SEDIMENT DATA REPORT
LOVRIC'S SEA-CRAFT
3022 OAKES AVENUE
ANACORTES, WASHINGTON

prepared for:

Washington Department of Ecology

on behalf of:

Lovric's Sea-Craft, Inc.

prepared by:

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December 21, 2017

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1.0 INTRODUCTION

A baseline sediment monitoring event was performed in accordance with the Lovric's Sea-Craft Sediment Sampling and Analysis Plan (SAP). The SAP was prepared by Whatcom Environmental Services and approved by the Department of Ecology. This sampling has been completed to fulfill the requirements of Special Condition S12.A in the Lovric's Sea-Craft Facility National Pollution Discharge Elimination System (NPDES) Permit WA0501491, effective January 1, 2014. Lovric's Sea-Craft is a ship repair facility located at 3022 Oakes Avenue in Anacortes Washington. The site location is shown on Figure 1.

The purpose of the sediment sampling is to characterize sediment quality near the permitted discharge locations. These discharges include stormwater surface flow running off the two marine railways where the majority of the facility work occurs, as well as the stormwater drainage pipe running beneath the eastern building which primarily drains gravel roadways and a vegetated hillside. All three locations discharge only stormwater. Process water and waste water generated at the facility are captured and properly disposed of offsite.

Sediment samples were collected for chemical analysis from thirteen sampling stations. Samples were collected on September 25, 26, and 27, 2017. Samples were analyzed for the full list of Sediment Management Standards (SMS) chemicals and conventional parameters as well as organotins. This report presents the results of all associated analytical data.

2.0 FIELD SAMPLING METHODS

Surface sediment samples were collected at thirteen sampling stations using a WILDCO Petite Ponar (9") sampler deployed from a boat. Samples were collected by Whatcom Environmental personnel. The boat was owned and operated by Lovric's Sea-Craft. Daily field activities will be recorded in the project field notebook, and on appropriate field forms and/or notebook. Proper sample collection and handling procedures were followed per the SAP (WES, 2017). Sample station locations are shown on Figure 2.

Multiple grab samples were collected and composited at each sampling location to provide sufficient volume for analysis. Two or three grabs were typically required, however some stations required up to eight grabs due to poor penetration of the sampling device. Samples were generally collected from the uppermost 0-10 cm of sediment. Materials more than 2 inches in diameter and debris were removed prior to sample collection. Extra sample volume was collected from sample station B-4 to allow for laboratory matrix spike / matrix spike duplicate (MS/MSD) analysis. Original field log sheets for each sampling station are provided in Appendix A.

Sample containers for sulfide compounds were filled from the first acceptable grab at each sample station prior to homogenization. The remainder of the sample was transferred directly from the substrate to a stainless steel bowl and homogenized as thoroughly as possible with a stainless steel trowel. The homogenized sample portions were transferred into clean sample containers provided by the analytical laboratory. All excess collected sediment remaining after filling required sampling containers will be left at the collection location prior to moving to the next sampling station.

Proposed sampling station locations were referenced to the actual deployment locations using a handheld GPS unit (Garmin model GPSMAP 64s). Coordinates of the actual deployment locations for all sample stations are provided in Table 1.

3.0 LABORATORY ANALYTICAL METHODS

Sediment samples have been analyzed for the full list of SMS chemical and conventional parameters. Samples were also analyzed for organotins as recommended in Ecology guidance documents (Ecology 2015), due to shipyard activities at the site.

All selected laboratories maintained applicable Ecology-accreditation. Selected laboratories are expected to adhere to the methods outlined in the approved SAP and adhere to the SCUM II (Ecology 2015) and PSEP protocols and requirements. Laboratories used during this project include Edge Analytical Laboratory located in Burlington, Washington, and TestAmerica located in Seattle Washington. The laboratory quality control data has been reviewed and deemed acceptable. Original laboratory quality control data is included in the laboratory reports in Appendix B.

4.0 DEVIATIONS

No biological testing was conducted as approved by Ecology in the SAP Approval letter (Ecology, 2017).

The SAP proposed fifteen sample stations, however only thirteen stations were sampled. No sample was collected from station A-2 due to rocky substrate in the vicinity. Numerous deployments were attempted, however inadequate recovery precluded sample collection. Rocks in the area were generally 1 to 6 inches and diameter and were historically placed in this location to stabilize the railway. No sample was collected from station B-2 because the location was inaccessible. Station B-2 is located beneath the dock in an area which was inaccessible to the sampling vessel due to height and width restrictions. The area could not be accessed by foot due to water level during sample collection. All other samples were collected as proposed.

Samples collected from stations B-1, B-3, and B-6 were collected from a depth of only 0-5 cm, instead of 0-10 cm. Sediment in this area was very firm and the sampling device was unable to penetrate more than 5 cm. This portion of the site is less protected and has stronger tidal currents than interior portions of the site, leading to less sedimentation. This conclusion was supported by anecdotal evidence provided by the site manager.

Grain size analysis was not conducted on sample A-3 due to inadequate sample volume. The reduced sample volume became apparent after homogenization and filling of all other jars. An adequate number of samples were analyzed for grain size to determine the general characteristics of the site and re-collection was deemed unnecessary.

5.0 QUALITY ASSURANCE REVIEW

A quality assurance review has been performed on the data generated during this sediment investigation. Data review included an evaluation of:

- Field collection and handling
- Completeness
- Data presentation
- Reporting limits
- Acceptability of test results for:
    - Method blanks
    - Analytical replicates
    - Laboratory control samples (blank spikes)
    - Surrogate Recoveries
    - Matrix spikes and Matrix spike duplicates

The quality assurance review has established confidence that project data are of known and appropriate quality and sufficient to support their intended use. The completeness for the data set is 100 percent. Based on the data quality verification and validation, all data were determined to be acceptable. No data were rejected. A summary of the quality assurance review is provided in Appendix C.

6.0 RESULTS

All sediment sample results have been compared to the SQS numeric criteria for marine sediment (Ecology, 2015). The original chain of custody forms and laboratory data reports and are provided in Appendix B.

A summary of all sediment sample results indicating detected contaminants at each sampling station, along with any data qualifiers assigned by the laboratory or during data validation, is provided in Table 2. A summary of all parameters relating to dry weight SQS criteria are shown on Table 3. A summary of all parameters relating to carbon normalized SQS criteria are shown on Table 4. Sample B-6 contained less than 0.5% total organic carbon and therefore has been compared the SQS Apparent Effects Threshold (AET) numeric criteria for marine sediment. All parameters relating to AET criteria are shown on Table 5. Sampling station locations and all parameters exceeding applicable criteria are shown on Figure 2.

Metals: Both copper and zinc concentrations exceeded the SQS criteria at sample stations A-1 and A-7. Both of these sample stations are located near the west railway, and are presumed to be in a depositional area for current and historic water runoff from the railway. No other metals were exceeded in marine sediment at the site.

Organotins: Tributyltin (TBT) concentrations exceeded the applicable screening level (USACE, 2016) at sample stations A-1, A-7, and A-8. These sample stations are located near the railways, and are presumed to be in a depositional area for current and historic water runoff from the railways.

Organic chemicals: Benzoic acid concentrations exceeded the SQS criteria at eight of the thirteen sample stations. The remaining stations contained benzoic acid concentrations near the SQS criteria. Benzoic acid appears to be ubiquitous throughout the sampling area.

Phthalates: Bis(2-Ethylhexyl)phthalate concentrations exceeded the SQS criteria at sample stations A-4 and A-7. Both of these sample stations are located near the west railway, and are presumed to be in a depositional area for current and historic water

runoff from the railway. No other phthalates were exceeded in marine sediment at the site.

Polycyclic Aromatics: Low Molecular Weight PAH (LPAH), fluorene, phenanthrene, and anthracene concentrations exceeded the SQS criteria at only sample station B-1. High Molecular Weight PAH (HPAH) and chrysene concentrations exceeded the SQS criteria at sample stations A-1 and B-4. Fluoranthene concentrations exceeded the SQS criteria at sample stations A-1, A-3, B-1, and B-4. Indeno[1,2,3-c,d]pyrene and benzo[g,h,i]perylene concentrations exceeded the SQS criteria at only sample station A-1. No other polycyclic aromatics were exceeded in marine sediment at the site.

Chlorinated Organics: No chlorinated organics were detected at the site. However, it should be noted that due to the dilution factors (created by converting data to dry weight and also converting to carbon normalized data) the laboratory detection limits were elevated greater than the SQS criteria for most chlorinated organics analyzed.

The highest concentration of pollutants appears to occur most frequently in two distinct areas. The first area is located immediately off the railways, and is likely a depositional area formed where the railway loading area is protected from the tidal currents which typically move through the site in an east/west direction. Tidal currents flow to the east on and incoming tide and to the west on an outgoing tide. The second concentration of pollutants occurs in a nearshore area approximately 60 feet east of the main pier. The source of this pollutant concentration is unclear as the area is subjected relatively strong currents. Additional evaluation may be informative at this location.

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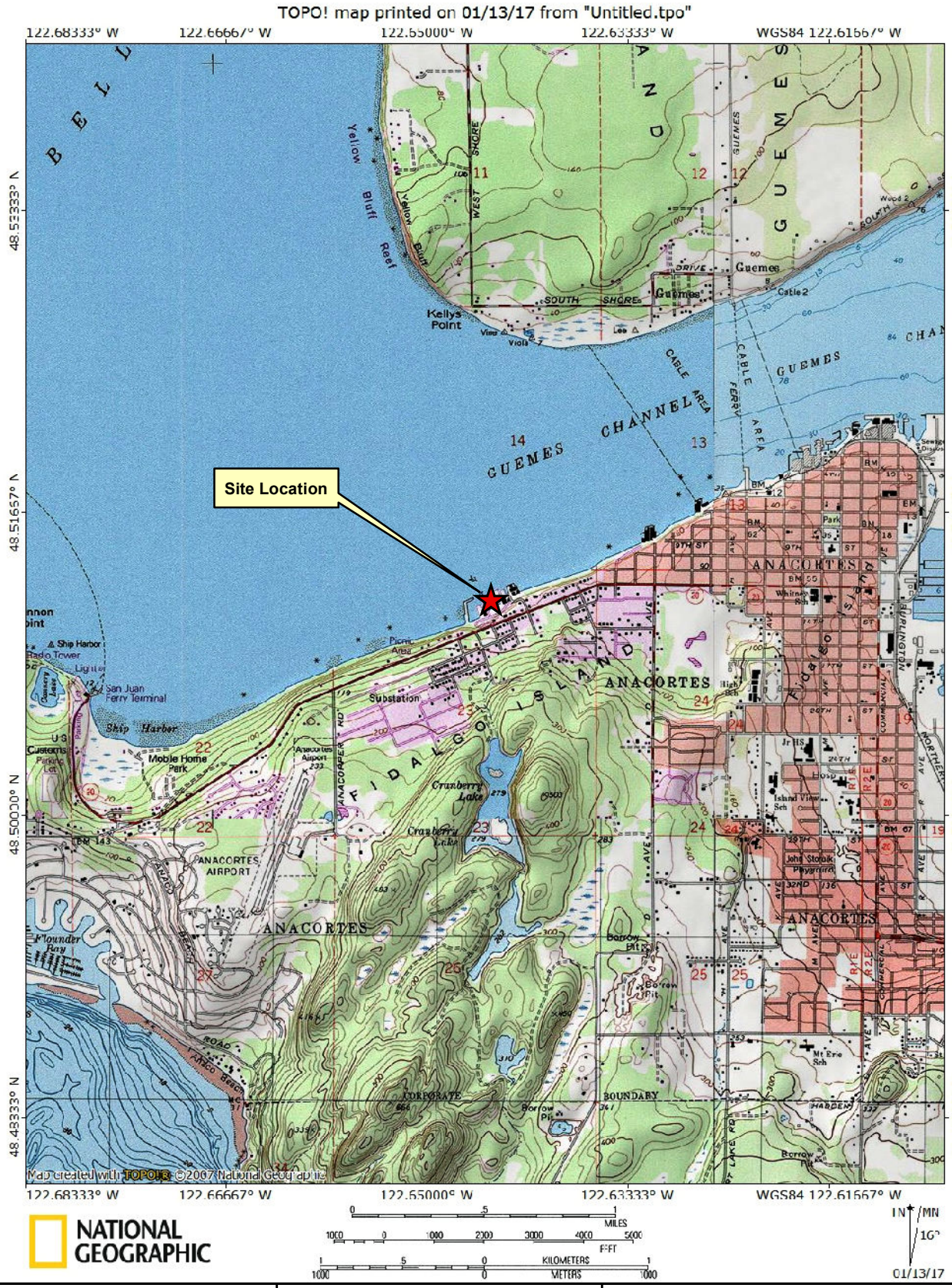

Prepared for:

Lovric Sea-Craft 50 Years Est 1965
Complete Service Shipyard
Built on tradition

Prepared by:

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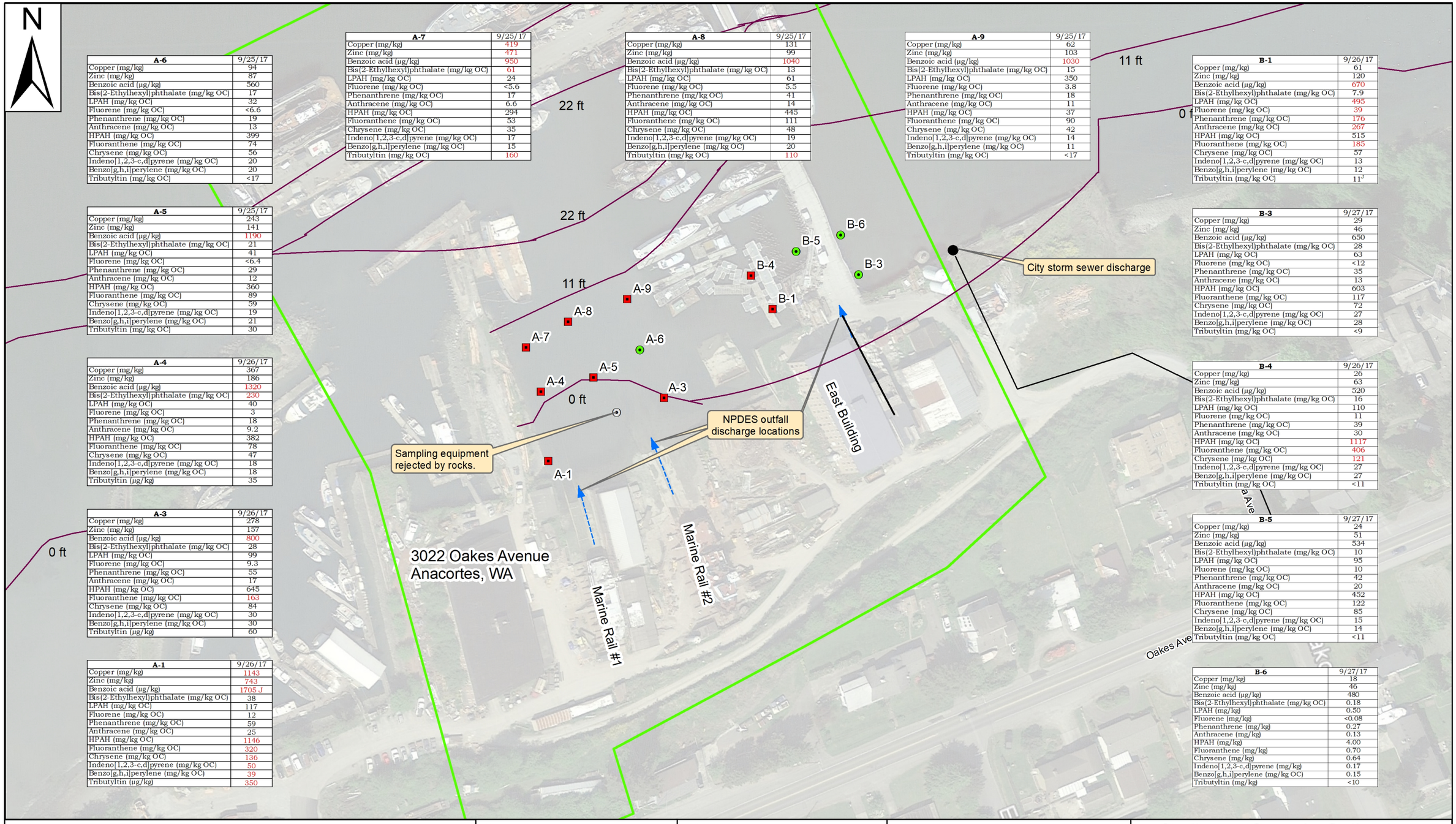
Site Location Map

Lovric's SAP
1/1/17

Figure 1



A-6	9/25/17
Copper (mg/kg)	94
Zinc (mg/kg)	87
Benzoic acid (µg/kg)	560
Bis(2-Ethylhexyl)phthalate (mg/kg OC)	17
LPAH (mg/kg OC)	32
Fluorene (mg/kg OC)	<6.6
Phenanthrene (mg/kg OC)	19
Anthracene (mg/kg OC)	13
HPAH (mg/kg OC)	399
Fluoranthene (mg/kg OC)	74
Chrysene (mg/kg OC)	56
Indeno[1,2,3-c,d]pyrene (mg/kg OC)	20
Benzo[g,h,i]perylene (mg/kg OC)	20
Tributyltin (mg/kg OC)	<17

A-7	9/25/17
Copper (mg/kg)	419
Zinc (mg/kg)	471
Benzoic acid (µg/kg)	950
Bis(2-Ethylhexyl)phthalate (mg/kg OC)	61
LPAH (mg/kg OC)	24
Fluorene (mg/kg OC)	<5.6
Phenanthrene (mg/kg OC)	17
Anthracene (mg/kg OC)	6.6
HPAH (mg/kg OC)	294
Fluoranthene (mg/kg OC)	53
Chrysene (mg/kg OC)	35
Indeno[1,2,3-c,d]pyrene (mg/kg OC)	17
Benzo[g,h,i]perylene (mg/kg OC)	15
Tributyltin (mg/kg OC)	160

A-8	9/25/17
Copper (mg/kg)	131
Zinc (mg/kg)	99
Benzoic acid (µg/kg)	1040
Bis(2-Ethylhexyl)phthalate (mg/kg OC)	13
LPAH (mg/kg OC)	61
Fluorene (mg/kg OC)	5.5
Phenanthrene (mg/kg OC)	41
Anthracene (mg/kg OC)	14
HPAH (mg/kg OC)	445
Fluoranthene (mg/kg OC)	111
Chrysene (mg/kg OC)	48
Indeno[1,2,3-c,d]pyrene (mg/kg OC)	19
Benzo[g,h,i]perylene (mg/kg OC)	20
Tributyltin (mg/kg OC)	110

A-9	9/25/17
Copper (mg/kg)	62
Zinc (mg/kg)	103
Benzoic acid (µg/kg)	1030
Bis(2-Ethylhexyl)phthalate (mg/kg OC)	15
LPAH (mg/kg OC)	350
Fluorene (mg/kg OC)	3.8
Phenanthrene (mg/kg OC)	18
Anthracene (mg/kg OC)	11
HPAH (mg/kg OC)	37
Fluoranthene (mg/kg OC)	90
Chrysene (mg/kg OC)	42
Indeno[1,2,3-c,d]pyrene (mg/kg OC)	14
Benzo[g,h,i]perylene (mg/kg OC)	11
Tributyltin (mg/kg OC)	<17

B-1	9/26/17
Copper (mg/kg)	61
Zinc (mg/kg)	120
Benzoic acid (µg/kg)	670
Bis(2-Ethylhexyl)phthalate (mg/kg OC)	7.9
LPAH (mg/kg OC)	495
Fluorene (mg/kg OC)	39
Phenanthrene (mg/kg OC)	176
Anthracene (mg/kg OC)	267
HPAH (mg/kg OC)	515
Fluoranthene (mg/kg OC)	185
Chrysene (mg/kg OC)	57
Indeno[1,2,3-c,d]pyrene (mg/kg OC)	13
Benzo[g,h,i]perylene (mg/kg OC)	12
Tributyltin (mg/kg OC)	11[J]

A-5	9/25/17
Copper (mg/kg)	243
Zinc (mg/kg)	141
Benzoic acid (µg/kg)	1190
Bis(2-Ethylhexyl)phthalate (mg/kg OC)	21
LPAH (mg/kg OC)	41
Fluorene (mg/kg OC)	<6.4
Phenanthrene (mg/kg OC)	29
Anthracene (mg/kg OC)	12
HPAH (mg/kg OC)	360
Fluoranthene (mg/kg OC)	89
Chrysene (mg/kg OC)	59
Indeno[1,2,3-c,d]pyrene (mg/kg OC)	19
Benzo[g,h,i]perylene (mg/kg OC)	21
Tributyltin (mg/kg OC)	30

B-3	9/27/17
Copper (mg/kg)	29
Zinc (mg/kg)	46
Benzoic acid (µg/kg)	650
Bis(2-Ethylhexyl)phthalate (mg/kg OC)	28
LPAH (mg/kg OC)	63
Fluorene (mg/kg OC)	<12
Phenanthrene (mg/kg OC)	35
Anthracene (mg/kg OC)	13
HPAH (mg/kg OC)	603
Fluoranthene (mg/kg OC)	117
Chrysene (mg/kg OC)	72
Indeno[1,2,3-c,d]pyrene (mg/kg OC)	27
Benzo[g,h,i]perylene (mg/kg OC)	28
Tributyltin (mg/kg OC)	<9

A-4	9/26/17
Copper (mg/kg)	367
Zinc (mg/kg)	186
Benzoic acid (µg/kg)	1320
Bis(2-Ethylhexyl)phthalate (mg/kg OC)	230
LPAH (mg/kg OC)	40
Fluorene (mg/kg OC)	3
Phenanthrene (mg/kg OC)	18
Anthracene (mg/kg OC)	9.2
HPAH (mg/kg OC)	382
Fluoranthene (mg/kg OC)	78
Chrysene (mg/kg OC)	47
Indeno[1,2,3-c,d]pyrene (mg/kg OC)	18
Benzo[g,h,i]perylene (mg/kg OC)	18
Tributyltin (µg/kg)	35

B-4	9/26/17
Copper (mg/kg)	26
Zinc (mg/kg)	63
Benzoic acid (µg/kg)	520
Bis(2-Ethylhexyl)phthalate (mg/kg OC)	16
LPAH (mg/kg OC)	110
Fluorene (mg/kg OC)	11
Phenanthrene (mg/kg OC)	39
Anthracene (mg/kg OC)	30
HPAH (mg/kg OC)	1117
Fluoranthene (mg/kg OC)	406
Chrysene (mg/kg OC)	121
Indeno[1,2,3-c,d]pyrene (mg/kg OC)	27
Benzo[g,h,i]perylene (mg/kg OC)	27
Tributyltin (mg/kg OC)	<11

A-3	9/26/17
Copper (mg/kg)	278
Zinc (mg/kg)	157
Benzoic acid (µg/kg)	800
Bis(2-Ethylhexyl)phthalate (mg/kg OC)	28
LPAH (mg/kg OC)	99
Fluorene (mg/kg OC)	9.3
Phenanthrene (mg/kg OC)	55
Anthracene (mg/kg OC)	17
HPAH (mg/kg OC)	645
Fluoranthene (mg/kg OC)	163
Chrysene (mg/kg OC)	84
Indeno[1,2,3-c,d]pyrene (mg/kg OC)	30
Benzo[g,h,i]perylene (mg/kg OC)	30
Tributyltin (µg/kg)	60

B-5	9/27/17
Copper (mg/kg)	24
Zinc (mg/kg)	51
Benzoic acid (µg/kg)	534
Bis(2-Ethylhexyl)phthalate (mg/kg OC)	10
LPAH (mg/kg OC)	95
Fluorene (mg/kg OC)	10
Phenanthrene (mg/kg OC)	42
Anthracene (mg/kg OC)	20
HPAH (mg/kg OC)	452
Fluoranthene (mg/kg OC)	122
Chrysene (mg/kg OC)	85
Indeno[1,2,3-c,d]pyrene (mg/kg OC)	15
Benzo[g,h,i]perylene (mg/kg OC)	14
Tributyltin (mg/kg OC)	<11

A-1	9/26/17
Copper (mg/kg)	1143
Zinc (mg/kg)	743
Benzoic acid (µg/kg)	1705 J
Bis(2-Ethylhexyl)phthalate (mg/kg OC)	38
LPAH (mg/kg OC)	117
Fluorene (mg/kg OC)	12
Phenanthrene (mg/kg OC)	59
Anthracene (mg/kg OC)	25
HPAH (mg/kg OC)	1146
Fluoranthene (mg/kg OC)	320
Chrysene (mg/kg OC)	136
Indeno[1,2,3-c,d]pyrene (mg/kg OC)	50
Benzo[g,h,i]perylene (mg/kg OC)	39
Tributyltin (µg/kg)	350

B-6	9/27/17
Copper (mg/kg)	18
Zinc (mg/kg)	46
Benzoic acid (µg/kg)	480
Bis(2-Ethylhexyl)phthalate (mg/kg OC)	0.18
LPAH (mg/kg)	0.50
Fluorene (mg/kg)	<0.08
Phenanthrene (mg/kg)	0.27
Anthracene (mg/kg)	0.13
HPAH (mg/kg)	4.00
Fluoranthene (mg/kg)	0.70
Chrysene (mg/kg)	0.64
Indeno[1,2,3-c,d]pyrene (mg/kg)	0.17
Benzo[g,h,i]perylene (mg/kg OC)	0.15
Tributyltin (mg/kg)	<10

Sediment Sample (no criteria exceedance)

Sediment Sample (exceeds one or more criteria)

Approximate Site Boundary

Depth Contour Line (MLLW = 0 ft)

Surface Flow Path

Buried Stormwater Pipe

Prepared for:

50 YEARS LOVRIC Sea-Craft Est 1965 — Complete Service Shipyard — Built on tradition

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All data are approximate and should be used as relative location reference only.

0 50 100 200 Feet

1 inch = 100 feet

Sediment Sample Collection Location Map

Lovric's SAP Data

12/21/17

Figure 2

Table 1. Sample Location Coordinates - Lovric's Sea-Craft

Location ID*	Lat./Lon. (GCS_North_American_1983_HARN)		Bottom depth (ft)**	Comments
Sample Station Cluster #1				
A1	48.511664	-122.645096	Intertidal	
A2	48.511807	-122.644791	Intertidal	No sample. Sampler was rejected, too rocky.
A3	48.511849	-122.644581	Intertidal	
A4	48.511869	-122.645128	1.5	
A5	48.511910	-122.644893	0.3	
A6	48.511991	-122.644687	4.3	
A7	48.512000	-122.645193	7.1	
A8	48.512075	-122.645005	8.0	
A9	48.512141	-122.644742	8.7	
Sample Station Cluster #2				
B1	48.512110	-122.644096	3.7	
B2	--	--	--	No sample. Location is inaccessible due to pier.
B3	48.512210	-122.643713	3.3	
B4	48.512209	-122.644192	5.8	
B5	48.512279	-122.643990	5.5	
B6	48.512327	-122.643791	5.4	

*Samples were collected September 25, 26, and 27, 2017.

**Bottom depth relative to mean low low water (NOAA; https://encdirect.noaa.gov/ accessed 9/28/17).

Table 2. Sediment Results (Dry Weight Basis) - Lovric's Sea-Craft

	Lovric's Sample Results												
	A-1 9/26/17	**A-3** 9/26/17	**A-4** 9/26/17	**A-5** 9/25/17	**A-6** 9/25/17	**A-7** 9/25/17	**A-8** 9/25/17	**A-9** 9/25/17	**B-1** 9/26/17	**B-3** 9/27/17	**B-4** 9/26/17	**B-5** 9/27/17	**B-6** 9/27/17
Collection Depth	**(cm)**												
	0-10	0-10	0-10	0-10	0-10	0-10	0-10	0-10	0-5	0-5	0-10	0-10	0-5
Conventional Parameters	**(mg/kg dw)**												
Ammonia	80	113	71	72	86	30	<50	52	37	<18	56	20	21
Grain Size	See laboratory report for grain size analysis.												
Total Organic Carbon	19,000	21,000	17,000	18,000	16,000	18,000	15,000	16,000	29,000	5,700	16,000	16,000	4,400
Total Organic Carbon (%)	1.9%	2.1%	1.7%	1.8%	1.6%	1.8%	1.5%	1.6%	2.9%	0.57%	1.6%	1.6%	0.44%
Total Sulfides[H]	3,600	2,700	940	1,300	1,500	1,200	800	1,500	1,200	340	2,400	570	420
Total Volatile Solids	5.0	4.1	4.2	6.1	4.9	4.4	5.2	5.2	4.3	1.5	5.7	2.1	1.9
Metals	**(mg/kg dw)**												
Arsenic	4.9	6.5	3.2	3.1	2.2	4.3	<0.97	<0.90	4.9	1.8	1.6	2.1	2.4
Cadmium	< 0.72	<0.45	<0.59	<1.05	<0.47	<0.84	<0.97	<0.90	<0.72	<0.61	<0.93	<0.78	<0.76
Chromium	36	34	30	41	33	42	38	43	25	23	31	26	25
Copper	1143	278	367	243	94	419	131	62	61	29	26	24	18
Lead	41	23	21	19	13	28	14	12	25	7.2	6.1	<0.78	5.1
Mercury	0.24	0.21	0.15	0.14	0.10	0.16	0.11	0.07	0.13	0.05	0.19	0.05	0.06
Silver	< 0.72	<0.45	<0.59	<1.05	<0.47	<0.84	<0.97	<0.90	<0.72 J	<0.61	<0.93	<0.78	<0.76
Zinc	743	157	186	141	87	471	99	103	120 J	46	63	51	46
Organic Chemicals	**(µg/kg dw)**												
2,4-Dimethylphenol	<105	<120	<95	<115	<105	<100	<100	<105	<80	<70	<100	<75	<80
2-Methylphenol	<105	<120	<95	<115	<105	<100	<100	<105	<80	<70	<100	<75	<80
4-Methylphenol	<105	<120	<95	<115	<105	<100	<100	<105	<80	<70	<100	<75	<80
Benzoic acid	1705 J	800 J	1320 J	1190 J	560	950 J	1040 J	1030 J	670 J	650 J	520 J	534 J	480 J
Benzyl alcohol	<105	<120	<95	<115	<105	<100	<100	<105	<80	<70	<100	<75	<80
Dibenzofuran	100	90	<100	<120	<110	<100	<100	<110	410	<70	120	90	<80
Phenol	<105	<120	<95	<115	<105	<100	<100	<105	<80	<70	0	<75	<80
N-nitrosodiphenylamine	<100	<120	<100	<120	<110	<100	<100	<110	<80	<70	<100	<80	<80
Phthalates	**(mg/kg dw)**												
Bis(2-Ethylhexyl)phthalate	0.72 J	0.59 J	3.91 J	0.38 J	0.27 J	1.10 J	0.19 J	0.25 J	0.23 J	0.16 J	0.26 J	0.16 J	0.18 J
Butylbenzyl phthalate	<0.1	<0.12	<0.10	<0.12	<0.11	<0.10	<0.10	<0.11	<0.08	<0.07	<0.10	<0.08	<0.08
Diethyl phthalate	0.12	0.11	0.13	0.12	0.12	0.11	0.10	0.18	0.10	0.09	0.16	0.18	0.19
Dimethyl phthalate	0.16	<0.12	0.14	0.40	<0.11	<0.10	<0.10	<0.11	<0.08	<0.07	<0.10	<0.08	<0.08
Di-n-butyl phthalate	0.38 J	0.46 J	0.32 J	0.29 J	0.46 J	0.56 J	0.25 J	0.42 J	0.35 J	0.33 J	0.34 J	0.48 J	0.41 J
Di-n-octyl phthalate	<0.1	<0.12	<0.10	<0.12	<0.11	<0.10	<0.10	<0.11	<0.08	<0.07	<0.10	<0.08	<0.08
Polychlorinated Biphenyls	**(mg/kg dw)**												
Total Aroclors	0.6 J	<0.13	0.05 J	<0.11	<0.11	0.05 J	0.03 J	<0.10	<0.09	<0.07	<0.10	<0.08	<0.08

Table 2. Sediment Results (Dry Weight Basis) - Lovric's Sea-Craft

	Lovric's Sample Results												
	A-1	**A-3**	**A-4**	**A-5**	**A-6**	**A-7**	**A-8**	**A-9**	**B-1**	**B-3**	**B-4**	**B-5**	**B-6**
	9/26/17	9/26/17	9/26/17	9/25/17	9/25/17	9/25/17	9/25/17	9/25/17	9/26/17	9/27/17	9/26/17	9/27/17	9/27/17
Polycyclic Aromatic	**(mg/kg dw)**												
LPAH	2	2.2	0.7	0.7	0.5	0.4	0.9	0.7	14.6	0.4	1.9	1.6	0.5
Naphthalene	<0.1	0.14	<0.10	<0.12	<0.11	<0.10	<0.10	0.07	0.17	0.09	0.18	0.12	0.07
Acenaphthylene	0.25	0.12	0.17	<0.12	<0.11	<0.10	<0.10	<0.11	0.12	<0.07	0.14	0.10	<0.08
Acenaphthene	0.15	0.12	<0.10	<0.12	<0.11	<0.10	<0.10	<0.11	0.12	<0.07	0.18	0.14	<0.08
Fluorene	0.23 J	0.20 J	0.05 J	<0.12 J	<0.11 J	<0.10 J	0.08 J	0.06 J	1.13 J	<0.07 J	0.18 J	0.16 J	<0.08 J
Phenanthrene	1.12	1.16	0.31	0.50	0.30	0.31	0.61	0.29	5.10	0.20	0.62	0.67	0.27
Anthracene	0.48	0.36	0.16	0.22	0.21	0.12	0.21	0.18	7.74	0.07	0.48	0.32	0.13
2-Methylnaphthalene	<0.1	0.10	<0.10	<0.12	<0.11	<0.10	<0.10	0.09	0.18	0.04	0.07	0.05	0.06
Total HPAH	21.8	13.6	6.5	6.5	6.4	5.3	6.6	5.6	14.9	3.4	17.9	7.2	4.0
Fluoranthene	6.08 J	3.42 J	1.33 J	1.6 J	1.18 J	0.95 J	1.66 J	1.44 J	5.36 J	0.67 J	6.5 J	1.95 J	0.70 J
Pyrenene	4.43 J	2.63 J	1.46 J	1.37 J	1.20 J	1.13 J	1.47 J	1.31 J	3.65 J	0.65 J	4.67 J	1.47 J	0.94 J
Benz[a]anthracene	1.79	0.99	0.46	0.58	0.53	0.38	0.51	0.48	1.07	0.38	1.12	0.51	0.42
Chrysene	2.59	1.76	0.80	1.06	0.90	0.63	0.72	0.67	1.65	0.41	1.94	1.36	0.64
Total benzofluoranthenes	3.52	2.29	1.34	0.47	1.36	1.10	1.18	0.94	1.65	0.72	1.95	1.06	0.66
Benzo[a]pyrene	1.48	1.05	0.51	0.59	0.59	0.45	0.51	0.37	0.75	0.30	0.75	0.43	0.31
Indeno[1,2,3-c,d]pyrene	0.95	0.63	0.31	0.34	0.32	0.31	0.28	0.22	0.38	0.15	0.43	0.24	0.17
Dibenzo[a,h]anthracene	0.21	0.15	<0.10	0.09	<0.11	0.07	<0.1	<0.11	0.08	<0.07	0.11	<0.08	*<0.08*
Benzo[g,h,i]perylene	0.74	0.63	0.31	0.38	0.32	0.27	0.30	0.18	0.35	0.16	0.43	0.22	0.15
Chlorinated Organics	**(mg/kg dw)**												
1,2,4-Trichlorobenzene	<0.1	<0.12	<0.1	<0.12	<0.11	<0.1	<0.1	<0.11	<0.08	<0.07	<0.1	<0.08	<0.08
1,2-Dichlorobenzene	<0.1	<0.12	<0.1	<0.12	<0.11	<0.1	<0.1	<0.11	<0.08	<0.07	<0.1	<0.08	<0.08
1,4-Dichlorobenzene	<0.1	<0.12	<0.1	<0.12	<0.11	<0.1	<0.1	<0.11	<0.08	<0.07	<0.1	<0.08	<0.08
Hexachlorobenzene	<0.1	<0.12	<0.1	<0.12	<0.11	<0.1	<0.1	<0.11	<0.08	<0.07	<0.1	<0.08	<0.08
Hexachlorobutadiene	<0.1	<0.12	<0.1	<0.12	<0.11	<0.1	<0.1	<0.11	<0.08	<0.07	<0.1	<0.08	<0.08
Pentachlorophenol	<0.53	<0.60	<0.48	<0.58	<0.53	<0.50	<0.50	<0.53	<0.40	<0.35	<0.50	<0.38	<0.40
Organotins	**(µg/kg dw)**												
Tetrabutyltin	<76	<96	<77	<89	<95	<73	<81	<98	<67	<52	<64	<63	<56
Tributyltin	350	60	35	30	<17	160	110	<17	11 J	<9	<11	<11	<10
Dibutyltin	200	27 J	18 J	30	<31	37	<26	<32	<22	<17	<21	<21	<18
Monobutyltin	33	<19	<15	9.9 J	<19	5.9 J	<16	<20	<13	<10	<13	<13	<11

< indicates the analyte was not detected above the PQL value shown (MDL is used for organotins).

H, All total sulfide samples were prepped or analyzed beyond the sulfides hold time.

J, Indicates estimated concentration.

<J, The reported quantitation limit is approximate and may be inaccurate or imprecise.

Table 3. Sediment Results with Dry Weight SQS Criteria - Lovric's Sea-Craft

	SQS Marine Criteria[a]	Lovric's Sample Results												
		A-1 9/26/17	**A-3** 9/26/17	**A-4** 9/26/17	**A-5** 9/25/17	**A-6** 9/25/17	**A-7** 9/25/17	**A-8** 9/25/17	**A-9** 9/25/17	**B-1** 9/26/17	**B-3** 9/27/17	**B-4** 9/26/17	**B-5** 9/27/17	**B-6**[b] 9/27/17
Metals	**(mg/kg dw)**													
Arsenic	57	4.9	6.5	3.2	3.1	2.2	4.3	<0.97	<0.90	4.9	1.8	1.6	2.1	(see Table 5)
Cadmium	5.1	< 0.72	<0.45	<0.59	<1.05	<0.47	<0.84	<0.97	<0.90	<0.72	<0.61	<0.93	<0.78	na
Chromium	260	36	34	30	41	33	42	38	43	25	23	31	26	na
Copper	390	**1143**	278	367	243	94	**419**	131	62	61	29	26	24	na
Lead	450	41	23	21	19	13	28	14	12	25	7.2	6.1	<0.78	na
Mercury	0.41	0.24	0.21	0.15	0.14	0.10	0.16	0.11	0.07	0.13	0.05	0.19	0.05	na
Silver	6.1	< 0.72	<0.45	<0.59	<1.05	<0.47	<0.84	<0.97	<0.90	<0.72 J	<0.61	<0.93	<0.78	na
Zinc	410	**743**	157	186	141	87	**471**	99	103	120 J	46	63	51	na
Organic Chemicals	**(µg/kg dw)**													
2,4-Dimethylphenol	29	*<105*	*<120*	*<95*	*<115*	*<105*	*<100*	*<100*	*<105*	*<80*	*<70*	*<100*	*<75*	(see Table 5)
2-Methylphenol	63	*<105*	*<120*	*<95*	*<115*	*<105*	*<100*	*<100*	*<105*	*<80*	*<70*	*<100*	*<75*	na
4-Methylphenol	670	<105	<120	<95	<115	<105	<100	<100	<105	<80	<70	<100	<75	na
Benzoic acid	650	**1705** J	**800** J	**1320** J	**1190** J	560	**950** J	**1040** J	**1030** J	**670** J	650 J	520 J	534 J	na
Benzyl alcohol	57	*<105*	*<120*	*<95*	*<115*	*<105*	*<100*	*<100*	*<105*	*<80*	*<70*	*<100*	*<75*	na
Phenol	420	<105	<120	<95	<115	<105	<100	<100	<105	<80	<70	<100	<75	na
Organotins	**(µg/kg dw)**													
Tetrabutyltin	NA	<76	<96	<77	<89	<95	<73	<81	<98	<67	<52	<64	<63	(see Table 5)
Tributyltin	73[c]	**350**	60	35	30	<17	**160**	**110**	<17	11 J	<9	<11	<11	na
Dibutyltin	NA	200	27 J	18 J	30	<31	37	<26	<32	<22	<17	<21	<21	na
Monobutyltin	NA	33	<19	<15	9.9 J	<19	5.9 J	<16	<20	<13	<10	<13	<13	na

mg/kg dw, indicates results have been dry-weight normalized.

a, Marine values are dry weight normalized for metals and polar organics and normalized to total organic carbon for nonpolar organics.

b, Sample B-6 Total Organic Carbon (TOC) is outside of the 0.5% - 3.5% range and is therefore dry-weight normalized and compared to AETs.

c, Tributyltin screening level from the *Dredged Material Evaluation and Disposal Procedures User Manual* (US Army Corps, 2016)

< indicates the analyte was not detected above the PQL value shown (MDL is used for organotins).

J, Indicates estimated concentration.

<J, The reported quantitation limit is approximate and may be inaccurate or imprecise.

Italics indicates the reported PQL value exceeds the applicable AET or SQS criteria.

Bold indicates value exceeds the applicable criteria

Table 4. Sediment Results with Carbon Normalized SQS Criteria - Lovric's Sea-Craft

	SQS Marine Criteria[a]	Lovric's Sample Results												
		A-1 9/26/17	A-3 9/26/17	A-4 9/26/17	A-5 9/25/17	A-6 9/25/17	A-7 9/25/17	A-8 9/25/17	A-9 9/25/17	B-1 9/26/17	B-3 9/27/17	B-4 9/26/17	B-5 9/27/17	B-6[b] 9/27/17
Organic Chemicals	**(mg/kg OC)**													
Dibenzofuran	15	5.3	4.5	<5.6	<6.4	<6.6	<5.6	<6.7	<6.6	14	<12	7.3	5.6	(see Table 5)
N-nitrosodiphenylamine	11	<5.5	<5.7	<5.6	<6.4	<6.6	<5.6	<6.7	<6.6	<2.8	*<12*	<6.3	<4.7	na
Phthalates	**(mg/kg OC)**													
Bis(2-Ethylhexyl)phthalate	47	38	28	**230**	21	17	**61**	13	15	7.9	28	16	10	(see Table 5)
Butylbenzyl phthalate	4.9	*<5.5*	*<5.7*	*<5.6*	*<6.4*	<6.6	*<5.6*	*<6.7*	*<6.6*	<2.8	*<12*	*<6.3*	<4.7	na
Diethyl phthalate	61	6.4	5.0	7.7	6.5	7.5	5.9	6.9	11	3.6	16	10	11	na
Dimethyl phthalate	53	8.6	<5.7	8.0	22	<6.6	<5.6	<6.7	<6.6	<2.8	<12	<6.3	<4.7	na
Di-n-butyl phthalate	220	20	<5.7	19	16	29	31	17	26	12	<12	21	30	na
Di-n-octyl phthalate	58	<5.5	<6	<5.6	<6.4	<6.6	<5.6	<6.7	<6.6	<2.8	<12	<6.3	<4.7	na
Polychlorinated Biphenyls	**(mg/kg OC)**													
Total Aroclors	12	3[J]	<6	3[J]	<6	<7	3[J]	2[J]	<6	<3	<12	<6	<5	(see Table 5)
Polycyclic Aromatic	**(mg/kg OC)**													
LPAH	370	117	99	40	41	32	24	61	350	**495**	63	110	95	(see Table 5)
Naphthalene	99	< 5.5	6.7	<5.6	<6.4	<6.6	<5.6	<6.7	4.5	5.8	15	11	7.5	na
Acenaphthylene	66	13	5.7	10	<6.4	<6.6	<5.6	<6.7	<6.6	4.3	<12	9	6.4	na
Acenaphthene	16	7.7	5.6	<5.6	<6.4	<6.6	<5.6	<6.7	<6.6	4.0	<12	11	8.9	na
Fluorene	23	12	9.3	3	<6.4	<6.6	<5.6	5.5	3.8	**39**	<12	11	10	na
Phenanthrene	100	59	55	18	29	19	17	41	18	**176**	35	39	42	na
Anthracene	220	25	17	9.2	12	13	6.6	14	11	**267**	13	30	20	na
2-Methylnaphthalene	38	< 5.5	4.6	<5.6	<6.4	<6.6	<5.6	<6.7	5.8	6.1	6.4	4.5	3.0	na
Total HPAH	960	**1146**	645	382	360	399	294	445	37	515	603	**1117**	452	na
Fluoranthene	160	**320**	**163**	78	89	74	53	111	90	**185**	117	**406**	122	na
Pyrene	1000	233	125	86	76	75	63	98	82	126	114	292	92	na
Benz[a]anthracene	110	94	47	27	32	33	21	34	30	37	66	70	32	na
Chrysene	110	**136**	84	47	59	56	35	48	42	57	72	**121**	85	na
Total benzofluoranthenes	230	185	109	79	26	85	61	79	59	57	126	122	66	na
Benzo[a]pyrene	99	78	50	30	33	37	25	34	23	26	52	47	27	na
Indeno[1,2,3-c,d]pyrene	34	**50**	30	18	19	20	17	19	14	13	27	27	15	na
Dibenzo[a,h]anthracene	12	11	7.1	<5.6	5.0	<6.6	4.0	<6.7	<6.6	2.7	<12	7	<4.7	na
Benzo[g,h,i]perylene	31	**39**	30	18	21	20	15	20	11	12	28	27	14	na

Table 4. Sediment Results with Carbon Normalized SQS Criteria - Lovric's Sea-Craft

	SQS Marine Criteria[a]	Lovric's Sample Results											
		A-1 9/26/17	A-3 9/26/17	A-4 9/26/17	A-5 9/25/17	A-6 9/25/17	A-7 9/25/17	A-8 9/25/17	A-9 9/25/17	B-1 9/26/17	B-3 9/27/17	B-4 9/26/17	B-5 9/27/17	B-6[b] 9/27/17
Chlorinated Organics	**(mg/kg OC)**													
1,2,4-Trichlorobenzene	0.81	*<5.5*	*<5.7*	*<5.6*	*<6.4*	*<6.6*	*<5.6*	*<6.7*	*<6.6*	*<2.8*	*<12*	*<6.3*	*<4.7*	(see Table 5)
1,2-Dichlorobenzene	2.3	*<5.5*	*<5.7*	*<5.6*	*<6.4*	*<6.6*	*<5.6*	*<6.7*	*<6.6*	*<2.8*	*<12*	*<6.3*	*<4.7*	na
1,4-Dichlorobenzene	3.1	*<5.5*	*<5.7*	*<5.6*	*<6.4*	*<6.6*	*<5.6*	*<6.7*	*<6.6*	<2.8	*<12*	*<6.3*	*<4.7*	na
Hexachlorobenzene	0.38	*<5.5*	*<5.7*	*<5.6*	*<6.4*	*<6.6*	*<5.6*	*<6.7*	*<6.6*	*<2.8*	*<12*	*<6.3*	*<4.7*	na
Hexachlorobutadiene	3.9	*<5.5*	*<5.7*	*<5.6*	*<6.4*	*<6.6*	*<5.6*	*<6.7*	*<6.6*	<2.8	*<12*	*<6.3*	*<4.7*	na
Pentachlorophenol	360	<27	<25	<35	<26	<36	<29	<33	<31	<18	<70	<22	<31	na

mg/kg OC, indicates results have been normalized to total organic carbon.

a, Marine values are dry weight normalized for metals and polar organics and normalized to total organic carbon for nonpolar organics.

b, Sample B-6 Total Organic Carbon (TOC) is outside of the 0.5% - 3.5% range and is therefore dry-weight normalized and compared to AETs.

< indicates the analyte was not detected above the PQL value shown.

J, Indicates estimated concentration.

<J, The reported quantitation limit is approximate and may be inaccurate or imprecise.

Italics indicates the reported PQL value exceeds the applicable AET or SQS criteria.

Bold indicates value exceeds the applicable criteria

Table 5. Sediment Results with AET Criteria - Lovric's Sea-Craft

	Marine Sediment AETs[a]	B-6 9/27/17
Metals	**(mg/kg dw)**	
Arsenic	57	2.4
Cadmium	5.1	<0.76
Chromium	260	25
Copper	390	18
Lead	450	5.1
Mercury	0.41	0.06
Silver	6.1	<0.76
Zinc	410	46
Organic Chemicals	**(µg/kg dw)**	
2,4-Dimethylphenol	29	*<80*
2-Methylphenol	63	*<80*
4-Methylphenol	670	<80
Benzoic acid	650	480 J
Benzyl alcohol	57	*<80*
Dibenzofuran	540	<80
Phenol	420	<80
N-nitrosodiphenylamine	28	*<80*
Phthalates	**mg/kg dw**	
Bis(2-Ethylhexyl)phthalate	1.30	0.18 J
Butylbenzyl phthalate	0.063	*<0.08*
Diethyl phthalate	0.200	0.19
Dimethyl phthalate	0.071	*<0.08*
Di-n-butyl phthalate	1.400	0.41 J
Di-n-octyl phthalate	6.200	<0.08
Polychlorinated Biphenyls	**mg/kg dw**	
Total Aroclors	0.130	<0.08
Polycyclic Aromatic	**mg/kg dw**	
LPAH	5.20	0.5
Naphthalene	2.10	0.07
Acenaphthylene	1.30	<0.08
Acenaphthene	0.50	<0.08
Fluorene	0.54	<0.08 J
Phenanthrene	1.50	0.27
Anthracene	0.96	0.13
2-Methylnaphthalene	0.67	0.06
Total HPAH	12.0	4.0
Fluoranthene	1.70	0.70 J
Pyrenene	2.60	0.94 J
Benz[a]anthracene	1.30	0.42
Chrysene	1.40	0.64
Total benzofluoranthenes	3.20	0.66
Benzo[a]pyrene	1.60	0.31
Indeno[1,2,3-c,d]pyrene	0.60	0.17
Dibenzo[a,h]anthracene	0.23	*<0.08*
Benzo[g,h,i]perylene	0.67	0.15

Table 5. Sediment Results with AET Criteria - Lovric's Sea-Craft

	Marine Sediment AETs[a]	B-6 9/27/17
Chlorinated Organics	**mg/kg dw**	
1,2,4-Trichlorobenzene	0.031	*<0.08*
1,2-Dichlorobenzene	0.035	*<0.08*
1,4-Dichlorobenzene	0.110	<0.08
Hexachlorobenzene	0.02	*<0.08*
Hexachlorobutadiene	0.01	*<0.08*
Pentachlorophenol	0.36	*<0.4*
Organotins	**ug/kg dw**	
Tetrabutyltin	NA	<56
Tributyltin	73[b]	<10
Dibutyltin	NA	<18
Monobutyltin	NA	<11

a, Dry weight normalized AETs are recommended when total organic carbon is outside the recommended range of 0.5 – 3.5% for organic carbon normalization.

b, Tributyltin screening level from the *Dredged Material Evaluation and Disposal Procedures User Manual* (US Army Corps, 2016)

< indicates the analyte was not detected above the PQL value shown (MDL is used for organotins).

J, Indicates estimated concentration.

<J, The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

APPENDIX A

Sediment Sample Collection Logs

Sediment Grab Sample Collection Log

Project: Lovric's Sea-Craft **Station Name:** A-1

Location: in between C rail, off bldg **Date/Time:** 9/26/17

Crew: BN/DH

Grab # 1	Bottom Depth	Penetration depth 3"	Time 1040
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	loose, organics, gravel-size rock (+rc)
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Grab # 2	Bottom Depth	Penetration depth 4"	Time 1045
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	loose, organics, gravel size-rock (angl, rc) minor woody debris *Small eel (~4 in)
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum sheen (Sh)	
Muck/mud			

Grab #	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Grab #	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Sediment Grab Sample Collection Log

Project: Lovric's Sea-Craft **Station Name:** A-2

Location: E of E rail **Date/Time:** 9/26/17

Crew: BN DH

Grab # 1	**Bottom Depth**	**Penetration depth** 2"	**Time** 1115
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble (Gravel) Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray (Black) Other:	None Slight (Moderate) Strong Overwhelming (H2S) Petroleum	mostly gravel and seaweed, poor recovery Fill gravel, angular 1-2"
Grab # 2	**Bottom Depth**	**Penetration depth**	**Time** 1120
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble (Gravel) Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray (Black) Other:	None Slight (Moderate) Strong Overwhelming (H2S) Petroleum sheen (SL)	Same as above * small eel, <3"
Grab # 3	**Bottom Depth**	**Penetration depth** 2"	**Time**
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	incomplete jaw closure: discard sample.
Grab #	**Bottom Depth**	**Penetration depth**	**Time**
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	incomplete jaw close: large 6" cobble discard sample.

location not sample-able: rock refusal; etc

nwhatcom ENVIRONMENTAL Completed by: Britta Page #: 1/1

Sediment Grab Sample Collection Log

Project: Lovric's Sea-Craft **Station Name:** A-3

Location: off E bulkhead **Date/Time:** 9/26/17 12:00

Crew: BN/DH

Grab # 1	Bottom Depth 2"	Penetration depth	Time 1150
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	loose, organics
(Gravel)	Brown	Slight	
Sand C M F	Brown Surface	(Moderate)	
Silt/Clay	Gray	Strong	
Detritus/organic matter	(Black)	Overwhelming	
Woody debris	Other:	(H2S)	Poor recovery
Shell debris		Petroleum	
(Muck/mud)			

Grab # 2	Bottom Depth 2"	Penetration depth	Time 1155
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	loose, organics
(Gravel)	Brown	Slight	
Sand C M F	Brown Surface	(Moderate)	
Silt/Clay	Gray	Strong	~~LITTLE~~
Detritus/organic matter	(Black)	Overwhelming	*LITTLE EEL ~4" LONG (RELEASED UNHARMED)
Woody debris	Other:	(H2S)	
Shell debris		Petroleum Sheen	
(Muck/mud)			

Grab # 3	Bottom Depth	Penetration depth	Time 1200
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	loose, organics
(Gravel)	Brown	Slight	
Sand C M F	Brown Surface	(Moderate)	
Silt/Clay	Gray	Strong	
Detritus/organic matter	(Black)	Overwhelming	
Woody debris	Other:	(H2S)	Poor recovery
Shell debris		Petroleum	
(Muck/mud)			

Grab #	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

nwhatcom ENVIRONMENTAL Completed by: _____ Page #: 1/1

Sediment Grab Sample Collection Log

Project: Lovric's Sea-Craft **Station Name:** A-4

Location: WaCW mill **Date/Time:** 9/26/17 10:15

Crew: DH/BN

Grab # 1	**Bottom Depth**	**Penetration depth** 3"	**Time** 1010
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	(Drab olive)	None	loose, organics
Gravel	Brown	Slight	
Sand C M F	(Brown Surface)	Moderate	
(Silt)/Clay	Gray	(Strong)	
Detritus/organic matter	(Black)	Overwhelming	
Woody debris	Other:	(H2S)	
Shell debris		Petroleum	
(Muck/mud)			

Grab # 2	**Bottom Depth**	**Penetration depth** 3"	**Time** 1015
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	(Drab olive)	None	loose, organics,
Gravel	Brown	Slight	*cobble size ~~rock~~, clam
Sand C M F	(Brown Surface)	Moderate	(pics taken)
(Silt)/Clay	Gray	(Strong)	
Detritus/organic matter	(Black)	Overwhelming	
Woody debris	Other:	(H2S)	
Shell debris		Petroleum	
(Muck/mud)			

Grab #	**Bottom Depth**	**Penetration depth**	**Time**
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Grab #	**Bottom Depth**	**Penetration depth**	**Time**
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Sediment Grab Sample Collection Log

Project: Lovric's Sea-Craft **Station Name:** A-5

Location: Central between rails **Date/Time:** 9-25-17 3:35

Crew: DH/BN

Grab # 1	**Bottom Depth**	**Penetration depth** ~~0-1½"~~ 3"	**Time** 3:25
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	LOTS OF GREEN SEAWEED IN SAMPLER, large seaweed removed before filling. loose
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Grab # 2	**Bottom Depth**	**Penetration depth** 3"	**Time** 3:28
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	SEAWEED AGAIN, WOODY DEBRIS large seaweed removed before filling loose
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Grab #	**Bottom Depth**	**Penetration depth**	**Time**
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Grab #	**Bottom Depth**	**Penetration depth**	**Time**
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Sediment Grab Sample Collection Log

Project: Lovric's Sea-Craft **Station Name:** A-6

Location: E of E rail **Date/Time:** 9/25/17 / 2:50

Crew: DH / BN

Grab # 1	Bottom Depth bad recovery, dropped in bucket, redo.	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Grab # 2	Bottom Depth	Penetration depth 3"	Time 2:40
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	mostly seaweed, poor recovery, but keeping. loose, organics.
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Grab # 3	Bottom Depth	Penetration depth 3"	Time 2:50
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	mostly seaweed, poor recovery, but loose, organics.
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Grab #	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Sediment Grab Sample Collection Log

Project: Lovric's Sea-Craft **Station Name:** A-7

Location: In Front of West Tail **Date/Time:** 9-25-17 / 12:50

Crew: Britta / DH

Grab # 1	Bottom Depth	Penetration depth 5in	Time 12:50
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	loose
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Grab # 2	Bottom Depth	Penetration depth 4"	Time 1:00
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	loose, organics
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris	grass	Petroleum	
Muck/mud			

Grab #	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Grab #	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Sediment Grab Sample Collection Log

Project: Lovric's Sea-Craft **Station Name:** A-8

Location: A-8 **Date/Time:** 9/25/17 1:35

Crew: DH / BN

Grab # 1	**Bottom Depth**	**Penetration depth** 5"	**Time** 1.35
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	(Drab olive)	None	loose, organics
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
(Silt) Clay	Gray	Strong	
Detritus/organic matter	(Black)	(Overwhelming)	
Woody debris	Other:	(H2S)	
Shell debris	(illegible)	Petroleum	
(Muck/mud)			

Grab # 2	**Bottom Depth**	**Penetration depth** 4"	**Time** 1:40
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	(Drab olive)	None	loose, organics
Gravel	(Brown)	Slight	
Sand C M F	Brown Surface	(Moderate)	
(Silt)/Clay	Gray	Strong	
Detritus/organic matter	(Black)	Overwhelming	
Woody debris	Other:	(H2S)	
Shell debris	(illegible)	Petroleum	
(Muck/mud)			

Grab #	**Bottom Depth**	**Penetration depth**	**Time**
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Grab #	**Bottom Depth**	**Penetration depth**	**Time**
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Sediment Grab Sample Collection Log

Project: Lovric's Sea-Craft
Station Name: A-9
Location: off Souther peir arm
Date/Time: 9/25/17 2:10
Crew: DH/BN

Grab # 1	Bottom Depth	Penetration depth 5"	Time 2:10
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	(Drab olive)	None	loose, organics
Gravel	Brown	Slight	
Sand C M F	Brown Surface	(Moderate)	
(Silt)/Clay	Gray	Strong	
Detritus/organic matter	(Black)	Overwhelming	
Woody debris	Other:	(H2S)	
Shell debris		Petroleum	
(Muck/mud)			

Grab # ~~[illegible]~~	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Grab #	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Grab #	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Sediment Grab Sample Collection Log

Project: Lovric's Sea-Craft **Station Name:** B-1

Location: S of Marked B-1 **Date/Time:** 9-26-17 / 2:25

Crew: BN/DH

Grab # 1	Bottom Depth	Penetration depth 2"	Time 2:10
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	large cobble, metal (<4"), small white specks, organics, loose, poor recovery. shell frag (trc)
Grab # 2	**Bottom Depth**	**Penetration depth** 2"	**Time** 2:15
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	woody debris, loose, organics, small gravels. * small crab
Grab # 3	**Bottom Depth**	**Penetration depth** 2"	**Time** 2:20
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	shell fragments, woody debris, loose, organics (trc)
Grab # 4	**Bottom Depth**	**Penetration depth** 2"	**Time** 2:25
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	shell fragments, gravel, organics, loose. *anemone

Sediment Grab Sample Collection Log

Project: Lovric's Sea-Craft **Station Name:** B-3

Location: E of pier, N of bulkhead **Date/Time:** 9/27/17 10:45

Crew: BN/DH 1 of 2

Grab # 1	**Bottom Depth**	**Penetration depth** 1"	**Time** 1025
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	Poor recovery, loose, shell fragments
Grab # 2	**Bottom Depth**	**Penetration depth** 1"	**Time** 1030
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	Poor recovery, loose, shell fragments gravel (fine) *[illegible]
Grab # 3	**Bottom Depth**	**Penetration depth** 2"	**Time** 1035
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	Poor recovery, loose, shell frag. *Crab 3"
Grab # 4	**Bottom Depth**	**Penetration depth** 1"	**Time** 1038
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/Clay Detritus/organic matter Woody debris Shell debris Muck/mud	Drab olive Brown Brown Surface Gray Black Other:	None Slight Moderate Strong Overwhelming H2S Petroleum	Poor recovery, loose shell frag. gravel (fine)

Sediment Grab Sample Collection Log

Project: Lovric's Sea-Craft **Station Name:** B-3

Location: E of Pier, N of bulkhead **Date/Time:** 9/27/11 10:45

Crew: BW / DH

Grab # 5	Bottom Depth	Penetration depth 2"	Time 1040
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	(None)	loose, poor recovery organics / seaweed
Gravel	Brown	Slight	
Sand C (M) F	Brown Surface	Moderate	
(Silt)/Clay	(Gray)	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Grab # 6	Bottom Depth	Penetration depth 2"	Time 1041
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	(None)	loose, poor recovery, cobble, minor woody debris, organics
Gravel	Brown	Slight	
Sand C (M) F	Brown Surface	Moderate	
(Silt)/Clay	(Gray)	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Grab # 7	Bottom Depth	Penetration depth 2"	Time 1045
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	(None)	loose, poor recovery, shell frag. organics, * tube worm (minor)
Gravel	Brown	Slight	
Sand C (M) F	Brown Surface	Moderate	
(Silt)/Clay	(Gray)	Strong	
Detritus/organic matter	(Black)	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Grab #	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

nwhatcom ENVIRONMENTAL Completed by: BW Page #: 2/2

Sediment Grab Sample Collection Log

Project: Lovric's Sea-Craft **Station Name:** B-4

Location: inside of Pier 'H' **Date/Time:** 9/26/17 1:30

Crew: BM/DH

Grab # 1	Bottom Depth	Penetration depth 3"	Time 1:20
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	(Drab olive)	None	loose, organics, gravel to cobbles
Gravel	Brown	Slight	
Sand C M F	Brown Surface	(Moderate)	
(Silt/Clay)	(Gray)	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	(H2S) & ? wk	* 3 small eel (~3")
Shell debris		Petroleum	
(Muck/mud)			

Grab # 2	Bottom Depth	Penetration depth 5"	Time 1:25
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	(Drab olive)	None	loose, organics
Gravel	Brown	Slight	
Sand C M F	Brown Surface	(Moderate)	
(Silt/Clay)	(Gray)	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	(H2S) & ? wk	
Shell debris		Petroleum	
(Muck/mud)			

Grab # 3	Bottom Depth	Penetration depth 4"	Time 1:30
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	(Drab olive)	None	loose, organics minor woody debris.
Gravel	Brown	Slight	
Sand C M F	Brown Surface	(Moderate)	
(Silt/Clay)	(Gray)	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	(H2S)	* Small eel (~3")
Shell debris		Petroleum	
(Muck/mud)			

Grab #	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Sediment Grab Sample Collection Log

Project: Lovric's Sea-Craft **Station Name:** B-5

Location: E ab inside Pier H **Date/Time:** 9/26/17 3:30

Crew: BN | DH

Grab # 1	Bottom Depth	Penetration depth 4"	Time 3:15
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	loose, coarse shell fragments (with)
Gravel	Brown	(Slight)	
Sand C M (F)	Brown Surface	Moderate	
(Silt)/Clay	(Gray)	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	(H2S)	
Shell debris		Petroleum	
(Muck/mud)			*worm (~5")

Grab # 2	Bottom Depth	Penetration depth 3"	Time 3:20
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	loose, shell fragments (with)
Gravel	Brown	(Slight)	
Sand C M (F)	Brown Surface	Moderate	
(Silt)/Clay	(Gray)	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	(H2S)	
Shell debris		Petroleum	
(Muck/mud)			

Grab # 3	Bottom Depth	Penetration depth 3"	Time 3:30
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	loose, shell frag. (with)
Gravel	Brown	(Slight)	
Sand C M (F)	Brown Surface	Moderate	
(Silt)/Clay	(Gray)	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	(H2S)	
Shell debris		Petroleum	
(Muck/mud)			

Grab #	Bottom Depth	Penetration depth	Time
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

nwhatcom ENVIRONMENTAL Completed by: Britta Page #: 1/1

Sediment Grab Sample Collection Log

Project: Lovric's Sea-Craft **Station Name:** B-C

Location: E of pier **Date/Time:** 9/27/17

Crew: BN DH 1 of 2

Grab # 1	Bottom Depth	Penetration depth 2"	Time 1105
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	Poor recovery, loose, seaweed
Gravel	Brown	(Slight)	
Sand C (M) F	Brown Surface	Moderate	
(Silt/Clay)	(Gray)	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	(H2S)	5" Dungeness crab
Shell debris		Petroleum	
Muck/mud			

Grab # 2	Bottom Depth	Penetration depth 2"	Time 1120
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	(None)	poor recovery, loose, seaweed, shell frag (trc)
Gravel	Brown	Slight	
Sand C (M) F	Brown Surface	Moderate	
(Silt/Clay)	(Gray)	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Grab # 3	Bottom Depth	Penetration depth —	Time 1125
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	No recovery, large 3" ft woody debris
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Grab # 4	Bottom Depth	Penetration depth 2"	Time 1125
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	(None)	poor recovery, loose, metal frag, gravel (trc), shell frag (trc) tube worms
Gravel	Brown	Slight	
Sand C (M) F	Brown Surface	Moderate	
(Silt/Clay)	(Gray)	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Sediment Grab Sample Collection Log

Project: Lovric's Sea-Craft **Station Name:** B-6

Location: E of pier **Date/Time:** 9/27/17 11:35

Crew: BN/DH

Grab # 5	Bottom Depth	Penetration depth 1.5"	Time 1126
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	(None)	poor recovery, loose with shell frag, tube worms, woody debris (m.mar)
Gravel	Brown	Slight	
Sand C M (F)	Brown Surface	Moderate	
(Silt)/Clay	(Gray)	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Grab # 6	Bottom Depth	Penetration depth —	Time 1130
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	no recovery.
Gravel	Brown	Slight	
Sand C M F	Brown Surface	Moderate	
Silt/Clay	Gray	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
Muck/mud			

Grab # 7	Bottom Depth	Penetration depth 2	Time 1133
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	(None)	poor recovery, loose, seaweed, tube worms shell frag (trc)
Gravel	Brown	Slight	
Sand C M (F)	Brown Surface	Moderate	
(Silt)/Clay	(Gray)	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
(Muck/mud)			

Grab # 8	Bottom Depth	Penetration depth 2"	Time 1135
Sediment Type:	***Sediment Color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	(None)	poor recovery, loose seaweed, tube worms, shell frag (trc)
Gravel	Brown	Slight	
Sand C M (F)	(Brown Surface)	Moderate	
(Silt)/Clay	(Gray)	Strong	
Detritus/organic matter	Black	Overwhelming	
Woody debris	Other:	H2S	
Shell debris		Petroleum	
(Muck/mud)			

APPENDIX B

Original Laboratory Reports

ANALYTICAL

Burlington, WA *Corporate Laboratory (a)*
1620 S Walnut St - Burlington, WA 98233 - **800.755.9295** • 360.757.1400

Bellingham, WA *Microbiology (b)*
805 Orchard Dr Ste 4 - Bellingham, WA 98225 - 360.715.1212

Portland, OR *Microbiology/Chemistry (c)*
9150 SW Pioneer Ct Ste W - Wilsonville, OR 97070 - 503.682.7802

Corvallis, OR *Microbiology/Chemistry (d)*
540 SW Third Street - Corvallis, OR 97333 - 541.753.4946

Bend, OR *Microbiology (e)*
20332 Empire Blvd Ste 4 - Bend, OR 97701 - 541.639.8425

Data Report

Client Name: Whatcom Environmental Services
228 E. Champion Street, Suite 101
Bellingham, WA 98225

Reference Number: **17-26654**
Project: Lovric's SeaCraft

Report Date: 10/19/17

Date Received: 9/27/17
Approved by: anp,bj,lrs
Authorized by:

Patrick Miller, MS
QA Officer

Sample Description: A1 — Sample Date: 9/26/17 10:45 am
Lab Number: 58338 — Sample Comment: — Collected By: D. Heimbigner/B. Nels

CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment
7664-41-7	**AMMONIA-N**	80	21		mg/Kg	1.0	350.1	a	10/3/17	LRS	350.1_171003BS	
E-10151	**VOLATILE SOLIDS**	5.0	0.1		%	1.0	SM2540 G	a	10/2/17	HKL	VS_171002	

Sample Description: A3 — Sample Date: 9/26/17 12:00 pm
Lab Number: 58339 — Sample Comment: — Collected By: D. Heimbigner/B. Nels

CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment
7664-41-7	**AMMONIA-N**	113	18		mg/Kg	1.0	350.1	a	10/3/17	LRS	350.1_171003BS	
E-10151	**VOLATILE SOLIDS**	4.1	0.1		%	1.0	SM2540 G	a	10/2/17	HKL	VS_171002	

Sample Description: A4 — Sample Date: 9/26/17 10:15 am
Lab Number: 58340 — Sample Comment: — Collected By: D. Heimbigner/B. Nels

CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment
7664-41-7	**AMMONIA-N**	71	19		mg/Kg	1.0	350.1	a	10/3/17	LRS	350.1_171003BS	
E-10151	**VOLATILE SOLIDS**	4.2	0.1		%	1.0	SM2540 G	a	10/2/17	HKL	VS_171002	

Sample Description: A5 — Sample Date: 9/25/17 3:35 pm
Lab Number: 58341 — Sample Comment: — Collected By: D. Heimbigner/B. Nels

CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment
7664-41-7	**AMMONIA-N**	72	55		mg/Kg	1.0	350.1	a	10/18/17	LRS	350.1_171018BS	
E-10151	**VOLATILE SOLIDS**	6.1	0.1		%	1.0	SM2540 G	a	10/2/17	HKL	VS_171002	

Sample Description: A6 — Sample Date: 9/25/17 2:50 pm
Lab Number: 58342 — Sample Comment: — Collected By: D. Heimbigner/B. Nels

CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment
7664-41-7	**AMMONIA-N**	86	45		mg/Kg	1.0	350.1	a	10/18/17	LRS	350.1_171018BS	

Notes:

ND = Not detected above the listed practical quantitation limit (PQL) or not above the Method Detection Limit (MDL), if requested.
PQL = Practical Quantitation Limit is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.
D.F. - Dilution Factor

If you have any questions concerning this report contact us at the above phone number.

Form: cRslt_2.rpt

Reference Number: **17-26654**
Report Date: 10/19/17

Data Report

E-10151	**VOLATILE SOLIDS**	4.9	0.1		%	1.0	SM2540 G	a	10/2/17	HKL	VS_171002

Sample Description: A7 — Sample Date: 9/25/17 12:50 pm
Lab Number: 58343 — Sample Comment: — Collected By: D. Heimbigner/B. Nels

CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment
7664-41-7	**AMMONIA-N**	30	30		mg/Kg	1.0	350.1	a	10/18/17	LRS	350.1_171018BS	
E-10151	**VOLATILE SOLIDS**	4.4	0.1		%	1.0	SM2540 G	a	10/2/17	HKL	VS_171002	

Sample Description: A8 — Sample Date: 9/25/17 1:35 pm
Lab Number: 58344 — Sample Comment: — Collected By: D. Heimbigner/B. Nels

CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment
7664-41-7	**AMMONIA-N**	ND	50		mg/Kg	1.0	350.1	a	10/18/17	LRS	350.1_171018BS	
E-10151	**VOLATILE SOLIDS**	5.2	0.1		%	1.0	SM2540 G	a	10/2/17	HKL	VS_171002	

Sample Description: A9 — Sample Date: 9/25/17 2:10 pm
Lab Number: 58345 — Sample Comment: — Collected By: D. Heimbigner/B. Nels

CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment
7664-41-7	**AMMONIA-N**	52	31		mg/Kg	1.0	350.1	a	10/18/17	LRS	350.1_171018BS	
E-10151	**VOLATILE SOLIDS**	5.2	0.1		%	1.0	SM2540 G	a	10/2/17	HKL	VS_171002	

Sample Description: B-1 — Sample Date: 9/26/17 2:25 pm
Lab Number: 58346 — Sample Comment: — Collected By: D. Heimbigner/B. Nels

CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment
7664-41-7	**AMMONIA-N**	37	21		mg/Kg	1.0	350.1	a	10/18/17	LRS	350.1_171018BS	
E-10151	**VOLATILE SOLIDS**	4.3	0.1		%	1.0	SM2540 G	a	10/12/17	HKLL	VS_171012	

Sample Description: B-3 — Sample Date: 9/27/17 10:45 am
Lab Number: 58347 — Sample Comment: — Collected By: D. Heimbigner/B. Nels

CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment
7664-41-7	**AMMONIA-N**	ND	18		mg/Kg	1.0	350.1	a	10/18/17	LRS	350.1_171018BS	
E-10151	**VOLATILE SOLIDS**	1.5	0.1		%	1.0	SM2540 G	a	10/12/17	HKLL	VS_171012	

Sample Description: B-4 — Sample Date: 9/26/17 1:30 pm
Lab Number: 58348 — Sample Comment: — Collected By: D. Heimbigner/B. Nels

CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment
7664-41-7	**AMMONIA-N**	56	38		mg/Kg	1.0	350.1	a	10/18/17	LRS	350.1_171018BS	
E-10151	**VOLATILE SOLIDS**	5.7	0.1		%	1.0	SM2540 G	a	10/12/17	HKLL	VS_171012	

Sample Description: B-5 — Sample Date: 9/26/17 3:30 pm
Lab Number: 58349 — Sample Comment: — Collected By: D. Heimbigner/B. Nels

CAS ID#	Parameter	Result	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment

Notes:

ND = Not detected above the listed practical quantitation limit (PQL) or not above the Method Detection Limit (MDL), if requested.
PQL = Practical Quantitation Limit is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.
D.F. - Dilution Factor

ANALYTICAL

Reference Number: **17-26654**
Report Date: 10/19/17

Data Report

7664-41-7	**AMMONIA-N**	20	18		**mg/Kg**	1.0	350.1	a	10/18/17	LRS	350.1_171018BS
E-10151	**VOLATILE SOLIDS**	2.1	0.1		**%**	1.0	SM2540 G	a	10/12/17	HKLL	VS_171012

Sample Description: B-6 — Sample Date: 9/26/17 11:35 am
Lab Number: 58350 — Sample Comment: — Collected By: D. Heimbigner/B. Nels

CAS ID#	Parameter	**Result**	PQL	MDL	Units	DF	Method	Lab	Analyzed	Analyst	Batch	Comment
7664-41-7	**AMMONIA-N**	21	18		**mg/Kg**	1.0	350.1	a	10/18/17	LRS	350.1_171018BS	
E-10151	**VOLATILE SOLIDS**	1.9	0.1		**%**	1.0	SM2540 G	a	10/12/17	HKLL	VS_171012	

Notes:

ND = Not detected above the listed practical quantitation limit (PQL) or not above the Method Detection Limit (MDL), if requested.
PQL = Practical Quantitation Limit is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.
D.F. - Dilution Factor

Burlington, WA	*Corporate Laboratory (a)*	1620 S Walnut St	Burlington, WA 98233	**800.755.9295** • 360.757.1400
Bellingham, WA	*Microbiology (b)*	805 Orchard Dr Ste 4	Bellingham, WA 98225	360.715.1212
Portland, OR	*Microbiology/Chemistry (c)*	9150 SW Pioneer Ct Ste W	Wilsonville, OR 97070	503.682.7802
Corvallis, OR	*Microbiology (d)*	540 SW Third Street	Corvallis, OR 97333	541.753.4946

WSDOE Lab C567

Marine Sediment Quality Standards
Chemical Criteria
WAC 173-204-320

Revised - 10-20-17

Client Name: Whatcom Environmental Services
228 E. Champion Street, Suite 101
Bellingham, WA 98225

Reference Number: **17-26654**
Project: Lovric's SeaCraft

Lab Number: 58338
Field ID: A1
Sample Description:
Matrix: Soil
Sample Date: 9/26/17

Report Date: 10/19/17
Date Analyzed: 10/5/17
Approved by: anp,bj,pdm
Authorized by:

Patrick Miller, MS
QA Officer

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	Metals											
7440-38-2	ARSENIC	**4.91**		mg/Kg	1	0.72	57	6010B/3051	ANP	6010B_171005	a	
7440-43-9	CADMIUM	**< 0.72**		mg/Kg	1	0.72	5.1	6010B/3051	ANP	6010B_171005	a	
7440-47-3	CHROMIUM	**36.0**		mg/Kg	1	0.72	260	6010B/3051	ANP	6010B_171005	a	
7440-50-8	COPPER	**1143**		mg/Kg	10	7.16	390	6010B/3051	ANP	6010B_171005	a	
7439-92-1	LEAD	**40.5**		mg/Kg	1	0.72	450	6010B/3051	ANP	6010B_171005	a	
7439-97-6	MERCURY	**0.236**		mg/Kg	10	0.083	0.41	7471A	RHF	7471A_171009	a	
7440-22-4	SILVER	**< 0.72**		mg/Kg	1	0.72	6.1	6010B/3051	ANP	6010B_171005	a	
7440-66-6	ZINC	**743**		mg/Kg	10	7.16	410	6010B/3051	ANP	6010B_171005	a	
	Polynuclear Aromatic Hydrocarbons (PAHs)											
	LOW MOLECULAR WT PAH	**2.2**		mg/Kg			370	8270D/3540C	CO	MSQS_171003	a	
91-20-3	NAPHTHALENE	**< 0.1**		mg/Kg	2	0.1	99	8270D/3540C	CO	MSQS_171003	a	
208-96-8	ACENAPHTHYLENE	**0.25**		mg/Kg	2	0.1	66	8270D/3540C	CO	MSQS_171003	a	
83-32-9	ACENAPTHENE	**0.15**		mg/Kg	2	0.1	16	8270D/3540C	CO	MSQS_171003	a	
86-73-7	FLUORENE	**0.23**		mg/Kg	2	0.1	23	8270D/3540C	CO	MSQS_171003	a	
85-01-8	PHENANTHRENE	**1.12**		mg/Kg	2	0.1	100	8270D/3540C	CO	MSQS_171003	a	
120-12-7	ANTHRACENE	**0.48**		mg/Kg	2	0.1	220	8270D/3540C	CO	MSQS_171003	a	
91-57-6	2-METHYLNAPHTHALENE	**< 0.1**		mg/Kg	2	0.1	38	8270D/3540C	CO	MSQS_171003	a	
	HIGH MOLECULAR WT PAH	**21.8**		mg/Kg			960	8270D/3540C	CO	MSQS_171003	a	
206-44-0	FLUORANTHENE	**6.08**		mg/Kg	2	0.1	160	8270D/3540C	CO	MSQS_171003	a	
129-00-0	PYRENE	**4.43**		mg/Kg	2	0.1	1000	8270D/3540C	CO	MSQS_171003	a	
56-55-3	BENZ[A]ANTHRACENE	**1.79**		mg/Kg	2	0.1	110	8270D/3540C	CO	MSQS_171003	a	
218-01-9	CHRYSENE	**2.59**		mg/Kg	2	0.1	110	8270D/3540C	CO	MSQS_171003	a	

Notes:

Flags are data qualifiers. If there are data qualifiers on your report definitions can be found on an accompanying sheet.
Units - mg/Kg is parts per million, mg/Kg OC is parts per million in terms of Organic Carbon, ug/Kg is parts per billion.
Practical Quantitation Limit or PQL is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.
Maximum Allowable is taken from Table 1 "Marine Sediment Quality Standards Chemical Criteria" in WAC 173-204-320.
Method - The value listed is the Analytical Method along with the Analytical Prep Mehtod separated by a forward slash.
Batch - The analytical batch number identifies samples that were analyzed together in a group. It is also associated with all quality control processed in that sample group.

If you have any questions concerning this report contact us at the above phone number.

Form: cSediment.rpt

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	TOTAL BENZOFLUORANTHENES	**3.52**		mg/Kg	2	0.1	230	8270D/3540C	CO	MSQS_171003	a	
50-32-8	BENZO[A]PYRENE	**1.48**		mg/Kg	2	0.1	99	8270D/3540C	CO	MSQS_171003	a	
193-39-5	INDENO[1,2,3,C,D]PYRENE	**0.95**		mg/Kg	2	0.1	34	8270D/3540C	CO	MSQS_171003	a	
53-70-3	DIBENZO[A,H]ANTHRACENE	**0.21**		mg/Kg	2	0.1	12	8270D/3540C	CO	MSQS_171003	a	
191-24-2	BENZO[G,H,I]PERYLENE	**0.74**		mg/Kg	2	0.1	31	8270D/3540C	CO	MSQS_171003	a	
	Base/Neutral Extractables											
95-50-1	1,2 - DICHLOROBENZENE	**< 0.1**		mg/Kg	2	0.1	2.3	8270D/3540C	CO	MSQS_171003	a	
106-46-7	1,4 - DICHLOROBENZENE	**< 0.1**		mg/Kg	2	0.1	3.1	8270D/3540C	CO	MSQS_171003	a	
120-82-1	1,2,4-TRICHLOROBENZENE	**< 0.1**		mg/Kg	2	0.1	0.81	8270D/3540C	CO	MSQS_171003	a	
118-74-1	HEXACHLOROBENZENE	**< 0.1**		mg/Kg	2	0.1	0.38	8270D/3540C	CO	MSQS_171003	a	
131-11-3	DIMETHYL PHTHALATE	**0.16**		mg/Kg	2	0.1	53	8270D/3540C	CO	MSQS_171003	a	
84-66-2	DIETHYL PHTHALATE	**0.12**		mg/Kg	2	0.1	61	8270D/3540C	CO	MSQS_171003	a	
84-74-2	DI-N-BUTYL PHTHALATE	**0.38**		mg/Kg	2	0.1	220	8270D/3540C	CO	MSQS_171003	a	
85-68-7	BENZYL BUTYL PHTHALATE	**< 0.1**		mg/Kg	2	0.1	4.9	8270D/3540C	CO	MSQS_171003	a	
117-81-7	DI(2-ETHYLHEXYL)PHTHALATE	**0.72**		mg/Kg	2	0.1	47	8270D/3540C	CO	MSQS_171003	a	
117-84-0	DI-N-OCTYL PHTHALATE	**< 0.1**		mg/Kg	2	0.1	58	8270D/3540C	CO	MSQS_171003	a	
132-64-9	DIBENZOFURAN	**0.1**		mg/Kg	2	0.1	15	8270D/3540C	CO	MSQS_171003	a	
87-68-3	HEXACHLOROBUTADIENE	**< 0.1**		mg/Kg	2	0.1	3.9	8270D/3540C	CO	MSQS_171003	a	
55-18-5	N-NITROSODIPHENYLAMINE	**< 0.1**		mg/Kg	2	0.1	11	8270D/3540C	CO	MSQS_171003	a	
1336-36-3	PCBS (Total Aroclors)	**0.06**	J	mg/Kg	2	0.11	12	8082/3540C	CO	MSQS_171003	a	Aroclor 1254
	Acid Extractables											
108-95-2	PHENOL	**< 105**		ug/Kg	2	105	420	8270D/3540C	CO	MSQS_171003	a	
95-48-7	2-METHYLPHENOL (o-CRESOL)	**< 105**		ug/Kg	2	105	63	8270D/3540C	CO	MSQS_171003	a	
106-44-5	4-METHYLPHENOL (p-CRESOL)	**< 105**		ug/Kg	2	105	670	8270D/3540C	CO	MSQS_171003	a	
105-67-9	2,4-DIMETHYLPHENOL	**< 53**		ug/Kg	2	53	29	8270D/3540C	CO	MSQS_171003	a	
87-86-5	PENTACHLOROPHENOL	**< 525**		ug/Kg	2	525	360	8270D/3540C	CO	MSQS_171003	a	
100-51-6	BENZYL ALCOHOL	**< 105**		ug/Kg	2	105	57	8270D/3540C	CO	MSQS_171003	a	
65-85-0	BENZOIC ACID	**1705**		ug/Kg	2	420	650	8270D/3540C	CO	MSQS_171003	a	

Notes:

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Portland, OR	*Microbiology/Chemistry (c)*	9150 SW Pioneer Ct Ste W	Wilsonville, OR 97070	503.682.7802
Corvallis, OR	*Microbiology (d)*	540 SW Third Street	Corvallis, OR 97333	541.753.4946

WSDOE Lab C567

Marine Sediment Quality Standards
Chemical Criteria
WAC 173-204-320

Revised - 10-20-17

Client Name: Whatcom Environmental Services
228 E. Champion Street, Suite 101
Bellingham, WA 98225

Reference Number: **17-26654**
Project: Lovric's SeaCraft

Lab Number: 58339
Field ID: A3
Sample Description:
Matrix: Soil
Sample Date: 9/26/17

Report Date: 10/19/17
Date Analyzed: 10/5/17
Approved by: anp,bj,pdm
Authorized by:

Patrick Miller, MS
QA Officer

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	Metals											
7440-38-2	ARSENIC	**6.52**		mg/Kg	1	0.45	57	6010B/3051	ANP	6010B_171005	a	
7440-43-9	CADMIUM	**< 0.45**		mg/Kg	1	0.45	5.1	6010B/3051	ANP	6010B_171005	a	
7440-47-3	CHROMIUM	**34.0**		mg/Kg	1	0.45	260	6010B/3051	ANP	6010B_171005	a	
7440-50-8	COPPER	**278**		mg/Kg	1	0.45	390	6010B/3051	ANP	6010B_171005	a	
7439-92-1	LEAD	**22.7**		mg/Kg	1	0.45	450	6010B/3051	ANP	6010B_171005	a	
7439-97-6	MERCURY	**0.207**		mg/Kg	10	0.083	0.41	7471A	RHF	7471A_171005	a	
7440-22-4	SILVER	**< 0.45**		mg/Kg	1	0.45	6.1	6010B/3051	ANP	6010B_171005	a	
7440-66-6	ZINC	**157**		mg/Kg	1	0.45	410	6010B/3051	ANP	6010B_171005	a	
	Polynuclear Aromatic Hydrocarbons (PAHs)											
	LOW MOLECULAR WT PAH	**2.2**		mg/Kg			370	8270D/3540C	CO	MSQS_171003	a	
91-20-3	NAPHTHALENE	**0.14**		mg/Kg	2	0.12	99	8270D/3540C	CO	MSQS_171003	a	
208-96-8	ACENAPHTHYLENE	**0.12**		mg/Kg	2	0.12	66	8270D/3540C	CO	MSQS_171003	a	
83-32-9	ACENAPTHENE	**0.12**		mg/Kg	2	0.12	16	8270D/3540C	CO	MSQS_171003	a	
86-73-7	FLUORENE	**0.2**		mg/Kg	2	0.12	23	8270D/3540C	CO	MSQS_171003	a	
85-01-8	PHENANTHRENE	**1.16**		mg/Kg	2	0.12	100	8270D/3540C	CO	MSQS_171003	a	
120-12-7	ANTHRACENE	**0.36**		mg/Kg	2	0.12	220	8270D/3540C	CO	MSQS_171003	a	
91-57-6	2-METHYLNAPHTHALENE	**0.1**		mg/Kg	2	0.12	38	8270D/3540C	CO	MSQS_171003	a	
	HIGH MOLECULAR WT PAH	**13.6**		mg/Kg			960	8270D/3540C	CO	MSQS_171003	a	
206-44-0	FLUORANTHENE	**3.42**		mg/Kg	2	0.12	160	8270D/3540C	CO	MSQS_171003	a	
129-00-0	PYRENE	**2.63**		mg/Kg	2	0.12	1000	8270D/3540C	CO	MSQS_171003	a	
56-55-3	BENZ[A]ANTHRACENE	**0.99**		mg/Kg	2	0.12	110	8270D/3540C	CO	MSQS_171003	a	
218-01-9	CHRYSENE	**1.76**		mg/Kg	2	0.12	110	8270D/3540C	CO	MSQS_171003	a	

Notes:

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If you have any questions concerning this report contact us at the above phone number.

Form: cSediment.rpt

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	TOTAL BENZOFLUORANTHENES	**2.29**		mg/Kg	2	0.12	230	8270D/3540C	CO	MSQS_171003	a	
50-32-8	BENZO[A]PYRENE	**1.05**		mg/Kg	2	0.12	99	8270D/3540C	CO	MSQS_171003	a	
193-39-5	INDENO[1,2,3,C,D]PYRENE	**0.63**		mg/Kg	2	0.12	34	8270D/3540C	CO	MSQS_171003	a	
53-70-3	DIBENZO[A,H]ANTHRACENE	**0.15**		mg/Kg	2	0.12	12	8270D/3540C	CO	MSQS_171003	a	
191-24-2	BENZO[G,H,I]PERYLENE	**0.63**		mg/Kg	2	0.12	31	8270D/3540C	CO	MSQS_171003	a	
	Base/Neutral Extractables											
95-50-1	1,2 - DICHLOROBENZENE	**< 0.12**		mg/Kg	2	0.12	2.3	8270D/3540C	CO	MSQS_171003	a	
106-46-7	1,4 - DICHLOROBENZENE	**< 0.12**		mg/Kg	2	0.12	3.1	8270D/3540C	CO	MSQS_171003	a	
120-82-1	1,2,4-TRICHLOROBENZENE	**< 0.12**		mg/Kg	2	0.12	0.81	8270D/3540C	CO	MSQS_171003	a	
118-74-1	HEXACHLOROBENZENE	**< 0.12**		mg/Kg	2	0.12	0.38	8270D/3540C	CO	MSQS_171003	a	
131-11-3	DIMETHYL PHTHALATE	**< 0.12**		mg/Kg	2	0.12	53	8270D/3540C	CO	MSQS_171003	a	
84-66-2	DIETHYL PHTHALATE	**0.11**		mg/Kg	2	0.12	61	8270D/3540C	CO	MSQS_171003	a	
84-74-2	DI-N-BUTYL PHTHALATE	**0.46**		mg/Kg	2	0.12	220	8270D/3540C	CO	MSQS_171003	a	
85-68-7	BENZYL BUTYL PHTHALATE	**< 0.12**		mg/Kg	2	0.12	4.9	8270D/3540C	CO	MSQS_171003	a	
117-81-7	DI(2-ETHYLHEXYL)PHTHALATE	**0.59**		mg/Kg	2	0.12	47	8270D/3540C	CO	MSQS_171003	a	
117-84-0	DI-N-OCTYL PHTHALATE	**< 0.12**		mg/Kg	2	0.12	58	8270D/3540C	CO	MSQS_171003	a	
132-64-9	DIBENZOFURAN	**0.09**		mg/Kg	2	0.12	15	8270D/3540C	CO	MSQS_171003	a	
87-68-3	HEXACHLOROBUTADIENE	**< 0.12**		mg/Kg	2	0.12	3.9	8270D/3540C	CO	MSQS_171003	a	
55-18-5	N-NITROSODIPHENYLAMINE	**< 0.12**		mg/Kg	2	0.12	11	8270D/3540C	CO	MSQS_171003	a	
1336-36-3	PCBS (Total Aroclors)	**< 0.13**	N1	mg/Kg	2	0.13	12	8082/3540C	CO	MSQS_171003	a	
	Acid Extractables											
108-95-2	PHENOL	**< 120**		ug/Kg	2	120	420	8270D/3540C	CO	MSQS_171003	a	
95-48-7	2-METHYLPHENOL (o-CRESOL)	**< 120**		ug/Kg	2	120	63	8270D/3540C	CO	MSQS_171003	a	
106-44-5	4-METHYLPHENOL (p-CRESOL)	**< 120**		ug/Kg	2	120	670	8270D/3540C	CO	MSQS_171003	a	
105-67-9	2,4-DIMETHYLPHENOL	**< 120**		ug/Kg	2	120	29	8270D/3540C	CO	MSQS_171003	a	
87-86-5	PENTACHLOROPHENOL	**< 600**		ug/Kg	2	600	360	8270D/3540C	CO	MSQS_171003	a	
100-51-6	BENZYL ALCOHOL	**< 120**		ug/Kg	2	120	57	8270D/3540C	CO	MSQS_171003	a	
65-85-0	BENZOIC ACID	**800**		ug/Kg	2	480	650	8270D/3540C	CO	MSQS_171003	a	

Notes:

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WSDOE Lab C567

Marine Sediment Quality Standards
Chemical Criteria
WAC 173-204-320

Revised - 10-20-17

Client Name: Whatcom Environmental Services
228 E. Champion Street, Suite 101
Bellingham, WA 98225

Reference Number: **17-26654**
Project: Lovric's SeaCraft

Lab Number: 58340
Field ID: A4
Sample Description:
Matrix: Soil
Sample Date: 9/26/17

Report Date: 10/19/17
Date Analyzed: 10/5/17
Approved by: anp,bj,pdm
Authorized by:

Patrick Miller, MS
QA Officer

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	Metals											
7440-38-2	ARSENIC	**3.17**		mg/Kg	1	0.59	57	6010B/3051	ANP	6010B_171005	a	
7440-43-9	CADMIUM	**< 0.59**		mg/Kg	1	0.59	5.1	6010B/3051	ANP	6010B_171005	a	
7440-47-3	CHROMIUM	**30.3**		mg/Kg	1	0.59	260	6010B/3051	ANP	6010B_171005	a	
7440-50-8	COPPER	**367**		mg/Kg	1	0.59	390	6010B/3051	ANP	6010B_171005	a	
7439-92-1	LEAD	**21.4**		mg/Kg	1	0.59	450	6010B/3051	ANP	6010B_171005	a	
7439-97-6	MERCURY	**0.151**		mg/Kg	10	0.082	0.41	7471A	RHF	7471A_171005	a	
7440-22-4	SILVER	**< 0.59**		mg/Kg	1	0.59	6.1	6010B/3051	ANP	6010B_171005	a	
7440-66-6	ZINC	**186**		mg/Kg	1	0.59	410	6010B/3051	ANP	6010B_171005	a	
	Polynuclear Aromatic Hydrocarbons (PAHs)											
	LOW MOLECULAR WT PAH	**0.7**		mg/Kg			370	8270D/3540C	CO	MSQS_171003	a	
91-20-3	NAPHTHALENE	**< 0.1**		mg/Kg	2	0.1	99	8270D/3540C	CO	MSQS_171003	a	
208-96-8	ACENAPHTHYLENE	**0.17**		mg/Kg	2	0.1	66	8270D/3540C	CO	MSQS_171003	a	
83-32-9	ACENAPTHENE	**< 0.1**		mg/Kg	2	0.1	16	8270D/3540C	CO	MSQS_171003	a	
86-73-7	FLUORENE	**0.05**		mg/Kg	2	0.1	23	8270D/3540C	CO	MSQS_171003	a	
85-01-8	PHENANTHRENE	**0.31**		mg/Kg	2	0.1	100	8270D/3540C	CO	MSQS_171003	a	
120-12-7	ANTHRACENE	**0.16**		mg/Kg	2	0.1	220	8270D/3540C	CO	MSQS_171003	a	
91-57-6	2-METHYLNAPHTHALENE	**< 0.1**		mg/Kg	2	0.1	38	8270D/3540C	CO	MSQS_171003	a	
	HIGH MOLECULAR WT PAH	**6.5**		mg/Kg			960	8270D/3540C	CO	MSQS_171003	a	
206-44-0	FLUORANTHENE	**1.33**		mg/Kg	2	0.1	160	8270D/3540C	CO	MSQS_171003	a	
129-00-0	PYRENE	**1.46**		mg/Kg	2	0.1	1000	8270D/3540C	CO	MSQS_171003	a	
56-55-3	BENZ[A]ANTHRACENE	**0.46**		mg/Kg	2	0.1	110	8270D/3540C	CO	MSQS_171003	a	
218-01-9	CHRYSENE	**0.8**		mg/Kg	2	0.1	110	8270D/3540C	CO	MSQS_171003	a	

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Form: cSediment.rpt

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	TOTAL BENZOFLUORANTHENES	**1.34**		mg/Kg	2	0.1	230	8270D/3540C	CO	MSQS_171003	a	
50-32-8	BENZO[A]PYRENE	**0.51**		mg/Kg	2	0.1	99	8270D/3540C	CO	MSQS_171003	a	
193-39-5	INDENO[1,2,3,C,D]PYRENE	**0.31**		mg/Kg	2	0.1	34	8270D/3540C	CO	MSQS_171003	a	
53-70-3	DIBENZO[A,H]ANTHRACENE	**< 0.1**		mg/Kg	2	0.1	12	8270D/3540C	CO	MSQS_171003	a	
191-24-2	BENZO[G,H,I]PERYLENE	**0.31**		mg/Kg	2	0.1	31	8270D/3540C	CO	MSQS_171003	a	
	Base/Neutral Extractables											
95-50-1	1,2 - DICHLOROBENZENE	**< 0.1**		mg/Kg	2	0.1	2.3	8270D/3540C	CO	MSQS_171003	a	
106-46-7	1,4 - DICHLOROBENZENE	**< 0.1**		mg/Kg	2	0.1	3.1	8270D/3540C	CO	MSQS_171003	a	
120-82-1	1,2,4-TRICHLOROBENZENE	**< 0.1**		mg/Kg	2	0.1	0.81	8270D/3540C	CO	MSQS_171003	a	
118-74-1	HEXACHLOROBENZENE	**< 0.1**		mg/Kg	2	0.1	0.38	8270D/3540C	CO	MSQS_171003	a	
131-11-3	DIMETHYL PHTHALATE	**0.14**		mg/Kg	2	0.1	53	8270D/3540C	CO	MSQS_171003	a	
84-66-2	DIETHYL PHTHALATE	**0.13**		mg/Kg	2	0.1	61	8270D/3540C	CO	MSQS_171003	a	
84-74-2	DI-N-BUTYL PHTHALATE	**0.32**		mg/Kg	2	0.1	220	8270D/3540C	CO	MSQS_171003	a	
85-68-7	BENZYL BUTYL PHTHALATE	**< 0.1**		mg/Kg	2	0.1	4.9	8270D/3540C	CO	MSQS_171003	a	
117-81-7	DI(2-ETHYLHEXYL)PHTHALATE	**3.91**		mg/Kg	2	0.1	47	8270D/3540C	CO	MSQS_171003	a	
117-84-0	DI-N-OCTYL PHTHALATE	**< 0.1**		mg/Kg	2	0.1	58	8270D/3540C	CO	MSQS_171003	a	
132-64-9	DIBENZOFURAN	**< 0.1**		mg/Kg	2	0.1	15	8270D/3540C	CO	MSQS_171003	a	
87-68-3	HEXACHLOROBUTADIENE	**< 0.1**		mg/Kg	2	0.1	3.9	8270D/3540C	CO	MSQS_171003	a	
55-18-5	N-NITROSODIPHENYLAMINE	**< 0.1**		mg/Kg	2	0.1	11	8270D/3540C	CO	MSQS_171003	a	
1336-36-3	PCBS (Total Aroclors)	**0.05**	J	mg/Kg	2	0.1	12	8082/3540C	CO	MSQS_171003	a	Aroclor 1254
	Acid Extractables											
108-95-2	PHENOL	**< 95**		ug/Kg	2	95	420	8270D/3540C	CO	MSQS_171003	a	
95-48-7	2-METHYLPHENOL (o-CRESOL)	**< 95**		ug/Kg	2	95	63	8270D/3540C	CO	MSQS_171003	a	
106-44-5	4-METHYLPHENOL (p-CRESOL)	**< 95**		ug/Kg	2	95	670	8270D/3540C	CO	MSQS_171003	a	
105-67-9	2,4-DIMETHYLPHENOL	**< 95**		ug/Kg	2	95	29	8270D/3540C	CO	MSQS_171003	a	
87-86-5	PENTACHLOROPHENOL	**< 475**		ug/Kg	2	475	360	8270D/3540C	CO	MSQS_171003	a	
100-51-6	BENZYL ALCOHOL	**< 95**		ug/Kg	2	95	57	8270D/3540C	CO	MSQS_171003	a	
65-85-0	BENZOIC ACID	**1320**		ug/Kg	2	380	650	8270D/3540C	CO	MSQS_171003	a	

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Corvallis, OR	*Microbiology (d)*	540 SW Third Street	Corvallis, OR 97333	541.753.4946

WSDOE Lab C567

Marine Sediment Quality Standards
Chemical Criteria
WAC 173-204-320

Revised - 10-20-17

Client Name: Whatcom Environmental Services
228 E. Champion Street, Suite 101
Bellingham, WA 98225

Reference Number: **17-26654**
Project: Lovric's SeaCraft

Lab Number: 58341
Field ID: A5
Sample Description:
Matrix: Soil
Sample Date: 9/25/17

Report Date: 10/19/17
Date Analyzed: 10/5/17
Approved by: anp,bj,pdm
Authorized by:

Patrick Miller, MS
QA Officer

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	Metals											
7440-38-2	ARSENIC	**3.05**		mg/Kg	1	1.05	57	6010B/3051	ANP	6010B_171005	a	
7440-43-9	CADMIUM	**< 1.05**		mg/Kg	1	1.05	5.1	6010B/3051	ANP	6010B_171005	a	
7440-47-3	CHROMIUM	**41.0**		mg/Kg	1	1.05	260	6010B/3051	ANP	6010B_171005	a	
7440-50-8	COPPER	**243**		mg/Kg	1	1.05	390	6010B/3051	ANP	6010B_171005	a	
7439-92-1	LEAD	**18.7**		mg/Kg	1	1.05	450	6010B/3051	ANP	6010B_171005	a	
7439-97-6	MERCURY	**0.139**		mg/Kg	10	0.083	0.41	7471A	RHF	7471A_171005	a	
7440-22-4	SILVER	**< 1.05**		mg/Kg	1	1.05	6.1	6010B/3051	ANP	6010B_171005	a	
7440-66-6	ZINC	**141**		mg/Kg	1	1.05	410	6010B/3051	ANP	6010B_171005	a	
	Polynuclear Aromatic Hydrocarbons (PAHs)											
	LOW MOLECULAR WT PAH	**0.7**		mg/Kg			370	8270D/3540C	CO	MSQS_171003	a	
91-20-3	NAPHTHALENE	**< 0.12**		mg/Kg	2	0.12	99	8270D/3540C	CO	MSQS_171003	a	
208-96-8	ACENAPHTHYLENE	**< 0.12**		mg/Kg	2	0.12	66	8270D/3540C	CO	MSQS_171003	a	
83-32-9	ACENAPTHENE	**< 0.12**		mg/Kg	2	0.12	16	8270D/3540C	CO	MSQS_171003	a	
86-73-7	FLUORENE	**< 0.12**		mg/Kg	2	0.12	23	8270D/3540C	CO	MSQS_171003	a	
85-01-8	PHENANTHRENE	**0.52**		mg/Kg	2	0.12	100	8270D/3540C	CO	MSQS_171003	a	
120-12-7	ANTHRACENE	**0.22**		mg/Kg	2	0.12	220	8270D/3540C	CO	MSQS_171003	a	
91-57-6	2-METHYLNAPHTHALENE	**< 0.12**		mg/Kg	2	0.12	38	8270D/3540C	CO	MSQS_171003	a	
	HIGH MOLECULAR WT PAH	**6.5**		mg/Kg			960	8270D/3540C	CO	MSQS_171003	a	
206-44-0	FLUORANTHENE	**1.6**		mg/Kg	2	0.12	160	8270D/3540C	CO	MSQS_171003	a	
129-00-0	PYRENE	**1.37**		mg/Kg	2	0.12	1000	8270D/3540C	CO	MSQS_171003	a	
56-55-3	BENZ[A]ANTHRACENE	**0.58**		mg/Kg	2	0.12	110	8270D/3540C	CO	MSQS_171003	a	
218-01-9	CHRYSENE	**1.06**		mg/Kg	2	0.12	110	8270D/3540C	CO	MSQS_171003	a	

Notes:

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Units - mg/Kg is parts per million, mg/Kg OC is parts per million in terms of Organic Carbon, ug/Kg is parts per billion.
Practical Quantitation Limit or PQL is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.
Maximum Allowable is taken from Table 1 "Marine Sediment Quality Standards Chemical Criteria" in WAC 173-204-320.
Method - The value listed is the Analytical Method along with the Analytical Prep Mehtod separated by a forward slash.
Batch - The analytical batch number identifies samples that were analyzed together in a group. It is also associated with all quality control processed in that sample group.

If you have any questions concerning this report contact us at the above phone number.

Form: cSediment.rpt

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	TOTAL BENZOFLUORANTHENES	**0.47**		mg/Kg	2	0.12	230	8270D/3540C	CO	MSQS_171003	a	
50-32-8	BENZO[A]PYRENE	**0.59**		mg/Kg	2	0.12	99	8270D/3540C	CO	MSQS_171003	a	
193-39-5	INDENO[1,2,3,C,D]PYRENE	**0.34**		mg/Kg	2	0.12	34	8270D/3540C	CO	MSQS_171003	a	
53-70-3	DIBENZO[A,H]ANTHRACENE	**0.09**		mg/Kg	2	0.12	12	8270D/3540C	CO	MSQS_171003	a	
191-24-2	BENZO[G,H,I]PERYLENE	**0.38**		mg/Kg	2	0.12	31	8270D/3540C	CO	MSQS_171003	a	
	Base/Neutral Extractables											
95-50-1	1,2 - DICHLOROBENZENE	**< 0.12**		mg/Kg	2	0.12	2.3	8270D/3540C	CO	MSQS_171003	a	
106-46-7	1,4 - DICHLOROBENZENE	**< 0.12**		mg/Kg	2	0.12	3.1	8270D/3540C	CO	MSQS_171003	a	
120-82-1	1,2,4-TRICHLOROBENZENE	**< 0.12**		mg/Kg	2	0.12	0.81	8270D/3540C	CO	MSQS_171003	a	
118-74-1	HEXACHLOROBENZENE	**< 0.12**		mg/Kg	2	0.12	0.38	8270D/3540C	CO	MSQS_171003	a	
131-11-3	DIMETHYL PHTHALATE	**0.4**		mg/Kg	2	0.12	53	8270D/3540C	CO	MSQS_171003	a	
84-66-2	DIETHYL PHTHALATE	**0.12**		mg/Kg	2	0.12	61	8270D/3540C	CO	MSQS_171003	a	
84-74-2	DI-N-BUTYL PHTHALATE	**0.29**		mg/Kg	2	0.12	220	8270D/3540C	CO	MSQS_171003	a	
85-68-7	BENZYL BUTYL PHTHALATE	**< 0.12**		mg/Kg	2	0.12	4.9	8270D/3540C	CO	MSQS_171003	a	
117-81-7	DI(2-ETHYLHEXYL)PHTHALATE	**0.38**		mg/Kg	2	0.12	47	8270D/3540C	CO	MSQS_171003	a	
117-84-0	DI-N-OCTYL PHTHALATE	**< 0.12**		mg/Kg	2	0.12	58	8270D/3540C	CO	MSQS_171003	a	
132-64-9	DIBENZOFURAN	**< 0.12**		mg/Kg	2	0.12	15	8270D/3540C	CO	MSQS_171003	a	
87-68-3	HEXACHLOROBUTADIENE	**< 0.12**		mg/Kg	2	0.12	3.9	8270D/3540C	CO	MSQS_171003	a	
55-18-5	N-NITROSODIPHENYLAMINE	**< 0.12**		mg/Kg	2	0.12	11	8270D/3540C	CO	MSQS_171003	a	
1336-36-3	PCBS (Total Aroclors)	**< 0.11**	N1	mg/Kg	2	0.11	12	8082/3540C	CO	MSQS_171003	a	
	Acid Extractables											
108-95-2	PHENOL	**< 115**		ug/Kg	2	115	420	8270D/3540C	CO	MSQS_171003	a	
95-48-7	2-METHYLPHENOL (o-CRESOL)	**< 115**		ug/Kg	2	115	63	8270D/3540C	CO	MSQS_171003	a	
106-44-5	4-METHYLPHENOL (p-CRESOL)	**< 115**		ug/Kg	2	115	670	8270D/3540C	CO	MSQS_171003	a	
105-67-9	2,4-DIMETHYLPHENOL	**< 115**		ug/Kg	2	115	29	8270D/3540C	CO	MSQS_171003	a	
87-86-5	PENTACHLOROPHENOL	**< 575**		ug/Kg	2	575	360	8270D/3540C	CO	MSQS_171003	a	
100-51-6	BENZYL ALCOHOL	**< 115**		ug/Kg	2	115	57	8270D/3540C	CO	MSQS_171003	a	
65-85-0	BENZOIC ACID	**1190**		ug/Kg	2	460	650	8270D/3540C	CO	MSQS_171003	a	

Notes:

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Maximum Allowable is taken from Table 1 "Marine Sediment Quality Standards Chemical Criteria" in WAC 173-204-320.
Method - The value listed is the Analytical Method along with the Analytical Prep Mehtod separated by a forward slash.
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Burlington, WA	*Corporate Laboratory (a)*	1620 S Walnut St	Burlington, WA 98233	**800.755.9295** • 360.757.1400
Bellingham, WA	*Microbiology (b)*	805 Orchard Dr Ste 4	Bellingham, WA 98225	360.715.1212
Portland, OR	*Microbiology/Chemistry (c)*	9150 SW Pioneer Ct Ste W	Wilsonville, OR 97070	503.682.7802
Corvallis, OR	*Microbiology (d)*	540 SW Third Street	Corvallis, OR 97333	541.753.4946

WSDOE Lab C567

Marine Sediment Quality Standards
Chemical Criteria
WAC 173-204-320

Revised - 10-20-17

Client Name: Whatcom Environmental Services
228 E. Champion Street, Suite 101
Bellingham, WA 98225

Reference Number: **17-26654**
Project: Lovric's SeaCraft

Lab Number: 58342
Field ID: A6
Sample Description:
Matrix: Soil
Sample Date: 9/25/17

Report Date: 10/19/17
Date Analyzed: 10/5/17
Approved by: anp,bj,pdm
Authorized by:

Patrick Miller, MS
QA Officer

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	Metals											
7440-38-2	ARSENIC	**2.15**		mg/Kg	1	0.47	57	6010B/3051	ANP	6010B_171005	a	
7440-43-9	CADMIUM	**< 0.47**		mg/Kg	1	0.47	5.1	6010B/3051	ANP	6010B_171005	a	
7440-47-3	CHROMIUM	**33.2**		mg/Kg	1	0.47	260	6010B/3051	ANP	6010B_171005	a	
7440-50-8	COPPER	**93.9**		mg/Kg	1	0.47	390	6010B/3051	ANP	6010B_171005	a	
7439-92-1	LEAD	**12.6**		mg/Kg	1	0.47	450	6010B/3051	ANP	6010B_171005	a	
7439-97-6	MERCURY	**0.103**		mg/Kg	10	0.082	0.41	7471A	RHF	7471A_171005	a	
7440-22-4	SILVER	**< 0.47**		mg/Kg	1	0.47	6.1	6010B/3051	ANP	6010B_171005	a	
7440-66-6	ZINC	**87.4**		mg/Kg	1	0.47	410	6010B/3051	ANP	6010B_171005	a	
	Polynuclear Aromatic Hydrocarbons (PAHs)											
	LOW MOLECULAR WT PAH	**0.5**		mg/Kg			370	8270D/3540C	CO	MSQS_171003	a	
91-20-3	NAPHTHALENE	**< 0.11**		mg/Kg	2	0.11	99	8270D/3540C	CO	MSQS_171003	a	
208-96-8	ACENAPHTHYLENE	**< 0.11**		mg/Kg	2	0.11	66	8270D/3540C	CO	MSQS_171003	a	
83-32-9	ACENAPTHENE	**< 0.11**		mg/Kg	2	0.11	16	8270D/3540C	CO	MSQS_171003	a	
86-73-7	FLUORENE	**< 0.11**		mg/Kg	2	0.11	23	8270D/3540C	CO	MSQS_171003	a	
85-01-8	PHENANTHRENE	**0.3**		mg/Kg	2	0.11	100	8270D/3540C	CO	MSQS_171003	a	
120-12-7	ANTHRACENE	**0.21**		mg/Kg	2	0.11	220	8270D/3540C	CO	MSQS_171003	a	
91-57-6	2-METHYLNAPHTHALENE	**< 0.11**		mg/Kg	2	0.11	38	8270D/3540C	CO	MSQS_171003	a	
	HIGH MOLECULAR WT PAH	**6.4**		mg/Kg			960	8270D/3540C	CO	MSQS_171003	a	
206-44-0	FLUORANTHENE	**1.18**		mg/Kg	2	0.11	160	8270D/3540C	CO	MSQS_171003	a	
129-00-0	PYRENE	**1.2**		mg/Kg	2	0.11	1000	8270D/3540C	CO	MSQS_171003	a	
56-55-3	BENZ[A]ANTHRACENE	**0.53**		mg/Kg	2	0.11	110	8270D/3540C	CO	MSQS_171003	a	
218-01-9	CHRYSENE	**0.9**		mg/Kg	2	0.11	110	8270D/3540C	CO	MSQS_171003	a	

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Maximum Allowable is taken from Table 1 "Marine Sediment Quality Standards Chemical Criteria" in WAC 173-204-320.
Method - The value listed is the Analytical Method along with the Analytical Prep Mehtod separated by a forward slash.
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If you have any questions concerning this report contact us at the above phone number.

Form: cSediment.rpt

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	TOTAL BENZOFLUORANTHENES	**1.36**		mg/Kg	2	0.11	230	8270D/3540C	CO	MSQS_171003	a	
50-32-8	BENZO[A]PYRENE	**0.59**		mg/Kg	2	0.11	99	8270D/3540C	CO	MSQS_171003	a	
193-39-5	INDENO[1,2,3,C,D]PYRENE	**0.32**		mg/Kg	2	0.11	34	8270D/3540C	CO	MSQS_171003	a	
53-70-3	DIBENZO[A,H]ANTHRACENE	**< 0.11**		mg/Kg	2	0.11	12	8270D/3540C	CO	MSQS_171003	a	
191-24-2	BENZO[G,H,I]PERYLENE	**0.32**		mg/Kg	2	0.11	31	8270D/3540C	CO	MSQS_171003	a	
	Base/Neutral Extractables											
95-50-1	1,2 - DICHLOROBENZENE	**< 0.11**		mg/Kg	2	0.11	2.3	8270D/3540C	CO	MSQS_171003	a	
106-46-7	1,4 - DICHLOROBENZENE	**< 0.11**		mg/Kg	2	0.11	3.1	8270D/3540C	CO	MSQS_171003	a	
120-82-1	1,2,4-TRICHLOROBENZENE	**< 0.11**		mg/Kg	2	0.11	0.81	8270D/3540C	CO	MSQS_171003	a	
118-74-1	HEXACHLOROBENZENE	**< 0.11**		mg/Kg	2	0.11	0.38	8270D/3540C	CO	MSQS_171003	a	
131-11-3	DIMETHYL PHTHALATE	**< 0.11**		mg/Kg	2	0.11	53	8270D/3540C	CO	MSQS_171003	a	
84-66-2	DIETHYL PHTHALATE	**0.12**		mg/Kg	2	0.11	61	8270D/3540C	CO	MSQS_171003	a	
84-74-2	DI-N-BUTYL PHTHALATE	**0.46**		mg/Kg	2	0.11	220	8270D/3540C	CO	MSQS_171003	a	
85-68-7	BENZYL BUTYL PHTHALATE	**< 0.11**		mg/Kg	2	0.11	4.9	8270D/3540C	CO	MSQS_171003	a	
117-81-7	DI(2-ETHYLHEXYL)PHTHALATE	**0.27**		mg/Kg	2	0.11	47	8270D/3540C	CO	MSQS_171003	a	
117-84-0	DI-N-OCTYL PHTHALATE	**< 0.11**		mg/Kg	2	0.11	58	8270D/3540C	CO	MSQS_171003	a	
132-64-9	DIBENZOFURAN	**< 0.11**		mg/Kg	2	0.11	15	8270D/3540C	CO	MSQS_171003	a	
87-68-3	HEXACHLOROBUTADIENE	**< 0.11**		mg/Kg	2	0.11	3.9	8270D/3540C	CO	MSQS_171003	a	
55-18-5	N-NITROSODIPHENYLAMINE	**< 0.11**		mg/Kg	2	0.11	11	8270D/3540C	CO	MSQS_171003	a	
1336-36-3	PCBS (Total Aroclors)	**< 0.11**		mg/Kg	2	0.11	12	8082/3540C	CO	MSQS_171003	a	
	Acid Extractables											
108-95-2	PHENOL	**< 105**		ug/Kg	2	105	420	8270D/3540C	CO	MSQS_171003	a	
95-48-7	2-METHYLPHENOL (o-CRESOL)	**< 105**		ug/Kg	2	105	63	8270D/3540C	CO	MSQS_171003	a	
106-44-5	4-METHYLPHENOL (p-CRESOL)	**< 105**		ug/Kg	2	105	670	8270D/3540C	CO	MSQS_171003	a	
105-67-9	2,4-DIMETHYLPHENOL	**< 105**		ug/Kg	2	105	29	8270D/3540C	CO	MSQS_171003	a	
87-86-5	PENTACHLOROPHENOL	**< 525**		ug/Kg	2	525	360	8270D/3540C	CO	MSQS_171003	a	
100-51-6	BENZYL ALCOHOL	**< 105**		ug/Kg	2	105	57	8270D/3540C	CO	MSQS_171003	a	
65-85-0	BENZOIC ACID	**560**		ug/Kg	2	420	650	8270D/3540C	CO	MSQS_171003	a	

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Bellingham, WA	*Microbiology (b)*	805 Orchard Dr Ste 4	Bellingham, WA 98225	360.715.1212
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Corvallis, OR	*Microbiology (d)*	540 SW Third Street	Corvallis, OR 97333	541.753.4946

WSDOE Lab C567

Marine Sediment Quality Standards
Chemical Criteria
WAC 173-204-320

Revised - 10-20-17

Client Name: Whatcom Environmental Services
228 E. Champion Street, Suite 101
Bellingham, WA 98225

Reference Number: **17-26654**
Project: Lovric's SeaCraft

Lab Number: 58343
Field ID: A7
Sample Description:
Matrix: Soil
Sample Date: 9/25/17

Report Date: 10/19/17
Date Analyzed: 10/5/17
Approved by: anp,bj,pdm
Authorized by:

Patrick Miller, MS
QA Officer

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	Metals											
7440-38-2	ARSENIC	**4.28**		mg/Kg	1	0.84	57	6010B/3051	ANP	6010B_171005	a	
7440-43-9	CADMIUM	**< 0.84**		mg/Kg	1	0.84	5.1	6010B/3051	ANP	6010B_171005	a	
7440-47-3	CHROMIUM	**41.7**		mg/Kg	1	0.84	260	6010B/3051	ANP	6010B_171005	a	
7440-50-8	COPPER	**419**		mg/Kg	1	0.84	390	6010B/3051	ANP	6010B_171005	a	
7439-92-1	LEAD	**28.3**		mg/Kg	1	0.84	450	6010B/3051	ANP	6010B_171005	a	
7439-97-6	MERCURY	**0.159**		mg/Kg	10	0.083	0.41	7471A	RHF	7471A_171005	a	
7440-22-4	SILVER	**< 0.84**		mg/Kg	1	0.84	6.1	6010B/3051	ANP	6010B_171005	a	
7440-66-6	ZINC	**471**		mg/Kg	1	0.84	410	6010B/3051	ANP	6010B_171005	a	
	Polynuclear Aromatic Hydrocarbons (PAHs)											
	LOW MOLECULAR WT PAH	**0.4**		mg/Kg			370	8270D/3540C	CO	MSQS_171003	a	
91-20-3	NAPHTHALENE	**< 0.1**		mg/Kg	2	0.1	99	8270D/3540C	CO	MSQS_171003	a	
208-96-8	ACENAPHTHYLENE	**< 0.1**		mg/Kg	2	0.1	66	8270D/3540C	CO	MSQS_171003	a	
83-32-9	ACENAPTHENE	**< 0.1**		mg/Kg	2	0.1	16	8270D/3540C	CO	MSQS_171003	a	
86-73-7	FLUORENE	**< 0.1**		mg/Kg	2	0.1	23	8270D/3540C	CO	MSQS_171003	a	
85-01-8	PHENANTHRENE	**0.31**		mg/Kg	2	0.1	100	8270D/3540C	CO	MSQS_171003	a	
120-12-7	ANTHRACENE	**0.12**		mg/Kg	2	0.1	220	8270D/3540C	CO	MSQS_171003	a	
91-57-6	2-METHYLNAPHTHALENE	**< 0.1**		mg/Kg	2	0.1	38	8270D/3540C	CO	MSQS_171003	a	
	HIGH MOLECULAR WT PAH	**5.3**		mg/Kg			960	8270D/3540C	CO	MSQS_171003	a	
206-44-0	FLUORANTHENE	**0.95**		mg/Kg	2	0.1	160	8270D/3540C	CO	MSQS_171003	a	
129-00-0	PYRENE	**1.13**		mg/Kg	2	0.1	1000	8270D/3540C	CO	MSQS_171003	a	
56-55-3	BENZ[A]ANTHRACENE	**0.38**		mg/Kg	2	0.1	110	8270D/3540C	CO	MSQS_171003	a	
218-01-9	CHRYSENE	**0.63**		mg/Kg	2	0.1	110	8270D/3540C	CO	MSQS_171003	a	

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Units - mg/Kg is parts per million, mg/Kg OC is parts per million in terms of Organic Carbon, ug/Kg is parts per billion.
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Maximum Allowable is taken from Table 1 "Marine Sediment Quality Standards Chemical Criteria" in WAC 173-204-320.
Method - The value listed is the Analytical Method along with the Analytical Prep Mehtod separated by a forward slash.
Batch - The analytical batch number identifies samples that were analyzed together in a group. It is also associated with all quality control processed in that sample group.

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Form: cSediment.rpt

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	TOTAL BENZOFLUORANTHENES	**1.1**		mg/Kg	2	0.1	230	8270D/3540C	CO	MSQS_171003	a	
50-32-8	BENZO[A]PYRENE	**0.45**		mg/Kg	2	0.1	99	8270D/3540C	CO	MSQS_171003	a	
193-39-5	INDENO[1,2,3,C,D]PYRENE	**0.31**		mg/Kg	2	0.1	34	8270D/3540C	CO	MSQS_171003	a	
53-70-3	DIBENZO[A,H]ANTHRACENE	**0.07**		mg/Kg	2	0.1	12	8270D/3540C	CO	MSQS_171003	a	
191-24-2	BENZO[G,H,I]PERYLENE	**0.27**		mg/Kg	2	0.1	31	8270D/3540C	CO	MSQS_171003	a	
	Base/Neutral Extractables											
95-50-1	1,2 - DICHLOROBENZENE	**< 0.1**		mg/Kg	2	0.1	2.3	8270D/3540C	CO	MSQS_171003	a	
106-46-7	1,4 - DICHLOROBENZENE	**< 0.1**		mg/Kg	2	0.1	3.1	8270D/3540C	CO	MSQS_171003	a	
120-82-1	1,2,4-TRICHLOROBENZENE	**< 0.1**		mg/Kg	2	0.1	0.81	8270D/3540C	CO	MSQS_171003	a	
118-74-1	HEXACHLOROBENZENE	**< 0.1**		mg/Kg	2	0.1	0.38	8270D/3540C	CO	MSQS_171003	a	
131-11-3	DIMETHYL PHTHALATE	**< 0.1**		mg/Kg	2	0.1	53	8270D/3540C	CO	MSQS_171003	a	
84-66-2	DIETHYL PHTHALATE	**0.11**		mg/Kg	2	0.1	61	8270D/3540C	CO	MSQS_171003	a	
84-74-2	DI-N-BUTYL PHTHALATE	**0.56**		mg/Kg	2	0.1	220	8270D/3540C	CO	MSQS_171003	a	
85-68-7	BENZYL BUTYL PHTHALATE	**< 0.1**		mg/Kg	2	0.1	4.9	8270D/3540C	CO	MSQS_171003	a	
117-81-7	DI(2-ETHYLHEXYL)PHTHALATE	**1.1**		mg/Kg	2	0.1	47	8270D/3540C	CO	MSQS_171003	a	
117-84-0	DI-N-OCTYL PHTHALATE	**< 0.1**		mg/Kg	2	0.1	58	8270D/3540C	CO	MSQS_171003	a	
132-64-9	DIBENZOFURAN	**< 0.1**		mg/Kg	2	0.1	15	8270D/3540C	CO	MSQS_171003	a	
87-68-3	HEXACHLOROBUTADIENE	**< 0.1**		mg/Kg	2	0.1	3.9	8270D/3540C	CO	MSQS_171003	a	
55-18-5	N-NITROSODIPHENYLAMINE	**< 0.1**		mg/Kg	2	0.1	11	8270D/3540C	CO	MSQS_171003	a	
1336-36-3	PCBS (Total Aroclors)	**0.05**	J	mg/Kg	2	0.11	12	8082/3540C	CO	MSQS_171003	a	Aroclor 1254
	Acid Extractables											
108-95-2	PHENOL	**< 100**		ug/Kg	2	100	420	8270D/3540C	CO	MSQS_171003	a	
95-48-7	2-METHYLPHENOL (o-CRESOL)	**< 100**		ug/Kg	2	100	63	8270D/3540C	CO	MSQS_171003	a	
106-44-5	4-METHYLPHENOL (p-CRESOL)	**< 100**		ug/Kg	2	100	670	8270D/3540C	CO	MSQS_171003	a	
105-67-9	2,4-DIMETHYLPHENOL	**< 100**		ug/Kg	2	100	29	8270D/3540C	CO	MSQS_171003	a	
87-86-5	PENTACHLOROPHENOL	**< 500**		ug/Kg	2	500	360	8270D/3540C	CO	MSQS_171003	a	
100-51-6	BENZYL ALCOHOL	**< 100**		ug/Kg	2	100	57	8270D/3540C	CO	MSQS_171003	a	
65-85-0	BENZOIC ACID	**950**		ug/Kg	2	400	650	8270D/3540C	CO	MSQS_171003	a	

Notes:

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Maximum Allowable is taken from Table 1 "Marine Sediment Quality Standards Chemical Criteria" in WAC 173-204-320.
Method - The value listed is the Analytical Method along with the Analytical Prep Mehtod separated by a forward slash.
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Bellingham, WA	*Microbiology (b)*	805 Orchard Dr Ste 4	Bellingham, WA 98225	360.715.1212
Portland, OR	*Microbiology/Chemistry (c)*	9150 SW Pioneer Ct Ste W	Wilsonville, OR 97070	503.682.7802
Corvallis, OR	*Microbiology (d)*	540 SW Third Street	Corvallis, OR 97333	541.753.4946

WSDOE Lab C567

Marine Sediment Quality Standards
Chemical Criteria
WAC 173-204-320

Revised - 10-20-17

Client Name: Whatcom Environmental Services
228 E. Champion Street, Suite 101
Bellingham, WA 98225

Reference Number: **17-26654**
Project: Lovric's SeaCraft

Lab Number: 58344
Field ID: A8
Sample Description:
Matrix: Soil
Sample Date: 9/25/17

Report Date: 10/19/17
Date Analyzed: 10/5/17
Approved by: anp,bj,pdm
Authorized by:

Patrick Miller, MS
QA Officer

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	Metals											
7440-38-2	ARSENIC	**< 0.97**		mg/Kg	1	0.97	57	6010B/3051	ANP	6010B_171005	a	
7440-43-9	CADMIUM	**< 0.97**		mg/Kg	1	0.97	5.1	6010B/3051	ANP	6010B_171005	a	
7440-47-3	CHROMIUM	**37.8**		mg/Kg	1	0.97	260	6010B/3051	ANP	6010B_171005	a	
7440-50-8	COPPER	**131**		mg/Kg	1	0.97	390	6010B/3051	ANP	6010B_171005	a	
7439-92-1	LEAD	**13.8**		mg/Kg	1	0.97	450	6010B/3051	ANP	6010B_171005	a	
7439-97-6	MERCURY	**0.110**		mg/Kg	10	0.082	0.41	7471A	RHF	7471A_171005	a	
7440-22-4	SILVER	**< 0.97**		mg/Kg	1	0.97	6.1	6010B/3051	ANP	6010B_171005	a	
7440-66-6	ZINC	**98.7**		mg/Kg	1	0.97	410	6010B/3051	ANP	6010B_171005	a	
	Polynuclear Aromatic Hydrocarbons (PAHs)											
	LOW MOLECULAR WT PAH	**0.9**		mg/Kg			370	8270D/3540C	CO	MSQS_171003	a	
91-20-3	NAPHTHALENE	**< 0.1**		mg/Kg	2	0.1	99	8270D/3540C	CO	MSQS_171003	a	
208-96-8	ACENAPHTHYLENE	**< 0.1**		mg/Kg	2	0.1	66	8270D/3540C	CO	MSQS_171003	a	
83-32-9	ACENAPTHENE	**< 0.1**		mg/Kg	2	0.1	16	8270D/3540C	CO	MSQS_171003	a	
86-73-7	FLUORENE	**0.08**		mg/Kg	2	0.1	23	8270D/3540C	CO	MSQS_171003	a	
85-01-8	PHENANTHRENE	**0.61**		mg/Kg	2	0.1	100	8270D/3540C	CO	MSQS_171003	a	
120-12-7	ANTHRACENE	**0.21**		mg/Kg	2	0.1	220	8270D/3540C	CO	MSQS_171003	a	
91-57-6	2-METHYLNAPHTHALENE	**< 0.1**		mg/Kg	2	0.1	38	8270D/3540C	CO	MSQS_171003	a	
	HIGH MOLECULAR WT PAH	**6.6**		mg/Kg			960	8270D/3540C	CO	MSQS_171003	a	
206-44-0	FLUORANTHENE	**1.66**		mg/Kg	2	0.1	160	8270D/3540C	CO	MSQS_171003	a	
129-00-0	PYRENE	**1.47**		mg/Kg	2	0.1	1000	8270D/3540C	CO	MSQS_171003	a	
56-55-3	BENZ[A]ANTHRACENE	**0.51**		mg/Kg	2	0.1	110	8270D/3540C	CO	MSQS_171003	a	
218-01-9	CHRYSENE	**0.72**		mg/Kg	2	0.1	110	8270D/3540C	CO	MSQS_171003	a	

Notes:

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Units - mg/Kg is parts per million, mg/Kg OC is parts per million in terms of Organic Carbon, ug/Kg is parts per billion.
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Maximum Allowable is taken from Table 1 "Marine Sediment Quality Standards Chemical Criteria" in WAC 173-204-320.
Method - The value listed is the Analytical Method along with the Analytical Prep Mehtod separated by a forward slash.
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Form: cSediment.rpt

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	TOTAL BENZOFLUORANTHENES	**1.18**		mg/Kg	2	0.1	230	8270D/3540C	CO	MSQS_171003	a	
50-32-8	BENZO[A]PYRENE	**0.51**		mg/Kg	2	0.1	99	8270D/3540C	CO	MSQS_171003	a	
193-39-5	INDENO[1,2,3,C,D]PYRENE	**0.28**		mg/Kg	2	0.1	34	8270D/3540C	CO	MSQS_171003	a	
53-70-3	DIBENZO[A,H]ANTHRACENE	**< 0.1**		mg/Kg	2	0.1	12	8270D/3540C	CO	MSQS_171003	a	
191-24-2	BENZO[G,H,I]PERYLENE	**0.3**		mg/Kg	2	0.1	31	8270D/3540C	CO	MSQS_171003	a	
	Base/Neutral Extractables											
95-50-1	1,2 - DICHLOROBENZENE	**< 0.1**		mg/Kg	2	0.1	2.3	8270D/3540C	CO	MSQS_171003	a	
106-46-7	1,4 - DICHLOROBENZENE	**< 0.1**		mg/Kg	2	0.1	3.1	8270D/3540C	CO	MSQS_171003	a	
120-82-1	1,2,4-TRICHLOROBENZENE	**< 0.1**		mg/Kg	2	0.1	0.81	8270D/3540C	CO	MSQS_171003	a	
118-74-1	HEXACHLOROBENZENE	**< 0.1**		mg/Kg	2	0.1	0.38	8270D/3540C	CO	MSQS_171003	a	
131-11-3	DIMETHYL PHTHALATE	**< 0.1**		mg/Kg	2	0.1	53	8270D/3540C	CO	MSQS_171003	a	
84-66-2	DIETHYL PHTHALATE	**0.1**		mg/Kg	2	0.1	61	8270D/3540C	CO	MSQS_171003	a	
84-74-2	DI-N-BUTYL PHTHALATE	**0.25**		mg/Kg	2	0.1	220	8270D/3540C	CO	MSQS_171003	a	
85-68-7	BENZYL BUTYL PHTHALATE	**< 0.1**		mg/Kg	2	0.1	4.9	8270D/3540C	CO	MSQS_171003	a	
117-81-7	DI(2-ETHYLHEXYL)PHTHALATE	**0.19**		mg/Kg	2	0.1	47	8270D/3540C	CO	MSQS_171003	a	
117-84-0	DI-N-OCTYL PHTHALATE	**< 0.1**		mg/Kg	2	0.1	58	8270D/3540C	CO	MSQS_171003	a	
132-64-9	DIBENZOFURAN	**< 0.1**		mg/Kg	2	0.1	15	8270D/3540C	CO	MSQS_171003	a	
87-68-3	HEXACHLOROBUTADIENE	**< 0.1**		mg/Kg	2	0.1	3.9	8270D/3540C	CO	MSQS_171003	a	
55-18-5	N-NITROSODIPHENYLAMINE	**< 0.1**		mg/Kg	2	0.1	11	8270D/3540C	CO	MSQS_171003	a	
1336-36-3	PCBS (Total Aroclors)	**0.03**	J	mg/Kg	2	0.1	12	8082/3540C	CO	MSQS_171003	a	Aroclor 1254
	Acid Extractables											
108-95-2	PHENOL	**< 100**		ug/Kg	2	100	420	8270D/3540C	CO	MSQS_171003	a	
95-48-7	2-METHYLPHENOL (o-CRESOL)	**< 100**		ug/Kg	2	100	63	8270D/3540C	CO	MSQS_171003	a	
106-44-5	4-METHYLPHENOL (p-CRESOL)	**< 100**		ug/Kg	2	100	670	8270D/3540C	CO	MSQS_171003	a	
105-67-9	2,4-DIMETHYLPHENOL	**< 100**		ug/Kg	2	100	29	8270D/3540C	CO	MSQS_171003	a	
87-86-5	PENTACHLOROPHENOL	**< 500**		ug/Kg	2	500	360	8270D/3540C	CO	MSQS_171003	a	
100-51-6	BENZYL ALCOHOL	**< 100**		ug/Kg	2	100	57	8270D/3540C	CO	MSQS_171003	a	
65-85-0	BENZOIC ACID	**1040**		ug/Kg	2	400	650	8270D/3540C	CO	MSQS_171003	a	

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Portland, OR	*Microbiology/Chemistry (c)*	9150 SW Pioneer Ct Ste W	Wilsonville, OR 97070	503.682.7802
Corvallis, OR	*Microbiology (d)*	540 SW Third Street	Corvallis, OR 97333	541.753.4946

WSDOE Lab C567

Marine Sediment Quality Standards
Chemical Criteria
WAC 173-204-320

Revised - 10-20-17

Client Name: Whatcom Environmental Services
228 E. Champion Street, Suite 101
Bellingham, WA 98225

Reference Number: **17-26654**
Project: Lovric's SeaCraft

Lab Number: 58345
Field ID: A9
Sample Description:
Matrix: Soil
Sample Date: 9/25/17

Report Date: 10/19/17
Date Analyzed: 10/5/17
Approved by: anp,bj,pdm
Authorized by:

Patrick Miller, MS
QA Officer

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	Metals											
7440-38-2	ARSENIC	**< 0.90**		mg/Kg	1	0.90	57	6010B/3051	ANP	6010B_171005	a	
7440-43-9	CADMIUM	**< 0.90**		mg/Kg	1	0.90	5.1	6010B/3051	ANP	6010B_171005	a	
7440-47-3	CHROMIUM	**42.5**		mg/Kg	1	0.90	260	6010B/3051	ANP	6010B_171005	a	
7440-50-8	COPPER	**61.9**		mg/Kg	1	0.90	390	6010B/3051	ANP	6010B_171005	a	
7439-92-1	LEAD	**12.4**		mg/Kg	1	0.90	450	6010B/3051	ANP	6010B_171005	a	
7439-97-6	MERCURY	**0.0652**		mg/Kg	1	0.008	0.41	7471A	RHF	7471A_171005	a	
7440-22-4	SILVER	**< 0.90**		mg/Kg	1	0.90	6.1	6010B/3051	ANP	6010B_171005	a	
7440-66-6	ZINC	**103**		mg/Kg	1	0.90	410	6010B/3051	ANP	6010B_171005	a	
	Polynuclear Aromatic Hydrocarbons (PAHs)											
	LOW MOLECULAR WT PAH	**0.7**		mg/Kg			370	8270D/3540C	CO	MSQS_171003	a	
91-20-3	NAPHTHALENE	**0.07**		mg/Kg	2	0.11	99	8270D/3540C	CO	MSQS_171003	a	
208-96-8	ACENAPHTHYLENE	**< 0.11**		mg/Kg	2	0.11	66	8270D/3540C	CO	MSQS_171003	a	
83-32-9	ACENAPTHENE	**< 0.11**		mg/Kg	2	0.11	16	8270D/3540C	CO	MSQS_171003	a	
86-73-7	FLUORENE	**0.06**		mg/Kg	2	0.11	23	8270D/3540C	CO	MSQS_171003	a	
85-01-8	PHENANTHRENE	**0.29**		mg/Kg	2	0.11	100	8270D/3540C	CO	MSQS_171003	a	
120-12-7	ANTHRACENE	**0.18**		mg/Kg	2	0.11	220	8270D/3540C	CO	MSQS_171003	a	
91-57-6	2-METHYLNAPHTHALENE	**0.09**		mg/Kg	2	0.11	38	8270D/3540C	CO	MSQS_171003	a	
	HIGH MOLECULAR WT PAH	**5.6**		mg/Kg			960	8270D/3540C	CO	MSQS_171003	a	
206-44-0	FLUORANTHENE	**1.44**		mg/Kg	2	0.11	160	8270D/3540C	CO	MSQS_171003	a	
129-00-0	PYRENE	**1.31**		mg/Kg	2	0.11	1000	8270D/3540C	CO	MSQS_171003	a	
56-55-3	BENZ[A]ANTHRACENE	**0.48**		mg/Kg	2	0.11	110	8270D/3540C	CO	MSQS_171003	a	
218-01-9	CHRYSENE	**0.67**		mg/Kg	2	0.11	110	8270D/3540C	CO	MSQS_171003	a	

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Form: cSediment.rpt

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	TOTAL BENZOFLUORANTHENES	**0.94**		mg/Kg	2	0.11	230	8270D/3540C	CO	MSQS_171003	a	
50-32-8	BENZO[A]PYRENE	**0.37**		mg/Kg	2	0.11	99	8270D/3540C	CO	MSQS_171003	a	
193-39-5	INDENO[1,2,3,C,D]PYRENE	**0.22**		mg/Kg	2	0.11	34	8270D/3540C	CO	MSQS_171003	a	
53-70-3	DIBENZO[A,H]ANTHRACENE	**< 0.11**		mg/Kg	2	0.11	12	8270D/3540C	CO	MSQS_171003	a	
191-24-2	BENZO[G,H,I]PERYLENE	**0.18**		mg/Kg	2	0.11	31	8270D/3540C	CO	MSQS_171003	a	
	Base/Neutral Extractables											
95-50-1	1,2 - DICHLOROBENZENE	**< 0.11**		mg/Kg	2	0.11	2.3	8270D/3540C	CO	MSQS_171003	a	
106-46-7	1,4 - DICHLOROBENZENE	**< 0.11**		mg/Kg	2	0.11	3.1	8270D/3540C	CO	MSQS_171003	a	
120-82-1	1,2,4-TRICHLOROBENZENE	**< 0.11**		mg/Kg	2	0.11	0.81	8270D/3540C	CO	MSQS_171003	a	
118-74-1	HEXACHLOROBENZENE	**< 0.11**		mg/Kg	2	0.11	0.38	8270D/3540C	CO	MSQS_171003	a	
131-11-3	DIMETHYL PHTHALATE	**< 0.11**		mg/Kg	2	0.11	53	8270D/3540C	CO	MSQS_171003	a	
84-66-2	DIETHYL PHTHALATE	**0.18**		mg/Kg	2	13.84	61	8270D/3540C	CO	MSQS_171003	a	
84-74-2	DI-N-BUTYL PHTHALATE	**0.42**		mg/Kg	2	0.11	220	8270D/3540C	CO	MSQS_171003	a	
85-68-7	BENZYL BUTYL PHTHALATE	**< 0.11**		mg/Kg	2	0.11	4.9	8270D/3540C	CO	MSQS_171003	a	
117-81-7	DI(2-ETHYLHEXYL)PHTHALATE	**0.24**		mg/Kg	2	0.11	47	8270D/3540C	CO	MSQS_171003	a	
117-84-0	DI-N-OCTYL PHTHALATE	**< 0.11**		mg/Kg	2	0.11	58	8270D/3540C	CO	MSQS_171003	a	
132-64-9	DIBENZOFURAN	**< 0.11**		mg/Kg	2	0.11	15	8270D/3540C	CO	MSQS_171003	a	
87-68-3	HEXACHLOROBUTADIENE	**< 0.11**		mg/Kg	2	0.11	3.9	8270D/3540C	CO	MSQS_171003	a	
55-18-5	N-NITROSODIPHENYLAMINE	**< 0.11**		mg/Kg	2	0.11	11	8270D/3540C	CO	MSQS_171003	a	
1336-36-3	PCBS (Total Aroclors)	**< 0.1**		mg/Kg	2	0.1	12	8082/3540C	CO	MSQS_171003	a	
	Acid Extractables											
108-95-2	PHENOL	**< 105**		ug/Kg	2	105	420	8270D/3540C	CO	MSQS_171003	a	
95-48-7	2-METHYLPHENOL (o-CRESOL)	**< 105**		ug/Kg	2	105	63	8270D/3540C	CO	MSQS_171003	a	
106-44-5	4-METHYLPHENOL (p-CRESOL)	**< 105**		ug/Kg	2	105	670	8270D/3540C	CO	MSQS_171003	a	
105-67-9	2,4-DIMETHYLPHENOL	**< 105**		ug/Kg	2	105	29	8270D/3540C	CO	MSQS_171003	a	
87-86-5	PENTACHLOROPHENOL	**< 525**		ug/Kg	2	525	360	8270D/3540C	CO	MSQS_171003	a	
100-51-6	BENZYL ALCOHOL	**< 105**		ug/Kg	2	105	57	8270D/3540C	CO	MSQS_171003	a	
65-85-0	BENZOIC ACID	**1030**		ug/Kg	2	420	650	8270D/3540C	CO	MSQS_171003	a	

Notes:

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Portland, OR	*Microbiology/Chemistry (c)*	9150 SW Pioneer Ct Ste W	Wilsonville, OR 97070	503.682.7802
Corvallis, OR	*Microbiology (d)*	540 SW Third Street	Corvallis, OR 97333	541.753.4946

WSDOE Lab C567

Marine Sediment Quality Standards
Chemical Criteria
WAC 173-204-320

Revised - 10-20-17

Client Name: Whatcom Environmental Services
228 E. Champion Street, Suite 101
Bellingham, WA 98225

Reference Number: **17-26654**
Project: Lovric's SeaCraft

Lab Number: 58346
Field ID: B-1
Sample Description:
Matrix: Soil
Sample Date: 9/26/17

Report Date: 10/19/17
Date Analyzed: 10/10/17
Approved by: anp,bj,pdm
Authorized by:

Patrick Miller, MS
QA Officer

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	Metals											
7440-38-2	ARSENIC	**4.85**		mg/Kg	1	0.72	57	6010B/3051	ANP	6010B_17101(	a	
7440-43-9	CADMIUM	**< 0.72**		mg/Kg	1	0.72	5.1	6010B/3051	ANP	6010B_17101(	a	
7440-47-3	CHROMIUM	**25.0**		mg/Kg	1	0.72	260	6010B/3051	ANP	6010B_17101(	a	
7440-50-8	COPPER	**61.3**		mg/Kg	1	0.72	390	6010B/3051	ANP	6010B_17101(	a	
7439-92-1	LEAD	**25.4**		mg/Kg	1	0.72	450	6010B/3051	ANP	6010B_17101(	a	
7439-97-6	MERCURY	**0.130**		mg/Kg	1	0.008	0.41	7471A	RHF	7471A_17101(	a	
7440-22-4	SILVER	**< 0.72**		mg/Kg	1	0.72	6.1	6010B/3051	ANP	6010B_17101(	a	
7440-66-6	ZINC	**120**		mg/Kg	1	0.72	410	6010B/3051	ANP	6010B_17101(	a	
	Polynuclear Aromatic Hydrocarbons (PAHs)											
	LOW MOLECULAR WT PAH	**14.6**		mg/Kg			370	8270D/3540C	CO	MSQS_171003	a	
91-20-3	NAPHTHALENE	**0.17**		mg/Kg	2	0.08	99	8270D/3540C	CO	MSQS_171003	a	
208-96-8	ACENAPHTHYLENE	**0.12**		mg/Kg	2	0.08	66	8270D/3540C	CO	MSQS_171003	a	
83-32-9	ACENAPTHENE	**0.12**		mg/Kg	2	0.08	16	8270D/3540C	CO	MSQS_171003	a	
86-73-7	FLUORENE	**1.13**		mg/Kg	2	0.08	23	8270D/3540C	CO	MSQS_171003	a	
85-01-8	PHENANTHRENE	**5.1**		mg/Kg	2	0.08	100	8270D/3540C	CO	MSQS_171003	a	
120-12-7	ANTHRACENE	**7.74**		mg/Kg	2	0.08	220	8270D/3540C	CO	MSQS_171003	a	
91-57-6	2-METHYLNAPHTHALENE	**0.18**		mg/Kg	2	0.08	38	8270D/3540C	CO	MSQS_171003	a	
	HIGH MOLECULAR WT PAH	**14.9**		mg/Kg			960	8270D/3540C	CO	MSQS_171003	a	
206-44-0	FLUORANTHENE	**5.36**		mg/Kg	2	0.08	160	8270D/3540C	CO	MSQS_171003	a	
129-00-0	PYRENE	**3.65**		mg/Kg	2	0.08	1000	8270D/3540C	CO	MSQS_171003	a	
56-55-3	BENZ[A]ANTHRACENE	**1.07**		mg/Kg	2	0.08	110	8270D/3540C	CO	MSQS_171003	a	
218-01-9	CHRYSENE	**1.65**		mg/Kg	2	0.08	110	8270D/3540C	CO	MSQS_171003	a	

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If you have any questions concerning this report contact us at the above phone number.

Form: cSediment.rpt

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	TOTAL BENZOFLUORANTHENES	**1.65**		mg/Kg	2	0.08	230	8270D/3540C	CO	MSQS_171003	a	
50-32-8	BENZO[A]PYRENE	**0.75**		mg/Kg	2	0.08	99	8270D/3540C	CO	MSQS_171003	a	
193-39-5	INDENO[1,2,3,C,D]PYRENE	**0.38**		mg/Kg	2	0.08	34	8270D/3540C	CO	MSQS_171003	a	
53-70-3	DIBENZO[A,H]ANTHRACENE	**0.08**		mg/Kg	2	0.08	12	8270D/3540C	CO	MSQS_171003	a	
191-24-2	BENZO[G,H,I]PERYLENE	**0.35**		mg/Kg	2	0.08	31	8270D/3540C	CO	MSQS_171003	a	
	Base/Neutral Extractables											
95-50-1	1,2 - DICHLOROBENZENE	**< 0.08**		mg/Kg	2	0.08	2.3	8270D/3540C	CO	MSQS_171003	a	
106-46-7	1,4 - DICHLOROBENZENE	**< 0.08**		mg/Kg	2	0.08	3.1	8270D/3540C	CO	MSQS_171003	a	
120-82-1	1,2,4-TRICHLOROBENZENE	**< 0.08**		mg/Kg	2	0.08	0.81	8270D/3540C	CO	MSQS_171003	a	
118-74-1	HEXACHLOROBENZENE	**< 0.08**		mg/Kg	2	0.08	0.38	8270D/3540C	CO	MSQS_171003	a	
131-11-3	DIMETHYL PHTHALATE	**< 0.08**		mg/Kg	2	0.08	53	8270D/3540C	CO	MSQS_171003	a	
84-66-2	DIETHYL PHTHALATE	**0.1**		mg/Kg	2	0.08	61	8270D/3540C	CO	MSQS_171003	a	
84-74-2	DI-N-BUTYL PHTHALATE	**0.35**		mg/Kg	2	0.08	220	8270D/3540C	CO	MSQS_171003	a	
85-68-7	BENZYL BUTYL PHTHALATE	**< 0.08**		mg/Kg	2	0.08	4.9	8270D/3540C	CO	MSQS_171003	a	
117-81-7	DI(2-ETHYLHEXYL)PHTHALATE	**0.23**		mg/Kg	2	0.08	47	8270D/3540C	CO	MSQS_171003	a	
117-84-0	DI-N-OCTYL PHTHALATE	**< 0.08**		mg/Kg	2	0.08	58	8270D/3540C	CO	MSQS_171003	a	
132-64-9	DIBENZOFURAN	**0.41**		mg/Kg	2	0.08	15	8270D/3540C	CO	MSQS_171003	a	
87-68-3	HEXACHLOROBUTADIENE	**< 0.08**		mg/Kg	2	0.08	3.9	8270D/3540C	CO	MSQS_171003	a	
55-18-5	N-NITROSODIPHENYLAMINE	**< 0.08**		mg/Kg	2	0.08	11	8270D/3540C	CO	MSQS_171003	a	
1336-36-3	PCBS (Total Aroclors)	**< 0.09**		mg/Kg	2	0.09	12	8082/3540C	CO	MSQS_171003	a	
	Acid Extractables											
108-95-2	PHENOL	**< 80**		ug/Kg	2	80	420	8270D/3540C	CO	MSQS_171003	a	
95-48-7	2-METHYLPHENOL (o-CRESOL)	**< 80**		ug/Kg	2	80	63	8270D/3540C	CO	MSQS_171003	a	
106-44-5	4-METHYLPHENOL (p-CRESOL)	**< 80**		ug/Kg	2	80	670	8270D/3540C	CO	MSQS_171003	a	
105-67-9	2,4-DIMETHYLPHENOL	**< 80**		ug/Kg	2	80	29	8270D/3540C	CO	MSQS_171003	a	
87-86-5	PENTACHLOROPHENOL	**< 400**		ug/Kg	2	400	360	8270D/3540C	CO	MSQS_171003	a	
100-51-6	BENZYL ALCOHOL	**< 80**		ug/Kg	2	80	57	8270D/3540C	CO	MSQS_171003	a	
65-85-0	BENZOIC ACID	**670**		ug/Kg	2	320	650	8270D/3540C	CO	MSQS_171003	a	

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WSDOE Lab C567

Marine Sediment Quality Standards
Chemical Criteria
WAC 173-204-320

Revised - 10-20-17

Client Name: Whatcom Environmental Services
228 E. Champion Street, Suite 101
Bellingham, WA 98225

Reference Number: **17-26654**
Project: Lovric's SeaCraft

Lab Number: 58347
Field ID: B-3
Sample Description:
Matrix: Soil
Sample Date: 9/27/17

Report Date: 10/19/17
Date Analyzed: 10/10/17
Approved by: anp,bj,pdm
Authorized by:

Patrick Miller, MS
QA Officer

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	Metals											
7440-38-2	ARSENIC	**1.83**		mg/Kg	1	0.61	57	6010B/3051	ANP	6010B_17101(	a	
7440-43-9	CADMIUM	**< 0.61**		mg/Kg	1	0.61	5.1	6010B/3051	ANP	6010B_17101(	a	
7440-47-3	CHROMIUM	**22.7**		mg/Kg	1	0.61	260	6010B/3051	ANP	6010B_17101(	a	
7440-50-8	COPPER	**29.3**		mg/Kg	1	0.61	390	6010B/3051	ANP	6010B_17101(	a	
7439-92-1	LEAD	**7.17**		mg/Kg	1	0.61	450	6010B/3051	ANP	6010B_17101(	a	
7439-97-6	MERCURY	**0.049**		mg/Kg	1	0.008	0.41	7471A	RHF	7471A_17101(	a	
7440-22-4	SILVER	**< 0.61**		mg/Kg	1	0.61	6.1	6010B/3051	ANP	6010B_17101(	a	
7440-66-6	ZINC	**46.4**		mg/Kg	1	0.61	410	6010B/3051	ANP	6010B_17101(	a	
	Polynuclear Aromatic Hydrocarbons (PAHs)											
	LOW MOLECULAR WT PAH	**0.4**		mg/Kg			370	8270D/3540C	CO	MSQS_171003	a	
91-20-3	NAPHTHALENE	**0.09**		mg/Kg	1	0.07	99	8270D/3540C	CO	MSQS_171003	a	
208-96-8	ACENAPHTHYLENE	**< 0.07**		mg/Kg	1	0.07	66	8270D/3540C	CO	MSQS_171003	a	
83-32-9	ACENAPTHENE	**< 0.07**		mg/Kg	1	0.07	16	8270D/3540C	CO	MSQS_171003	a	
86-73-7	FLUORENE	**< 0.07**		mg/Kg	1	0.07	23	8270D/3540C	CO	MSQS_171003	a	
85-01-8	PHENANTHRENE	**0.2**		mg/Kg	1	0.07	100	8270D/3540C	CO	MSQS_171003	a	
120-12-7	ANTHRACENE	**0.07**		mg/Kg	1	0.07	220	8270D/3540C	CO	MSQS_171003	a	
91-57-6	2-METHYLNAPHTHALENE	**0.04**		mg/Kg	1	0.07	38	8270D/3540C	CO	MSQS_171003	a	
	HIGH MOLECULAR WT PAH	**3.4**		mg/Kg			960	8270D/3540C	CO	MSQS_171003	a	
206-44-0	FLUORANTHENE	**0.67**		mg/Kg	1	0.07	160	8270D/3540C	CO	MSQS_171003	a	
129-00-0	PYRENE	**0.65**		mg/Kg	1	0.07	1000	8270D/3540C	CO	MSQS_171003	a	
56-55-3	BENZ[A]ANTHRACENE	**0.38**		mg/Kg	1	0.07	110	8270D/3540C	CO	MSQS_171003	a	
218-01-9	CHRYSENE	**0.41**		mg/Kg	1	0.07	110	8270D/3540C	CO	MSQS_171003	a	

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Form: cSediment.rpt

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	TOTAL BENZOFLUORANTHENES	**0.72**		mg/Kg	1	0.07	230	8270D/3540C	CO	MSQS_171003	a	
50-32-8	BENZO[A]PYRENE	**0.3**		mg/Kg	1	0.07	99	8270D/3540C	CO	MSQS_171003	a	
193-39-5	INDENO[1,2,3,C,D]PYRENE	**0.15**		mg/Kg	1	0.07	34	8270D/3540C	CO	MSQS_171003	a	
53-70-3	DIBENZO[A,H]ANTHRACENE	**< 0.07**		mg/Kg	1	0.07	12	8270D/3540C	CO	MSQS_171003	a	
191-24-2	BENZO[G,H,I]PERYLENE	**0.16**		mg/Kg	1	0.07	31	8270D/3540C	CO	MSQS_171003	a	
	Base/Neutral Extractables											
95-50-1	1,2 - DICHLOROBENZENE	**< 0.07**		mg/Kg	1	0.07	2.3	8270D/3540C	CO	MSQS_171003	a	
106-46-7	1,4 - DICHLOROBENZENE	**< 0.07**		mg/Kg	1	0.07	3.1	8270D/3540C	CO	MSQS_171003	a	
120-82-1	1,2,4-TRICHLOROBENZENE	**< 0.07**		mg/Kg	1	0.07	0.81	8270D/3540C	CO	MSQS_171003	a	
118-74-1	HEXACHLOROBENZENE	**< 0.07**		mg/Kg	1	0.07	0.38	8270D/3540C	CO	MSQS_171003	a	
131-11-3	DIMETHYL PHTHALATE	**< 0.07**		mg/Kg	1	0.07	53	8270D/3540C	CO	MSQS_171003	a	
84-66-2	DIETHYL PHTHALATE	**0.09**		mg/Kg	1	0.07	61	8270D/3540C	CO	MSQS_171003	a	
84-74-2	DI-N-BUTYL PHTHALATE	**0.33**		mg/Kg	1	0.07	220	8270D/3540C	CO	MSQS_171003	a	
85-68-7	BENZYL BUTYL PHTHALATE	**< 0.07**		mg/Kg	1	0.07	4.9	8270D/3540C	CO	MSQS_171003	a	
117-81-7	DI(2-ETHYLHEXYL)PHTHALATE	**0.16**		mg/Kg	1	0.07	47	8270D/3540C	CO	MSQS_171003	a	
117-84-0	DI-N-OCTYL PHTHALATE	**< 0.07**		mg/Kg	1	0.07	58	8270D/3540C	CO	MSQS_171003	a	
132-64-9	DIBENZOFURAN	**< 0.07**		mg/Kg	1	0.07	15	8270D/3540C	CO	MSQS_171003	a	
87-68-3	HEXACHLOROBUTADIENE	**< 0.07**		mg/Kg	1	0.07	3.9	8270D/3540C	CO	MSQS_171003	a	
55-18-5	N-NITROSODIPHENYLAMINE	**< 0.07**		mg/Kg	1	0.07	11	8270D/3540C	CO	MSQS_171003	a	
1336-36-3	PCBS (Total Aroclors)	**< 0.07**		mg/Kg	1	0.07	12	8082/3540C	CO	MSQS_171003	a	
	Acid Extractables											
108-95-2	PHENOL	**< 70**		ug/Kg	1	70	420	8270D/3540C	CO	MSQS_171003	a	
95-48-7	2-METHYLPHENOL (o-CRESOL)	**< 70**		ug/Kg	1	70	63	8270D/3540C	CO	MSQS_171003	a	
106-44-5	4-METHYLPHENOL (p-CRESOL)	**< 70**		ug/Kg	1	70	670	8270D/3540C	CO	MSQS_171003	a	
105-67-9	2,4-DIMETHYLPHENOL	**< 70**		ug/Kg	1	70	29	8270D/3540C	CO	MSQS_171003	a	
87-86-5	PENTACHLOROPHENOL	**< 350**		ug/Kg	1	350	360	8270D/3540C	CO	MSQS_171003	a	
100-51-6	BENZYL ALCOHOL	**< 70**		ug/Kg	1	70	57	8270D/3540C	CO	MSQS_171003	a	
65-85-0	BENZOIC ACID	**650**		ug/Kg	1	280	650	8270D/3540C	CO	MSQS_171003	a	

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Corvallis, OR	*Microbiology (d)*	540 SW Third Street	Corvallis, OR 97333	541.753.4946

WSDOE Lab C567

Marine Sediment Quality Standards
Chemical Criteria
WAC 173-204-320

Revised - 10-20-17

Client Name: Whatcom Environmental Services
228 E. Champion Street, Suite 101
Bellingham, WA 98225

Reference Number: **17-26654**
Project: Lovric's SeaCraft

Lab Number: 58348
Field ID: B-4
Sample Description:
Matrix: Soil
Sample Date: 9/26/17

Report Date: 10/19/17
Date Analyzed: 10/10/17
Approved by: anp,bj,pdm
Authorized by:

Patrick Miller, MS
QA Officer

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	Metals											
7440-38-2	ARSENIC	**1.58**		mg/Kg	1	0.93	57	6010B/3051	ANP	6010B_17101(	a	
7440-43-9	CADMIUM	**< 0.93**		mg/Kg	1	0.93	5.1	6010B/3051	ANP	6010B_17101(	a	
7440-47-3	CHROMIUM	**31.3**		mg/Kg	1	0.93	260	6010B/3051	ANP	6010B_17101(	a	
7440-50-8	COPPER	**26.3**		mg/Kg	1	0.93	390	6010B/3051	ANP	6010B_17101(	a	
7439-92-1	LEAD	**6.11**		mg/Kg	1	0.93	450	6010B/3051	ANP	6010B_17101(	a	
7439-97-6	MERCURY	**0.1866**		mg/Kg	1	0.083	0.41	7471A	RHF	7471A_17101(	a	
7440-22-4	SILVER	**< 0.93**		mg/Kg	1	0.93	6.1	6010B/3051	ANP	6010B_17101(	a	
7440-66-6	ZINC	**63.2**		mg/Kg	1	0.93	410	6010B/3051	ANP	6010B_17101(	a	
	Polynuclear Aromatic Hydrocarbons (PAHs)											
	LOW MOLECULAR WT PAH	**1.9**		mg/Kg			370	8270D/3540C	CO	MSQS_171003	a	
91-20-3	NAPHTHALENE	**0.18**		mg/Kg	2	0.1	99	8270D/3540C	CO	MSQS_171003	a	
208-96-8	ACENAPHTHYLENE	**0.14**		mg/Kg	2	0.1	66	8270D/3540C	CO	MSQS_171003	a	
83-32-9	ACENAPTHENE	**0.18**		mg/Kg	2	0.1	16	8270D/3540C	CO	MSQS_171003	a	
86-73-7	FLUORENE	**0.18**		mg/Kg	2	0.1	23	8270D/3540C	CO	MSQS_171003	a	
85-01-8	PHENANTHRENE	**0.62**		mg/Kg	2	0.1	100	8270D/3540C	CO	MSQS_171003	a	
120-12-7	ANTHRACENE	**0.48**		mg/Kg	2	0.1	220	8270D/3540C	CO	MSQS_171003	a	
91-57-6	2-METHYLNAPHTHALENE	**0.07**		mg/Kg	2	0.1	38	8270D/3540C	CO	MSQS_171003	a	
	HIGH MOLECULAR WT PAH	**17.9**		mg/Kg			960	8270D/3540C	CO	MSQS_171003	a	
206-44-0	FLUORANTHENE	**6.5**		mg/Kg	2	0.1	160	8270D/3540C	CO	MSQS_171003	a	
129-00-0	PYRENE	**4.67**		mg/Kg	2	0.1	1000	8270D/3540C	CO	MSQS_171003	a	
56-55-3	BENZ[A]ANTHRACENE	**1.12**		mg/Kg	2	0.1	110	8270D/3540C	CO	MSQS_171003	a	
218-01-9	CHRYSENE	**1.94**		mg/Kg	2	0.1	110	8270D/3540C	CO	MSQS_171003	a	

Notes:

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Units - mg/Kg is parts per million, mg/Kg OC is parts per million in terms of Organic Carbon, ug/Kg is parts per billion.
Practical Quantitation Limit or PQL is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.
Maximum Allowable is taken from Table 1 "Marine Sediment Quality Standards Chemical Criteria" in WAC 173-204-320.
Method - The value listed is the Analytical Method along with the Analytical Prep Mehtod separated by a forward slash.
Batch - The analytical batch number identifies samples that were analyzed together in a group. It is also associated with all quality control processed in that sample group.

If you have any questions concerning this report contact us at the above phone number.

Form: cSediment.rpt

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	TOTAL BENZOFLUORANTHENES	**1.95**		mg/Kg	2	0.1	230	8270D/3540C	CO	MSQS_171003	a	
50-32-8	BENZO[A]PYRENE	**0.75**		mg/Kg	2	0.1	99	8270D/3540C	CO	MSQS_171003	a	
193-39-5	INDENO[1,2,3,C,D]PYRENE	**0.43**		mg/Kg	2	0.1	34	8270D/3540C	CO	MSQS_171003	a	
53-70-3	DIBENZO[A,H]ANTHRACENE	**0.11**		mg/Kg	2	0.1	12	8270D/3540C	CO	MSQS_171003	a	
191-24-2	BENZO[G,H,I]PERYLENE	**0.43**		mg/Kg	2	0.1	31	8270D/3540C	CO	MSQS_171003	a	
	Base/Neutral Extractables											
95-50-1	1,2 - DICHLOROBENZENE	**< 0.1**		mg/Kg	2	0.1	2.3	8270D/3540C	CO	MSQS_171003	a	
106-46-7	1,4 - DICHLOROBENZENE	**< 0.1**		mg/Kg	2	0.1	3.1	8270D/3540C	CO	MSQS_171003	a	
120-82-1	1,2,4-TRICHLOROBENZENE	**< 0.1**		mg/Kg	2	0.1	0.81	8270D/3540C	CO	MSQS_171003	a	
118-74-1	HEXACHLOROBENZENE	**< 0.1**		mg/Kg	2	0.1	0.38	8270D/3540C	CO	MSQS_171003	a	
131-11-3	DIMETHYL PHTHALATE	**< 0.1**		mg/Kg	2	0.1	53	8270D/3540C	CO	MSQS_171003	a	
84-66-2	DIETHYL PHTHALATE	**0.16**		mg/Kg	2	0.1	61	8270D/3540C	CO	MSQS_171003	a	
84-74-2	DI-N-BUTYL PHTHALATE	**0.34**		mg/Kg	2	0.1	220	8270D/3540C	CO	MSQS_171003	a	
85-68-7	BENZYL BUTYL PHTHALATE	**< 0.1**		mg/Kg	2	0.1	4.9	8270D/3540C	CO	MSQS_171003	a	
117-81-7	DI(2-ETHYLHEXYL)PHTHALATE	**0.26**		mg/Kg	2	0.1	47	8270D/3540C	CO	MSQS_171003	a	
117-84-0	DI-N-OCTYL PHTHALATE	**< 0.1**		mg/Kg	2	0.1	58	8270D/3540C	CO	MSQS_171003	a	
132-64-9	DIBENZOFURAN	**0.12**		mg/Kg	2	0.1	15	8270D/3540C	CO	MSQS_171003	a	
87-68-3	HEXACHLOROBUTADIENE	**< 0.1**		mg/Kg	2	0.1	3.9	8270D/3540C	CO	MSQS_171003	a	
55-18-5	N-NITROSODIPHENYLAMINE	**< 0.1**		mg/Kg	2	0.1	11	8270D/3540C	CO	MSQS_171003	a	
1336-36-3	PCBS (Total Aroclors)	**< 0.1**		mg/Kg	2	0.1	12	8082/3540C	CO	MSQS_171003	a	
	Acid Extractables											
108-95-2	PHENOL	**< 100**		ug/Kg	2	100	420	8270D/3540C	CO	MSQS_171003	a	
95-48-7	2-METHYLPHENOL (o-CRESOL)	**< 100**		ug/Kg	2	100	63	8270D/3540C	CO	MSQS_171003	a	
106-44-5	4-METHYLPHENOL (p-CRESOL)	**< 100**		ug/Kg	2	100	670	8270D/3540C	CO	MSQS_171003	a	
105-67-9	2,4-DIMETHYLPHENOL	**< 100**		ug/Kg	2	100	29	8270D/3540C	CO	MSQS_171003	a	
87-86-5	PENTACHLOROPHENOL	**< 500**		ug/Kg	2	500	360	8270D/3540C	CO	MSQS_171003	a	
100-51-6	BENZYL ALCOHOL	**< 100**		ug/Kg	2	100	57	8270D/3540C	CO	MSQS_171003	a	
65-85-0	BENZOIC ACID	**520**		ug/Kg	2	400	650	8270D/3540C	CO	MSQS_171003	a	

Notes:

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Maximum Allowable is taken from Table 1 "Marine Sediment Quality Standards Chemical Criteria" in WAC 173-204-320.
Method - The value listed is the Analytical Method along with the Analytical Prep Mehtod separated by a forward slash.
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Bellingham, WA	*Microbiology (b)*	805 Orchard Dr Ste 4	Bellingham, WA 98225	360.715.1212
Portland, OR	*Microbiology/Chemistry (c)*	9150 SW Pioneer Ct Ste W	Wilsonville, OR 97070	503.682.7802
Corvallis, OR	*Microbiology (d)*	540 SW Third Street	Corvallis, OR 97333	541.753.4946

WSDOE Lab C567

Marine Sediment Quality Standards
Chemical Criteria
WAC 173-204-320

Revised - 10-20-17

Client Name: Whatcom Environmental Services
228 E. Champion Street, Suite 101
Bellingham, WA 98225

Reference Number: **17-26654**
Project: Lovric's SeaCraft

Lab Number: 58349
Field ID: B-5
Sample Description:
Matrix: Soil
Sample Date: 9/26/17

Report Date: 10/19/17
Date Analyzed: 10/10/17
Approved by: anp,bj,pdm
Authorized by:

Patrick Miller, MS
QA Officer

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	Metals											
7440-38-2	ARSENIC	**2.10**		mg/Kg	1	0.78	57	6010B/3051	ANP	6010B_17101(	a	
7440-43-9	CADMIUM	**< 0.78**		mg/Kg	1	0.78	5.1	6010B/3051	ANP	6010B_17101(	a	
7440-47-3	CHROMIUM	**25.7**		mg/Kg	1	0.78	260	6010B/3051	ANP	6010B_17101(	a	
7440-50-8	COPPER	**23.7**		mg/Kg	1	0.78	390	6010B/3051	ANP	6010B_17101(	a	
7439-92-1	LEAD	**< 0.78**		mg/Kg	1	0.78	450	6010B/3051	ANP	6010B_17101(	a	
7439-97-6	MERCURY	**0.046**		mg/Kg	1	0.008	0.41	7471A	RHF	7471A_17101(	a	
7440-22-4	SILVER	**< 0.78**		mg/Kg	1	0.78	6.1	6010B/3051	ANP	6010B_17101(	a	
7440-66-6	ZINC	**51.0**		mg/Kg	1	0.78	410	6010B/3051	ANP	6010B_17101(	a	
	Polynuclear Aromatic Hydrocarbons (PAHs)											
	LOW MOLECULAR WT PAH	**1.6**		mg/Kg			370	8270D/3540C	CO	MSQS_171003	a	
91-20-3	NAPHTHALENE	**0.12**	N1	mg/Kg	2	0.08	99	8270D/3540C	CO	MSQS_171003	a	Field Dup 27 mg/Kg-OC
208-96-8	ACENAPHTHYLENE	**0.1**		mg/Kg	2	0.08	66	8270D/3540C	CO	MSQS_171003	a	
83-32-9	ACENAPTHENE	**0.14**		mg/Kg	2	0.08	16	8270D/3540C	CO	MSQS_171003	a	
86-73-7	FLUORENE	**0.16**		mg/Kg	2	0.08	23	8270D/3540C	CO	MSQS_171003	a	
85-01-8	PHENANTHRENE	**0.67**		mg/Kg	2	0.08	100	8270D/3540C	CO	MSQS_171003	a	
120-12-7	ANTHRACENE	**0.32**		mg/Kg	2	0.08	220	8270D/3540C	CO	MSQS_171003	a	
91-57-6	2-METHYLNAPHTHALENE	**0.05**		mg/Kg	2	0.08	38	8270D/3540C	CO	MSQS_171003	a	
	HIGH MOLECULAR WT PAH	**7.2**		mg/Kg			960	8270D/3540C	CO	MSQS_171003	a	
206-44-0	FLUORANTHENE	**1.95**		mg/Kg	2	0.08	160	8270D/3540C	CO	MSQS_171003	a	
129-00-0	PYRENE	**1.47**		mg/Kg	2	0.08	1000	8270D/3540C	CO	MSQS_171003	a	
56-55-3	BENZ[A]ANTHRACENE	**0.51**		mg/Kg	2	0.08	110	8270D/3540C	CO	MSQS_171003	a	
218-01-9	CHRYSENE	**1.36**		mg/Kg	2	0.08	110	8270D/3540C	CO	MSQS_171003	a	

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Form: cSediment.rpt

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	TOTAL BENZOFLUORANTHENES	**1.06**		mg/Kg	2	0.08	230	8270D/3540C	CO	MSQS_171003	a	
50-32-8	BENZO[A]PYRENE	**0.43**		mg/Kg	2	0.08	99	8270D/3540C	CO	MSQS_171003	a	
193-39-5	INDENO[1,2,3,C,D]PYRENE	**0.24**		mg/Kg	2	0.08	34	8270D/3540C	CO	MSQS_171003	a	
53-70-3	DIBENZO[A,H]ANTHRACENE	**< 0.08**		mg/Kg	2	0.08	12	8270D/3540C	CO	MSQS_171003	a	
191-24-2	BENZO[G,H,I]PERYLENE	**0.22**		mg/Kg	2	0.08	31	8270D/3540C	CO	MSQS_171003	a	
	Base/Neutral Extractables											
95-50-1	1,2 - DICHLOROBENZENE	**< 0.08**		mg/Kg	2	0.08	2.3	8270D/3540C	CO	MSQS_171003	a	
106-46-7	1,4 - DICHLOROBENZENE	**< 0.08**		mg/Kg	2	0.08	3.1	8270D/3540C	CO	MSQS_171003	a	
120-82-1	1,2,4-TRICHLOROBENZENE	**< 0.08**		mg/Kg	2	0.08	0.81	8270D/3540C	CO	MSQS_171003	a	
118-74-1	HEXACHLOROBENZENE	**< 0.08**		mg/Kg	2	0.08	0.38	8270D/3540C	CO	MSQS_171003	a	
131-11-3	DIMETHYL PHTHALATE	**< 0.08**		mg/Kg	2	0.08	53	8270D/3540C	CO	MSQS_171003	a	
84-66-2	DIETHYL PHTHALATE	**0.18**		mg/Kg	2	0.08	61	8270D/3540C	CO	MSQS_171003	a	
84-74-2	DI-N-BUTYL PHTHALATE	**0.48**		mg/Kg	2	0.08	220	8270D/3540C	CO	MSQS_171003	a	
85-68-7	BENZYL BUTYL PHTHALATE	**< 0.08**		mg/Kg	2	0.08	4.9	8270D/3540C	CO	MSQS_171003	a	
117-81-7	DI(2-ETHYLHEXYL)PHTHALATE	**0.16**		mg/Kg	2	0.08	47	8270D/3540C	CO	MSQS_171003	a	
117-84-0	DI-N-OCTYL PHTHALATE	**< 0.08**		mg/Kg	2	0.08	58	8270D/3540C	CO	MSQS_171003	a	
132-64-9	DIBENZOFURAN	**0.09**		mg/Kg	2	0.08	15	8270D/3540C	CO	MSQS_171003	a	
87-68-3	HEXACHLOROBUTADIENE	**< 0.08**		mg/Kg	2	0.08	3.9	8270D/3540C	CO	MSQS_171003	a	
55-18-5	N-NITROSODIPHENYLAMINE	**< 0.08**		mg/Kg	2	0.08	11	8270D/3540C	CO	MSQS_171003	a	
1336-36-3	PCBS (Total Aroclors)	**< 0.08**		mg/Kg	2	0.08	12	8082/3540C	CO	MSQS_171003	a	
	Acid Extractables											
108-95-2	PHENOL	**< 75**		ug/Kg	2	75	420	8270D/3540C	CO	MSQS_171003	a	
95-48-7	2-METHYLPHENOL (o-CRESOL)	**< 75**		ug/Kg	2	75	63	8270D/3540C	CO	MSQS_171003	a	
106-44-5	4-METHYLPHENOL (p-CRESOL)	**< 75**		ug/Kg	2	75	670	8270D/3540C	CO	MSQS_171003	a	
105-67-9	2,4-DIMETHYLPHENOL	**< 75**		ug/Kg	2	75	29	8270D/3540C	CO	MSQS_171003	a	
87-86-5	PENTACHLOROPHENOL	**< 375**		ug/Kg	2	375	360	8270D/3540C	CO	MSQS_171003	a	
100-51-6	BENZYL ALCOHOL	**< 75**		ug/Kg	2	75	57	8270D/3540C	CO	MSQS_171003	a	
65-85-0	BENZOIC ACID	**534**	d1	ug/Kg	2	300	650	8270D/3540C	CO	MSQS_171003	a	

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Corvallis, OR	*Microbiology (d)*	540 SW Third Street	Corvallis, OR 97333	541.753.4946

WSDOE Lab C567

Marine Sediment Quality Standards
Chemical Criteria
WAC 173-204-320

Revised - 10-20-17

Client Name: Whatcom Environmental Services
228 E. Champion Street, Suite 101
Bellingham, WA 98225

Reference Number: **17-26654**
Project: Lovric's SeaCraft

Lab Number: 58350
Field ID: B-6
Sample Description:
Matrix: Soil
Sample Date: 9/26/17

Report Date: 10/19/17
Date Analyzed: 10/10/17
Approved by: anp,bj,pdm
Authorized by:

Patrick Miller, MS
QA Officer

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	Metals											
7440-38-2	ARSENIC	**2.44**		mg/Kg	1	0.76	57	6010B/3051	ANP	6010B_17101(	a	
7440-43-9	CADMIUM	**< 0.76**		mg/Kg	1	0.76	5.1	6010B/3051	ANP	6010B_17101(	a	
7440-47-3	CHROMIUM	**24.8**		mg/Kg	1	0.76	260	6010B/3051	ANP	6010B_17101(	a	
7440-50-8	COPPER	**18.0**		mg/Kg	1	0.76	390	6010B/3051	ANP	6010B_17101(	a	
7439-92-1	LEAD	**5.09**		mg/Kg	1	0.76	450	6010B/3051	ANP	6010B_17101(	a	
7439-97-6	MERCURY	**0.055**		mg/Kg	1	0.008	0.41	7471A	RHF	7471A_17101(	a	
7440-22-4	SILVER	**< 0.76**		mg/Kg	1	0.76	6.1	6010B/3051	ANP	6010B_17101(	a	
7440-66-6	ZINC	**45.8**		mg/Kg	1	0.76	410	6010B/3051	ANP	6010B_17101(	a	
	Polynuclear Aromatic Hydrocarbons (PAHs)											
	LOW MOLECULAR WT PAH	**0.5**		mg/Kg			370	8270D/3540C	CO	MSQS_171003	a	
91-20-3	NAPHTHALENE	**0.07**		mg/Kg	2	0.08	99	8270D/3540C	CO	MSQS_171003	a	
208-96-8	ACENAPHTHYLENE	**< 0.08**		mg/Kg	2	0.08	66	8270D/3540C	CO	MSQS_171003	a	
83-32-9	ACENAPTHENE	**< 0.08**		mg/Kg	2	0.08	16	8270D/3540C	CO	MSQS_171003	a	
86-73-7	FLUORENE	**< 0.08**		mg/Kg	2	0.08	23	8270D/3540C	CO	MSQS_171003	a	
85-01-8	PHENANTHRENE	**0.27**		mg/Kg	2	0.08	100	8270D/3540C	CO	MSQS_171003	a	
120-12-7	ANTHRACENE	**0.13**		mg/Kg	2	0.08	220	8270D/3540C	CO	MSQS_171003	a	
91-57-6	2-METHYLNAPHTHALENE	**0.06**		mg/Kg	2	0.08	38	8270D/3540C	CO	MSQS_171003	a	
	HIGH MOLECULAR WT PAH	**4.0**		mg/Kg			960	8270D/3540C	CO	MSQS_171003	a	
206-44-0	FLUORANTHENE	**0.7**		mg/Kg	2	0.08	160	8270D/3540C	CO	MSQS_171003	a	
129-00-0	PYRENE	**0.94**		mg/Kg	2	0.08	1000	8270D/3540C	CO	MSQS_171003	a	
56-55-3	BENZ[A]ANTHRACENE	**0.42**		mg/Kg	2	0.08	110	8270D/3540C	CO	MSQS_171003	a	
218-01-9	CHRYSENE	**0.64**		mg/Kg	2	0.08	110	8270D/3540C	CO	MSQS_171003	a	

Notes:

Flags are data qualifiers. If there are data qualifiers on your report definitions can be found on an accompanying sheet.
Units - mg/Kg is parts per million, mg/Kg OC is parts per million in terms of Organic Carbon, ug/Kg is parts per billion.
Practical Quantitation Limit or PQL is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.
Maximum Allowable is taken from Table 1 "Marine Sediment Quality Standards Chemical Criteria" in WAC 173-204-320.
Method - The value listed is the Analytical Method along with the Analytical Prep Mehtod separated by a forward slash.
Batch - The analytical batch number identifies samples that were analyzed together in a group. It is also associated with all quality control processed in that sample group.

If you have any questions concerning this report contact us at the above phone number.

Form: cSediment.rpt

CAS	Chemical Parameter	RESULT	Flag	Units	DF	PQL	Maximum Allowance	Method	Analyst	Batch	Lab	Comment
	TOTAL BENZOFLUORANTHENES	**0.66**		mg/Kg	2	0.08	230	8270D/3540C	CO	MSQS_171003	a	
50-32-8	BENZO[A]PYRENE	**0.31**		mg/Kg	2	0.08	99	8270D/3540C	CO	MSQS_171003	a	
193-39-5	INDENO[1,2,3,C,D]PYRENE	**0.17**		mg/Kg	2	0.08	34	8270D/3540C	CO	MSQS_171003	a	
53-70-3	DIBENZO[A,H]ANTHRACENE	**< 0.08**		mg/Kg	2	0.08	12	8270D/3540C	CO	MSQS_171003	a	
191-24-2	BENZO[G,H,I]PERYLENE	**0.15**		mg/Kg	2	0.08	31	8270D/3540C	CO	MSQS_171003	a	
	Base/Neutral Extractables											
95-50-1	1,2 - DICHLOROBENZENE	**< 0.08**		mg/Kg	2	0.08	2.3	8270D/3540C	CO	MSQS_171003	a	
106-46-7	1,4 - DICHLOROBENZENE	**< 0.08**		mg/Kg	2	0.08	3.1	8270D/3540C	CO	MSQS_171003	a	
120-82-1	1,2,4-TRICHLOROBENZENE	**< 0.08**		mg/Kg	2	0.08	0.81	8270D/3540C	CO	MSQS_171003	a	
118-74-1	HEXACHLOROBENZENE	**< 0.08**		mg/Kg	2	0.08	0.38	8270D/3540C	CO	MSQS_171003	a	
131-11-3	DIMETHYL PHTHALATE	**< 0.08**		mg/Kg	2	0.08	53	8270D/3540C	CO	MSQS_171003	a	
84-66-2	DIETHYL PHTHALATE	**0.19**		mg/Kg	2	0.08	61	8270D/3540C	CO	MSQS_171003	a	
84-74-2	DI-N-BUTYL PHTHALATE	**0.41**		mg/Kg	2	0.08	220	8270D/3540C	CO	MSQS_171003	a	
85-68-7	BENZYL BUTYL PHTHALATE	**< 0.08**		mg/Kg	2	0.08	4.9	8270D/3540C	CO	MSQS_171003	a	
117-81-7	DI(2-ETHYLHEXYL)PHTHALATE	**0.18**		mg/Kg	2	0.08	47	8270D/3540C	CO	MSQS_171003	a	
117-84-0	DI-N-OCTYL PHTHALATE	**< 0.08**		mg/Kg	2	0.08	58	8270D/3540C	CO	MSQS_171003	a	
132-64-9	DIBENZOFURAN	**< 0.08**		mg/Kg	2	0.08	15	8270D/3540C	CO	MSQS_171003	a	
87-68-3	HEXACHLOROBUTADIENE	**< 0.08**		mg/Kg	2	0.08	3.9	8270D/3540C	CO	MSQS_171003	a	
55-18-5	N-NITROSODIPHENYLAMINE	**< 0.08**		mg/Kg	2	0.08	11	8270D/3540C	CO	MSQS_171003	a	
1336-36-3	PCBS (Total Aroclors)	**< 0.08**		mg/Kg	2	0.08	12	8082/3540C	CO	MSQS_171003	a	
	Acid Extractables											
108-95-2	PHENOL	**< 80**		ug/Kg	2	80	420	8270D/3540C	CO	MSQS_171003	a	
95-48-7	2-METHYLPHENOL (o-CRESOL)	**< 80**		ug/Kg	2	80	63	8270D/3540C	CO	MSQS_171003	a	
106-44-5	4-METHYLPHENOL (p-CRESOL)	**< 80**		ug/Kg	2	80	670	8270D/3540C	CO	MSQS_171003	a	
105-67-9	2,4-DIMETHYLPHENOL	**< 80**		ug/Kg	2	80	29	8270D/3540C	CO	MSQS_171003	a	
87-86-5	PENTACHLOROPHENOL	**< 400**		ug/Kg	2	400	360	8270D/3540C	CO	MSQS_171003	a	
100-51-6	BENZYL ALCOHOL	**< 80**		ug/Kg	2	80	57	8270D/3540C	CO	MSQS_171003	a	
65-85-0	BENZOIC ACID	**480**	N1	ug/Kg	2	320	650	8270D/3540C	CO	MSQS_171003	a	

Notes:

Flags are data qualifiers. If there are data qualifiers on your report definitions can be found on an accompanying sheet.
Units - mg/Kg is parts per million, mg/Kg OC is parts per million in terms of Organic Carbon, ug/Kg is parts per billion.
Practical Quantitation Limit or PQL is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.
Maximum Allowable is taken from Table 1 "Marine Sediment Quality Standards Chemical Criteria" in WAC 173-204-320.
Method - The value listed is the Analytical Method along with the Analytical Prep Mehtod separated by a forward slash.
Batch - The analytical batch number identifies samples that were analyzed together in a group. It is also associated with all quality control processed in that sample group.

SAMPLE INDEPENDENT QUALITY CONTROL REPORT

Calibration Check

Reference Number: **17-26654**
Report Date: 10/19/17

Batch		Analyte	Result	True Value	Units	Method	% Recovery	Limits*	QC Qualifier	QC Type	Comment
6010B_171005A	2	ARSENIC	0.99	1	mg/L	6010B	99	90-110		CAL	
	2	CADMIUM	1.01	1	mg/L	6010B	101	90-110		CAL	
	2	CHROMIUM	1.01	1	mg/L	6010B	101	90-110		CAL	
	2	COPPER	0.99	1	mg/L	6010B	99	90-110		CAL	
	2	LEAD	1	1	mg/L	6010B	100	90-110		CAL	
	2	SILVER	0.5	0.5	mg/L	6010B	100	90-110		CAL	
	2	ZINC	1	1	mg/L	6010B	100	90-110		CAL	
6010B_171009A	2	CADMIUM	0.97	1	mg/L	6010B	97	90-110		CAL	
	2	CHROMIUM	0.98	1	mg/L	6010B	98	90-110		CAL	
	2	COPPER	0.91	1	mg/L	6010B	91	90-110		CAL	
	2	LEAD	1.01	1	mg/L	6010B	101	90-110		CAL	
	2	ZINC	0.93	1	mg/L	6010B	93	90-110		CAL	
6010B_171010A	2	ARSENIC	1.02	1	mg/L	6010B	102	90-110		CAL	
	2	CADMIUM	1.04	1	mg/L	6010B	104	90-110		CAL	
	2	CHROMIUM	1.03	1	mg/L	6010B	103	90-110		CAL	
	2	COPPER	1.01	1	mg/L	6010B	101	90-110		CAL	
	2	LEAD	1.05	1	mg/L	6010B	105	90-110		CAL	
	2	SILVER	0.53	0.5	mg/L	6010B	106	90-110		CAL	
	2	ZINC	1.05	1	mg/L	6010B	105	90-110		CAL	
7471A_171009	0	MERCURY	0.00198	0.00200	mg/L	7471A	99	85-115		CAL	
7471A_171016	0	MERCURY	0.00203	0.00200	mg/L	7471A	102	85-115		CAL	

*Notation:

% Recovery = (Result of Analysis)/(True Value) * 100

NA = Indicates % Recovery could not be calculated.

Limits are intended for water matrices only. These criteria are for guidance only when reported with soils/solids.

SAMPLE INDEPENDENT QUALITY CONTROL REPORT

Laboratory Fortified Blank

Reference Number: **17-26654**
Report Date: 10/19/17

Batch		Analyte	Result	True Value	Units	Method	% Recovery	Limits*	QC Qualifier	QC Type	Comment
6010B_171005A	0	ARSENIC	0.96	1	mg/L	6010B	96	85-115		LFB	
	0	CADMIUM	1.11	1	mg/L	6010B	111	85-115		LFB	
	0	CHROMIUM	0.94	1	mg/L	6010B	94	85-115		LFB	
	0	COPPER	0.92	1	mg/L	6010B	92	85-115		LFB	
	0	LEAD	0.87	1	mg/L	6010B	87	85-115		LFB	
	0	SILVER	0.53	0.5	mg/L	6010B	106	85-115		LFB	
	0	ZINC	1.11	1	mg/L	6010B	111	85-115		LFB	
6010B_171009A	0	CADMIUM	0.5	0.5	mg/L	6010B	100	85-115		LFB	
	0	CHROMIUM	0.52	0.5	mg/L	6010B	104	85-115		LFB	
	0	COPPER	0.49	0.5	mg/L	6010B	98	85-115		LFB	
	0	LEAD	0.55	0.5	mg/L	6010B	110	85-115		LFB	
	0	ZINC	0.51	0.5	mg/L	6010B	102	85-115		LFB	
6010B_171010A	0	ARSENIC	0.93	1	mg/L	6010B	93	85-115		LFB	
	0	CADMIUM	0.86	1	mg/L	6010B	86	85-115		LFB	
	0	CHROMIUM	0.92	1	mg/L	6010B	92	85-115		LFB	
	0	COPPER	0.89	1	mg/L	6010B	89	85-115		LFB	
	0	LEAD	0.94	1	mg/L	6010B	94	85-115		LFB	
	0	SILVER	0.55	0.5	mg/L	6010B	110	85-115		LFB	
	0	ZINC	0.86	1	mg/L	6010B	86	85-115		LFB	
7471A_171009	0	MERCURY	0.00211	0.00200	mg/L	7471A	106	85-115		LFB	
7471A_171016	0	MERCURY	0.00199	0.00200	mg/L	7471A	100	85-115		LFB	
MSQS_171003	0	PCBS (Total Aroclors)	0.16	0.2	mg/Kg	8082	80	85-115		LFB	
	0	1,2 - DICHLOROBENZENE	0.43	0.5	mg/Kg	8270D	86	32-129		LFB	
	0	1,2,4-TRICHLOROBENZENE	0.47	0.5	mg/Kg	8270D	94	44-142		LFB	
	0	1,4 - DICHLOROBENZENE	0.4	0.5	mg/Kg	8270D	80	20-124		LFB	
	0	2,4-DIMETHYLPHENOL	2.79	2.5	mg/Kg	8270D	112	32-119		LFB	
	0	2-METHYLNAPHTHALENE	0.5	0.5	mg/Kg	8270D	100	70-130		LFB	

*Notation:

% Recovery = (Result of Analysis)/(True Value) * 100

NA = Indicates % Recovery could not be calculated.

Limits are intended for water matrices only. These criteria are for guidance only when reported with soils/solids.

SAMPLE INDEPENDENT QUALITY CONTROL REPORT

Laboratory Fortified Blank

Reference Number: **17-26654**
Report Date: 10/19/17

Batch		Analyte	Result	True Value	Units	Method	% Recovery	Limits*	QC Qualifier	QC Type	Comment
MSQS_171003	0	2-METHYLPHENOL (o-CRESOL)	2.9	2.5	mg/Kg	8270D	116	40-160		LFB	
	0	4-METHYLPHENOL (p-CRESOL)	5.8	4.5	mg/Kg	8270D	129	25-125		LFB	
	0	ACENAPHTHYLENE	0.52	0.5	mg/Kg	8270D	104	33-145		LFB	
	0	ACENAPTHENE	0.45	0.5	mg/Kg	8270D	90	47-145		LFB	
	0	ANTHRACENE	0.46	0.5	mg/Kg	8270D	92	27-133		LFB	
	0	BENZ[A]ANTHRACENE	0.43	0.5	mg/Kg	8270D	86	33-143		LFB	
	0	BENZO[A]PYRENE	0.47	0.5	mg/Kg	8270D	94	17-163		LFB	
	0	BENZO[G,H,I]PERYLENE	0.48	0.5	mg/Kg	8270D	96	1-219		LFB	
	0	BENZOIC ACID	0.86	2	mg/Kg	8270D	43	70-130		LFB	
	0	BENZYL ALCOHOL	0.32	0.5	mg/Kg	8270D	64	35-140		LFB	
	0	BENZYL BUTYL PHTHALATE	0.47	0.5	mg/Kg	8270D	94	1-152		LFB	
	0	CHRYSENE	0.48	0.5	mg/Kg	8270D	96	17-168		LFB	
	0	DI(2-ETHYLHEXYL)PHTHALATE	0.55	0.5	mg/Kg	8270D	110	60-140		LFB	
	0	DIBENZO[A,H]ANTHRACENE	0.41	0.5	mg/Kg	8270D	82	1-227		LFB	
	0	DIBENZOFURAN	0.47	0.5	mg/Kg	8270D	94	50-130		LFB	
	0	DIETHYL PHTHALATE	0.6	0.5	mg/Kg	8270D	120	1-114		LFB	
	0	DIMETHYL PHTHALATE	0.59	0.5	mg/Kg	8270D	118	1-114		LFB	
	0	DI-N-BUTYL PHTHALATE	0.8	0.5	mg/Kg	8270D	160	1-118		LFB	
	0	DI-N-OCTYL PHTHALATE	0.49	0.5	mg/Kg	8270D	98	4-146		LFB	
	0	FLUORANTHENE	0.5	0.5	mg/Kg	8270D	100	26-137		LFB	
	0	FLUORENE	0.49	0.5	mg/Kg	8270D	98	59-121		LFB	
	0	HEXACHLOROBENZENE	0.5	0.5	mg/Kg	8270D	100	1-152		LFB	
	0	HEXACHLOROBUTADIENE	0.49	0.5	mg/Kg	8270D	98	24-116		LFB	
	0	INDENO[1,2,3,C,D]PYRENE	0.41	0.5	mg/Kg	8270D	82	1-171		LFB	
	0	NAPHTHALENE	0.48	0.5	mg/Kg	8270D	96	21-133		LFB	
	0	N-NITROSODIPHENYLAMINE	0.47	0.5	mg/Kg	8270D	94	70-130		LFB	
	0	PENTACHLOROPHENOL	2.02	2.5	mg/Kg	8270D	81	14-176		LFB	
	0	PHENANTHRENE	0.47	0.5	mg/Kg	8270D	94	54-120		LFB	
	0	PHENOL	1.84	2.5	mg/Kg	8270D	74	5-112		LFB	
	0	PYRENE	0.5	0.5	mg/Kg	8270D	100	52-115		LFB	
	0	TOTAL BENZOFLUORANTHENES	0.96	1	mg/Kg	8270D	96	70-130		LFB	

*Notation:

% Recovery = (Result of Analysis)/(True Value) * 100

NA = Indicates % Recovery could not be calculated.

Limits are intended for water matrices only. These criteria are for guidance only when reported with soils/solids.

SAMPLE INDEPENDENT QUALITY CONTROL REPORT

Laboratory Fortified Blank

Reference Number: **17-26654**
Report Date: 10/19/17

Batch	Analyte	Result	True Value	Units	Method	% Recovery	Limits*	QC Qualifier	QC Type	Comment

*Notation:

% Recovery = (Result of Analysis)/(True Value) * 100

NA = Indicates % Recovery could not be calculated.

Limits are intended for water matrices only. These criteria are for guidance only when reported with soils/solids.

SAMPLE INDEPENDENT QUALITY CONTROL REPORT

Laboratory Reagent Blank

Reference Number: **17-26654**
Report Date: 10/19/17

Batch		Analyte	Result	True Value	Units	Method	% Recovery	Limits*	QC Qualifier	QC Type	Comment
6010B_171005A	0	ARSENIC	ND		mg/L	6010B		0-0		LRB	
	0	CADMIUM	ND		mg/L	6010B		0-0		LRB	
	0	CHROMIUM	ND		mg/L	6010B		0-0		LRB	
	0	COPPER	ND		mg/L	6010B		0-0		LRB	
	0	LEAD	ND		mg/L	6010B		0-0		LRB	
	0	SILVER	ND		mg/L	6010B		0-0		LRB	
	0	ZINC	ND		mg/L	6010B		0-0		LRB	
6010B_171009A	0	CADMIUM	ND		mg/L	6010B		0-0		LRB	
	0	CHROMIUM	ND		mg/L	6010B		0-0		LRB	
	0	COPPER	ND		mg/L	6010B		0-0		LRB	
	0	LEAD	ND		mg/L	6010B		0-0		LRB	
	0	ZINC	ND		mg/L	6010B		0-0		LRB	
6010B_171010A	0	ARSENIC	ND		mg/L	6010B		0-0		LRB	
	0	CADMIUM	ND		mg/L	6010B		0-0		LRB	
	0	CHROMIUM	ND		mg/L	6010B		0-0		LRB	
	0	COPPER	ND		mg/L	6010B		0-0		LRB	
	0	LEAD	ND		mg/L	6010B		0-0		LRB	
	0	SILVER	ND		mg/L	6010B		0-0		LRB	
	0	ZINC	ND		mg/L	6010B		0-0		LRB	

*Notation:

% Recovery = (Result of Analysis)/(True Value) * 100

NA = Indicates % Recovery could not be calculated.

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SAMPLE INDEPENDENT QUALITY CONTROL REPORT

Method Blank

Reference Number: **17-26654**
Report Date: 10/19/17

Batch		Analyte	Result	True Value	Units	Method	% Recovery	Limits*	QC Qualifier	QC Type	Comment
350.1_171003bs	0	AMMONIA-N	ND		mg/L	350.1		0-0		MB	
350.1_171018bs	0	AMMONIA-N	ND		mg/L	350.1		0-0		MB	
6010B_171005A	0	ARSENIC	ND		mg/L	6010B		0-0		MB	
	0	CADMIUM	ND		mg/L	6010B		0-0		MB	
	0	CHROMIUM	ND		mg/L	6010B		0-0		MB	
	0	COPPER	0.01		mg/L	6010B		0-0		MB	
	0	LEAD	ND		mg/L	6010B		0-0		MB	
	0	SILVER	ND		mg/L	6010B		0-0		MB	
	0	ZINC	ND		mg/L	6010B		0-0		MB	
6010B_171009A	0	CADMIUM	ND		mg/L	6010B		0-0		MB	
	0	CHROMIUM	ND		mg/L	6010B		0-0		MB	
	0	COPPER	ND		mg/L	6010B		0-0		MB	
	0	LEAD	ND		mg/L	6010B		0-0		MB	
	0	ZINC	ND		mg/L	6010B		0-0		MB	
6010B_171010A	0	ARSENIC	ND		mg/L	6010B		0-0		MB	
	0	CADMIUM	ND		mg/L	6010B		0-0		MB	
	0	CHROMIUM	ND		mg/L	6010B		0-0		MB	
	0	COPPER	0.01		mg/L	6010B		0-0		MB	
	0	LEAD	ND		mg/L	6010B		0-0		MB	
	0	SILVER	ND		mg/L	6010B		0-0		MB	
	0	ZINC	0.01		mg/L	6010B		0-0		MB	
7471A_171009	0	MERCURY	ND		mg/L	7471A		0-0		MB	
7471A_171016	0	MERCURY	ND		mg/L	7471A		0-0		MB	
MSQS_171003	0	PCBS (Total Aroclors)	ND		mg/Kg	8082		0-0		MB	
	0	1,2 - DICHLOROBENZENE	ND		mg/Kg	8270D		0-0		MB	
	0	1,2,4-TRICHLOROBENZENE	ND		mg/Kg	8270D		0-0		MB	

*Notation:

% Recovery = (Result of Analysis)/(True Value) * 100

NA = Indicates % Recovery could not be calculated.

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SAMPLE INDEPENDENT QUALITY CONTROL REPORT

Method Blank

Reference Number: **17-26654**
Report Date: 10/19/17

Batch		Analyte	Result	True Value	Units	Method	% Recovery	Limits*	QC Qualifier	QC Type	Comment
MSQS_171003	0	1,4 - DICHLOROBENZENE	ND		mg/Kg	8270D		0-0		MB	
	0	2,4-DIMETHYLPHENOL	ND		mg/Kg	8270D		0-0		MB	
	0	2-METHYLNAPHTHALENE	ND		mg/Kg	8270D		0-0		MB	
	0	2-METHYLPHENOL (o-CRESOL)	ND		mg/Kg	8270D		0-0		MB	
	0	4-METHYLPHENOL (p-CRESOL)	ND		mg/Kg	8270D		0-0		MB	
	0	ACENAPHTHYLENE	ND		mg/Kg	8270D		0-0		MB	
	0	ACENAPTHENE	ND		mg/Kg	8270D		0-0		MB	
	0	ANTHRACENE	ND		mg/Kg	8270D		0-0		MB	
	0	BENZ[A]ANTHRACENE	ND		mg/Kg	8270D		0-0		MB	
	0	BENZO[A]PYRENE	ND		mg/Kg	8270D		0-0		MB	
	0	BENZO[G,H,I]PERYLENE	ND		mg/Kg	8270D		0-0		MB	
	0	BENZOIC ACID	ND		mg/Kg	8270D		0-0		MB	
	0	BENZYL ALCOHOL	ND		mg/Kg	8270D		0-0		MB	
	0	BENZYL BUTYL PHTHALATE	ND		mg/Kg	8270D		0-0		MB	
	0	CHRYSENE	ND		mg/Kg	8270D		0-0		MB	
	0	DI(2-ETHYLHEXYL)PHTHALATE	0.02		mg/Kg	8270D		0-0		MB	
	0	DIBENZO[A,H]ANTHRACENE	ND		mg/Kg	8270D		0-0		MB	
	0	DIBENZOFURAN	ND		mg/Kg	8270D		0-0		MB	
	0	DIETHYL PHTHALATE	0.08		mg/Kg	8270D		0-0		MB	
	0	DIMETHYL PHTHALATE	0.01		mg/Kg	8270D		0-0		MB	
	0	DI-N-BUTYL PHTHALATE	ND		mg/Kg	8270D		0-0		MB	
	0	DI-N-OCTYL PHTHALATE	ND		mg/Kg	8270D		0-0		MB	
	0	FLUORANTHENE	0.05		mg/Kg	8270D		0-0		MB	
	0	FLUORENE	ND		mg/Kg	8270D		0-0		MB	
	0	HEXACHLOROBENZENE	ND		mg/Kg	8270D		0-0		MB	
	0	HEXACHLOROBUTADIENE	ND		mg/Kg	8270D		0-0		MB	
	0	HIGH MOLECULAR WT PAH	ND		mg/Kg OC	8270D		0-0		MB	
	0	INDENO[1,2,3,C,D]PYRENE	ND		mg/Kg	8270D		0-0		MB	
	0	LOW MOLECULAR WT PAH	ND		mg/Kg OC*	8270D		0-0		MB	
	0	NAPHTHALENE	ND		mg/Kg	8270D		0-0		MB	
	0	N-NITROSODIPHENYLAMINE	ND		mg/Kg	8270D		0-0		MB	
	0	PENTACHLOROPHENOL	ND		mg/Kg	8270D		0-0		MB	

*Notation:

% Recovery = (Result of Analysis)/(True Value) * 100

NA = Indicates % Recovery could not be calculated.

Limits are intended for water matrices only. These criteria are for guidance only when reported with soils/solids.

SAMPLE INDEPENDENT QUALITY CONTROL REPORT

Method Blank

Reference Number: **17-26654**
Report Date: 10/19/17

Batch		Analyte	Result	True Value	Units	Method	% Recovery	Limits*	QC Qualifier	QC Type	Comment
MSQS_171003	0	PHENANTHRENE	ND		mg/Kg	8270D		0-0		MB	
	0	PHENOL	ND		mg/Kg	8270D		0-0		MB	
	0	PYRENE	ND		mg/Kg	8270D		0-0		MB	
	0	TOTAL BENZOFLUORANTHENES	ND		mg/Kg	8270D		0-0		MB	

*Notation:

% Recovery = (Result of Analysis)/(True Value) * 100

NA = Indicates % Recovery could not be calculated.

Limits are intended for water matrices only. These criteria are for guidance only when reported with soils/solids.

SAMPLE INDEPENDENT QUALITY CONTROL REPORT

Quality Control Sample

Reference Number: **17-26654**
Report Date: 10/19/17

Batch		Analyte	Result	True Value	Units	Method	% Recovery	Limits*	QC Qualifier	QC Type	Comment
6010B_171005A	0	ARSENIC	2	2	mg/L	6010B	100	90-110		QCS	
	0	CADMIUM	2	2	mg/L	6010B	100	90-110		QCS	
	0	CHROMIUM	2.02	2	mg/L	6010B	101	90-110		QCS	
	0	COPPER	2.08	2	mg/L	6010B	104	90-110		QCS	
	0	LEAD	1.93	2	mg/L	6010B	97	90-110		QCS	
	0	SILVER	0.5	0.5	mg/L	6010B	100	90-110		QCS	
	0	ZINC	1.97	2	mg/L	6010B	99	90-110		QCS	
6010B_171009A	0	CADMIUM	2.08	2	mg/L	6010B	104	90-110		QCS	
	0	CHROMIUM	2.06	2	mg/L	6010B	103	90-110		QCS	
	0	COPPER	1.98	2	mg/L	6010B	99	90-110		QCS	
	0	LEAD	2.07	2	mg/L	6010B	104	90-110		QCS	
	0	ZINC	2.04	2	mg/L	6010B	102	90-110		QCS	
6010B_171010A	0	ARSENIC	2.05	2	mg/L	6010B	103	90-110		QCS	
	0	CADMIUM	2	2	mg/L	6010B	100	90-110		QCS	
	0	CHROMIUM	2.01	2	mg/L	6010B	101	90-110		QCS	
	0	COPPER	2.1	2	mg/L	6010B	105	90-110		QCS	
	0	LEAD	2	2	mg/L	6010B	100	90-110		QCS	
	0	SILVER	0.52	0.5	mg/L	6010B	104	90-110		QCS	
	0	ZINC	2.01	2	mg/L	6010B	101	90-110		QCS	

*Notation:

% Recovery = (Result of Analysis)/(True Value) * 100

NA = Indicates % Recovery could not be calculated.

Limits are intended for water matrices only. These criteria are for guidance only when reported with soils/solids.

SAMPLE DEPENDENT
QUALITY CONTROL REPORT
Duplicate, Matrix Spike/Matrix Spike Duplicate and Confirmation Result Report

Batch	Sample	Analyte	Result	Duplicate Result	Units	%RPD	Limits	QC Qualifier	Type	Comments
Duplicate										
350.1_171003BS										
	55422	AMMONIA-N	ND	ND	mg/Kg	NA	0-20		DUP	
350.1_171018BS										
	58341	AMMONIA-N	72	60	mg/Kg	18.2	0-20		DUP	
6010B_171005A										
	57760	ARSENIC	ND	ND	mg/kg	NA	0-20		DUP	
	57760	CADMIUM	ND	ND	mg/kg	NA	0-20		DUP	
	57760	CHROMIUM	73.6	75.7	mg/kg	2.8	0-20		DUP	
	57760	COPPER	12.5	12.7	mg/kg	1.6	0-20		DUP	
	57760	LEAD	1.65	2.47	mg/kg	39.8	0-20	INH	DUP	
	57760	SILVER	ND	ND	mg/kg	NA	0-20		DUP	
	58343	ARSENIC	4.28	3.74	mg/Kg	13.5	0-20		DUP	
	58343	SILVER	ND	ND	mg/Kg	NA	0-20		DUP	
6010B_171009A										
	58343	CADMIUM	ND	ND	mg/Kg	NA	0-20		DUP	
	58343	CHROMIUM	41.7	37.6	mg/Kg	10.3	0-20		DUP	
	58343	COPPER	419	487	mg/Kg	15.0	0-20		DUP	
	58343	LEAD	28.3	42.3	mg/Kg	39.7	0-20	INH	DUP	
	58343	ZINC	471	572	mg/Kg	19.4	0-20		DUP	
6010B_171010a										
	58346	ARSENIC	4.85	4.73	mg/Kg	2.5	0-20		DUP	
	58346	CADMIUM	ND	ND	mg/Kg	NA	0-20		DUP	
	58346	CHROMIUM	25.0	24.3	mg/Kg	2.8	0-20		DUP	
	58346	COPPER	61.3	30.0	mg/Kg	68.6	0-20	INH	DUP	
	58346	LEAD	25.4	21.4	mg/Kg	17.1	0-20		DUP	

%RPD = Relative Percent Difference

NA = Indicates %RPD could not be calculated

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) analyses are used to determine the accuracy (MS) and precision (MSD) of a analytical method in a given sample matrix. Therefore, the usefulness of this report is limited to samples of similar matrices analyzed in the same analytical batch.

Only Duplicate sample with detections are listed in this report

Limits are intended for water matrices only. These criteria are for guidance only when reported with soils/solids.

Reference Number: 17-26654
Report Date: 10/19/2017

Batch	Sample	Analyte	Result	Duplicate Result	Units	%RPD	Limits	QC Qualifier	Type	Comments
	58346	SILVER	ND	ND	mg/Kg	NA	0-20		DUP	
	58346	ZINC	120	190	mg/Kg	45.2	0-20	INH	DUP	
7471A_171009										
	57760	MERCURY	nd	0.0097	mg/kg	NA	0-50	INH	DUP	
	58645	MERCURY	ND	ND	mg/Kg	NA	0-50		DUP	
7471A_171016										
	59568	MERCURY	0.026	0.027	mg/kg	3.8	0-50		DUP	
	62172	MERCURY	0.016	0.019	mg/Kg	17.1	0-50		DUP	
MSQS_171003										
	58350	PCBS (Total Aroclors)	ND	ND	mg/Kg OC	NA	0-50		DUP	
	58349	1,2 - DICHLOROBENZENE	ND	ND	mg/Kg OC	NA	0-60		DUP	
	58349	1,2,4-TRICHLOROBENZENE	ND	ND	mg/Kg OC	NA	0-60		DUP	
	58349	1,4 - DICHLOROBENZENE	ND	ND	mg/Kg OC	NA	0-60		DUP	
	58349	2 - FLUOROBIPHENYL (Surr)	101	120	%	17.2	0-60		DUP	
	58349	2 - FLUOROPHENOL (Surr)	63	36	%	54.5	0-60		DUP	
	58349	2,4,6 - TRIBROMOPHENOL (Surr)	134	148	%	9.9	0-60		DUP	
	58349	2,4-DIMETHYLPHENOL	ND	ND	ug/Kg	NA	0-60		DUP	
	58349	2-METHYLNAPHTHALENE	3	2	mg/Kg OC	40.0	0-60		DUP	
	58349	2-METHYLPHENOL (o-CRESOL)	ND	ND	ug/Kg	NA	0-60		DUP	
	58349	4-METHYLPHENOL (p-CRESOL)	ND	ND	ug/Kg	NA	0-60		DUP	
	58349	ACENAPHTHYLENE	6.4	4.3	mg/Kg OC	39.3	0-60		DUP	
	58349	ACENAPTHENE	8.9	7.8	mg/Kg OC	13.2	0-60		DUP	
	58349	ANTHRACENE	20	11	mg/Kg OC	58.1	0-60		DUP	
	58349	BENZ[A]ANTHRACENE	32	23	mg/Kg OC	32.7	0-60		DUP	
	58349	BENZO[A]PYRENE	27	20	mg/Kg OC	29.8	0-60		DUP	
	58349	BENZO[G,H,I]PERYLENE	14	8	mg/Kg OC	54.5	0-60		DUP	
	58349	BENZOIC ACID	534	ND	ug/Kg	NA	0-60	N1	DUP	
	58349	BENZYL ALCOHOL	ND	ND	ug/Kg	NA	0-60		DUP	
	58349	BENZYL BUTYL PHTHALATE	ND	ND	mg/Kg OC	NA	0-60		DUP	
	58349	CHRYSENE	85	32	mg/Kg OC	90.6	0-60		DUP	
	58349	d5-NITROBENZENE (Surr)	98	100	%	2.0	0-60		DUP	
	58349	d5-PHENOL (Surr)	81	51	%	45.5	0-60		DUP	
	58349	DI(2-ETHYLHEXYL)PHTHALATE	10	9	mg/Kg OC	10.5	0-60		DUP	
	58349	DIBENZO[A,H]ANTHRACENE	ND	ND	mg/Kg OC	NA	0-60		DUP	

%RPD = Relative Percent Difference

NA = Indicates %RPD could not be calculated

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Only Duplicate sample with detections are listed in this report

Limits are intended for water matrices only. These criteria are for guidance only when reported with soils/solids.

Reference Number: 17-26654
Report Date: 10/19/2017

Batch	Sample	Analyte	Result	Duplicate Result	Units	%RPD	Limits	QC Qualifier	Type	Comments
	58349	DIBENZOFURAN	5.6	5.8	mg/Kg OC	3.5	0-60		DUP	
	58349	DIETHYL PHTHALATE	11	5	mg/Kg OC	75.0	0-60	b0	DUP	
	58349	DIMETHYL PHTHALATE	ND	ND	mg/Kg OC	NA	0-60		DUP	
	58349	DI-N-BUTYL PHTHALATE	30	23	mg/Kg OC	26.4	0-60		DUP	
	58349	DI-N-OCTYL PHTHALATE	ND	ND	mg/Kg OC	NA	0-60		DUP	
	58349	FLUORANTHENE	122	93	mg/Kg OC	27.0	0-60		DUP	
	58349	FLUORENE	10	7	mg/Kg OC	35.3	0-60		DUP	
	58349	HEXACHLOROBENZENE	ND	ND	mg/Kg OC	NA	0-60		DUP	
	58349	HEXACHLOROBUTADIENE	ND	ND	mg/Kg OC	NA	0-60		DUP	
	58349	HIGH MOLECULAR WT PAH	452	313	mg/Kg OC	36.3	0-60		DUP	
	58349	INDENO[1,2,3,C,D]PYRENE	15	11	mg/Kg OC	30.8	0-60		DUP	
	58349	LOW MOLECULAR WT PAH	95	87	mg/Kg OC*	8.8	0-60		DUP	
	58349	NAPHTHALENE	7.5	27	mg/Kg OC	113.0	0-60	N1	DUP	
	58349	N-NITROSODIPHENYLAMINE	ND	ND	mg/Kg OC	NA	0-60		DUP	
	58349	PENTACHLOROPHENOL	ND	ND	ug/Kg	NA	0-60		DUP	
	58349	PHENANTHRENE	42	29	mg/Kg OC	36.6	0-60		DUP	
	58349	PHENOL	ND	ND	ug/Kg	NA	0-60		DUP	
	58349	p-TERPHENYL-d14 (Surr)	93	118	%	23.7	0-60		DUP	
	58349	PYRENE	92	80	mg/Kg OC	14.0	0-60		DUP	
	58349	TOTAL BENZOFLUORANTHENES	66	47	mg/Kg OC	33.6	0-60		DUP	
	58350	1,2 - DICHLOROBENZENE	ND	ND	mg/Kg OC	NA	0-60		DUP	
	58350	1,2,4-TRICHLOROBENZENE	ND	ND	mg/Kg OC	NA	0-60		DUP	
	58350	1,4 - DICHLOROBENZENE	ND	ND	mg/Kg OC	NA	0-60		DUP	
	58350	2 - FLUOROBIPHENYL (Surr)	103	127	%	20.9	0-60		DUP	
	58350	2 - FLUOROPHENOL (Surr)	63	38	%	49.5	0-60		DUP	
	58350	2,4,6 - TRIBROMOPHENOL (Surr)	139	135	%	2.9	0-60		DUP	
	58350	2,4-DIMETHYLPHENOL	ND	ND	ug/Kg	NA	0-60		DUP	
	58350	2-METHYLNAPHTHALENE	14	7	mg/Kg OC	66.7	0-60		DUP	
	58350	2-METHYLPHENOL (o-CRESOL)	ND	ND	ug/Kg	NA	0-60		DUP	
	58350	4-METHYLPHENOL (p-CRESOL)	ND	ND	ug/Kg	NA	0-60		DUP	
	58350	ACENAPHTHYLENE	ND	ND	mg/Kg OC	NA	0-60		DUP	
	58350	ACENAPTHENE	ND	ND	mg/Kg OC	NA	0-60		DUP	
	58350	ANTHRACENE	30	50	mg/Kg OC	50.0	0-60		DUP	
	58350	BENZ[A]ANTHRACENE	95	58	mg/Kg OC	48.4	0-60		DUP	

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Reference Number: 17-26654
Report Date: 10/19/2017

Batch	Sample	Analyte	Result	Duplicate Result	Units	%RPD	Limits	QC Qualifier	Type	Comments
	58350	BENZO[A]PYRENE	70	72	mg/Kg OC	2.8	0-60		DUP	
	58350	BENZO[G,H,I]PERYLENE	35	37	mg/Kg OC	5.6	0-60		DUP	
	58350	BENZOIC ACID	480	ND	ug/Kg	NA	0-60		DUP	
	58350	BENZYL ALCOHOL	ND	ND	ug/Kg	NA	0-60		DUP	
	58350	BENZYL BUTYL PHTHALATE	ND	ND	mg/Kg OC	NA	0-60		DUP	
	58350	CHRYSENE	146	136	mg/Kg OC	7.1	0-60		DUP	
	58350	d5-NITROBENZENE (Surr)	107	95	%	11.9	0-60		DUP	
	58350	d5-PHENOL (Surr)	80	57	%	33.6	0-60		DUP	
	58350	DI(2-ETHYLHEXYL)PHTHALATE	41	24	mg/Kg OC	52.3	0-60		DUP	
	58350	DIBENZO[A,H]ANTHRACENE	ND	ND	mg/Kg OC	NA	0-60		DUP	
	58350	DIBENZOFURAN	ND	ND	mg/Kg OC	NA	0-60		DUP	
	58350	DIETHYL PHTHALATE	44	18	mg/Kg OC	83.9	0-60	b0	DUP	
	58350	DIMETHYL PHTHALATE	ND	ND	mg/Kg OC	NA	0-60		DUP	
	58350	DI-N-BUTYL PHTHALATE	93	60	mg/Kg OC	43.1	0-60		DUP	
	58350	DI-N-OCTYL PHTHALATE	ND	ND	mg/Kg OC	NA	0-60		DUP	
	58350	FLUORANTHENE	160	195	mg/Kg OC	19.7	0-60		DUP	
	58350	FLUORENE	ND	ND	mg/Kg OC	NA	0-60		DUP	
	58350	HEXACHLOROBENZENE	ND	ND	mg/Kg OC	NA	0-60		DUP	
	58350	HEXACHLOROBUTADIENE	ND	ND	mg/Kg OC	NA	0-60		DUP	
	58350	HIGH MOLECULAR WT PAH	910	944	mg/Kg OC	3.7	0-60		DUP	
	58350	INDENO[1,2,3,C,D]PYRENE	38	45	mg/Kg OC	16.9	0-60		DUP	
	58350	LOW MOLECULAR WT PAH	106	125	mg/Kg OC*	16.5	0-60		DUP	
	58350	NAPHTHALENE	15	14	mg/Kg OC	6.9	0-60		DUP	
	58350	N-NITROSODIPHENYLAMINE	ND	ND	mg/Kg OC	NA	0-60		DUP	
	58350	PENTACHLOROPHENOL	ND	ND	ug/Kg	NA	0-60		DUP	
	58350	PHENANTHRENE	61	61	mg/Kg OC	0.0	0-60		DUP	
	58350	PHENOL	ND	ND	ug/Kg	NA	0-60		DUP	
	58350	p-TERPHENYL-d14 (Surr)	97	119	%	20.4	0-60		DUP	
	58350	PYRENE	213	230	mg/Kg OC	7.7	0-60		DUP	
	58350	TOTAL BENZOFLUORANTHENES	150	171	mg/Kg OC	13.1	0-60		DUP	
TS_171002										
	57760	TOTAL SOLIDS FOR CALCULATION	95.03	96.20	%	1.2	0-20		DUP	
	58338	TOTAL SOLIDS FOR CALCULATION	47.80	48.87	%	2.2	0-20		DUP	
TS_171010										

%RPD = Relative Percent Difference

NA = Indicates %RPD could not be calculated

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Reference Number: 17-26654
Report Date: 10/19/2017

Batch	Sample	Analyte	Result	Duplicate Result	Units	%RPD	Limits	QC Qualifier	Type	Comments
	59318	TOTAL SOLIDS FOR CALCULATION	85.94	86.50	%	0.6	0-20		DUP	
VS_171002										
	58338	VOLATILE SOLIDS	5.0	5.1	%	2.0	0-20		DUP	
VS_171012										
	58346	VOLATILE SOLIDS	4.3	3.9	%	9.8	0-20		DUP	

%RPD = Relative Percent Difference

NA = Indicates %RPD could not be calculated

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) analyses are used to determine the accuracy (MS) and precision (MSD) of a analytical method in a given sample matrix. Therefore, the usefulness of this report is limited to samples of similar matrices analyzed in the same analytical batch.

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FORM: QC Dependent.rpt

Laboratory Fortified Matrix (MS)

Batch	Sample	Analyte	Result	Spike Result	Duplicate Spike Result	Spike Conc	Units	Percent Recovery MS	Percent Recovery MSD	Limits*	%RPD	Limits*	QC Qualifier	Type	Comments
350.1_171003BS															
	55422	AMMONIA-N	ND	243	238	237	mg/Kg	**103**	**100**	70-130	2.1	0-0		LFM	
350.1_171018BS															
	58341	AMMONIA-N	72	498	510	470	mg/Kg	**91**	**93**	70-130	2.8	0-0		LFM	
6010B_171005A															
	57760	ARSENIC	ND	89.3	80.5	90.8	mg/kg	**98**	**89**	75-125	10.4	0-20		LFM	
	57760	CADMIUM	ND	81.7	74.4	90.8	mg/kg	**90**	**82**	75-125	9.4	0-20		LFM	
	57760	CHROMIUM	73.6	158	133	90.8	mg/kg	**93**	**65**	75-125	34.8	0-20		LFM	
	57760	COPPER	12.5	101	90.5	90.8	mg/kg	**97**	**86**	75-125	12.6	0-20		LFM	
	57760	LEAD	1.65	82.9	75.7	90.8	mg/kg	**89**	**82**	75-125	9.3	0-20		LFM	
	57760	SILVER	ND	41.7	52.0	45.1	mg/kg	**92**	**115**	75-125	22.0	0-20		LFM	
	58343	ARSENIC	4.28	76.0	68.7	69.6	mg/Kg	**103**	**93**	75-125	10.7	0-20		LFM	
	58343	SILVER	ND	32.7	30.	34.8	mg/Kg	**94**	**86**	75-125	8.6	0-20		LFM	
6010B_171009A															
	58343	CADMIUM	ND	59.4	51.0	70	mg/Kg	**85**	**73**	75-125	15.2	0-20		LFM	
	58343	CHROMIUM	41.7	108	89.7	70	mg/Kg	**95**	**69**	75-125	32.0	0-20		LFM	
	58343	COPPER	419	468	400	70	mg/Kg	**70**	**-27**	75-125	453.3	0-20	INH	LFM	
	58343	LEAD	28.3	85.2	75.8	70	mg/Kg	**81**	**68**	75-125	18.0	0-20		LFM	
	58343	ZINC	471	402	396	70	mg/Kg	**-99**	**-107**	75-125	8.3	0-20	INH	LFM	
6010B_171010a															
	58346	ARSENIC	4.85	73.2	66.9	66	mg/Kg	**104**	**94**	75-125	9.7	0-20		LFM	
	58346	CADMIUM	ND	57.9	51.5	66	mg/Kg	**88**	**78**	75-125	11.7	0-20		LFM	
	58346	CHROMIUM	25.0	84.2	78.1	66	mg/Kg	**90**	**80**	75-125	10.9	0-20		LFM	
	58346	COPPER	61.3	103	120	66	mg/Kg	**63**	**89**	75-125	33.9	0-20	IM	LFM	
	58346	LEAD	25.4	80.4	67.1	66	mg/Kg	**83**	**63**	75-125	27.5	0-20		LFM	
	58346	SILVER	ND	8.01	13.4	33	mg/Kg	**24**	**41**	75-125	50.4	0-20	IM	LFM	
	58346	ZINC	120	152	159	66	mg/Kg	**48**	**59**	75-125	19.7	0-20	IM	LFM	
7471A_171009															
	57760	MERCURY	ND	0.0802	0.0777	0.0822	mg/kg	**98**	**95**	70-130	3.2	0-20		LFM	
	58645	MERCURY	ND	0.0678	0.0665	0.0837	mg/Kg	**81**	**79**	70-130	1.9	0-20		LFM	
7471A_171016															
	59568	MERCURY	0.026	0.106	0.107	0.0839	mg/kg	**95**	**97**	70-130	1.2	0-20		LFM	
	62172	MERCURY	0.016	0.093	0.097	0.0828	mg/Kg	**93**	**98**	70-130	5.1	0-20		LFM	

%RPD = Relative Percent Difference

NA = Indicates %RPD could not be calculated

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) analyses are used to determine the accuracy (MS) and precision (MSD) of a analytical method in a given sample matrix. Therefore, the usefulness of this report is limited to samples of similar matrices analyzed in the same analytical batch.

Only Duplicate sample with detections are listed in this report

Limits are intended for water matrices only. These criteria are for guidance only when reported with soils/solids.

Reference Number: 17-26654
Report Date: 10/19/2017

Batch	Sample	Analyte	Result	Spike Result	Duplicate Spike Result	Spike Conc	Units	Percent Recovery MS	Percent Recovery MSD	Limits*	%RPD	Limits*	QC Qualifier	Type	Comments
MSQS_171003															
	58340	PCBS (Total Aroclors)	3	13.9		18.1	mg/Kg-OC	**60**	**NA**	85-115	NA	0-20		LFM	
	58338	1,2 - DICHLOROBENZENE	ND	33	35	55	mg/Kg OC	**60**	**64**	32-129	5.9	0-60		LFM	
	58338	1,2,4-TRICHLOROBENZENE	ND	51	59	55	mg/Kg OC	**93**	**107**	44-142	14.5	0-60		LFM	
	58338	1,4 - DICHLOROBENZENE	ND	27	25	55	mg/Kg OC	**49**	**45**	20-124	7.7	0-60		LFM	
	58338	2 - FLUOROBIPHENYL (Surr)	148	120	138		%		**NA**	70-130	NA	0-60		LFM	
	58338	2 - FLUOROPHENOL (Surr)	76	64	67		%		**NA**	70-130	NA	0-60		LFM	
	58338	2,4-DIMETHYLPHENOL	ND	6820	8820	5250	ug/Kg	**130**	**168**	32-119	25.6	0-60		LFM	
	58338	2-METHYLNAPHTHALENE	ND	62	75	55	mg/Kg OC	**113**	**136**	70-130	19.0	0-60		LFM	
	58338	2-METHYLPHENOL (o-CRESOL)	ND	6220	7670	5250	ug/Kg	**118**	**146**	40-160	20.9	0-60		LFM	
	58338	4-METHYLPHENOL (p-CRESOL)	ND	11710	14390	9450	ug/Kg	**124**	**152**	25-125	20.5	0-60		LFM	
	58338	ACENAPHTHYLENE	13	78	111	55	mg/Kg OC	**118**	**178**	33-145	40.5	0-60		LFM	
	58338	ACENAPTHENE	7.7	60	66	55	mg/Kg OC	**95**	**106**	47-145	10.8	0-60		LFM	
	58338	ANTHRACENE	25	82	87	55	mg/Kg OC	**104**	**113**	27-133	8.4	0-60		LFM	
	58338	BENZ[A]ANTHRACENE	94	139	146	55	mg/Kg OC	**82**	**95**	33-143	14.4	0-60		LFM	
	58338	BENZO[A]PYRENE	78	135	123	55	mg/Kg OC	**104**	**82**	17-163	23.5	0-60		LFM	
	58338	BENZO[G,H,I]PERYLENE	39	98	101	55	mg/Kg OC	**107**	**113**	1-219	5.0	0-60		LFM	
	58338	BENZOIC ACID	1705	5180	5460	4200	ug/Kg	**83**	**89**	70-130	7.7	0-60		LFM	
	58338	BENZYL ALCOHOL	ND	54	25	55	ug/Kg	**98**	**45**	35-140	73.4	0-60		LFM	
	58338	BENZYL BUTYL PHTHALATE	ND	56	66	55	mg/Kg OC	**102**	**120**	1-152	16.4	0-60		LFM	
	58338	CHRYSENE	136	199	207	55	mg/Kg OC	**115**	**129**	17-168	11.9	0-60		LFM	
	58338	d5-NITROBENZENE (Surr)	142	109	115		%		**NA**	70-130	NA	0-60		LFM	
	58338	d5-PHENOL (Surr)	115	82	94		%		**NA**	70-130	NA	0-60		LFM	
	58338	DI(2-ETHYLHEXYL)PHTHALATE	38	193	125	55	mg/Kg OC	**282**	**158**	60-140	56.2	0-60	b0	LFM	
	58338	DIBENZO[A,H]ANTHRACENE	11	58	61	55	mg/Kg OC	**85**	**91**	1-227	6.2	0-60		LFM	
	58338	DIBENZOFURAN	5.3	59	65	55	mg/Kg OC	**98**	**109**	50-130	10.6	0-60		LFM	
	58338	DIETHYL PHTHALATE	6.4	68	88	55	mg/Kg OC	**112**	**148**	1-114	27.9	0-60		LFM	
	58338	DIMETHYL PHTHALATE	8.6	75	116	55	mg/Kg OC	**121**	**195**	1-114	47.2	0-60		LFM	
	58338	DI-N-BUTYL PHTHALATE	20	93	103	55	mg/Kg OC	**133**	**151**	1-118	12.8	0-60		LFM	
	58338	DI-N-OCTYL PHTHALATE	ND	61	68	55	mg/Kg OC	**111**	**124**	4-146	10.9	0-60		LFM	
	58338	FLUORANTHENE	320	423	519	55	mg/Kg OC	**187**	**362**	26-137	63.6	0-60		LFM	
	58338	FLUORENE	12	65	83	55	mg/Kg OC	**96**	**129**	59-121	29.0	0-60		LFM	
	58338	HEXACHLOROBENZENE	ND	59	79	55	mg/Kg OC	**107**	**144**	1-152	29.0	0-60		LFM	
	58338	HEXACHLOROBUTADIENE	ND	49	51	55	mg/Kg OC	**89**	**93**	24-116	4.0	0-60		LFM	

%RPD = Relative Percent Difference

NA = Indicates %RPD could not be calculated

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) analyses are used to determine the accuracy (MS) and precision (MSD) of a analytical method in a given sample matrix. Therefore, the usefulness of this report is limited to samples of similar matrices analyzed in the same analytical batch.

Only Duplicate sample with detections are listed in this report

Limits are intended for water matrices only. These criteria are for guidance only when reported with soils/solids.

Reference Number: 17-26654
Report Date: 10/19/2017

Batch	Sample	Analyte	Result	Spike Result	Duplicate Spike Result	Spike Conc	Units	Percent Recovery MS	Percent Recovery MSD	Limits*	%RPD	Limits*	QC Qualifier	Type	Comments
	58338	INDENO[1,2,3,C,D]PYRENE	50	93	92	55	mg/Kg OC	**78**	**76**	1-171	2.4	0-60		LFM	
	58338	NAPHTHALENE	ND	58	63	55	mg/Kg OC	**105**	**115**	21-133	8.3	0-60		LFM	
	58338	N-NITROSODIPHENYLAMINE	ND	60	75	55	mg/Kg OC	**109**	**136**	70-130	22.2	0-60		LFM	
	58338	PENTACHLOROPHENOL	ND	4870	6510	5250	ug/Kg	**93**	**124**	14-176	28.8	0-60		LFM	
	58338	PHENANTHRENE	59	109	155	55	mg/Kg OC	**91**	**175**	54-120	63.0	0-60		LFM	
	58338	PHENOL	ND	4200	5160	5250	ug/Kg	**80**	**98**	5-112	20.5	0-60		LFM	
	58338	p-TERPHENYL-d14 (Surr)	99	109	104		%		**NA**	70-130	NA	0-60		LFM	
	58338	PYRENE	233	319	369	55	mg/Kg OC	**156**	**247**	52-115	45.0	0-60		LFM	
	58338	TOTAL BENZOFLUORANTHENES	185	306	298	110	mg/Kg OC	**110**	**103**	70-130	6.8	0-60		LFM	
	58348	1,2 - DICHLOROBENZENE	ND	120	123	125	mg/Kg OC	**96**	**98**	32-129	2.5	0-60		LFM	
	58348	1,2,4-TRICHLOROBENZENE	ND	139	140	125	mg/Kg OC	**111**	**112**	44-142	0.7	0-60		LFM	
	58348	1,4 - DICHLOROBENZENE	ND	101	96	125	mg/Kg OC	**81**	**77**	20-124	5.1	0-60		LFM	
	58348	2 - FLUOROBIPHENYL (Surr)	110	125	118		%		**NA**	70-130	NA	0-60		LFM	
	58348	2 - FLUOROPHENOL (Surr)	52	61	34		%		**NA**	70-130	NA	0-60		LFM	
	58348	2,4-DIMETHYLPHENOL	ND	4920	4800	4000	ug/Kg	**123**	**120**	32-119	2.5	0-60		LFM	
	58348	2-METHYLNAPHTHALENE	4.5	156	151	125	mg/Kg OC	**121**	**117**	70-130	3.4	0-60		LFM	
	58348	2-METHYLPHENOL (o-CRESOL)	ND	4400	3800	4000	ug/Kg	**110**	**95**	40-160	14.6	0-60		LFM	
	58348	4-METHYLPHENOL (p-CRESOL)	ND	6770	5600	6000	ug/Kg	**113**	**93**	25-125	18.9	0-60		LFM	
	58348	ACENAPHTHYLENE	9	201	190	125	mg/Kg OC	**154**	**145**	33-145	5.9	0-60		LFM	
	58348	ACENAPTHENE	11	139	143	125	mg/Kg OC	**102**	**106**	47-145	3.1	0-60		LFM	
	58348	ANTHRACENE	30	229	173	125	mg/Kg OC	**159**	**114**	27-133	32.7	0-60		LFM	
	58348	BENZ[A]ANTHRACENE	70	191	174	125	mg/Kg OC	**97**	**83**	33-143	15.1	0-60		LFM	
	58348	BENZO[A]PYRENE	47	175	186	125	mg/Kg OC	**102**	**111**	17-163	8.2	0-60		LFM	
	58348	BENZO[G,H,I]PERYLENE	27	170	176	125	mg/Kg OC	**114**	**119**	1-219	4.1	0-60		LFM	
	58348	BENZOIC ACID	520	1970	1600	2000	ug/Kg	**73**	**54**	70-130	29.2	0-60		LFM	
	58348	BENZYL ALCOHOL	ND	504	548	2000	ug/Kg	**25**	**27**	35-140	8.4	0-60		LFM	
	58348	BENZYL BUTYL PHTHALATE	ND	138	147	125	mg/Kg OC	**110**	**118**	1-152	6.3	0-60		LFM	
	58348	CHRYSENE	121	255	207	125	mg/Kg OC	**107**	**69**	17-168	43.6	0-60		LFM	
	58348	d5-NITROBENZENE (Surr)	95	97	90		%		**NA**	70-130	NA	0-60		LFM	
	58348	d5-PHENOL (Surr)	66	70	44		%		**NA**	70-130	NA	0-60		LFM	
	58348	DI(2-ETHYLHEXYL)PHTHALATE	16	232	183	125	mg/Kg OC	**173**	**134**	60-140	25.6	0-60		LFM	
	58348	DIBENZO[A,H]ANTHRACENE	6.6	121	127	125	mg/Kg OC	**92**	**96**	1-227	5.1	0-60		LFM	
	58348	DIBENZOFURAN	7.3	146	143	125	mg/Kg OC	**111**	**109**	50-130	2.2	0-60		LFM	
	58348	DIETHYL PHTHALATE	10	147	157	125	mg/Kg OC	**110**	**118**	1-114	7.0	0-60		LFM	

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Only Duplicate sample with detections are listed in this report

Limits are intended for water matrices only. These criteria are for guidance only when reported with soils/solids.

FORM: QC Dependent.rpt

Reference Number: 17-26654
Report Date: 10/19/2017

Batch	Sample	Analyte	Result	Spike Result	Duplicate Spike Result	Spike Conc	Units	Percent Recovery MS	Percent Recovery MSD	Limits*	%RPD	Limits*	QC Qualifier	Type	Comments
	58348	DIMETHYL PHTHALATE	ND	145	132	125	mg/Kg OC	**116**	**106**	1-114	9.4	0-60		LFM	
	58348	DI-N-BUTYL PHTHALATE	21	185	226	125	mg/Kg OC	**131**	**164**	1-118	22.2	0-60		LFM	
	58348	DI-N-OCTYL PHTHALATE	ND	154	179	125	mg/Kg OC	**123**	**143**	4-146	15.0	0-60		LFM	
	58348	FLUORANTHENE	406	439	343	125	mg/Kg OC	**26**	**-50**	26-137	640.0	0-60		LFM	
	58348	FLUORENE	11	172	163	125	mg/Kg OC	**129**	**122**	59-121	5.8	0-60		LFM	
	58348	HEXACHLOROBENZENE	ND	173	169	125	mg/Kg OC	**138**	**135**	1-152	2.3	0-60		LFM	
	58348	HEXACHLOROBUTADIENE	ND	138	135	125	mg/Kg OC	**110**	**108**	24-116	2.2	0-60		LFM	
	58348	INDENO[1,2,3,C,D]PYRENE	27	143	153	125	mg/Kg OC	**93**	**101**	1-171	8.3	0-60		LFM	
	58348	NAPHTHALENE	11	153	155	125	mg/Kg OC	**114**	**115**	21-133	1.4	0-60		LFM	
	58348	N-NITROSODIPHENYLAMINE	ND	156	153	125	mg/Kg OC	**125**	**122**	70-130	1.9	0-60		LFM	
	58348	PENTACHLOROPHENOL	ND	4310	4400	4000	ug/Kg	**108**	**110**	14-176	2.1	0-60		LFM	
	58348	PHENANTHRENE	39	274	181	125	mg/Kg OC	**188**	**114**	54-120	49.3	0-60		LFM	
	58348	PHENOL	ND	3020	2160	4000	ug/Kg	**76**	**54**	5-112	33.2	0-60		LFM	
	58348	p-TERPHENYL-d14 (Surr)	94	100	98		%		**NA**	70-130	NA	0-60		LFM	
	58348	PYRENE	292	319	296	125	mg/Kg OC	**22**	**3**	52-115	148.4	0-60		LFM	
	58348	TOTAL BENZOFLUORANTHENES	122	384	369	250	mg/Kg OC	**105**	**99**	70-130	5.9	0-60		LFM	

%RPD = Relative Percent Difference

NA = Indicates %RPD could not be calculated

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) analyses are used to determine the accuracy (MS) and precision (MSD) of a analytical method in a given sample matrix. Therefore, the usefulness of this report is limited to samples of similar matrices analyzed in the same analytical batch.

Only Duplicate sample with detections are listed in this report

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QUALITY CONTROL REPORT
SURROGATE REPORT

Reference Number: 17-26654
Report Date: 10/19/17

Lab No	Analyte	Result	Qualifier	Units	Method	Limit
MSQS_171003						
58338	2,4,6 - TRIBROMOPHENOL (Surr)	87		%	8270D	Acceptance Limits 34-140%
	2 - FLUOROBIPHENYL (Surr)	148		%		Acceptance Limits 49-127%
	2 - FLUOROPHENOL (Surr)	76		%		Acceptance Limits 21-118%
	d5-PHENOL (Surr)	115		%		Acceptance Limits 23-134%
	p-TERPHENYL-d14 (Surr)	99		%		Acceptance Limits 25-127%
	d5-NITROBENZENE (Surr)	142		%		Acceptance Limits 43-127%
MSQS_171003						
58339	2,4,6 - TRIBROMOPHENOL (Surr)	126		%	8270D	Acceptance Limits 34-140%
	2 - FLUOROBIPHENYL (Surr)	121		%		Acceptance Limits 49-127%
	2 - FLUOROPHENOL (Surr)	74		%		Acceptance Limits 21-118%
	d5-PHENOL (Surr)	101		%		Acceptance Limits 23-134%
	p-TERPHENYL-d14 (Surr)	111		%		Acceptance Limits 25-127%
	d5-NITROBENZENE (Surr)	112		%		Acceptance Limits 43-127%
MSQS_171003						
58340	2,4,6 - TRIBROMOPHENOL (Surr)	171	M1	%	8270D	Acceptance Limits 34-140%
	2 - FLUOROBIPHENYL (Surr)	155	M1	%		Acceptance Limits 49-127%
	2 - FLUOROPHENOL (Surr)	74		%		Acceptance Limits 21-118%
	d5-PHENOL (Surr)	113		%		Acceptance Limits 23-134%
	p-TERPHENYL-d14 (Surr)	115		%		Acceptance Limits 25-127%
	d5-NITROBENZENE (Surr)	109		%		Acceptance Limits 43-127%
MSQS_171003						
58341	2,4,6 - TRIBROMOPHENOL (Surr)	106		%	8270D	Acceptance Limits 34-140%
	2 - FLUOROBIPHENYL (Surr)	133		%		Acceptance Limits 49-127%
	2 - FLUOROPHENOL (Surr)	23		%		Acceptance Limits 21-118%
	d5-PHENOL (Surr)	48		%		Acceptance Limits 23-134%
	p-TERPHENYL-d14 (Surr)	112		%		Acceptance Limits 25-127%
	d5-NITROBENZENE (Surr)	114		%		Acceptance Limits 43-127%
MSQS_171003						
58342	2,4,6 - TRIBROMOPHENOL (Surr)	113		%	8270D	Acceptance Limits 34-140%
	2 - FLUOROBIPHENYL (Surr)	136		%		Acceptance Limits 49-127%
	2 - FLUOROPHENOL (Surr)	24		%		Acceptance Limits 21-118%
	d5-PHENOL (Surr)	48		%		Acceptance Limits 23-134%
	p-TERPHENYL-d14 (Surr)	115		%		Acceptance Limits 25-127%
	d5-NITROBENZENE (Surr)	108		%		Acceptance Limits 43-127%
MSQS_171003						
58343	2,4,6 - TRIBROMOPHENOL (Surr)	103		%	8270D	Acceptance Limits 34-140%
	2 - FLUOROBIPHENYL (Surr)	123		%		Acceptance Limits 49-127%
	2 - FLUOROPHENOL (Surr)	27		%		Acceptance Limits 21-118%
	d5-PHENOL (Surr)	51		%		Acceptance Limits 23-134%
	p-TERPHENYL-d14 (Surr)	110		%		Acceptance Limits 25-127%
	d5-NITROBENZENE (Surr)	112		%		Acceptance Limits 43-127%
MSQS_171003						
58344	2,4,6 - TRIBROMOPHENOL (Surr)	111		%	8270D	Acceptance Limits 34-140%
	2 - FLUOROBIPHENYL (Surr)	132		%		Acceptance Limits 49-127%
	2 - FLUOROPHENOL (Surr)	26		%		Acceptance Limits 21-118%
	d5-PHENOL (Surr)	52		%		Acceptance Limits 23-134%
	p-TERPHENYL-d14 (Surr)	115		%		Acceptance Limits 25-127%
	d5-NITROBENZENE (Surr)	109		%		Acceptance Limits 43-127%
MSQS_171003						
58345	2,4,6 - TRIBROMOPHENOL (Surr)	118		%	8270D	Acceptance Limits 34-140%
	2 - FLUOROBIPHENYL (Surr)	136		%		Acceptance Limits 49-127%

*Notation:

A surrogate is a pure compound added to a sample in the laboratory just before processing so that the overall efficiency of a method can be determined.

The Acceptance Limits (or Control Limits) approximate a 99% confidence interval around the mean recovery.

QUALITY CONTROL REPORT
SURROGATE REPORT

Reference Number: 17-26654
Report Date: 10/19/17

Lab No	Analyte	Result	Qualifier	Units	Method	Limit
58345	2 - FLUOROPHENOL (Surr)	35		%	8270D	Acceptance Limits 21-118%
	d5-PHENOL (Surr)	65		%		Acceptance Limits 23-134%
	p-TERPHENYL-d14 (Surr)	116		%		Acceptance Limits 25-127%
	d5-NITROBENZENE (Surr)	103		%		Acceptance Limits 43-127%
MSQS_171003						
58346	2,4,6 - TRIBROMOPHENOL (Surr)	103		%	8270D	Acceptance Limits 34-140%
	2 - FLUOROBIPHENYL (Surr)	133		%		Acceptance Limits 49-127%
	2 - FLUOROPHENOL (Surr)	49		%		Acceptance Limits 21-118%
	d5-PHENOL (Surr)	80		%		Acceptance Limits 21-134%
	p-TERPHENYL-d14 (Surr)	114		%		Acceptance Limits 25-127%
	d5-NITROBENZENE (Surr)	107		%		Acceptance Limits 43-127%
MSQS_171003						
58347	2,4,6 - TRIBROMOPHENOL (Surr)	109		%	8270D	Acceptance Limits 34-140%
	2 - FLUOROBIPHENYL (Surr)	119		%		Acceptance Limits 49-127%
	2 - FLUOROPHENOL (Surr)	66		%		Acceptance Limits 21-118%
	d5-PHENOL (Surr)	90		%		Acceptance Limits 23-134%
	p-TERPHENYL-d14 (Surr)	120		%		Acceptance Limits 25-127%
	d5-NITROBENZENE (Surr)	114		%		Acceptance Limits 43-127%
MSQS_171003						
58348	2,4,6 - TRIBROMOPHENOL (Surr)	102		%	8270D	Acceptance Limits 34-140%
	2 - FLUOROBIPHENYL (Surr)	110		%		Acceptance Limits 49-127%
	2 - FLUOROPHENOL (Surr)	52		%		Acceptance Limits 21-118%
	d5-PHENOL (Surr)	66		%		Acceptance Limits 23-134%
	p-TERPHENYL-d14 (Surr)	94		%		Acceptance Limits 25-127%
	d5-NITROBENZENE (Surr)	95		%		Acceptance Limits 43-127%
MSQS_171003						
58349	2,4,6 - TRIBROMOPHENOL (Surr)	134		%	8270D	Acceptance Limits 34-140%
	2 - FLUOROBIPHENYL (Surr)	101		%		Acceptance Limits 49-127%
	2 - FLUOROPHENOL (Surr)	63		%		Acceptance Limits 21-118%
	d5-PHENOL (Surr)	81		%		Acceptance Limits 23-134%
	p-TERPHENYL-d14 (Surr)	93		%		Acceptance Limits 25-127%
	d5-NITROBENZENE (Surr)	98		%		Acceptance Limits 43-127%
MSQS_171003						
58350	2,4,6 - TRIBROMOPHENOL (Surr)	139		%	8270D	Acceptance Limits 34-140%
	2 - FLUOROBIPHENYL (Surr)	103		%		Acceptance Limits 49-127%
	2 - FLUOROPHENOL (Surr)	63		%		Acceptance Limits 21-118%
	d5-PHENOL (Surr)	80		%		Acceptance Limits 23-134%
	p-TERPHENYL-d14 (Surr)	97		%		Acceptance Limits 25-127%
	d5-NITROBENZENE (Surr)	107		%		Acceptance Limits 43-127%

*Notation:

A surrogate is a pure compound added to a sample in the laboratory just before processing so that the overall efficiency of a method can be determined.

The Acceptance Limits (or Control Limits) approximate a 99% confidence interval around the mean recovery.

Burlington, WA	*Corporate Laboratory (a)*	1620 S Walnut St	Burlington, WA 98233	**800.755.9295** • 360.757.1400
Bellingham, WA	*Microbiology (b)*	805 Orchard Dr Ste 4	Bellingham, WA 98225	360.715.1212
Portland, OR	*Microbiology/Chemistry (c)*	9150 SW Pioneer Ct Ste W	Wilsonville, OR 97070	503.682.7802
Corvallis, OR	*Microbiology (d)*	540 SW Third Street	Corvallis, OR 97333	541.753.4946

October 19, 2017

Case Narrative

Reference: **17-26654**

Project Notes

	Analytical Method	Notes	Created by
Project Note	8270D	The diution factor for the mg/Kg comounds is the conversion factor to dry weight based on the sample total solids. The dilution factor for the mg/Kg-OC is the conversion factor to dry weight and normalized to total organic carbon. The QL is adjusted accordingly to the dilution factors applied. The acceptance limits are for water matrix and are listed for guidance only - any result that is atypical is noted in the Narrative.	CO

Lab Sample ID	Sample Information
58338	**A1**

Analytical Method	Notes	Created by
8270D	Napthalene was detected a significatly greater amount in the field duplicate - this compound has greater variability due to the more volatile properties of this compound.	CO

Lab Sample ID	Sample Information
58339	**A3**

Analytical Method	Notes	Created by
8082	Aroclor 1254- is "suspect" and estimated at 2 mg/Kg-OC.	CO

Lab Sample ID	Sample Information
58341	**A5**

Analytical Method	Notes	Created by
8082	Aroclor 1254 is "suspect" and estimated at 1 mg/Kg-OC.	CO

Case Narrative

Reference: **17-26654**

Lab Sample ID	Sample Information
58349	B-5

Analytical Method	Notes	Created by
8270D	Benzoic Acid was not detected in the field duplicate - this comound exibits poor chromatography and may not of been detected at the level expected. Napthalene was detected in the field duplicate at a significatly greater amoun (27mg/Kg-OCt. This compound has a greater variability due to the volatile properties of the compound.	CO

Lab Sample ID	Sample Information
58350	B-6

Analytical Method	Notes	Created by
8270D	Benzoic Acid was not detected in the field duplicate - this comound exibits poor chromatography and may not of been detected at the level expected.	CO

Qualifier Definitions

Reference Number: 17-26654
Report Date: 10/19/17

Qualifier	Definition
b0	Phthalate compounds are commonly found in plastics used within the extraction method. Background amounts are not unexpected and are typically below the MRL. Results reported are likely biased high.
d1	Data is "suspect", the field duplicate sample does not agree, see Case Narrative.
IM	Matrix induced bias assumed
INH	The sample was non-homogeneous
J	Indicates an estimated concentration. This occurs when an analyte concentration is below the calibration curve but is above the method detection limit.
M1	Matrix spike recovery was high; the associated blank spike recovery was acceptable. Matrix bias indicated.
N1	See case narrative.

Note: Some qualifier definitions found on this page may pertain to results or QC data which are not printed with this report.

CHAIN OF CUSTODY / ANALYSIS REQUEST (PLEASE COMPLETE ALL APPLICABLE SHADED SECTIONS)

REPORT TO: Whatcom Environmental Services	BILLING EMAIL: cbmwehler@msn.com
ADDRESS: 228 E. Champion Street, Suite 101	BILL TO: Ed Ehler
CITY: Bellingham STATE: WA ZIP: 98225	ADDRESS: 3022 Oakes Ave
ATTN: Dan Heimbigner	CITY: Anacortes STATE: WA ZIP: 98221
PHONE: 360-752-9571 FAX:	PHONE: 206-979-0784 P.O.#:
REPORT EMAIL: dheimbigner@whatcomenvironmental.com	CARD: ☐ VISA ☐ M/C EXPIRES /
PROJECT NAME: Lovric's SeaCraft	CARD#

RL: 17-26654 58338 - 58350

CHECK REGULATORY PROGRAM
- ☐ SAFE DRINKING WATER ACT
- ☐ CLEAN WATER ACT
- ☐ RCRA / CERCLA
- ☒ OTHER: SMS

EDGE ANALYTICAL

Main Lab (800-755-9295)
1620 South Walnut St. Burlington, WA 98233
Microbiology (888-725-1212)
805 W. Orchard Dr. Suite 4 Bellingham, WA 98225

Wilsonville Lab (503-682-7802)
9150 SW Pioneer Ct. Suite W Wilsonville, OR 97070
Corvallis Lab (541-753-4946)
540 SW 3rd St. Corvallis, OR 97333

INSTRUCTIONS
1. USE ONE LINE PER SAMPLE LOCATION.
2. BE SPECIFIC IN TEST REQUESTS.
3. NEW LIST EACH METAL INDIVIDUALLY. NEW
4. CHECK OFF ANALYSIS TO BE PERFORMED FOR EACH SAMPLE LOCATION.
5. ENTER NUMBER OF CONTAINERS.

TURN AROUND TIME REQUIRED
- ☒ STANDARD
- ☐ HALF-TIME (50% SURCHARGE)
- ☐ QUICKEST (100% SURCHARGE) PHONE CALL REQ.
- ☐ EMERGENCY (PHONE CALL REQUIRED)

ANALYSIS REQUESTED

	SAMPLE ID	LOCATION	GRAB/ COMP.	SAMPLE MATRIX*	DATE	TIME	Marine Sediment Quality Standard test group	Ammonia	Total Volatile Solids					NUMBER OF CONTAINERS	SPECIAL INSTRUCTIONS/ CONDITIONS ON RECEIPT
1	A1		G	Sediment	9/26/17	10:45	☒	☒	☒	☐	☐	☐	☐	2	
2	~~A2~~						☐	☐	☐	☐	☐	☐	☐		No A-2 sample collected.
3	A3		G	Sediment	9/26/17	12:00	☒	☒	☒	☐	☐	☐	☐	2	
4	A4		G	Sediment	9/26/17	10:15	☒	☒	☒	☐	☐	☐	☐	2	Please send results
5	A5		G	Sediment	9/25/17	3:35	☒	☒	☒	☐	☐	☐	☐	2	to both Whatcom
6	A6		G	Sediment	9/25/17	2:50	☒	☒	☒	☐	☐	☐	☐	2	Environmental and
7	A7		G	Sediment	9/25/17	12:50	☒	☒	☒	☐	☐	☐	☐	2	Lovric's SeaCraft
8	A8		G	Sediment	9/25/17	1:35	☒	☒	☒	☐	☐	☐	☐	2	(Ed Ehler).
9	A9		G	Sediment	9/25/17	2:10	☒	☒	☒	☐	☐	☐	☐	2	
10	B-1		G	Sediment	9/26/17	2:25	☒	☒	☒	☐	☐	☐	☐	2	

SAMPLED BY: D. Heimbigner and B. Nelson (W.E.S.) | PHONE: 360-752-9571 | FAX: | EMAIL: dheimbigner@whatcomenvironmental.com, cbmwehler@msn.com | 18 ◄TOTAL CONTAINERS

SAMPLE RECEIPT REQUESTED (MUST INCLUDE FAX OR EMAIL) ☒ *W- WATER SW- SURFACE WATER WW- WASTE WATER OL- OIL DW- DRINKING WATER GW- GROUND WATER S- SOIL OTHER_____

RELINQUISHED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Dan Heimbigner	9-27-17	3:00		9/27/17	1555
			KRJL	9/27/2017	17:00

	YES	NO	N/A
CUSTODY SEALS INTACT	☐	☐	☒
SAMPLE TEMP 8.5°C SATISFACTORY	☒	☐	☐
EVIDENCE OF COOLING	☒	☐	☐
SAMPLES RECEIVED INTACT 1.8°C	☒	☐	
CHAIN OF CUSTODY & LABELS AGREE	☒	☐	

FORM: COC 01-06-2011

CHAIN OF CUSTODY / ANALYSIS REQUEST (PLEASE COMPLETE ALL APPLICABLE SHADED SECTIONS)

REPORT TO: Whatcom Environmental Services	BILLING EMAIL: cbmwehler@msn.com
ADDRESS: 228 E. Champion Street, Suite 101	BILL TO: Ed Ehler
CITY: Bellingham STATE: WA ZIP: 98225	ADDRESS: 3022 Oakes Ave
ATTN: Dan Heimbigner	CITY: Anacortes STATE: WA ZIP: 98221
PHONE: 360-752-9571 FAX:	PHONE: 206-979-0784 P.O.#:
REPORT EMAIL: dheimbigner@whatcomenvironmental.com	CARD: ☐ VISA ☐ M/C EXPIRES /
PROJECT NAME: Lovric's SeaCraft	CARD#

FOR LAB USE ONLY

REF#

CHECK REGULATORY PROGRAM

- ☐ SAFE DRINKING WATER ACT
- ☐ CLEAN WATER ACT
- ☐ RCRA / CERCLA
- ☒ OTHER: SMS

EDGE ANALYTICAL

Main Lab (800-755-9295)
1620 South Walnut St. Burlington, WA 98233
Microbiology (888-725-1212)
805 W. Orchard Dr. Suite 4 Bellingham, WA 98225

Wilsonville Lab (503-682-7802)
9150 SW Pioneer Ct. Suite W Wilsonville, OR 97070
Corvallis Lab (541-753-4946)
540 SW 3rd St. Corvallis, OR 97333

INSTRUCTIONS

1. USE ONE LINE PER SAMPLE LOCATION.
2. BE SPECIFIC IN TEST REQUESTS.
3. NEW LIST EACH METAL INDIVIDUALLY. NEW
4. CHECK OFF ANALYSIS TO BE PERFORMED FOR EACH SAMPLE LOCATION.
5. ENTER NUMBER OF CONTAINERS.

TURN AROUND TIME REQUIRED

- ☒ STANDARD
- ☐ HALF-TIME (50% SURCHARGE)
- ☐ QUICKEST (100% SURCHARGE) PHONE CALL REQ.
- ☐ EMERGENCY (PHONE CALL REQUIRED)

ANALYSIS REQUESTED

	SAMPLE ID	LOCATION	GRAB/ COMP.	SAMPLE MATRIX*	DATE	TIME	Marine Sediment Quality Standard test group	Ammonia	Total Volatile Solids					NUMBER OF CONTAINERS	SPECIAL INSTRUCTIONS/ CONDITIONS ON RECEIPT
1	B-1		G	Sediment	9/26/17	2:25	☒	☒	☒	☐	☐	☐	☐	2	
2	~~B-2~~						☐	☐	☐	☐	☐	☐	☐		No B-2 sample collected.
3	B-3		G	Sediment	9/27/17	10:45	☒	☒	☒	☐	☐	☐	☐	2	
4	B-4		G	Sediment	9/26/17	1:30	☒	☒	☒	☐	☐	☐	☐	6	Extra volume for MS/MSD.
5	B-5		G	Sediment	9/26/17	3:30	☒	☒	☒	☐	☐	☐	☐	2	
6	B-6		G	Sediment	9/26/17	11:35	☒	☒	☒	☐	☐	☐	☐	2	Please send results
7							☐	☐	☐	☐	☐	☐	☐		to both Whatcom
8							☐	☐	☐	☐	☐	☐	☐		Environmental and
9							☐	☐	☐	☐	☐	☐	☐		Lovric's SeaCraft
10							☐	☐	☐	☐	☐	☐	☐		(Ed Ehler).

SAMPLED BY: D. Heimbigner and B. Nelson (W.E.S.) | PHONE: 360-752-9571 | FAX: | EMAIL: dheimbigner@whatcomenvironmental.com, cbmwehler@msn.com | 14/12 ◀TOTAL CONTAINERS

SAMPLE RECEIPT REQUESTED (MUST INCLUDE FAX OR EMAIL) ☒

*W- WATER SW- SURFACE WATER WW- WASTE WATER OL- OIL
DW- DRINKING WATER GW- GROUND WATER S- SOIL OTHER_____

RELINQUISHED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Dan Heimbigner	9-27-17	3:00	CLT	9/27/17	15:15
			KRSL	9/27/2017	17:00 EDGE

	YES	NO	N/A
CUSTODY SEALS INTACT	☐	☐	☒
SAMPLE TEMP 8.5 °C SATISFACTORY	☒	☐	☐
EVIDENCE OF COOLING	☒	☐	☐
SAMPLES RECEIVED INTACT 1.8°C	☒	☐	
CHAIN OF CUSTODY & LABELS AGREE	☒	☐	

FORM: COC 01-06-2011

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

TestAmerica Job ID: 580-71823-1
Client Project/Site: Lovric's Sea Craft Sediment Sampling

For:
Whatcom Environmental Services Inc.
228 East Champion Street #101
Bellingham, Washington 98225

Attn: Mr. Dan Heimbigner

Authorized for release by:
10/18/2017 4:13:42 PM

Sheri Cruz, Project Manager I
(253)922-2310
sheri.cruz@testamericainc.com

Table of Contents

Job ID: 580-71823-1

Laboratory: TestAmerica Seattle

Narrative

Job Narrative
580-71823-1

Comments
No additional comments.

Receipt
The samples were received on 9/28/2017 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were -0.7º C, 0.7º C and 1.2º C.

GC/MS Semi VOA
Method(s) Organotins: Sample 580-71823-1 in prep batch 258360 has a TributylTin hit at 914ug/L on column. The calibration range for this target extends up to 898ug/L on column, so the 914ug/L hit is E-flagged for being above the calibration range. Because the E-flagged hit is within 5% of the maximum calibration point, data is considered accurate and is reported without further dilution.A-1 (580-71823-1)

Method(s) Organotins: The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 580-258360 and analytical batch 580-258484 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
Method(s) 9034: Sulfide preparation batch 280-390586 and analytical batch 280-390639:The following samples were received with less than 2 days remaining on the holding time or less than one shift (8 hours) remaining on a test with a holding time of 48 hours or less. As such, the laboratory had insufficient time remaining to perform the analysis within holding time: A-1 (580-71823-1), A-3 (580-71823-2), A-4 (580-71823-3) and A-5 (580-71823-4).

Method(s) 9034: Sulfide preparation batch 280-390881 and analytical batch 280-390935:The following samples were received with less than 2 days remaining on the holding time or less than one shift (8 hours) remaining on a test with a holding time of 48 hours or less. As such, the laboratory had insufficient time remaining to perform the analysis within holding time: B-3 (580-71823-10), B-4 (580-71823-11), B-4 (580-71823-11[MS]) and B-4 (580-71823-11[MSD]).

Method(s) 9034: Sulfide preparation batch 280-390958 and 280-390958 and analytical batch 280-390966:The following samples were received with less than 2 days remaining on the holding time or less than one shift (8 hours) remaining on a test with a holding time of 48 hours or less. As such, the laboratory had insufficient time remaining to perform the analysis within holding time: A-6 (580-71823-5), A-7 (580-71823-6), A-8 (580-71823-7), A-9 (580-71823-8), B-1 (580-71823-9), B-5 (580-71823-12) and B-6 (580-71823-13).

Method(s) 9034: Sulfide preparation batch 280-390586 and analytical batch 280-390639:The following samples were diluted due to the nature of the sample matrix: A-1 (580-71823-1), A-3 (580-71823-2), A-4 (580-71823-3) and A-5 (580-71823-4). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Geotechnical
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

Geotechnical

Qualifier	Qualifier Description
F3	Duplicate RPD exceeds the control limit

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample Results

Client: Whatcom Environmental Services Inc.
Project/Site: Lovric's Sea Craft Sediment Sampling

TestAmerica Job ID: 580-71823-1

Client Sample ID: A-1
Date Collected: 09/26/17 10:45
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-1
Matrix: Solid

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	19000		2000	44	mg/Kg			10/09/17 12:09	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	46.6		0.1	0.1	%			10/05/17 16:11	1
Percent Moisture	53.4		0.1	0.1	%			10/05/17 16:11	1

Method: D422 - Grain Size

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Gravel	0.1				%			10/06/17 15:10	1
Coarse Sand	1.0				%			10/06/17 15:10	1
Medium Sand	3.9				%			10/06/17 15:10	1
Fine Sand	45.4				%			10/06/17 15:10	1
Silt	40.9				%			10/06/17 15:10	1
Clay	8.8				%			10/06/17 15:10	1

Client Sample ID: A-1
Date Collected: 09/26/17 10:45
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-1
Matrix: Solid
Percent Solids: 46.6

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibutyltin	200		25	5.7	ug/Kg	☼	10/08/17 10:56	10/10/17 20:16	1
Monobutyltin	33		15	3.8	ug/Kg	☼	10/08/17 10:56	10/10/17 20:16	1
Tetra-n-butyltin	ND		76	22	ug/Kg	☼	10/08/17 10:56	10/10/17 20:16	1
Tributyltin	350	E	13	2.9	ug/Kg	☼	10/08/17 10:56	10/10/17 20:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*52*		*10 - 113*	*10/08/17 10:56*	*10/10/17 20:16*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	3600	H	210	51	mg/Kg	☼	10/09/17 14:50	10/09/17 21:24	10

Client Sample ID: A-3
Date Collected: 09/26/17 12:00
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-2
Matrix: Solid
Percent Solids: 40.8

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibutyltin	**27**	**J**	31	7.3	ug/Kg	☼	10/08/17 10:56	10/10/17 20:42	1
Monobutyltin	ND		19	4.8	ug/Kg	☼	10/08/17 10:56	10/10/17 20:42	1
Tetra-n-butyltin	ND		96	28	ug/Kg	☼	10/08/17 10:56	10/10/17 20:42	1
Tributyltin	**60**		17	3.7	ug/Kg	☼	10/08/17 10:56	10/10/17 20:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*43*		*10 - 113*	*10/08/17 10:56*	*10/10/17 20:42*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	**2700**	**H**	240	59	mg/Kg	☼	10/09/17 14:50	10/09/17 21:24	10
Total Organic Carbon - Duplicates	**21000**		2000	44	mg/Kg			10/09/17 13:00	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**40.8**		0.1	0.1	%			10/05/17 16:11	1
Percent Moisture	**59.2**		0.1	0.1	%			10/05/17 16:11	1

Client: Whatcom Environmental Services Inc.
Project/Site: Lovric's Sea Craft Sediment Sampling

TestAmerica Job ID: 580-71823-1

Client Sample ID: A-4
Date Collected: 09/26/17 10:15
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-3
Matrix: Solid

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	17000		2000	44	mg/Kg			10/09/17 13:05	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	51.0		0.1	0.1	%			10/05/17 16:11	1
Percent Moisture	49.0		0.1	0.1	%			10/05/17 16:11	1

Method: D422 - Grain Size

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Gravel	0.0				%			10/06/17 15:10	1
Coarse Sand	0.3				%			10/06/17 15:10	1
Medium Sand	2.9				%			10/06/17 15:10	1
Fine Sand	42.3				%			10/06/17 15:10	1
Silt	44.0				%			10/06/17 15:10	1
Clay	10.5				%			10/06/17 15:10	1

Client Sample ID: A-4
Date Collected: 09/26/17 10:15
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-3
Matrix: Solid
Percent Solids: 51.0

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibutyltin	**18**	**J**	25	5.8	ug/Kg	☼	10/08/17 10:56	10/10/17 21:08	1
Monobutyltin	ND		15	3.8	ug/Kg	☼	10/08/17 10:56	10/10/17 21:08	1
Tetra-n-butyltin	ND		77	22	ug/Kg	☼	10/08/17 10:56	10/10/17 21:08	1
Tributyltin	**35**		13	2.9	ug/Kg	☼	10/08/17 10:56	10/10/17 21:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*36*		*10 - 113*	*10/08/17 10:56*	*10/10/17 21:08*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	**940**	**H**	200	47	mg/Kg	☼	10/09/17 14:50	10/09/17 21:24	10

Client: Whatcom Environmental Services Inc.
Project/Site: Lovric's Sea Craft Sediment Sampling

TestAmerica Job ID: 580-71823-1

Client Sample ID: A-5
Date Collected: 09/25/17 15:35
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-4
Matrix: Solid

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	18000		2000	44	mg/Kg			10/09/17 13:10	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	44.7		0.1	0.1	%			10/05/17 16:11	1
Percent Moisture	55.3		0.1	0.1	%			10/05/17 16:11	1

Method: D422 - Grain Size

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Gravel	0.0				%			10/06/17 15:10	1
Coarse Sand	0.3				%			10/06/17 15:10	1
Medium Sand	6.3				%			10/06/17 15:10	1
Fine Sand	23.6				%			10/06/17 15:10	1
Silt	54.8				%			10/06/17 15:10	1
Clay	14.9				%			10/06/17 15:10	1

Client: Whatcom Environmental Services Inc.
Project/Site: Lovric's Sea Craft Sediment Sampling

TestAmerica Job ID: 580-71823-1

Client Sample ID: A-5
Date Collected: 09/25/17 15:35
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-4
Matrix: Solid
Percent Solids: 44.7

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibutyltin	30		29	6.8	ug/Kg	☼	10/08/17 10:56	10/10/17 21:34	1
Monobutyltin	9.9	J	18	4.4	ug/Kg	☼	10/08/17 10:56	10/10/17 21:34	1
Tetra-n-butyltin	ND		89	26	ug/Kg	☼	10/08/17 10:56	10/10/17 21:34	1
Tributyltin	30		16	3.4	ug/Kg	☼	10/08/17 10:56	10/10/17 21:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*37*		*10 - 113*	*10/08/17 10:56*	*10/10/17 21:34*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	1300	H	220	54	mg/Kg	☼	10/09/17 14:50	10/09/17 21:24	10

Client: Whatcom Environmental Services Inc.
Project/Site: Lovric's Sea Craft Sediment Sampling

TestAmerica Job ID: 580-71823-1

Client Sample ID: A-6
Date Collected: 09/25/17 14:50
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-5
Matrix: Solid

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	16000		2000	44	mg/Kg			10/09/17 13:15	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	41.8		0.1	0.1	%			10/05/17 16:11	1
Percent Moisture	58.2		0.1	0.1	%			10/05/17 16:11	1

Method: D422 - Grain Size

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Gravel	0.0				%			10/06/17 15:10	1
Coarse Sand	0.1				%			10/06/17 15:10	1
Medium Sand	3.5				%			10/06/17 15:10	1
Fine Sand	33.8				%			10/06/17 15:10	1
Silt	46.2				%			10/06/17 15:10	1
Clay	16.3				%			10/06/17 15:10	1

Client Sample ID: A-6
Date Collected: 09/25/17 14:50
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-5
Matrix: Solid
Percent Solids: 41.8

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibutyltin	ND		31	7.2	ug/Kg	☼	10/08/17 10:56	10/10/17 22:00	1
Monobutyltin	ND		19	4.7	ug/Kg	☼	10/08/17 10:56	10/10/17 22:00	1
Tetra-n-butyltin	ND		95	27	ug/Kg	☼	10/08/17 10:56	10/10/17 22:00	1
Tributyltin	ND		17	3.6	ug/Kg	☼	10/08/17 10:56	10/10/17 22:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*43*		*10 - 113*	*10/08/17 10:56*	*10/10/17 22:00*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	**1500**	**H**	240	57	mg/Kg	☼	10/11/17 15:42	10/11/17 17:51	10

Client: Whatcom Environmental Services Inc.
Project/Site: Lovric's Sea Craft Sediment Sampling

TestAmerica Job ID: 580-71823-1

Client Sample ID: A-7
Date Collected: 09/25/17 12:50
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-6
Matrix: Solid

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	18000		2000	44	mg/Kg			10/09/17 13:20	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	51.5		0.1	0.1	%			10/05/17 16:11	1
Percent Moisture	48.5		0.1	0.1	%			10/05/17 16:11	1

Method: D422 - Grain Size

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Gravel	0.4				%			10/06/17 15:10	1
Coarse Sand	3.9				%			10/06/17 15:10	1
Medium Sand	12.2				%			10/06/17 15:10	1
Fine Sand	33.9				%			10/06/17 15:10	1
Silt	37.6				%			10/06/17 15:10	1
Clay	12.0				%			10/06/17 15:10	1

Client Sample ID: A-7 **Lab Sample ID: 580-71823-6**
Date Collected: 09/25/17 12:50 **Matrix: Solid**
Date Received: 09/28/17 09:20 **Percent Solids: 51.5**

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibutyltin	37		24	5.5	ug/Kg	☼	10/08/17 10:56	10/10/17 22:26	1
Monobutyltin	5.9	J	15	3.6	ug/Kg	☼	10/08/17 10:56	10/10/17 22:26	1
Tetra-n-butyltin	ND		73	21	ug/Kg	☼	10/08/17 10:56	10/10/17 22:26	1
Tributyltin	160		13	2.8	ug/Kg	☼	10/08/17 10:56	10/10/17 22:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*33*		*10 - 113*	*10/08/17 10:56*	*10/10/17 22:26*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	1200	H	190	46	mg/Kg	☼	10/11/17 15:42	10/11/17 17:51	10

Client: Whatcom Environmental Services Inc.
Project/Site: Lovric's Sea Craft Sediment Sampling

TestAmerica Job ID: 580-71823-1

Client Sample ID: A-8
Date Collected: 09/25/17 13:35
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-7
Matrix: Solid

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	15000		2000	44	mg/Kg			10/09/17 13:25	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	47.3		0.1	0.1	%			10/05/17 16:11	1
Percent Moisture	52.7		0.1	0.1	%			10/05/17 16:11	1

Method: D422 - Grain Size

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Gravel	0.0				%			10/06/17 15:10	1
Coarse Sand	0.3				%			10/06/17 15:10	1
Medium Sand	7.8				%			10/06/17 15:10	1
Fine Sand	28.1				%			10/06/17 15:10	1
Silt	50.0				%			10/06/17 15:10	1
Clay	13.8				%			10/06/17 15:10	1

Client Sample ID: A-8 **Lab Sample ID: 580-71823-7**
Date Collected: 09/25/17 13:35 **Matrix: Solid**
Date Received: 09/28/17 09:20 **Percent Solids: 47.3**

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibutyltin	ND		26	6.1	ug/Kg	☼	10/08/17 10:56	10/10/17 22:52	1
Monobutyltin	ND		16	4.0	ug/Kg	☼	10/08/17 10:56	10/10/17 22:52	1
Tetra-n-butyltin	ND		81	23	ug/Kg	☼	10/08/17 10:56	10/10/17 22:52	1
Tributyltin	**110**		14	3.1	ug/Kg	☼	10/08/17 10:56	10/10/17 22:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*61*		*10 - 113*	*10/08/17 10:56*	*10/10/17 22:52*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	**800**	**H**	210	51	mg/Kg	☼	10/11/17 16:09	10/11/17 17:51	10

Client: Whatcom Environmental Services Inc.
Project/Site: Lovric's Sea Craft Sediment Sampling

TestAmerica Job ID: 580-71823-1

Client Sample ID: A-9
Date Collected: 09/25/17 14:10
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-8
Matrix: Solid

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	16000		2000	44	mg/Kg			10/09/17 13:30	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	38.6		0.1	0.1	%			10/05/17 16:11	1
Percent Moisture	61.4		0.1	0.1	%			10/05/17 16:11	1

Method: D422 - Grain Size

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Gravel	0.0				%			10/06/17 15:10	1
Coarse Sand	0.1				%			10/06/17 15:10	1
Medium Sand	2.5				%			10/06/17 15:10	1
Fine Sand	28.5				%			10/06/17 15:10	1
Silt	51.2				%			10/06/17 15:10	1
Clay	17.8				%			10/06/17 15:10	1

Client Sample ID: A-9
Date Collected: 09/25/17 14:10
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-8
Matrix: Solid
Percent Solids: 38.6

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibutyltin	ND		32	7.4	ug/Kg	☼	10/08/17 10:56	10/10/17 23:18	1
Monobutyltin	ND		20	4.9	ug/Kg	☼	10/08/17 10:56	10/10/17 23:18	1
Tetra-n-butyltin	ND		98	28	ug/Kg	☼	10/08/17 10:56	10/10/17 23:18	1
Tributyltin	ND		17	3.7	ug/Kg	☼	10/08/17 10:56	10/10/17 23:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*49*		*10 - 113*	*10/08/17 10:56*	*10/10/17 23:18*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	**1500**	**H**	260	62	mg/Kg	☼	10/11/17 16:09	10/11/17 17:51	10

Client: Whatcom Environmental Services Inc.
Project/Site: Lovric's Sea Craft Sediment Sampling

TestAmerica Job ID: 580-71823-1

Client Sample ID: B-1
Date Collected: 09/26/17 14:25
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-9
Matrix: Solid

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	29000		2000	44	mg/Kg			10/09/17 13:35	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	57.7		0.1	0.1	%			10/05/17 16:11	1
Percent Moisture	42.3		0.1	0.1	%			10/05/17 16:11	1

Method: D422 - Grain Size

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Gravel	3.5				%			10/06/17 15:10	1
Coarse Sand	4.5				%			10/06/17 15:10	1
Medium Sand	5.3				%			10/06/17 15:10	1
Fine Sand	62.9				%			10/06/17 15:10	1
Silt	17.5				%			10/06/17 15:10	1
Clay	6.3				%			10/06/17 15:10	1

Client Sample ID: B-1
Date Collected: 09/26/17 14:25
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-9
Matrix: Solid
Percent Solids: 57.7

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibutyltin	ND		22	5.1	ug/Kg	☼	10/08/17 10:56	10/10/17 23:43	1
Monobutyltin	ND		13	3.3	ug/Kg	☼	10/08/17 10:56	10/10/17 23:43	1
Tetra-n-butyltin	ND		67	19	ug/Kg	☼	10/08/17 10:56	10/10/17 23:43	1
Tributyltin	**11**	**J**	12	2.6	ug/Kg	☼	10/08/17 10:56	10/10/17 23:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*46*		*10 - 113*	*10/08/17 10:56*	*10/10/17 23:43*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	**1200**	**H**	170	42	mg/Kg	☼	10/11/17 16:09	10/11/17 17:51	10

Client: Whatcom Environmental Services Inc.
Project/Site: Lovric's Sea Craft Sediment Sampling

TestAmerica Job ID: 580-71823-1

Client Sample ID: B-3
Date Collected: 09/27/17 10:45
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-10
Matrix: Solid

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	5700		2000	44	mg/Kg			10/09/17 13:56	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	71.4		0.1	0.1	%			10/05/17 16:11	1
Percent Moisture	28.6		0.1	0.1	%			10/05/17 16:11	1

Method: D422 - Grain Size

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Gravel	0.1				%			10/06/17 15:10	1
Coarse Sand	1.3				%			10/06/17 15:10	1
Medium Sand	2.6				%			10/06/17 15:10	1
Fine Sand	79.6				%			10/06/17 15:10	1
Silt	9.7				%			10/06/17 15:10	1
Clay	6.8				%			10/06/17 15:10	1

Client Sample ID: B-3 **Lab Sample ID: 580-71823-10**
Date Collected: 09/27/17 10:45 **Matrix: Solid**
Date Received: 09/28/17 09:20 **Percent Solids: 71.4**

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibutyltin	ND		17	3.9	ug/Kg	☼	10/08/17 10:56	10/11/17 00:09	1
Monobutyltin	ND		10	2.6	ug/Kg	☼	10/08/17 10:56	10/11/17 00:09	1
Tetra-n-butyltin	ND		52	15	ug/Kg	☼	10/08/17 10:56	10/11/17 00:09	1
Tributyltin	ND		9.1	2.0	ug/Kg	☼	10/08/17 10:56	10/11/17 00:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*34*		*10 - 113*	*10/08/17 10:56*	*10/11/17 00:09*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	**340**	**H**	140	34	mg/Kg	☼	10/11/17 10:06	10/11/17 12:41	10

Client: Whatcom Environmental Services Inc.
Project/Site: Lovric's Sea Craft Sediment Sampling

TestAmerica Job ID: 580-71823-1

Client Sample ID: B-4
Date Collected: 09/26/17 13:30
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-11
Matrix: Solid

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	16000		2000	44	mg/Kg			10/09/17 11:53	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	53.9		0.1	0.1	%			10/05/17 16:11	1
Percent Moisture	46.1		0.1	0.1	%			10/05/17 16:11	1

Method: D422 - Grain Size

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Gravel	2.2				%			10/06/17 15:10	1
Coarse Sand	0.6				%			10/06/17 15:10	1
Medium Sand	2.6				%			10/06/17 15:10	1
Fine Sand	41.2				%			10/06/17 15:10	1
Silt	42.0				%			10/06/17 15:10	1
Clay	11.5				%			10/06/17 15:10	1

Client Sample ID: B-4
Date Collected: 09/26/17 13:30
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-11
Matrix: Solid
Percent Solids: 53.9

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibutyltin	ND		21	4.9	ug/Kg	☼	10/08/17 10:56	10/11/17 00:35	1
Monobutyltin	ND		13	3.2	ug/Kg	☼	10/08/17 10:56	10/11/17 00:35	1
Tetra-n-butyltin	ND	F2	64	18	ug/Kg	☼	10/08/17 10:56	10/11/17 00:35	1
Tributyltin	ND		11	2.5	ug/Kg	☼	10/08/17 10:56	10/11/17 00:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*37*		*10 - 113*	*10/08/17 10:56*	*10/11/17 00:35*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	**2400**	**H**	190	45	mg/Kg	☼	10/11/17 10:06	10/11/17 12:41	10

Client: Whatcom Environmental Services Inc.
Project/Site: Lovric's Sea Craft Sediment Sampling

TestAmerica Job ID: 580-71823-1

Client Sample ID: B-5
Date Collected: 09/26/17 15:30
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-12
Matrix: Solid

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	16000		2000	44	mg/Kg			10/09/17 14:02	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	62.9		0.1	0.1	%			10/05/17 16:11	1
Percent Moisture	37.1		0.1	0.1	%			10/05/17 16:11	1

Method: D422 - Grain Size

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Gravel	0.1				%			10/06/17 15:10	1
Coarse Sand	5.2				%			10/06/17 15:10	1
Medium Sand	5.2				%			10/06/17 15:10	1
Fine Sand	61.7				%			10/06/17 15:10	1
Silt	19.3				%			10/06/17 15:10	1
Clay	8.4				%			10/06/17 15:10	1

Client Sample ID: B-5 **Lab Sample ID: 580-71823-12**
Date Collected: 09/26/17 15:30 **Matrix: Solid**
Date Received: 09/28/17 09:20 **Percent Solids: 62.9**

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibutyltin	ND		21	4.8	ug/Kg	☼	10/08/17 10:56	10/11/17 01:52	1
Monobutyltin	ND		13	3.1	ug/Kg	☼	10/08/17 10:56	10/11/17 01:52	1
Tetra-n-butyltin	ND		63	18	ug/Kg	☼	10/08/17 10:56	10/11/17 01:52	1
Tributyltin	ND		11	2.4	ug/Kg	☼	10/08/17 10:56	10/11/17 01:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*43*		*10 - 113*	*10/08/17 10:56*	*10/11/17 01:52*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	**570**	**H**	160	38	mg/Kg	☼	10/11/17 16:09	10/11/17 17:51	10

Client: Whatcom Environmental Services Inc.
Project/Site: Lovric's Sea Craft Sediment Sampling

TestAmerica Job ID: 580-71823-1

Client Sample ID: B-6
Date Collected: 09/27/17 11:35
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-13
Matrix: Solid

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	4400		2000	44	mg/Kg			10/09/17 14:07	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	66.0		0.1	0.1	%			10/05/17 16:11	1
Percent Moisture	34.0		0.1	0.1	%			10/05/17 16:11	1

Method: D422 - Grain Size

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Gravel	0.2				%			10/06/17 15:10	1
Coarse Sand	2.1				%			10/06/17 15:10	1
Medium Sand	3.1				%			10/06/17 15:10	1
Fine Sand	64.8				%			10/06/17 15:10	1
Silt	23.3				%			10/06/17 15:10	1
Clay	6.5				%			10/06/17 15:10	1

Client Sample ID: B-6 **Lab Sample ID: 580-71823-13**
Date Collected: 09/27/17 11:35 **Matrix: Solid**
Date Received: 09/28/17 09:20 **Percent Solids: 66.0**

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibutyltin	ND		18	4.2	ug/Kg	☼	10/08/17 10:56	10/11/17 02:18	1
Monobutyltin	ND		11	2.8	ug/Kg	☼	10/08/17 10:56	10/11/17 02:18	1
Tetra-n-butyltin	ND		56	16	ug/Kg	☼	10/08/17 10:56	10/11/17 02:18	1
Tributyltin	ND		9.7	2.1	ug/Kg	☼	10/08/17 10:56	10/11/17 02:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*43*		*10 - 113*	*10/08/17 10:56*	*10/11/17 02:18*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	**420**	**H**	150	36	mg/Kg	☼	10/11/17 16:09	10/11/17 17:51	10

Method: Organotins - Organotins, PSEP (GC/MS)

Lab Sample ID: MB 580-258360/1-A
Matrix: Solid
Analysis Batch: 258484

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 258360

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibutyltin	ND		13	3.0	ug/Kg		10/08/17 10:56	10/10/17 18:05	1
Monobutyltin	ND		8.0	2.0	ug/Kg		10/08/17 10:56	10/10/17 18:05	1
Tetra-n-butyltin	ND		40	12	ug/Kg		10/08/17 10:56	10/10/17 18:05	1
Tributyltin	ND		7.0	1.5	ug/Kg		10/08/17 10:56	10/10/17 18:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*53*		*10 - 113*	*10/08/17 10:56*	*10/10/17 18:05*	*1*

Lab Sample ID: LCS 580-258360/2-A
Matrix: Solid
Analysis Batch: 258484

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 258360

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dibutyltin	61.9	31.9		ug/Kg		52	15 - 141
Monobutyltin	50.2	20.2		ug/Kg		40	10 - 140
Tetra-n-butyltin	80.6	23.3	J	ug/Kg		29	10 - 110
Tributyltin	71.8	34.4		ug/Kg		48	14 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tripentyltin	*51*		*10 - 113*

Lab Sample ID: 580-71823-11 MS
Matrix: Solid
Analysis Batch: 258484

Client Sample ID: B-4
Prep Type: Total/NA
Prep Batch: 258360

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Dibutyltin	ND		110	44.1		ug/Kg	☼	40	15 - 141
Monobutyltin	ND		89.4	13.8	J	ug/Kg	☼	15	10 - 140
Tetra-n-butyltin	ND	F2	144	36.3	J	ug/Kg	☼	25	10 - 110
Tributyltin	ND		128	36.6		ug/Kg	☼	29	14 - 150

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Tripentyltin	*108*		*10 - 113*

Lab Sample ID: 580-71823-11 MSD
Matrix: Solid
Analysis Batch: 258484

Client Sample ID: B-4
Prep Type: Total/NA
Prep Batch: 258360

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dibutyltin	ND		103	43.9		ug/Kg	☼	43	15 - 141	1	10
Monobutyltin	ND		83.2	17.9		ug/Kg	☼	22	10 - 140	26	40
Tetra-n-butyltin	ND	F2	134	26.0	J F2	ug/Kg	☼	19	10 - 110	33	10
Tributyltin	ND		119	37.3		ug/Kg	☼	31	14 - 150	2	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Tripentyltin	*31*		*10 - 113*

Method: 9034 - Sulfide, Acid Soluble and Insoluble (Titrimetric)

Lab Sample ID: MB 280-390586/1-A
Matrix: Solid
Analysis Batch: 390639

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390586

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	ND		10	2.4	mg/Kg		10/09/17 14:50	10/09/17 21:24	1

Lab Sample ID: LCS 280-390586/2-A
Matrix: Solid
Analysis Batch: 390639

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390586

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	107	84.0		mg/Kg		78	38 - 104

Lab Sample ID: MB 280-390881/5-A
Matrix: Solid
Analysis Batch: 390935

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390881

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	ND		2.0	0.48	mg/Kg		10/11/17 10:06	10/11/17 12:41	1

Lab Sample ID: LCS 280-390881/6-A
Matrix: Solid
Analysis Batch: 390935

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390881

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	21.2	15.2		mg/Kg		72	38 - 104

Lab Sample ID: 580-71823-11 MS
Matrix: Solid
Analysis Batch: 390935

Client Sample ID: B-4
Prep Type: Total/NA
Prep Batch: 390881

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	2400	H	197	2520	H 4	mg/Kg	☼	38	38 - 104

Lab Sample ID: 580-71823-11 MSD
Matrix: Solid
Analysis Batch: 390935

Client Sample ID: B-4
Prep Type: Total/NA
Prep Batch: 390881

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfide	2400	H	197	2600	H 4	mg/Kg	☼	75	38 - 104	3	35

Lab Sample ID: MB 280-390958/1-A
Matrix: Solid
Analysis Batch: 390966

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390958

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	ND		10	2.4	mg/Kg		10/11/17 15:40	10/11/17 17:51	1

Lab Sample ID: LCS 280-390958/2-A
Matrix: Solid
Analysis Batch: 390966

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390958

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	106	76.0		mg/Kg		72	38 - 104

Method: 9060_PSEP - TOC (Puget Sound)

Lab Sample ID: MB 580-258439/3
Matrix: Solid
Analysis Batch: 258439

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	ND		2000	44	mg/Kg			10/09/17 10:49	1

Lab Sample ID: LCS 580-258439/4
Matrix: Solid
Analysis Batch: 258439

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon - Duplicates			4620	5750		mg/Kg		124	68 - 149		

Lab Sample ID: LCSD 580-258439/5
Matrix: Solid
Analysis Batch: 258439

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon - Duplicates			4620	5150		mg/Kg		111	68 - 149	11	32

Lab Sample ID: 580-71823-11 MS
Matrix: Solid
Analysis Batch: 258439

Client Sample ID: B-4
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon - Duplicates	16000		120000	127000		mg/Kg		92	68 - 149		

Lab Sample ID: 580-71823-11 MSD
Matrix: Solid
Analysis Batch: 258439

Client Sample ID: B-4
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon - Duplicates	16000		120000	131000		mg/Kg		96	68 - 149	3	32

Lab Sample ID: 580-71823-1 DU
Matrix: Solid
Analysis Batch: 258439

Client Sample ID: A-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Organic Carbon - Duplicates	19000			20500		mg/Kg				7	50

Lab Sample ID: 580-71823-11 DU
Matrix: Solid
Analysis Batch: 258439

Client Sample ID: B-4
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Organic Carbon - Duplicates	16000			15700		mg/Kg				5	50

Method: 9060_PSEP - TOC (Puget Sound) (Continued)

Lab Sample ID: 580-71823-1 TRL
Matrix: Solid
Analysis Batch: 258439

Client Sample ID: TRIP
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		TRL Result	TRL Qualifier	Unit	D			RSD	RSD Limit
Total Organic Carbon - Duplicates	19000			19400		mg/Kg				4	

Method: D422 - Grain Size

Lab Sample ID: 580-71823-11 DU
Matrix: Solid
Analysis Batch: 258304

Client Sample ID: B-4
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Gravel	2.2			4.3	F3	%				65	20
Coarse Sand	0.6			1.4	F3	%				80	20
Medium Sand	2.6			2.0	F3	%				26	20
Fine Sand	41.2			37.8		%				9	20
Silt	42.0			41.2		%				2	20
Clay	11.5			12.9		%				11	20

Lab Chronicle

Client: Whatcom Environmental Services Inc.
Project/Site: Lovric's Sea Craft Sediment Sampling

TestAmerica Job ID: 580-71823-1

Client Sample ID: A-1
Date Collected: 09/26/17 10:45
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	258439	10/09/17 12:09	J1Y	TAL SEA
Total/NA	Analysis	D 2216		1	258216	10/05/17 16:11	JWL	TAL SEA
Total/NA	Analysis	D422		1	258304	10/06/17 15:10	HJM	TAL SEA

Client Sample ID: A-1
Date Collected: 09/26/17 10:45
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-1
Matrix: Solid
Percent Solids: 46.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin Prep			258360	10/08/17 10:56	ERZ	TAL SEA
Total/NA	Analysis	Organotins		1	258484	10/10/17 20:16	ERB	TAL SEA
Total/NA	Prep	9030B			390586	10/09/17 14:50	ALS	TAL DEN
Total/NA	Analysis	9034		10	390639	10/09/17 21:24	ALS	TAL DEN

Client Sample ID: A-3
Date Collected: 09/26/17 12:00
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	258439	10/09/17 13:00	J1Y	TAL SEA
Total/NA	Analysis	D 2216		1	258216	10/05/17 16:11	JWL	TAL SEA

Client Sample ID: A-3
Date Collected: 09/26/17 12:00
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-2
Matrix: Solid
Percent Solids: 40.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin Prep			258360	10/08/17 10:56	ERZ	TAL SEA
Total/NA	Analysis	Organotins		1	258484	10/10/17 20:42	ERB	TAL SEA
Total/NA	Prep	9030B			390586	10/09/17 14:50	ALS	TAL DEN
Total/NA	Analysis	9034		10	390639	10/09/17 21:24	ALS	TAL DEN

Client Sample ID: A-4
Date Collected: 09/26/17 10:15
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	258439	10/09/17 13:05	J1Y	TAL SEA
Total/NA	Analysis	D 2216		1	258216	10/05/17 16:11	JWL	TAL SEA
Total/NA	Analysis	D422		1	258304	10/06/17 15:10	HJM	TAL SEA

Lab Chronicle

Client: Whatcom Environmental Services Inc.
Project/Site: Lovric's Sea Craft Sediment Sampling

TestAmerica Job ID: 580-71823-1

Client Sample ID: A-4
Date Collected: 09/26/17 10:15
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-3
Matrix: Solid
Percent Solids: 51.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin Prep			258360	10/08/17 10:56	ERZ	TAL SEA
Total/NA	Analysis	Organotins		1	258484	10/10/17 21:08	ERB	TAL SEA
Total/NA	Prep	9030B			390586	10/09/17 14:50	ALS	TAL DEN
Total/NA	Analysis	9034		10	390639	10/09/17 21:24	ALS	TAL DEN

Client Sample ID: A-5
Date Collected: 09/25/17 15:35
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	258439	10/09/17 13:10	J1Y	TAL SEA
Total/NA	Analysis	D 2216		1	258216	10/05/17 16:11	JWL	TAL SEA
Total/NA	Analysis	D422		1	258304	10/06/17 15:10	HJM	TAL SEA

Client Sample ID: A-5
Date Collected: 09/25/17 15:35
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-4
Matrix: Solid
Percent Solids: 44.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin Prep			258360	10/08/17 10:56	ERZ	TAL SEA
Total/NA	Analysis	Organotins		1	258484	10/10/17 21:34	ERB	TAL SEA
Total/NA	Prep	9030B			390586	10/09/17 14:50	ALS	TAL DEN
Total/NA	Analysis	9034		10	390639	10/09/17 21:24	ALS	TAL DEN

Client Sample ID: A-6
Date Collected: 09/25/17 14:50
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-5
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	258439	10/09/17 13:15	J1Y	TAL SEA
Total/NA	Analysis	D 2216		1	258216	10/05/17 16:11	JWL	TAL SEA
Total/NA	Analysis	D422		1	258304	10/06/17 15:10	HJM	TAL SEA

Client Sample ID: A-6
Date Collected: 09/25/17 14:50
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-5
Matrix: Solid
Percent Solids: 41.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin Prep			258360	10/08/17 10:56	ERZ	TAL SEA
Total/NA	Analysis	Organotins		1	258484	10/10/17 22:00	ERB	TAL SEA
Total/NA	Prep	9030B			390958	10/11/17 15:42	ALS	TAL DEN
Total/NA	Analysis	9034		10	390966	10/11/17 17:51	ALS	TAL DEN

Lab Chronicle

Client: Whatcom Environmental Services Inc.
Project/Site: Lovric's Sea Craft Sediment Sampling

TestAmerica Job ID: 580-71823-1

Client Sample ID: A-7
Date Collected: 09/25/17 12:50
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-6
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	258439	10/09/17 13:20	J1Y	TAL SEA
Total/NA	Analysis	D 2216		1	258216	10/05/17 16:11	JWL	TAL SEA
Total/NA	Analysis	D422		1	258304	10/06/17 15:10	HJM	TAL SEA

Client Sample ID: A-7
Date Collected: 09/25/17 12:50
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-6
Matrix: Solid
Percent Solids: 51.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin Prep			258360	10/08/17 10:56	ERZ	TAL SEA
Total/NA	Analysis	Organotins		1	258484	10/10/17 22:26	ERB	TAL SEA
Total/NA	Prep	9030B			390958	10/11/17 15:42	ALS	TAL DEN
Total/NA	Analysis	9034		10	390966	10/11/17 17:51	ALS	TAL DEN

Client Sample ID: A-8
Date Collected: 09/25/17 13:35
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-7
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	258439	10/09/17 13:25	J1Y	TAL SEA
Total/NA	Analysis	D 2216		1	258216	10/05/17 16:11	JWL	TAL SEA
Total/NA	Analysis	D422		1	258304	10/06/17 15:10	HJM	TAL SEA

Client Sample ID: A-8
Date Collected: 09/25/17 13:35
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-7
Matrix: Solid
Percent Solids: 47.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin Prep			258360	10/08/17 10:56	ERZ	TAL SEA
Total/NA	Analysis	Organotins		1	258484	10/10/17 22:52	ERB	TAL SEA
Total/NA	Prep	9030B			390958	10/11/17 16:09	ALS	TAL DEN
Total/NA	Analysis	9034		10	390966	10/11/17 17:51	ALS	TAL DEN

Client Sample ID: A-9
Date Collected: 09/25/17 14:10
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-8
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	258439	10/09/17 13:30	J1Y	TAL SEA
Total/NA	Analysis	D 2216		1	258216	10/05/17 16:11	JWL	TAL SEA
Total/NA	Analysis	D422		1	258304	10/06/17 15:10	HJM	TAL SEA

Lab Chronicle

Client: Whatcom Environmental Services Inc.
Project/Site: Lovric's Sea Craft Sediment Sampling

TestAmerica Job ID: 580-71823-1

Client Sample ID: A-9
Date Collected: 09/25/17 14:10
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-8
Matrix: Solid
Percent Solids: 38.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin Prep			258360	10/08/17 10:56	ERZ	TAL SEA
Total/NA	Analysis	Organotins		1	258484	10/10/17 23:18	ERB	TAL SEA
Total/NA	Prep	9030B			390958	10/11/17 16:09	ALS	TAL DEN
Total/NA	Analysis	9034		10	390966	10/11/17 17:51	ALS	TAL DEN

Client Sample ID: B-1
Date Collected: 09/26/17 14:25
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-9
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	258439	10/09/17 13:35	J1Y	TAL SEA
Total/NA	Analysis	D 2216		1	258216	10/05/17 16:11	JWL	TAL SEA
Total/NA	Analysis	D422		1	258304	10/06/17 15:10	HJM	TAL SEA

Client Sample ID: B-1
Date Collected: 09/26/17 14:25
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-9
Matrix: Solid
Percent Solids: 57.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin Prep			258360	10/08/17 10:56	ERZ	TAL SEA
Total/NA	Analysis	Organotins		1	258484	10/10/17 23:43	ERB	TAL SEA
Total/NA	Prep	9030B			390958	10/11/17 16:09	ALS	TAL DEN
Total/NA	Analysis	9034		10	390966	10/11/17 17:51	ALS	TAL DEN

Client Sample ID: B-3
Date Collected: 09/27/17 10:45
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-10
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	258439	10/09/17 13:56	J1Y	TAL SEA
Total/NA	Analysis	D 2216		1	258216	10/05/17 16:11	JWL	TAL SEA
Total/NA	Analysis	D422		1	258304	10/06/17 15:10	HJM	TAL SEA

Client Sample ID: B-3
Date Collected: 09/27/17 10:45
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-10
Matrix: Solid
Percent Solids: 71.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin Prep			258360	10/08/17 10:56	ERZ	TAL SEA
Total/NA	Analysis	Organotins		1	258484	10/11/17 00:09	ERB	TAL SEA
Total/NA	Prep	9030B			390881	10/11/17 10:06	PAH	TAL DEN
Total/NA	Analysis	9034		10	390935	10/11/17 12:41	PAH	TAL DEN

Client Sample ID: B-4

Lab Sample ID: 580-71823-11
Date Collected: 09/26/17 13:30
Matrix: Solid
Date Received: 09/28/17 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	258439	10/09/17 11:53	J1Y	TAL SEA
Total/NA	Analysis	D 2216		1	258216	10/05/17 16:11	JWL	TAL SEA
Total/NA	Analysis	D422		1	258304	10/06/17 15:10	HJM	TAL SEA

Client Sample ID: B-4

Lab Sample ID: 580-71823-11
Date Collected: 09/26/17 13:30
Matrix: Solid
Date Received: 09/28/17 09:20
Percent Solids: 53.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin Prep			258360	10/08/17 10:56	ERZ	TAL SEA
Total/NA	Analysis	Organotins		1	258484	10/11/17 00:35	ERB	TAL SEA
Total/NA	Prep	9030B			390881	10/11/17 10:06	PAH	TAL DEN
Total/NA	Analysis	9034		10	390935	10/11/17 12:41	PAH	TAL DEN

Client Sample ID: B-5

Lab Sample ID: 580-71823-12
Date Collected: 09/26/17 15:30
Matrix: Solid
Date Received: 09/28/17 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	258439	10/09/17 14:02	J1Y	TAL SEA
Total/NA	Analysis	D 2216		1	258216	10/05/17 16:11	JWL	TAL SEA
Total/NA	Analysis	D422		1	258304	10/06/17 15:10	HJM	TAL SEA

Client Sample ID: B-5

Lab Sample ID: 580-71823-12
Date Collected: 09/26/17 15:30
Matrix: Solid
Date Received: 09/28/17 09:20
Percent Solids: 62.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin Prep			258360	10/08/17 10:56	ERZ	TAL SEA
Total/NA	Analysis	Organotins		1	258484	10/11/17 01:52	ERB	TAL SEA
Total/NA	Prep	9030B			390958	10/11/17 16:09	ALS	TAL DEN
Total/NA	Analysis	9034		10	390966	10/11/17 17:51	ALS	TAL DEN

Client Sample ID: B-6

Lab Sample ID: 580-71823-13
Date Collected: 09/27/17 11:35
Matrix: Solid
Date Received: 09/28/17 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	258439	10/09/17 14:07	J1Y	TAL SEA
Total/NA	Analysis	D 2216		1	258216	10/05/17 16:11	JWL	TAL SEA
Total/NA	Analysis	D422		1	258304	10/06/17 15:10	HJM	TAL SEA

Lab Chronicle

Client: Whatcom Environmental Services Inc.
Project/Site: Lovric's Sea Craft Sediment Sampling

TestAmerica Job ID: 580-71823-1

Client Sample ID: B-6
Date Collected: 09/27/17 11:35
Date Received: 09/28/17 09:20

Lab Sample ID: 580-71823-13
Matrix: Solid
Percent Solids: 66.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin Prep			258360	10/08/17 10:56	ERZ	TAL SEA
Total/NA	Analysis	Organotins		1	258484	10/11/17 02:18	ERB	TAL SEA
Total/NA	Prep	9030B			390958	10/11/17 16:09	ALS	TAL DEN
Total/NA	Analysis	9034		10	390966	10/11/17 17:51	ALS	TAL DEN

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Whatcom Environmental Services Inc. TestAmerica Job ID: 580-71823-1
Project/Site: Lovric's Sea Craft Sediment Sampling

Laboratory: TestAmerica Seattle

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	UST-022	03-02-18
California	State Program	9	2901	01-31-18
L-A-B	DoD ELAP		L2236	01-19-19
L-A-B	ISO/IEC 17025		L2236	01-19-19
Montana (UST)	State Program	8	N/A	04-30-20
Oregon	NELAP	10	WA100007	11-05-17
US Fish & Wildlife	Federal		LE058448-0	10-31-18
USDA	Federal		P330-14-00126	02-10-20
Washington	State Program	10	C553	02-17-18

Laboratory: TestAmerica Denver

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17
A2LA	ISO/IEC 17025		2907.01	10-31-17
Alabama	State Program	4	40730	09-30-12 *
Alaska (UST)	State Program	10	UST-30	04-05-18
Arizona	State Program	9	AZ0713	12-20-17
Arkansas DEQ	State Program	6	88-0687	06-01-18
California	State Program	9	2513	01-08-18
Connecticut	State Program	1	PH-0686	09-30-18
Florida	NELAP	4	E87667	06-30-18
Georgia	State Program	4	N/A	01-08-18
Illinois	NELAP	5	200017	04-30-18
Iowa	State Program	7	370	12-01-18
Kansas	NELAP	7	E-10166	04-30-18
Louisiana	NELAP	6	02096	06-30-18
Maine	State Program	1	CO0002	03-03-19
Minnesota	NELAP	5	8-999-405	12-31-17
Nevada	State Program	9	CO0026	07-31-18
New Hampshire	NELAP	1	205310	04-28-18
New Jersey	NELAP	2	CO004	06-30-18
New York	NELAP	2	11964	04-01-18
North Carolina (WW/SW)	State Program	4	358	12-31-17
North Dakota	State Program	8	R-034	01-09-18
Oklahoma	State Program	6	8614	08-31-18
Oregon	NELAP	10	4025	01-08-18
Pennsylvania	NELAP	3	68-00664	07-31-18
South Carolina	State Program	4	72002001	01-08-18
Texas	NELAP	6	T104704183-16-12	09-30-18
USDA	Federal		P330-16-00397	12-15-19
Utah	NELAP	8	CO00026	07-31-18
Virginia	NELAP	3	460232	06-14-18
Washington	State Program	10	C583	08-03-18
West Virginia DEP	State Program	3	354	11-30-17
Wisconsin	State Program	5	999615430	08-31-18
Wyoming (UST)	A2LA	8	2907.01	10-31-17

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Sample Summary

Client: Whatcom Environmental Services Inc.
Project/Site: Lovric's Sea Craft Sediment Sampling

TestAmerica Job ID: 580-71823-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-71823-1	A-1	Solid	09/26/17 10:45	09/28/17 09:20
580-71823-2	A-3	Solid	09/26/17 12:00	09/28/17 09:20
580-71823-3	A-4	Solid	09/26/17 10:15	09/28/17 09:20
580-71823-4	A-5	Solid	09/25/17 15:35	09/28/17 09:20
580-71823-5	A-6	Solid	09/25/17 14:50	09/28/17 09:20
580-71823-6	A-7	Solid	09/25/17 12:50	09/28/17 09:20
580-71823-7	A-8	Solid	09/25/17 13:35	09/28/17 09:20
580-71823-8	A-9	Solid	09/25/17 14:10	09/28/17 09:20
580-71823-9	B-1	Solid	09/26/17 14:25	09/28/17 09:20
580-71823-10	B-3	Solid	09/27/17 10:45	09/28/17 09:20
580-71823-11	B-4	Solid	09/26/17 13:30	09/28/17 09:20
580-71823-12	B-5	Solid	09/26/17 15:30	09/28/17 09:20
580-71823-13	B-6	Solid	09/27/17 11:35	09/28/17 09:20

Loc: 580

TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424-1317
phone 253.922.2310 fax 253.922.5047

71823

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program: ☐DW ☐NPDES ☐RCRA ☑Other: SMS

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Dan Heimbigner (W.E.S.)	Site Contact: Ed Ehler	Date: 9/27/17	COC No: 01
Lovric's Sea-Craft (Ed Ehler)	Tel/Fax: (360) 752-9571	Lab Contact: Sheri Cruz	Carrier: FedEx	___1___ of ___2___ COCs
3022 Oakes Ave	Analysis Turnaround Time			Sampler:
Anacortes, WA 98221	☐CALENDAR DAYS ☐WORKING DAYS			For Lab Use Only:
(206) 979-0784	TAT if different from Below _____			Walk-in Client:
	☑ 2 weeks			Lab Sampling:
Project Name: Sediment Sampling	☐ 1 week			
Site: Lovric's Sea-Craft	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Organotins Standard list bulk	Total Sulfides (Plumb 1981)	Total Organic Carbon (Method 9060)	Grain Size (PSEP 1997a or ASTM D-422	Sample Specific Notes:
A-1	9/26/17	10:45	G	Sed.	4	n		X	X	X	X	
~~A-2~~					0							Sampler refused (rocky substrate) at location A-2. No sample collected.
A-3	9/26/17	12:00	G	Sed.	4	n		X	X	X	X	
A-4	9/26/17	10:15	G	Sed.	4	n		X	X	X	X	
A-5	9/25/17	3:35	G	Sed.	4	n		X	X	X	X	
A-6	9/25/17	2:50	G	Sed.	4	n		X	X	X	X	
A-7	9/25/17	12:50	G	Sed.	4	n		X	X	X	X	
A-8	9/25/17	1:35	G	Sed.	4	n		X	X	X	X	
A-9	9/25/17	2:10	G	Sed.	4	n		X	X	X	X	
B-1	9/26/17	2:25	G	Sed.	4	n		X	X	X	X	
~~B-2~~					0							Location B-2 inaccessible (beneath pier). No sample collected.
B-3	9/27/17	10:45	G	Sed.	4	n		X	X	X	X	

580-71823 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☑Non-Hazard ☐Flammable ☐Skin Irritant ☐Poison B ☐Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐Return to Client ☑Disposal by Lab ☐Archive for_____ Months

Special Instructions/QC Requirements & Comments:

Please send results to W.E.S. (dheimbigner@whatcomenvironmental.com) *and* Lovric's Sea-Craft (cbmwehler@msn.com)

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd:_____ Corr'd:_____		Therm ID No.:_____
Relinquished by: Dan Heimbigner	Company: Whatcom Environmental Services	Date/Time: 9-27-17/300	Received by: Tom Blank	Company: TA-Sea	Date/Time: 9/28/17 0920
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.13, dated 9/1/2017

10/18/2017

TestAmerica Seattle
5755 8th Street East

Tacoma, WA 98424-1317
phone 253.922.2310 fax 253.922.5047

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program: ☐DW ☐NPDES ☐RCRA ☑Other: SMS

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Dan Heimbigner (W.E.S.)	Site Contact: Ed Ehler	Date: 9/27/17	COC No: 01
Lovric's Sea-Craft (Ed Ehler)	Tel/Fax: (360) 752-9571	Lab Contact: Sheri Cruz	Carrier: FedEx	2 of 2 COCs
3022 Oakes Ave	Analysis Turnaround Time			Sampler:
Anacortes, WA 98221	☐CALENDAR DAYS ☐WORKING DAYS			For Lab Use Only:
(206) 979-0784	TAT if different from Below ____			Walk-in Client:
	☑ 2 weeks			Lab Sampling:
Project Name: Sediment Sampling	☐ 1 week			
Site: Lovric's Sea-Craft	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Organotins Standard list bulk	Total Sulfides (Plumb 1981)	Total Organic Carbon (Method 9060)	Grain Size (PSEP 1997a or ASTM D-422	Sample Specific Notes:
B-4	9/26/17	1:30	G	Sed.	9	n	y	X	X	X	X	Extra volume collected for MS/MSD.
B-5	9/26/17	3:30	G	Sed.	4	n		X	X	X	X	
B-6	9/27/17	11:35	G	Sed.	4	n		X	X	X	X	

TB A2 Cooler ___ Cor 0.7 Unc 0.4
Cooler Dsc Lg Blue @Lab ___
Wet/Packs Packing Bubble
Fed Std overn w/seal

TB A2 Cooler ___ Cor 1.2 w/cs Unc 1.9
Cooler Dsc Lg Blue @Lab ___
Wet/Packs Packing cardboard

TB A2 Cooler ___ Cor 0.7 Unc 0.1
Cooler Dsc Lg Blue @Lab ___
Wet/Packs Packing Bubble
Fed 5.0 w/seal

Preservation Used: (1= Ice,) 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= Other ____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☑Non-Hazard ☐Flammable ☐Skin Irritant ☐Poison B ☐Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐Return to Client ☑Disposal by Lab ☐Archive for ____ Months

Special Instructions/QC Requirements & Comments:

Please send results to W.E.S. (dheimbigner@whatcomenvironmental.com) *and* Lovric's Sea-Craft (cbmwehler@msn.com)

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: ____ Corr'd: ____		Therm ID No.: ____
Relinquished by: Dan Heimbigner	Company: Whatcom Environmental Services	Date/Time: 9-27-17 1300	Received by: Tom Blank	Company: TASea	Date/Time: 9/28/17 0920
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.13, dated 9/1/2017

UPDATED by client

Cruz, Sheri

From: Dan Heimbigner <dheimbigner@whatcomenvironmental.com>
Sent: Friday, September 29, 2017 11:29 AM
To: Cruz, Sheri
Cc: Allen, Kristine; Walker, M Elaine
Subject: RE: Lovric's Samples

-External Email-

Hi Sheri,

Have the Lovric's sediment samples been checked in yet? I think there may be an error on my chain of custody (no grain size analysis sample container was included for A-3).

Let me know,

Thanks,

Dan Heimbigner

Whatcom Environmental Services
228 E. Champion St. #101
Bellingham, WA 98225
360-752-9571
www.whatcomenvironmental.com

nwhatcom ENVIRONMENTAL
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20 years 1997 - 2017

From: Allen, Kristine [mailto:Kristine.Allen@testamericainc.com]
Sent: Friday, September 22, 2017 4:28 PM

To: Dan Heimbigner <dheimbigner@whatcomenvironmental.com>; Walker, M Elaine <Elaine.Walker@testamericainc.com>
Cc: Cruz, Sheri <Sheri.Cruz@testamericainc.com>
Subject: RE: BP Gas Tank Farm

Sheri will be your contact for this one. Sorry about that – the Lovic Sea Craft Billing had me assign it differently.

You can contact me for anything as well.

KRIS ALLEN
Manager of Project Management
Pacific Northwest

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

5755 8th Street East
Tacoma, WA 98424
Dir 253.248.4970 | Cell: 253.433.0390
www.testamericainc.com

From: D n H i bi n r [ilto:dh i bi n r wh t o nviron nt l. o]
Sent: Frid y, pt b r 22, 2017 :2 PM
To: W lk r, M El in
Cc: All n, Kri tin
Subject: FW: P T nk F r

-External Email-

Hi Elaine,
Not sure if it matters, but I just remembered that a while back TestAmerica made Sheri Cruz the primary contact for all Whatcom Environmental projects.
I am happy to work with whomever.

Thanks,

Dan Heimbigner

Whatcom Environmental Services
228 E. Champion St. #101
Bellingham, WA 98225
360-752-9571
www.whatcomenvironmental.com

whatcom ENVIRONMENTAL
soil | water | air
compliance consulting

20 years 1997 - 2017

From: Walker, M Elaine [mailto:Elaine.Walker@testamericainc.com]
Sent: Wednesday, July 12, 2017 10:24 AM
To: Dan Heimbigner <dheimbigner@whatcomenvironmental.com>
Subject: RE: BP Gas Tank Farm

Those got transferred to Sheri as well so she will be the sole contact for your Company.

Thanks,
M. ELAINE WALKER
Project Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

5755 8th Street East
Tacoma, WA 98424
Tel 253.248.4972 | Fax 253.922.5047
www.testamericainc.com

From: D n H i bi n r [ilto:dh i bi n r wh t o nviron nt l. o]
Sent: W dn d y, July 12, 2017 10:2 AM
To: W lk r, M El in
Subject: P T nk F r

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Hi Elaine,

Are you still our project manager for the BP Gas Tank Farm and BP UST projects? Or did those get transferred to Sheri Cruz as well?

Thanks,

Dan Heimbigner

Whatcom Environmental Services
228 E. Champion St. #101
Bellingham, WA 98225
360-752-9571
www.whatcomenvironmental.com

TestAmerica Seattle
5755 8th Street East

Tacoma, WA 98424-1317
phone 253.922.2310 fax 253.922.5047

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: ☐DW ☐NPDES ☐RCRA ☑Other: SMS

Client Contact	Project Manager: Dan Heimbigner (W.E.S.)	Site Contact: Ed Ehler	Date: 9/27/17	COC No: 01
Lovric's Sea-Craft (Ed Ehler)	Tel/Fax: (360) 752-9571	Lab Contact: Sheri Cruz	Carrier: FedEx	1 of 2 COCs
3022 Oakes Ave	Analysis Turnaround Time			Sampler:
Anacortes, WA 98221	☐CALENDAR DAYS ☐WORKING DAYS			For Lab Use Only:
(206) 979-0784	TAT if different from Below ____			Walk-in Client:
	☑ 2 weeks			Lab Sampling:
Project Name: Sediment Sampling	☐ 1 week			
Site: Lovric's Sea-Craft	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Organotins Standard list bulk	Total Sulfides (Plumb 1981)	Total Organic Carbon (Method 9060)	Grain Size (PSEP 1987a or ASTM D-422	Sample Specific Notes:
A-1	9/26/17	10:45	G	Sed.	4	n		X	X	X	X	
A-2					0							Sampler refused (rocky substrate) at location A-2. No sample collected.
A-3	9/26/17	12:00	G	Sed.	4	n		X	X	X	X	No 160z Jar at A-3
A-4	9/26/17	10:15	G	Sed.	4	n		X	X	X	X	
A-5	9/25/17	3:35	G	Sed.	4	n		X	X	X	X	
A-6	9/25/17	2:50	G	Sed.	4	n		X	X	X	X	
A-7	9/25/17	12:50	G	Sed.	4	n		X	X	X	X	
A-8	9/25/17	1:35	G	Sed.	4	n		X	X	X	X	
A-9	9/25/17	2:10	G	Sed.	4	n		X	X	X	X	
B-1	9/26/17	2:25	G	Sed.	4	n		X	X	X	X	
B-2					0							Location B-2 inaccessible (beneath pier). No sample collected.
B-3	9/27/17	10:45	G	Sed.	4	n		X	X	X	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☑Non-Hazard ☐Flammable ☐Skin Irritant ☐Poison B ☐Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐Return to Client ☑Disposal by Lab ☐Archive for ____ Months

Special Instructions/QC Requirements & Comments:

Please send results to W.E.S. (dheimbigner@whatcomenvironmental.com) *and* Lovric's Sea-Craft (cbmwehler@msn.com)

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: ____ Corr'd: ____ Therm ID No.: ____		
Relinquished by: Dan Heimbigner	Company: Whatcom Environmental Services	Date/Time: 9-27-17 1300	Received by: Tom Blank	Company: TA-Sea	Date/Time: 9/28/17 0920
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.13, dated 9/1/2017

TestAmerica Seattle
5755 8th Street East

Tacoma, WA 98424-1317
phone 253.922.2310 fax 253.922.5047

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program: ☐DW ☐NPDES ☐RCRA ☑Other: SMS

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Dan Heimbigner (W.E.S.)	Site Contact: Ed Ehler	Date: 9/27/17	COC No: 01
Lovric's Sea-Craft (Ed Ehler)	Tel/Fax: (360) 752-9571	Lab Contact: Sheri Cruz	Carrier: FedEx	2 of 2 COCs
3022 Oakes Ave	Analysis Turnaround Time			Sampler:
Anacortes, WA 98221	☐CALENDAR DAYS ☐WORKING DAYS			For Lab Use Only:
(206) 979-0784	TAT if different from Below ____			Walk-in Client:
	☑ 2 weeks			Lab Sampling:
Project Name: Sediment Sampling	☐ 1 week			
Site: Lovric's Sea-Craft	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Organotins Standard list bulk	Total Sulfides (Plumb 1981)	Total Organic Carbon (Method 9060)	Grain Size (PSEP 1997a or ASTM D-422	Sample Specific Notes:
B-4	9/26/17	1:30	G	Sed.	9	n	y	X	X	X	X	Extra volume collected for MS/MSD.
B-5	9/26/17	3:30	G	Sed.	4	n		X	X	X	X	
B-6	9/27/17	11:35	G	Sed.	4	n		X	X	X	X	

TB A2 Cooler ___ Cor 0.7 Unc 1.4
Cooler Dsc Lg Blue @Lab ___
Wet/Packs Packing Bubble
Fed Std overn w/seal

TB A2 Cooler ___ Cor 1.2 w/cs Unc 1.9
Cooler Dsc Lg Blue @Lab ___
Wet/Packs Packing cardboard

TB A2 Cooler ___ Cor 0.7 Unc 0.1
Cooler Dsc Lg Blue @Lab ___
Wet/Packs Packing Bubble
Fed 5.0 w/seal

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☑Non-Hazard ☐Flammable ☐Skin Irritant ☐Poison B ☐Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐Return to Client ☑Disposal by Lab ☐Archive for ____ Months

Special Instructions/QC Requirements & Comments:

Please send results to W.E.S. (dheimbigner@whatcomenvironmental.com) *and* Lovric's Sea-Craft (cbmwehler@msn.com)

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: ____ Corr'd: ____ Therm ID No.: ____

Relinquished by: Dan Heimbigner	Company: Whatcom Environmental Services	Date/Time: 9-27-17 13:00	Received by: Tom Blanton	Company: TASea	Date/Time: 9/28/17 0920
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.13, dated 9/1/2017

TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Phone (253) 922-2310 Fax (253) 922-5047

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Cruz, Sheri L	Carrier Tracking No(s):	COC No: 580-50303.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: sheri.cruz@testamericainc.com	State of Origin: Washington	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 580-71823-1
Address: 4955 Yarrow Street,	Due Date Requested: 10/16/2017			
City: Arvada	TAT Requested (days):			
State, Zip: CO, 80002				
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO #:			
Email:	WO #:			
Project Name: Lovric's Sea Craft Sediment Sampling	Project #: 58011714			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9034/9030B	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
A-1 (580-71823-1)	9/26/17	10:45 Pacific		Solid			X	1	Total Sulfide by PSEP - requires special narrative comment (ask Seattle)
A-3 (580-71823-2)	9/26/17	12:00 Pacific		Solid			X	1	Total Sulfide by PSEP - requires special narrative comment (ask Seattle)
A-4 (580-71823-3)	9/26/17	10:15 Pacific		Solid			X	1	Total Sulfide by PSEP - requires special narrative comment (ask Seattle)
A-5 (580-71823-4)	9/25/17	15:35 Pacific		Solid			X	1	Total Sulfide by PSEP - requires special narrative comment (ask Seattle)
A-6 (580-71823-5)	9/25/17	14:50 Pacific		Solid			X	1	Total Sulfide by PSEP - requires special narrative comment (ask Seattle)
A-7 (580-71823-6)	9/25/17	12:50 Pacific		Solid			X	1	Total Sulfide by PSEP - requires special narrative comment (ask Seattle)
A-8 (580-71823-7)	9/25/17	13:35 Pacific		Solid			X	1	Total Sulfide by PSEP - requires special narrative comment (ask Seattle)
A-9 (580-71823-8)	9/25/17	14:10 Pacific		Solid			X	1	Total Sulfide by PSEP - requires special narrative comment (ask Seattle)
B-1 (580-71823-9)	9/26/17	14:25 Pacific		Solid			X	1	Total Sulfide by PSEP - requires special narrative comment (ask Seattle)

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1	Tom Blount	10/5/17	TA-Sea		10/6/17 0915	TAD
2						
3						

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 2.1°C + 0.1 IR #7 Transferred by BB 10/6/17

10/18/2017

TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Phone (253) 922-2310 Fax (253) 922-5047

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Cruz, Sheri L	Carrier Tracking No(s):	COC No: 580-50303.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: sheri.cruz@testamericainc.com	State of Origin: Washington	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 580-71823-1
Address: 4955 Yarrow Street,	Due Date Requested: 10/16/2017			
City: Arvada	TAT Requested (days):			
State, Zip: CO, 80002				
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO #:			
Email:	WO #:			
Project Name: Lovric's Sea Craft Sediment Sampling	Project #: 58011714			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9034/9030B	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
B-3 (580-71823-10)	9/27/17	10:45 Pacific		Solid			X	1	Total Sulfide by PSEP - requires special narrative comment (ask Seattle)
B-4 (580-71823-11)	9/26/17	13:30 Pacific		Solid			X	1	Total Sulfide by PSEP - requires special narrative comment (ask Seattle)
B-4 (580-71823-11MS)	9/26/17	13:30 Pacific	MS	Solid			X	1	Total Sulfide by PSEP - requires special narrative comment (ask Seattle)
B-4 (580-71823-11MSD)	9/26/17	13:30 Pacific	MSD	Solid			X	1	Total Sulfide by PSEP - requires special narrative comment (ask Seattle)
B-5 (580-71823-12)	9/26/17	15:30 Pacific		Solid			X	1	Total Sulfide by PSEP - requires special narrative comment (ask Seattle)
B-6 (580-71823-13)	9/27/17	11:35 Pacific		Solid			X	1	Total Sulfide by PSEP - requires special narrative comment (ask Seattle)

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Tom Blunt	10/5/17			10/6/17 0915	TAD
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Login Sample Receipt Checklist

Client: Whatcom Environmental Services Inc.

Job Number: 580-71823-1

Login Number: 71823
List Number: 1
Creator: Gall, Brandon A

List Source: TestAmerica Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	No Name
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Whatcom Environmental Services Inc.

Job Number: 580-71823-1

Login Number: 71823
List Number: 2
Creator: Pottruff, Reed W

List Source: TestAmerica Denver
List Creation: 10/06/17 02:48 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

APPENDIX C

Quality Assurance Review

Memo

To: Ed Ehler- Lovric's Sea-Craft
Date: December 20, 2017
From: Dan Heimbigner

RE: Sediment Sampling Laboratory Data Verification and Validation – Lovric's Sea-Craft

This evaluation provides the results of verification and validation checks of analytical data for thirteen sediment samples collected during sampling events occurring on September 25, 26, and 27, 2017 at the Lovric's Sea-Craft site located in Anacortes, Washington. The samples were collected and analyzed as part of the site's National Pollutant Discharge Elimination System (NPDES) Waste Discharge Permit. All sample analyses were conducted at Edge Analytical laboratory, located in Burlington, Washington, or TestAmerica laboratory, located in Seattle, Washington or TestAmerica located in Denver, Colorado. This data quality evaluation covers Edge data package 17-26654, and TestAmerica data package 580-71823-1.

The verification and validation check for each laboratory data package included the following:

- Verification that the laboratory data package contained all necessary documentation (including chain-of-custody records; identification of samples received by the laboratory; date and time of receipt of the samples at the laboratory; sample conditions upon receipt at the laboratory; date and time of sample analysis; explanation of any significant corrective actions taken by the laboratory during the analytical process; and, if applicable, date of extraction, definition of laboratory data qualifiers, all sample-related quality control data, and quality control acceptance criteria).
- Verification that all requested analyses, special cleanups, and special handling methods were performed.
- Evaluation of sample holding times.
- Evaluation of quality control data compared to acceptance criteria, including method blanks, surrogate recoveries, matrix spike results,

laboratory duplicate and/or replicate results, and laboratory control sample results.

- Evaluation of overall data quality and completeness of analytical data.

Data validation qualifiers are added to the sample results, as appropriate, based on the verification and validation check. The absence of a data qualifier indicates that the reported result is acceptable without qualification. The data quality evaluation is summarized below.

Laboratory Data Package Completeness

Each laboratory data package contained a signed chain-of-custody, a cooler receipt form documenting the condition and temperature of the samples upon receipt at the laboratory, sample analytical results, and quality control results (method blanks, surrogate recoveries, laboratory control sample results, and replicate sample results). A case narrative identifying any complications was also provided with each laboratory data package. Definitions of laboratory qualifiers and quality control acceptance criteria were provided, as appropriate.

Sample Conditions and Analysis

The laboratories received the samples in good condition and all analyses were performed as requested. Preservation of samples, as specified by the analytical method, was verified by the laboratory and adjusted as appropriate.

Holding Times

For all analyses and all samples, the time between sample collection, extraction (if applicable), and analysis was determined to be within analytical method and project-specified holding times, with the following exception:

- The total sulfide analysis associated with all samples in data package 580-71823-1 was completed outside the method recommended hold time. The hold-time issues have been noted in the summary data tables in the Sediment Data Report.

Laboratory Method Blanks Results

At least one method blank was analyzed with each batch of samples. No contamination was detected in any of the method blanks, with the following exceptions:

- Copper was detected in the method blank associated with metals analysis in data package 17-26654 (batch 6010B_171005A and 6010B_171010A). Associated sample result concentrations are orders of magnitude larger than the method blank results and are considered unaffected.
- Zinc was detected in the method blank associated with metals analysis in data package 17-26654 (batch 6010B_171010A). Associated sample result concentrations are orders of magnitude larger than the method blank result and are considered unaffected.
- Diethyl phthalate was detected in the method blank associated with SVOC analysis in data package 17-26654 (batch MSQS_171003). The method blank result exceeds the required quantitation limit but was below applicable marine sediment criteria. The action level is defined as 10x the concentration in any blank for the common phthalate laboratory contaminants, or 5x the concentration for other compounds (EPA, 1999). All associated sample results are greater than the action level, therefore no additional qualifiers are deemed necessary.
- Di(2-ethylhexyl)phthalate was detected in the method blank associated with SVOC analysis in data package 17-26654 (batch MSQS_171003). The method blank result is less than the required quantitation limit. Associated sample results which exceed the action level have been qualified as estimated (J), as indicated in Table 2 and Table 3.
- Dimethyl phthalate was detected in the method blank associated with SVOC analysis in data package 17-26654 (batch MSQS_171003). The method blank result is less than the required quantitation. All associated sample results are greater than the action level, therefore no additional qualifiers are deemed necessary.
- Fluoranthene was detected in the method blank associated with SVOC analysis in data package 17-26654 (batch MSQS_171003). The method blank result meets the required quantitation limit. All associated sample results are greater than the action level, therefore no additional qualifiers are deemed necessary.

Surrogate Recoveries

Appropriate compounds were used as surrogate spikes for the SVOC and organotin analyses. Recovery values for the surrogate spikes were within the laboratory-specified control limits for all samples with the exception that 2-fluorobiphenyl was recovered slightly above the laboratory specified control limit. No data qualification was deemed necessary.

Laboratory Control Sample Results

At least one laboratory control sample (LCS) and/or laboratory control sample duplicate (LCSD) was analyzed with each batch of samples. Recoveries for each LCS and/or LCSD were within the current laboratory-specified control limits, with the following exceptions:

- The LCS percent recovery of 4-Methylphenol (p-cresol) exceeded the laboratory-specified control limits associated with SVOC analysis in data package 17-26654 (batch MSQS_171003). Associated sample results were all below the detection limit. No additional qualifiers are deemed necessary.
- The LCS percent recovery for benzoic acid was below the laboratory-specified control limits associated with SVOC analysis in data package 17-26654 (batch MSQS_171003). Associated sample results have been qualified as estimated concentrations (J), as indicated in Table 2 and Table 3.
- The LCS percent recovery for di-n-butyl phthalate exceeded the laboratory-specified control limits associated with SVOC analysis in data package 17-26654 (batch MSQS_171003). Associated sample results have been qualified as estimated (J), as indicated in Table 2 and Table 3.
- The LCS percent recovery for PCBs (total Aroclors) was below the laboratory-specified control limits associated with PCB analysis in data package 17-26654 (batch MSQS_171003). However, the LCS percent recovery was within the EPA acceptance limits (EPA, 2017). No additional qualifiers are deemed necessary.

Sample Duplicate and Matrix Spike/Matrix Spike Duplicate Results and Laboratory Duplicate Results

A sample duplicate and Matrix Spike/Matrix Spike Duplicate (MS/MSD) was analyzed with each batch of samples. The recovery values all duplicates and for each required spiking compound were within the laboratory-specified control limits for all project samples with the following exceptions:

- The MSD recoveries for cadmium, chromium, and lead associated with the metals analysis for sample 58343 in data package 17-26654 were below the laboratory-specified control limits. The corresponding MS recoveries were within the laboratory-specified control limits, therefore no qualification of the data was necessary.
- The MSD recoveries for cadmium, chromium, and lead associated with the metals analysis for sample 58343 in data package 17-26654 were below the laboratory-specified control limits. The corresponding MS recoveries were within the laboratory-specified control limits, therefore no qualification of the data was necessary.
- The MS or MSD recoveries for copper and lead associated with the metals analysis for sample 58346 in data package 17-26654 were below the laboratory-specified control limits. The corresponding MS or MSD recoveries were within the laboratory-specified control limits, therefore no qualification of the data was necessary.
- The MS/MSD recoveries for silver and zinc associated with the metals analysis for sample 58346 in data package 17-26654 were below the laboratory-specified control limits. Based upon sample descriptions and laboratory data for other parameters, no other samples are considered sufficiently similar to sample 58346 to require qualification. Associated sample results for sample 58346 have been qualified as possibly biased (J), as indicated in Table 2 and Table 3.
- The MS recovery for total Aroclors associated with the PCB analysis for sample 58340 in data package 17-26654 was below the laboratory-specified control limits. The MS recovery was within the EPA acceptance limits (EPA, 2017). No additional qualifiers are deemed necessary.
- The MS/MSD recoveries for 2-4 dimethylphenol associated with the SVOC analysis for sample 58338 in data package 17-26654 were above the

laboratory-specified control limits. All associated results are non-detects, therefore no qualifiers are deemed necessary.

- The MS or MSD recoveries for 2-methylnaphthalene, 4-methylphenol, acenaphthylene, diethyl phthalate, fluorene, n-nitrosodiphenylamine, phenanthrene, acenaphthylene, anthracene, associated with the SVOC analysis for sample 58338 in data package 17-26654 were above the laboratory-specified control limits. The corresponding MS or MSD recoveries were within the laboratory-specified control limits, therefore no qualification of the data was necessary.
- The MS/MSD recoveries for di-(2-ethylhexyl)phthalate, dimethyl phthalate, di-n-butyl phthalate, fluoranthene and pyrene associated with the SVOC analysis for sample 58338 in data package 17-26654 were above the laboratory-specified control limits. Associated sample results have been qualified as estimated concentrations (J) as indicated in Table 2 and Table 3.
- The MS or MSD recoveries for acenaphthylene, anthracene, di(2-ethylhexyl)phthalate, diethyl phthalate, fluoranthene, and phenanthrene associated with the SVOC analysis for sample 58348 in data package 17-26654 were outside of the laboratory-specified control limits. The corresponding MS or MSD recoveries were within the laboratory-specified control limits, therefore no qualification of the data was necessary.
- The MS/MSD recoveries for di-n-butyl phthalate and fluorene associated with the SVOC analysis for sample 58348 in data package 17-26654 were above the laboratory-specified control limits. Associated sample results have been qualified as estimated concentrations, (J), as indicated in Table 2 and Table 3.
- The MS/MSD recoveries for pyrene associated with the SVOC analysis for sample 58348 in data package 17-26654 were below the laboratory-specified control limits. Associated sample results have been qualified as estimated concentrations (J) as indicated in Table 2 and Table 3.

Overall Assessment of the Data

The completeness for this data set is 100 percent. Data precision was evaluated through sample duplicates, laboratory surrogate duplicates and matrix spike duplicates. Data accuracy was evaluated through laboratory method blanks, surrogate spikes, and

matrix spikes. Based on this data quality verification and validation, all of the data were determined to be acceptable. No data were rejected.