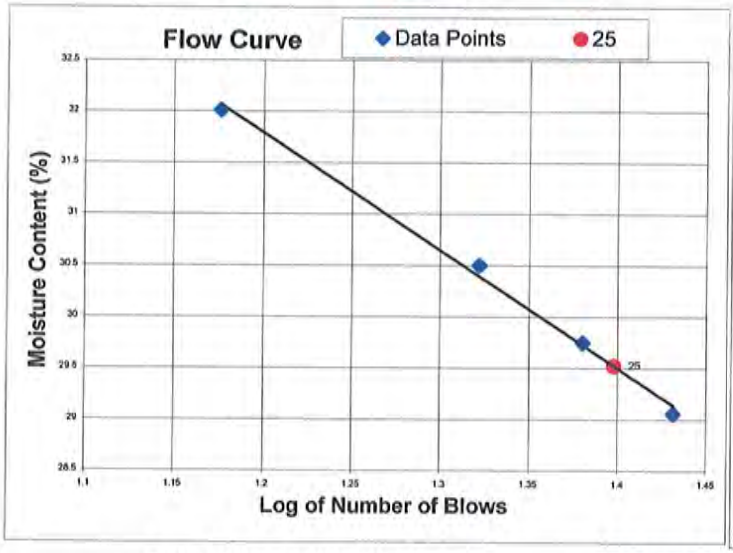
	Sample 1	Sample 2
Weight of Wet Soil & Pan (g):	6.348	6.498
Weight of Dry Soil & Pan (g):	5.555	5.704
Weight of Water (g):	0.793	0.794
Weight of Pan (g):	0.743	0.739
Moisture Content (%):	16.5	16.0

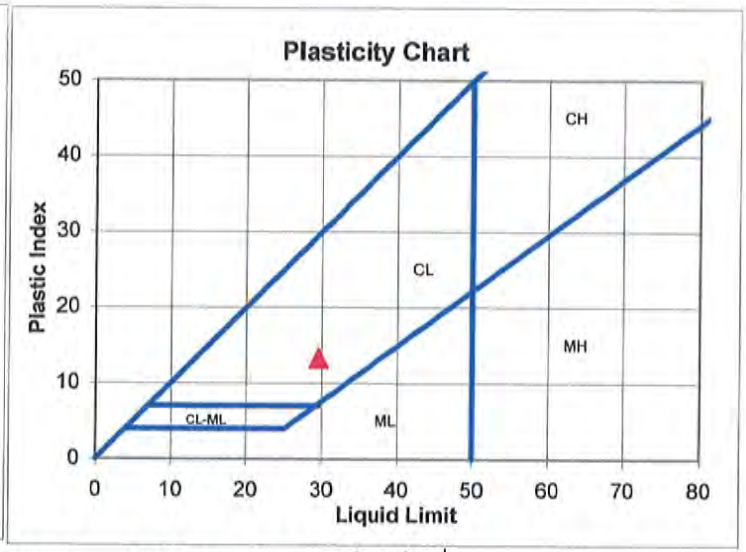
Average: 16.2%
Standard Deviation: 0.3%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4
Number of Blows:	27	24	21	15
Weight of Wet Soil & Pan (g):	14.758	14.824	17.478	14.979
Weight of Dry Soil & Pan (g):	11.607	11.595	13.570	11.532
Weight of Water (g):	3.151	3.229	3.908	3.447
Weight of Pan (g):	0.763	0.741	0.756	0.764
Moisture Content (%):	29.1	29.7	30.5	32.0

Plastic Limit: 16
Liquid Limit: 30
Plastic Index: 13
Atterberg Classification CL





Data Entered By: DPM Date: 5/9/2014 Data Checked By: DAW
File Name: atterberg-ASTM_4318-R6_36-110c.xls Date: 05/22/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B23-06
Depth: 26-27' (25-27.5')
Sample Number: Silty Clay
Test Date: 4/22/2014
Technician: DPM
Sampled Date: 12/6/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

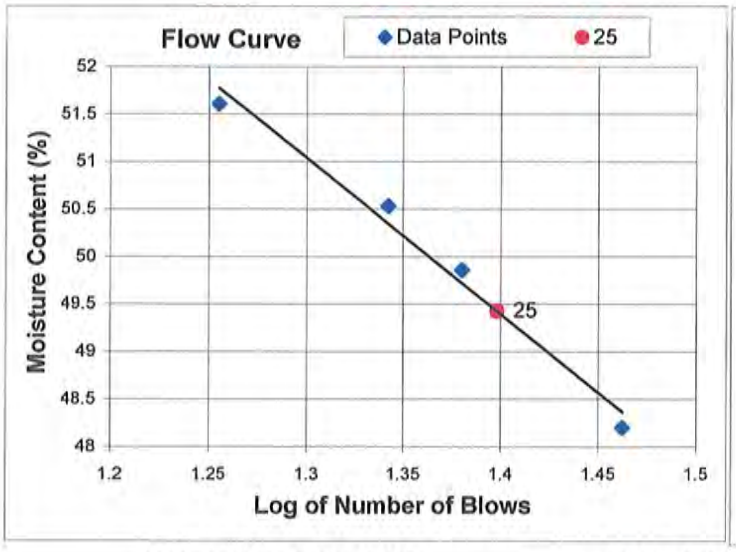
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.535	6.193	6.199
Weight of Dry Soil & Pan (g):	5.623	5.369	5.345
Weight of Water (g):	0.912	0.824	0.854
Weight of Pan (g):	0.772	0.770	0.774
Moisture Content (%):	18.8	17.9	18.7

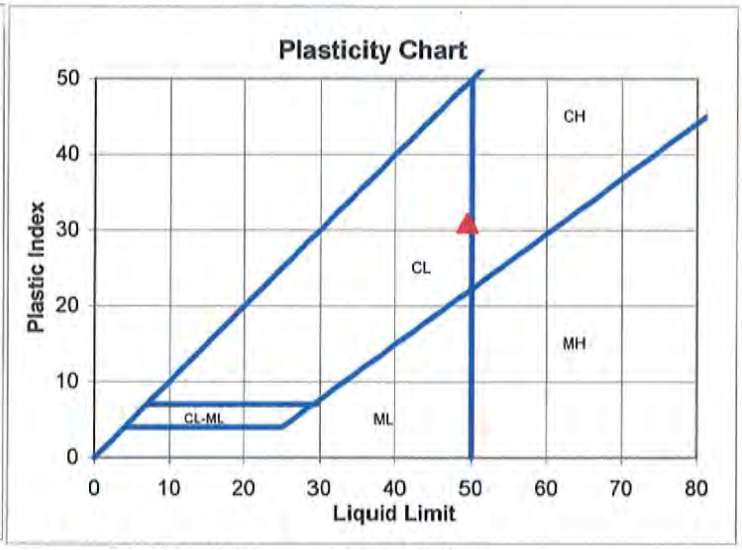
Average: 18.5%
Standard Deviation: 0.5%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4
Number of Blows:	29	24	22	18
Weight of Wet Soil & Pan (g):	16.288	16.376	13.533	15.741
Weight of Dry Soil & Pan (g):	11.240	11.187	9.248	10.639
Weight of Water (g):	5.048	5.189	4.285	5.102
Weight of Pan (g):	0.767	0.779	0.768	0.753
Moisture Content (%):	48.2	49.9	50.5	51.6

Plastic Limit: 18
Liquid Limit: 49
Plastic Index: 31
Atterberg Classification CL





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File Name: 2512_77_atterberg-ASTM_4318-R6_32.x Date: 05/23/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B15-10
Depth: 28.5-29.5' (27-29.5')
Sample Number: Clayey Fine Sand Tails
Test Date: 4/22/2014
Technician: DPM
Sampled Date: 12/5/2013
Sampled By: MWH
Method: Method A

Test Configuration
Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits Non-Plastic

Liquid Limits Non-Plastic

Atterberg Classification NP

Data Entered By: DPM Date: 4/24/2014
File Name: atterberg-ASTM_4318-R6_35.xls

Data Checked By: CKP
Date: 4/29/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B15-07A
Depth: 21.0-21.5'
Sample Number: Fine Sand Tailings
Test Date: 4/23/2014
Technician: DPM
Sampled Date: 11/27/2013
Sampled By: MWH
Method: Method A

Test Configuration
Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits Non-Plastic

Liquid Limits Non-Plastic

Atterberg Classification NP

Data Entered By: DPM Date: 4/24/2014
File Name: atterberg-ASTM_4318-R6_33.xls

Data Checked By: CKP
Date: 4/29/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B15-05
Depth: 15.5-16.0' (15-17.5')
Sample Number: Sand Tailings
Test Date: 4/23/2014
Technician: DPM
Sampled Date: 12/5/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

Non-Plastic

Liquid Limits

Non-Plastic

Atterberg Classification NP

Data Entered By: DPM Date: 4/24/2014
File Name: atterberg-ASTM_4318-R6_34.xls

Data Checked By: CKP
Date: 4/29/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B10-04A
Depth: 16.0-16.5'
Sample Number: Sand Tailings
Test Date: 2/28/2014
Technician: DPM
Sampled Date: 11/26/2013
Sampled By: MWH
Method: Method A

Test Configuration
Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits Non-Plastic

Liquid Limits Non-Plastic

Atterberg Classification NP

Data Entered By: DPM Date: 3/4/2014
File Name: atterberg-ASTM_4318-R6_17.xls

Data Checked By: bj
Date: 03/06/2014

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B1-05A
Depth: 16.0-16.5'
Sample Number: Silty Clay w/ Sand
Test Date: 3/12/2014
Technician: DPM
Sampled Date: 11/21/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

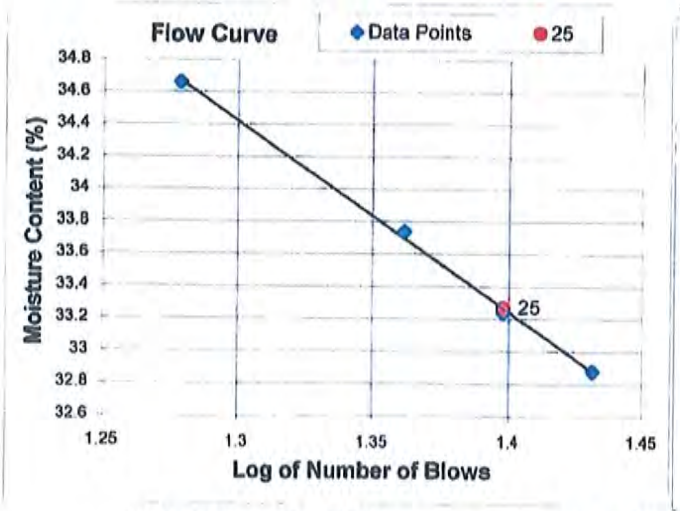
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.756	6.485	6.429
Weight of Dry Soil & Pan (g):	6.059	5.821	5.784
Weight of Water (g):	0.697	0.664	0.645
Weight of Pan (g):	0.764	0.749	0.759
Moisture Content (%):	13.2	13.1	12.8

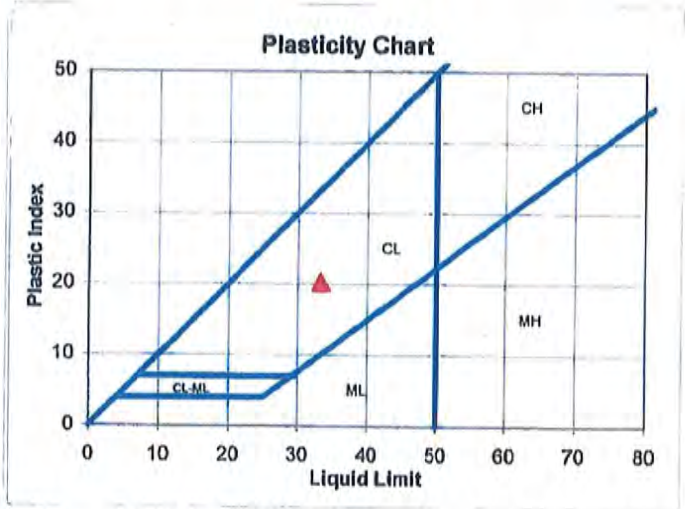
Average: 13.0%
Standard Deviation: 0.2%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4
Number of Blows:	25	27	23	19
Weight of Wet Soil & Pan (g):	13.892	15.609	14.942	16.233
Weight of Dry Soil & Pan (g):	10.615	11.931	11.362	12.246
Weight of Water (g):	3.277	3.678	3.580	3.987
Weight of Pan (g):	0.756	0.744	0.750	0.743
Moisture Content (%):	33.2	32.9	33.7	34.7

Plastic Limit: 13
Liquid Limit: 33
Plastic Index: 20
Atterberg Classification CL





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File Name: atterberg-ASTM_4318-R6_21.xls

Data Checked By: bj
Date: 3/14/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B10-12A
Depth: 36.0-36.5'
Sample Number: Clayey Silt Tailings
Test Date: 3/7/2014
Technician: DPM
Sampled Date: 11/26/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

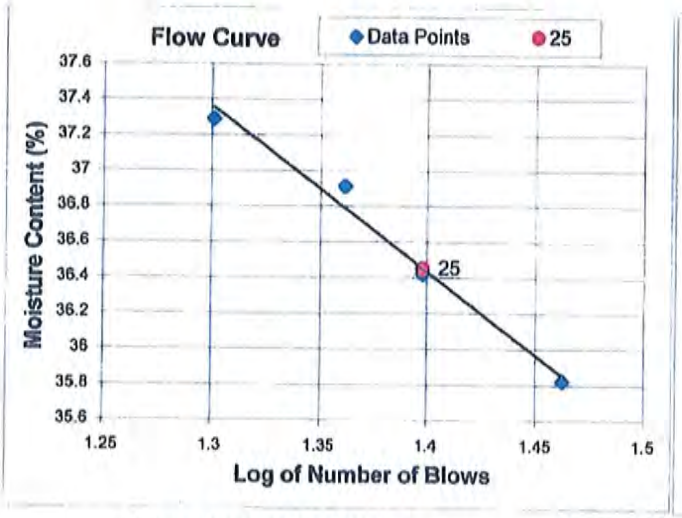
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	5.950	6.088	6.209
Weight of Dry Soil & Pan (g):	5.238	5.367	5.473
Weight of Water (g):	0.712	0.721	0.736
Weight of Pan (g):	0.761	0.729	0.769
Moisture Content (%):	15.9	15.5	15.6

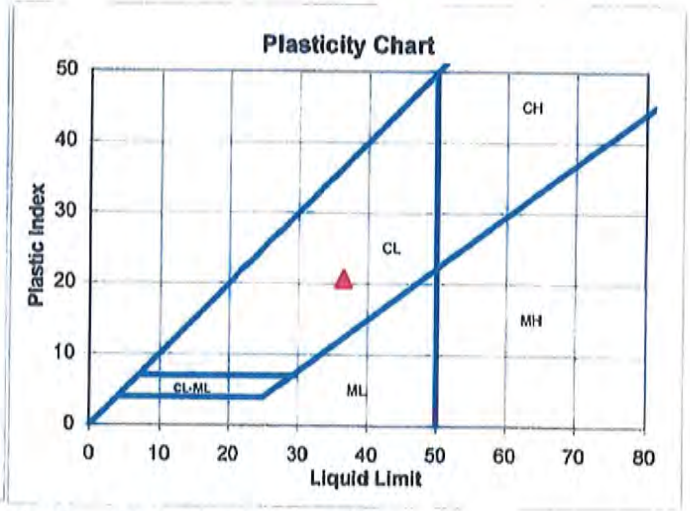
Average: 15.7%
Standard Deviation: 0.2%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4
Number of Blows:	29	23	25	20
Weight of Wet Soil & Pan (g):	13.507	13.608	12.995	12.497
Weight of Dry Soil & Pan (g):	10.147	10.146	9.731	9.311
Weight of Water (g):	3.360	3.462	3.264	3.186
Weight of Pan (g):	0.767	0.767	0.769	0.767
Moisture Content (%):	35.8	36.9	36.4	37.3

Plastic Limit: 16
Liquid Limit: 36
Plastic Index: 21
Atterberg Classification CL





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File Name: atterberg-ASTM_4318-R6_20.xls

Data Checked By: bj
Date: 3/14/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B1-09
Depth: 27.0-27.5' (25-27.5')
Sample Number: Sand Tailings
Test Date: 3/29/2014
Technician: DPM
Sampled Date: 11/21/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits Non-Plastic

Liquid Limits Non-Plastic

Atterberg Classification NP

Data Entered By: DPM Date: 4/10/2014
File Name: atterberg-ASTM_4318-R6_27.xls

Data Checked By: [illegible]
Date: 4/11/14

ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B2-14A
Depth: 26.0-26.5'
Sample Number: Silty Clay
Test Date: 3/14/2014
Technician: DPM
Sampled Date: 11/20/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

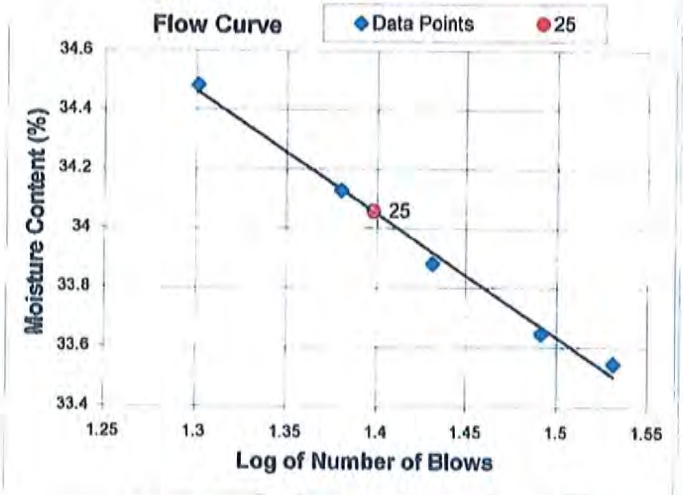
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.828	6.399	6.297
Weight of Dry Soil & Pan (g):	6.038	5.610	5.513
Weight of Water (g):	0.790	0.789	0.784
Weight of Pan (g):	1.024	0.751	0.744
Moisture Content (%):	15.8	16.2	16.4

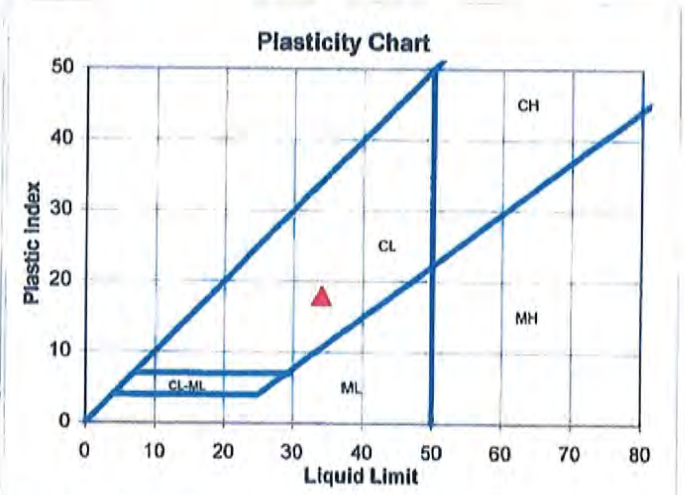
Average: 16.1%
Standard Deviation: 0.4%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Number of Blows:	20	24	27	31	34
Weight of Wet Soil & Pan (g):	14.208	16.872	14.876	15.734	16.537
Weight of Dry Soil & Pan (g):	10.760	12.772	11.306	11.967	12.574
Weight of Water (g):	3.448	4.100	3.570	3.767	3.963
Weight of Pan (g):	0.761	0.758	0.769	0.771	0.760
Moisture Content (%):	34.5	34.1	33.9	33.6	33.5

Plastic Limit: 16
Liquid Limit: 34
Plastic Index: 18
Atterberg Classification CL





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Data Checked By: [signature]
Date: 4/11/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impounment
Project Number:

Boring Number: TI-B10-14
Depth: 40.0-41.0' (40-42.5')
Sample Number: Clayey Silt Tailings
Test Date: 3/29/2014
Technician: DPM
Sampled Date: 11/26/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

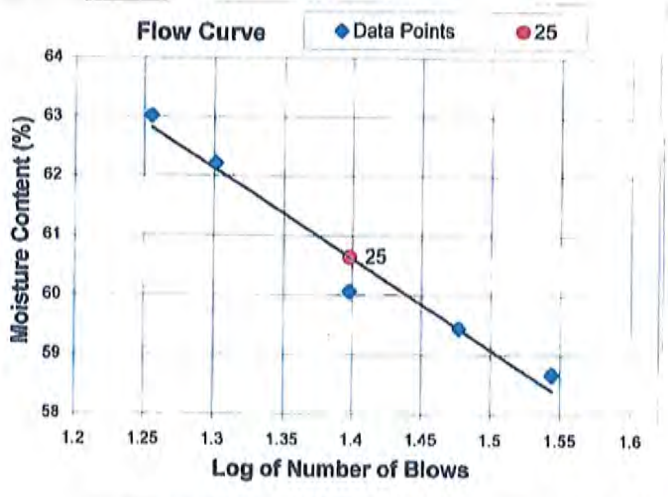
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.020	6.032	5.837
Weight of Dry Soil & Pan (g):	5.155	5.182	5.016
Weight of Water (g):	0.865	0.850	0.821
Weight of Pan (g):	1.012	1.004	1.008
Moisture Content (%):	20.9	20.3	20.5

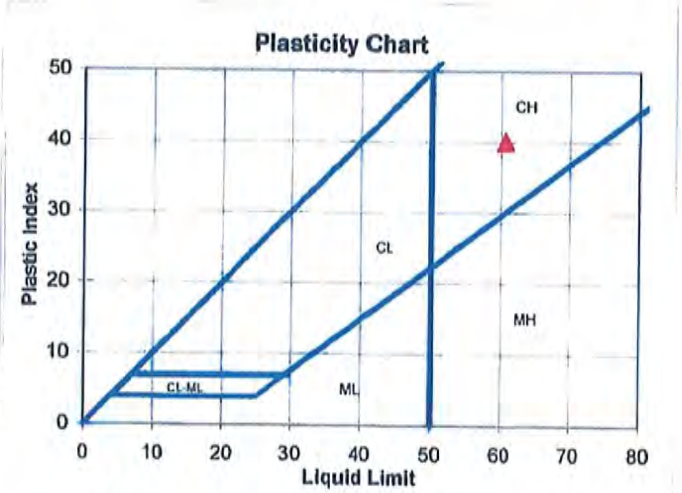
Average: 20.6%
Standard Deviation: 0.3%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Number of Blows:	35	30	25	20	18
Weight of Wet Soil & Pan (g):	15.070	12.400	13.564	11.815	14.478
Weight of Dry Soil & Pan (g):	9.874	8.152	8.849	7.681	9.274
Weight of Water (g):	5.196	4.248	4.715	4.134	5.204
Weight of Pan (g):	1.018	1.006	0.999	1.036	1.016
Moisture Content (%):	58.7	59.4	60.1	62.2	63.0

Plastic Limit: 21
Liquid Limit: 61
Plastic Index: 40
Atterberg Classification CH





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File Name: atterberg-ASTM_4318-R6_29.xls

Data Checked By: bg
Date: 4/11/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B10-08A
Depth: 26.0-26.5'
Sample Number: Clayey Silt Tailings
Test Date: 3/14/2014
Technician: DPM
Sampled Date: 11/26/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

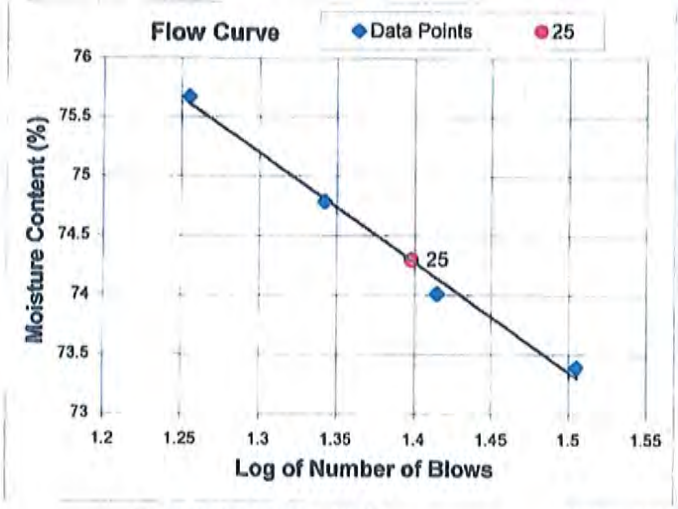
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.081	6.082	5.875
Weight of Dry Soil & Pan (g):	5.003	4.993	4.850
Weight of Water (g):	1.078	1.089	1.025
Weight of Pan (g):	0.997	1.009	1.025
Moisture Content (%):	26.9	27.3	26.8

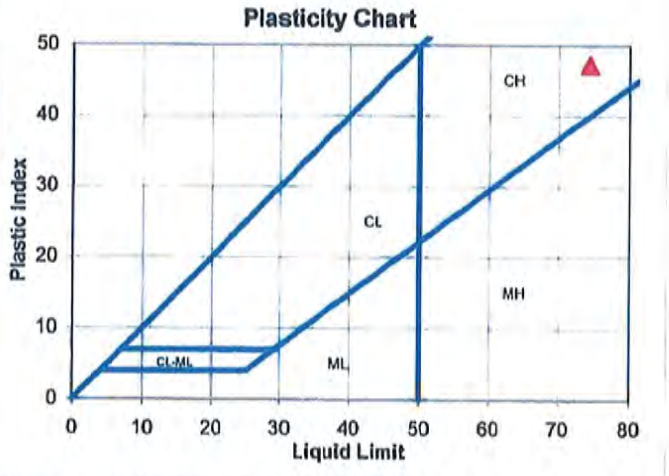
Average: 27.0%
Standard Deviation: 0.3%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Number of Blows:	32	26	25	18	22
Weight of Wet Soil & Pan (g):	14.462	14.569	14.101	13.907	16.284
Weight of Dry Soil & Pan (g):	8.785	8.803	8.524	8.355	9.750
Weight of Water (g):	5.677	5.766	5.577	5.552	6.534
Weight of Pan (g):	1.050	1.012	1.018	1.018	1.013
Moisture Content (%):	73.4	74.0	74.3	75.7	74.8

Plastic Limit: 27
Liquid Limit: 74
Plastic Index: 47
Atterberg Classification CH





Data Entered By: DPM Date: 3/17/2014
File Name: atterberg-ASTM_4318-R6_23.xls

Data Checked By: bj
Date: 4/11/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B10-10
Depth: 32-32.5' (30.0-32.5')
Sample Number: Bottom of the tube
Test Date: 3/21/2014
Technician: DPM
Sampled Date: 11/26/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits Non-Plastic

Liquid Limits Non-Plastic

Atterberg Classification NP

Data Entered By: DPM Date: 4/10/2014
File Name: atterberg-ASTM_4318-R6_26.xls

Data Checked By: hj
Date: 4/11/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B1-15A
Depth: 41.1-41.5'
Sample Number: Sandy Clay
Test Date: 3/29/2014
Technician: DPM
Sampled Date: 11/21/2013
Sampled By: MWH
Method: Method A

Test Configuration
Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

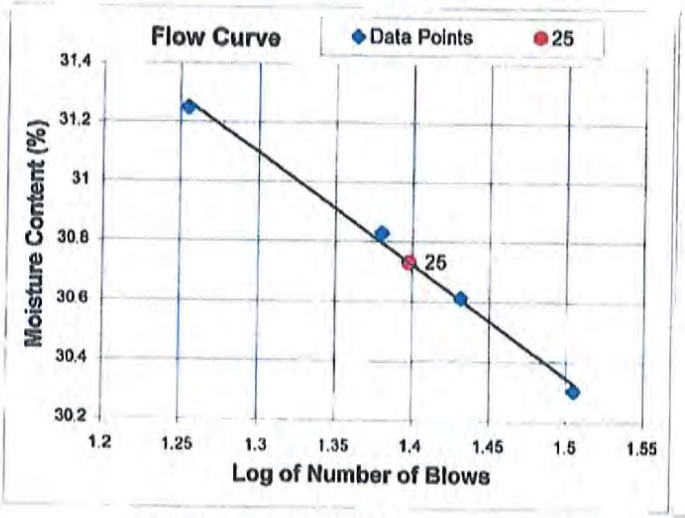
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.790	6.830	6.911
Weight of Dry Soil & Pan (g):	6.051	6.093	6.164
Weight of Water (g):	0.739	0.737	0.747
Weight of Pan (g):	1.005	0.981	0.967
Moisture Content (%):	14.6	14.4	14.4

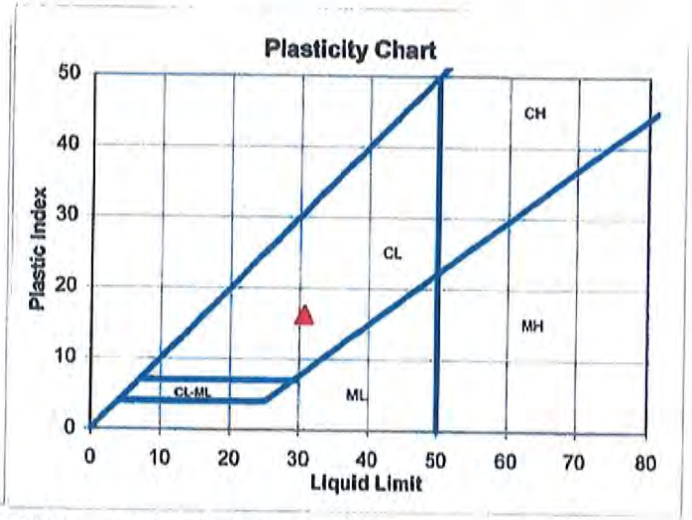
Average: 14.5%
Standard Deviation: 0.1%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4
Number of Blows:	18	24	27	32
Weight of Wet Soil & Pan (g):	15.605	15.144	14.679	14.080
Weight of Dry Soil & Pan (g):	12.127	11.808	11.477	11.048
Weight of Water (g):	3.478	3.336	3.202	3.032
Weight of Pan (g):	0.997	0.987	1.017	1.043
Moisture Content (%):	31.2	30.8	30.6	30.3

Plastic Limit: 14
Liquid Limit: 31
Plastic Index: 16
Atterberg Classification CL





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Date: 4/14/2014
File Name: atterberg-ASTM_4318-R6_24.xls

Data Checked By: bj
Date: 4/18/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B1-12
Depth: 32-33' (32-34.5')
Sample Number: Sand Tailings (V. fine, Clayey)
Test Date: 4/15/2014
Technician: DPM
Sampled Date: 11/21/2013
Sampled By: MWH
Method: Method A

Test Configuration
Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

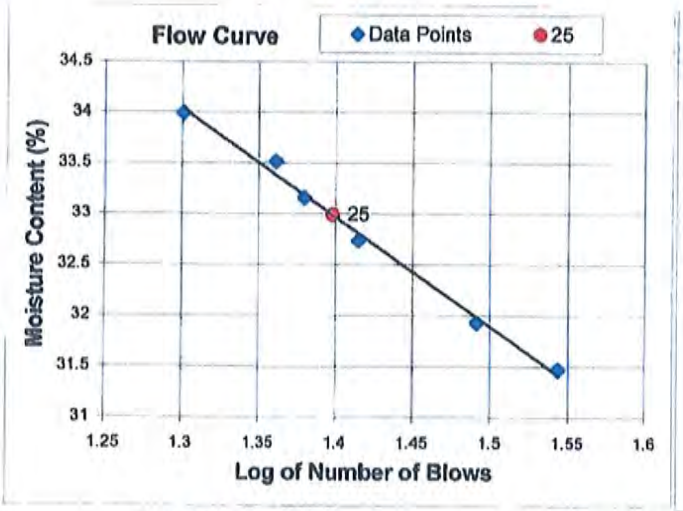
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.599	6.284	6.556
Weight of Dry Soil & Pan (g):	5.795	5.523	5.794
Weight of Water (g):	0.804	0.761	0.762
Weight of Pan (g):	0.742	0.729	0.760
Moisture Content (%):	15.9	15.9	15.1

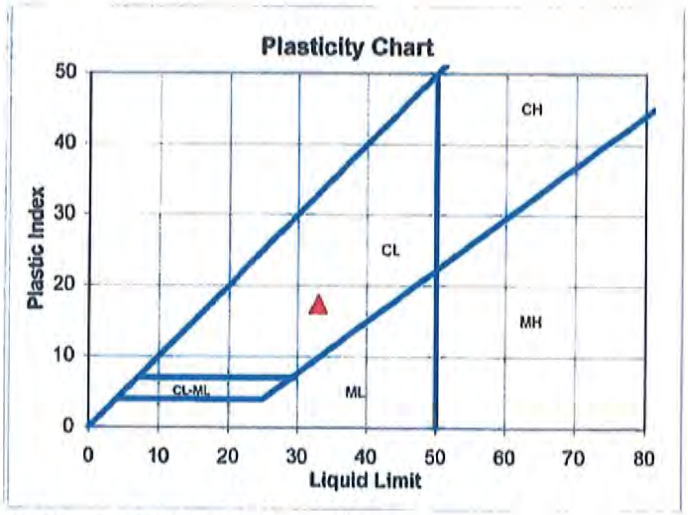
Average: 15.6%
Standard Deviation: 0.4%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6
Number of Blows:	20	23	24	26	31	35
Weight of Wet Soil & Pan (g):	12.709	13.846	13.569	12.908	13.336	13.679
Weight of Dry Soil & Pan (g):	9.679	10.563	10.382	9.909	10.290	10.583
Weight of Water (g):	3.030	3.283	3.187	2.999	3.046	3.096
Weight of Pan (g):	0.765	0.767	0.769	0.747	0.750	0.744
Moisture Content (%):	34.0	33.5	33.2	32.7	31.9	31.5

Plastic Limit: 16
Liquid Limit: 33
Plastic Index: 17
Atterberg Classification CL





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File Name: atterberg-ASTM_4318-R6_30.xls

Data Checked By: [illegible]
Date: 4/18/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B10-10
Depth: 30.3-30.7' (30-32.5')
Sample Number: Top of Tube - Fine
Test Date: 4/16/2014
Technician: DPM
Sampled Date: 11/26/2013
Sampled By: MWH
Method: Method A

Test Configuration
Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

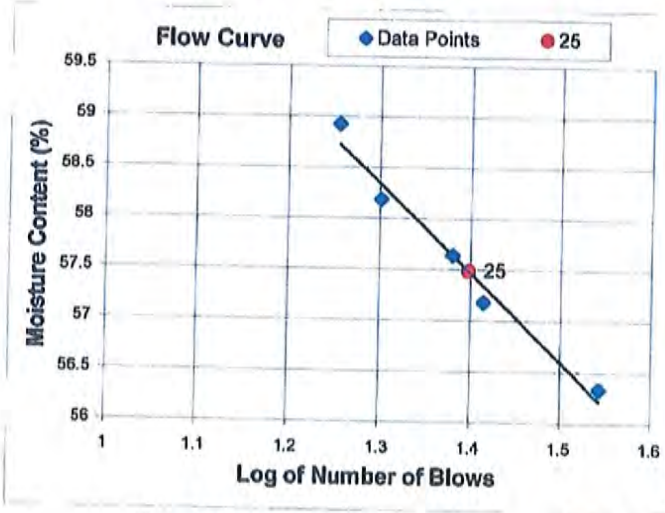
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.017	6.004	6.050
Weight of Dry Soil & Pan (g):	5.048	5.044	5.081
Weight of Water (g):	0.969	0.960	0.969
Weight of Pan (g):	0.754	0.735	0.756
Moisture Content (%):	22.6	22.3	22.4

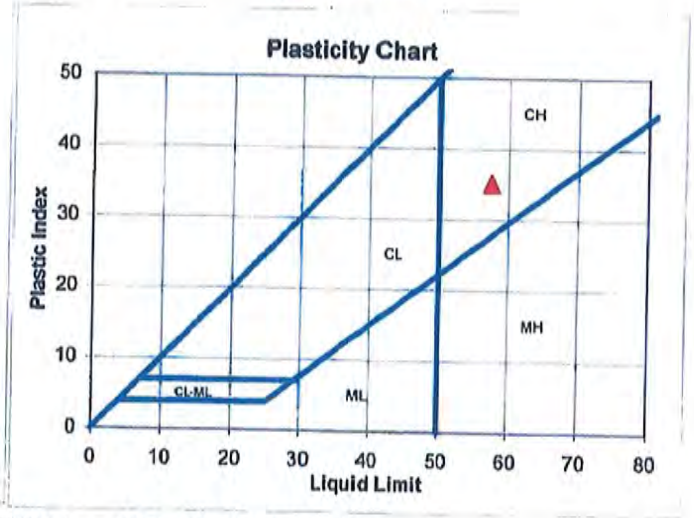
Average: 22.4%
Standard Deviation: 0.1%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Number of Blows:	35	26	24	20	18
Weight of Wet Soil & Pan (g):	12.559	12.938	15.069	12.788	14.269
Weight of Dry Soil & Pan (g):	8.307	8.507	9.837	8.359	9.261
Weight of Water (g):	4.252	4.431	5.232	4.429	5.008
Weight of Pan (g):	0.759	0.758	0.760	0.747	0.762
Moisture Content (%):	56.3	57.2	57.6	58.2	58.9

Plastic Limit: 22
Liquid Limit: 57
Plastic Index: 35
Atterberg Classification CH





Data Entered By: DPM Date: 4/17/2014
File Name: atterberg-ASTM_4318-R6_31.xls

Data Checked By: bj
Date: 4/18/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number: -

Boring Number: TI-B3-08A
Depth: 46.0-46.5'
Sample Number: Silty Clay
Test Date: 2/10/2014
Technician: DPM
Sampled Date: 11/19/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

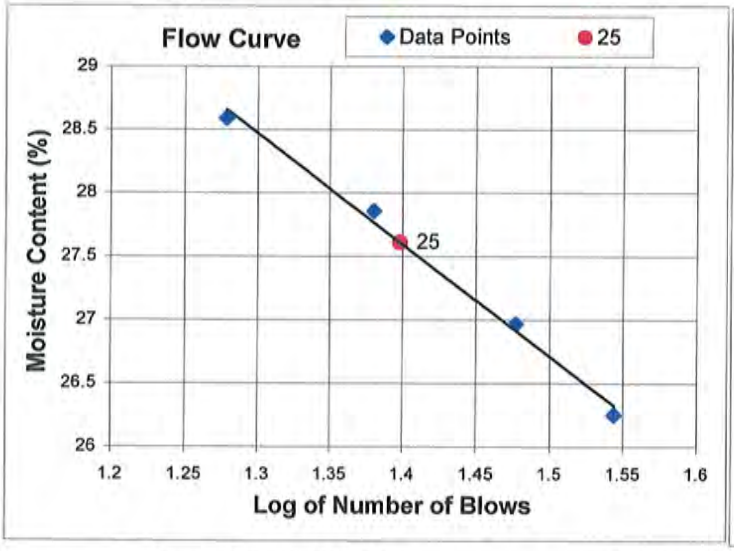
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.938	6.725	6.502
Weight of Dry Soil & Pan (g):	6.241	6.035	5.872
Weight of Water (g):	0.697	0.690	0.630
Weight of Pan (g):	0.757	0.766	0.748
Moisture Content (%):	12.7	13.1	12.3

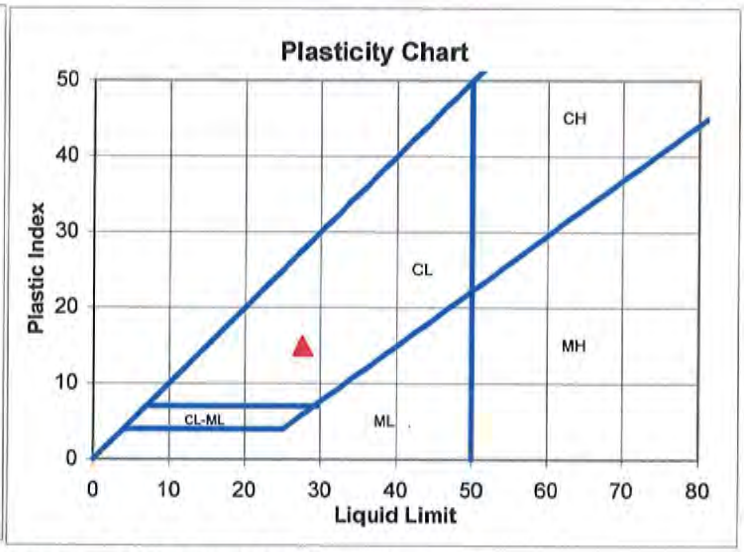
Average: 12.7%
Standard Deviation: 0.4%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4
Number of Blows:	35	30	24	19
Weight of Wet Soil & Pan (g):	16.804	14.996	15.489	11.259
Weight of Dry Soil & Pan (g):	13.465	11.971	12.276	8.925
Weight of Water (g):	3.339	3.025	3.213	2.334
Weight of Pan (g):	0.746	0.753	0.742	0.761
Moisture Content (%):	26.3	27.0	27.9	28.6

Plastic Limit: 13
Liquid Limit: 28
Plastic Index: 15
Atterberg Classification CL





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File Name: atterberg-ASTM_4318-R6_14.xls

Data Checked By: BJ
Date: 2/14/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number: -

Boring Number: TI-B3-04A
Depth: 26.0-26.5'
Sample Number: Silty Clay
Test Date: 2/10/2014
Technician: DPM
Sampled Date: 11/19/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: #40

Plastic Limits

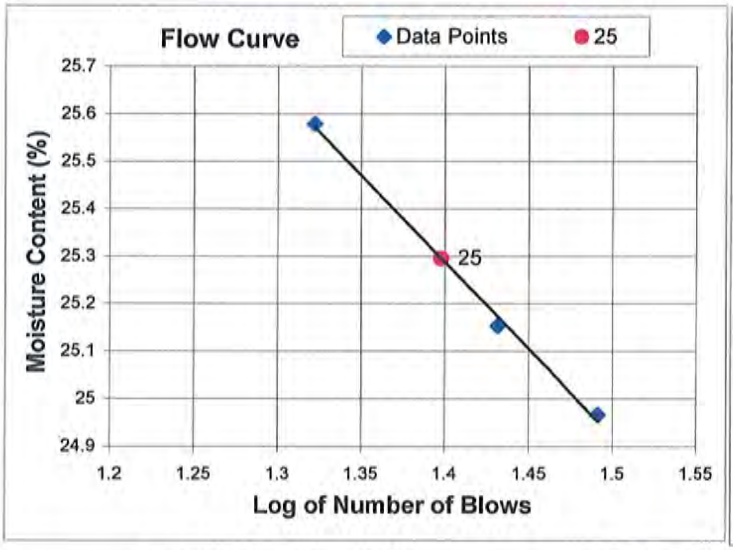
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.682	6.361	6.429
Weight of Dry Soil & Pan (g):	5.977	5.701	5.794
Weight of Water (g):	0.705	0.660	0.635
Weight of Pan (g):	0.730	0.773	0.777
Moisture Content (%):	13.4	13.4	12.7

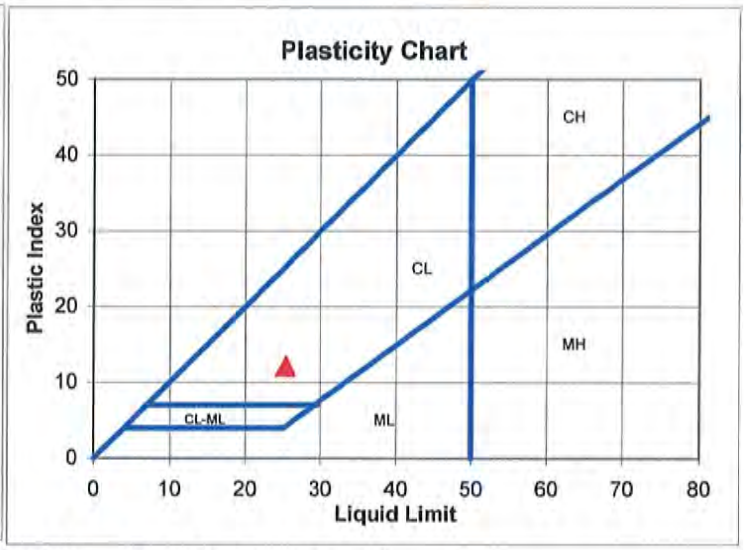
Average: 13.2%
Standard Deviation: 0.4%

Liquid Limits

	Sample 1	Sample 2	Sample 3
Number of Blows:	21	27	31
Weight of Wet Soil & Pan (g):	15.310	16.899	15.564
Weight of Dry Soil & Pan (g):	12.348	13.655	12.608
Weight of Water (g):	2.962	3.244	2.956
Weight of Pan (g):	0.768	0.758	0.768
Moisture Content (%):	25.6	25.2	25.0

Plastic Limit: 13
Liquid Limit: 25
Plastic Index: 12
Atterberg Classification CL





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File Name: atterberg-ASTM_4318-R6_13.xls

Data Checked By: bj
Date: 2/14/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B10-20A
Depth: 66.0-66.5'
Sample Number: Silty Sand
Test Date: 3/17/2014
Technician: DPM
Sampled Date: 11/26/2013
Sampled By: MWH
Method: Method A

Test Configuration
Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits Non-Plastic

Liquid Limits Non-Plastic

Atterberg Classification NP

Data Entered By: DPM Date: 3/21/2014
File Name: atterberg-ASTM_4318-R6_25.xls

Data Checked By: bj
Date: 03/24/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B1-11A
Depth: 31.0-31.5'
Sample Number: Sand Tailings (V. Fine Clayey)
Test Date: 5/7/2014
Technician: DPM
Sampled Date: 11/21/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

Note: The sample was dried at 60c.

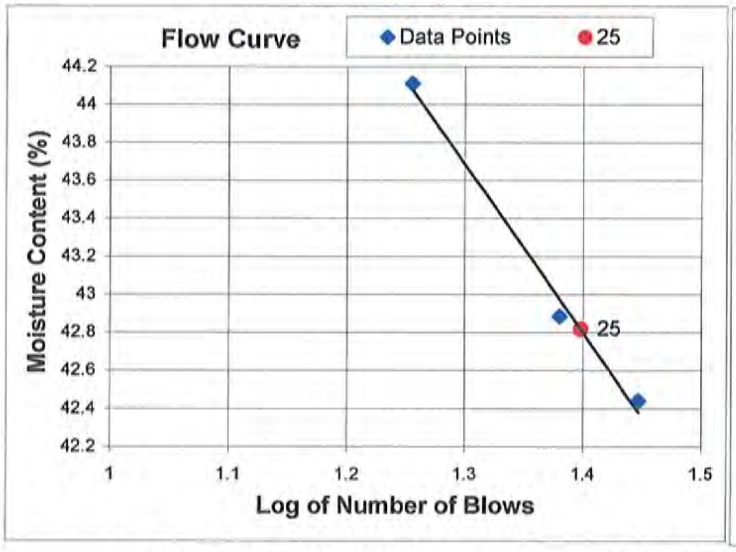
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.846	6.782	6.784
Weight of Dry Soil & Pan (g):	6.030	6.003	6.010
Weight of Water (g):	0.816	0.779	0.774
Weight of Pan (g):	1.149	1.121	1.136
Moisture Content (%):	16.7	16.0	15.9

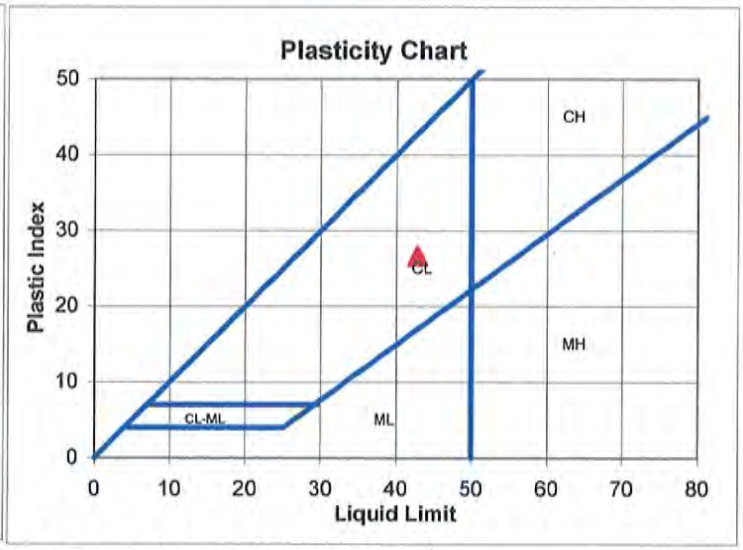
Average: 16.2%
Standard Deviation: 0.5%

Liquid Limits

	Sample 1	Sample 2	Sample 3
Number of Blows:	28	24	18
Weight of Wet Soil & Pan (g):	14.338	12.470	13.759
Weight of Dry Soil & Pan (g):	10.417	9.065	9.891
Weight of Water (g):	3.921	3.405	3.868
Weight of Pan (g):	1.178	1.125	1.122
Moisture Content (%):	42.4	42.9	44.1

Plastic Limit: 16
Liquid Limit: 43
Plastic Index: 27
Atterberg Classification CL





Data Entered By: DPM Date: 5/9/2014
File Name: atterberg-ASTM_4318-R6_44-60c.xls

Data Checked By: DAW
Date: 05/23/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B1-11A
Depth: 31.0-31.5'
Sample Number: Sand Tailings (V. Fine Clayey)
Test Date: 5/7/2014
Technician: DPM
Sampled Date: 11/21/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

Note: The sample was dried at 110c.

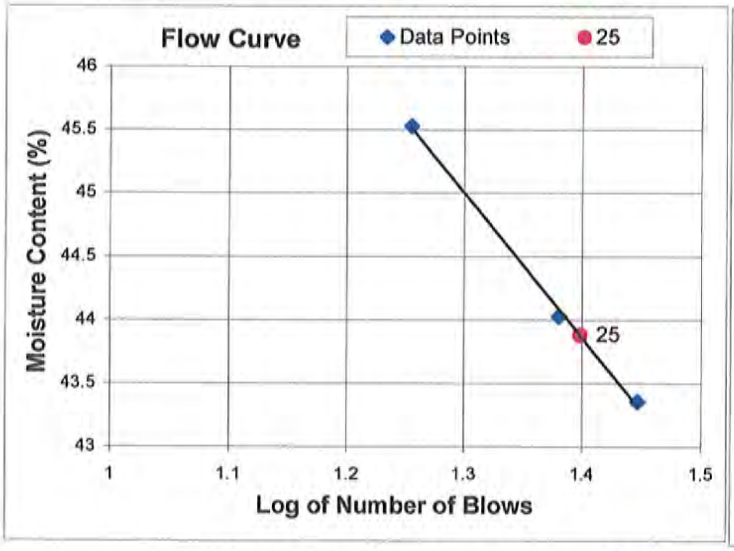
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.846	6.782	6.784
Weight of Dry Soil & Pan (g):	5.994	5.969	5.973
Weight of Water (g):	0.852	0.813	0.811
Weight of Pan (g):	1.149	1.121	1.136
Moisture Content (%):	17.6	16.8	16.8

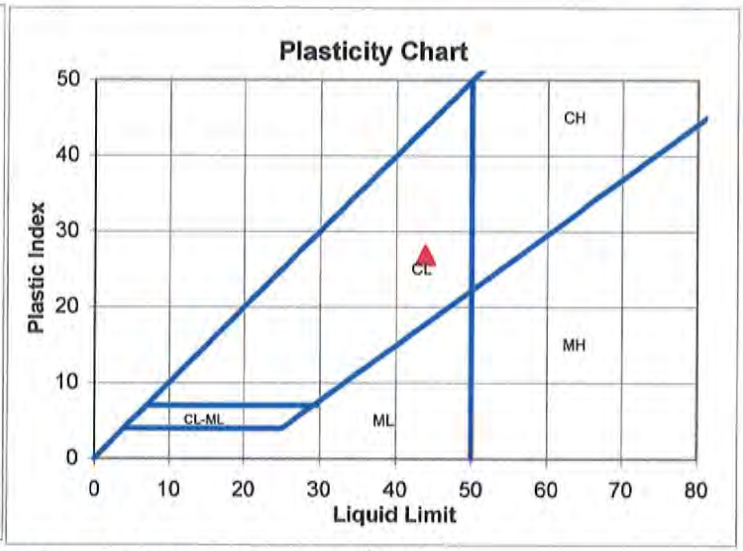
Average: 17.0%
Standard Deviation: 0.5%

Liquid Limits

	Sample 1	Sample 2	Sample 3
Number of Blows:	28	24	18
Weight of Wet Soil & Pan (g):	14.338	12.470	13.860
Weight of Dry Soil & Pan (g):	10.358	9.002	9.878
Weight of Water (g):	3.980	3.468	3.982
Weight of Pan (g):	1.178	1.125	1.132
Moisture Content (%):	43.4	44.0	45.5

Plastic Limit: 17
Liquid Limit: 44
Plastic Index: 27
Atterberg Classification CL





Data Entered By: DPM Date: 5/9/2014 Data Checked By: DAU
File Name: atterberg-ASTM_4318-R6_44-110c.xls Date: 05/23/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B3-10
Depth: 56-57' (55-57')
Sample Number: Silty Clay
Test Date: 5/7/2014
Technician: DPM
Sampled Date: 11/19/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

Note: The sample was dried at 60c.

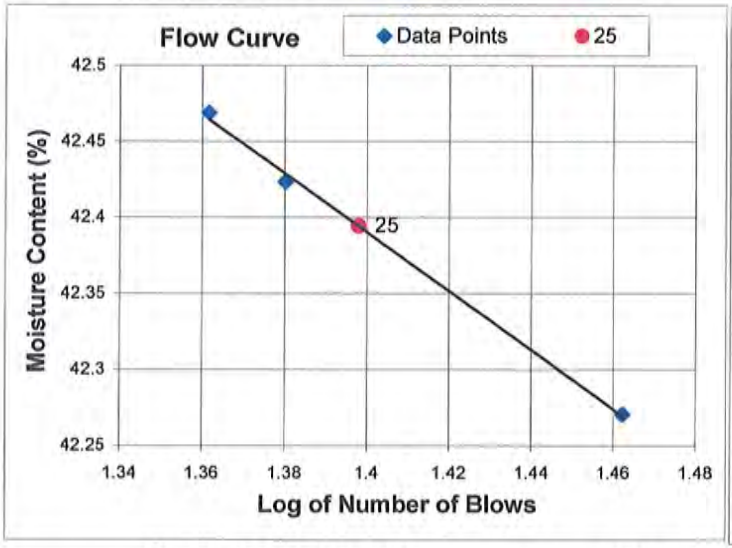
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.685	6.577	6.669
Weight of Dry Soil & Pan (g):	6.068	5.967	6.055
Weight of Water (g):	0.617	0.610	0.614
Weight of Pan (g):	1.141	1.145	1.147
Moisture Content (%):	12.5	12.7	12.5

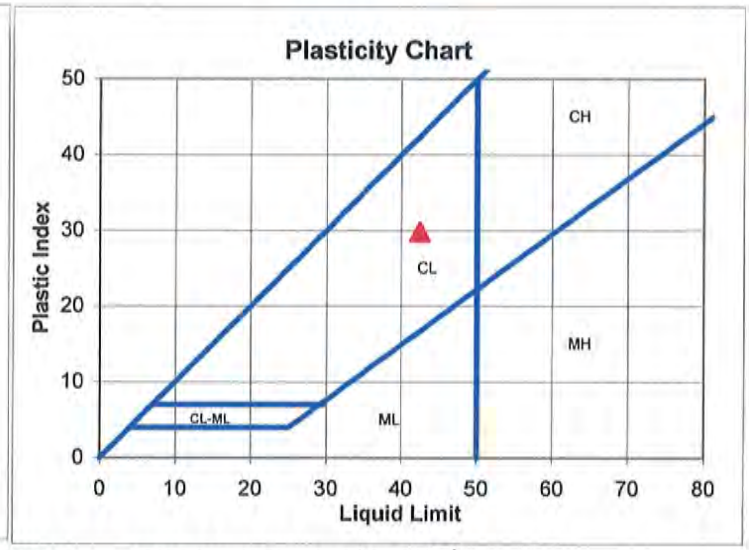
Average: 12.6%
Standard Deviation: 0.1%

Liquid Limits

	Sample 1	Sample 2	Sample 3
Number of Blows:	23	24	29
Weight of Wet Soil & Pan (g):	12.698	15.305	13.182
Weight of Dry Soil & Pan (g):	9.247	11.086	9.600
Weight of Water (g):	3.451	4.219	3.582
Weight of Pan (g):	1.121	1.141	1.126
Moisture Content (%):	42.5	42.4	42.3

Plastic Limit: 13
Liquid Limit: 42
Plastic Index: 30
Atterberg Classification CL





Data Entered By: DPM Date: 5/9/2014
File Name: atterberg-ASTM_4318-R6_49.xls

Data Checked By: AW
Date: 05/23/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B3-10
Depth: 56-57' (55-57')
Sample Number: Silty Clay
Test Date: 5/7/2014
Technician: DPM
Sampled Date: 11/19/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

Note: The sample was dried at 110c.

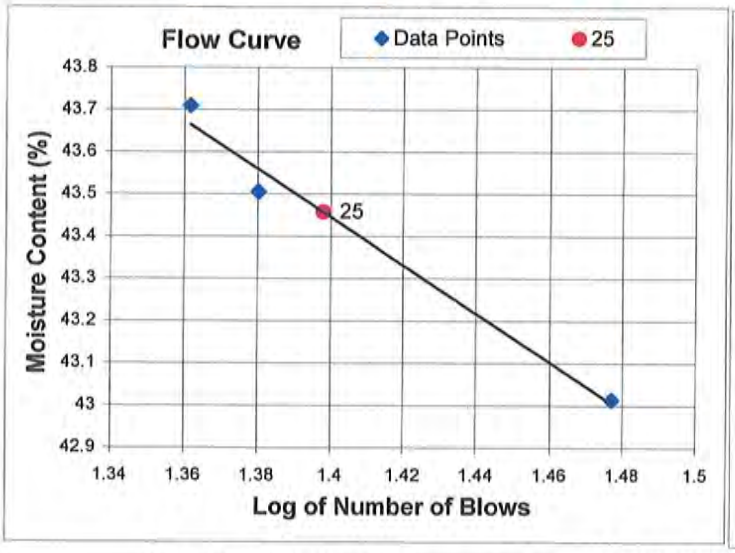
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.685	6.577	6.669
Weight of Dry Soil & Pan (g):	6.024	5.925	6.014
Weight of Water (g):	0.661	0.652	0.655
Weight of Pan (g):	1.141	1.145	1.147
Moisture Content (%):	13.5	13.6	13.5

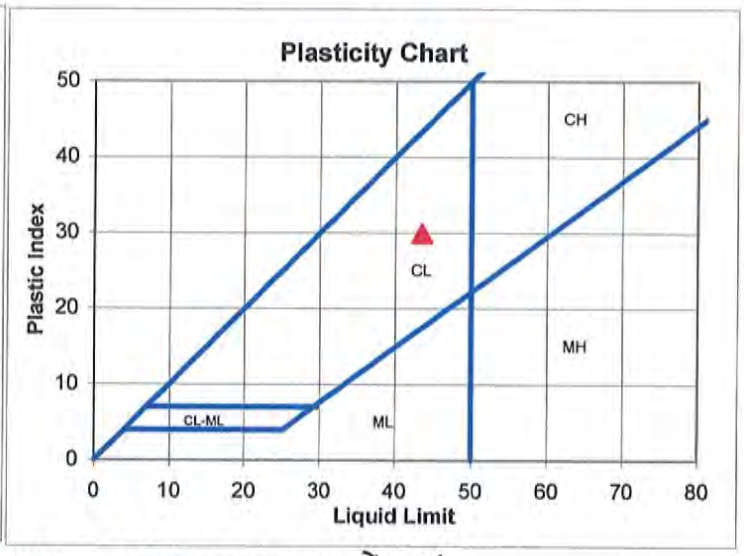
Average: 13.5%
Standard Deviation: 0.1%

Liquid Limits

	Sample 1	Sample 2	Sample 3
Number of Blows:	24	30	23
Weight of Wet Soil & Pan (g):	15.305	14.857	14.719
Weight of Dry Soil & Pan (g):	11.011	10.732	10.595
Weight of Water (g):	4.294	4.125	4.124
Weight of Pan (g):	1.141	1.142	1.160
Moisture Content (%):	43.5	43.0	43.7

Plastic Limit: 14
Liquid Limit: 43
Plastic Index: 30
Atterberg Classification CL





Data Entered By: DPM Date: 5/9/2014 Data Checked By: DAU
File Name: atterberg-ASTM_4318-R6_49-110c.xls Date: 05/23/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B3-03
Depth: 21.0-22.0' (20-22.4')
Sample Number: Silty Clay
Test Date: 5/5/2014
Technician: DPM
Sampled Date: 11/19/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

Note: The sample was dried at 60c.

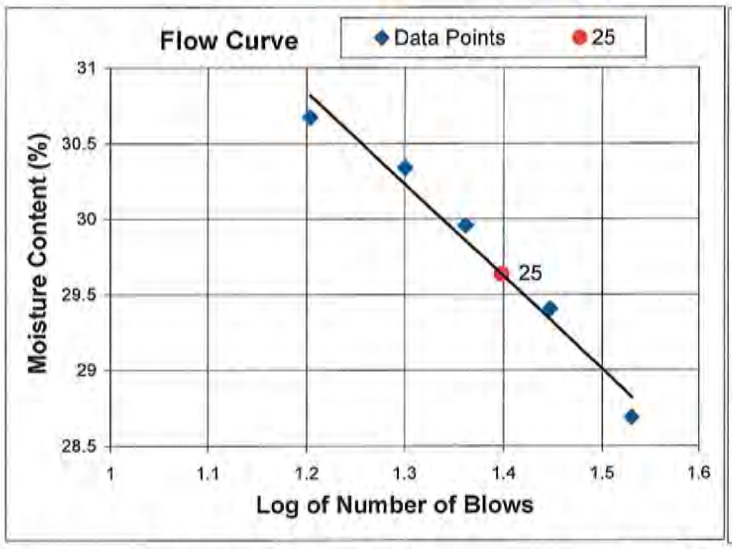
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.241	6.394	6.368
Weight of Dry Soil & Pan (g):	5.659	5.815	5.757
Weight of Water (g):	0.582	0.579	0.611
Weight of Pan (g):	0.773	0.746	0.763
Moisture Content (%):	11.9	11.4	12.2

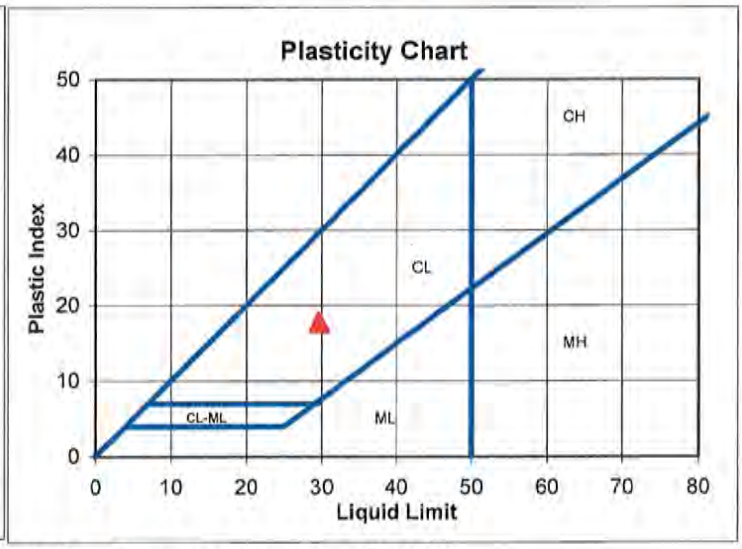
Average: 11.9%
Standard Deviation: 0.4%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Number of Blows:	16	20	23	28	34
Weight of Wet Soil & Pan (g):	14.153	15.194	12.727	17.673	14.217
Weight of Dry Soil & Pan (g):	11.009	11.935	10.060	13.917	11.300
Weight of Water (g):	3.144	3.259	2.667	3.756	2.917
Weight of Pan (g):	0.758	1.192	1.157	1.143	1.132
Moisture Content (%):	30.7	30.3	30.0	29.4	28.7

Plastic Limit: 12
Liquid Limit: 30
Plastic Index: 18
Atterberg Classification CL





Data Entered By: DPM Date: 5/23/2014 Data Checked By: DAW
File Name: atterberg-ASTM_4318-R6_41-60c.xls Date: 05/23/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B3-03
Depth: 21.0-22.0' (20-22.4')
Sample Number: Silty Clay
Test Date: 5/5/2014
Technician: DPM
Sampled Date: 11/19/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: #40

Plastic Limits

Note: The sample was dried at 110c.

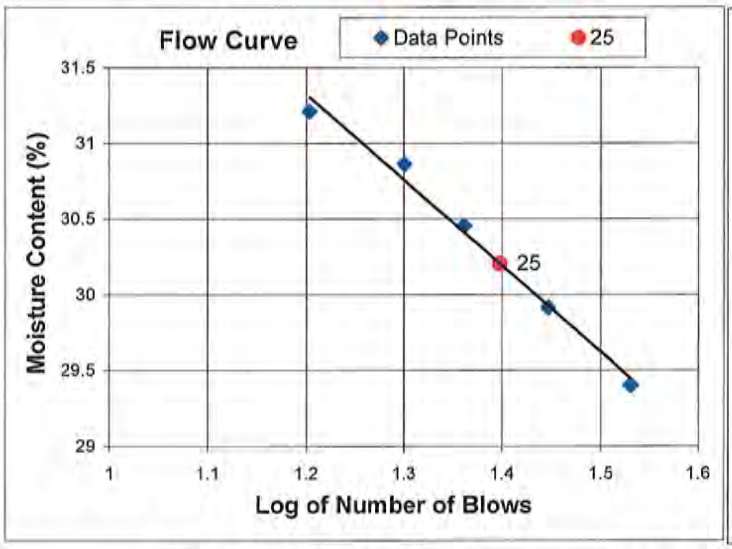
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.241	6.394	6.368
Weight of Dry Soil & Pan (g):	5.644	5.798	5.740
Weight of Water (g):	0.597	0.596	0.628
Weight of Pan (g):	0.773	0.746	0.763
Moisture Content (%):	12.3	11.8	12.6

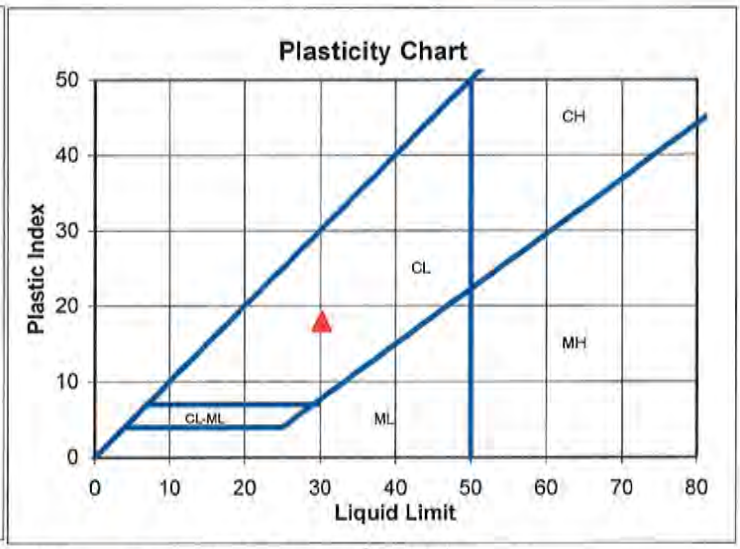
Average: 12.2%
Standard Deviation: 0.4%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Number of Blows:	16	20	23	28	34
Weight of Wet Soil & Pan (g):	14.153	15.194	12.727	17.673	14.217
Weight of Dry Soil & Pan (g):	10.967	11.892	10.026	13.867	11.244
Weight of Water (g):	3.186	3.302	2.701	3.806	2.973
Weight of Pan (g):	0.758	1.192	1.157	1.143	1.132
Moisture Content (%):	31.2	30.9	30.5	29.9	29.4

Plastic Limit: 12
Liquid Limit: 30
Plastic Index: 18
Atterberg Classification CL





Data Entered By: DPM Date: 5/23/2014 Data Checked By: DAW
File Name: atterberg-ASTM_4318-R6_41-110c.xls Date: 05/23/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B3-06
Depth: 35-36' (35-37.3')
Sample Number: Silty Clay
Test Date: 5/7/2014
Technician: DPM
Sampled Date: 11/19/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

Note: The sample was dried at 60c.

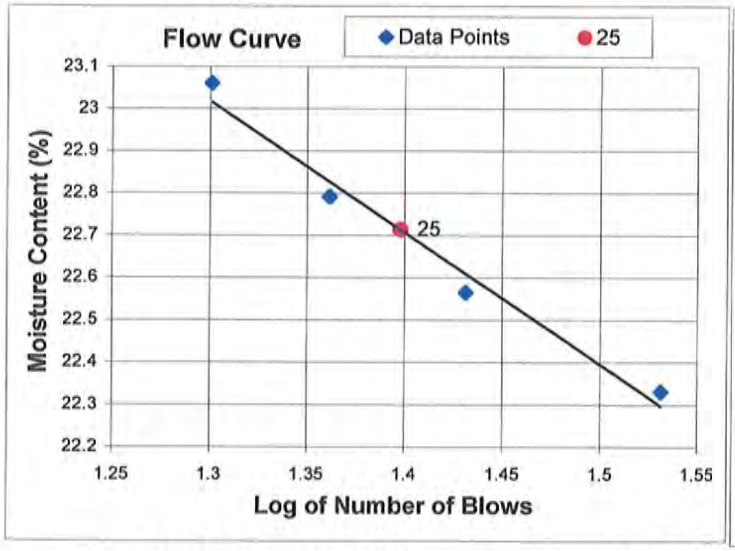
	Sample 1	Sample 2
Weight of Wet Soil & Pan (g):	7.147	7.001
Weight of Dry Soil & Pan (g):	6.420	6.329
Weight of Water (g):	0.727	0.672
Weight of Pan (g):	1.144	1.143
Moisture Content (%):	13.8	13.0

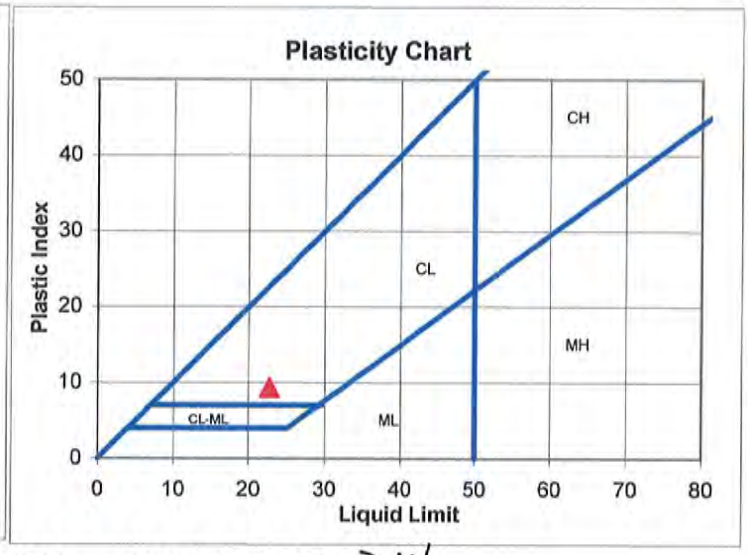
Average: 13.4%
Standard Deviation: 0.6%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4
Number of Blows:	20	23	27	34
Weight of Wet Soil & Pan (g):	16.589	13.566	14.396	13.991
Weight of Dry Soil & Pan (g):	13.691	11.257	11.962	11.644
Weight of Water (g):	2.898	2.309	2.434	2.347
Weight of Pan (g):	1.124	1.126	1.175	1.134
Moisture Content (%):	23.1	22.8	22.6	22.3

Plastic Limit: 13
Liquid Limit: 23
Plastic Index: 9
Atterberg Classification CL





Data Entered By: DPM Date: 5/9/2014
File Name: atterberg-ASTM_4318-R6_51-60c.xls

Data Checked By: DAW
Date: 05/22/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B3-06
Depth: 35-36' (35-37.3')
Sample Number: Silty Clay
Test Date: 5/7/2014
Technician: DPM
Sampled Date: 11/19/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: -#40

Plastic Limits

Note: The sample was dried at 110c.

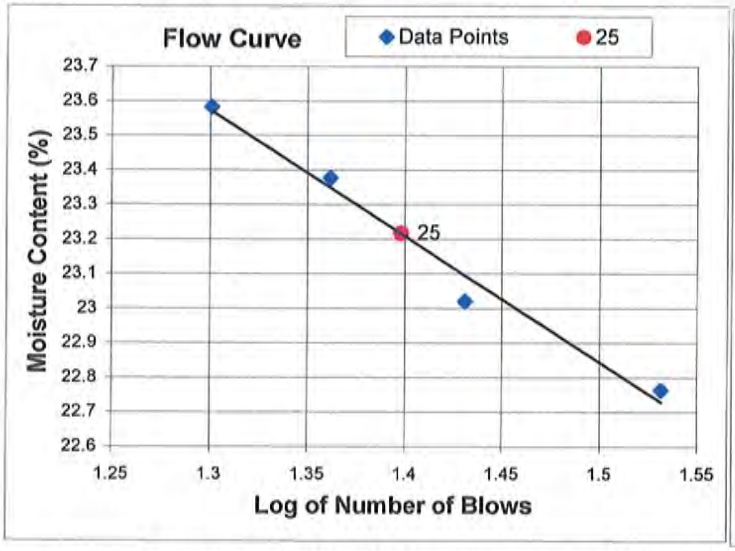
	Sample 1	Sample 2
Weight of Wet Soil & Pan (g):	7.147	7.001
Weight of Dry Soil & Pan (g):	6.396	6.301
Weight of Water (g):	0.751	0.700
Weight of Pan (g):	1.144	1.143
Moisture Content (%):	14.3	13.6

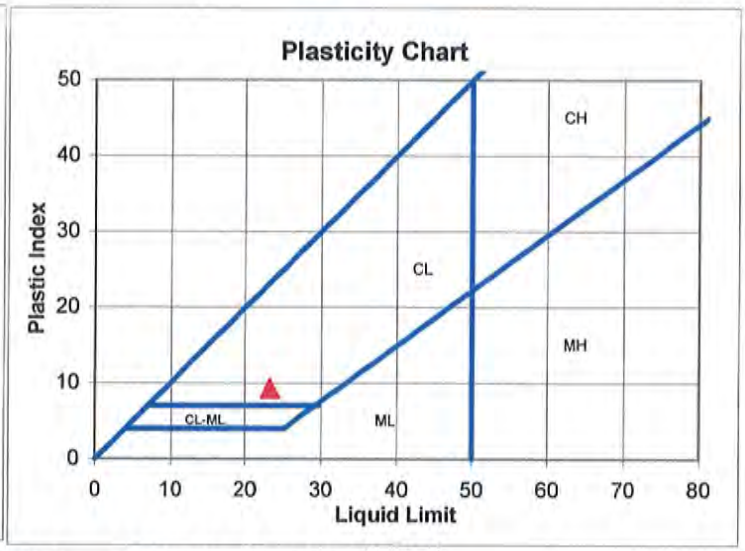
Average: 13.9%
Standard Deviation: 0.5%

Liquid Limits

	Sample 1	Sample 2	Sample 3	Sample 4
Number of Blows:	20	23	27	34
Weight of Wet Soil & Pan (g):	16.589	13.566	14.396	13.991
Weight of Dry Soil & Pan (g):	13.638	11.209	11.922	11.607
Weight of Water (g):	2.951	2.357	2.474	2.384
Weight of Pan (g):	1.124	1.126	1.175	1.134
Moisture Content (%):	23.6	23.4	23.0	22.8

Plastic Limit: 14
Liquid Limit: 23
Plastic Index: 9
Atterberg Classification CL





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File Name: atterberg-ASTM_4318-R6_51-110c.xls Date: 05/22/14

ATT
ADVANCED TERRA TESTING

Atterberg Limits Test
ASTM D 4318

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number: -

Boring Number: TI-B10-06
Depth: 21.5-22.5' (20.0-22.5')
Sample Number: Clayey Silt Tailings
Test Date: 2/11/2014
Technician: DPM
Sampled Date: 11/26/2013
Sampled By: MWH
Method: Method A

Test Configuration

Liquid Limits Device: 1080
Material Size of Fines: #40

Plastic Limits

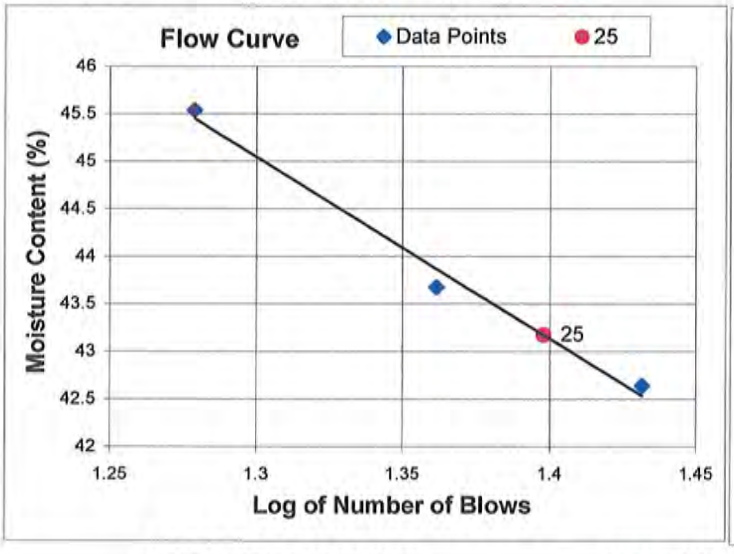
	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.443	6.361	6.268
Weight of Dry Soil & Pan (g):	5.547	5.473	5.415
Weight of Water (g):	0.896	0.888	0.853
Weight of Pan (g):	0.764	0.761	0.760
Moisture Content (%):	18.7	18.8	18.3

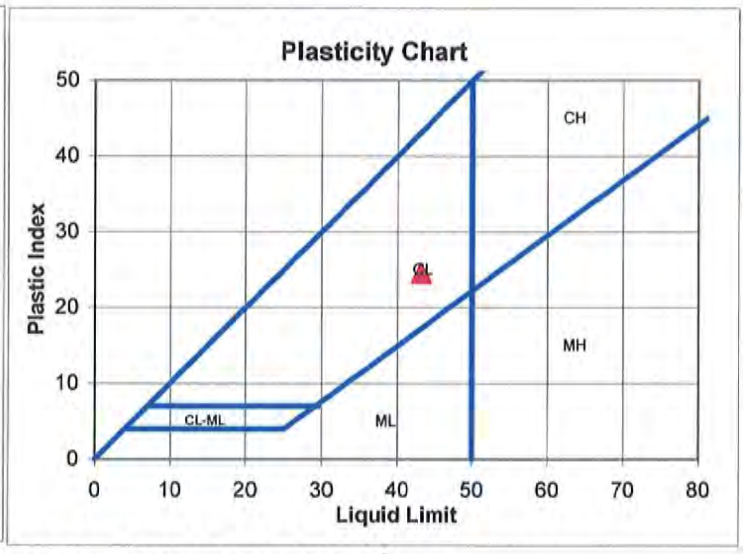
Average: 18.6%
Standard Deviation: 0.3%

Liquid Limits

	Sample 1	Sample 2	Sample 3
Number of Blows:	19	23	27
Weight of Wet Soil & Pan (g):	14.949	13.477	15.777
Weight of Dry Soil & Pan (g):	10.506	9.608	11.285
Weight of Water (g):	4.443	3.869	4.492
Weight of Pan (g):	0.749	0.749	0.750
Moisture Content (%):	45.5	43.7	42.6

Plastic Limit: 19
Liquid Limit: 43
Plastic Index: 25
Atterberg Classification CL





Data Entered By: DPM Date: 2/12/2014
File Name: atterberg-ASTM_4318-R6_15.xls

Data Checked By: bj
Date: 2/14/14

ATT
ADVANCED TERRA TESTING

SPECIFIC GRAVITY TESTS ASTM D 854

CLIENT:	MWH	JOB NO.	2512-77
SOIL DESCR.	Church Rock	LOCATION	Tailings Impoundment

BORING NO.	TI-B8-06	TI-B11-10	TI-B11-03	TI-B11-08
DEPTH	35-36'	56-57'	15-16'	51.5-52.5'
SAMPLE NO.	-	-	-	-
DATE SAMPLED	-	12/02/13 MWH	12/02/13 MWH	12/02/13 MWH
DATE TESTED	01/30/14 DPM	01/31/14 DPM	03/14/14 DPM	03/19/14 DPM
Pycnometer #	AA	EE	EE	SS
Weight of oven dry soil (g) (Wo)	26.669	26.156	27.411	26.199
Weight of flask, soil, and water. (g) (Wb)	181.824	179.781	180.640	185.088
Temperature (deg. C) (Tx)	20.7	20.0	21.1	19.9
Weight of water & flask at Tx (from cal. curve)(Wa)	165.052	163.519	163.498	168.405
Specific Gravity*	2.69	2.64	2.67	2.75

BORING NO.	TI-B8-10A	TI-B8-12A	TI-B15-04	TI-B15-10
DEPTH	46.0-46.5'	56.0-56.5'	13.5-14.0'	28.5-29.5'
SAMPLE NO.	-	-	-	-
DATE SAMPLED	12/04/13 MWH	12/04/13 MWH	12/05/13 MWH	12/05/13 MWH
DATE TESTED	03/21/14 DPM	03/21/14 DPM	3/28/14 DPM	3/28/14 DPM
Pycnometer #	1	AA	AA	1
Weight of oven dry soil (g) (Wo)	25.506	25.839	25.036	26.340
Weight of flask, soil, and water. (g) (Wb)	178.040	181.273	180.751	178.401
Temperature (deg. C) (Tx)	22.3	22.5	20.6	20.9
Weight of water & flask at Tx (from cal. curve)(Wa)	161.904	165.011	165.054	161.949
Specific Gravity*	2.72	2.70	2.68	2.66

*Specific Gravity = Wo/[Wo+(Wa-Wb)]

Data entry by: DPM Date: 04/10/2014
Data checked by: [illegible] Date: 4/11/14
FileName: MWSGAS51

ADVANCED TERRA TESTING, INC. ATT

SPECIFIC GRAVITY TESTS ASTM D 854

CLIENT:	MWH	JOB NO.	2512-77
PROJECT:	Church Rock	LOCATION:	Tailings Impoundment

BORING NO.	TI-B23-06	TI-B11-17A	TI-B23-03	TI-B15-05
DEPTH	26-27'	81.0-81.5'	17.25-17.5'	15.5-16.0'
SAMPLE NO.	-	-	Bottom of Tube	-
DATE SAMPLED	12/06/13 MWH	12/02/13 MWH	12/06/13 MWH	12/05/13 MWH
DATE TESTED	03/28/14 DPM	03/28/14 DPM	04/14/14 DPM	04/17/14 DPM
Soil Description	Silty Clay	Gravely Sand	Silty Clay	Sand Tailings
Pycnometer #	EE	SS	FF	1
Weight of oven dry soil (g) (Wo)	25.397	26.928	25.984	28.463
Weight of flask, soil, and water. (g) (Wb)	179.582	185.514	181.274	179.643
Temperature (deg. C) (Tx)	20.9	20.9	21.3	22.5
Weight of water & flask at Tx (from cal. curve)(Wa)	163.502	168.356	164.816	161.897
Specific Gravity*	2.73	2.76	2.73	2.66

BORING NO.	TI-B23-03	TI-B15-07A	TI-B15-15A	TI-B15-11A
DEPTH	15.5-15.75'	21.0-21.5'	46.0-46.5'	31.0-31.5
SAMPLE NO.	Top of Tube	-	-	-
DATE SAMPLED	12/06/13 MWH	12/05/13 MWH	12/05/13 MWH	12/05/13 MWH
DATE TESTED	04/17/14 DPM	04/17/14 DPM	04/25/14 DPM	04/25/14 DPM
Soil Description	Sand Tailings	Fine Sand Tailings	Clayey Sand	Silty Clay
Pycnometer #	SS	FF	SS	FF
Weight of oven dry soil (g) (Wo)	25.469	26.544	26.578	25.240
Weight of flask, soil, and water. (g) (Wb)	184.548	181.429	185.372	180.692
Temperature (deg. C) (Tx)	22.4	22.7	23.1	23.0
Weight of water & flask at Tx (from cal. curve)(Wa)	168.280	164.779	168.245	164.771
Specific Gravity*	2.77	2.68	2.81	2.71

*Specific Gravity = Wo/[Wo+(Wa-Wb)]

Data entry by: DPM Date: 05/23/2014
Data checked by: DAW Date: 05/23/14
FileName: MWSGAS81

ADVANCED TERRA TESTING, INC. ATT

SPECIFIC GRAVITY TESTS ASTM D 854

CLIENT: MWH JOB NO. 2512-77

LOCATION Church Rock

BORING NO.	TI-B10-03	TI-B10-02	TI-B8-08	TI-B8-09
DEPTH	12.5-14.0'	10.0-11.0'	41.0-42.0'	44.5-44.6'
SAMPLE NO.	--	--	--	--
DATE SAMPLED	11/26/13 MWH	11/26/13 MWH	12/04/13 MWH	--
DATE TESTED	--	--	--	--
SOIL DESCR.	Sand Tailings	Sand Tailings	Clayey Silt	Clayey Silt
Pycnometer #	AA	1	EE	FF
Weight of oven dry soil (g) (Wo)	30.870	32.918	30.086	33.013
Weight of flask, soil, and water. (g) (Wb)	184.055	182.218	181.999	184.935
Temperature (deg. C) (Tx)	27.7	27.7	27.7	27.7
Weight of water & flask at Tx (from cal. curve)(Wa)	164.882	161.712	163.335	164.630
Specific Gravity*	2.64	2.65	2.63	2.60

BORING NO.	TI-B8-02C	TI-B10-14	TI-B8-06
DEPTH	25.0-25.5'	40.0-41.0'	35.0-36.0'
SAMPLE NO.	--	--	--
DATE SAMPLED	12/03/13 MWH	11/26/13 MWH	12/04/13 MWH
DATE TESTED	--	--	--
SOIL DESCR.	Sand Tailings	Clayey Silt Tailings	Clayey Silt/Sand
Pycnometer #	SS	DD	HH
Weight of oven dry soil (g) (Wo)	31.870	30.990	31.575
Weight of flask, soil, and water. (g) (Wb)	188.147	182.100	184.303
Temperature (deg. C) (Tx)	27.7	27.7	27.7
Weight of water & flask at Tx (from cal. curve)(Wa)	168.005	163.229	164.563
Specific Gravity*	2.72	2.56	2.67

NOTE: Sample dried at 60 degrees Celsius.

*Specific Gravity = Wo/[Wo+(Wa-Wb)]

Data entry by: DAW Date: 06/04/2014

Data checked by: KR Date: 6/4/14

FileName: MNSA1214.WK4

ADVANCED TERRA TESTING, INC. ATT

SPECIFIC GRAVITY TESTS ASTM D 854

CLIENT: MWH JOB NO. 2512-77

LOCATION Church Rock

BORING NO.	TI-B10-03	TI-B10-02	TI-B8-08	TI-B8-09
DEPTH	12.5-14.0'	10.0-11.0'	41.0-42.0'	44.5-44.6'
SAMPLE NO.	--	--	--	--
DATE SAMPLED	11/26/13 MWH	11/26/13 MWH	12/04/13 MWH	--
DATE TESTED	--	--	--	--
SOIL DESCR.	Sand Tailings	Sand Tailings	Clayey Silt	Clayey Silt
Pycnometer #	AA	1	EE	FF
Weight of oven dry soil (g) (Wo)	30.568	32.646	29.695	32.856
Weight of flask, soil, and water. (g) (Wb)	184.055	182.218	181.999	184.935
Temperature (deg. C) (Tx)	27.7	27.7	27.7	27.7
Weight of water & flask at Tx (from cal. curve)(Wa)	164.882	161.712	163.335	164.630
Specific Gravity*	2.68	2.69	2.69	2.62

BORING NO.	TI-B8-02C	TI-B10-14	TI-B8-06
DEPTH	25.0-25.5'	40.0-41.0'	35.0-36.0'
SAMPLE NO.	--	--	--
DATE SAMPLED	12/03/13 MWH	11/26/13 MWH	12/04/13 MWH
DATE TESTED	--	--	--
SOIL DESCR.	Sand Tailings	Clayey Silt Tailings	Clayey Silt/Sand
Pycnometer #	SS	DD	HH
Weight of oven dry soil (g) (Wo)	31.856	30.787	31.533
Weight of flask, soil, and water. (g) (Wb)	188.147	182.100	184.303
Temperature (deg. C) (Tx)	27.7	27.7	27.7
Weight of water & flask at Tx (from cal. curve)(Wa)	168.005	163.229	164.563
Specific Gravity*	2.72	2.58	2.67

NOTE: Sample dried at 110 degrees Celsius.

*Specific Gravity = Wo/[Wo+(Wa-Wb)]

Data entry by: DAW Date: 06/04/2014

Data checked by: KR Date: 6/4/14

FileName: MNSA1011.WK4

ADVANCED TERRA TESTING, INC. ATT

SPECIFIC GRAVITY TESTS ASTM D 854

CLIENT: MWH JOB NO. 2512-77

LOCATION Church Rock

BORING NO.	TI-B10-03	TI-B10-02	TI-B8-08	TI-B8-09
DEPTH	12.5-14.0'	10.0-11.0'	41.0-42.0'	44.5-44.6'
SAMPLE NO.	--	--	--	--
DATE SAMPLED	11/26/13 MWH	11/26/13 MWH	12/04/13 MWH	--
DATE TESTED	--	--	--	--
SOIL DESCR.	Sand Tailings	Sand Tailings	Clayey Silt	Clayey Silt
Pycnometer #	AA	1	EE	FF
Weight of oven dry soil (g) (Wo)	30.568	32.646	29.695	32.856
Weight of flask, soil, and water. (g) (Wb)	183.753	181.946	181.608	184.778
Temperature (deg. C) (Tx)	27.7	27.7	27.7	27.7
Weight of water & flask at Tx (from cal. curve)(Wa)	164.882	161.712	163.335	164.630
Specific Gravity*	2.61	2.63	2.60	2.59

BORING NO.	TI-B8-02C	TI-B10-14	TI-B8-06
DEPTH	25.0-25.5'	40.0-41.0'	35.0-36.0'
SAMPLE NO.	--	--	--
DATE SAMPLED	12/03/13 MWH	11/26/13 MWH	12/04/13 MWH
DATE TESTED	--	--	--
SOIL DESCR.	Sand Tailings	Clayey Silt Tailings	Clayey Silt/Sand
Pycnometer #	SS	DD	HH
Weight of oven dry soil (g) (Wo)	31.856	30.787	31.533
Weight of flask, soil, and water. (g) (Wb)	188.133	181.897	184.261
Temperature (deg. C) (Tx)	27.7	27.7	27.7
Weight of water & flask at Tx (from cal. curve)(Wa)	168.005	163.229	164.563
Specific Gravity*	2.72	2.54	2.66

NOTE: Sample dried at 110 degrees Celsius.

*Specific Gravity = Wo/[Wo+(Wa-Wb)]

Data entry by: DAW Date: 06/06/2014

Data checked by: CJ Date: 06/06/2014

FileName: MNSA101B.WK4

ADVANCED TERRA TESTING, INC. ATT

SPECIFIC GRAVITY TESTS ASTM D 854

CLIENT:	MWH	JOB NO.	2512-77
PROJECT:	Church Rock	LOCATION	Tailings Impoundment

BORING NO.	TI-B10-25A	TI-B1-09	TI-B3-10	TI-B3-06
DEPTH	91.0-91.5'	27-27.5	56-57'	35-36'
SAMPLE NO.	Rerun	-	-	-
DATE SAMPLED	11/26/13 MWH	11/21/13 MWH	11/19/13 MWH	11/19/13 MWH
DATE TESTED	04/14/14 DPM	04/14/14 DPM	04/25/14 DPM	04/25/14 DPM
SOIL DESCRIPTION	Clayey Sand	Sand Tailings	Silty Clay	Silty Clay
Pycnometer #	EE	AA	EE	AA
Weight of oven dry soil (g) (Wo)	25.471	26.410	25.476	26.113
Weight of flask, soil, and water. (g) (Wb)	179.408	181.567	179.556	181.327
Temperature (deg. C) (Tx)	21.2	21.2	23.1	23.1
Weight of water & flask at Tx (from cal. curve)(Wa)	163.496	165.040	163.456	164.997
Specific Gravity*	2.66	2.67	2.72	2.67

BORING NO.	TI-BI-11A
DEPTH	31.0-31.5'
SAMPLE NO.	--
DATE SAMPLED	11/21/13 MWH
DATE TESTED	05/08/14 DPM
SOIL DESCRIPTION	Sand Tailings
Pycnometer #	EE
Weight of oven dry soil (g) (Wo)	25.772
Weight of flask, soil, and water. (g) (Wb)	179.603
Temperature (deg. C) (Tx)	23.4
Weight of water & flask at Tx (from cal. curve)(Wa)	163.449
Specific Gravity*	2.68

*Specific Gravity = Wo/[Wo+(Wa-Wb)]

Data entry by: DPM/DAW Date: 05/19/2014
Data checked by: BKL Date: 5/21/14
FileName: MWGAS91.WK4

ADVANCED TERRA TESTING, INC. ATT

SPECIFIC GRAVITY TESTS ASTM D 854

CLIENT:	MWH	JOB NO.	2512-77
SOIL DESCR.	Church Rock	LOCATION	Tailings Impoundment

BORING NO.	TI-B3-01A	TI-B2-02A	TI-B2-8C	TI-B10-04A
DEPTH	11.0-11.5'	6.0-6.5'	15.0-15.5'	16.0-16.5'
SAMPLE NO.	-	-	-	-
DATE SAMPLED	11/19/13 MWH	11/20/13 MWH	11/20/13 MWH	11/26/13 MWH
DATE TESTED	01/30/14 DPM	01/31/14 DPM	02/10/14 DPM	02/10/14 DPM
Pycnometer #	1	SS	FF	EE
Weight of oven dry soil (g) (Wo)	27.046	25.518	26.806	25.364
Weight of flask, soil, and water. (g) (Wb)	178.748	184.414	181.607	179.304
Temperature (deg. C) - (Tx)	20.9	19.8	21.1	21.1
Weight of water & flask at Tx (from cal. curve)(Wa)	161.949	168.410	164.821	163.498
Specific Gravity*	2.64	2.68	2.68	2.65

BORING NO.	TI-B10-12A	TI-B10-08A	TI-B2-11A	TI-B2-05A
DEPTH	36.0-36.5'	26.0-26.5'	21.0-21.5'	11.0-11.5'
SAMPLE NO.	-	-	-	-
DATE SAMPLED	11/26/13 MWH	11/26/13 MWH	11/20/13 MWH	11/20/13 MWH
DATE TESTED	02/10/14 DPM	02/10/14 DPM	02/12/14 DPM	02/13/14 DPM
Pycnometer #	1	AA	SS	FF
Weight of oven dry soil (g) (Wo)	25.046	25.502	25.035	28.858
Weight of flask, soil, and water. (g) (Wb)	177.623	181.150	184.279	183.096
Temperature (deg. C) (Tx)	21.4	21.1	20.6	22.2
Weight of water & flask at Tx (from cal. curve)(Wa)	161.933	165.043	168.371	164.792
Specific Gravity*	2.68	2.71	2.74	2.73

*Specific Gravity = Wo/[Wo+(Wa-Wb)]

Data entry by: DPM Date: 02/25/2014
Data checked by: bs Date: 3/1/14
FileName: MWSGAS61

ADVANCED TERRA TESTING, INC. ATT

SPECIFIC GRAVITY TESTS ASTM D 854

CLIENT:	MWH	JOB NO.	2512-77
PROJECT:	Church Rock	LOCATION:	Tailings Impoundment

BORING NO.	TI-B10-16A	TI-B10-25A	TI-B1-13A	TI-B10-10
DEPTH	46.0-46.5'	91.0-91.5'	36.0-36.5'	32.0-32.5'
SAMPLE NO.	-	-	-	Bottom of Tube
DATE SAMPLED	11/26/13 MWH	11/26/13 MWH	11/21/13 MWH	11/26/13 MWH
DATE TESTED	02/20/14 DPM	02/20/14 DPM	02/27/14 DPM	03/07/14 DPM
Soil Description	Silty Sand	Clayey Sand	Clayey Sand	Coarse
Pycnometer #	SS	FF	EE	1
Weight of oven dry soil (g) (Wo)	27.998	25.777	25.041	25.622
Weight of flask, soil, and water. (g) (Wb)	186.128	183.244	179.367	177.973
Temperature (deg. C) (Tx)	21.4	21.5	21.0	21.2
Weight of water & flask at Tx (from cal. curve)(Wa)	168.331	164.811	163.500	161.940
Specific Gravity*	2.74	3.51	2.73	2.67

BORING NO.	TI-B10-10
DEPTH	30.3-30.7'
SAMPLE NO.	Top of Tube
DATE SAMPLED	11/26/13 MWH
DATE TESTED	03/07/14 DPM
Soil Description	Fine
Pycnometer #	AA
Weight of oven dry soil (g) (Wo)	24.980
Weight of flask, soil, and water. (g) (Wb)	180.813
Temperature (deg. C) (Tx)	21.4
Weight of water & flask at Tx (from cal. curve)(Wa)	165.036
Specific Gravity*	2.71

*Specific Gravity = Wo/[Wo+(Wa-Wb)]

Data entry by: DPM Date: 03/13/2014
Data checked by: bj Date: 3/14/14
FileName: MWSGAS71

ADVANCED TERRA TESTING, INC. ATT

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B15-15A
Depth: 46.0-46.5'
Sample Number: Clayey Sand
Sampled Date: 12/5/2013
Test Date: 4/25/2014

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 41.27
Weight of Dry Soil & Pan (g): 39.83
Weight of Water (g): 1.45
Weight of Pan (g): 3.58
Weight of Dry Soil (g): 36.25
Moisture (%): 4.0

General Sample Data

Total Wet Weight of Sample (g): 60.71
Total Dry Weight of Sample (g): 58.38
Calculated Weight Plus #200 (g): 21.59
Moisture of Total Sample (%): 4.0
Percent Retained #200 Sieve (%): 37.0

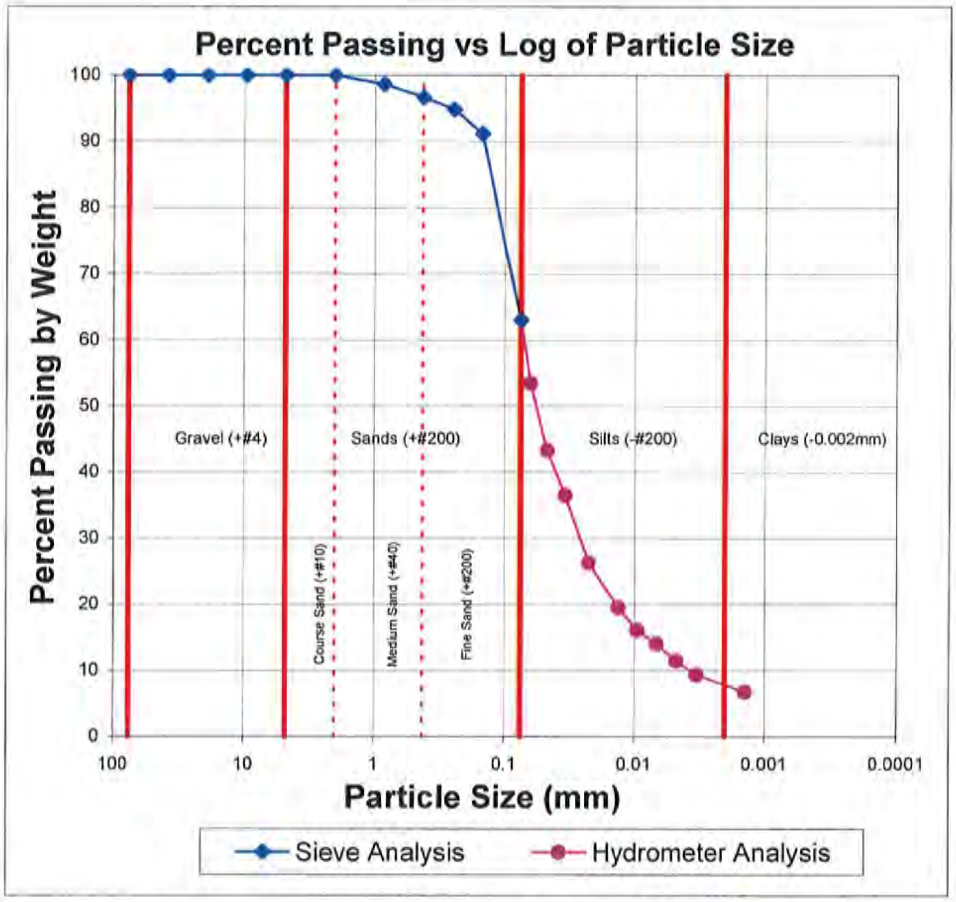
Plus Split Data

Original Weight of +#10 (g): 0.00
Calculated Weight of +#10 (g): 0.00

Minus Split Data

Original Weight of -#10 (g): 60.71
Calculated Dry Weight of -#10 (g): 58.38

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	0.00	0.00	0.00	0.00	100.0
3/8"	**9.525**	0.00	0.00	0.00	0.00	100.0
#4	**4.750**	0.00	0.00	0.00	0.00	100.0
#10	**2.000**	0.00	0.00	0.00	0.00	100.0
60.705g split out of -#10 material.						
#20	**0.850**	4.51	3.72	0.79	0.79	98.6
#40	**0.425**	4.24	3.08	1.16	1.16	96.6
#60	**0.250**	4.13	3.06	1.07	1.07	94.8
#100	**0.150**	5.24	3.09	2.15	2.15	91.1
#200	**0.075**	19.50	3.07	16.42	16.42	63.0



Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_69.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B15-15A
Depth: 46.0-46.5'
Sample Number: Clayey Sand
Sampled Date: 12/5/2013
Test Date: 4/25/2014

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.70
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.5
Specific Gravity Correction Factor - α: 0.99

Total Wet Weight of Sample (g): 60.71
Total Dry Weight of Sample (g): 58.38
Wet Weight of Sub-Sample (g): 60.705
Dry Weight of Sub-Sample (g): 58.376
Corrected Dry Weight of Sub-Sample - W(g): 58.376

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	37.0	31.5	17.6	0.0140	10.23	0.0631	53.5	31.21	53.5
1	31.0	25.5	17.6	0.0140	11.21	0.0467	43.3	25.27	43.3
2	27.0	21.5	17.6	0.0140	11.87	0.0340	36.5	21.30	36.5
5	21.0	15.5	17.6	0.0140	12.85	0.0224	26.3	15.36	26.3
15	17.0	11.5	17.7	0.0140	13.51	0.0132	19.5	11.40	19.5
30	15.0	9.5	17.7	0.0140	13.83	0.0095	16.1	9.41	16.1
60	13.8	8.3	17.8	0.0140	14.04	0.0068	14.0	8.18	14.0
120	12.3	6.8	18.0	0.0138	14.29	0.0048	11.5	6.69	11.5
250	11.0	5.5	18.9	0.0138	14.49	0.0033	9.3	5.45	9.3
1440	9.5	4.0	18.4	0.0138	14.74	0.0014	6.8	3.96	6.8

Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_69.xls

Checked By: KK
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B15-01A
Depth: 6.0-6.5'
Sample Number: Sand Tailings
Sampled Date: 12/5/2013
Test Date: 4/20/2014

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 35.25
Weight of Dry Soil & Pan (g): 35.13
Weight of Water (g): 0.12
Weight of Pan (g): 3.08
Weight of Dry Soil (g): 32.05
Moisture (%): 0.4

General Sample Data

Total Wet Weight of Sample (g): 244.64
Total Dry Weight of Sample (g): 243.74
Calculated Weight Plus #200 (g): 213.32
Moisture of Total Sample (%): 0.4
Percent Retained #200 Sieve (%): 87.5

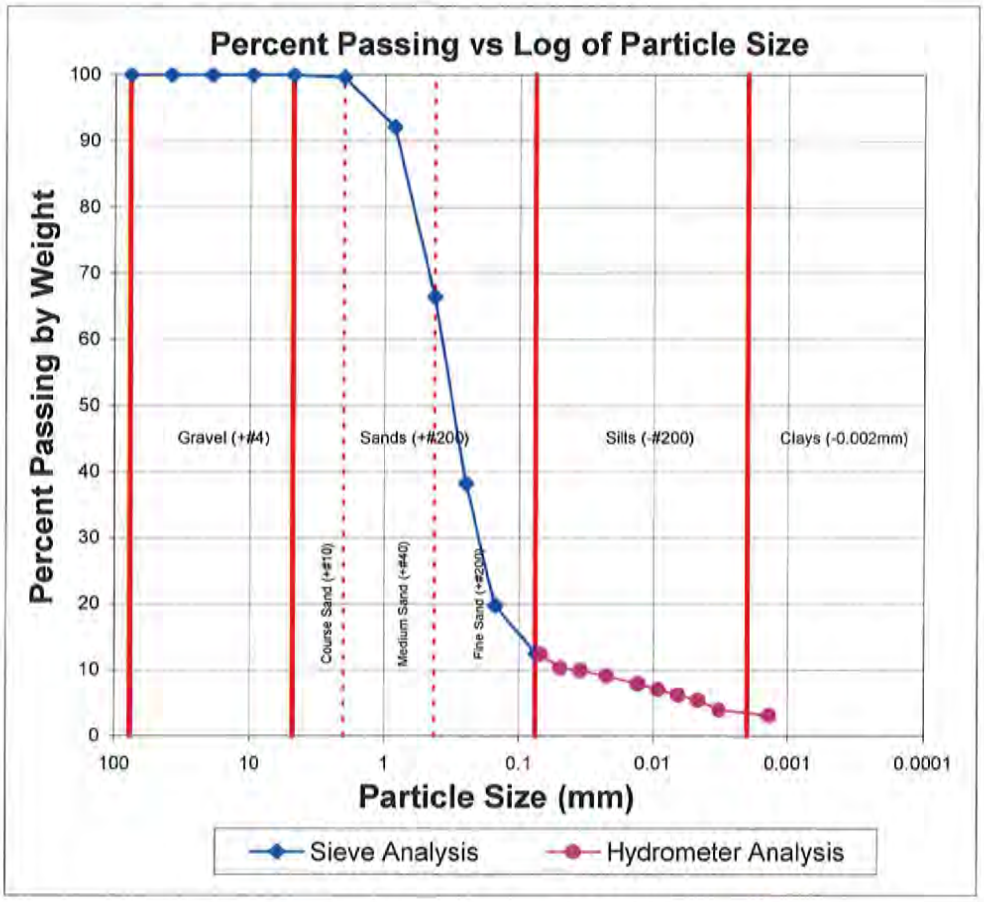
Plus Split Data

Original Weight of +#10 (g): 1.46
Calculated Weight of +#10 (g): 1.01

Minus Split Data

Original Weight of -#10 (g): 243.18
Calculated Dry Weight of -#10 (g): 242.73

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	0.00	0.00	0.00	0.00	100.0
3/8"	**9.525**	0.00	0.00	0.00	0.00	100.0
#4	**4.750**	0.00	0.00	0.00	0.00	100.0
#10	**2.000**	1.01	0.00	1.01	1.01	99.6
120.244g split out of -#10 material.						
#20	**0.850**	12.10	3.10	9.00	18.23	92.1
#40	**0.425**	33.97	3.12	30.85	62.51	66.5
#60	**0.250**	37.08	3.07	34.01	68.91	38.2
#100	**0.150**	25.38	3.08	22.29	45.17	19.7
#200	**0.075**	11.76	3.12	8.64	17.50	12.5



Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_66.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B15-01A
Depth: 6.0-6.5'
Sample Number: Sand Tailings
Sampled Date: 12/5/2013
Test Date: 4/20/2014

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.70
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.5
Specific Gravity Correction Factor - α: 0.99

Total Wet Weight of Sample (g): 244.64
Total Dry Weight of Sample (g): 243.74
Wet Weight of Sub-Sample (g): 120.244
Dry Weight of Sub-Sample (g): 119.799
Corrected Dry Weight of Sub-Sample - W(g): 120.280

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	20.5	15.0	20.2	0.0134	12.93	0.0684	12.4	30.12	12.4
1	18.0	12.5	20.2	0.0134	13.34	0.0491	10.3	25.10	10.3
2	17.5	12.0	20.2	0.0134	13.42	0.0348	9.9	24.10	9.9
5	16.5	11.0	20.2	0.0134	13.59	0.0222	9.1	22.09	9.1
15	15.0	9.5	20.3	0.0134	13.83	0.0129	7.8	19.08	7.8
30	14.0	8.5	20.4	0.0134	14.00	0.0092	7.0	17.07	7.0
60	13.0	7.5	20.4	0.0134	14.16	0.0065	6.2	15.06	6.2
120	12.0	6.5	20.8	0.0134	14.33	0.0046	5.4	13.05	5.4
250	10.3	4.8	21.2	0.0133	14.61	0.0032	3.9	9.54	3.9
1440	9.3	3.8	20.9	0.0134	14.78	0.0014	3.1	7.53	3.1

Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_66.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B15-05
Depth: 15.5-16.0' (15-17.5')
Sample Number: Sand Tailings
Sampled Date: 12/5/2013
Test Date: 4/15/2014

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 118.52
Weight of Dry Soil & Pan (g): 118.17
Weight of Water (g): 0.35
Weight of Pan (g): 3.57
Weight of Dry Soil (g): 114.61
Moisture (%): 0.3

General Sample Data

Total Wet Weight of Sample (g): 916.56
Total Dry Weight of Sample (g): 913.76
Calculated Weight Plus #200 (g): 776.14
Moisture of Total Sample (%): 0.3
Percent Retained #200 Sieve (%): 84.9

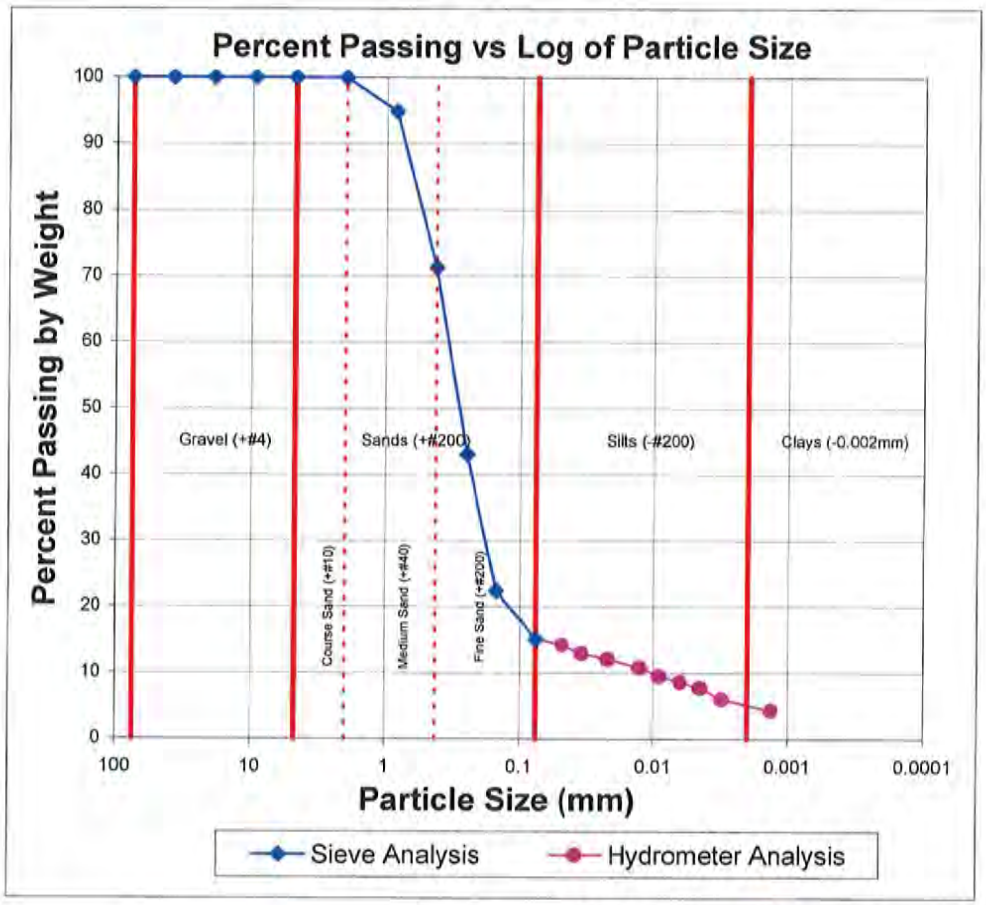
Plus Split Data

Original Weight of +#10 (g): 0.32
Calculated Weight of +#10 (g): 0.25

Minus Split Data

Original Weight of -#10 (g): 916.24
Calculated Dry Weight of -#10 (g): 913.50

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	0.00	0.00	0.00	0.00	100.0
3/8"	**9.525**	0.00	0.00	0.00	0.00	100.0
#4	**4.750**	0.00	0.00	0.00	0.00	100.0
#10	**2.000**	0.25	0.00	0.25	0.25	100.0
115.146g split out of -#10 material.						
#20	**0.850**	9.68	3.77	5.91	47.01	94.8
#40	**0.425**	30.79	3.71	27.08	215.51	71.2
#60	**0.250**	36.11	3.71	32.40	257.83	43.0
#100	**0.150**	26.83	3.09	23.74	188.92	22.4
#200	**0.075**	11.45	3.08	8.37	66.61	15.1



Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_63.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B15-05
Depth: 15.5-16.0' (15-17.5')
Sample Number: Sand Tailings
Sampled Date: 12/5/2013
Test Date: 4/15/2014

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.70
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.0
Specific Gravity Correction Factor - α: 0.99

Total Wet Weight of Sample (g): 916.56
Total Dry Weight of Sample (g): 913.76
Wet Weight of Sub-Sample (g): 115.146
Dry Weight of Sub-Sample (g): 114.793
Corrected Dry Weight of Sub-Sample - W(g): 114.793

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	21.5	16.5	20.5	0.0134	12.77	0.0480	14.2	130.15	14.2
2	20.0	15.0	20.5	0.0134	13.01	0.0343	12.9	118.31	12.9
5	19.0	14.0	20.5	0.0134	13.18	0.0218	12.1	110.43	12.1
15	17.5	12.5	20.7	0.0134	13.42	0.0127	10.8	98.60	10.8
30	16.0	11.0	20.6	0.0134	13.67	0.0091	9.5	86.76	9.5
60	15.0	10.0	21.1	0.0133	13.83	0.0064	8.6	78.88	8.6
120	14.0	9.0	21.6	0.0133	14.00	0.0045	7.8	70.99	7.8
250	12.0	7.0	22.5	0.0131	14.33	0.0031	6.0	55.21	6.0
1440	10.0	5.0	20.7	0.0134	14.65	0.0014	4.3	39.44	4.3

Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_63.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B23-03
Depth: 15.5-15.75' (15-17.5')
Sample Number: Top of Tube - Sand Tailings
Sampled Date: 12/6/2013 Sampled By: MWH
Test Date: 4/15/2014 Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 60.35
Weight of Dry Soil & Pan (g): 59.73
Weight of Water (g): 0.63
Weight of Pan (g): 3.78
Weight of Dry Soil (g): 55.95
Moisture (%): 1.1

General Sample Data

Total Wet Weight of Sample (g): 113.21
Total Dry Weight of Sample (g): 111.96
Calculated Weight Plus #200 (g): 70.30
Moisture of Total Sample (%): 1.1
Percent Retained #200 Sieve (%): 62.8

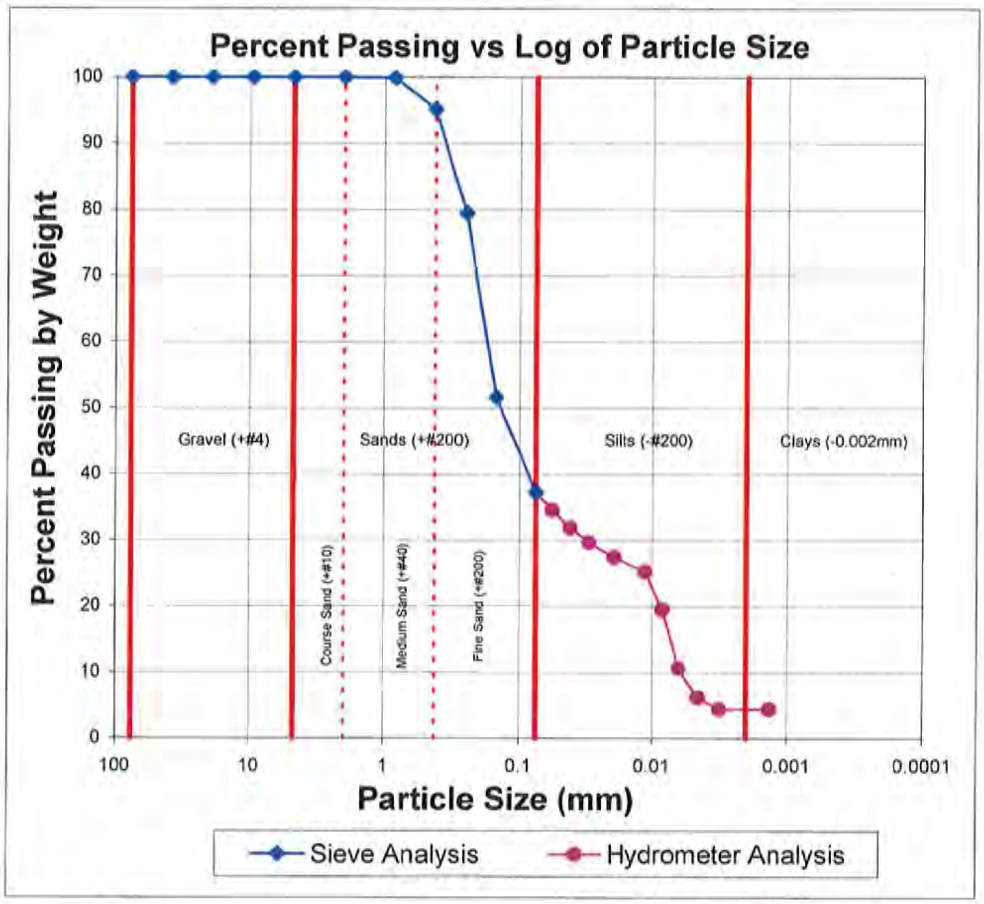
Plus Split Data

Original Weight of +#10 (g): 0.00
Calculated Weight of +#10 (g): 0.00

Minus Split Data

Original Weight of -#10 (g): 113.21
Calculated Dry Weight of -#10 (g): 111.96

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	0.00	0.00	0.00	0.00	100.0
3/8"	**9.525**	0.00	0.00	0.00	0.00	100.0
#4	**4.750**	0.00	0.00	0.00	0.00	100.0
#10	**2.000**	0.00	0.00	0.00	0.00	100.0
113.21g split out of -#10 material.						
#20	**0.850**	3.82	3.70	0.12	0.12	99.9
#40	**0.425**	9.13	3.83	5.31	5.31	95.2
#60	**0.250**	21.31	3.70	17.60	17.60	79.4
#100	**0.150**	34.27	3.11	31.16	31.16	51.6
#200	**0.075**	19.18	3.07	16.11	16.11	37.2



Note: The sample started showing signs of flocculation at the 60 minute reading.
At the 24 hour reading the supernate was barely cloudy.

Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_64.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B23-03
Depth: 15.5-15.75' (15-17.5')
Sample Number: Top of Tube - Sand Tailings
Sampled Date: 12/6/2013 Sampled By: MWH
Test Date: 4/15/2014 Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.70
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.0
Specific Gravity Correction Factor - α: 0.99

Total Wet Weight of Sample (g): 113.21
Total Dry Weight of Sample (g): 111.96
Wet Weight of Sub-Sample (g): 113.210
Dry Weight of Sub-Sample (g): 111.955
Corrected Dry Weight of Sub-Sample - W(g): 111.955

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	44.0	39.0	20.6	0.0134	9.08	0.0573	34.5	38.65	34.5
1	41.0	36.0	20.6	0.0134	9.57	0.0416	31.9	35.67	31.9
2	38.5	33.5	20.6	0.0134	9.98	0.0300	29.7	33.20	29.7
5	36.0	31.0	20.6	0.0134	10.39	0.0194	27.4	30.72	27.4
15	33.5	28.5	20.7	0.0134	10.80	0.0114	25.2	28.24	25.2
30	27.0	22.0	20.8	0.0134	11.87	0.0085	19.5	21.80	19.5
60	17.0	12.0	20.9	0.0134	13.51	0.0064	10.6	11.89	10.6
120	12.0	7.0	21.3	0.0133	14.33	0.0046	6.2	6.94	6.2
250	10.0	5.0	22.2	0.0131	14.65	0.0032	4.4	4.95	4.4
1440	10.0	5.0	20.4	0.0134	14.65	0.0014	4.4	4.95	4.4

Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_64.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B15-11A
Depth: 31.0-31.5'
Sample Number: Silty Clay
Sampled Date: 12/5/2013
Test Date: 4/20/2014

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 28.58
Weight of Dry Soil & Pan (g): 28.27
Weight of Water (g): 0.31
Weight of Pan (g): 3.08
Weight of Dry Soil (g): 25.20
Moisture (%): 1.2

General Sample Data

Total Wet Weight of Sample (g): 449.52
Total Dry Weight of Sample (g): 444.48
Calculated Weight Plus #200 (g): 258.34
Moisture of Total Sample (%): 1.1
Percent Retained #200 Sieve (%): 58.1

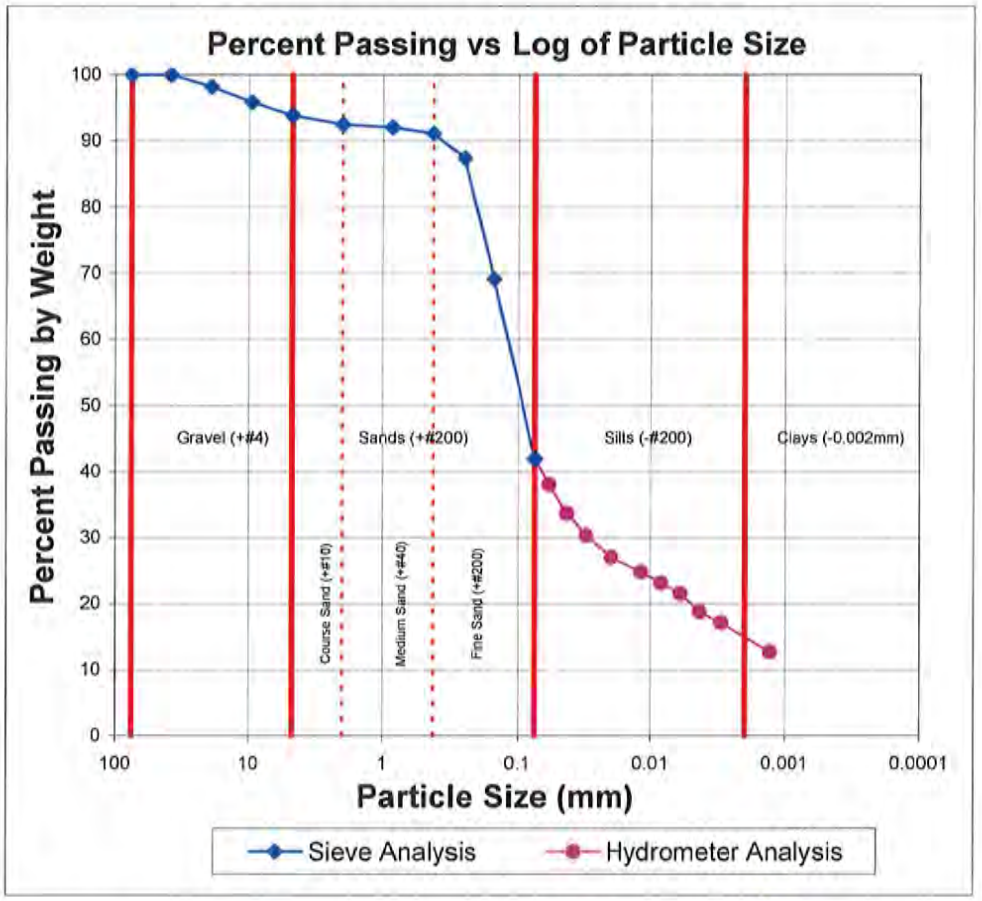
Plus Split Data

Original Weight of +#10 (g): 37.36
Calculated Weight of +#10 (g): 33.31

Minus Split Data

Original Weight of -#10 (g): 412.16
Calculated Dry Weight of -#10 (g): 411.17

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	8.00	0.00	8.00	8.00	98.2
3/8"	**9.525**	10.38	0.00	10.38	10.38	95.9
#4	**4.750**	8.97	0.00	8.97	8.97	93.8
#10	**2.000**	5.96	0.00	5.96	5.96	92.5
84.13g split out of -#10 material.						
#20	**0.850**	2.71	2.30	0.42	2.06	92.0
#40	**0.425**	3.18	2.36	0.81	4.03	91.1
#60	**0.250**	7.01	3.65	3.36	16.64	87.4
#100	**0.150**	20.19	3.76	16.43	81.28	69.1
#200	**0.075**	28.15	3.69	24.46	121.02	41.9



Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_62.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B15-11A
Depth: 31.0-31.5'
Sample Number: Silty Clay
Sampled Date: 12/5/2013
Test Date: 4/20/2014

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.70
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.5
Specific Gravity Correction Factor - α: 0.99

Total Wet Weight of Sample (g): 449.52
Total Dry Weight of Sample (g): 444.48
Wet Weight of Sub-Sample (g): 84.130
Dry Weight of Sub-Sample (g): 83.111
Corrected Dry Weight of Sub-Sample - W(g): 89.849

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	40.0	34.5	20.6	0.0134	9.73	0.0593	38.0	169.12	38.0
1	36.0	30.5	20.6	0.0134	10.39	0.0433	33.6	149.51	33.6
2	33.0	27.5	20.6	0.0134	10.88	0.0314	30.3	134.80	30.3
5	30.0	24.5	20.6	0.0134	11.37	0.0203	27.0	120.10	27.0
15	28.0	22.5	20.4	0.0134	11.70	0.0119	24.8	110.29	24.8
30	26.5	21.0	20.4	0.0134	11.95	0.0085	23.2	102.94	23.2
60	25.0	19.5	20.5	0.0134	12.19	0.0061	21.5	95.59	21.5
120	22.5	17.0	20.7	0.0134	12.60	0.0044	18.7	83.33	18.7
250	21.0	15.5	21.2	0.0133	12.85	0.0030	17.1	75.98	17.1
1440	17.0	11.5	20.5	0.0134	13.51	0.0013	12.7	56.37	12.7

Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_62.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B15-07A
Depth: 21.0-21.5'
Sample Number: Fine Sand Tailings
Sampled Date: 12/5/2013
Test Date: 4/15/2014

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 58.80
Weight of Dry Soil & Pan (g): 58.55
Weight of Water (g): 0.25
Weight of Pan (g): 3.73
Weight of Dry Soil (g): 54.82
Moisture (%): 0.5

General Sample Data

Total Wet Weight of Sample (g): 363.15
Total Dry Weight of Sample (g): 361.52
Calculated Weight Plus #200 (g): 291.38
Moisture of Total Sample (%): 0.5
Percent Retained #200 Sieve (%): 80.6

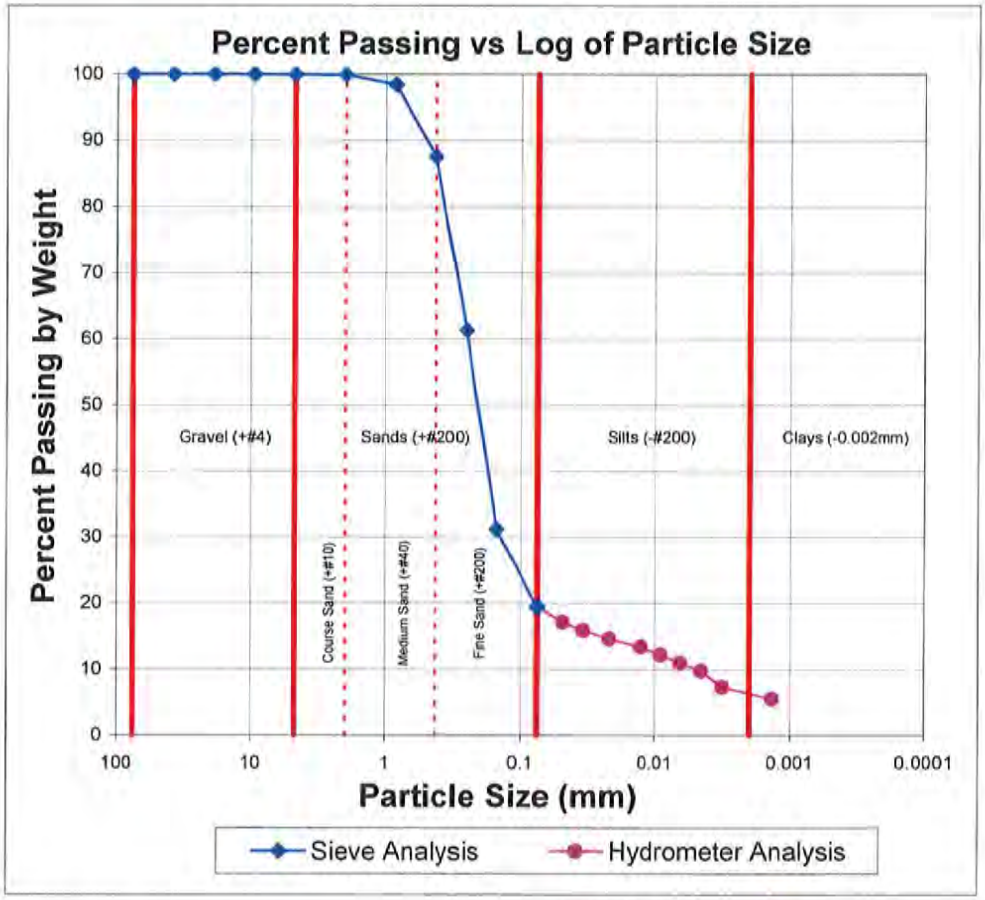
Plus Split Data

Original Weight of +#10 (g): 0.31
Calculated Weight of +#10 (g): 0.28

Minus Split Data

Original Weight of -#10 (g): 362.84
Calculated Dry Weight of -#10 (g): 361.24

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	0.00	0.00	0.00	0.00	100.0
3/8"	**9.525**	0.00	0.00	0.00	0.00	100.0
#4	**4.750**	0.13	0.00	0.13	0.13	100.0
#10	**2.000**	0.15	0.00	0.15	0.15	99.9
81.531g split out of -#10 material.						
#20	**0.850**	3.50	2.29	1.20	5.35	98.4
#40	**0.425**	11.18	2.32	8.87	39.47	87.5
#60	**0.250**	25.06	3.72	21.34	94.98	61.3
#100	**0.150**	27.51	3.07	24.43	108.74	31.2
#200	**0.075**	12.63	3.07	9.56	42.56	19.4



Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_61.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B15-07A
Depth: 21.0-21.5'
Sample Number: Fine Sand Tailings
Sampled Date: 12/5/2013
Test Date: 4/15/2014

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.70
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.0
Specific Gravity Correction Factor - α: 0.99

Total Wet Weight of Sample (g): 363.15
Total Dry Weight of Sample (g): 361.52
Wet Weight of Sub-Sample (g): 81.531
Dry Weight of Sub-Sample (g): 81.165
Corrected Dry Weight of Sub-Sample - W(g): 81.247

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	19.0	14.0	20.4	0.0134	13.18	0.0488	17.1	61.73	17.1
2	18.0	13.0	20.4	0.0134	13.34	0.0347	15.9	57.32	15.9
5	17.0	12.0	20.4	0.0134	13.51	0.0221	14.6	52.91	14.6
15	16.0	11.0	20.5	0.0134	13.67	0.0128	13.4	48.50	13.4
30	15.0	10.0	20.7	0.0134	13.83	0.0091	12.2	44.09	12.2
60	14.0	9.0	20.9	0.0134	14.00	0.0065	11.0	39.68	11.0
120	13.0	8.0	21.5	0.0133	14.16	0.0046	9.8	35.27	9.8
250	11.0	6.0	22.3	0.0131	14.49	0.0032	7.3	26.46	7.3
1440	9.5	4.5	20.4	0.0134	14.74	0.0014	5.5	19.84	5.5

Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_61.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B23-03
Depth: 17.25-17.5' (15-17.5')
Sample Number: Bottom of Tube -Silty Clay
Sampled Date: 12/6/2013 Sampled By: MWH
Test Date: 4/11/2014 Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 46.22
Weight of Dry Soil & Pan (g): 45.39
Weight of Water (g): 0.82
Weight of Pan (g): 3.56
Weight of Dry Soil (g): 41.84
Moisture (%): 2.0

General Sample Data

Total Wet Weight of Sample (g): 63.05
Total Dry Weight of Sample (g): 61.84
Calculated Weight Plus #200 (g): 19.21
Moisture of Total Sample (%): 2.0
Percent Retained #200 Sieve (%): 31.1

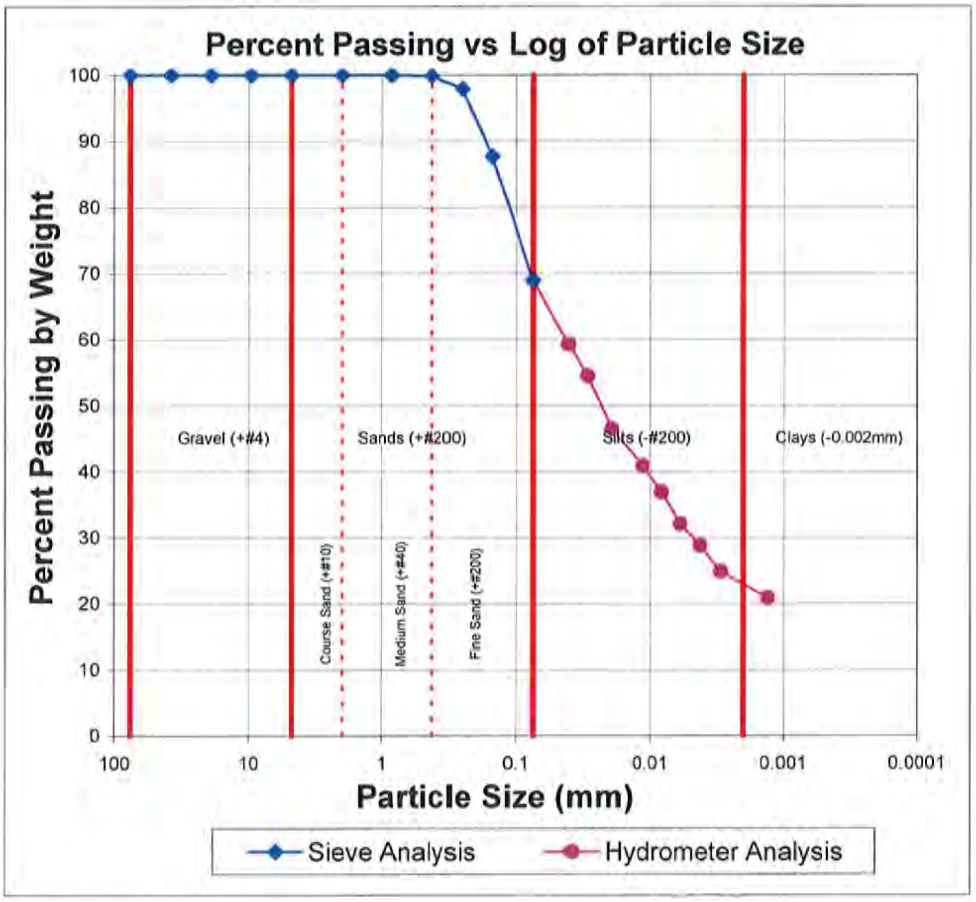
Plus Split Data

Original Weight of +#10 (g): 0.00
Calculated Weight of +#10 (g): 0.00

Minus Split Data

Original Weight of -#10 (g): 63.05
Calculated Dry Weight of -#10 (g): 61.84

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	0.00	0.00	0.00	0.00	100.0
3/8"	**9.525**	0.00	0.00	0.00	0.00	100.0
#4	**4.750**	0.00	0.00	0.00	0.00	100.0
#10	**2.000**	0.00	0.00	0.00	0.00	100.0
63.053g split out of -#10 material.						
#20	**0.850**	2.37	2.37	0.00	0.00	100.0
#40	**0.425**	2.35	2.28	0.08	0.08	99.9
#60	**0.250**	4.85	3.62	1.23	1.23	97.9
#100	**0.150**	9.37	3.08	6.29	6.29	87.7
#200	**0.075**	14.70	3.08	11.62	11.62	68.9



Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_60.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B23-03
Depth: 17.25-17.5' (15-17.5')
Sample Number: Bottom of Tube -Silty Clay
Sampled Date: 12/6/2013 Sampled By: MWH
Test Date: 4/11/2014 Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.70
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.0
Specific Gravity Correction Factor - α: 0.99

Total Wet Weight of Sample (g): 63.05
Total Dry Weight of Sample (g): 61.84
Wet Weight of Sub-Sample (g): 63.053
Dry Weight of Sub-Sample (g): 61.840
Corrected Dry Weight of Sub-Sample - W(g): 61.840

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	42.0	37.0	21.1	0.0133	9.41	0.0407	59.3	36.66	59.3
2	39.0	34.0	21.1	0.0133	9.90	0.0295	54.5	33.69	54.5
5	34.0	29.0	21.1	0.0133	10.72	0.0194	46.5	28.74	46.5
15	30.5	25.5	21.2	0.0133	11.29	0.0115	40.9	25.27	40.9
30	28.0	23.0	21.4	0.0133	11.70	0.0083	36.9	22.79	36.9
60	25.0	20.0	21.7	0.0133	12.19	0.0060	32.0	19.82	32.0
120	23.0	18.0	22.4	0.0131	12.52	0.0042	28.8	17.84	28.8
250	20.5	15.5	23.4	0.0130	12.93	0.0029	24.8	15.36	24.8
1440	18.0	13.0	19.6	0.0136	13.34	0.0013	20.8	12.88	20.8

Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_60.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B15-10
Depth: 28.5-29.5' (27-29.5')
Sample Number: Clayey Fine Sand Tails
Sampled Date: 12/5/2013
Test Date: 3/25/2014

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 58.56
Weight of Dry Soil & Pan (g): 58.28
Weight of Water (g): 0.28
Weight of Pan (g): 3.84
Weight of Dry Soil (g): 54.44
Moisture (%): 0.5

General Sample Data

Total Wet Weight of Sample (g): 55.18
Total Dry Weight of Sample (g): 54.89
Calculated Weight Plus #200 (g): 35.88
Moisture of Total Sample (%): 0.5
Percent Retained #200 Sieve (%): 65.4

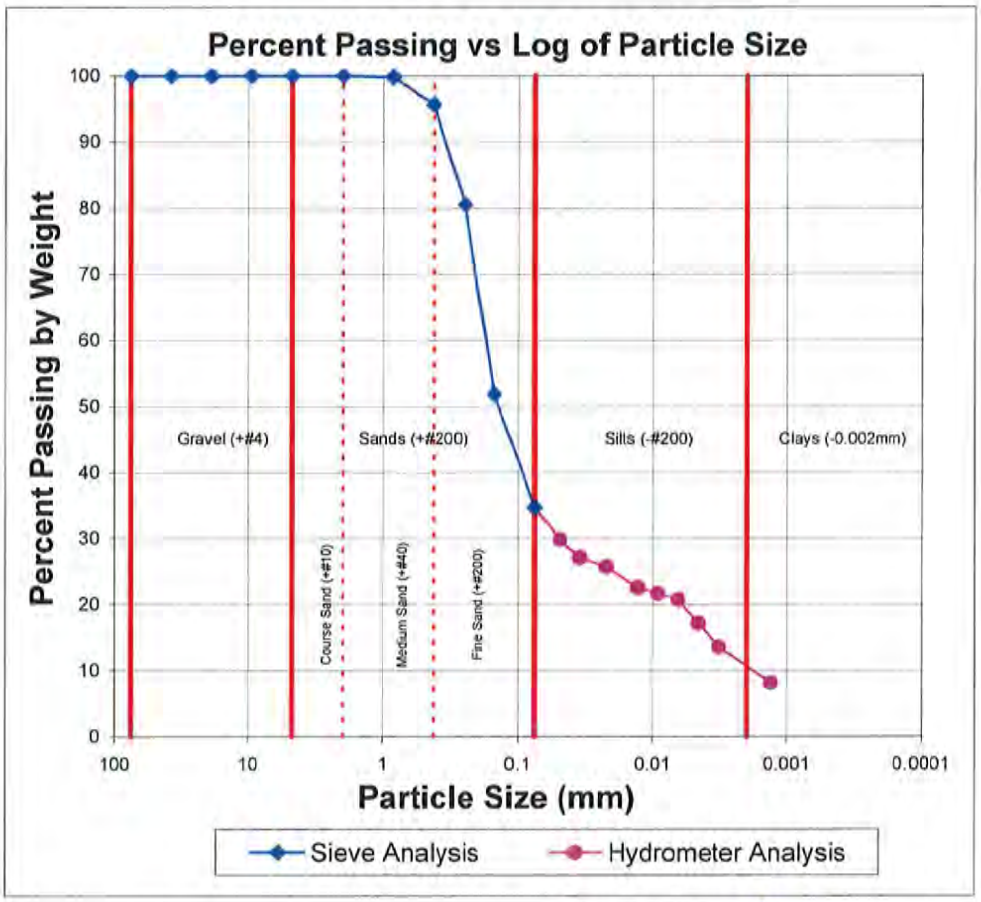
Plus Split Data

Original Weight of +#10 (g): 0.00
Calculated Weight of +#10 (g): 0.00

Minus Split Data

Original Weight of -#10 (g): 55.18
Calculated Dry Weight of -#10 (g): 54.89

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	0.00	0.00	0.00	0.00	100.0
3/8"	**9.525**	0.00	0.00	0.00	0.00	100.0
#4	**4.750**	0.00	0.00	0.00	0.00	100.0
#10	**2.000**	0.00	0.00	0.00	0.00	100.0
55.175g split out of -#10 material.						
#20	**0.850**	2.47	2.36	0.11	0.11	99.8
#40	**0.425**	4.57	2.29	2.29	2.29	95.6
#60	**0.250**	12.00	3.70	8.30	8.30	80.5
#100	**0.150**	19.54	3.79	15.75	15.75	51.8
#200	**0.075**	12.49	3.06	9.43	9.43	34.6



Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_58.xls

Checked By: KE
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B15-10
Depth: 28.5-29.5' (27-29.5')
Sample Number: Clayey Fine Sand Tails
Sampled Date: 12/5/2013
Test Date: 3/25/2014

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.70
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.5
Specific Gravity Correction Factor - α: 0.99

Total Wet Weight of Sample (g): 55.18
Total Dry Weight of Sample (g): 54.89
Wet Weight of Sub-Sample (g): 55.175
Dry Weight of Sub-Sample (g): 54.892
Corrected Dry Weight of Sub-Sample - W(g): 54.892

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	22.0	16.5	18.3	0.0138	12.69	0.0491	29.8	16.35	29.8
2	20.5	15.0	18.3	0.0138	12.93	0.0350	27.1	14.86	27.1
5	19.8	14.3	18.3	0.0138	13.06	0.0223	25.7	14.12	25.7
15	18.0	12.5	18.2	0.0138	13.34	0.0130	22.6	12.39	22.6
30	17.5	12.0	18.3	0.0138	13.42	0.0092	21.7	11.89	21.7
60	17.0	11.5	18.5	0.0138	13.51	0.0065	20.8	11.40	20.8
120	15.0	9.5	19.1	0.0136	13.83	0.0046	17.1	9.41	17.1
250	13.0	7.5	20.0	0.0134	14.16	0.0032	13.5	7.43	13.5
1440	10.0	4.5	22.0	0.0131	14.65	0.0013	8.1	4.46	8.1

Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_58.xls

Checked By: KL
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B15-04
Depth: 13.5-14.0' (11.5-14.0')
Sample Number: Clayey Sand Tailings
Sampled Date: 12/5/2013
Test Date: 3/25/2014

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 34.62
Weight of Dry Soil & Pan (g): 34.20
Weight of Water (g): 0.41
Weight of Pan (g): 3.70
Weight of Dry Soil (g): 30.50
Moisture (%): 1.4

General Sample Data

Total Wet Weight of Sample (g): 746.42
Total Dry Weight of Sample (g): 736.45
Calculated Weight Plus #200 (g): 512.84
Moisture of Total Sample (%): 1.4
Percent Retained #200 Sieve (%): 69.6

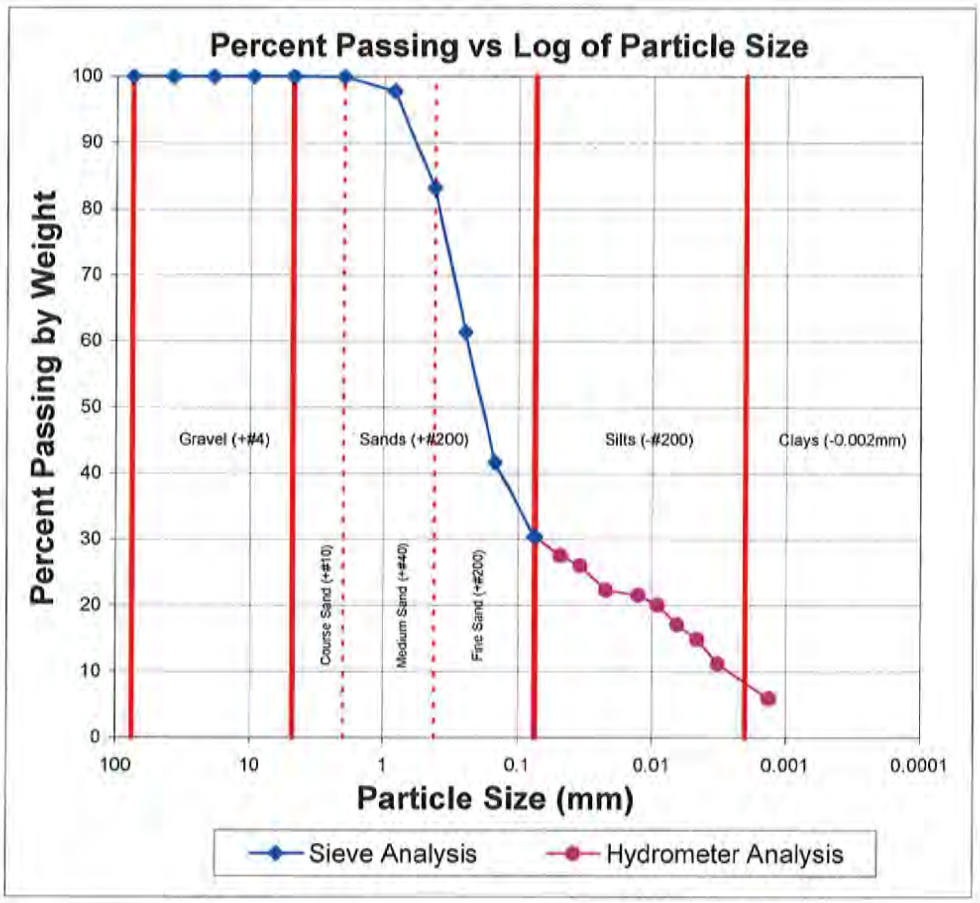
Plus Split Data

Original Weight of +#10 (g): 0.37
Calculated Weight of +#10 (g): 0.30

Minus Split Data

Original Weight of -#10 (g): 746.05
Calculated Dry Weight of -#10 (g): 736.15

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	0.00	0.00	0.00	0.00	100.0
3/8"	**9.525**	0.00	0.00	0.00	0.00	100.0
#4	**4.750**	0.15	0.00	0.15	0.15	100.0
#10	**2.000**	0.15	0.00	0.15	0.15	100.0
67.509g split out of -#10 material.						
#20	**0.850**	3.83	2.37	1.46	16.15	97.8
#40	**0.425**	12.06	2.32	9.74	107.65	83.1
#60	**0.250**	18.25	3.72	14.53	160.60	61.3
#100	**0.150**	16.22	3.07	13.16	145.41	41.6
#200	**0.075**	10.59	3.11	7.49	82.74	30.4



Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_57.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B15-04
Depth: 13.5-14.0' (11.5-14.0')
Sample Number: Clayey Sand Tailings
Sampled Date: 12/5/2013 Sampled By: MWH
Test Date: 3/25/2014 Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.70
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.5
Specific Gravity Correction Factor - α: 0.99

Total Wet Weight of Sample (g): 746.42
Total Dry Weight of Sample (g): 736.45
Wet Weight of Sub-Sample (g): 67.509
Dry Weight of Sub-Sample (g): 66.607
Corrected Dry Weight of Sub-Sample - W(g): 66.607

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	24.0	18.5	18.1	0.0138	12.36	0.0484	27.5	202.69	27.5
2	23.0	17.5	18.1	0.0138	12.52	0.0345	26.0	191.73	26.0
5	20.5	15.0	18.1	0.0138	12.93	0.0222	22.3	164.34	22.3
15	20.0	14.5	18.1	0.0138	13.01	0.0128	21.6	158.86	21.6
30	19.0	13.5	18.3	0.0138	13.18	0.0091	20.1	147.91	20.1
60	17.0	11.5	18.5	0.0138	13.51	0.0065	17.1	126.00	17.1
120	15.5	10.0	19.1	0.0136	13.75	0.0046	14.9	109.56	14.9
250	13.0	7.5	19.9	0.0136	14.16	0.0032	11.2	82.17	11.2
1440	9.5	4.0	22.0	0.0131	14.74	0.0013	6.0	43.82	6.0

Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_57.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B8-10A
Depth: 46.0-46.5'
Sample Number: Silty/Clayey Sand
Sampled Date: 12/4/2013
Test Date: 3/20/2014

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 34.09
Weight of Dry Soil & Pan (g): 32.63
Weight of Water (g): 1.45
Weight of Pan (g): 3.85
Weight of Dry Soil (g): 28.78
Moisture (%): 5.1

General Sample Data

Total Wet Weight of Sample (g): 77.84
Total Dry Weight of Sample (g): 74.09
Calculated Weight Plus #200 (g): 20.68
Moisture of Total Sample (%): 5.1
Percent Retained #200 Sieve (%): 27.9

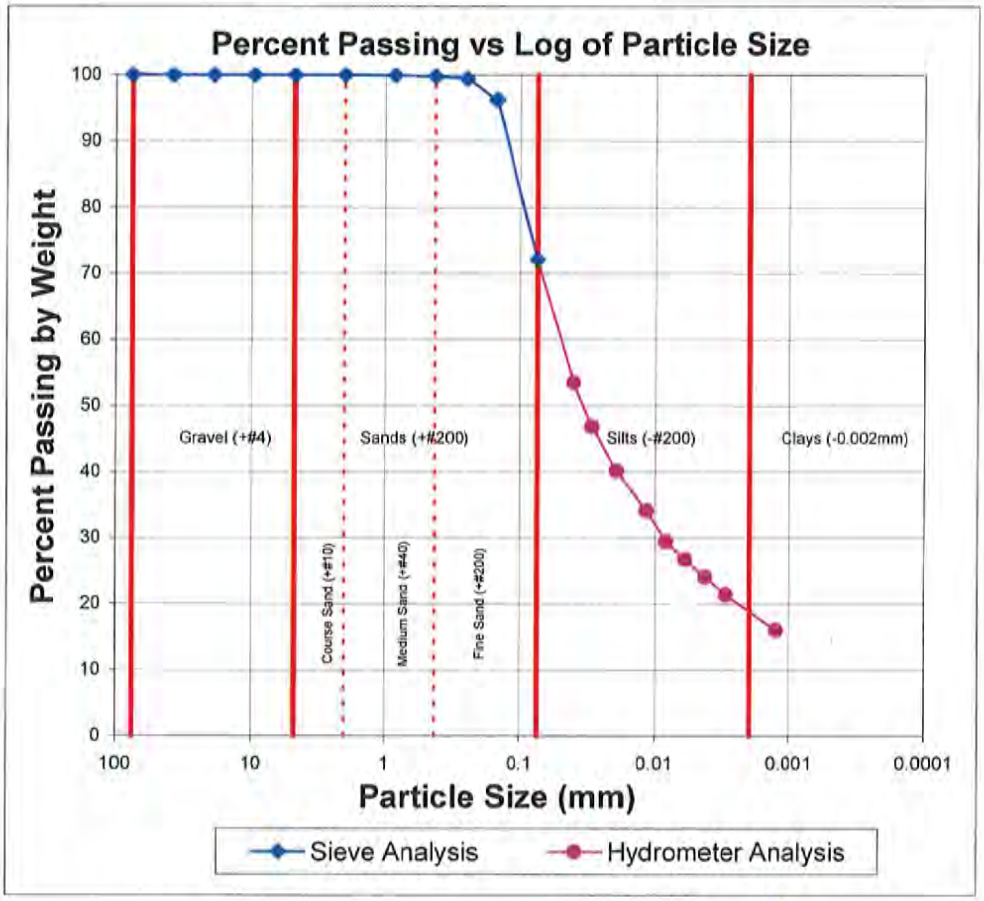
Plus Split Data

Original Weight of +#10 (g): 0.00
Calculated Weight of +#10 (g): 0.00

Minus Split Data

Original Weight of -#10 (g): 77.84
Calculated Dry Weight of -#10 (g): 74.09

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	0.00	0.00	0.00	0.00	100.0
3/8"	**9.525**	0.00	0.00	0.00	0.00	100.0
#4	**4.750**	0.00	0.00	0.00	0.00	100.0
#10	**2.000**	0.00	0.00	0.00	0.00	100.0
77.838g split out of -#10 material.						
#20	**0.850**	2.32	2.28	0.04	0.04	99.9
#40	**0.425**	2.48	2.37	0.11	0.11	99.8
#60	**0.250**	2.59	2.35	0.24	0.24	99.5
#100	**0.150**	6.22	3.85	2.38	2.38	96.3
#200	**0.075**	20.98	3.07	17.91	17.91	72.1



Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_56.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B8-10A
Depth: 46.0-46.5'
Sample Number: Silty/Clayey Sand
Sampled Date: 12/4/2013
Test Date: 3/20/2014

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.70
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.0
Specific Gravity Correction Factor - α: 0.99

Total Wet Weight of Sample (g): 77.84
Total Dry Weight of Sample (g): 74.09
Wet Weight of Sub-Sample (g): 77.838
Dry Weight of Sub-Sample (g): 74.095
Corrected Dry Weight of Sub-Sample - W(g): 74.095

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	45.0	40.0	20.9	0.0134	8.91	0.0401	53.5	39.64	53.5
2	40.0	35.0	20.9	0.0134	9.73	0.0297	46.8	34.68	46.8
5	35.0	30.0	20.9	0.0134	10.55	0.0195	40.1	29.73	40.1
15	30.5	25.5	20.9	0.0134	11.29	0.0117	34.1	25.27	34.1
30	27.0	22.0	20.9	0.0134	11.87	0.0085	29.4	21.80	29.4
60	25.0	20.0	20.9	0.0134	12.19	0.0061	26.7	19.82	26.7
120	23.0	18.0	21.1	0.0133	12.52	0.0043	24.1	17.84	24.1
250	21.0	16.0	21.8	0.0133	12.85	0.0030	21.4	15.85	21.4
1440	17.0	12.0	22.1	0.0131	13.51	0.0013	16.0	11.89	16.0

Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_56.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B8-12A
Depth: 56.0-56.5'
Sample Number: Silty/Clayey Sand
Sampled Date: 12/4/2013
Test Date: 3/20/2014

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 30.23
Weight of Dry Soil & Pan (g): 29.94
Weight of Water (g): 0.30
Weight of Pan (g): 3.78
Weight of Dry Soil (g): 26.16
Moisture (%): 1.1

General Sample Data

Total Wet Weight of Sample (g): 379.47
Total Dry Weight of Sample (g): 375.24
Calculated Weight Plus #200 (g): 213.74
Moisture of Total Sample (%): 1.1
Percent Retained #200 Sieve (%): 57.0

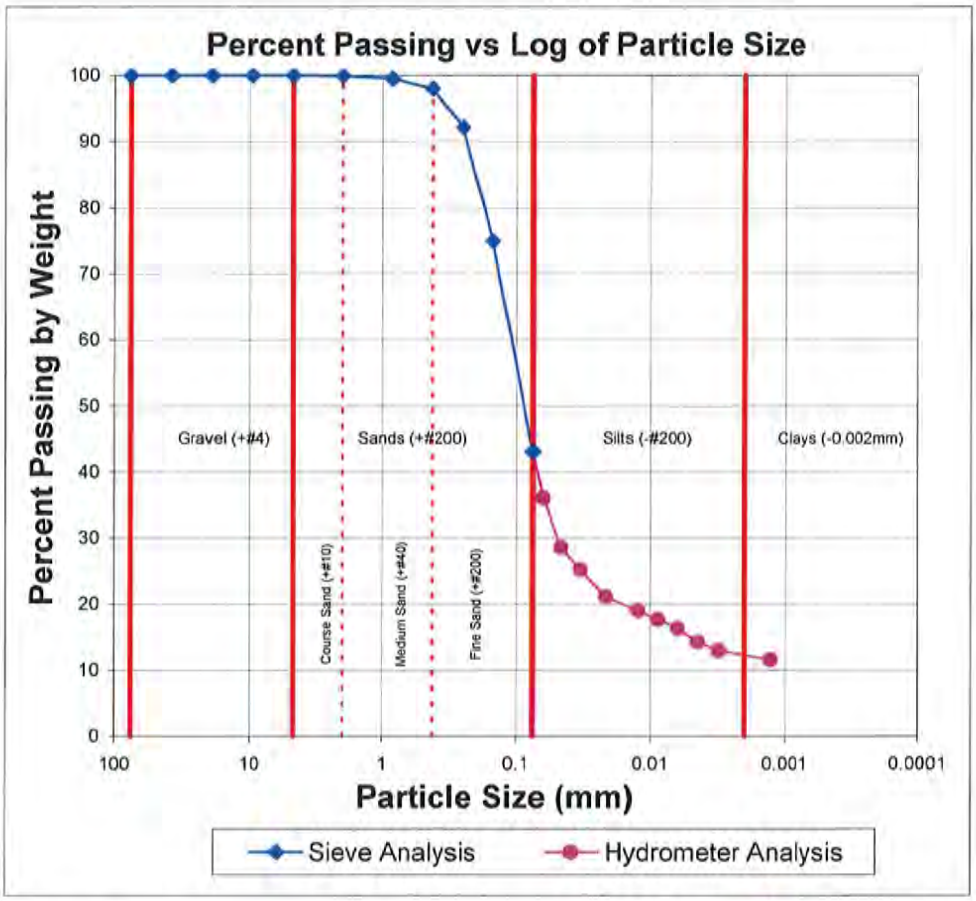
Plus Split Data

Original Weight of +#10 (g): 0.22
Calculated Weight of +#10 (g): 0.19

Minus Split Data

Original Weight of -#10 (g): 379.25
Calculated Dry Weight of -#10 (g): 375.05

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	0.00	0.00	0.00	0.00	100.0
3/8"	**9.525**	0.00	0.00	0.00	0.00	100.0
#4	**4.750**	0.00	0.00	0.00	0.00	100.0
#10	**2.000**	0.19	0.00	0.19	0.19	99.9
73.529g split out of -#10 material.						
#20	**0.850**	2.68	2.35	0.33	1.71	99.5
#40	**0.425**	3.47	2.38	1.10	5.66	98.0
#60	**0.250**	6.64	2.38	4.27	22.01	92.1
#100	**0.150**	16.25	3.77	12.47	64.34	75.0
#200	**0.075**	26.30	3.07	23.23	119.83	43.0



Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_55.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B8-12A
Depth: 56.0-56.5'
Sample Number: Silty/Clayey Sand
Sampled Date: 12/4/2013
Test Date: 3/20/2014

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.70
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.0
Specific Gravity Correction Factor - α: 0.99

Total Wet Weight of Sample (g): 379.47
Total Dry Weight of Sample (g): 375.24
Wet Weight of Sub-Sample (g): 73.529
Dry Weight of Sub-Sample (g): 72.709
Corrected Dry Weight of Sub-Sample - W(g): 72.782

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	31.5	26.5	21.1	0.0133	11.13	0.0627	36.1	135.38	36.1
1	26.0	21.0	21.1	0.0133	12.03	0.0461	28.6	107.29	28.6
2	23.5	18.5	21.1	0.0133	12.44	0.0331	25.2	94.51	25.2
5	20.5	15.5	21.1	0.0133	12.93	0.0214	21.1	79.19	21.1
15	19.0	14.0	21.1	0.0133	13.18	0.0124	19.1	71.52	19.1
30	18.0	13.0	21.1	0.0133	13.34	0.0089	17.7	66.41	17.7
60	17.0	12.0	21.1	0.0133	13.51	0.0063	16.3	61.31	16.3
120	15.5	10.5	21.1	0.0133	13.75	0.0045	14.3	53.64	14.3
250	14.5	9.5	21.7	0.0133	13.92	0.0031	12.9	48.53	12.9
1440	13.5	8.5	22.2	0.0131	14.08	0.0013	11.6	43.43	11.6

Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_55.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B11-12A
Depth: 61.0-61.5'
Sample Number: Clayey Sand
Sampled Date: 12/2/2013
Test Date: 3/21/2014

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 84.76
Weight of Dry Soil & Pan (g): 83.75
Weight of Water (g): 1.02
Weight of Pan (g): 3.80
Weight of Dry Soil (g): 79.94
Moisture (%): 1.3

General Sample Data

Total Wet Weight of Sample (g): 82.28
Total Dry Weight of Sample (g): 81.25
Calculated Weight Plus #200 (g): 31.41
Moisture of Total Sample (%): 1.3
Percent Retained #200 Sieve (%): 38.7

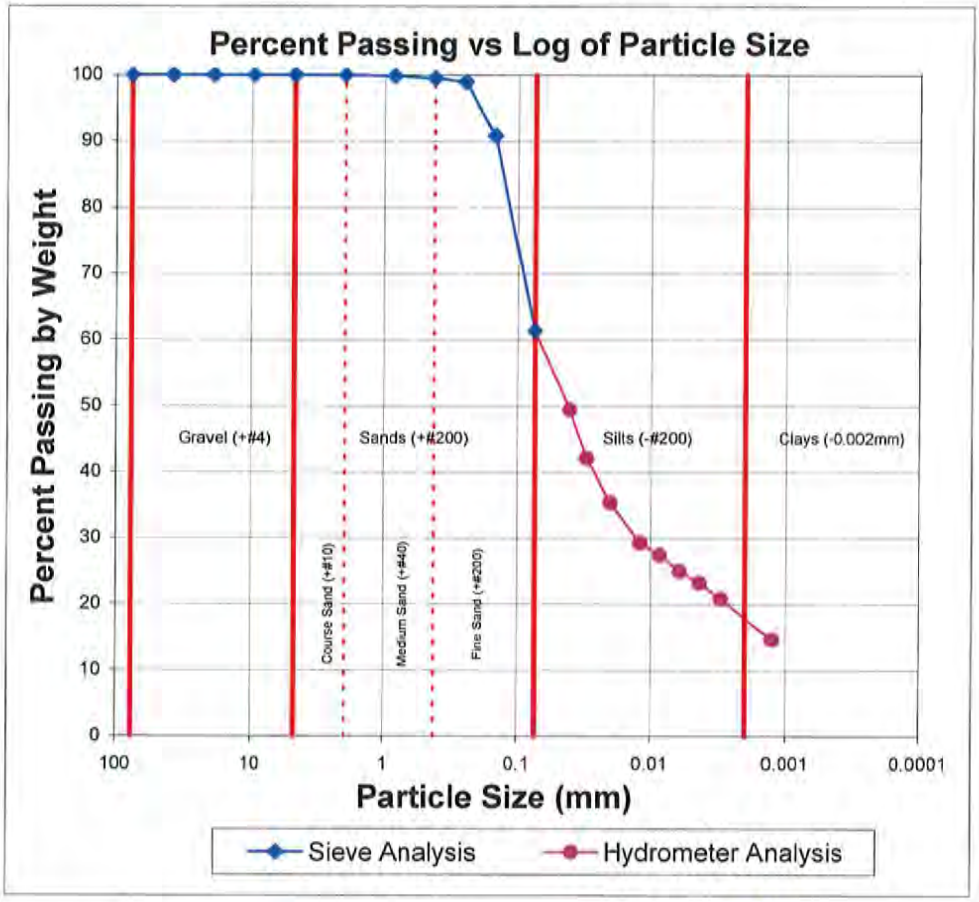
Plus Split Data

Original Weight of +#10 (g): 0.00
Calculated Weight of +#10 (g): 0.00

Minus Split Data

Original Weight of -#10 (g): 82.28
Calculated Dry Weight of -#10 (g): 81.25

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	0.00	0.00	0.00	0.00	100.0
3/8"	**9.525**	0.00	0.00	0.00	0.00	100.0
#4	**4.750**	0.00	0.00	0.00	0.00	100.0
#10	**2.000**	0.00	0.00	0.00	0.00	100.0
82.284g split out of -#10 material.						
#20	**0.850**	2.50	2.39	0.11	0.11	99.9
#40	**0.425**	3.36	3.07	0.29	0.29	99.5
#60	**0.250**	3.51	3.08	0.43	0.43	99.0
#100	**0.150**	9.68	3.07	6.61	6.61	90.8
#200	**0.075**	27.08	3.11	23.97	23.97	61.3



Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_54.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B11-12A
Depth: 61.0-61.5'
Sample Number: Clayey Sand
Sampled Date: 12/2/2013
Test Date: 3/21/2014

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.70
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.5
Specific Gravity Correction Factor - α: 0.99

Total Wet Weight of Sample (g): 82.28
Total Dry Weight of Sample (g): 81.25
Wet Weight of Sub-Sample (g): 82.284
Dry Weight of Sub-Sample (g): 81.249
Corrected Dry Weight of Sub-Sample - W(g): 81.249

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	46.0	40.5	18.3	0.0138	8.75	0.0408	49.4	40.13	49.4
2	40.0	34.5	18.3	0.0138	9.73	0.0304	42.1	34.19	42.1
5	34.5	29.0	18.3	0.0138	10.64	0.0201	35.4	28.74	35.4
15	29.5	24.0	18.5	0.0138	11.46	0.0120	29.3	23.78	29.3
30	28.0	22.5	18.6	0.0138	11.70	0.0086	27.4	22.30	27.4
60	26.0	20.5	18.9	0.0138	12.03	0.0062	25.0	20.31	25.0
120	24.5	19.0	19.4	0.0136	12.28	0.0044	23.2	18.83	23.2
250	22.5	17.0	20.2	0.0134	12.60	0.0030	20.7	16.85	20.7
1440	17.5	12.0	22.0	0.0131	13.42	0.0013	14.6	11.89	14.6

Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_54.xls

Checked By: KP
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B23-06
Depth: 26-27' (25-27.5')
Sample Number: Silty Clay
Sampled Date: 12/6/2013
Test Date: 3/25/2014

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 45.76
Weight of Dry Soil & Pan (g): 44.98
Weight of Water (g): 0.78
Weight of Pan (g): 3.82
Weight of Dry Soil (g): 41.16
Moisture (%): 1.9

General Sample Data

Total Wet Weight of Sample (g): 54.45
Total Dry Weight of Sample (g): 53.43
Calculated Weight Plus #200 (g): 4.69
Moisture of Total Sample (%): 1.9
Percent Retained #200 Sieve (%): 8.8

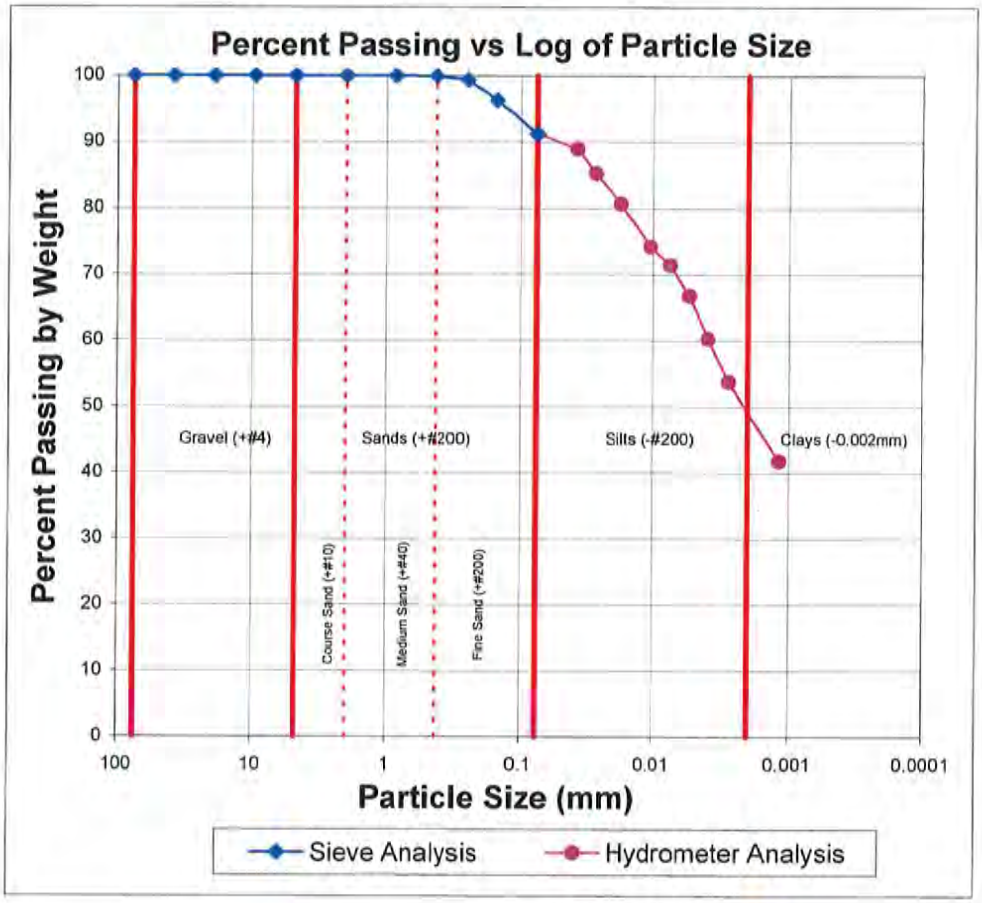
Plus Split Data

Original Weight of +#10 (g): 0.00
Calculated Weight of +#10 (g): 0.00

Minus Split Data

Original Weight of -#10 (g): 54.45
Calculated Dry Weight of -#10 (g): 53.43

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	0.00	0.00	0.00	0.00	100.0
3/8"	**9.525**	0.00	0.00	0.00	0.00	100.0
#4	**4.750**	0.00	0.00	0.00	0.00	100.0
#10	**2.000**	0.00	0.00	0.00	0.00	100.0
54.448g split out of -#10 material.						
#20	**0.850**	2.38	2.37	0.01	0.01	100.0
#40	**0.425**	3.73	3.70	0.02	0.02	99.9
#60	**0.250**	3.40	3.09	0.32	0.32	99.3
#100	**0.150**	4.73	3.09	1.64	1.64	96.3
#200	**0.075**	5.78	3.08	2.70	2.70	91.2



Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_53.xls

Checked By: KK
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B23-06
Depth: 26-27' (25-27.5')
Sample Number: Silty Clay
Sampled Date: 12/6/2013
Test Date: 3/25/2014

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.70
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.5
Specific Gravity Correction Factor - α: 0.99

Total Wet Weight of Sample (g): 54.45
Total Dry Weight of Sample (g): 53.43
Wet Weight of Sub-Sample (g): 54.448
Dry Weight of Sub-Sample (g): 53.433
Corrected Dry Weight of Sub-Sample - W(g): 53.433

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	53.5	48.0	18.2	0.0138	7.52	0.0378	89.0	47.56	89.0
2	51.5	46.0	18.2	0.0138	7.85	0.0273	85.3	45.58	85.3
5	49.0	43.5	18.2	0.0138	8.26	0.0177	80.7	43.10	80.7
15	45.5	40.0	18.3	0.0138	8.83	0.0106	74.2	39.64	74.2
30	44.0	38.5	18.4	0.0138	9.08	0.0076	71.4	38.15	71.4
60	41.5	36.0	18.8	0.0138	9.49	0.0055	66.8	35.67	66.8
120	38.0	32.5	19.2	0.0136	10.06	0.0039	60.3	32.20	60.3
250	34.5	29.0	20.0	0.0134	10.64	0.0028	53.8	28.74	53.8
1440	28.0	22.5	22.1	0.0131	11.70	0.0012	41.7	22.30	41.7

Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_53.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B11-17
Depth: 81.0-81.5'
Sample Number: Gravely Sand
Sampled Date: 12/2/2013
Test Date: 3/27/2014

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 37.77
Weight of Dry Soil & Pan (g): 37.55
Weight of Water (g): 0.22
Weight of Pan (g): 3.67
Weight of Dry Soil (g): 33.88
Moisture (%): 0.6

General Sample Data

Total Wet Weight of Sample (g): 369.35
Total Dry Weight of Sample (g): 367.44
Calculated Weight Plus #200 (g): 288.39
Moisture of Total Sample (%): 0.5
Percent Retained #200 Sieve (%): 78.5

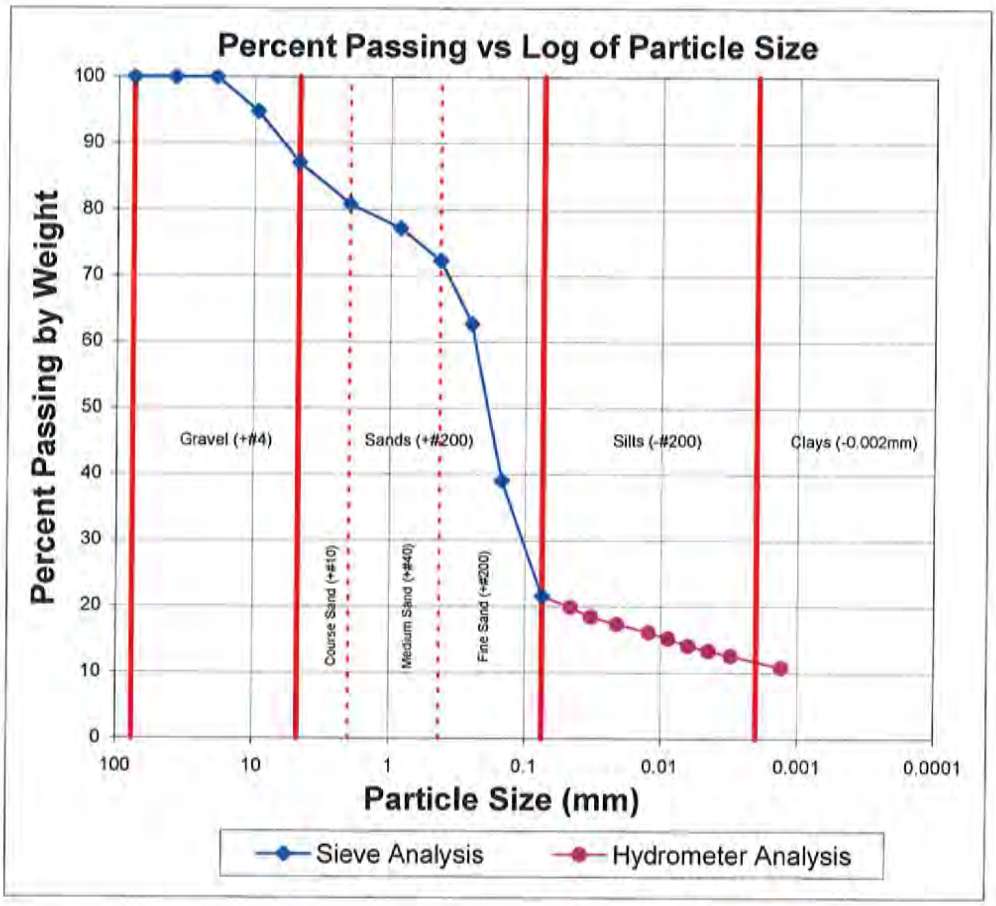
Plus Split Data

Original Weight of +#10 (g): 79.60
Calculated Weight of +#10 (g): 70.51

Minus Split Data

Original Weight of -#10 (g): 289.75
Calculated Dry Weight of -#10 (g): 296.93

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	0.00	0.00	0.00	0.00	100.0
3/8"	**9.525**	19.14	0.00	19.14	19.14	94.8
#4	**4.750**	28.35	0.00	28.35	28.35	87.1
#10	**2.000**	23.02	0.00	23.02	23.02	80.8
110.396g split out of -#10 material.						
#20	**0.850**	8.05	3.09	4.96	13.44	77.2
#40	**0.425**	9.69	3.10	6.60	17.86	72.3
#60	**0.250**	16.10	3.09	13.01	35.22	62.7
#100	**0.150**	38.68	6.50	32.18	87.10	39.0
#200	**0.075**	26.81	3.07	23.74	64.27	21.5



Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_52.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B11-17
Depth: 81.0-81.5'
Sample Number: Gravely Sand
Sampled Date: 12/2/2013
Test Date: 3/27/2014

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.70
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 2.8
Specific Gravity Correction Factor - α: 0.99

Total Wet Weight of Sample (g): 369.35
Total Dry Weight of Sample (g): 367.44
Wet Weight of Sub-Sample (g): 110.396
Dry Weight of Sub-Sample (g): 109.690
Corrected Dry Weight of Sub-Sample - W(g): 135.755

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	30.0	27.2	19.3	0.0136	11.37	0.0459	19.9	73.06	19.9
2	28.0	25.2	19.3	0.0136	11.70	0.0329	18.4	67.69	18.4
5	26.5	23.7	19.3	0.0136	11.95	0.0210	17.3	63.67	17.3
15	24.8	22.0	19.4	0.0136	12.24	0.0123	16.1	58.98	16.1
30	23.5	20.7	19.4	0.0136	12.44	0.0088	15.1	55.63	15.1
60	22.0	19.2	19.5	0.0136	12.69	0.0063	14.0	51.60	14.0
120	21.0	18.2	19.8	0.0136	12.85	0.0045	13.3	48.92	13.3
250	20.0	17.2	20.4	0.0134	13.01	0.0031	12.6	46.24	12.6
1456	17.5	14.7	19.3	0.0136	13.42	0.0013	10.8	39.53	10.8

Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_52.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B11-06
Depth: 30.5-31.5' (30.0-31.5')
Sample Number: Sandy Clay
Sampled Date: 12/2/2013
Test Date: 3/27/2014

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 30.25
Weight of Dry Soil & Pan (g): 29.86
Weight of Water (g): 0.40
Weight of Pan (g): 3.07
Weight of Dry Soil (g): 26.79
Moisture (%): 1.5

General Sample Data

Total Wet Weight of Sample (g): 1,593.60
Total Dry Weight of Sample (g): 1,572.35
Calculated Weight Plus #200 (g): 760.87
Moisture of Total Sample (%): 1.4
Percent Retained #200 Sieve (%): 48.4

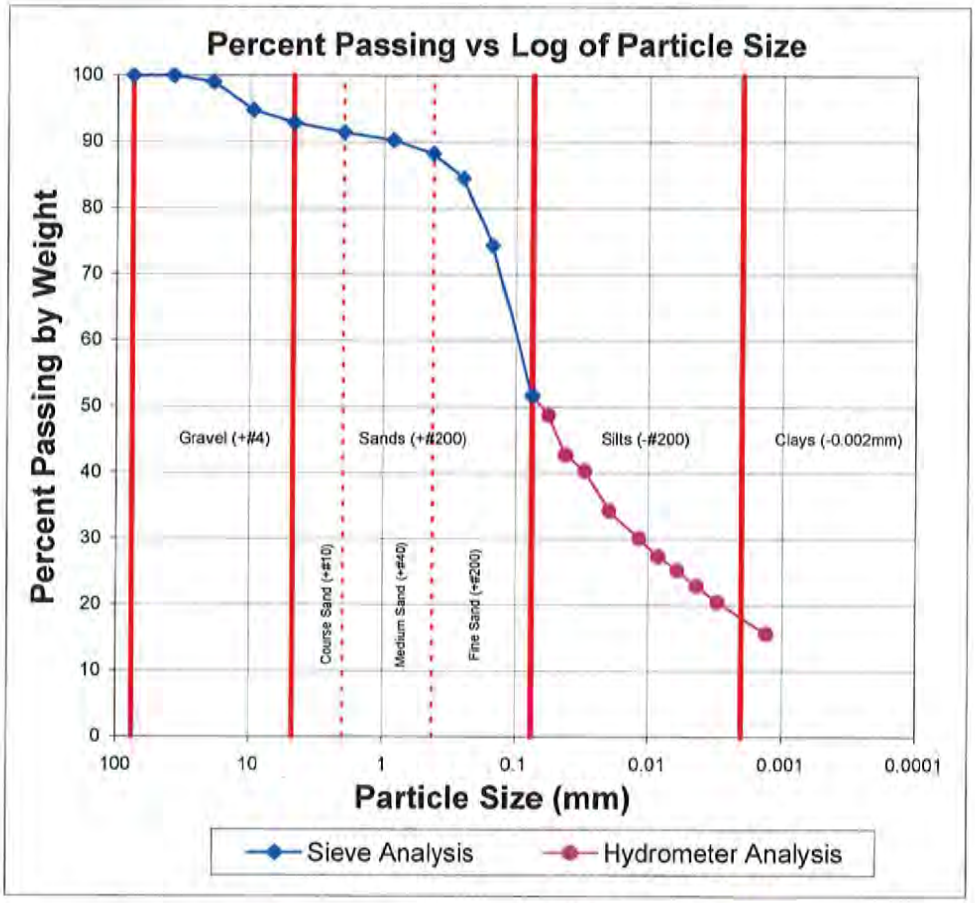
Plus Split Data

Original Weight of +#10 (g): 176.19
Calculated Weight of +#10 (g): 134.79

Minus Split Data

Original Weight of -#10 (g): 1,417.41
Calculated Dry Weight of -#10 (g): 1,437.56

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	15.70	0.00	15.70	15.70	99.0
3/8"	**9.525**	66.17	0.00	66.17	66.17	94.8
#4	**4.750**	29.88	0.00	29.88	29.88	92.9
#10	**2.000**	23.05	0.00	23.05	23.05	91.4
76.482g split out of -#10 material.						
#20	**0.850**	4.64	3.68	0.96	18.27	90.3
#40	**0.425**	5.44	3.76	1.68	32.03	88.2
#60	**0.250**	6.62	3.56	3.07	58.46	84.5
#100	**0.150**	12.02	3.62	8.39	160.11	74.3
#200	**0.075**	22.39	3.66	18.73	357.22	51.6



Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_51.xls

Checked By: KP
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B11-06
Depth: 30.5-31.5' (30.0-31.5')
Sample Number: Sandy Clay
Sampled Date: 12/2/2013
Test Date: 3/27/2014

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.70
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.5
Specific Gravity Correction Factor - α: 0.99

Total Wet Weight of Sample (g): 1,593.60
Total Dry Weight of Sample (g): 1,572.35
Wet Weight of Sub-Sample (g): 76.482
Dry Weight of Sub-Sample (g): 75.368
Corrected Dry Weight of Sub-Sample - W(g): 82.459

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
0.5	46.0	40.5	19.3	0.0136	8.75	0.0569	48.7	765.24	48.7
1	41.0	35.5	19.3	0.0136	9.57	0.0421	42.7	670.77	42.7
2	39.0	33.5	19.3	0.0136	9.90	0.0303	40.3	632.98	40.3
5	34.0	28.5	19.3	0.0136	10.72	0.0199	34.2	538.50	34.2
15	30.5	25.0	19.3	0.0136	11.29	0.0118	30.0	472.37	30.0
30	28.3	22.8	19.4	0.0136	11.66	0.0085	27.3	429.86	27.3
60	26.5	21.0	19.5	0.0136	11.95	0.0061	25.2	396.79	25.2
120	24.5	19.0	19.9	0.0136	12.28	0.0044	22.8	359.00	22.8
250	22.5	17.0	20.6	0.0134	12.60	0.0030	20.4	321.21	20.4
1451	18.5	13.0	19.1	0.0136	13.26	0.0013	15.6	245.63	15.6

Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_51.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B11-03
Depth: 15-16'
Sample Number: Sand
Sampled Date: 12/2/2013
Test Date: 3/13/2014

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 117.71
Weight of Dry Soil & Pan (g): 116.58
Weight of Water (g): 1.13
Weight of Pan (g): 3.77
Weight of Dry Soil (g): 112.81
Moisture (%): 1.0

General Sample Data

Total Wet Weight of Sample (g): 524.04
Total Dry Weight of Sample (g): 519.10
Calculated Weight Plus #200 (g): 319.02
Moisture of Total Sample (%): 1.0
Percent Retained #200 Sieve (%): 61.5

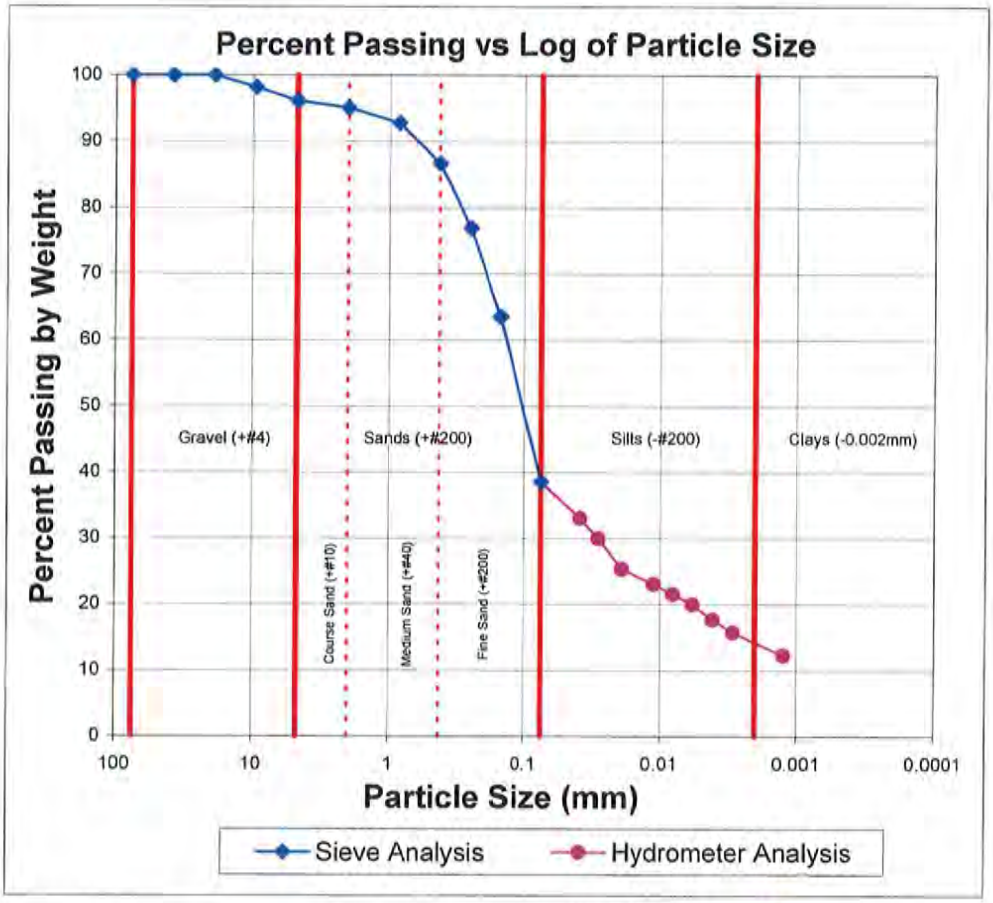
Plus Split Data

Original Weight of +#10 (g): 50.06
Calculated Weight of +#10 (g): 25.62

Minus Split Data

Original Weight of -#10 (g): 473.98
Calculated Dry Weight of -#10 (g): 493.48

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	0.00	0.00	0.00	0.00	100.0
3/8"	**9.525**	9.47	0.00	9.47	9.47	98.2
#4	**4.750**	10.53	0.00	10.53	10.53	96.1
#10	**2.000**	5.63	0.00	5.63	5.63	95.1
123.923g split out of -#10 material.						
#20	**0.850**	5.24	2.30	2.94	11.82	92.8
#40	**0.425**	10.23	2.30	7.93	31.89	86.6
#60	**0.250**	15.65	3.10	12.55	50.47	76.9
#100	**0.150**	20.38	3.06	17.33	69.69	63.5
#200	**0.075**	35.27	3.07	32.21	129.54	38.5



Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_50.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B11-03
Depth: 15-16'
Sample Number: Sand
Sampled Date: 12/2/2013
Test Date: 3/13/2014

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.70
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.0
Specific Gravity Correction Factor - α: 0.99

Total Wet Weight of Sample (g): 524.04
Total Dry Weight of Sample (g): 519.10
Wet Weight of Sub-Sample (g): 123.923
Dry Weight of Sub-Sample (g): 122.693
Corrected Dry Weight of Sub-Sample - W(g): 129.015

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	48.0	43.0	21.4	0.0133	8.42	0.0385	33.0	171.44	33.0
2	44.0	39.0	21.4	0.0133	9.08	0.0283	30.0	155.49	30.0
5	38.0	33.0	21.4	0.0133	10.06	0.0188	25.3	131.57	25.3
15	35.0	30.0	21.5	0.0133	10.55	0.0111	23.0	119.61	23.0
30	33.0	28.0	21.6	0.0133	10.88	0.0080	21.5	111.64	21.5
60	31.0	26.0	21.8	0.0133	11.21	0.0057	20.0	103.66	20.0
120	28.0	23.0	22.1	0.0131	11.70	0.0041	17.7	91.70	17.7
250	25.5	20.5	22.5	0.0131	12.11	0.0029	15.7	81.73	15.7
1440	21.0	16.0	21.1	0.0133	12.85	0.0013	12.3	63.79	12.3

Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_50.xls

Checked By: KP
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B11-08
Depth: 51.5-52.5' (50-52.5')
Sample Number: Finer Tailings
Sampled Date: 12/2/2013
Test Date: 3/17/2014

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 44.00
Weight of Dry Soil & Pan (g): 42.74
Weight of Water (g): 1.26
Weight of Pan (g): 3.72
Weight of Dry Soil (g): 39.02
Moisture (%): 3.2

General Sample Data

Total Wet Weight of Sample (g): 62.35
Total Dry Weight of Sample (g): 60.41
Calculated Weight Plus #200 (g): 1.62
Moisture of Total Sample (%): 3.2
Percent Retained #200 Sieve (%): 2.7

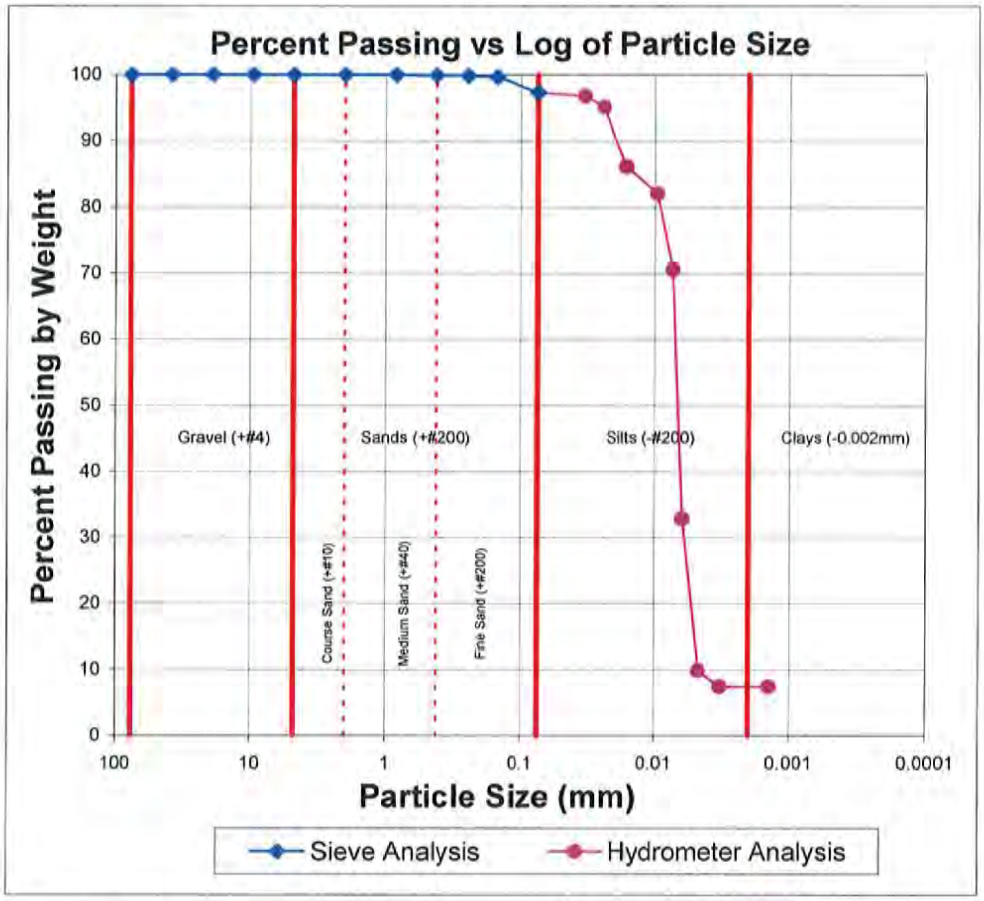
Plus Split Data

Original Weight of +#10 (g): 0.00
Calculated Weight of +#10 (g): 0.00

Minus Split Data

Original Weight of -#10 (g): 62.35
Calculated Dry Weight of -#10 (g): 60.41

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	0.00	0.00	0.00	0.00	100.0
3/8"	**9.525**	0.00	0.00	0.00	0.00	100.0
#4	**4.750**	0.00	0.00	0.00	0.00	100.0
#10	**2.000**	0.00	0.00	0.00	0.00	100.0
62.352g split out of -#10 material.						
#20	**0.850**	2.32	2.31	0.01	0.01	100.0
#40	**0.425**	2.40	2.36	0.04	0.04	99.9
#60	**0.250**	2.33	2.30	0.03	0.03	99.9
#100	**0.150**	3.24	3.12	0.12	0.12	99.7
#200	**0.075**	5.00	3.58	1.42	1.42	97.3



Notes:
The sample started showing signs of flocculation at the one minute reading.
At the four hour reading the suppurate was barely cloudy.
At the 24 hour reading the suppurate was clear

Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_49.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B11-08
Depth: 51.5-52.5' (50-52.5')
Sample Number: Finer Tailings
Sampled Date: 12/2/2013
Test Date: 3/17/2014

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.70
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.0
Specific Gravity Correction Factor - α: 0.99

Total Wet Weight of Sample (g): 62.35
Total Dry Weight of Sample (g): 60.41
Wet Weight of Sub-Sample (g): 62.352
Dry Weight of Sub-Sample (g): 60.406
Corrected Dry Weight of Sub-Sample - W(g): 60.406

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
1	64.0	59.0	17.8	0.0140	5.80	0.0336	96.8	58.46	96.8
2	63.0	58.0	17.8	0.0140	5.96	0.0241	95.1	57.47	95.1
5	57.5	52.5	17.8	0.0140	6.86	0.0164	86.1	52.02	86.1
15	55.0	50.0	18.0	0.0138	7.27	0.0096	82.0	49.55	82.0
30	48.0	43.0	18.2	0.0138	8.42	0.0073	70.5	42.61	70.5
60	25.0	20.0	18.6	0.0138	12.19	0.0062	32.8	19.82	32.8
120	11.0	6.0	19.2	0.0136	14.49	0.0047	9.8	5.95	9.8
250	9.5	4.5	20.1	0.0134	14.74	0.0033	7.4	4.46	7.4
1440	9.5	4.5	18.6	0.0138	14.74	0.0014	7.4	4.46	7.4

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Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_49.xls

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ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B8-04
Depth: 30.0-31.0' (30-32')
Sample Number: Clayey Silt / Sand
Sampled Date: 12/3/2013
Test Date: 3/17/2014

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 29.33
Weight of Dry Soil & Pan (g): 28.31
Weight of Water (g): 1.01
Weight of Pan (g): 3.70
Weight of Dry Soil (g): 24.62
Moisture (%): 4.1

General Sample Data

Total Wet Weight of Sample (g): 54.42
Total Dry Weight of Sample (g): 52.27
Calculated Weight Plus #200 (g): 4.83
Moisture of Total Sample (%): 4.1
Percent Retained #200 Sieve (%): 9.2

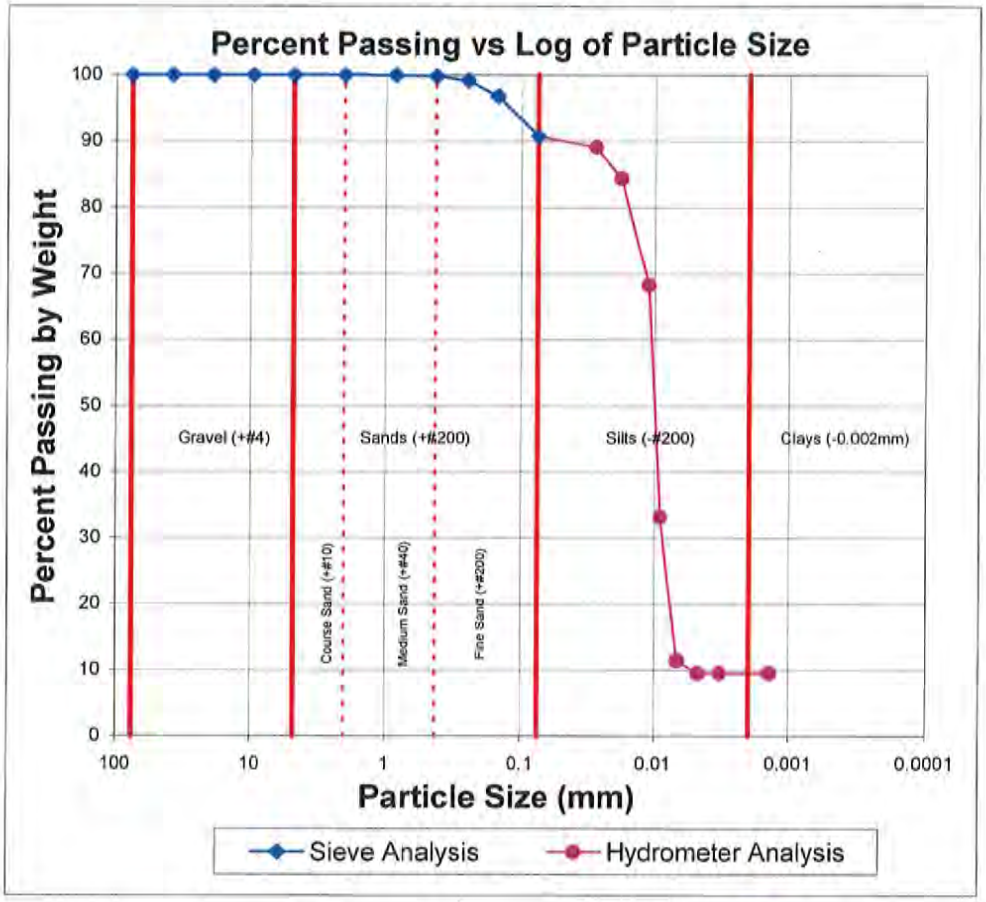
Plus Split Data

Original Weight of +#10 (g): 0.00
Calculated Weight of +#10 (g): 0.00

Minus Split Data

Original Weight of -#10 (g): 54.42
Calculated Dry Weight of -#10 (g): 52.27

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	0.00	0.00	0.00	0.00	100.0
3/8"	**9.525**	0.00	0.00	0.00	0.00	100.0
#4	**4.750**	0.00	0.00	0.00	0.00	100.0
#10	**2.000**	0.00	0.00	0.00	0.00	100.0
54.417g split out of -#10 material.						
#20	**0.850**	2.34	2.32	0.02	0.02	100.0
#40	**0.425**	2.43	2.35	0.08	0.08	99.8
#60	**0.250**	2.64	2.29	0.35	0.35	99.2
#100	**0.150**	4.35	3.11	1.24	1.24	96.8
#200	**0.075**	6.27	3.12	3.15	3.15	90.8



Notes:
The sample started showing signs of flocculation within 30 seconds of starting the test.
At the two hour reading the suppurate was barely cloudy.
At the 24 hour reading the suppurate was completely clear.

Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_48.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B8-04
Depth: 30.0-31.0' (30-32')
Sample Number: Clayey Silt / Sand
Sampled Date: 12/3/2013
Test Date: 3/17/2014

Sampled By: MWH
Technician: DPM

Hydrometer Data

Test Configuration

Hydrometer Type: 152H
Specific Gravity: 2.70
Deflocculant: Sodium Hexametaphosphate
Deflocculant Correction: 5.0
Specific Gravity Correction Factor - α: 0.99

Total Wet Weight of Sample (g): 54.42
Total Dry Weight of Sample (g): 52.27
Wet Weight of Sub-Sample (g): 54.417
Dry Weight of Sub-Sample (g): 52.266
Corrected Dry Weight of Sub-Sample - W(g): 52.266

Elapsed Time (min)	Hydrometer Reading	Corrected Hydrometer Reading	Temperature (°C)	Temperature Coefficient (K)	Effective Depth (L)	Grain Diameter (mm)	Percent in Suspension (%)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
0	-	-	-	-	-	-	-	-	-
2	52.0	47.0	17.5	0.0140	7.77	0.0275	89.1	46.57	89.1
5	49.5	44.5	17.5	0.0140	8.18	0.0179	84.4	44.10	84.4
15	41.0	36.0	17.8	0.0140	9.57	0.0112	68.3	35.67	68.3
30	22.5	17.5	17.9	0.0140	12.60	0.0090	33.2	17.34	33.2
60	11.0	6.0	18.3	0.0138	14.49	0.0068	11.4	5.95	11.4
120	10.0	5.0	19.0	0.0136	14.65	0.0048	9.5	4.95	9.5
250	10.0	5.0	20.1	0.0134	14.65	0.0033	9.5	4.95	9.5
1440	10.0	5.0	18.5	0.0138	14.65	0.0014	9.5	4.95	9.5

Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_48.xls

Checked By: KR
Date: 6/18/14

ATT
ADVANCED TERRA TESTING

Particle Size Analysis of Soils
ASTM D 422

Client: MWH
Job Number: 2512-77
Project: Church Rock
Location: Tailings Impoundment
Project Number:

Boring Number: TI-B8-02A
Depth: 26.0-26.5'
Sample Number: Clayey Silt
Sampled Date: 12/3/2013
Test Date: 1/27/2014

Sampled By: MWH
Technician: DPM

Grain Size Data

Hygroscopic Moisture of Fines

Weight of Wet Soil & Pan (g): 26.90
Weight of Dry Soil & Pan (g): 26.48
Weight of Water (g): 0.42
Weight of Pan (g): 3.73
Weight of Dry Soil (g): 22.75
Moisture (%): 1.8

General Sample Data

Total Wet Weight of Sample (g): 381.08
Total Dry Weight of Sample (g): 374.17
Calculated Weight Plus #200 (g): 284.49
Moisture of Total Sample (%): 1.8
Percent Retained #200 Sieve (%): 76.0

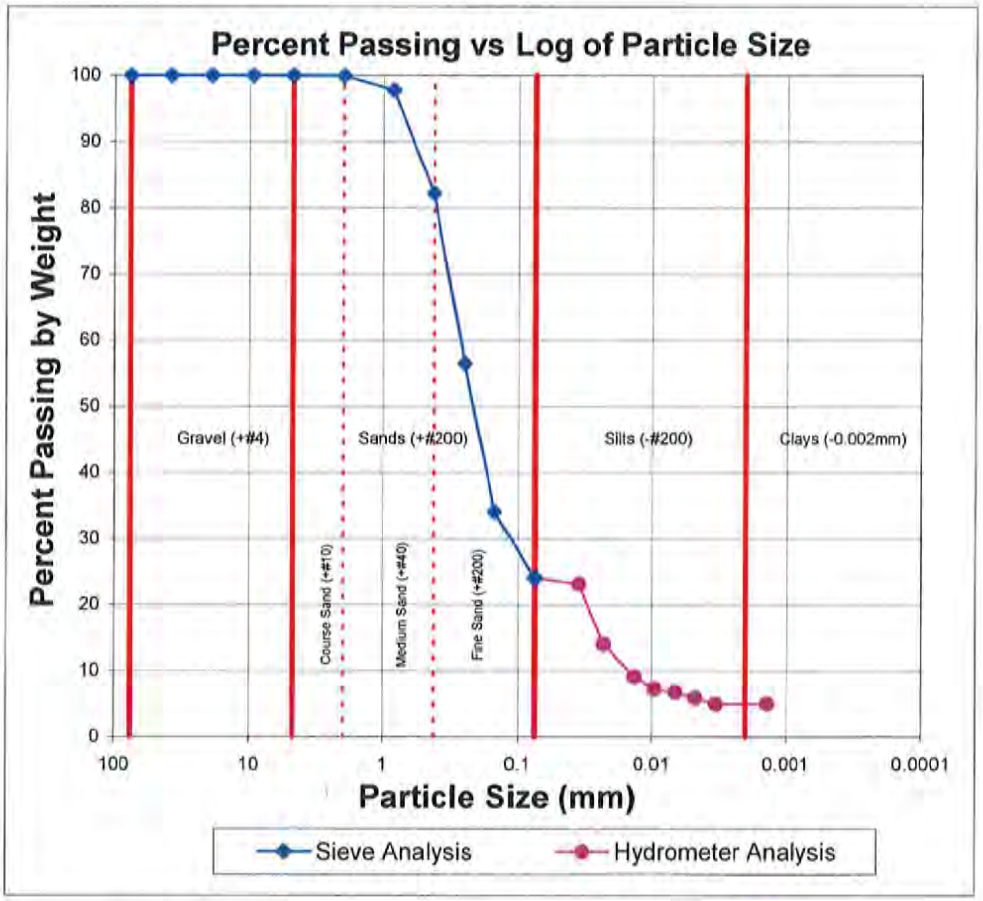
Plus Split Data

Original Weight of +#10 (g): 0.22
Calculated Weight of +#10 (g): 0.21

Minus Split Data

Original Weight of -#10 (g): 380.86
Calculated Dry Weight of -#10 (g): 373.97

Sieve Number	Sieve Size (mm)	Weight of Retained Soil & Pan (g)	Weight of Pan (g)	Weight of Retained Soil (g)	Calculated Weight of Retained Soil (g)	Percent Passing by Weight (%)
3"	**76.2**	0.00	0.00	0.00	0.00	100.0
1.5"	**38.10**	0.00	0.00	0.00	0.00	100.0
3/4"	**19.05**	0.00	0.00	0.00	0.00	100.0
3/8"	**9.525**	0.00	0.00	0.00	0.00	100.0
#4	**4.750**	0.00	0.00	0.00	0.00	100.0
#10	**2.000**	0.21	0.00	0.21	0.21	99.9
55.699g split out of -#10 material.						
#20	**0.850**	5.06	3.87	1.19	8.16	97.8
#40	**0.425**	12.25	3.73	8.53	58.32	82.2
#60	**0.250**	17.16	3.07	14.08	96.29	56.4
#100	**0.150**	15.84	3.56	12.28	83.96	34.0
#200	**0.075**	9.28	3.79	5.49	37.55	24.0



Notes:
1. At the 5min. reading the sample started showing signs of flocculation.

2. At the 24 hour reading the suspension is almost completely clear. Any reading above zero is due to dissolved solids.

Data Entered By: DPM
Date: 6/18/2014
File Name: 2512_77_hydrometer-ASTM-D422-R0_30.xls

Checked By: KR
Date: 6/18/14

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ADVANCED TERRA TESTING