

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 8, 2020
Date Started: June 9, 2020
Date Finished: June 13, 2020

Client: AnchorQEA
HLB Project #: 20-053
Tested By: H Benny

CASE NARRATIVE

1. Fourteen 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 the job was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. Some samples contained a lot of gravel.
4. The samples contained organic matter which may have broken down during the oven drying and sieving process, affecting the grain size analysis.
5. Sample LDW20-IT146 had a glass shard on the #4 sieve. 6.
6. The data is provided in summary tables and plots.
7. There were no other noted anomalies in the testing or samples on project.

Reviewed by: 

Harold L Benny & Associates, LLC

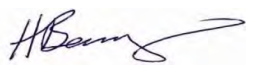
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Apparent Grain Size Distribution Summary

Percent Finer Than Indicated Size

Sample No.	Gravel			Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt				Clay	
	-3	-2	-1						0	1	2	3	4	5
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
LDW20-SC169	100.0	100.0	99.9	98.5	96.6	95.1	91.8	81.5	65.6	36.4	20.7	11.6	9.1	6.8
	100.0	100.0	100.0	97.1	95.7	94.1	91.0	80.5	66.3	38.2	20.1	12.8	10.1	6.7
	100.0	100.0	99.8	97.5	96.0	94.5	91.2	80.6	66.5	36.6	19.6	12.3	9.5	6.6
LDW20-IT215	82.0	71.9	61.7	53.6	43.5	29.8	19.8	13.7	10.5	7.4	5.6	3.7	2.7	1.9
LDW20-IT240	89.3	85.0	77.4	71.5	65.6	51.4	37.6	26.7	21.6	13.7	9.2	5.7	3.9	2.7
LDW20-IT247	98.4	95.1	90.0	86.1	76.3	53.1	36.0	23.5	17.1	10.8	7.6	4.9	3.6	2.3
LDW20-IT310	100.0	100.0	100.0	98.9	98.2	97.7	93.5	72.7	49.2	28.5	18.7	11.1	7.9	5.2
LDW20-SC322	100.0	100.0	99.9	98.7	97.5	96.5	90.6	70.9	50.1	27.3	17.2	10.1	7.8	5.9
LDW20-SC336	100.0	100.0	100.0	97.4	96.2	95.0	90.3	76.4	58.8	25.5	15.7	10.5	8.1	6.0
LDW20-SC336FD	100.0	100.0	100.0	97.8	96.6	95.4	90.5	76.7	60.1	26.8	16.9	10.8	9.2	6.7
LDW20-IT365	100.0	99.0	98.9	98.4	90.4	62.8	31.4	21.4	15.5	10.1	6.8	4.3	3.0	2.0
LDW20-IT365FD	100.0	100.0	100.0	99.5	91.6	64.2	32.4	22.2	15.3	10.0	6.8	4.1	3.0	2.0
LDW20-IT361	100.0	98.3	97.9	96.5	88.7	68.8	47.9	26.7	16.1	9.7	6.8	4.3	2.8	2.3
LDW20-IT139	100.0	100.0	98.5	97.8	94.8	72.7	41.9	19.5	10.7	7.0	4.9	3.4	2.4	1.2
LDW20-IT151	100.0	100.0	89.1	72.2	54.9	38.4	33.0	27.4	21.2	13.5	8.9	5.3	3.7	2.1
LDW20-IT146	95.1	85.3	76.6	69.7	61.9	39.4	18.3	7.4	6.1	4.4	3.3	2.5	1.7	0.9

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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)
LDW20-SC169	0.1	1.3	1.9	1.6	3.2	10.3	15.9	29.2	15.7	9.1	2.5	2.3	6.8	81.5
	0.0	2.8	1.5	1.5	3.1	10.5	14.2	28.1	18.2	7.3	2.7	3.4	6.7	80.5
	0.2	2.3	1.5	1.5	3.3	10.6	14.1	29.9	17.0	7.3	2.9	2.9	6.6	80.6
LDW20-IT215	38.3	8.2	10.1	13.7	9.9	6.2	3.2	3.1	1.7	2.0	1.0	0.8	1.9	13.7
LDW20-IT240	22.6	5.8	5.9	14.2	13.8	10.9	5.1	7.9	4.6	3.5	1.8	1.2	2.7	26.7
LDW20-IT247	10.0	3.9	9.8	23.2	17.1	12.5	6.4	6.3	3.2	2.7	1.3	1.3	2.3	23.5
LDW20-IT310	0.0	1.1	0.7	0.5	4.3	20.8	23.5	20.7	9.9	7.6	3.1	2.7	5.2	72.7
LDW20-SC322	0.1	1.2	1.2	1.0	5.9	19.7	20.8	22.8	10.1	7.1	2.3	1.9	5.9	70.9
LDW20-SC336	0.0	2.5	1.3	1.1	4.7	13.9	17.6	33.3	9.8	5.3	2.3	2.1	6.0	76.4
LDW20-SC336FD	0.0	2.1	1.3	1.2	4.8	13.9	16.6	33.3	10.0	6.0	1.7	2.5	6.7	76.7
LDW20-IT365	1.1	0.5	7.9	27.6	31.4	10.0	5.9	5.5	3.3	2.5	1.3	1.0	2.0	21.4
LDW20-IT365FD	0.0	0.5	7.9	27.3	31.9	10.2	6.9	5.3	3.2	2.7	1.1	1.0	2.0	22.2
LDW20-IT361	2.1	1.4	7.8	19.9	20.9	21.2	10.6	6.4	2.9	2.5	1.5	0.4	2.3	26.7
LDW20-IT139	1.5	0.7	3.0	22.0	30.8	22.4	8.8	3.8	2.1	1.5	1.0	1.1	1.2	19.5
LDW20-IT151	10.9	16.9	17.3	16.5	5.4	5.5	6.2	7.7	4.6	3.6	1.6	1.6	2.1	27.4
LDW20-IT146	23.4	6.9	7.8	22.5	21.1	10.9	1.3	1.7	1.1	0.8	0.8	0.9	0.9	7.4

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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
LDW20-SC169	100.0	100.0	99.9	98.5	96.6	95.1	91.8	81.5	65.6	36.4	20.7	11.6	9.1	6.8
	100.0	100.0	100.0	97.1	95.7	94.1	91.0	80.5	66.3	38.2	20.1	12.8	10.1	6.7
	100.0	100.0	99.8	97.5	96.0	94.5	91.2	80.6	66.5	36.6	19.6	12.3	9.5	6.6
AVE	100.0	100.0	99.9	97.7	96.1	94.5	91.3	80.9	66.1	37.1	20.1	12.2	9.6	6.7
STDEV	0.0	0.0	0.1	0.6	0.4	0.4	0.3	0.4	0.4	0.8	0.5	0.5	0.4	0.1
%RSD	0.0	0.0	0.1	0.6	0.4	0.4	0.4	0.5	0.6	2.3	2.3	3.9	4.2	1.4

The Triplicate Applies To The Following Samples

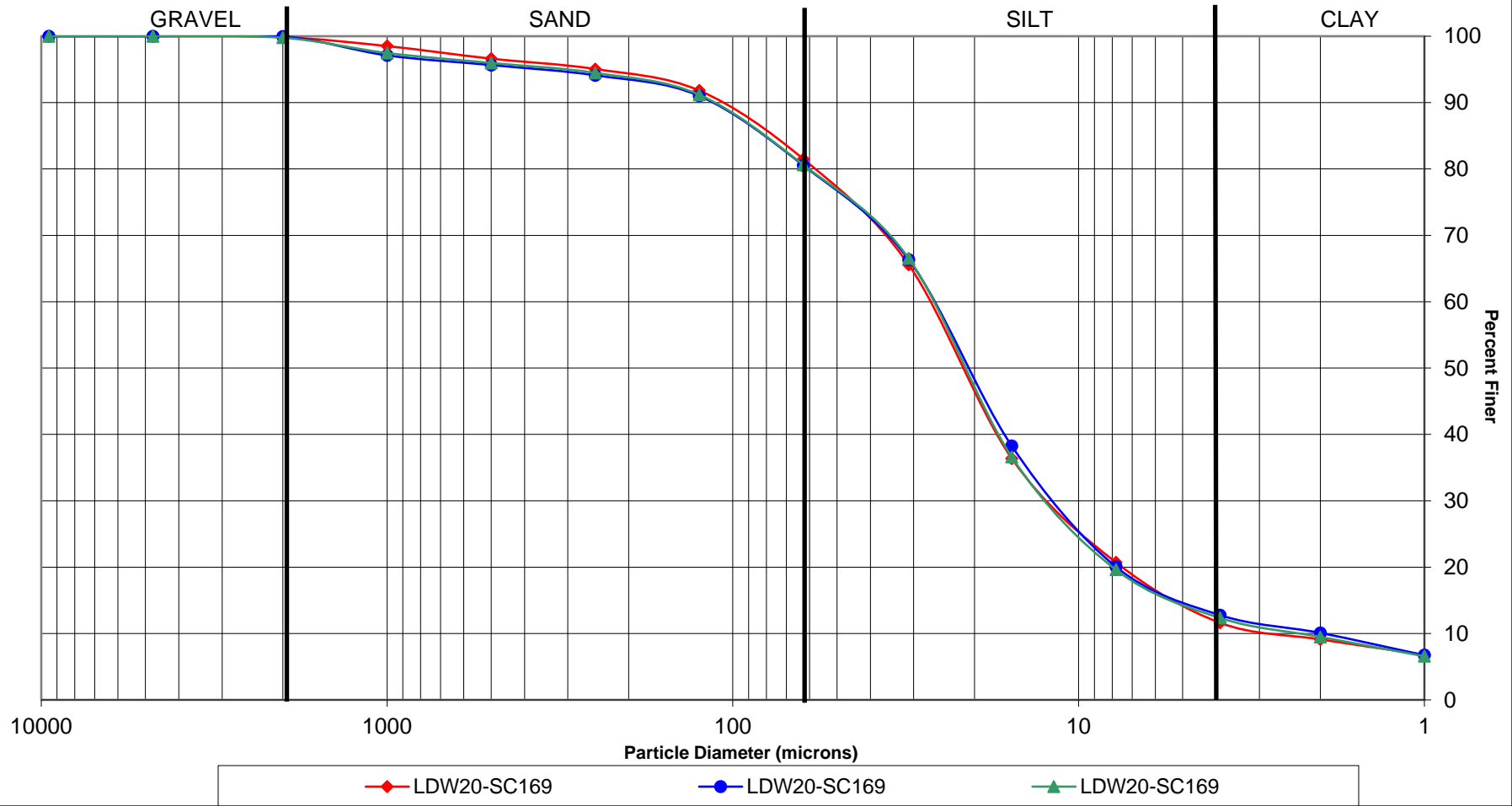
Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
LDW20-SC169	6/5/2020	6/9/2020	6/13/2020	99.8		13.6
	6/5/2020	6/9/2020	6/13/2020	100.1		12.6
	6/5/2020	6/9/2020	6/13/2020	99.8		12.9
LDW20-IT215	6/5/2020	6/9/2020	6/13/2020	100.4		11.1
LDW20-IT240	6/5/2020	6/9/2020	6/13/2020	97.1		12.1
LDW20-IT247	6/5/2020	6/9/2020	6/13/2020	99.6		11.8
LDW20-IT310	6/5/2020	6/9/2020	6/13/2020	101.0		15.1
LDW20-SC322	6/5/2020	6/9/2020	6/13/2020	100.7		13.5
LDW20-SC336	6/5/2020	6/9/2020	6/13/2020	99.8		14.3
LDW20-SC336FD	6/5/2020	6/9/2020	6/13/2020	101.8		13.8
LDW20-IT365	6/5/2020	6/9/2020	6/13/2020	100.8		9.1
LDW20-IT365FD	6/5/2020	6/9/2020	6/13/2020	100.7		8.9
LDW20-IT361	6/5/2020	6/9/2020	6/13/2020	100.4		10.0
LDW20-IT139	6/3/2020	6/9/2020	6/13/2020	100.7		7.5
LDW20-IT151	6/3/2020	6/9/2020	6/13/2020	100.5		11.9
LDW20-IT146	6/3/2020	6/9/2020	6/13/2020	98.2		7.4

Notes to the Testing: Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution.

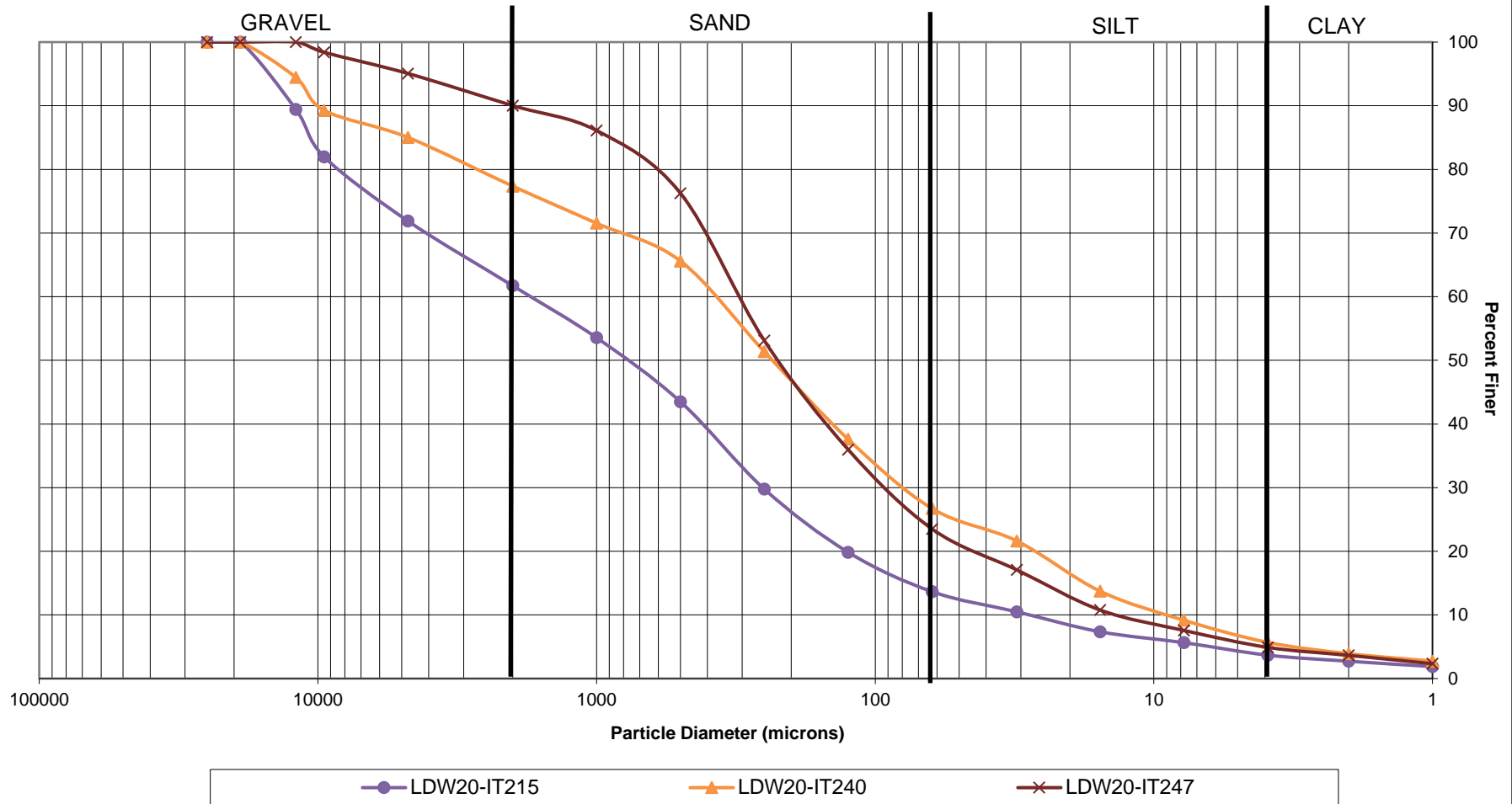
Reviewed by:  _____

PSEP Grain Size Distribution

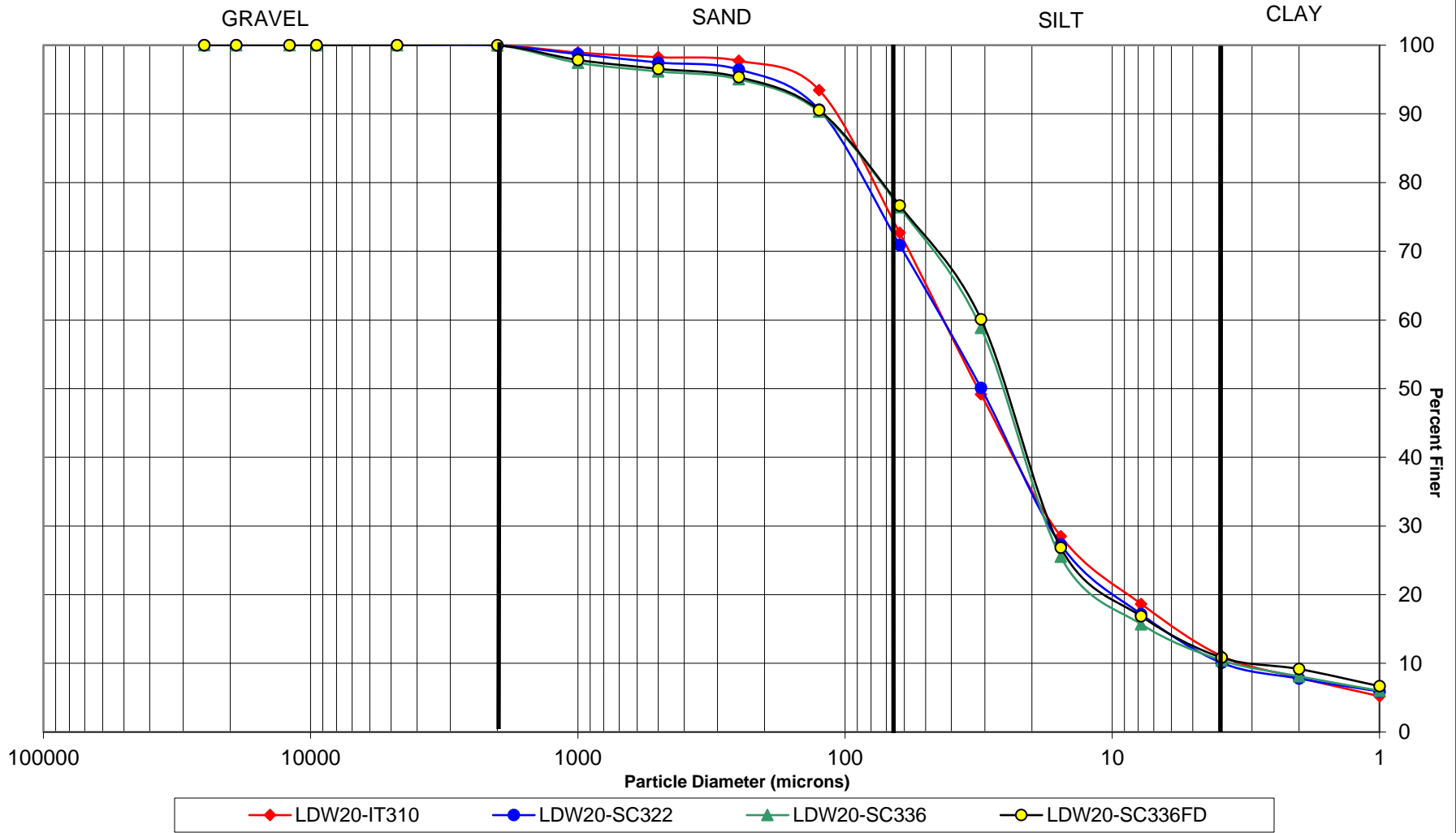
Triplicate Sample Plot



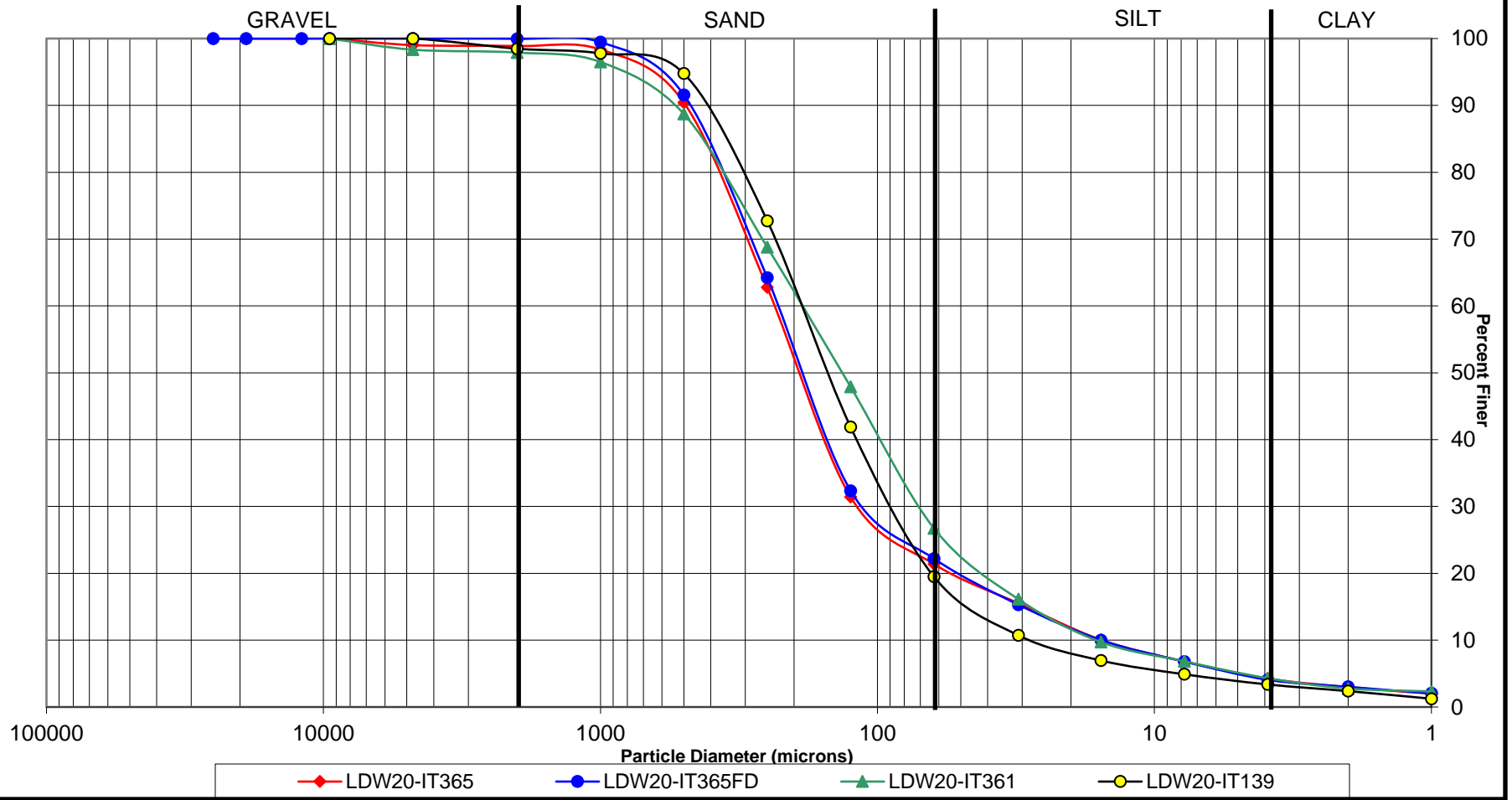
PSEP Grain Size Distribution



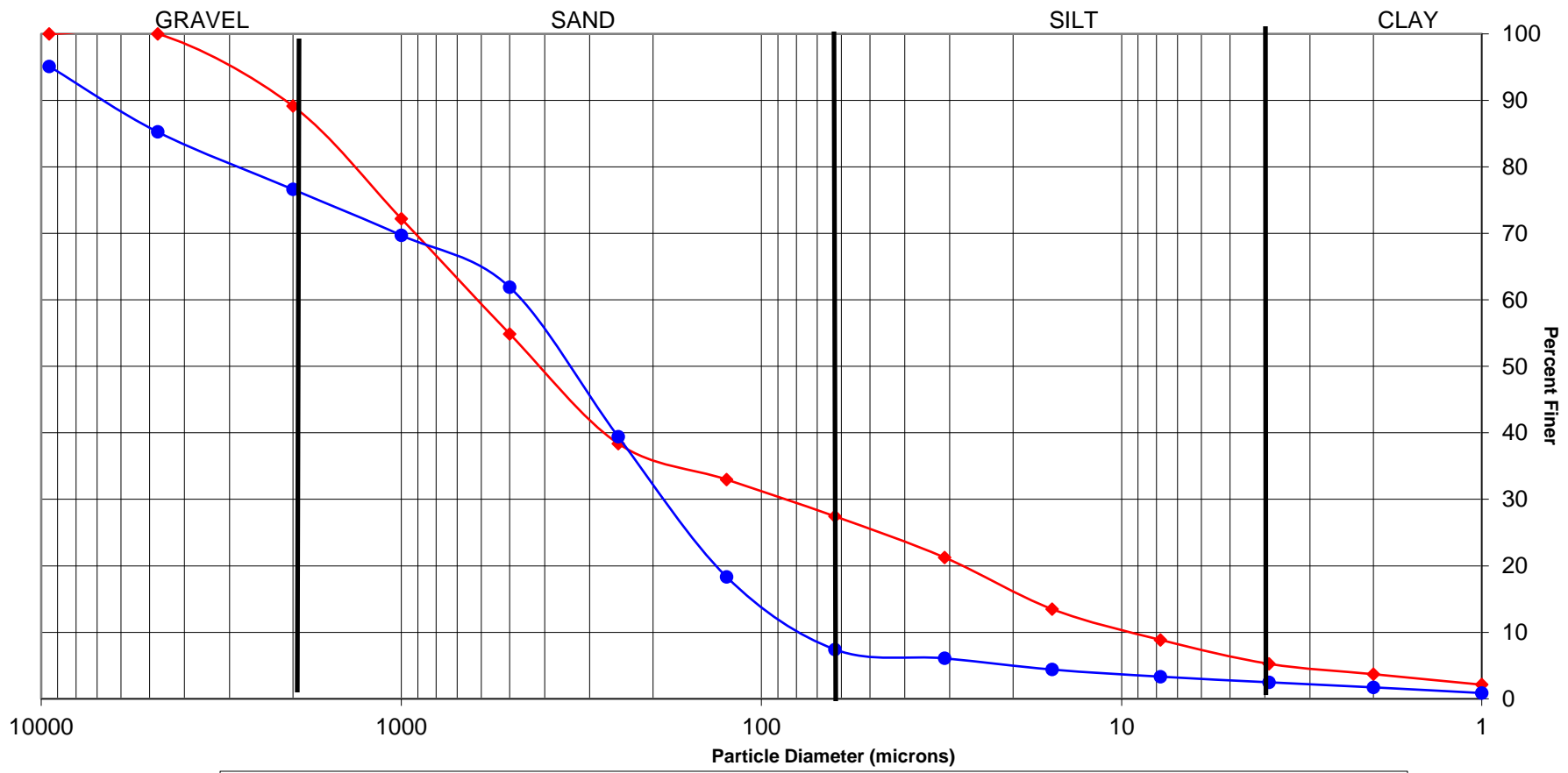
PSEP Grain Size Distribution



PSEP Grain Size Distribution



PSEP Grain Size Distribution



◆ LDW20-IT151 ● LDW20-IT146

Harold L Benny & Associates, LLC

Project: Duwanish A0C4
 HLB Project #: 20-053
 Date Started: 6-9-2020
 Sample ID: LDW20-SC169A

Client: Anchor QEA
 Date Complete: 6-13-2020
 Tested by: HBenny

Sample Description: Dark Grey Silt/clay

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	228
	Tare Wt	1.6315
	Wet Wt + Tare	30.7321
	Dry Wt + Tare	12.9894
Test Sample	Tare No.	228
	Tare Wt	51.4959
	Wet Wt + Tare	94.3624
	Dry Wt + Tare	55.4910
	Cylinder #	C-15

Sieve Analysis

Tare Weight	51.5027
4	-
10	51.5272
18	51.7521
35	52.0687
60	52.3301
120	52.8732
230	54.6010
Pan	0.9959

Pipette Analysis

	Tare #	Tare Weight	Dry Weight
6/16/2020			
8:30:00 AM			
8:30:20 AM	1	1.6361	1.9274
8:31:51 AM	2	1.6399	1.8777
8:37:25 AM	3	1.6462	1.7861
8:59:41 AM	4	1.6376	1.7250
10:29:00 AM	5	1.6503	1.7072
4:26:00 PM	6	1.6503	1.6988
6:38:00 AM	7	1.6380	1.6787

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC 4
 HLB Project #: 20-053
 Date Started: 6-9-2020
 Sample ID: LDW20-SC169 B

Client: Anchor QEA
 Date Complete: 6-13-2020
 Tested by: H Benny

Sample Description: Dark Grey Silt/Clay

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	237
	Tare Wt	1.6484
	Wet Wt + Tare	32.6676
	Dry Wt + Tare	13.7959
Test Sample	Tare No.	237
	Tare Wt	51.1092
	Wet Wt + Tare	91.1161
	Dry Wt + Tare	55.0924
	Cylinder #	C-16

Sieve Analysis

Tare Weight	51.1172
4	-
10	51.1235
18	51.5693
35	51.7981
60	52.0403
120	52.5269
230	54.1682
Pan	1.0201

Pipette Analysis

6/16/2020	Tare #	Tare Weight	Dry Weight
8:34:00 AM			
8:34:20 AM	1	1.6450	1.9148
8:35:51 AM	2	1.6351	1.8606
8:41:25 AM	3	1.6449	1.7825
9:03:41 AM	4	1.6498	1.7305
10:33:00 AM	5	1.6487	1.7066
4:30:00 PM	6	1.6526	1.7021
6:42:00 AM	7	1.6544	1.6934

Notes:

Harold L Benny & Associates, LLC

Project: Duwemish AOC4
 HLB Project #: 20-053
 Date Started: 6-9-2020
 Sample ID: LDW20-SC169C

Client: Anchor QEA
 Date Complete: 6-13-2020
 Tested by: H Benny

Sample Description: Dark Grey Silt/clay

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content		
Tare No.	206	
Tare Wt	1.6493	
Wet Wt + Tare	34.6487	
Dry Wt + Tare	14.5792	
Test Sample		
Tare No.	206	
Tare Wt	50.7054	
Wet Wt + Tare	91.7219	
Dry Wt + Tare	54.9672	
Cylinder #	C-23	

Sieve Analysis

Tare Weight	50.7174
4	-
10	50.7548
18	51.1246
35	51.3656
60	51.6060
120	52.1356
230	53.8337
Pan	1.2087

Pipette Analysis

6/16/2020	Tare #	Tare Weight	Dry Weight
8:38:00 AM			
8:38:20 AM	1	1.6522	1.9299
8:39:51 AM	2	1.6487	1.8809
8:45:25 AM	3	1.6589	1.7947
9:07:41 AM	4	1.6404	1.7215
10:37:00 AM	5	1.6438	1.7015
4:34:00 PM	6	1.6345	1.6830
6:46:00 AM	7	1.6381	1.6772

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-053
 Date Started: 6-9-2020
 Sample ID: LDW20-SC322

Client: Anchor QEA
 Date Complete: 6-13-2020
 Tested by: H Benny

Sample Description: Dark Grey Silt/clay

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	246
	Tare Wt	1.6529
	Wet Wt + Tare	35.7722
	Dry Wt + Tare	18.3412
Test Sample	Tare No.	246
	Tare Wt	51.7945
	Wet Wt + Tare	90.7611
	Dry Wt + Tare	59.0974
	Cylinder #	C-51

Sieve Analysis

Tare Weight	51.8092
4	—
10	51.8210
18	52.0570
35	52.2907
60	52.4828
120	53.5981
230	57.3503
Pan	1.7902

Pipette Analysis

6/16/2020	Tare #	Tare Weight	Dry Weight
9:02:00 AM			
9:02:20 AM	1	1.6473	1.9330
9:03:51 AM	2	1.6454	1.8530
9:09:25 AM	3	1.6561	1.7774
9:31:41 AM	4	1.6470	1.7299
11:01:00 AM	5	1.6502	1.7063
4:58:00 PM	6	1.6451	1.6925
7:10:00 AM	7	1.6249	1.6652

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-053
 Date Started: 6-9-2020
 Sample ID: LDW20-SC336

Client: Anchor QEA
 Date Complete: 6-13-2020
 Tested by: HBenny

Sample Description: Dark Grey Silt/clay

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	204
	Tare Wt	1.6218
	Wet Wt + Tare	31.9234
	Dry Wt + Tare	15.4176
Test Sample	Tare No.	204
	Tare Wt	51.3143
	Wet Wt + Tare	92.5954
	Dry Wt + Tare	57.5448
	Cylinder #	C-32

Sieve Analysis

Tare Weight	51.3249
4	—
10	51.3292
18	51.8063
35	52.0436
60	52.2574
120	53.1457
230	55.7614
Pan	1.8066

Pipette Analysis

6/16/2020	Tare #	Tare Weight	Dry Weight
9:06:00 AM			
9:06:20 AM	1	1.6482	1.9540
9:07:51 AM	2	1.6515	1.8910
9:13:25 AM	3	1.6549	1.7689
9:35:41 AM	4	1.6514	1.7285
11:05:00 AM	5	1.6518	1.7091
5:02:00 PM	6	1.6444	1.6929
7:14:00 AM	7	1.6463	1.6869

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-053
 Date Started: 6-9-2020
 Sample ID: LDW20-SC336 FD

Client: Anchor

Date Complete: 6-13-2020
 Tested by: H Benny

Sample Description: Dark Grey silt/clay

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	221
	Tare Wt	1.6334
	Wet Wt + Tare	29.4822
	Dry Wt + Tare	14.3463
Test Sample	Tare No.	221
	Tare Wt	51.9563
	Wet Wt + Tare	91.2238
	Dry Wt + Tare	57.3166
	Cylinder #	C-31

Sieve Analysis

Tare Weight	51.9662
4	—
10	51.9680
18	52.3523
35	52.5838
60	52.8006
120	53.6667
230	56.1554
Pan	1.2017

Pipette Analysis

6/16/2020	Tare #	Tare Weight	Dry Weight
9:10:00 AM			
9:10:20 AM	1	1.6411	1.9279
9:11:51 AM	2	1.6452	1.8751
9:17:25 AM	3	1.6499	1.7625
9:39:41 AM	4	1.6485	1.7259
11:09:00 AM	5	1.6487	1.7049
5:06:00 PM	6	1.6404	1.6917
7:18:00 AM	7	1.6352	1.6767

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-053
 Date Started: 6-9-2020
 Sample ID: LDW20-IT215

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Reddish Gravelly Silty Sand

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	254
	Tare Wt	1.6453
	Wet Wt + Tare	46.1142
	Dry Wt + Tare	35.4580
Test Sample	Tare No.	254
	Tare Wt	52.75 ¹⁵ 1.60
	Wet Wt + Tare	159.3732
	Dry Wt + Tare	123.8884
	Cylinder #	C-10

Sieve Analysis

Tare Weight	52.7953
4	75.5870
10	83.8179
18	90.4398
35	98.5894
60	109.7084
120	117.7559
230	122.7740
Pan	1.6575

1/2" = 61.3570
 3/8" = 67.3956

Pipette Analysis

6/16/2020	Tare #	Tare Weight	Dry Weight
8:46:00 AM			
8:46:20 AM	1	1.6493	1.8821
8:47:51 AM	2	1.6480	1.8352
8:53:25 AM	3	1.6478	1.7845
9:15:41 AM	4	1.6436	1.7526
10:45:00 AM	5	1.6478	1.7191
4:42:00 PM	6	1.6313	1.6932
6:54:00 AM	7	1.6342	1.6826

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC 4
 HLB Project #: 20-053
 Date Started: 6-9-2020
 Sample ID: LDW20-IT240

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey Silt Sandy Silt w/ Gravel

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	249
	Tare Wt	1.6314
	Wet Wt + Tare	52.2561
	Dry Wt + Tare	34.7286
Test Sample	Tare No.	249
	Tare Wt	51.7970
	Wet Wt + Tare	121.0429
	Dry Wt + Tare	87.2025
	Cylinder #	C-50

Sieve Analysis

Tare Weight	51.8130
4	58.5952
10	62.0589
18	64.6989
35	67.3839
60	73.8312
120	80.0674
230	84.9912
Pan	2.3930

1/2" = 54.3257
 3/8" = 56.6707

Pipette Analysis

6/16/2020	Tare #	Tare Weight	Dry Weight
8:50:00 AM			
8:50:20 AM	1	1.6456	1.9323
8:51:51 AM	2	1.6510	1.8704
8:57:25 AM	3	1.6510	1.7970
9:19:41 AM	4	# 1.64504	1.7538
10:49:00 AM	5	1.6556	1.7265
4:46:00 PM	6	1.6521	1.7065
6:58:00 AM	7	1.6445	1.6880

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish A04
 HLB Project #: 20-053
 Date Started: 6-9-2020
 Sample ID: LDW20-IT247

Client: Anchor
 Date Complete: _____
 Tested by: H Benny

Sample Description: Dark Grey Gravelly Sandy Silt

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	148
	Tare Wt	1.6504
	Wet Wt + Tare	40.5234
	Dry Wt + Tare	29.1000
Test Sample	Tare No.	248
	Tare Wt	91.8645
	Wet Wt + Tare	122.4978
	Dry Wt + Tare	93.2435
	Cylinder #	C-9

Sieve Analysis

Tare Weight	51.8827
4	54.3542
10	56.8784
18	58.8382
35	63.7684
60	75.3650
120	83.9422
230	90.1880
Pan	3.1954

$\frac{7}{8} = 52.6864$

Pipette Analysis

6/16/2020	Tare #	Tare Weight	Dry Weight
8:54:00 AM			
8:54:20 AM	1	1.6451	1.9028
8:55:51 AM	2	1.6503	1.8399
9:01:25 AM	3	1.6458	1.7721
9:23:41 AM	4	1.6441	1.7381
10:53:00 AM	5	1.6442	1.7114
4:50:00 PM	6	1.6450	1.6996
7:02:00 AM	7	1.6507	1.6921

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-053
 Date Started: 6-9-2020
 Sample ID: LDW20-IT365

Client: Anchor
 Date Complete: _____
 Tested by: H Benny

Sample Description: Dark Gray Sandy Silt

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	234
	Tare Wt	1.6402
	Wet Wt + Tare	39.7613
	Dry Wt + Tare	28.4196
Test Sample	Tare No.	234
	Tare Wt	51.5760
	Wet Wt + Tare	112.1522
	Dry Wt + Tare	86.4385
	Cylinder #	C-42

Sieve Analysis

Tare Weight	51.5824
4	52.0038
10	52.0601
18	52.2812
35	55.6588
60	67.4228
120	80.7647
230	85.0365
Pan	1.3650

Pipette Analysis

6/16/2020	Tare #	Tare Weight	Dry Weight
9:14:00 AM			
9:14:20 AM	1	1.6401	1.8329
9:15:51 AM	2	1.6365	1.7854
9:21:25 AM	3	1.6405	1.7433
9:43:41 AM	4	1.6499	1.7252
11:13:00 AM	5	1.6399	1.6938
5:10:00 PM	6	1.6408	1.6838
7:22:00 AM	7	1.6431	1.6779

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish A004
 HLB Project #: 20-053
 Date Started: 6-9-2020
 Sample ID: LDW20-IT365FD

Client: Anchor

Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey Sandy Silt

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	209
	Tare Wt	1.63879
	Wet Wt + Tare	37.5519
	Dry Wt + Tare	26.8973
Test Sample	Tare No.	209
	Tare Wt	50.8361
	Wet Wt + Tare	107.7263
	Dry Wt + Tare	83.3246
	Cylinder #	C-8

Sieve Analysis

Tare Weight	50.8372
4	—
10	50.8524
18	51.0530
35	54.2093
60	65.1481
120	77.9059
230	81.9704
Pan	1.3561

Pipette Analysis

6/16/2020	Tare #	Tare Weight	Dry Weight
9:18:00 AM			
9:18:20 AM	1	1.6474	1.8375
9:19:51 AM	2	1.6413	1.7809
9:25:25 AM	3	1.6481	1.7456
9:47:41 AM	4	1.6519	1.7239
11:17:00 AM	5	1.6440	1.6943
5:14:00 PM	6	1.6453	1.6917
7:26:00 AM	7	1.6421	1.6763

*B 1.6872

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-053
 Date Started: 6-9-2020
 Sample ID: LDW20-IT361

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey Sandy Silt

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	214
	Tare Wt	1.6412
	Wet Wt + Tare	41.7059
	Dry Wt + Tare	28.6006
Test Sample	Tare No.	214
	Tare Wt	50.9549
	Wet Wt + Tare	106.7066
	Dry Wt + Tare	80.8175
	Cylinder #	C-17

Sieve Analysis

Tare Weight	50.9621
4	51.5885
10	51.7492
18	52.2782
35	55.1960
60	62.6647
120	70.5066
230	78.4535
Pan	2.3872

Pipette Analysis

6/16/2020	Tare #	Tare Weight	Dry Weight
9:22:00 AM			
9:22:20 AM	1	1.6462	1.86813
9:23:51 AM	2	1.6418	1.7802
9:29:25 AM	3	1.6424	1.7329
9:51:41 AM	4	1.6418	1.7108
11:21:00 AM	5	1.6410	1.6911
5:18:00 PM	6	1.6386	1.6772
7:30:00 AM	7	1.6393	1.6746

HB

Notes:

Harold L Benny & Associates, LLC

Project: Dulwamish AOC 4
 HLB Project #: 20-053
 Date Started: 6-9-2020
 Sample ID: LDW20-JT139

Client: Anchor
 Date Complete: _____
 Tested by: H Benny

Sample Description: Brown Sandy Silt

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	227
	Tare Wt	1.6464
	Wet Wt + Tare	47.9464
	Dry Wt + Tare	35.8541
Test Sample	Tare No.	227
	Tare Wt	51.0551
	Wet Wt + Tare	103.0820
	Dry Wt + Tare	83.7168
	Cylinder #	C-25

Sieve Analysis

Tare Weight	51.0576	HR
4	0	
10	51.6408	
18	51.9137	
35	53.0717	
60	61.5360	
120	73.3940	
230	82.0047	
Pan	1.7908	

Pipette Analysis

6/16/2020	Tare #	Tare Weight	Dry Weight
9:26:00 AM			
9:26:20 AM	1	1.6402	1.8023
9:27:51 AM	2	1.6403	1.7401
9:33:25 AM	3	1.6451	1.7161
9:55:41 AM	4	1.6437	1.6990
11:25:00 AM	5	1.6521	1.6958
5:22:00 PM	6	1.6502	1.6863
7:34:00 AM	7	1.6466	1.6740

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-053
 Date Started: 6-9-2020
 Sample ID: LDW20-IT151

Client: Anchor QEA
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey Sandy Silt w/ Gravel

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	253
	Tare Wt	1.6341
	Wet Wt + Tare	38.7076
	Dry Wt + Tare	25.8336
Test Sample	Tare No.	253
	Tare Wt	51.9393
	Wet Wt + Tare	118.6063
	Dry Wt + Tare	85.0100
	Cylinder #	C-43

Sieve Analysis

Tare Weight	51.9484
4	—
10	56.6725
18	64.0446
35	71.5845
60	78.7596
120	81.1160
230	83.5248
Pan	1.3980

Pipette Analysis

6/16/2020	Tare #	Tare Weight	Dry Weight
9:30:00 AM			
9:30:20 AM	1	1.6447	1.8971
9:31:51 AM	2	1.6532	1.8551
9:37:25 AM	3	1.6464	1.7812
9:59:41 AM	4	1.6478	1.7425
11:29:00 AM	5	1.6582	1.7217
5:26:00 PM	6	1.6471	1.6971
7:38:00 AM	7	1.6517	1.6880

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC 4
 HLB Project #: 20-053
 Date Started: 6-9-2020
 Sample ID: LDW20-IT146

Client: AnchorQEA
 Date Complete: _____
 Tested by: HBenny

Sample Description: Brown Gravelly Silty Sand

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	247
	Tare Wt	1.6425
	Wet Wt + Tare	39.8052
	Dry Wt + Tare	28.6197
Test Sample	Tare No.	247
	Tare Wt	51.8640
	Wet Wt + Tare	145.6763 + 47.7567
	Dry Wt + Tare	115.2020 145.5108
	Cylinder #	C-1

Sieve Analysis

Tare Weight	51.8748
4	63.4278
10	69.3608
18	73.6652
35	78.6411
60	93.4003
120	106.7313
230	113.8105
Pan	1.6940

$3/8" = 57.9319$

Pipette Analysis

6/16/2020	Tare #	Tare Weight	Dry Weight
9:34:00 AM			
9:34:20 AM	1	1.6491	1.8530
9:35:51 AM	2	1.6478	1.7898
9:41:25 AM	3	1.6482	1.7558
10:03:41 AM	4	1.6450	1.7308
11:33:00 AM	5	1.6422	1.7107
5:30:00 PM	6	1.6455	1.6985
7:42:00 AM	7	1.6415	1.6771

Tare = 51.8711
 $3/8" = 56.7581$
 4 66.6263
 10 75.2722
 18 82.1917
 35 90.0136
 60 112.4909
 120 133.5926
 230 144.5209
 Pan 1.2633

Notes: glass shard on #4 sieve

Harold L Benny & Associates, LLC

Project: Duwanigh AOC4
 HLB Project #: 20-053
 Date Started: 10-9-2020
 Sample ID: LDW20-IT310

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey silt/clay

Calgon Batch:

Temperature:

Solids Content

		Tare No.	202
Moisture Content	Tare Wt	1.6420	
	Wet Wt + Tare	34.2712	
	Dry Wt + Tare	18.4240	
	Test Sample		Tare No.
		Tare Wt	49.9884
		Wet Wt + Tare	90.5854
		Dry Wt + Tare	57.7896
		Cylinder #	C-14

Sieve Analysis

Tare Weight	50.0159
4	—
10	50.0174
18	50.2388
35	50.3815
60	50.4902
120	51.3810
230	55.7198
Pan	2.1112

Pipette Analysis

6/16/2020	Tare #	Tare Weight	Dry Weight
8:58:00 AM			
8:58:20 AM	1	1.6516	1.9690
8:59:51 AM	2	1.6509	1.8722
9:05:25 AM	3	1.6454	1.7813
9:27:41 AM	4	1.6464	1.7415
10:57:00 AM	5	1.6558	1.7195
4:54:00 PM	6	1.6537	1.7044
7:06:00 AM	7	1.6478	1.6873

Notes:

Harold L Benny & Associates, LLC

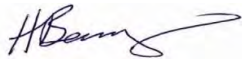
Project: Duwamish AOC4
Date Received: June 8, 2020
Date Started: June 9, 2020
Date Finished: June 14, 2020

Client: AnchorQEA
HLB Project #: 20-054
Tested By: H Benny

CASE NARRATIVE

1. Eleven samples were submitted for analysis. Eleven samples are represented on this report. They 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 the job was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. Some samples contained a lot of sand and some gravel.
4. The samples contained organic matter which may have broken down during the oven drying and sieving process, affecting the grain size analysis.
5. The data is provided in summary tables and plots.
6. There were no other noted anomalies in the testing or samples on project.

Reviewed by:



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 8, 2020
Date Started: June 9, 2020
Date Finished: June 14, 2020

Client: AnchorQEA
Project #: 20-054
Tested by: H Benny

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	Phi Size	Phi Size						Phi Size	Phi Size	Phi Size	Phi Size	Phi Size	Phi Size
	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
	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
LDW20-SC121	100.0	100.0	99.9	99.4	93.9	82.0	62.3	34.3	22.2	14.6	9.9	6.8	4.7	3.3
	100.0	100.0	99.9	99.4	94.3	82.3	63.6	34.8	22.0	14.7	10.0	7.3	4.6	3.2
	100.0	100.0	100.0	99.5	94.1	82.1	62.3	34.4	22.0	15.9	10.2	7.0	4.6	3.0
LDW20-IT106	100.0	95.3	83.7	76.5	66.1	43.1	33.7	26.9	18.5	12.6	8.4	5.8	3.4	2.2
LDW20-SC102	100.0	100.0	98.3	96.7	94.1	89.5	77.4	57.3	43.2	28.3	18.8	12.5	8.2	6.2
LDW20-SC101	100.0	100.0	99.5	98.4	90.7	69.9	60.6	47.8	34.9	24.0	15.3	9.5	6.4	4.3
LDW20-SC117	100.0	100.0	99.9	98.9	97.6	94.6	87.6	68.6	50.3	35.3	21.0	13.3	9.1	6.2
LDW20-SC123	100.0	100.0	99.5	98.3	95.5	88.0	78.4	61.9	46.1	31.3	21.2	13.5	9.2	6.2
LDW20-SC123FD	100.0	100.0	99.4	98.1	95.3	87.8	78.2	61.9	44.9	31.6	20.2	12.9	9.0	6.7
LDW20-SC125	100.0	100.0	99.7	98.2	96.9	94.6	90.2	77.2	60.6	41.1	27.6	17.0	11.2	8.3
LDW20-IT105	100.0	100.0	97.4	95.1	88.6	65.0	50.1	38.4	31.1	21.6	13.9	8.5	5.1	3.6
LDW20-SC130	100.0	100.0	99.1	97.7	93.3	74.3	52.3	40.2	30.4	20.7	12.2	8.0	5.5	3.8
LDW20-IT127	100.0	100.0	96.2	93.1	78.3	44.7	33.0	25.4	20.0	14.8	9.1	6.0	3.8	3.0

Reviewed by:  _____

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 8, 2020
Date Started: June 9, 2020
Date Finished: June 14, 2020

Client: AnchorQEA
HLB Project #: 20-054
Tested by: H Benny

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)
LDW20-SC121	0.1	0.5	5.4	11.9	19.7	28.0	12.0	7.6	4.7	3.1	2.2	1.4	3.3	34.3
	0.1	0.5	5.1	12.0	18.8	28.8	12.8	7.3	4.7	2.7	2.7	1.4	3.2	34.8
	0.0	0.5	5.4	12.0	19.8	27.9	12.4	6.1	5.7	3.1	2.5	1.6	3.0	34.4
LDW20-IT106	16.3	7.2	10.4	23.0	9.4	6.8	8.4	5.9	4.2	2.6	2.4	1.2	2.2	26.9
LDW20-SC102	1.7	1.6	2.5	4.7	12.1	20.1	14.1	14.9	9.6	6.2	4.3	2.1	6.2	57.3
LDW20-SC101	0.5	1.0	7.8	20.8	9.3	12.8	12.9	10.8	8.8	5.8	3.1	2.1	4.3	47.8
LDW20-SC117	0.1	0.9	1.4	3.0	7.0	19.0	18.3	15.0	14.3	7.7	4.2	2.9	6.2	68.6
LDW20-SC123	0.5	1.1	2.8	7.5	9.6	16.5	15.8	14.8	10.0	7.7	4.3	3.0	6.2	61.9
LDW20-SC123FD	0.6	1.3	2.8	7.5	9.6	16.3	17.1	13.3	11.3	7.4	3.8	2.4	6.7	61.9
LDW20-SC125	0.3	1.5	1.3	2.4	4.3	13.0	16.7	19.4	13.5	10.7	5.8	2.9	8.3	77.2
LDW20-IT105	2.6	2.2	6.6	23.5	15.0	11.7	7.3	9.5	7.7	5.4	3.4	1.5	3.6	38.4
LDW20-SC130	0.9	1.4	4.4	19.0	22.0	12.1	9.8	9.7	8.5	4.2	2.6	1.7	3.8	40.2
LDW20-IT127	3.8	3.1	14.8	33.6	11.7	7.6	5.4	5.2	5.6	3.1	2.3	0.7	3.0	25.4

Reviewed by: 

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 8, 2020
Date Started: June 9, 2020
Date Finished: June 14, 2020

Client: AnchorQEA
HLB Project #: 20-054
Tested by: H Benny

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
LDW20-SC121	100.0	100.0	99.9	99.4	93.9	82.0	62.3	34.3	22.2	14.6	9.9	6.8	4.7	3.3
	100.0	100.0	99.9	99.4	94.3	82.3	63.6	34.8	22.0	14.7	10.0	7.3	4.6	3.2
	100.0	100.0	100.0	99.5	94.1	82.1	62.3	34.4	22.0	15.9	10.2	7.0	4.6	3.0
AVE	100.0	100.0	99.9	99.4	94.1	82.1	62.7	34.5	22.1	15.1	10.0	7.1	4.6	3.1
STDEV	0.0	0.0	0.0	0.1	0.2	0.1	0.6	0.2	0.1	0.6	0.1	0.2	0.1	0.1
%RSD	0.0	0.0	0.0	0.1	0.2	0.2	1.0	0.6	0.5	3.8	1.0	2.7	1.1	4.1

The Triplicate Applies To The Following Samples

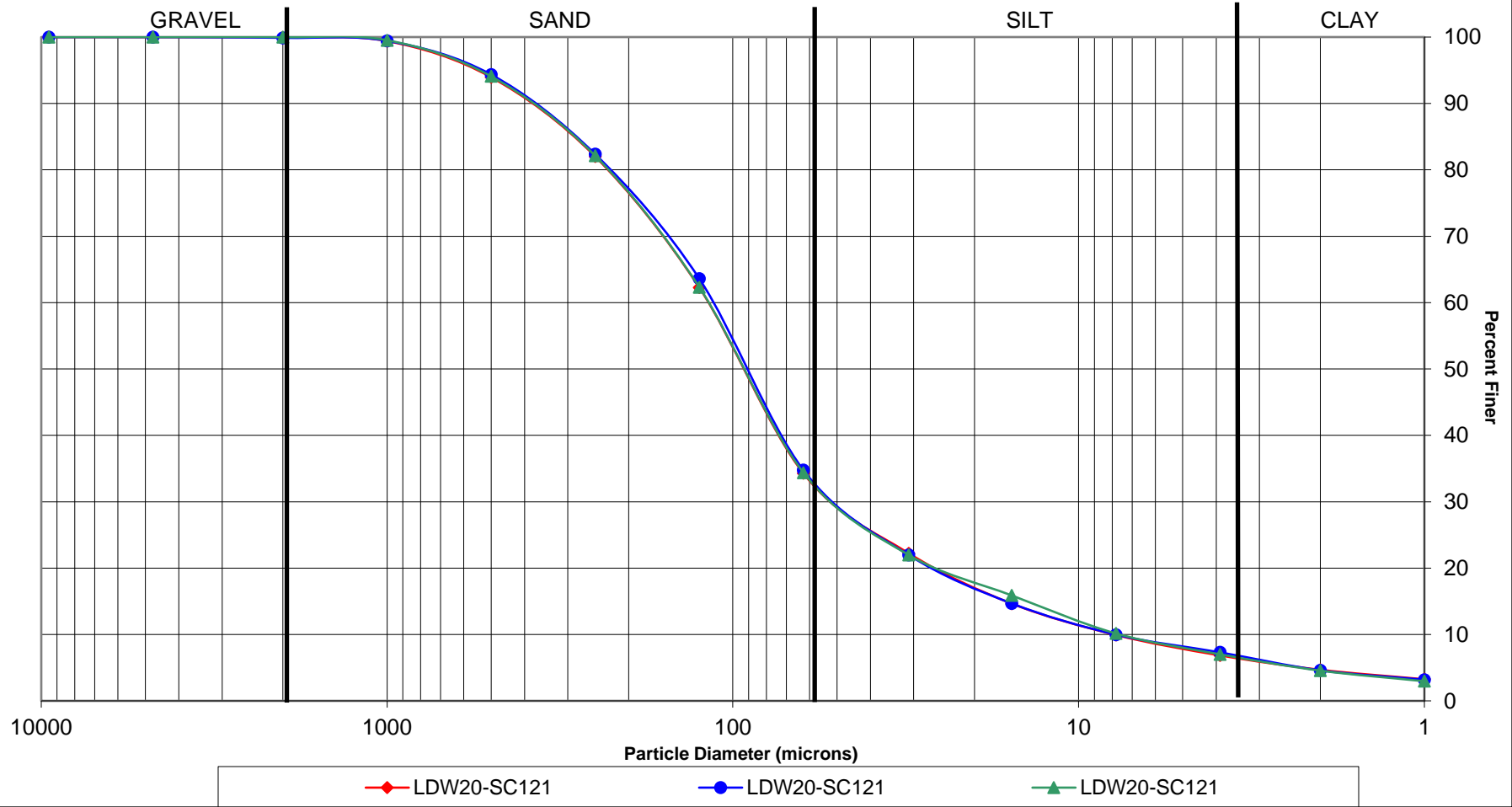
Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
LDW20-SC121	6/2/2020	6/9/2020	6/14/2020	100.6		9.8
	6/2/2020	6/9/2020	6/14/2020	102.4		9.9
	6/2/2020	6/9/2020	6/14/2020	100.6		9.6
LDW20-IT106	6/2/2020	6/9/2020	6/14/2020	103.5		8.9
LDW20-SC102	6/2/2020	6/9/2020	6/14/2020	99.6		14.3
LDW20-SC101	6/2/2020	6/9/2020	6/14/2020	99.2		12.3
LDW20-SC117	6/2/2020	6/9/2020	6/14/2020	99.8		15.8
LDW20-SC123	6/2/2020	6/9/2020	6/14/2020	100.3		13.3
LDW20-SC123FD	6/2/2020	6/9/2020	6/14/2020	100.8		12.7
LDW20-SC125	6/2/2020	6/9/2020	6/14/2020	100.6		16.1
LDW20-IT105	6/2/2020	6/9/2020	6/14/2020	96.1		9.0
LDW20-SC130	6/2/2020	6/9/2020	6/14/2020	100.9		9.4
LDW20-IT127	6/2/2020	6/9/2020	6/14/2020	98.3		6.0

Notes to the Testing: Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution.

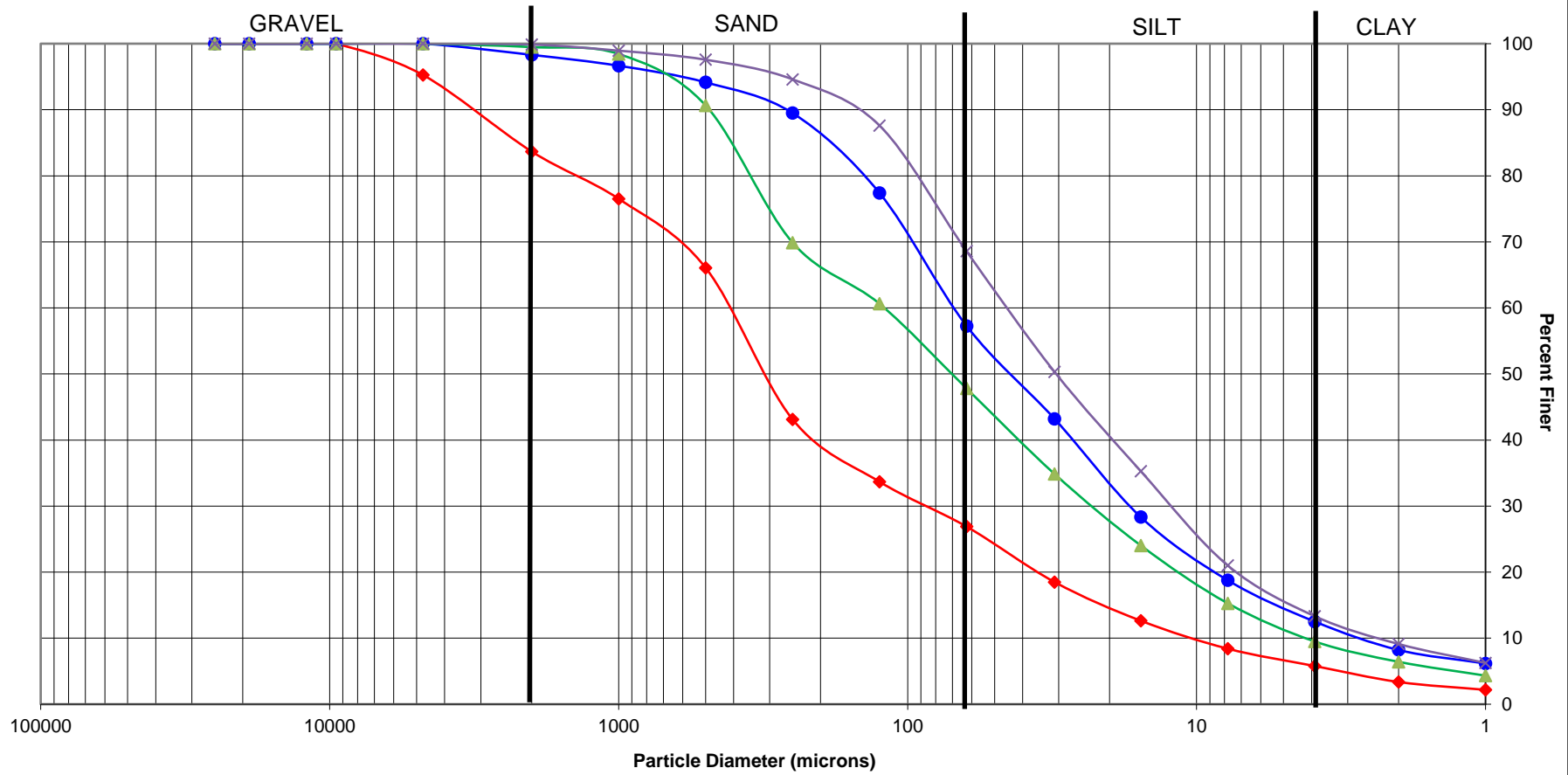
Reviewed by: 

PSEP Grain Size Distribution

Triplicate Sample Plot

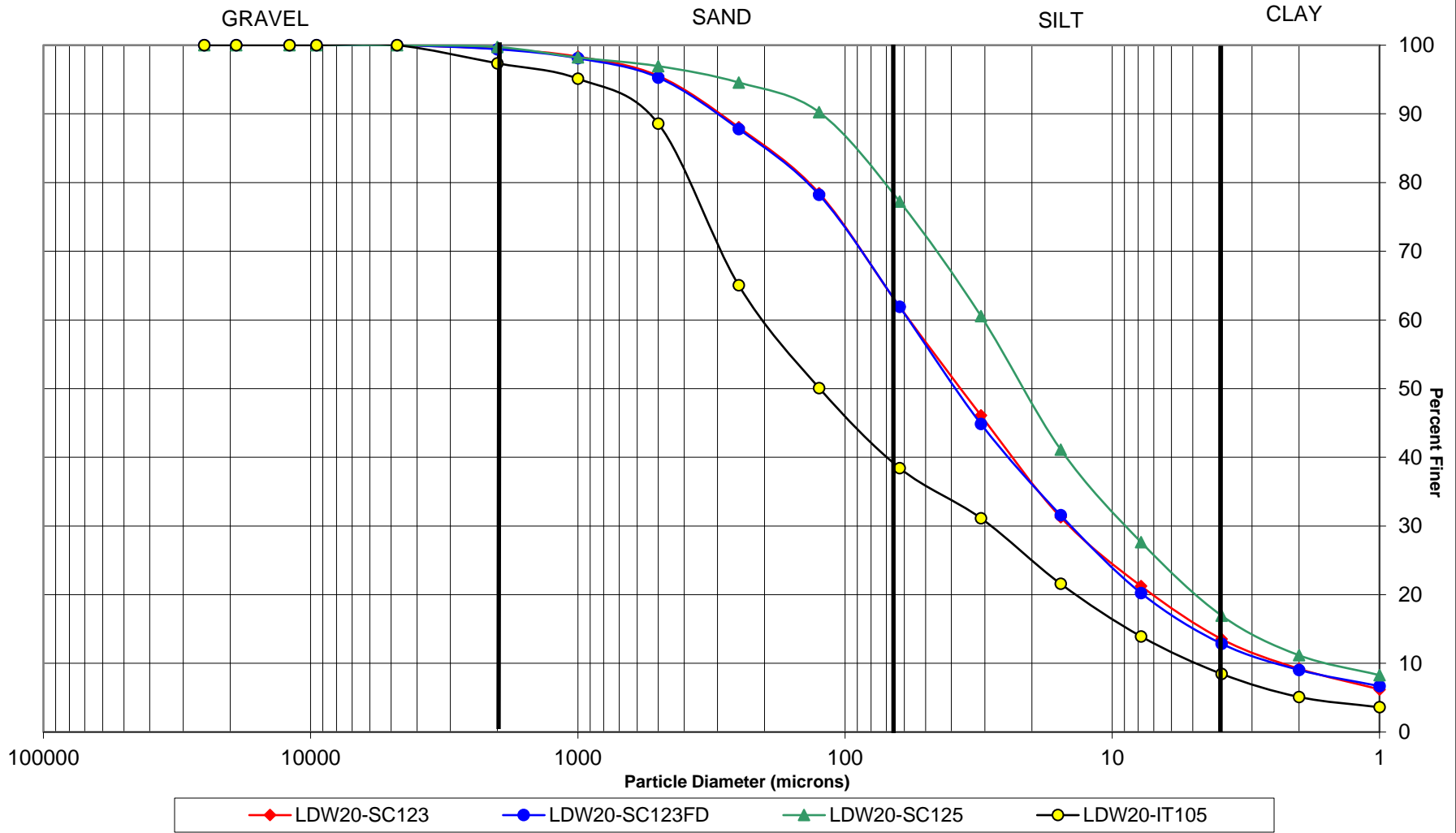


PSEP Grain Size Distribution

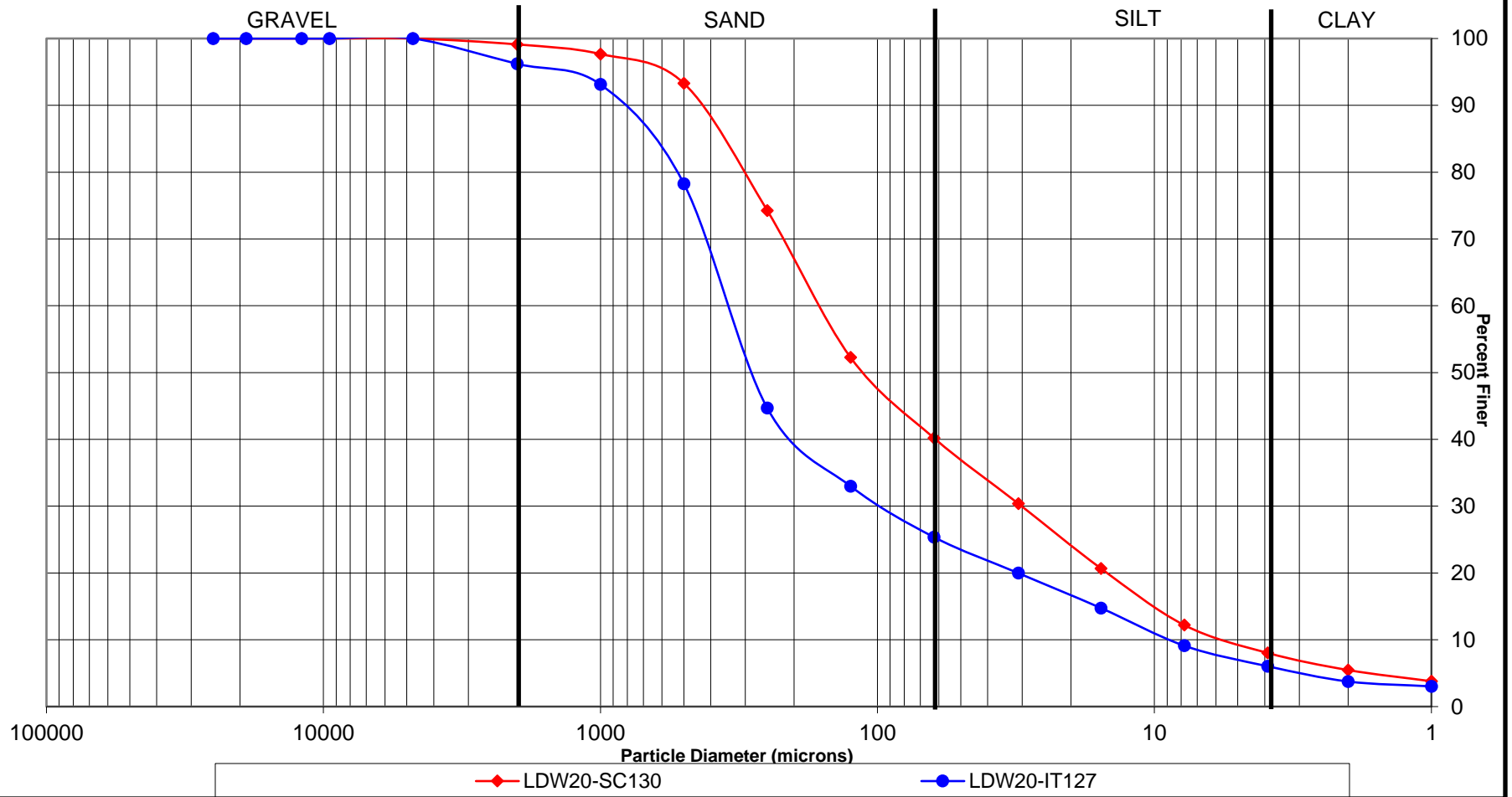


◆ LDW20-IT106 ● LDW20-SC102 ▲ LDW20-SC101 ✕ LDW20-SC117

PSEP Grain Size Distribution



PSEP Grain Size Distribution



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-054
 Date Started: 6-9-2020
 Sample ID: LDW20-SC121 A

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey ^{Fine} Sandy Silt

Calgon Batch:

Temperature:

Solids Content

Sieve Analysis

Moisture Content	Tare No.	217
	Tare Wt	1.6495
	Wet Wt + Tare	42.875
	Dry Wt + Tare	29.8789
Test Sample	Tare No.	217
	Tare Wt	51.7838
	Wet Wt + Tare	93.4923
	Dry Wt + Tare	72.5062
	Cylinder #	C-55

8688 HB

Tare Weight	51.7918
4	-
10	51.8099
18	51.9652
35	53.5218
60	56.9346
120	62.5737
230	70.5678
Pan	2.0263

Pipette Analysis

	Tare #	Tare Weight	Dry Weight
6/12/2020			
9:42:00 AM			
9:42:20 AM	1	1.6377	1.84670
9:43:51 AM	2	1.6412	1.7845
9:49:25 AM	3	1.6371	1.7373
10:11:41 AM	4	1.6511	1.7245
11:41:00 AM	5	1.6468	1.7027
5:38:00 PM	6	1.6418	1.6854
7:50:00 AM	7	1.6430	1.6785

HB

Notes:

Harold L Benny & Associates, LLC

Project: Diwanish AOC4
 HLB Project #: 20-054
 Date Started: 6-9-2020
 Sample ID: LDW20-SC121 B

Client: Anchor
 Date Complete: _____
 Tested by: H Benny

Sample Description: Dark Grey Fine Sandy Silt

Calgon Batch:

Temperature:

Solids Content

Sieve Analysis

Moisture Content	Tare No.	207
	Tare Wt	1.6525
	Wet Wt + Tare	46.7530
	Dry Wt + Tare	32.4953
Test Sample	Tare No.	207
	Tare Wt	50.1622
	Wet Wt + Tare	91.68281 #B
	Dry Wt + Tare	70.6517
	Cylinder #	C-36

Tare Weight	50.1661
4	—
10	50.1995
18	50.3277
35	51.7683
60	55.1724
120	60.4894
230	68.6656
Pan	2.0236

Pipette Analysis

6/12/2020	Tare #	Tare Weight	Dry Weight
9:46:00 AM			
9:46:20 AM	1	1.6457	1.8467
9:47:51 AM	2	1.6547	1.7935
9:53:25 AM	3	1.6505	1.7488
10:15:41 AM	4	1.6453	1.7176
11:45:00 AM	5	1.6393	1.6968
5:42:00 PM	6	1.6419	1.6844
7:54:00 AM	7	1.6514	1.6861

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-054
 Date Started: 6-9-2020
 Sample ID: LDW20-SC121C

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey Fine Sandy Silt

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	256
	Tare Wt	1.6513
	Wet Wt + Tare	51.6185
	Dry Wt + Tare	35.8455
Test Sample	Tare No.	256
	Tare Wt	51.5701
	Wet Wt + Tare	92.5283
	Dry Wt + Tare	71.7818
	Cylinder #	C-46

Sieve Analysis

Tare Weight	51.5826
4	-
10	51.5874
18	51.7175
35	53.2415
60	56.5988
120	62.1442
230	69.9747
Pan	1.8188

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Pipette Analysis

6/12/2020	Tare #	Tare Weight	Dry Weight
9:50:00 AM			
9:50:20 AM	1	1.6532	1.8595
9:51:51 AM	2	1.6464	1.7859
9:57:25 AM	3	1.6394	1.7449
10:19:41 AM	4	1.6461	1.7197
11:49:00 AM	5	1.6491	1.7052
5:46:00 PM	6	1.6499	1.6923
7:58:00 AM	7	1.6488	1.6823

Notes:

Harold L Benny & Associates, LLC

Project: DuWamish AOC4
 HLB Project #: 20-054
 Date Started: 6-9-2020
 Sample ID: LDW20-IT106

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Grey Silt w/ Gravel

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	226
	Tare Wt	1.6534
	Wet Wt + Tare	30.5027
	Dry Wt + Tare	19.7686
Test Sample	Tare No.	226
	Tare Wt	51.5556
	Wet Wt + Tare	104.0715
	Dry Wt + Tare	76.8646
	Cylinder #	C-20

Sieve Analysis

Tare Weight	51.5646
4	53.1299
10	56.9473
18	59.3093
35	62.7521
60	70.3221
120	73.4354
230	75.6729
Pan	1.2261

Pipette Analysis

6/12/2020	Tare #	Tare Weight	Dry Weight
9:54:00 AM			
9:54:20 AM	1	1.6481	1.8205
9:55:51 AM	2	1.6475	1.7824
10:01:25 AM	3	1.6492	1.7468
10:23:41 AM	4	1.6509	1.7215
11:53:00 AM	5	1.6542	1.7081
5:50:00 PM	6	1.6554	1.6939
8:02:00 AM	7	1.6327	1.6636

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-054
 Date Started: 6-9-2020
 Sample ID: LDW20-SC102

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey Silt/Clay

Calgon Batch: 18

Temperature: 22

Solids Content

Moisture Content	
Tare No.	205
Tare Wt	16482
Wet Wt + Tare	35.6413
Dry Wt + Tare	22.1187
Test Sample	
Tare No.	205
Tare Wt	50.0151
Wet Wt + Tare	91.5686
Dry Wt + Tare	62.4857
Cylinder #	C-4

Sieve Analysis

Tare Weight	50.0273
4	-
10	50.4509
18	50.8635
35	51.4922
60	52.6578
120	55.6881
230	60.7202
Pan	1.8028

Pipette Analysis

6/12/2020	Tare #	Tare Weight	Dry Weight
9:58:00 AM			
9:58:20 AM	1	1.6557	1.9613
9:59:51 AM	2	1.6548	1.8889
10:05:25 AM	3	1.6492	1.8186
10:27:41 AM	4	1.6518	1.7631
11:57:00 AM	5	1.6440	1.7239
5:54:00 PM	6	1.6415	1.6998
8:06:00 AM	7	1.6337	1.6817

Notes:

Harold L Benny & Associates, LLC

Project: Dunwich AOC4
 HLB Project #: 20-054
 Date Started: 6-9-2020
 Sample ID: LDW20-SC101

Client: Anchor

Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey Silt/clay

Calgon Batch: 18

Temperature: 22

Solids Content

Moisture Content	Tare No.	252
	Tare Wt	1.6409
	Wet Wt + Tare	38.0707
	Dry Wt + Tare	24.3254
Test Sample	Tare No.	252
	Tare Wt	62.1892
	Wet Wt + Tare	93.5838
	Dry Wt + Tare	67.1704
	Cylinder #	C-13

Sieve Analysis

Tare Weight	52.1982
4	-
10	52.3321
18	52.6010
35	54.6078
60	59.9616
120	62.3504
230	65.6538
Pan	1.5791

Pipette Analysis

6/12/2020	Tare #	Tare Weight	Dry Weight
10:02:00 AM			
10:02:20 AM	1	1.6439	1.9113
10:03:51 AM	2	1.6502	1.888483
10:09:25 AM	3	1.6568	1.7987
10:31:41 AM	4	1.6546	1.7510
12:01:00 PM	5	1.6563	1.7227
5:58:00 PM	6	1.6556	1.7059
8:10:00 AM	7	1.6449	1.6844

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC 4
 HLB Project #: 20-054
 Date Started: 6-9-2020
 Sample ID: LDW20-SC117

Client: Anchor

Date Complete: _____

Tested by: HBenny

Sample Description: Dark Gray Silt/clay

Calgon Batch: 18

Temperature: 22

Solids Content

Moisture Content	Tare No.	255
	Tare Wt	1.6576
	Wet Wt + Tare	40.8850
	Dry Wt + Tare	23.5882
Test Sample	Tare No.	255
	Tare Wt	52.0165
	Wet Wt + Tare	93.3796
	Dry Wt + Tare	61.6230
	Cylinder #	C-58

Sieve Analysis

Tare Weight	52.0272
4	-
10	52.0590
18	52.2715
35	52.5884
60	53.2763
120	54.0959
230	59.2942
Pan	2.3280

Pipette Analysis

6/12/2020	Tare #	Tare Weight	Dry Weight
10:06:00 AM			
10:06:20 AM	1	1.6440	1.9792
10:07:51 AM	2	1.6466	1.9960
10:13:25 AM	3	1.6490	1.8296
10:35:41 AM	4	1.6486	1.7630
12:05:00 PM	5	1.6408	1.7196
6:02:00 PM	6	1.6421	1.7014
8:14:00 AM	7	1.6553	1.7013

Notes:

Harold L Benny & Associates, LLC

Project: Dunamish AOC4
 HLB Project #: 20-054
 Date Started: 6-9-2020
 Sample ID: LDW20-SC123

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Gray Silt/Clay

Calgon Batch: 10

Temperature: 22

Solids Content

Moisture Content	Tare No.	243	*B
	Tare Wt	1.6506	
	Wet Wt + Tare	34.2602	
	Dry Wt + Tare	20.5968	
Test Sample	Tare No.	243	
	Tare Wt	52.1413	
	Wet Wt + Tare	89.5943	
	Dry Wt + Tare	61.9986	
	Cylinder #	C-49	

Sieve Analysis

Tare Weight	52.1530
4	-
10	52.2663
18	52.5118
35	53.1120
60	54.7149
120	56.7742
230	60.3133
Pan	1.6987

Pipette Analysis

6/12/2020	Tare #	Tare Weight	Dry Weight
10:10:00 AM			
10:10:20 AM	1	1.6446	1.9258
10:11:51 AM	2	1.6540	1.8680
10:17:25 AM	3	1.6485	1.7992
10:39:41 AM	4	1.6560	1.7638
12:09:00 PM	5	1.6437	1.7186
6:06:00 PM	6	1.6484	1.7048
8:18:00 AM	7	1.6520	1.6956

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-054
 Date Started: 6-9-2020
 Sample ID: LDW20-SC123FD

Client: Anchor

Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Gray Silt/clay

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	239
	Tare Wt	1.6394
	Wet Wt + Tare	24.9996
	Dry Wt + Tare	15.0568
Test Sample	Tare No.	239
	Tare Wt	51.5931
	Wet Wt + Tare	87.26586 HB
	Dry Wt + Tare	60.9282
	Cylinder #	C-59

Sieve Analysis

Tare Weight	51.5997
4	-
10	51.7195
18	51.9896
35	52.5657
60	54.1006
120	56.0643
230	59.4034
Pan	1.6309

Pipette Analysis

6/12/2020	Tare #	Tare Weight	Dry Weight
10:14:00 AM			
10:14:20 AM	1	1.6471	1.9144
10:15:51 AM	2	1.6513	1.8506
10:21:25 AM	3	1.6521	1.7974
10:43:41 AM	4	1.6498	1.7490
12:13:00 PM	5	1.6533	1.7226
6:10:00 PM	6	1.6461	1.6999
8:22:00 AM	7	1.6432	1.6874

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-054
 Date Started: 6-9-2020
 Sample ID: LDW20-SC125

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Dark Grey silt/clay

Calgon Batch: 18

Temperature: 22

Solids Content

Moisture Content	Tare No.	215
	Tare Wt	1.5752
	Wet Wt + Tare	25.5560
	Dry Wt + Tare	14.7638
Test Sample	Tare No.	215
	Tare Wt	51.0069
	Wet Wt + Tare	88.9505
	Dry Wt + Tare	57.0921
	Cylinder #	C-3

Sieve Analysis

Tare Weight	51.0225
4	-
10	51.0793
18	51.3956
35	51.6591
60	52.1558
120	53.0590
230	55.7722
Pan	1.3206

Pipette Analysis

6/12/2020	Tare #	Tare Weight	Dry Weight
10:18:00 AM			
10:18:20 AM	1	1.6450	1.9820
10:19:51 AM	2	1.6416	1.9099
10:25:25 AM	3	1.6454	1.8331
10:47:41 AM	4	1.6487	1.7804
12:17:00 PM	5	1.6452	1.7326
6:14:00 PM	6	1.6484	1.7118
8:26:00 AM	7	1.6465	1.6979

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-054
 Date Started: 6-9-2020
 Sample ID: LDW20-JT105

Client: Anchor
 Date Complete: _____
 Tested by: H Benny

Sample Description: Dark Grey Silt/Clay w/ woody debris

Calgon Batch: 18

Temperature: 22

Solids Content

Moisture Content	Tare No.	240
	Tare Wt	1.6562
	Wet Wt + Tare	35.9193
	Dry Wt + Tare	18.9376
Test Sample	Tare No.	240
	Tare Wt	52.0180
	Wet Wt + Tare	98.4122
	Dry Wt + Tare	67.6520
	Cylinder #	C-57

Sieve Analysis

Tare Weight	52.0278
4	-
10	52.6455
18	53.1696
35	54.7035
60	60.2092
120	63.7077
230	66.4342
Pan	1.2218

Pipette Analysis

6/12/2020	Tare #	Tare Weight	Dry Weight
10:22:00 AM			
10:22:20 AM	1	1.6458	1.8617
10:23:51 AM	2	1.6485	1.8171
10:29:25 AM	3	1.6482	1.7703
10:51:41 AM	4	1.6481	1.7329
12:21:00 PM	5	1.6435	1.7018
6:18:00 PM	6	1.6427	1.6846
8:30:00 AM	7	1.6441	1.6787

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-054
 Date Started: 6-9-2020
 Sample ID: LDW20-SC130

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: _____

Calgon Batch: 18

Temperature: 22

Solids Content

Moisture Content	Tare No.	218
	Tare Wt	1.6494
	Wet Wt + Tare	26.6148
	Dry Wt + Tare	17.2260
Test Sample	Tare No.	218
	Tare Wt	51.2114
	Wet Wt + Tare	88.8516
	Dry Wt + Tare	66.3857
	Cylinder #	C-44

Sieve Analysis

Tare Weight	51.2190
4	-
10	51.4272
18	51.7652
35	52.7938
60	57.2637
120	62.4323
230	65.2629
Pan	1.1204

Pipette Analysis

6/12/2020	Tare #	Tare Weight	Dry Weight
10:26:00 AM			
10:26:20 AM	1	1.6492	1.8509
10:27:51 AM	2	1.6537	1.8122
10:33:25 AM	3	1.6560	1.7693
10:55:41 AM	4	1.6484	1.7222
12:25:00 PM	5	1.6518	1.7062
6:22:00 PM	6	1.6568	1.6993
8:34:00 AM	7	1.6565	1.6912

Notes:

Harold L Benny & Associates, LLC

Project: Durhamish A04
 HLB Project #: 20-054
 Date Started: 6-9-2020
 Sample ID: LDW20-IT127

Client: Anchor

Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey silt/clay w/ woody debris

Calgon Batch: 18

Temperature: 22

Solids Content

Moisture Content	Tare No.	238
	Tare Wt	1.5766
	Wet Wt + Tare	33.1576
	Dry Wt + Tare	20.4583
Test Sample	Tare No.	238
	Tare Wt	51.9220
	Wet Wt + Tare	91.2264
	Dry Wt + Tare	70.2295
	Cylinder #	C-28

Sieve Analysis

Tare Weight	51.9320
4	—
10	52.8236
18	53.5498
35	57.0390
60	64.9299
120	67.6794
230	69.4711
Pan	0.7421

Pipette Analysis

6/12/2020	Tare #	Tare Weight	Dry Weight
10:30:00 AM			
10:30:20 AM	1	1.6563	1.8009
10:31:51 AM	2	1.6434	1.7560
10:37:25 AM	3	1.6562	1.7438
10:59:41 AM	4	1.6496	1.7102
12:29:00 PM	5	1.6542	1.7001
6:26:00 PM	6	1.6530	1.6880
8:38:00 AM	7	1.6525	1.6840

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 8, 2020
Date Started: June 14, 2020
Date Finished: June 19, 2020

Client: AnchorQEA
HLB Project #: 20-058
Tested By: H Benny

CASE NARRATIVE

1. Eleven 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 the job was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. The samples contained organic matter which may have broken down during the oven drying and sieving process, affecting the grain size analysis.
4. The data is provided in summary tables and plots.
5. There were no other noted anomalies in the testing or samples on project.

Reviewed by:



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 8, 2020
Date Started: June 14, 2020
Date Finished: June 19, 2020

Client: AnchorQEA
Project #: 20-058
Tested by: H Benny

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	
	-3	-2	-1						0	1	2	3	4	5
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
LDW20-SS167	100.0	100.0	100.0	97.3	94.9	92.0	89.0	74.6	60.6	33.6	19.2	10.7	8.4	6.3
	100.0	100.0	99.8	96.9	94.6	91.7	88.7	74.3	61.9	35.7	18.7	11.9	9.4	6.3
	100.0	100.0	99.9	97.4	95.3	92.2	89.0	74.6	62.2	34.2	18.3	11.5	8.9	6.1
LDW20-SS159	100.0	100.0	99.9	99.4	98.1	94.7	84.6	57.3	35.4	22.5	13.4	7.6	4.8	3.3
LDW20-SS158	100.0	100.0	99.8	97.8	96.0	90.3	85.9	70.3	56.8	35.6	21.6	12.3	8.7	6.4
LDW20-SS154	100.0	100.0	99.9	97.6	96.2	95.2	93.6	86.7	74.7	45.8	25.5	14.3	9.5	7.0
LDW20-SS168	100.0	100.0	99.5	97.8	95.4	92.2	85.7	60.0	39.7	28.5	17.5	11.3	7.1	5.1
LDW20-SS101	100.0	100.0	98.9	97.6	94.2	84.4	78.7	62.1	39.7	26.6	16.9	10.9	7.1	4.9
LDW20-SS102	100.0	100.0	97.4	95.6	92.4	71.9	51.2	36.3	26.2	16.5	11.6	8.0	5.2	3.5
LDW20-SS102FD	100.0	100.0	98.6	96.8	93.3	72.6	51.6	36.3	25.2	17.4	11.3	8.1	5.3	3.4
LDW20-SS109	100.0	93.8	87.6	83.9	76.5	59.7	45.7	35.1	23.5	17.2	11.6	6.9	5.1	3.4
LDW20-SS109FD	100.0	98.5	93.0	89.0	81.0	63.8	49.1	37.8	27.6	19.2	12.7	7.8	5.6	3.6
LDW20-SS117	100.0	100.0	99.2	97.9	96.2	89.3	80.7	62.9	46.9	32.8	21.0	13.5	9.8	6.4

Reviewed by: 

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 8, 2020
Date Started: June 14, 2020
Date Finished: June 19, 2020

Client: AnchorQEA
HLB Project #: 20-058
Tested by: H Benny

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)
LDW20-SS167	0.0	2.6	2.4	2.9	2.9	14.5	13.9	27.0	14.5	8.4	2.3	2.2	6.3	74.6
	0.2	2.9	2.3	2.8	3.1	14.4	12.4	26.2	17.0	6.8	2.5	3.1	6.3	74.3
	0.1	2.5	2.1	3.1	3.2	14.4	12.5	28.0	15.9	6.8	2.7	2.7	6.1	74.6
LDW20-SS159	0.1	0.5	1.2	3.4	10.2	27.3	21.9	12.9	9.0	5.8	2.9	1.5	3.3	57.3
LDW20-SS158	0.2	2.0	1.8	5.7	4.4	15.6	13.5	21.1	14.1	9.3	3.6	2.2	6.4	70.3
LDW20-SS154	0.1	2.3	1.4	1.0	1.6	6.9	12.0	29.0	20.2	11.3	4.8	2.5	7.0	86.7
LDW20-SS168	0.5	1.8	2.4	3.2	6.4	25.7	20.3	11.2	11.0	6.2	4.2	2.0	5.1	60.0
LDW20-SS101	1.1	1.3	3.4	9.8	5.7	16.6	22.5	13.0	9.7	6.0	3.8	2.1	4.9	62.1
LDW20-SS102	2.6	1.8	3.2	20.5	20.7	15.0	10.1	9.7	5.0	3.6	2.8	1.7	3.5	36.3
LDW20-SS102FD	1.4	1.8	3.5	20.7	21.0	15.3	11.1	7.8	6.1	3.3	2.8	1.9	3.4	36.3
LDW20-SS109	12.4	3.8	7.4	16.7	14.1	10.6	11.6	6.2	5.7	4.7	1.7	1.8	3.4	35.1
LDW20-SS109FD	7.0	4.1	8.0	17.2	14.7	11.4	10.2	8.4	6.5	4.9	2.2	2.0	3.6	37.8
LDW20-SS117	0.8	1.3	1.7	6.9	8.6	17.8	16.0	14.1	11.8	7.5	3.7	3.4	6.4	62.9

Reviewed by:  _____

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 8, 2020
Date Started: June 14, 2020
Date Finished: June 19, 2020

Client: AnchorQEA
HLB Project #: 20-058
Tested by: H Benny

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
LDW20-SS167	100.0	100.0	100.0	97.3	94.9	92.0	89.0	74.6	60.6	33.6	19.2	10.7	8.4	6.3
	100.0	100.0	99.8	96.9	94.6	91.7	88.7	74.3	61.9	35.7	18.7	11.9	9.4	6.3
	100.0	100.0	99.9	97.4	95.3	92.2	89.0	74.6	62.2	34.2	18.3	11.5	8.9	6.1
AVE	100.0	100.0	99.9	97.2	94.9	92.0	88.9	74.5	61.6	34.5	18.7	11.4	8.9	6.2
STDEV	0.0	0.0	0.1	0.2	0.3	0.2	0.2	0.2	0.7	0.9	0.3	0.5	0.4	0.1
%RSD	0.0	0.0	0.1	0.2	0.3	0.2	0.2	0.2	1.1	2.5	1.8	4.2	4.5	1.1

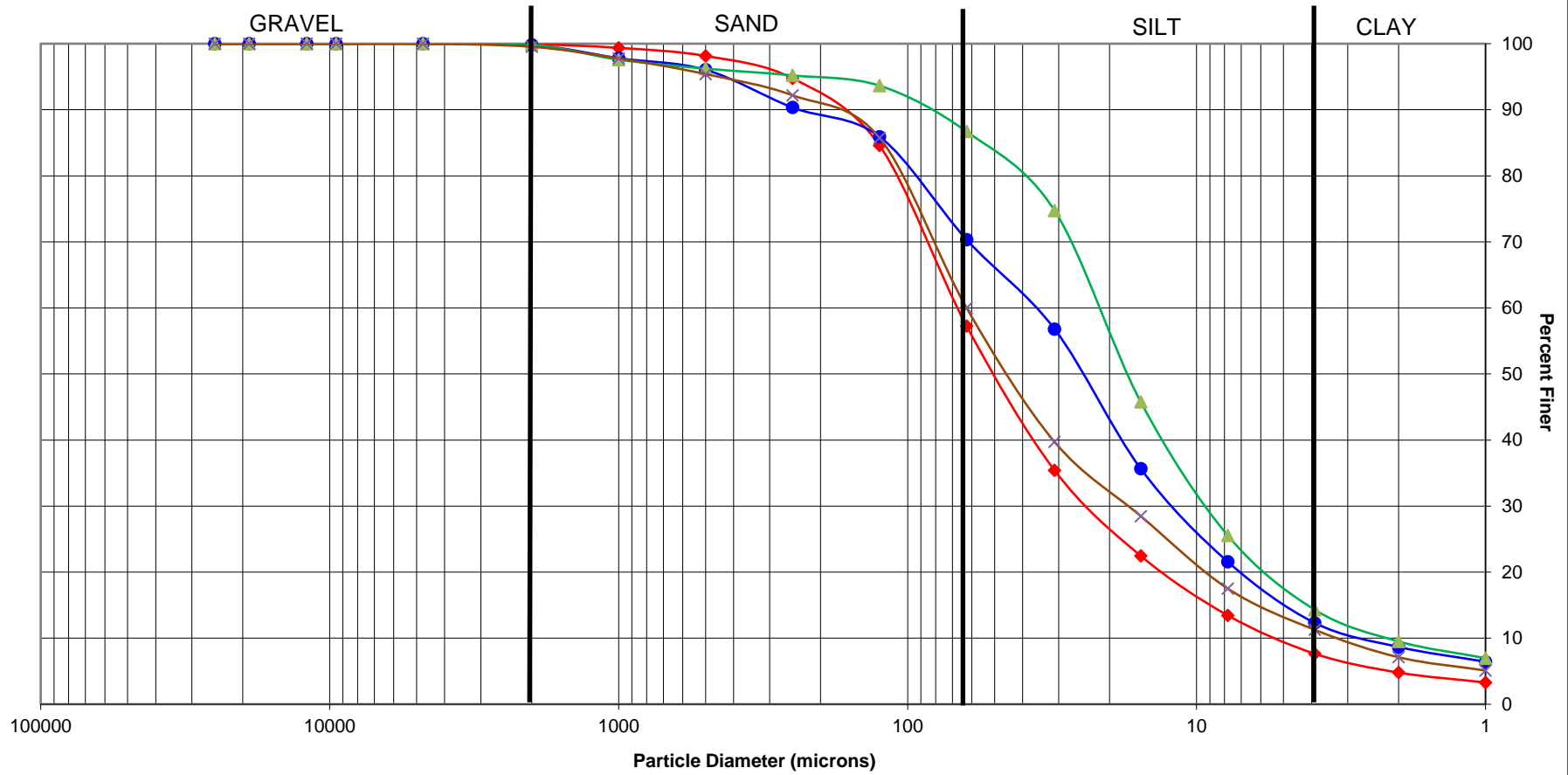
The Triplicate Applies To The Following Samples

Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
LDW20-SS167	6/5/2020	6/14/2020	6/19/2020	96.8		13.1
	6/5/2020	6/14/2020	6/19/2020	96.7		12.0
	6/5/2020	6/14/2020	6/19/2020	97.1		12.5
LDW20-SS159	6/5/2020	6/14/2020	6/19/2020	99.2		12.1
LDW20-SS158	6/5/2020	6/14/2020	6/19/2020	99.5		12.8
LDW20-SS154	6/5/2020	6/14/2020	6/19/2020	98.4		13.8
LDW20-SS168	6/5/2020	6/14/2020	6/19/2020	100.9		12.0
LDW20-SS101	6/5/2020	6/14/2020	6/19/2020	101.0		14.1
LDW20-SS102	6/5/2020	6/14/2020	6/19/2020	100.1		11.7
LDW20-SS102FD	6/5/2020	6/14/2020	6/19/2020	102.1		11.3
LDW20-SS109	6/5/2020	6/14/2020	6/19/2020	101.1		10.6
LDW20-SS109FD	6/5/2020	6/14/2020	6/19/2020	101.5		10.9
LDW20-SS117	6/5/2020	6/14/2020	6/19/2020	102.7		14.3

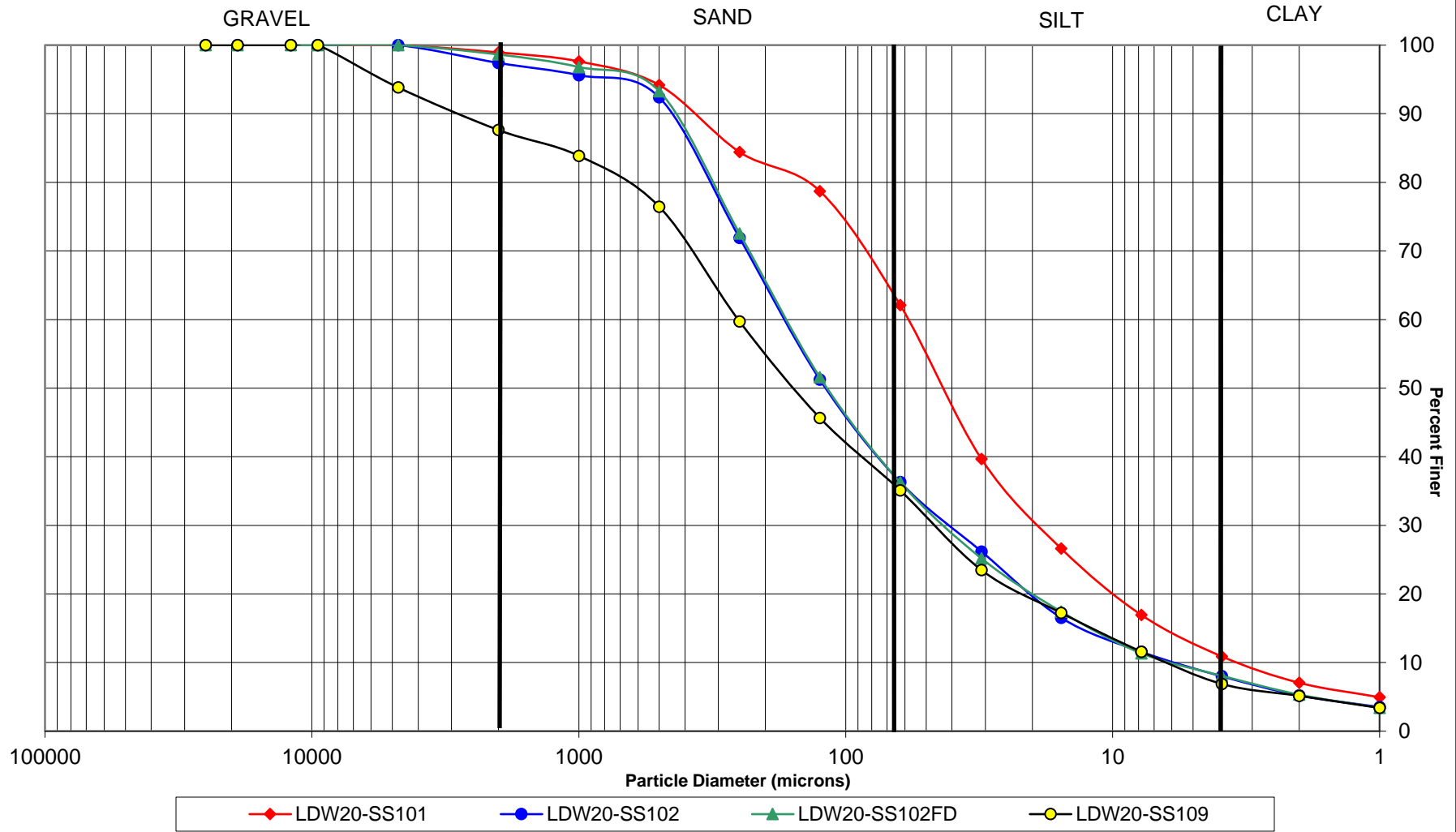
Notes to the Testing: Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution.

Reviewed by: 

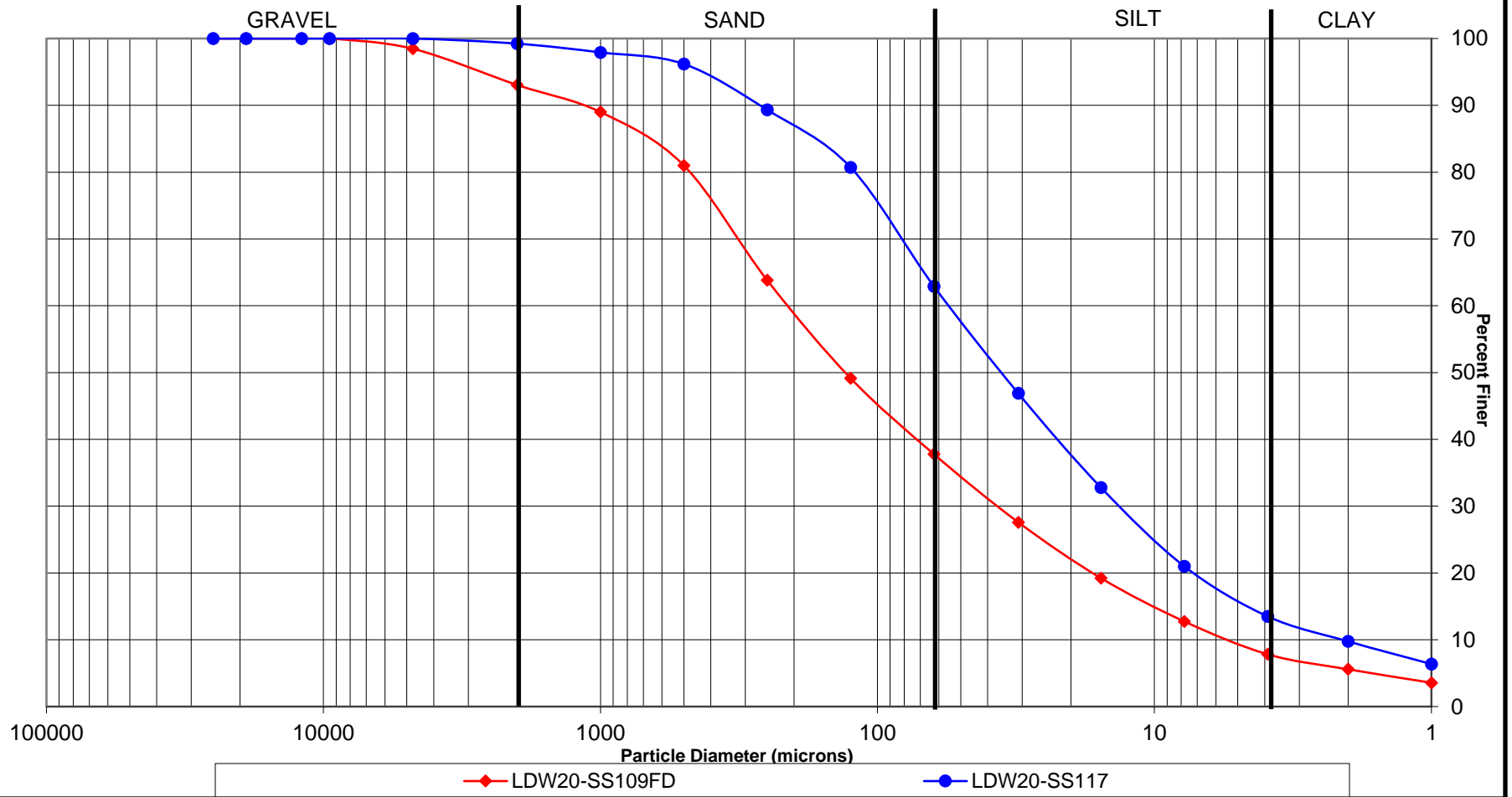
PSEP Grain Size Distribution



PSEP Grain Size Distribution



PSEP Grain Size Distribution



Harold L Benny & Associates, LLC

Project: Duwamish AOC 4
 HLB Project #: 20-058
 Date Started: 6-14-2020
 Sample ID: LDW20-55167A

Client: Anchor
 Date Complete: 6-19-2020
 Tested by: H Benny

Sample Description: Dark Grey Silt/Clay

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	202
	Tare Wt	1.6498
	Wet Wt + Tare	22.0467
	Dry Wt + Tare	9.4766
Test Sample	Tare No.	202
	Tare Wt	49.9888
	Wet Wt + Tare	95.7028
	Dry Wt + Tare	56.0255
	Cylinder #	C-55

Sieve Analysis

Tare Weight	50.0008
4	—
10	50.0090
18	50.4717
35	50.8956
60	51.4060
120	51.9233
230	54.4588
Pan	1.5846

Pipette Analysis

6/17/2020	Tare #	Tare Weight	Dry Weight
10:13:00 AM			
10:13:20 AM	1	1.6347	1.9235
10:14:51 AM	2	1.6397	1.8504
10:20:25 AM	3	1.6500	1.8051
10:42:41 AM	4	1.6469	1.7441
12:12:00 PM	5	1.6415	1.7054
6:09:00 PM	6	1.6355	1.6837
8:21:00 AM	7	1.6376	1.6774

Notes:

Harold L Benny & Associates, LLC

Project: Dunsmuir AOC4
 HLB Project #: 20-058
 Date Started: 6-14-2020
 Sample ID: LDW20-55167B

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey Silt/clay

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	248
	Tare Wt	1.6536
	Wet Wt + Tare	21.0988
	Dry Wt + Tare	9.1174
Test Sample	Tare No.	248
	Tare Wt	51.8704
	Wet Wt + Tare	94.0825
	Dry Wt + Tare	57.6193
	Cylinder #	C-53

Sieve Analysis

Tare Weight	51.8730
4	—
10	51.9099
18	52.3782
35	52.7522
60	53.2138
120	53.7092
230	56.0415
Pan	1,5984

Fibers

Pipette Analysis

6/17/2020	Tare #	Tare Weight	Dry Weight
10:16:00 AM			
10:16:20 AM	1	1.6488	1.9096
10:17:51 AM	2	1.6335	1.8418
10:23:25 AM	3	1.6256	1.7682
10:45:41 AM	4	1.6391	1.7330
12:15:00 PM	5	1.6366	1.6993
6:12:00 PM	6	1.6370	1.6854
8:24:00 AM	7	1.6384	1.6767

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-058
 Date Started: 6-14-2020
 Sample ID: LDW20-55167C

Client: Anchor

Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey silt/clay

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	237
	Tare Wt	1.6527
	Wet Wt + Tare	22.0032
	Dry Wt + Tare	9.4946
Test Sample	Tare No.	237
	Tare Wt	51.1068
	Wet Wt + Tare	94.5382
	Dry Wt + Tare	56.8690
	Cylinder #	C-54

Sieve Analysis

Tare Weight	51.1201
4	—
10	51.1367
18	51.5530
35	51.9056
60	52.4286
120	52.9622
230	55.3680
Pan	1.5169

Pipette Analysis

6/17/2020	Tare #	Tare Weight	Dry Weight
10:19:00 AM			
10:19:20 AM	1	1.6351	1.9048
10:20:51 AM	2	1.6440	1.8619
10:26:25 AM	3	1.6309	1.7787
10:48:41 AM	4	1.6316	1.7279
12:18:00 PM	5	1.6468	1.7092
6:15:00 PM	6	1.6422	1.6889
8:27:00 AM	7	1.6351	1.6743

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-058
 Date Started: 6-14-2020
 Sample ID: LDW20-55159 # HB

Client: Anchor

Date Complete: _____
 Tested by: H Benny

Sample Description: Dark Grey Silt/Clay

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	233
	Tare Wt	1.6476
	Wet Wt + Tare	36.1082
	Dry Wt + Tare	19.7378
Test Sample	Tare No.	233
	Tare Wt	51.4258
	Wet Wt + Tare	91.7977
	Dry Wt + Tare	62.8462
	Cylinder #	C-18

Sieve Analysis

Tare Weight	51.4284
4	-
10	51.4466
18	51.5631
35	51.8225
60	52.5417
120	54.6981
230	60.4869
Pan	2.4726

Pipette Analysis

6/17/2020	Tare #	Tare Weight	Dry Weight
10:22:00 AM			
10:22:20 AM	1	1.6386	1.9026
10:23:51 AM	2	1.6356	1.8048
10:29:25 AM	3	1.6430	1.7569
10:51:41 AM	4	1.6400	1.7154
12:21:00 PM	5	1.6418	1.6924
6:18:00 PM	6	1.6381	1.6765
8:30:00 AM	7	1.6408	1.6728

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish A004
 HLB Project #: 20-058
 Date Started: 6-14-2020
 Sample ID: LDW20-55158

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey Silt/clay

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	209	
	Tare Wt	1.6357	
	Wet Wt + Tare	31.9737	
	Dry Wt + Tare	13.02331	HB
Test Sample	Tare No.	209	
	Tare Wt	50.8289	
	Wet Wt + Tare	99.1649	
	Dry Wt + Tare	57.6639	
	Cylinder #	C-11	

Sieve Analysis

Tare Weight	50.8382	#B
4	—	
10	50.8680	
18	51.2364	
35	51.5568	
60	52.5944	
120	53.3953	
230	56.2258	
Pan	1.5007	

Pipette Analysis

6/17/2020	Tare #	Tare Weight	Dry Weight
10:25:00 AM			
10:25:20 AM	1	1.6456	1.9209
10:26:51 AM	2	1.6386	1.8639
10:32:25 AM	3	1.6408	1.7889
10:54:41 AM	4	1.6418	1.7385
12:24:00 PM	5	1.6353	1.6982
6:21:00 PM	6	1.6429	1.6925
8:33:00 AM	7	1.6428	1.6842

Notes:

Harold L Benny & Associates, LLC

Project: Duwanish AOC4
 HLB Project #: 20-058
 Date Started: 6-14-2020
 Sample ID: LDW20-SS154

Client: Anchor
 Date Complete: _____
 Tested by: H Benny

Sample Description: Dark Grey silt/clay

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	253
	Tare Wt	1.6384
	Wet Wt + Tare	26.0786
	Dry Wt + Tare	10.3240
Test Sample	Tare No.	253
	Tare Wt	51.9385
	Wet Wt + Tare	96.7533
	Dry Wt + Tare	55.0633
	Cylinder #	C-33

Sieve Analysis

Tare Weight	51.9533
4	—
10	51.9715
18	52.3390
35	52.5547
60	52.7183
120	52.9669
230	54.0724
Pan	1.0273

Pipette Analysis

6/17/2020	Tare #	Tare Weight	Dry Weight
10:28:00 AM			
10:28:20 AM	1	1.6366	1.9357
10:29:51 AM	2	1.6387	1.8984
10:35:25 AM	3	1.6395	1.8055
10:57:41 AM	4	1.6431	1.7437
12:27:00 PM	5	1.6374	1.7016
6:24:00 PM	6	1.6491	1.6978
8:36:00 AM	7	1.6496	1.6901

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC 4
 HLB Project #: 20-058
 Date Started: 6-14-2020
 Sample ID: LDW20-55168

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Gray Silt/Clay

Calgon Batch: 18

Temperature: 21

Solids Content

	236
Moisture Cc	1.6506
	e 35.9296
	16.1599
	236
Test Samp	50.7911
	98.1377
	60.8856
	C-6

Sieve Analysis

Tare Weight	50.7949
4	-
10	50.8888
18	51.2408
35	51.7172
60	52.3616
120	53.6538
230	58.8109
Pan	2.1220

Pipette Analysis

Time Sticker	Tare #	Tare Weight	Dry Weight
	1	1.6513	1.9062
	2	1.6514	1.8271
	3	1.6473	1.7784
	4	1.6491	1.7366
	5	1.6460	1.7087
	6	1.6526	1.6988
	7	1.6486	1.6868

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-058
 Date Started: 6-14-2020
 Sample ID: LJW20-55101

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey silt/clay

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	235
	Tare Wt	1.6405
	Wet Wt + Tare	33.3932
	Dry Wt + Tare	18.8192
Test Sample	Tare No.	235
	Tare Wt	51.4477
	Wet Wt + Tare	93.4793
	Dry Wt + Tare	62.6064
	Cylinder #	C-61

Sieve Analysis

Tare Weight	51.4557
4	-
10	51.6977
18	54.9955
35	52.7775
60	54.9996
120	56.2948
230	60.0716
Pan	2.5652

HB

Pipette Analysis

6/17/2020	Tare #	Tare Weight	Dry Weight
10:34:00 AM			
10:34:20 AM	1	1.6499	1.9460
10:35:51 AM	2	1.6464	1.8430
10:41:25 AM	3	1.6461	1.7840
11:03:41 AM	4	1.6591	
12:33:00 PM	5	1.6486	1.7155
6:30:00 PM	6	1.6467	1.6964
8:42:00 AM	7	1.6524	1.6926

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-058
 Date Started: 6-14-2020
 Sample ID: LDW20-55102FD

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey Sandy Silt

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	219
	Tare Wt	1.6392
	Wet Wt + Tare	46.5397
	Dry Wt + Tare	31.4833
Test Sample	Tare No.	219
	Tare Wt	50.4784
	Wet Wt + Tare	97.3065
	Dry Wt + Tare	72.1258
	Cylinder #	C-19

Sieve Analysis

Tare Weight	50.4881
4	-
10	50.9127
18	51.4820
35	52.5786
60	59.0305
120	65.5562
230	70.3264
Pan	1.7800

Pipette Analysis

6/17/2020	#	Tare Weight	Dry Weight
10:37:00 AM			
10:37:20 AM	1	1.6456	1.8766
10:38:51 AM	2	1.6378	1.8093
10:44:25 AM	3	1.6358	1.7600
11:06:41 AM	4	1.6431	1.7302
12:36:00 PM	5	1.6443	1.7115
6:33:00 PM	6	1.6407	1.6911
8:45:00 AM	7	1.6446	1.6833

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC 4
 HLB Project #: 20-058
 Date Started: 6-14-2020
 Sample ID: LDW20-55102

Client: Anchor
 Date Complete: _____
 Tested by: H Benny

Sample Description: Dark Grey Sandy Silt

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	210
	Tare Wt	1.6520
	Wet Wt + Tare	48.0630
	Dry Wt + Tare	33.5831
Test Sample	Tare No.	210
	Tare Wt	51.2268
	Wet Wt + Tare	97.8865
	Dry Wt + Tare	73.5672
	Cylinder #	C-36

Sieve Analysis

Tare Weight	51.2358
4	-
10	52.0699
18	52.6439
35	53.6823
60	60.2666
120	66.9083
230	71.7139
Pan	1.8256

Pipette Analysis

6/17/2020	Tare #	Tare Weight	Dry Weight
10:40:00 AM			
10:40:20 AM	1	1.6446	1.8952
10:41:51 AM	2	1.6347	1.8208
10:47:25 AM	3	1.6403	1.7644
11:09:41 AM	4	1.6397	1.7533
12:39:00 PM	5	1.6409	1.7102
6:36:00 PM	6	1.6397	1.6911
8:48:00 AM	7	1.6417	1.6822

1.7319 HB

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish
 HLB Project #: 20-058
 Date Started: 6-14-2020
 Sample ID: LDW20-55109

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey Sandy Silt w/ shell fragments

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	208
	Tare Wt	6.6501
	Wet Wt + Tare	40.7979
	Dry Wt + Tare	27.2314
Test Sample	Tare No.	208
	Tare Wt	51.2904
	Wet Wt + Tare	97.5538
	Dry Wt + Tare	72.7045
	Cylinder #	C-49

Sieve Analysis

Tare Weight	51.3012
4	53.1676
10	55.0433
18	56.1778
35	58.4201
60	63.4756
120	67.7282
230	70.9235
Pan	1.7462

Pipette Analysis

6/17/2020	Tare #	Tare Weight	Dry Weight
10:43:00 AM			
10:43:20 AM	1	1.6440	1.8673
10:44:51 AM	2	1.6475	1.8058
10:50:25 AM	3	1.6452	1.7662
11:12:41 AM	4	1.6318	1.7190
12:42:00 PM	5	1.6365	1.6956
6:39:00 PM	6	1.6380	1.6867
8:51:00 AM	7	1.6428	1.6810

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-058
 Date Started: 6-14-2020
 Sample ID: LDWZO-55109FD

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey Sandy Silt w/ shell fragments

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	213
	Tare Wt	1.6361
	Wet Wt + Tare	46.0731
	Dry Wt + Tare	30.2921
Test Sample	Tare No.	213
	Tare Wt	51.5013
	Wet Wt + Tare	96.4391
	Dry Wt + Tare	71.4326
	Cylinder #	C-57

Sieve Analysis

Tare Weight	51.5069
4	51.9534
10	53.5213
18	54.6970
35	57.0138
60	61.9936
120	66.2442
230	69.5379
Pan	1.9168

Pipette Analysis

6/17/2020	Tare #	Tare Weight	Dry Weight
10:46:00 AM			
10:46:20 AM	1	1.6384	1.8666
10:47:51 AM	2	1.6377	1.8131
10:53:25 AM	3	1.6381	1.7658
11:15:41 AM	4	1.6332	1.7239
12:45:00 PM	5	1.6398	1.7024
6:42:00 PM	6	1.6435	1.6933
8:54:00 AM	7	1.6441	1.6824

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-058
 Date Started: 6-14-2020
 Sample ID: LDW20-55113

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Gray Silty Sand

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	211
	Tare Wt	1.6461
	Wet Wt + Tare	45.8776
	Dry Wt + Tare	33.5327
Test Sample	Tare No.	211
	Tare Wt	51.7828
	Wet Wt + Tare	171.3923
	Dry Wt + Tare	127.7491
	Cylinder #	C-12

Sieve Analysis

Tare Weight	51.7973
4	-
10	52.3762
18	58.1572
35	89.0281
60	117.6957
120	122.8482
230	125.9831
Pan	1.8601

Pipette Analysis

6/27/2020	Tare #	Tare Weight	Dry Weight
10:49:00 AM			
10:49:20 AM	1	1.6343	1.8776
10:50:51 AM	2	1.6365	1.8402
10:56:25 AM	3	1.6384	1.7635
11:18:41 AM	4	1.6375	1.7187
12:48:00 PM	5	1.6411	1.6968
6:45:00 PM	6	1.6373	1.6834
8:57:00 AM	7	1.6354	1.6716

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish A004
 HLB Project #: 20-058
 Date Started: 6-14-2020
 Sample ID: LDW20-55117

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey silt/clay

Calgon Batch:

Temperature:

Solids Content

Moisture Content		
Tare No.	220	
Tare Wt	1.6520	
Wet Wt + Tare	39.9301	
Dry Wt + Tare	22.4933	
Test Sample		
Tare No.	220	
Tare Wt	51.6099	
Wet Wt + Tare	93.5027	
Dry Wt + Tare	61.9079	
Cylinder #	C-62	

Sieve Analysis

Tare Weight	51.6269
4	—
10	51.8022
18	52.1013
35	52.4976
60	54.0619
120	56.0271
230	60.0907
Pan	1.8423

Pipette Analysis

6/27/2020	Tare #	Tare Weight	Dry Weight
10:52:00 AM			
10:52:20 AM	1	1.6370	1.9299
10:53:51 AM	2	1.6390	1.8652
10:59:25 AM	3	1.6349	1.7985
11:21:41 AM	4	1.6408	1.7520
12:51:00 PM	5	1.6387	1.7166
6:48:00 PM	6	1.6398	1.7011
9:00:00 AM	7	1.6352	1.6814

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC
 HLB Project #: 20-058
 Date Started: 6-14-2020
 Sample ID: LDW 20-SC101

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey silt/clay

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	222
	Tare Wt	1.6538
	Wet Wt + Tare	35.8716
	Dry Wt + Tare	22.2844
Test Sample	Tare No.	222
	Tare Wt	51.5401
	Wet Wt + Tare	91.0500
	Dry Wt + Tare	62.1467
	Cylinder #	C-34

472 HB

Sieve Analysis

Tare Weight	51.5482
4	-
10	51.5940
18	51.7470
35	52.8008
60	55.5297
120	57.2603
230	60.6417
Pan	1.5362

Pipette Analysis

	Tare #	Tare Weight	Dry Weight
6/27/2020			
10:55:00 AM			
10:55:20 AM	1	1.6386	1.9462
10:56:51 AM	2	1.6414	1.8142
11:02:25 AM	3	1.6351	1.7826
11:24:41 AM	4	1.6372	1.7176
12:54:00 PM	5	1.6358	1.6977
6:51:00 PM	6	1.6347	1.6866
9:03:00 AM	7	1.6352	1.6762

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish A004
 HLB Project #: 20-058
 Date Started: 6-14-2020
 Sample ID: LDW20-SC102

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey silt/clay

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	223
	Tare Wt	1.6463
	Wet Wt + Tare	41.9149
	Dry Wt + Tare	26.3528
Test Sample	Tare No.	223
	Tare Wt	51.8695
	Wet Wt + Tare	90.4401
	Dry Wt + Tare	60.0586
	Cylinder #	C-58

Sieve Analysis

Tare Weight	51.8702
4	—
10	51.9100
18	52.1005
35	52.4330
60	53.3268
120	55.9245
230	60.4624
Pan	1.6221

Pipette Analysis

	Tare #	Tare Weight	Dry Weight
6/27/2020			
10:58:00 AM			
10:58:20 AM	1	1.6511	1.9581
10:59:51 AM	2	1.6334	1.8625
11:05:25 AM	3	1.6365	1.8103
11:27:41 AM	4	1.6378	1.7344
12:57:00 PM	5	1.6476	1.7186
6:54:00 PM	6	1.6507	1.7090
9:06:00 AM	7	1.6511	1.6957

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-058
 Date Started: 6-14-2020
 Sample ID: LDW20-IT105

Client: Anchor QEA
 Date Complete: 6/19/2020
 Tested by: H. Benny

Sample Description: Dark Grey Sandy Silt

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	229
	Tare Wt	1.6488
	Wet Wt + Tare	34.4911
	Dry Wt + Tare	22.8156
Test Sample	Tare No.	229
	Tare Wt	51.7339
	Wet Wt + Tare	121.5493
	Dry Wt + Tare	82.8139
	Cylinder #	C-20

Sieve Analysis

Tare Weight	51.7491
4	52.1968
10	52.3016
18	52.8819
35	55.2643
60	65.9308
120	73.7787
230	79.9197
Pan	2.8273

Pipette Analysis

6/27/2020	Tare #	Tare Weight	Dry Weight
11:01:00 AM			
11:01:20 AM	1	1.6412	1.9875
11:02:51 AM	2	1.6357	1.8865
11:08:25 AM	3	1.6525	1.8212
11:30:41 AM	4	1.6227	1.7412
1:00:00 PM	5	1.6435	1.7258
6:57:00 PM	6	1.6460	1.7080
9:09:00 AM	7	1.6474	1.6951

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 13, 2020
Date Started: June 21, 2020
Date Finished: June 27, 2020

Client: AnchorQEA
HLB Project #: 20-059
Tested By: H Benny

CASE NARRATIVE

1. Sixteen 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 the job was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. Sample LDW20-SS130-FD contained six rocks that were at least an inch in diameter, which were not in SS130. These rocks were excluded from the analysis.
4. Sample LDW20-SC148C contained a lot of shell fragments on the upper three sieves.
5. The samples contained organic matter which may have broken down during the oven drying and sieving process, affecting the grain size analysis.
5. The data is provided in summary tables and plots.
6. There were no other noted anomalies in the testing or samples on project.

Reviewed by:



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 13, 2020
Date Started: June 21, 2020
Date Finished: June 27, 2020

Client: AnchorQEA
Project #: 20-059
Tested by: H Benny

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
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
LDW20-SS356	100.0	100.0	100.0	98.0	96.9	95.7	91.5	73.4	46.4	30.4	20.7	11.3	8.5	5.4
	100.0	100.0	100.0	98.2	97.3	96.2	91.6	74.0	51.6	32.2	20.5	11.2	8.7	5.0
	100.0	100.0	99.9	97.7	96.7	95.3	91.3	72.8	51.8	32.0	20.0	11.4	8.4	5.2
LDW20-SS364	100.0	100.0	99.9	96.1	94.8	93.9	92.0	87.3	73.0	42.1	25.3	13.6	10.1	5.9
LDW20-SS338	100.0	100.0	99.9	97.1	95.8	94.7	93.2	88.0	74.4	50.5	30.9	17.6	13.8	8.4
LDW20-SS338-FD	100.0	100.0	100.0	96.8	95.7	94.8	93.5	88.1	75.1	49.7	31.9	17.3	14.0	9.2
LDW20-SS336	100.0	98.5	98.4	96.4	95.6	94.6	91.3	73.0	54.2	32.2	21.1	11.7	8.6	5.7
LDW20-SS106	100.0	100.0	97.5	94.7	90.8	83.0	74.5	57.9	39.4	24.8	16.5	10.0	7.5	4.6
LDW20-SS121	100.0	100.0	99.8	98.8	96.0	86.7	75.3	59.3	42.5	25.9	16.8	10.3	8.1	4.8
LDW20-SS123	100.0	100.0	98.2	96.4	93.0	75.9	64.3	50.1	36.6	24.1	16.0	10.0	7.4	5.4
LDW20-SS123-FD	100.0	100.0	98.3	96.4	92.9	75.0	62.5	48.4	33.8	22.7	15.5	9.7	7.0	4.6
LDW20-SS125	100.0	100.0	98.4	96.5	94.7	90.9	87.2	75.2	58.4	39.7	26.9	16.9	11.8	8.2
LDW20-SS130	100.0	93.8	80.4	79.0	76.7	66.4	52.4	40.6	26.8	16.8	8.9	6.7	4.8	3.3
LDW20-SS130-FD	100.0	90.4	77.1	75.7	73.4	63.1	49.1	37.6	25.5	15.7	9.5	6.9	4.7	3.2
LDW20-SC148C	100.0	100.0	90.1	83.5	79.7	70.9	63.7	54.3	43.5	32.2	17.8	11.4	5.8	2.8
LDW20-SC155B	100.0	100.0	100.0	99.6	99.0	97.9	82.6	48.4	35.6	20.9	11.7	9.0	7.5	5.5
LDW20-SC166C	100.0	100.0	100.0	99.3	98.4	97.6	90.1	57.4	40.6	21.9	12.0	10.0	7.3	3.6
LDW20-SC208B	100.0	100.0	99.8	98.8	97.9	97.0	95.5	86.9	36.6	23.5	12.6	10.2	7.5	3.4

Reviewed by:  _____

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 13, 2020
Date Started: June 21, 2020
Date Finished: June 27, 2020

Client: AnchorQEA
HLB Project #: 20-059
Tested by: H Benny

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)
LDW20-SS356	0.0	2.0	1.1	1.2	4.2	18.1	27.0	15.9	9.8	9.4	2.8	3.1	5.4	73.4
	0.0	1.8	0.9	1.1	4.6	17.6	22.4	19.3	11.7	9.3	2.5	3.7	5.0	74.0
	0.1	2.2	1.0	1.5	3.9	18.6	21.0	19.8	12.0	8.6	3.0	3.2	5.2	72.8
LDW20-SS364	0.1	3.8	1.3	0.9	1.8	4.8	14.3	30.9	16.9	11.7	3.5	4.2	5.9	87.3
LDW20-SS338	0.1	2.8	1.2	1.1	1.6	5.2	13.6	23.9	19.6	13.2	3.8	5.4	8.4	88.0
LDW20-SS338-FD	0.0	3.2	1.1	0.9	1.3	5.4	13.0	25.4	17.8	14.6	3.2	4.9	9.2	88.1
LDW20-SS336	1.6	2.0	0.9	1.0	3.3	18.3	18.7	22.0	11.2	9.4	3.1	2.9	5.7	73.0
LDW20-SS106	2.5	2.8	4.0	7.8	8.5	16.6	18.5	14.5	8.3	6.5	2.5	3.0	4.6	57.9
LDW20-SS121	0.2	1.0	2.8	9.3	11.4	16.0	16.8	16.6	9.1	6.4	2.2	3.3	4.8	59.3
LDW20-SS123	1.8	1.8	3.4	17.1	11.6	14.2	13.5	12.5	8.1	6.0	2.6	2.0	5.4	50.1
LDW20-SS123-FD	1.7	1.8	3.5	17.9	12.5	14.1	14.5	11.2	7.1	5.9	2.6	2.5	4.6	48.4
LDW20-SS125	1.6	1.9	1.8	3.9	3.6	12.0	16.8	18.7	12.8	10.0	5.1	3.6	8.2	75.2
LDW20-SS130	19.6	1.5	2.3	10.3	14.0	11.8	13.7	10.1	7.8	2.2	2.0	1.4	3.3	40.6
LDW20-SS130-FD	22.9	1.4	2.3	10.4	14.0	11.5	12.2	9.8	6.2	2.5	2.2	1.5	3.2	37.6
LDW20-SC148C	9.9	6.5	3.9	8.8	7.1	9.4	10.8	11.3	14.3	6.4	5.5	3.1	2.8	54.3
LDW20-SC155B	0.0	0.4	0.6	1.1	15.3	34.3	12.7	14.8	9.2	2.7	1.5	1.9	5.5	48.4
LDW20-SC166C	0.0	0.7	0.9	0.8	7.6	32.7	16.8	18.7	9.8	2.0	2.8	3.6	3.6	57.4
LDW20-SC208B	0.2	1.1	0.9	0.8	1.5	8.6	50.3	13.2	10.9	2.4	2.7	4.2	3.4	86.9

Reviewed by: 

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 13, 2020
Date Started: June 21, 2020
Date Finished: June 27, 2020

Client: AnchorQEA
HLB Project #: 20-059
Tested by: H Benny

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
LDW20-SS356	100.0	100.0	100.0	98.0	96.9	95.7	91.5	73.4	46.4	30.4	20.7	11.3	8.5	5.4
	100.0	100.0	100.0	98.2	97.3	96.2	91.6	74.0	51.6	32.2	20.5	11.2	8.7	5.0
	100.0	100.0	99.9	97.7	96.7	95.3	91.3	72.8	51.8	32.0	20.0	11.4	8.4	5.2
AVE	100.0	100.0	100.0	98.0	97.0	95.7	91.5	73.4	49.9	31.6	20.4	11.3	8.5	5.2
STDEV	0.0	0.0	0.0	0.2	0.2	0.4	0.1	0.5	2.5	0.8	0.3	0.1	0.1	0.1
%RSD	0.0	0.0	0.0	0.2	0.2	0.4	0.1	0.7	5.0	2.5	1.4	0.8	1.5	2.8

The Triplicate Applies To The Following Samples

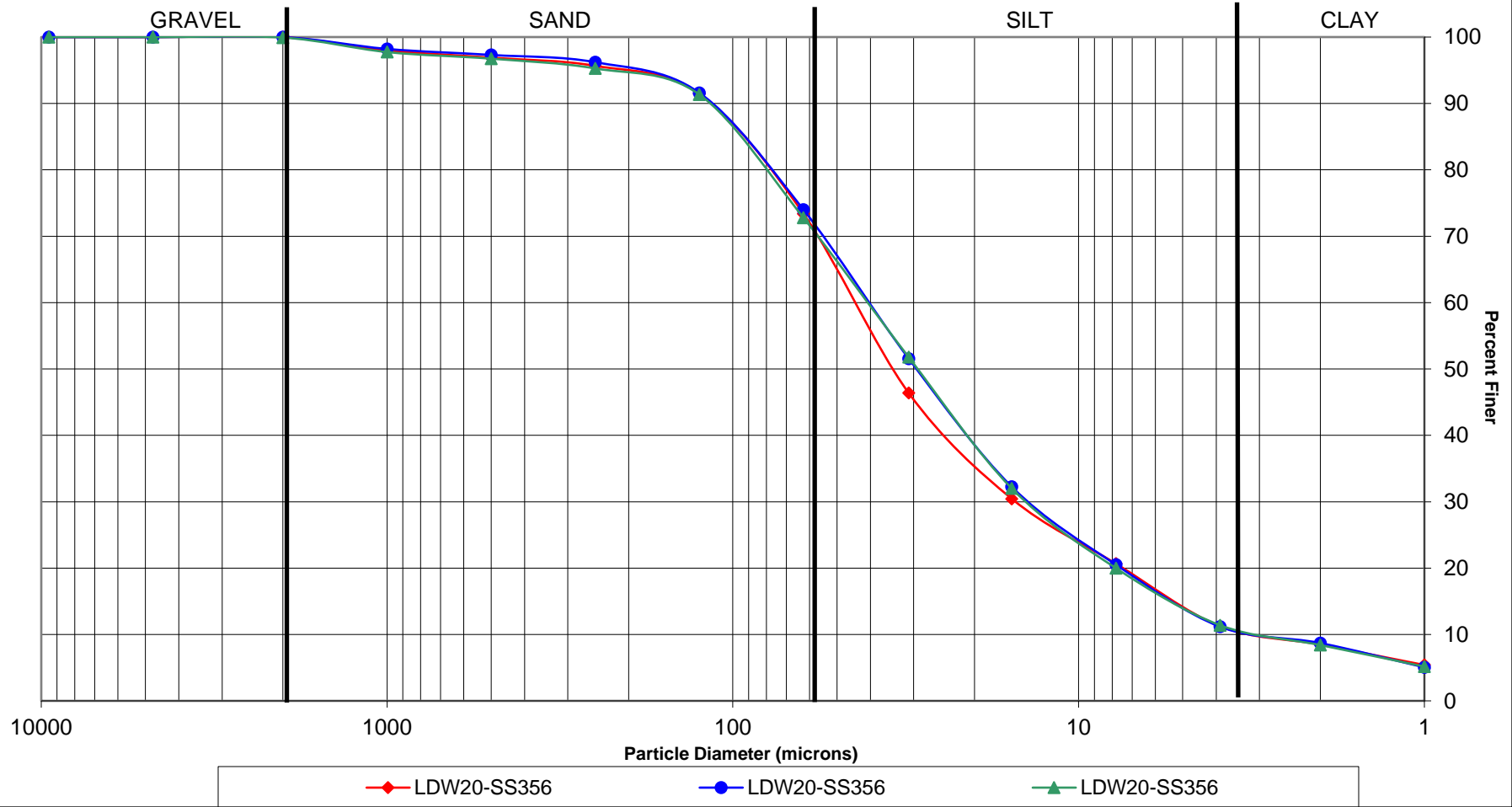
Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
LDW20-SS356	6/10/2020	6/21/2020	6/26/2020	102.8		14.0
	6/10/2020	6/21/2020	6/26/2020	101.2		13.5
	6/10/2020	6/21/2020	6/26/2020	101.4		13.4
LDW20-SS364	6/10/2020	6/21/2020	6/26/2020	99.3		13.4
LDW20-SS338	6/10/2020	6/21/2020	6/26/2020	100.4		13.8
LDW20-SS338-FD	6/10/2020	6/21/2020	6/26/2020	100.5		13.6
LDW20-SS336	6/10/2020	6/21/2020	6/26/2020	100.0		14.0
LDW20-SS106	6/10/2020	6/21/2020	6/26/2020	102.6		11.4
LDW20-SS121	6/10/2020	6/21/2020	6/26/2020	100.4		14.4
LDW20-SS123	6/10/2020	6/21/2020	6/26/2020	100.5		12.9
LDW20-SS123-FD	6/10/2020	6/21/2020	6/26/2020	100.9		11.9
LDW20-SS125	6/10/2020	6/21/2020	6/26/2020	99.2		14.6
LDW20-SS130	6/10/2020	6/21/2020	6/26/2020	104.1		16.5
LDW20-SS130-FD	6/10/2020	6/21/2020	6/26/2020	101.5		15.4
LDW20-SC148C	6/8/2020	6/21/2020	6/26/2020	104.3		17.4
LDW20-SC155B	6/8/2020	6/21/2020	6/26/2020	98.2		12.6
LDW20-SC166C	6/8/2020	6/21/2020	6/26/2020	101.2		13.5
LDW20-SC208B	6/8/2020	6/21/2020	6/26/2020	104.3		19.4

Notes to the Testing: Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution.

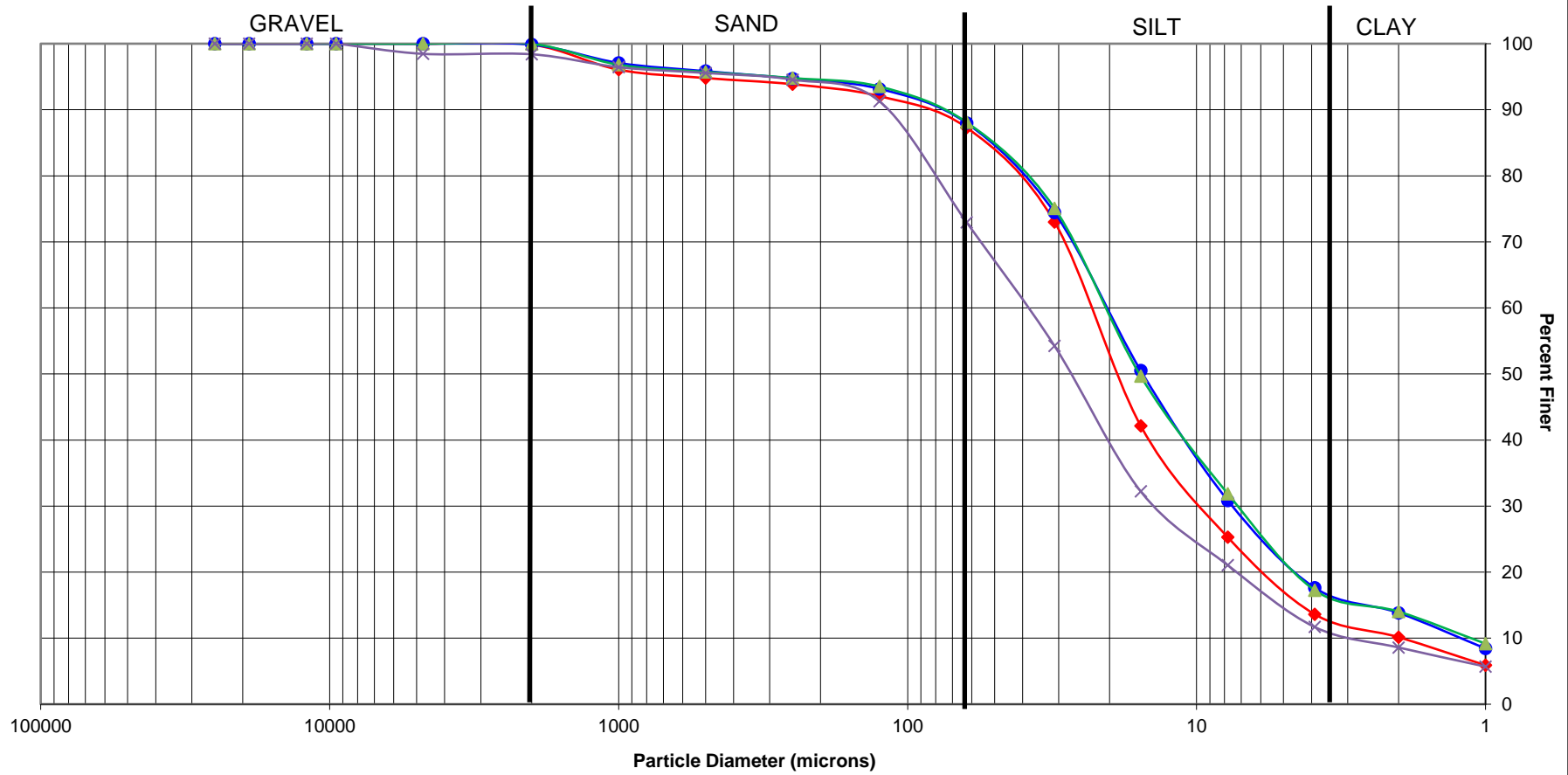
Reviewed by: 

PSEP Grain Size Distribution

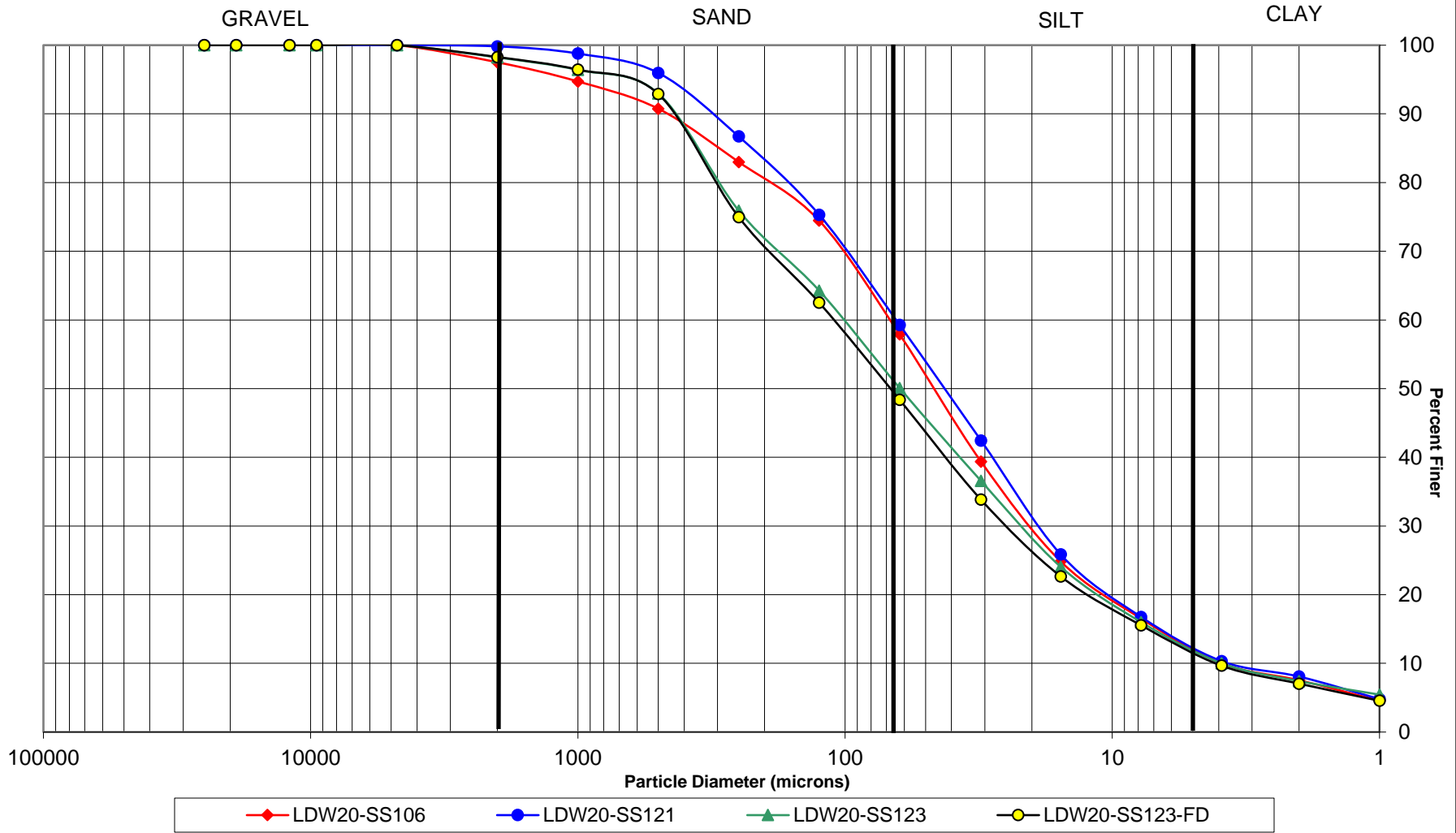
Triplicate Sample Plot



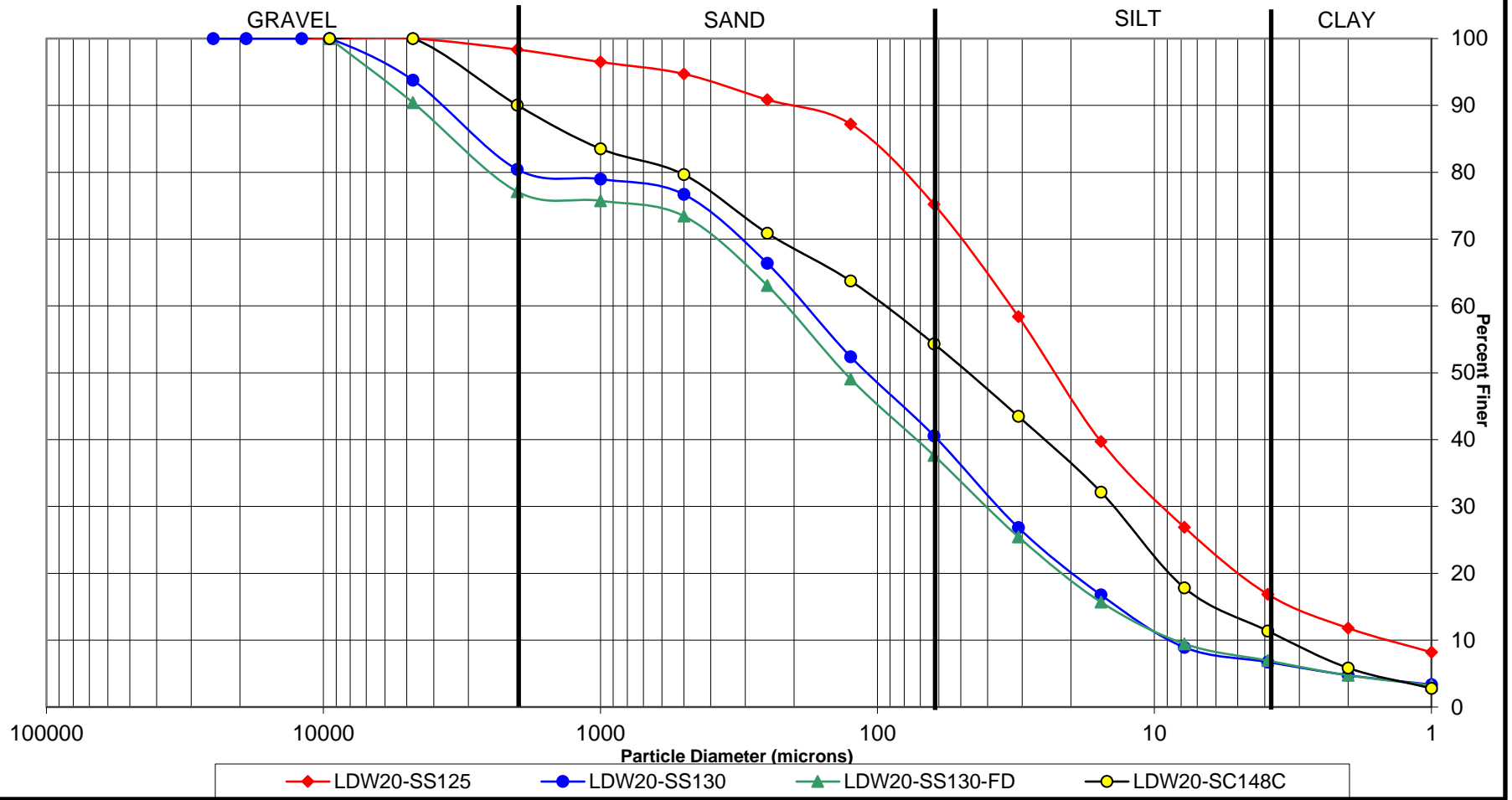
PSEP Grain Size Distribution



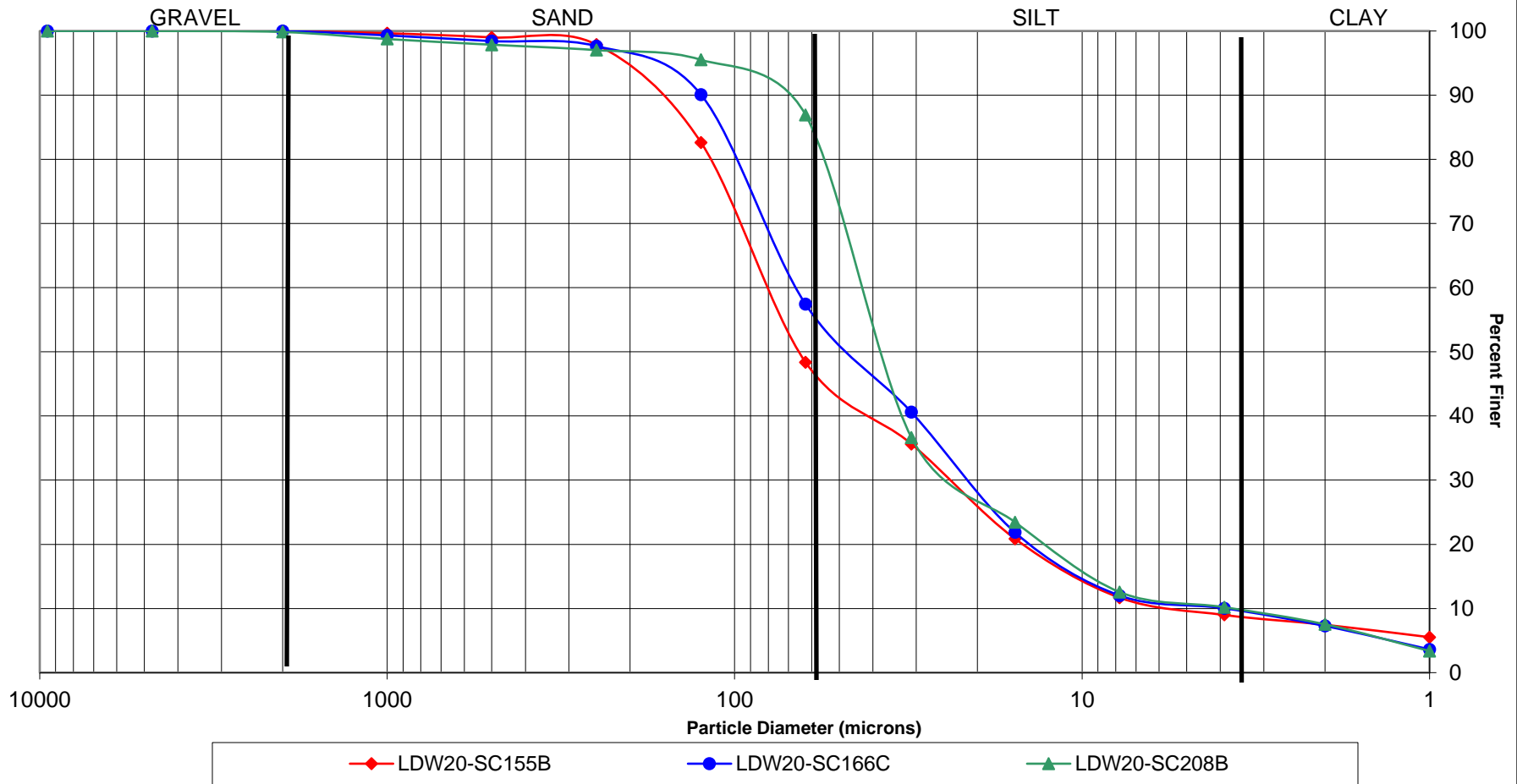
PSEP Grain Size Distribution



PSEP Grain Size Distribution



PSEP Grain Size Distribution



Harold L Benny & Associates, LLC

Project: Duwamish A04
 HLB Project #: 20-059
 Date Started: 6-21-2020
 Sample ID: LDW20-55356 A

Client: Anchor
 Date Complete: 6-26-2020
 Tested by: HBenny

Sample Description: Dark Grey silt/clay

Calgon Batch: 19

Temperature: 21

Solids Content

Moisture Content	Tare No.	207
	Tare Wt	1.6527
	Wet Wt + Tare	31.2443
	Dry Wt + Tare	14.7934
Test Sample	Tare No.	207
	Tare Wt	50.1604
	Wet Wt + Tare	93.0543
	Dry Wt + Tare	57.2655
	Cylinder #	C-49

71 HB

Sieve Analysis

Tare Weight	50.1677
4	—
10	50.1698
18	50.5492
35	50.74592
60	50.9936
120	51.7917
230	55.2352
Pan	2.0784

HB

Pipette Analysis

6/25/2020	Tare #	Tare Weight	Dry Weight
10:30:00 AM			
10:30:20 AM	1	1.6469	1.9301
10:31:51 AM	2	1.6464	1.8322
10:37:25 AM	3	1.6469	1.7736
10:59:41 AM	4	1.6468	1.7373
12:29:00 PM	5	1.6491	1.7047
6:26:00 PM	6	1.6477	1.6930
8:38:00 AM	7	1.6470	1.6809

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-059
 Date Started: 6-21-2020
 Sample ID: LDW20-55356B

Client: Anchor

Date Complete: _____
 Tested by: H Benny

Sample Description: Dark Grey silt / clay

Calgon Batch: 19

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	205
	Tare Wt	1.6491
	Wet Wt + Tare	31.0874
	Dry Wt + Tare	14.7758
Test Sample	Tare No.	205
	Tare Wt	50.0156
	Wet Wt + Tare	90.9328
	Dry Wt + Tare	56.7550
	Cylinder #	C-6

Tare Weight	50.0231
4	—
10	50.0255
18	50.3498
35	50.5143
60	50.7148
120	51.5554
230	54.7647
Pan	2.0229

Pipette Analysis

6/25/2020	Tare #	Tare Weight	Dry Weight
10:34:00 AM			
10:34:20 AM	1	1.6476	1.9274
10:35:51 AM	2	1.6494	1.8493
10:41:25 AM	3	1.6505	1.7807
11:03:41 AM	4	1.6547	1.7426
12:33:00 PM	5	1.6504	1.7046
6:30:00 PM	6	1.6533	1.6986
8:42:00 AM	7	1.6496	1.6817

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-059
 Date Started: 6-21-2020
 Sample ID: LDW20-SS 356 C

Client: Anchor
 Date Complete: _____
 Tested by: H Benny

Sample Description: _____

Calgon Batch: 19

Temperature: 21

Solids Content

Moisture Content	Tare No.	238
	Tare Wt	1.5776
	Wet Wt + Tare	34.5540
	Dry Wt + Tare	16.2275
Test Sample	Tare No.	238
	Tare Wt	51.9196
	Wet Wt + Tare	93.4537
	Dry Wt + Tare	59.1406
	Cylinder #	C-62

Sieve Analysis

Tare Weight	51.9290
4	—
10	51.9427
18	52.3461
35	52.5300
60	52.8016
120	53.5263
230	56.9494
Pan	2.2268

Pipette Analysis

6/25/2020	Tare #	Tare Weight	Dry Weight
10:38:00 AM			
10:38:20 AM	1	1.6504	1.9280
10:39:51 AM	2	1.6457	1.8481
10:45:25 AM	3	1.6492	1.7796
11:07:41 AM	4	1.6399	1.7266
12:37:00 PM	5	1.6452	1.67006
6:34:00 PM	6	1.6542	1.6987
8:46:00 AM	7	1.6484	1.6811

HB

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-059
 Date Started: 6-21-2020
 Sample ID: LDW20-55364

Client: Anchor
 Date Complete: _____
 Tested by: H Benny

Sample Description: Grey silt/clay

Calgon Batch: 19

Temperature: 21

Solids Content

Moisture Content	Tare No.	218
	Tare Wt	1.6486
	Wet Wt + Tare	34.0408
	Dry Wt + Tare	13.4260
Test Sample	Tare No.	218
	Tare Wt	51.2112
	Wet Wt + Tare	93.3412
	Dry Wt + Tare	54.2394
	Cylinder #	C-15

Sieve Analysis

Tare Weight	51.2214
4	—
10	51.2424
18	51.8246
35	52.0179
60	52.1023
120	52.4399
230	53.1677
Pan	1.0721

Pipette Analysis

6/25/2020	Tare #	Tare Weight	Dry Weight
10:42:00 AM			
10:42:20 AM	1	1.6432	1.9267
10:43:51 AM	2	1.6452	1.8843
10:49:25 AM	3	1.6451	1.7890
11:11:41 AM	4	1.6440	1.7359
12:41:00 PM	5	1.6465	1.7024
6:38:00 PM	6	1.6361	1.6813
8:50:00 AM	7	1.6448	1.6769

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-059
 Date Started: 6-21-2020
 Sample ID: LDW20-SS338

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey Silt/clay

Calgon Batch: 19

Temperature: 21

Solids Content

Moisture Content	Tare No.	228
	Tare Wt	1.6452
	Wet Wt + Tare	30.3103
	Dry Wt + Tare	12.9560
Test Sample	Tare No.	228
	Tare Wt	51.4931
	Wet Wt + Tare	91.3309
	Dry Wt + Tare	54.4607
	Cylinder #	C-32

Sieve Analysis

Tare Weight	51.5029
4	—
10	51.5254
18	51.9614
35	52.1574
60	52.3327
120	52.5783
230	53.3922
Pan	1.0913

Pipette Analysis

6/25/2020	Tare #	Tare Weight	Dry Weight
10:46:00 AM			
10:46:20 AM	1	1.6424	1.9316
10:47:51 AM	2	1.6474	1.8943
10:53:25 AM	3	1.6490	1.8210
11:15:41 AM	4	1.6513	1.7618
12:45:00 PM	5	1.6501	1.7192
6:42:00 PM	6	1.6499	1.7071
8:54:00 AM	7	1.6481	1.6884

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-059
 Date Started: 6-21-2020
 Sample ID: LDW20-SS338 FD

Client: Anchor
 Date Complete: _____
 Tested by: H Benny

Sample Description: Dark Grey Silt/clay

Calgon Batch: 19

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	226
	Tare Wt	1.6533
	Wet Wt + Tare	31.0318
	Dry Wt + Tare	13.1614
Test Sample	Tare No.	226
	Tare Wt	51.5567
	Wet Wt + Tare	91.1799
	Dry Wt + Tare	54.8049
	Cylinder #	C-18

Tare Weight	51.6010
4	—
10	51.6043
18	52.0964
35	52.2641
60	52.4087
120	52.6091
230	53.4484
Pan	1.3626

Pipette Analysis

6/25/2020	Tare #	Tare Weight	Dry Weight
10:50:00 AM			
10:50:20 AM	1	1.6513	1.9370
10:51:51 AM	2	1.6507	1.8964
10:57:25 AM	3	1.6529	1.8201
11:19:41 AM	4	1.6531	1.7654
12:49:00 PM	5	1.6460	1.7132
6:46:00 PM	6	1.6491	1.7063
8:58:00 AM	7	1.6361	1.6783

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-059
 Date Started: 6-21-2020
 Sample ID: LDW20-55336

Client: Anchor

Date Complete: _____

Tested by: H Benny

Sample Description: Dark Grey Silt/clay (wet)

Calgon Batch: 19

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	234
	Tare Wt	1.6448
	Wet Wt + Tare	37.7579
	Dry Wt + Tare	17.4105
Test Sample	Tare No.	234
	Tare Wt	51.5742
	Wet Wt + Tare	95.5957
	Dry Wt + Tare	58.7449
	Cylinder #	C-14

Tare Weight	51.5802
4	7
10	51.8889
18	52.2643
35	52.4325
60	52.6264
120	53.2593
230	56.7763
Pan	2.2924

51.8763 HB

Pipette Analysis

6/25/2020	Tare #	Tare Weight	Dry Weight
10:54:00 AM			
10:54:20 AM	1	1.6458	1.9401
10:55:51 AM	2	1.6435	1.8658
11:01:25 AM	3	1.6427	1.77804
11:23:41 AM	4	1.6422	1.7370
12:53:00 PM	5	1.6371	1.6959
6:50:00 PM	6	1.6435	1.6904
9:02:00 AM	7	1.6433	1.6791

HB

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-059
 Date Started: 6-21-2020
 Sample ID: LDW20-55106

Client: Anchor
 Date Complete: _____
 Tested by: HLBenny

Sample Description: Dark Grey Silt/Clay w/ woody debris

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	231
	Tare Wt	1.6585
	Wet Wt + Tare	28.6284
	Dry Wt + Tare	13.3705
Test Sample	Tare No.	231
	Tare Wt	51.7395
	Wet Wt + Tare	97.0110
	Dry Wt + Tare	62.5732
	Cylinder #	C-50

Sieve Analysis

Tare Weight	51.7523
4	—
10	52.2419
18	52.7900
35	53.5703
60	55.0959
120	56.7739
230	60.0301
Pan	2.2271

Pipette Analysis

6/25/2020	Tare #	Tare Weight	Dry Weight
10:58:00 AM			
10:58:20 AM	1	1.6468	1.8734
10:59:51 AM	2	1.6396	1.8044
11:05:25 AM	3	1.6388	1.7479
11:27:41 AM	4	1.6429	1.7201
12:57:00 PM	5	1.6355	1.6877
6:54:00 PM	6	1.6344	1.6772
9:06:00 AM	7	1.6442	1.6756

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-059
 Date Started: 6-21-2020
 Sample ID: LDW 20-55121

Client: Anchor

Date Complete: _____
 Tested by: H Benny

Sample Description: Dark Gray silt/clay

Calgon Batch:

Temperature:

Solids Content

Sieve Analysis

Moisture Content	Tare No.	253
	Tare Wt	1.6469
	Wet Wt + Tare	45.1697
	Dry Wt + Tare	25.4038
Test Sample	Tare No.	253
	Tare Wt	51.9403
	Wet Wt + Tare	96.5770
	Dry Wt + Tare	64.1346
	Cylinder #	251

Tare Weight	51.9478
4	—
10	51.9898
18	52.2449
35	52.9305
60	55.1862
120	57.9651
230	61.8713
Pan	2.2608

C-34 MS

Pipette Analysis

6/25/2020	Tare #	Tare Weight	Dry Weight
11:02:00 AM			
11:02:20 AM	1	1.6504	1.9511
11:03:51 AM	2	1.6516	1.8715
11:09:25 AM	3	1.6495	1.7889
11:31:41 AM	4	1.6528	1.7480
1:01:00 PM	5	1.6478	1.7118
6:58:00 PM	6	1.6448	1.6979
9:10:00 AM	7	1.6537	1.6909

Notes:

Harold L Benny & Associates, LLC

Project: Duwanish AOC 4
 HLB Project #: 20-059
 Date Started: 6-21-2020
 Sample ID: LDW20-55123

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey Silt/clay

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	222
	Tare Wt	1.6535
	Wet Wt + Tare	36.2722
	Dry Wt + Tare	22.8744
Test Sample	Tare No.	222
	Tare Wt	51.5420
	Wet Wt + Tare	93.6277
	Dry Wt + Tare	66.2131
	Cylinder #	C-1

Sieve Analysis

Tare Weight	51.5486
4	-
10	52.0086
18	52.4775
35	53.3606
60	57.7622
120	60.7672
230	64.4237
Pan	1.8386

Pipette Analysis

6/25/2020	Tare #	Tare Weight	Dry Weight
11:06:00 AM			
11:06:20 AM	1	1.6445	1.9142
11:07:51 AM	2	1.6529	1.8545
11:13:25 AM	3	1.6548	1.7922
11:35:41 AM	4	1.6539	1.7499
1:05:00 PM	5	1.6519	1.7172
7:02:00 PM	6	1.6443	1.6963
9:14:00 AM	7	1.6475	1.6866

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-059
 Date Started: 6-21-2020
 Sample ID: LDW20-SS123FD

Client: Anchor

Date Complete: _____
 Tested by: H Benny

Sample Description: Dark Grey Silt/Clay

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	209
	Tare Wt	1.6477
	Wet Wt + Tare	36.6168
	Dry Wt + Tare	23.1327
Test Sample	Tare No.	209
	Tare Wt	50.8314
	Wet Wt + Tare	91.0300
	Dry Wt + Tare	65.8614
	Cylinder #	C-55

Sieve Analysis

Tare Weight	50.8391
4	—
10	51.2651
18	51.7186
35	52.5944
60	67.0204
120	60.0962
230	63.5882
Pan	2.2170

Pipette Analysis

6/25/2020	Tare #	Tare Weight	Dry Weight
11:10:00 AM			
11:10:20 AM	1	1.6477	1.8964
11:11:51 AM	2	1.6497	1.8293
11:17:25 AM	3	1.6562	1.7811
11:39:41 AM	4	1.6453	1.7353
1:09:00 PM	5	1.6493	1.7105
7:06:00 PM	6	1.6385	1.6869
9:18:00 AM	7	1.6414	1.6776

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC 4
 HLB Project #: 20-059
 Date Started: 6-21-2020
 Sample ID: LDW20-55125

Client: Anchor

Date Complete: _____
 Tested by: H Benny

Sample Description: Dark Gray Silt/clay

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	233
	Tare Wt	1.6575
	Wet Wt + Tare	39.7629
	Dry Wt + Tare	20.2696
Test Sample	Tare No.	233
	Tare Wt	51.4175
	Wet Wt + Tare	91.3275
	Dry Wt + Tare	57.845
	Cylinder #	C-10

Sieve Analysis

Tare Weight	51.4272
4	-
10	51.7477
18	52.1131
35	52.4589
60	53.2107
120	53.9208
230	56.26734
Pan	1.5627

HB

Pipette Analysis

6/25/2020	Tare #	Tare Weight	Dry Weight
11:14:00 AM			
11:14:20 AM	1	1.6322	1.9425
11:15:51 AM	2	1.6341	1.8776
11:21:25 AM	3	1.6340	1.8040
11:43:41 AM	4	1.6310	1.7506
1:13:00 PM	5	1.6403	1.7205
7:10:00 PM	6	1.6275	1.6878
9:22:00 AM	7	1.6437	1.6898

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-059
 Date Started: 6-21-2020
 Sample ID: LDW20-55130

Client: Anchor

Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey Silty Sand w/ Gravel

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	213
	Tare Wt	16588
	Wet Wt + Tare	43.9725
	Dry Wt + Tare	30.6715
Test Sample	Tare No.	213
	Tare Wt	51.5032
	Wet Wt + Tare	110.9224
	Dry Wt + Tare	78.6834
	Cylinder #	C-57

Sieve Analysis

Tare Weight	51.5117
4	54.0536
10	59.4821
18	60.0796
35	61.0097
60	65.2089
120	70.9022
230	75.7220
Pan	2.9395

Pipette Analysis

6/25/2020	Tare #	Tare Weight	Dry Weight
11:18:00 AM			
11:18:20 AM	1	1.6561	1.9684
11:19:51 AM	2	1.6504	1.8743
11:25:25 AM	3	1.6512	1.7963
11:47:41 AM	4	1.6516	1.7354
1:17:00 PM	5	1.67493	1.7159
7:14:00 PM	6	1.6487	1.6998
9:26:00 AM	7	1.6562	1.6963

HB

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-059
 Date Started: 6-21-2020
 Sample ID: LDW20-SS130 FD

Client: _____

Date Complete: _____

Tested by: _____

Sample Description: Dark Grey, Lots of Rocks to 1" See note below.

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	232
	Tare Wt	1.6473
	Wet Wt + Tare	52.7346
	Dry Wt + Tare	36.7893
Test Sample	Tare No.	232
	Tare Wt	51.7176
	Wet Wt + Tare	111.3349
	Dry Wt + Tare	79.7437
	Cylinder #	C-31

Sieve Analysis

Tare Weight	51.7484
4	55.6838
10	61.1353
18	61.7051
35	62.6384
60	66.8930
120	72.6297
230	77.3259
Pan	2.4438

Pipette Analysis

6/25/2020	Tare #	Tare Weight	Dry Weight
11:22:00 AM			
11:22:20 AM	1	1.6547	1.9649
11:23:51 AM	2	1.6431	1.8627
11:29:25 AM	3	1.6491	1.7898
11:51:41 AM	4	1.6505	1.73408
1:21:00 PM	5	1.6498	1.7198
7:18:00 PM	6	1.6440	1.6962
9:30:00 AM	7	1.6430	1.6831

HB

Notes:

There were 6 rocks to 1" diameter in the FD that were not in the SS130. I question how well they were mixed. All large rocks were excluded from GS.

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-059
 Date Started: 6-21-2020
 Sample ID: LDW20-SC148C

Client: Anchor
 Date Complete: _____
 Tested by: HLBenny

Sample Description: Dark Grey Gravelly Sandy Silt

Calgon Batch: 19

Temperature: 21

Solids Content

Moisture Content	Tare No.	229
	Tare Wt	1.6514
	Wet Wt + Tare	46.0737
	Dry Wt + Tare	30.6203
Test Sample	Tare No.	229
	Tare Wt	51.6350
	Wet Wt + Tare	101.1479
	Dry Wt + Tare	68.0133
	Cylinder #	C-20

Sieve Analysis

Tare Weight	51.7422
4	-
10	54.9547
18	57.0658
35	58.3127
60	61.1437
120	63.4516
230	66.4903
Pan	1.5688

Shell Frag
↓

Pipette Analysis

6/25/2020	Tare #	Tare Weight	Dry Weight
11:26:00 AM			
11:26:20 AM	1	1.6426	1.9807
11:27:51 AM	2	1.6390	1.9221
11:33:25 AM	3	1.6346	1.8476
11:55:41 AM	4	1.6440	1.7683
1:25:00 PM	5	1.6455	1.7299
7:22:00 PM	6	1.6587	1.7088
9:34:00 AM	7	1.6482	1.6794

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-059
 Date Started: 6-21-2020
 Sample ID: LDW20-SC155B

Client: Anchor
 Date Complete: _____
 Tested by: H Benny

Sample Description: Dark Grey Silt/Clay

Calgon Batch: 19

Temperature: 21

Solids Content

Moisture Content	
Tare No.	211
Tare Wt	1.6490
Wet Wt + Tare	53.6227
Dry Wt + Tare	34.8992
Test Sample	
Tare No.	211
Tare Wt	51.7844
Wet Wt + Tare	92.5081
Dry Wt + Tare	66.8953
Cylinder #	C-19

Sieve Analysis

Tare Weight	51.8037
4	—
10	51.8043
18	51.8957
35	52.0641
60	52.3540
120	56.3291
230	65.2553
Pan	1.6956

Pipette Analysis

6/25/2020	Tare #	Tare Weight	Dry Weight
11:38:00 AM			
11:38:20 AM	1	1.6374	1.9128
11:39:51 AM	2	1.6554	1.8584
11:45:25 AM	3	1.6399	1.7645
12:07:41 PM	4	1.6538	1.7297
1:37:00 PM	5	1.6567	1.7183
7:34:00 PM	6	1.6501	1.7036
9:46:00 AM	7	1.6564	1.6998

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-59
 Date Started: 6-21-2020
 Sample ID: LDW20-SC166C

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: Dark Grey s.l./Clay

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	230
	Tare Wt	1.6594
	Wet Wt + Tare	30.8957
	Dry Wt + Tare	18.3312
Test Sample	Tare No.	230
	Tare Wt	50.1845
	Wet Wt + Tare	91.3161
	Dry Wt + Tare	62.1316
	Cylinder #	C-17

Sieve Analysis

Tare Weight	50.1946
4	—
10	50.1967
18	50.3556
35	50.5636
60	50.7464
120	52.5206
230	60.1823
Pan	2.0211

Pipette Analysis

6/25/2020	Tare #	Tare Weight	Dry Weight
11:34:00 AM			
11:34:20 AM	1	1.6511	1.9287
11:35:51 AM	2	1.6567	1.8587
11:41:25 AM	3	1.6386	1.7538
12:03:41 PM	4	1.6461	1.7157
1:33:00 PM	5	1.6476	1.67080
7:30:00 PM	6	1.6468	1.6944
9:42:00 AM	7	1.6498	1.6805

HB

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-059
 Date Started: 6-21-2020
 Sample ID: LDW20-SC208B

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Dark Gray Silt/clay

Calgon Batch: 19

Temperature: 21

Solids Content

Moisture Content	Tare No.	212
	Tare Wt	1.6573
	Wet Wt + Tare	38.8975
	Dry Wt + Tare	21.3124
Test Sample	Tare No.	212
	Tare Wt	50.7483
	Wet Wt + Tare	92.9823
	Dry Wt + Tare	55.6817
	Cylinder #	C-36

Sieve Analysis

Tare Weight	50.7584
4	—
10	50.7928
18	51.0370
35	51.2350
60	51.4228
120	51.7595
230	53.6740
Pan	2.0780

Pipette Analysis

6/25/2020	Tare #	Tare Weight	Dry Weight
11:30:00 AM			
11:30:20 AM	1	1.6493	2.0325
11:31:51 AM	2	1.6534	1.8240
11:37:25 AM	3	1.6492	1.7634
11:59:41 AM	4	1.6545	1.7221
1:29:00 PM	5	1.6512	1.7087
7:26:00 PM	6	1.6506	1.6967
9:38:00 AM	7	1.6525	1.6808

Notes:

Harold L Benny & Associates, LLC

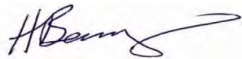
Project: Duwamish AOC4
Date Received: June 8, 2020
Date Started: June 18, 2020
Date Finished: June 23, 2020

Client: AnchorQEA
HLB Project #: 20-060
Tested By: H Benny

CASE NARRATIVE

1. Twelve 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 the job was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. The samples contained organic matter which may have broken down during the oven drying and sieving process, affecting the grain size analysis.
4. The data is provided in summary tables and plots.
5. There were no noted anomalies in the testing or samples on project.

Reviewed by:



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 8, 2020
Date Started: June 18, 2020
Date Finished: June 23, 2020

Client: AnchorQEA
Project #: 20-060
Tested by: H Benny

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	
	-3	-2	-1						0	1	2	3	4	5
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
LDW20-SC156	100.0	100.0	99.3	98.8	98.1	95.9	50.5	25.4	18.0	12.8	9.3	6.1	4.5	3.3
	100.0	100.0	98.7	98.2	97.4	94.9	49.7	24.5	17.1	13.2	9.3	6.2	4.4	3.4
	100.0	100.0	98.3	97.9	97.1	94.9	49.1	23.8	18.0	12.9	9.2	6.1	4.4	3.4
LDW20-IT133	100.0	97.9	95.3	93.1	85.0	56.4	32.1	16.2	10.2	7.1	5.2	3.7	2.5	1.7
LDW20-SC140	100.0	100.0	99.6	99.1	96.3	76.9	54.1	32.4	22.0	13.0	9.6	6.4	4.3	3.4
LDW20-SC142	100.0	100.0	98.3	97.5	94.4	76.9	46.9	27.0	17.8	10.6	8.3	5.8	4.4	3.4
LDW20-SC150	100.0	95.3	85.9	75.0	62.9	48.3	43.4	37.0	30.4	16.8	11.8	8.1	5.9	4.6
LDW20-SC162	100.0	100.0	98.3	96.4	92.6	73.2	54.4	32.5	24.0	16.5	12.0	8.3	6.2	4.4
LDW20-SC135	100.0	100.0	99.6	98.4	91.0	83.7	73.2	48.0	36.2	23.2	16.3	10.7	7.6	5.8
LDW20-SC202	100.0	100.0	88.3	81.4	76.4	73.2	66.4	54.5	41.0	19.3	15.0	10.8	7.8	5.9
LDW20-SC203	100.0	100.0	96.3	91.5	86.2	80.2	70.7	56.9	41.7	23.5	17.7	11.9	8.7	6.4
LDW20-SC144	100.0	100.0	99.9	99.6	98.6	95.9	84.6	49.1	30.8	19.4	13.8	10.3	7.8	5.7
LDW20-SC211	100.0	100.0	99.9	99.0	98.0	96.7	91.0	74.0	39.3	25.0	16.5	11.2	9.2	7.2
LDW20-SC211FD	100.0	100.0	99.8	99.0	98.1	97.0	91.5	74.6	38.2	22.8	17.0	12.2	8.6	6.8

Reviewed by:  _____

Harold L Benny & Associates, LLC


Project: Duwamish AOC4
Date Received: June 8, 2020
Date Started: June 18, 2020
Date Finished: June 23, 2020

Client: AnchorQEA
HLB Project #: 20-060
Tested by: H Benny

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)
LDW20-SC156	0.7	0.4	0.8	2.2	45.4	25.1	7.4	5.2	3.5	3.2	1.6	1.2	3.3	25.4
	1.3	0.4	0.8	2.5	45.2	25.2	7.4	3.9	3.9	3.1	1.8	1.0	3.4	24.5
	1.7	0.4	0.8	2.2	45.8	25.3	5.8	5.1	3.7	3.1	1.7	1.0	3.4	23.8
LDW20-IT133	4.7	2.2	8.1	28.7	24.3	15.9	5.9	3.1	1.9	1.6	1.1	0.8	1.7	16.2
LDW20-SC140	0.4	0.6	2.8	19.4	22.8	21.7	10.4	9.0	3.4	3.2	2.0	0.9	3.4	32.4
LDW20-SC142	1.7	0.8	3.1	17.5	30.0	19.9	9.3	7.1	2.3	2.5	1.5	0.9	3.4	27.0
LDW20-SC150	14.1	10.9	12.1	14.6	4.9	6.5	6.6	13.6	5.0	3.7	2.2	1.3	4.6	37.0
LDW20-SC162	1.7	1.9	3.8	19.4	18.8	21.9	8.6	7.4	4.5	3.7	2.2	1.8	4.4	32.5
LDW20-SC135	0.4	1.1	7.5	7.2	10.5	25.3	11.8	13.0	6.9	5.6	3.1	1.8	5.8	48.0
LDW20-SC202	11.7	6.9	4.9	3.2	6.9	11.9	13.5	21.7	4.2	4.2	3.1	1.8	5.9	54.5
LDW20-SC203	3.7	4.8	5.2	6.0	9.6	13.8	15.2	18.1	5.8	5.7	3.2	2.3	6.4	56.9
LDW20-SC144	0.1	0.3	1.0	2.7	11.3	35.5	18.3	11.4	5.6	3.5	2.5	2.1	5.7	49.1
LDW20-SC211	0.1	0.9	1.0	1.3	5.7	17.1	34.7	14.3	8.5	5.3	1.9	2.1	7.2	74.0
LDW20-SC211FD	0.2	0.8	0.8	1.2	5.5	16.9	36.4	15.3	5.8	4.8	3.6	1.8	6.8	74.6

Reviewed by:  _____

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 8, 2020
Date Started: June 18, 2020
Date Finished: June 23, 2020

Client: AnchorQEA
HLB Project #: 20-060
Tested by: H Benny

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
LDW20-SC156	100.0	100.0	99.3	98.8	98.1	95.9	50.5	25.4	18.0	12.8	9.3	6.1	4.5	3.3
	100.0	100.0	98.7	98.2	97.4	94.9	49.7	24.5	17.1	13.2	9.3	6.2	4.4	3.4
	100.0	100.0	98.3	97.9	97.1	94.9	49.1	23.8	18.0	12.9	9.2	6.1	4.4	3.4
AVE	100.0	100.0	98.7	98.3	97.5	95.2	49.8	24.6	17.7	13.0	9.3	6.1	4.4	3.4
STDEV	0.0	0.0	0.4	0.4	0.4	0.5	0.6	0.6	0.4	0.1	0.1	0.1	0.1	0.0
%RSD	0.0	0.0	0.4	0.4	0.4	0.5	1.1	2.6	2.4	1.1	0.7	1.0	1.4	1.3

The Triplicate Applies To The Following Samples

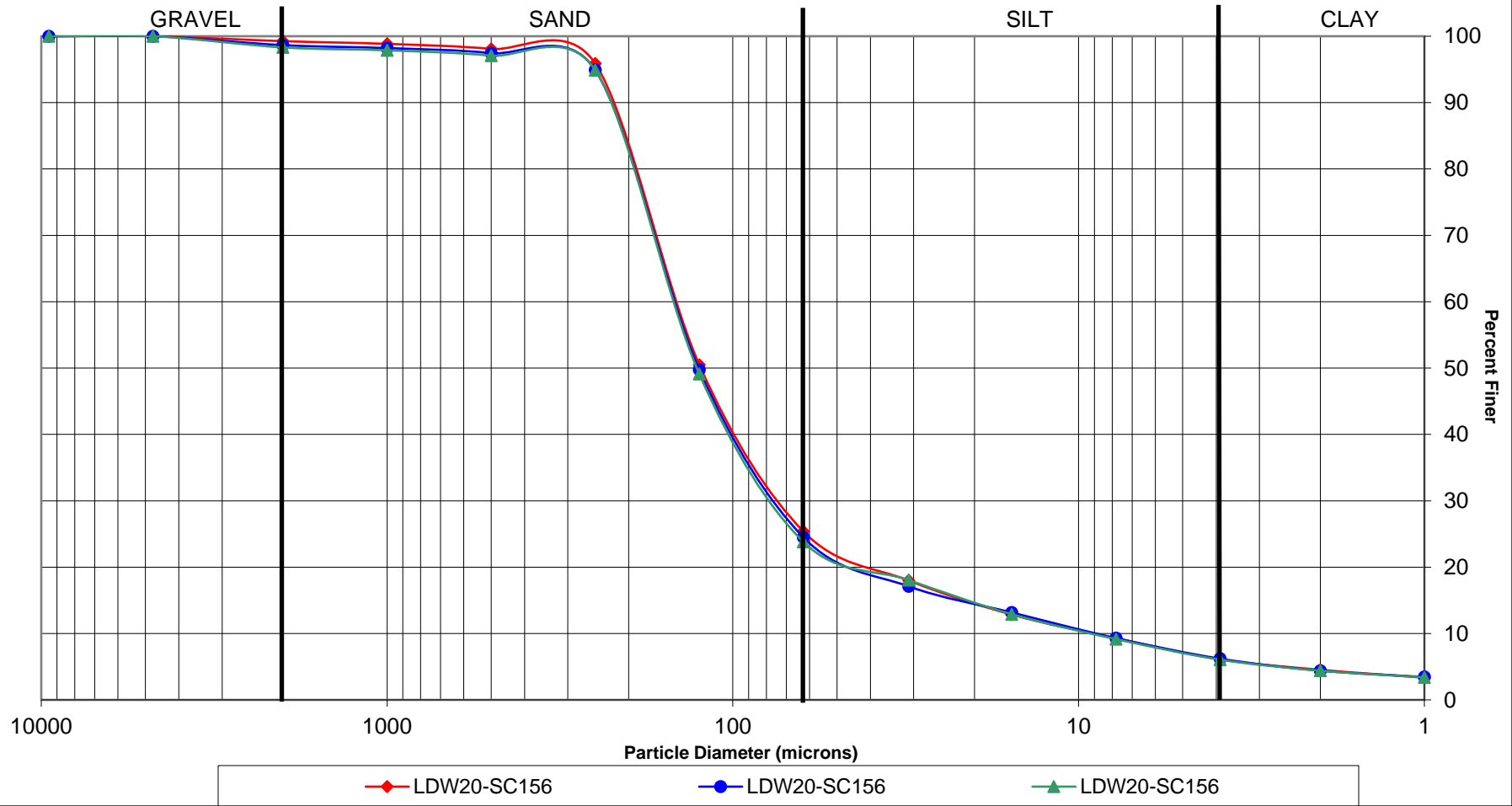
Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
LDW20-SC156	6/3/2020	6/18/2020	6/23/2020	100.7		8.1
	6/3/2020	6/18/2020	6/23/2020	100.1		7.6
	6/3/2020	6/18/2020	6/23/2020	99.2		7.7
LDW20-IT133	6/3/2020	6/18/2020	6/23/2020	101.0		9.6
LDW20-SC140	6/3/2020	6/18/2020	6/23/2020	102.6		13.9
LDW20-SC142	6/3/2020	6/18/2020	6/23/2020	102.8		13.4
LDW20-SC150	6/3/2020	6/18/2020	6/23/2020	99.6		12.2
LDW20-SC162	6/3/2020	6/18/2020	6/23/2020	101.1		7.9
LDW20-SC135	6/3/2020	6/18/2020	6/23/2020	100.0		11.7
LDW20-SC202	6/3/2020	6/18/2020	6/23/2020	99.5		15.0
LDW20-SC203	6/3/2020	6/18/2020	6/23/2020	101.0		13.5
LDW20-SC144	6/3/2020	6/18/2020	6/23/2020	98.2		12.8
LDW20-SC211	6/3/2020	6/18/2020	6/23/2020	102.5		16.3
LDW20-SC211FD	6/3/2020	6/18/2020	6/23/2020	104.9		16.9

Notes to the Testing: Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution.

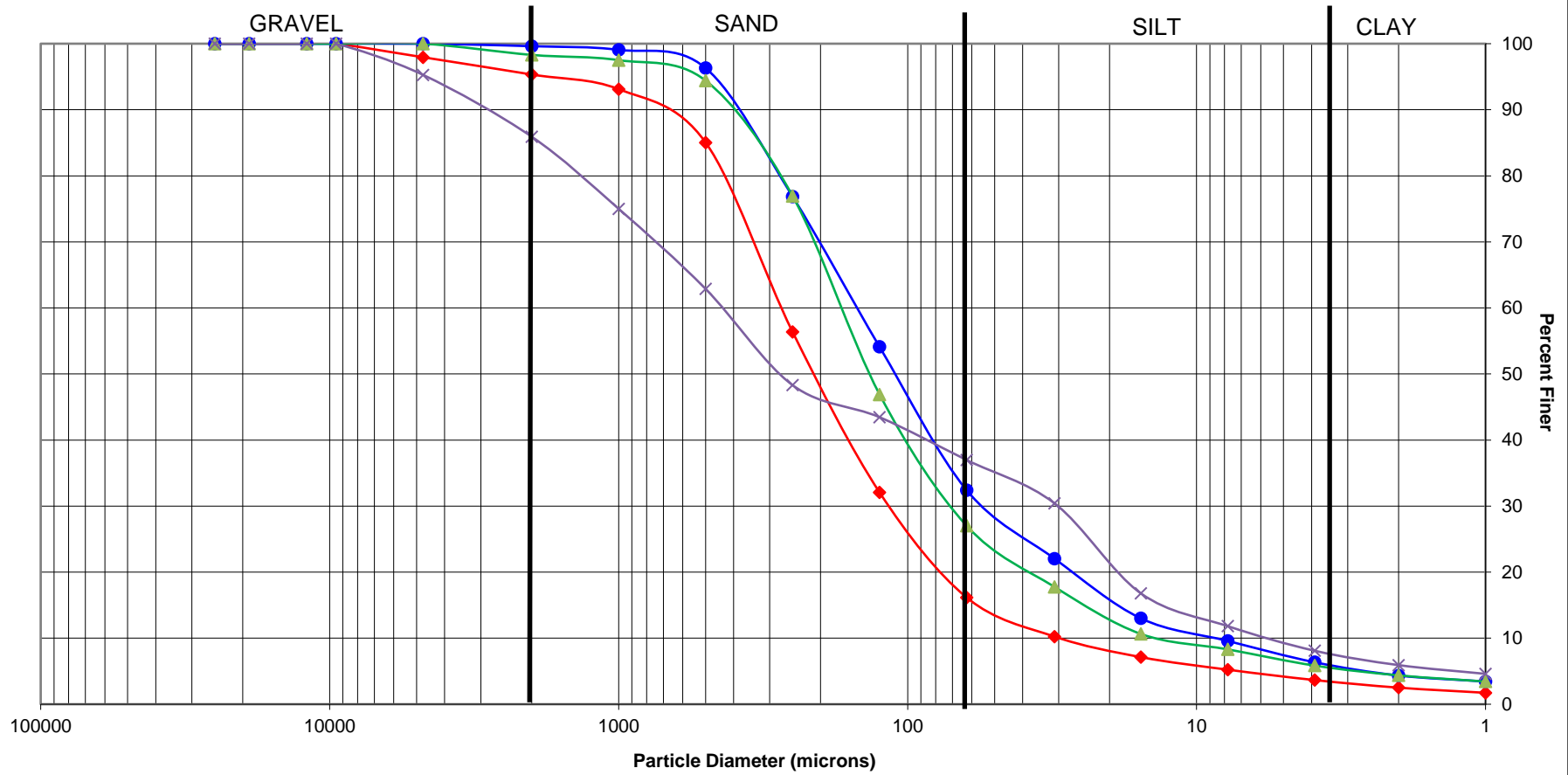
Reviewed by:  _____

PSEP Grain Size Distribution

Triplicate Sample Plot

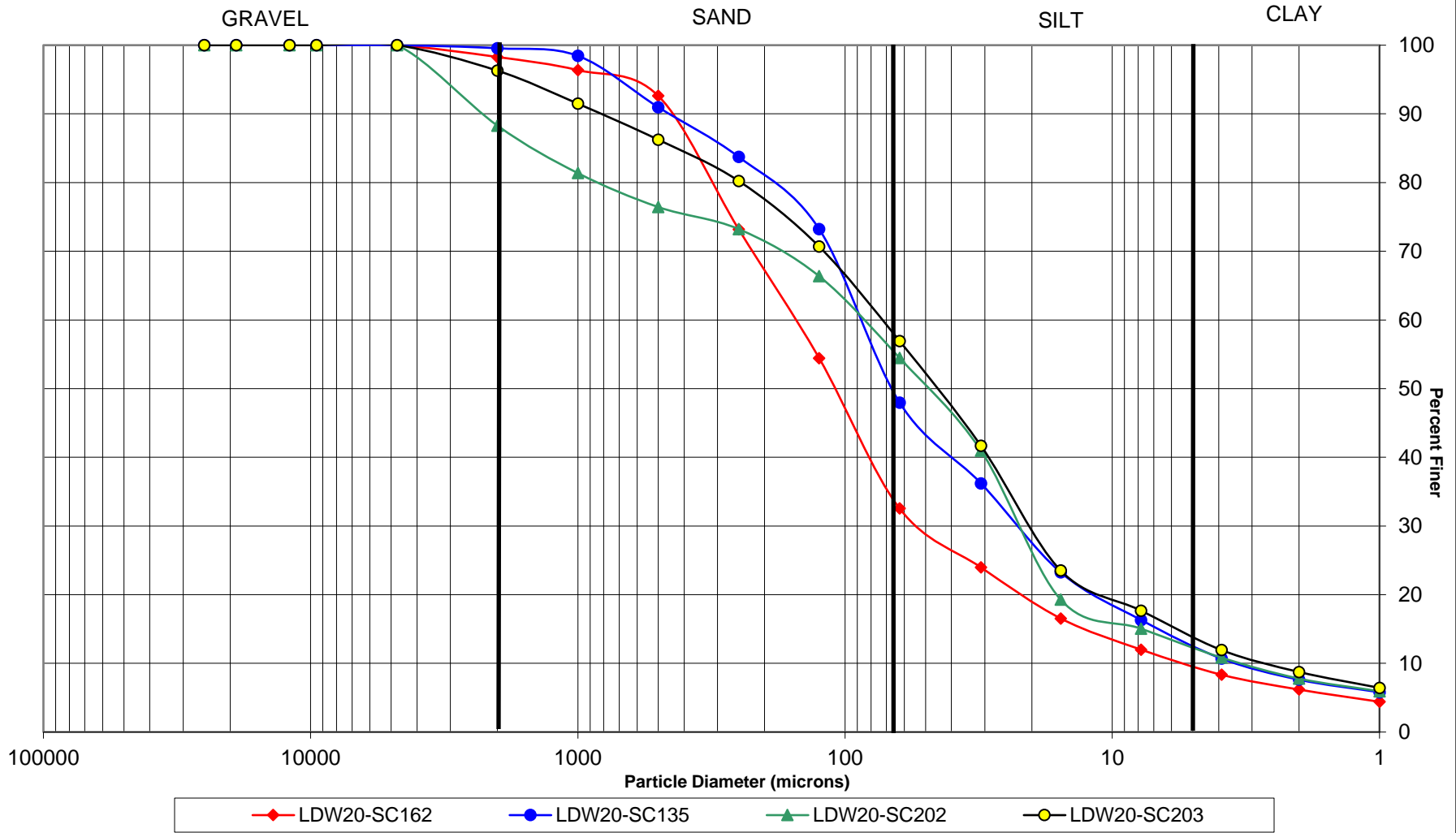


PSEP Grain Size Distribution

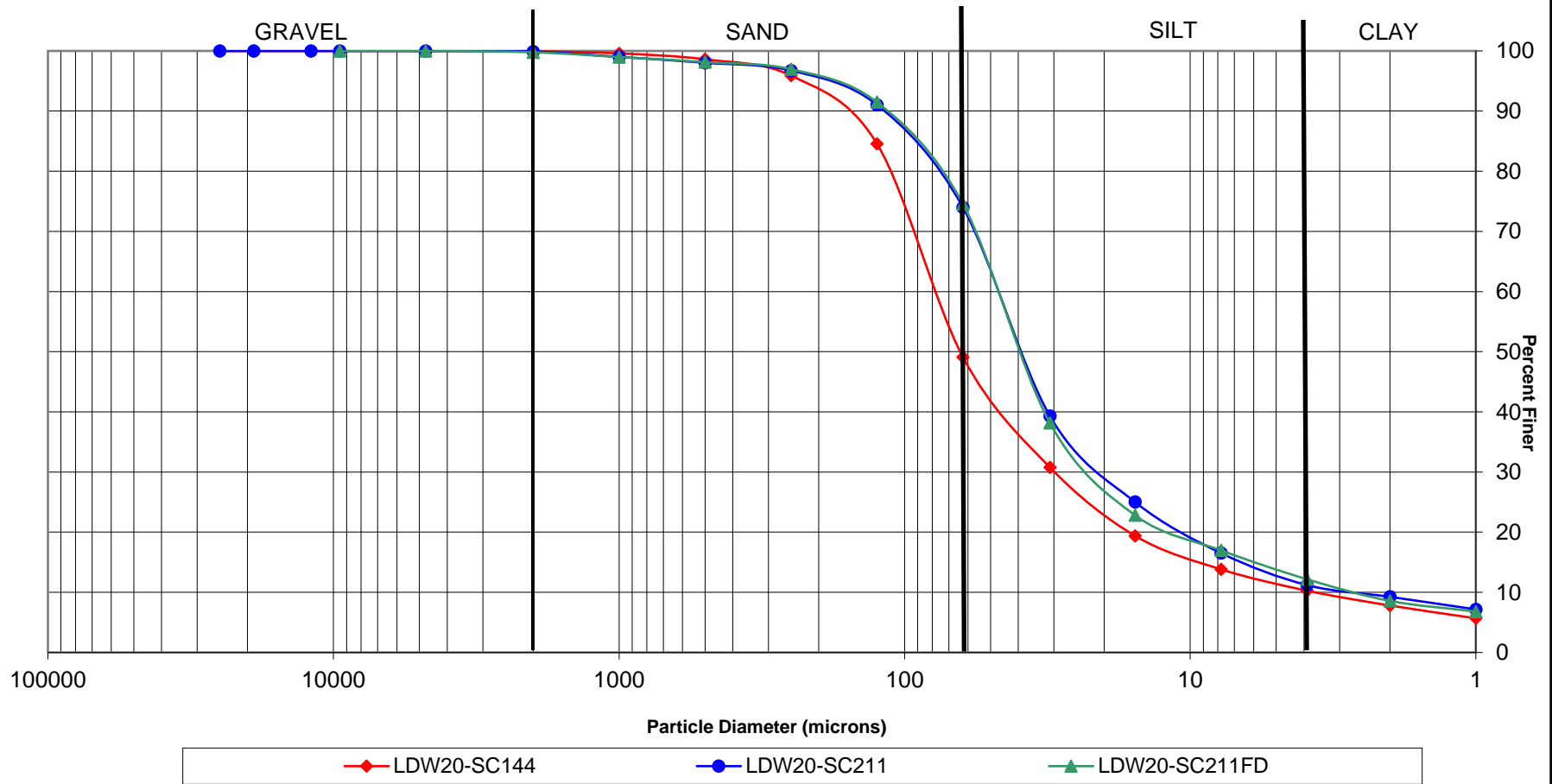


◆ LDW20-IT133 ● LDW20-SC140 ▲ LDW20-SC142 ✕ LDW20-SC150

PSEP Grain Size Distribution



PSEP Grain Size Distribution



Harold L Benny & Associates, LLC

Project: Durawish AOC4
 HLB Project #: 20-060
 Date Started: 6-18-2020
 Sample ID: LDW20-SC156A

Client: Anchor
 Date Complete: 6-23-2020
 Tested by: HBenny

Sample Description: Dark Grey Sandy Silt

Calgon Batch: 18

Temperature: 21

Solids Content

	Tare No.	247
Moisture Content	Tare Wt	1.6445
	Wet Wt + Tare	46.4091
	Dry Wt + Tare	32.6158
	Tare No.	247
Test Sample	Tare Wt	51.8639
	Wet Wt + Tare	98.2236
	Dry Wt + Tare	76.6277
	Cylinder #	C-40

Sieve Analysis

Tare Weight	51.8681
4	—
10	52.1071
18	52.2393
35	52.4844
60	53.1927
120	67.7530
230	75.8034
Pan	0.8256

Pipette Analysis

6/21/2020	Tare #	Tare Weight	Dry Weight
9:35:00 AM			
9:35:20 AM	1	1.6484	1.8245
9:36:51 AM	2	1.6497	1.7822
9:42:25 AM	3	1.6505	1.7502
10:04:41 AM	4	1.6501	1.7273
11:34:00 AM	5	1.6431	1.6999
5:31:00 PM	6	1.6430	1.6898
7:43:00 AM	7	1.6467	1.6859

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-060
 Date Started: 6-18-2020
 Sample ID: LDW20-SC156B

Client: Anchor
 Date Complete: 6-23-2020
 Tested by: HBenny

Sample Description: Dark Grey Sandy Silt

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content		
Tare No.	254	
Tare Wt	1.6412	
Wet Wt + Tare	31.4207	
Dry Wt + Tare	22.1146	
Test Sample		
Tare No.	254	
Tare Wt	52.7869	
Wet Wt + Tare	97.8723	
Dry Wt + Tare	76.9911	
Cylinder #	C-59	

Sieve Analysis

Tare Weight	52.7987
4	—
10	53.2156
18	53.3526
35	53.5902
60	54.3740
120	68.3785
230	76.2030
Pan	0.9124

Pipette Analysis

6/21/2020	Tare #	Tare Weight	Dry Weight
9:39:00 AM			
9:39:20 AM	1	1.6553	1.8247
9:40:51 AM	2	1.6505	1.87744
9:46:25 AM	3	1.6435	1.7430
10:08:41 AM	4	1.6406	1.7162
11:38:00 AM	5	1.6416	1.6980
5:35:00 PM	6	1.6457	1.6909
7:47:00 AM	7	1.6515	1.6908

HB

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish A04
 HLB Project #: 20-060
 Date Started: 6-18-2020
 Sample ID: LDW20-5C56C

Client: Anchor
 Date Complete: 6-23-2020
 Tested by: HBenny

Sample Description: Dark Grey Sandy Silt

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	256
	Tare Wt	1.6458
	Wet Wt + Tare	35.9966
	Dry Wt + Tare	25.1640
Test Sample	Tare No.	256
	Tare Wt	51.5713
	Wet Wt + Tare	98.8635
	Dry Wt + Tare	77.1904
	Cylinder #	C-21

Sieve Analysis

Tare Weight	51.5786
4	—
10	52.1254
18	52.2659
35	52.5274
60	53.2331
120	68.0588
230	76.2492
Pan	1.0008

Pipette Analysis

6/21/2020	Tare #	Tare Weight	Dry Weight
9:43:00 AM			
9:43:20 AM	1	1.6476	1.8246
9:44:51 AM	2	1.6358	1.7715
9:50:25 AM	3	1.6344	1.7365
10:12:41 AM	4	1.6472	1.7249
11:42:00 AM	5	1.6459	1.7034
5:39:00 PM	6	1.6487	1.6953
7:51:00 AM	7	1.6473	1.6874

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-060
 Date Started: 6-18-2020
 Sample ID: LDW20-IT133

Client: Anchor
 Date Complete: 6-23-2020
 Tested by: HBenny

Sample Description: Brown Silty Sand + Gravel

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	246
	Tare Wt	1.6456
	Wet Wt + Tare	47.7330
	Dry Wt + Tare	35.5630
Test Sample	Tare No.	246
	Tare Wt	51.7933
	Wet Wt + Tare	132.9183
	Dry Wt + Tare	103.7992
	Cylinder #	C-46

Sieve Analysis

Tare Weight	51.8012
4	53.0275
10	54.5880
18	55.9119
35	60.7350
60	77.8607
120	92.3646
230	101.8512
Pan	1.9259

Pipette Analysis

6/21/2020	Tare #	Tare Weight	Dry Weight
9:47:00 AM			
9:47:20 AM	1	1.6480	1.8477
9:48:51 AM	2	1.6349	1.7739
9:54:25 AM	3	1.6473	1.7496
10:16:41 AM	4	1.6458	1.7256
11:46:00 AM	5	1.6407	1.7019
5:43:00 PM	6	1.6414	1.6890
7:55:00 AM	7	1.6450	1.6834

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-060
 Date Started: 6-18-2020
 Sample ID: LDW20-5C140

Client: Anchor
 Date Complete: 6-23-2020
 Tested by: HBenny

Sample Description: Dark Grey Silty Sand

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	255
	Tare Wt	1.6513
	Wet Wt + Tare	35.9494
	Dry Wt + Tare	24.3505
Test Sample	Tare No.	255
	Tare Wt	52.0176
	Wet Wt + Tare	116.9021
	Dry Wt + Tare	83.5016
	Cylinder #	C-27

Sieve Analysis

Tare Weight	52.0265
4	—
10	52.1898
18	52.4269
35	53.6138
60	61.9655
120	71.7388
230	81.6486
Pan	2.4364

Pipette Analysis

6/21/2020	Tare #	Tare Weight	Dry Weight
9:51:00 AM			
9:51:20 AM	1	1.6470	1.9213
9:52:51 AM	2	1.6504	1.8527
9:58:25 AM	3	1.6397	1.7665
10:20:41 AM	4	1.6400	1.7381
11:50:00 AM	5	1.6427	1.7138
5:47:00 PM	6	1.6342	1.6885
7:59:00 AM	7	1.6478	1.6945

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOKH
 HLB Project #: 20-060
 Date Started: 6-18-2020
 Sample ID: LDW20 SC142

Client: Anchor
 Date Complete: 6-23-2020
 Tested by: HBenny

Sample Description: Dark Grey Silty Sand w/ woody debris

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	244
	Tare Wt	1.6510
	Wet Wt + Tare	42.2246
	Dry Wt + Tare	30.1264
Test Sample	Tare No.	52.2589 244 HB
	Tare Wt	52.2589
	Wet Wt + Tare	123.2461
	Dry Wt + Tare	90.6376
	Cylinder #	C-13

Sieve Analysis

Tare Weight	52.2788
4	-
10	53.1253
18	53.5208
35	55.0657
60	63.7679
120	78.7377
230	88.6345
Pan	2.1218

woody

Pipette Analysis

6/21/2020	Tare #	Tare Weight	Dry Weight
9:55:00 AM			
9:55:20 AM	1	1.6467	1.9066
9:56:51 AM	2	1.6375	1.8275
10:02:25 AM	3	1.6390	1.7601
10:24:41 AM	4	1.6369	1.7353
11:54:00 AM	5	1.6285	1.7031
5:51:00 PM	6	1.6366	1.6969
8:03:00 AM	7	1.6333	1.6845

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-060
 Date Started: 6-18-2020
 Sample ID: LDW20-SC150

Client: Anchor
 Date Complete: 6-23-2020
 Tested by: HBenny

Sample Description: Dark Grey Silt w/ woody debris

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	243
	Tare Wt	1.6401
	Wet Wt + Tare	38.5413
	Dry Wt + Tare	24.0809
Test Sample	Tare No.	243
	Tare Wt	52.1429
	Wet Wt + Tare	106.4233
	Dry Wt + Tare	74.6979
	Cylinder #	C-30

Sieve Analysis

Tare Weight	52.1522
4	53.7113
10	56.7995
18	60.4031
35	64.4080
60	69.2171
120	70.8197
230	72.9561
Pan	1.1095

73 HB

Pipette Analysis

6/21/2020	Tare #	Tare Weight	Dry Weight
9:59:00 AM			
9:59:20 AM	1	1.6329	1.8977
10:00:51 AM	2	1.6410	1.8605
10:06:25 AM	3	1.6352	1.7645
10:28:41 AM	4	1.6354	1.7317
11:58:00 AM	5	1.6455	1.7171
5:55:00 PM	6	1.6517	1.7089
8:07:00 AM	7	1.6387	1.6871

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-060
 Date Started: 6-18-2020
 Sample ID: LDW20-SC162

Client: Anchor
 Date Complete: 6-23-2020
 Tested by: HBenny

Sample Description: Dark Grey Silt w/ woody debris

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	206
	Tare Wt	1.6417
	Wet Wt + Tare	36.3449
	Dry Wt + Tare	22.3636
Test Sample	Tare No.	206
	Tare Wt	50.7130
	Wet Wt + Tare	91.1832
	Dry Wt + Tare	68.0629
	Cylinder #	C-44

Sieve Analysis

Tare Weight	50.7191
4	—
10	51.1343
18	51.5971
35	52.5045
60	61.1986
120	61.7304
230	67.0200
Pan	1.1440

Pipette Analysis

6/21/2020	Tare #	Tare Weight	Dry Weight
10:03:00 AM			
10:03:20 AM	1	1.6418	1.8117
10:04:51 AM	2	1.6381	1.7706
10:10:25 AM	3	1.6397	1.7367
10:32:41 AM	4	1.6406	1.7159
12:02:00 PM	5	1.6416	1.6994
5:59:00 PM	6	1.6387	1.6862
8:11:00 AM	7	1.6457	1.6847

Notes:

Harold L Benny & Associates, LLC

Project: Duwanish AOC4
 HLB Project #: 20-060
 Date Started: 6-18-2020
 Sample ID: LDW20-SC135

Client: Anchor
 Date Complete: 6-23-2020
 Tested by: HBenny

Sample Description: Dark Gray Silt/clay w/ woody debris

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	217
	Tare Wt	1.6451
	Wet Wt + Tare	34.0999
	Dry Wt + Tare	21.7757
Test Sample	Tare No.	217
	Tare Wt	51.7841
	Wet Wt + Tare	91.0867
	Dry Wt + Tare	65.7736
	Cylinder #	C-38

Sieve Analysis

Tare Weight	51.7903
4	—
10	51.8997
18	52.1682
35	53.9924
60	55.7568
120	58 60 .3160
230	64.4762
Pan	1.3447

HB Resieved

Pipette Analysis

6/21/2020	Tare #	Tare Weight	Dry Weight
10:07:00 AM			
10:07:20 AM	1	1.6452	1.8971
10:08:51 AM	2	1.6437	1.8382
10:14:25 AM	3	1.6356	1.7669
10:36:41 AM	4	1.6439	1.7414
12:06:00 PM	5	1.6507	1.7208
6:03:00 PM	6	1.6413	1.6964
8:15:00 AM	7	1.6409	1.6871

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-060
 Date Started: 6-18-2020
 Sample ID: LDW20-SC202

Client: Anchor
 Date Complete: 6-23-2020
 Tested by: H Benny

Sample Description: Dark Grey Silt/Clay w/ Gravel

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	250
	Tare Wt	1.6471
	Wet Wt + Tare	35.9783
	Dry Wt + Tare	23.3333
Test Sample	Tare No.	250
	Tare Wt	52.3255
	Wet Wt + Tare	95.8948
	Dry Wt + Tare	66.5130
	Cylinder #	C-29

Sieve Analysis

Tare Weight	52.3361
4	—
10	55.5595
18	57.4621
35	58.8224
60	59.7060
120	61.5938
230	64.8707
Pan	1.6994

Pipette Analysis

6/21/2020	Tare #	Tare Weight	Dry Weight
10:11:00 AM			
10:11:20 AM	1	1.6441	1.9646
10:12:51 AM	2	1.6421	1.8867
10:18:25 AM	3	1.6486	1.7732
10:40:41 AM	4	1.6403	1.7415
12:10:00 PM	5	1.6355	1.7134
6:07:00 PM	6	1.6358	1.6968
8:19:00 AM	7	1.6313	1.6821

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-060
 Date Started: 6-18-2020
 Sample ID: LDW20-SC203

Client: Anchor
 Date Complete: 6-23-2020
 Tested by: H Benny

Sample Description: Dark Grey Silt/clay

Calgon Batch: 18

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	221
	Tare Wt	1.6436
	Wet Wt + Tare	31.1277
	Dry Wt + Tare	19.2996
Test Sample	Tare No.	221
	Tare Wt	51.9546
	Wet Wt + Tare	91.6423
	Dry Wt + Tare	63.7328
	Cylinder #	C-39

Tare Weight	51.9612
4	—
10	52.8433
18	53.9856
35	55.2323
60	56.6597
120	58.9304
230	62.2007
Pan	

Pipette Analysis

6/21/2020	Tare #	Tare Weight	Dry Weight
10:15:00 AM			
10:15:20 AM	1	1.6481	1.9318
10:16:51 AM	2	1.6481	1.8721
10:22:25 AM	3	1.6468	1.7154
10:44:41 AM	4	1.64503	1.7514
12:14:00 PM	5	1.6477	1.7218
6:11:00 PM	6	1.6360	1.6951
8:23:00 AM	7	1.6366	1.6848

H3

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-060
 Date Started: 6-18-2020
 Sample ID: LDW20-SC211

Client: Anchor
 Date Complete: 6-23-2020
 Tested by: H Benny

Sample Description: Dark Grey Silt/clay

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	245
	Tare Wt	1.6431
	Wet Wt + Tare	40.5585
	Dry Wt + Tare	22.6689
Test Sample	Tare No.	245
	Tare Wt	51.8585
	Wet Wt + Tare	92.7392
	Dry Wt + Tare	59.8572
	Cylinder #	C-4

Sieve Analysis

Tare Weight	51.8695
4	-
10	51.8906
18	52.0895
35	52.3033
60	52.5907
120	53.8481
230	57.6149
Pan	2.3049

Pipette Analysis

	Tare #	Tare Weight	Dry Weight
6/21/2020			
10:23:00 AM	1	1.6319	1.9659
10:23:20 AM	2	1.6378	1.6251
10:24:51 AM	3	1.6328	1.7585
10:30:25 AM	4	1.6335	1.7226
10:52:41 AM	5	1.6360	1.7022
12:22:00 PM	6	1.6374	1.6952
6:19:00 PM	7	1.6369	1.6857
8:31:00 AM			

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-060
 Date Started: 6-18-2020
 Sample ID: LDW20-SC211FD

Client: Anchor
 Date Complete: 6-23-2020
 Tested by: H Benny

Sample Description: Dark Grey silt/clay

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	251
	Tare Wt	1.6406
	Wet Wt + Tare	37.0736
	Dry Wt + Tare	20.8015
Test Sample	Tare No.	251
	Tare Wt	52.0884
	Wet Wt + Tare	94.1242
	Dry Wt + Tare	59.8280
	Cylinder #	C-28

Sieve Analysis

Tare Weight	52.0971
4	—
10	52.1481
18	52.3269
35	52.5190
60	52.7890
120	54.0355
230	57.8800
Pan	1.9495

Pipette Analysis

6/21/2020	Tare #	Tare Weight	Dry Weight
10:27:00 AM			
10:27:20 AM	1	1.6408	1.9765
10:28:51 AM	2	1.6396	1.8229
10:34:25 AM	3	1.6414	1.7582
10:56:41 AM	4	1.6399	1.7314
12:26:00 PM	5	1.6358	1.7065
6:23:00 PM	6	1.6371	1.6922
8:35:00 AM	7	1.6399	1.6873

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-060
 Date Started: 6-18-2020
 Sample ID: LDW20-SC144

Client: Anchor
 Date Complete: 6-23-2020
 Tested by: H Benny

Sample Description: Dark Grey Silt/clay

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	216
	Tare Wt	1.6397
	Wet Wt + Tare	35.8935
	Dry Wt + Tare	23.7925
Test Sample	Tare No.	216
	Tare Wt	51.5178
	Wet Wt + Tare	92.0144
	Dry Wt + Tare	67.8942
	Cylinder #	C-22

Sieve Analysis

Tare Weight	51.5370
4	-
10	51.5560
18	51.6447
35	51.9028
60	52.6128
120	55.5793
230	64.8681
Pan	3.0809

Pipette Analysis

6/21/2020	Tare #	Tare Weight	Dry Weight
10:19:00 AM			
10:19:20 AM	1	1.6411	1.9256
10:20:51 AM	2	1.6401	1.8221
10:26:25 AM	3	1.6407	1.7620
10:48:41 AM	4	1.6466	1.7382
12:18:00 PM	5	1.6303	1.7030
6:15:00 PM	6	1.6316	1.6912
8:27:00 AM	7	1.6319	1.6801

Notes:

Harold L Benny & Associates, LLC

Project: Dunwich AOC4
 HLB Project #: 20-060
 Date Started: 6-18-2020
 Sample ID: LDW20-55169

Client: Anchor
 Date Complete: 6-23-2020
 Tested by: HL Benny

Sample Description: Dark Grey Silt/clay

Calgon Batch: 18

Temperature: 21

Solids Content

Moisture Content	Tare No.	227
	Tare Wt	1.6425
	Wet Wt + Tare	31.8340
	Dry Wt + Tare	14.7888
Test Sample	Tare No.	227
	Tare Wt	51.0531
	Wet Wt + Tare	97.6033
	Dry Wt + Tare	62.0334
	Cylinder #	C-3

Sieve Analysis

Tare Weight	51.0687
4	—
10	51.0809
18	51.4368
35	51.7361
60	52.0932
120	54.0260
230	60.1543
Pan	1.8984

Pipette Analysis

6/21/2020	Tare #	Tare Weight	Dry Weight
10:31:00 AM			
10:31:20 AM	1	1.6456	1.8799
10:32:51 AM	2	1.6432	1.8209
10:38:25 AM	3	1.6497	1.7741
11:00:41 AM	4	1.6441	1.7281
12:30:00 PM	5	1.6495	1.7115
6:27:00 PM	6	1.6464	1.6932
8:39:00 AM	7	1.6522	1.6913

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 8, 2020
Date Started: June 29, 2020
Date Finished: July 2, 2020

Client: AnchorQEA
Project #: 20-061
Tested by: H Benny

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
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
LDW20-SC109	100.0	100.0	99.8	98.4	93.7	79.7	69.2	54.6	39.2	28.7	18.3	12.2	8.7	5.8
	100.0	100.0	99.3	97.9	93.4	79.6	69.0	54.6	42.0	28.0	18.2	12.3	8.4	5.4
	100.0	99.6	99.3	98.2	94.1	80.0	69.4	54.9	42.4	28.5	17.9	12.8	8.5	5.6
LDW20-SC113	100.0	99.4	99.3	98.0	91.7	74.1	56.3	37.3	23.1	12.8	5.9	4.5	3.4	2.2
LDW20-SC168	100.0	100.0	99.7	97.3	95.4	91.0	83.8	64.4	50.9	27.0	17.7	11.6	7.9	5.1
LDW20-SC161	100.0	100.0	99.9	98.6	92.1	80.9	73.0	60.8	50.4	33.2	19.3	12.0	7.8	4.8
LDW20-IT236	100.0	100.0	99.4	98.0	84.4	54.0	44.9	36.3	27.6	17.3	10.4	7.0	4.4	2.7
LDW20-SC167	100.0	100.0	99.9	98.3	86.0	71.4	67.2	58.5	50.3	32.5	19.5	12.5	8.6	5.3
LDW20-SC214	100.0	100.0	100.0	98.3	97.3	95.8	91.5	79.3	61.8	22.5	15.2	10.2	8.6	5.4
LDW20-IT232	83.7	83.7	77.0	71.4	66.6	59.5	48.2	30.7	23.3	15.0	9.4	6.2	4.6	3.0
LDW20-SC318	100.0	100.0	99.4	98.0	96.6	94.6	90.2	73.8	55.8	22.0	13.7	9.5	8.1	5.0
LDW20-SC251	100.0	100.0	99.7	97.3	89.4	79.8	68.7	51.4	38.0	23.7	14.9	9.5	6.9	4.4
LDW20-SC264	100.0	100.0	99.9	99.1	98.3	97.0	80.1	61.4	47.3	23.4	13.3	9.3	7.2	4.7
LDW20-SS253	100.0	98.2	96.4	92.4	79.3	46.3	25.0	16.5	12.9	8.8	6.1	3.9	2.7	1.5
LDW20-SS248	100.0	100.0	98.1	94.9	81.6	45.8	25.0	18.4	15.2	10.8	7.8	5.2	3.4	1.8
LDW20-SS272	100.0	100.0	99.7	97.8	96.2	94.9	90.7	74.2	56.2	20.8	19.5	11.9	7.4	4.3

Reviewed by:  _____

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-061
 Date Started: 6-29-2020
 Sample ID: LDW20-SC109A

Client: Anchor
 Date Complete: 7-2-2020
 Tested by: H Benny

Sample Description: Dark Grey Silt/Clay

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content		
Tare No.	214	
Tare Wt	1.6438	
Wet Wt + Tare	43.2033	
Dry Wt + Tare	27.6236	
Test Sample		
Tare No.	214	
Tare Wt	50.9533	
Wet Wt + Tare	91.4075	
Dry Wt + Tare	64.3511	
Cylinder #	C-34	

Sieve Analysis

Tare Weight	50.9631
4	-
10	51.0123
18	51.3610
35	52.5628
60	56.1038
120	58.7558
230	62.4462
Pan	1.9565

Pipette Analysis

7/4/2020	Tare #	Tare Weight	Dry Weight
11:10:00 AM			
11:10:20 AM	1	1.6505	1.9364
11:11:51 AM	2	1.6427	1.8545
11:17:25 AM	3	1.6488	1.8083
11:39:41 AM	4	1.6340	1.7415
1:09:00 PM	5	1.6366	1.7138
7:06:00 PM	6	1.6272	1.6869
9:18:00 AM	7	1.6458	1.6910

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-061
 Date Started: 6-29-2020
 Sample ID: LDW20-SC109B

Client: Anchor
 Date Complete: 7-2-2020
 Tested by: H. Benny

Sample Description: Dark Grey Silt/clay

Calgon Batch: 20

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	215
	Tare Wt	1.6424
	Wet Wt + Tare	38.6357
	Dry Wt + Tare	24.7512
Test Sample	Tare No.	215
	Tare Wt	51.0059
	Wet Wt + Tare	91.2740
	Dry Wt + Tare	64.1508
	Cylinder #	C-14

Tare Weight	51.0194
4	—
10	51.1845
18	51.5407
35	52.6847
60	56.1412
120	58.8216
230	62.4300
Pan	1.7636

Pipette Analysis

7/4/2020	Tare #	Tare Weight	Dry Weight
11:14:00 AM			
11:14:20 AM	1	1.6525	1.9418
11:15:51 AM	2	1.6479	1.8146
11:21:25 AM	3	1.6475	1.8038
11:43:41 AM	4	1.6315	1.7386
1:13:00 PM	5	1.6337	1.7115
7:10:00 PM	6	1.6329	1.6909
9:22:00 AM	7	1.6318	1.6749

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-061
 Date Started: 6-29-2020
 Sample ID: LDW20-SC109C

Client: Anchor
 Date Complete: 7-2-2020
 Tested by: H Benny

Sample Description: Dark Grey Silt/clay

Calgon Batch: 20

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	252
	Tare Wt	1.16426
	Wet Wt + Tare	38.6173
	Dry Wt + Tare	24.7407
Test Sample	Tare No.	252
	Tare Wt	52.1880
	Wet Wt + Tare	91.2059
	Dry Wt + Tare	64.7228
	Cylinder #	C-10

Tare Weight	52.1999
4	52.3053
10	52.3743
18	52.6366
35	53.6480
60	57.0627
120	59.6547
230	63.2018
Pan	1.5619

Pipette Analysis

7/4/2020	Tare #	Tare Weight	Dry Weight
11:18:00 AM			
11:18:20 AM	1	1.6501	1.9320
11:19:51 AM	2	1.6492	1.8711
11:25:25 AM	3	1.6502	1.8048
11:47:41 AM	4	1.6428	1.7456
1:17:00 PM	5	1.6375	1.7157
7:14:00 PM	6	1.6471	1.7046
9:26:00 AM	7	1.6523	1.6957

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-061
 Date Started: 6-29-2020
 Sample ID: LDW20-SC113

Client: Anchor
 Date Complete: 7-2-2020
 Tested by: H Benny

Sample Description: Dark Grey Sandy Silt/Clay

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	239
	Tare Wt	1.6527
	Wet Wt + Tare	52.4326
	Dry Wt + Tare	37.5246
Test Sample	Tare No.	239
	Tare Wt	51.5914
	Wet Wt + Tare	98.1656
	Dry Wt + Tare	74.7323
	Cylinder #	C-29

Sieve Analysis

Tare Weight	51.5973
4	51.7800
10	51.8219
18	52.2546
35	54.3303
60	60.1059
120	65.9639
230	72.2406
Pan	2.5068

HB

Pipette Analysis

7/4/2020	Tare #	Tare Weight	Dry Weight
11:22:00 AM			
11:22:20 AM	1	1.6515	1.9122
11:23:51 AM	2	1.6471	1.8152
11:29:25 AM	3	1.6500	1.7503
11:51:41 AM	4	1.6433	1.6984
1:21:00 PM	5	1.6464	1.6918
7:18:00 PM	6	1.6423	1.6810
9:30:00 AM	7	1.6413	1.6718

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-061
 Date Started: 6-29-2020
 Sample ID: LDW20-SC168

Client: Anchor
 Date Complete: 7-2-2020
 Tested by: H Benny

Sample Description: Dark Grey Silt/clay

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	204
	Tare Wt	1.6404
	Wet Wt + Tare	30.1450
	Dry Wt + Tare	14.0236
Test Sample	Tare No.	204
	Tare Wt	51.3117
	Wet Wt + Tare	94.4428
	Dry Wt + Tare	59.8376
	Cylinder #	C-28

Sieve Analysis

Tare Weight	51.3269
4	-
10	51.3880
18	51.8416
35	52.1865
60	53.0129
120	54.3609
230	58.0058
Pan	1.8870

Pipette Analysis

7/4/2020	Tare #	Tare Weight	Dry Weight
11:26:00 AM			
11:26:20 AM	1	1.6488	1.9063
11:27:51 AM	2	1.6467	1.8538
11:33:25 AM	3	1.6379	1.7551
11:55:41 AM	4	1.6314	1.7138
1:25:00 PM	5	1.6418	1.7014
7:22:00 PM	6	1.6455	1.6911
9:34:00 AM	7	1.6496	1.6849

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-061
 Date Started: 6-29-2020
 Sample ID: LDW20-SC161

Client: Anchor
 Date Complete: 7-2-2020
 Tested by: H Benny

Sample Description: Dark Grey Sandy Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content		
Tare No.	249	
Tare Wt	1.6394	
Wet Wt + Tare	44.7911	
Dry Wt + Tare	23.7890	
Test Sample		
Tare No.	249	
Tare Wt	51.7951	
Wet Wt + Tare	98.5540	
Dry Wt + Tare	62.7101	
Cylinder #	C-59	

Sieve Analysis

Tare Weight	51.8091
4	-
10	51.8365
18	52.1424
35	53.7027
60	56.3854
120	58.2996
230	61.2214
Pan	1.5292

Pipette Analysis

7/4/2020	Tare #	Tare Weight	Dry Weight
11:30:00 AM			
11:30:20 AM	1	1.6401	1.9562
11:31:51 AM	2	1.6373	1.8993
11:37:25 AM	3	1.6435	1.8217
11:59:41 AM	4	1.6345	1.7448
1:29:00 PM	5	1.6360	1.7106
7:26:00 PM	6	1.6527	1.7070
9:38:00 AM	7	1.6400	1.6797

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-061
 Date Started: 6-29-2020
 Sample ID: LDW20-IT236

Client: Anchor
 Date Complete: 7-2-2020
 Tested by: H Benny

Sample Description: Dark Grey Sandy Silt/clay

Calgon Batch: 20

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	240
	Tare Wt	1.6473
	Wet Wt + Tare	36.8865
	Dry Wt + Tare	23.3466
Test Sample	Tare No.	240
	Tare Wt	52.0180
	Wet Wt + Tare	95.6277
	Dry Wt + Tare	70.4431
	Cylinder #	C-1

Tare Weight	52.0240
4	-
10	52.1723
18	52.5481
35	56.2260
60	64.3720
120	66.8088
230	69.1174
Pan	1.3408

Pipette Analysis

7/4/2020	Tare #	Tare Weight	Dry Weight
11:34:00 AM			
11:34:20 AM	1	1.6504	1.8569
11:35:51 AM	2	1.6482	1.8111
11:41:25 AM	3	1.6451	1.7530
12:03:41 PM	4	1.6411	1.7127
1:33:00 PM	5	1.6398	1.6931
7:30:00 PM	6	1.6423	1.6820
9:42:00 AM	7	1.6399	1.6705

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC 4
 HLB Project #: 20-061
 Date Started: 6-29-2020
 Sample ID: LDW20-SC167

Client: Anchor
 Date Complete: 7-2-2020
 Tested by: HLBenny

Sample Description: Dark Grey Sandy Silt/Clay

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	224
	Tare Wt	1.6535
	Wet Wt + Tare	39.0855
	Dry Wt + Tare	21.4157
Test Sample	Tare No.	224
	Tare Wt	52.0251
	Wet Wt + Tare	96.5195
	Dry Wt + Tare	62.9724
	Cylinder #	C-22

Sieve Analysis

Tare Weight	52.0330
4	—
10	52.0468
18	52.4298
35	55.3155
60	58.7583
120	59.7417
230	61.7700
Pan	1.2413

Pipette Analysis

7/4/2020	Tare #	Tare Weight	Dry Weight
11:38:00 AM			
11:38:20 AM	1	1.6436	1.9372
11:39:51 AM	2	1.6457	1.8994
11:45:25 AM	3	1.6450	1.8147
12:07:41 PM	4	1.6493	1.7575
1:37:00 PM	5	1.6488	1.7237
7:34:00 PM	6	1.6512	1.7078
9:46:00 AM	7	1.6460	1.6870

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-061
 Date Started: 6-29-2020
 Sample ID: LDW20-SC214

Client: Anchor
 Date Complete: 7-2-2020
 Tested by: HBenny

Sample Description: Dark Grey Silt/clay

Calgon Batch: 20

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	235
	Tare Wt	1.6586
	Wet Wt + Tare	42.1977
	Dry Wt + Tare	21.5744
Test Sample	Tare No.	235
	Tare Wt	51.4394
	Wet Wt + Tare	91.7762
	Dry Wt + Tare	57.2893
	Cylinder #	C-21

Tare Weight	51.4565
4	-
10	51.4592
18	51.7843
35	51.9952
60	52.2934
120	53.1361
230	55.5605
Pan	1.7910

Pipette Analysis

7/4/2020	Tare #	Tare Weight	Dry Weight
11:42:00 AM			
11:42:20 AM	1	1.6517	1.9824
11:43:51 AM	2	1.6483	1.9095
11:49:25 AM	3	1.6464	1.7518
12:11:41 PM	4	1.6376	1.7138
1:41:00 PM	5	1.6390	1.6956
7:38:00 PM	6	1.6423	1.6925
9:50:00 AM	7	1.6378	1.6754

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-041
 Date Started: 6-29-2020
 Sample ID: LDW20-SC169

Client: Anchor

Date Complete: 7-2-20
 Tested by: H Benny

Sample Description: Dark Grey Silt/Clay

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	237
	Tare Wt	1.6516
	Wet Wt + Tare	36.7253
	Dry Wt + Tare	19.3710
Test Sample	Tare No.	237
	Tare Wt	51.1102
	Wet Wt + Tare	91.0085
	Dry Wt + Tare	60.4854
	Cylinder #	C-30

Sieve Analysis

Tare Weight	51.1211
4	-
10	51.5100
18	52.2030
35	53.4384
60	55.1177
120	56.4973
230	59.1937
Pan	1.3155

Pipette Analysis

7/4/2020	Tare #	Tare Weight	Dry Weight
11:46:00 AM			
11:46:20 AM	1	1.6425	1.9001
11:47:51 AM	2	1.6421	1.8524
11:53:25 AM	3	1.6406	1.7599
12:15:41 PM	4	1.6425	1.7239
1:45:00 PM	5	1.6439	1.7012
7:42:00 PM	6	1.6427	1.6913
9:54:00 AM	7	1.6415	1.6791

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-061
 Date Started: 6-29-2020
 Sample ID: LDW20-1T232

Client: Anchor
 Date Complete: 7-2-20
 Tested by: H Benny

Sample Description: Dark Grey Gravelly Sandy Silt/clay

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content		
Tare No.	231	
Tare Wt	1.6519	
Wet Wt + Tare	44.7924	
Dry Wt + Tare	29.7264	
Test Sample		
Tare No.	231	
Tare Wt	51.7379	
Wet Wt + Tare	129.6177	
Dry Wt + Tare	90.3403	
Cylinder #	C-62	

Sieve Analysis

Tare Weight	51.7462
4	60.0124
10	63.4081
18	66.2618
35	68.6601
60	72.2639
120	77.9749
230	86.8624
Pan	3.7204

$1/2'' = 58.9055$
 $3/8'' = 60.0048$

Pipette Analysis

7/4/2020	Tare #	Tare Weight	Dry Weight
11:50:00 AM			
11:50:20 AM	1	1.6419	2.0060
11:51:51 AM	2	1.6378	1.8986
11:57:25 AM	3	1.6343	1.8074
12:19:41 PM	4	1.6302	1.7451
1:49:00 PM	5	1.6313	1.7128
7:46:00 PM	6	1.6383	1.7031
9:58:00 AM	7	1.6408	1.6888

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-061
 Date Started: 6-29-2020
 Sample ID: LDW20-5C318

Client: Anchor
 Date Complete: 7-2-2020
 Tested by: H Benny

Sample Description: Dark Grey Sandy Silt/Clay

Calgon Batch: 20

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	219
	Tare Wt	1.6482
	Wet Wt + Tare	49.4129
	Dry Wt + Tare	26.1764
Test Sample	Tare No.	219
	Tare Wt	50.4809
	Wet Wt + Tare	92.5797
	Dry Wt + Tare	58.1841
	Cylinder #	C-3

Tare Weight	50.4878
4	—
10	50.6210
18	50.9150
35	51.2267
60	51.6476
120	52.6021
230	56.1574
Pan	2.0818

Pipette Analysis

7/4/2020	Tare #	Tare Weight	Dry Weight
11:54:00 AM			
11:54:20 AM	1	1.6439	1.9805
11:55:51 AM	2	1.6437	1.89018 HB
12:01:25 PM	3	1.6479	1.7596
12:23:41 PM	4	1.6461	1.7215
1:53:00 PM	5	1.6541	1.7115
7:50:00 PM	6	1.6405	1.6917
10:02:00 AM	7	1.6472	1.6850

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-061
 Date Started: 6-29-2020
 Sample ID: LDW20-SC251

Client: Anchor
 Date Complete: 7-2-2020
 Tested by: H. Benny

Sample Description: Dark Grey Silt/Clay

Calgon Batch: ^{HB} 7220

Temperature: 21

Solids Content

Moisture Content	Tare No.	253
	Tare Wt	1.6528
	Wet Wt + Tare	41.4559
	Dry Wt + Tare	25.4768
Test Sample	Tare No.	253
	Tare Wt	51.9383
	Wet Wt + Tare	92.6845
	Dry Wt + Tare	65.6031
	Cylinder #	C-04

Sieve Analysis

Tare Weight	51.9481
4	—
10	52.0261
18	52.6136
35	54.5265
60	56.8785
120	59.5857
230	63.8069
Pan	1.8031

Pipette Analysis

7/4/2020	Tare #	Tare Weight	Dry Weight
11:58:00 AM			
11:58:20 AM	1	1.6548	1.9306
11:59:51 AM	2	1.6493	1.8542
12:05:25 PM	3	1.6486	1.7825
12:27:41 PM	4	1.6491	1.7393
1:57:00 PM	5	1.6492	1.7123
7:54:00 PM	6	1.6444	1.6945
10:06:00 AM	7	1.6406	1.6786

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-061
 Date Started: 6-29-2020
 Sample ID: LDW20-SC264

Client: Anchor
 Date Complete: 7-2-2020
 Tested by: H. Benny

Sample Description: Dark Grey Sandy Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	246
	Tare Wt	1.6508
	Wet Wt + Tare	42.3114
	Dry Wt + Tare	24.5788
Test Sample	Tare No.	246
	Tare Wt	51.7929
	Wet Wt + Tare	94.5304
	Dry Wt + Tare	62.6912
	Cylinder #	C-44

Tare Weight	51.8017
4	—
10	51.8149
18	52.0082
35	52.2184
60	52.5355
120	56.5871
230	61.0938
Pan	1.6424

Pipette Analysis

7/4/2020	Tare #	Tare Weight	Dry Weight
12:02:00 PM			
12:02:20 PM	1	1.6533	1.9692
12:03:51 PM	2	1.6435	1.8891
12:09:25 PM	3	1.6459	1.7756
12:31:41 PM	4	1.6474	1.7281
2:01:00 PM	5	1.6441	1.7051
7:58:00 PM	6	1.6461	1.6971
10:10:00 AM	7	1.6457	1.6844

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-061
 Date Started: 6-29-2020
 Sample ID: LDW20-55253

Client: Anchor
 Date Complete: 7-2-2020
 Tested by: H Benny

Sample Description: Brown Sandy Silt/clay

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	218
	Tare Wt	1.6371
	Wet Wt + Tare	61.8937
	Dry Wt + Tare	45.5679
Test Sample	Tare No.	218
	Tare Wt	51.2111
	Wet Wt + Tare	103.6706
	Dry Wt + Tare	84.2694
	Cylinder #	C40

Sieve Analysis

Tare Weight	51.2150
4	+
10	51.9243
18	53.4306
35	58.4612
60	71.0799
120	79.2174
230	82.4828
Pan	1.1074

0.6820 HB

Pipette Analysis

7/4/2020	Tare #	Tare Weight	Dry Weight
12:06:00 PM			
12:06:20 PM	1	1.6406	1.7854
12:07:51 PM	2	1.6373	1.7520
12:13:25 PM	3	1.6414	1.7248
12:35:41 PM	4	1.6402	1.7029
2:05:00 PM	5	1.6443	1.6906
8:02:00 PM	6	1.6440	1.6806
10:14:00 AM	7	1.6395	1.6668

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-061
 Date Started: 6-29-2020
 Sample ID: LDW20-SS248

Client: Anchor
 Date Complete: 7-2-2020
 Tested by: H Benny

Sample Description: Brown Sandy Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content		
	Tare No.	234
	Tare Wt	1.6543
	Wet Wt + Tare	52.8276
	Dry Wt + Tare	37.3532
Test Sample		
	Tare No.	234
	Tare Wt	51.5750
	Wet Wt + Tare	104.2647
	Dry Wt + Tare	82.3297
	Cylinder #	C-13

Sieve Analysis

Tare Weight	51.5765
4	-
10	52.2915
18	53.4624
35	58.3383
60	71.5073
120	79.1506
230	81.5868
Pan	0.7145

Pipette Analysis

7/4/2020	Tare #	Tare Weight	Dry Weight
12:10:00 PM			
12:10:20 PM	1	1.6315	1.7826
12:11:51 PM	2	1.6304	1.7585
12:17:25 PM	3	1.6319	1.7276
12:39:41 PM	4	1.6309	1.7042
2:09:00 PM	5	1.6471	1.7012
8:06:00 PM	6	1.6464	1.6877
10:18:00 AM	7	1.6430	1.6726

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-061
 Date Started: 6-29-2020
 Sample ID: LDW20-55272

Client: Anchor
 Date Complete: 7-2-2020
 Tested by: H Benny

Sample Description: Brown silt/clay

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	229
	Tare Wt	1.6522
	Wet Wt + Tare	35.4884
	Dry Wt + Tare	16.4283
Test Sample	Tare No.	51.7323 229 HB
	Tare Wt	51.7323
	Wet Wt + Tare	94.1266
	Dry Wt + Tare	58.7717
	Cylinder #	C-46

Sieve Analysis

Tare Weight	51.7436
4	—
10	51.8067
18	52.1528
35	52.4509
60	52.6877
120	53.4570
230	56.5288
Pan	2.2622

Pipette Analysis

7/4/2020	Tare #	Tare Weight	Dry Weight
12:14:00 PM			
12:14:20 PM	1	1.6487	1.9425
12:15:51 PM	2	1.6482	1.8743
12:21:25 PM	3	1.6510	1.7448
12:43:41 PM	4	1.6507	1.7397
2:13:00 PM	5	1.6417	1.7021
8:10:00 PM	6	1.6516	1.6952
10:22:00 AM	7	1.6407	1.6728

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 13, 2020
Date Started: July 7, 2020
Date Finished: July 13, 2020

Client: AnchorQEA
HLB Project #: 20-062
Tested By: H Benny

CASE NARRATIVE

1. Sixteen 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 the job was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. The samples contained organic matter which may have broken down during the oven drying and sieving process, affecting the grain size analysis.
4. The data is provided in summary tables and plots.
5. There were no noted anomalies in the testing or samples on project.

Reviewed by:



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 13, 2020
Date Started: July 7, 2020
Date Finished: July 13, 2020

Client: AnchorQEA
Project #: 20-062
Tested by: H Benny

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
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
LDW20-IT364	100.0	100.0	99.9	97.4	96.2	95.5	93.7	87.6	77.5	23.4	14.6	10.0	7.3	4.7
	100.0	100.0	99.6	97.1	96.0	95.1	93.1	87.1	71.3	23.3	14.2	9.6	6.6	4.3
	100.0	100.0	99.9	97.9	96.8	95.9	93.4	87.6	73.7	23.6	14.8	9.2	7.0	4.5
LDW20-IT224	100.0	94.5	87.2	80.6	74.1	64.5	46.4	29.9	21.3	13.5	9.7	5.9	4.7	2.6
LDW20-IT334	100.0	100.0	99.7	96.9	93.0	86.9	81.9	71.9	57.3	21.8	14.4	8.6	6.9	4.0
LDW20-IT359	100.0	100.0	99.9	98.9	96.6	87.8	79.1	58.2	39.2	24.0	15.7	9.7	6.5	3.8
LDW20-IT374	100.0	100.0	100.0	98.3	97.1	95.8	89.9	69.8	47.5	27.2	16.1	9.1	5.8	3.1
LDW20-SC238B	100.0	100.0	100.0	99.1	98.2	97.1	90.9	74.7	55.7	17.8	11.3	7.6	7.1	4.1
LDW20-IT228	100.0	97.8	95.3	92.8	85.5	57.6	29.1	15.7	10.0	6.5	4.6	3.0	2.2	1.3
LDW20-SC235B	100.0	100.0	99.9	99.0	97.8	96.9	93.5	80.5	63.7	15.7	11.2	7.9	6.2	4.2
LDW20-SC250B	100.0	100.0	100.0	98.4	97.4	96.5	92.6	73.9	51.5	15.8	11.5	8.2	6.1	4.3
LDW20-IT244	100.0	100.0	99.7	97.9	93.1	85.7	82.5	73.4	59.1	32.6	20.1	12.8	8.4	4.9
LDW20-SC159	100.0	100.0	100.0	99.4	98.3	93.5	80.0	56.8	41.8	23.1	13.0	8.9	6.0	4.2
LDW20-SC154	100.0	100.0	100.0	98.1	96.8	96.4	95.2	90.3	80.6	22.2	15.8	11.1	7.6	5.3
LDW20-SC158	100.0	100.0	100.0	97.8	96.6	95.1	92.8	84.4	71.3	19.5	15.4	10.8	7.6	5.2
LDW20-IT243	100.0	100.0	98.5	97.6	90.9	63.2	53.8	40.4	29.0	19.0	12.1	8.2	5.0	3.2
LDW20-SS162	100.0	100.0	99.6	99.0	97.7	83.8	30.9	14.1	11.1	7.9	5.8	4.2	2.9	2.1
LDW20-SS166	100.0	100.0	99.9	99.7	99.1	98.2	62.0	32.3	20.2	13.4	9.2	6.5	4.4	2.8

Reviewed by: 

Harold L Benny & Associates, LLC


Project: Duwamish AOC4
Date Received: June 13, 2020
Date Started: July 7, 2020
Date Finished: July 13, 2020

Client: AnchorQEA
HLB Project #: 20-062
Tested by: H Benny

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)
LDW20-IT364	0.1	2.5	1.2	0.7	1.8	6.1	10.0	54.1	8.8	4.6	2.7	2.5	4.7	87.6
	0.4	2.5	1.1	0.9	2.0	6.0	15.9	48.0	9.1	4.6	2.9	2.3	4.3	87.1
	0.1	2.0	1.1	0.9	2.5	5.8	13.9	50.1	8.8	5.6	2.2	2.5	4.5	87.6
LDW20-IT224	12.8	6.6	6.5	9.6	18.1	16.4	8.7	7.8	3.8	3.8	1.2	2.1	2.6	29.9
LDW20-IT334	0.3	2.8	3.9	6.2	5.0	9.9	14.7	35.5	7.4	5.7	1.8	2.9	4.0	71.9
LDW20-IT359	0.1	1.0	2.4	8.7	8.7	21.0	19.0	15.2	8.3	6.0	3.2	2.7	3.8	58.2
LDW20-IT374	0.0	1.7	1.2	1.3	5.9	20.0	22.4	20.3	11.1	7.0	3.3	2.8	3.1	69.8
LDW20-SC238B	0.0	0.8	0.9	1.1	6.2	16.2	19.0	37.9	6.5	3.7	0.6	3.0	4.1	74.7
LDW20-IT228	4.7	2.4	7.3	27.9	28.5	13.4	5.7	3.5	2.0	1.5	0.8	0.9	1.3	15.7
LDW20-SC235B	0.1	1.0	1.2	0.9	3.4	12.9	16.8	48.1	4.5	3.3	1.7	2.0	4.2	80.5
LDW20-SC250B	0.0	1.6	1.0	0.9	3.9	18.7	22.4	35.7	4.3	3.3	2.1	1.7	4.3	73.9
LDW20-IT244	0.3	1.8	4.9	7.4	3.2	9.1	14.3	26.5	12.4	7.4	4.4	3.4	4.9	73.4
LDW20-SC159	0.0	0.6	1.0	4.9	13.4	23.2	15.0	18.7	10.2	4.0	2.9	1.8	4.2	56.8
LDW20-SC154	0.0	1.9	1.3	0.5	1.2	4.9	9.7	58.4	6.4	4.7	3.6	2.3	5.3	90.3
LDW20-SC158	0.0	2.2	1.2	1.6	2.3	8.4	13.0	51.8	4.1	4.6	3.2	2.4	5.2	84.4
LDW20-IT243	1.5	0.9	6.8	27.6	9.4	13.4	11.3	10.0	6.9	4.0	3.1	1.8	3.2	40.4
LDW20-SS162	0.4	0.6	1.2	13.9	52.9	16.8	3.0	3.2	2.0	1.6	1.3	0.8	2.1	14.1
LDW20-SS166	0.1	0.2	0.6	1.0	36.2	29.7	12.0	6.8	4.2	2.7	2.1	1.6	2.8	32.3

Reviewed by: 

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 13, 2020
Date Started: July 7, 2020
Date Finished: July 13, 2020

Client: AnchorQEA
HLB Project #: 20-062
Tested by: H Benny

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
LDW20-IT364	100.0	100.0	99.9	97.4	96.2	95.5	93.7	87.6	77.5	23.4	14.6	10.0	7.3	4.7
	100.0	100.0	99.6	97.1	96.0	95.1	93.1	87.1	71.3	23.3	14.2	9.6	6.6	4.3
	100.0	100.0	99.9	97.9	96.8	95.9	93.4	87.6	73.7	23.6	14.8	9.2	7.0	4.5
AVE	100.0	100.0	99.8	97.5	96.3	95.5	93.4	87.4	74.2	23.4	14.5	9.6	7.0	4.5
STDEV	0.0	0.0	0.1	0.3	0.3	0.3	0.2	0.2	2.6	0.1	0.3	0.3	0.3	0.2
%RSD	0.0	0.0	0.1	0.3	0.4	0.3	0.2	0.3	3.5	0.5	1.8	3.4	3.9	4.2

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)
LDW20-IT364	6/10/2020	7/7/2020	7/13/2020	103.3		14.3
	6/10/2020	7/7/2020	7/13/2020	99.5		14.6
	6/10/2020	7/7/2020	7/13/2020	99.9		14.9
LDW20-IT224	6/10/2020	7/7/2020	7/13/2020	100.4		8.4
LDW20-IT334	6/10/2020	7/7/2020	7/13/2020	99.3		12.4
LDW20-IT359	6/10/2020	7/7/2020	7/13/2020	100.8		14.0
LDW20-IT374	6/10/2020	7/7/2020	7/13/2020	100.8		14.9
LDW20-SC238B	6/10/2020	7/7/2020	7/13/2020	101.5		16.4
LDW20-IT228	6/10/2020	7/7/2020	7/13/2020	100.1		8.3
LDW20-SC235B	6/10/2020	7/7/2020	7/13/2020	100.4		16.3
LDW20-SC250B	6/10/2020	7/7/2020	7/13/2020	99.4		14.8
LDW20-IT244	6/10/2020	7/7/2020	7/13/2020	101.9		17.4
LDW20-SC159	6/4/2020	7/7/2020	7/13/2020	101.7		13.4
LDW20-SC154	6/4/2020	7/7/2020	7/13/2020	99.2		15.6
LDW20-SC158	6/4/2020	7/7/2020	7/13/2020	99.5		15.9
LDW20-IT243	6/4/2020	7/7/2020	7/13/2020	102.5		11.6
LDW20-SS162	6/12/2020	7/7/2020	7/13/2020	100.4		5.4
LDW20-SS166	6/12/2020	7/7/2020	7/13/2020	101.1		10.0

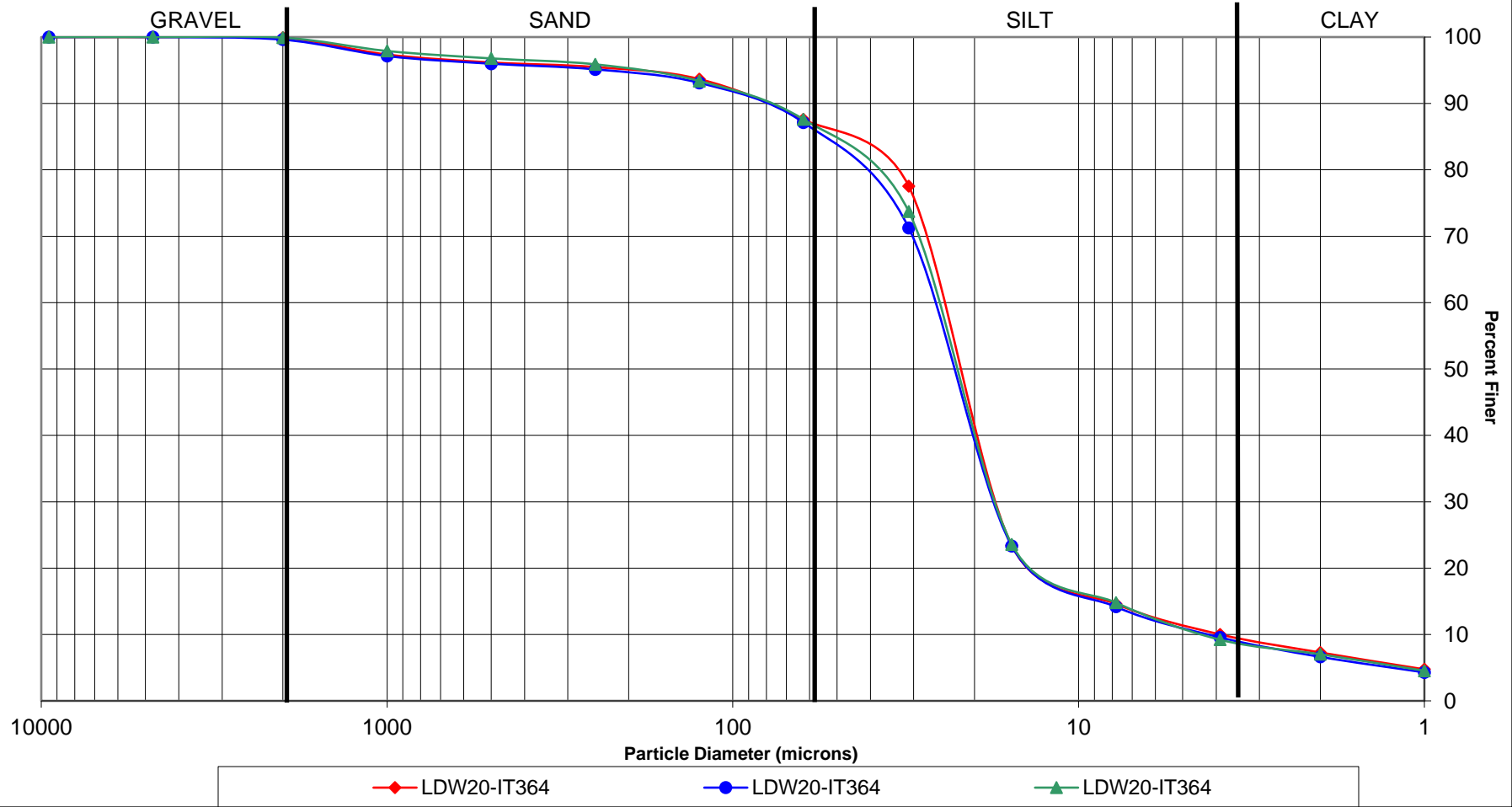
Notes to the Testing: Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution.

Reviewed by: _____

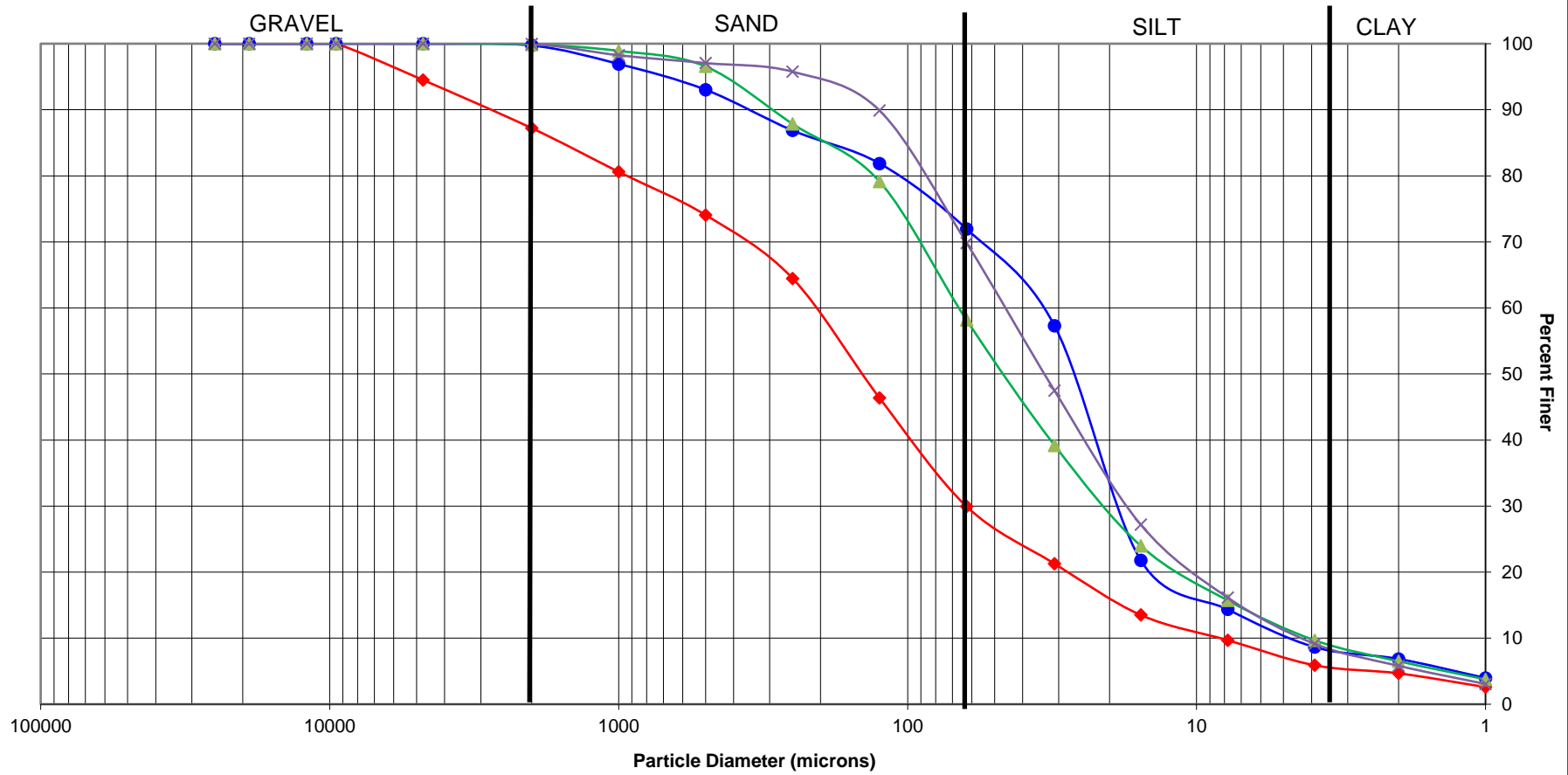


PSEP Grain Size Distribution

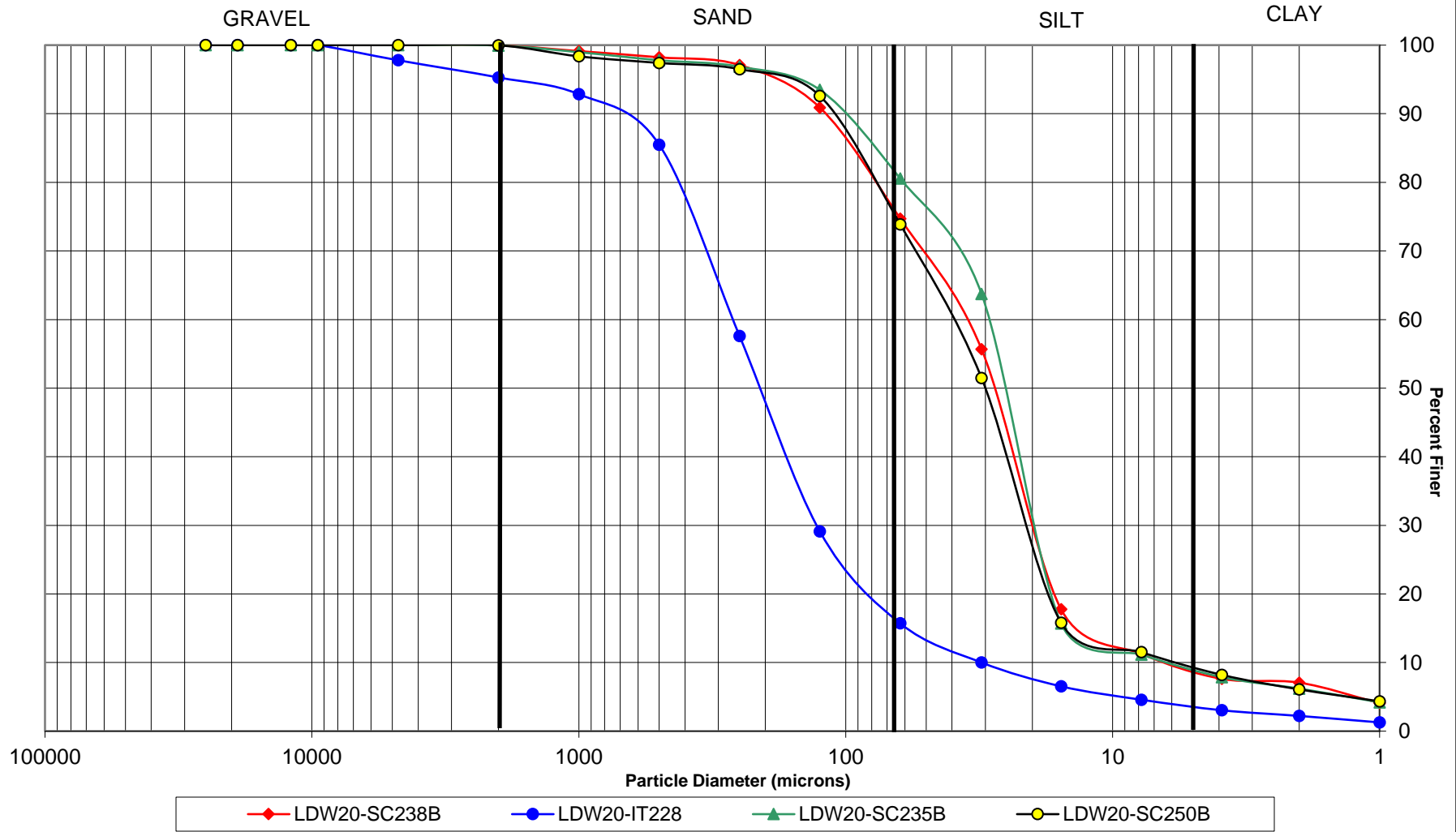
Triplicate Sample Plot



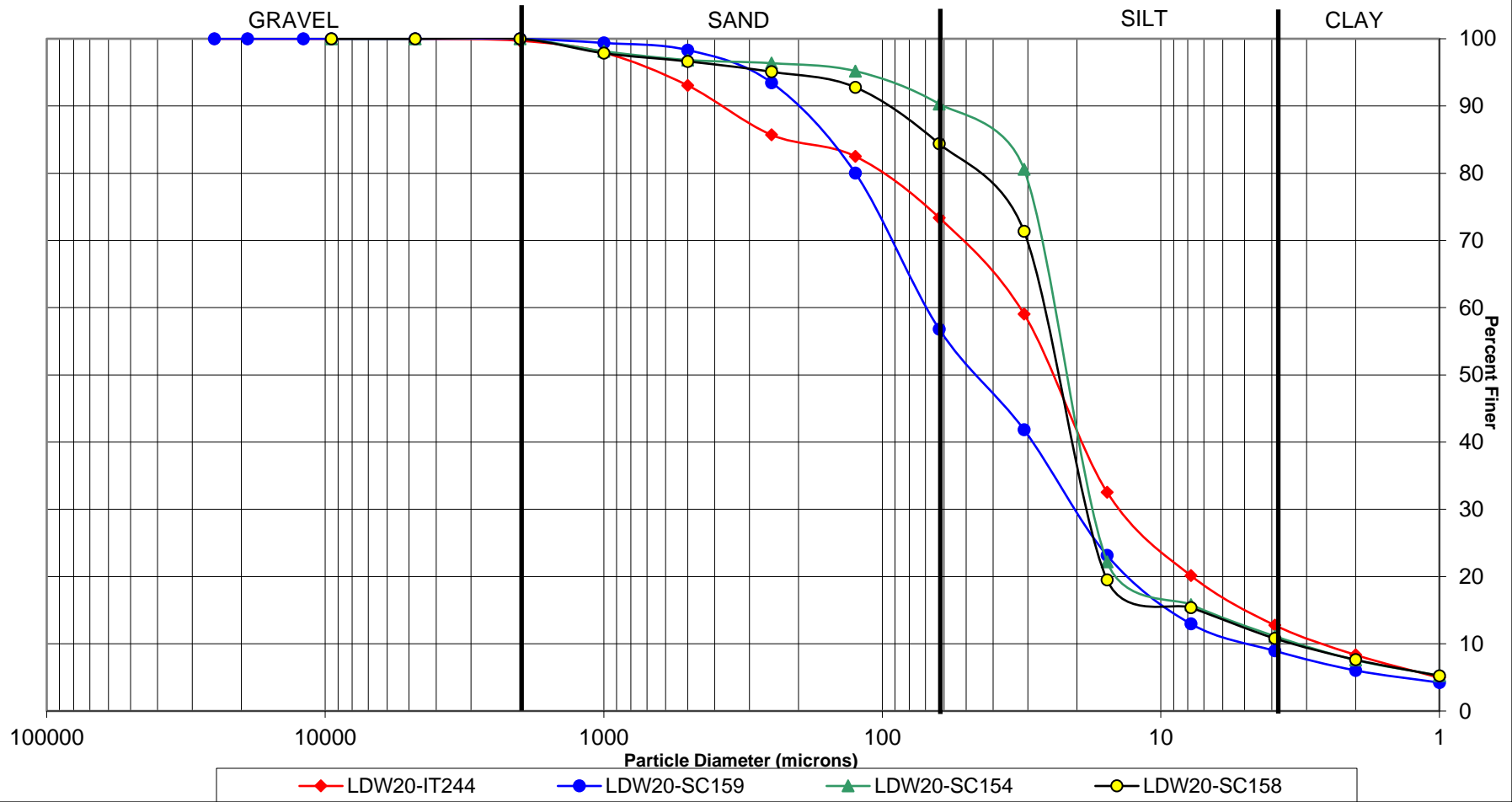
PSEP Grain Size Distribution



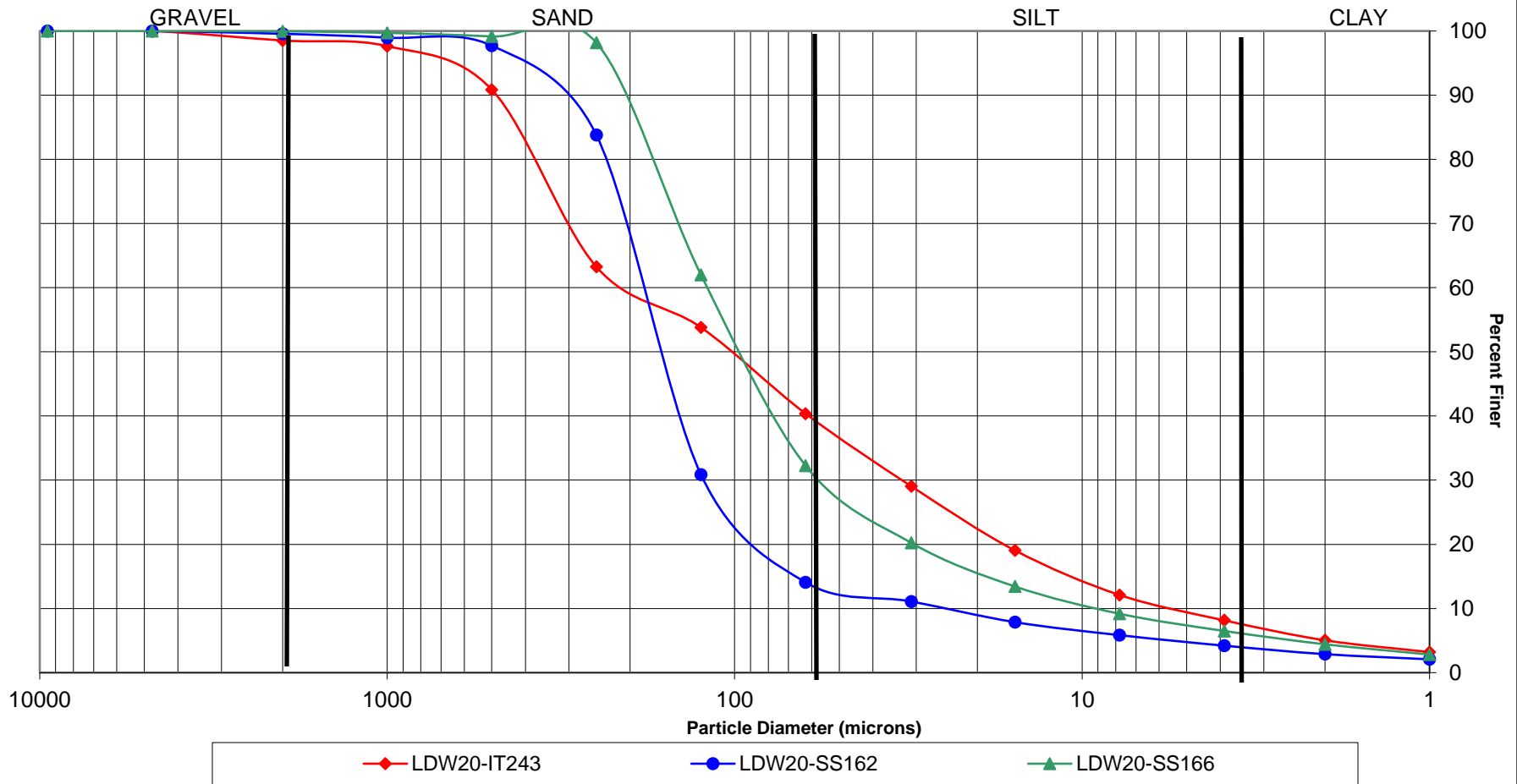
PSEP Grain Size Distribution



PSEP Grain Size Distribution



PSEP Grain Size Distribution



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-062
 Date Started: 7-7-2020
 Sample ID: LDW20-IT364A

Client: Anchor
 Date Complete: 7-13-2020
 Tested by: H Benny

Sample Description: Dark Grey Silt

Calgon Batch: 20 0.8011

Temperature: 21

Solids Content

Moisture Content	Tare No.	206
	Tare Wt	16.432
	Wet Wt + Tare	32.5962
	Dry Wt + Tare	14.7103
Test Sample	Tare No.	206
	Tare Wt	50.7044
	Wet Wt + Tare	89.3027
	Dry Wt + Tare	53.7469
	Cylinder #	C-72

Sieve Analysis

Tare Weight	50.7100
4	—
10	50.7277
18	51.1388
35	51.3334
60	51.4472
120	51.7418
230	52.7324
Pan	1.0707

Pipette Analysis

7/11/2020	Tare #	Tare Weight	Dry Weight
10:20:00 AM			
10:20:20 AM	1	1.6450	1.9450
10:21:49 AM	2	1.6375	1.8981
10:27:15 AM	3	1.6429	1.7447
10:48:59 AM	4	1.6405	1.7076
12:16:00 PM	5	1.6401	1.6897
6:04:00 PM	6	1.6412	1.6812
7:56:00 AM	7	1.6388	1.6698

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-662
 Date Started: 7-7-2020
 Sample ID: LDW20-IT364B

Client: Anchor
 Date Complete: 7-13-2020
 Tested by: H Benny

Sample Description: Dark Grey Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	226
	Tare Wt	1.6566
	Wet Wt + Tare	33.9148
	Dry Wt + Tare	15.2929
Test Sample	Tare No.	226
	Tare Wt	51.5557
	Wet Wt + Tare	91.3036
	Dry Wt + Tare	54.7604
	Cylinder #	C-73

Sieve Analysis

Tare Weight	51.5625
4	—
10	51.6284
18	52.0435
35	52.2367
60	52.3800
120	52.7221
230	53.7251
Pan	1.0879

Pipette Analysis

7/11/2020	Tare #	Tare Weight	Dry Weight
10:25:00 AM			
10:25:20 AM	1	1.6392	1.9496
10:26:49 AM	2	1.6386	1.8952
10:32:15 AM	3	1.6387	1.7234
10:53:59 AM	4	1.6416	1.7055
12:21:00 PM	5	1.6516	1.6999
6:09:00 PM	6	1.6520	1.6904
8:01:00 AM	7	1.6478	1.6783

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-062
 Date Started: 7-7-2020
 Sample ID: LDW20-IT364C

Client: Anchor
 Date Complete: 7-13-2020
 Tested by: H Benny

Sample Description: Dark Grey Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	256
	Tare Wt	1.6530
	Wet Wt + Tare	33.0940
	Dry Wt + Tare	14.9489
Test Sample	Tare No.	256
	Tare Wt	51.5703
	Wet Wt + Tare	91.9347
	Dry Wt + Tare	54.6280
	Cylinder #	C-71

Tare Weight	51.5816
4	—
10	51.5971
18	51.9397
35	52.1311
60	52.2835
120	52.7111
230	53.6975
Pan	0.9628

Pipette Analysis

7/11/2020	Tare #	Tare Weight	Dry Weight
10:30:00 AM			
10:30:20 AM	1	1.6466	1.9620
10:31:49 AM	2	1.6564	1.9243
10:37:15 AM	3	1.6464	1.7330
10:58:59 AM	4	1.6525	1.7191
12:26:00 PM	5	1.6534	1.7009
6:14:00 PM	6	1.6603	1.7003
8:06:00 AM	7	1.6434	1.6749

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-062
 Date Started: 7-7-2020
 Sample ID: LDW20-IT224

Client: Anchor
 Date Complete: 7-13-2020
 Tested by: H Benny

Sample Description: Dark Grey Gravelly Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	243	
	Tare Wt	1.6514	
	Wet Wt + Tare	41.8380	
	Dry Wt + Tare	28.7339	
Test Sample	Tare No.	243	
	Tare Wt	52.1419	
	Wet Wt + Tare	93.70618	HB
	Dry Wt + Tare	73.2911	
	Cylinder #	C-70	

Tare Weight	52.1466
4	53.6881
10	55.7264
18	57.5295
35	59.4115
60	62.0992
120	67.1713
230	71.7694
Pan	1.6311

Pipette Analysis

7/11/2020	Tare #	Tare Weight	Dry Weight
10:35:00 AM			
10:35:20 AM	1	1.6469	1.8285
10:36:49 AM	2	1.6474	1.7821
10:42:15 AM	3	1.6524	1.7438
11:03:59 AM	4	1.6541	1.7242
12:31:00 PM	5	1.6583	1.7072
6:19:00 PM	6	1.6535	1.6956
8:11:00 AM	7	1.6520	1.6825

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-062
 Date Started: 7-7-2020
 Sample ID: LDW 20 - IT 334

Client: Anchor
 Date Complete: 7-13-2020
 Tested by: H Benny

Sample Description: Dark Grey Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	235
	Tare Wt	1.6414
	Wet Wt + Tare	36.4058
	Dry Wt + Tare	16.9406
Test Sample	Tare No.	235
	Tare Wt	51.4375
	Wet Wt + Tare	90.5509
	Dry Wt + Tare	57.6099
	Cylinder #	C-21

Sieve Analysis

Tare Weight	51.4484
4	—
10	51.4956
18	51.9770
35	52.6488
60	53.7106
120	54.5706
230	56.2770
Pan	1.3260

Pipette Analysis

7/11/2020	Tare #	Tare Weight	Dry Weight
10:40:00 AM			
10:40:20 AM	1	1.6360	1.9023
10:41:49 AM	2	1.6405	1.8552
10:47:15 AM	3	1.6393	1.7309
11:08:59 AM	4	1.6430	1.7088
12:36:00 PM	5	1.6342	1.6802
6:24:00 PM	6	1.6383	1.6781
8:16:00 AM	7	1.6367	1.6665

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-062
 Date Started: 7-7-2020
 Sample ID: LDW20-IT359

Client: Anchor
 Date Complete: 7-13-2020
 Tested by: HBenny

Sample Description: Dark Grey Sandy Silt

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	244
	Tare Wt	1.6606
	Wet Wt + Tare	46.1643
	Dry Wt + Tare	28.0747
Test Sample	Tare No.	918 244
	Tare Wt	52.2588
	Wet Wt + Tare	92.8156
	Dry Wt + Tare	65.4220
	Cylinder #	C-75

Sieve Analysis

Tare Weight	52.2719
4	-
10	52.3057
18	52.5348
35	53.1020
60	55.1974
120	57.2990
230	62.3429
Pan	3.1560

Pipette Analysis

7/11/2020	Tare #	Tare Weight	Dry Weight
10:45:00 AM			
10:45:20 AM	1	1.6371	1.9291
10:46:49 AM	2	1.6393	1.8424
10:52:15 AM	3	1.6387	1.7692
11:13:59 AM	4	1.6420	1.7330
12:41:00 PM	5	1.6401	1.7023
6:29:00 PM	6	1.6367	1.6838
8:21:00 AM	7	1.6427	1.6767

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-062
 Date Started: 7-7-2020
 Sample ID: LDW20-IT374

Client: Anchor
 Date Complete: 7-13-2020
 Tested by: HBenny

Sample Description: Dark Grey Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	217
	Tare Wt	1.6499
	Wet Wt + Tare	40.6521
	Dry Wt + Tare	20.2933
Test Sample	Tare No.	217
	Tare Wt	51.7813
	Wet Wt + Tare	96.615136 HB
	Dry Wt + Tare	60.4675
	Cylinder #	C-17

Sieve Analysis

Tare Weight	51.7908
4	—
10	51.7985
18	52.1646
35	52.4191
60	52.6990
120	53.9568
230	58.2401
Pan	2.2543

Pipette Analysis

	Tare #	Tare Weight	Dry Weight
7/11/2020			
10:50:00 AM			
10:50:20 AM	1	1.6401	1.9515
10:51:49 AM	2	1.6515	1.8679
10:57:15 AM	3	1.6542	1.7856
11:18:59 AM	4	1.6499	1.7344
12:46:00 PM	5	1.6520	1.7068
6:34:00 PM	6	1.6491	1.6898
8:26:00 AM	7	1.6488	1.6778

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-062
 Date Started: 7-7-2020
 Sample ID: LDW20-SC238B

Client: Anchor
 Date Complete: 7-13-2020
 Tested by: HBenny

Sample Description: Dark Grey Sandy Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	238
	Tare Wt	1.6409
	Wet Wt + Tare	49.8115
	Dry Wt + Tare	27.9764
Test Sample	Tare No.	238
	Tare Wt	51.9197
	Wet Wt + Tare	92.0531
	Dry Wt + Tare	59.5688
	Cylinder #	C-74

Sieve Analysis

Tare Weight	51.9269
4	—
10	51.9354
18	52.1186
35	52.3163
60	52.5625
120	53.9248
230	57.4761
Pan	2.1327

Pipette Analysis

7/11/2020	Tare #	Tare Weight	Dry Weight
10:55:00 AM			
10:55:20 AM	1	1.6390	1.9764
10:56:49 AM	2	1.6395	1.8963
11:02:15 AM	3	1.6464	1.7392
11:23:59 AM	4	1.6471	1.7119
12:51:00 PM	5	1.6465	1.6955
6:39:00 PM	6	1.6433	1.6899
8:31:00 AM	7	1.6516	1.6853

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-062
 Date Started: 7-7-2020
 Sample ID: LDW20-IT228

Client: Anchor
 Date Complete: 7-13-2020
 Tested by: H Benny

Sample Description: Brown Silty Fine Sand

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	232
	Tare Wt	1.6455
	Wet Wt + Tare	54.5268
	Dry Wt + Tare	41.5543
Test Sample	Tare No.	232
	Tare Wt	51.7361
	Wet Wt + Tare	121.7754
	Dry Wt + Tare	97.9677
	Cylinder #	C-62

Sieve Analysis

Tare Weight	51.7475
4	52.9136
10	54.2382
18	55.5318
35	59.4164
60	74.1499
120	89.2192
230	96.3005
Pan	1.5505

Pipette Analysis

7/11/2020	Tare #	Tare Weight	Dry Weight
11:00:00 AM			
11:00:20 AM	1	1.6470	1.8278
11:01:49 AM	2	1.6543	1.7760
11:07:15 AM	3	1.6502	1.7352
11:28:59 AM	4	1.6529	1.7173
12:56:00 PM	5	1.6546	1.7028
6:44:00 PM	6	1.6545	1.6940
8:36:00 AM	7	1.6504	1.6799

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-062
 Date Started: 7-7-2020
 Sample ID: LDW20-SC235B

Client: Anchor
 Date Complete: 7-13-2020
 Tested by: HBenny

Sample Description: Dark Grey Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	254
	Tare Wt	1.6397
	Wet Wt + Tare	50.2558
	Dry Wt + Tare	27.3061
Test Sample	Tare No.	254
	Tare Wt	52.7871
	Wet Wt + Tare	91.1783
	Dry Wt + Tare	58.1684
	Cylinder #	L-25

Sieve Analysis

Tare Weight	52.7950
4	—
10	52.8059
18	53.0040
35	53.2428
60	53.4314
120	54.1157
230	56.7378
Pan	1.4644

Pipette Analysis

7/11/2020	Tare #	Tare Weight	Dry Weight
11:05:00 AM			
11:05:20 AM	1	1.6471	1.9882
11:06:49 AM	2	1.6485	1.9220
11:12:15 AM	3	1.6432	1.7226
11:33:59 AM	4	1.6447	1.7058
1:01:00 PM	5	1.6478	1.6956
6:49:00 PM	6	1.6491	1.6902
8:41:00 AM	7	1.6456	1.6786

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-062
 Date Started: 7-7-2020
 Sample ID: LDW20-SC250B

Client: Anchor
 Date Complete: 7-13-2020
 Tested by: H Benny

Sample Description: Dark Grey Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	255
	Tare Wt	1.6600
	Wet Wt + Tare	47.1677
	Dry Wt + Tare	24.9573
Test Sample	Tare No.	255
	Tare Wt	52.0170
	Wet Wt + Tare	90.9929
	Dry Wt + Tare	59.2743
	Cylinder #	C-36

Sieve Analysis

Tare Weight	52.0254
4	—
10	52.0317
18	52.3525
35	52.5445
60	52.7249
120	53.5057
230	57.2461
Pan	2.1293

Pipette Analysis

7/11/2020	Tare #	Tare Weight	Dry Weight
11:10:00 AM			
11:10:20 AM	1	1.6445	1.9581
11:11:49 AM	2	1.6441	1.8671
11:17:15 AM	3	1.6456	1.7251
11:38:59 AM	4	1.6432	1.7055
1:06:00 PM	5	1.6509	1.6999
6:54:00 PM	6	1.6512	1.6917
8:46:00 AM	7	1.6490	1.6825

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-062
 Date Started: 7-7-2020
 Sample ID: LDW20-IT244

Client: Anchor
 Date Complete: 7-13-2020
 Tested by: H Benny

Sample Description: Brown Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content		Tare No.	205
	Tare Wt	1.6548	
	Wet Wt + Tare	37.8468	
	Dry Wt + Tare	23.5728	
Test Sample		Tare No.	205
	Tare Wt	50.0165	
	Wet Wt + Tare	89.2788	
	Dry Wt + Tare	58.6700	
	Cylinder #	C-19	

Sieve Analysis

Tare Weight	50.0313
4	—
10	50.1014
18	50.5237
35	51.6823
60	53.4313
120	54.1924
230	56.3610
Pan	1.8027

Pipette Analysis

7/11/2020	Tare #	Tare Weight	Dry Weight
11:15:00 AM			
11:15:20 AM	1	1.6524	2.0086
11:16:49 AM	2	1.6528	1.9445
11:22:15 AM	3	1.6472	1.8152
11:43:59 AM	4	1.6510	1.7610
1:11:00 PM	5	1.6500	1.7256
6:59:00 PM	6	1.6515	1.7065
8:51:00 AM	7	1.6434	1.6825

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-062
 Date Started: 7-7-2020
 Sample ID: LDW20-SC159

Client: Anchor
 Date Complete: 7-13-2020
 Tested by: H Benny

Sample Description: Dark Grey Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	245
	Tare Wt	1.6483
	Wet Wt + Tare	43.8550
	Dry Wt + Tare	25.8435
Test Sample	Tare No.	245
	Tare Wt	51.8587
	Wet Wt + Tare	92.9616
	Dry Wt + Tare	64.1615
	Cylinder #	C-53

Sieve Analysis

Tare Weight	51.8666
4	—
10	51.8708
18	52.0145
35	52.2619
60	53.4048
120	56.5738
230	62.0450
Pan	2.1841

Pipette Analysis

7/11/2020	Tare #	Tare Weight	Dry Weight
11:20:00 AM			
11:20:20 AM	1	1.6430	1.9190
11:21:49 AM	2	1.6432	1.8532
11:27:15 AM	3	1.6513	1.7746
11:48:59 AM	4	1.6456	1.7217
1:16:00 PM	5	1.6486	1.7061
7:04:00 PM	6	1.6487	1.6927
8:56:00 AM	7	1.6481	1.6837

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-062
 Date Started: 7-7-2020
 Sample ID: LDW20-SC154

Client: Anchor
 Date Complete: 7-13-2020
 Tested by: HLBenny

Sample Description: Dark Grey Sandy Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	246
	Tare Wt	1.6414
	Wet Wt + Tare	46.8562
	Dry Wt + Tare	21.7178
Test Sample	Tare No.	246
	Tare Wt	51.7920
	Wet Wt + Tare	90.8259
	Dry Wt + Tare	54.3242
	Cylinder #	C-14

Sieve Analysis

Tare Weight	51.8196
4	—
10	51.8215
18	52.1423
35	52.3670
60	52.4497
120	52.6528
230	53.5004
Pan	0.8681

Pipette Analysis

	Tare #	Tare Weight	Dry Weight
7/11/2020			
11:25:00 AM			
11:25:20 AM	1	1.6465	1.9782
11:26:49 AM	2	1.6521	1.9496
11:32:15 AM	3	1.6452	1.748
11:53:59 AM	4	1.6355	1.7068
1:21:00 PM	5	1.6359	1.6908
7:09:00 PM	6	1.6419	1.6844
9:01:00 AM	7	1.6373	1.6717

1.7388 HB

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-062
 Date Started: 7-7-2020
 Sample ID: LDW20-SC188

Client: Anchor
 Date Complete: 7-13-2020
 Tested by: H. Benny

Sample Description: Dark Grey Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	214
	Tare Wt	1.6438
	Wet Wt + Tare	37.8112
	Dry Wt + Tare	17.9612
Test Sample	Tare No.	214
	Tare Wt	50.9531
	Wet Wt + Tare	92.8277
	Dry Wt + Tare	55.0567
	Cylinder #	C-42

Sieve Analysis

Tare Weight	50.9634
4	—
10	—
18	51.3702
35	51.5997
60	51.8926
120	52.3280
230	53.9143
Pan	1.2062

Pipette Analysis

7/11/2020	Tare #	Tare Weight	Dry Weight
11:30:00 AM			
11:30:20 AM	1	1.6400	1.9768
11:31:49 AM	2	1.6495	1.9365
11:37:15 AM	3	1.6495	1.7396
11:58:59 AM	4	1.6507	1.7251
1:26:00 PM	5	1.6437	1.7007
7:14:00 PM	6	1.6482	1.6932
9:06:00 AM	7	1.6420	1.6779

gb

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-062
 Date Started: 7-7-2020
 Sample ID: LDW20-IT243

Client: Anchor
 Date Complete: 7-13-2020
 Tested by: HBenny

Sample Description: Dark Grey Sandy Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	237
	Tare Wt	1.6495
	Wet Wt + Tare	41.4892
	Dry Wt + Tare	29.9197
Test Sample	Tare No.	237 ⁶⁻⁸⁶
	Tare Wt	51.1283
	Wet Wt + Tare	91.5117
	Dry Wt + Tare	69.6409
	Cylinder #	C-12

Tare Weight	51.1133
4	5 -
10	51.5374
18	51.7889
35	53.7340
60	61.4262
120	65.3532
230	68.2022
Pan	1.3890

HB

Pipette Analysis

7/11/2020	Tare #	Tare Weight	Dry Weight
11:35:00 AM			
11:35:20 AM	1	1.6481	1.8815
11:36:49 AM	2	1.6449	1.8233
11:42:15 AM	3	1.6417	1.7642
12:03:59 PM	4	1.6353	1.7190
1:31:00 PM	5	1.6487	1.7103
7:19:00 PM	6	1.6438	1.6880
9:11:00 AM	7	1.6515	1.6854

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-062
 Date Started: 7-7-2020
 Sample ID: LDW20-55162

Client: Anchor
 Date Complete: 7-13-2020
 Tested by: HLBenny

Sample Description: Dark Grey Sandy Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content		
Tare No.		249
Tare Wt		1.6450
Wet Wt + Tare		62.5450
Dry Wt + Tare		43.3670
Test Sample		
Tare No.		249
Tare Wt		51.8027
Wet Wt + Tare		108.2164
Dry Wt + Tare		85.5533
Cylinder #		C-29

Sieve Analysis

Sieve	Weight
Tare Weight	51.8061
4	—
10	51.9743
18	52.2085
35	52.6912
60	58.0759
120	78.5302
230	85.0144
Pan	0.5738

Pipette Analysis

Date	Tare #	Tare Weight	Dry Weight
7/11/2020			
11:40:00 AM			
11:40:20 AM	1	1.6480	1.7698
11:41:49 AM	2	1.6355	1.7369
11:47:15 AM	3	1.6415	1.7181
12:08:59 PM	4	1.6518	1.7128
1:36:00 PM	5	1.6544	1.7028
7:24:00 PM	6	1.6547	1.6929
9:16:00 AM	7	1.6487	1.6807

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-062
 Date Started: 7-7-2020
 Sample ID: LDW20-55166

Client: Anchor
 Date Complete: 7-13-2020
 Tested by: H Benny

Sample Description: Dark Grey Sandy Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	253
	Tare Wt	1.6511
	Wet Wt + Tare	56.6320
	Dry Wt + Tare	36.9953
Test Sample	Tare No.	253
	Tare Wt	51.9374
	Wet Wt + Tare	99.8869
	Dry Wt + Tare	75.0700
	Cylinder #	C-44

Tare Weight	51.9479
4	—
10	51.9642
18	52.0384
35	52.2130
60	52.5215
120	63.7929
230	73.0580
Pan	2.0185

Pipette Analysis

7/11/2020	Tare #	Tare Weight	Dry Weight
11:45:00 AM			
11:45:20 AM	1	1.6505	1.8610
11:46:49 AM	2	1.6544	1.7951
11:52:15 AM	3	1.6511	1.7499
12:13:59 PM	4	1.6478	1.7204
1:41:00 PM	5	1.6504	1.7065
7:29:00 PM	6	1.6393	1.6826
9:21:00 AM	7	1.6441	1.6775

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 15, 2020
Date Started: July 11, 2020
Date Finished: July 17, 2020

Client: AnchorQEA
HLB Project #: 20-063
Tested By: H Benny

CASE NARRATIVE

1. Sixteen 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 the job was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. The samples contained organic matter which may have broken down during the oven drying and sieving process, affecting the grain size analysis.
4. Sample IT379-FD had several rocks in the jar that were not in IT379. This field duplicate was not a duplicate of IT379.
5. The data is provided in summary tables and plots.
6. There were no other noted anomalies in the testing or samples on project.

Reviewed by:



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 15, 2020
Date Started: July 11, 2020
Date Finished: July 17, 2020

Client: AnchorQEA
Project #: 20-063
Tested by: H Benny

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
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
LDW20-IT272	100.0	100.0	99.8	98.4	97.3	96.6	93.1	80.9	66.0	21.7	10.9	7.5	5.3	3.3
	100.0	100.0	99.6	98.2	97.1	96.1	92.6	80.6	66.9	20.6	10.3	6.9	5.3	3.4
	100.0	100.0	100.0	98.6	97.6	97.1	94.1	82.0	65.7	20.5	9.9	6.7	4.8	3.0
LDW20-IT248	100.0	100.0	99.7	98.9	95.8	81.4	60.6	43.4	33.2	21.2	12.8	7.6	5.3	2.8
LDW20-IT253	100.0	100.0	97.9	95.2	82.8	50.5	30.2	20.6	14.2	9.4	5.9	3.9	2.3	0.9
LDW20-IT253 FD	100.0	100.0	98.5	96.1	83.7	51.7	31.7	22.0	13.6	8.8	5.3	3.4	1.5	0.6
LDW20-SC269B	100.0	100.0	99.9	98.5	97.0	95.6	88.9	71.1	52.8	15.3	7.2	5.6	4.5	3.5
LDW20-SC261B	100.0	100.0	99.9	98.6	97.3	96.0	89.7	72.9	50.8	14.7	8.2	6.8	5.4	3.9
LDW20-SC255B	100.0	100.0	100.0	98.3	97.3	96.6	93.0	77.0	58.2	28.2	9.6	7.5	6.2	4.1
LDW20-SC245B	100.0	100.0	99.9	98.8	96.8	94.2	89.3	71.2	50.9	21.1	10.1	7.6	5.4	4.6
LDW20-IT268	100.0	99.7	99.0	96.9	94.7	92.5	89.0	79.5	63.5	41.1	25.6	16.1	10.2	6.6
LDW20-SS135	100.0	100.0	97.3	92.8	79.3	42.4	27.7	21.5	16.1	11.5	7.6	4.8	3.3	2.3
LDW20-IT356	100.0	98.4	98.4	96.9	95.8	95.4	90.4	72.6	53.2	30.3	14.2	9.4	6.3	4.6
LDW20-IT369	100.0	100.0	99.3	98.3	92.9	81.8	62.1	43.1	29.9	17.6	10.5	6.6	4.0	2.7
LDW20-IT372	100.0	99.9	99.4	95.2	86.0	80.4	70.1	55.4	44.1	25.5	12.2	7.4	5.0	3.1
LDW20-IT377	100.0	100.0	99.8	98.5	96.0	86.8	68.5	56.5	44.6	23.3	10.0	6.7	4.5	3.3
LDW20-IT379	100.0	100.0	97.4	95.8	86.9	65.0	43.5	32.0	23.2	16.6	12.0	8.3	5.2	3.4
LDW20-IT379 FD	100.0	94.6	92.1	89.7	82.1	61.6	41.1	30.3	21.9	16.2	11.2	7.5	4.9	3.1

Reviewed by: 

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 15, 2020
Date Started: July 11, 2020
Date Finished: July 17, 2020

Client: AnchorQEA
HLB Project #: 20-063
Tested by: H Benny

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)
LDW20-IT272	0.2	1.4	1.2	0.7	3.5	12.2	15.0	44.3	10.7	3.5	2.2	2.0	3.3	80.9
	0.4	1.4	1.1	1.0	3.5	12.0	13.8	46.3	10.3	3.4	1.6	1.9	3.4	80.6
	0.0	1.4	1.0	0.5	3.0	12.1	16.4	45.2	10.6	3.2	1.9	1.7	3.0	82.0
LDW20-IT248	0.3	0.8	3.1	14.4	20.8	17.2	10.2	12.0	8.4	5.1	2.4	2.5	2.8	43.4
LDW20-IT253	2.1	2.7	12.4	32.3	20.3	9.6	6.4	4.8	3.6	1.9	1.6	1.4	0.9	20.6
LDW20-IT253 FD	1.5	2.5	12.3	32.0	20.0	9.7	8.4	4.9	3.5	1.9	1.9	0.9	0.6	22.0
LDW20-SC269B	0.1	1.4	1.5	1.5	6.6	17.8	18.4	37.4	8.1	1.6	1.1	1.1	3.5	71.1
LDW20-SC261B	0.1	1.3	1.3	1.3	6.3	16.8	22.1	36.1	6.5	1.4	1.4	1.5	3.9	72.9
LDW20-SC255B	0.0	1.7	1.0	0.7	3.6	16.0	18.8	30.0	18.6	2.1	1.3	2.1	4.1	77.0
LDW20-SC245B	0.1	1.0	2.0	2.6	4.9	18.0	20.3	29.8	11.0	2.5	2.3	0.8	4.6	71.2
LDW20-IT268	1.0	2.1	2.2	2.2	3.6	9.4	16.0	22.4	15.5	9.5	5.9	3.5	6.6	79.5
LDW20-SS135	2.7	4.6	13.5	36.9	14.7	6.2	5.4	4.6	3.9	2.7	1.5	1.0	2.3	21.5
LDW20-IT356	1.6	1.5	1.1	0.4	5.1	17.7	19.5	22.9	16.1	4.8	3.1	1.6	4.6	72.6
LDW20-IT369	0.7	1.0	5.4	11.1	19.7	19.1	13.2	12.3	7.1	3.9	2.6	1.3	2.7	43.1
LDW20-IT372	0.6	4.1	9.2	5.7	10.3	14.7	11.3	18.7	13.3	4.8	2.4	1.9	3.1	55.4
LDW20-IT377	0.2	1.3	2.5	9.2	18.4	12.0	11.9	21.3	13.2	3.3	2.2	1.2	3.3	56.5
LDW20-IT379	2.6	1.6	8.9	21.9	21.5	11.5	8.7	6.7	4.6	3.7	3.1	1.8	3.4	32.0
LDW20-IT379 FD	7.9	2.4	7.6	20.6	20.5	10.8	8.4	5.8	4.9	3.7	2.6	1.9	3.1	30.3

Reviewed by: 

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 15, 2020
Date Started: July 11, 2020
Date Finished: July 17, 2020

Client: AnchorQEA
HLB Project #: 20-063
Tested by: H Benny

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
LDW20-IT272	100.0	100.0	99.8	98.4	97.3	96.6	93.1	80.9	66.0	21.7	10.9	7.5	5.3	3.3
	100.0	100.0	99.6	98.2	97.1	96.1	92.6	80.6	66.9	20.6	10.3	6.9	5.3	3.4
	100.0	100.0	100.0	98.6	97.6	97.1	94.1	82.0	65.7	20.5	9.9	6.7	4.8	3.0
AVE	100.0	100.0	99.8	98.4	97.3	96.6	93.3	81.2	66.2	20.9	10.4	7.0	5.1	3.2
STDEV	0.0	0.0	0.2	0.2	0.2	0.4	0.6	0.6	0.5	0.6	0.4	0.3	0.3	0.1
%RSD	0.0	0.0	0.2	0.2	0.2	0.4	0.6	0.7	0.8	2.6	4.2	4.5	4.9	4.6

The Triplicate Applies To The Following Samples

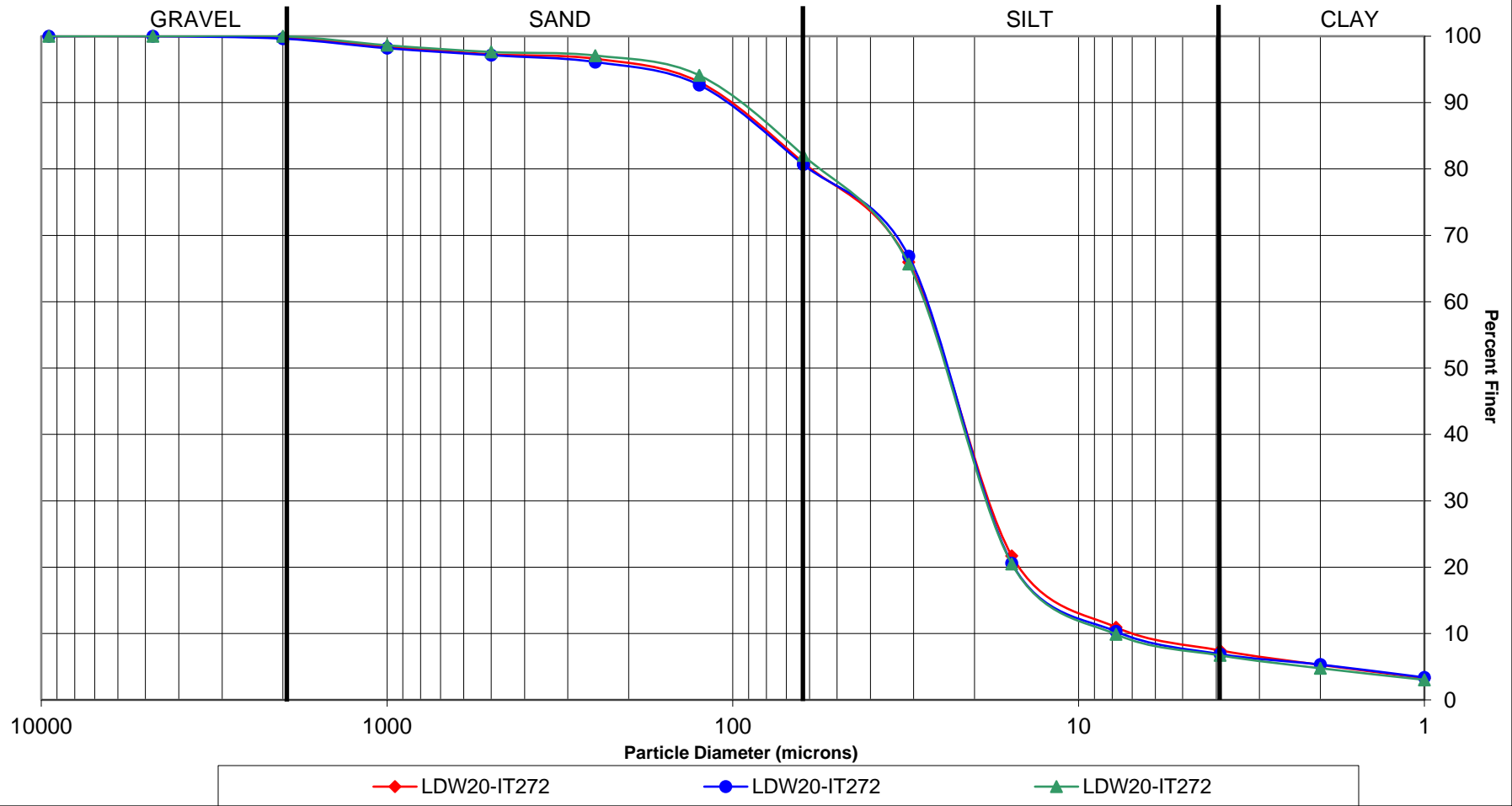
Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
LDW20-IT272	6/11/2020	7/11/2020	7/17/2020	103.2		15.9
	6/11/2020	7/11/2020	7/17/2020	102.8		16.0
	6/11/2020	7/11/2020	7/17/2020	101.0		16.7
LDW20-IT248	6/11/2020	7/11/2020	7/17/2020	101.1		10.8
LDW20-IT253	6/11/2020	7/11/2020	7/17/2020	100.6		6.1
LDW20-IT253 FD	6/11/2020	7/11/2020	7/17/2020	101.8		6.6
LDW20-SC269B	6/11/2020	7/11/2020	7/17/2020	101.6		15.0
LDW20-SC261B	6/11/2020	7/11/2020	7/17/2020	103.5		14.5
LDW20-SC255B	6/11/2020	7/11/2020	7/17/2020	100.6		15.4
LDW20-SC245B	6/11/2020	7/11/2020	7/17/2020	100.1		14.5
LDW20-IT268	6/11/2020	7/11/2020	7/17/2020	101.0		16.0
LDW20-SS135	6/10/2020	7/11/2020	7/17/2020	100.3		6.5
LDW20-IT356	6/9/2020	7/11/2020	7/17/2020	100.8		13.5
LDW20-IT369	6/9/2020	7/11/2020	7/17/2020	102.4		10.9
LDW20-IT372	6/9/2020	7/11/2020	7/17/2020	100.3		12.0
LDW20-IT377	6/9/2020	7/11/2020	7/17/2020	100.9		12.0
LDW20-IT379	6/9/2020	7/11/2020	7/17/2020	101.0		9.8
LDW20-IT379 FD	6/9/2020	7/11/2020	7/17/2020	101.0		9.6

Notes to the Testing: Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution.

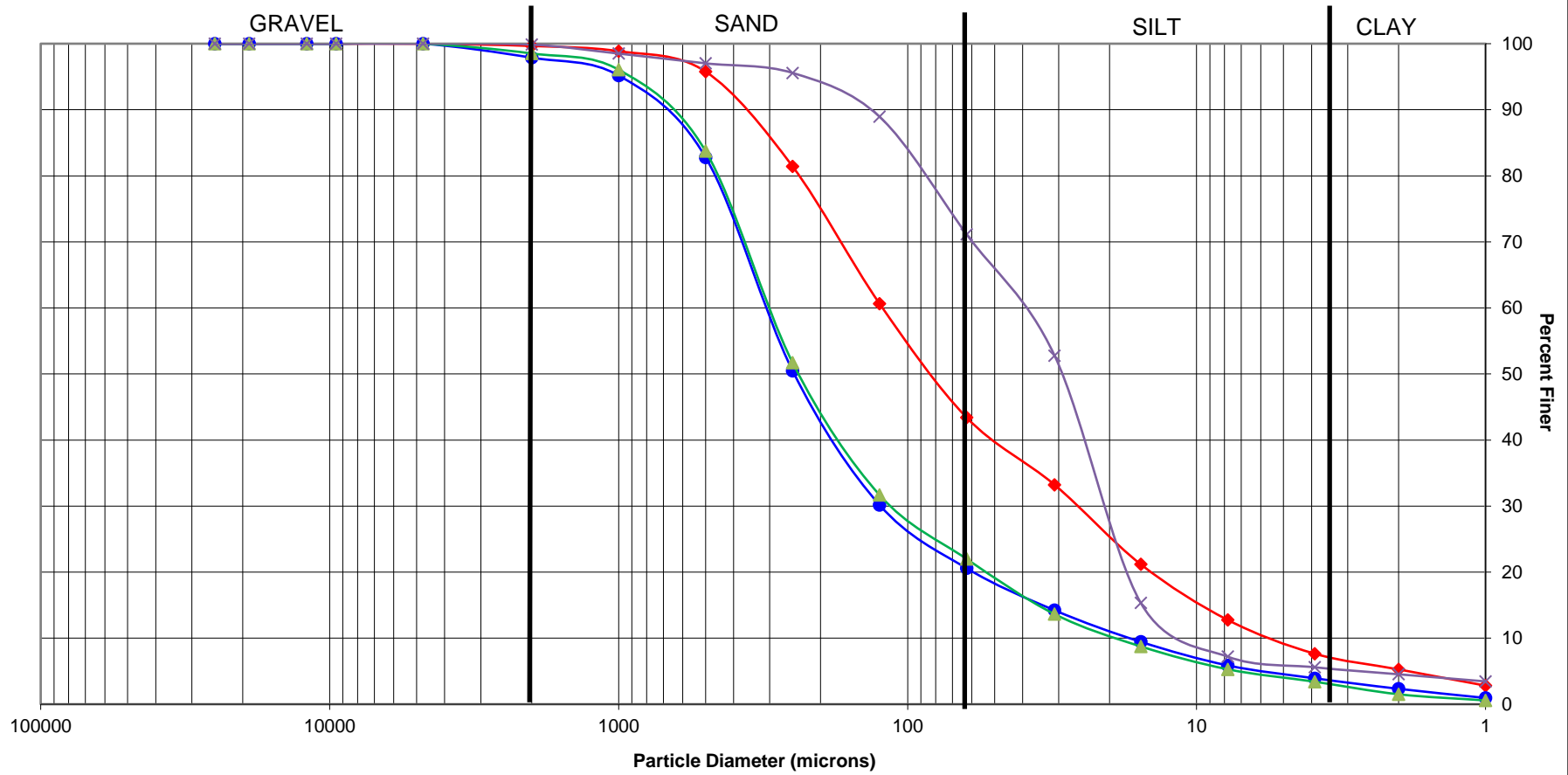
Reviewed by:  _____

PSEP Grain Size Distribution

Triplicate Sample Plot

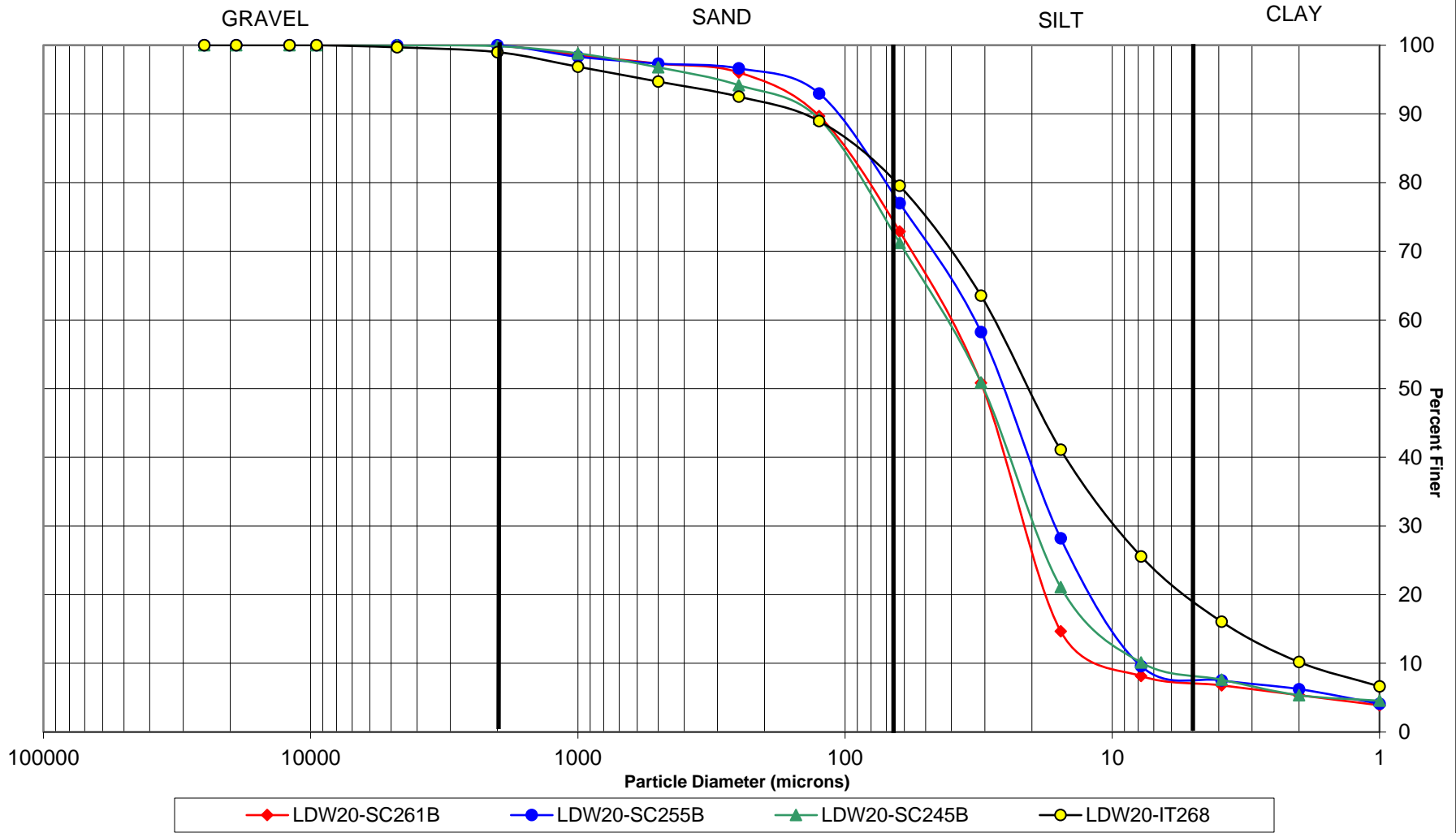


PSEP Grain Size Distribution

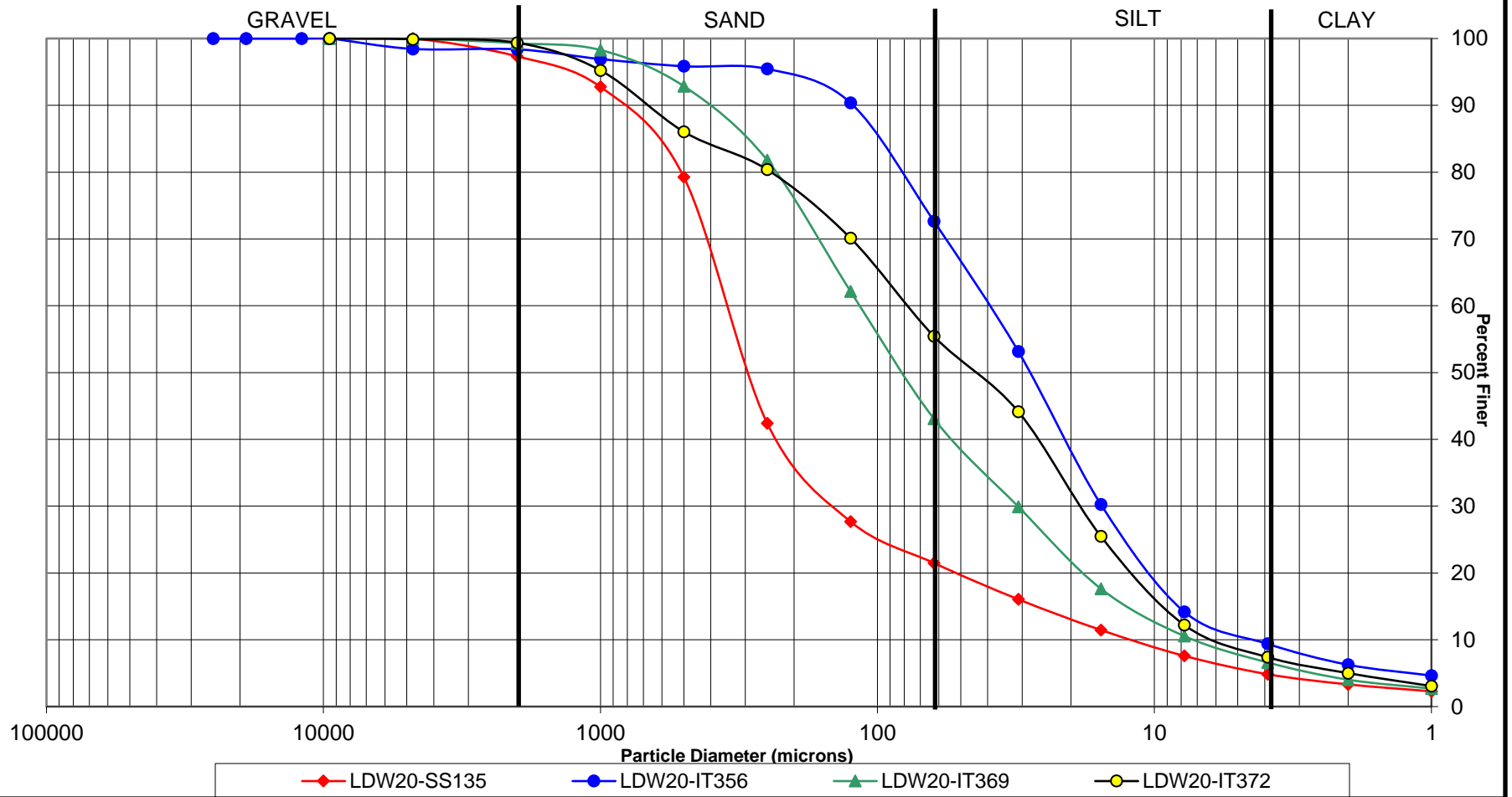


◆ LDW20-IT248 ● LDW20-IT253 ▲ LDW20-IT253 FD ✕ LDW20-SC269B

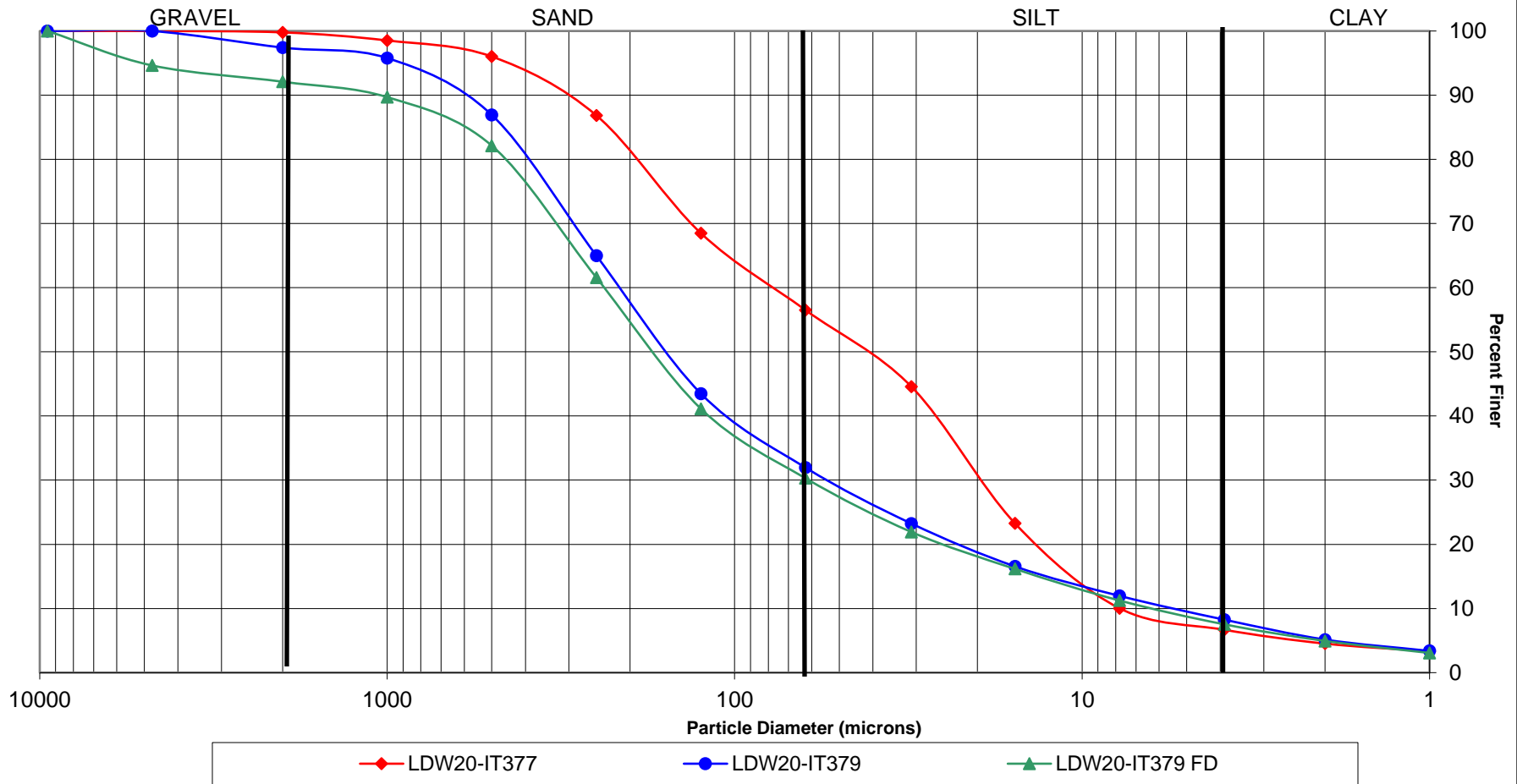
PSEP Grain Size Distribution



PSEP Grain Size Distribution



PSEP Grain Size Distribution



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-IT272A

Client: Anchor
 Date Complete: 7-17-2020
 Tested by: H. Benny

Sample Description: Dark Grey Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	225
	Tare Wt	1.6516
	Wet Wt + Tare	34.7283
	Dry Wt + Tare	18.5973
Test Sample	Tare No.	225
	Tare Wt	51.9408
	Wet Wt + Tare	90.2802
	Dry Wt + Tare	57.0807
	Cylinder #	C-28

Sieve Analysis

Tare Weight	51.9509
4	-
10	51.9832
18	52.2588
35	52.4879
60	52.6191
120	53.3091
230	55.6968
Pan	1.4252

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:00:00 PM			
12:00:20 PM	1	1.5883	1.9101
12:01:49 PM	2	1.5910	1.8581
12:07:15 PM	3	1.6067	1.7053
12:28:59 PM	4	1.5785	1.6362
1:56:00 PM	5	1.6073	1.6517
7:44:00 PM	6	1.5930	1.6291
9:36:00 AM	7	1.6448	1.6733

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-IT272B

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: _____

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	234
	Tare Wt	1.6424
	Wet Wt + Tare	34.0394
	Dry Wt + Tare	18.1965
Test Sample	Tare No.	234
	Tare Wt	51.5749
	Wet Wt + Tare	90.4564
	Dry Wt + Tare	56.7384
	Cylinder #	C-4

Sieve Analysis

Tare Weight	51.5843
4	—
10	51.6576
18	51.9434
35	52.1530
60	52.3570
120	53.0477
230	55.4292
Pan	1.3973

H.B.
H.B.

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:05:00 PM			
12:05:20 PM	1	1.6503	1.9761
12:06:49 PM	2	1.6502	1.9248
12:12:15 PM	3	1.6519	1.7475
12:33:59 PM	4	1.6506	1.7065
2:01:00 PM	5	1.6083	1.6510
7:49:00 PM	6	1.6056	1.6422
9:41:00 AM	7	1.6581	1.6872

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-IT272C

Client: Anchor
 Date Complete: 7-17-2020
 Tested by: H Benny

Sample Description: Dark Grey Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content		
Tare No.	200	
Tare Wt	1.6396	
Wet Wt + Tare	35.6827	
Dry Wt + Tare	19.4159	
Test Sample		
Tare No.	200	
Tare Wt	51.6763	
Wet Wt + Tare	90.5815	
Dry Wt + Tare	56.7893	
Cylinder #	C-46	

Sieve Analysis

Tare Weight	51.6863
4	—
10	—
18	51.9638
35	52.1698
60	52.2785
120	52.8860
230	55.3368
Pan	1.4954

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:10:00 PM			
12:10:20 PM	1	1.6490	1.9944
12:11:49 PM	2	1.6543	1.9346
12:17:15 PM	3	1.5794	1.6778
12:38:59 PM	4	1.5973	1.6551
2:06:00 PM	5	1.5945	1.6375
7:54:00 PM	6	1.5943	1.6295
9:46:00 AM	7	1.6030	1.6312

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-IT248

Client: Anchor
 Date Complete: _____
 Tested by: HLBenny

Sample Description: Dark Grey Sandy Silt

Calgon Batch:

Temperature:

Solids Content

Sieve Analysis

Moisture Content	Tare No.	229
	Tare Wt	1.6429
	Wet Wt + Tare	34.9167
	Dry Wt + Tare	22.4880
Test Sample	Tare No.	229
	Tare Wt	51.7308
	Wet Wt + Tare	91.4997
	Dry Wt + Tare	67.0013
	Cylinder #	C-59

Tare Weight	51.7397
4	—
10	51.8259
18	52.0231
35	52.7938
60	56.3706
120	61.5483
230	65.8393
Pan	1.1970

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:15:00 PM			
12:15:20 PM	1	1.5840	1.8108
12:16:49 PM	2	1.5976	1.7773
12:22:15 PM	3	1.5931	1.7135
12:43:59 PM	4	1.5936	1.6725
2:11:00 PM	5	1.6077	1.6614
7:59:00 PM	6	1.5964	1.6384
9:51:00 AM	7	1.5868	1.6167

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-IT253

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Dark Grey Sandy Silt

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	231
	Tare Wt	1.6478
	Wet Wt + Tare	59.3527
	Dry Wt + Tare	44.3565
Test Sample	Tare No.	231
	Tare Wt	51.7386
	Wet Wt + Tare	91.8801
	Dry Wt + Tare	76.2452
	Cylinder #	C-20

Sieve Analysis

Tare Weight	51.7422
4	—
10	52.3719
18	53.1744
35	56.8549
60	66.4557
120	72.4903
230	75.3359
Pan	0.8340

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:20:00 PM			
12:20:20 PM	1	1.5882	1.7228
12:21:49 PM	2	1.5892	1.6892
12:27:15 PM	3	1.56088	1.6806
12:48:59 PM	4	1.6001	1.6508
2:16:00 PM	5	1.5962	1.6354
8:04:00 PM	6	1.5874	1.6172
9:56:00 AM	7	1.5966	1.6182

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW 20 - JT 253FD

Client: Anchor
 Date Complete: 7-17-2020
 Tested by: H Benny

Sample Description: Dark Grey Sandy Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	257
	Tare Wt	1.6373
	Wet Wt + Tare	51.2268
	Dry Wt + Tare	39.0002
Test Sample	Tare No.	257
	Tare Wt	51.9957
	Wet Wt + Tare	91.8093
	Dry Wt + Tare	76.0953
	Cylinder #	C-34

Sieve Analysis

Tare Weight	51.9944
4	-
10	52.4387
18	53.1773
35	56.8761
60	66.4815
120	72.4916
230	75.3924
Pan	0.7002

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:25:00 PM			
12:25:20 PM	1	1.5982	1.7356
12:26:49 PM	2	1.6011	1.6975
12:32:15 PM	3	1.5845	1.6521
12:53:59 PM	4	1.5950	1.6422
2:21:00 PM	5	1.5924	1.6285
8:09:00 PM	6	1.6006	1.6255
10:01:00 AM	7	1.5972	1.6166

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-SC269B

Client: Anchor
 Date Complete: 7-17-2020
 Tested by: H. Benny

Sample Description: Dark Grey Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	242
	Tare Wt	1.6471
	Wet Wt + Tare	46.1804
	Dry Wt + Tare	24.5429
Test Sample	Tare No.	242
	Tare Wt	51.3362
	Wet Wt + Tare	92.4634
	Dry Wt + Tare	59.9116
	Cylinder #	C-3

Sieve Analysis

Tare Weight	51.3501
4	—
10	51.3802
18	51.6674
35	51.9793
60	52.2864
120	53.6900
230	57.4513
Pan	2.4650

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:30:00 PM			
12:30:20 PM	1	1.6080	1.9184
12:31:49 PM	2	1.5973	1.8341
12:37:15 PM	3	1.5962	1.6761
12:58:59 PM	4	1.5965	1.6425
2:26:00 PM	5	1.6073	1.6466
8:14:00 PM	6	1.6069	1.6418
10:06:00 AM	7	1.5953	1.6257

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-SC261B

Client: Anchor
 Date Complete: 7-17-2020
 Tested by: H. Benny

Sample Description: _____

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	250
	Tare Wt	1.6434
	Wet Wt + Tare	43.5175
	Dry Wt + Tare	22.3862
Test Sample	Tare No.	250
	Tare Wt	52.3257
	Wet Wt + Tare	92.3759
	Dry Wt + Tare	59.3731
	Cylinder #	C-30

Sieve Analysis

Tare Weight	52.3302
4	—
10	52.3459
18	52.6130
35	52.8622
60	53.1169
120	54.3766
230	57.7089
Pan	1.7249

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:35:00 PM			
12:35:20 PM	1	1.5907	1.8826
12:36:49 PM	2	1.5936	1.8045
12:42:15 PM	3	1.5997	1.6720
1:03:59 PM	4	1.5885	1.6358
2:31:00 PM	5	1.5954	1.6375
8:19:00 PM	6	1.5981	1.6347
10:11:00 AM	7	1.5995	1.6305

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-SC255B

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: ^{Dark} Grey Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	201
	Tare Wt	1.6363
	Wet Wt + Tare	43.2116
	Dry Wt + Tare	22.2959
Test Sample	Tare No.	201
	Tare Wt	51.6851
	Wet Wt + Tare	91.9843
	Dry Wt + Tare	58.5761
	Cylinder #	C-10

Tare Weight	51.6978
4	—
10	52.0340
18	52.2331
35	52.3733
60	53.1028
120	
230	56.3044
Pan	2.2948

— HB

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:40:00 PM			
12:40:20 PM	1	1.5977	1.9197
12:41:49 PM	2	1.5980	1.8459
12:47:15 PM	3	1.6472	1.7755
1:08:59 PM	4	1.6503	1.7045
2:36:00 PM	5	1.6520	1.6980
8:24:00 PM	6	1.6318	1.6727
10:16:00 AM	7	1.6420	1.6744

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-SC245B

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: Dark Grey Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	241
	Tare Wt	1.6544
	Wet Wt + Tare	34.9876
	Dry Wt + Tare	19.2117
Test Sample	Tare No.	241
	Tare Wt	51.6954
	Wet Wt + Tare	90.4358
	Dry Wt + Tare	59.2099
	Cylinder #	C-40

Sieve Analysis

Tare Weight	51.6981
4	-
10	51.7284
18	51.9414
35	52.3566
60	52.8858
120	53.8894
230	57.5695
Pan	1.7196

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:45:00 PM			
12:45:20 PM	1	1.6450	1.9513
12:46:49 PM	2	1.6471	1.8706
12:52:15 PM	3	1.6379	1.7399
1:13:59 PM	4	1.6388	1.6961
2:41:00 PM	5	1.6451	1.6922
8:29:00 PM	6	1.6555	1.6934
10:21:00 AM	7	1.6403	1.6749

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-TT268

Client: Anchor
 Date Complete: _____
 Tested by: H Benny

Sample Description: Dark Gray S.H

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	203
	Tare Wt	1.6393
	Wet Wt + Tare	57.0608
	Dry Wt + Tare	29.07559
Test Sample	Tare No.	203
	Tare Wt	51.0045
	Wet Wt + Tare	91.6564
	Dry Wt + Tare	56.8975
	Cylinder #	C-22

Sieve Analysis

Tare Weight	51.0224
4	51.0838
10	51.2260
18	51.6524
35	52.0893
60	52.5279
120	53.2441
230	55.1388
Pan	1.8624

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:50:00 PM			
12:50:20 PM	1	1.6500	1.9820
12:51:49 PM	2	1.6428	1.9119
12:57:15 PM	3	1.6538	1.8335
1:18:59 PM	4	1.6539	1.7718
2:46:00 PM	5	1.5913	1.6713
8:34:00 PM	6	1.5887	1.6453
10:26:00 AM	7	1.6495	1.6920

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-SS135

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Dark Grey Sandy Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	219
	Tare Wt	1.5974
	Wet Wt + Tare	73.3845
	Dry Wt + Tare	52.0849
Test Sample	Tare No.	219
	Tare Wt	50.4779
	Wet Wt + Tare	93.6039
	Dry Wt + Tare	74.7962
	Cylinder #	C-15

Sieve Analysis

Tare Weight	50.4825
4	-
10	51.2912
18	52.6804
35	56.7742
60	67.9521
120	72.4161
230	74.2957
Pan	

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:55:00 PM			
12:55:20 PM	1	1.6533	1.7977
12:56:49 PM	2	1.6417	1.7548
1:02:15 PM	3	1.6415	1.7268
1:23:59 PM	4	1.6026	1.6645
2:51:00 PM	5	1.5870	1.6323
8:39:00 PM	6	1.6004	1.6365
10:31:00 AM	7	1.5923	1.6221

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-IT356

Client: Anchor
 Date Complete: _____
 Tested by: H Benny

Sample Description: Dark Grey Sil

Calgon Batch: 20

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	220
	Tare Wt	1.5932
	Wet Wt + Tare	49.0185
	Dry Wt + Tare	23.9998
Test Sample	Tare No.	220
	Tare Wt	51.6125
	Wet Wt + Tare	90.9046
	Dry Wt + Tare	58.3923
	Cylinder #	C-13

Tare Weight	51.6213
4	51.9115
10	51.9217
18	52.1929
35	52.3932
60	52.4661
120	53.4119
230	56.7014
Pan	2.0404

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
1:00:00 PM			
1:00:20 PM	1	1.5928	1.8757
1:01:49 PM	2	1.6446	1.8565
1:07:15 PM	3	1.6481	1.7756
1:28:59 PM	4	1.6521	1.7204
2:56:00 PM	5	1.6107	1.6613
8:44:00 PM	6	1.6484	1.6875
10:36:00 AM	7	1.6491	1.6822

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-IT369

Client: Anchor
 Date Complete: _____
 Tested by: H Benny

Sample Description: Dark Grey Sandy Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content		
Tare No.	215	
Tare Wt	1.5834	
Wet Wt + Tare	49.2753	
Dry Wt + Tare	31.1482	
Test Sample		
Tare No.	215	
Tare Wt	51.0044	
Wet Wt + Tare	91.8130	
Dry Wt + Tare	67.0376	
Cylinder #	C-32	

Sieve Analysis

Tare Weight	51.0101	
4	-	
10	51.1890	
18	51.4464	
35	52.8133	
60	55.6112	
120	60.5793	
230	65.4010	
Pan	1.4525	

.3998 #B

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
1:05:00 PM			
1:05:20 PM	1	1.6449	1.8668
1:06:49 PM	2	1.5775	1.7412
1:12:15 PM	3	1.5934	1.6965
1:33:59 PM	4	1.5778	1.6459
3:01:00 PM	5	1.5827	1.6313
8:49:00 PM	6	1.5846	1.6205
10:41:00 AM	7	1.5771	1.6064

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-IT 372

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	221	HB
	Tare Wt	1.6112	
	Wet Wt + Tare	52.6000	
	Dry Wt + Tare	29.1878	
Test Sample	Tare No.	221	
	Tare Wt	51.9545	
	Wet Wt + Tare	92.0843	
	Dry Wt + Tare	63.3787	
	Cylinder #	C-31	

Tare Weight	51.9665
4	51.9905
10	52.1050
18	53.0015
35	54.9969
60	56.2269
120	58.4555
230	61.6416
Pan	1.7055

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
1:10:00 PM			
1:10:20 PM	1	1.5886	1.8440
1:11:49 PM	2	1.5941	1.8012
1:17:15 PM	3	1.5934	1.7197
1:38:59 PM	4	1.5992	1.6681
3:06:00 PM	5	1.5996	1.6476
8:54:00 PM	6	1.5856	1.6205
10:46:00 AM	7	1.6034	1.6327

33 t/B

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-IT377

Client: Anchor
 Date Complete: _____
 Tested by: HLBenny

Sample Description: Dark Grey Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	228
	Tare Wt	1.5825
	Wet Wt + Tare	53.9759
	Dry Wt + Tare	29.6144
Test Sample	Tare No.	228
	Tare Wt	51.4934
	Wet Wt + Tare	91.2662
	Dry Wt + Tare	61.9314
	Cylinder #	C-55

Tare Weight	51.5049
4	—
10	51.5507
18	51.8188
35	52.3529
60	54.3054
120	58.2139
230	60.7617
Pan	1.2173

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
1:15:00 PM			
1:15:20 PM	1	1.5847	1.8373
1:16:49 PM	2	1.6229	1.8269
1:22:15 PM	3	1.6078	1.7219
1:43:59 PM	4	1.6071	1.6654
3:11:00 PM	5	1.6067	1.6509
8:59:00 PM	6	1.5881	1.6232
10:51:00 AM	7	1.5976	1.6276

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-IT379

Client: Anchor
 Date Complete: _____
 Tested by: H Benny

Sample Description: Dark Grey ^{sandy} Silt

Calgon Batch: 21

Temperature: 21

Solids Content

Moisture Content	Tare No.	218
	Tare Wt	1.5968
	Wet Wt + Tare	58.3911
	Dry Wt + Tare	45.0964
Test Sample	Tare No.	218
	Tare Wt	51.2111
	Wet Wt + Tare	91.05894 HB
	Dry Wt + Tare	73.0368
	Cylinder #	C-08

Sieve Analysis

Tare Weight	51.2172
4	-
10	52.0077
18	52.8053
35	55.2137
60	61.9099
120	68.4827
230	72.0018
Pan	1.0006

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
1:20:00 PM			
1:20:20 PM	1	1.5976	1.8030
1:21:49 PM	2	1.6094	1.7660
1:27:15 PM	3	1.6006	1.7168
1:48:59 PM	4	1.5852	1.6736
3:16:00 PM	5	1.6061	1.6721
9:04:00 PM	6	1.5901	1.6373
10:56:00 AM	7	1.6022	1.6387

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-IT379FD

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Lots of rocks to 1/2" in FD. Not well mixed

Calgon Batch: 21

Temperature: 21

Solids Content

Moisture Content	Tare No.	252
	Tare Wt	1.5843
	Wet Wt + Tare	73.8280
	Dry Wt + Tare	57.7362
Test Sample	Tare No.	252
	Tare Wt	52.1881
	Wet Wt + Tare	93.0433
	Dry Wt + Tare	75.2577
	Cylinder #	C-38

Sieve Analysis

Tare Weight	52.1949
4	53.9006
10	54.7050
18	55.4684
35	57.8701
60	64.3991
120	70.8956
230	74.3305
Pan	0.9006

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
1:25:00 PM			
1:25:20 PM	1	1.5893	1.7916
1:26:49 PM	2	1.5903	1.7442
1:32:15 PM	3	1.5860	1.7037
1:53:59 PM	4	1.6002	1.6869
3:21:00 PM	5	1.5785	1.6419
9:09:00 PM	6	1.5785	1.6256
11:01:00 AM	7	1.6072	1.6425

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 15, 2020
Date Started: July 14, 2020
Date Finished: July 20, 2020

Client: AnchorQEA
HLB Project #: 20-064
Tested By: H Benny

CASE NARRATIVE

1. Ten 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 the job was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. The samples contained organic matter which may have broken down during the oven drying and sieving process, affecting the grain size analysis.
4. The data is provided in summary tables and plots.
5. There were no noted anomalies in the testing or samples on project.

Reviewed by:



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 15, 2020
Date Started: July 14, 2020
Date Finished: July 20, 2020

Client: AnchorQEA
Project #: 20-064
Tested by: H Benny

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
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
LDW20-SS169	100.0	100.0	100.0	98.6	96.7	92.8	86.0	58.6	41.9	28.6	19.7	11.6	7.8	5.0
	100.0	100.0	100.0	98.1	95.8	92.4	84.9	58.1	42.1	29.0	20.0	11.6	7.5	5.2
	100.0	100.0	99.9	98.0	95.9	92.8	86.1	58.6	42.1	28.9	20.2	11.5	7.8	5.3
LDW20-SS146	99.9	95.7	80.4	68.5	56.5	36.3	16.8	9.9	8.4	6.7	5.0	3.4	2.3	1.5
LDW20-SS139	98.1	96.4	92.2	89.3	79.9	48.2	19.5	8.8	6.5	4.6	3.5	2.4	1.5	0.8
LDW20-SS127	100.0	100.0	99.4	98.3	92.4	75.7	58.2	50.1	38.1	23.1	16.4	10.1	6.2	3.9
LDW20-SS127 FD	100.0	100.0	97.4	94.4	90.2	82.0	73.0	55.5	39.3	23.9	16.7	10.6	6.2	3.7
LDW20-SS133	96.8	95.9	94.0	92.4	86.2	58.4	27.1	15.3	11.0	7.2	5.3	3.7	2.3	1.6
LDW20-SS140	100.0	98.7	98.1	96.5	91.7	77.1	57.4	40.0	29.2	17.7	12.3	7.9	5.4	3.5
LDW20-SS142	100.0	99.1	98.9	97.5	93.3	81.0	42.9	27.7	19.2	14.5	10.3	7.0	4.9	3.5
LDW20-SS144	100.0	100.0	99.9	99.6	98.8	97.7	72.3	26.0	15.5	10.4	7.5	5.7	3.9	2.8
LDW20-SS148	100.0	100.0	99.3	99.0	97.8	95.9	84.3	52.6	39.7	26.7	17.9	12.0	8.0	5.5

Reviewed by: 

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 15, 2020
Date Started: July 14, 2020
Date Finished: July 20, 2020

Client: AnchorQEA
HLB Project #: 20-064
Tested by: H Benny

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)
LDW20-SS169	0.0	1.4	1.9	3.9	6.8	27.4	16.7	13.3	8.9	8.0	3.9	2.7	5.0	58.6
	0.0	1.9	2.3	3.4	7.5	26.8	16.0	13.0	9.0	8.4	4.1	2.4	5.2	58.1
	0.1	1.9	2.1	3.2	6.7	27.5	16.5	13.2	8.7	8.7	3.7	2.5	5.3	58.6
LDW20-SS146	19.6	11.9	12.0	20.2	19.5	6.8	1.5	1.8	1.7	1.7	1.1	0.7	1.5	9.9
LDW20-SS139	7.8	2.8	9.5	31.7	28.7	10.7	2.3	1.9	1.0	1.2	0.9	0.7	0.8	8.8
LDW20-SS127	0.6	1.1	5.9	16.7	17.6	8.0	12.0	15.0	6.7	6.2	3.9	2.4	3.9	50.1
LDW20-SS127 FD	2.6	2.9	4.2	8.2	9.0	17.5	16.3	15.4	7.2	6.1	4.5	2.4	3.7	55.5
LDW20-SS133	6.0	1.6	6.2	27.8	31.3	11.7	4.4	3.8	1.9	1.6	1.3	0.7	1.6	15.3
LDW20-SS140	1.9	1.7	4.8	14.6	19.8	17.3	10.9	11.4	5.5	4.3	2.6	1.9	3.5	40.0
LDW20-SS142	1.1	1.4	4.2	12.3	38.1	15.3	8.5	4.7	4.2	3.2	2.1	1.4	3.5	27.7
LDW20-SS144	0.1	0.3	0.8	1.1	25.4	46.3	10.5	5.1	2.9	1.8	1.8	1.1	2.8	26.0
LDW20-SS148	0.7	0.3	1.3	1.9	11.6	31.7	13.0	13.0	8.8	5.9	4.0	2.5	5.5	52.6

Reviewed by: 

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 15, 2020
Date Started: July 14, 2020
Date Finished: July 20, 2020

Client: AnchorQEA
HLB Project #: 20-064
Tested by: H Benny

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
LDW20-SS169	100.0	100.0	100.0	98.6	96.7	92.8	86.0	58.6	41.9	28.6	19.7	11.6	7.8	5.0
	100.0	100.0	100.0	98.1	95.8	92.4	84.9	58.1	42.1	29.0	20.0	11.6	7.5	5.2
	100.0	100.0	99.9	98.0	95.9	92.8	86.1	58.6	42.1	28.9	20.2	11.5	7.8	5.3
AVE	100.0	100.0	100.0	98.2	96.1	92.7	85.6	58.4	42.0	28.9	20.0	11.6	7.7	5.1
STDEV	0.0	0.0	0.0	0.2	0.4	0.2	0.5	0.2	0.1	0.2	0.2	0.1	0.1	0.1
%RSD	0.0	0.0	0.0	0.2	0.4	0.2	0.6	0.4	0.3	0.7	1.1	0.6	1.6	2.1

The Triplicate Applies To The Following Samples

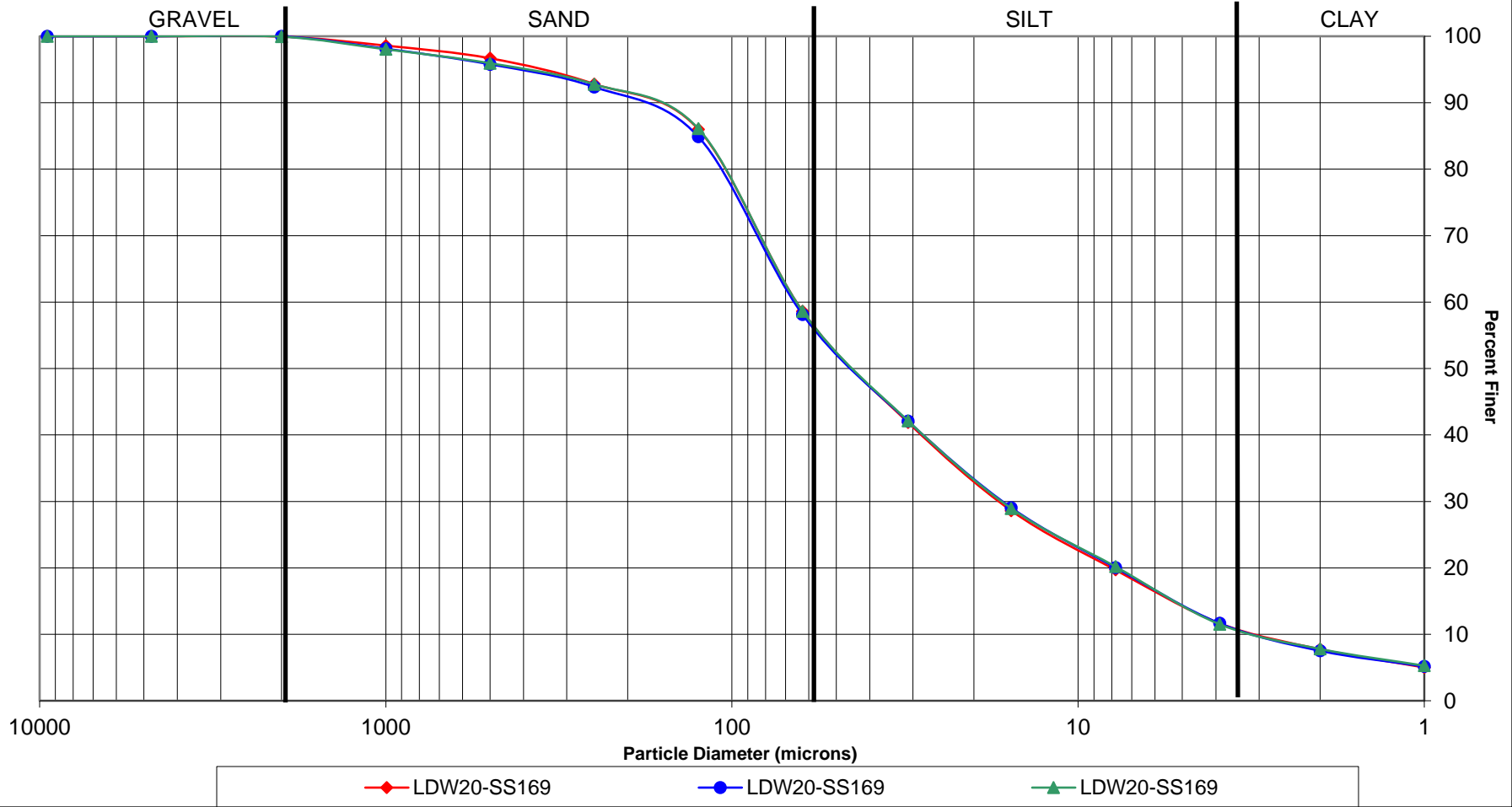
Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
LDW20-SS169	6/11/2020	7/14/2020	7/24/2020	98.3		9.8
	6/11/2020	7/14/2020	7/24/2020	99.3		9.8
	6/11/2020	7/14/2020	7/24/2020	100.6		10.1
LDW20-SS139	6/11/2020	7/14/2020	7/24/2020	99.7		8.6
LDW20-SS146	6/11/2020	7/14/2020	7/24/2020	99.8		5.5
LDW20-SS127	6/11/2020	7/14/2020	7/24/2020	97.6		9.5
LDW20-SS127 FD	6/11/2020	7/14/2020	7/24/2020	104.2		10.6
LDW20-SS133	6/11/2020	7/14/2020	7/24/2020	100.5		10.6
LDW20-SS140	6/11/2020	7/14/2020	7/24/2020	99.7		9.1
LDW20-SS142	6/11/2020	7/14/2020	7/24/2020	98.6		7.1
LDW20-SS144	6/11/2020	7/14/2020	7/24/2020	101.4		6.6
LDW20-SS148	6/11/2020	7/14/2020	7/24/2020	99.5		11.9

Notes to the Testing: Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution.

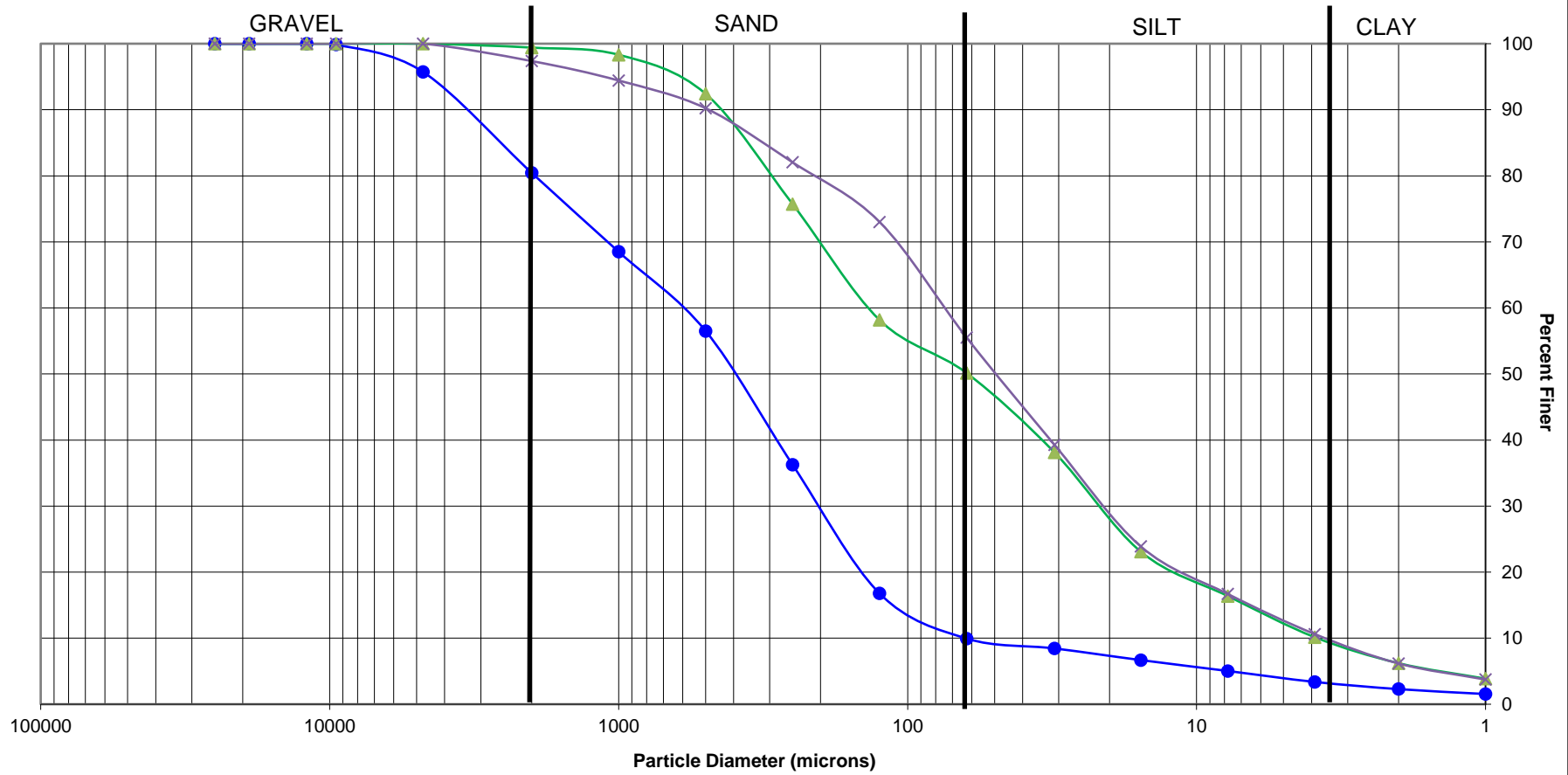
Reviewed by: 

PSEP Grain Size Distribution

Triplicate Sample Plot

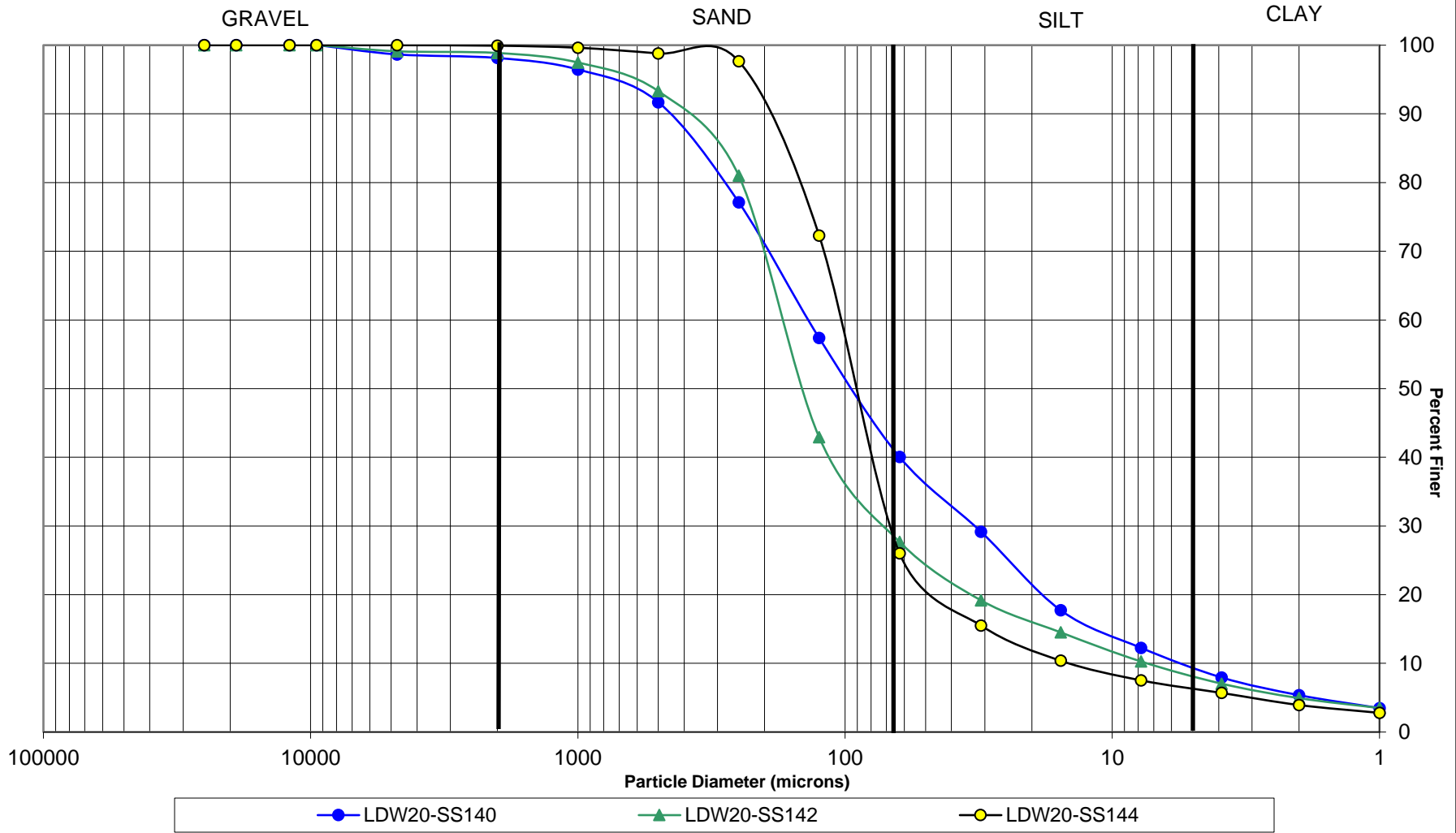


PSEP Grain Size Distribution

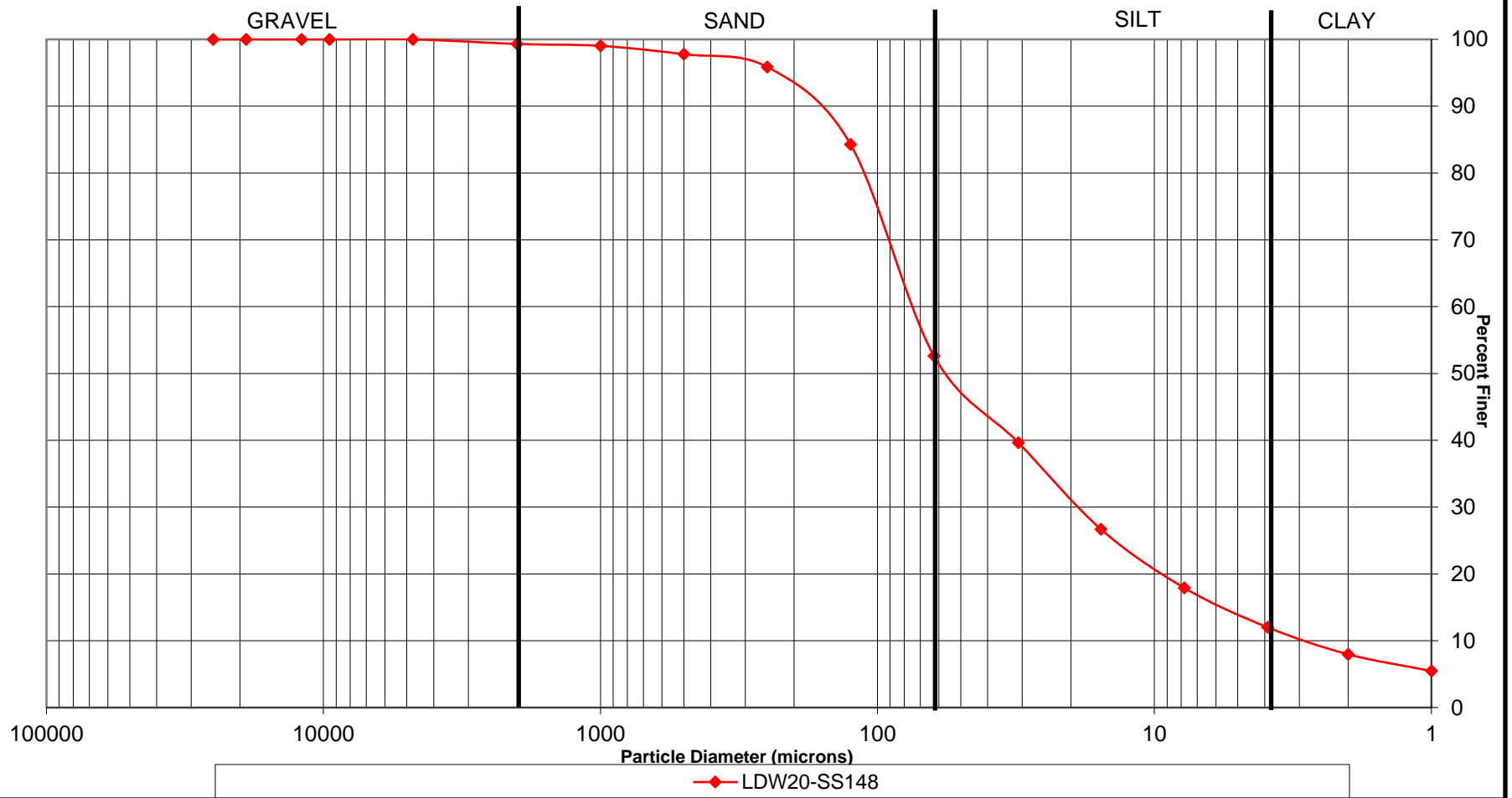


● LDW20-SS139 ▲ LDW20-SS127 ✕ LDW20-SS127 FD

PSEP Grain Size Distribution



PSEP Grain Size Distribution



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-IT272A

Client: Anchor
 Date Complete: 7-17-2020
 Tested by: H. Benny

Sample Description: Dark Grey Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	225
	Tare Wt	1.6516
	Wet Wt + Tare	34.7283
	Dry Wt + Tare	18.5973
Test Sample	Tare No.	225
	Tare Wt	51.9408
	Wet Wt + Tare	90.2802
	Dry Wt + Tare	57.0807
	Cylinder #	C-28

Sieve Analysis

Tare Weight	51.9509
4	-
10	51.9832
18	52.2588
35	52.4879
60	52.6191
120	53.3091
230	55.6968
Pan	1.4252

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:00:00 PM			
12:00:20 PM	1	1.5883	1.9101
12:01:49 PM	2	1.5910	1.8581
12:07:15 PM	3	1.6067	1.7053
12:28:59 PM	4	1.5785	1.6362
1:56:00 PM	5	1.6073	1.6517
7:44:00 PM	6	1.5930	1.6291
9:36:00 AM	7	1.6448	1.6733

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-IT272B

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: _____

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	234
	Tare Wt	1.6424
	Wet Wt + Tare	34.0394
	Dry Wt + Tare	18.1965
Test Sample	Tare No.	234
	Tare Wt	51.5749
	Wet Wt + Tare	90.4564
	Dry Wt + Tare	56.7384
	Cylinder #	C-4

Sieve Analysis

Tare Weight	51.5843
4	—
10	51.6576
18	51.9434
35	52.1530
60	52.3570
120	53.0477
230	55.4292
Pan	1.3973

H.B.
H.B.

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:05:00 PM			
12:05:20 PM	1	1.6503	1.9761
12:06:49 PM	2	1.6502	1.9248
12:12:15 PM	3	1.6519	1.7475
12:33:59 PM	4	1.6506	1.7065
2:01:00 PM	5	1.6083	1.6510
7:49:00 PM	6	1.6056	1.6422
9:41:00 AM	7	1.6581	1.6872

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-IT272C

Client: Anchor
 Date Complete: 7-17-2020
 Tested by: H Benny

Sample Description: Dark Grey Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content		
Tare No.	200	
Tare Wt	1.6396	
Wet Wt + Tare	35.6827	
Dry Wt + Tare	19.4159	
Test Sample		
Tare No.	200	
Tare Wt	51.6763	
Wet Wt + Tare	90.5815	
Dry Wt + Tare	56.7893	
Cylinder #	C-46	

Sieve Analysis

Tare Weight	51.6863
4	—
10	—
18	51.9638
35	52.1698
60	52.2785
120	52.8860
230	55.3368
Pan	1.4954

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:10:00 PM			
12:10:20 PM	1	1.6490	1.9944
12:11:49 PM	2	1.6543	1.9346
12:17:15 PM	3	1.5794	1.6778
12:38:59 PM	4	1.5973	1.6551
2:06:00 PM	5	1.5945	1.6375
7:54:00 PM	6	1.5943	1.6295
9:46:00 AM	7	1.6030	1.6312

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-IT248

Client: Anchor
 Date Complete: _____
 Tested by: HLBenny

Sample Description: Dark Grey Sandy Silt

Calgon Batch:

Temperature:

Solids Content

Sieve Analysis

Moisture Content	Tare No.	229
	Tare Wt	1.6429
	Wet Wt + Tare	34.9167
	Dry Wt + Tare	22.4880
Test Sample	Tare No.	229
	Tare Wt	51.7308
	Wet Wt + Tare	91.4997
	Dry Wt + Tare	67.0013
	Cylinder #	C-59

Tare Weight	51.7397
4	—
10	51.8259
18	52.0231
35	52.7938
60	56.3706
120	61.5483
230	65.8393
Pan	1.1970

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:15:00 PM			
12:15:20 PM	1	1.5840	1.8108
12:16:49 PM	2	1.5976	1.7773
12:22:15 PM	3	1.5931	1.7135
12:43:59 PM	4	1.5936	1.6725
2:11:00 PM	5	1.6077	1.6614
7:59:00 PM	6	1.5964	1.6384
9:51:00 AM	7	1.5868	1.6167

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-IT253

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Dark Grey Sandy Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	231
	Tare Wt	1.6478
	Wet Wt + Tare	59.3527
	Dry Wt + Tare	44.3565
Test Sample	Tare No.	231
	Tare Wt	51.7386
	Wet Wt + Tare	91.8801
	Dry Wt + Tare	76.2452
	Cylinder #	C-20

Sieve Analysis

Tare Weight	51.7422
4	—
10	52.3719
18	53.1744
35	56.8549
60	66.4557
120	72.4903
230	75.3359
Pan	0.8340

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:20:00 PM			
12:20:20 PM	1	1.5882	1.7228
12:21:49 PM	2	1.5892	1.6892
12:27:15 PM	3	1.56088	1.6806
12:48:59 PM	4	1.6001	1.6508
2:16:00 PM	5	1.5962	1.6354
8:04:00 PM	6	1.5874	1.6172
9:56:00 AM	7	1.5966	1.6182

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW 20 - JT 253FD

Client: Anchor
 Date Complete: 7-17-2020
 Tested by: H Benny

Sample Description: Dark Grey Sandy Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	257
	Tare Wt	1.6373
	Wet Wt + Tare	51.2268
	Dry Wt + Tare	39.0002
Test Sample	Tare No.	257
	Tare Wt	51.9957
	Wet Wt + Tare	91.8093
	Dry Wt + Tare	76.0953
	Cylinder #	C-34

Sieve Analysis

Tare Weight	51.9944
4	-
10	52.4387
18	53.1773
35	56.8761
60	66.4815
120	72.4916
230	75.3924
Pan	0.7002

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:25:00 PM			
12:25:20 PM	1	1.5982	1.7356
12:26:49 PM	2	1.6011	1.6975
12:32:15 PM	3	1.5845	1.6521
12:53:59 PM	4	1.5950	1.6422
2:21:00 PM	5	1.5924	1.6285
8:09:00 PM	6	1.6006	1.6255
10:01:00 AM	7	1.5972	1.6166

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-SC269B

Client: Anchor
 Date Complete: 7-17-2020
 Tested by: H. Benny

Sample Description: Dark Grey Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	242
	Tare Wt	1.6471
	Wet Wt + Tare	46.1804
	Dry Wt + Tare	24.5429
Test Sample	Tare No.	242
	Tare Wt	51.3362
	Wet Wt + Tare	92.4634
	Dry Wt + Tare	59.9116
	Cylinder #	C-3

Sieve Analysis

Tare Weight	51.3501
4	—
10	51.3802
18	51.6674
35	51.9793
60	52.2864
120	53.6900
230	57.4513
Pan	2.4650

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:30:00 PM			
12:30:20 PM	1	1.6080	1.9184
12:31:49 PM	2	1.5973	1.8341
12:37:15 PM	3	1.5962	1.6761
12:58:59 PM	4	1.5965	1.6425
2:26:00 PM	5	1.6073	1.6466
8:14:00 PM	6	1.6069	1.6418
10:06:00 AM	7	1.5953	1.6257

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-SC261B

Client: Anchor
 Date Complete: 7-17-2020
 Tested by: H. Benny

Sample Description: _____

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	250
	Tare Wt	1.6434
	Wet Wt + Tare	43.5175
	Dry Wt + Tare	22.3862
Test Sample	Tare No.	250
	Tare Wt	52.3257
	Wet Wt + Tare	92.3759
	Dry Wt + Tare	59.3731
	Cylinder #	C-30

Sieve Analysis

Tare Weight	52.3302
4	—
10	52.3459
18	52.6130
35	52.8622
60	53.1169
120	54.3766
230	57.7089
Pan	1.7249

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:35:00 PM			
12:35:20 PM	1	1.5907	1.8826
12:36:49 PM	2	1.5936	1.8045
12:42:15 PM	3	1.5997	1.6720
1:03:59 PM	4	1.5885	1.6358
2:31:00 PM	5	1.5954	1.6375
8:19:00 PM	6	1.5981	1.6347
10:11:00 AM	7	1.5995	1.6305

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-SC255B

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: ^{Dark} Grey Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	201
	Tare Wt	1.6363
	Wet Wt + Tare	43.2116
	Dry Wt + Tare	22.2959
Test Sample	Tare No.	201
	Tare Wt	51.6851
	Wet Wt + Tare	91.9843
	Dry Wt + Tare	58.5761
	Cylinder #	C-10

Tare Weight	51.6978
4	—
10	52.0340
18	52.2331
35	52.3733
60	53.1028
120	
230	56.3044
Pan	2.2948

— HB

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:40:00 PM			
12:40:20 PM	1	1.5977	1.9197
12:41:49 PM	2	1.5980	1.8459
12:47:15 PM	3	1.6472	1.7755
1:08:59 PM	4	1.6503	1.7045
2:36:00 PM	5	1.6520	1.6980
8:24:00 PM	6	1.6318	1.6727
10:16:00 AM	7	1.6420	1.6744

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-SC245B

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: Dark Grey Silt

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	241
	Tare Wt	1.6544
	Wet Wt + Tare	34.9876
	Dry Wt + Tare	19.2117
Test Sample	Tare No.	241
	Tare Wt	51.6954
	Wet Wt + Tare	90.4358
	Dry Wt + Tare	59.2099
	Cylinder #	C-40

Sieve Analysis

Tare Weight	51.6981
4	-
10	51.7284
18	51.9414
35	52.3566
60	52.8858
120	53.8894
230	57.5695
Pan	1.7196

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:45:00 PM			
12:45:20 PM	1	1.6450	1.9513
12:46:49 PM	2	1.6471	1.8706
12:52:15 PM	3	1.6379	1.7399
1:13:59 PM	4	1.6388	1.6961
2:41:00 PM	5	1.6451	1.6922
8:29:00 PM	6	1.6555	1.6934
10:21:00 AM	7	1.6403	1.6749

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-TT268

Client: Anchor
 Date Complete: _____
 Tested by: H Benny

Sample Description: Dark Gray S.H

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	203
	Tare Wt	1.6393
	Wet Wt + Tare	57.0608
	Dry Wt + Tare	29.07559
Test Sample	Tare No.	203
	Tare Wt	51.0045
	Wet Wt + Tare	91.6564
	Dry Wt + Tare	56.8975
	Cylinder #	C-22

Sieve Analysis

Tare Weight	51.0224
4	51.0838
10	51.2260
18	51.6524
35	52.0893
60	52.5279
120	53.2441
230	55.1388
Pan	1.8624

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:50:00 PM			
12:50:20 PM	1	1.6500	1.9820
12:51:49 PM	2	1.6428	1.9119
12:57:15 PM	3	1.6538	1.8335
1:18:59 PM	4	1.6539	1.7718
2:46:00 PM	5	1.5913	1.6713
8:34:00 PM	6	1.5887	1.6453
10:26:00 AM	7	1.6495	1.6920

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-SS135

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Dark Grey Sandy Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	219
	Tare Wt	1.5974
	Wet Wt + Tare	73.3845
	Dry Wt + Tare	52.0849
Test Sample	Tare No.	219
	Tare Wt	50.4779
	Wet Wt + Tare	93.6039
	Dry Wt + Tare	74.7962
	Cylinder #	C-15

Sieve Analysis

Tare Weight	50.4825
4	-
10	51.2912
18	52.6804
35	56.7742
60	67.9521
120	72.4161
230	74.2957
Pan	

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
12:55:00 PM			
12:55:20 PM	1	1.6533	1.7977
12:56:49 PM	2	1.6417	1.7548
1:02:15 PM	3	1.6415	1.7268
1:23:59 PM	4	1.6026	1.6645
2:51:00 PM	5	1.5870	1.6323
8:39:00 PM	6	1.6004	1.6365
10:31:00 AM	7	1.5923	1.6221

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-IT356

Client: Anchor
 Date Complete: _____
 Tested by: H Benny

Sample Description: Dark Grey Sil

Calgon Batch: 20

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	220
	Tare Wt	1.5932
	Wet Wt + Tare	49.0185
	Dry Wt + Tare	23.9998
Test Sample	Tare No.	220
	Tare Wt	51.6125
	Wet Wt + Tare	90.9046
	Dry Wt + Tare	58.3923
	Cylinder #	C-13

Tare Weight	51.6213
4	51.9115
10	51.9217
18	52.1929
35	52.3932
60	52.4661
120	53.4119
230	56.7014
Pan	2.0404

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
1:00:00 PM			
1:00:20 PM	1	1.5928	1.8757
1:01:49 PM	2	1.6446	1.8565
1:07:15 PM	3	1.6481	1.7756
1:28:59 PM	4	1.6521	1.7204
2:56:00 PM	5	1.6107	1.6613
8:44:00 PM	6	1.6484	1.6875
10:36:00 AM	7	1.6491	1.6822

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-IT369

Client: Anchor
 Date Complete: _____
 Tested by: H Benny

Sample Description: Dark Grey Sandy Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Moisture Content	Tare No.	215
	Tare Wt	1.5834
	Wet Wt + Tare	49.2753
	Dry Wt + Tare	31.1482
Test Sample	Tare No.	215
	Tare Wt	51.0044
	Wet Wt + Tare	91.8130
	Dry Wt + Tare	67.0376
	Cylinder #	C-32

Sieve Analysis

Tare Weight	51.0101
4	-
10	51.1890
18	51.4464
35	52.8133
60	55.6112
120	60.5793
230	65.4010
Pan	1.4525

.3998 #B

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
1:05:00 PM			
1:05:20 PM	1	1.6449	1.8668
1:06:49 PM	2	1.5775	1.7412
1:12:15 PM	3	1.5934	1.6965
1:33:59 PM	4	1.5778	1.6459
3:01:00 PM	5	1.5827	1.6313
8:49:00 PM	6	1.5846	1.6205
10:41:00 AM	7	1.5771	1.6064

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-IT 372

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	221	HB
	Tare Wt	1.6112	
	Wet Wt + Tare	52.6000	
	Dry Wt + Tare	29.1878	
Test Sample	Tare No.	221	
	Tare Wt	51.9545	
	Wet Wt + Tare	92.0843	
	Dry Wt + Tare	63.3787	
	Cylinder #	C-31	

Tare Weight	51.9665
4	51.9905
10	52.1050
18	53.0015
35	54.9969
60	56.2269
120	58.4555
230	61.6416
Pan	1.7055

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
1:10:00 PM			
1:10:20 PM	1	1.5886	1.8440
1:11:49 PM	2	1.5941	1.8012
1:17:15 PM	3	1.5934	1.7197
1:38:59 PM	4	1.5992	1.6681
3:06:00 PM	5	1.5996	1.6476
8:54:00 PM	6	1.5856	1.6205
10:46:00 AM	7	1.6034	1.6327

33 tB

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-IT377

Client: Anchor
 Date Complete: _____
 Tested by: HLBenny

Sample Description: Dark Grey Silt

Calgon Batch: 20

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	228
	Tare Wt	1.5825
	Wet Wt + Tare	53.9759
	Dry Wt + Tare	29.6144
Test Sample	Tare No.	228
	Tare Wt	51.4934
	Wet Wt + Tare	91.2662
	Dry Wt + Tare	61.9314
	Cylinder #	C-55

Tare Weight	51.5049
4	—
10	51.5507
18	51.8188
35	52.3529
60	54.3054
120	58.2139
230	60.7617
Pan	1.2173

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
1:15:00 PM			
1:15:20 PM	1	1.5847	1.8373
1:16:49 PM	2	1.6229	1.8269
1:22:15 PM	3	1.6078	1.7219
1:43:59 PM	4	1.6071	1.6654
3:11:00 PM	5	1.6067	1.6509
8:59:00 PM	6	1.5881	1.6232
10:51:00 AM	7	1.5976	1.6276

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-IT379

Client: Anchor
 Date Complete: _____
 Tested by: H Benny

Sample Description: Dark Grey ^{sandy} Silt

Calgon Batch: 21

Temperature: 21

Solids Content

Moisture Content	Tare No.	218
	Tare Wt	1.5968
	Wet Wt + Tare	58.3911
	Dry Wt + Tare	45.0964
Test Sample	Tare No.	218
	Tare Wt	51.2111
	Wet Wt + Tare	91.05894 HB
	Dry Wt + Tare	73.0368
	Cylinder #	C-08

Sieve Analysis

Tare Weight	51.2172
4	-
10	52.0077
18	52.8053
35	55.2137
60	61.9099
120	68.4827
230	72.0018
Pan	1.0006

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
1:20:00 PM			
1:20:20 PM	1	1.5976	1.8030
1:21:49 PM	2	1.6094	1.7660
1:27:15 PM	3	1.6006	1.7168
1:48:59 PM	4	1.5852	1.6736
3:16:00 PM	5	1.6061	1.6721
9:04:00 PM	6	1.5901	1.6373
10:56:00 AM	7	1.6022	1.6387

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-11-2020
 Sample ID: LDW20-IT379FD

Client: Anchor
 Date Complete: _____
 Tested by: HLBenny

Sample Description: Lots of rocks to 1/2" in FD. Not well mixed

Calgon Batch: 21

Temperature: 21

Solids Content

Moisture Content	Tare No.	252
	Tare Wt	1.5843
	Wet Wt + Tare	73.8280
	Dry Wt + Tare	57.7362
Test Sample	Tare No.	252
	Tare Wt	52.1881
	Wet Wt + Tare	93.0433
	Dry Wt + Tare	75.2577
	Cylinder #	C-38

Sieve Analysis

Tare Weight	52.1949
4	53.9006
10	54.7050
18	55.4684
35	57.8701
60	64.3991
120	70.8956
230	74.3305
Pan	0.9006

Pipette Analysis

7/15/2020	Tare #	Tare Weight	Dry Weight
1:25:00 PM			
1:25:20 PM	1	1.5893	1.7916
1:26:49 PM	2	1.5903	1.7442
1:32:15 PM	3	1.5860	1.7037
1:53:59 PM	4	1.6002	1.6869
3:21:00 PM	5	1.5785	1.6419
9:09:00 PM	6	1.5785	1.6256
11:01:00 AM	7	1.6072	1.6425

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 15, 2020
Date Started: June 22, 2020
Date Finished: June 26, 2020

Client: AnchorQEA
HLB Project #: 20-065
Tested By: H Benny

CASE NARRATIVE

1. Fifteen 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 the job was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. The samples contained organic matter which may have broken down during the oven drying and sieving process, affecting the grain size analysis.
4. The data is provided in summary tables and plots.
5. There were no noted anomalies in the testing or samples on project.

Reviewed by:



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 15, 2020
Date Started: June 22, 2020
Date Finished: June 26, 2020

Client: AnchorQEA
Project #: 20-065
Tested by: H Benny

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
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
LDW20-IT257	100.0	100.0	99.4	98.1	93.1	86.3	83.4	74.6	60.4	38.3	25.8	17.1	12.8	9.6
	100.0	100.0	99.8	98.4	93.7	87.1	84.1	75.3	60.2	38.8	25.5	17.0	12.6	9.4
	100.0	100.0	99.9	98.8	93.9	87.3	84.3	75.4	60.9	40.1	25.7	17.1	12.8	9.5
LDW20-IT258	100.0	100.0	98.9	97.6	89.1	68.2	61.9	51.0	41.1	27.6	19.2	13.4	10.1	7.7
LDW20-IT266	100.0	100.0	99.2	98.6	97.0	93.6	89.0	71.6	52.5	34.2	23.0	15.7	11.9	9.2
LDW20-SC230B	100.0	100.0	99.9	99.1	98.1	96.9	93.1	78.9	62.5	31.1	18.8	14.4	11.8	9.3
LDW20-SC223A	100.0	100.0	99.7	98.6	97.1	95.3	84.0	65.7	50.9	27.3	18.4	13.8	11.5	8.5
LDW20-SC222B	100.0	100.0	100.0	98.9	98.1	97.5	94.4	82.3	65.8	24.3	18.9	14.4	11.9	9.6
LDW20-SC220A	100.0	100.0	99.9	99.0	97.6	96.1	85.9	67.2	50.9	29.4	20.2	14.6	11.9	9.3
LDW20-SC217A	100.0	100.0	100.0	99.3	98.3	96.9	88.9	69.1	53.1	29.1	19.4	14.6	11.6	8.9
LDW20-SC219C	100.0	100.0	99.9	98.6	97.8	97.3	94.6	83.7	70.9	32.2	22.5	16.9	13.7	10.4
LDW20-SC212A	100.0	100.0	99.7	98.7	97.4	94.2	73.7	48.6	38.6	26.3	18.8	13.9	10.9	8.4
LDW20-SS151	100.0	100.0	99.1	96.2	94.6	93.2	89.8	78.5	64.4	41.7	28.7	18.8	14.2	10.3
LDW20-SS151-FD	100.0	100.0	98.4	96.1	94.6	93.0	89.8	78.4	64.8	43.5	29.5	19.7	14.8	10.6
LDW20-SS150	100.0	99.6	96.7	86.5	59.0	26.9	14.7	8.1	7.6	6.4	5.0	4.0	3.3	2.7
LDW20-SS155	100.0	100.0	99.9	99.4	98.4	97.1	79.0	45.1	31.6	20.8	15.3	11.7	9.3	7.5
LDW20-SS156	100.0	100.0	99.6	99.5	99.1	96.0	34.3	14.1	10.8	9.1	7.4	6.1	4.9	4.3

Reviewed by:  _____

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 15, 2020
Date Started: June 22, 2020
Date Finished: June 26, 2020

Client: AnchorQEA
HLB Project #: 20-065
Tested by: H Benny

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)
LDW20-IT257	0.6	1.2	5.1	6.8	2.9	8.8	14.2	22.1	12.5	8.7	4.3	3.2	9.6	74.6
	0.2	1.4	4.7	6.6	3.0	8.9	15.1	21.4	13.3	8.4	4.4	3.2	9.4	75.3
	0.1	1.0	4.9	6.7	2.9	8.9	14.5	20.8	14.4	8.7	4.3	3.2	9.5	75.4
LDW20-IT258	1.1	1.3	8.5	20.9	6.3	11.0	9.8	13.5	8.4	5.8	3.3	2.4	7.7	51.0
LDW20-IT266	0.8	0.7	1.6	3.4	4.6	17.4	19.1	18.3	11.2	7.3	3.7	2.7	9.2	71.6
LDW20-SC230B	0.1	0.7	1.0	1.2	3.8	14.2	16.4	31.4	12.3	4.4	2.6	2.5	9.3	78.9
LDW20-SC223A	0.3	1.0	1.5	1.8	11.3	18.3	14.9	23.6	8.8	4.6	2.3	3.0	8.5	65.7
LDW20-SC222B	0.0	1.1	0.8	0.6	3.1	12.1	16.5	41.6	5.4	4.5	2.5	2.3	9.6	82.3
LDW20-SC220A	0.1	0.9	1.4	1.5	10.1	18.8	16.3	21.5	9.2	5.6	2.7	2.5	9.3	67.2
LDW20-SC217A	0.0	0.7	1.0	1.4	8.0	19.8	15.9	24.0	9.7	4.8	3.0	2.6	8.9	69.1
LDW20-SC219C	0.1	1.3	0.8	0.5	2.7	10.9	12.8	38.7	9.6	5.6	3.2	3.3	10.4	83.7
LDW20-SC212A	0.3	0.9	1.3	3.3	20.5	25.1	10.0	12.3	7.5	4.9	3.0	2.5	8.4	48.6
LDW20-SS151	0.9	2.9	1.7	1.4	3.4	11.3	14.0	22.7	13.0	10.0	4.6	3.8	10.3	78.5
LDW20-SS151-FD	1.6	2.2	1.5	1.6	3.3	11.4	13.6	21.3	14.0	9.8	4.9	4.1	10.6	78.4
LDW20-SS150	3.3	10.2	27.5	32.1	12.2	6.6	0.6	1.2	1.3	1.0	0.7	0.6	2.7	8.1
LDW20-SS155	0.1	0.5	1.0	1.3	18.1	33.9	13.5	10.7	5.6	3.6	2.4	1.8	7.5	45.1
LDW20-SS156	0.4	0.1	0.4	3.0	61.7	20.2	3.3	1.8	1.7	1.3	1.2	0.6	4.3	14.1

Reviewed by: 

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 15, 2020
Date Started: June 22, 2020
Date Finished: June 26, 2020

Client: AnchorQEA
HLB Project #: 20-065
Tested by: H Benny

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
LDW20-IT257	100.0	100.0	99.4	98.1	93.1	86.3	83.4	74.6	60.4	38.3	25.8	17.1	12.8	9.6
	100.0	100.0	99.8	98.4	93.7	87.1	84.1	75.3	60.2	38.8	25.5	17.0	12.6	9.4
	100.0	100.0	99.9	98.8	93.9	87.3	84.3	75.4	60.9	40.1	25.7	17.1	12.8	9.5
AVE	100.0	100.0	99.7	98.5	93.6	86.9	83.9	75.1	60.5	39.1	25.6	17.1	12.7	9.5
STDEV	0.0	0.0	0.2	0.3	0.4	0.4	0.4	0.4	0.3	0.8	0.1	0.0	0.1	0.1
%RSD	0.0	0.0	0.2	0.3	0.4	0.5	0.5	0.5	0.5	2.0	0.5	0.3	0.6	0.7

The Triplicate Applies To The Following Samples

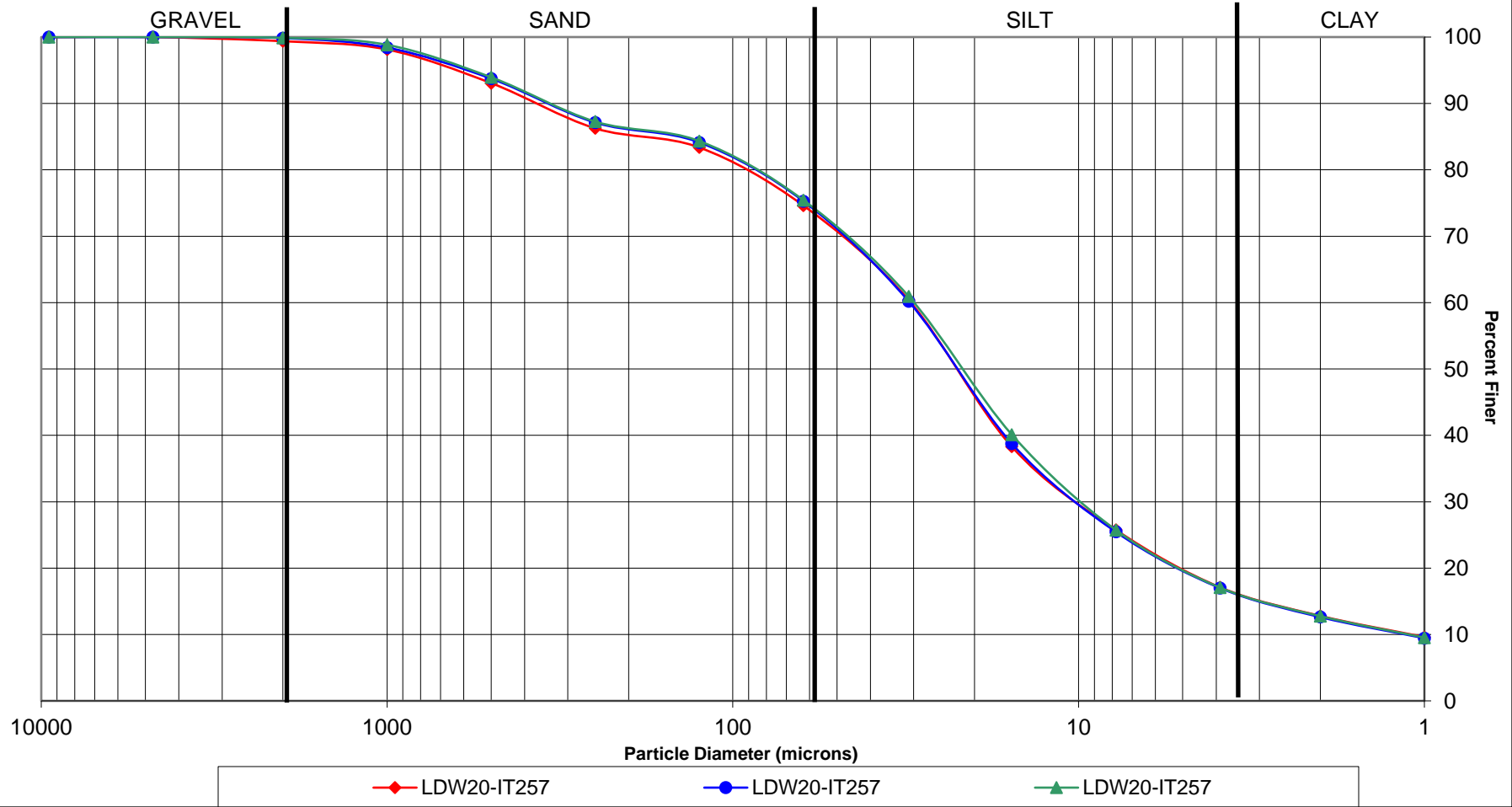
Client ID	Date Sampled	Date Received	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
LDW20-IT257	6/12/2020	6/15/2020	7/22/2020	7/27/2020	97.4		17.1
	6/12/2020	6/15/2020	7/22/2020	7/27/2020	96.5		17.6
	6/12/2020	6/15/2020	7/22/2020	7/27/2020	97.5		17.3
LDW20-IT258	6/12/2020	6/15/2020	7/22/2020	7/27/2020	95.1		12.0
LDW20-IT266	6/12/2020	6/15/2020	7/22/2020	7/27/2020	95.0		16.6
LDW20-SC230B	6/12/2020	6/15/2020	7/22/2020	7/27/2020	95.7		16.8
LDW20-SC223A	6/12/2020	6/15/2020	7/22/2020	7/27/2020	96.4		14.3
LDW20-SC222B	6/12/2020	6/15/2020	7/22/2020	7/27/2020	95.5		16.2
LDW20-SC220A	6/12/2020	6/15/2020	7/22/2020	7/27/2020	96.6		14.3
LDW20-SC217A	6/12/2020	6/15/2020	7/22/2020	7/27/2020	96.1		15.4
LDW20-SC219C	6/12/2020	6/15/2020	7/22/2020	7/27/2020	95.5		16.6
LDW20-SC212A	6/12/2020	6/15/2020	7/22/2020	7/27/2020	97.8		11.1
LDW20-SS151	6/12/2020	6/15/2020	7/22/2020	7/27/2020	95.0		12.2
LDW20-SS151-FD	6/12/2020	6/15/2020	7/22/2020	7/27/2020	94.6		12.1
LDW20-SS150	6/12/2020	6/15/2020	7/22/2020	7/27/2020	98.0		5.0
LDW20-SS155	6/12/2020	6/15/2020	7/22/2020	7/27/2020	96.6		11.0
LDW20-SS156	6/12/2020	6/15/2020	7/22/2020	7/27/2020	101.8		7.1

Notes to the Testing: Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution.

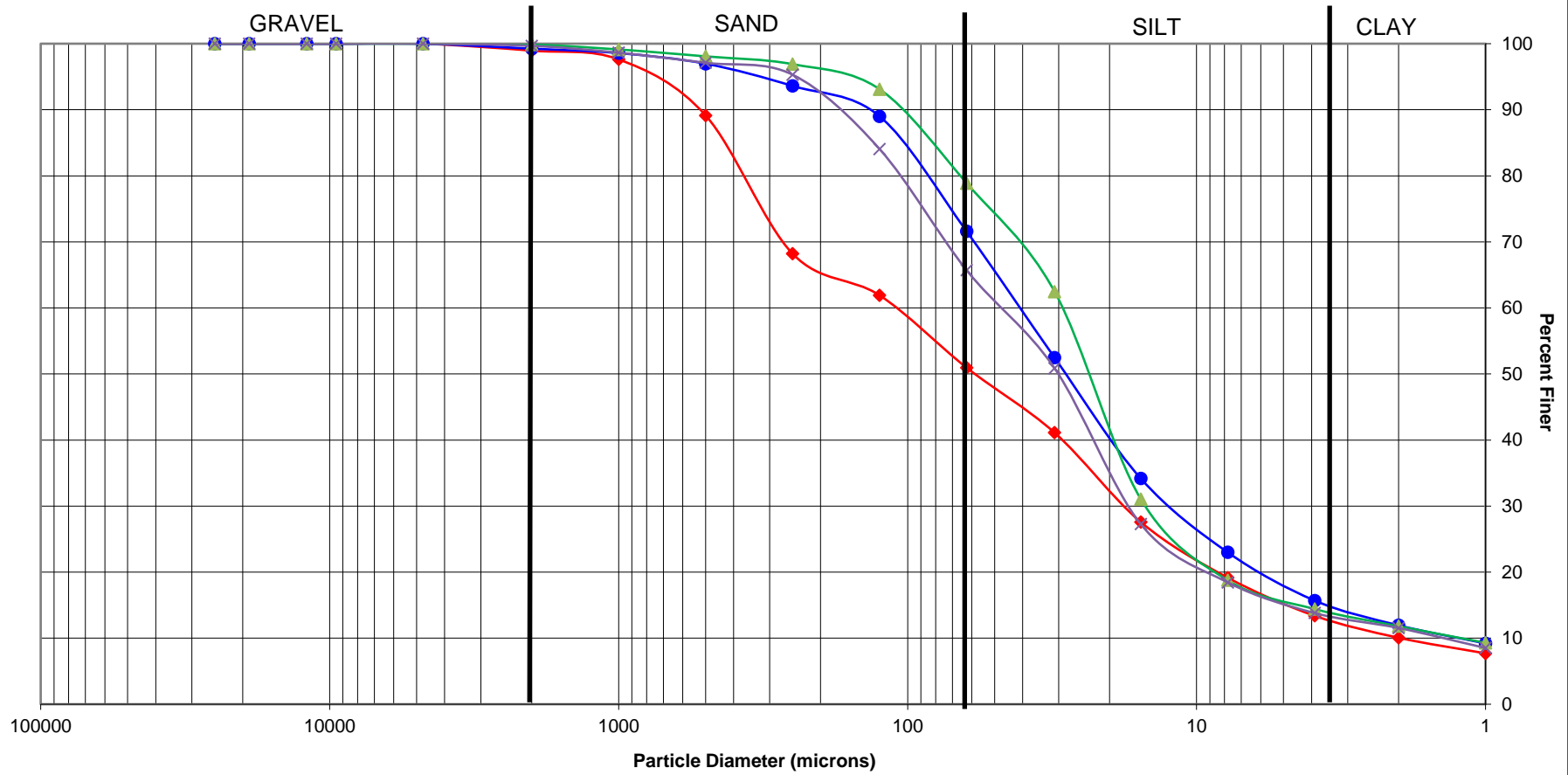
Reviewed by: 

PSEP Grain Size Distribution

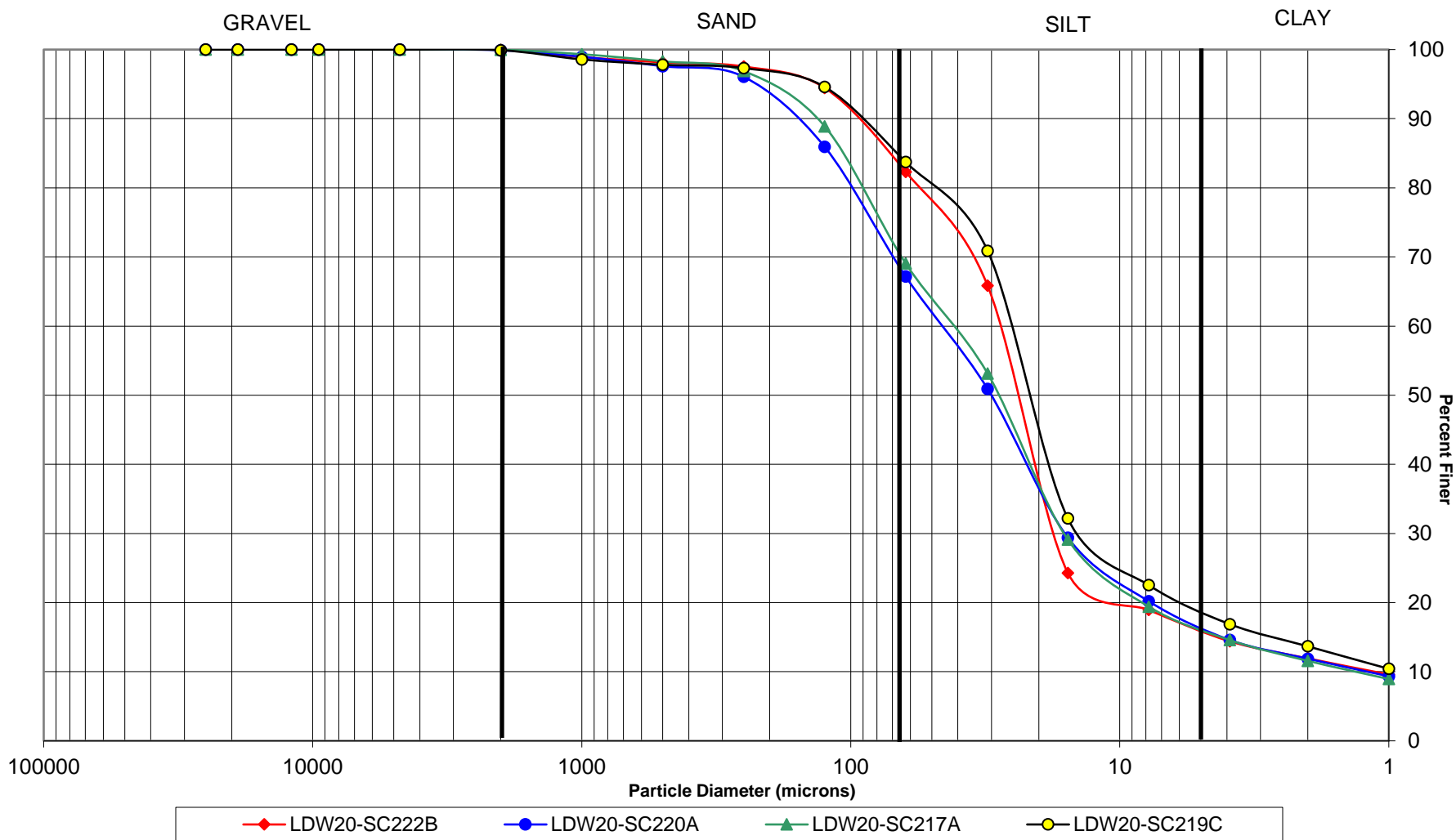
Triplicate Sample Plot



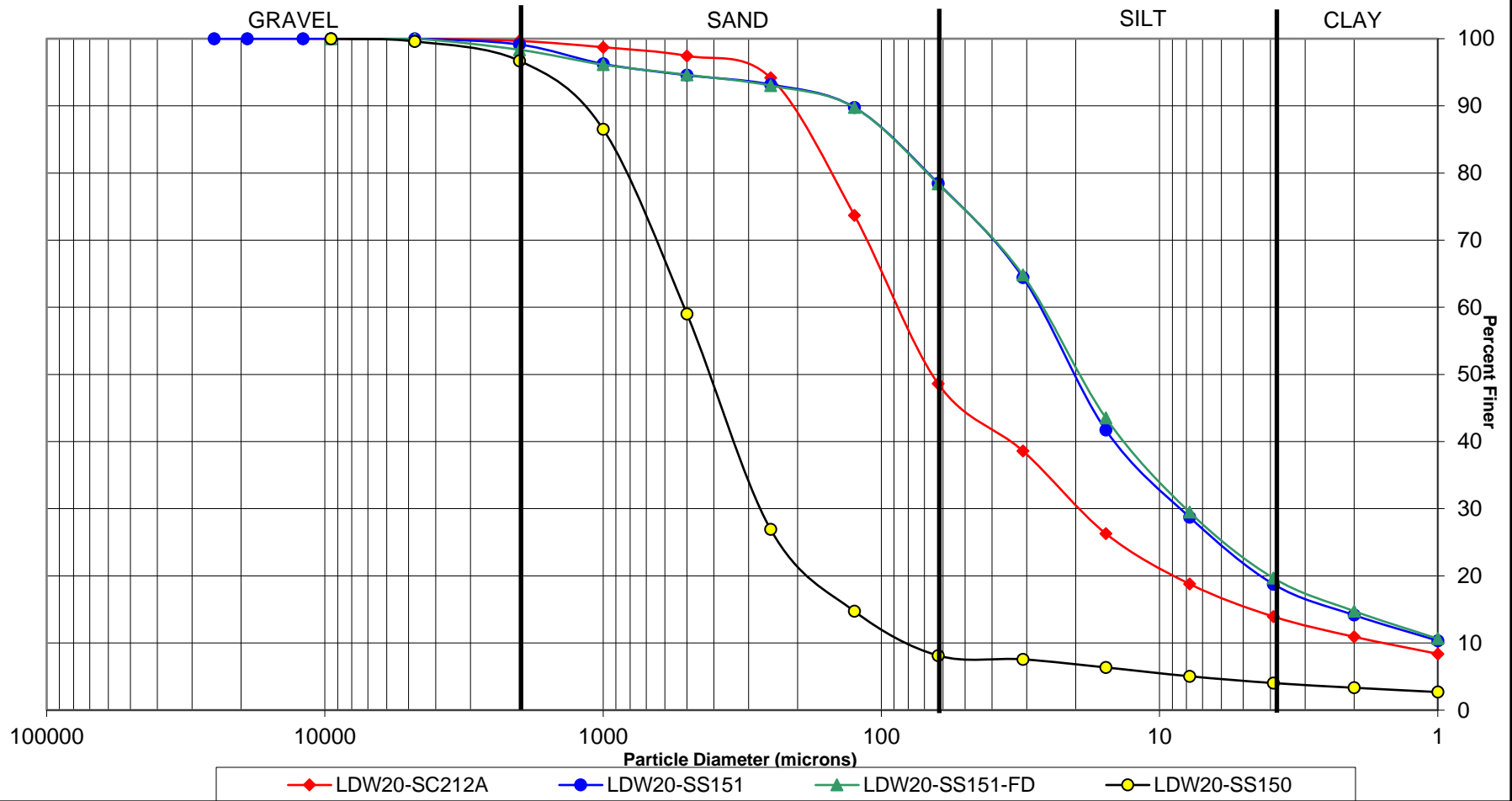
PSEP Grain Size Distribution



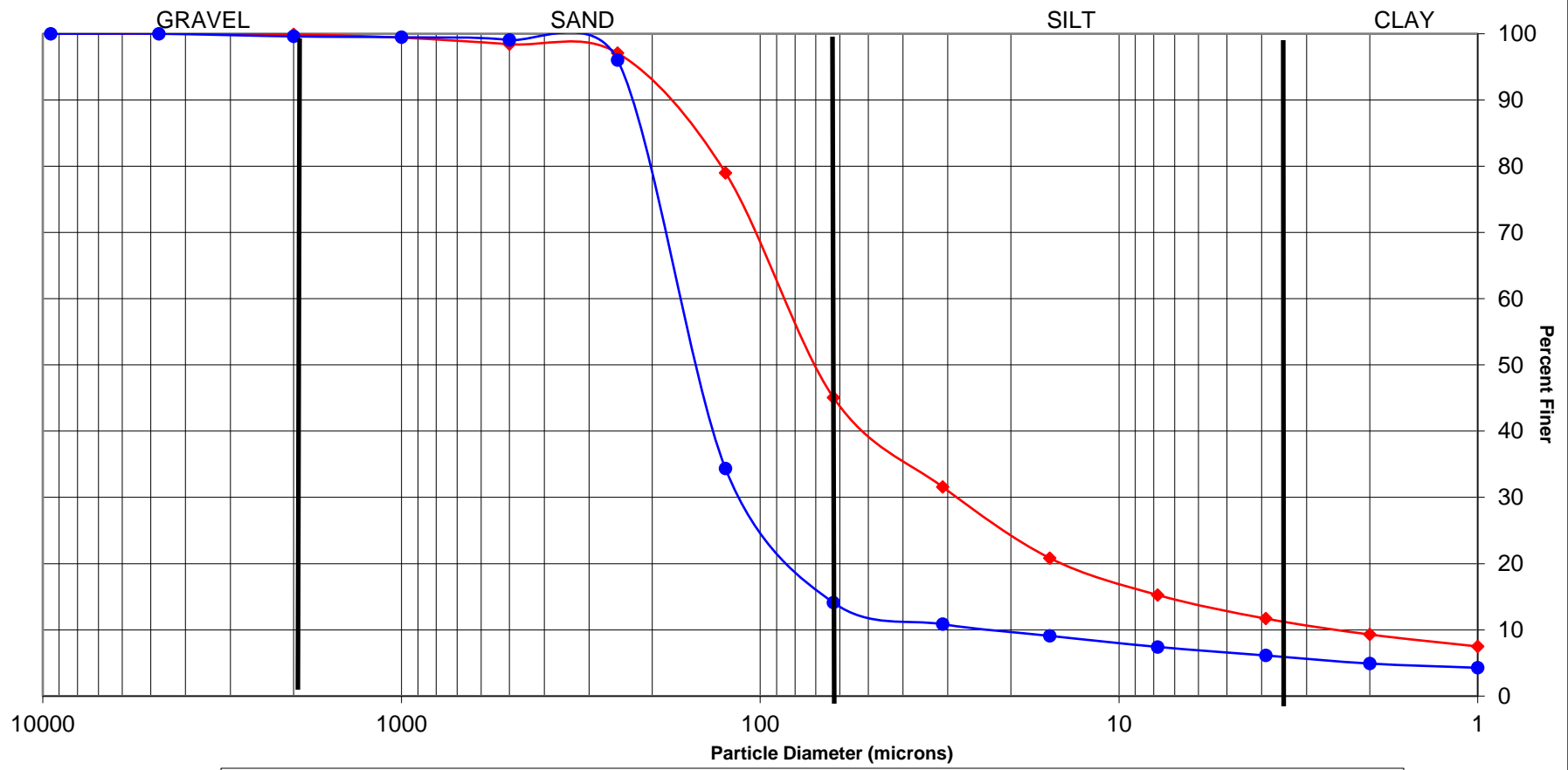
PSEP Grain Size Distribution



PSEP Grain Size Distribution



PSEP Grain Size Distribution



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-065
 Date Started: 7-22-2020
 Sample ID: LDW20-IT257A

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Dark Grey silt/clay

Calgon Batch: 22

Temperature: 22

Solids Content

Moisture Content	Tare No.	247
	Tare Wt	1.6032
	Wet Wt + Tare	53.8571
	Dry Wt + Tare	32.3973
Test Sample	Tare No.	247
	Tare Wt	51.8653
	Wet Wt + Tare	90.6672
	Dry Wt + Tare	59.2994
	Cylinder #	C-75

Sieve Analysis

Tare Weight	51.8732
4	-
10	52.0171
18	52.3022
35	53.4589
60	55.0171
120	55.6772
230	57.6782
Pan	1.7522

7/26/2020	Pipette Analysis		
TIME	Tare #	Tare Weight	Dry Weight
11:00:00 AM			
11:00:20 AM	1	1.5885	1.9417
11:01:49 AM	2	1.6399	1.9233
11:07:15 AM	3	1.5992	1.7689
11:28:59 AM	4	1.6082	1.7291
12:56:00 PM	5	1.5999	1.6802
6:44:00 PM	6	1.5944	1.6545
9:00:00 AM	7	1.5932	1.6383

8:36:00 AM

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-065
 Date Started: 7-22-2020
 Sample ID: LDW20-IT257B

Client: Anchor
 Date Complete: _____
 Tested by: H Benny

Sample Description: _____

Calgon Batch: 22

Temperature: 22

Solids Content

Sieve Analysis

Moisture Content	Tare No.	251
	Tare Wt	1.6491
	Wet Wt + Tare	51.2377
	Dry Wt + Tare	30.8370
Test Sample	Tare No.	251
	Tare Wt	52.0906
	Wet Wt + Tare	91.7513
	Dry Wt + Tare	59.5126
	Cylinder #	C-10

Tare Weight	52.0974
4	-
10	52.1339
18	52.4669
35	53.5585
60	55.1039
120	55.8028
230	57.8693
Pan	1.6866

7/26/2020	Pipette Analysis		
TIME	Tare #	Tare Weight	Dry Weight
11:03:00 AM			
11:03:20 AM	1	1.6398	2.0084
11:04:49 AM	2	1.5937	1.8850
11:10:15 AM	3	1.5899	1.7775
11:31:59 AM	4	1.6477	1.7709
12:59:00 PM	5	1.6448	1.7271
6:47:00 PM	6	1.6456	1.7067
8:39:00 AM	7	1.6436	1.6893

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-D65
 Date Started: 7-22-2020
 Sample ID: LDW20-IT257C

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Dark Grey silt/clay

Calgon Batch: 22

Temperature: 22

Solids Content

Moisture Content	Tare No.	256
	Tare Wt	1.6484
	Wet Wt + Tare	69.7909
	Dry Wt + Tare	41.7325
Test Sample	Tare No.	256
	Tare Wt	51.5702
	Wet Wt + Tare	90.5878
	Dry Wt + Tare	58.8810
	Cylinder #	C-31

Sieve Analysis

Tare Weight	51.5798
4	—
10	51.6077
18	51.8486
35	52.9703
60	54.5038
120	55.1769
230	57.2196
Pan	1.7213

7/26/2020	Pipette Analysis		
TIME	Tare #	Tare Weight	Dry Weight
11:06:00 AM			
11:06:20 AM	1	1.6446	2.0028
11:07:49 AM	2	1.6498	1.9368
11:13:15 AM	3	1.6467	1.8356
11:34:59 AM	4	1.6471	1.7683
1:02:00 PM	5	1.6443	1.7247
6:50:00 PM	6	1.6474	1.7075
8:42:00 AM	7	1.6516	1.6964

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-065
 Date Started: 7-22-2020
 Sample ID: LDW20-IT258

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey silt/clay

Calgon Batch:

Temperature:

Solids Content

Sieve Analysis

Moisture Content	Tare No.	237
	Tare Wt	1.6005
	Wet Wt + Tare	43.1401
	Dry Wt + Tare	27.0273
Test Sample	Tare No.	237
	Tare Wt	51.1077
	Wet Wt + Tare	89.4513
	Dry Wt + Tare	63.9417
	Cylinder #	C-46

Tare Weight	51.1149
4	-
10	51.3628
18	51.6737
35	53.6638
60	58.5787
120	60.0562
230	62.6266
Pan	1.3310

7/26/2020	Pipette Analysis		
TIME	Tare #	Tare Weight	Dry Weight
11:09:00 AM			
11:09:20 AM	1	1.6483	1.9119
11:10:49 AM	2	1.6489	1.8519
11:16:15 AM	3	1.6460	1.7822
11:37:59 AM	4	1.6480	1.7426
1:05:00 PM	5	1.6473	1.7134
6:53:00 PM	6	1.6364	1.6848
8:45:00 AM	7	1.6380	1.6760

61 HB

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-065
 Date Started: 7-22-2020
 Sample ID: LDW20-IT266

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Dark Grey Silt/clay

Calgon Batch:

Temperature:

Solids Content

Sieve Analysis

Moisture Content	Tare No.	243
	Tare Wt	1.6461
	Wet Wt + Tare	49.1708
	Dry Wt + Tare	29.7925
Test Sample	Tare No.	243
	Tare Wt	52.1421
	Wet Wt + Tare	91.3621
	Dry Wt + Tare	61.2732
	Cylinder #	C-32

Tare Weight	52.1536
4	-
10	52.3287
18	52.4850
35	52.8571
60	53.6406
120	54.7075
230	58.7513
Pan	2.5522

7/26/2020	Pipette Analysis		
TIME	Tare #	Tare Weight	Dry Weight
11:45:00 AM			
11:45:20 AM	1	1.6457	2.0026
11:46:49 AM	2	1.6420	1.8985
11:52:15 AM	3	1.6356	1.8027
12:13:59 PM	4	1.6308	1.7432
1:41:00 PM	5	1.6366	1.7133
7:29:00 PM	6	1.6414	1.6998
9:21:00 AM	7	1.6485	1.6935

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-065
 Date Started: 7-22-2020
 Sample ID: LDW20-SC230B

Client: Anchor
 Date Complete: _____
 Tested by: HLBenny

Sample Description: Dark Grey Silt/Clay

Calgon Batch: 22

Temperature: 22

Solids Content

Moisture Content	Tare No.	249
	Tare Wt	1.6454
	Wet Wt + Tare	44.8852
	Dry Wt + Tare	24.8442
Test Sample	Tare No.	249
	Tare Wt	51.7950
	Wet Wt + Tare	91.4226
	Dry Wt + Tare	58.1054
	Cylinder #	C-22

Sieve Analysis

Tare Weight	51.8039
4	—
10	51.8324
18	51.9907
35	52.2126
60	52.4638
120	53.2702
230	56.2912
Pan	1.8736

7/26/2020	Pipette Analysis		
TIME	Tare #	Tare Weight	Dry Weight
11:12:00 AM			
11:12:20 AM	1	1.6523	2.0068
11:13:49 AM	2	1.6406	1.9181
11:19:15 AM	3	1.6351	1.7731
11:40:59 AM	4	1.6399	1.7233
1:08:00 PM	5	1.6347	1.6987
6:56:00 PM	6	1.6489	1.7014
8:48:00 AM	7	1.6513	1.6926

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-065
 Date Started: 7-22-2020
 Sample ID: LDW 20 - SC 223A

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: Dark Grey silt/clay

Calgon Batch: 22

Temperature: 22

Solids Content

Moisture Content	Tare No.	214
	Tare Wt	1.6468
	Wet Wt + Tare	50.1838
	Dry Wt + Tare	28.3661
Test Sample	Tare No.	214
	Tare Wt	50.9534
	Wet Wt + Tare	90.5547
	Dry Wt + Tare	60.3035
	Cylinder #	C-59

Sieve Analysis

Tare Weight	50.9639
4	-
10	51.0353
18	51.2615
35	51.5958
60	51.9879
120	54.4413
230	58.4381
Pan	1.8947

7/26/2020

Pipette Analysis

TIME	Tare #	Tare Weight	Dry Weight
11:15:00 AM			
11:15:20 AM	1	1.6540	1.9567
11:16:49 AM	2	1.6549	1.8849
11:22:15 AM	3	1.6493	1.7726
11:43:59 AM	4	1.6534	1.7368
1:11:00 PM	5	1.6490	1.7114
6:59:00 PM	6	1.6463	1.6985
8:51:00 AM	7	1.6540	1.6925

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-065
 Date Started: 7-22-2020
 Sample ID: LDW20-SC222B

Client: Anchor
 Date Complete: _____
 Tested by: H Benny

Sample Description: Dark Grey Silt/Clay

Calgon Batch: 22

Temperature: 22

Solids Content

Sieve Analysis

Moisture Content	Tare No.	206
	Tare Wt	1.6473
	Wet Wt + Tare	60.8950
	Dry Wt + Tare	31.4209
Test Sample	Tare No.	206
	Tare Wt	50.7048
	Wet Wt + Tare	89.9040
	Dry Wt + Tare	55.6474
	Cylinder #	C-40

Tare Weight	50.7129
4	—
10	50.7199
18	50.9274
35	51.0774
60	51.1961
120	51.8063
230	54.1960
Pan	1.5007

7/26/2020	Pipette Analysis		
TIME	Tare #	Tare Weight	Dry Weight
11:18:00 AM			
11:18:20 AM	1	1.6571	1.9999
11:19:49 AM	2	1.6553	1.9269
11:25:15 AM	3	1.6433	1.7435
11:46:59 AM	4	1.6418	1.7199
1:14:00 PM	5	1.6441	1.7035
7:02:00 PM	6	1.6455	1.6947
8:54:00 AM	7	1.6487	1.6883

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-063
 Date Started: 7-22-2020
 Sample ID: LDW20-SC220A

Client: Anchor
 Date Complete: _____
 Tested by: HLBenny

Sample Description: Dark Grey Silt/Clay

Calgon Batch: 22

Temperature: 22

Solids Content

Sieve Analysis

Moisture Content	Tare No.	215
	Tare Wt	1.6388
	Wet Wt + Tare	47.4537
	Dry Wt + Tare	26.5183
Test Sample	Tare No.	215
	Tare Wt	51.0054
	Wet Wt + Tare	90.2957
	Dry Wt + Tare	59.6013
	Cylinder #	C-20

Tare Weight	51.0137
4	—
10	51.0341
18	51.2356
35	51.5270
60	51.8553
120	54.0176
230	58.0187
Pan	1.6146

7/26/2020

Pipette Analysis

TIME	Tare #	Tare Weight	Dry Weight
11:21:00 AM			
11:21:20 AM	1	1.6402	1.9420
11:22:49 AM	2	1.6407	1.8657
11:28:15 AM	3	1.6423	1.7722
11:49:59 AM	4	1.6410	1.7302
1:17:00 PM	5	1.6463	1.7108
7:05:00 PM	6	1.6434	1.6959
8:57:00 AM	7	1.6372	1.6785

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-065
 Date Started: 7-22-2020
 Sample ID: LDW20-SC217A

Client: Anchor

Date Complete: _____
 Tested by: H.L. Benny

Sample Description: Dark Grey silt/clay

Calgon Batch: 22

Temperature: 22

Solids Content

Sieve Analysis

Moisture Content	Tare No.	221
	Tare Wt	1.6477
	Wet Wt + Tare	49.3908
	Dry Wt + Tare	28.6332
Test Sample	Tare No.	221
	Tare Wt	51.9570
	Wet Wt + Tare	91.3179
	Dry Wt + Tare	60.6021
	Cylinder #	C-28

.3090

Tare Weight	51.9656
4	-
10	51.9715
18	52.1161
35	52.3457
60	52.6580
120	54.4352
230	58.8476
Pan	1.7914

7/26/2020 Pipette Analysis			
TIME	Tare #	Tare Weight	Dry Weight
11:24:00 AM			
11:24:20 AM	1	1.6487	1.9741
11:25:49 AM	2	1.6512	1.8973
11:31:15 AM	3	1.6502	1.7850
11:52:59 AM	4	1.6494	1.7393
1:20:00 PM	5	1.6460	1.7135
7:08:00 PM	6	1.6413	1.6949
9:00:00 AM	7	1.6565	1.6979

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-065
 Date Started: 7-22-2020
 Sample ID: LDW20-5C219C

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: Dark Grey silt/clay

Calgon Batch: 22

Temperature: 22

Solids Content

Moisture Content	Tare No.	228
	Tare Wt	1.6392
	Wet Wt + Tare	50.1681
	Dry Wt + Tare	26.3073
Test Sample	Tare No.	228
	Tare Wt	51.4939
	Wet Wt + Tare	90.4453
	Dry Wt + Tare	56.1989
	Cylinder #	C-04

Sieve Analysis

Tare Weight	51.5019
4	—
10	51.5201
18	51.7835
35	51.9363
60	52.0324
120	52.5710
230	54.7230
Pan	1.4655

7/26/2020	Pipette Analysis		
TIME	Tare #	Tare Weight	Dry Weight
11:27:00 AM			
11:27:20 AM	1	1.6407	1.9910
11:28:49 AM	2	1.6437	1.9377
11:34:15 AM	3	1.6542	1.7876
11:55:59 AM	4	1.6535	1.7469
1:23:00 PM	5	1.6521	1.7221
7:11:00 PM	6	1.6535	1.7102
9:03:00 AM	7	1.6477	1.6909

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-065
 Date Started: 7-22-2020
 Sample ID: LDW20-SC212A

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Dark Grey Silt/clay

Calgon Batch: 22

Temperature: 22

Solids Content

Moisture Content	Tare No.	225
	Tare Wt	1.6379
	Wet Wt + Tare	51.6377
	Dry Wt + Tare	31.2996
Test Sample	Tare No.	225
	Tare Wt	51.9410
	Wet Wt + Tare	90.5195
	Dry Wt + Tare	65.1173
	Cylinder #	C-13

Sieve Analysis

Tare Weight	51.9470
4	-
10	52.0254
18	52.2384
35	52.5332
60	53.2821
120	57.9662
230	63.7072
Pan	1.4253

7/26/2020

Pipette Analysis

TIME	Tare #	Tare Weight	Dry Weight
11:30:00 AM			
11:30:20 AM	1	1.6408	1.8734
11:31:49 AM	2	1.6517	1.8323
11:37:15 AM	3	1.6488	1.7718
11:58:59 AM	4	1.6464	1.7343
1:26:00 PM	5	1.6396	1.7048
7:14:00 PM	6	1.6491	1.7002
9:06:00 AM	7	1.6564	1.6956

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-065
 Date Started: 7-22-2020
 Sample ID: LDW20-55151

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: Dark Grey silt/clay

Calgon Batch: 22

Temperature: 22

Solids Content

Sieve Analysis

Moisture Content	Tare No.	200
	Tare Wt	1.6433
	Wet Wt + Tare	50.5198
	Dry Wt + Tare	20.5708
Test Sample	Tare No.	200
	Tare Wt	51.6764
	Wet Wt + Tare	91.8691
	Dry Wt + Tare	56.5594
	Cylinder #	C-08

Tare Weight	51.6863
4	-
10	51.8213
18	52.2710
35	52.5321
60	52.7472
120	53.2774
230	55.0386
Pan	1.4954

7/26/2020	Pipette Analysis		
TIME	Tare #	Tare Weight	Dry Weight
11:33:00 AM			
11:33:20 AM	1	1.6504	1.9111
11:34:49 AM	2	1.6508	1.8620
11:40:15 AM	3	1.6442	1.7809
12:01:59 PM	4	1.6396	1.7338
1:29:00 PM	5	1.6550	1.7165
7:17:00 PM	6	1.6518	1.6982
9:09:00 AM	7	1.6507	1.6846

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-065
 Date Started: 7-22-2020
 Sample ID: LDW20-SS151-FD

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey silt/clay

Calgon Batch: 22

Temperature: 22

Solids Content

Moisture Content	Tare No.	250
	Tare Wt	1.6507
	Wet Wt + Tare	44.6653
	Dry Wt + Tare	17.8246
Test Sample	Tare No.	250
	Tare Wt	52.3265
	Wet Wt + Tare	93.2501
	Dry Wt + Tare	57.0848
	Cylinder #	C-30

Sieve Analysis

Tare Weight	52.3374
4	—
10	52.5912
18	52.9336
35	53.1643
60	53.4124
120	53.9139
230	55.6673
Pan	1.4422

7/26/2020

Pipette Analysis

TIME	Tare #	Tare Weight	Dry Weight
11:39:00 AM			
11:39:20 AM	1	1.6531	1.9118
11:40:49 AM	2	1.6537	1.8645
11:46:15 AM	3	1.6555	1.7971
12:07:59 PM	4	1.6452	1.7411
1:35:00 PM	5	1.6506	1.7146
7:23:00 PM	6	1.6518	1.6998
9:15:00 AM	7	1.6525	1.6871

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-065
 Date Started: 7-22-2020
 Sample ID: LDW20-SS150

Client: Anchor
 Date Complete: _____
 Tested by: HLBenny

Sample Description: Dark Grey Silt/Clay w/ Sand

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	205
	Tare Wt	1.6414
	Wet Wt + Tare	75.7608
	Dry Wt + Tare	55.1258
Test Sample	Tare No. ²⁰⁵	50.0185
	Tare Wt	
	Wet Wt + Tare	135.6438
	Dry Wt + Tare	107.6502
	Cylinder #	C-55

Sieve Analysis

Tare Weight	50.0243
4	50.2740
10	52.0551
18	58.3568
35	75.3431
60	95.1848
120	102.7125
230	106.7925
Pan	0.7045

7/26/2020	Pipette Analysis		
TIME	Tare #	Tare Weight	Dry Weight
11:36:00 AM			
11:36:20 AM	1	1.6570	1.7821
11:37:49 AM	2	1.6410	1.7364
11:43:15 AM	3	1.6511	1.7312
12:04:59 PM	4	1.6510	1.7145
1:32:00 PM	5	1.6531	1.7039
7:20:00 PM	6	1.6574	1.6994
9:12:00 AM	7	1.6439	1.6778

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-065
 Date Started: 7-22-2020
 Sample ID: LDW20-55155

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dark Grey Sandy silt

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	226
	Tare Wt	1.6468
	Wet Wt + Tare	61.1767
	Dry Wt + Tare	38.4292
Test Sample	Tare No.	226
	Tare Wt	51.5588
	Wet Wt + Tare	90.9102
	Dry Wt + Tare	66.6653
	Cylinder #	C-34

Sieve Analysis

Tare Weight	51.5651	
4	—	
10	51.58778	HB
18	51.7094	
35	51.95497	HB
60	52.2731	
120	56.6692	
230	64.9217	
Pan	1.7536	

7/26/2020	Pipette Analysis		
TIME	Tare #	Tare Weight	Dry Weight
11:42:00 AM			
11:42:20 AM	1	1.6475	1.8837
11:43:49 AM	2	1.6437	1.8026
11:49:15 AM	3	1.6444	1.7493
12:10:59 PM	4	1.6482	1.7250
1:38:00 PM	5	1.6501	1.7090
7:26:00 PM	6	1.6493	1.6961
9:18:00 AM	7	1.6432	1.6809

+1

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-065
 Date Started: 7-22-2020
 Sample ID: LDW20-55156

Client: Anchor
 Date Complete: _____
 Tested by: HLBenny

Sample Description: Dark Grey Sandy Silt

Calgon Batch: 22

Temperature: 22

Solids Content

Moisture Content	Tare No.	238
	Tare Wt	1.6431
	Wet Wt + Tare	49.9074
	Dry Wt + Tare	34.5306
Test Sample	Tare No.	238
	Tare Wt	51.9212
	Wet Wt + Tare	125.4228
	Dry Wt + Tare	97.4359
	Cylinder #	C-38

Sieve Analysis

Tare Weight	51.9281
4	—
10	52.1293
18	52.1952
35	52.4012
60	53.9108
120	84.8103
230	96.9492
Pan	0.4886

7/26/2020	Pipette Analysis		
TIME	Tare #	Tare Weight	Dry Weight
11:48:00 AM			
11:48:20 AM	1	1.6458	1.7689
11:49:49 AM	2	1.6452	1.7519
11:55:15 AM	3	1.6436	1.7330
12:16:59 PM	4	1.6403	1.7133
1:44:00 PM	5	1.6428	1.7031
7:32:00 PM	6	1.6400	1.6883
9:24:00 AM	7	1.6380	1.6800

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: July 26, 2020
Date Finished: August 2, 2020

Client: AnchorQEA
HLB Project #: 20-077
Tested By: H Benny

CASE NARRATIVE

1. Sixteen 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 the job was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. Sample LDW20-SS215 was mostly gravel and sand, and not appropriate for this analysis. The sample had a QA ratio of 109.2 which is outside of our internal requirements (95-105). However since it was not appropriate for this analysis, and there was not enough material to re-run it, it was not re-run.
4. The samples contained organic matter which may have broken down during the oven drying and sieving process, affecting the grain size analysis.
5. The data is provided in summary tables and plots.
6. There were no other noted anomalies in the testing or samples on project.

Reviewed by:



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: July 26, 2020
Date Finished: August 2, 2020

Client: AnchorQEA
Project #: 20-077
Tested by: H Benny

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
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
LDW20-SS341	100.0	100.0	99.9	98.1	95.9	88.4	79.4	73.4	66.7	46.2	28.5	18.0	11.5	7.5
	100.0	100.0	100.0	98.5	96.3	87.3	78.9	72.8	65.5	45.2	27.6	17.9	10.9	7.5
	100.0	100.0	100.0	98.2	95.7	86.7	77.8	71.4	63.4	45.5	27.9	17.4	10.8	7.3
LDW20-SS215	88.0	79.2	67.6	56.0	45.0	31.8	21.8	16.4	6.6	4.5	3.5	2.5	1.7	1.3
LDW20-SS214	100.0	100.0	99.8	98.5	97.1	95.8	91.1	74.9	52.7	32.8	21.9	14.8	10.2	7.3
LDW20-SS212	100.0	100.0	99.6	99.2	97.6	82.3	49.5	36.2	25.2	17.1	11.6	8.3	5.9	4.2
LDW20-SS202	100.0	100.0	66.4	40.9	25.7	18.9	16.3	13.0	8.9	6.0	4.3	3.0	2.0	1.5
LDW20-SS203	100.0	100.0	69.9	47.0	28.6	19.4	16.3	12.2	8.9	6.4	4.3	2.9	1.9	1.5
LDW20-SS347	100.0	100.0	100.0	98.5	97.6	97.0	96.4	95.5	92.3	66.9	44.1	25.3	17.4	11.7
LDW20-SS350	100.0	100.0	99.9	97.6	96.0	95.3	94.3	93.3	90.2	65.4	39.0	23.8	15.8	10.8
LDW20-SS352	100.0	100.0	100.0	98.3	96.9	96.0	95.3	94.4	91.7	66.1	43.5	26.5	17.5	11.8
LDW20-SS217	100.0	100.0	98.6	97.8	95.2	90.2	71.2	47.0	30.1	21.2	14.6	10.2	7.2	5.1
LDW20-SS219	100.0	100.0	100.0	99.2	98.1	97.1	91.9	76.8	54.9	35.8	22.6	14.9	10.1	7.3
LDW20-SS220	100.0	100.0	99.6	98.0	95.2	92.9	80.0	55.0	40.2	26.9	18.4	12.4	8.5	5.6
LDW20-IT383	100.0	95.1	93.7	89.4	80.5	62.4	49.8	42.6	35.4	25.9	19.4	13.8	9.7	6.4
LDW20-IT313	100.0	99.9	99.1	97.8	89.4	61.7	49.0	35.1	26.4	16.5	10.8	6.9	4.7	3.2
LDW20-IT304	100.0	100.0	100.0	99.5	98.7	98.1	95.6	84.6	65.3	39.7	24.9	16.0	10.6	7.5
LDW20-IT415	100.0	99.9	99.1	98.0	90.2	64.6	52.7	39.9	28.2	18.0	11.5	8.2	5.5	3.7

Reviewed by:  _____

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: July 26, 2020
Date Finished: August 2, 2020

Client: AnchorQEA
HLB Project #: 20-077
Tested by: H Benny

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)
LDW20-SS341	0.1	1.7	2.2	7.5	9.0	6.0	6.7	20.4	17.7	10.5	6.5	4.1	7.5	73.4
	0.0	1.5	2.2	9.0	8.5	6.1	7.3	20.3	17.7	9.7	7.0	3.4	7.5	72.8
	0.0	1.8	2.5	9.1	8.9	6.3	8.1	17.9	17.5	10.6	6.6	3.5	7.3	71.4
LDW20-SS215	32.4	11.6	11.0	13.2	10.0	5.3	9.9	2.1	1.0	1.0	0.7	0.5	1.3	16.4
LDW20-SS214	0.2	1.3	1.4	1.3	4.7	16.2	22.2	19.9	10.9	7.1	4.6	3.0	7.3	74.9
LDW20-SS212	0.4	0.4	1.6	15.3	32.8	13.3	10.9	8.1	5.5	3.3	2.4	1.7	4.2	36.2
LDW20-SS202	33.6	25.5	15.2	6.8	2.6	3.4	4.1	2.9	1.7	1.3	1.0	0.4	1.5	13.0
LDW20-SS203	30.1	22.9	18.3	9.2	3.1	4.1	3.3	2.6	2.1	1.5	0.9	0.4	1.5	12.2
LDW20-SS347	0.0	1.5	0.9	0.5	0.6	0.9	3.2	25.4	22.7	18.8	7.9	5.7	11.7	95.5
LDW20-SS350	0.1	2.3	1.6	0.7	1.0	1.0	3.1	24.8	26.4	15.2	8.1	5.0	10.8	93.3
LDW20-SS352	0.0	1.7	1.4	0.9	0.7	0.9	2.8	25.6	22.6	17.0	9.1	5.6	11.8	94.4
LDW20-SS217	1.4	0.8	2.6	5.0	19.0	24.2	17.0	8.9	6.6	4.4	3.0	2.1	5.1	47.0
LDW20-SS219	0.0	0.8	1.1	1.0	5.2	15.1	22.0	19.1	13.2	7.7	4.8	2.8	7.3	76.8
LDW20-SS220	0.4	1.6	2.8	2.3	12.9	25.1	14.7	13.3	8.5	6.0	3.9	2.9	5.6	55.0
LDW20-IT383	6.3	4.3	8.9	18.0	12.6	7.3	7.2	9.5	6.5	5.6	4.1	3.3	6.4	42.6
LDW20-IT313	0.9	1.2	8.4	27.7	12.8	13.9	8.7	9.9	5.7	3.9	2.2	1.5	3.2	35.1
LDW20-IT304	0.0	0.5	0.8	0.7	2.5	11.0	19.3	25.6	14.8	8.9	5.4	3.2	7.5	84.6
LDW20-IT415	0.9	1.2	7.8	25.6	11.8	12.9	11.7	10.2	6.5	3.3	2.7	1.8	3.7	39.9

Reviewed by: 

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: July 26, 2020
Date Finished: August 2, 2020

Client: AnchorQEA
HLB Project #: 20-077
Tested by: H Benny

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
LDW20-SS341	100.0	100.0	99.9	98.1	95.9	88.4	79.4	73.4	66.7	46.2	28.5	18.0	11.5	7.5
	100.0	100.0	100.0	98.5	96.3	87.3	78.9	72.8	65.5	45.2	27.6	17.9	10.9	7.5
	100.0	100.0	100.0	98.2	95.7	86.7	77.8	71.4	63.4	45.5	27.9	17.4	10.8	7.3
AVE	100.0	100.0	99.9	98.3	96.0	87.5	78.7	72.5	65.2	45.6	28.0	17.8	11.1	7.4
STDEV	0.0	0.0	0.1	0.2	0.2	0.7	0.7	0.8	1.4	0.4	0.4	0.3	0.3	0.1
%RSD	0.0	0.0	0.1	0.2	0.2	0.8	0.9	1.1	2.1	1.0	1.4	1.6	2.9	1.3

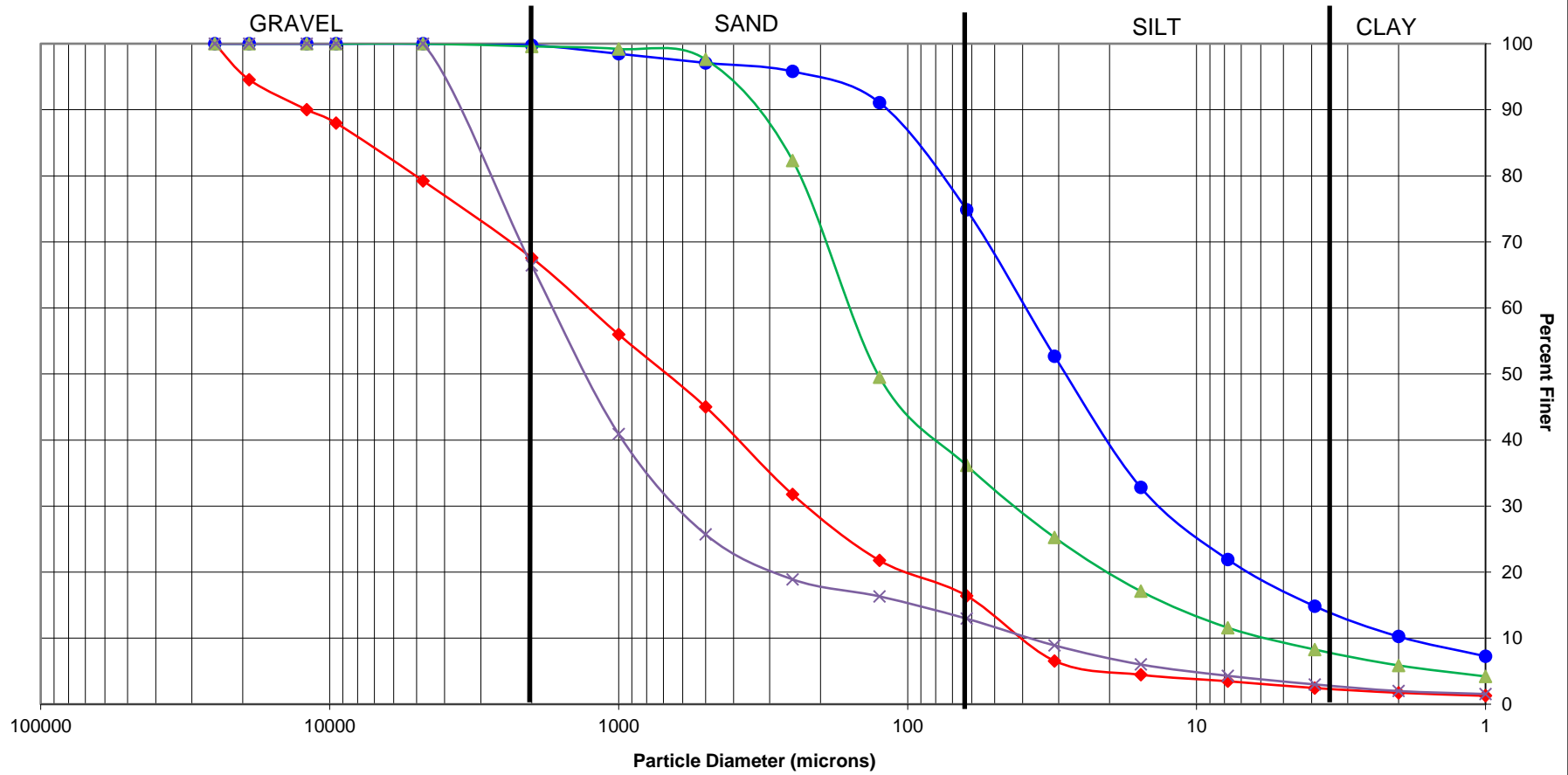
The Triplicate Applies To The Following Samples

Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
LDW20-SS341	6/15/2020	7/26/2020	7/31/2020	101.0		12.6
	6/15/2020	7/26/2020	7/31/2020	99.3		12.2
	6/15/2020	7/26/2020	7/31/2020	99.1		11.7
LDW20-SS215	6/15/2020	7/26/2020	7/31/2020	109.2		21.1
LDW20-SS214	6/15/2020	7/26/2020	7/31/2020	99.2		14.1
LDW20-SS212	6/15/2020	7/26/2020	7/31/2020	99.1		8.5
LDW20-SS202	6/15/2020	7/26/2020	7/31/2020	101.7		8.3
LDW20-SS203	6/15/2020	7/26/2020	7/31/2020	99.9		9.3
LDW20-SS347	6/15/2020	7/26/2020	7/31/2020	99.4		11.2
LDW20-SS350	6/15/2020	7/26/2020	7/31/2020	98.4		12.4
LDW20-SS352	6/15/2020	7/26/2020	7/31/2020	96.7		13.0
LDW20-SS217	6/15/2020	7/26/2020	7/31/2020	98.8		11.6
LDW20-SS219	6/15/2020	7/26/2020	7/31/2020	98.3		15.1
LDW20-SS220	6/15/2020	7/26/2020	7/31/2020	100.8		13.0
LDW20-IT383	6/23/2020	7/26/2020	7/31/2020	101.8		12.6
LDW20-IT313	6/23/2020	7/26/2020	7/31/2020	99.8		19.3
LDW20-IT304	6/23/2020	7/26/2020	7/31/2020	100.8		17.5
LDW20-IT415	6/23/2020	7/26/2020	7/31/2020	101.5		23.9

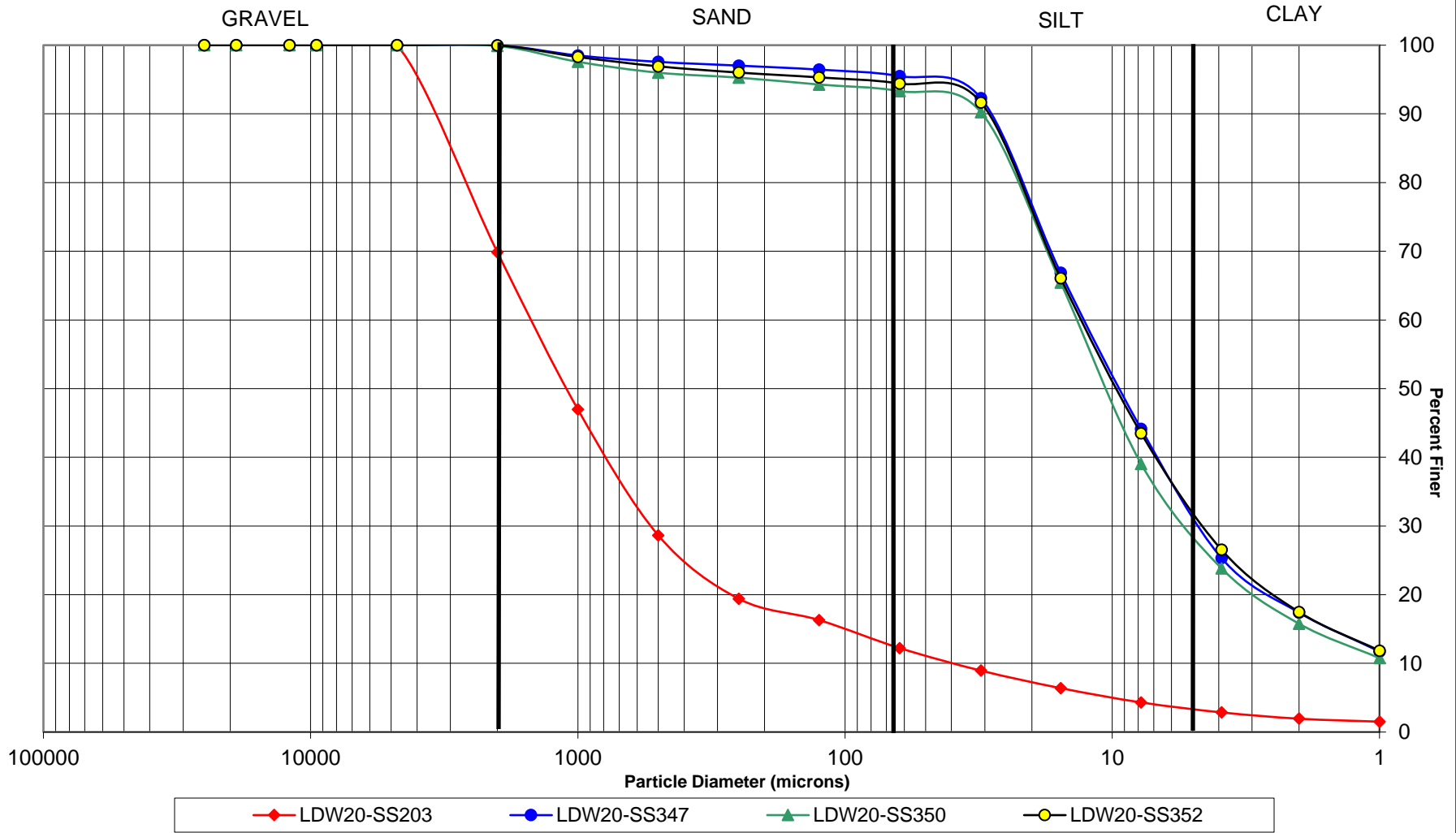
Notes to the Testing: Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution.

Reviewed by: 

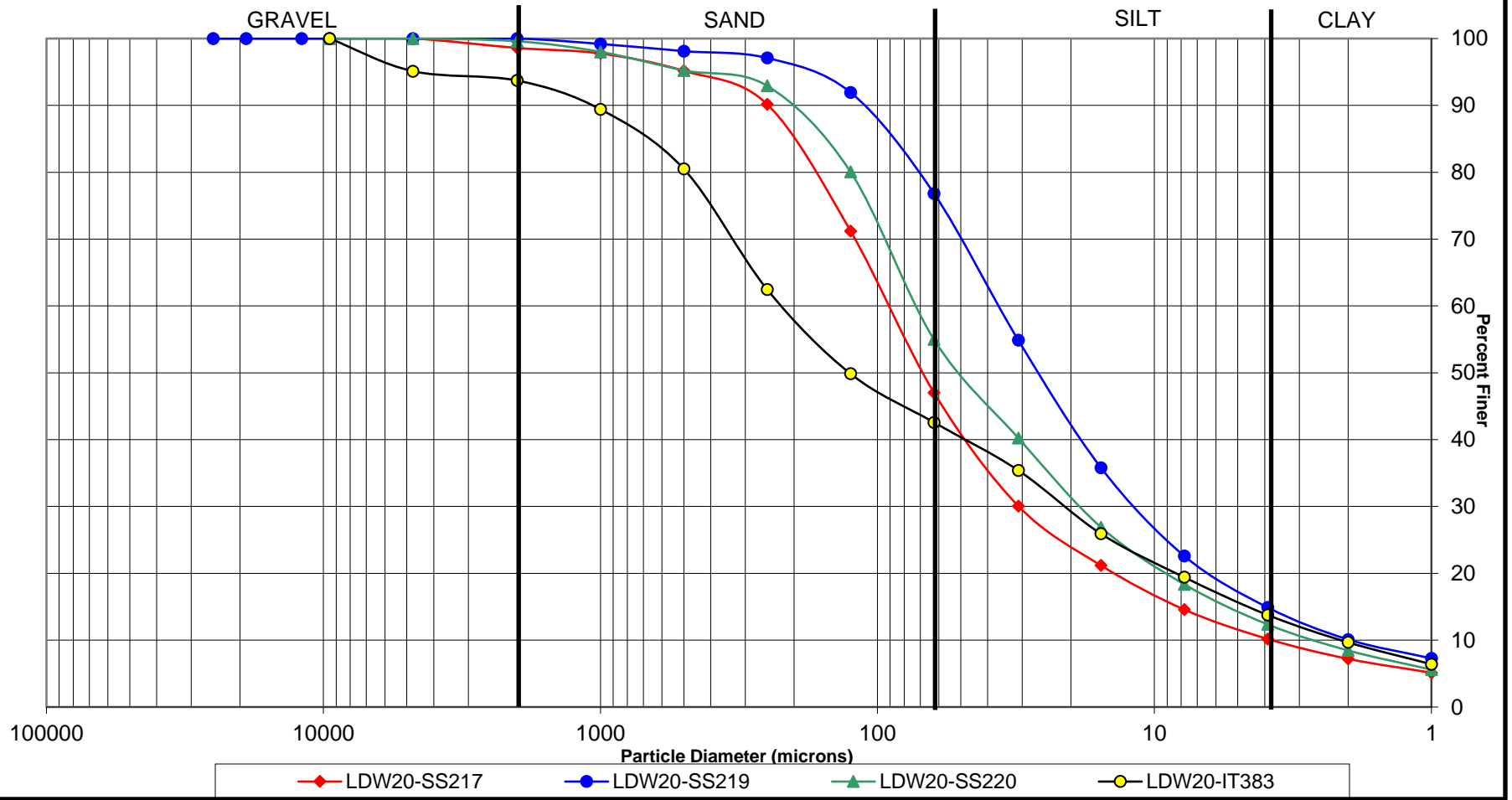
PSEP Grain Size Distribution



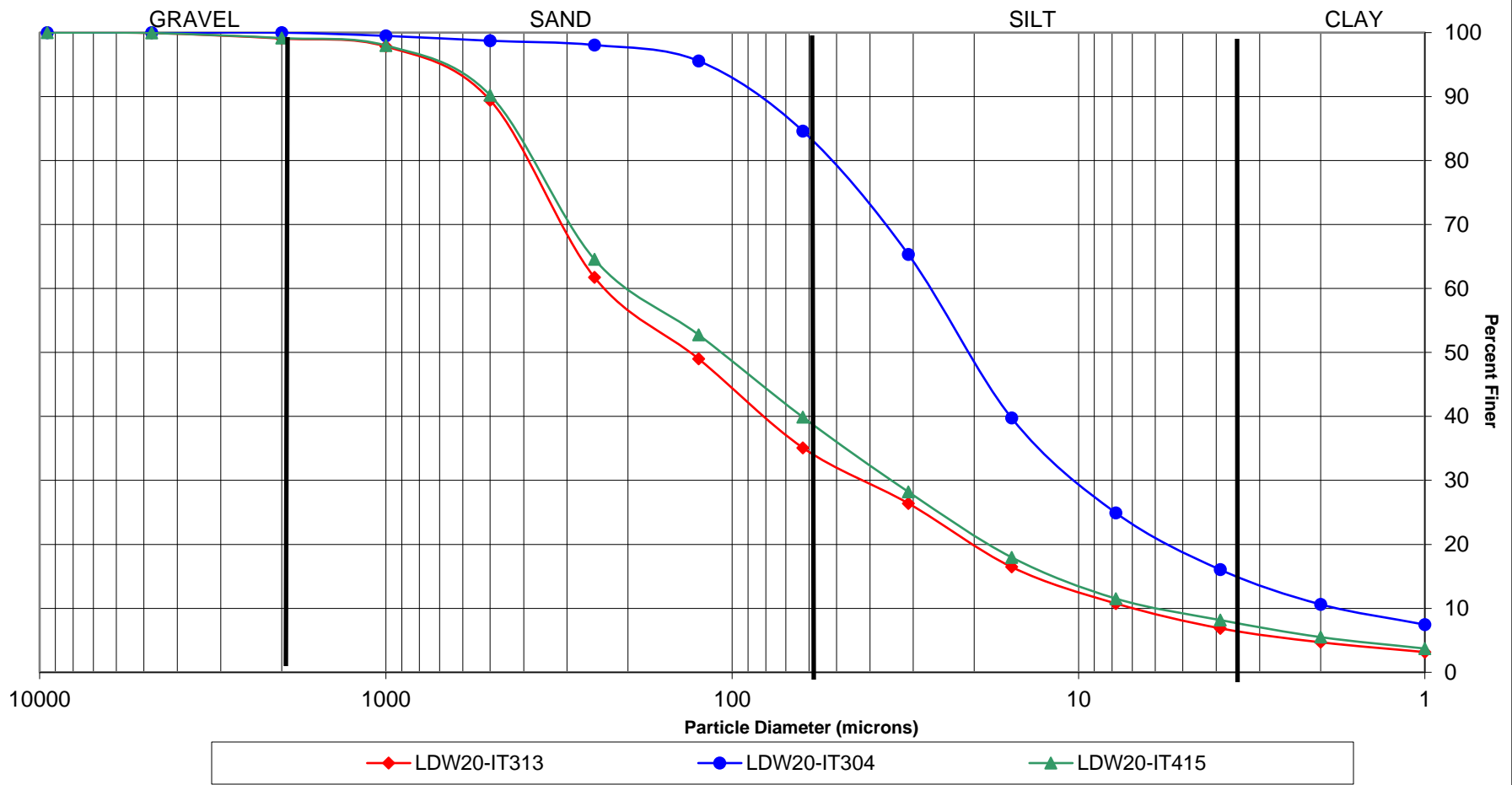
PSEP Grain Size Distribution



PSEP Grain Size Distribution



PSEP Grain Size Distribution



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: August 1, 2020
Date Finished: August 6, 2020

Client: AnchorQEA
HLB Project #: 20-078
Tested By: H Benny

CASE NARRATIVE

1. Sixteen 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 the job was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. Sample LDW20-SC381 was brown sand, fairly clean. It did not have enough fines to pipette. Only the first pipette reading was taken so that the QA ratio could be determined.
4. The samples contained organic matter which may have broken down during the oven drying and sieving process, affecting the grain size analysis.
5. The data is provided in summary tables and plots.
6. There were no other noted anomalies in the testing or samples on project.

Reviewed by:



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: August 1, 2020
Date Finished: August 6, 2020

Client: AnchorQEA
Project #: 20-078
Tested by: H Benny

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
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
LDW20-IT332	100.0	100.0	100.0	99.0	97.8	96.1	86.2	58.8	42.2	25.4	14.2	8.3	5.4	4.1
	100.0	100.0	100.0	98.7	97.7	96.8	86.6	58.6	43.0	25.1	14.3	8.2	5.5	4.1
	100.0	100.0	100.0	98.9	97.7	96.2	85.9	57.7	43.0	24.7	14.7	8.4	5.8	4.4
LDW20-SC324	100.0	100.0	100.0	97.4	96.1	95.6	94.3	89.0	79.0	24.6	20.1	13.5	9.9	8.0
LDW20-SC327	100.0	100.0	100.0	97.9	96.7	95.8	93.4	84.6	71.7	20.5	17.9	11.9	8.8	6.5
LDW20-SC326	100.0	100.0	99.9	99.1	98.2	97.5	87.5	56.4	39.6	24.0	15.9	10.4	7.0	5.1
LDW20-SC368	100.0	100.0	98.7	94.8	73.8	29.9	18.0	13.5	10.5	6.8	4.8	3.1	2.3	1.7
LDW20-IT421	100.0	100.0	99.6	99.0	97.6	93.4	71.2	40.6	25.7	17.2	13.1	10.6	5.7	3.8
LDW20-IT409	100.0	100.0	99.9	99.5	98.7	96.0	77.2	44.0	21.2	17.2	12.1	7.8	5.6	3.9
LDW20-SC381	100.0	99.5	94.6	72.6	24.8	2.1	0.4	0.2	-	-	-	-	-	-
LDW20-IT330	100.0	100.0	99.0	94.9	81.1	45.0	14.4	10.2	9.0	6.6	4.6	2.8	1.9	1.2
LDW20-IT331	100.0	100.0	99.8	98.7	97.3	90.5	72.6	54.9	42.3	26.2	14.5	7.7	5.7	3.7
LDW20-IT388	100.0	100.0	99.6	98.8	95.1	63.3	38.6	24.1	16.3	10.1	7.0	4.5	3.2	2.0
LDW20-IT390	96.6	75.1	61.9	58.1	49.4	23.4	10.6	5.8	3.2	2.5	2.0	1.1	1.0	0.7
LDW20-SS306	100.0	100.0	100.0	98.6	95.9	93.2	83.1	65.6	41.4	22.3	14.8	8.6	4.6	2.6
LDW20-SS308	100.0	100.0	99.8	99.2	97.4	94.9	87.8	67.0	41.3	24.1	15.3	9.5	5.2	2.8
LDW20-SS401	100.0	100.0	99.4	98.0	95.6	93.0	88.5	73.7	55.3	31.8	20.7	13.0	8.6	4.9
LDW20-SS406	100.0	100.0	95.3	89.8	79.3	65.4	48.3	26.3	18.1	11.5	8.7	5.6	3.6	2.1
LDW20-SS415	100.0	100.0	99.0	97.2	91.9	73.6	54.5	38.7	25.4	17.3	12.4	7.9	5.2	2.8

Reviewed by: 

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: August 1, 2020
Date Finished: August 6, 2020

Client: AnchorQEA
HLB Project #: 20-078
Tested by: H Benny

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)
LDW20-IT332	0.0	0.9	1.2	1.7	9.9	27.5	16.5	16.8	11.2	5.9	2.9	1.3	4.1	58.8
	0.0	1.2	1.1	0.9	10.2	27.9	15.6	18.0	10.8	6.1	2.7	1.3	4.1	58.6
	0.0	1.0	1.3	1.5	10.3	28.2	14.7	18.3	10.0	6.3	2.6	1.4	4.4	57.7
LDW20-SC324	0.0	2.6	1.2	0.6	1.3	5.2	10.0	54.5	4.5	6.5	3.7	1.9	8.0	89.0
LDW20-SC327	0.0	2.1	1.1	0.9	2.3	8.9	12.9	51.2	2.6	6.0	3.1	2.2	6.5	84.6
LDW20-SC326	0.1	0.8	0.9	0.7	10.0	31.2	16.7	15.6	8.1	5.5	3.3	1.9	5.1	56.4
LDW20-SC368	1.3	3.9	21.0	43.9	11.8	4.6	3.0	3.7	2.0	1.7	0.8	0.6	1.7	13.5
LDW20-IT421	0.4	0.6	1.4	4.2	22.2	30.5	15.0	8.4	4.2	2.5	4.9	1.9	3.8	40.6
LDW20-IT409	0.1	0.4	0.9	2.7	18.7	33.3	22.8	4.1	5.0	4.4	2.2	1.7	3.9	44.0
LDW20-SC381	5.4	22.0	47.8	22.7	1.8	0.2	-	-	-	-	-	-	-	0.2
LDW20-IT330	1.0	4.0	13.8	36.2	30.6	4.2	1.1	2.5	1.9	1.8	0.9	0.7	1.2	10.2
LDW20-IT331	0.2	1.2	1.4	6.8	17.9	17.7	12.7	16.0	11.7	6.7	2.1	1.9	3.7	54.9
LDW20-IT388	0.4	0.8	3.7	31.8	24.7	14.5	7.8	6.2	3.1	2.5	1.3	1.1	2.0	24.1
LDW20-IT390	38.1	3.8	8.7	25.9	12.8	4.8	2.7	0.7	0.5	0.9	0.0	0.4	0.7	5.8
LDW20-SS306	0.0	1.4	2.7	2.7	10.1	17.5	24.2	19.1	7.5	6.2	4.0	2.0	2.6	65.6
LDW20-SS308	0.2	0.6	1.8	2.5	7.1	20.7	25.7	17.2	8.9	5.8	4.3	2.4	2.8	67.0
LDW20-SS401	0.6	1.3	2.4	2.7	4.5	14.8	18.4	23.5	11.1	7.7	4.5	3.7	4.9	73.7
LDW20-SS406	4.7	5.6	10.5	13.9	17.1	22.0	8.1	6.7	2.8	3.1	2.1	1.5	2.1	26.3
LDW20-SS415	1.0	1.8	5.3	18.3	19.1	15.8	13.3	8.1	4.9	4.5	2.7	2.4	2.8	38.7

Reviewed by: 

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: August 1, 2020
Date Finished: August 6, 2020

Client: AnchorQEA
HLB Project #: 20-078
Tested by: H Benny

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
LDW20-IT332	100.0	100.0	100.0	99.0	97.8	96.1	86.2	58.8	42.2	25.4	14.2	8.3	5.4	4.1
	100.0	100.0	100.0	98.7	97.7	96.8	86.6	58.6	43.0	25.1	14.3	8.2	5.5	4.1
	100.0	100.0	100.0	98.9	97.7	96.2	85.9	57.7	43.0	24.7	14.7	8.4	5.8	4.4
AVE	100.0	100.0	100.0	98.9	97.7	96.4	86.2	58.4	42.7	25.1	14.4	8.3	5.5	4.2
STDEV	0.0	0.0	0.0	0.1	0.1	0.3	0.3	0.5	0.4	0.3	0.2	0.1	0.2	0.1
%RSD	0.0	0.0	0.0	0.1	0.1	0.3	0.3	0.8	0.9	1.1	1.5	1.2	3.2	3.1

The Triplicate Applies To The Following Samples

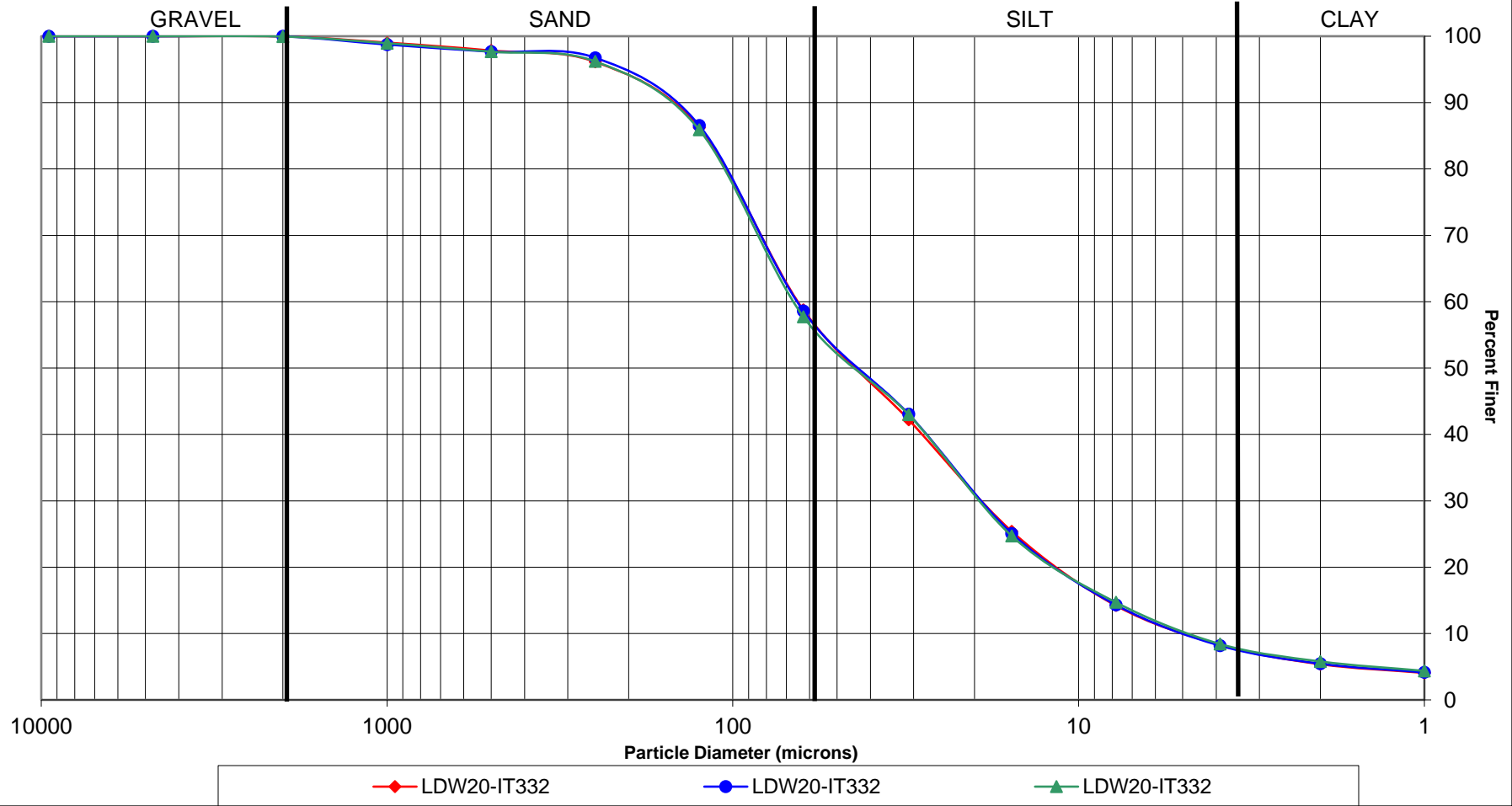
Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
LDW20-IT332	6/16/2020	8/1/2020	8/7/2020	99.9		12.7
	6/16/2020	8/1/2020	8/7/2020	102.0		12.1
	6/16/2020	8/1/2020	8/7/2020	99.0		12.9
LDW20-SC324	6/16/2020	8/1/2020	8/7/2020	96.5		14.6
LDW20-SC327	6/16/2020	8/1/2020	8/7/2020	97.9		13.6
LDW20-SC326	6/16/2020	8/1/2020	8/7/2020	100.7		11.5
LDW20-SC368	6/16/2020	8/1/2020	8/7/2020	100.1		8.4
LDW20-IT421	6/16/2020	8/1/2020	8/7/2020	100.5		9.6
LDW20-IT409	6/16/2020	8/1/2020	8/7/2020	99.4		10.5
LDW20-SC381	6/16/2020	8/1/2020	8/7/2020	99.8	SS	0.2
LDW20-IT330	6/16/2020	8/1/2020	8/7/2020	99.8		5.5
LDW20-IT331	6/16/2020	8/1/2020	8/7/2020	100.2		11.3
LDW20-IT388	6/16/2020	8/1/2020	8/7/2020	101.5		13.9
LDW20-IT390	6/16/2020	8/1/2020	8/7/2020	101.3		6.0
LDW20-SS306	6/23/2020	8/1/2020	8/7/2020	103.5		10.4
LDW20-SS308	6/23/2020	8/1/2020	8/7/2020	103.3		11.0
LDW20-SS401	6/23/2020	8/1/2020	8/7/2020	102.5		14.4
LDW20-SS406	6/23/2020	8/1/2020	8/7/2020	100.4		7.0
LDW20-SS415	6/23/2020	8/1/2020	8/7/2020	103.3		9.5

Notes to the Testing: Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution.

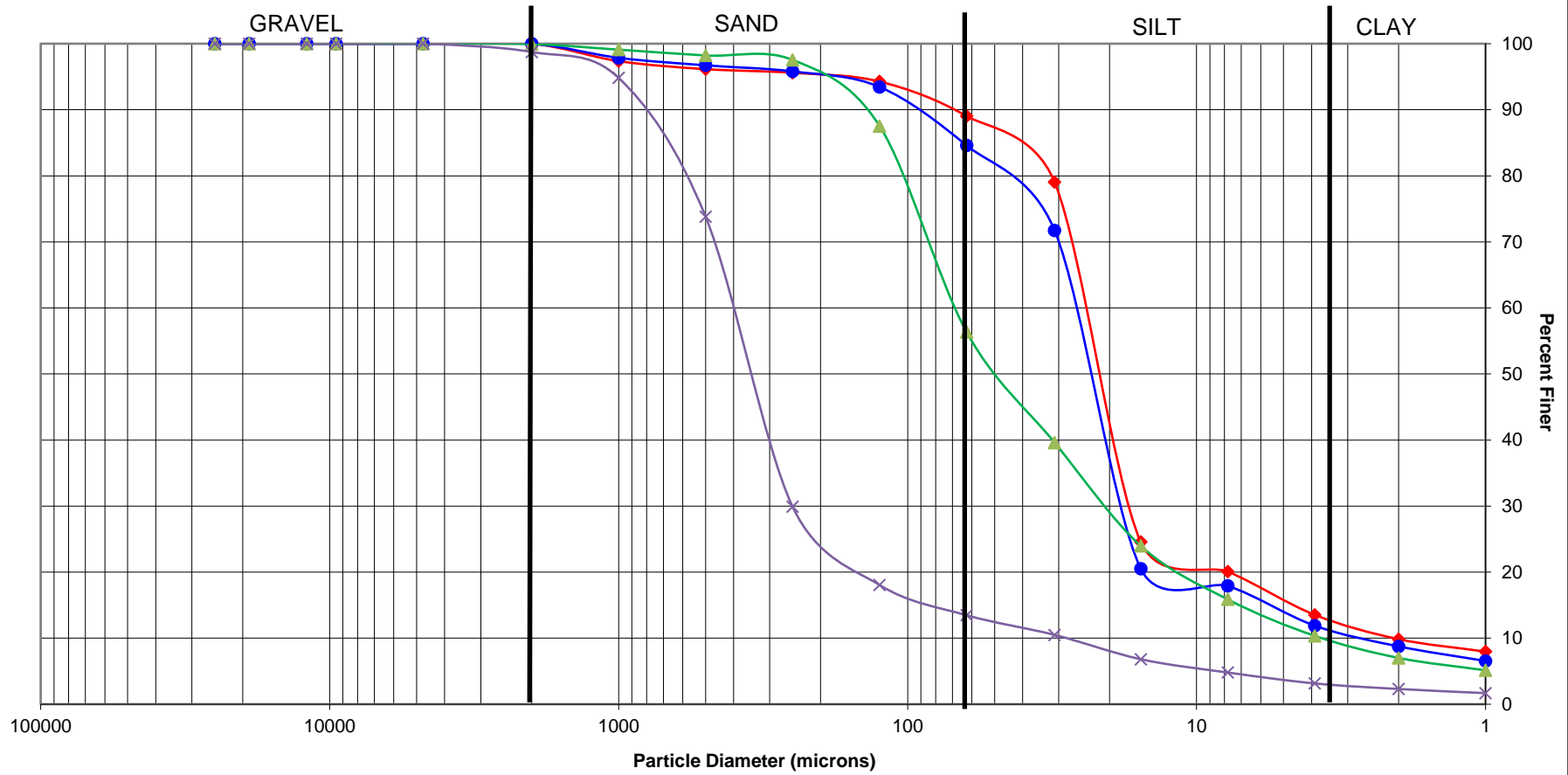
Reviewed by: 

PSEP Grain Size Distribution

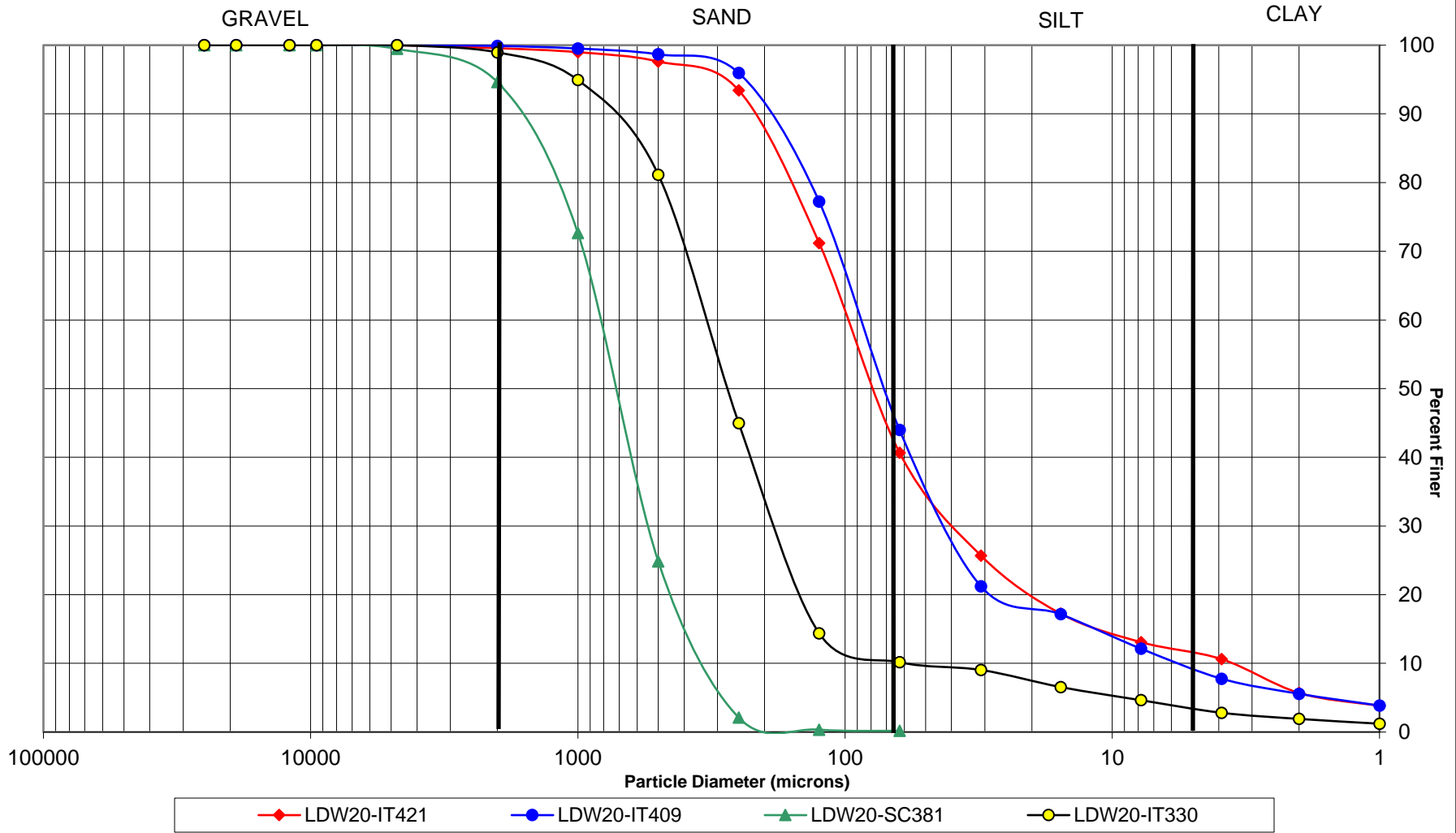
Triplicate Sample Plot



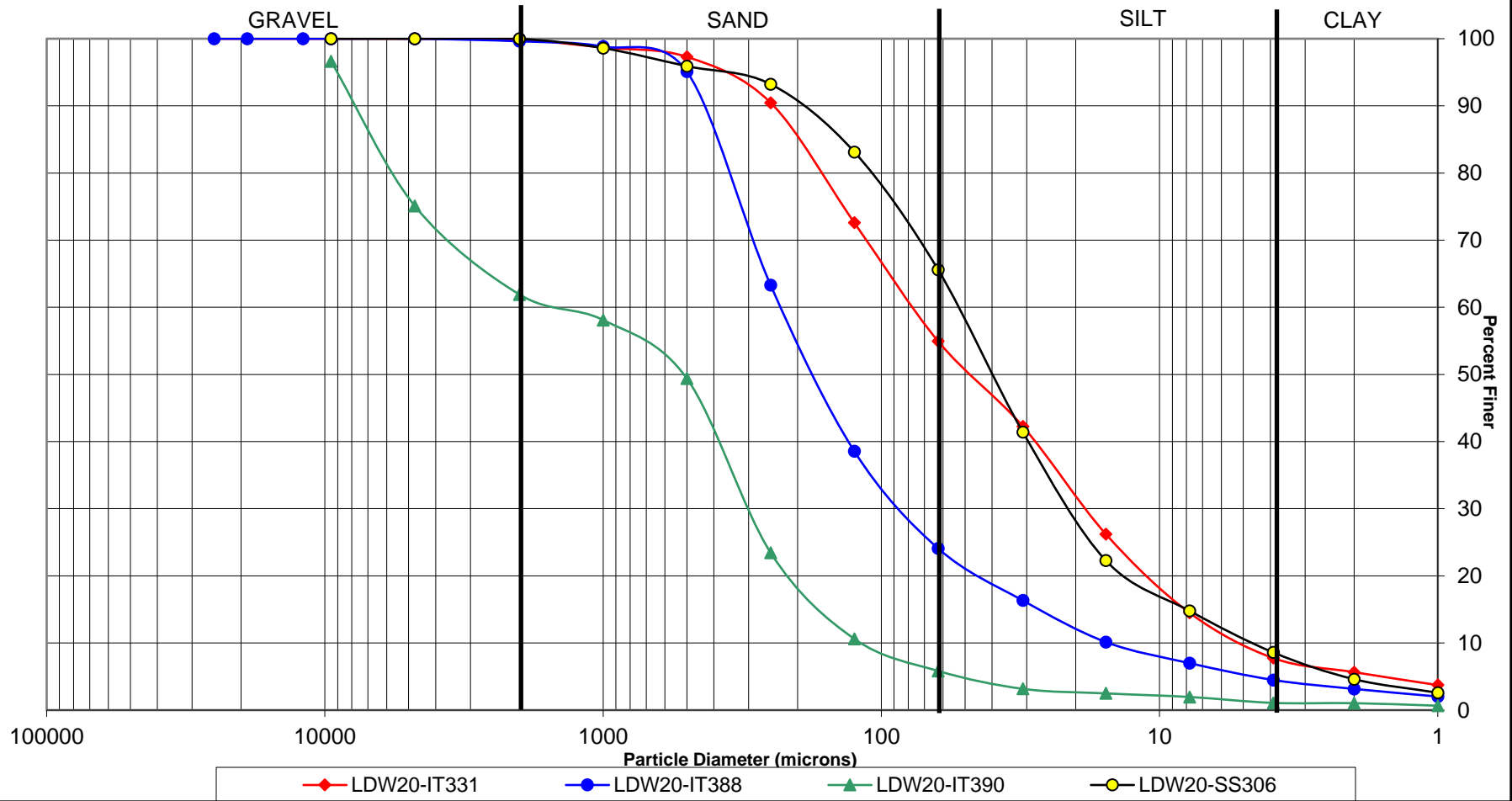
PSEP Grain Size Distribution



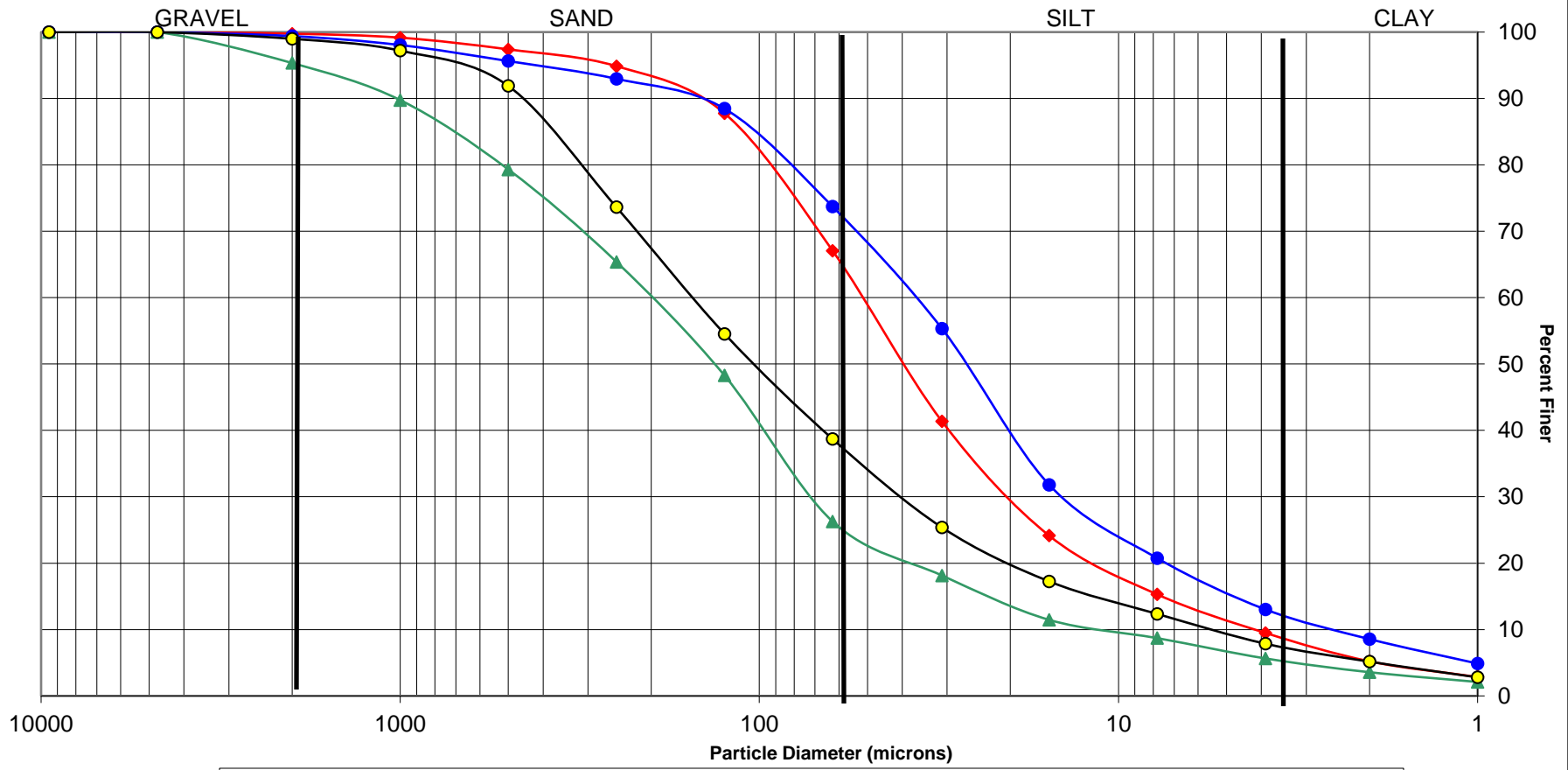
PSEP Grain Size Distribution



PSEP Grain Size Distribution



PSEP Grain Size Distribution



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: August 7, 2020
Date Finished: August 14, 2020

Client: AnchorQEA
HLB Project #: 20-079
Tested By: H Benny

CASE NARRATIVE

1. Fifteen 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 the job was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. The samples contained organic matter which may have broken down during the oven drying and sieving process, affecting the grain size analysis.
4. The data is provided in summary tables and plots.
5. There were no noted anomalies in the testing or samples on project.

Reviewed by:



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: August 7, 2020
Date Finished: August 14, 2020

Client: AnchorQEA
Project #: 20-079
Tested by: H Benny

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
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
LDW20-SS224	100.0	99.4	96.7	94.9	92.7	89.1	76.3	55.0	34.8	20.6	13.9	8.2	5.8	3.5
	100.0	100.0	97.4	95.2	93.0	87.4	75.5	53.8	33.9	20.3	13.8	8.3	5.4	3.1
	100.0	100.0	98.1	96.6	94.4	90.5	76.7	54.1	34.2	20.3	13.9	8.2	5.6	3.3
LDW20-SS232	100.0	91.8	78.0	70.8	66.2	58.1	43.6	27.8	18.9	11.8	8.4	5.2	3.6	2.1
LDW20-SS240	100.0	96.6	92.3	87.8	80.5	54.0	29.5	19.4	11.4	7.2	5.1	3.3	2.2	1.2
LDW20-SS244	100.0	100.0	96.5	88.9	72.7	51.1	42.3	33.9	22.8	14.2	10.1	6.4	4.3	2.4
LDW20-SS243	92.6	92.6	88.8	84.6	73.4	42.4	27.2	20.0	14.9	10.1	7.3	4.5	2.9	1.8
LDW20-SS269	100.0	100.0	99.6	97.9	96.4	95.5	86.5	65.6	47.5	32.9	22.3	12.9	9.1	5.8
LDW20-SS261	100.0	100.0	100.0	99.2	98.1	96.3	86.3	60.7	39.5	22.8	14.6	8.9	6.3	4.0
LDW20-SS255	100.0	100.0	100.0	99.2	98.1	96.7	89.3	68.7	47.8	27.2	18.6	11.4	8.1	5.2
LDW20-SS250	100.0	100.0	100.0	99.0	97.8	95.6	89.0	68.6	49.2	30.4	20.4	12.2	8.7	5.5
LDW20-SS245	100.0	100.0	100.0	98.6	97.1	95.3	89.2	66.9	48.6	31.6	20.6	11.9	8.6	5.5
LDW20-SS222	100.0	100.0	99.8	98.5	96.9	94.4	85.1	67.2	51.6	33.7	22.6	13.4	9.6	6.1
LDW20-SS223	100.0	100.0	99.2	96.5	93.8	90.8	80.0	55.7	40.3	26.3	18.3	11.5	8.2	5.3
LDW20-IT423	90.7	82.0	76.0	69.7	53.3	36.8	31.3	25.5	21.2	14.0	10.0	6.3	4.3	2.5
LDW20-IT416	100.0	100.0	99.7	98.8	96.3	90.9	75.7	49.0	28.6	18.0	13.2	8.4	6.0	4.1
LDW20-IT418	100.0	100.0	96.1	88.6	80.5	73.3	65.2	48.0	35.4	22.9	15.5	10.3	6.8	4.1

Reviewed by:  _____

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: August 7, 2020
Date Finished: August 14, 2020

Client: AnchorQEA
HLB Project #: 20-079
Tested by: H Benny

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)
LDW20-SS224	3.3	1.8	2.3	3.6	12.8	21.4	20.2	14.2	6.7	5.7	2.4	2.3	3.5	55.0
	2.6	2.1	2.2	5.6	11.9	21.6	20.0	13.5	6.6	5.5	2.9	2.3	3.1	53.8
	1.9	1.5	2.2	3.8	13.8	22.6	19.9	13.9	6.4	5.7	2.5	2.3	3.3	54.1
LDW20-SS232	22.0	7.2	4.6	8.1	14.5	15.8	8.9	7.1	3.5	3.2	1.5	1.5	2.1	27.8
LDW20-SS240	7.7	4.5	7.3	26.5	24.5	10.2	8.0	4.1	2.1	1.8	1.2	1.0	1.2	19.4
LDW20-SS244	3.5	7.7	16.2	21.6	8.8	8.5	11.0	8.6	4.1	3.8	2.1	1.9	2.4	33.9
LDW20-SS243	11.2	4.2	11.2	30.9	15.3	7.2	5.0	4.9	2.8	2.8	1.6	1.1	1.8	20.0
LDW20-SS269	0.4	1.7	1.5	0.9	9.1	20.9	18.1	14.6	10.6	9.5	3.8	3.3	5.8	65.6
LDW20-SS261	0.0	0.8	1.1	1.8	10.0	25.6	21.2	16.8	8.2	5.7	2.6	2.3	4.0	60.7
LDW20-SS255	0.0	0.8	1.1	1.4	7.4	20.6	20.9	20.5	8.6	7.2	3.3	2.9	5.2	68.7
LDW20-SS250	0.0	1.0	1.1	2.2	6.6	20.4	19.3	18.8	10.1	8.2	3.5	3.2	5.5	68.6
LDW20-SS245	0.0	1.4	1.5	1.8	6.1	22.3	18.3	17.1	11.0	8.7	3.3	3.1	5.5	66.9
LDW20-SS222	0.2	1.4	1.6	2.4	9.4	17.9	15.5	17.9	11.2	9.2	3.8	3.5	6.1	67.2
LDW20-SS223	0.8	2.7	2.6	3.0	10.8	24.4	15.4	13.9	8.1	6.8	3.2	3.0	5.3	55.7
LDW20-IT423	24.0	6.2	16.4	16.6	5.5	5.8	4.2	7.3	3.9	3.8	2.0	1.8	2.5	25.5
LDW20-IT416	0.3	0.9	2.4	5.5	15.2	26.7	20.4	10.6	4.8	4.8	2.4	1.9	4.1	49.0
LDW20-IT418	3.9	7.5	8.1	7.2	8.0	17.2	12.6	12.5	7.3	5.2	3.5	2.8	4.1	48.0

Reviewed by: 

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: August 7, 2020
Date Finished: August 14, 2020

Client: AnchorQEA
HLB Project #: 20-079
Tested by: H Benny

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
LDW20-SS224	100.0	99.4	96.7	94.9	92.7	89.1	76.3	55.0	34.8	20.6	13.9	8.2	5.8	3.5
	100.0	100.0	97.4	95.2	93.0	87.4	75.5	53.8	33.9	20.3	13.8	8.3	5.4	3.1
	100.0	100.0	98.1	96.6	94.4	90.5	76.7	54.1	34.2	20.3	13.9	8.2	5.6	3.3
AVE	100.0	99.8	97.4	95.6	93.3	89.0	76.1	54.3	34.3	20.4	13.8	8.2	5.6	3.3
STDEV	0.0	0.3	0.6	0.7	0.7	1.3	0.5	0.5	0.4	0.1	0.0	0.1	0.2	0.2
%RSD	0.0	0.3	0.6	0.7	0.8	1.4	0.7	0.9	1.1	0.7	0.3	0.8	3.0	4.8

The Triplicate Applies To The Following Samples

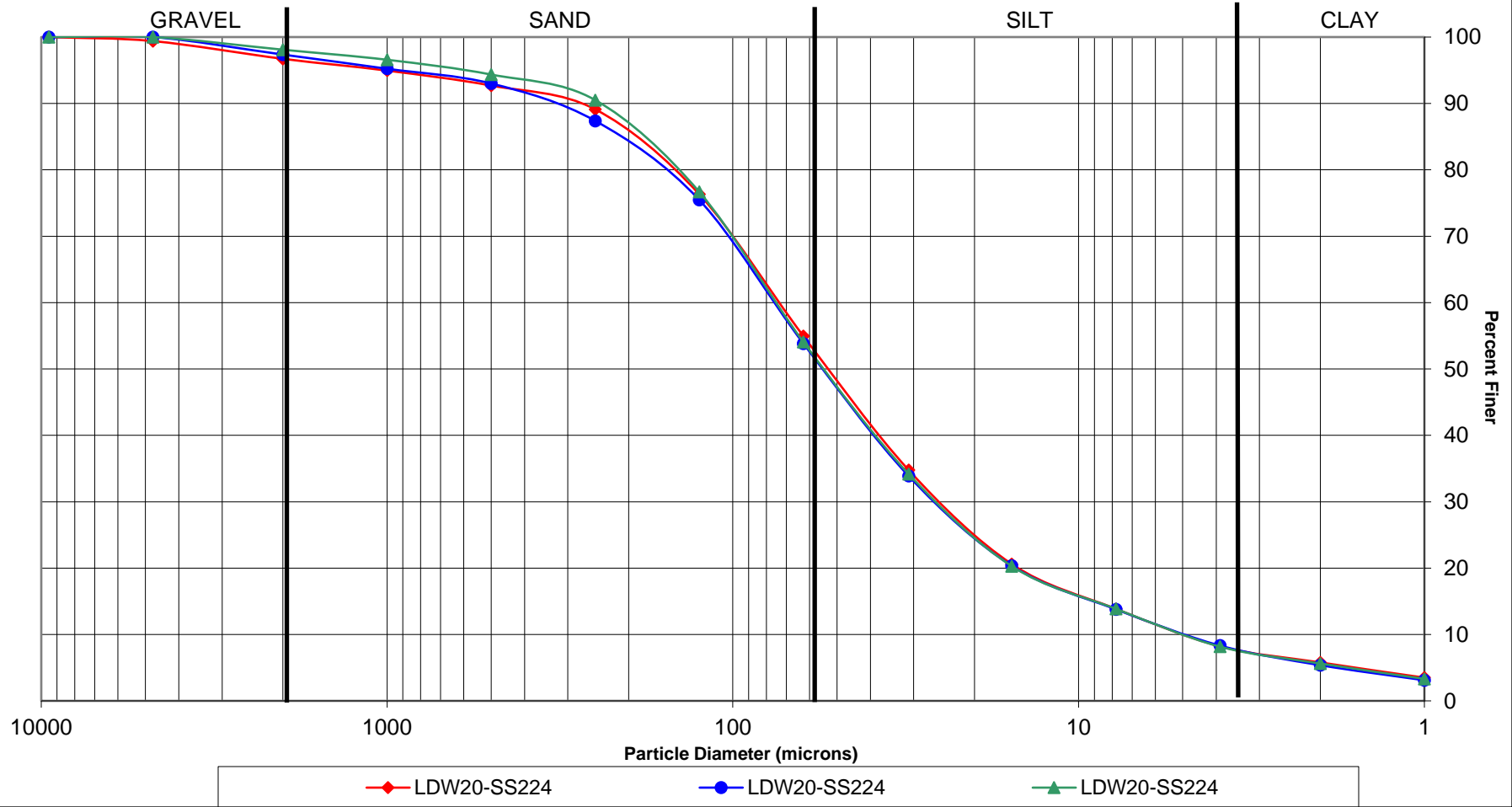
Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
LDW20-SS224	6/19/2020	8/7/2020	8/14/2020	104.1		11.3
	6/19/2020	8/7/2020	8/14/2020	102.4		11.4
	6/19/2020	8/7/2020	8/14/2020	101.3		11.1
LDW20-SS232	6/19/2020	8/7/2020	8/14/2020	99.8		7.3
LDW20-SS240	6/19/2020	8/7/2020	8/14/2020	102.9		8.5
LDW20-SS244	6/19/2020	8/7/2020	8/14/2020	103.0		9.6
LDW20-SS243	6/19/2020	8/7/2020	8/14/2020	98.9		6.5
LDW20-SS269	6/19/2020	8/7/2020	8/14/2020	103.8		13.1
LDW20-SS261	6/19/2020	8/7/2020	8/14/2020	100.9		14.2
LDW20-SS255	6/19/2020	8/7/2020	8/14/2020	101.5		15.2
LDW20-SS250	6/19/2020	8/7/2020	8/14/2020	103.9		15.9
LDW20-SS245	6/19/2020	8/7/2020	8/14/2020	101.1		14.8
LDW20-SS222	6/19/2020	8/7/2020	8/14/2020	102.8		14.4
LDW20-SS223	6/17/2020	8/7/2020	8/14/2020	102.4		13.6
LDW20-IT423	6/17/2020	8/7/2020	8/14/2020	97.9		7.9
LDW20-IT416	6/17/2020	8/7/2020	8/14/2020	99.8		14.2
LDW20-IT418	6/17/2020	8/7/2020	8/14/2020	101.8		12.8

Notes to the Testing: Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution.

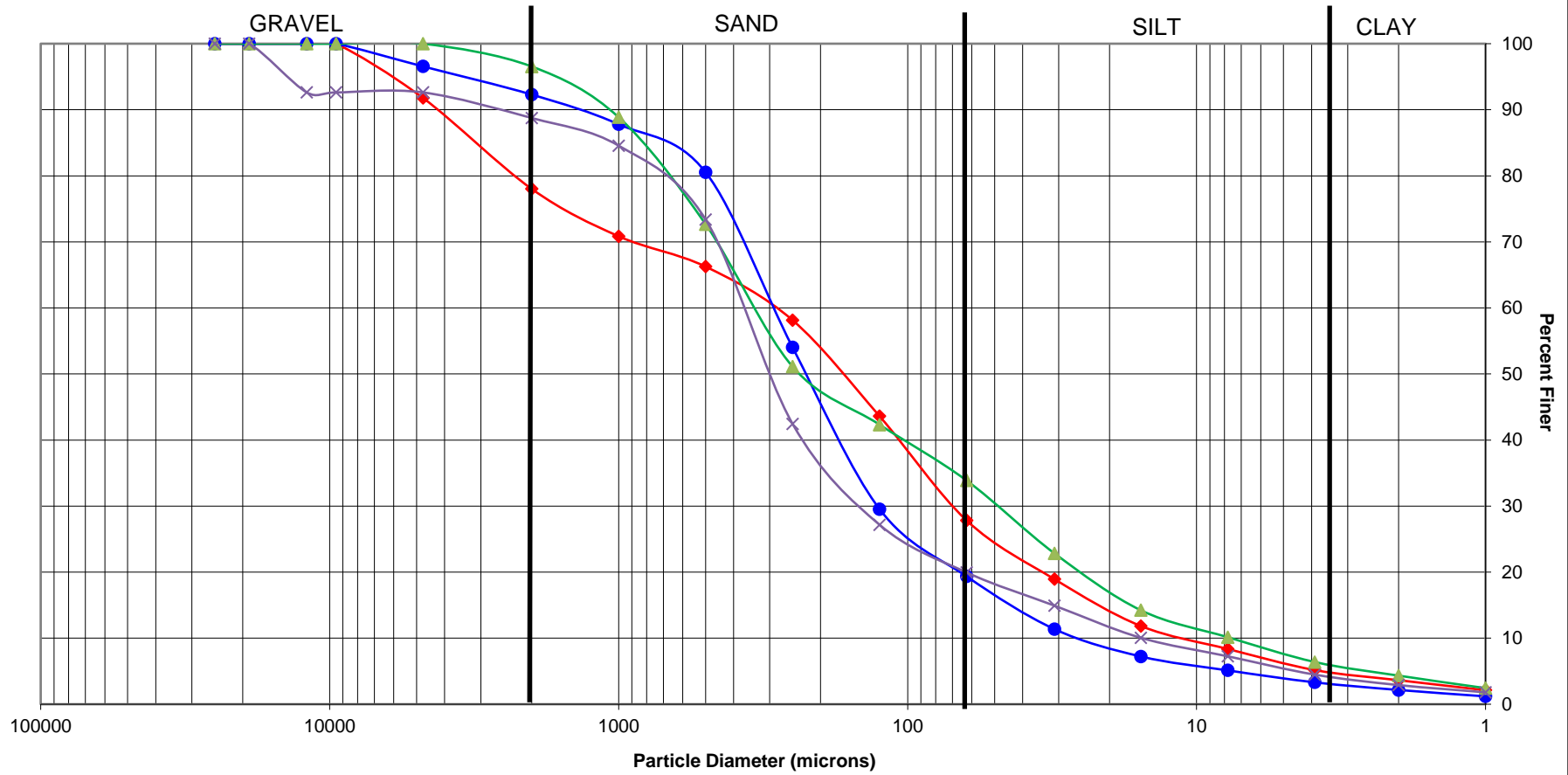
Reviewed by: 

PSEP Grain Size Distribution

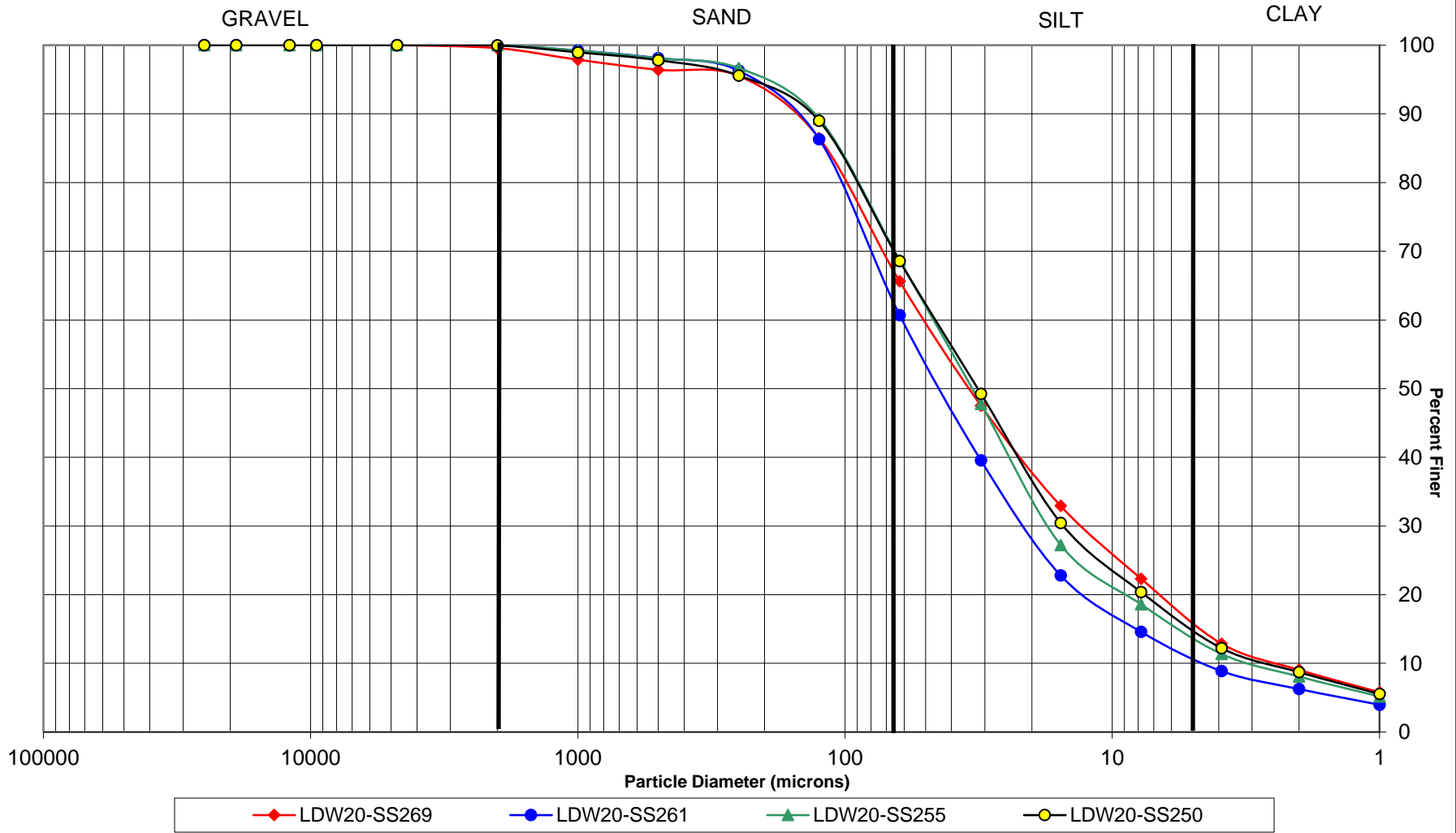
Triplicate Sample Plot



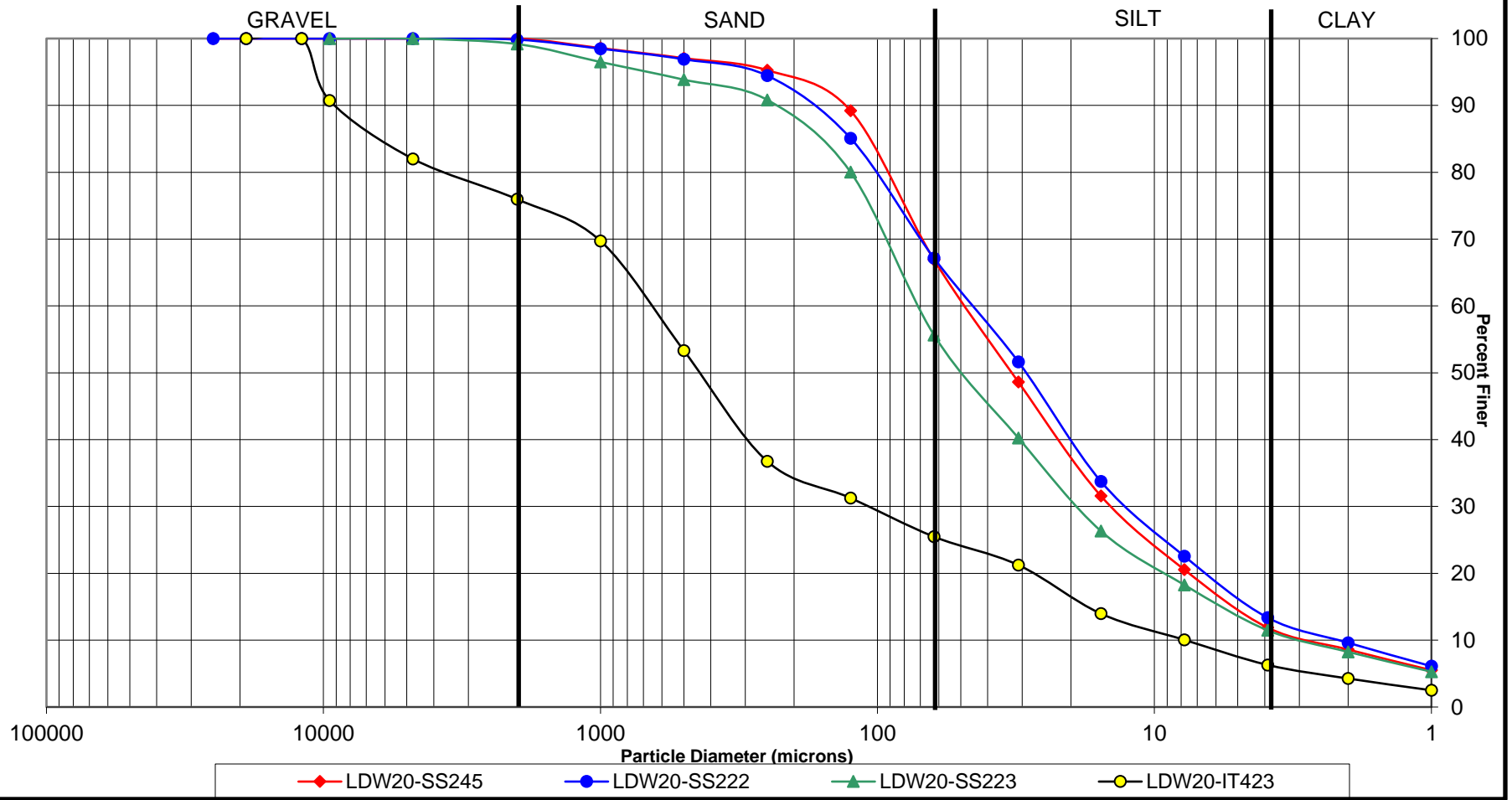
PSEP Grain Size Distribution



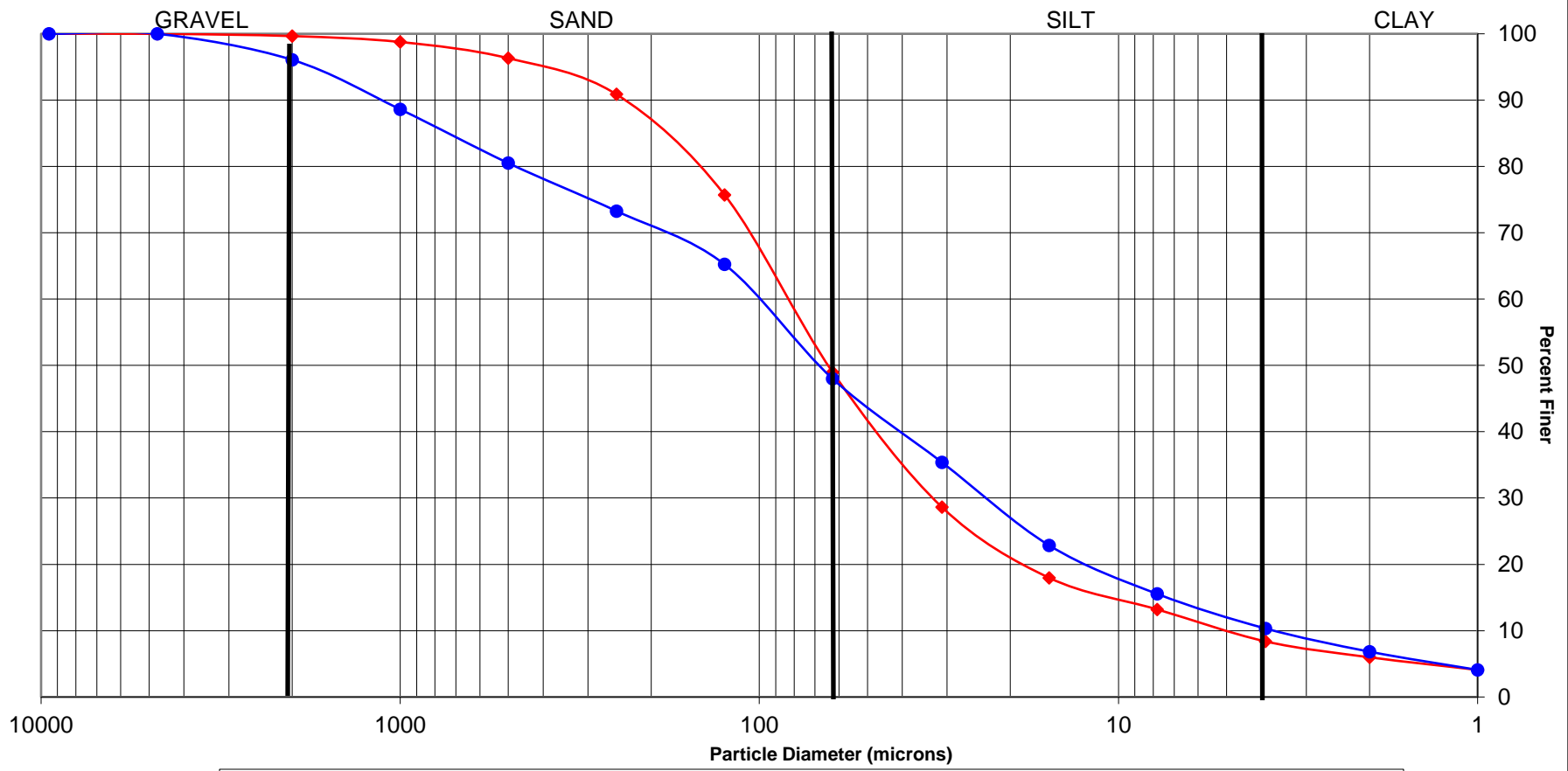
PSEP Grain Size Distribution



PSEP Grain Size Distribution



PSEP Grain Size Distribution



Legend: LDW20-IT416 (red line with diamond marker) and LDW20-IT418 (blue line with circle marker)

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: August 10, 2020
Date Finished: August 16, 2020

Client: AnchorQEA
HLB Project #: 20-080
Tested By: H Benny

CASE NARRATIVE

1. Fourteen 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 the job was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. The samples contained organic matter which may have broken down during the oven drying and sieving process, affecting the grain size analysis.
4. The data is provided in summary tables and plots.
5. There were no noted anomalies in the testing or samples on project.

Reviewed by:



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: August 10, 2020
Date Finished: August 16, 2020

Client: AnchorQEA
Project #: 20-080
Tested by: H Benny

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
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
LDW20-SS340	100.0	100.0	100.0	97.6	96.6	96.5	95.6	92.1	79.0	50.2	29.4	17.0	10.5	7.3
	100.0	100.0	100.0	98.0	97.0	96.4	95.5	92.0	77.6	52.0	30.6	17.4	10.7	7.2
	100.0	100.0	100.0	97.9	96.7	96.7	95.7	92.2	78.1	52.3	30.8	18.0	10.6	7.9
LDW20-SS353	100.0	100.0	98.7	95.1	92.9	91.3	89.8	88.6	81.9	56.9	35.8	20.7	12.8	8.8
LDW20-SS345	100.0	100.0	100.0	97.7	96.3	95.7	95.4	94.7	88.4	58.4	36.9	19.3	13.7	9.6
LDW20-SS342	100.0	100.0	99.9	97.4	96.1	95.6	95.1	93.8	83.6	56.4	35.0	20.6	13.3	12.9
LDW20-SS351	100.0	100.0	100.0	97.7	96.2	95.6	95.1	94.4	89.8	64.8	42.1	25.4	15.9	10.9
LDW20-SS348	100.0	100.0	100.0	97.1	95.9	95.3	94.8	93.9	87.8	63.2	41.2	24.6	15.4	11.0
LDW20-SS349	100.0	100.0	99.9	97.1	95.3	95.1	94.3	93.3	88.3	64.1	40.7	23.3	15.3	10.5
LDW20-SS346	100.0	100.0	100.0	97.3	96.0	95.9	95.3	93.9	84.1	60.5	40.3	24.0	16.4	10.8
LDW20-SS160	100.0	100.0	99.9	99.7	98.9	97.8	73.5	37.0	22.9	14.9	10.3	6.6	4.8	3.2
LDW20-SS204	100.0	100.0	100.0	99.9	99.6	90.7	22.1	11.2	7.0	4.5	3.3	2.2	1.7	1.5
LDW20-SS210	100.0	100.0	99.4	99.1	97.6	84.0	40.2	24.8	17.5	12.3	8.1	5.4	4.0	2.7
LDW20-SC392	100.0	98.1	91.6	61.4	14.7	3.3	1.1	0.9	-	-	-	-	-	-
LDW20-SS423	100.0	98.0	94.4	90.5	84.5	76.5	67.4	52.4	34.6	21.6	13.0	7.7	5.4	3.7
LDW20-SS411	100.0	100.0	99.6	98.5	95.4	74.8	44.3	26.9	17.1	12.3	8.4	5.1	3.2	1.9

Reviewed by:  _____

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: August 10, 2020
Date Finished: August 16, 2020

Client: AnchorQEA
HLB Project #: 20-080
Tested by: H Benny

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)
LDW20-SS340	0.0	2.4	1.0	0.1	0.9	3.6	13.0	28.8	20.8	12.4	6.5	3.2	7.3	92.1
	0.0	2.0	1.0	0.6	0.9	3.4	14.4	25.6	21.5	13.2	6.7	3.5	7.2	92.0
	0.0	2.1	1.1	0.0	1.0	3.5	14.1	25.9	21.5	12.8	7.4	2.7	7.9	92.2
LDW20-SS353	1.3	3.6	2.2	1.7	1.4	1.2	6.7	25.0	21.1	15.1	7.8	4.0	8.8	88.6
LDW20-SS345	0.0	2.3	1.4	0.6	0.2	0.8	6.2	30.0	21.5	17.7	5.5	4.1	9.6	94.7
LDW20-SS342	0.1	2.5	1.2	0.6	0.5	1.3	10.2	27.2	21.4	14.4	7.3	0.4	12.9	93.8
LDW20-SS351	0.0	2.2	1.5	0.7	0.5	0.7	4.6	24.9	22.7	16.7	9.6	4.9	10.9	94.4
LDW20-SS348	0.0	2.9	1.3	0.6	0.5	0.9	6.1	24.6	22.0	16.7	9.2	4.4	11.0	93.9
LDW20-SS349	0.1	2.8	1.8	0.2	0.9	0.9	5.1	24.2	23.4	17.4	8.0	4.8	10.5	93.3
LDW20-SS346	0.0	2.7	1.3	0.1	0.6	1.4	9.9	23.6	20.2	16.3	7.6	5.7	10.8	93.9
LDW20-SS160	0.1	0.2	0.8	1.1	24.3	36.4	14.1	8.0	4.5	3.7	1.8	1.6	3.2	37.0
LDW20-SS204	0.0	0.1	0.3	9.0	68.5	10.9	4.2	2.5	1.2	1.1	0.5	0.2	1.5	11.2
LDW20-SS210	0.6	0.3	1.4	13.6	43.8	15.4	7.3	5.2	4.1	2.7	1.4	1.3	2.7	24.8
LDW20-SC392	8.4	30.2	46.7	11.4	2.2	0.2	-	-	-	-	-	-	-	0.9
LDW20-SS423	5.6	3.9	6.0	7.9	9.1	15.0	17.9	12.9	8.7	5.2	2.3	1.7	3.7	52.4
LDW20-SS411	0.4	1.0	3.1	20.6	30.5	17.4	9.9	4.8	3.9	3.3	1.9	1.3	1.9	26.9

Reviewed by: 

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: August 10, 2020
Date Finished: August 16, 2020

Client: AnchorQEA
HLB Project #: 20-080
Tested by: H Benny

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
LDW20-SS340	100.0	100.0	100.0	97.6	96.6	96.5	95.6	92.1	79.0	50.2	29.4	17.0	10.5	7.3
	100.0	100.0	100.0	98.0	97.0	96.4	95.5	92.0	77.6	52.0	30.6	17.4	10.7	7.2
	100.0	100.0	100.0	97.9	96.7	96.7	95.7	92.2	78.1	52.3	30.8	18.0	10.6	7.9
AVE	100.0	100.0	100.0	97.8	96.8	96.5	95.6	92.1	78.3	51.5	30.3	17.4	10.6	7.5
STDEV	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.1	0.6	0.9	0.6	0.4	0.1	0.3
%RSD	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.1	0.8	1.8	2.0	2.3	0.8	3.8

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)
LDW20-SS340	6/11/2020	8/10/2020	8/16/2020	98.7		14.2
	6/11/2020	8/10/2020	8/16/2020	99.2		14.4
	6/11/2020	8/10/2020	8/16/2020	100.4		14.5
LDW20-SS353	6/11/2020	8/10/2020	8/16/2020	98.6		12.0
LDW20-SS345	6/11/2020	8/10/2020	8/16/2020	99.1		12.5
LDW20-SS342	6/11/2020	8/10/2020	8/16/2020	97.2		13.0
LDW20-SS351	6/11/2020	8/10/2020	8/16/2020	101.0		13.2
LDW20-SS348	6/11/2020	8/10/2020	8/16/2020	100.6		12.2
LDW20-SS349	6/11/2020	8/10/2020	8/16/2020	100.7		11.1
LDW20-SS346	6/11/2020	8/10/2020	8/16/2020	100.9		13.6
LDW20-SS160	6/11/2020	8/10/2020	8/16/2020	100.9		10.0
LDW20-SS204	6/11/2020	8/10/2020	8/16/2020	102.2		7.7
LDW20-SS210	6/11/2020	8/10/2020	8/16/2020	99.9		7.1
LDW20-SC392	6/5/2020	8/10/2020	8/16/2020	100.7	SS	0.5
LDW20-SS423	6/5/2020	8/10/2020	8/16/2020	103.9		9.4
LDW20-SS411	6/5/2020	8/10/2020	8/16/2020	100.6		7.2

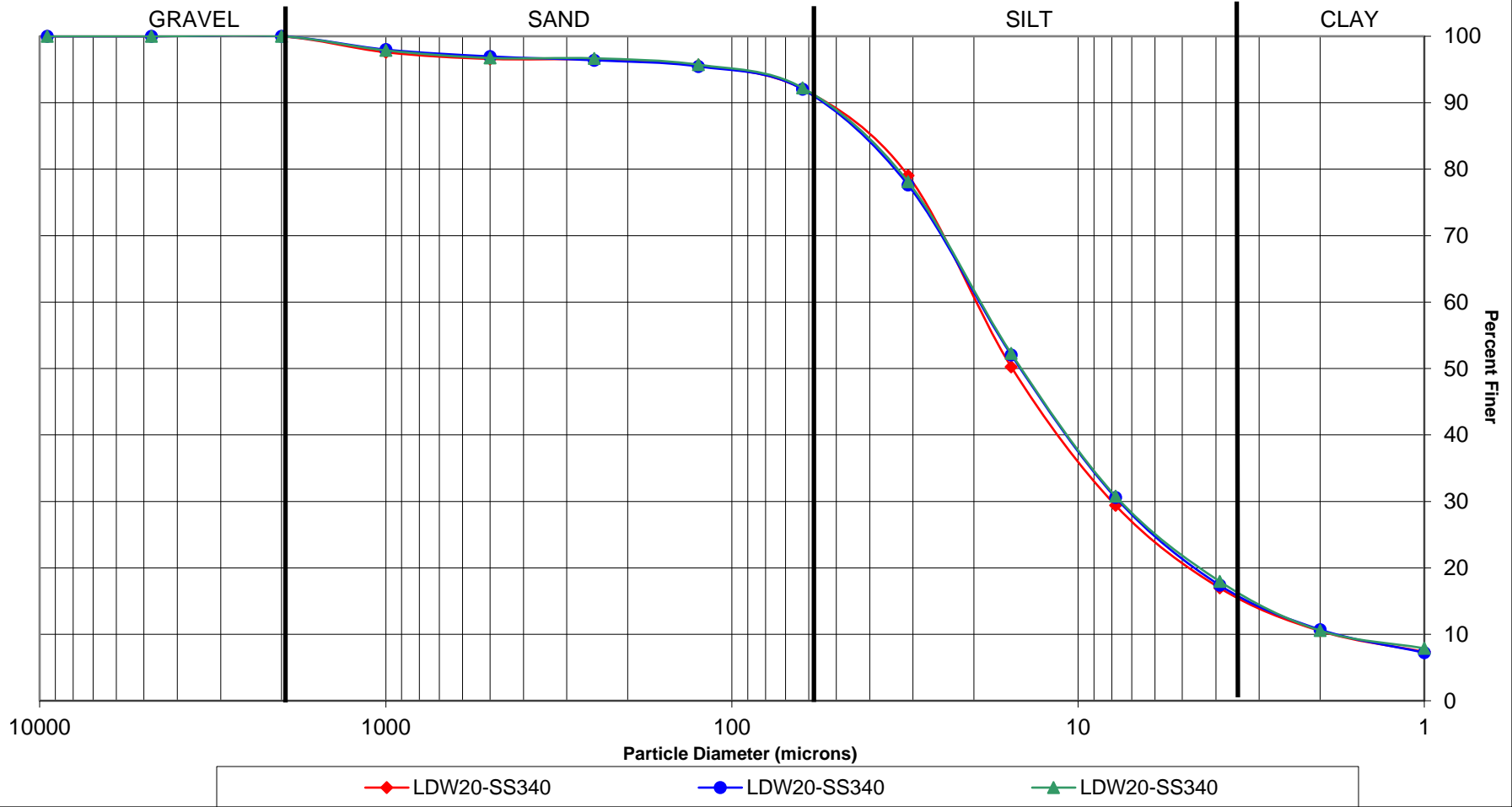
Notes to the Testing: Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution.

Reviewed by: _____

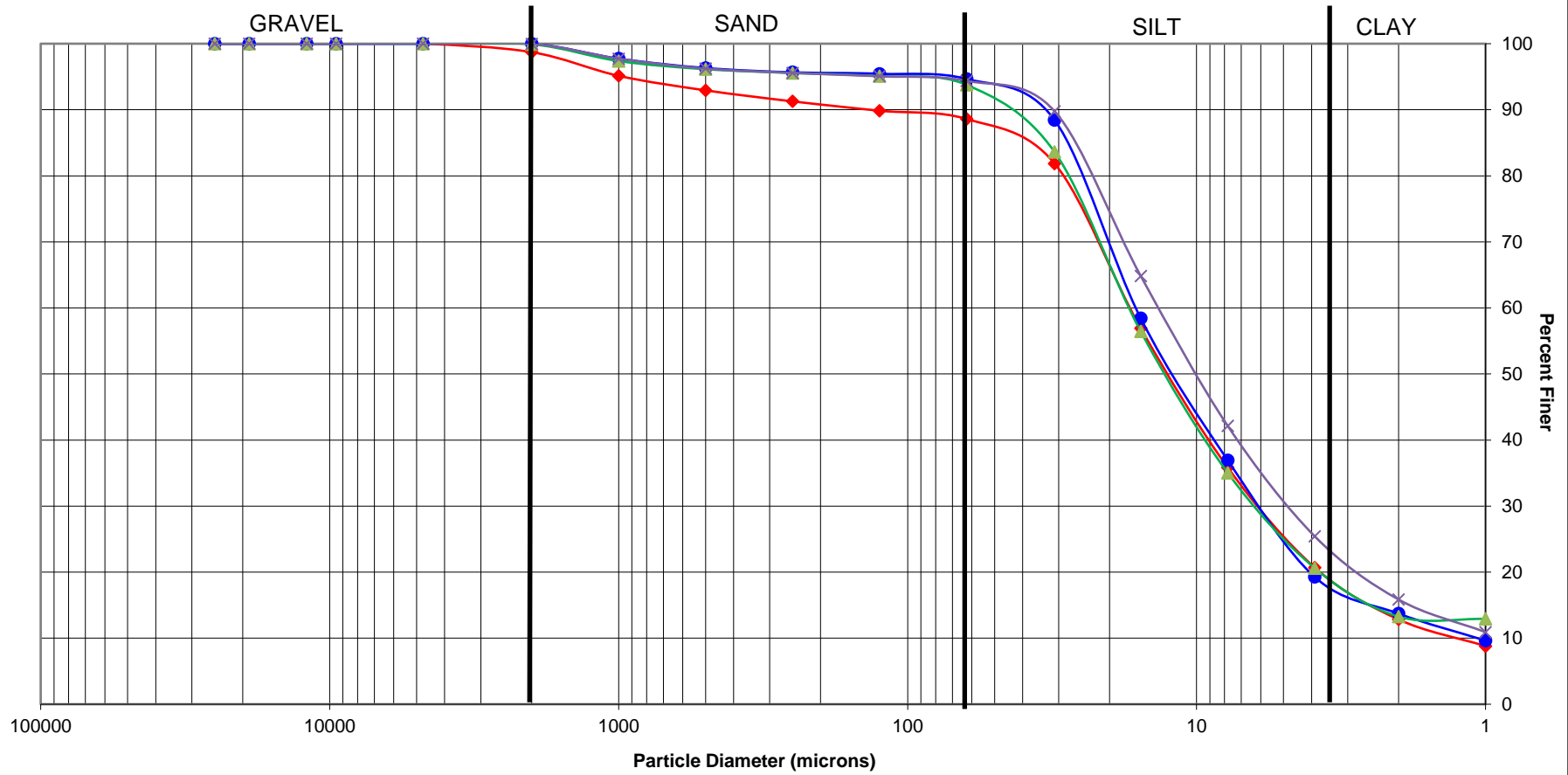


PSEP Grain Size Distribution

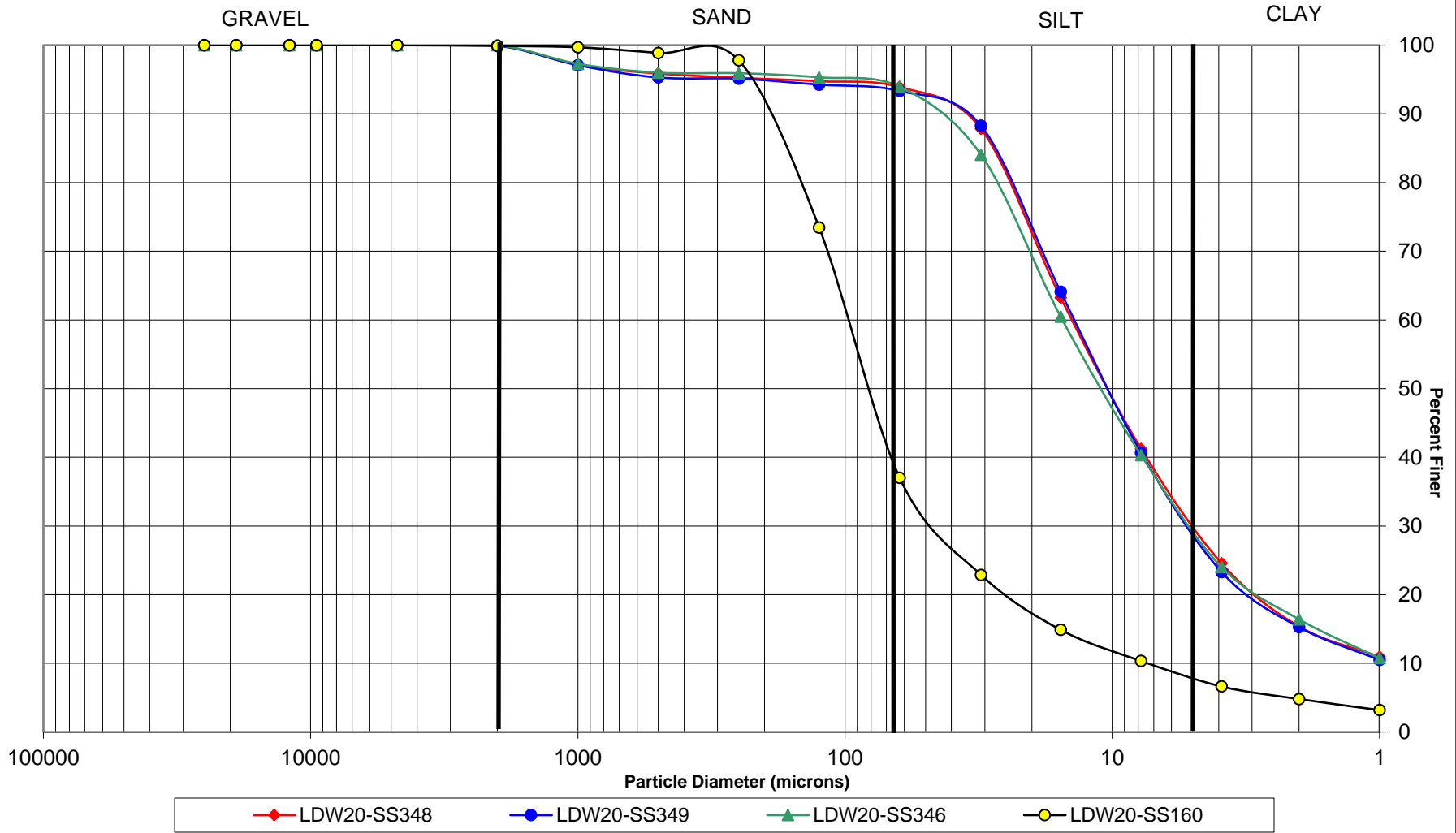
Triplicate Sample Plot



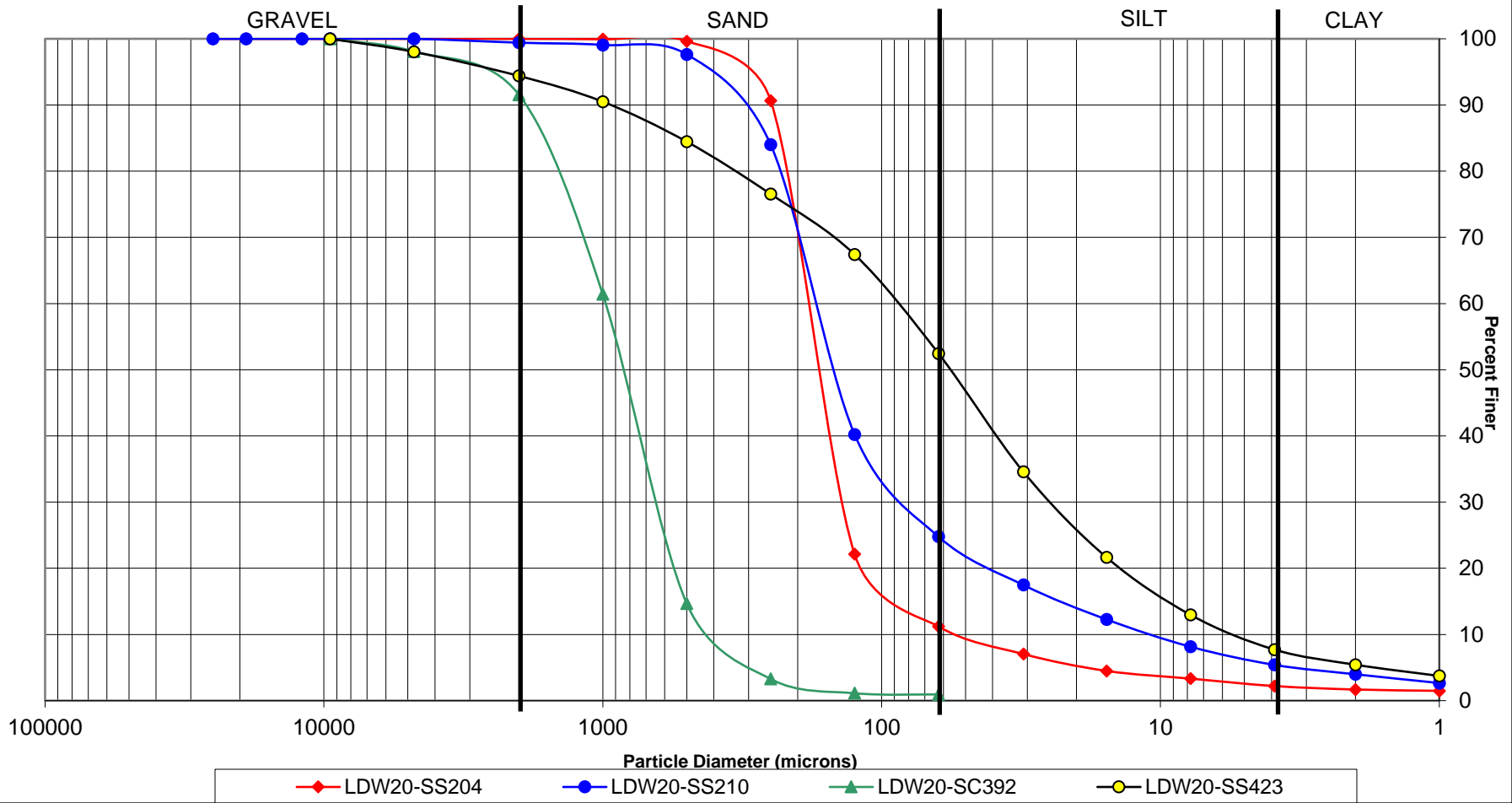
PSEP Grain Size Distribution



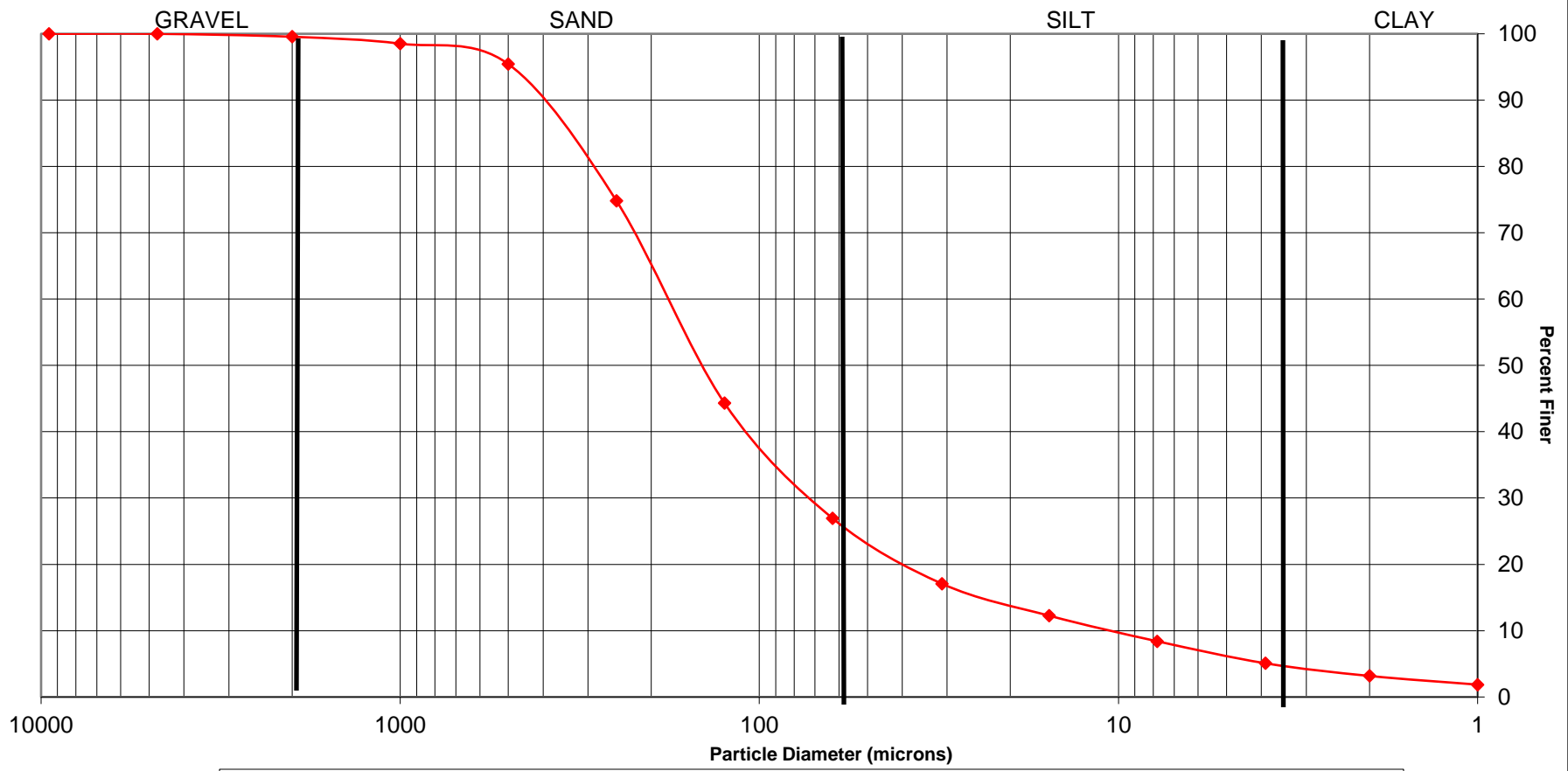
PSEP Grain Size Distribution



PSEP Grain Size Distribution



PSEP Grain Size Distribution



—◆— LDW20-SS411

CHAIN-OF-CUSTODY/TEST REQUEST FORM

No **3209**

Project/Client Name: Duwamish AOC4 Ship to: Harold L Benny and Associates
 Project Number: 180067-02.02 Attn: Harold Benny Shipping Date: 6/16/20
 Contact Name: Amara Vandervort Shipper: Courier Airbill Number: N/A
 Sampled By: RM JH Form filled out by: R Mathomet Turnaround requested: Std

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)										Comments / Instructions (jar tag number(s))			
					Grav	Size	Dist	PC	MS	TS	TS	TS	TS	TS		TS	TS	
6/16/20	0812	LDW 20 - SS 340	1	sediment	X													
	0829	- SS 353	1		X													
	0847	- SS 345	1		X													
	0922	- SS 342	1		X													
	0943	- SS 351	1		X													
	1004	- SS 348	1		X													
	1027	- SS 349	1		X													
	1050	- SS 346	1		X													
	1225	- SS 160	1		X													
	1243	- SS 204	1		X													
	1303	- SS 210	1		X													
		Total Number of Containers	11															

Purchase Order / Statement of Work # CLP - 0427206

1) Released by: <u>Brandi Quinisk</u>	2) Released by: <u>H Benny</u>
Print name: <u>Brandi Quinisk</u>	Print name: <u>Jacob Watter</u>
Signature: <u>Brandi Quinisk</u>	Signature: <u>[Signature]</u>
Company: <u>Windward</u>	Company: <u>HUB</u>
Date/Time: <u>6/16/20 15:48</u>	Date/Time: <u>6-22-2020 1011</u>

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:



 200 West Mercer Street
 Suite 401
 Seattle, WA 98119
 Tel: (206) 378-1364
 Fax: (206) 217-9343

* Distribution: White copies accompany shipment; yellow retained by consignor.

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-080
 Date Started: 8-10-2020
 Sample ID: LDW20-55340A

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: DK Grey Silt/Clay

Calgon Batch: 24

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	204
	Tare Wt	1.5935
	Wet Wt + Tare	32.9897
	Dry Wt + Tare	14.3620
Test Sample	Tare No.	204
	Tare Wt	51.3112
	Wet Wt + Tare	89.3512
	Dry Wt + Tare	53.3685
	Cylinder #	C-29

Tare Weight	51.3274
4	-
10	51.3309
18	51.7004
35	51.8557
60	51.8680
120	52.0036
230	52.5539
Pan	0.8285

Pipette Analysis

8/15/2020	Tare #	Tare Weight	Dry Weight
8:45:00 AM			
8:45:20 AM	1	1.5886	1.8940
8:46:51 AM	2	1.5875	1.8537
8:52:25 AM	3	1.6073	1.7812
9:14:41 AM	4	1.5863	1.6949
10:44:00 AM	5	1.5890	1.6586
4:41:00 PM	6	1.5960	1.6453
6:53:00 AM	7	1.5982	1.6376

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-080
 Date Started: 8-10-2020
 Sample ID: LDW 20 - 55340 B

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: Dark Grey Silt/clay

Calgon Batch: 24

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	212
	Tare Wt	1.5955
	Wet Wt + Tare	33.2471
	Dry Wt + Tare	14.4589
Test Sample	Tare No.	212
	Tare Wt	50.7462
	Wet Wt + Tare	89.3042
	Dry Wt + Tare	52.7233
	Cylinder #	C-23

Tare Weight	50.7563
4	-
10	-
18	51.0714
35	51.2326
60	51.3227
120	51.4681
230	52.0072
Pan	0.7608

Pipette Analysis

8/15/2020	Tare #	Tare Weight	Dry Weight
8:50:00 AM			
8:50:20 AM	1	1.6024	1.9097
8:51:51 AM	2	1.5954	1.8570
8:57:25 AM	3	1.6113	1.7921
9:19:41 AM	4	1.6109	1.7239
10:49:00 AM	5	1.5968	1.6681
4:46:00 PM	6	1.6137	1.6639
6:58:00 AM	7	1.5974	1.6366

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-080
 Date Started: 8-10-2020
 Sample ID: LDW20-55340C

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: Dark Grey Silt/clay

Calgon Batch: 24

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	216
	Tare Wt	1.5997
	Wet Wt + Tare	31.1567
	Dry Wt + Tare	13.6339
Test Sample	Tare No.	216
	Tare Wt	51.5155
	Wet Wt + Tare	90.2026
	Dry Wt + Tare	53.6960
	Cylinder #	C-21

Tare Weight	51.5278
4	-
10	51.5290
18	51.8636
35	52.0433
60	52.0509
120	52.2024
230	52.7513
Pan	0.9411

Pipette Analysis

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8/15/2020	Tare #	Tare Weight	Dry Weight
8:55:00 AM			
8:55:20 AM	1	1.6112	1.9168
8:56:51 AM	2	1.5974	1.8588
9:02:25 AM	3	1.5934	1.7737
9:24:41 AM	4	1.5899	1.7029
10:54:00 AM	5	1.6080	1.6807
4:51:00 PM	6	1.5896	1.6391
7:03:00 AM	7	1.5964	1.6375

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-080
 Date Started: 8-10-2020
 Sample ID: LDW20-553573 HB

Client: Anchor
 Date Complete: _____
 Tested by: HLBenny

Sample Description: Dk Grey silt/clay

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	238
	Tare Wt	1.5738
	Wet Wt + Tare	36.3317
	Dry Wt + Tare	12.3004
Test Sample	Tare No.	238
	Tare Wt	51.9199
	Wet Wt + Tare	95.8902
	Dry Wt + Tare	53.7936
	Cylinder #	C-53

Sieve Analysis

Tare Weight	51.9333
4	-
10	52.1069
18	52.5936
35	52.8919
60	53.1183
120	53.3108
230	53.4798
Pan	0.3409

Pipette Analysis

8/15/2020	Tare #	Tare Weight	Dry Weight
9:00:00 AM			
9:00:20 AM	1	1.6001	1.8608
9:01:51 AM	2	1.5936	1.8353
9:07:25 AM	3	1.5811	1.7541
9:29:41 AM	4	1.5715	1.6865
10:59:00 AM	5	1.5748	1.6481
4:56:00 PM	6	1.5907	1.6424
7:08:00 AM	7	1.5767	1.6173

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-080
 Date Started: 8-10-2020
 Sample ID: LDW20-55345

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: DK Grey silt/clay

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	243
	Tare Wt	1.5984
	Wet Wt + Tare	37.1901
	Dry Wt + Tare	13.02451
Test Sample	Tare No.	243
	Tare Wt	52.1403
	Wet Wt + Tare	95.7354
	Dry Wt + Tare	53.1300
	Cylinder #	C-15

Sieve Analysis

Tare Weight	52.1498
4	—
10	52.1500
18	52.4734
35	52.6776
60	52.7206
120	52.8021
230	52.9144
Pan	0.2108

Pipette Analysis

8/15/2020	Tare #	Tare Weight	Dry Weight
9:05:00 AM			
9:05:20 AM	1	1.5933	1.8832
9:06:51 AM	2	1.5951	1.8669
9:12:25 AM	3	1.5996	1.7847
9:34:41 AM	4	1.5862	1.7092
11:04:00 AM	5	1.5862	1.6582
5:01:00 PM	6	1.5940	1.6500
7:13:00 AM	7	1.5860	1.6302

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-080
 Date Started: 8-10-2020
 Sample ID: LDW20-55342

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: Dark Grey silt/clay

Calgon Batch:

Temperature:

Solids Content

Sieve Analysis

Moisture Content	Tare No.	224
	Tare Wt	1.6085
	Wet Wt + Tare	45.2712
	Dry Wt + Tare	16.5731
Test Sample	Tare No.	224
	Tare Wt	52.0227
	Wet Wt + Tare	92.3639
	Dry Wt + Tare	53.2841
	Cylinder #	C-18

Tare Weight	52.0348
4	-
10	52.0468
18	52.3982
35	52.5690
60	52.6480
120	52.7161
230	52.8971
Pan	0.3923

Pipette Analysis

8/15/2020	Tare #	Tare Weight	Dry Weight
9:10:00 AM			
9:10:20 AM	1	1.5974	1.8810
9:11:51 AM	2	1.58647	1.8409
9:17:25 AM	3	1.5746	1.7515
9:39:41 AM	4	1.5899	1.7059
11:09:00 AM	5	1.5809	1.6559
5:06:00 PM	6	1.5769	1.6310
7:18:00 AM	7	1.5864	1.6395

HLB

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-080
 Date Started: 8-10-2020
 Sample ID: LDW20-55351

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: Dk Grey silt/clay

Calgon Batch: 24

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	206
	Tare Wt	1.5943
	Wet Wt + Tare	39.6629
	Dry Wt + Tare	14.3886
Test Sample	Tare No.	206
	Tare Wt	50.7031
	Wet Wt + Tare	92.3247
	Dry Wt + Tare	51.7058 ^{BB #B}
	Cylinder #	C-75

Tare Weight	50.7181
4	
10	50.7216
18	51.0360
35	51.2462
60	51.3385
120	51.4078
230	51.5053
Pan	0.2038

Pipette Analysis

8/15/2020	Tare #	Tare Weight	Dry Weight
9:15:00 AM			
9:15:20 AM	1	1.5711	1.8488
9:16:51 AM	2	1.5861	1.8512
9:22:25 AM	3	1.5904	1.7864
9:44:41 AM	4	1.5779	1.7110
11:14:00 AM	5	1.5778	1.6646
5:11:00 PM	6	1.5844	1.6447
7:23:00 AM	7	1.5845	1.6311

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-080
 Date Started: 8-10-2020
 Sample ID: LDW20-55348

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: DK Grey Silt/Clay

Calgon Batch: 24

Temperature: 21

Solids Content

Sieve Analysis

Moisture Content	Tare No.	202
	Tare Wt	1.5916
	Wet Wt + Tare	32.3484
	Dry Wt + Tare	11.4643
Test Sample	Tare No.	202
	Tare Wt	49.9856
	Wet Wt + Tare	90.5257
	Dry Wt + Tare	51.0738
	Cylinder #	C-09

Tare Weight	50.0015
4	
10	50.0022
18	50.3751
35	50.5382
60	50.6190
120	50.6838
230	50.7946
Pan	0.2742

Pipette Analysis

8/15/2020	Tare #	Tare Weight	Dry Weight
9:20:00 AM			
9:20:20 AM	1	1.5861	1.8452
9:21:51 AM	2	1.5989	1.8424
9:27:25 AM	3	1.5901	1.7700
9:49:41 AM	4	1.5812	1.7042
11:19:00 AM	5	1.5930	1.6729
5:16:00 PM	6	1.5854	1.6415
7:28:00 AM	7	1.5872	1.6319

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-080
 Date Started: 8-10-2020
 Sample ID: LDW20-55349

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: DK Grey silt/clay

Calgon Batch: 24

Temperature: 21

Solids Content

Moisture Content	Tare No.	215
	Tare Wt	1.5915
	Wet Wt + Tare	35.7927
	Dry Wt + Tare	11.9322
Test Sample	Tare No.	215
	Tare Wt	51.0035
	Wet Wt + Tare	90.5334
	Dry Wt + Tare	52.0938
	Cylinder #	C-61

Sieve Analysis

Tare Weight	51.0198
4	—
10	51.0283
18	51.3666
35	51.5820
60	51.6014
120	51.7061
230	51.8166
Pan	0.2454

Pipette Analysis

8/15/2020	Tare #	Tare Weight	Dry Weight
9:25:00 AM			
9:25:20 AM	1	1.5945	1.8323
9:26:51 AM	2	1.5880	1.8139
9:32:25 AM	3	1.6023	1.7708
9:54:41 AM	4	1.5760	1.6889
11:24:00 AM	5	1.5732	1.6449
5:21:00 PM	6	1.5931	1.6451
7:33:00 AM	7	1.5937	1.6350

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-080
 Date Started: 8-10-2020
 Sample ID: LDW20-55346

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: _____

Calgon Batch: 24

Temperature: 21

Solids Content

Moisture Content	Tare No.	231
	Tare Wt	1.5916
	Wet Wt + Tare	42.5857
	Dry Wt + Tare	17.0201
Test Sample	Tare No.	231
	Tare Wt	51.7421
	Wet Wt + Tare	90.1796
	Dry Wt + Tare	53.0091
	Cylinder #	C-16

Sieve Analysis

Tare Weight	51.7600
4	—
10	—
18	52.1518
35	52.3382
60	52.3501
120	52.4368
230	52.6357
Pan	0.4564

Pipette Analysis

8/15/2020	Tare #	Tare Weight	Dry Weight
9:30:00 AM			
9:30:20 AM	1	1.5775	1.8630
9:31:51 AM	2	1.6043	1.8616
9:37:25 AM	3	1.5812	1.7709
9:59:41 AM	4	1.5707	1.7026
11:29:00 AM	5	1.5881	1.6733
5:26:00 PM	6	1.5837	1.6471
7:38:00 AM	7	1.5866	1.6338

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-080
 Date Started: 8-10-2020
 Sample ID: LDW20-55160

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: Grey Sandy Silt/Clay

Calgon Batch: 24

Temperature: 21

Solids Content

Moisture Content	
Tare No.	245
Tare Wt	1.5908
Wet Wt + Tare	53.7371
Dry Wt + Tare	34.6633
Test Sample	
Tare No.	245
Tare Wt	51.8609
Wet Wt + Tare	94.4821
Dry Wt + Tare	71.0203
Cylinder #	C-17

Sieve Analysis

Tare Weight	51.8727
4	—
10	51.9004
18	51.9551
35	52.1775
60	52.4683
120	59.0475
230	68.8945
Pan	2.1604

Pipette Analysis

8/15/2020	Tare #	Tare Weight	Dry Weight
9:35:00 AM			
9:35:20 AM	1	1.5971	1.8087
9:36:51 AM	2	1.5982	1.7372
9:42:25 AM	3	1.5807	1.6768
10:04:41 AM	4	1.5859	1.6577
11:34:00 AM	5	1.5895	1.6414
5:31:00 PM	6	1.6000	1.6421
7:43:00 AM	7	1.6071	1.6406

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-080
 Date Started: 8-10-2020
 Sample ID: LDW20-55204

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: Dark Grey Sandy s.l./Clay

Calgon Batch: 24

Temperature: 21

Solids Content

Moisture Content	Tare No.	214
	Tare Wt	1.5971
	Wet Wt + Tare	52.2112
	Dry Wt + Tare	37.1853
Test Sample	Tare No.	214
	Tare Wt	50.9554
	Wet Wt + Tare	129.2784 148.2814
	Dry Wt + Tare	112.7489
	Cylinder #	C-57

Sieve Analysis

Tare Weight	50.9649
4	—
10	51.0108
18	51.2216
35	57.3523
60	
120	104.2534
230	111.7276
Pan	0.8012

Now on #10
#B

Pipette Analysis

8/15/2020	Tare #	Tare Weight	Dry Weight
9:40:00 AM			
9:40:20 AM	1	1.5971	1.7369
9:41:51 AM	2	1.5963	1.7069
9:47:25 AM	3	1.5895	1.6660
10:09:41 AM	4	1.5974	1.6583
11:39:00 AM	5	1.5916	1.6375
5:36:00 PM	6	1.5914	1.6303
7:48:00 AM	7	1.5886	1.6248

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-080
 Date Started: 8-10-2020
 Sample ID: LDW20-35210

Client: Anchor

Date Complete: _____
 Tested by: HBenny

Sample Description: DK Grey Sand silt/clay

Calgon Batch: 24

Temperature: 21

Solids Content

Moisture Content	Tare No.	220
	Tare Wt	1.5881
	Wet Wt + Tare	56.584993 HB
	Dry Wt + Tare	39.7562
Test Sample	Tare No.	220
	Tare Wt	51.6169
	Wet Wt + Tare	92.7872
	Dry Wt + Tare	73.9044
	Cylinder #	C-59

Sieve Analysis

Tare Weight	51.6237
4	—
10	51.7909
18	51.8905
35	52.2978
60	56.2000
120	68.73293 HB
230	73.1479
Pan	0.7815

Pipette Analysis

8/15/2020	Tare #	Tare Weight	Dry Weight
9:45:00 AM			
9:45:20 AM	1	1.5923	1.7508
9:46:51 AM	2	1.5739	1.6903
9:52:25 AM	3	1.5874	1.6740
10:14:41 AM	4	1.5851	1.6481
11:44:00 AM	5	1.5854	1.6327
5:41:00 PM	6	1.5928	1.6320
7:53:00 AM	7	1.5785	1.6101

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-080
 Date Started: 8-10-2020
 Sample ID: LDW20-55423

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: DK Grey silt/clay w/ twigs + debris

Calgon Batch: 24

Temperature: 21

Solids Content

Moisture Content	Tare No.	240
	Tare Wt	1.6095
	Wet Wt + Tare	48.3346
	Dry Wt + Tare	23.7261
Test Sample	Tare No.	240
	Tare Wt	52.0165
	Wet Wt + Tare	90.0742
	Dry Wt + Tare	62.0685
	Cylinder #	C-38

Sieve Analysis

Tare Weight	52.0327
4	52.3893
10	53.0430
18	53.7442
35	54.8329
60	56.2589
120	57.9043
230	60.5990
Pan	1.4229

Pipette Analysis

8/15/2020	Tare #	Tare Weight	Dry Weight
9:50:00 AM			
9:50:20 AM	1	1.5809	1.7727
9:51:51 AM	2	1.5789	1.7151
9:57:25 AM	3	1.5896	1.6810
10:19:41 AM	4	1.5983	1.6596
11:49:00 AM	5	1.5782	1.6213
5:46:00 PM	6	1.5771	1.6123
7:58:00 AM	7	1.5818	1.6111

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-080
 Date Started: 8-10-2020
 Sample ID: LDW20-SC392

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Clean, Brown Med Sand

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	241
	Tare Wt	1.6045
	Wet Wt + Tare	40.4465
	Dry Wt + Tare	38.4814
Test Sample	Tare No.	241
	Tare Wt	51.6966
	Wet Wt + Tare	105.4574
	Dry Wt + Tare	102.4802
	Cylinder #	C-22

Sieve Analysis

Tare Weight	51.6990
4	52.6839
10	56.0069
18	71.4048
35	95.2537
60	101.0671
120	102.1703
230	102.2582
Pan	0.0341

Pipette Analysis

8/15/2020	Tare #	Tare Weight	Dry Weight
10:00:00 AM			
10:00:20 AM	1	1.6010	1.6200
10:01:51 AM	2	1.5941	
10:07:25 AM	3	1.5909	
10:29:41 AM	4	1.6065	
11:59:00 AM	5	1.5920	
5:56:00 PM	6	1.5847	
8:08:00 AM	7	1.5800	

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-080
 Date Started: 8-10-2020
 Sample ID: LDW20-SS411

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: DK Grey Sandy Silt/Clay

Calgon Batch:

Temperature:

Solids Content

Sieve Analysis

Moisture Content	Tare No.	235
	Tare Wt	1.5906
	Wet Wt + Tare	48.8786
	Dry Wt + Tare	33.3889
Test Sample	Tare No.	235
	Tare Wt	51.4362
	Wet Wt + Tare	91.37653 HB
	Dry Wt + Tare	74.26040 HB
	Cylinder #	C-72

Tare Weight	51.4501
4	—
10	51.5705
18	51.8506
35	52.6770
60	58.2127
120	66.4060
230	71.0689
Pan	1.5148

Pipette Analysis

8/15/2020	Tare #	Tare Weight	Dry Weight
9:55:00 AM			
9:55:20 AM	1	1.5782	1.7359
9:56:51 AM	2	1.5818	1.6873
10:02:25 AM	3	1.5760	1.6578
10:24:41 AM	4	1.5949	1.6561
11:54:00 AM	5	1.5939	1.6374
5:51:00 PM	6	1.5781	1.6114
8:03:00 AM	7	1.5802	1.6065

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: August 15, 2020
Date Finished: August 22, 2020

Client: AnchorQEA
HLB Project #: 20-081
Tested By: H Benny

CASE NARRATIVE

1. Sixteen 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 the job was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. The samples contained organic matter which may have broken down during the oven drying and sieving process, affecting the grain size analysis.
4. The data is provided in summary tables and plots.
5. There were no noted anomalies in the testing or samples on project.

Reviewed by:



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: August 15, 2020
Date Finished: August 22, 2020

Client: AnchorQEA
Project #: 20-081
Tested by: H Benny

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
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
LDW20-SC345	100.0	100.0	100.0	100.0	97.0	96.0	95.4	94.8	93.2	87.0	22.6	18.0	12.6	7.0
	100.0	100.0	100.0	97.4	96.3	96.2	95.3	93.6	87.2	24.4	19.2	13.0	9.6	6.9
	100.0	100.0	100.0	97.1	95.9	95.8	94.9	93.2	85.8	22.4	18.2	12.7	9.3	6.8
LDW20-SC340	100.0	100.0	100.0	98.0	95.8	92.6	89.9	84.1	75.3	21.7	14.5	10.7	7.7	5.7
LDW20-SC342	100.0	100.0	100.0	97.8	96.3	95.2	94.3	92.1	84.8	24.5	16.8	12.0	8.8	6.3
LDW20-SC346	100.0	100.0	100.0	98.1	97.0	96.9	96.0	94.1	83.1	30.3	25.7	17.0	12.7	8.6
LDW20-SC349	100.0	100.0	100.0	98.1	96.7	96.6	95.8	94.6	89.0	29.5	22.2	15.5	10.8	7.5
LDW20-SC348	100.0	100.0	99.9	97.5	95.9	95.1	94.5	93.6	88.5	24.6	21.9	15.3	10.8	7.5
LDW20-SC353	100.0	100.0	97.3	93.0	86.6	81.8	78.1	76.2	72.1	25.9	19.1	12.3	8.9	5.9
LDW20-SC351	100.0	100.0	99.9	98.0	96.6	95.8	95.2	94.4	89.3	23.7	21.1	16.2	12.1	8.3
LDW20-SC349-FD	100.0	100.0	100.0	97.9	96.5	96.3	95.1	93.6	85.9	31.8	25.6	17.3	12.4	8.7
LDW20-SC160C	100.0	100.0	100.0	99.5	98.7	97.4	83.1	51.3	37.1	19.4	11.5	8.5	6.0	4.4
LDW20-SC210B	100.0	100.0	99.6	98.9	97.7	96.7	74.6	50.3	37.1	19.2	12.7	8.9	6.6	4.5
LDW20-SC204B	100.0	100.0	99.7	99.3	98.5	96.7	71.3	39.8	26.3	17.5	10.0	7.3	5.4	4.0
LDW20-SS251	100.0	100.0	99.9	98.8	97.1	95.7	88.2	67.6	47.0	27.5	17.5	11.3	7.4	5.0
LDW20-SS264	100.0	100.0	99.6	97.7	96.1	93.7	89.5	74.7	53.3	27.4	17.5	11.5	7.6	5.5
LDW20-SS409	100.0	100.0	100.0	99.5	98.2	96.8	71.8	37.3	21.5	13.6	9.6	6.4	3.8	2.2
LDW20-SS310	100.0	100.0	99.9	98.5	97.4	96.7	92.8	68.6	43.2	26.0	16.3	10.7	6.8	4.2

Reviewed by: 

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: August 15, 2020
Date Finished: August 22, 2020

Client: AnchorQEA
HLB Project #: 20-081
Tested by: H Benny

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)
LDW20-SC345	0.0	0.0	3.0	1.0	0.7	0.5	1.6	6.2	64.4	4.6	5.5	5.6	7.0	94.8
	0.0	2.6	1.1	0.1	0.9	1.7	6.4	62.8	5.2	6.2	3.4	2.7	6.9	93.6
	0.0	2.9	1.2	0.1	0.9	1.7	7.4	63.4	4.3	5.5	3.3	2.5	6.8	93.2
LDW20-SC340	0.0	2.0	2.2	3.2	2.8	5.7	8.8	53.6	7.2	3.8	3.0	2.0	5.7	84.1
LDW20-SC342	0.0	2.2	1.4	1.1	1.0	2.2	7.3	60.3	7.7	4.8	3.2	2.5	6.3	92.1
LDW20-SC346	0.0	1.9	1.1	0.0	0.9	1.9	11.0	52.9	4.5	8.7	4.3	4.1	8.6	94.1
LDW20-SC349	0.0	1.9	1.4	0.1	0.9	1.2	5.6	59.5	7.3	6.7	4.7	3.3	7.5	94.6
LDW20-SC348	0.1	2.5	1.6	0.8	0.5	1.0	5.1	63.9	2.7	6.6	4.5	3.3	7.5	93.6
LDW20-SC353	2.7	4.3	6.4	4.8	3.7	1.9	4.1	46.2	6.8	6.8	3.4	2.9	5.9	76.2
LDW20-SC351	0.1	1.9	1.4	0.7	0.6	0.9	5.0	65.6	2.6	4.9	4.1	3.8	8.3	94.4
LDW20-SC349-FD	0.0	2.1	1.4	0.2	1.2	1.5	7.7	54.1	6.2	8.3	4.9	3.7	8.7	93.6
LDW20-SC160C	0.0	0.5	0.9	1.2	14.3	31.8	14.3	17.7	7.9	3.0	2.4	1.7	4.4	51.3
LDW20-SC210B	0.4	0.7	1.1	1.0	22.1	24.3	13.2	17.9	6.5	3.8	2.4	2.0	4.5	50.3
LDW20-SC204B	0.3	0.4	0.9	1.8	25.4	31.5	13.5	8.8	7.5	2.7	1.9	1.4	4.0	39.8
LDW20-SS251	0.1	1.1	1.8	1.3	7.6	20.6	20.6	19.5	10.0	6.2	3.9	2.4	5.0	67.6
LDW20-SS264	0.4	1.9	1.6	2.4	4.2	14.9	21.4	25.9	10.0	5.9	4.0	2.0	5.5	74.7
LDW20-SS409	0.0	0.5	1.3	1.3	25.1	34.4	15.8	7.9	4.0	3.2	2.6	1.7	2.2	37.3
LDW20-SS310	0.1	1.4	1.1	0.8	3.8	24.2	25.4	17.2	9.7	5.6	3.8	2.6	4.2	68.6

Reviewed by: 

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: August 15, 2020
Date Finished: August 22, 2020

Client: AnchorQEA
HLB Project #: 20-081
Tested by: H Benny

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
LDW20-SC345	100.0	100.0	100.0	97.0	96.0	95.4	94.8	93.2	87.0	22.6	18.0	12.6	9.6	7.0
	100.0	100.0	100.0	97.4	96.3	96.2	95.3	93.6	87.2	24.4	19.2	13.0	9.6	6.9
	100.0	100.0	100.0	97.1	95.9	95.8	94.9	93.2	85.8	22.4	18.2	12.7	9.3	6.8
AVE	100.0	100.0	100.0	97.2	96.1	95.8	95.0	93.4	86.7	23.1	18.5	12.7	9.5	6.9
STDEV	0.0	0.0	0.0	0.1	0.2	0.3	0.2	0.2	0.6	0.9	0.5	0.2	0.1	0.1
%RSD	0.0	0.0	0.0	0.1	0.2	0.4	0.2	0.2	0.7	3.9	2.8	1.5	1.4	1.1

The Triplicate Applies To The Following Samples

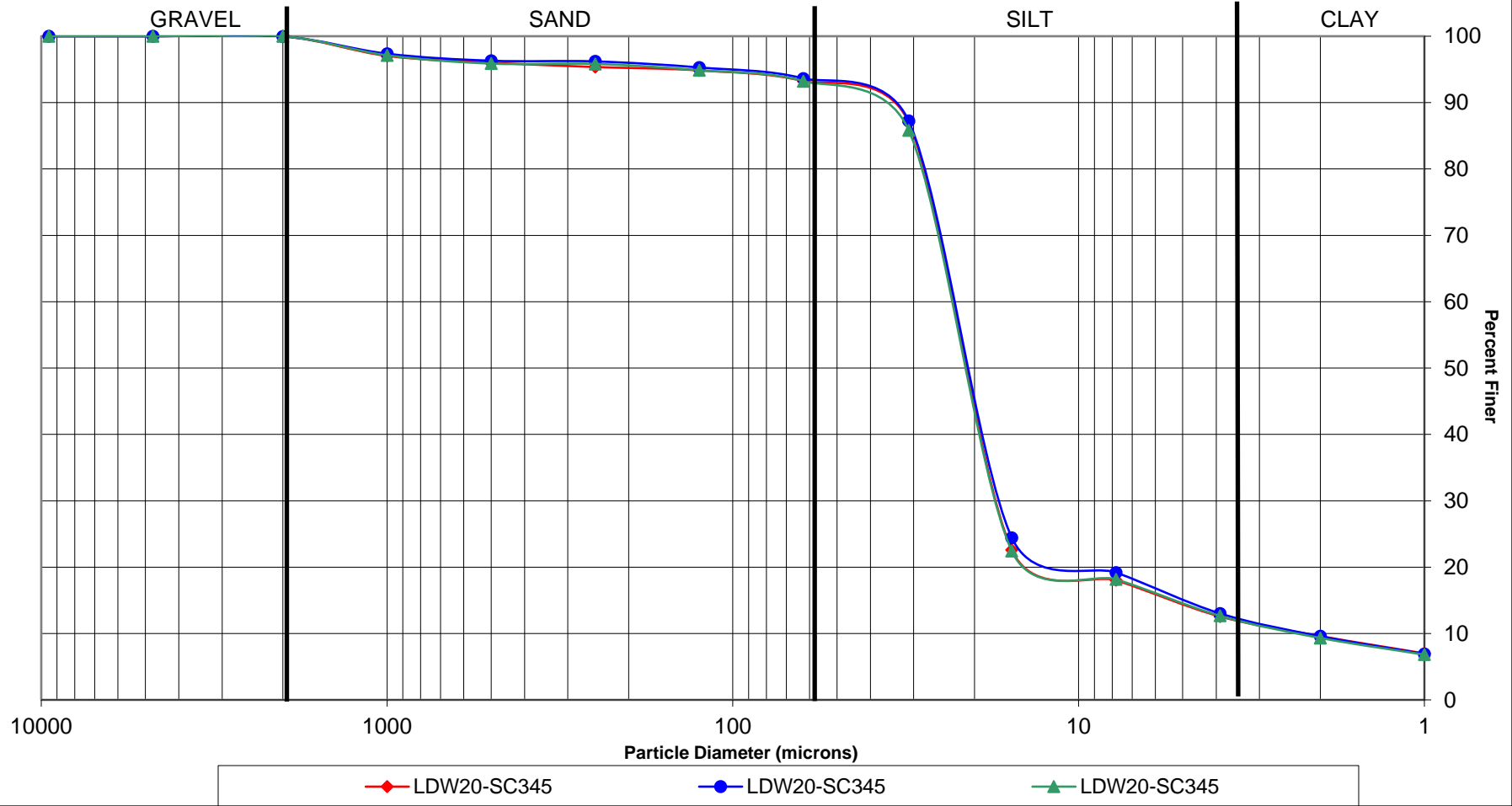
Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
LDW20-SC345	6/22/2020	8/15/2020	8/22/2020	102.0		14.3
	6/22/2020	8/15/2020	8/22/2020	99.3		13.4
	6/22/2020	8/15/2020	8/22/2020	97.6		13.4
LDW20-SC340	6/22/2020	8/15/2020	8/22/2020	101.2		14.7
LDW20-SC342	6/22/2020	8/15/2020	8/22/2020	98.5		14.8
LDW20-SC346	6/22/2020	8/15/2020	8/22/2020	98.1		15.9
LDW20-SC349	6/22/2020	8/15/2020	8/22/2020	99.8		14.4
LDW20-SC348	6/22/2020	8/15/2020	8/22/2020	98.4		14.9
LDW20-SC353	6/22/2020	8/15/2020	8/22/2020	99.3		12.0
LDW20-SC351	6/22/2020	8/15/2020	8/22/2020	98.4		15.3
LDW20-SC349-FD	6/22/2020	8/15/2020	8/22/2020	101.6		14.9
LDW20-SC160C	6/22/2020	8/15/2020	8/22/2020	100.4		12.7
LDW20-SC210B	6/22/2020	8/15/2020	8/22/2020	101.6		12.4
LDW20-SC204B	6/22/2020	8/15/2020	8/22/2020	100.8		10.5
LDW20-SS251	6/22/2020	8/15/2020	8/22/2020	104.8		14.2
LDW20-SS264	6/22/2020	8/15/2020	8/22/2020	101.7		15.1
LDW20-SS264	6/22/2020	8/15/2020	8/22/2020	101.7		15.1
LDW20-SS409	6/22/2020	8/15/2020	8/22/2020	103.1		9.7
LDW20-SS310	6/22/2020	8/15/2020	8/22/2020	103.7		13.2

Notes to the Testing: Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution.

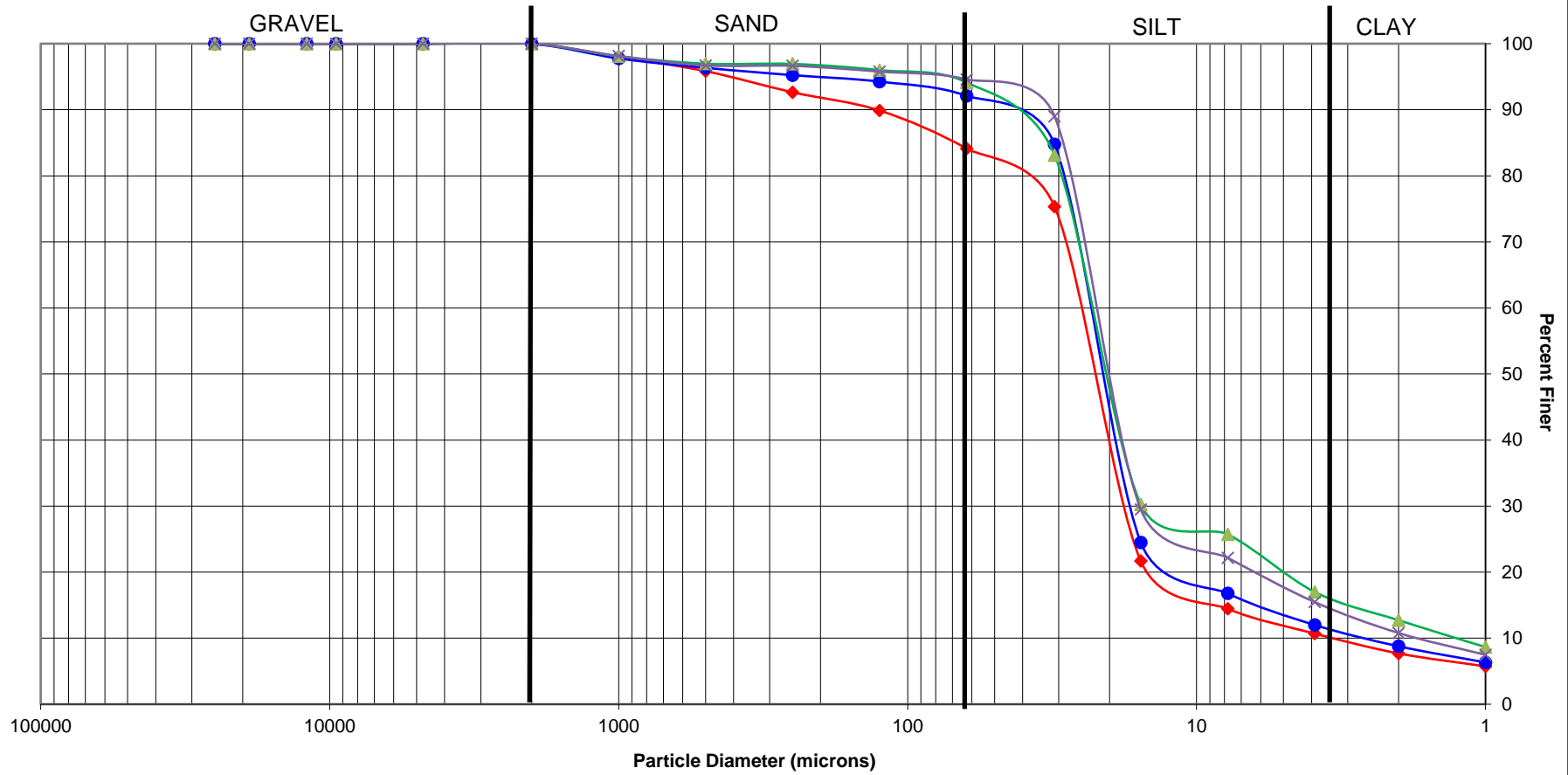
Reviewed by:  _____

PSEP Grain Size Distribution

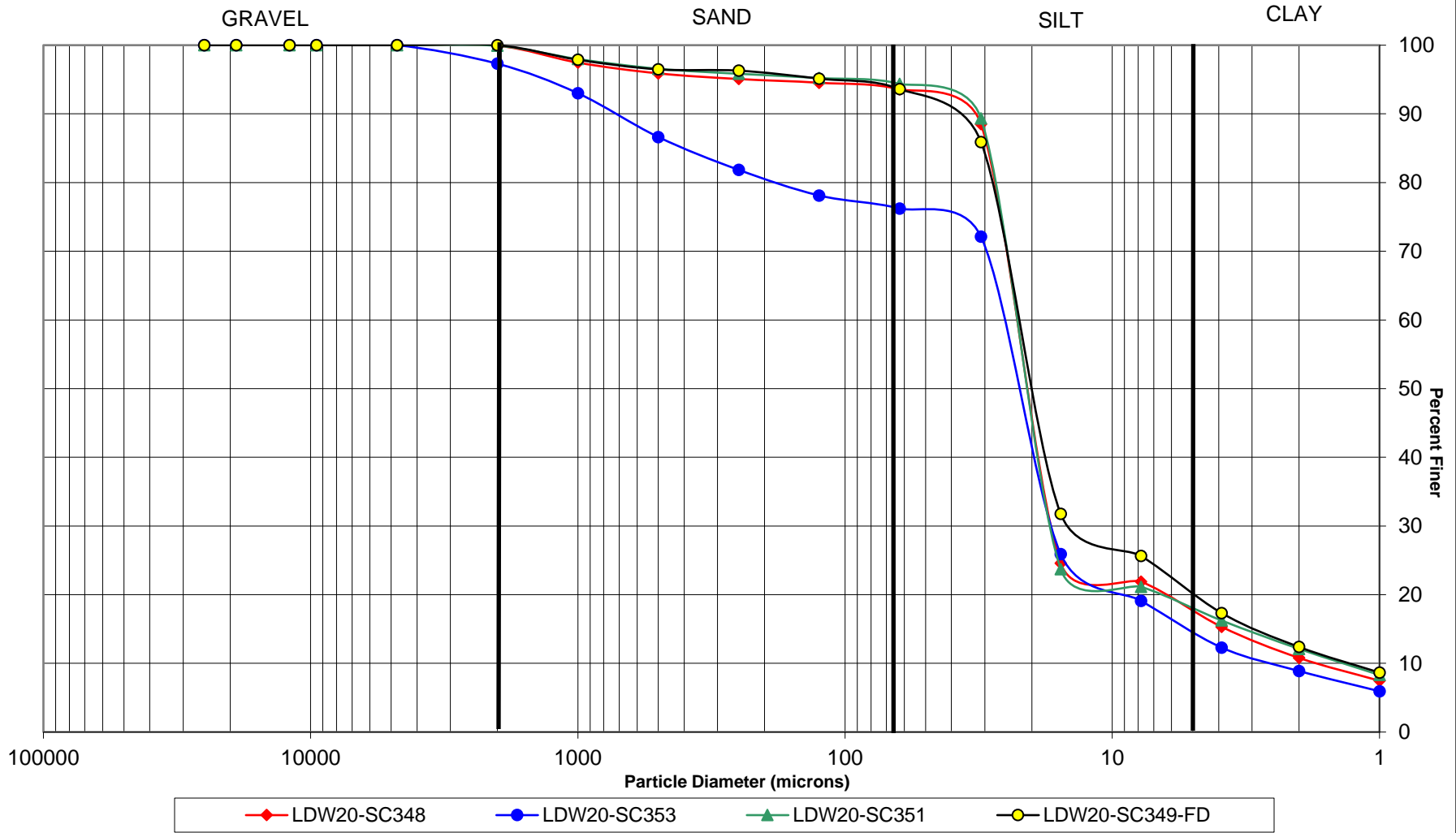
Triplicate Sample Plot



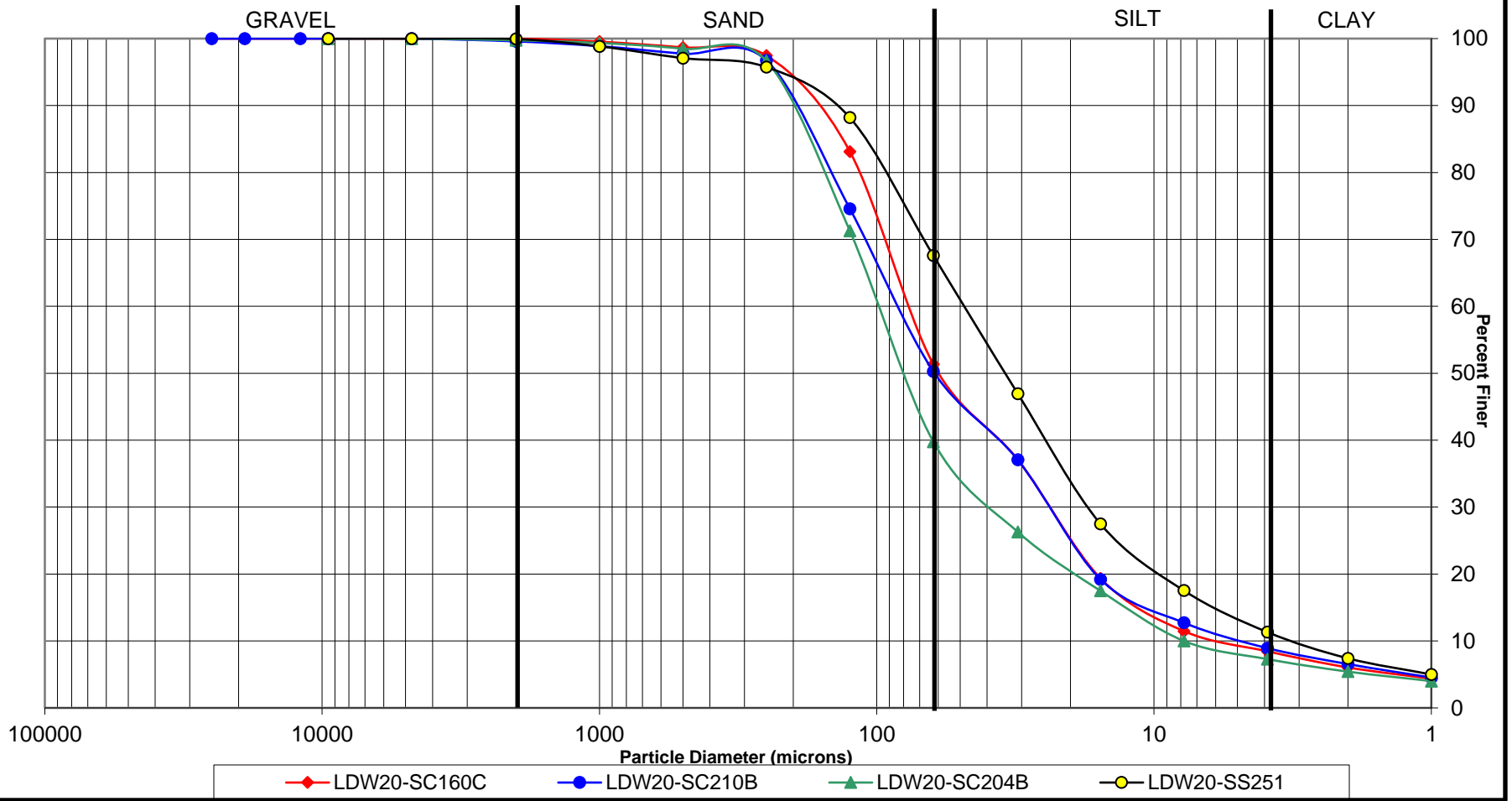
PSEP Grain Size Distribution



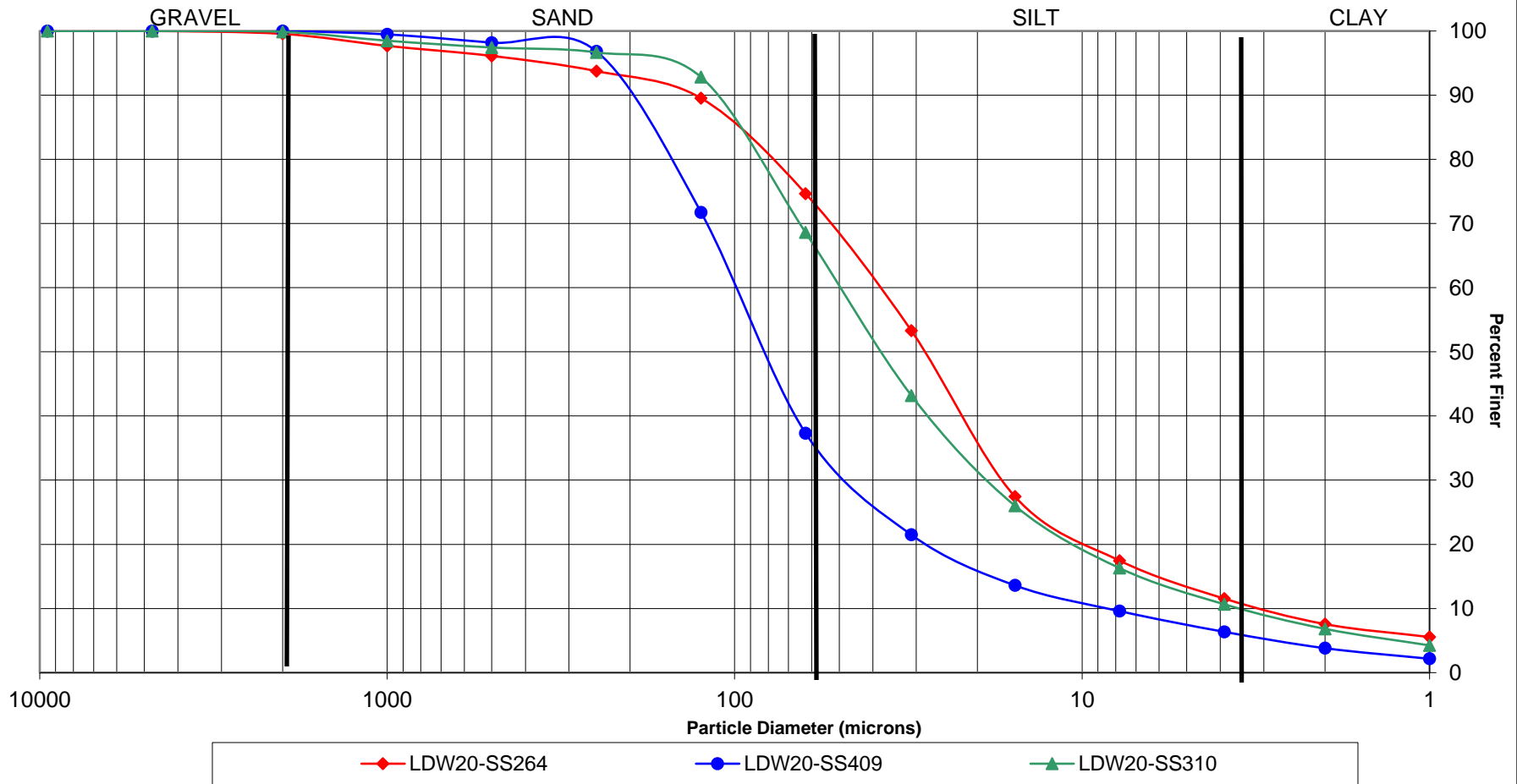
PSEP Grain Size Distribution



PSEP Grain Size Distribution



PSEP Grain Size Distribution



CHAIN-OF-CUSTODY/TEST REQUEST FORM

No 3911

Project/Client Name: Duwamish AOC4
 Project Number: 180067-02.02
 Contact Name: A Vanderwaert
 Sampled By: Windward

Ship to: Harold L Berry & Assoc
 Attn: Harold Berry
 Shipper: Cowier
 Form filled out by: AV

Shipping Date: 6/15/20
 Airbill Number: NA
 Turnaround requested: Std

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)					Comments / Instructions (jar tag number(s))
6/15/20	0718	LDW20-SC340	1	Sediment						
	0724	SC342	1							
	0735	SC340	1							
	0856	SC345	1							
	0910	SC349	1							
	0927	SC348	1							
	0934	SC353	1							
	0940	SC351	1							
	0910	SC349FD	1							
	1129	SC160C	1							
	1239	SC210B	1							
6/15/20	1327	LDW20-SC204B	1	Sediment						
Total Number of Containers			12							

Purchase Order / Statement of Work # CLF-0427206

1) Released by: A Vanderwaert 2) Released by: H Berry
 Print name: A Vanderwaert Print name: Harold Berry
 Signature: A Vanderwaert Signature: H Berry
 Company: Windward Company: HLB
 Date/Time: 6/15/20 1634 Date/Time: 6-22-2020 1011

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

200 West Mercer Street
 Suite 401
 Seattle, WA 98119
 Tel: (206) 378-1364
 Fax: (206) 217-9343



* Distribution: White copies accompany shipment; yellow retained by consignor.

CHAIN-OF-CUSTODY/TEST REQUEST FORM

No 3215

Project/Client Name: Duwamish AOCY Ship to: Harold L Benny and Associates
 Project Number: 180067-02:02 Attn: Harold Benny Shipping Date: 6/18/20
 Contact Name: Amera Vandervort Shipper: ARR courier Airbill Number: NA
 Sampled By: RM, JH Form filled out by: R Mathomet Turnaround requested: std

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)				Comments / Instructions (jar tag number(s))
					Cr. Size	PSEP			
6/18/20	0911	LDW20-SS251	1	sediment	X				
	0939	-SS264	1	↓	X				
	1036	-SS409	1		X				
	1119	-SS310	1		X				
	1225	-SS318	1		X				
	1242	-SS322	1		X				
	1304	-SS359	1		X				
	1330	-SS377	1		X				
	1407	-SS379	1		X				
	1447	-SS388	1	X					
		Total Number of Containers	10						

Purchase Order / Statement of Work # UF-0427206

1) Released by: <u>A Vandervort</u>	2) Released by: <u>H Benny</u>
Print name: <u>A Vandervort</u>	Print name: <u>H Benny</u>
Signature: <u>[Signature]</u>	Signature: <u>[Signature]</u>
Company: <u>ARR</u>	Company: <u>HLB</u>
Date/Time: <u>6/18/20 1610</u>	Date/Time: <u>6-22-2020 1011</u>

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

* Distribution: White copies accompany shipment; yellow retained by consignee.

200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: (206) 378-1364
Fax: (206) 217-9343

Wind/Ward
environmental LLC

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-081
 Date Started: 8-15-2020
 Sample ID: LDW20-SC345A

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: DK Grey Silt/Clay

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	209
	Tare Wt	1.6054
	Wet Wt + Tare	33.3161
	Dry Wt + Tare	13.8821
Test Sample	Tare No.	50.8293 209 #B
	Tare Wt	50.8293
	Wet Wt + Tare	90.6081
	Dry Wt + Tare	52.2347
	Cylinder #	L-49

Sieve Analysis

Tare Weight	50.8372
4	—
10	50.8388
18	51.2945
35	51.4505
60	51.5516
120	51.6307
230	51.8799
Pan	0.3858

Pipette Analysis

8/24/2020	Tare #	Tare Weight	Dry Weight
9:36:00 AM			
9:36:20 AM	1	1.5882	1.8857
9:37:49 AM	2	1.5954	1.6745
9:43:15 AM	3	1.6003	1.6849
10:04:59 AM	4	1.5949	1.6657
11:32:00 AM	5	1.5830	1.6373
5:20:00 PM	6	1.5995	1.6449
7:12:00 AM	7	1.5756	1.6131

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-081
 Date Started: 8-15-2020
 Sample ID: LDW20-SC345B

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: DK Grey Silt/clay

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	244
	Tare Wt	1.5868
	Wet Wt + Tare	41.8621
	Dry Wt + Tare	17.1527
Test Sample	Tare No.	244
	Tare Wt	52.2561
	Wet Wt + Tare	89.2736
	Dry Wt + Tare	53.5553
	Cylinder #	C-13

Sieve Analysis

Tare Weight	52.2645
4	-
10	52.2691
18	52.6418
35	52.7931
60	52.8077
120	52.4386
230	53.1753
Pan	0.3499

Pipette Analysis

8/24/2020	Tare #	Tare Weight	Dry Weight
9:38:00 AM			
9:38:20 AM	1	1.5791	1.8655
9:39:49 AM	2	1.5781	1.8459
9:45:15 AM	3	1.5800	1.6668
10:06:59 AM	4	1.5776	1.6493
11:34:00 AM	5	1.5847	1.6386
5:22:00 PM	6	1.5971	1.6411
7:14:00 AM	7	1.5773	1.6136

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-081
 Date Started: 8-15-2020
 Sample ID: LDW20-SC345C

Client: Anchor
 Date Complete: _____
 Tested by: HLBenny

Sample Description: DK Grey Silt/clay

Calgon Batch: 25

Temperature: 22

Solids Content

Sieve Analysis

Moisture Content	Tare No.	200	
	Tare Wt	16.127	
	Wet Wt + Tare	40.6106	
	Dry Wt + Tare	16.64701	HB
Test Sample	Tare No.	200	
	Tare Wt	51.6755	
	Wet Wt + Tare	88.8372	
	Dry Wt + Tare	53.0261	
	Cylinder #	C51	

Tare Weight	51.6815
4	-
10	8-
18	52.0942
35	52.2732
60	52.2807
120	52.4170
230	52.6541
Pan	0.3777

Pipette Analysis

8/24/2020	Tare #	Tare Weight	Dry Weight
9:40:00 AM			
9:40:20 AM	1	1.5802	1.8712
9:41:49 AM	2	1.5755	1.8443
9:47:15 AM	3	1.5676	1.6499
10:08:59 AM	4	1.5876	1.6574
11:36:00 AM	5	1.5866	1.6402
5:24:00 PM	6	1.5930	1.6368
7:16:00 AM	7	1.5945	1.6309

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-081
 Date Started: 8-15-2020
 Sample ID: LDW20-SC340

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Dk Grey silt/clay

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	205
	Tare Wt	1.5960
	Wet Wt + Tare	40.8876
	Dry Wt + Tare	18.4150
Test Sample	Tare No.	205
	Tare Wt	50.0155
	Wet Wt + Tare	90.92434 HB
	Dry Wt + Tare	53.5024
	Cylinder #	C-03

Sieve Analysis

Tare Weight	50.0234
4	—
10	50.0297
18	50.3716
35	50.7524
60	51.3116
120	51.7957
230	52.8015
Pan	0.7220

Pipette Analysis

8/24/2020	Tare #	Tare Weight	Dry Weight
9:42:00 AM			
9:42:20 AM	1	1.5874	1.8944
9:43:49 AM	2	1.5652	1.8423
9:49:15 AM	3	1.5701	1.6615
10:10:59 AM	4	1.5925	1.6589
11:38:00 AM	5	1.6006	1.6540
5:26:00 PM	6	1.5829	1.6259
7:18:00 AM	7	1.5948	1.6310

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-081
 Date Started: 8-15-2020
 Sample ID: LDW20-SC342

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: DK Grey Silt/clay

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	247
	Tare Wt	1.5852
	Wet Wt + Tare	30.8491
	Dry Wt + Tare	17.2167
Test Sample	Tare No.	247
	Tare Wt	51.8640
	Wet Wt + Tare	90.1697
	Dry Wt + Tare	53.5528
	Cylinder #	C-04

Sieve Analysis

Tare Weight	51.8761
4	-
10	51.8805
18	52.2355
35	52.4641
60	52.6417
120	52.7992
230	53.1459
Pan	0.4204

Pipette Analysis

8/24/2020	Tare #	Tare Weight	Dry Weight
9:44:00 AM			
9:44:20 AM	1	1.5964	1.9136
9:45:49 AM	2	1.68105	1.9034
9:51:15 AM	3	1.5994	1.6957
10:12:59 AM	4	1.5984	1.6695
11:40:00 AM	5	1.5965	1.6520
5:28:00 PM	6	1.5980	1.6430
7:20:00 AM	7	1.5969	1.6339

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-081
 Date Started: 8-15-2020
 Sample ID: LDW20-SC346

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: DK Grey silt/clay

Calgon Batch: 25

Temperature: 22

Solids Content

Sieve Analysis

Moisture Content	Tare No.	237
	Tare Wt	1.6122
	Wet Wt + Tare	42.1290
	Dry Wt + Tare	19.3168
Test Sample	Tare No.	237
	Tare Wt	51.1062
	Wet Wt + Tare	89.6872
	Dry Wt + Tare	52.6189
	Cylinder #	C-08

Tare Weight	51.1163
4	-
10	-
18	51.4373
35	51.6261
60	51.6332
120	51.7908
230	52.1065
Pan	0.5161

Pipette Analysis

8/24/2020	Tare #	Tare Weight	Dry Weight
9:46:00 AM			
9:46:20 AM	1	1.5902	1.9305
9:47:49 AM	2	1.5966	1.8988
9:53:15 AM	3	1.5935	1.7139
10:14:59 AM	4	1.5809	1.6857
11:42:00 AM	5	1.5875	1.6623
5:30:00 PM	6	1.5728	1.6329
7:22:00 AM	7	1.5720	1.6181

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-081
 Date Started: 8-15-2020
 Sample ID: LDW20-5C349

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: DK Grey Silty Clay

Calgon Batch: 24

Temperature: 22

Solids Content

Moisture Content	Tare No.	256
	Tare Wt	1.5926
	Wet Wt + Tare	40.6283
	Dry Wt + Tare	17.6140
Test Sample	Tare No.	256
	Tare Wt	51.5688
	Wet Wt + Tare	88.7214
	Dry Wt + Tare	52.7068
	Cylinder #	C-74

Sieve Analysis

Tare Weight	51.5779
4	—
10	—
18	51.8617
35	52.0795
60	52.0895
120	52.2224
230	52.4030
Pan	0.2779

Pipette Analysis

8/24/2020	Tare #	Tare Weight	Dry Weight
9:48:00 AM			
9:48:20 AM	1	1.5704	1.8758
9:49:49 AM	2	1.5944	1.8827
9:55:15 AM	3	1.5724	1.6789
10:16:59 AM	4	1.5785	1.6626
11:44:00 AM	5	1.5856	1.6492
5:32:00 PM	6	1.5936	1.6429
7:24:00 AM	7	1.5907	1.6249

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-081
 Date Started: 8-15-2020
 Sample ID: LDW20-SC348

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Dk Grey silt/clay

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	221
	Tare Wt	1.5995
	Wet Wt + Tare	34.9724
	Dry Wt + Tare	15.0157
Test Sample	Tare No.	221
	Tare Wt	51.9537
	Wet Wt + Tare	91.6794
	Dry Wt + Tare	53.2160
	Cylinder #	C-55

Sieve Analysis

Tare Weight	51.9622
4	—
10	51.9751
18	52.3672
35	52.6176
60	52.7490
120	52.8356
230	52.9907
Pan	0.2629

Pipette Analysis

8/24/2020	Tare #	Tare Weight	Dry Weight
9:50:00 AM			
9:50:20 AM	1	1.5901	1.9105
9:51:49 AM	2	1.5761	1.8797
9:57:15 AM	3	1.5918	1.6880
10:18:59 AM	4	1.5899	1.6773
11:46:00 AM	5	1.5894	1.6555
5:34:00 PM	6	1.5931	1.6445
7:26:00 AM	7	1.6001	1.6407

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-081
 Date Started: 8-15-2020
 Sample ID: LDW20-SC353

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: DK Grey silt/clay w/ sticks

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	201
	Tare Wt	1.5815
	Wet Wt + Tare	28.6464
	Dry Wt + Tare	12.5626
Test Sample	Tare No.	201
	Tare Wt	51.6881
	Wet Wt + Tare	90.6896
	Dry Wt + Tare	55.8632
	Cylinder #	C-70

Sieve Analysis

Tare Weight	51.7004
4	-
10	52.1273
18	52.8072
35	53.8158
60	54.5728
120	55.1632
230	55.4623
Pan	0.3099

Pipette Analysis

8/24/2020	Tare #	Tare Weight	Dry Weight
9:52:00 AM			
9:52:20 AM	1	1.5920	1.8520
9:53:49 AM	2	1.6010	1.8473
9:59:15 AM	3	1.5850	1.6840
10:20:59 AM	4	1.6009	1.6782
11:48:00 AM	5	1.6154	1.6710
5:36:00 PM	6	1.5876	1.6323
7:28:00 AM	7	1.6038	1.6391

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-081
 Date Started: 8-15-2020
 Sample ID: LDW20-SC351

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: Grey silt/clay w/ org. debris

Calgon Batch: 25

Temperature: 22

Solids Content

Sieve Analysis

Moisture Content	Tare No.	210
	Tare Wt	1.5840
	Wet Wt + Tare	34.4770
	Dry Wt + Tare	15.1319
Test Sample	Tare No.	210
	Tare Wt	51.2290
	Wet Wt + Tare	90.5241
	Dry Wt + Tare	52.4549
	Cylinder #	C-58

Tare Weight	51.2383
4	—
10	51.2528
18	51.5651
35	51.7942
60	51.9124
120	52.0112
230	52.1495
Pan	0.3140

Pipette Analysis

8/24/2020	Tare #	Tare Weight	Dry Weight
9:54:00 AM			
9:54:20 AM	1	1.6038	1.9309
9:55:49 AM	2	1.5894	1.8996
10:01:15 AM	3	1.5937	1.6881
10:22:59 AM	4	1.5972	1.6831
11:50:00 AM	5	1.5860	1.6558
5:38:00 PM	6	1.5939	1.6501
7:30:00 AM	7	1.6048	1.6485

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-081
 Date Started: 8-15-2020
 Sample ID: LDW20-SC349FD

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: DK Grey Silt/clay

Calgon Batch: 24

Temperature: 22

Solids Content

Moisture Content	Tare No.	250
	Tare Wt	1.5704
	Wet Wt + Tare	38.6581
	Dry Wt + Tare	16.9758
Test Sample	Tare No.	250
	Tare Wt	52.3292
	Wet Wt + Tare	90.6797
	Dry Wt + Tare	53.9156
	Cylinder #	C-20

Sieve Analysis

Tare Weight	52.3397
4	—
10	52.3399
18	52.6772
35	52.9001
60	52.9301
120	53.1154
230	53.3583
Pan	0.4961

Pipette Analysis

8/24/2020	Tare #	Tare Weight	Dry Weight
9:56:00 AM			
9:56:20 AM	1	1.5918	1.9013
9:57:49 AM	2	1.5929	1.8786
10:03:15 AM	3	1.5917	1.7077
10:24:59 AM	4	1.5926	1.6893
11:52:00 AM	5	1.5858	1.6565
5:40:00 PM	6	1.6049	1.6601
7:32:00 AM	7	1.5972	1.6407

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-081
 Date Started: 8-15-2020
 Sample ID: LDW20-SC160C

Client: Anchor

Date Complete: _____
 Tested by: H Benny

Sample Description: DK Grey silt/clay w/ sand

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	253
	Tare Wt	1.5639
	Wet Wt + Tare	58.0793
	Dry Wt + Tare	36.5594
Test Sample	Tare No.	253
	Tare Wt	51.9421
	Wet Wt + Tare	91.9855
	Dry Wt + Tare	65.8647
	Cylinder #	C-32

Sieve Analysis

Tare Weight	51.9488
4	—
10	51.9513
18	52.0655
35	52.2772
60	52.5812
120	56.1333
230	64.0140
Pan	1.9024

Pipette Analysis

8/24/2020	Tare #	Tare Weight	Dry Weight
9:58:00 AM			
9:58:20 AM	1	1.5941	1.8630
9:59:49 AM	2	1.6025	1.8020
10:05:15 AM	3	1.6069	1.7189
10:26:59 AM	4	1.6084	1.6814
11:54:00 AM	5	1.6123	1.6704
5:42:00 PM	6	1.5893	1.6355
7:34:00 AM	7	1.6017	1.6396

Notes:

Harold L Benny & Associates, LLC

Project: Durhamish AOC4
 HLB Project #: 20-081
 Date Started: 8-15-2020
 Sample ID: LDW20-SC210B

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: DK Grey Silt / clay w/ sand

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	227
	Tare Wt	1.5806
	Wet Wt + Tare	50.8135
	Dry Wt + Tare	32.2776
Test Sample	Tare No.	227
	Tare Wt	51.0562
	Wet Wt + Tare	90.5324
	Dry Wt + Tare	64.9310
	Cylinder #	C-44

Sieve Analysis

Tare Weight	51.0608
4	—
10	51.1639
18	51.3397
35	51.6177
60	51.8648
120	57.3167
230	63.3019
Pan	1.5052

Pipette Analysis

8/24/2020	Tare #	Tare Weight	Dry Weight
10:00:00 AM			
10:00:20 AM	1	1.5854	1.8414
10:01:49 AM	2	1.5752	1.7711
10:07:15 AM	3	1.5855	1.6949
10:28:59 AM	4	1.5977	1.6257
11:56:00 AM	5	1.5803	1.6399
5:44:00 PM	6	1.5795	1.6276
7:36:00 AM	7	1.5897	1.6280

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-081
 Date Started: 8-15-2020
 Sample ID: LDW20-SC204B

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: DK Grey silt/clay

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	218
	Tare Wt	1.5827
	Wet Wt + Tare	51.8437
	Dry Wt + Tare	34.2548
Test Sample	Tare No.	218
	Tare Wt	51.2102
	Wet Wt + Tare	91.8880
	Dry Wt + Tare	68.6764
	Cylinder #	C-50

Sieve Analysis

Tare Weight	51.2155
4	-
10	51.2861
18	51.3890
35	51.6185
60	52.0990
120	58.8139
230	67.1430
Pan	1.6183

Pipette Analysis

8/24/2020	Tare #	Tare Weight	Dry Weight
10:02:00 AM			
10:02:20 AM	1	1.5716	1.7940
10:03:49 AM	2	1.5855	1.7398
10:09:15 AM	3	1.5772	1.6853
10:30:59 AM	4	1.5671	1.6359
11:58:00 AM	5	1.5857	1.6403
5:46:00 PM	6	1.5905	1.6353
7:38:00 AM	7	1.5806	1.6180

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-081
 Date Started: 8-15-2020
 Sample ID: LDW20-55251

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: Grey silt/clay

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	229
	Tare Wt	1.5867
	Wet Wt + Tare	37.5632
	Dry Wt + Tare	21.5999
Test Sample	Tare No.	229
	Tare Wt	51.7315
	Wet Wt + Tare	89.5217
	Dry Wt + Tare	60.4001
	Cylinder #	C-14

Sieve Analysis

Tare Weight	51.7404
4	—
10	51.7543
18	51.9833
35	52.3546
60	52.6352
120	54.2249
230	58.5556
Pan	1.7098

Pipette Analysis

8/24/2020	Tare #	Tare Weight	Dry Weight
10:04:00 AM			
10:04:20 AM	1	1.5847	1.8661
10:05:49 AM	2	1.5820	1.7868
10:11:15 AM	3	1.6000	1.7267
10:32:59 AM	4	1.5914	1.6781
12:00:00 PM	5	1.5905	1.6387
5:48:00 PM	6	1.5997	1.6458
7:40:00 AM	7	1.5707	1.6071

1.6523 HB

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-081
 Date Started: 8-15-2020
 Sample ID: LDW20-55264

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: DK Grey Silt / clay

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	219
	Tare Wt	1.5959
	Wet Wt + Tare	49.7979
	Dry Wt + Tare	25.7791
Test Sample	Tare No.	219
	Tare Wt	50.4794
	Wet Wt + Tare	90.7154
	Dry Wt + Tare	57.1895
	Cylinder #	C-46

Sieve Analysis

Tare Weight	50.4916
4	—
10	50.5815
18	50.9602
35	51.2758
60	51.5737
120	52.6050
230	55.6063
Pan	1.6001

Pipette Analysis

8/24/2020	Tare #	Tare Weight	Dry Weight
10:06:00 AM			
10:06:20 AM	1	1.6027	1.9139
10:07:49 AM	2	1.5946	1.8226
10:13:15 AM	3	1.5940	1.7193
10:34:59 AM	4	1.5834	1.6691
12:02:00 PM	5	1.5951	1.6573
5:50:00 PM	6	1.5869	1.6333
7:42:00 AM	7	1.5936	1.6320

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-081
 Date Started: 8-15-2020
 Sample ID: LDW20-55409

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Brown silt/clay

Calgon Batch: 25

Temperature: 22

Solids Content

Sieve Analysis

Moisture Content	Tare No.	232
	Tare Wt	1.5907
	Wet Wt + Tare	59.2649
	Dry Wt + Tare	36.2921
Test Sample	Tare No.	232
	Tare Wt	51.7367
	Wet Wt + Tare	94.7454
	Dry Wt + Tare	70.3515
	Cylinder #	C-24

Tare Weight	51.7417
4	—
10	51.7426
18	51.8782
35	52.2116
60	52.5602
120	59.0511
230	67.9624
Pan	2.1087

Pipette Analysis

8/24/2020	Tare #	Tare Weight	Dry Weight
10:08:00 AM			
10:08:20 AM	1	1.6050	1.7989
10:09:49 AM	2	1.6057	1.7299
10:15:15 AM	3	1.6071	1.6917
10:36:59 AM	4	1.5901	1.6546
12:04:00 PM	5	1.5749	1.6232
5:52:00 PM	6	1.5968	1.6323
7:44:00 AM	7	1.5959	1.6231

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-081
 Date Started: 8-15-2020
 Sample ID: LDW20-55310

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: Grey Silty clay

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	217
	Tare Wt	1.5876
	Wet Wt + Tare	41.4206
	Dry Wt + Tare	22.3174
Test Sample	Tare No.	217
	Tare Wt	51.7835
	Wet Wt + Tare	88.9303
	Dry Wt + Tare	61.0264
	Cylinder #	C-28

Sieve Analysis

Tare Weight	51.7982
4	—
10	51.8243
18	52.0904
35	52.2953
60	52.4432
120	53.1866
230	57.8688
Pan	3.2127

Pipette Analysis

8/24/2020	Tare #	Tare Weight	Dry Weight
10:10:00 AM			
10:10:20 AM	1	1.6070	1.8748
10:11:49 AM	2	1.5861	1.7635
10:17:15 AM	3	1.5971	1.7104
10:38:59 AM	4	1.5998	1.6769
12:06:00 PM	5	1.5828	1.6389
5:54:00 PM	6	1.5716	1.6134
7:46:00 AM	7	1.5840	1.6162

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: August 19, 2020
Date Finished: August 22, 2020

Client: AnchorQEA
HLB Project #: 20-082
Tested By: H Benny

CASE NARRATIVE

1. Sixteen 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 the job was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. The samples contained organic matter which may have broken down during the oven drying and sieving process, affecting the grain size analysis.
5. The data is provided in summary tables and plots.
6. There were no noted anomalies in the testing or samples on project.

Reviewed by: _____



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: August 19, 2020
Date Finished: August 22, 2020

Client: AnchorQEA
Project #: 20-082
Tested by: H Benny

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
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
LDW20-SS324	100.0	100.0	100.0	99.9	97.0	95.7	95.4	94.2	87.4	70.0	45.5	28.1	16.2	11.4
	100.0	100.0	99.9	97.2	95.2	94.0	92.5	85.8	69.5	44.1	28.0	15.9	10.6	7.5
	100.0	100.0	99.9	97.1	95.4	94.5	92.7	85.9	65.7	45.4	27.6	16.6	10.8	7.2
LDW20-SS326	100.0	100.0	100.0	99.0	97.7	96.1	83.2	43.5	27.7	18.8	12.9	8.3	5.5	3.6
LDW20-SS365	100.0	100.0	100.0	99.7	97.8	88.2	54.5	37.0	24.8	16.5	11.3	7.3	4.9	2.8
LDW20-SS368	100.0	100.0	100.0	99.9	97.9	36.0	14.5	9.9	6.4	4.1	2.9	1.9	1.4	1.0
LDW20-SS372	100.0	99.2	96.5	86.7	63.4	53.0	43.5	33.8	24.1	15.0	9.8	6.0	3.9	2.3
LDW20-SS426	91.8	88.1	79.3	75.2	70.4	63.7	44.2	23.6	12.8	9.1	6.7	4.7	2.8	1.6
LDW20-SS421	100.0	100.0	99.3	98.2	96.4	93.0	68.4	34.8	21.7	13.6	9.7	6.0	3.8	2.1
LDW20-SS327	100.0	100.0	100.0	97.2	95.8	94.6	91.2	75.9	60.1	38.9	22.9	14.8	10.0	5.9
LDW20-SS331	100.0	100.0	100.0	98.3	96.8	92.6	78.6	56.2	38.5	26.3	17.2	10.6	7.3	4.3
LDW20-SS332	100.0	100.0	100.0	99.0	97.3	94.8	77.1	45.9	30.5	19.2	12.4	7.2	4.6	2.8
LDW20-SS318	100.0	100.0	99.0	98.0	96.9	90.5	79.4	64.3	43.6	27.3	18.0	10.9	7.5	4.3
LDW20-SS322	100.0	100.0	99.9	98.9	97.7	95.6	84.1	61.6	43.3	25.9	16.3	9.4	6.6	4.0
LDW20-SS359	100.0	100.0	99.8	99.0	92.5	64.6	45.3	28.7	16.0	9.8	6.6	4.2	2.6	1.2
LDW20-SS377	100.0	100.0	100.0	96.6	95.1	92.1	86.4	79.0	61.6	36.6	21.5	12.8	8.2	5.4
LDW20-SS379	92.8	89.2	84.9	81.5	72.2	48.8	28.4	19.4	15.6	11.2	7.6	5.1	3.4	2.0
LDW20-SS388	100.0	100.0	97.9	95.3	83.1	48.1	28.2	17.9	12.0	8.3	5.0	3.7	2.1	1.2

Reviewed by:  _____

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: August 19, 2020
Date Finished: August 22, 2020

Client: AnchorQEA
HLB Project #: 20-082
Tested by: H Benny

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)
LDW20-SS324	0.0	0.1	2.9	1.3	0.3	1.2	6.8	17.4	24.6	17.3	12.0	4.8	11.4	94.2
	0.1	2.8	2.0	1.2	1.5	6.7	16.3	25.4	16.1	12.1	5.3	3.1	7.5	85.8
	0.1	2.8	1.7	0.9	1.9	6.8	20.2	20.2	17.8	11.0	5.8	3.6	7.2	85.9
LDW20-SS326	0.0	1.0	1.2	1.6	12.9	39.7	15.8	8.9	6.0	4.5	2.8	1.9	3.6	43.5
LDW20-SS365	0.0	0.3	2.0	9.6	33.6	17.5	12.2	8.4	5.1	4.0	2.4	2.1	2.8	37.0
LDW20-SS368	0.0	0.1	2.0	61.9	21.5	4.6	3.4	2.3	1.1	1.0	0.5	0.4	1.0	9.9
LDW20-SS372	3.5	9.8	23.3	10.4	9.5	9.8	9.7	9.1	5.2	3.8	2.1	1.7	2.3	33.8
LDW20-SS426	20.7	4.1	4.7	6.8	19.5	20.5	10.8	3.7	2.4	2.0	1.9	1.3	1.6	23.6
LDW20-SS421	0.7	1.2	1.7	3.5	24.6	33.6	13.1	8.0	4.0	3.7	2.2	1.8	2.1	34.8
LDW20-SS327	0.0	2.8	1.4	1.2	3.4	15.3	15.8	21.1	16.1	8.1	4.7	4.1	5.9	75.9
LDW20-SS331	0.0	1.7	1.5	4.2	14.0	22.4	17.7	12.2	9.1	6.7	3.3	3.0	4.3	56.2
LDW20-SS332	0.0	1.0	1.6	2.5	17.8	31.2	15.4	11.3	6.7	5.2	2.7	1.7	2.8	45.9
LDW20-SS318	1.0	1.0	1.1	6.4	11.1	15.1	20.7	16.3	9.4	7.1	3.4	3.2	4.3	64.3
LDW20-SS322	0.1	1.0	1.2	2.0	11.5	22.5	18.3	17.4	9.6	6.9	2.8	2.7	4.0	61.6
LDW20-SS359	0.2	0.8	6.5	27.9	19.3	16.6	12.7	6.1	3.2	2.5	1.6	1.3	1.2	28.7
LDW20-SS377	0.0	3.4	1.5	3.0	5.7	7.4	17.3	25.1	15.1	8.6	4.6	2.8	5.4	79.0
LDW20-SS379	15.1	3.3	9.3	23.4	20.4	9.0	3.8	4.4	3.5	2.5	1.8	1.3	2.0	19.4
LDW20-SS388	2.1	2.5	12.3	35.0	19.9	10.3	6.0	3.7	3.3	1.3	1.6	0.9	1.2	17.9

Reviewed by:  _____

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: June 22, 2020
Date Started: August 19, 2020
Date Finished: August 22, 2020

Client: AnchorQEA
HLB Project #: 20-082
Tested by: H Benny

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
LDW20-SS324	100.0	100.0	99.9	97.0	95.7	95.4	94.2	87.4	70.0	45.5	28.1	16.2	11.4	8.1
	100.0	100.0	99.9	97.2	95.2	94.0	92.5	85.8	69.5	44.1	28.0	15.9	10.6	7.5
	100.0	100.0	99.9	97.1	95.4	94.5	92.7	85.9	65.7	45.4	27.6	16.6	10.8	7.2
AVE	100.0	100.0	99.9	97.1	95.4	94.6	93.1	86.4	68.4	45.0	27.9	16.2	10.9	7.6
STDEV	0.0	0.0	0.0	0.1	0.2	0.6	0.8	0.7	2.0	0.6	0.2	0.3	0.3	0.4
%RSD	0.0	0.0	0.0	0.1	0.2	0.6	0.8	0.9	2.9	1.4	0.8	1.7	3.1	4.9

The Triplicate Applies To The Following Samples

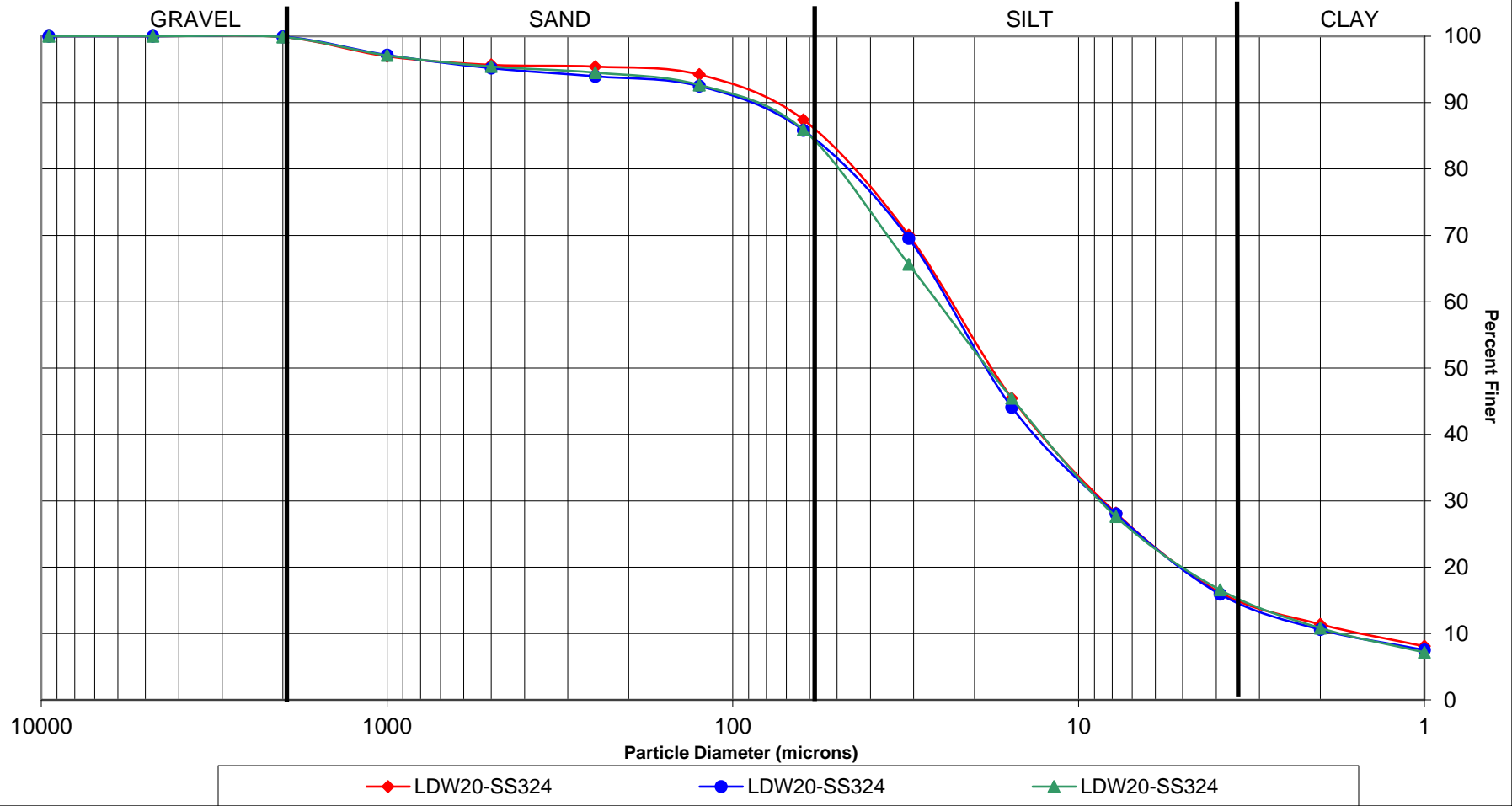
Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0 g)
LDW20-SS324	6/17/2020	8/19/2020	8/23/2020	98.2		12.9
	6/17/2020	8/19/2020	8/23/2020	99.3		12.3
	6/17/2020	8/19/2020	8/23/2020	100.1		12.6
LDW20-SS326	6/17/2020	8/19/2020	8/23/2020	101.2		8.7
LDW20-SS365	6/17/2020	8/19/2020	8/23/2020	101.5		8.1
LDW20-SS368	6/17/2020	8/19/2020	8/23/2020	100.1		6.6
LDW20-SS372	6/17/2020	8/19/2020	8/23/2020	101.1		8.8
LDW20-SS426	6/17/2020	8/19/2020	8/23/2020	103.2		12.0
LDW20-SS421	6/17/2020	8/19/2020	8/23/2020	98.9		7.5
LDW20-SS327	6/17/2020	8/19/2020	8/23/2020	98.9		10.9
LDW20-SS331	6/17/2020	8/19/2020	8/23/2020	100.2		9.9
LDW20-SS332	6/17/2020	8/19/2020	8/23/2020	101.5		14.8
LDW20-SS318	6/18/2020	8/19/2020	8/23/2020	100.5		12.4
LDW20-SS322	6/18/2020	8/19/2020	8/23/2020	99.2		12.2
LDW20-SS359	6/18/2020	8/19/2020	8/23/2020	101.1		9.5
LDW20-SS377	6/18/2020	8/19/2020	8/23/2020	100.5		11.4
LDW20-SS377	6/18/2020	8/19/2020	8/23/2020	100.5		11.4
LDW20-SS379	6/18/2020	8/19/2020	8/23/2020	98.9		6.5

Notes to the Testing: Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution.

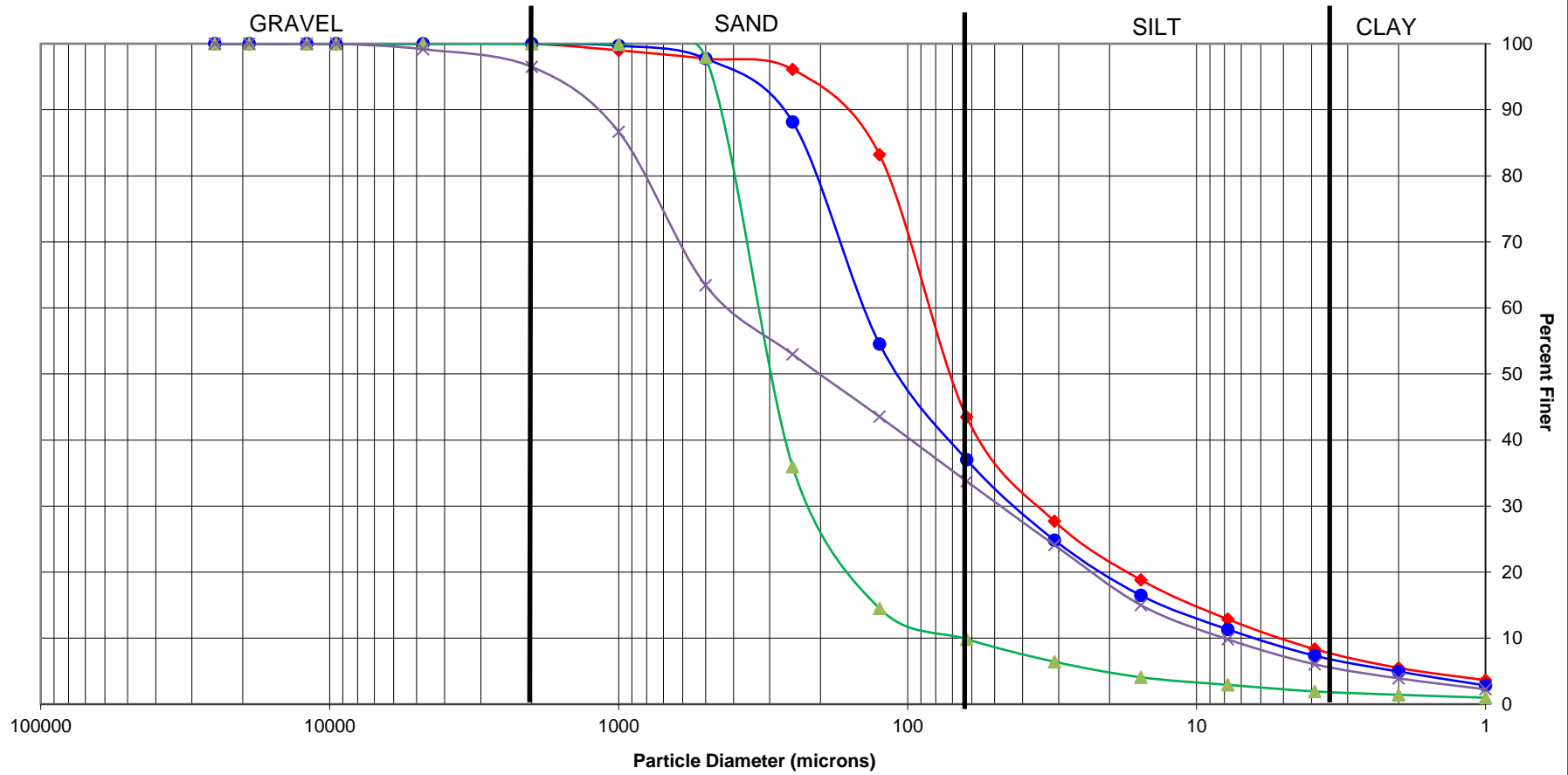
Reviewed by:  _____

PSEP Grain Size Distribution

Triplicate Sample Plot

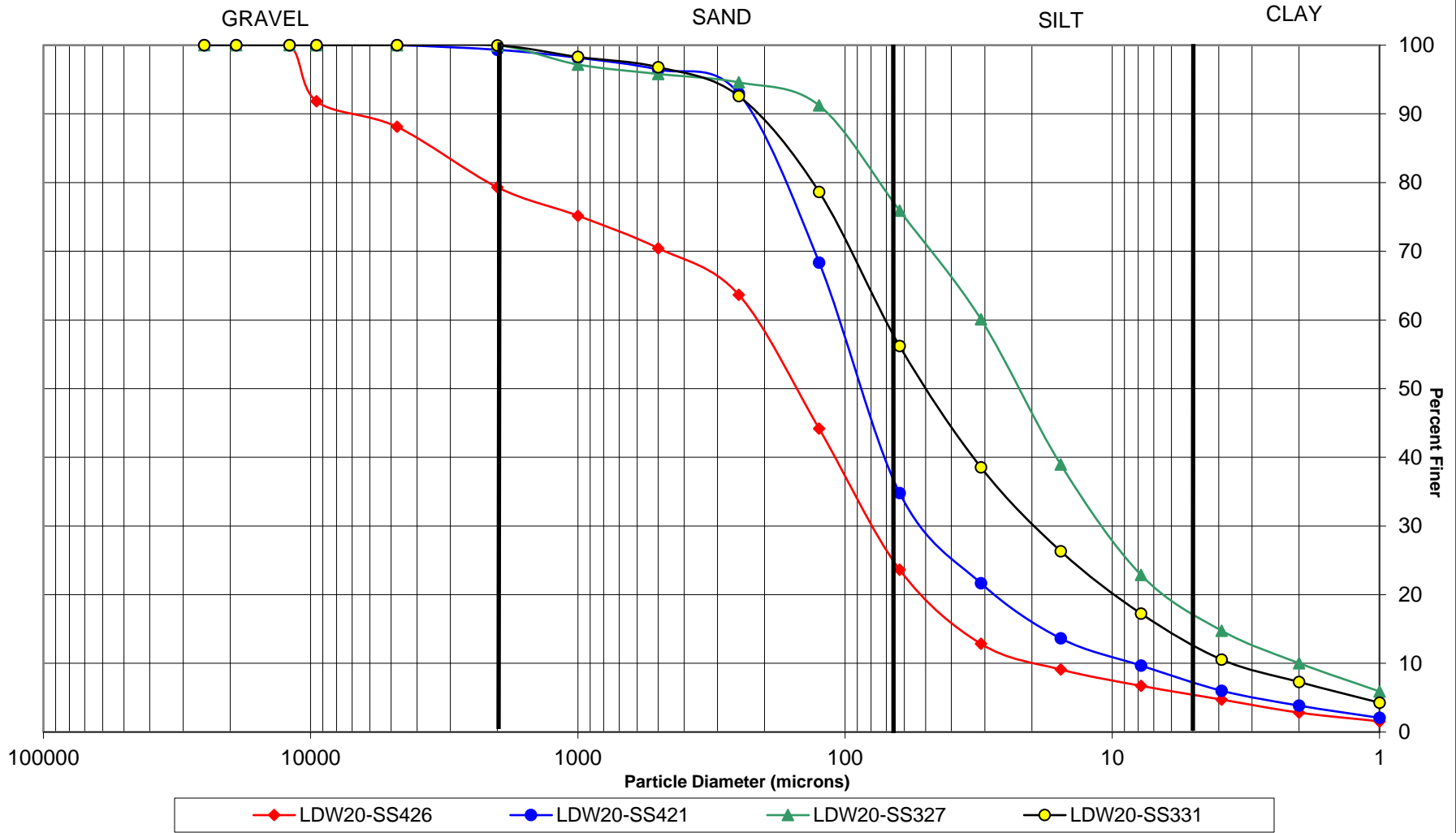


PSEP Grain Size Distribution

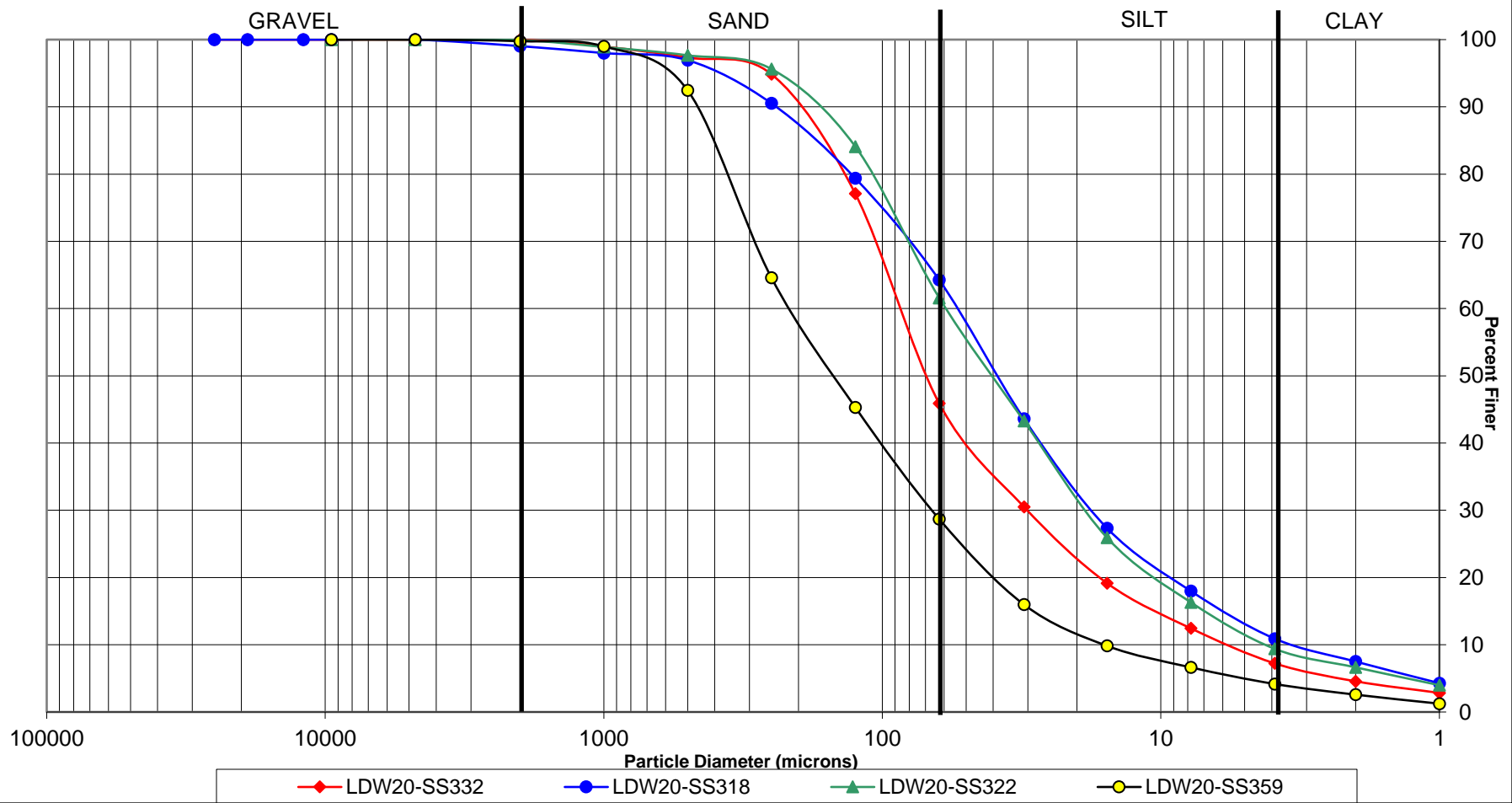


◆ LDW20-SS326 ● LDW20-SS365 ▲ LDW20-SS368 ✕ LDW20-SS372

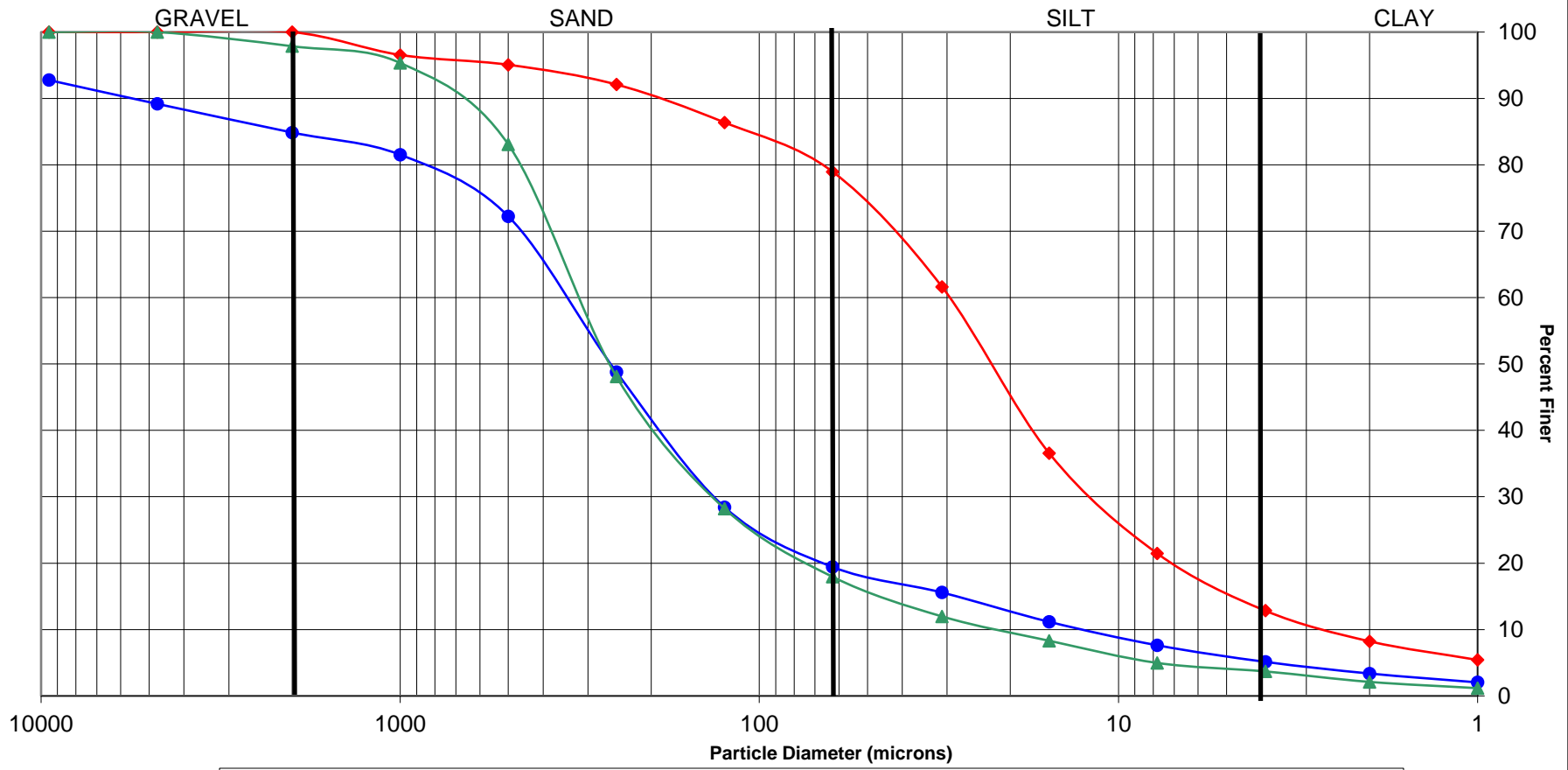
PSEP Grain Size Distribution



PSEP Grain Size Distribution



PSEP Grain Size Distribution



CHAIN-OF-CUSTODY/TEST REQUEST FORM

No 3210

1 of 1

Project/Client Name: Duwamish AOCY Ship to: Harold L Benny and Associates
 Project Number: 180067-02.02 Attn: Harold Benny Shipping Date: 6/17/20
 Contact Name: Amaru Vandervoort Shipper: courier Airbill Number: NA
 Sampled By: J.H. R.M. Form filled out by: R. Methornet Turnaround requested: Std

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)						Comments / Instructions [Jar tag number(s)]
					Grain size						
6/17/20	0842	LPW20-SS324	1	sediment	X						
	0922	-SS326	1		X						
	1013	-SS365	1		X						
	1034	-SS368	1		X						
	1052	-SS372	1		X						
	1135	-SS426	1		X						
	1157	-SS421	1		X						
	1323	-SS327	1		X						
	1402	-SS331	1		X						
	1425	-SS332	1		X						
Total Number of Containers											
					10	Purchase Order / Statement of Work # <u>CLF-0427206</u>					

1) Released by: <u>Brandi Quinisk</u>		2) Released by: <u>HLBenny</u>	
Print name: <u>Brandi Quinisk</u>		Print name: <u>Jacobralto</u>	
Signature: <u>Brandi Quinisk</u>		Signature: <u>Jacobralto</u>	
Company: <u>Windward</u>		Company: <u>ARI</u>	
Date/Time: <u>6/17/20 16:02</u>		Date/Time: <u>06/16/20 10:11</u>	
Date/Time: <u>6/17/20 16:02</u>		Date/Time: <u>06/16/20 10:11</u>	

To be completed by Laboratory upon sample receipt:

Date of receipt: _____	Laboratory W.O. #: _____
Condition upon receipt: _____	Time of receipt: _____
Cooler temperature: _____	Received by: _____

200 West Mercer Street
 Suite 401
 Seattle, WA 98119
 Tel: (206) 378-1364
 Fax: (206) 217-9343



* Distribution: White copies accompany shipment; yellow retained by consignor.

CHAIN-OF-CUSTODY/TEST REQUEST FORM

No. 3215

Project/Client Name: Duwamish AOCY Ship to: Harold L Benny and Associates
 Project Number: 180067-02:02 Attn: Harold Benny Shipping Date: 6/18/20
 Contact Name: Alicia Vandervort Shipper: AM courier Airbill Number: NA
 Sampled By: RM, JH Form filled out by: R Mathomet Turnaround requested: Std

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)				Comments / Instructions (lar tag number(s))
					Grain Size	PSEF			
6/18/20	0911	LDW20-SS251	1	sediment	X				
	0939	-SS264	1		X				
	1036	-SS409	1		X				
	1119	-SS310	1		X				
	1225	-SS318	1		X				
	1242	-SS322	1		X				
	1304	-SS359	1		X				
	1330	-SS377	1		X				
	1407	-SS379	1		X				
	1447	-SS388	1		X				
Total Number of Containers			10						Purchase Order / Statement of Work # <u>WF-0427206</u>


1) Released by: A Vandervort 2) Released by: Joseph Walter 2) Rec'd by: HBenny
 Print name: A Vandervort Signature: [Signature] Company: AM
 Signature: [Signature] Company: ATCB
 Date/Time: 6/18/20 16:10 Date/Time: 6-22-2020 10:11

* Distribution: White copies accompany shipment; yellow retained by consignee.

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

200 West Mercer Street
 Suite 401
 Seattle, WA 98119
 Tel: (206) 378-1364
 Fax: (206) 217-9343



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-082
 Date Started: 8-19-2020
 Sample ID: LDW20-55324A

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: DK Grey silt/clay

Calgon Batch: 24

Temperature: 22

Solids Content

Sieve Analysis

Moisture Content	Tare No.	249
	Tare Wt	1.5882
	Wet Wt + Tare	47.7117
	Dry Wt + Tare	18.7884
Test Sample	Tare No.	249
	Tare Wt	51.7958
	Wet Wt + Tare	91.4922
	Dry Wt + Tare	54.4774
	Cylinder #	C-16

Tare Weight	51.8118
4	—
10	51.8299
18	52.2595
35	52.4523
60	52.4908
120	52.6688
230	53.6745
Pan	0.8579

Pipette Analysis

8/22/2020	Tare #	Tare Weight	Dry Weight
10:00:00 AM			
10:00:20 AM	1	1.5986	1.8791
10:01:49 AM	2	1.5986	1.8260
10:07:15 AM	3	1.6046	1.7580
10:28:59 AM	4	1.5847	1.6859
11:56:00 AM	5	1.6098	1.6749
5:44:00 PM	6	1.5975	1.6482
7:36:00 AM	7	1.5866	1.6273

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-082
 Date Started: 8-19-2020
 Sample ID: LDW20-55324B

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: DK Grey silt/clay

Calgon Batch: 24

Temperature: 22

Solids Content

Moisture Content	Tare No.	233
	Tare Wt	1.5702
	Wet Wt + Tare	43.2251
	Dry Wt + Tare	17.1440
Test Sample	Tare No.	233
	Tare Wt	51.4165
	Wet Wt + Tare	89.8374
	Dry Wt + Tare	54.5177
	Cylinder #	C-38

Sieve Analysis

Tare Weight	51.4354
4	—
10	51.4467
18	51.8431
35	52.1266
60	52.3034
120	52.5156
230	53.4712
Pan	1.1222

Pipette Analysis

8/22/2020	Tare #	Tare Weight	Dry Weight
10:02:00 AM			
10:02:20 AM	1	1.5824	1.8473
10:03:49 AM	2	1.5933	1.8108
10:09:15 AM	3	1.5983	1.7422
10:30:59 AM	4	1.5818	1.6792
11:58:00 AM	5	1.5918	1.6542
5:46:00 PM	6	1.5830	1.6300
7:38:00 AM	7	1.5767	1.6148

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-082
 Date Started: 8-19-2020
 Sample ID: LDW20-55324C

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: DK Grey Silt/clay

Calgon Batch: 24

Temperature: 22

Solids Content

Sieve Analysis

Moisture Content	Tare No.	230
	Tare Wt	1.5830
	Wet Wt + Tare	41.0831
	Dry Wt + Tare	16.3331
Test Sample	Tare No.	230
	Tare Wt	50.1840
	Wet Wt + Tare	89.5295
	Dry Wt + Tare	53.5262
	Cylinder #	C-72

Tare Weight	50.2061
4	—
10	50.2253
18	50.6313
35	50.8776
60	51.0124
120	51.2856
230	52.2801
Pan	1.2603

Pipette Analysis

8/22/2020	Tare #	Tare Weight	Dry Weight
10:04:00 AM			
10:04:20 AM	1	1.5930	1.8613
10:05:49 AM	2	1.5878	1.7968
10:11:15 AM	3	1.5848	1.7345
10:32:59 AM	4	1.5877	1.6851
12:00:00 PM	5	1.5817	1.6527
5:48:00 PM	6	1.5745	1.6226
7:40:00 AM	7	1.5724	1.6098

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-082
 Date Started: 8-19-2020
 Sample ID: LDW20-55326

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: DK Grey Silt/Clay

Calgon Batch: 24

Temperature: 22

Solids Content

Moisture Content	Tare No.	213
	Tare Wt	1.5689
	Wet Wt + Tare	47.0183
	Dry Wt + Tare	23.4438
Test Sample	Tare No.	213
	Tare Wt	51.5024
	Wet Wt + Tare	93.2887
	Dry Wt + Tare	64.7874
	Cylinder #	C-59

Sieve Analysis

Tare Weight	51.5177
4	-
10	51.5211
18	51.7208
35	51.9721
60	52.3009
120	54.8989
230	62.8821
Pan	1.9770

Pipette Analysis

8/22/2020	Tare #	Tare Weight	Dry Weight
10:06:00 AM			
10:06:20 AM	1	1.5616	1.7480
10:07:49 AM	2	1.5782	1.7046
10:13:15 AM	3	1.5842	1.6754
10:34:59 AM	4	1.5852	1.6527
12:02:00 PM	5	1.5822	1.6317
5:50:00 PM	6	1.5832	1.6214
7:42:00 AM	7	1.5766	1.6074

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-082
 Date Started: 8-19-2020
 Sample ID: LDW20-55365

Client: Anchor

Date Complete: _____
 Tested by: HBenny

Sample Description: DK ~~Grey~~ ^{Brown} silt/clay
 HB

Calgon Batch: 24

Temperature: _____

Solids Content

Moisture Content	Tare No.	257
	Tare Wt	1.5926
	Wet Wt + Tare	51.5090
	Dry Wt + Tare	28.9703
Test Sample	Tare No.	257
	Tare Wt	51.9872
	Wet Wt + Tare	92.0868
	Dry Wt + Tare	67.6293
	Cylinder #	C-53

Sieve Analysis

Tare Weight	51.9959
4	—
10	51.9968
18	52.0603
35	52.4906
60	54.5983
120	61.9980
230	65.8442
Pan	1.4683

Pipette Analysis

8/22/2020	Tare #	Tare Weight	Dry Weight
10:08:00 AM			
10:08:20 AM	1	1.5700	1.7429
10:09:49 AM	2	1.5860	1.7100
10:15:15 AM	3	1.5870	1.6748
10:36:59 AM	4	1.5753	1.6408
12:04:00 PM	5	1.5703	1.6485
5:52:00 PM	6	1.5774	1.6152
7:44:00 AM	7	1.5754	1.6041

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-082
 Date Started: 8-19-2020
 Sample ID: LDW20-SS368

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: Brown Silty Sand

Calgon Batch: 24

Temperature: _____

Solids Content

Sieve Analysis

Moisture Content	Tare No.	211
	Tare Wt	1.5800
	Wet Wt + Tare	60.8592
	Dry Wt + Tare	44.6442
Test Sample	Tare No.	211
	Tare Wt	51.7858
	Wet Wt + Tare	143.9605
	Dry Wt + Tare	113.4723
	Cylinder #	C-18

Tare Weight	51.7934
4	-
10	51.8027
18	51.8773
35	53.1885
60	94.6686
120	109.0450
230	112.1543
Pan	1.3151

Pipette Analysis

8/22/2020	Tare #	Tare Weight	Dry Weight
10:10:00 AM			
10:10:20 AM	1	1.5976	1.7448
10:11:49 AM	2	1.6090	1.7114
10:17:15 AM	3	1.6100	1.6810
10:38:59 AM	4	1.6108	1.6665
12:06:00 PM	5	1.6151	1.6574
5:54:00 PM	6	1.6010	1.6365
7:46:00 AM	7	1.5830	1.6126

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-082
 Date Started: 8-19-2020
 Sample ID: LDW20-55372

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: DK Grey Sandy S.I+ clay

Calgon Batch:

Temperature:

Solids Content

Sieve Analysis

Moisture Content	Tare No.	242
	Tare Wt	1.5987
	Wet Wt + Tare	53.7924
	Dry Wt + Tare	34.0015
Test Sample	Tare No.	242
	Tare Wt	51.3388
	Wet Wt + Tare	93.3618
	Dry Wt + Tare	69.8825
	Cylinder #	C-17

Tare Weight	51.3480
4	51.5669
10	52.2618
18	54.8230
35	60.8912
60	63.6172
120	66.0835
230	68.6278
Pan	1.1334

Pipette Analysis

8/22/2020	Tare #	Tare Weight	Dry Weight
10:12:00 AM			
10:12:20 AM	1	1.5999	1.7870
10:13:49 AM	2	1.5687	1.7095
10:19:15 AM	3	1.5978	1.6917
10:40:59 AM	4	1.6043	1.6714
12:08:00 PM	5	1.5820	1.6296
5:56:00 PM	6	1.5989	1.6355
7:48:00 AM	7	1.5847	1.6127

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-082
 Date Started: 8-19-2020
 Sample ID: LDW20-55426

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: Brown Gravelly Sandy Silt

Calgon Batch: 24

Temperature: 22

Solids Content

Moisture Content	Tare No.	252
	Tare Wt	1.5887
	Wet Wt + Tare	64.0126
	Dry Wt + Tare	45.0223
Test Sample	Tare No.	252
	Tare Wt	52.1911
	Wet Wt + Tare	125.0563
	Dry Wt + Tare	93.1046
	Cylinder #	C-09

Sieve Analysis

Tare Weight	52.2057
4	58.2350
10	62.6939
18	64.7943
35	67.1921
60	70.6284
120	80.5179
230	90.9177
Pan	2.2400

$\frac{3}{8}$ 56.3508

Pipette Analysis

8/22/2020	Tare #	Tare Weight	Dry Weight
10:14:00 AM			
10:14:20 AM	1	1.5932	1.8077
10:15:49 AM	2	1.5881	1.7306
10:21:15 AM	3	1.5957	1.7015
10:42:59 AM	4	1.5851	1.6675
12:10:00 PM	5	1.5891	1.6519
5:58:00 PM	6	1.5867	1.6308
7:50:00 AM	7	1.5979	1.6296

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-082
 Date Started: 8-19-2020
 Sample ID: LDW20-55421

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: Brown silt/clay

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	208
	Tare Wt	1.5859
	Wet Wt + Tare	44.0827
	Dry Wt + Tare	24.4122
Test Sample	Tare No.	208
	Tare Wt	51.2963
	Wet Wt + Tare	91.5728
	Dry Wt + Tare	67.5725
	Cylinder #	C-51

Sieve Analysis

Tare Weight	51.3067
4	-
10	51.4521
18	51.7032
35	52.0749
60	52.8284
120	58.1513
230	65.4106
Pan	2.0046

Pipette Analysis

8/22/2020	Tare #	Tare Weight	Dry Weight
10:16:00 AM			
10:16:20 AM	1	1.5816	1.7533
10:17:49 AM	2	1.5813	1.6924
10:23:15 AM	3	1.5777	1.6537
10:44:59 AM	4	1.5753	1.6340
12:12:00 PM	5	1.5888	1.6315
6:00:00 PM	6	1.5851	1.6183
7:52:00 AM	7	1.5809	1.6063

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-082
 Date Started: 8-19-2020
 Sample ID: LDW20-55327

Client: Anchor

Date Complete: _____
 Tested by: H.L. Benny

Sample Description: DK Grey silt/clay

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	254
	Tare Wt	1.5906
	Wet Wt + Tare	49.3155
	Dry Wt + Tare	19.4138
Test Sample	Tare No.	254
	Tare Wt	52.7890
	Wet Wt + Tare	91.3932
	Dry Wt + Tare	57.6983
	Cylinder #	C-75

Sieve Analysis

Tare Weight	52.8085
4	—
10	52.8113
18	53.2147
35	53.4125
60	53.5893
120	54.0737
230	56.2814
Pan	1.4490

Pipette Analysis

8/22/2020	Tare #	Tare Weight	Dry Weight
10:18:00 AM			
10:18:20 AM	1	1.5763	1.8147
10:19:49 AM	2	1.5916	1.7831
10:25:15 AM	3	1.5879	1.7178
10:46:59 AM	4	1.5920	1.6822
12:14:00 PM	5	1.5963	1.6557
6:02:00 PM	6	1.5988	1.6444
7:54:00 AM	7	1.5912	1.6248

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-082
 Date Started: 8-19-2020
 Sample ID: LDW20-55331

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: DK Grey S.H Clay

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	203
	Tare Wt	1.5817
	Wet Wt + Tare	42.9933
	Dry Wt + Tare	20.6987
Test Sample	Tare No.	203
	Tare Wt	51.0057
	Wet Wt + Tare	89.1672
	Dry Wt + Tare	60.2094
	Cylinder #	C-15

Sieve Analysis

Tare Weight	51.0189
4	—
10	51.0219
18	51.3206
35	51.5855
60	52.3231
120	54.7854
230	58.7362
Pan	1.5501

Pipette Analysis

8/22/2020	Tare #	Tare Weight	Dry Weight
10:20:00 AM			
10:20:20 AM	1	1.5993	1.8131
10:21:49 AM	2	1.5901	1.7420
10:27:15 AM	3	1.5792	1.6882
10:48:59 AM	4	1.5892	1.6662
12:16:00 PM	5	1.5887	1.6422
6:04:00 PM	6	1.5899	1.6319
7:56:00 AM	7	1.6080	1.6394

Notes:

Harold L Benny & Associates, LLC

Project: Duwanish AOC4
 HLB Project #: 20-082
 Date Started: 8-19-2020
 Sample ID: LDW20-55332

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: DK Grey Watery Silty Sand

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	236
	Tare Wt	1.5867
	Wet Wt + Tare	49.5922
	Dry Wt + Tare	24.8539
Test Sample	Tare No.	236
	Tare Wt	50.7885
	Wet Wt + Tare	117.3527
	Dry Wt + Tare	72.0537
	Cylinder #	C-61

Sieve Analysis

Tare Weight	50.8169
4	—
10	50.8199
18	51.1527
35	51.6808
60	52.4802
120	58.2127
230	68.2715
Pan	3.7382

Pipette Analysis

8/22/2020	Tare #	Tare Weight	Dry Weight
10:22:00 AM			
10:22:20 AM	1	1.5918	1.8945
10:23:49 AM	2	1.5905	1.8007
10:29:15 AM	3	1.5768	1.7149
10:50:59 AM	4	1.5846	1.6800
12:18:00 PM	5	1.5963	1.6586
6:06:00 PM	6	1.5949	1.6403
7:58:00 AM	7	1.5723	1.6067

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-082
 Date Started: 8-19-2020
 Sample ID: LDW20-55318

Client: Anchor
 Date Complete: _____
 Tested by: HLBenny

Sample Description: Grey Wet silt/clay

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	207
	Tare Wt	1.5969
	Wet Wt + Tare	60.6064
	Dry Wt + Tare	27.2995
Test Sample	Tare No.	207
	Tare Wt	50.1633
	Wet Wt + Tare	94.6525
	Dry Wt + Tare	59.2633
	Cylinder #	C-27

Sieve Analysis

Tare Weight	50.1718
4	—
10	50.3590
18	50.5604
35	50.7659
60	52.0110
120	
230	57.0976
Pan	2.1940

Pipette Analysis

8/22/2020	Tare #	Tare Weight	Dry Weight
10:24:00 AM			
10:24:20 AM	1	1.5980	1.8615
10:25:49 AM	2	1.5966	1.7811
10:31:15 AM	3	1.5932	1.7150
10:52:59 AM	4	1.5902	1.6759
12:20:00 PM	5	1.5966	1.6550
6:08:00 PM	6	1.5914	1.6367
8:00:00 AM	7	1.5861	1.6190

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-082
 Date Started: 8-19-2020
 Sample ID: LDW20-55322

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: DK Grey Wet Silty Clay

Calgon Batch: 24

Temperature: _____

Solids Content

Moisture Content	Tare No.	223
	Tare Wt	1.5865
	Wet Wt + Tare	52.4014
	Dry Wt + Tare	24.5390
Test Sample	Tare No.	223
	Tare Wt	51.8605
	Wet Wt + Tare	95.7359
	Dry Wt + Tare	61.0815
	Cylinder #	C-42

Sieve Analysis

Tare Weight	51.8729
4	—
10	51.8890
18	52.0907
35	52.3364
60	52.7402
120	55.0263
230	59.4851
Pan	1.6688

Pipette Analysis

8/22/2020	Tare #	Tare Weight	Dry Weight
10:26:00 AM			
10:26:20 AM	1	1.5968	1.8605
10:27:49 AM	2	1.5979	1.7872
10:33:15 AM	3	1.5956	1.7155
10:54:59 AM	4	1.6067	1.6882
12:22:00 PM	5	1.6001	1.6540
6:10:00 PM	6	1.5763	1.6192
8:02:00 AM	7	1.5923	1.6246

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-082
 Date Started: 8-19-2020
 Sample ID: LDW20-55-359

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Grey Sandy Silt

Calgon Batch: 24

Temperature: _____

Solids Content

Moisture Content	Tare No.	243
	Tare Wt	1.5763
	Wet Wt + Tare	54.8366
	Dry Wt + Tare	35.8197
Test Sample	Tare No.	243
	Tare Wt	52.1408
	Wet Wt + Tare	103.7255
	Dry Wt + Tare	78.0567
	Cylinder #	C-29

Sieve Analysis

Tare Weight	52.1506
4	—
10	52.2287
18	52.4852
35	54.6529
60	63.9030
120	70.2891
230	75.8001
Pan	2.0429

Pipette Analysis

8/22/2020	Tare #	Tare Weight	Dry Weight
10:28:00 AM			
10:28:20 AM	1	1.5775	1.7772
10:29:49 AM	2	1.6473	1.7685
10:35:15 AM	3	1.6486	1.7295
10:56:59 AM	4	1.6459	1.7058
12:24:00 PM	5	1.6470	1.6907
6:12:00 PM	6	1.6480	1.6813
8:04:00 AM	7	1.5826	1.6071

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-082
 Date Started: 8-15-2020
 Sample ID: LDW20-55377

Client: Anchor

Date Complete: _____
 Tested by: H Benny

Sample Description: Dk Grey Silt/clay

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	225
	Tare Wt	1.5951
	Wet Wt + Tare	38.2712
	Dry Wt + Tare	14.6758
Test Sample	Tare No.	225
	Tare Wt	51.9414
	Wet Wt + Tare	92.61650
	Dry Wt + Tare	56.3470
	Cylinder #	C-22

Sieve Analysis

Tare Weight	51.9513
4	—
10	—
18	52.4512
35	52.6657
60	53.0974
120	53.9266
230	55.0033
Pan	1.2848

Pipette Analysis

8/22/2020	Tare #	Tare Weight	Dry Weight
10:30:00 AM			
10:30:20 AM	1	1.5882	1.8321
10:31:49 AM	2	1.5953	1.7895
10:37:15 AM	3	1.5804	1.7083
10:58:59 AM	4	1.6519	1.7302
12:26:00 PM	5	1.6479	1.7013
6:14:00 PM	6	1.5934	1.6335
8:06:00 AM	7	1.5932	1.6252

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-082
 Date Started: 8-19-2020
 Sample ID: LDW20-55379

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: Brown Gravelly Sandy Silt

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	255
	Tare Wt	1.5925
	Wet Wt + Tare	46.9313
	Dry Wt + Tare	31.8223
Test Sample	Tare No.	255
	Tare Wt	52.0186
	Wet Wt + Tare	102.4340
	Dry Wt + Tare	80.1165
	Cylinder #	C-23

Sieve Analysis

Tare Weight	52.0244	3/8 54.4566
4	55.6595	
10	57.1100	
18	58.2359	
35	61.3564	
60	69.2381	
120	76.0822	
230	79.1109	
Pan	1.0200	

Pipette Analysis

8/22/2020	Tare #	Tare Weight	Dry Weight
10:32:00 AM			
10:32:20 AM	1	1.5779	1.7320
10:33:49 AM	2	1.6387	1.7609
10:39:15 AM	3	1.6442	1.7364
11:00:59 AM	4	1.6433	1.7115
12:28:00 PM	5	1.6516	1.7028
6:16:00 PM	6	1.6523	1.6916
8:08:00 AM	7	1.5759	1.6061

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-082
 Date Started: 8-19-2020
 Sample ID: LDW20-SS388

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Brown Sandy Silt + roots

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	222
	Tare Wt	1.6047
	Wet Wt + Tare	39.0421
	Dry Wt + Tare	25.9145
Test Sample	Tare No.	222
	Tare Wt	51.5413
	Wet Wt + Tare	91.8804
	Dry Wt + Tare	73.6776
	Cylinder #	C-21

Sieve Analysis

Tare Weight	51.5479
4	—
10	52.0993
18	52.7499
35	55.9230
60	64.9529
120	70.0867
230	72.7426
Pan	0.7818

Pipette Analysis

	Tare #	Tare Weight	Dry Weight
8/22/2020			
10:34:00 AM			
10:34:20 AM	1	1.5854	1.6961
10:35:49 AM	2	1.6493	1.7265
10:41:15 AM	3	1.6394	1.6980
11:02:59 AM	4	1.6487	1.6903
12:30:00 PM	5	1.6502	1.6853
6:18:00 PM	6	1.6437	1.6708
8:10:00 AM	7	1.6452	1.6675

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: July 1, 2020
Date Started: August 22, 2020
Date Finished: August 27, 2020

Client: AnchorQEA
HLB Project #: 20-083
Tested By: H Benny

CASE NARRATIVE

1. Fifteen 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 the job was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. The samples contained organic matter which may have broken down during the oven drying and sieving process, affecting the grain size analysis.
5. The data is provided in summary tables and plots.
6. There were no noted anomalies in the testing or samples on project.

Reviewed by:



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: July 1, 2020
Date Started: August 22, 2020
Date Finished: August 27, 2020

Client: AnchorQEA
Project #: 20-083
Tested by: H Benny

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
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
LDW20-IT316	100.0	100.0	100.0	99.7	99.4	98.1	85.6	50.7	22.6	12.8	7.8	5.4	3.3	2.3
	100.0	100.0	99.8	99.6	98.2	83.8	49.7	21.5	11.6	7.2	5.1	3.2	2.2	1.4
	100.0	100.0	99.8	99.7	98.1	83.8	50.4	22.5	11.8	7.9	5.5	3.3	2.3	1.4
LDW20-IT301	100.0	98.4	97.0	96.7	95.0	85.7	63.2	23.9	9.7	5.5	3.7	2.1	1.3	0.7
LDW20-IT302	100.0	94.7	90.9	87.8	83.7	76.7	55.0	39.5	29.4	19.6	13.2	7.4	4.6	2.8
LDW20-IT306	100.0	100.0	99.8	99.3	98.2	95.7	89.5	75.4	53.6	33.3	20.6	11.6	8.1	5.6
LDW20-IT309	100.0	99.4	98.8	98.1	95.7	87.3	66.1	43.2	27.7	17.2	11.4	6.7	4.4	2.9
LDW20-IT312	100.0	100.0	98.2	97.8	96.4	83.9	55.8	30.7	18.7	11.0	7.3	4.3	2.8	1.9
LDW20-IT320	97.2	97.1	97.0	96.9	96.6	93.3	52.9	16.3	5.7	3.2	2.2	1.2	0.7	0.5
LDW20-IT323	100.0	100.0	99.9	98.9	95.4	90.0	80.3	64.8	46.7	21.1	14.5	8.8	6.2	4.4
LDW20-IT308	100.0	100.0	100.0	99.5	98.9	97.5	93.7	80.7	58.7	35.0	22.6	13.7	9.1	6.1
LDW20-IT411	100.0	95.9	94.8	93.6	90.6	72.3	38.4	24.2	17.0	11.8	8.4	5.3	3.2	2.3
LDW20-IT401	100.0	100.0	99.4	98.7	95.6	89.8	73.9	41.4	22.9	14.9	10.3	6.9	4.6	3.1
LDW20-IT406	100.0	98.0	94.8	90.3	76.2	49.7	32.6	21.2	15.3	10.5	7.7	4.9	3.2	2.1
LDW20-IT424	100.0	100.0	99.7	98.7	97.7	97.3	88.1	63.7	47.0	30.5	20.7	12.8	8.4	5.8
LDW20-IT426	84.5	72.6	65.1	60.2	50.9	38.3	24.9	14.6	8.7	6.0	4.3	2.8	1.7	1.1
LDW20-IT419	100.0	100.0	99.2	98.3	94.9	85.0	62.6	39.5	24.0	16.8	11.0	7.2	4.6	2.9

Reviewed by: 

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: July 1, 2020
Date Started: August 22, 2020
Date Finished: August 27, 2020

Client: AnchorQEA
HLB Project #: 20-083
Tested by: H Benny

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)
LDW20-IT316	0.0	0.3	0.3	1.3	12.5	34.9	28.1	9.9	5.0	2.4	2.0	1.0	2.3	50.7
	0.2	0.2	1.4	14.4	34.2	28.2	9.9	4.4	2.1	1.9	1.1	0.7	1.4	21.5
	0.2	0.2	1.5	14.3	33.4	27.9	10.7	4.0	2.3	2.2	1.1	0.9	1.4	22.5
LDW20-IT301	3.0	0.3	1.7	9.3	22.5	39.3	14.2	4.2	1.8	1.6	0.8	0.5	0.7	23.9
LDW20-IT302	9.1	3.1	4.1	7.0	21.7	15.5	10.1	9.8	6.4	5.7	2.8	1.9	2.8	39.5
LDW20-IT306	0.2	0.5	1.1	2.5	6.2	14.2	21.7	20.3	12.7	9.1	3.5	2.5	5.6	75.4
LDW20-IT309	1.2	0.7	2.5	8.4	21.2	22.9	15.6	10.5	5.8	4.7	2.2	1.5	2.9	43.2
LDW20-IT312	1.8	0.4	1.5	12.5	28.1	25.1	12.0	7.7	3.8	3.0	1.5	0.9	1.9	30.7
LDW20-IT320	3.0	0.1	0.3	3.3	40.4	36.6	10.6	2.5	1.0	1.0	0.5	0.3	0.5	16.3
LDW20-IT323	0.1	1.0	3.4	5.4	9.7	15.5	18.1	25.6	6.6	5.7	2.7	1.8	4.4	64.8
LDW20-IT308	0.0	0.5	0.7	1.4	3.7	13.0	22.0	23.7	12.4	8.8	4.6	3.1	6.1	80.7
LDW20-IT411	5.2	1.2	3.1	18.3	33.9	14.2	7.2	5.2	3.4	3.1	2.0	1.0	2.3	24.2
LDW20-IT401	0.6	0.7	3.1	5.8	15.9	32.5	18.4	8.0	4.6	3.4	2.3	1.5	3.1	41.4
LDW20-IT406	5.2	4.5	14.1	26.4	17.2	11.3	5.9	4.8	2.9	2.8	1.7	1.1	2.1	21.2
LDW20-IT424	0.3	1.0	1.0	0.4	9.2	24.4	16.7	16.5	9.8	7.9	4.4	2.6	5.8	63.7
LDW20-IT426	34.9	5.0	9.3	12.6	13.4	10.4	5.9	2.7	1.7	1.5	1.1	0.6	1.1	14.6
LDW20-IT419	0.8	0.9	3.5	9.9	22.4	23.1	15.4	7.2	5.8	3.8	2.6	1.8	2.9	39.5

Reviewed by: 

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: July 1, 2020
Date Started: August 22, 2020
Date Finished: August 27, 2020

Client: AnchorQEA
HLB Project #: 20-083
Tested by: H Benny

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
LDW20-IT316	100.0	100.0	99.7	99.4	98.1	85.6	50.7	22.6	12.8	7.8	5.4	3.3	2.3	1.5
	100.0	100.0	99.8	99.6	98.2	83.8	49.7	21.5	11.6	7.2	5.1	3.2	2.2	1.4
	100.0	100.0	99.8	99.7	98.1	83.8	50.4	22.5	11.8	7.9	5.5	3.3	2.3	1.4
AVE	100.0	100.0	99.8	99.6	98.2	84.4	50.3	22.2	12.1	7.6	5.4	3.3	2.2	1.4
STDEV	0.0	0.0	0.1	0.1	0.0	0.8	0.5	0.5	0.5	0.3	0.2	0.1	0.1	0.0
%RSD	0.0	0.0	0.1	0.1	0.0	1.0	0.9	2.3	4.2	4.0	3.1	1.6	3.2	2.0

The Triplicate Applies To The Following Samples

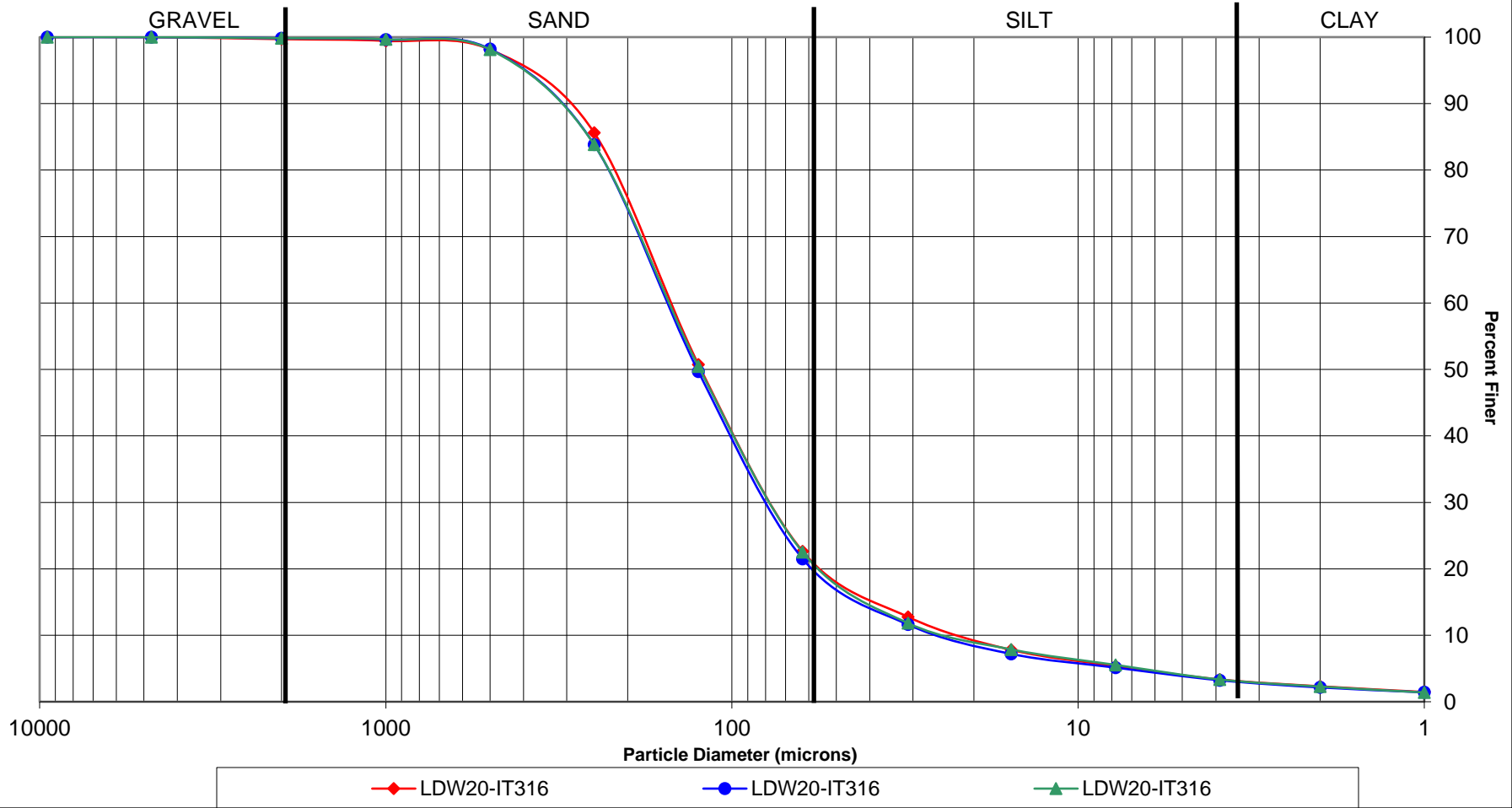
Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
LDW20-IT316	6/22/2020	8/22/2020	8/26/2020	101.8		11.7
	6/22/2020	8/22/2020	8/26/2020	100.9		8.7
	6/22/2020	8/22/2020	8/26/2020	102.8		9.8
LDW20-IT301	6/22/2020	8/22/2020	8/26/2020	100.8		12.4
LDW20-IT302	6/22/2020	8/22/2020	8/26/2020	100.9		9.1
LDW20-IT306	6/22/2020	8/22/2020	8/26/2020	100.8		17.6
LDW20-IT309	6/22/2020	8/22/2020	8/26/2020	106.5		11.0
LDW20-IT312	6/22/2020	8/22/2020	8/26/2020	100.8		8.6
LDW20-IT320	6/22/2020	8/22/2020	8/26/2020	101.5		11.8
LDW20-IT323	6/22/2020	8/22/2020	8/26/2020	102.4		12.8
LDW20-IT308	6/22/2020	8/22/2020	8/26/2020	101.8		18.8
LDW20-IT411	6/22/2020	8/22/2020	8/26/2020	101.1		6.7
LDW20-IT401	6/22/2020	8/22/2020	8/26/2020	101.3		10.9
LDW20-IT406	6/22/2020	8/22/2020	8/26/2020	98.3		6.7
LDW20-IT424	6/17/2020	8/22/2020	8/26/2020	99.6		13.3
LDW20-IT426	6/17/2020	8/22/2020	8/26/2020	102.4		10.8
LDW20-IT419	6/17/2020	8/22/2020	8/26/2020	103.7		14.8

Notes to the Testing: Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution.

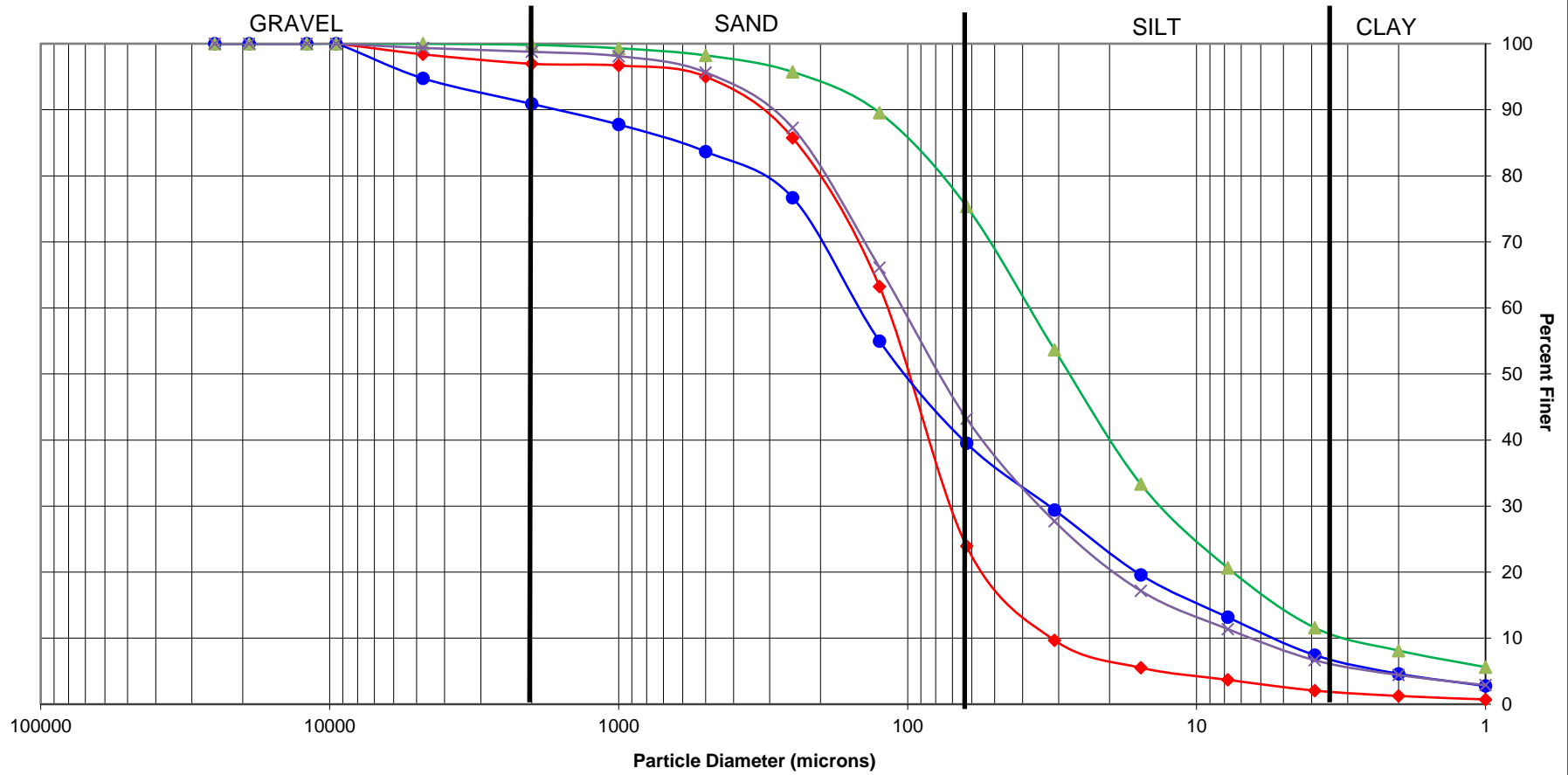
Reviewed by: 

PSEP Grain Size Distribution

Triplicate Sample Plot

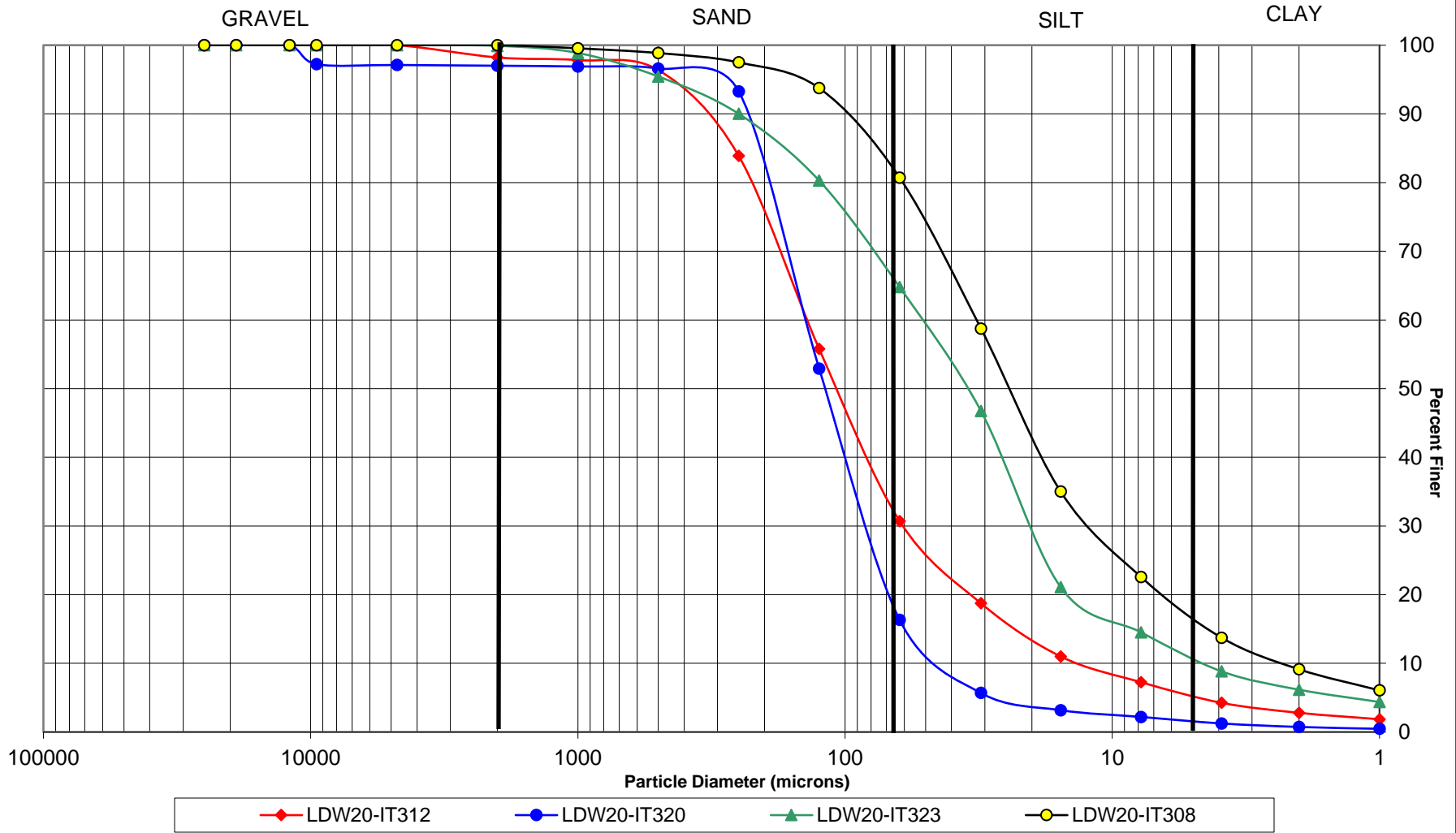


PSEP Grain Size Distribution



◆ LDW20-IT301 ● LDW20-IT302 ▲ LDW20-IT306 ✕ LDW20-IT309

PSEP Grain Size Distribution



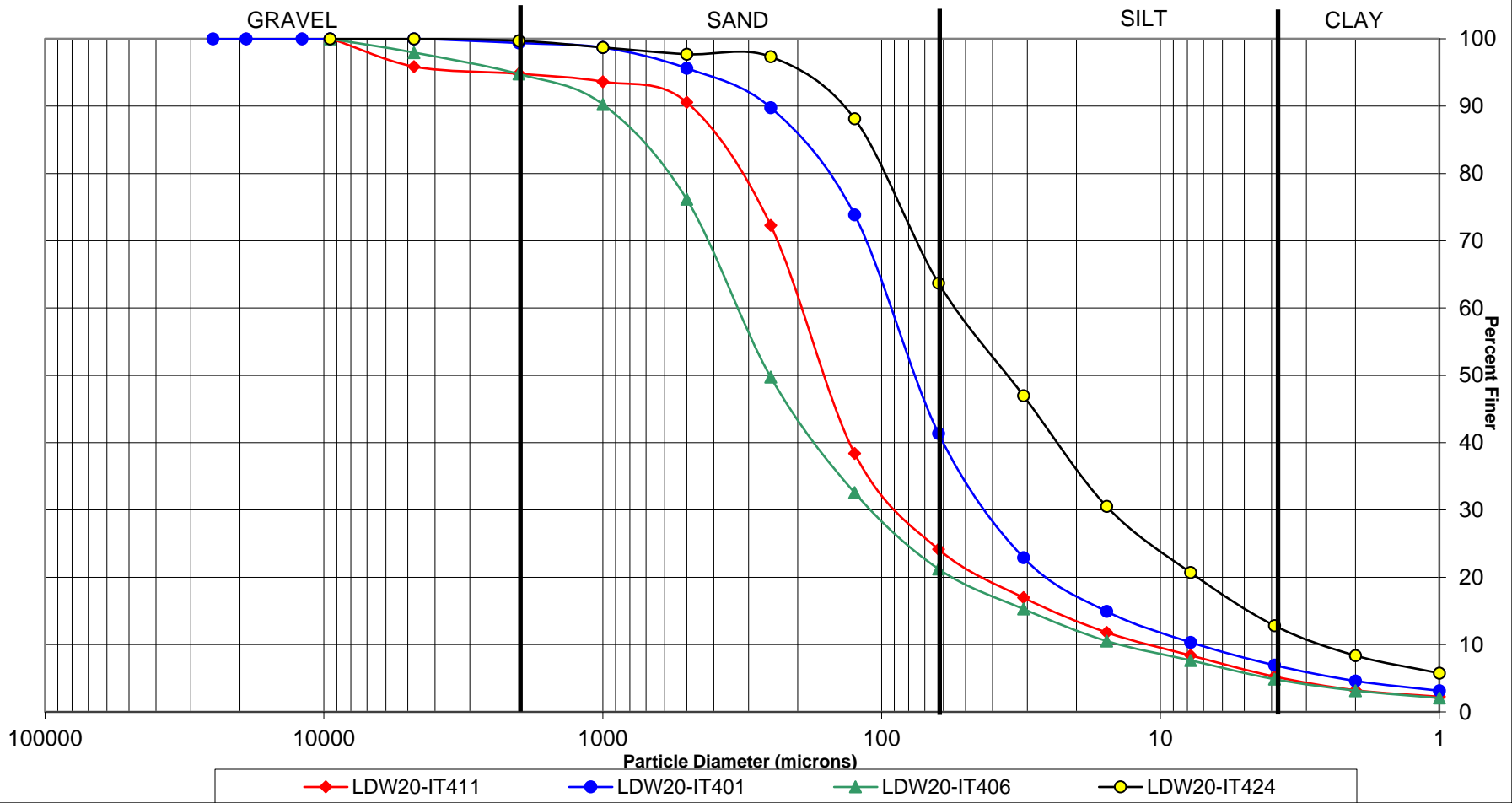
Sample Number: LDW20-IT⁴ 100.0 100.0 100.0 100 95.9 94.8 93.6 90.6 72.3 38.4 24.2 17.0 11.8 8.4 5.3 3.2 2.3
 25000 19000 12500 9500 4750 2000 1000 500 250 125 62.5 31.2 15.6 7.8 3.9 1.95 1
 1" 3/4" 1/2" 3/8" 4 10 18 35 60 120 230

		Sieve Analysis Portion				Pipette Portion								
		Sieve Size	Weight of Soil + Tare	Weight of Soil	Percent Retained	Percent Passing	Phi Size	Tare weight	Dry Weight + Tare	Soil Wt	Soil x 50	Minus Calgon	Cum Percent Coarser	Percent Passing
Wt Tare	1.5950	Tare	52.0311	0.0000	0		4	1.5911	1.7362	0.1451	7.255	6.394	76.65222	23.3478
Wet Wt & Tare	58.0852	1"	52.0311	0	0	100.0	5	1.5768	1.6870	0.1102	5.51	4.649	83.02411	17
Dry Wt & Tare	41.1909	3/4"	52.0311	0	0	100.0	6	1.5751	1.6570	0.0819	4.095	3.234	88.191	12
Wt Moisture	16.8943	1/2"	52.0311	0	0	100.0	7	1.5736	1.6368	0.0632	3.16	2.299	91.60517	8
Dry Soil	39.5959	3/8"	52.0311	0	0	100.0	8	1.6018	1.6478	0.046	2.3	1.439	94.74547	5
Moisture Content	0.426668	4	53.1761	1.145	4	95.9	9	1.6024	1.6373	0.0349	1.745	0.884	96.77206	3
		10	53.4690	1.4379	5	94.8	10	1.5779	1.6075	0.0296	1.48	0.619	97.73971	2
Wt Tare	52.0232	18	53.7943	1.7632	6	93.6								
Wet Wt & Tare	91.5097	35	54.6451	2.614	9	90.6								
Dry Wt & Tare	74.3950	60	59.6989	7.6678	28	72.3								
Wt Total Solids	27.67743	120	69.0803	17.0492	62	38.4								
Wt -230 Solids	6.677629	230	73.0230	20.9919	76	24.2								
QA (before/after)	1.010645													

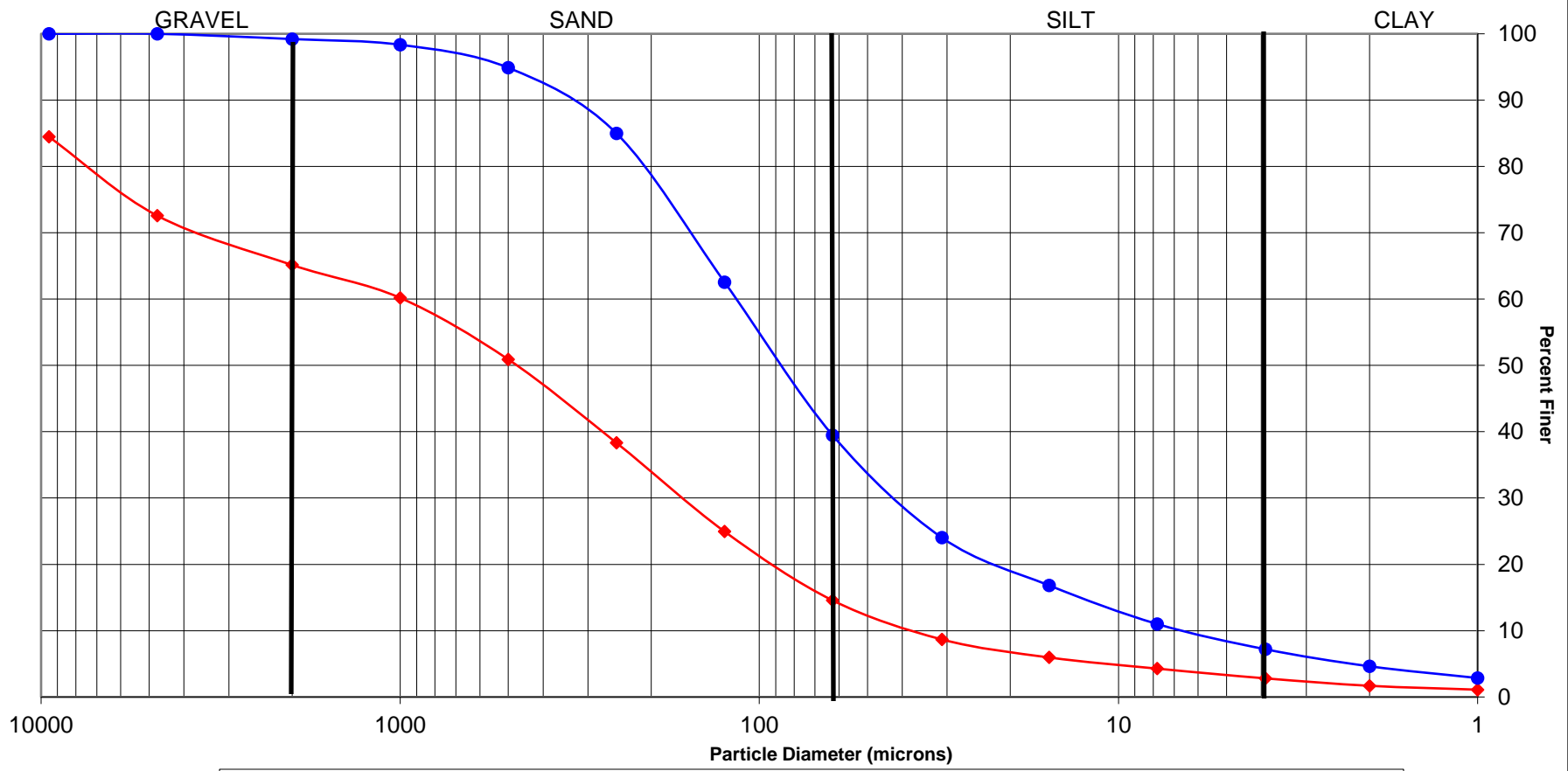
Tot solids 70.0934

Weight of Calgon = 0.861

PSEP Grain Size Distribution



PSEP Grain Size Distribution



◆ LDW20-IT426 ● LDW20-IT419

CHAIN-OF-CUSTODY/TEST REQUEST FORM

No 3867

1 of 2

Project/Client Name: Duwamish Avoc
 Project Number: 180067.02.02
 Contact Name: A. Vandervort
 Sampled By: Windward

Ship to: Harold Berry Assoc
 Attn: Harold Berry Shipping Date: 6/22/20
 Shipper: Covier Airbill Number: _____
 Form filled out by: A. Vandervort Turnaround requested: STA

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)			Comments / Instructions (Jar tag number(s))
6/22/20	0713	L0w20-IT301	1	Sediment	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	0720	IT302	1		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	0729	IT300	1		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	0735	IT309	1		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	0740	IT312	1		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	0745	IT316	1		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	0752	IT320	2		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	0757	IT323	1		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	0811	IT308	1		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	1035	IT411 IT409	1		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	0927	IT401	1		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
6/22/20	0946	L0w20-IT400	1	Sediment	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Total Number of Containers			13					
1) Released by: _____					2) Released by: _____			
Print name: <u>A. Vandervort</u>					Print name: <u>Jacob Latta</u>			
Signature: <u>A. Vandervort</u>					Signature: <u>[Signature]</u>			
Company: <u>Windward</u>					Company: <u>ART</u>			
Date/Time: <u>6/22/20 1547</u>					Date/Time: <u>07/01/20 1131</u>			
Purchase Order / Statement of Work # <u>CLF-0427200</u>					2) Rec'd by: <u>HBerry</u>			
					Company: <u>HLB</u>			
					Date/Time: <u>7/1/2020 1131</u>			

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

200 West Mercer Street
 Suite 401
 Seattle, WA 98119
 Tel: (206) 378-1364
 Fax: (206) 217-9343



* Distribution: White copies accompany shipment; yellow retained by consignator.

CHAIN-OF-CUSTODY/TEST REQUEST FORM

No 3920

Project/Client Name: Duwamish Area
 Project Number: 180067-02.02
 Contact Name: Amara Vandervort
 Sampled By: Windward

Ship to: Harold L. Benny & Associates
 Attn: Harold Benny Shipping Date: 6/17/2020
 Shipper: Bowier Airbill Number: NA
 Form filled out by: B. Windward Turnaround requested: Std.

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)					Comments / Instructions [jar tag number(s)]
					Gravimetric	PSER				
6/17/2020	7:32	LDW20-1T416	1	Sediment	X					
	7:49	LDW20-1T418	1	Sediment	X					
	7:58	LDW20-1T423	1	Sediment	X					
	8:05	LDW20-1T424	1	Sediment	X					
	8:15	LDW20-1T426	1	Sediment	X					
	12:36	LDW20-1T419	1	Sediment	X					
/										
Total Number of Containers					6					
1) Released by: <u>Brandi Quinlisk</u>					Purchase Order / Statement of Work # <u>CLF-04272ab</u>					
Print name: <u>Brandi Quinlisk</u>					2) Released by: <u>HBenny</u>					
Signature: <u>Brandi Quinlisk</u>					Print name: <u>Harold Benny</u>					
Company: <u>Windward</u>					Signature: <u>HBenny</u>					
Date/Time: <u>6/17/2020 16:02</u>					Company: <u>HB</u>					
					Date/Time: <u>6-22-2020 1011</u>					

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

* Distribution: White copies accompany shipment; yellow retained by consignee.

200 West Mercer Street
 Suite 401
 Seattle, WA 98119
 Tel: (206) 378-1364
 Fax: (206) 217-9343



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-083
 Date Started: 8-22-2020
 Sample ID: LDW20-IT316

Client: Anchor
 Date Complete: 8
 Tested by: H. Benny

Sample Description: Grey Silty Sand

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	204
	Tare Wt	1.5984
	Wet Wt + Tare	60.1986
	Dry Wt + Tare	44.3299
Test Sample	Tare No.	204
	Tare Wt	51.3114
	Wet Wt + Tare	122.3069
	Dry Wt + Tare	95.0497
	Cylinder #	C-19

Sieve Analysis

Tare Weight	51.3181
4	-
10	51.4761
18	51.6126
35	52.2864
60	58.7733
120	76.8181
230	91.3729
Pan	3.3327

Pipette Analysis

8/28/2020	Tare #	Tare Weight	Dry Weight
10:00:00 AM			
10:00:20 AM	1	1.5984	1.8320
10:01:49 AM	2	1.5952	1.7423
10:07:15 AM	3	1.6041	1.7007
10:28:59 AM	4	1.6036	1.6755
11:56:00 AM	5	1.6170	1.6683
5:44:00 PM	6	1.6114	1.6522
7:36:00 AM	7	1.5935	1.6256

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-683
 Date Started: 8-22-2020
 Sample ID: LDW20-IT316B

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Grey Sandy Silt/Clay

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	216
	Tare Wt	1.5940
	Wet Wt + Tare	49.9508
	Dry Wt + Tare	35.5737
Test Sample	Tare No.	216
	Tare Wt	51.5165
	Wet Wt + Tare	109.1860
	Dry Wt + Tare	85.9949
	Cylinder #	C-25

Sieve Analysis

Tare Weight	51.5182
4	-
10	51.5847
18	51.6656
35	52.2459
60	58.0754
120	71.9170
230	83.3250
Pan	2.7133

Pipette Analysis

8/28/2020	Tare #	Tare Weight	Dry Weight
10:02:00 AM			
10:02:20 AM	1	1.6032	1.7879
10:03:49 AM	2	1.5834	1.6939
10:09:15 AM	3	1.5817	1.6567
10:30:59 AM	4	1.5737	1.6322
11:58:00 AM	5	1.5865	1.6297
5:46:00 PM	6	1.5909	1.6254
7:38:00 AM	7	1.5886	1.6172

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-083
 Date Started: 8-22-2020
 Sample ID: LDW20-IT316C

Client: Anchor
 Date Complete: _____
 Tested by: HLBenny

Sample Description: Grey Sandy silt/clay

Calgon Batch: 25

Temperature: 22

Solids Content

Sieve Analysis

Moisture Content	Tare No.	248
	Tare Wt	1.6549
	Wet Wt + Tare	41.0791
	Dry Wt + Tare	30.7629
Test Sample	Tare No.	248
	Tare Wt	51.8678
	Wet Wt + Tare	111.7082
	Dry Wt + Tare	88.1011
	Cylinder #	C-22

Tare Weight	51.8700
4	—
10	51.9423
18	52.0201
35	52.6904
60	58.9523
120	73.5435
230	85.7659
Pan	2.3777

Pipette Analysis

8/28/2020	Tare #	Tare Weight	Dry Weight
10:04:00 AM			
10:04:20 AM	1	1.5915	1.7821
10:05:49 AM	2	1.5870	1.7049
10:11:15 AM	3	1.5941	1.6783
10:32:59 AM	4	1.5940	1.6584
12:00:00 PM	5	1.5943	1.6400
5:48:00 PM	6	1.5987	1.6353
7:40:00 AM	7	1.5830	1.6121

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-083
 Date Started: 8-22-2020
 Sample ID: LDW20-IT301

Client: Anchor

Date Complete: _____
 Tested by: H Benny

Sample Description: Brown Silty Sand

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	<u>234</u>
	Tare Wt	<u>1.10460</u>
	Wet Wt + Tare	<u>54.8744</u>
	Dry Wt + Tare	<u>41.0971</u>
Test Sample	Tare No.	<u>234</u>
	Tare Wt	<u>51.5766</u>
	Wet Wt + Tare	<u>121.3967</u>
	Dry Wt + Tare	<u>96.1862</u>
	Cylinder #	<u>C-34</u>

Sieve Analysis

Tare Weight	<u>51.5744</u>
4	<u>52.4110</u>
10	<u>53.1507</u>
18	<u>53.2861</u>
35	<u>54.1580</u>
60	<u>58.9488</u>
120	<u>70.6180</u>
230	<u>90.9407</u>
Pan	<u>5.2541</u>

Pipette Analysis

8/28/2020	Tare #	Tare Weight	Dry Weight
10:06:00 AM			
10:06:20 AM	<u>1</u>	<u>1.6001</u>	<u>1.8568</u>
10:07:49 AM	<u>2</u>	<u>1.5708</u>	<u>1.6874</u>
10:13:15 AM	<u>3</u>	<u>1.5641</u>	<u>1.6380</u>
10:34:59 AM	<u>4</u>	<u>1.5728</u>	<u>1.6279</u>
12:02:00 PM	<u>5</u>	<u>1.5857</u>	<u>1.6241</u>
5:50:00 PM	<u>6</u>	<u>1.5898</u>	<u>1.6199</u>
7:42:00 AM	<u>7</u>	<u>1.6034</u>	<u>1.6280</u>

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-083
 Date Started: 8-22-2020
 Sample ID: LDW20-IT302

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: DK Grey silt/clay

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	251
	Tare Wt	1.6539
	Wet Wt + Tare	54.8227
	Dry Wt + Tare	34.1521
Test Sample	Tare No.	251
	Tare Wt	52.0917
	Wet Wt + Tare	89.9997
	Dry Wt + Tare	67.4788
	Cylinder #	C-36

Sieve Analysis

Tare Weight	52.0966
4	53.3154
10	54.2096
18	54.9336
35	55.8829
60	57.4979
120	62.5325
230	66.1155
Pan	1.0810

Pipette Analysis

8/28/2020	Tare #	Tare Weight	Dry Weight
10:08:00 AM			
10:08:20 AM	1	1.5826	1.7788
10:09:49 AM	2	1.5896	1.7419
10:15:15 AM	3	1.5844	1.6916
10:36:59 AM	4	1.5928	1.6705
12:04:00 PM	5	1.5781	1.6295
5:52:00 PM	6	1.5963	1.6347
7:44:00 AM	7	1.5955	1.6254

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-023
 Date Started: 8-22-2010
 Sample ID: LDW20-IT306

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: Brown silt/clay

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	237
	Tare Wt	1.5858
	Wet Wt + Tare	48.7303
	Dry Wt + Tare	29.2212
Test Sample	Tare No.	237
	Tare Wt	51.1063
	Wet Wt + Tare	90.8921
	Dry Wt + Tare	60.3814
	Cylinder #	C-33

Sieve Analysis

Tare Weight	51.1192
4	—
10	51.1627
18	51.2822
35	51.5317
60	52.1159
120	53.5584
230	56.8653
Pan	3.5505

Pipette Analysis

8/28/2010	Tare #	Tare Weight	Dry Weight
10:10:00 AM			
10:10:20 AM	1	1.5976	1.9625
10:11:49 AM	2	1.5960	1.8614
10:17:15 AM	3	1.6139	1.7853
10:38:59 AM	4	1.6046	1.7173
12:06:00 PM	5	1.6010	1.6718
5:54:00 PM	6	1.5935	1.6483
7:46:00 AM	7	1.5952	1.6384

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-083
 Date Started: 8-22-2020
 Sample ID: LDW20-IT309

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: DK Grey Sandy Silt/Clay

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	240
	Tare Wt	1.5876
	Wet Wt + Tare	43.6253
	Dry Wt + Tare	28.9547
Test Sample	Tare No.	240
	Tare Wt	52.0187
	Wet Wt + Tare	91.1790
	Dry Wt + Tare	68.8031
	Cylinder #	C-06

Sieve Analysis

Tare Weight	52.0214
4	52.1859
10	52.3351
18	52.5020
35	53.1291
60	55.2665
120	60.6636
230	66.4899
Pan	2.0743

Pipette Analysis

8/28/2020	Tare #	Tare Weight	Dry Weight
10:12:00 AM			
10:12:20 AM	1	1.6057	1.8121
10:13:49 AM	2	1.5946	1.7443
10:19:15 AM	3	1.5781	1.6775
10:40:59 AM	4	1.5716	1.6433
12:08:00 PM	5	1.5951	1.6442
5:56:00 PM	6	1.5870	1.6254
7:48:00 AM	7	1.5889	1.6199

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-083
 Date Started: 8-22-2020
 Sample ID: LDW20-IT312

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: Grey Sandy silt/clay

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	253
	Tare Wt	1.5911
	Wet Wt + Tare	54.6329
	Dry Wt + Tare	39.3096
Test Sample	Tare No.	253
	Tare Wt	51.9406
	Wet Wt + Tare	91.3994
	Dry Wt + Tare	73.0595
	Cylinder #	C-30

Sieve Analysis

Tare Weight	51.9429
4	-
10	52.4449
18	52.5528
35	52.9607
60	56.4680
120	64.3502
230	71.3822
Pan	1.6653

Pipette Analysis

8/28/2020	Tare #	Tare Weight	Dry Weight
10:14:00 AM			
10:14:20 AM	1	1.5722	1.7575
10:15:49 AM	2	1.5794	1.7010
10:21:15 AM	3	1.5866	1.6651
10:42:59 AM	4	1.5896	1.6472
12:10:00 PM	5	1.5831	1.6240
5:58:00 PM	6	1.5895	1.6223
7:50:00 AM	7	1.6062	1.6288

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-083
 Date Started: 8-22-2020
 Sample ID: LDW20-IT 320

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Grey Silty Sand

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	202
	Tare Wt	1.5849
	Wet Wt + Tare	56.6658
	Dry Wt + Tare	44.1450
Test Sample	Tare No.	202
	Tare Wt	49.9868
	Wet Wt + Tare	143.5958
	Dry Wt + Tare	115.6170
	Cylinder #	C-54

Sieve Analysis

Tare Weight	50.0123
4	2.0850
10	50.0908
18	50.1741
35	50.3891
60	52.7890
120	81.9782
230	108.4412
Pan	5.1023

$\frac{3}{8}$ 2.0050

Pipette Analysis

8/28/2020	Tare #	Tare Weight	Dry Weight
10:16:00 AM			
10:16:20 AM	1	1.5928	1.8255
10:17:49 AM	2	1.5989	1.6972
10:23:15 AM	3	1.5834	1.6460
10:44:59 AM	4	1.5899	1.6385
12:12:00 PM	5	1.5748	1.6098
6:00:00 PM	6	1.5700	1.5978
7:52:00 AM	7	1.5817	1.6056

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-083
 Date Started: 8-22-2020
 Sample ID: LDW20-IT323

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Dk Grey silt/clay

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	235
	Tare Wt	1.5830
	Wet Wt + Tare	40.3679
	Dry Wt + Tare	23.2546
Test Sample	Tare No.	235
	Tare Wt	51.4378
	Wet Wt + Tare	86.7809
	Dry Wt + Tare	60.1874
	Cylinder #	C-73

Sieve Analysis

Tare Weight	51.4507
4	-
10	51.4688
18	51.6747
35	52.3513
60	53.4238
120	55.3453
230	58.4052
Pan	1.6866

Pipette Analysis

8/28/2020	Tare #	Tare Weight	Dry Weight
10:18:00 AM			
10:18:20 AM	1	1.5905	1.8544
10:19:49 AM	2	1.5972	1.7947
10:25:15 AM	3	1.5915	1.6901
10:46:59 AM	4	1.5859	1.6591
12:14:00 PM	5	1.5822	1.6335
6:02:00 PM	6	1.6086	1.6496
7:54:00 AM	7	1.5907	1.6248

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-083
 Date Started: 8-22-2020
 Sample ID: LDW20-IT308

Client: Anchor

Date Complete: _____
 Tested by: H.L. Benny

Sample Description: Grey silt/clay

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	241
	Tare Wt	1.5901
	Wet Wt + Tare	41.0980
	Dry Wt + Tare	26.1070
Test Sample	Tare No.	241
	Tare Wt	51.10947
	Wet Wt + Tare	89.1408
	Dry Wt + Tare	58.7437
	Cylinder #	C-11

Sieve Analysis

Tare Weight	51.7017
4	—
10	—
18	51.8086
35	51.9682
60	52.2845
120	53.1542
230	56.1816
Pan	2.6572

Pipette Analysis

	Tare #	Tare Weight	Dry Weight
8/28/2020			
10:20:00 AM			
10:20:20 AM	1	1.6101	1.9941
10:21:49 AM	2	1.5974	1.8827
10:27:15 AM	3	1.6022	1.7792
10:48:59 AM	4	1.5854	1.7056
12:16:00 PM	5	1.5822	1.6621
6:04:00 PM	6	1.5774	1.6363
7:56:00 AM	7	1.5900	1.6349

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-083
 Date Started: 8-22-2020
 Sample ID: LDW20-IT411

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: DK Grey silt/clay

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	224
	Tare Wt	1.5950
	Wet Wt + Tare	58.0852
	Dry Wt + Tare	41.1909
Test Sample	Tare No.	224
	Tare Wt	52.0232
	Wet Wt + Tare	91.5097
	Dry Wt + Tare	74.3950
	Cylinder #	C-71

Sieve Analysis

Tare Weight	52.0311
4	53.1761
10	53.4690
18	53.7943
35	54.6451
60	59.6989
120	69.0803
230	73.0230
Pan	0.9911

Pipette Analysis

8/28/2020	Tare #	Tare Weight	Dry Weight
10:22:00 AM			
10:22:20 AM	1	1.5911	1.7362
10:23:49 AM	2	1.5768	1.6870
10:29:15 AM	3	1.5751	1.6570
10:50:59 AM	4	1.5736	1.6368
12:18:00 PM	5	1.6018	1.6478
6:06:00 PM	6	1.6024	1.6373
7:58:00 AM	7	1.5779	1.6075

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-083
 Date Started: 8-22-2020
 Sample ID: LDW20-15401

Client: Anchor
 Date Complete: _____
 Tested by: HLBenny

Sample Description: Grey Sandy Silt/clay

Calgon Batch: 25

Temperature: 22

Solids Content

Sieve Analysis

Moisture Content	Tare No.	220
	Tare Wt	1.6423
	Wet Wt + Tare	45.3053
	Dry Wt + Tare	31.1393
Test Sample	Tare No.	220
	Tare Wt	51.6149
	Wet Wt + Tare	90.6812
	Dry Wt + Tare	70.5136
	Cylinder #	C-12

Tare Weight	51.6183
4	—
10	51.7828
18	51.9642
35	52.7738
60	54.3174
120	58.5196
230	67.0942
Pan	3.4735

Pipette Analysis

8/28/2020	Tare #	Tare Weight	Dry Weight
10:24:00 AM			
10:24:20 AM	1	1.5819	1.8107
10:25:49 AM	2	1.5792	1.7159
10:31:15 AM	3	1.5794	1.6744
10:52:59 AM	4	1.5832	1.6543
12:20:00 PM	5	1.5864	1.6398
6:08:00 PM	6	1.5817	1.6229
8:00:00 AM	7	1.5808	1.6144

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-083
 Date Started: 8-22-2020
 Sample ID: LDW20-IT 406

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: Grey Gravelly Sandy Silt

Calgon Batch:

Temperature:

Solids Content

Moisture Content	Tare No.	250
	Tare Wt	1.6482
	Wet Wt + Tare	47.3740
	Dry Wt + Tare	34.0512
Test Sample	Tare No.	250
	Tare Wt	52.3272
	Wet Wt + Tare	96.9370
	Dry Wt + Tare	78.3517
	Cylinder #	C-10

Sieve Analysis

Tare Weight	52.3327
4	52.9808
10	53.9877
18	55.4116
35	59.8728
60	68.2286
120	73.6603
230	77.2465
Pan	1.1248

Pipette Analysis

8/28/2020	Tare #	Tare Weight	Dry Weight
10:26:00 AM			
10:26:20 AM	1	1.5701	1.7325
10:27:49 AM	2	1.5932	1.7088
10:33:15 AM	3	1.5906	1.6756
10:54:59 AM	4	1.5836	1.6501
12:22:00 PM	5	1.5823	1.6308
6:10:00 PM	6	1.5911	1.6287
8:02:00 AM	7	1.5673	1.5978

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-083
 Date Started: 8-22-2020
 Sample ID: LDW20-IT424

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: DK Grey Silt/Clay

Calgon Batch: 25

Temperature: 22

Solids Content

Sieve Analysis

Moisture Content	Tare No.	247
	Tare Wt	1.10491
	Wet Wt + Tare	41.9024
	Dry Wt + Tare	24.0483
Test Sample	Tare No.	247
	Tare Wt	51.8643
	Wet Wt + Tare	89.4753
	Dry Wt + Tare	61.6662
	Cylinder #	C-40

Tare Weight	51.8783
4	-
10	51.9403
18	52.1466
35	52.3572
60	52.4366
120	54.3659
230	59.4740
Pan	2.1829

Pipette Analysis

8/23/2020	Tare #	Tare Weight	Dry Weight
10:28:00 AM			
10:28:20 AM	1	1.5736	1.8592
10:29:49 AM	2	1.5821	1.7968
10:35:15 AM	3	1.5877	1.7332
10:56:59 AM	4	1.5944	1.6986
12:24:00 PM	5	1.5995	1.6706
6:12:00 PM	6	1.5970	1.6494
8:04:00 AM	7	1.5855	1.6269

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-083
 Date Started: 8-22-2020
 Sample ID: LDW20-LT426

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Brown Gravelly Sandy Silt

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	245
	Tare Wt	1.5721
	Wet Wt + Tare	80.0454
	Dry Wt + Tare	65.1172
Test Sample	Tare No.	245
	Tare Wt	51.8603
	Wet Wt + Tare	143.2468
	Dry Wt + Tare	116.9038
	Cylinder #	C-43

Sieve Analysis

Tare Weight	51.8651
4	72.1572
10	77.6591
18	81.3361
35	88.2055
60	97.5087
120	107.4076
230	115.0917
Pan	1.8436

1/2 61.7855
 3/8 63.3719

Pipette Analysis

8/28/2020	Tare #	Tare Weight	Dry Weight
10:30:00 AM			
10:30:20 AM	1	1.5855	1.7829
10:31:49 AM	2	1.6220	1.7645
10:37:15 AM	3	1.5862	1.6895
10:58:59 AM	4	1.6022	1.6812
12:26:00 PM	5	1.5826	1.6204
6:14:00 PM	6	1.5771	1.6187
8:06:00 AM	7	1.6012	1.6343

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-083
 Date Started: 8-22-2020
 Sample ID: LDW20-IT 419

Client: Anchor

Date Complete: _____
 Tested by: HBenny

Sample Description: Grey Silty Sand

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	214
	Tare Wt	1.6520
	Wet Wt + Tare	52.4924
	Dry Wt + Tare	39.9654
Test Sample	Tare No.	214
	Tare Wt	50.9551
	Wet Wt + Tare	91.2526 + 9.4831
	Dry Wt + Tare	76.9519
	Cylinder #	C-3

Sieve Analysis

Tare Weight	50.9608
4	←
10	51.2584
18	51.5824
35	52.8839
60	56.5912
120	65.0091
230	73.6721
Pan	2.9492

Pipette Analysis

8/28/2020	Tare #	Tare Weight	Dry Weight
10:32:00 AM			
10:32:20 AM	1	1.6010	1.8873
10:33:49 AM	2	1.5957	1.7866
10:39:15 AM	3	1.5804	1.7193
11:00:59 AM	4	1.6104	1.7072
12:28:00 PM	5	1.5803	1.6332
6:16:00 PM	6	1.5825	1.6332
8:08:00 AM	7	1.5818	1.6197

1.6496 HB

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: July 1, 2020
Date Started: August 27, 2020
Date Finished: September 1, 2020

Client: AnchorQEA
HLB Project #: 20-084
Tested By: H Benny

CASE NARRATIVE

1. Fifteen 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 the job was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. The samples contained organic matter which may have broken down during the oven drying and sieving process, affecting the grain size analysis.
5. The data is provided in summary tables and plots.
6. There were no noted anomalies in the testing or samples on project.

Reviewed by:



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: July 1, 2020
Date Started: August 27, 2020
Date Finished: September 1, 2020

Client: AnchorQEA
Project #: 20-084
Tested by: H Benny

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
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
LDW20-SS258	100.0	100.0	100.0	99.5	98.3	88.6	58.7	49.5	39.9	28.0	16.8	11.4	6.7	4.2
	100.0	100.0	99.5	98.4	88.5	56.2	48.4	38.6	25.6	17.5	11.7	7.3	4.4	2.4
	100.0	100.0	100.0	98.8	88.7	58.7	49.3	39.6	27.2	17.7	11.3	7.0	4.2	2.2
LDW20-SS424	100.0	100.0	99.9	99.0	97.9	96.3	81.7	49.7	34.6	22.8	16.3	10.5	6.4	3.4
LDW20-SS268	100.0	100.0	99.1	97.7	95.7	93.7	88.7	77.2	58.6	37.1	24.2	15.1	10.0	5.9
LDW20-SS266	100.0	100.0	99.7	98.6	93.0	78.3	67.4	44.6	26.9	16.4	11.2	7.4	5.1	3.2
LDW20-SS257	100.0	100.0	98.5	96.1	87.1	76.9	71.9	59.9	43.6	26.4	17.2	10.6	6.9	4.0
LDW20-SS228	100.0	100.0	88.4	75.7	56.4	31.9	16.5	10.4	7.2	4.9	3.5	2.4	1.5	0.9
LDW20-SS236	100.0	100.0	99.1	97.7	92.9	83.6	70.4	52.3	33.6	21.3	14.3	9.1	6.4	3.6
LDW20-SS247	100.0	94.8	85.5	77.4	65.9	37.4	21.1	13.5	9.2	5.9	4.3	2.7	1.8	1.1
LDW20-SS301	100.0	97.7	91.1	89.4	84.3	63.6	36.3	20.2	12.9	8.9	6.1	4.0	2.2	0.9
LDW20-SS302	90.5	80.5	75.9	71.8	66.0	55.1	35.5	28.2	22.4	15.1	9.3	5.1	3.1	1.3
LDW20-SS309	100.0	100.0	99.8	99.2	96.9	89.6	76.1	55.7	35.5	20.0	12.8	7.6	4.4	2.1
LDW20-SS323	100.0	100.0	99.8	98.1	96.0	94.4	88.1	73.8	49.9	28.9	19.0	11.1	7.5	4.2
LDW20-SS404	100.0	100.0	96.8	54.2	11.2	3.6	1.3	0.6	-	-	-	-	-	-
LDW20-SS407	100.0	100.0	99.4	85.7	46.0	20.3	9.8	6.7	4.6	3.2	2.3	1.4	0.9	0.4
LDW20-IT389	98.6	97.6	94.7	89.9	62.7	14.1	5.6	3.7	-	-	-	-	-	-

Reviewed by:  _____

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: July 1, 2020
Date Started: August 27, 2020
Date Finished: September 1, 2020

Client: AnchorQEA
HLB Project #: 20-084
Tested by: H Benny

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)
LDW20-SS258	0.0	0.5	1.2	9.7	29.9	9.1	9.6	11.9	11.2	5.4	4.7	2.5	4.2	49.5
	0.5	1.1	9.8	32.3	7.9	9.8	13.0	8.1	5.8	4.3	2.9	2.0	2.4	38.6
	0.0	1.2	10.1	30.1	9.3	9.8	12.4	9.5	6.4	4.3	2.8	2.0	2.2	39.6
LDW20-SS424	0.1	0.8	1.1	1.7	14.5	32.0	15.2	11.7	6.5	5.8	4.1	3.0	3.4	49.7
LDW20-SS268	0.9	1.4	2.0	1.9	5.0	11.5	18.6	21.6	12.9	9.1	5.1	4.1	5.9	77.2
LDW20-SS266	0.3	1.2	5.5	14.8	10.9	22.8	17.7	10.6	5.2	3.8	2.2	1.9	3.2	44.6
LDW20-SS257	1.5	2.5	9.0	10.2	5.0	11.9	16.3	17.3	9.1	6.7	3.7	2.9	4.0	59.9
LDW20-SS228	11.6	12.8	19.3	24.4	15.4	6.1	3.2	2.3	1.3	1.1	0.9	0.7	0.9	10.4
LDW20-SS236	0.9	1.4	4.7	9.3	13.3	18.1	18.7	12.3	7.0	5.3	2.7	2.8	3.6	52.3
LDW20-SS247	14.5	8.1	11.6	28.4	16.3	7.6	4.2	3.3	1.6	1.5	0.9	0.8	1.1	13.5
LDW20-SS301	8.9	1.7	5.1	20.7	27.3	16.1	7.3	4.0	2.8	2.1	1.8	1.3	0.9	20.2
LDW20-SS302	24.1	4.0	5.8	10.9	19.5	7.3	5.8	7.3	5.8	4.1	2.1	1.8	1.3	28.2
LDW20-SS309	0.2	0.6	2.2	7.3	13.5	20.4	20.2	15.5	7.2	5.3	3.2	2.3	2.1	55.7
LDW20-SS323	0.2	1.7	2.1	1.6	6.3	14.3	23.8	21.1	9.9	7.9	3.7	3.3	4.2	73.8
LDW20-SS404	3.2	42.6	43.0	7.7	2.3	0.7	-	-	-	-	-	-	-	0.6
LDW20-SS407	0.6	13.6	39.7	25.7	10.5	3.0	2.1	1.4	1.0	0.9	0.5	0.4	0.4	6.7
LDW20-IT389	5.3	4.9	27.1	48.6	8.6	1.9	-	-	-	-	-	-	-	3.7

Reviewed by:



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: July 1, 2020
Date Started: August 27, 2020
Date Finished: September 1, 2020

Client: AnchorQEA
HLB Project #: 20-084
Tested by: H Benny

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
LDW20-SS258	100.0	100.0	99.5	98.3	88.6	58.7	49.5	39.9	28.0	16.8	11.4	6.7	4.2	2.3
	100.0	100.0	99.5	98.4	88.5	56.2	48.4	38.6	25.6	17.5	11.7	7.3	4.4	2.4
	100.0	100.0	100.0	98.8	88.7	58.7	49.3	39.6	27.2	17.7	11.3	7.0	4.2	2.2
AVE	100.0	100.0	99.6	98.5	88.6	57.9	49.1	39.3	26.9	17.3	11.5	7.0	4.3	2.3
STDEV	0.0	0.0	0.2	0.2	0.1	1.1	0.5	0.5	1.0	0.4	0.2	0.3	0.1	0.1
%RSD	0.0	0.0	0.3	0.2	0.1	2.0	1.0	1.4	3.6	2.2	1.3	3.6	2.3	2.8

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)
LDW20-SS258	6/22/2020	8/22/2020	8/26/2020	101.7		10.7
	6/22/2020	8/22/2020	8/26/2020	103.9		10.0
	6/22/2020	8/22/2020	8/26/2020	101.6		9.6
LDW20-SS424	6/22/2020	8/22/2020	8/26/2020	102.6		11.2
LDW20-SS268	6/22/2020	8/22/2020	8/26/2020	101.0		16.8
LDW20-SS266	6/22/2020	8/22/2020	8/26/2020	100.3		10.8
LDW20-SS257	6/22/2020	8/22/2020	8/26/2020	99.8		14.0
LDW20-SS228	6/22/2020	8/22/2020	8/26/2020	100.4		6.7
LDW20-SS236	6/22/2020	8/22/2020	8/26/2020	100.3		11.6
LDW20-SS247	6/22/2020	8/22/2020	8/26/2020	100.7		10.1
LDW20-SS301	6/24/2020	8/22/2020	8/26/2020	103.0		5.6
LDW20-SS302	6/24/2020	8/22/2020	8/26/2020	101.9		6.3
LDW20-SS309	6/24/2020	8/22/2020	8/26/2020	100.7		12.4
LDW20-SS323	6/24/2020	8/22/2020	8/26/2020	99.7		14.0
LDW20-SS404	6/24/2020	8/22/2020	8/26/2020	99.5	SS	0.5
LDW20-SS407	6/24/2020	8/22/2020	8/26/2020	100.2		6.5
LDW20-IT389	6/24/2020	8/22/2020	8/26/2020	100.2		6.5
LDW20-IT389	6/16/2020	8/22/2020	8/26/2020	101.4	SS	3.2

Notes to the Testing: Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution.

Reviewed by: 

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: July 1, 2020
Date Started: August 27, 2020
Date Finished: September 1, 2020

Client: AnchorQEA
HLB Project #: 20-084
Tested by: H Benny

Data Qualifiers

PSEP Grain Size Analysis

SM - The sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations.

SS - The sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis.

W - The weight of the sample in some pipette aliquots was below the level required for accurate weighing.

F - The samples were frozen prior to particle size determination.

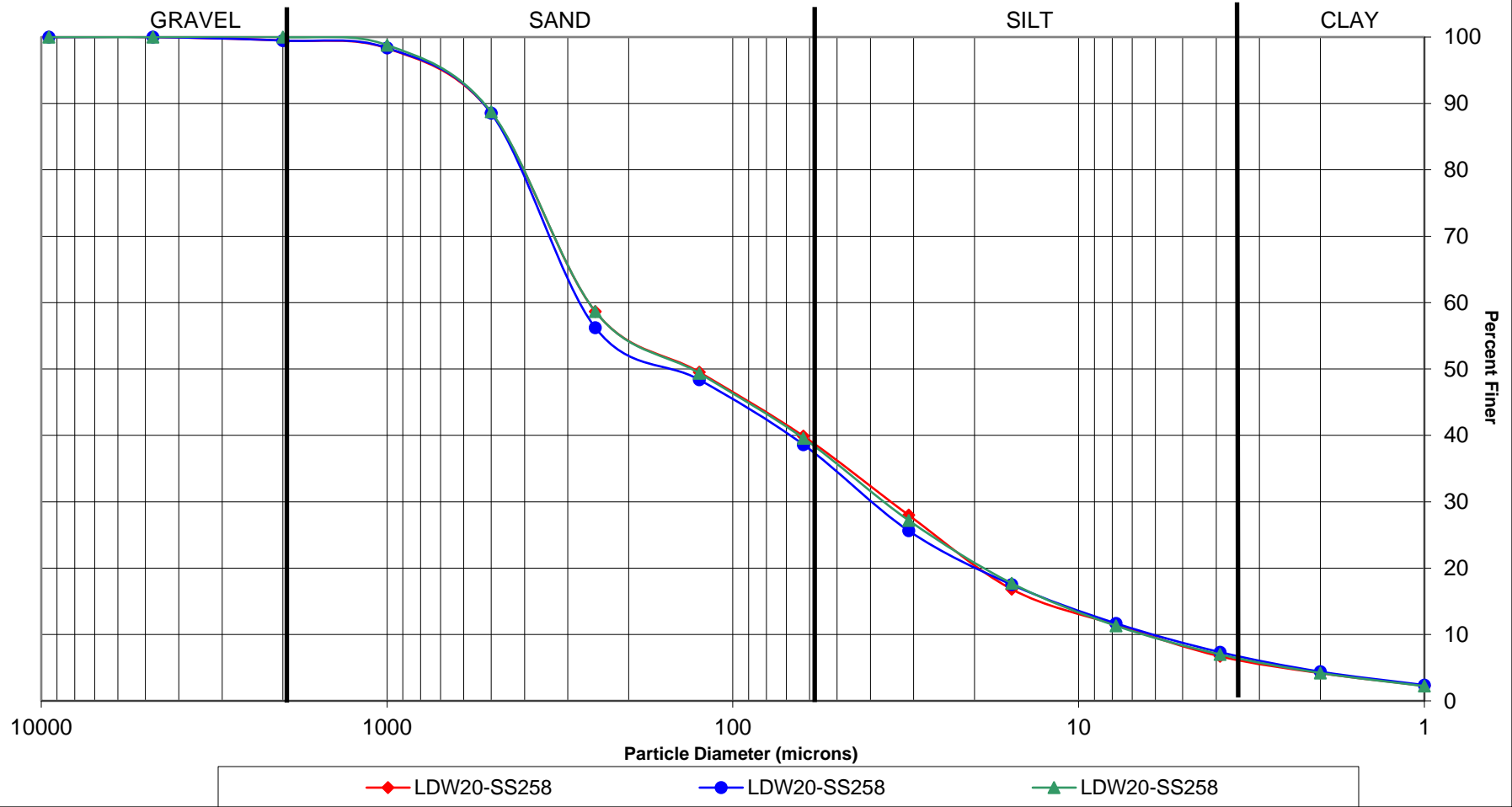
LV - Due to low sample volume provided, the samples could not be rerun to meet QA requirements.

Reviewed by: _____

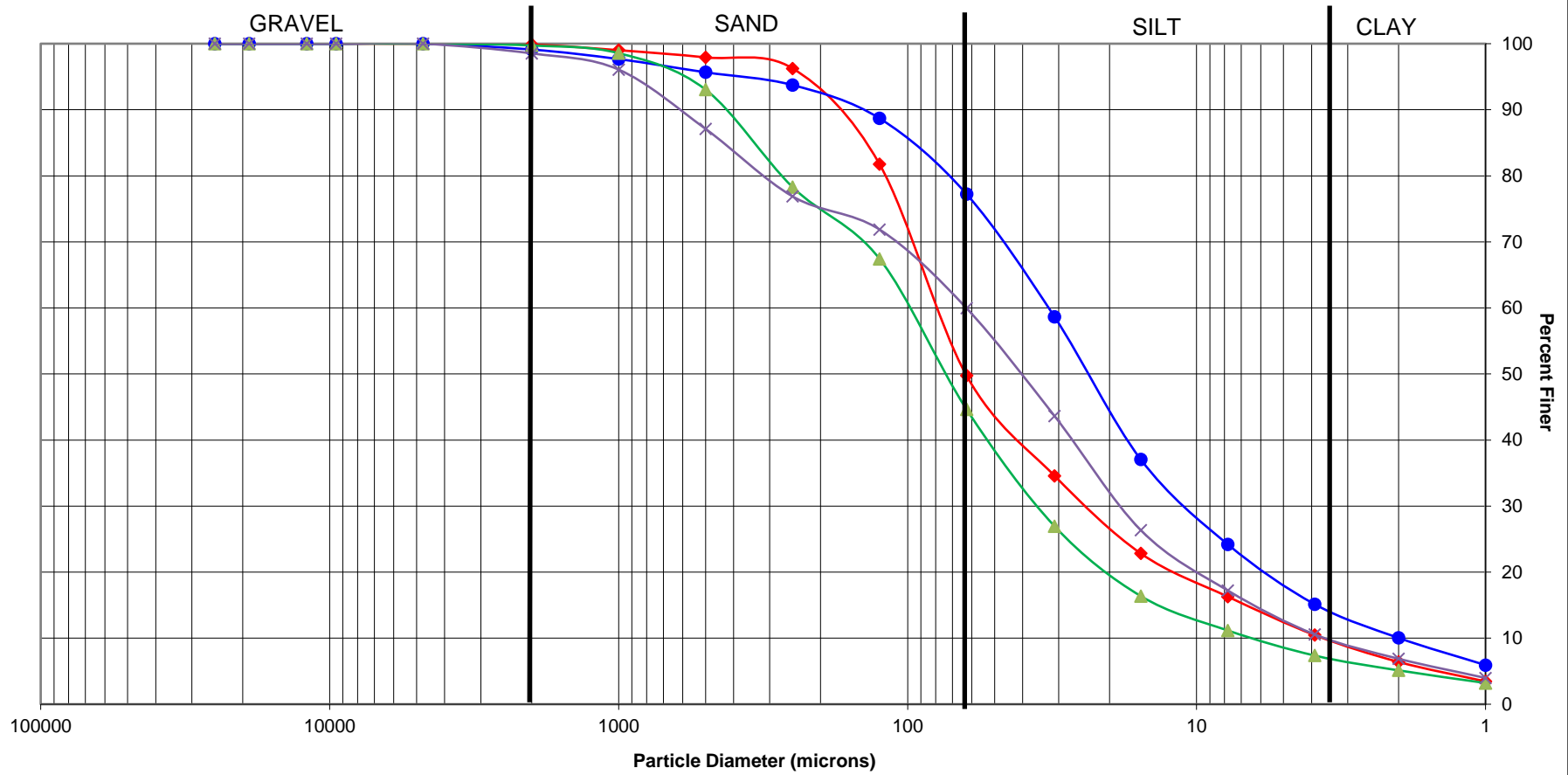


PSEP Grain Size Distribution

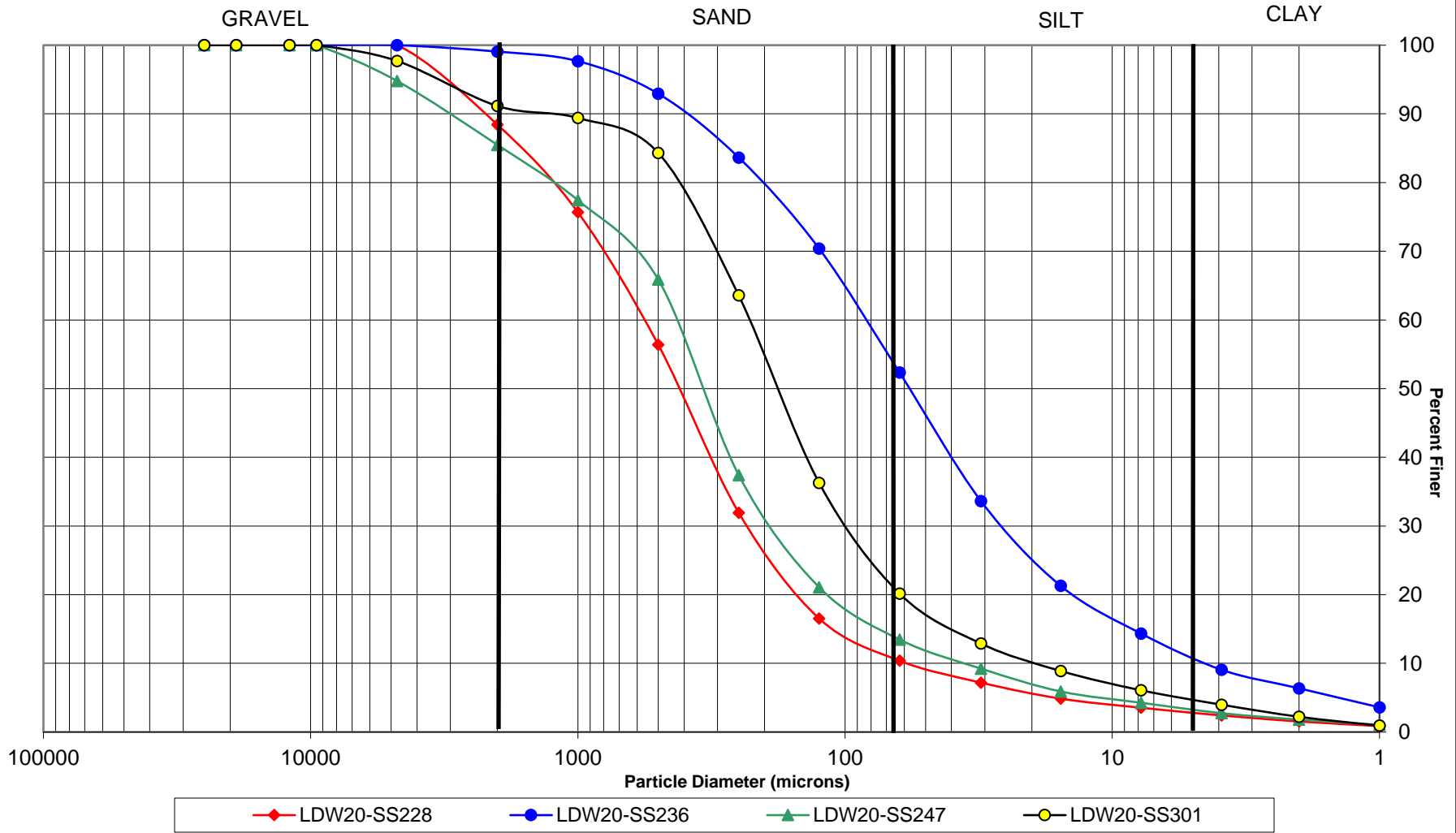
Triplicate Sample Plot



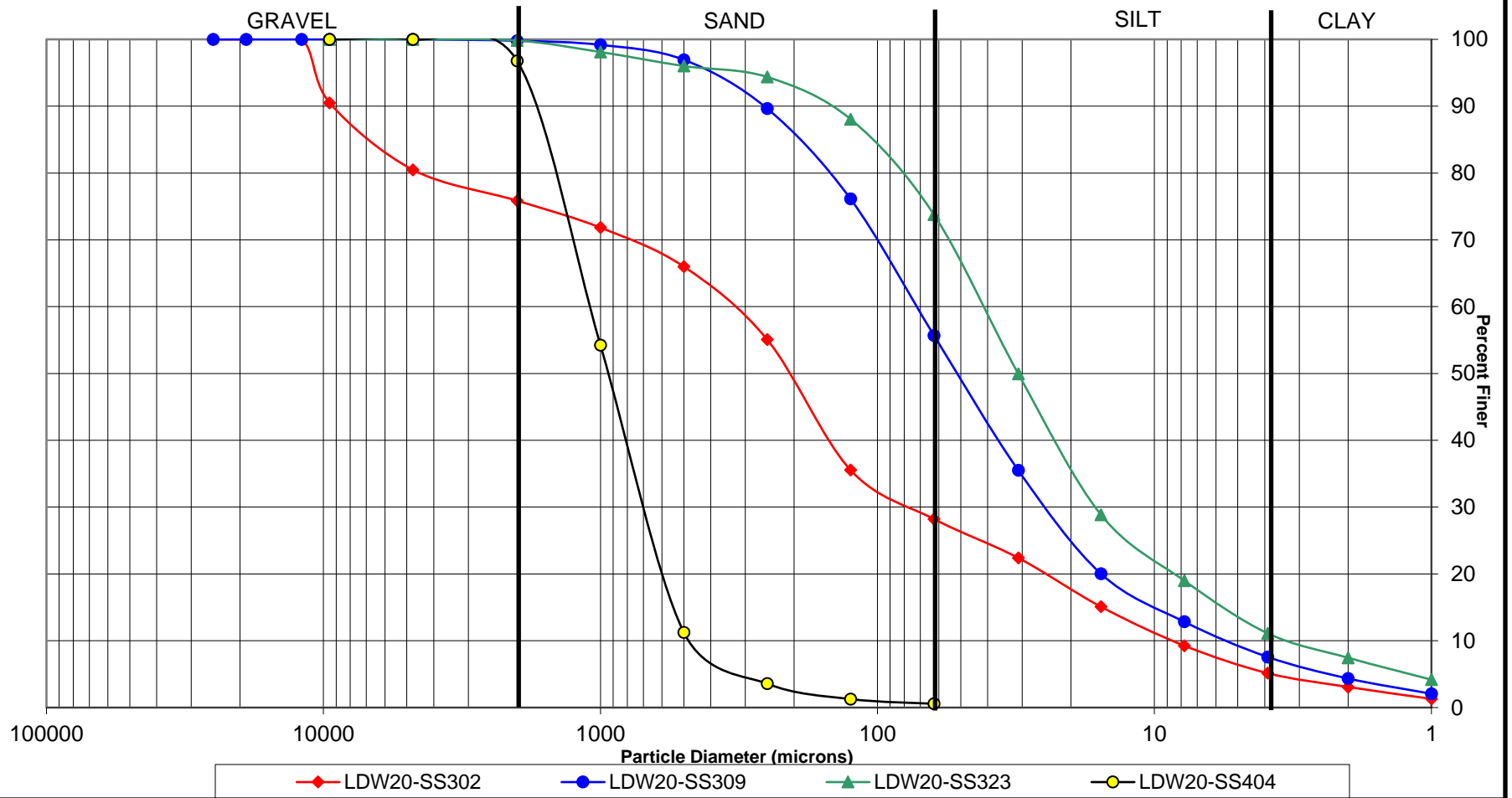
PSEP Grain Size Distribution



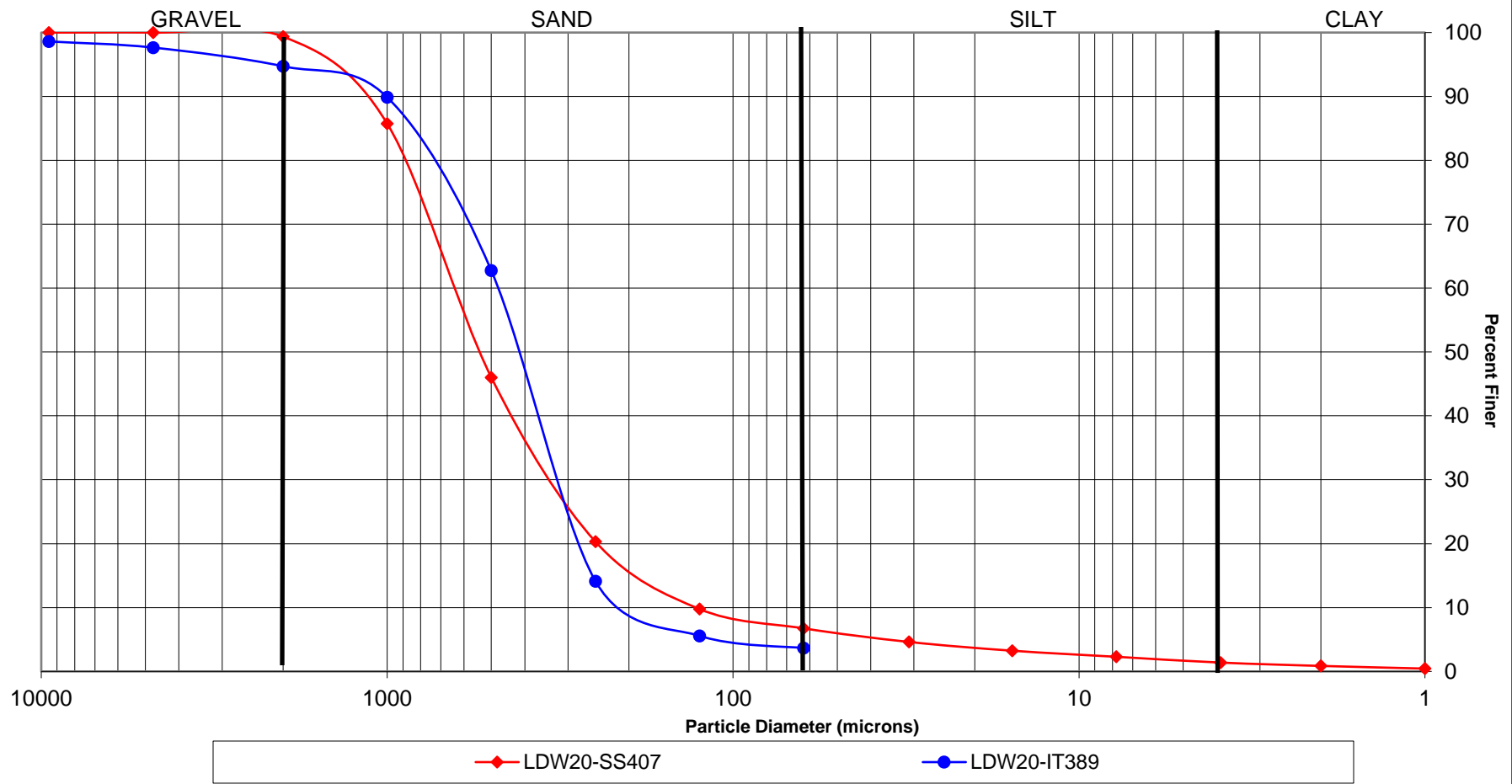
PSEP Grain Size Distribution



PSEP Grain Size Distribution



PSEP Grain Size Distribution



CHAIN-OF-CUSTODY/TEST REQUEST FORM

No **3931**

1 of 1

Project/Client Name: Dwightish AOCY Ship to: Harold L. Beatty & Assoc.
 Project Number: 180067-02.02 Attn: Harold Beatty Shipping Date: 6/26/20
 Contact Name: Anara Vandervort Shipper: Coviel Airbill Number: NA
 Sampled By: JH, KM Form filled out by: K. McPeck Turnaround requested: Std.

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)					Comments / Instructions [Iar tag number(s)]
					Grain Size	PSFP				
06.26.20	0846	L0W20-SS424	1	sediment	X					
	0914	-SS268	1		X					
	0934	-SS266	1		X					
	0954	-SS258	1		X					
	1013	-SS257	1		X					
	1039	-SS228	1		X					
	1057	-SS236	1		X					
	1115	-SS247	1		X					
<u>K. McPeck 6/26/20</u>										
Total Number of Containers					Purchase Order / Statement of Work # <u>CLF-0427206</u>					

1) Released by: <u>Kate McPeck</u> Print name: <u>Kate McPeck</u> Signature: <u>[Signature]</u> Company: <u>Windward</u> Date/Time: <u>6/26/2020 1556</u>	2) Rec'd by: <u>[Signature]</u> Print name: <u>Jacob Walter</u> Signature: <u>[Signature]</u> Company: <u>HUB</u> Date/Time: <u>7-1-2020 1131</u>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------

* Distribution: White copies accompany shipment; yellow retained by consignee.

200 West Mercer Street
 Suite 401
 Seattle, WA 98119
 Tel: (206) 378-1364
 Fax: (206) 217-9343



To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

CHAIN-OF-CUSTODY/TEST REQUEST FORM

No 3302

1 of 1

Project/Client Name: Duwamish AOC4 Ship to: Harold L Benny & Assor
 Project Number: 180067-02-02 Attn: Harold Benny Shipping Date: 6/24/20
 Contact Name: Amaro Vandervort Shipper: Courier Airbill Number: NA
 Sampled By: JH, KM Form filled out by: K. McPeak Turnaround requested: std.

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)						Comments / Instructions (Jar tag number(s))
					Grain size	PSEP					
06/24/20	0754	LOW20-SS301	1	Sediment	X						
	0818	-SS302	1		X						
	0842	-SS309	1		X						
	0913	-SS323	1		X						
	1111	-SS404	1		X						
	1136	-SS407	1		X						
to pickup 6/24/20											
					Purchase Order / Statement of Work # <u>CLF-0427206</u>						
Total Number of Containers					6						

1) Released by: Prandi Quinisk 2) Released by: HBenny
 Print name: Prandi Quinisk Print name: Jacob Yate
 Signature: Prandi Quinisk Signature: [Signature]
 Company: Windward Company: HEB
 Date/Time: 6/24/20 16:23 Date/Time: 07/01/20 1131
 Date/Time: 6/24/20 16:23 Date/Time: 7-1-2020 1131

To be completed by Laboratory upon sample receipt:

Date of receipt: _____ Laboratory W.O. #: _____
 Condition upon receipt: _____ Time of receipt: _____
 Cooler temperature: _____ Received by: _____

200 West Mercer Street
 Suite 401
 Seattle, WA 98119
 Tel: (206) 378-1364
 Fax: (206) 217-9343



* Distribution: White copies accompany shipment; yellow retained by consignee.

CHAIN-OF-CUSTODY/TEST REQUEST FORM

No 3918

Tier 1 bin size

Project/Client Name: Duwanish Acody

Ship to: ARI

Project Number: 180067-02.02

Attn: Amanda Volgardson Shipping Date: 6/16/2020

Contact Name: Amanda Vandervort

Shipper: Power Airbill Number: NA

Sampled By: Windward

Form filled out by: B. Quinlisk Turnaround requested: STD


Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)				Comments / Instructions (jar tag number(s))
6/16/2020	12:08	LD2020-17389	1	sediment	X				
Total Number of Containers									

1) Released by: <i>Brandi Quinlisk</i>			2) Released by: <i>HBB</i>		
Print name: <i>Brandi Quinlisk</i>			Print name: <i>Jobyate</i>		
Signature: <i>Brandi Quinlisk</i>			Signature: <i>Jobyate</i>		
Company: <i>Windward</i>			Company: <i>HBB</i>		
Date/Time: <i>6/16/2020 15:48</i>			Date/Time: <i>6-22-2020 1011</i>		
Date/Time: <i>6/16/2020 15:48</i>			Date/Time: <i>6/16/2020 1549</i>		
Purchase Order / Statement of Work #			Purchase Order / Statement of Work # <i>OLF-0427206</i>		

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

* Distribution: White copies accompany shipment; yellow retained by consignee.



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Seattle, WA 98119
Tel: (206) 378-1364
Fax: (206) 217-9343

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-084
 Date Started: 8-27-2020
 Sample ID: LDW20-55258A

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Brown Sandy Silt

Calgon Batch: 25

Temperature: 21.2

Solids Content

Moisture Content	Tare No.	210
	Tare Wt	1.62463
	Wet Wt + Tare	41.5988
	Dry Wt + Tare	28.1576
Test Sample	Tare No.	210
	Tare Wt	51.2288
	Wet Wt + Tare	91.7462
	Dry Wt + Tare	68.9821
	Cylinder #	C-72

Sieve Analysis

Tare Weight	51.2379
4	—
10	51.3812
18	51.6937
35	54.3043
60	62.3515
120	64.8114
230	67.4028
Pan	1.3288

Pipette Analysis

8/30/2020	Tare #	Tare Weight	Dry Weight
10:05:00 AM			
10:05:20 AM	1	1.5727	1.7953
10:06:49 AM	2	1.5857	1.7508
10:12:15 AM	3	1.5675	1.6736
10:33:59 AM	4	1.5781	1.6558
12:01:00 PM	5	1.5909	1.6436
5:49:00 PM	6	1.5801	1.6194
7:41:00 AM	7	1.5748	1.6040

Notes:

Harold L Benny & Associates, LLC

Project: Duwanish AOC4
 HLB Project #: 20-084
 Date Started: 8-27-2020
 Sample ID: LDW20-55258B

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Brown Sandy Silt

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	201
	Tare Wt	1.6400
	Wet Wt + Tare	43.6459
	Dry Wt + Tare	29.2945
Test Sample	Tare No.	201
	Tare Wt	51.6865
	Wet Wt + Tare	91.1357
	Dry Wt + Tare	69.0237
	Cylinder #	C-38

Sieve Analysis

Tare Weight	51.6911
4	—
10	51.8278
18	52.1182
35	54.6723
60	63.0590
120	65.0994
230	67.6369
Pan	1.3849

Pipette Analysis

8/30/2020	Tare #	Tare Weight	Dry Weight
10:10:00 AM			
10:10:20 AM	1	1.5932	1.7915
10:11:49 AM	2	1.5897	1.7350
10:17:15 AM	3	1.5939	1.6986
10:38:59 AM	4	1.5831	1.6587
12:06:00 PM	5	1.5914	1.6453
5:54:00 PM	6	1.5836	1.6228
7:46:00 AM	7	1.6052	1.6343

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-084
 Date Started: 8-27-2020
 Sample ID: LDW20-95258C

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: Brown Sandy Silt

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	231
	Tare Wt	1.6463
	Wet Wt + Tare	37.7548
	Dry Wt + Tare	25.4004
Test Sample	Tare No.	231
	Tare Wt	34.3780 51.7439
	Wet Wt + Tare	88.8005
	Dry Wt + Tare	68.1754
	Cylinder #	C-61

Sieve Analysis

Tare Weight	51.7561
4	-
10	52.0511 ^{HS}
18	52.0511
35	54.5046
60	61.8324
120	64.1043
230	66.4876
Pan	1.4565

Pipette Analysis

8/30/2020	Tare #	Tare Weight	Dry Weight
10:15:00 AM			
10:15:20 AM	1	1.5991	1.8017
10:16:49 AM	2	1.5906	1.7383
10:22:15 AM	3	1.5823	1.6845
10:43:59 AM	4	1.5842	1.6557
12:11:00 PM	5	1.5948	1.6456
5:59:00 PM	6	1.5810	1.6184
7:51:00 AM	7	1.5803	1.6082

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-084
 Date Started: 8-27-2020
 Sample ID: LDW20-55424

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: Brown silt/clay

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	221	18 HB
	Tare Wt	1.6469	
	Wet Wt + Tare	43.8755	
	Dry Wt + Tare	25.6574	
Test Sample	Tare No.	221	
	Tare Wt	51.9535	
	Wet Wt + Tare	91.6679	
	Dry Wt + Tare	65.7705	
	Cylinder #	C-24	

Sieve Analysis

Tare Weight	51.9579
4	-
10	51.9894
18	52.1806
35	52.4274
60	52.8046
120	56.0809
230	63.3680
Pan	2.5016

Pipette Analysis

8/30/2020	Tare #	Tare Weight	Dry Weight
10:20:00 AM			
10:20:20 AM	1	1.5836	1.8139
10:21:49 AM	2	1.5763	1.7457
10:27:15 AM	3	1.5924	1.7101
10:48:59 AM	4	1.5699	1.6588
12:16:00 PM	5	1.5985	1.6618
6:04:00 PM	6	1.6085	1.6539
7:56:00 AM	7	1.5934	1.6258

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-084
 Date Started: 8-27-2020
 Sample ID: LDW20-55268

Client: Anchor

Date Complete: _____
 Tested by: H Benny

Sample Description: Brown silt/clay

Calgon Batch: 25

Temperature: 22

Solids Content

Sieve Analysis

Moisture Content	Tare No.	238
	Tare Wt	1.6507
	Wet Wt + Tare	44.7151
	Dry Wt + Tare	24.4603
Test Sample	Tare No.	238
	Tare Wt	51.9226
	Wet Wt + Tare	92.9259
	Dry Wt + Tare	59.1216
	Cylinder #	C-49

Tare Weight	51.9330
4	-
10	52.1251
18	52.4394
35	52.8748
60	53.2938
120	54.3894
230	56.8805
Pan	2.0735

Pipette Analysis

8/30/2020	Tare #	Tare Weight	Dry Weight
10:25:00 AM			
10:25:20 AM	1	1.6221	1.9704
10:26:49 AM	2	1.6179	1.8873
10:32:15 AM	3	1.5832	1.7598
10:53:59 AM	4	1.5912	1.7125
12:21:00 PM	5	1.5824	1.6647
6:09:00 PM	6	1.5898	1.6502
8:01:00 AM	7	1.5911	1.6338

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-084
 Date Started: 8-27-2020
 Sample ID: LDW20-55266

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: Brown silt/clay

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	215
	Tare Wt	1.6438
	Wet Wt + Tare	50.2471
	Dry Wt + Tare	32.6418
Test Sample	Tare No.	215
	Tare Wt	51.0051
	Wet Wt + Tare	88.8822
	Dry Wt + Tare	66.4674
	Cylinder #	C-28

Sieve Analysis

Tare Weight	51.0090
4	—
10	51.0744
18	51.3568
35	52.6905
60	56.2564
120	58.8795
230	64.3819
Pan	2.1281

Pipette Analysis

8/30/2020	Tare #	Tare Weight	Dry Weight
10:30:00 AM			
10:30:20 AM	1	1.5961	1.8275
10:31:49 AM	2	1.5997	1.7467
10:37:15 AM	3	1.5980	1.6941
10:58:59 AM	4	1.5999	1.6709
12:26:00 PM	5	1.5947	1.6474
6:14:00 PM	6	1.5894	1.6313
8:06:00 AM	7	1.6020	1.6347

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-084
 Date Started: 8-27-2020
 Sample ID: LDW20-55257

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: Brown silt/clay w/ sand

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	212
	Tare Wt	1.5910
	Wet Wt + Tare	36.6754
	Dry Wt + Tare	22.7356
Test Sample	Tare No.	212
	Tare Wt	50.7484
	Wet Wt + Tare	89.4581
	Dry Wt + Tare	62.5531
	Cylinder #	C-16

Sieve Analysis

Tare Weight	50.7574
4	—
10	51.1006
18	51.6728
35	53.7673
60	56.1517
120	57.3219
230	60.1016
Pan	2.4748

Pipette Analysis

8/30/2020	Tare #	Tare Weight	Dry Weight
10:35:00 AM			
10:35:20 AM	1	1.5979	1.8956
10:36:49 AM	2	1.5964	1.8175
10:42:15 AM	3	1.5911	1.7315
11:03:59 AM	4	1.6054	1.7031
12:31:00 PM	5	1.5973	1.6639
6:19:00 PM	6	1.6144	1.6638
8:11:00 AM	7	1.6074	1.6432

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-084
 Date Started: 8-27-2020
 Sample ID: LDW20-55228

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: Brown Silty Sand w/ Gravel

Calgon Batch: 25

Temperature: 22

Solids Content

Sieve Analysis

Moisture Content	Tare No.	206
	Tare Wt	1.6426
	Wet Wt + Tare	59.7381
	Dry Wt + Tare	44.3141
Test Sample	Tare No.	206
	Tare Wt	50.7052
	Wet Wt + Tare	139.2558
	Dry Wt + Tare	110.3566
	Cylinder #	C-13

Tare Weight	50.7115
4	-
10	58.2356
18	66.5326
35	79.0820
60	94.9817
120	105.0033
230	109.0006
Pan	1.0763

Pipette Analysis

8/30/2020	Tare #	Tare Weight	Dry Weight
10:40:00 AM			
10:40:20 AM	1	1.5817	1.7294
10:41:49 AM	2	1.5806	1.6911
10:47:15 AM	3	1.6009	1.6812
11:08:59 AM	4	1.5990	1.6621
12:36:00 PM	5	1.5941	1.6427
6:24:00 PM	6	1.6030	1.6402
8:16:00 AM	7	1.6065	1.6350

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-084
 Date Started: 8-27-2020
 Sample ID: LDW20-55236

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Brown silty clay

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	256
	Tare Wt	1.5907
	Wet Wt + Tare	41.5086
	Dry Wt + Tare	24.7775
Test Sample	Tare No.	256
	Tare Wt	51.5197
	Wet Wt + Tare	89.9154
	Dry Wt + Tare	64.3062
	Cylinder #	C-59

Sieve Analysis

Tare Weight	51.5853
4	—
10	51.7935
18	52.1037
35	53.1579
60	55.2289
120	58.1833
230	62.2041
Pan	2.1504

Pipette Analysis

8/30/2020	Tare #	Tare Weight	Dry Weight
10:45:00 AM			
10:45:20 AM	1	1.5878	1.8369
10:46:49 AM	2	1.6038	1.7704
10:52:15 AM	3	1.5808	1.6926
11:13:59 AM	4	1.5713	1.6522
12:41:00 PM	5	1.5839	1.6414
6:29:00 PM	6	1.5790	1.6245
8:21:00 AM	7	1.5735	1.6067

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-084
 Date Started: 8-27-2020
 Sample ID: LDW20-55247

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: Brown Silty Sand and Gravel

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	257
	Tare Wt	1.5915
	Wet Wt + Tare	92.5779
	Dry Wt + Tare	65.5798
Test Sample	Tare No.	257
	Tare Wt	51.9883
	Wet Wt + Tare	158.7250
	Dry Wt + Tare	118.8869
	Cylinder #	C-15

Sieve Analysis

Tare Weight	52.0154
4	55.9234
10	62.9111
18	68.9596
35	77.6355
60	98.9901
120	111.2596
230	116.9719
Pan	1.6027

Pipette Analysis

8/30/2020	Tare #	Tare Weight	Dry Weight
10:50:00 AM			
10:50:20 AM	1	1.5763	1.7852
10:51:49 AM	2	1.5786	1.7335
10:57:15 AM	3	1.6049	1.7102
11:18:59 AM	4	1.5807	1.6615
12:46:00 PM	5	1.5990	1.6572
6:34:00 PM	6	1.6025	1.6467
8:26:00 AM	7	1.5985	1.6315

Notes:

Harold L Benny & Associates, LLC

Project: Durhamist A004
 HLB Project #: 20-084
 Date Started: 8-27-2020
 Sample ID: LDW20-55301

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Brown Silty Sand w/ Gravel

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content		
Tare No.		219
Tare Wt		1.6065
Wet Wt + Tare		55.2499
Dry Wt + Tare		39.3071
Test Sample		
Tare No.		219
Tare Wt		50.4791
Wet Wt + Tare		89.9880
Dry Wt + Tare		73.5059
Cylinder #		C-18

Sieve Analysis

Tare Weight		50.4888
4		51.1236
10		52.9476
18		53.4313
35		54.8467
60		60.6074
120		68.1863
230		72.6606
Pan		0.8227

Pipette Analysis

8/30/2020	Tare #	Tare Weight	Dry Weight
10:55:00 AM			
10:55:20 AM	1	1.5776	1.6908
10:56:49 AM	2	1.5766	1.6633
11:02:15 AM	3	1.5865	1.6517
11:23:59 AM	4	1.5988	1.6488
12:51:00 PM	5	1.5915	1.6302
6:39:00 PM	6	1.5909	1.6201
8:31:00 AM	7	1.6105	1.6327

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-084
 Date Started: 8-27-2020
 Sample ID: LDW20-55302

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Grey Silty Sand w/ Gravel

Calgon Batch: 25

Temperature: 22

Solids Content

Sieve Analysis

Moisture Content	Tare No.	232
	Tare Wt	1.5923
	Wet Wt + Tare	49.0281
	Dry Wt + Tare	29.4898
Test Sample	Tare No.	232
	Tare Wt	51.7367
	Wet Wt + Tare	89.67192 HB
	Dry Wt + Tare	68.6591
	Cylinder #	C-42

Tare Weight	51.7480
4	56.1005
10	57.1277
18	58.0261
35	59.3264
60	61.7601
120	66.1110
230	67.7423
Pan	0.5580

3/8 53.8645

Pipette Analysis

8/30/2020	Tare #	Tare Weight	Dry Weight
11:00:00 AM			
11:00:20 AM	1	1.6082	1.7427
11:01:49 AM	2	1.5979	1.7130
11:07:15 AM	3	1.5888	1.6720
11:28:59 AM	4	1.5756	1.6333
12:56:00 PM	5	1.5739	1.6136
6:44:00 PM	6	1.5772	1.6079
8:36:00 AM	7	1.5956	1.6185

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-084
 Date Started: 8-27-2020
 Sample ID: LDW20-55309

Client: Anchor
 Date Complete: _____
 Tested by: H.L. Benny

Sample Description: Brown Sandy Silt

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	211
	Tare Wt	1.5844
	Wet Wt + Tare	51.0446
	Dry Wt + Tare	29.4569
Test Sample	Tare No.	211
	Tare Wt	51.7852
	Wet Wt + Tare	91.1833
	Dry Wt + Tare	63.8621
	Cylinder #	C-27

Sieve Analysis

Tare Weight	51.7896
4	—
10	51.8364
18	51.9728
35	52.4685
60	54.0907
120	57.0933
230	61.6276
Pan	2.2329

Pipette Analysis

8/30/2020	Tare #	Tare Weight	Dry Weight
11:05:00 AM			
11:05:20 AM	1	1.5967	1.8580
11:06:49 AM	2	1.5910	1.7647
11:12:15 AM	3	1.5782	1.6837
11:33:59 AM	4	1.5886	1.6624
1:01:00 PM	5	1.5760	1.6266
6:49:00 PM	6	1.5777	1.6141
8:41:00 AM	7	1.5814	1.6077

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-084
 Date Started: 8-27-2020
 Sample ID: LDW20-SS323

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Grey silt | clay

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	218
	Tare Wt	1.5804
	Wet Wt + Tare	48.0281
	Dry Wt + Tare	23.8402
Test Sample	Tare No.	218
	Tare Wt	51.2111
	Wet Wt + Tare	90.8359
	Dry Wt + Tare	58.3409
	Cylinder #	C-09

Sieve Analysis

Tare Weight	51.2170
4	-
10	51.2499
18	51.5773
35	51.9746
60	52.2865
120	53.4840
230	56.1960
Pan	2.0757

Pipette Analysis

8/30/2020	Tare #	Tare Weight	Dry Weight
11:10:00 AM			
11:10:20 AM	1	1.5980	1.8963
11:11:49 AM	2	1.5915	1.7988
11:17:15 AM	3	1.5810	1.7081
11:38:59 AM	4	1.6024	1.6919
1:06:00 PM	5	1.5906	1.6501
6:54:00 PM	6	1.5822	1.6278
8:46:00 AM	7	1.5901	1.6232

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-084
 Date Started: 8-27-2020
 Sample ID: LDW20-55404

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: Clean Brown Sand

Calgon Batch: 25

Temperature: 22

Solids Content

Sieve Analysis

Moisture Content	Tare No.	230
	Tare Wt	1.6103
	Wet Wt + Tare	48.8038
	Dry Wt + Tare	43.4804
Test Sample	Tare No.	230
	Tare Wt	50.1865
	Wet Wt + Tare	156.2256
	Dry Wt + Tare	144.0718
	Cylinder #	C-29

Tare Weight	50.1854
4	—
10	503.1996
18	93.2374
35	133.6830
60	140.8968
120	143.0733
230	143.7277
Pan	0.2189

HLB

Pipette Analysis

Time Sticker	Tare #	Tare Weight	Dry Weight
	1	1.5875	1.6255
	2		
	3		
	4		
	5		
	6		
	7		

Not enough fines to pipette

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-084
 Date Started: 8-27-2020
 Sample ID: LDW20-55407

Client: Anchor
 Date Complete: _____
 Tested by: HLBenny

Sample Description: Brown Silty Sand

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	227
	Tare Wt	1.6013
	Wet Wt + Tare	54.6768
	Dry Wt + Tare	41.7051
Test Sample	Tare No.	227
	Tare Wt	51.0554
	Wet Wt + Tare	178.3442
	Dry Wt + Tare	142.0967
	Cylinder #	C-53

Sieve Analysis

Tare Weight	51.0683
4	—
10	51.6860
18	64.78794
35	102.9913
60	127.7127
120	137.8579
230	140.7630
Pan	0.9884

HLB

Pipette Analysis

8/30/2020	Tare #	Tare Weight	Dry Weight
11:15:00 AM			
11:15:20 AM	1	1.6023	1.7454
11:16:49 AM	2	1.5928	1.6986
11:22:15 AM	3	1.5966	1.6761
11:43:59 AM	4	1.5943	1.6555
1:11:00 PM	5	1.5834	1.6272
6:59:00 PM	6	1.5955	1.6293
8:51:00 AM	7	1.5755	1.6012

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-084
 Date Started: 8-27-2020
 Sample ID: LDW20-IT389

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: Brown Silty Sand w/ Gravel

Calgon Batch: 25

Temperature: 22

Solids Content

Moisture Content	Tare No.	242
	Tare Wt	1.5924
	Wet Wt + Tare	39.4169
	Dry Wt + Tare	33.2476
Test Sample	Tare No.	242
	Tare Wt	51.3396
	Wet Wt + Tare	157.3302
	Dry Wt + Tare	137.3995
	Cylinder #	C-17

HB

Sieve Analysis

Tare Weight	51.3426
4	53.4306
10	56.0256
18	60.3357
35	84.4321
60	127.5804
120	135.1782
230	136.8839
Pan	0.4037

3/8 52.5744

Pipette Analysis

Time Sticker	Tare #	Tare Weight	Dry Weight
	1	1.5872	1.6395
	2		
	3		
	4		
	5		
	6		
	7		

Not enough fines to pipette

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: July 1, 2020
Date Started: August 31, 2020
Date Finished: September 7, 2020

Client: AnchorQEA
HLB Project #: 20-085
Tested By: H Benny

CASE NARRATIVE

1. Thirteen 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 the job was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. The samples contained organic matter which may have broken down during the oven drying and sieving process, affecting the grain size analysis.
4. The data is provided in summary tables and plots.
5. There were no noted anomalies in the testing or samples on project.

Reviewed by:



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: July 1, 2020
Date Started: August 31, 2020
Date Finished: September 7, 2020

Client: AnchorQEA
Project #: 20-085
Tested by: H Benny

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
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
LDW20-SS390	100.0	100.0	93.8	92.8	90.9	86.0	75.0	53.0	37.4	29.5	19.2	12.8	7.5	4.8
	100.0	96.7	94.2	92.0	87.0	71.2	52.6	37.5	27.9	19.2	13.0	7.7	5.0	2.9
	100.0	100.0	97.0	90.2	89.8	78.7	56.5	41.0	30.6	20.5	13.9	8.1	5.3	2.8
LDW20-SS320	100.0	100.0	100.0	99.3	97.1	88.2	45.5	17.7	8.0	5.5	3.9	2.5	1.7	0.7
LDW20-SS304	100.0	100.0	99.9	99.4	97.9	97.0	91.1	75.5	52.9	30.9	19.7	10.1	8.4	4.9
LDW20-SS319	100.0	100.0	99.6	98.5	85.7	57.4	45.1	26.0	16.6	10.8	7.7	5.9	3.0	1.5
LDW20-SS393	100.0	98.2	97.0	95.0	88.2	75.5	46.7	24.9	15.4	11.3	8.9	5.9	4.1	2.1
LDW20-SS383	100.0	89.3	79.3	74.8	67.5	53.1	39.4	30.8	24.7	18.2	12.7	7.7	5.0	2.8
LDW20-SS389	100.0	100.0	99.4	98.6	94.9	75.8	48.1	35.0	25.0	16.2	10.0	6.2	4.0	2.1
LDW20-SS413	100.0	100.0	98.7	61.7	7.5	0.8	0.1	0.0	-	-	-	-	-	-
LDW20-SS416	100.0	98.0	93.8	90.3	85.4	79.7	69.2	49.7	30.3	18.1	12.6	9.6	6.1	3.7
LDW20-SS418	100.0	100.0	100.0	99.2	98.2	97.3	81.1	44.5	26.3	17.8	12.7	8.0	5.3	2.6
LDW20-SS419	84.0	77.9	76.7	75.6	74.0	62.9	42.8	26.7	21.2	15.4	10.9	4.6	4.4	2.4
LDW20-SS392	96.0	93.2	82.7	48.7	13.7	5.6	2.1	1.6	-	-	-	-	-	-
LDW20-IT319	100.0	100.0	100.0	99.4	94.9	81.1	62.6	41.9	27.5	18.7	11.9	4.9	4.8	2.7

Reviewed by: _____



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: July 1, 2020
Date Started: August 31, 2020
Date Finished: September 7, 2020

Client: AnchorQEA
HLB Project #: 20-085
Tested by: H Benny

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)
LDW20-SS390	6.2	0.9	1.9	4.9	11.0	22.0	15.6	7.8	10.3	6.3	5.3	2.7	4.8	53.0
	5.8	2.2	4.9	15.8	18.6	15.1	9.6	8.7	6.2	5.3	2.7	2.2	2.9	37.5
	3.0	6.7	0.4	11.1	22.3	15.4	10.5	10.0	6.6	5.9	2.8	2.5	2.8	41.0
LDW20-SS320	0.0	0.7	2.2	8.9	42.7	27.8	9.7	2.5	1.6	1.4	0.8	1.0	0.7	17.7
LDW20-SS304	0.1	0.6	1.5	0.9	5.8	15.6	22.6	22.0	11.2	9.5	1.7	3.5	4.9	75.5
LDW20-SS319	0.4	1.1	12.7	28.3	12.3	19.1	9.4	5.8	3.1	1.9	2.9	1.4	1.5	26.0
LDW20-SS393	3.0	2.0	6.8	12.6	28.8	21.8	9.6	4.0	2.5	2.9	1.8	2.0	2.1	24.9
LDW20-SS383	20.7	4.6	7.2	14.5	13.7	8.6	6.1	6.5	5.5	4.9	2.7	2.2	2.8	30.8
LDW20-SS389	0.6	0.8	3.7	19.0	27.7	13.0	10.1	8.8	6.2	3.8	2.2	1.9	2.1	35.0
LDW20-SS413	1.3	36.9	54.3	6.7	0.7	0.1	-	-	-	-	-	-	-	0.0
LDW20-SS416	6.2	3.5	4.9	5.7	10.5	19.5	19.4	12.2	5.5	3.0	3.5	2.4	3.7	49.7
LDW20-SS418	0.0	0.8	1.0	0.9	16.1	36.7	18.2	8.5	5.1	4.7	2.7	2.7	2.6	44.5
LDW20-SS419	23.3	1.1	1.6	11.1	20.0	16.2	5.4	5.8	4.5	6.3	0.3	2.0	2.4	26.7
LDW20-SS392	17.3	34.0	35.0	8.2	3.4	0.5	-	-	-	-	-	-	-	1.6
LDW20-IT319	0.0	0.5	4.5	13.8	18.5	20.6	14.4	8.8	6.8	6.9	0.1	2.1	2.7	41.9

Reviewed by:  _____

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: July 1, 2020
Date Started: August 31, 2020
Date Finished: September 7, 2020

Client: AnchorQEA
HLB Project #: 20-085
Tested by: H Benny

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
LDW20-SS390	100.0	93.8	92.8	90.9	86.0	75.0	53.0	37.4	29.5	19.2	12.8	7.5	4.8	2.8
	100.0	96.7	94.2	92.0	87.0	71.2	52.6	37.5	27.9	19.2	13.0	7.7	5.0	2.9
	100.0	100.0	97.0	90.2	89.8	78.7	56.5	41.0	30.6	20.5	13.9	8.1	5.3	2.8
AVE	100.0	96.8	94.6	91.0	87.6	75.0	54.0	38.6	29.3	19.6	13.3	7.8	5.0	2.8
STDEV	0.0	2.5	1.7	0.7	1.6	3.1	1.7	1.7	1.1	0.6	0.5	0.2	0.2	0.0
%RSD	0.0	2.6	1.8	0.8	1.8	4.1	3.2	4.4	3.8	3.3	3.7	3.0	3.9	1.3

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)
LDW20-SS390	6/22/2020	8/22/2020	8/26/2020	101.1		8.1
	6/22/2020	8/22/2020	8/26/2020	101.7		8.1
	6/22/2020	8/22/2020	8/26/2020	104.9		8.9
LDW20-SS320	6/22/2020	8/22/2020	8/26/2020	103.9		4.8
LDW20-SS304	6/22/2020	8/22/2020	8/26/2020	100.0		15.9
LDW20-SS319	6/22/2020	8/22/2020	8/26/2020	100.2		7.0
LDW20-SS393	6/22/2020	8/22/2020	8/26/2020	103.3		6.2
LDW20-SS383	6/22/2020	8/22/2020	8/26/2020	100.1		9.7
LDW20-SS389	6/22/2020	8/22/2020	8/26/2020	102.0		8.6
LDW20-SS413	6/22/2020	8/22/2020	8/26/2020	99.6	SS	0.0
LDW20-SS416	6/22/2020	8/22/2020	8/26/2020	103.2		13.1
LDW20-SS418	6/22/2020	8/22/2020	8/26/2020	101.1		9.4
LDW20-SS419	6/22/2020	8/22/2020	8/26/2020	95.5		9.5
LDW20-SS392	6/22/2020	8/22/2020	8/26/2020	101.5	SS	1.0
LDW20-IT319	6/22/2020	8/22/2020	8/26/2020	102.5		10.4

Notes to the Testing: Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution.

Reviewed by:



Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: July 1, 2020
Date Started: August 31, 2020
Date Finished: September 7, 2020

Client: AnchorQEA
HLB Project #: 20-085
Tested by: H Benny

Data Qualifiers

PSEP Grain Size Analysis

SM - The sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations.

SS - The sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis.

W - The weight of the sample in some pipette aliquots was below the level required for accurate weighing.

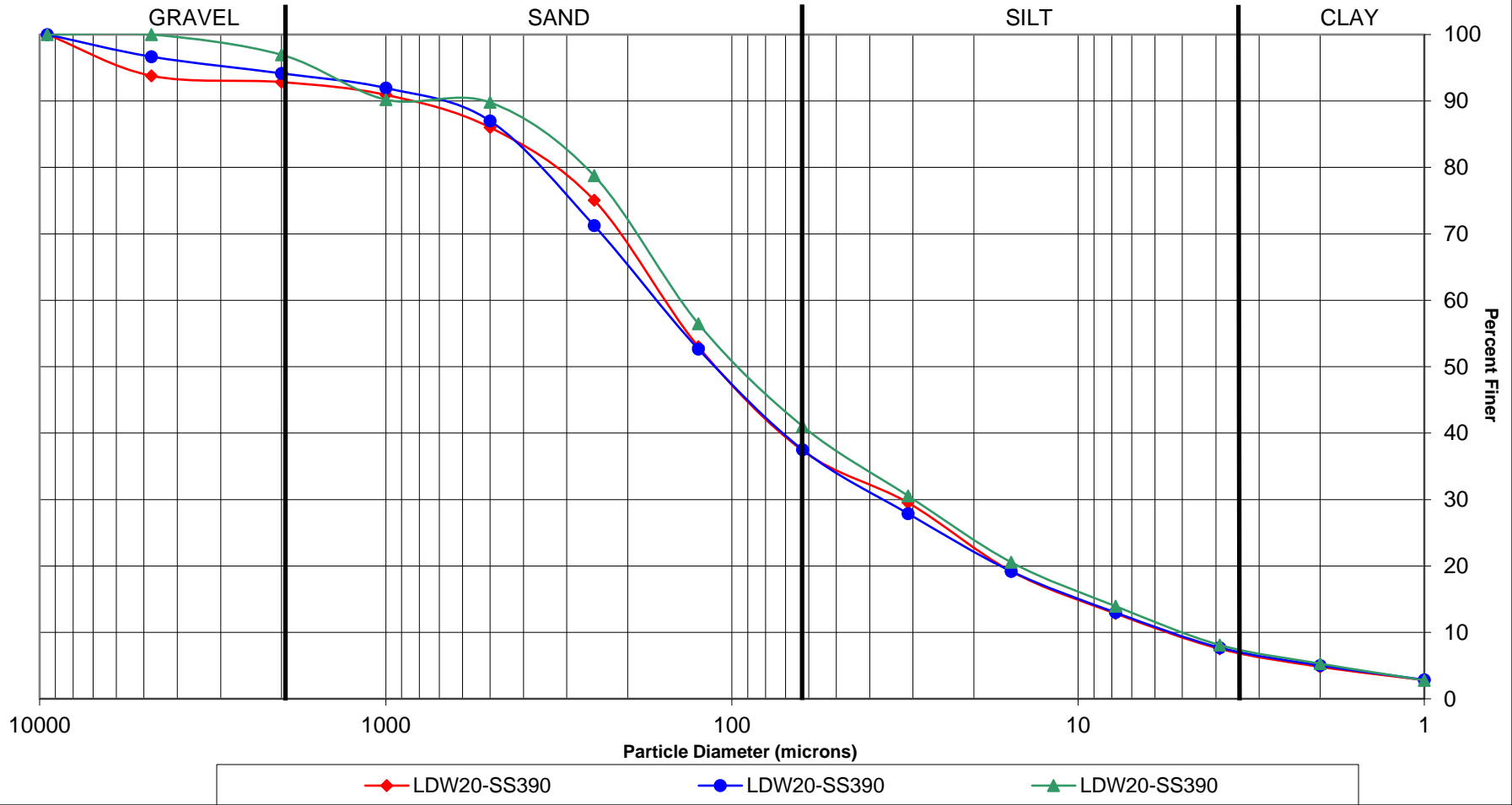
F - The samples were frozen prior to particle size determination.

LV - Due to low sample volume provided, the samples could not be rerun to meet QA requirements.

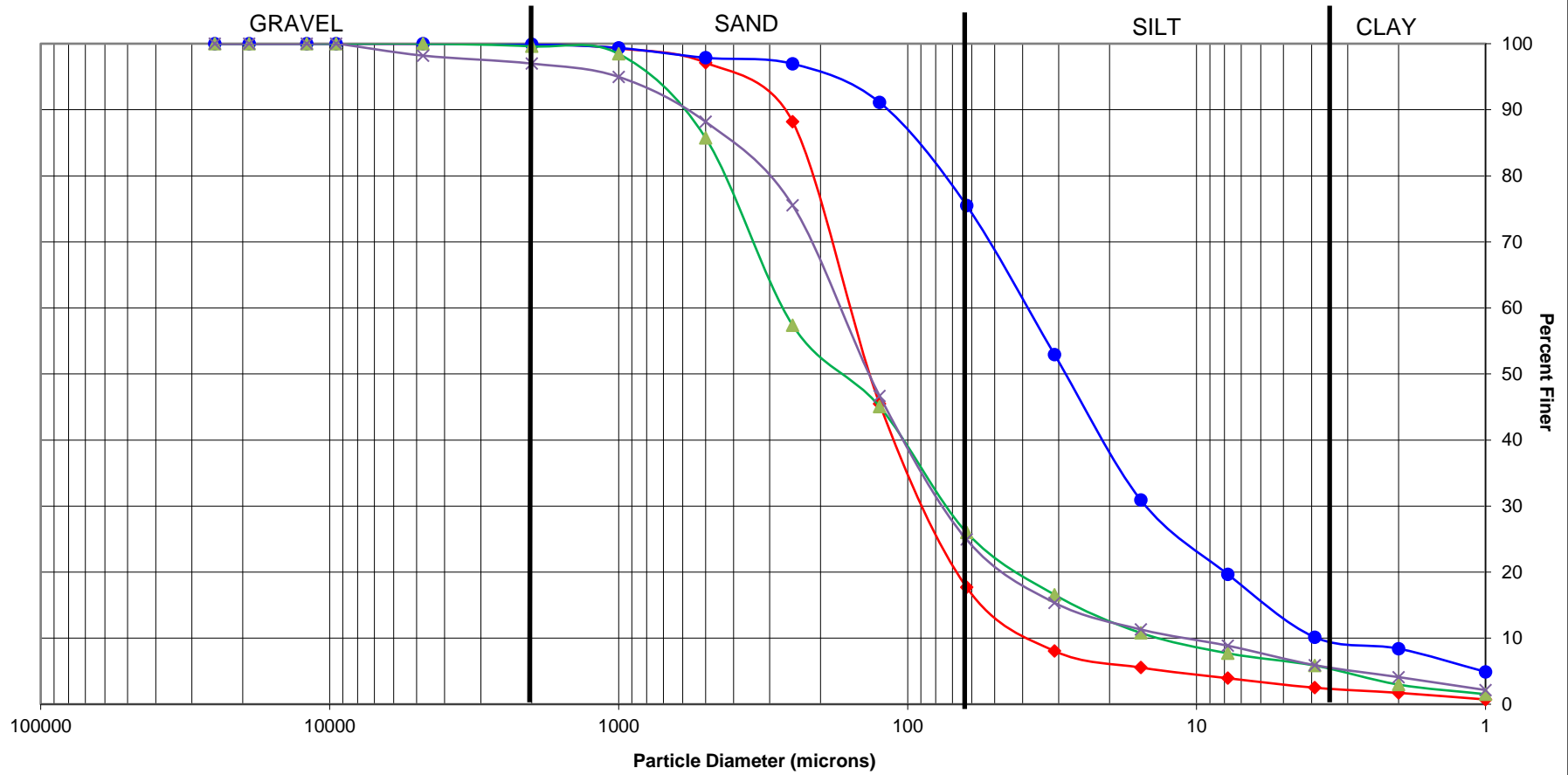
Reviewed by: 

PSEP Grain Size Distribution

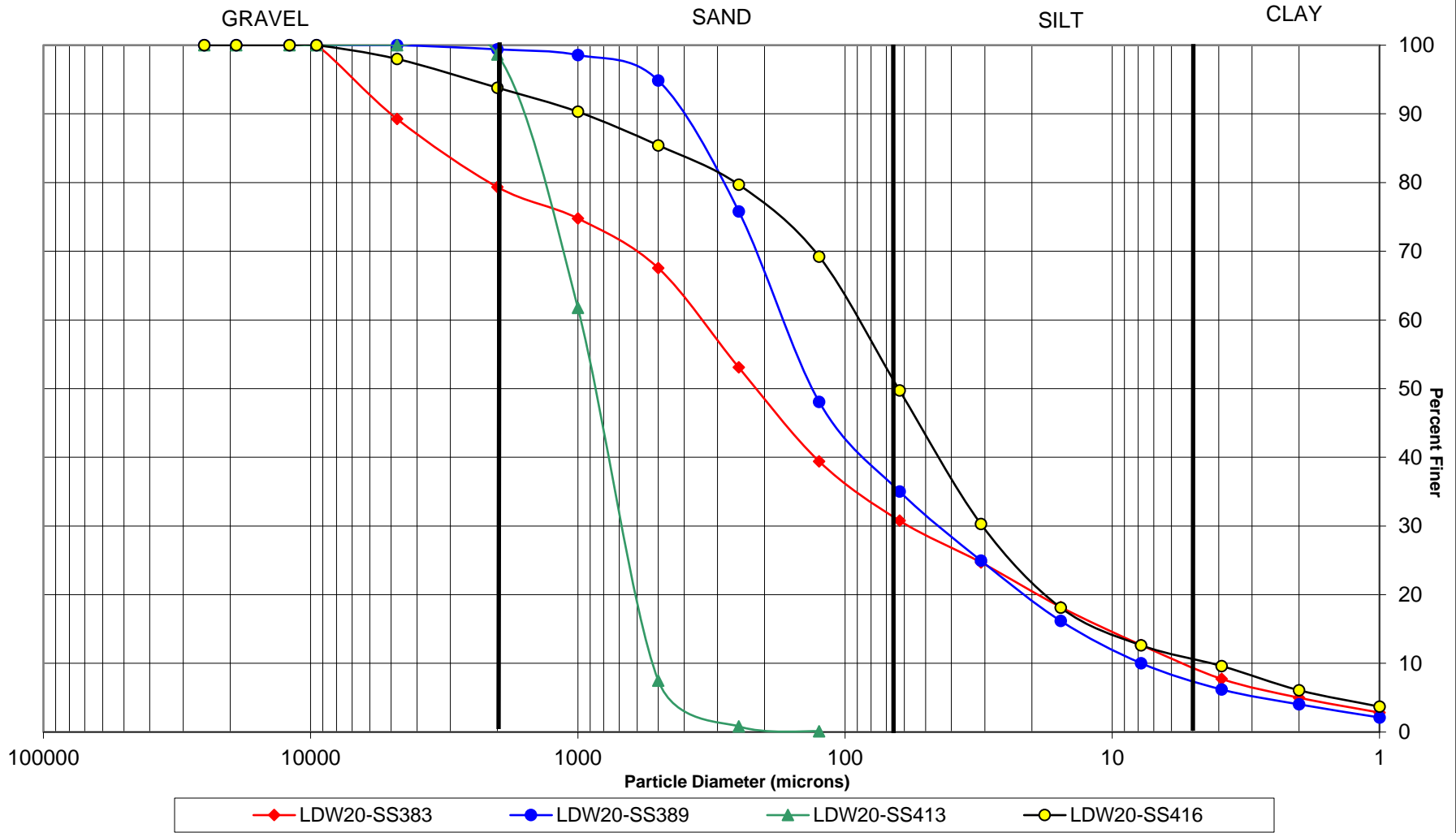
Triplicate Sample Plot



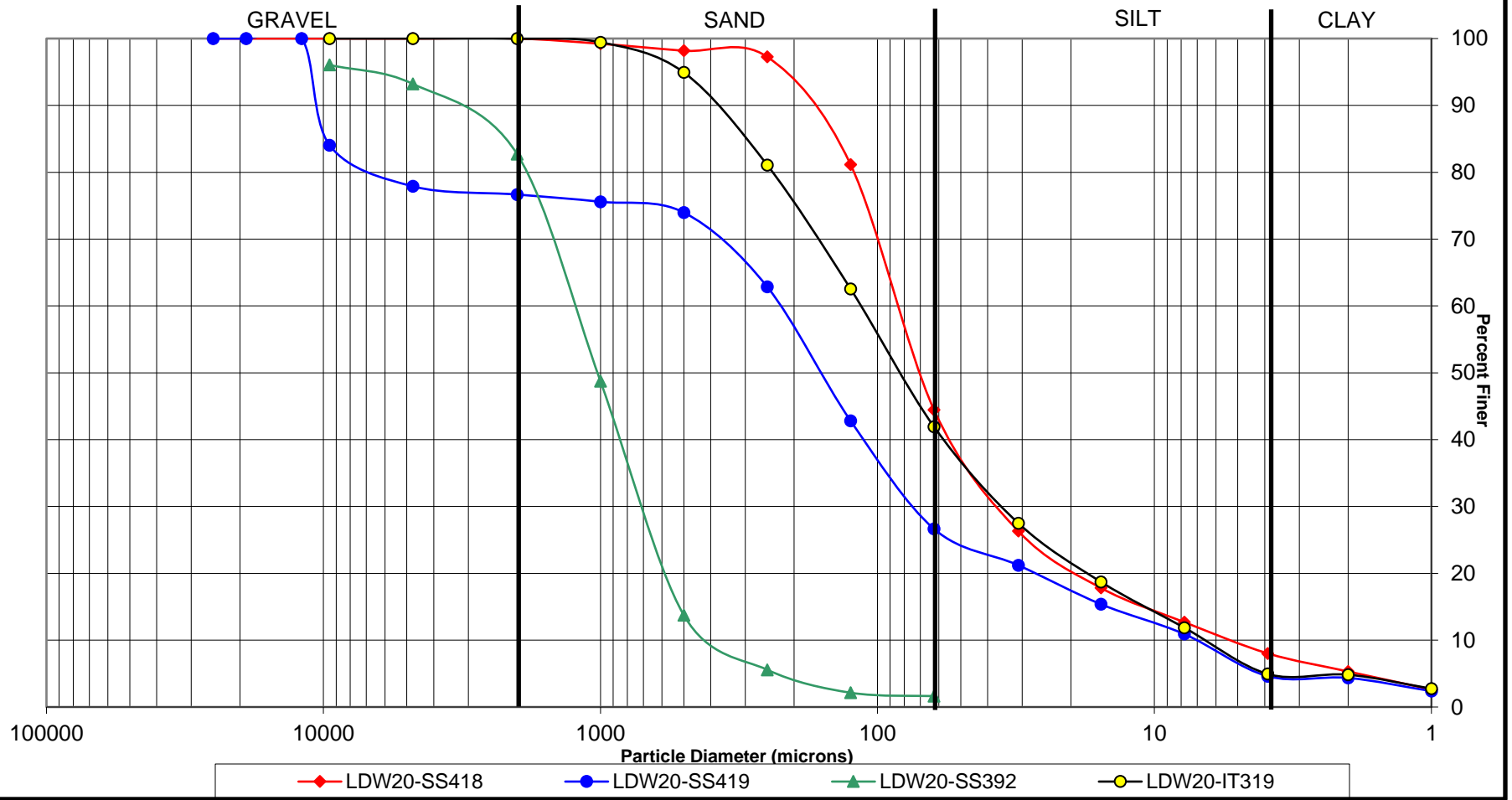
PSEP Grain Size Distribution



PSEP Grain Size Distribution



PSEP Grain Size Distribution



CHAIN-OF-CUSTODY/TEST REQUEST FORM

No 3306

Project/Client Name: Duchamish AOLY Ship to: ARI
 Project Number: 180067-02.02 Attn: Amanda Volgardsen Shipping Date: 6/25/20
 Contact Name: Amyra Vandervort Shipper: Courier Airbill Number: NA
 Sampled By: JH, KM Form filled out by: K. McPeck Turnaround requested: std.

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)					Comments / Instructions (lar tag number(s))
					PSAP	grain size				
06.25.20	0710	LOW20-SS320	1	Sediment	X					
	0736	-SS304	1		X					
	0753	-SS319	1		X					
	0817	-SS393	1		X					
	0842	-SS383	1		X					
	0907	-SS390	1		X					
	0948	-SS389	1		X					
	1055	-SS413	1		X					
	1111	-SS416	1		X					
	1132	-SS418	1		X					
	1200	-SS419	1		X					
	1244	-SS392	1		X					
Total Number of Containers			12							

Purchase Order / Statement of Work # CLF-0427206

1) Released by: <u>A. Vandervort</u> Print name: <u>A. Vandervort</u> Signature: <u>[Signature]</u> Company: <u>ARI</u> Date/Time: <u>6/25/20 1650</u>	2) Rec'd by: <u>HBunny</u> Print name: <u>Jacob Hagg</u> Signature: <u>[Signature]</u> Company: <u>HLB</u> Date/Time: <u>7-1-2020 1131</u>
--------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------

To be completed by Laboratory upon sample receipt:

Date of receipt: _____	Laboratory W.O. #: _____
Condition upon receipt: _____	Time of receipt: _____
Cooler temperature: _____	Received by: _____


 200 West Mercer Street
 Suite 401
 Seattle, WA 98119
 Tel: (206) 378-1364
 Fax: (206) 217-9343

* Distribution: White copies accompany shipment; yellow retained by consignor.

CHAIN-OF-CUSTODY/TEST REQUEST FORM

No 3912

Project/Client Name: Duwamish A044
 Project Number: 1800670202
 Contact Name: A Vandenoit
 Sampled By: Windward

Ship to: Harold L Benny + Assoc
 Attn: Harold Benny Shipping Date: 6/19/20
 Shipper: Carrier Airbill Number: NA
 Form filled out by: AV Turnaround requested: Std

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)	Comments / Instructions (Jar tag number(s))
6/19/20	0717	LOW20-IT319	1	Sediment	GROSS SIZE	
Total Number of Containers					Purchase Order / Statement of Work #	
1)					2)	
1) Rec'd by: <u>AV</u>					2) Rec'd by: <u>HB</u>	
Company: <u>ARI</u>					Company: <u>HLB</u>	
Date/Time: <u>6/19/20 1632</u>					Date/Time: <u>6-22-2020 1011</u>	

1) Released by: A Vandenoit
 Print name: A Vandenoit
 Signature: [Signature]
 Company: Windward
 Date/Time: 6/19/20 1632

2) Released by: Joseph Lafer
 Print name: Joseph Lafer
 Signature: [Signature]
 Company: HLB
 Date/Time: 6-22-2020 1011

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

200 West Mercer Street
 Suite 401
 Seattle, WA 98119
 Tel: (206) 378-1364
 Fax: (206) 217-9343



* Distribution: White copies accompany shipment; yellow retained by consignee.

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-085
 Date Started: 8-31-2020
 Sample ID: LDW20-55390A

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Brown Sandy Silt w/ detrous

Calgon Batch: 26

Temperature: 22

Solids Content

Moisture Content	Tare No.	207
	Tare Wt	1.5968
	Wet Wt + Tare	24.8888
	Dry Wt + Tare	14.7207
Test Sample	Tare No.	207
	Tare Wt	50.1637
	Wet Wt + Tare	88.5060
	Dry Wt + Tare	65.0452
	Cylinder #	C-13

Sieve Analysis

Tare Weight	50.1699
4	51.5124
10	51.7165
18	52.1324
35	53.1904
60	55.5614
120	60.3247
230	63.7004
Pan	0.9764

Pipette Analysis

9/4/2020	Tare #	Tare Weight	Dry Weight
12:00:00 PM			
12:00:20 PM	1	1.5754	1.7489
12:01:49 PM	2	1.5901	1.7330
12:07:15 PM	3	1.5850	1.6837
12:28:59 PM	4	1.5837	1.6553
1:56:00 PM	5	1.5965	1.6454
7:44:00 PM	6	1.5694	1.6067
9:36:00 AM	7	1.5711	1.5998

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-085
 Date Started: 8-31-2020
 Sample ID: LDW20-55390B

Client: Anchor

Date Complete: _____
 Tested by: H.L. Benny

Sample Description: Brown Sandy Silt w/ detrous

Calgon Batch: 26

Temperature: 22

Solids Content

Moisture Content	Tare No.	222
	Tare Wt	15.745
	Wet Wt + Tare	26.2500
	Dry Wt + Tare	15.4979
Test Sample	Tare No.	222
	Tare Wt	51.5408
	Wet Wt + Tare	89.8839
	Dry Wt + Tare	65.8235
	Cylinder #	C-72

Sieve Analysis

Tare Weight	51.5457
4	52.2674
10	52.8110
18	53.2872
35	54.3570
60	57.7109
120	61.7925
230	65.0690
Pan	0.8474

Pipette Analysis

9/4/2020	Tare #	Tare Weight	Dry Weight
12:05:00 PM			
12:05:20 PM	1	1.5848	1.7567
12:06:49 PM	2	1.5960	1.7314
12:12:15 PM	3	1.5828	1.6812
12:33:59 PM	4	1.5910	1.6630
2:01:00 PM	5	1.5845	1.6340
7:49:00 PM	6	1.5760	1.6141
9:41:00 AM	7	1.5851	1.6140

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-085
 Date Started: 8-31-2020
 Sample ID: LDW20-55390C

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Brown Sandy Silt w/ detrus

Calgon Batch: 26

Temperature: 22

Solids Content

Moisture Content	Tare No.	254
	Tare Wt	1.5944
	Wet Wt + Tare	27.7922
	Dry Wt + Tare	17.7671
Test Sample	Tare No.	254
	Tare Wt	52.7906
	Wet Wt + Tare	90.6082
	Dry Wt + Tare	66.9573
	Cylinder #	C-29

Sieve Analysis

Tare Weight	52.7942
4	—
10	53.4554
18	54.9192
35	55.0102
60	57.4074
120	62.2378
230	65.5840
Pan	0.9744

Pipette Analysis

	Tare #	Tare Weight	Dry Weight
9/4/2020			
12:10:00 PM			
12:10:20 PM	1	1.5831	1.7576
12:11:49 PM	2	1.5871	1.7302
12:17:15 PM	3	1.5850	1.6867
12:38:59 PM	4	1.5946	1.6690
2:06:00 PM	5	1.5678	1.6185
7:54:00 PM	6	1.5834	1.6220
9:46:00 AM	7	1.5794	1.6076

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-085
 Date Started: 8-31-2020
 Sample ID: LDW20-55320

Client: Anchor
 Date Complete: _____
 Tested by: HLBenny

Sample Description: DK Brown Silty Sand

Calgon Batch: 26

Temperature: 22

Solids Content

Sieve Analysis

Moisture Content	Tare No.	223
	Tare Wt	1.5855
	Wet Wt + Tare	46.6117
	Dry Wt + Tare	33.1756
Test Sample	Tare No.	223
	Tare Wt	51.8603
	Wet Wt + Tare	90.59494 HB
	Dry Wt + Tare	76.4936
	Cylinder #	C-18

Tare Weight	51.8690
4	-
10	51.0748
18	52.0665
35	52.6591
60	55.1031
120	66.8118
230	74.4290
Pan	1.0941

Pipette Analysis

9/4/2020	Tare #	Tare Weight	Dry Weight
12:15:00 PM			
12:15:20 PM	1	1.5961	1.6894
12:16:49 PM	2	1.5946	1.6538
12:22:15 PM	3	1.5966	1.6426
12:43:59 PM	4	1.6072	1.6447
2:11:00 PM	5	1.6046	1.6345
7:59:00 PM	6	1.5882	1.6140
9:51:00 AM	7	1.5931	1.6136

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-085
 Date Started: 8-31-2020
 Sample ID: LDW20-55304

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Grey silt/clay

Calgon Batch: 24

Temperature: 22

Solids Content

Moisture Content	Tare No.	244
	Tare Wt	1.5822
	Wet Wt + Tare	36.9374
	Dry Wt + Tare	21.4750
Test Sample	Tare No.	244
	Tare Wt	52.2558
	Wet Wt + Tare	89.7422
	Dry Wt + Tare	60.6323
	Cylinder #	C-27

Sieve Analysis

Tare Weight	52.2700
4	—
10	52.2878
18	52.4059
35	52.7206
60	52.9121
120	54.1453
230	57.4374
Pan	3.0970

Pipette Analysis

9/4/2020	Tare #	Tare Weight	Dry Weight
12:20:00 PM			
12:20:20 PM	1	1.5995	1.9346
12:21:49 PM	2	1.6173	1.8572
12:27:15 PM	3	1.6087	1.7558
12:48:59 PM	4	1.6072	1.7069
2:16:00 PM	5	1.5909	1.6504
8:04:00 PM	6	1.5952	1.6474
9:56:00 AM	7	1.5781	1.6155

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-085
 Date Started: 9-31-2020
 Sample ID: LDW20-55319

Client: Anchor

Date Complete: _____
 Tested by: HB

Sample Description: Brown Silty Sand

Calgon Batch: 26

Temperature: 22

Solids Content

Moisture Content	Tare No.	203
	Tare Wt	1.5740
	Wet Wt + Tare	47.7519
	Dry Wt + Tare	33.3750
Test Sample	Tare No.	203
	Tare Wt	51.0071
	Wet Wt + Tare	90.1361
	Dry Wt + Tare	72.4288
	Cylinder #	C-16

Sieve Analysis

Tare Weight	51.0119
4	—
10	51.1200
18	51.4268
35	59.8590
60	62.4954
120	65.8153
230	70.9520
Pan	1.5154

Pipette Analysis

9/4/2020	Tare #	Tare Weight	Dry Weight
12:25:00 PM			
12:25:20 PM	1	1.5921	1.7480
12:26:49 PM	2	1.5864	1.6923
12:32:15 PM	3	1.5809	1.6557
12:53:59 PM	4	1.5725	1.6307
2:21:00 PM	5	1.5815	1.6297
8:09:00 PM	6	1.5882	1.6209
10:01:00 AM	7	1.5784	1.6033

Notes:

Harold L Benny & Associates, LLC

Project: Duvalumish AOC 4
 HLB Project #: 20-085
 Date Started: 8-31-2020
 Sample ID: LDW20-55416

Client: Anchor

Date Complete: _____
 Tested by: H Benny

Sample Description: Brown Gravelly Sandy Silt

Calgon Batch: 26

Temperature: 22

Solids Content

Moisture Content	Tare No.	249
	Tare Wt	1.5988
	Wet Wt + Tare	55.6614
	Dry Wt + Tare	38.4223
Test Sample	Tare No.	249
	Tare Wt	51.7942
	Wet Wt + Tare	90.4671
	Dry Wt + Tare	68.0097
	Cylinder #	C-3

Sieve Analysis

Tare Weight	51.8015
4	52.3297
10	53.4330
18	54.3560
35	55.6425
60	57.1498
120	59.9086
230	65.0460
Pan	2.7921

Pipette Analysis

9/4/2020	Tare #	Tare Weight	Dry Weight
12:45:00 PM			
12:45:20 PM	1	1.5762	1.8386
12:46:49 PM	2	1.6063	1.7776
12:52:15 PM	3	1.5882	1.6974
1:13:59 PM	4	1.5894	1.6706
2:41:00 PM	5	1.5982	1.6478
8:29:00 PM	6	1.6033	1.6511
10:21:00 AM	7	1.6027	1.6383

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-085
 Date Started: 8-31-2020
 Sample ID: LDW20-55393

Client: Anchor
 Date Complete: _____
 Tested by: H. Benny

Sample Description: Brown Sandy Silt

Calgon Batch: 26

Temperature: 22

Solids Content

Moisture Content	Tare No.	252
	Tare Wt	1.5749
	Wet Wt + Tare	44.0434
	Dry Wt + Tare	30.3233
Test Sample	Tare No.	252
	Tare Wt	52.1910
	Wet Wt + Tare	88.7887
	Dry Wt + Tare	72.4861
	Cylinder #	C-49

Sieve Analysis

Tare Weight	52.1971
4	52.6455
10	52.9432
18	53.4424
35	55.1274
60	58.2604
120	65.4057
230	70.7942
Pan	1.2514

Pipette Analysis

9/4/2020	Tare #	Tare Weight	Dry Weight
12:30:00 PM			
12:30:20 PM	1	1.6035	1.7279
12:31:49 PM	2	1.5961	1.6865
12:37:15 PM	3	1.5966	1.6676
12:58:59 PM	4	1.6178	1.6770
2:26:00 PM	5	1.5884	1.6335
8:14:00 PM	6	1.6010	1.6374
10:06:00 AM	7	1.5943	1.6213

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-085
 Date Started: 8-31-2020
 Sample ID: LDW20-55383

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: Brown Gravelly Sandy Silt w/ detritus

Calgon Batch: 26

Temperature: 22

Moisture Cont	225
	.5758
	44.7946
	31.1885
Test Samp	225
	51.9428
	97.8052
	75.7608
	C-53

Tare Weight	51.9548
4	55.3306
10	58.4450
18	59.8805
35	62.1545
60	66.6958
120	70.9967
230	73.7104
Pan	1.0531

Pipette Analysis

Time Sticker	Tare #	Tare Weight	Dry Weight
	1	1.5866	1.7962
	2	1.5881	1.7599
	3	1.6167	1.7477
	4	1.6055	1.7018
	5	1.5995	1.6648
	6	1.5950	1.6431
	7	1.5843	1.6188

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-085
 Date Started: 8-31-2020
 Sample ID: LDW20-55389

Client: Anchor
 Date Complete: _____
 Tested by: HBenny

Sample Description: Brown Sandy Silt

Calgon Batch: 26

Temperature: 22

Solids Content

Moisture Content	Tare No.	209
	Tare Wt	1.5894
	Wet Wt + Tare	40.1526
	Dry Wt + Tare	26.9897
Test Sample	Tare No.	209
	Tare Wt	50.8296
	Wet Wt + Tare	88.3051
	Dry Wt + Tare	68.2963
	Cylinder #	C-23

Sieve Analysis

Tare Weight	50.8347
4	-
10	50.9852
18	51.1888
35	52.1053
60	56.8048
120	63.6530
230	66.8734
Pan	0.9929

Pipette Analysis

9/4/2020	Tare #	Tare Weight	Dry Weight
12:40:00 PM			
12:40:20 PM	1	1.5872	1.7670
12:41:49 PM	2	1.5966	1.7341
12:47:15 PM	3	1.5672	1.6622
1:08:59 PM	4	1.5832	1.6484
2:36:00 PM	5	1.5916	1.6383
8:24:00 PM	6	1.5823	1.6185
10:16:00 AM	7	1.5939	1.6208

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-085
 Date Started: 8-31-2020
 Sample ID: LDW20-55413

Client: Anchor

Date Complete: _____
 Tested by: HLBenny

Sample Description: Brown, Clean Sand

Calgon Batch: 26

Temperature: 22

Solids Content

Sieve Analysis

Moisture Content	Tare No.	200	
	Tare Wt	1.6110	
	Wet Wt + Tare	54.1701	
	Dry Wt + Tare	50.4817	50.5817
Test Sample	Tare No.	200	
	Tare Wt	51.6752	
	Wet Wt + Tare	122.3621	
	Dry Wt + Tare	117.5833	
	Cylinder #	C-17	

Tare Weight	51.6762
4	-
10	52.5604
18	76.8682
35	112.6058
60	116.9941
120	117.4623
230	117.5300
Pan	0.0269

Pipette Analysis

Time Sticker	Tare #	Tare Weight	Dry Weight
	1	1.6192	1.6420
	2		
	3		
	4		
	5		
	6		
	7		

Not enough fines to pipette

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-085
 Date Started: 8-31-2020
 Sample ID: LDW20-55418

Client: Anchor

Date Complete: _____
 Tested by: H. Benny

Sample Description: Brown Sandy Silt

Calgon Batch: 26

Temperature: 22

Solids Content

Moisture Content	Tare No.	243
	Tare Wt	1.6114
	Wet Wt + Tare	39.7583
	Dry Wt + Tare	23.9888
Test Sample	Tare No.	243
	Tare Wt	52.1420
	Wet Wt + Tare	88.2116
	Dry Wt + Tare	66.1905
	Cylinder #	C-4

Sieve Analysis

Tare Weight	52.1496
4	—
10	—
18	52.3148
35	52.5362
60	52.7305
120	56.1390
230	63.8989
Pan	2.2035

Pipette Analysis

9/4/2020	Tare #	Tare Weight	Dry Weight
12:50:00 PM			
12:50:20 PM	1	1.5873	1.7878
12:51:49 PM	2	1.5773	1.7042
12:57:15 PM	3	1.5928	1.6841
1:18:59 PM	4	1.5797	1.6496
2:46:00 PM	5	1.5901	1.6404
8:34:00 PM	6	1.5893	1.6283
10:26:00 AM	7	1.5888	1.6165

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-085
 Date Started: 8-31-2020
 Sample ID: LDW20-55419

Client: Anchor

Date Complete: _____
 Tested by: HBenny

Sample Description: Brown Sandy Silt w/ Gravel

Calgon Batch: 26

Temperature: 22

Solids Content

Moisture Content	Tare No.	233
	Tare Wt	1.5817
	Wet Wt + Tare	49.2993
	Dry Wt + Tare	35.7828
Test Sample	Tare No.	233
	Tare Wt	51.4193
	Wet Wt + Tare	101.2294
	Dry Wt + Tare	79.1699
	Cylinder #	C-75

Sieve Analysis

Tare Weight	51.4230	3/8 57.1238
4	59.3186	
10	59.7542	
18	60.1398	
35	60.7158	
60	64.6833	
120	71.8375	
230	77.6091	
Pan	1.6842	

Pipette Analysis

9/4/2020	Tare #	Tare Weight	Dry Weight
12:55:00 PM			
12:55:20 PM	1	1.5798	1.8206
12:56:49 PM	2	1.5682	1.7435
1:02:15 PM	3	1.5785	1.7102
1:23:59 PM	4	1.5873	1.6856
2:51:00 PM	5	1.5859	1.6371
8:39:00 PM	6	1.5949	1.6442
10:31:00 AM	7	1.5888	1.6233

Notes:

Harold L Benny & Associates, LLC

Project: Dunwich AOC4
 HLB Project #: 20-085
 Date Started: 8-31-2020
 Sample ID: LDW20-55392

Client: Anchor

Date Complete: _____
 Tested by: HBenny

Sample Description: Brown, Clean Sand

Calgon Batch: 26

Temperature: 22

Solids Content

Moisture Content		Tare No.	229
	Tare Wt	1.5748	
	Wet Wt + Tare	43.2404	
	Dry Wt + Tare	39.26468	HB
Test Sample		Tare No.	229
	Tare Wt	51.7350	
	Wet Wt + Tare	122.2374	
	Dry Wt + Tare	114.4979	
	Cylinder #	C-51	

Sieve Analysis

Sieve	Tare Weight	51.7382	3/8 54.2587
4	56.0720		
10	62.7542		
18	84.4077		
35	106.7232		
60	111.9271		
120	114.1173		
230	114.4357		
Pan	0.0937		

Pipette Analysis

Time Sticker	Tare #	Tare Weight	Dry Weight
	1	1.5958	1.6148
	2		
	3		
	4		
	5		
	6		
	7		

not enough fines
to pipette

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
 HLB Project #: 20-085
 Date Started: 8-31-2020
 Sample ID: LDW20-IT319

Client: Anchor

Date Complete: _____
 Tested by: HB

Sample Description: Grey Silt/clay

Calgon Batch: 26

Temperature: 22

Solids Content

Moisture Content	Tare No.	208
	Tare Wt	1.5912
	Wet Wt + Tare	56.1747
	Dry Wt + Tare	37.544549 HB
Test Sample	Tare No.	208
	Tare Wt	51.2948
	Wet Wt + Tare	89.0139
	Dry Wt + Tare	67.7795
	Cylinder #	C-46

Sieve Analysis

Tare Weight	51.2987
4	—
10	51.3044
18	51.4366
35	52.5570
60	55.9870
120	60.5797
230	65.6902
Pan	1.7528

Pipette Analysis

9/4/2020	Tare #	Tare Weight	Dry Weight
1:00:00 PM			
1:00:20 PM	1	1.5912	1.8036
1:01:49 PM	2	1.6080	1.7577
1:07:15 PM	3	1.5806	1.6878
1:28:59 PM	4	1.5976	1.6717
2:56:00 PM	5	1.5833	1.6377
8:44:00 PM	6	1.5914	1.6315
10:36:00 AM	7	1.6018	1.6318

1.6239 HB
 ↑
 mistake from
 SS319

Notes:

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: July 28, 2020
Date Started: August 5, 2020
Date Finished: August 11, 2020

Client: AnchorQEA
Project #: 20-093
Tested by: H Benny

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
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
LDW20-SS226	100.0	98.7	97.6	95.3	93.2	88.9	83.4	61.7	42.3	28.6	18.4	11.3	7.8	4.7
	100.0	100.0	99.6	98.3	96.3	92.8	87.0	65.4	47.4	30.5	19.8	11.8	8.4	5.0
	100.0	100.0	99.8	98.1	96.4	92.8	87.7	66.2	47.4	30.9	20.6	12.4	8.5	5.3
LDW20-SS230	100.0	100.0	99.9	98.9	97.7	96.6	86.6	59.0	40.6	24.7	16.3	10.1	7.0	4.1
LDW20-SS235	100.0	100.0	100.0	98.8	97.8	96.3	89.5	65.1	44.7	27.0	17.5	11.0	7.8	4.8
LDW20-SS238	100.0	100.0	99.2	98.4	97.1	95.0	84.7	58.1	41.0	24.2	16.0	9.9	6.9	4.3

Reviewed by:  _____

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: July 28, 2020
Date Started: August 5, 2020
Date Finished: August 11, 2020

Client: AnchorQEA
HLB Project #: 20-093
Tested by: H Benny

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)
LDW20-SS226	2.4	2.3	2.1	4.2	5.5	21.7	19.3	13.8	10.1	7.1	3.5	3.1	4.7	61.7
	0.4	1.3	2.0	3.5	5.8	21.6	18.1	16.9	10.6	8.0	3.4	3.4	5.0	65.4
	0.2	1.7	1.7	3.6	5.2	21.5	18.8	16.6	10.3	8.2	3.9	3.2	5.3	66.2
LDW20-SS230	0.1	0.9	1.3	1.1	10.0	27.6	18.4	16.0	8.4	6.2	3.1	2.9	4.1	59.0
LDW20-SS235	0.0	1.1	1.1	1.5	6.8	24.4	20.4	17.7	9.5	6.5	3.1	3.0	4.8	65.1
LDW20-SS238	0.8	0.8	1.3	2.1	10.3	26.6	17.1	16.8	8.2	6.0	3.1	2.6	4.3	58.1

Reviewed by:  _____

Harold L Benny & Associates, LLC

Project: Duwamish AOC4
Date Received: July 28, 2020
Date Started: August 5, 2020
Date Finished: August 11, 2020

Client: AnchorQEA
HLB Project #: 20-093
Tested by: H Benny

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
LDW20-SS226	100.0	98.7	97.6	95.3	93.2	88.9	83.4	61.7	42.3	28.6	18.4	11.3	7.8	4.7
	100.0	100.0	99.6	98.3	96.3	92.8	87.0	65.4	47.4	30.5	19.8	11.8	8.4	5.0
	100.0	100.0	99.8	98.1	96.4	92.8	87.7	66.2	47.4	30.9	20.6	12.4	8.5	5.3
AVE	100.0	99.6	99.0	97.2	95.3	91.5	86.0	64.4	45.7	30.0	19.6	11.8	8.2	5.0
STDEV	0.0	0.6	1.0	1.4	1.5	1.8	1.9	2.0	2.4	1.0	0.9	0.4	0.3	0.2
%RSD	0.0	0.6	1.0	1.4	1.6	2.0	2.2	3.1	5.2	3.4	4.5	3.5	3.8	4.5

The Triplicate Applies To The Following Samples

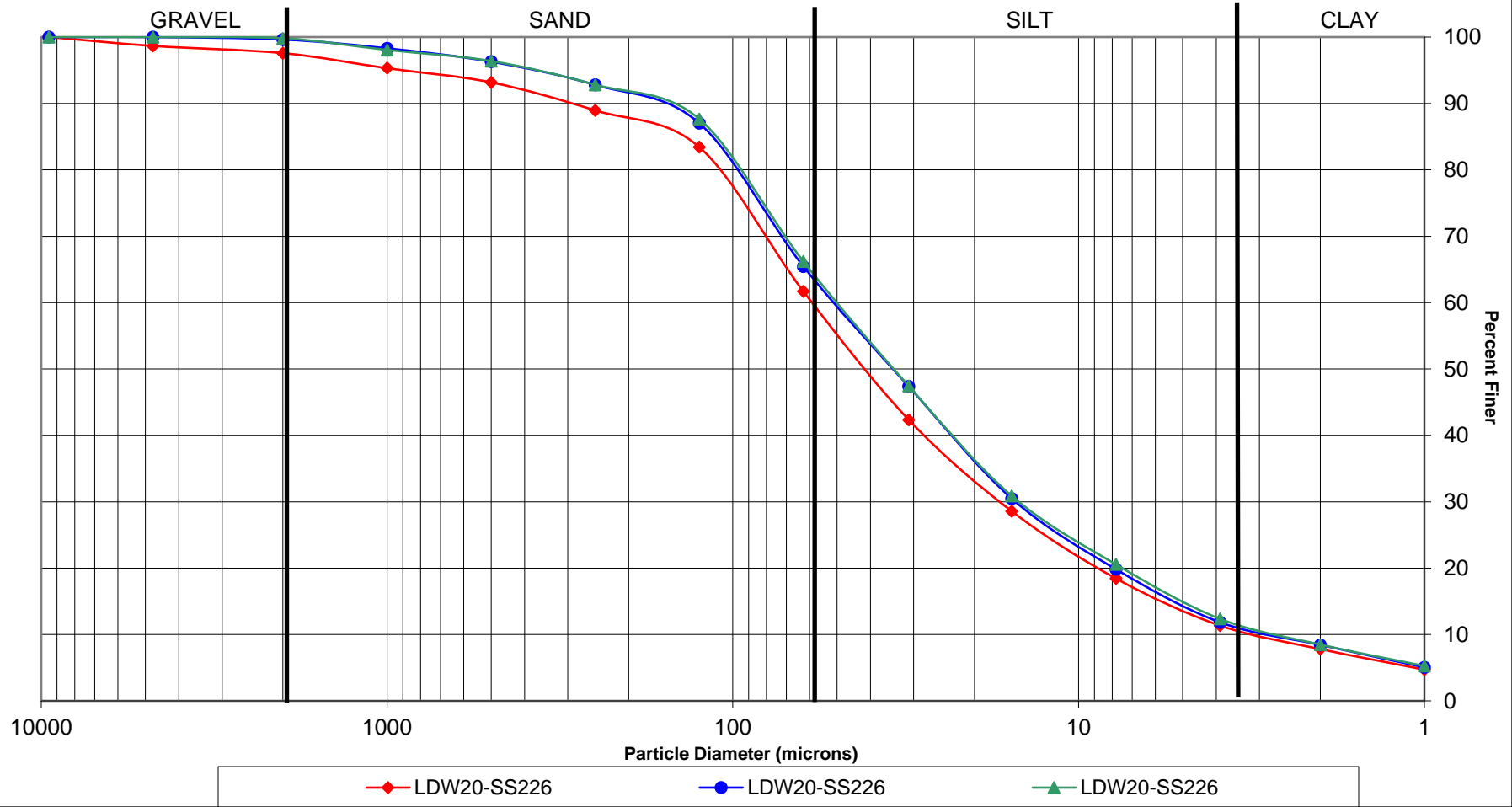
Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
LDW20-SS226	6/19/2020	8/5/2020	3/2/2020	100.2		12.2
	6/19/2020	8/5/2020	3/2/2020	101.6		13.1
	6/19/2020	8/5/2020	3/2/2020	100.6		13.2
LDW20-SS230	6/19/2020	8/5/2020	3/2/2020	104.4		13.5
LDW20-SS235	6/19/2020	8/5/2020	3/2/2020	101.2		13.9
LDW20-SS238	6/19/2020	8/5/2020	3/2/2020	102.6		13.0

Notes to the Testing: Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution.

Reviewed by: 

PSEP Grain Size Distribution

Triplicate Sample Plot



PSEP Grain Size Distribution

