

Analytical Chemistry Data Package

**Project: ENVVEST Ambient Monitoring
Dry Dock Silt Study 2014**

Sediment Chemistry

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CHEMISTRY ANALYSIS DATA PACKAGE CONTENT

ENVVEST Dry Dock Silt Study 2014 Sediment Chemistry

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Analytical raw data available upon request

Drydock Silt Study
ENVVEST FY14
Reported as Dry Weight Concentrations

Sample ID	Station Code	Fraction	Matrix	MSL Code	Collection Date/time	Solids, Total	TOC	Gravel, Medium	Gravel, Fine	Sand, Very Coarse
						Units	% dry wt	% dry wt	% dry wt	% dry wt
Laboratory Achieved Method Detection Limits (MDL)							0.02			
Reporting Limit (RL = MDL* 3.18)							0.05			
DDS001	DD1 DEWATER001	Bulk	Sediment	3462-1A	12/10/12	25.0	3.66	3.96	26.85	12.56
DDS001	DD1 DEWATER001	2mm-63µm	Sediment	3462-1B	12/10/12	29.5	4.03	0	0	0.23
DDS001	DD1 DEWATER001	<63µm	Sediment	3462-1C	12/10/12					
DDS002	DD1 DEWATER002	Bulk	Sediment	3462-2A	12/10/12					
DDS002	DD1 DEWATER002	2mm-63µm	Sediment	3462-2B	12/10/12	19.9	4.95	0	0	0.39
DDS002	DD1 DEWATER002	<63µm	Sediment	3462-2C	12/10/12					
DDS003	DD1 DEWATER003	Bulk	Sediment	3462-3A	12/10/12					
DDS003	DD1 DEWATER003	2mm-63µm	Sediment	3462-3B	12/10/12	25.6	10.7	0.98	1.43	1.08
DDS003	DD1 DEWATER003	<63µm	Sediment	3462-3C	12/10/12					
DDS004	DD5 1 NW SIDE	Bulk	Sediment	3462-4A	12/21/12					
DDS004	DD5 1 NW SIDE	2mm-63µm	Sediment	3462-4B	12/21/12	23.6	7.42	0	0.40	0.98
DDS004	DD5 1 NW SIDE	<63µm	Sediment	3462-4C	12/21/12					
DDS005	DD5 2 MID	Bulk	Sediment	3462-5A	12/21/12					
DDS005	DD5 2 MID	2mm-63µm	Sediment	3462-5B	12/21/12	27.9	5.05	23.39	7.48	6.59
DDS005	DD5 2 MID	<63µm	Sediment	3462-5C	12/21/12					
DDS007	DD5 4	Bulk	Sediment	3462-6A	12/21/12					
DDS007	DD5 4	2mm-63µm	Sediment	3462-6B	12/21/12	36.9	4.81	1.68	10.07	19.85
DDS007	DD5 4	<63µm	Sediment	3462-6C	12/21/12					
DDS008	DD1-3	Bulk	Sediment	3462-7A	01/09/13					
DDS008	DD1-3	2mm-63µm	Sediment	3462-7B	01/09/13	19.4	9.76	0	2.96	4.91
DDS008	DD1-3	<63µm	Sediment	3462-7C	01/09/13					
DDS009	DD1-2	Bulk	Sediment	3462-8A	01/09/13					
DDS009	DD1-2	2mm-63µm	Sediment	3462-8B	01/09/13	15.1	11.8	0.42	1.48	4.31
DDS009	DD1-2	<63µm	Sediment	3462-8C	01/09/13					
DDS010	DD1-1	Bulk	Sediment	3462-9A	01/09/13					
DDS010	DD1-1	2mm-63µm	Sediment	3462-9B	01/09/13	19.5	13.5	12.02	25.86	24.42
DDS010	DD1-1	<63µm	Sediment	3462-9C	01/09/13					
DDS013	DD1-3 MID	Bulk	Sediment	3462-10A	02/06/13					
DDS013	DD1-3 MID	2mm-63µm	Sediment	3462-10B	02/06/13	71.7	0.507	3.71	15.86	29.69
DDS013	DD1-3 MID	<63µm	Sediment	3462-10C	02/06/13					
DDS014	DD6-1	Bulk	Sediment	3462-11A	02/07/13					
DDS014	DD6-1	2mm-63µm	Sediment	3462-11B	02/07/13	02/07/13				
DDS014	DD6-1	<63µm	Sediment	3462-11C	02/07/13					

Drydock Silt Study
ENVVEST FY14
Reported as Dry Weight Concentrations

Sample ID	Station Code	Fraction	Matrix	MSL Code	Sand, Coarse	Sand, Medium	Sand, Fine	Sand, Very Fine	Silt	Clay
					Units	% dry wt	% dry wt	% dry wt	% dry wt	% dry wt
Laboratory Achieved Method Detection Limits (MDL)										
Reporting Limit (RL = MDL* 3.18)										
DDS001	DD1 DEWATER001	Bulk	Sediment	3462-1A	2.53	2.19	1.96	0.47	32.3	44.3
DDS001	DD1 DEWATER001	2mm-63µm	Sediment	3462-1B						
DDS001	DD1 DEWATER001	<63µm	Sediment	3462-1C						
DDS002	DD1 DEWATER002	Bulk	Sediment	3462-2A	0.72	1.06	1.16	0.50	52.5	48.6
DDS002	DD1 DEWATER002	2mm-63µm	Sediment	3462-2B						
DDS002	DD1 DEWATER002	<63µm	Sediment	3462-2C						
DDS003	DD1 DEWATER003	Bulk	Sediment	3462-3A	0.28	0.54	1.10	0.47	57.2	35.7
DDS003	DD1 DEWATER003	2mm-63µm	Sediment	3462-3B						
DDS003	DD1 DEWATER003	<63µm	Sediment	3462-3C						
DDS004	DD5 1 NW SIDE	Bulk	Sediment	3462-4A	1.90	5.21	13.21	5.86	60	13.2
DDS004	DD5 1 NW SIDE	2mm-63µm	Sediment	3462-4B						
DDS004	DD5 1 NW SIDE	<63µm	Sediment	3462-4C						
DDS005	DD5 2 MID	Bulk	Sediment	3462-5A	2.12	2.98	11.41	2.91	56	22.3
DDS005	DD5 2 MID	2mm-63µm	Sediment	3462-5B						
DDS005	DD5 2 MID	<63µm	Sediment	3462-5C						
DDS007	DD5 4	Bulk	Sediment	3462-6A	6.62	3.77	4.08	1.92	44.8	22.9
DDS007	DD5 4	2mm-63µm	Sediment	3462-6B						
DDS007	DD5 4	<63µm	Sediment	3462-6C						
DDS008	DD1-3	Bulk	Sediment	3462-7A	16.65	12.46	6.84	0.70	19.3	11.7
DDS008	DD1-3	2mm-63µm	Sediment	3462-7B						
DDS008	DD1-3	<63µm	Sediment	3462-7C						
DDS009	DD1-2	Bulk	Sediment	3462-8A	4.41	1.97	3.79	0.74	38.4	28.1
DDS009	DD1-2	2mm-63µm	Sediment	3462-8B						
DDS009	DD1-2	<63µm	Sediment	3462-8C						
DDS010	DD1-1	Bulk	Sediment	3462-9A	5.03	4.11	5.29	1.20	46.8	28
DDS010	DD1-1	2mm-63µm	Sediment	3462-9B						
DDS010	DD1-1	<63µm	Sediment	3462-9C						
DDS013	DD1-3 MID	Bulk	Sediment	3462-10A	10.60	3.45	6.54	1.01	12.1	10.5
DDS013	DD1-3 MID	2mm-63µm	Sediment	3462-10B						
DDS013	DD1-3 MID	<63µm	Sediment	3462-10C						
DDS014	DD6-1	Bulk	Sediment	3462-11A	23.44	3.96	0.99	0.20	4.1	1.9
DDS014	DD6-1	2mm-63µm	Sediment	3462-11B						
DDS014	DD6-1	<63µm	Sediment	3462-11C						

Drydock Silt Study
ENVVEST FY14
Reported as Dry Weight Concentrations

Sample ID	Station Code	Fraction	Matrix	MSL Code	% >2mm	% 2mm- 63µm	% <63µm	% Dry Wt.	Hg	Al	Cr
Units % dry wt % dry wt % dry wt %									µg/g	µg/g	µg/g
Laboratory Achieved Method Detection Limits (MDL)									0.002	4.2	0.10
Reporting Limit (RL = MDL* 3.18)									0.006	13	0.30
DDS001	DD1 DEWATER001	Bulk	Sediment	3462-1A	30.8	19.7	76.6	48			
DDS001	DD1 DEWATER001	2mm-63µm	Sediment	3462-1B					1.05	42915	105
DDS001	DD1 DEWATER001	<63µm	Sediment	3462-1C					0.789	49101	85.8
DDS002	DD1 DEWATER002	Bulk	Sediment	3462-2A	0.0	3.7	101	40			
DDS002	DD1 DEWATER002	2mm-63µm	Sediment	3462-2B					1.33	61084	199
DDS002	DD1 DEWATER002	<63µm	Sediment	3462-2C					1.01	51659	96.3
DDS003	DD1 DEWATER003	Bulk	Sediment	3462-3A	0.0	2.8	92.9	19			
DDS003	DD1 DEWATER003	2mm-63µm	Sediment	3462-3B					1.28	55836	263
DDS003	DD1 DEWATER003	<63µm	Sediment	3462-3C					0.761	52671	112
DDS004	DD5 1 NW SIDE	Bulk	Sediment	3462-4A	2.4	27.3	73.2	28			
DDS004	DD5 1 NW SIDE	2mm-63µm	Sediment	3462-4B					0.650	33757	449
DDS004	DD5 1 NW SIDE	<63µm	Sediment	3462-4C					0.603	46133	405
DDS005	DD5 2 MID	Bulk	Sediment	3462-5A	0.4	20.4	78.3	17			
DDS005	DD5 2 MID	2mm-63µm	Sediment	3462-5B					0.434	31828	437
DDS005	DD5 2 MID	<63µm	Sediment	3462-5C					0.480	44077	150
DDS007	DD5 4	Bulk	Sediment	3462-6A	30.9	23.0	67.7	37			
DDS007	DD5 4	2mm-63µm	Sediment	3462-6B					0.165	40807	326
DDS007	DD5 4	<63µm	Sediment	3462-6C					0.571	54045	144
DDS008	DD1-3	Bulk	Sediment	3462-7A	11.8	56.5	31.0	41			
DDS008	DD1-3	2mm-63µm	Sediment	3462-7B					0.821	34638	528
DDS008	DD1-3	<63µm	Sediment	3462-7C					1.15	49857	455
DDS009	DD1-2	Bulk	Sediment	3462-8A	3.0	15.8	66.5	20			
DDS009	DD1-2	2mm-63µm	Sediment	3462-8B					1.19	25607	1132
DDS009	DD1-2	<63µm	Sediment	3462-8C					1.12	46154	165
DDS010	DD1-1	Bulk	Sediment	3462-9A	1.9	19.9	74.8	15			
DDS010	DD1-1	2mm-63µm	Sediment	3462-9B					1.02	36326	241
DDS010	DD1-1	<63µm	Sediment	3462-9C					0.908	46546	159
DDS013	DD1-3 MID	Bulk	Sediment	3462-10A	37.9	46.0	22.6	28			
DDS013	DD1-3 MID	2mm-63µm	Sediment	3462-10B					2.00	26384	132
DDS013	DD1-3 MID	<63µm	Sediment	3462-10C					1.79	50630	206
DDS014	DD6-1	Bulk	Sediment	3462-11A	19.6	58.3	6.0	78			
DDS014	DD6-1	2mm-63µm	Sediment	3462-11B					0.184	2315	766
DDS014	DD6-1	<63µm	Sediment	3462-11C					0.220	4064	198

Drydock Silt Study
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Sample ID	Station Code	Fraction	Matrix	MSL Code	Cu	Fe	Ni	Pb	Zn
					Units	µg/g	µg/g	µg/g	µg/g
Laboratory Achieved Method Detection Limits (MDL)						0.11	0.45	0.13	0.46
Reporting Limit (RL = MDL* 3.18)						0.35	1.4	0.41	1.5
DDS001	DD1 DEWATER001	Bulk	Sediment	3462-1A					
DDS001	DD1 DEWATER001	2mm-63µm	Sediment	3462-1B	352	43661	94.6	567	785
DDS001	DD1 DEWATER001	<63µm	Sediment	3462-1C	247	40956	71.8	94.5	569
DDS002	DD1 DEWATER002	Bulk	Sediment	3462-2A					
DDS002	DD1 DEWATER002	2mm-63µm	Sediment	3462-2B	465	50550	221	122	1000
DDS002	DD1 DEWATER002	<63µm	Sediment	3462-2C	265	36542	113	81.9	555
DDS003	DD1 DEWATER003	Bulk	Sediment	3462-3A					
DDS003	DD1 DEWATER003	2mm-63µm	Sediment	3462-3B	1038	63401	335	158	1440
DDS003	DD1 DEWATER003	<63µm	Sediment	3462-3C	433	42305	137	93.3	661
DDS004	DD5 1 NW SIDE	Bulk	Sediment	3462-4A					
DDS004	DD5 1 NW SIDE	2mm-63µm	Sediment	3462-4B	1928	80783	612	371	6610
DDS004	DD5 1 NW SIDE	<63µm	Sediment	3462-4C	2795	91291	561	401	6367
DDS005	DD5 2 MID	Bulk	Sediment	3462-5A					
DDS005	DD5 2 MID	2mm-63µm	Sediment	3462-5B	4047	108089	559	378	13428
DDS005	DD5 2 MID	<63µm	Sediment	3462-5C	2615	70871	184	213	9133
DDS007	DD5 4	Bulk	Sediment	3462-6A					
DDS007	DD5 4	2mm-63µm	Sediment	3462-6B	2290	95484	359	176	8296
DDS007	DD5 4	<63µm	Sediment	3462-6C	1607	50612	145	132	4163
DDS008	DD1-3	Bulk	Sediment	3462-7A					
DDS008	DD1-3	2mm-63µm	Sediment	3462-7B	1300	77862	604	166	2540
DDS008	DD1-3	<63µm	Sediment	3462-7C	949	66848	450	172	3081
DDS009	DD1-2	Bulk	Sediment	3462-8A					
DDS009	DD1-2	2mm-63µm	Sediment	3462-8B	2102	165308	1351	158	4621
DDS009	DD1-2	<63µm	Sediment	3462-8C	712	56344	296	123	2138
DDS010	DD1-1	Bulk	Sediment	3462-9A					
DDS010	DD1-1	2mm-63µm	Sediment	3462-9B	1614	60550	443	228	4029
DDS010	DD1-1	<63µm	Sediment	3462-9C	828	44966	258	126	1897
DDS013	DD1-3 MID	Bulk	Sediment	3462-10A					
DDS013	DD1-3 MID	2mm-63µm	Sediment	3462-10B	1132	35971	156	149	2667
DDS013	DD1-3 MID	<63µm	Sediment	3462-10C	1534	61687	261	225	4324
DDS014	DD6-1	Bulk	Sediment	3462-11A					
DDS014	DD6-1	2mm-63µm	Sediment	3462-11B	1634	592761	551	53.1	2885
DDS014	DD6-1	<63µm	Sediment	3462-11C	1702	289936	207	45.0	3387

Drydock Silt Study
ENVVEST FY14
Reported as Dry Weight Concentrations

Sample ID	Station Code	Fraction	Matrix	MSL Code	Collection Date/time	Solids, Total	TOC	Gravel, Medium	Gravel, Fine	Sand, Very Coarse
Units						% dry wt	% dry wt	% dry wt	% dry wt	% dry wt
Laboratory Achieved Method Detection Limits (MDL)							0.02			
Reporting Limit (RL = MDL * 3.18)							0.05			
DDS016	DD6-3	Bulk	Sediment	3462-12A	02/07/13	35.3	4.83	3.36	2.65	5.01
DDS016	DD6-3	2mm-63µm	Sediment	3462-12B	02/07/13	28.3	8.59	2.52	3.23	1.27
DDS016	DD6-3	<63µm	Sediment	3462-12C	02/07/13					
DDS017	DD6-4	Bulk	Sediment	3462-13A	02/07/13					
DDS017	DD6-4	2mm-63µm	Sediment	3462-13B	02/07/13	9.00	4.01	0	0	0.77
DDS017	DD6-4	<63µm	Sediment	3462-13C	02/07/13					
DDS018	DD5-1	Bulk	Sediment	3462-14A	05/15/13					
DDS018	DD5-1	2mm-63µm	Sediment	3462-14B	05/15/13	51.6	1.89	3.79	3.64	6.50
DDS018	DD5-1	<63µm	Sediment	3462-14C	05/15/13					
DDS019	DD5-2	Bulk	Sediment	3462-15A	05/15/13					
DDS019	DD5-2	2mm-63µm	Sediment	3462-15B	05/15/13	NA	4.00	NA	NA	NA
DDS019	DD5-2	<63µm	Sediment	3462-15C	05/15/13					
DDS020	DD5-3	Bulk	Sediment	3462-16A	05/15/13					
DDS020	DD5-3	2mm-63µm	Sediment	3462-16B	05/15/13	22.4	5.97	0	3.66	3.33
DDS020	DD5-3	<63µm	Sediment	3462-16C	05/15/13					
DDS021	DD1	Bulk	Sediment	3462-17A	06/05/13					
DDS021	DD1	2mm-63µm	Sediment	3462-17B	06/05/13	98.1	0.729	0	0.78	6.28
DDS021	DD1	<63µm	Sediment	3462-17C	06/05/13					
DDS022	Blasting Grit	Bulk	Sediment	3462-18A	MARCH 2013					
DDS022	Blasting Grit	2mm-63µm	Sediment	3462-18B	MARCH 2013	12.9	4.06	0	0.13	0.65
DDS022	Blasting Grit	<63µm	Sediment	3462-18C	MARCH 2013					
DDS023	DD6-1	Bulk	Sediment	3462-19A	06/28/13					
DDS023	DD6-1	2mm-63µm	Sediment	3462-19B	06/28/13	36.0	3.15	6.69	14.13	8.88
DDS023	DD6-1	<63µm	Sediment	3462-19C	06/28/13					
DDS024	DD6-2	Bulk	Sediment	3462-20A	06/28/13					
DDS024	DD6-2	2mm-63µm	Sediment	3462-20B	06/28/13	21.2	3.29	0	9.25	2.16
DDS024	DD6-2	<63µm	Sediment	3462-20C	06/28/13					
DDS025	DD6-3	Bulk	Sediment	3462-21A	06/28/13					
DDS025	DD6-3	2mm-63µm	Sediment	3462-21B	06/28/13	22.9	2.70	67.39	5.04	2.53
DDS025	DD6-3	<63µm	Sediment	3462-21C	06/28/13					
DDS026	DD5-1	Bulk	Sediment	3462-22A	06/07/13					
DDS026	DD5-1	2mm-63µm	Sediment	3462-22B	06/07/13	22.9	2.70	67.39	5.04	2.53
DDS026	DD5-1	<63µm	Sediment	3462-22C	06/07/13					

Drydock Silt Study
ENVVEST FY14
Reported as Dry Weight Concentrations

Sample ID	Station Code	Fraction	Matrix	MSL Code	Sand, Coarse	Sand, Medium	Sand, Fine	Sand, Very Fine	Silt	Clay
					Units	% dry wt	% dry wt	% dry wt	% dry wt	% dry wt
Laboratory Achieved Method Detection Limits (MDL)										
Reporting Limit (RL = MDL* 3.18)										
DDS016	DD6-3	Bulk	Sediment	3462-12A	3.54	6.65	11.96	3.92	41.4	26.6
DDS016	DD6-3	2mm-63µm	Sediment	3462-12B						
DDS016	DD6-3	<63µm	Sediment	3462-12C						
DDS017	DD6-4	Bulk	Sediment	3462-13A	1.07	1.35	10.00	2.24	54.4	31.2
DDS017	DD6-4	2mm-63µm	Sediment	3462-13B						
DDS017	DD6-4	<63µm	Sediment	3462-13C						
DDS018	DD5-1	Bulk	Sediment	3462-14A	0.67	0.40	1.92	3.00	35.6	62.5
DDS018	DD5-1	2mm-63µm	Sediment	3462-14B						
DDS018	DD5-1	<63µm	Sediment	3462-14C						
DDS019	DD5-2	Bulk	Sediment	3462-15A	23.65	27.94	22.91	2.34	6.9	7.2
DDS019	DD5-2	2mm-63µm	Sediment	3462-15B						
DDS019	DD5-2	<63µm	Sediment	3462-15C						
DDS020	DD5-3	Bulk	Sediment	3462-16A	NA	NA	NA	NA	NA	NA
DDS020	DD5-3	2mm-63µm	Sediment	3462-16B						
DDS020	DD5-3	<63µm	Sediment	3462-16C						
DDS021	DD1	Bulk	Sediment	3462-17A	4.02	4.86	7.46	2.36	44.8	35.5
DDS021	DD1	2mm-63µm	Sediment	3462-17B						
DDS021	DD1	<63µm	Sediment	3462-17C						
DDS022	Blasting Grit	Bulk	Sediment	3462-18A	64.34	14.05	11.10	1.12	1.6	0.2
DDS022	Blasting Grit	2mm-63µm	Sediment	3462-18B						
DDS022	Blasting Grit	<63µm	Sediment	3462-18C						
DDS023	DD6-1	Bulk	Sediment	3462-19A	0.45	2.10	2.18	1.75	64.5	52.0
DDS023	DD6-1	2mm-63µm	Sediment	3462-19B						
DDS023	DD6-1	<63µm	Sediment	3462-19C						
DDS024	DD6-2	Bulk	Sediment	3462-20A	2.8	2.16	2.32	0.56	12.8	14.3
DDS024	DD6-2	2mm-63µm	Sediment	3462-20B						
DDS024	DD6-2	<63µm	Sediment	3462-20C						
DDS025	DD6-3	Bulk	Sediment	3462-21A	0.61	0.81	2.47	3.60	51.1	35.3
DDS025	DD6-3	2mm-63µm	Sediment	3462-21B						
DDS025	DD6-3	<63µm	Sediment	3462-21C						
DDS026	DD5-1	Bulk	Sediment	3462-22A	7.99	9.93	4.60	1.35	20.3	27.0
DDS026	DD5-1	2mm-63µm	Sediment	3462-22B						
DDS026	DD5-1	<63µm	Sediment	3462-22C						

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Drydock Silt Study
ENVVEST FY14
Reported as Dry Weight Concentrations

Sample ID	Station Code	Fraction	Matrix	MSL Code	% >2mm	% 2mm- 63µm	% <63µm	% Dry Wt.	Hg	Al	Cr
Units % dry wt % dry wt % dry wt %									µg/g	µg/g	µg/g
Laboratory Achieved Method Detection Limits (MDL)									0.002	4.2	0.10
Reporting Limit (RL = MDL* 3.18)									0.006	13	0.30
DDS016	DD6-3	Bulk	Sediment	3462-12A	6.0	31.1	68.0	42			
DDS016	DD6-3	2mm-63µm	Sediment	3462-12B					0.411	28277	387
DDS016	DD6-3	<63µm	Sediment	3462-12C					0.586	54273	115
DDS017	DD6-4	Bulk	Sediment	3462-13A	5.8	15.9	85.6	30			
DDS017	DD6-4	2mm-63µm	Sediment	3462-13B					0.464	23157	129
DDS017	DD6-4	<63µm	Sediment	3462-13C					0.564	52453	135
DDS018	DD5-1	Bulk	Sediment	3462-14A	0.0	6.8	98.1	10			
DDS018	DD5-1	2mm-63µm	Sediment	3462-14B					1.03	45586	171
DDS018	DD5-1	<63µm	Sediment	3462-14C					0.322	30782	64.5
DDS019	DD5-2	Bulk	Sediment	3462-15A	7.4	83.3	14.1	54			
DDS019	DD5-2	2mm-63µm	Sediment	3462-15B					0.103	44244	1058
DDS019	DD5-2	<63µm	Sediment	3462-15C					0.601	33211	178
DDS020	DD5-3	Bulk	Sediment	3462-16A				28			
DDS020	DD5-3	2mm-63µm	Sediment	3462-16B					1.89	45598	334
DDS020	DD5-3	<63µm	Sediment	3462-16C					0.448	43690	87.6
DDS021	DD1	Bulk	Sediment	3462-17A	3.7	22.0	80.3	23			
DDS021	DD1	2mm-63µm	Sediment	3462-17B					1.08	39252	243
DDS021	DD1	<63µm	Sediment	3462-17C					1.09	48493	101
DDS022	Blasting Grit	Bulk	Sediment	3462-18A	0.8	96.9	1.8	99			
DDS022	Blasting Grit	2mm-63µm	Sediment	3462-18B					0.002 U	371	1974
DDS022	Blasting Grit	<63µm	Sediment	3462-18C					0.002 U	1226	831
DDS023	DD6-1	Bulk	Sediment	3462-19A	0.1	7.1	116.5	24			
DDS023	DD6-1	2mm-63µm	Sediment	3462-19B					1.29	44810	173
DDS023	DD6-1	<63µm	Sediment	3462-19C					0.531	51507	94.5
DDS024	DD6-2	Bulk	Sediment	3462-20A	20.8	16.7	27.1	36			
DDS024	DD6-2	2mm-63µm	Sediment	3462-20B					0.213	25801	326
DDS024	DD6-2	<63µm	Sediment	3462-20C					0.431	51836	87.1
DDS025	DD6-3	Bulk	Sediment	3462-21A	9.3	9.7	86.4	23			
DDS025	DD6-3	2mm-63µm	Sediment	3462-21B					0.668	55159	150
DDS025	DD6-3	<63µm	Sediment	3462-21C					0.577	53843	79.6
DDS026	DD5-1	Bulk	Sediment	3462-22A	72.4	26.4	47.3	22			
DDS026	DD5-1	2mm-63µm	Sediment	3462-22B					0.402	46710	254
DDS026	DD5-1	<63µm	Sediment	3462-22C					0.412	43074	75.6

Drydock Silt Study
ENVVEST FY14
Reported as Dry Weight Concentrations

Sample ID	Station Code	Fraction	Matrix	MSL Code	Cu	Fe	Ni	Pb	Zn
					Units	µg/g	µg/g	µg/g	µg/g
Laboratory Achieved Method Detection Limits (MDL)					0.11	0.45	0.13	0.46	0.10
Reporting Limit (RL = MDL* 3.18)					0.35	1.4	0.41	1.5	0.32
DDS016	DD6-3	Bulk	Sediment	3462-12A					
DDS016	DD6-3	2mm-63µm	Sediment	3462-12B	4724	102529	355	310	14704
DDS016	DD6-3	<63µm	Sediment	3462-12C	2584	54544	119	93.1	4422
DDS017	DD6-4	Bulk	Sediment	3462-13A					
DDS017	DD6-4	2mm-63µm	Sediment	3462-13B	3062	61590	156	137	17603
DDS017	DD6-4	<63µm	Sediment	3462-13C	2567	76069	124	107	7795
DDS018	DD5-1	Bulk	Sediment	3462-14A					
DDS018	DD5-1	2mm-63µm	Sediment	3462-14B	1723	65074	202	245	4935
DDS018	DD5-1	<63µm	Sediment	3462-14C	593	26040	67.3	60.3	1710
DDS019	DD5-2	Bulk	Sediment	3462-15A					
DDS019	DD5-2	2mm-63µm	Sediment	3462-15B	1082	117193	1042	188	7642
DDS019	DD5-2	<63µm	Sediment	3462-15C	4532	72312	337	310	11035
DDS020	DD5-3	Bulk	Sediment	3462-16A					
DDS020	DD5-3	2mm-63µm	Sediment	3462-16B	1441	74632	311	280	4932
DDS020	DD5-3	<63µm	Sediment	3462-16C	697	33969	91.3	120	2375
DDS021	DD1	Bulk	Sediment	3462-17A					
DDS021	DD1	2mm-63µm	Sediment	3462-17B	1980	50930	310	272	2782
DDS021	DD1	<63µm	Sediment	3462-17C	1075	39248	101	122	1828
DDS022	Blasting Grit	Bulk	Sediment	3462-18A					
DDS022	Blasting Grit	2mm-63µm	Sediment	3462-18B	2813	742420	713	42.4	682
DDS022	Blasting Grit	<63µm	Sediment	3462-18C	3932	511342	431	33.7	1190
DDS023	DD6-1	Bulk	Sediment	3462-19A					
DDS023	DD6-1	2mm-63µm	Sediment	3462-19B	3238	66039	268	140	2620
DDS023	DD6-1	<63µm	Sediment	3462-19C	1196	40647	103	68.7	1080
DDS024	DD6-2	Bulk	Sediment	3462-20A					
DDS024	DD6-2	2mm-63µm	Sediment	3462-20B	1702	85616	209	432	9879
DDS024	DD6-2	<63µm	Sediment	3462-20C	1004	41690	73.8	59.6	2897
DDS025	DD6-3	Bulk	Sediment	3462-21A					
DDS025	DD6-3	2mm-63µm	Sediment	3462-21B	895	41854	116	118	951
DDS025	DD6-3	<63µm	Sediment	3462-21C	442	33679	48.8	53.2	433
DDS026	DD5-1	Bulk	Sediment	3462-22A					
DDS026	DD5-1	2mm-63µm	Sediment	3462-22B	1076	72544	269	193	3242
DDS026	DD5-1	<63µm	Sediment	3462-22C	495	33779	79.5	71.3	1553

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Sample ID	Station Code	Fraction	Matrix	MSL Code	Collection Date/time	Solids, Total	TOC	Gravel, Medium	Gravel, Fine	Sand, Very Coarse
<i>Units</i>						<i>% dry wt</i>	<i>% dry wt</i>	<i>% dry wt</i>	<i>% dry wt</i>	<i>% dry wt</i>
Laboratory Achieved Method Detection Limits (MDL)							0.02			
Reporting Limit (RL = MDL* 3.18)							0.05			
DDS027	DD5-2	Bulk	Sediment	3462-23A	06/07/13	46.8	7.35	0	1.49	8.36
DDS027	DD5-2	2mm-63µm	Sediment	3462-23B	06/07/13					
DDS027	DD5-2	<63µm	Sediment	3462-23C	06/07/13					
DDS2014-001	DD5-1	Bulk	Sediment	3462-195A	10/01/14	19.7	6.30	4.58	1.02	3.06
DDS2014-001	DD5-1	2mm-63µm	Sediment	3462-195B	10/01/14					
DDS2014-001	DD5-1	<63µm	Sediment	3462-195C	10/01/14					
DDS2014-002	DD5-2	Bulk	Sediment	3462-196A	10/01/14	20.5	3.72	0	0.19	1.52
DDS2014-002	DD5-2	2mm-63µm	Sediment	3462-196B	10/01/14					
DDS2014-002	DD5-2	<63µm	Sediment	3462-196C	10/01/14					
DDS2014-003	DD5-3	Bulk	Sediment	3462-197A	10/01/14	18.6	5.48	0	0	1.02
DDS2014-003	DD5-3	2mm-63µm	Sediment	3462-197B	10/01/14					
DDS2014-003	DD5-3	<63µm	Sediment	3462-197C	10/01/14					

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Sample ID	Station Code	Fraction	Matrix	MSL Code	Sand, Coarse	Sand, Medium	Sand, Fine	Sand, Very Fine	Silt	Clay
					Units	% dry wt	% dry wt	% dry wt	% dry wt	% dry wt
Laboratory Achieved Method Detection Limits (MDL)										
Reporting Limit (RL = MDL* 3.18)										
DDS027	DD5-2	Bulk	Sediment	3462-23A	17.98	17.09	10.69	1.98	21.4	15.2
DDS027	DD5-2	2mm-63µm	Sediment	3462-23B						
DDS027	DD5-2	<63µm	Sediment	3462-23C						
DDS2014-001	DD5-1	Bulk	Sediment	3462-195A	6.84	4.99	4.68	2.22	44.8	25.7
DDS2014-001	DD5-1	2mm-63µm	Sediment	3462-195B						
DDS2014-001	DD5-1	<63µm	Sediment	3462-195C						
DDS2014-002	DD5-2	Bulk	Sediment	3462-196A	2.14	0.50	1.27	2.28	56.8	31.5
DDS2014-002	DD5-2	2mm-63µm	Sediment	3462-196B						
DDS2014-002	DD5-2	<63µm	Sediment	3462-196C						
DDS2014-003	DD5-3	Bulk	Sediment	3462-197A	2.34	1.52	3.26	2.46	53.5	30.5
DDS2014-003	DD5-3	2mm-63µm	Sediment	3462-197B						
DDS2014-003	DD5-3	<63µm	Sediment	3462-197C						

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Reported as Dry Weight Concentrations

Sample ID	Station Code	Fraction	Matrix	MSL Code	% >2mm	% 2mm- 63µm	% <63µm	% Dry Wt.	Hg	Al	Cr
<i>Units % dry wt % dry wt % dry wt %</i>									<i>µg/g</i>	<i>µg/g</i>	<i>µg/g</i>
Laboratory Achieved Method Detection Limits (MDL)									0.002	4.2	0.10
Reporting Limit (RL = MDL* 3.18)									0.006	13	0.30
DDS027	DD5-2	Bulk	Sediment	3462-23A	1.5	56.1	36.6	45			
DDS027	DD5-2	2mm-63µm	Sediment	3462-23B					0.326	32387	444
DDS027	DD5-2	<63µm	Sediment	3462-23C					0.746	34852	185
DDS2014-001	DD5-1	Bulk	Sediment	3462-195A	5.6	21.8	70.5	34			
DDS2014-001	DD5-1	2mm-63µm	Sediment	3462-195B					1.54	40618	299
DDS2014-001	DD5-1	<63µm	Sediment	3462-195C					0.716	46185	121
DDS2014-002	DD5-2	Bulk	Sediment	3462-196A	0.2	7.7	88.3	20			
DDS2014-002	DD5-2	2mm-63µm	Sediment	3462-196B					1.62	42772	278
DDS2014-002	DD5-2	<63µm	Sediment	3462-196C					0.558	57858	84.1
DDS2014-003	DD5-3	Bulk	Sediment	3462-197A	0.0	10.6	84.0	18			
DDS2014-003	DD5-3	2mm-63µm	Sediment	3462-197B					0.956	42924	212
DDS2014-003	DD5-3	<63µm	Sediment	3462-197C					0.625	54095	111

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Sample ID	Station Code	Fraction	Matrix	MSL Code	Cu	Fe	Ni	Pb	Zn
					<i>Units</i>	<i>µg/g</i>	<i>µg/g</i>	<i>µg/g</i>	<i>µg/g</i>
Laboratory Achieved Method Detection Limits (MDL)					0.11	0.45	0.13	0.46	0.10
Reporting Limit (RL = MDL* 3.18)					0.35	1.4	0.41	1.5	0.32
DDS027	DD5-2	Bulk	Sediment	3462-23A					
DDS027	DD5-2	2mm-63µm	Sediment	3462-23B	3467	132094	422	328	17477
DDS027	DD5-2	<63µm	Sediment	3462-23C	3754	65711	327	227	15181
DDS2014-001	DD5-1	Bulk	Sediment	3462-195A					
DDS2014-001	DD5-1	2mm-63µm	Sediment	3462-195B	2271	108736	264	507	7355
DDS2014-001	DD5-1	<63µm	Sediment	3462-195C	1621	42218	117	129	2011
DDS2014-002	DD5-2	Bulk	Sediment	3462-196A					
DDS2014-002	DD5-2	2mm-63µm	Sediment	3462-196B	3205	108173	220	365	11443
DDS2014-002	DD5-2	<63µm	Sediment	3462-196C	306	35310	42.7	59.0	380
DDS2014-003	DD5-3	Bulk	Sediment	3462-197A					
DDS2014-003	DD5-3	2mm-63µm	Sediment	3462-197B	3766	61769	279	274	5863
DDS2014-003	DD5-3	<63µm	Sediment	3462-197C	1425	39850	84.5	96.1	1362

QC Summary for ICP-OES
Drydock Silt Study
ENVVEST FY14

UNITS: µg/g Dry Weight

Sample ID	Station	Code	Fraction	Matrix	MSL Code	Al	Cr	Cu	Fe	Ni	Pb	Zn	ICP-OES Batch ID
Instrument:						ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	
Laboratory Achieved Detection Limits (Freshwater)						4.2	0.10	0.11	0.45	0.13	0.46	0.10	
Freshwater Reporting Limit (MDL* 3.18)						13	0.30	0.35	1.4	0.41	1.5	0.32	
<u>METHOD BLANKS</u>													
MB					BLANK r2	4.2 U	0.679	0.229 J	0.45 U	0.13 U	0.46 U	0.10 U	I120814B
MB					BLANK r1	4.2 U	0.10 U	0.139 J	0.45 U	0.13 U	0.46 U	0.10 U	I1217
MB					BLANK r3	4.2 U	0.592	0.213 J	0.498 J	0.13 U	0.46 U	0.10 U	I121714A rep
<u>LABORATORY CONTROL SAMPLES</u>													
LCS					LCS r2	10.0	11.0	20.4	11.2	8.86	9.73	16.6	I120814B
LCS					LCS r1	9.59	10.3	10.1	10.1	9.53	9.17	10.1	I1217
LCS					LCS r3	7.92	10.9	10.5	10.6	9.20	9.05	9.87	I121714A rep
					Spiking Level	10	10	10	10	10	10	10	
					Percent Recovery	100%	110%	204% N	112%	89%	97%	166% N	
					Percent Recovery	96%	103%	101%	101%	95%	92%	101%	
					Percent Recovery	79%	109%	105%	106%	92%	91%	99%	
<u>MATRIX SPIKE RESULTS</u>													
DDS2014-002		<63µm		Sediment	3462-196C	57858	84.1	306	35310	42.7	59.0	380	I120814B
MS					3462-196C MS		203	416		159	172	728	I120814B
MSD					3462-196C MSD		197	412		159	166	722	I120814B
					Spiking Level, MS	NS	119	119	NS	119	119	357	
					Spiking Level, MSD	NS	120	120	NS	120	120	349	
					Percent Recovery, MS		100%	92%		98%	95%	98%	
					Percent Recovery, MSD		94%	89%		98%	90%	96%	
					RPD		5.6%	3.4%		0.1%	5.6%	1.7%	
DDS022	Blasting Grit	2mm-63µm		Sediment	3462-18B	371	1974	2813	742420	713	42.4	682	I120414A rep
MS					3462-18B MS	402	2050	3154		809	70.1	846	I120414A rep
MSD					3462-18B MSD	385	1844	2754		693	72.0	833	I120414A rep
					Spiking Level, MS	25	25	25	NS	25	25	102	
					Spiking Level, MSD	25	25	25	NS	25	25	102	
					Percent Recovery, MS	125% c	303% c	1369% c		384% c	111%	161% c	
					Percent Recovery, MSD	56% c	-524% c	-235% c		-82% c	119%	148% c	
					RPD	77% c	-748% c	283% c		309% c	6.8%	8.3%	
DDS2014-003		<63µm		Sediment	3462-197C	54095	111	1425	39850	84.5	96.1	1362	I121714A rep
MS					3462-197C MS		229	1543		204	213	1722	I121714A rep
MSD					3462-197C MSD		233	1553		205	214	1737	I121714A rep
					Spiking Level, MS	NS	126	126	NS	126	126	379	
					Spiking Level, MSD	NS	124	124	NS	124	124	373	
					Percent Recovery, MS		94%	94%		94%	93%	95%	
					Percent Recovery, MSD		97%	101%		95%	93%	99%	
					RPD		3%	8%		1%	0.9%	4.0%	

UNITS: µg/g Dry Weight

Sample ID	Station Code	Fraction	Matrix	MSL Code	Al	Cr	Cu	Fe	Ni	Pb	Zn	ICP-OES Batch ID
<i>Instrument:</i>					ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	
Laboratory Achieved Detection Limits (Freshwater)					4.2	0.10	0.11	0.45	0.13	0.46	0.10	
Freshwater Reporting Limit (MDL* 3.18)					13	0.30	0.35	1.4	0.41	1.5	0.32	
REPLICATE PRECISION												
DDS007	DD5 4	<63µm	Sediment	3462-6C	54045	144	1607	50612	145	132	4163	I120814B
DUP				3462-6Cr2	54558	146	1601	51782	149	133	4172	I120814B
				<i>Mean</i>	54302	145	1604	51197	147	133	4167	
				RPD	0.9%	1.6%	0.4%	2.3%	3.3%	1.0%	0.2%	
DDS022	Blasting Grit	2mm-63µm	Sediment	3462-18B	371	1974	2813	742420	713	42.4	682	I120414A rep
DUP				3462-18Br2	377	1880	2772	723630	686	44.9	787	I120414A rep
				<i>Mean</i>	374	1927	2792	733025	700	43.6	735	
				RPD	1.8%	4.9%	1.5%	2.6%	3.8%	5.7%	14.3%	
DDS027	DD5-2	2mm-63µm	Sediment	3462-23B	32387	444	3467	132094	422	328	17477	I120414A rep
DUP				3462-23Br2	31096	427	3004	123029	493	332	14384	I120414A rep
				<i>Mean</i>	31741	436	3236	127561	458	330	15930	
				RPD	4.1%	3.9%	14.3%	7.1%	15.4%	1.1%	19.4%	
DDS2014-003		<63µm	Sediment	3462-197C	48493	101	1075	39248	101	122	1828	I121714A rep
DUP				3462-197Cr2	47069	97.7	1049	38049	100	122	1770	I121714A rep
				<i>Mean</i>	47781	99.5	1062	38649	100	122	1799	
				RPD	3.0%	3.6%	2.5%	3.1%	1.2%	0.2%	3.2%	
STANDARD REFERENCE MATERIAL												
SRM				PACS-3 R2	62981	82.9	299	39728	31.3	161	352	I120814B
SRM				PACS-3 R1	55128	73.0	272	34890	30.7	146	318	I120414A rep
SRM				PACS-3 R3	63042	83.7	298	39838	32.8	167	357	I121714A rep
				Certified Value	65800	91.6	327	41100	39.9	188	379	
				Percent Recovery	96%	90%	91%	97%	78% &	86%	93%	
				Percent Recovery	84%	80%	83%	85%	77% &	78% &	84%	
				Percent Recovery	96%	91%	91%	97%	82%	89%	94%	

UNITS: $\mu\text{g/g}$ Dry Weight

Sample ID	Station Code	Fraction	Matrix	MSL Code	Hg	Hg Batch ID
Instrument:					DMA	
Laboratory Achieved Detection Limits					0.002	
Reporting Limit (MDL* 3.18)					0.006	

METHOD BLANKS

MB				METHOD BLANK	0.00788	121514HGDMA
MB				METHOD BLANK R1	0.00974	121314HGDMA
MB				METHOD BLANK R2	0.00932	121314HGDMA

LABORATORY CONTROL SAMPLES

LCS				LCS	1.04	121514HGDMA
LCS				LCS R1	1.06	121314HGDMA
LCS				LCS R2	1.02	121314HGDMA
				Spiking Level	1.00	
				Percent Recovery, LCS 1	104%	
				Percent Recovery, LCS 2	94%	
				Percent Recovery, LCS 3	98%	

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

DDS003	DD1 DEWATER003	<63 μm	Sediment	3462-3C	0.761	121514HGDMA
MS				3462-3C MS	4.42	121514HGDMA
MSD				3462-3C MSD	4.74	121514HGDMA
				Spiking Level, MS	3.49	
				Spiking Level, MSD	3.85	
				Percent Recovery, MS	105%	
				Percent Recovery, MSD	104%	
				RPD	1.3%	

DDS001	DD1 DEWATER001	2mm-63 μm	Sediment	3462-1B	1.05	121514HGDMA
MS				3462-1B MS	4.93	121514HGDMA
MSD				3462-1B MSD	5.06	121514HGDMA
				Spiking Level, MS	3.82	
				Spiking Level, MSD	4.07	
				Percent Recovery, MS	102%	
				Percent Recovery, MSD	99%	
				RPD	2.9%	

DDS2014-002		<63 μm	Sediment	3462-196C	0.558	121314HGDMA
MS				3462-196C MS	2.56	121314HGDMA
MSD				3462-196C MSD	2.57	121314HGDMA
				Spiking Level, MS	2.11	
				Spiking Level, MSD	2.02	
				Percent Recovery, MS	95%	
				Percent Recovery, MSD	100%	
				RPD	5.0%	

DDS019	DD5-2	<63 μm	Sediment	3462-15C	0.601	121314HGDMA
MS				3462-15C MS	3.24	121314HGDMA
MSD				3462-15C MSD	3.32	121314HGDMA
				Spiking Level, MS	2.64	
				Spiking Level, MSD	2.39	
				Percent Recovery, MS	100%	
				Percent Recovery, MSD	114%	
				RPD	12.9%	

QC Summary for Hg
Drydock Silt Study
ENVVEST FY14

UNITS: $\mu\text{g/g}$ Dry Weight

Sample ID	Station Code	Fraction	Matrix	MSL Code	Hg	Hg Batch ID
Instrument:					DMA	
Laboratory Achieved Detection Limits					0.002	
Reporting Limit (MDL* 3.18)					0.006	
DDS022	Blasting Grit	2mm-63 μm	Sediment	3462-18B	0.002 U	121314HGDMA
MS				3462-18B MS	0.0382	121314HGDMA
MSD				3462-18B MSD	0.0369	121314HGDMA
				Spiking Level, MS	0.0430	
				Spiking Level, MSD	0.0474	
				Percent Recovery, MS	89%	
				Percent Recovery, MSD	78%	
				RPD	13.2%	
DDS2014-003		<63 μm	Sediment	3462-197C	0.625	121314HGDMA
MS				3462-197C MS	3.16	121314HGDMA
MSD				3462-197C MSD	3.45	121314HGDMA
				Spiking Level, MS	2.58	
				Spiking Level, MSD	2.89	
				Percent Recovery, MS	98%	
				Percent Recovery, MSD	98%	
				RPD	0.5%	
REPLICATE PRECISION						
DDS002	DD1 DEWATER002	<63 μm	Sediment	3462-2C	1.01	121514HGDMA
DUP				3462-2C DUP	0.792	121514HGDMA
				Mean	0.900	
				RPD	24%	
DDS004	DD5 1 NW SIDE	2mm-63 μm	Sediment	3462-4B	0.650	121314HGDMA
DUP				3462-4B DUP	0.563	121314HGDMA
				Mean	0.606	
				RPD	14%	
DDS004	DD5 1 NW SIDE	<63 μm	Sediment	3462-4C	0.603	121314HGDMA
DUP				3462-4C R	0.685	121314HGDMA
				Mean	0.644	
				RPD	13%	
DDS005	DD5 2 MID	<63 μm	Sediment	3462-5C	0.480	121314HGDMA
DUP				3462-5C R	0.520	121314HGDMA
				Mean	0.500	121314HGDMA
				RPD	8%	
DDS007	DD5 4	<63 μm	Sediment	3462-6C	0.571	121314HGDMA
DUP				3462-6C DUP	0.570	121314HGDMA
				Mean	0.571	
				RPD	0%	
DDS013	DD1-3 MID	2mm-63 μm	Sediment	3462-10B	2.00	121314HGDMA
DUP				3462-10B DUP	2.49	121314HGDMA
				Mean	2.24	121314HGDMA
				RPD	22%	
DDS016	DD6-3	<63 μm	Sediment	3462-12C	0.586	121314HGDMA
DUP				3462-12C DUP	0.572	121314HGDMA
				Mean	0.579	121314HGDMA
				RPD	2%	

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 Sequim, Washington 98382-9099
 206/528-3407

QC Summary for Hg
Drydock Silt Study
ENVVEST FY14

UNITS: $\mu\text{g/g}$ Dry Weight

Sample ID	Station Code	Fraction	Matrix	MSL Code	Hg	Hg Batch ID
<i>Instrument:</i>					<i>DMA</i>	

Laboratory Achieved Detection Limits						0.002
Reporting Limit (MDL* 3.18)						0.006

DDS2014-002		2mm-63 μm	Sediment	3462-196B	1.62	121314HGDMA
DUP				3462-196B dup	0.857	121314HGDMA
TRIP				3462-196B Dup	0.600	121314HGDMA
				Mean	1.02	121314HGDMA
				RSD	52% *	

STANDARD REFERENCE MATERIAL

SRM				PACS-3	3.13	121514HGDMA
SRM				PACS-3 R1	2.64	121314HGDMA
SRM				PACS-3 R2	2.66	121314HGDMA
				Certified Value	3.00	
				Percent Recovery	104%	
				Percent Recovery	88%	
				Percent Recovery	89%	

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Sequim, Washington 98382-9099
206/528-3407

**Drydock Silt Study
ENVVEST FY14**

DATA QUALIFIERS:

- c Exceeds DQO but meets contingency criteria of either:
 - 1 SRM certified <10x MDL
 - 2 Insufficient spiking level relative to native sample concentrations
 - 3 Sample concentration <10x MDL
- U Analyte not detected at or above the MDL, MDL reported
- J Analyte detected above the MDL, but less than the RL
- N Spiked sample recovery outside QC criterion of 70-130%
- & Accuracy result outside QC criterion of $\leq 20\%$ PD
- * Precision result outside QC criterion of $< 30\%$
- NS Sample not spiked for this analyte
- B Analyte detected in the method blank > RL
and sample concentration < 10 times detected blank value
- ND Not detected

Notes:

- NC Not Certified
- Not analyzed
- NA Not applicable/available
- TME Total Metals Fraction
- DME Dissolved Metals Fraction

QAI/QC NARRATIVE

PROJECT:	Dry Dock Silt Fractionation Study 2014
PARAMETER:	Aluminum (Al), chromium (Cr), copper (Cu), iron (Fe), nickel (Ni), lead (Pb), zinc (Zn), and mercury (Hg)
LABORATORY:	Pacific Northwest National Laboratory (PNNL), Battelle Marine Sciences Laboratory (MSL), Sequim, Washington
MATRIX:	Silt samples collected from various dry docks
SAMPLE CUSTODY AND PROCESSING:	Sediment/silt samples were collected opportunistically from the floors and caissons of the DD during docking and undocking operations. Silt samples were collected as described in the sampling and analysis plan (PNNL and CardnoTEC 2014). A brief description is provided below. The bulk sample was fractionated for metals analyses by passing first through a 2mm and then a 63 µm sieve. The sieves were pre-cleaned plastic material to prevent metal contamination. Due to the limited material, the priority order for analyses was metal>TOC>grain size. The fractionation steps are listed below. 1. Divide the bulk sample into aliquots for fractionation, TOC/%moisture and grain size. With approximate masses of 10g, 3g, and 20 g, respectively. 2. Weigh out approximately 10 g wet aliquot for fractionation. 3. Pass the entire sample through a pre-cleaned, plastic 2mm sieve using DI water to make sure smaller particles are not entrained with the larger particles left on the sieve. 4. Weight the sample and freeze at -80°C. 5. Lyophilize the sample to remove the excess water, ball mill to homogenize, and digest a representative aliquot for metals analyses as discussed below. 6. If the sample is primarily silt, the optional step is to skip steps 4 and 5. Collect an aliquot for metals analyses of the sample that passes 2 mm and pass the remaining sample through a 63µm pre-cleaned, plastic sieve. After the second sieving, follow step 4 and 5 to create a second sample for metals analyses. 7. Between each sample the plastic sieves were washed with hot dilute Micro solution, 5 % Nitric acid, and copious DI water rinse. 1. The particle size fractions represent two material classes including smaller than coarse sand (< 2mm) and silt/clay (< 62.5 µm). Table 1 lists the measurement quality criteria, method detection limits (MDL), and reporting limits (RL) for each metal.

QAI/QC NARRATIVE

Table 1 Measurement quality criteria

Analyte	Analytical Method	Spike Range of Recovery	SRM Accuracy	Relative Precision	Achieved Detection Limit ⁽¹⁾ (µg/g dry wt.)	Reporting Limit ⁽²⁾ (µg/g dry wt.)
Hg	DMA	70-130%	≤20% PD	≤30% RPD	0.002	0.006
Al	ICP-OES	70-130%	≤20% PD	≤30% RPD	4.2	13
Cr	ICP-OES	70-130%	≤20% PD	≤30% RPD	0.10	0.30
Cu	ICP-OES	70-130%	≤20% PD	≤30% RPD	0.11	0.35
Fe	ICP-OES	70-130%	≤20% PD	≤30% RPD	0.45	1.4
Ni	ICP-OES	70-130%	≤20% PD	≤30% RPD	0.13	0.41
Pb	ICP-OES	70-130%	≤20% PD	≤30% RPD	0.46	1.5
Zn	ICP-OES	70-130%	≤20% PD	≤30% RPD	0.10	0.32

(1) Reported from the annually verified Sediment MDL summary.

(2) Determined as 3.18 times achieved MDL

METHODS:

Sediment samples were analyzed for aluminum (Al), chromium (Cr), copper (Cu), iron (Fe), lead (Pb), nickel (Ni), zinc (Zn), and mercury (Hg). After fractionation, samples were freeze-dried and homogenized using a ball-mill prior according to Battelle SOP MSL-C-003, *Percent Dry Weight and Homogenizing Dry Sediment, Soil and Tissue*.

Sediment samples were digested in accordance with Battelle SOP MSL-I-006, *Mixed Acid Sediment Digestion*. The sediment were digested following the total dissolution method followed by boric acid neutralization. In brief, an approximately 400-mg (dry weight) aliquot of each sample was combined with nitric, hydrochloric, and hydrofluoric acids in a Teflon digestion vessel and heated in an oven at 130°C (±10°C) for a minimum of eight hours. After cooling, boric acid was added to the digestate to neutralize the hydrofluoric acid and deionized water was added to achieve analysis volume.

Digested samples were analyzed for Al, Cr, Cu, Fe, Ni, Pb and Zn using inductively coupled plasma optical emissions spectroscopy (ICP-OES) according to Battelle SOP MSL-I-033, *Determination of Elements in Aqueous and Digestate Samples by ICP-OES*. This procedure is based on two methods modified and adapted for analysis of low level samples: EPA Method 6010B and 200.7.

Samples were analyzed for total Hg according to SOP MSL-I-034, *Direct Determination of Total Mercury in Tissues and Sediments by Thermal Decomposition, Gold Amalgamation and Cold Vapor Atomic Absorption Spectrometry (DMA)*, EPA Method 7473m (modified). An approximately 20-mg aliquot of each dried, homogeneous sample was heated in a controlled decomposition furnace flushed with oxygen to liberate Hg from the sediment. The decomposition and catalyst furnaces maintain a temperature of at least 750°C. The amalgamator is rapidly heated, releasing elemental Hg vapor, which is then detected by atomic absorption spectrophotometer (AAS).

HOLDING TIMES:

The suggested holding time for the reported analytes in sediment is one year frozen. The recommended holding time was not met for all samples collected; however, the analyses targeted total metals and all samples were stored frozen. The samples are not considered impacted as no loss pathways are recognized for total metals from frozen sediment.

DETECTION LIMITS:

Analytical results were reported to laboratory achieved detection limits derived from the annually verified Sediment MDL Study. The MDL study was conducted in compliance with 40 CFR Part 136 Appendix B Revision 1.11, which entails the analyses of at least seven replicates of the matrix (quartz sand) to calculate the MDL value. The MDL is annually verified.

QAI/QC NARRATIVE

Data were evaluated and flagged in accordance to the following criteria:

- U Analyte not detected at or above laboratory achieved detection limit, MDL reported
- J Value reported is below the RL, but above the MDL.
- & Accuracy results outside QC criteria of $\leq 20\%$ PD (SRM).
- * Precision results outside QC criteria of $\leq 30\%$ RPD.
- N Spiked sample recovery not within the QC limits of 70-130%.
- B Analyte detected in the method blank above the RL, sample concentration < 10 times detected blank value.
- c Exceeds primary criteria but meets contingency criteria of either:
 - 1 SRM certified <10x MDL
 - 2 Insufficient spiking level relative to native sample concentrations
 - 3 Sample concentration <10x MDL

METHOD BLANKS:

Method blanks were analyzed at a frequency of one per 20 samples. All metals were either not detected or detected below the reporting limit (RL) with the exception of Hg and Cr. The sample concentrations for Cr were all several orders of magnitude greater than the detected blank and no data flags were applied. For Hg, only one sample was less than 10x the detected blank. The sample was the blasting grit and the Hg was not detectable in this sample. The data are not considered impacted and were not flagged.

LABORATORY CONTROL SAMPLE ACCURACY:

Laboratory control samples were analyzed at a frequency of one per 20 samples. The LCS recoveries were within the QC acceptance criterion of $\pm 30\%$ recovery for all metals except one LCS for Cu (204%) and one for Zn (166%). The high recoveries were attributed to a random event as the SRM verified good analytical accuracy for this batch.

STANDARD REFERENCE MATERIAL ACCURACY:

The SRM analyzed with the sediment samples was PACS-3. The SRM accuracy was expressed as the percent recovery between the determined concentration and the certified or reference value. The percent recoveries were within the QC acceptance criterion of 80-120% for all metals, except two replicates for Ni (78% and 77%) and one replicate for Pb (78%). Other measures of accuracy were within the QC criterion; therefore, no further corrective action was taken.

MATRIX SPIKE ACCURACY:

Matrix spike recoveries were within the QC acceptance criterion of 70-130% recovery for all metals of concern spiked at an appropriate level relative to the native sample concentration. Al and Fe were not spiked due to high native sample concentrations. Sample 3462-18 was not spiked at a sufficient level for Al, Cr, Cu, Ni, and Zn. Therefore the MS/MSD were flagged with a contingency qualifier "c". Acceptable accuracy was demonstrated by the LCS and SRM.

LABORATORY PRECISION:

Laboratory precision was evaluated by laboratory duplicates and was expressed as the relative percent difference (RPD) of replicate results or relative standard deviation (RSD) if the replicates were greater than two. The RPD/RSD values were within the QC criterion of $\leq 30\%$ RPD except one replicate for Hg (52%). The sample was analyzed in triplicate to verify the sample heterogeneity. Many other replicates verified the laboratory precision was acceptable for Hg.

QAI/QC NARRATIVE

REFERENCES: PNNL and CardnoTEC (2014). 2014 PROJECT WORK PLAN For DRY DOCK AUTOMATED SAMPLING Conducted at Puget Sound Naval Shipyard Bremerton, WA Project ENVVEST Study Area. Sampling and Analysis Plan prepared for the U.S. Navy.

SAMPLE LOGIN

Project Manager: Brandenberger

Date Received: 7/25/2014

Batch: 1

Login Designee: Brandenberger

Project: **Dry Dock Silt (DDA) - ENVVEST**

Pacific Northwest
NATIONAL LABORATORY

Battelle
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Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382
PH: (360) 681-4565

Sample ID	Description	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date	Collection TIME
DDS-001	DD1 DEWATER001	3462-1	SILT	LAB 130	TME	12/10/12	1425
DDS-002	DD1 DEWATER002	3462-2	SILT	LAB 130	TME	12/10/12	1438
DDS-003	DD1 DEWATER003	3462-3	SILT	LAB 130	TME	12/10/12	1440
DDS-004	DD5 1 NW SIDE	3462-4	SILT	LAB 130	TME	12/21/12	0940
DDS-005	DD5 2 MID	3462-5	SILT	LAB 130	TME	12/21/12	0945
DDS-006	DD5 3 SW END	NO SAMPLE					
DDS-007	DD5 4	3462-6	SILT	LAB 130	TME	12/21/12	1005
DDS-008	DD1-3	3462-7	SILT	LAB 130	TME	01/09/13	1525
DDS-009	DD1-2	3462-8	SILT	LAB 130	TME	01/09/13	1535
DDS-010	DD1-1	3462-9	SILT	LAB 130	TME	01/09/13	1545
DDS-011	DD1-1 SW	NO SAMPLE					
DDS-012	DD1-2 SEC	NO SAMPLE					
DDS-013	DD1-3 MID	3462-10	SILT	LAB 130	TME	02/06/13	1400
DDS-014	DD6-1	3462-11	SILT	LAB 130	TME	02/07/13	
DDS-015	DD6-2	NO SAMPLE					
DDS-016	DD6-3	3462-12	SILT	LAB 130	TME	02/07/13	
DDS-017	DD6-4	3462-13	SILT	LAB 130	TME	02/07/13	
DDS-018	DD5-1	3462-14	SILT	LAB 130	TME	05/15/13	1520
DDS-019	DD5-2	3462-15	SILT	LAB 130	TME	05/15/13	1530
DDS-020	DD5-3	3462-16	SILT	LAB 130	TME	05/15/13	1545

SAMPLE LOGIN

Project Manager: Brandenberger

Date Received: 7/25/2014

Batch: 1

Login Designee: Brandenberger

Project: **Dry Dock Silt (DDA) - ENVVEST**


Pacific Northwest
NATIONAL LABORATORY

Battelle
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*Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382
PH: (360) 681-4565*

Sample ID	Description	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date	Collection TIME
DDS-021	DD1	3462-17	SILT	LAB 130	TME	06/05/13	0830
DDS-022	Blasting Grit	3462-18	SILT	LAB 130	TME	MARCH 2013	
DDS-023	DD6-1	3462-19	SILT	LAB 130	TME	06/28/13	1115
DDS-024	DD6-2	3462-20	SILT	LAB 130	TME	06/28/13	1120
DDS-025	DD6-3	3462-21	SILT	LAB 130	TME	06/28/13	1135
DDS-026	DD5-1	3462-22	SILT	LAB 130	TME	06/07/13	
DDS-027	DD5-2	3462-23	SILT	LAB 130	TME	06/07/13	

SAMPLE LOGIN

Project Manager: Brandenberger
Date Received: 10/2/14 (logged in 11/19/14)
Batch: 9
Login Designee: Strivens/Suslick
Project: **Dry Dock Silt**



*Marine Sciences Laboratory
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Sequim, Washington 98382
PH: (360) 681-4565*

Sponsor ID	Site Description	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
DDS2014-001	DD5-1	3462-195	sed	walkin, shelf R	TOC, Grain size, metals	10/01/14
DDS2014-002	DD5-2	3462-196	sed	walkin, shelf R	TOC, Grain size, metals	10/01/14
DDS2014-003	DD5-3	3462-197	sed	walkin, shelf R	TOC, Grain size, metals	10/01/14

SAMPLE CHAIN OF CUSTODY FORM

Date: 2/6/2013
 Page: 1 of 1
 COC Number: _____

Battelle

Marine Sciences Laboratory
 1529 West Sequim Bay Road
 Sequim, Washington 98382

Project No.: <u>Pry Dock Silt</u>	EVENT: <u>Undocking</u> <u>DD1 open to bay, 6 nos 12/12/12</u> <u>DD5</u> <u>DD1</u>	Laboratory: Battelle MSL
Project Name:	Testing Parameters	Address: 1529 W. Sequim Bay Road Sequim, WA 98382
Project Manager: Jill Brandenberger Phone: (360) 681-3668		Attention: Jill Brandenberger Observations, Instructions

Lab. Use only: Lab ID	Sample ID	Sample Label	Collection Date/Time	Matrix													No. of containers	StationID	DDI South Comments	Frame
3462*	DD1-001	DD1 Dewater 001	12/10/2012 1425	Silt													1	DD1 SE	North East End below stairs 0	
No Sample	DD1-002	DD1 Dewater 002	12/10/2012 1438	Silt	Sample included?												1	DD1 Center E	DD1 Center East Side frame 420	
-3	DD1-003	DD1 Dewater 003	12/10/2012 1440	Silt													1	DD1 North	DD1 North End middle frame 570	
-4	004	DD5 1 NW side	12/21/12 0940	Silt													1	DD5 NW	NW side trough	
-5	005	DD5 2 Mid	12/21/12 0945	Silt													1	DD5 Mid	mid west @ stairwell frame 95	
No Sample	006	DD5 3 SW end	12/21/12 0955	Silt													0	DD5 SW	SW end North of stairs	
-10	007	DD5 4	12/21/12 1005	Silt													1	DD5 SE	middle	
-7	008	DD1 1-3	1/9/2013 1525	Silt													1	DD1	not specified	
-8	009	DD1 2	1/9/2013 1535	Silt													1	DD1	not specified	
-9	010	DD1 3-1	1/9/2013 1545	Silt													1	DD1	not specified	
No Sample	011	DD1-1 SW	2/6/13 1300	Silt													0	DD1	South west front of caisson	
No Sample	012	DD1-2 SE	2/6/13 1315	Silt													0	DD1	SE corner of caisson shells	
-10	013	DD1-3 Mid	2/6/13 1400	Silt													1	DD1	mid from cross troughs	

Relinquished by: <u>C Gebhart</u> Signature: <u>Christine Gebhart</u> Printed Name: _____ Company: _____	Date: <u>7/25/16</u> Time: <u>1254</u> <u>↑ should be 1445</u>	Received by: <u>J Brandenberger</u> Signature: <u>J Brandenberger</u> Printed Name: _____ Company: _____	Total # of Containers: _____ Shipment Method: _____ Shipment Method: _____
Relinquished by: _____ Signature: _____ Printed Name: _____ Company: _____	Date: _____ Time: _____	Received by: _____ Signature: _____ Printed Name: _____ Company: _____	Sample Disposition: _____ Distribution: _____ 1) 2 copies to the Laboratory 2) 1 copy to project manager 3) Return completed original to Battelle Marine Sciences Laboratory

Date: 2/7/13
Page: _____ of _____
COC Number: _____

Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project No.: Project Name: Project Manager: Jill Brandenberger Phone: (360) 681-3668	EVENT: Testing Parameters	Laboratory: Battelle MSL Address: 1529 W. Sequim Bay Road Sequim, WA 98382 Attention: Jill Brandenberger Observations, Instructions
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[illegible]

Relinquished by:				Received by:		Total # of Containers	
Signature		Date		Signature		Shipment Method:	
Printed Name		Company		Printed Name		Shipment Method:	
Relinquished by:				Received by:		Sample Disposition:	
Signature		Date		Signature		Distribution:	
Printed Name		Company		Printed Name		1) 2 copies to the Laboratory 2) 1 copy to project manager 3) Return completed original to Battelle Marine Sciences Laboratory	

SAMPLE CHAIN OF CUSTODY FORM

Date: 5/15/2013/6/5/2013

Page: 1 of 1

COC Num DD52013-05-15

Project No.: <u>Dry Dock Silt (DD5) DD5:1T</u> Project Name: <u>ENUEST</u> Project Manager: <u>Johnston</u> Phone: _____	EVENT: <u>DD5 undocking</u> <u>DD6 undocking</u> <u>DD5 undocking</u> <u>Blasting Grit</u> <u>Testing Parameters</u>	Laboratory: _____ Address: _____ Attention: _____ Observations, Instructions: _____
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Lab. Use only: ID	Sample ID	Sample Label	Collection Date/Time	Matrix	As per Sonar												No. of containers	StationID	Comments
3462*	DD5ILT-018	DD5-1	5/15/2013 1520	SILT													1	DD5	North End from floor to keel block
	-019	DD5-2	" 1530	SILT													1	DD5	West Side (North End) Floor
	-020	DD5-3	" 1545	SILT													1	DD5	East Side (North End) Floor
	DD5ILT-021	DD1	6/5/2013 0830	SILT													1	DD1	SW end to mid in troughs
	DD5ILT-022	Blasting Grit	March 2013														1		Found in DD6 under keel block
	DD5ILT-023	1-DD6 #1	6/28/13 1115	SILT													1	DD6	NE area of dock from cross troughs
	-024	2-DD6 #2	6/28/13 1120	SILT													1	DD6	SE area of dock from cross troughs
	-025	3-DD6 #3	6/28/13 1135	SILT													1	DD6	SW in corner of wall & floor
	-026	DD5-1	6/7/13	SILT													1	DD5	unspecified
	-027	DD5-2	6/7/13	SILT													1	DD5	unspecified

Relinquished by: <u>Christine Gebhart</u> <u>7/25/14</u> <u>1256</u> Signature Date Time <u>Christine Gebhart</u> Printed Name Company	Received by: <u>[Signature]</u> Signature <u>Jim Brandenburg</u> Printed Name	Total # of Containers: _____ Shipment Method: _____ Shipment Method: _____ Sample Disposition: _____ Distribution: 1) 2 copies to the Laboratory 2) 1 copy to project manager 3) Return completed original to Battelle Marine Sciences Laboratory
Relinquished by: _____ Signature Date Time _____ Printed Name Company	Received by: _____ Signature _____ Printed Name	

SAMPLE CHAIN OF CUSTODY FORM

Date: ~~6/3/2013~~ ~~7/15/2013~~ 10/1/2014

Page: 1 of 1

COC Number: ~~NPDES20130712~~ DDS2014-001

Project No.: DDS2014 (Dry Dock Silt samples taken in 2014)				EVENT: DD5 Dewatering				Laboratory: BMSL/PNNL			
Samplers: R.K. Johnston				Testing Parameters				Address: 1529 W. Sequim Bay Rd Sequim, WA 98382			
Project Manager: R.K. Johnston Phone: (360) 961-9072								Attention: J.I. Brandenberger / Jon Strivens Observations, Instructions			

Lab. Use only: Lab ID	Sample ID	Sample Label	Collection Date/Time	Matrix	As per SOW											No. of containers	StationID	Comments
3462-149	DD22014-001	DD5-1	10/1/2014 10:45	SILT	X											1	DD5	East side half way down, taken from along wall between keel blocks stacked against DD wall
3462-150	DD22014-002	DD5-2	10/1/2014 10:55	SILT	X											1	DD5	On DD floor south end, taken from track drain on east side
3462-151	DD22014-003	DD5-3	10/1/2014 11:10	SILT	X											1	DD5	On DD floor west side half way down, taken from track drain

Relinquished by: <u>RK Johnston</u> 10/1/2014 1300 (Left at <u>Samplers Pump Unit 4</u>)				Received by: <u>Brian Tornow</u>				Total # of Containers			
Signature: <u>RK Johnston</u> Date: <u>10/1/2014</u> Time: <u>1300</u>				Signature: <u>Brian Tornow</u>				Shipment Method: <u>Hand Delivered</u>			
Printed Name: <u>RK Johnston</u> Company: <u>SSC Pac/PNNL</u>				Printed Name: <u>Brian Tornow</u>				Shipment Method: <u>JS</u>			
Relinquished by: <u>Brian Tornow</u> 10/2/14 11:28				Received by: <u>Jon Strivens</u> 10/1/14				Sample Disposition:			
Signature: <u>Brian Tornow</u> Date: <u>10/2/14</u> Time: <u>11:28</u>				Signature: <u>Jon Strivens</u>				Distribution:			
Printed Name: <u>Brian Tornow</u> Company: <u>Cardno</u>				Printed Name: <u>Jon Strivens</u>				1) 2 copies to the Laboratory			
								2) 1 copy to project manager			
								3) Return completed original to			

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #: 3462 Sample No(s): 1-23 Batch: 1
Project Name: DD silt Project Manager: Jmg

TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)

Matrix: sed

WP# _____

Special Instructions: refrigerate

See LIMS Sample Tracking for archive/disposal information

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes No N/A Indicate in Appropriate Box

☐ ☐ ☒ Custody seal present Seal intact? YES NOCooler 1: 5.8 °C☒ ☐ ☐ Cooler temperature (acceptable range: less than 6°C or solids:frozen)
(if multiple coolers, note temp. of each cooler)

Cooler 2: _____ °C

Cooler 3: _____ °C

Cooler 4: _____ °C

☐ ☐ ☒ Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)
Comment/Remedy: _____☒ ☐ ☐ Were all chain of custody forms signed and dated?☐ ☒ ☐ Were samples filtered at MSL? ☐ ALL ☐ HALFSamples must be filtered
prior to preservation!Sample condition(s): Acceptable Other (explain): _____Container type: ☐ Teflon ☐ Poly ☒ Glass ☐ Cap. Vial ☐ Baggie Other: _____

Notes: _____

Completed By: [Signature] Cooler Receipt Date/Time: 7/25/14 1600

SAMPLE PRESERVATION

☐ Sample(s) were preserved prior to arrival at MSL (noted on: CoC / Sample / per PM Instruction)☐ Random pH checked for ~10% of samples (use dip paper) Sample IDs: _____☐ Complete pH check required for project (use pH meter and record on pH Record form)☐ Sample(s) were preserved at MSLType: ☐ 0.2% HNO₃

Notes: _____ Lot# _____

☐ 0.5% HCl (Hg samples)

Notes: _____ Lot# _____

☒ Refrigerate/FreezeNotes: LAB 23/130☐ Other

Notes: _____

Completed By: [Signature] Preservation Date/Time: 7/25/14 1600

Storage Shelf: _____

Comments/Observations: _____

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #: 3462

Sample No(s): 149-151

Batch: 7

Project Name: DDA005

Project Manager: Brandenberger

TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)

Matrix: sediment

WP#

Special Instructions:

See LIMS Sample Tracking for archive/disposal information

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes No N/A Indicate in Appropriate Box

☐☐☒

Custody seal present

Seal intact?

YES

NO

Cooler 1: 4 °C

☒☐☐

Cooler temperature (acceptable range: less than 6°C or solids:frozen)

(if multiple coolers, note temp. of each cooler)

Cooler 2: °C

Cooler 3: °C

Cooler 4: °C

☐☐☒

Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)

Comment/Remedy:

☒☐☐Were all chain of custody forms signed and dated?☐☐☒

Were samples filtered at MSL?

ALL

HALF

Samples must be filtered
prior to preservation!

Sample condition(s):

Acceptable

Other (explain):

Container type:

Teflon Poly

Glass

Cap. Vial

Baggie

Other:

Notes:

Completed By: STRIVS

Cooler Receipt Date/Time: 2014/02/11:29

SAMPLE PRESERVATION

☐

Sample(s) were preserved prior to arrival at MSL (noted on: CoC / Sample / per PM Instruction)

☐

Random pH checked for ~10% of samples (use dip paper)

Sample IDs:

☐

Complete pH check required for project (use pH meter and record on pH Record form)

☐

Sample(s) were preserved at MSL

Type:

☐0.2% HNO₃

Notes:

Lot#

☐

0.5% HCl (Hg samples)

Notes:

Lot#

☒

Refrigerate/Freeze

Notes:

MSL 5-130g

☐

Other

Notes:

Completed By: STRIVS

Preservation Date/Time: 10/2/14 1135

Storage Shelf:

MSL 5-130 Fridge

Comments/Observations:

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Samples were subset to denote fraction A-B-C once slawed
 A = >2mm
 B = 2mm-63µm
 C = <63µm

Date: 12/1/2014

Pacific Northwest
NATIONAL LABORATORY

Battelle
The Business of Innovation

Project Name: DD Silt 2014

Project Manager: Brandenberger

Phone Number: 14564

Shipment Method: NA

Preservation: Freeze Dryer

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Line	Laboratory ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters					Field Sample ID	Observations/Comments
					TME	Hg	% Dry Weight				
1	3462-1A	11/21/2014	Sediment	1			x			DDS001	>2mm
2	3462-2A	11/21/2014	Sediment	1			x			DDS002	>2mm
3	3462-3A	11/21/2014	Sediment	1			x			DDS003	>2mm
4	3462-4A	11/21/2014	Sediment	1			x			DDS004	>2mm
5	3462-5A	11/21/2014	Sediment	1			x			DDS005	>2mm
6	3462-6A	11/23/2014	Sediment	1			x			DDS007	>2mm
7	3462-7A	11/23/2014	Sediment	1			x			DDS008	>2mm
8	3462-8A	11/23/2014	Sediment	1			x			DDS009	>2mm
9	3462-9A	11/23/2014	Sediment	1			x			DDS010	>2mm
10	3462-10A	11/23/2014	Sediment	1			x			DDS013	>2mm
11	3462-11A	11/23/2014	Sediment	1			x			DDS014	>2mm
12	3462-12A	11/24/2014	Sediment	1			x			DDS016	>2mm
13	3462-13A	11/24/2014	Sediment	1			x			DDS017	>2mm
14	3462-14A	11/24/2014	Sediment	1			x			DDS018	>2mm
15	3462-15A	11/24/2014	Sediment	1			x			DDS019	>2mm
16	3462-16A	11/24/2014	Sediment	1			x			DDS020	>2mm
17	3462-17A	11/24/2014	Sediment	1			x			DDS021	>2mm
18	3462-18A	11/25/2014	Sediment	1			x			DDS022	>2mm
19	3462-19A	11/25/2014	Sediment	1			x			DDS023	>2mm
20	3462-20A	11/25/2014	Sediment	1			x			DDS024	>2mm
21	3462-21A	11/25/2014	Sediment	1			x			DDS025	>2mm
22	3462-22A	11/25/2014	Sediment	1			x			DDS026	>2mm
23	3462-23A	11/25/2014	Sediment	1			x			DDS027	>2mm
24	3462-195A	11/25/2014	Sediment	1			x			DDS2014-001	>2mm

25	3462-196A	11/25/2014	Sediment	1			x			DDS2014-002	>2mm
26	3462-197A	11/25/2014	Sediment	1			x			DDS2014-003	>2mm
27	3462-1B	11/21/2014	Sediment	1	x	x	x			DDS001	2mm-63µm
28	3462-2B	11/21/2014	Sediment	1	x	x	x			DDS002	2mm-63µm
29	3462-3B	11/21/2014	Sediment	1	x	x	x			DDS003	2mm-63µm
30	3462-4B	11/21/2014	Sediment	1	x	x	x			DDS004	2mm-63µm
31	3462-5B	11/21/2014	Sediment	1	x	x	x			DDS005	2mm-63µm
32	3462-6B	11/23/2014	Sediment	1	x	x	x			DDS007	2mm-63µm
33	3462-7B	11/23/2014	Sediment	1	x	x	x			DDS008	2mm-63µm
34	3462-8B	11/23/2014	Sediment	1	x	x	x			DDS009	2mm-63µm
35	3462-9B	11/23/2014	Sediment	1	x	x	x			DDS010	2mm-63µm
36	3462-10B	11/23/2014	Sediment	1	x	x	x			DDS013	2mm-63µm
37	3462-11B	11/23/2014	Sediment	1	x	x	x			DDS014	2mm-63µm
38	3462-12B	11/24/2014	Sediment	1	x	x	x			DDS016	2mm-63µm
39	3462-13B	11/24/2014	Sediment	1	x	x	x			DDS017	2mm-63µm
40	3462-14B	11/24/2014	Sediment	1	x	x	x			DDS018	2mm-63µm
41	3462-15B	11/24/2014	Sediment	1	x	x	x			DDS019	2mm-63µm
42	3462-16B	11/24/2014	Sediment	1	x	x	x			DDS020	2mm-63µm
43	3462-17B	11/24/2014	Sediment	1	x	x	x			DDS021	2mm-63µm
44	3462-18B	11/25/2014	Sediment	1	x	x	x			DDS022	2mm-63µm
45	3462-19B	11/25/2014	Sediment	1	x	x	x			DDS023	2mm-63µm
46	3462-20B	11/25/2014	Sediment	1	x	x	x			DDS024	2mm-63µm
47	3462-21B	11/25/2014	Sediment	1	x	x	x			DDS025	2mm-63µm
48	3462-22B	11/25/2014	Sediment	1	x	x	x			DDS026	2mm-63µm
49	3462-23B	11/25/2014	Sediment	1	x	x	x			DDS027	2mm-63µm
50	3462-195B	11/25/2014	Sediment	1	x	x	x			DDS2014-001	2mm-63µm
51	3462-196B	11/25/2014	Sediment	1	x	x	x			DDS2014-002	2mm-63µm
52	3462-197B	11/25/2014	Sediment	1	x	x	x			DDS2014-003	2mm-63µm
53	3462-1C	11/21/2014	Sediment	2	x	x	x			DDS001	<63µm
54	3462-2C	11/21/2014	Sediment	2	x	x	x			DDS002	<63µm
55	3462-3C	11/21/2014	Sediment	2	x	x	x			DDS003	<63µm
56	3462-4C	11/21/2014	Sediment	2	x	x	x			DDS004	<63µm
57	3462-5C	11/21/2014	Sediment	2	x	x	x			DDS005	<63µm
58	3462-6C	11/23/2014	Sediment	2	x	x	x			DDS007	<63µm
59	3462-7C	11/23/2014	Sediment	2	x	x	x			DDS008	<63µm

60	3462-8C	11/23/2014	Sediment	2	x	x	x		DDS009	<63µm
61	3462-9C	11/23/2014	Sediment	2	x	x	x		DDS010	<63µm
62	3462-10C	11/23/2014	Sediment	2	x	x	x		DDS013	<63µm
63	3462-11C	11/23/2014	Sediment	2	x	x	x		DDS014	<63µm
64	3462-12C	11/24/2014	Sediment	2	x	x	x		DDS016	<63µm
65	3462-13C	11/24/2014	Sediment	2	x	x	x		DDS017	<63µm
66	3462-14C	11/24/2014	Sediment	2	x	x	x		DDS018	<63µm
67	3462-15C	11/24/2014	Sediment	2	x	x	x		DDS019	<63µm
68	3462-16C	11/24/2014	Sediment	2	x	x	x		DDS020	<63µm
69	3462-17C	11/24/2014	Sediment	2	x	x	x		DDS021	<63µm
70	3462-18C	11/25/2014	Sediment	2	x	x	x		DDS022	<63µm
71	3462-19C	11/25/2014	Sediment	2	x	x	x		DDS023	<63µm
72	3462-20C	11/25/2014	Sediment	2	x	x	x		DDS024	<63µm
73	3462-21C	11/25/2014	Sediment	2	x	x	x		DDS025	<63µm
74	3462-22C	11/25/2014	Sediment	2	x	x	x		DDS026	<63µm
75	3462-23C	11/25/2014	Sediment	2	x	x	x		DDS027	<63µm
76	3462-195C	11/25/2014	Sediment	2	x	x	x		DDS2014-001	<63µm
77	3462-196C	11/25/2014	Sediment	2	x	x	x		DDS2014-002	<63µm
78	3462-197C	11/25/2014	Sediment	2	x	x	x		DDS2014-003	<63µm

Relinquished By:	Company: PNNL
Strivens	20141201 1844
Signature/Printed Name	Date/Time

Relinquished By:	Company:
Signature/Printed Name	Date/Time

Received By:	Company:
Signature/Printed Name	Date/Time

Received By:	Company:
Signature/Printed Name	Date/Time

PROJECT ENVVEST						
Project Name:		ENNVEST - Dry Dock Silt 2014				
SAMPLE TEAM:		Navy, Battelle				
DATE:		11/20/2014				
Laboratory:		ALS				
CHAIN OF CUSTODY FORM						
Testing Parameters per QAPP						
Sample ID	STATION ID	Collection Date/Time	Matrix	Grain Size, ASTM D422MIPSEP TOC	No. of containers	COMMENTS
3462-1	DDS001	12/10/12 14:25		X X	1	
3462-2	DDS002	12/10/12 14:38		X X	1	
3462-3	DDS003	12/10/12 14:40		X X	1	
3462-4	DDS004	12/21/12 10:05		X X	1	
3462-5	DDS005	12/21/19 9:45		X X	1	
3462-6	DDS007	12/21/12 10:05		X X	1	
3462-7	DDS008	1/9/13 0:00		X X	2	
3462-8	DDS009	1/9/13 0:00		X X	2	
3462-9	DDS010	1/9/13 0:00		X X	1	
3462-10	DDS013	2/6/13 0:00		X X	1	
3462-11	DDS014	2/7/13 0:00		X X	1	
3462-12	DDS016	2/7/13 0:00		X X	1	
3462-13	DDS017	2/7/13 0:00		X X	1	
3462-14	DDS018	5/15/13 15:20		X X	1	
3462-15	DDS019	5/15/13 15:30		X X	1	
3462-16	DDS020	5/15/13 15:45		X X	1	
3462-17	DDS021	6/15/13 8:30		X X	1	
3462-18	DDS022	March 2013		X X	1	Blasting Grit
3462-19	DDS023	6/28/13 0:00		X X	1	
3462-20	DDS024	6/28/13 0:00		X X	1	
3462-21	DDS025	6/28/13 0:00		X X	1	
3462-22	DDS026	6/7/13 0:00		X X	1	
3462-23	DDS027	6/7/13 0:00		X X	1	
3462-195	DDS2014-001	10/1/14 10:45		X X	1	
3462-196	DDS2014-002	10/10/14/ 10:55		X X	1	
3462-197	DDS2014-003	10/10/14/ 11:10		X X	1	
--end--						
					Total:	28
Relinquished By: J. Strivens		Company: Battelle MSL		shipped via Fedex 11/20/14, CS		
Signature/Printed Name				Date/Time 11/20/2014		
Received By: 		Company: ALS				
Signature/Printed Name				Date/Time 11/24/14 0940		

PC HH

Cooler Receipt and Preservation Form

Client / Project: BaHole Service Request K14 13203Received: 11/21/14 Opened: 11/21/14 By: 42 Unloaded: 11/21/14 By: 42

1. Samples were received via? Mail Fed Ex UPS DHL PDX Courier Hand Delivered
2. Samples were received in: (circle) Cooler Box Envelope Other NA
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
- If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID	Tracking Number	NA	Filed
<u>.7</u>	<u>.8</u>	<u>3.8</u>	<u>3.9</u>	<u>+1</u>	<u>355</u>	<u>NA</u>	<u>7719 3047 1273</u>		

4. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head- space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: Rec'd 3462-8R2 and 3462-7R2 not on COC.
DETERMINED TO BE QC FOR 3462-8 AND 3462-7.