Materials Testing & Consulting, Inc.

Geotechnical Engineering • Special Inspection • Materials Testing • Environmental Consulting

Project:	LDW ENR/AC Pilot Study	**Date Received:**	July 17, 2019
Project #:	19S135	**Sampled By:**	Client
Client :	Wood	**Date Reported:**	August 5, 2019
Source:	Multiple	**Tested By:**	B. Goble
MTC Sample#:	Multiple		

CASE NARRATIVE

1. Two samples were submitted for grain size analysis according to Puget Sound Estuary Protocol (PSEP) methodology.
2. The samples were run in a single batch and one sample from another job was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. The data is provided in summary tables and plots.
4. There were no noted anomalies during this testing.

All results apply only to actual locations and materials tested. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.

Reviewed by: _____

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Project: LDW ENR/AC Pilot Study
Project #: 19S135
Date Received: July 17, 2019
Date Tested: August 3, 2019

Client: Wood
Sampled by: Client
Tested by: B. Goble

Apparent Grain Size Distribution Summary

Percent Finer Than Indicated Size

Sample No.	Gravel			Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt				Clay	
Phi Size	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
Sieve Size (microns)	3/8"	#4 (4750)	#10 (2000)	#18 (1000)	#35 (500)	#60 (250)	#120 (125)	#230 (63)	31.0	15.6	7.8	3.9	2.0	1.0
S19-1436	100.0	86.0	75.9	68.6	54.5	27.3	8.8	4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6
	100.0	86.4	76.6	68.7	54.4	27.5	7.5	3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1
	100.0	87.0	77.8	69.9	55.0	26.9	7.9	3.5	<3.5	<3.5	<3.5	<3.5	<3.5	<3.5
LDW-Y2-SC-ENR-SS	100.0	95.2	75.3	66.8	55.4	47.6	45.0	44.2	41.8	31.6	19.8	13.8	10.1	6.4
LDW-Y2-SC-ENR+AC-SS	100.0	83.0	67.8	55.8	40.2	29.9	26.4	24.9	21.9	17.1	11.9	8.4	6.0	3.9

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Apparent Grain Size Distribution Summary

Percent Retained in Each Size Fraction

Sample No.	Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Coarse Silt	Medium Silt	Fine Silt	Very Fine Silt	Clay			Total Fines
Phi Size	< -1	-1 to 0	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	> 10	> 4
Sieve Size (microns)	> #10 (2000)	10-18 (2000-1000)	18-35 (1000-500)	35-60 (500-250)	60-120 (250-125)	120-230 (125-62)	62.5-31.0	31.0-15.6	15.6-7.8	7.8-3.9	3.9-2.0	2.0-1.0	<1.0	<230 (<62)
S19-1436	24.1	7.3	14.1	27.2	18.5	4.2	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	4.6
	23.4	7.9	14.2	26.9	20.0	4.4	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	3.1
	22.2	7.9	14.9	28.1	19.0	4.4	<3.5	<3.5	<3.5	<3.5	<3.5	<3.5	<3.5	3.5
LDW-Y2-SC-ENR-SS	24.7	8.5	11.4	7.8	2.7	0.8	2.4	10.3	11.8	5.9	3.7	3.7	6.4	44.2
LDW-Y2-SC-ENR+AC-SS	32.2	11.9	15.6	10.3	3.5	1.5	2.9	4.8	5.2	3.4	2.4	2.1	3.9	24.9

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Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
S19-1436	100.0	86.0	75.9	68.6	54.5	27.3	8.8	4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6
	100.0	86.4	76.6	68.7	54.4	27.5	7.5	3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1
	100.0	87.0	77.8	69.9	55.0	26.9	7.9	3.5	<3.5	<3.5	<3.5	<3.5	<3.5	<3.5
AVE	100.0	86.5	76.8	69.1	54.6	27.3	8.1	3.7	N/A	N/A	N/A	N/A	N/A	N/A
STDEV	0.0	0.4	0.8	0.6	0.3	0.3	0.5	0.6	N/A	N/A	N/A	N/A	N/A	N/A
%RSD	0.0	0.4	1.0	0.9	0.5	0.9	6.6	16.5	N/A	N/A	N/A	N/A	N/A	N/A

The Triplicate Applies To The Following Samples

Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
S19-1436	7/24/2019	7/26/2019	8/3/2019	101.3	SS	4.4
	7/24/2019	7/26/2019	8/3/2019	99.7	SS	3.6
	7/24/2019	7/26/2019	8/3/2019	100.1	SS	4.2
LDW-Y2-SC-ENR-SS	6/22/2019	7/26/2019	8/3/2019	96.2		11.7
LDW-Y2-SC-ENR+AC-SS	6/22/2019	7/26/2019	8/3/2019	101.3		12.2

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Reviewed by: Elizabeth Goble

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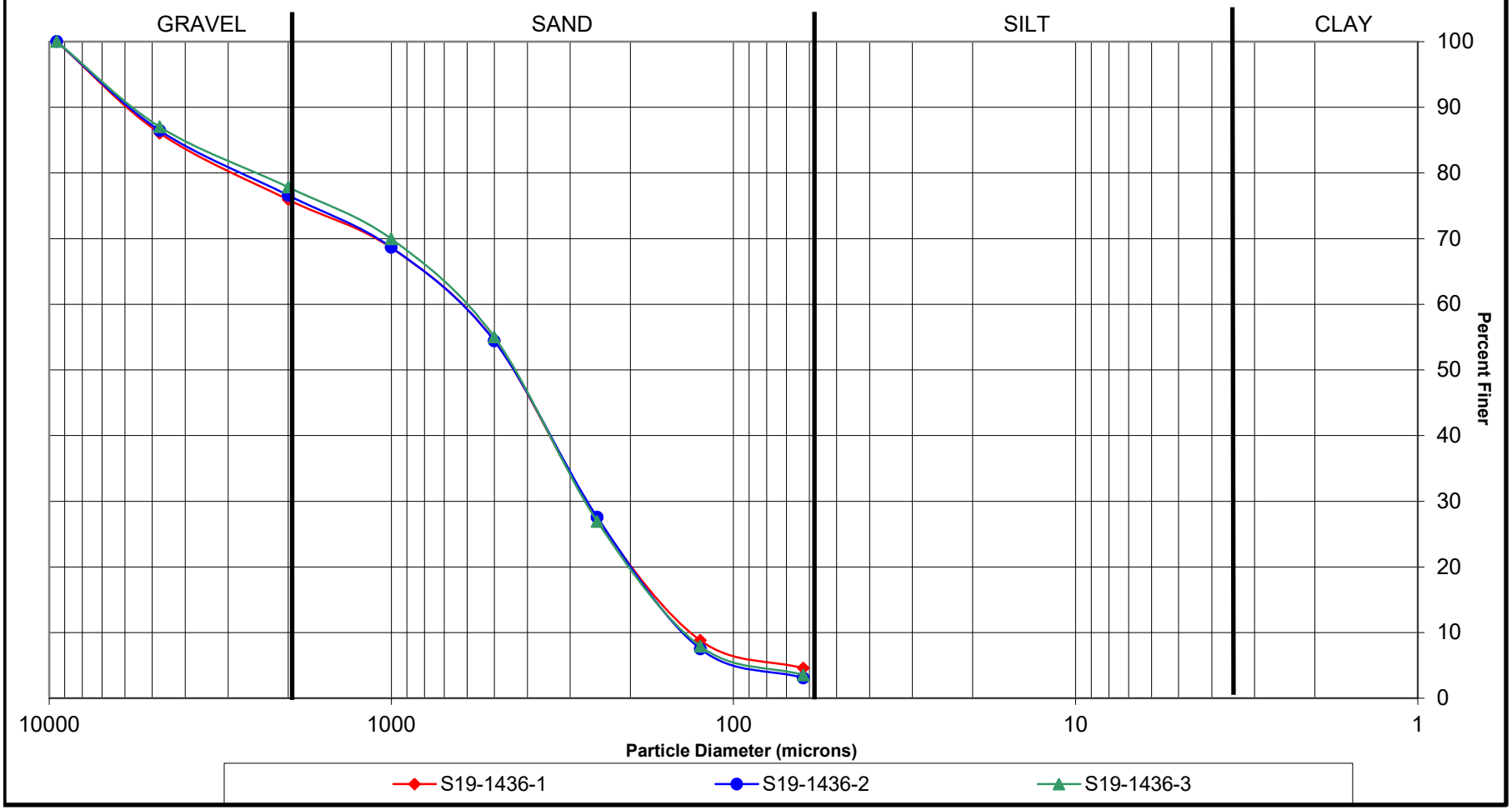
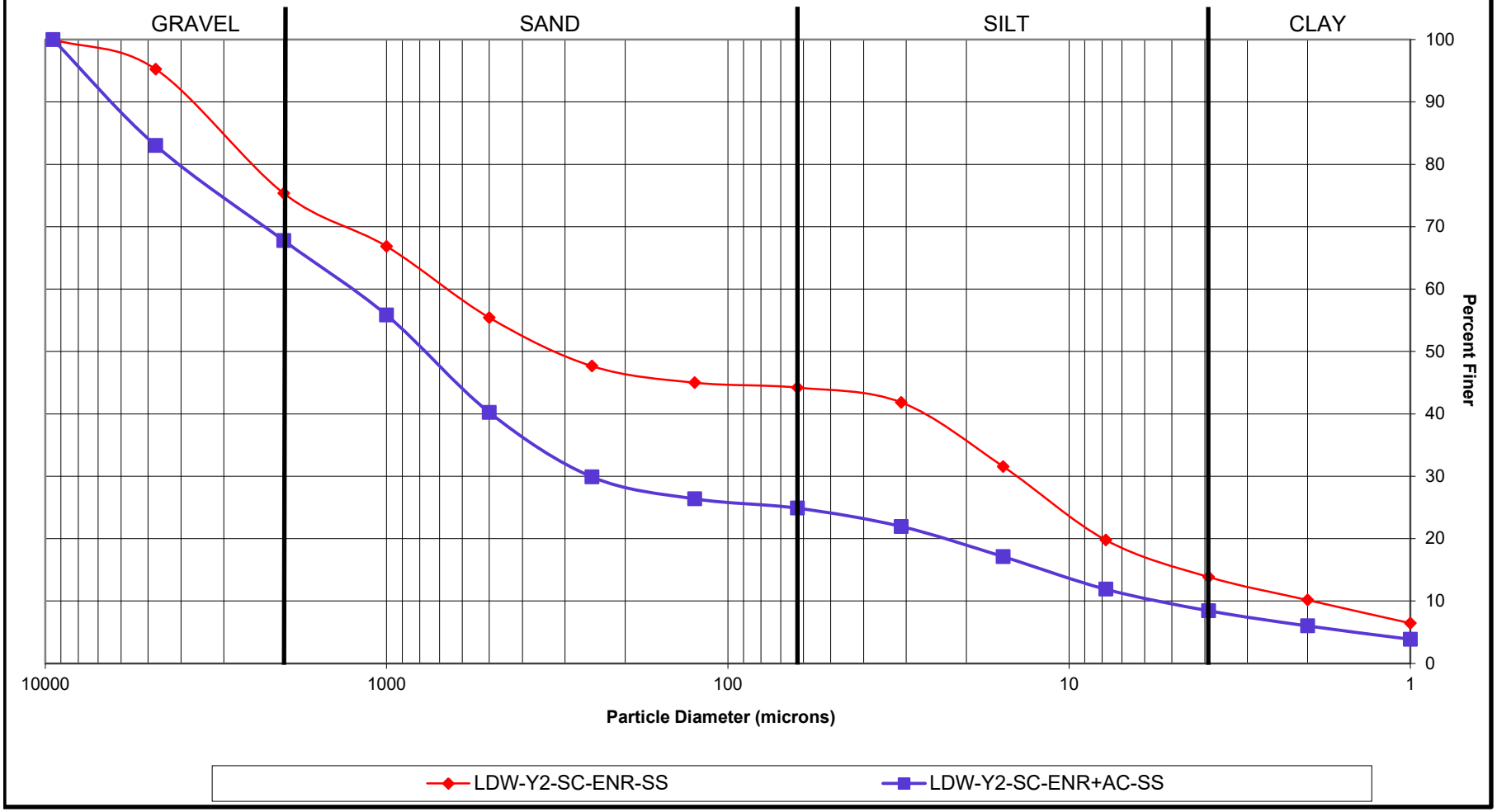
PSEP Grain Size Distribution

Triplicate Sample Plot



PSEP Grain Size Distribution