MARINE ENGINEERING

Appendix A

2015 Sediment Sampling Laboratory Results

Civil and

Environmental

Consulting

Table 1 Metals and Organics, SMS Marine Sediment

Parameter	Criterion		Sampling Station					
	SQS	SIZMax	OF6-2		OF13-1		OF13-2	
TOC			2.00		0.71		0.57	
METALS	**mg/kg, dry weight**							
Arsenic	57	93	1.8	U	2.2	J	1.8	J
Cadmium	5.1	6.7	0.12	J	0.10	U	0.13	J
Chromium	260	270	14.1		12.3		11.5	
Copper	390	390	7.7		9.6		13.7	
Lead	450	530	7.7		9.8		11.5	
Mercury	0.41	0.59	0.027		0.031		0.043	
Silver	6.1	6.1	0.3	J	0.3	U	0.2	U
Zinc	410	960	38.6		34.3		45.1	
NON-IONIZABLE ORGANIC COMPOUNDS	**mg/kg, organic carbon**							
Dilution Factor			10		10		10	
Aromatic Hydrocarbons								
Total LPAH(1)	370	780	83		27		18	
Naphthalene	99	170	1.5	JD	4.1	U	5.1	JD
Acenaphthylene	66	66	1.3	U	4.9	JD	4.6	U
Acenaphthene	16	57	6.0	D	4.5	U	5.6	U
Fluorene	23	79	5.0	D	4.6	U	5.8	U
Phenanthrene	100	480	55	D	17	D	13	D
Anthracene	220	1200	16	D	5.4	JD	5.6	U
2-Methylnaphthalene	38	64	1.4	U	3.9	U	4.9	U
Total HPAH(2)	960	5300	280		250		98	
Fluoranthene	160	1200	70	D	49	D	16	D
Pyrene	1000	1400	55	D	62	D	17	D
Benz[a]anthracene	110	270	25	D	21	D	10	JD
Chrysene	110	460	28	D	21	D	11	JD

Table 1 Metals and Organics, SMS Marine Sediment

Parameter	Criterion		Sampling Station					
	SQS	SIZMax	OF6-2		OF13-1		OF13-2	
Total benzofluoranthenes[3]	230	450	42	D	33	D	19	D
Benzo[a]pyrene	99	210	26	D	25	D	10	JD
Indeno[1,2,3-c,d]pyrene	34	88	16	D	18	D	7.0	JD
Dibenzo[a,h]anthracene	12	33	3.8	D	4.2	U	5.3	U
Benzo[g,h,i]perylene	31	78	15	D	20	D	6.8	JD
Chlorinated Benzenes								
1,2-Dichlorobenzene	2.3	2.3	1.2	U	**3.4**	U	**4.2**	U
1,4-Dichlorobenzene	3.1	9	1.3	U	3.5	U	4.4	U
1,2,4-Trichlorobenzene	0.81	1.8	1.3	U	**3.7**	U	**4.6**	U
Hexachlorobenzene	0.38	2.3	1.7	U	**4.6**	U	**5.8**	U
Phthalate Esters								
Dimethyl phthalate	53	53	4.6	D	5.6	U	7.0	U
Diethyl phthalate	61	110	1.9	U	5.2	U	6.5	U
Di-n-butyl phthalate	220	1700	2.4	U	6.8	U	8.4	U
Butylbenzyl phthalate	4.9	64	1.9	U	5.2	U	6.5	U
Bis[2-ethylhexyl]phthalate	47	78	**150**	DX	13	U	25	JD
Di-n-octyl phthalate	58	4500	25	D	4.5	U	5.6	U
Miscellaneous								
Dibenzofuran	15	58	2.4	JD	4.8	U	6.0	U
Hexachlorobutadiene	3.9	6.2	1.5	U	4.2	U	5.3	U
N-nitrosodiphenylamine	11	11	1.6	U	4.5	U	5.6	U
Total PCBs	12	65	10		0.41	U	0.51	U
IONIZABLE ORGANIC COMPOUNDS	**µg/kg, dry weight**							
Phenol	420	1200	31	U	31	U	31	U
2-Methylphenol	63	63	41	U	41	U	41	U
4-Methylphenol	670	670	45	U	45	U	45	U
2,4-Dimethylphenol	29	29	**63**	U	**63**	U	**63**	U

Table 1 Metals and Organics, SMS Marine Sediment

Parameter	Criterion		Sampling Station					
	SQS	SIZMax	OF6-2		OF13-1		OF13-2	
Pentachlorophenol	360	690	53	U	53	U	53	U
Benzyl alcohol	57	73	49	U	49	U	49	U
Benzoic acid	650	650	**960**	U	**960**	U	**960**	U

Pink bold font indicates the measured concentration exceeded SQS criterion

Red bold font indicates the measured concentration exceeded SIZMax criterion

(1) The total LPAH criterion under the SMS represents the sum of the concentrations of the following LPAH compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, and anthracene. 2-Methylnaphthalene is not included in the LPAH definition under the SMS, but is included in the LPAH definition under the DMMP. The total LPAH criterion is not the sum of the corresponding criteria listed for the individual LPAH compounds.

(2) The total HPAH criterion under the SMS represents the sum of the concentrations of the following HPAH compounds: fluoranthene, pyrene, benz[a]anthracene, chrysene, total benzofluoranthenes, benzo[a]pyrene, indeno[1,2,3-c,d]pyrene, dibenzo[a,h]anthracene, and benzo[g,h,i]perylene. The total HPAH criterion is not the sum of the corresponding criteria listed for the individual HPAH compounds.

(3) The total benzofluoranthenes criterion represents the sum of the concentrations of the b, j, and k isomers of benzofluoranthene.

Notes: Where laboratory analysis indicates a chemical is not detected in a sediment sample, the detection limit shall be reported with U (Undetected) qualifier code and shall be at or below the Marine SQS chemical criteria (Table 6). Where the result is an estimated concentration that is less than the MRL but greater than or equal to the MDL, the detection limit shall be reported with a J flag. Chemical concentrations resulting from a dilution are marked with a D flag. Where chemical criteria in Table 5 represent the sums of individual compounds (e.g., total LPAHs and total HPAHs), isomers (e.g., total benzofluoranthenes), or groups of congeners (e.g., total PCBs), the following methods shall be applied: (i) Where chemical analyses identify an undetected value for every individual compound/isomer/congener, then the single highest detection limit shall represent the sum of the respective compounds/isomers/congeners; and (ii) Where chemical analyses detect one or more individual compound/isomers/ congeners, only the detected concentrations will be added to represent the group sum.

Table 2 Metals and Organics, Marine Sediment AETs

Parameter	Criterion		Sampling Station											
	SQS	SIZMax	WP-1		WP-2		WP-3		WP-4		WP-5		OF13-3	
TOC			4.49		8.43		3.87		5.57		3.85		0.22	
METALS	**mg/kg, dry weight**													
Arsenic	57	93	11.7		12.9		12.9		14.0		12.1		2.1	U
Cadmium	5.1	6.7	1.6		2.41		1.41		2.47		1.12		0.1	U
Chromium	260	270	58.4		67.2		44.2		69.6		56.0		10.1	
Copper	390	390	129		147		113		158		120		16.9	
Lead	450	530	66.3		79.1		77.2		107		59.7		44	
Mercury	0.41	0.59	**0.784**		**0.882**		**1.04**		**1.04**		**0.742**		0.014	J
Silver	6.1	6.1	1.5		4.1		3.2		4.3		1.0	J	0.3	U
Zinc	410	960	159		207		271		229		140		45.7	
NON-IONIZABLE ORGANIC COMPOUNDS	**µg/kg, dry weight**													
Dilution Factor			1		varies		varies		1		1		5	
Aromatic Hydrocarbons														
Total LPAH[1]	5200	5200	38.2		340		660		130		39		110	
Naphthalene	2100	2100	5.2	U	39		6.6	J	4.7	U	5.9	U	15	U
Acenaphthylene	1300	1300	4.6	U	17	J	14		9.2	J	5.5	J	13	U
Acenaphthene	500	500	5.7	U	15	J	15		5.2	U	6.5	U	16	U
Fluorene	540	540	5.9	J	27		27		11	J	6.7	U	17	U
Phenanthrene	1500	1500	25		140		390		69		21		18	U
Anthracene	960	960	7.3	J	46		190		23		12	J	16	U
2-Methylnaphthalene	670	670	5.0	U	60		14		18		5.7	U	14	U
Total HPAH[2]	12000	17000	340		1000		5800		800		430		180	
Fluoranthene	1700	2500	50		150		1300	D	130		58		19	U
Pyrene	2600	3300	52		230	D	980		130		59		19	U
Benz[a]anthracene	1300	1600	32		140	DX	620		75		38		18	U
Chrysene	1400	2800	38		120	D	540		78		42		21	U

Table 2 Metals and Organics, Marine Sediment AETs

Parameter	Criterion		Sampling Station											
	SQS	SIZMax	WP-1		WP-2		WP-3		WP-4		WP-5		OF13-3	
Total benzofluoranthenes[3]	3200	3600	63		140	X	930		130		82		37	U
Benzo[a]pyrene	1600	1600	43		98		600		89		52		18	U
Indeno[1,2,3-c,d]pyrene	600	690	34		59		410		70		43		16	U
Dibenzo[a,h]anthracene	230	230	5.3	U	16	J	89		17		11	J	15	U
Benzo[g,h,i]perylene	670	720	30		71		370		73		41		19	U
Chlorinated Benzenes														
1,2-Dichlorobenzene	35	50	4.3	U	4.2	U	2.5	U	3.9	U	4.9	U	12	U
1,4-Dichlorobenzene	110	110	4.5	U	56		85		19		5.1	U	13	U
1,2,4-Trichlorobenzene	31	51	4.6	U	12	J	2.7	U	10	J	5.3	U	13	U
Hexachlorobenzene	22	70	5.9	U	5.7		3.5	U	5.3	U	6.7	U	17	U
Phthalate Esters														
Dimethyl phthalate	71	160	7.1	U	6.9	U	4.2	U	15	J	8.1	U	20	U
Diethyl phthalate	200	>1200	6.6	U	44		3.9	U	6.0	U	7.5	U	19	U
Di-n-butyl phthalate	1400	1400	19	J	130		31.0		29	J	15	J	24	U
Butylbenzyl phthalate	63	900	6.6	U	**4500**	D	140		190		64		19	U
Bis[2-ethylhexyl]phthalate	1300	1900	430		**8500**	D	**1800**	D	590		73	J	45	U
Di-n-octyl phthalate	6200	6200	5.7	U	140		3.4	U	5.2	U	6.5	U	16	U
Miscellaneous														
Dibenzofuran	540	540	7.0	J	5.9	U	9.1	J	5.5	U	6.9	U	17	U
Hexachlorobutadiene	11	120	5.3	U	5.2	U	3.2	U	4.8	U	6.1	U	15	U
N-nitrosodiphenylamine	28	40	5.7	U	5.5	U	3.4	U	5.2	U	6.5	U	16	U
Total PCBs	130	1000	52		180		310		85		20		19	P
IONIZABLE ORGANIC COMPOUNDS	**µg/kg, dry weight**													
Phenol	420	1200	5.5	U	62		3.3	U	5.0	U	6.3	U	16	U
2-Methylphenol	63	63	7.3	U	7.1	U	4.3	U	6.6	U	8.3	U	21	U
4-Methylphenol	670	670	8.0	U	48		65		7.2	U	9.1	U	23	U
2,4-Dimethylphenol	29	29	12	U	11	U	6.6	U	11	U	13	U	32	U

Table 2 Metals and Organics, Marine Sediment AETs

Parameter	Criterion		Sampling Station											
	SQS	SIZMax	WP-1		WP-2		WP-3		WP-4		WP-5		OF13-3	
Pentachlorophenol	360	690	9.4	U	9.1	U	5.5	U	8.5	U	11	U	27	U
Benzyl alcohol	57	73	8.7	U	8.4	U	5.1	U	7.9	U	9.9	U	25	U
Benzoic acid	650	650	170	U***	170	U***	100	U***	160	U***	200	U***	480	U

Pink bold font indicates the measured concentration exceeded SQS criterion

Red bold font indicates the measured concentration exceeded SIZMax criterion

(1) The total LPAH criterion under the SMS represents the sum of the concentrations of the following LPAH compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, and anthracene. 2-Methylnaphthalene is not included in the LPAH definition under the SMS, but is included in the LPAH definition under the DMMP. The total LPAH criterion is not the sum of the corresponding criteria listed for the individual LPAH compounds.

(2) The total HPAH criterion under the SMS represents the sum of the concentrations of the following HPAH compounds: fluoranthene, pyrene, benz[a]anthracene, chrysene, total benzofluoranthenes, benzo[a]pyrene, indeno[1,2,3-c,d]pyrene, dibenzo[a,h]anthracene, and benzo[g,h,i]perylene. The total HPAH criterion is not the sum of the corresponding criteria listed for the individual HPAH compounds.

(3) The total benzofluoranthenes criterion represents the sum of the concentrations of the b, j, and k isomers of benzofluoranthene.

Notes: Where laboratory analysis indicates a chemical is not detected in a sediment sample, the detection limit shall be reported with U (Undetected) qualifier code and shall be at or below the Marine SQS chemical criteria (Table 6). Where the result is an estimated concentration that is less than the MRL but greater than or equal to the MDL, the detection limit shall be reported with a J flag. Chemical concentrations resulting from a dilution are marked with a D flag. Where chemical criteria in Table 5 represent the sums of individual compounds (e.g., total LPAHs and total HPAHs), isomers (e.g., total benzofluoranthenes), or groups of congeners (e.g., total PCBs), the following methods shall be applied: (i) Where chemical analyses identify an undetected value for every individual compound/isomer/congener, then the single highest detection limit shall represent the sum of the respective compounds/isomers/congeners; and (ii) Where chemical analyses detect one or more individual compound/isomers/ congeners, only the detected concentrations will be added to represent the group sum.

Table 3 Metals and Organics, Marine Sediment AETs

Parameter	Criterion		Sampling Station													
	SQS	SIZMax	OF6-1		OF6-3		OF7-1		OF7-2		OF7-3		OF12-1		OF12-3	
TOC			0.24		0.23		0.41		0.28		0.34		0.33		0.41	
METALS	**mg/kg, dry weight**															
Arsenic	57	93	2.3	J	1.5	U	2.7	J	1.9	J	3.0		2	U	2.1	U
Cadmium	5.1	6.7	0.1	U	0.08	U	0.11	J	0.07	J	0.2		0.1	U	0.1	U
Chromium	260	270	13.7		15.4		17.1		10.3		13.1		15.2		16	
Copper	390	390	6.4		5.9		8.1		4.3		6.3		9.1		13	
Lead	450	530	7.6		10.4		9.1		4.6		6.7		7.1		7.9	
Mercury	0.41	0.59	0.017		0.015	J	0.064		0.065		0.061		0.019		0.02	
Silver	6.1	6.1	0.3	U	0.2	U	0.2	U	0.2	U	0.1	U	0.3	U	0.3	U
Zinc	410	960	34.2		25.5		28.6		17.4		26.0		18.9		32.8	
NON-IONIZABLE ORGANIC COMPOUNDS	**µg/kg, dry weight**															
Dilution Factor			5		5		1		1		1		10		10	
Aromatic Hydrocarbons																
Total LPAH[(1)]	5200	5200	140		190		35		29		32		230		250	
Naphthalene	2100	2100	15	U	15	U	2.9	U	2.9	U	2.9	U	29	U	29	U
Acenaphthylene	1300	1300	13	U	13	U	2.6	U	3.5	J	2.8	J	33	JD	42	JD
Acenaphthene	500	500	16	U	16	U	3.2	U	3.2	U	3.2	U	32	U	32	U
Fluorene	540	540	17	U	17	U	3.3	U	3.3	U	3.3	U	33	U	33	U
Phenanthrene	1500	1500	51	D	95	D	15		6.4	J	8.2		42	JD	52	JD
Anthracene	960	960	16	U	16	JD	5.2	J	7.0		8.5		32	U	32	U
2-Methylnaphthalene	670	670	14	U	14	U	2.8	U	2.8	U	2.8	U	28	U	28	U
Total HPAH[(2)]	12000	17000	560		770		140		150		100		1200		1300	
Fluoranthene	1700	2500	130	D	190	D	21		24		19		140	D	190	D
Pyrene	2600	3300	89	D	160	D	26		27		22		260	D	240	D
Benz[a]anthracene	1300	1600	47	D	58	D	13		15		11		100	D	130	D
Chrysene	1400	2800	53	D	74	D	16		16		9.5		100	D	120	D

Table 3 Metals and Organics, Marine Sediment AETs

Parameter	Criterion		Sampling Station													
	SQS	SIZMax	OF6-1		OF6-3		OF7-1		OF7-2		OF7-3		OF12-1		OF12-3	
Total benzofluoranthenes[3]	3200	3600	96	D	110	D	19		22		9.4		180	D	210	D
Benzo[a]pyrene	1600	1600	55	D	68	D	15		16		12		140	D	180	D
Indeno[1,2,3-c,d]pyrene	600	690	42	D	50	D	13		11		6.7	J	100	D	110	D
Dibenzo[a,h]anthracene	230	230	15	U	15	U	4.7	J	3.0	U	3.0	U	30	U	30	U
Benzo[g,h,i]perylene	670	720	35	D	43	D	10		11		8.1		110	D	120	D
Chlorinated Benzenes																
1,2-Dichlorobenzene	35	50	12	U	12	U	2.4	U	2.4	U	2.4	U	24	U	24	U
1,4-Dichlorobenzene	110	110	13	U	13	U	2.5	U	2.5	U	2.5	U	25	U	25	U
1,2,4-Trichlorobenzene	31	51	13	U	13	U	2.6	U	2.6	U	2.6	U	26	U	26	U
Hexachlorobenzene	22	70	17	U	17	U	3.3	U	3.3	U	3.3	U	33	U	33	U
Phthalate Esters																
Dimethyl phthalate	71	160	20	U	20	U	4.0	U	4.0	U	4.0	U	40	U	40	U
Diethyl phthalate	200	>1200	19	U	19	U	3.7	U	3.7	U	3.7	U	37	U	37	U
Di-n-butyl phthalate	1400	1400	24	U	24	U	4.8	U	4.8	U	4.8	U	48	U	48	U
Butylbenzyl phthalate	63	900	19	U	19	U	3.7	U	3.7	U	3.7	U	37	U	37	U
Bis[2-ethylhexyl]phthalate	1300	1900	79	JD	840	JD	8.9	U	8.9	U	8.9	U	89	U	89	U
Di-n-octyl phthalate	6200	6200	16	U	16	U	3.2	U	3.2	U	3.2	U	32	U	32	U
Miscellaneous																
Dibenzofuran	540	540	17	U	17	U	3.4	U	3.4	U	3.4	U	34	U	34	U
Hexachlorobutadiene	11	120	15	U	15	U	3.0	U	3.0	U	3.0	U	30	U	30	U
N-nitrosodiphenylamine	28	40	16	U	16	U	3.2	U	3.2	U	3.2	U	32	U	32	U
Total PCBs	130	1000	2.7	U	2.6	U	2.0	U	2.1	U	2.1	U	8.0	Ui	3.0	Ui
IONIZABLE ORGANIC COMPOUNDS	**µg/kg, dry weight**															
Phenol	420	1200	16	U	16	U	3.1	U	11	J	3.1	U	31	U	57	JD
2-Methylphenol	63	63	21	U	21	U	4.1	U	4.1	U	4.1	U	41	U	41	U
4-Methylphenol	670	670	23	U	23	U	4.5	U	4.5	U	4.5	U	45	U	45	U
2,4-Dimethylphenol	29	29	32	U	32	U	6.3	U	6.3	U	6.3	U	63	U	63	U

Table 3 Metals and Organics, Marine Sediment AETs

Parameter	Criterion		Sampling Station													
	SQS	SIZMax	OF6-1		OF6-3		OF7-1		OF7-2		OF7-3		OF12-1		OF12-3	
Pentachlorophenol	360	690	27	U	27	U	5.3	U	5.3	U	5.3	U	53	U	53	U
Benzyl alcohol	57	73	25	U	25	U	4.9	U	4.9	U	4.9	U	49	U	49	U
Benzoic acid	650	650	480	U	480	U	96	U***	96	U***	96	U***	**960**	U	**960**	U

Pink bold font indicates the measured concentration exceeded SQS criterion

Red bold font indicates the measured concentration exceeded SIZMax criterion

(1) The total LPAH criterion under the SMS represents the sum of the concentrations of the following LPAH compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, and anthracene. 2-Methylnaphthalene is not included in the LPAH definition under the SMS, but is included in the LPAH definition under the DMMP. The total LPAH criterion is not the sum of the corresponding criteria listed for the individual LPAH compounds.

(2) The total HPAH criterion under the SMS represents the sum of the concentrations of the following HPAH compounds: fluoranthene, pyrene, benz[a]anthracene, chrysene, total benzofluoranthenes, benzo[a]pyrene, indeno[1,2,3-c,d]pyrene, dibenzo[a,h]anthracene, and benzo[g,h,i]perylene. The total HPAH criterion is not the sum of the corresponding criteria listed for the individual HPAH compounds.

(3) The total benzofluoranthenes criterion represents the sum of the concentrations of the b, j, and k isomers of benzofluoranthene.

Notes: Where laboratory analysis indicates a chemical is not detected in a sediment sample, the detection limit shall be reported with U (Undetected) qualifier code and shall be at or below the Marine SQS chemical criteria (Table 6). Where the result is an estimated concentration that is less than the MRL but greater than or equal to the MDL, the detection limit shall be reported with a J flag. Chemical concentrations resulting from a dilution are marked with a D flag. Where chemical criteria in Table 5 represent the sums of individual compounds (e.g., total LPAHs and total HPAHs), isomers (e.g., total benzofluoranthenes), or groups of congeners (e.g., total PCBs), the following methods shall be applied: (i) Where chemical analyses identify an undetected value for every individual compound/isomer/congener, then the single highest detection limit shall represent the sum of the respective compounds/isomers/congeners; and (ii) Where chemical analyses detect one or more individual compound/isomers/ congeners, only the detected concentrations will be added to represent the group sum.

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September 11, 2015

Analytical Report for Service Request No: K150 2 1

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ig Harbor, A 9 335

RE: Bremerton Sediment Sampling / Bremerton 2015

Dear illiam,

Enclosed are the results of the sample(s) submitted to our laboratory uly 30, 2015
or your reference, these analyses have been assigned our service request number **K1508281.**

Analyses were performed according to our laboratory's ELAP approved quality assurance program. The test results meet requirements of the current ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. or a specific list of ELAP accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS roup SA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. ou may also contact me via email at howard.holmes alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager

RI HT S L TI S RI HT PART ER

DNR-00008447

ALS Environmental
ALS roup SA, Corp
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RI HT S L TI S RI HT PART ER

DNR-00008448

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
ISO 17025	http://www.pjlabs.com/	L14-50
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

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ALS ENVIRONMENTAL

Client:	Cosmopolitan Engineering Group	**Service Request No.:**	K1508281
Project:	Bremerton Sediment Sampling/ Bremerton 2015	**Date Received:**	07/30/15
Sample Matrix:	Sediment		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Duplicate (DUP), Matrix Spike (MS), Matrix/Duplicate Matrix Spike (MS/DMS), Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Eight sediment samples were received for analysis at ALS Environmental on 07/30/15. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Total Metals

Matrix Spike Recovery Exceptions:
The matrix spike recovery of Mercury for the Batch QC1 sample was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

PCB Aroclors by EPA Method 8082

Second Source Exceptions:
The analysis of PCB Aroclors by EPA 8082 requires the use of dual column confirmation. When the Initial Calibration Verification (ICV) criteria are met for both columns, the lower of the two sample results is generally reported. The criteria were not met for Aroclor 1260 in CAL 13624. The data quality was not affected. No further corrective action was necessary.

Sample Notes and Discussion:
Two Aroclors were identified in sample OF13-3: Aroclor 1242 and Aroclor 1254. When mixtures of PCB Aroclors are present in a sample, correct identification and quantitative analysis of the individual Aroclors can be subjective. In particular, when mixtures are present, differentiating Aroclor 1242 from Aroclor 1248 can be difficult.

Approved by_____

DNR-00008453

A review of the sample chromatograms indicated the presence of PCB patterns or matrix components that spanned the entire elution range from Aroclor 1242 through the end of Aroclor 1260. Based on individual PCB peaks in the early portion of the chromatogram, Aroclor 1242 was identified and quantitated. Although the presence of Aroclor 1248 could not be ruled out, Aroclor 1242 appeared to be the best match based on the early eluting peaks in the PCB chromatogram. Aroclor 1260 was identified based on the presence of late eluting PCB peaks in the chromatogram.

Elevated Detection Limits:
The detection limit was elevated for Aroclor 1221 in sample OF12-1 and Aroclor 1232 in sample OF12-3. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the normal limit. The result was flagged to indicate the matrix interference.

Matrix Spike Recovery Exceptions:
The matrix spike recovery of Aroclor 1260 for sample OF6-2 was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential bias in this matrix. No further corrective action was appropriate.

No anomalies associated with the analysis of these samples were observed.

Semivolatile Organic Compounds by EPA Method 8270

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for many analytes in the replicate matrix spike analyses (MS/DMS) for sample Batch QC was outside control criteria. All spike recoveries for the analyte in question were within acceptance limits in the MS/DMS, indicating the analytical batch was in control. No further corrective action was appropriate.

The Relative Percent Difference (RPD) criterion for the replicate analysis of Phenol, 4-Methylphenol, 2-Methylnaphthalene, and Bis(2-ethylhexyl) Phthalate in sample Batch QC was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for Benzoic Acid in the replicate Laboratory Control Samples (LCS/DLCS) KWG1507192-3 and KWG1507192-4 was outside control criteria. All spike recoveries for the analyte in question were within acceptance limits in the LCS/DLCS. The error associated with an elevated RPD equated to a higher degree of variability. Since the affected target analyte was not detected in the samples, the quality of the sample data was not significantly affected. No further corrective action was taken.

Elevated Detection Limits:
The detection limit was elevated for all samples except sample Batch QC. The sample extract was diluted prior to instrumental analysis due to relatively high levels of non-target background components. The extract was highly colored and viscous, which indicated the need to perform a dilution prior to injection into the instrument. Clean-up of the extract was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilution. The reporting limits were adjusted to reflect the dilution.

Sample Notes and Discussion:
The results reported for Bis(2-ethylhexyl) Phthalate in sample OF6-2 may contain a slight bias. The chromatogram indicated the presence of non-target background components. The matrix interference may have resulted in a slight high bias in the affected sample. The results were flagged with "X" to indicate the issue.

No other anomalies associated with the analysis of these samples were observed.

Approved by_____

Dioxins and Furans by EPA Method 1613B

The analysis for Dioxins and Furans was performed at ALS Environmental in Houston, Texas. The data for this analysis is included in the corresponding section of this report.

Approved by_____

Chain of Custody

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CHAIN OF CUSTODY

ALS Environmental

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SR# K1508281

PAGE 1 OF 1 COC#

PROJECT NAME: Bremerton Sediment Sampling
PROJECT NUMBER: Bremerton 2015
PROJECT MANAGER: Bill Fox
COMPANY NAME: Cosmopolitan Marine Engineering
ADDRESS: 9612 Kopachuck Dr NW
CITY/STATE/ZIP: Gig Harbor, WA 98335
E-MAIL ADDRESS: bfox@cosmopolitaneng.com
PHONE #: 253-265-2958 FAX #:
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270D☒ 8270LL☐ SIM PAH☐	Volatile Organics 624☐ 8260☐ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCBs Aroclors ☒ Congeners☐	Pesticides/Herbicides 608☐ 8081☐ 8141☐ 8151☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	Metals, Total or Dissolved (See List below)	Cyanide☐ Hex-Chrom☐	(circle) pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS, Turb.	(circle) NH_3-N, COD, TKN, TOC, DOC, NO_2+NO_3, T-Phos	TOX 9020☐ AOX 1650☐ 506☐	Alkalinity ☐ CO_3☐ HCO_3☐	Dioxins/Furans 1613☐ 8290☐	Dissolved Gases RSK 175☐ Methane☐ Ethane☐ Ethene☐ CO_2☐	NH_3-Plumb 350.1M	Sulfide 9030M	PSEP Particle size, TS	REMARKS
OF 13-1	7/29/15	10:00	1	sed	4	X				X			X			X			X		X	X	X	
OF 13-2	7/29/15	10:33	2	sed	4	X				X			X			X			X		X	X	X	
OF 13-3	7/29/15	9:33	3	sed	4	X				X			X			X			X		X	X	X	
OF 12-3	7/29/15	11:27	4	sed	4	X				X			X			X			X		X	X	X	
OF 12-1	7/30/15	11:53	5	sed	4	X				X			X			X			X		X	X	X	
OF 6-1	7/30/15	10:19	6	sed	4	X				X			X			X			X		X	X	X	
OF 6-2	7/30/15	10:39	7	sed	4	X				X			X			X			X		X	X	X	
OF 6-3	7/30/15	9:57	8	sed	4	X				X			X			X			X		X	X	X	

REPORT REQUIREMENTS

- X I. Routine Report: Method Blank, Surrogate, as required
- ___ II. Report Dup., MS, MSD as required
- ___ III. CLP Like Summary (no raw data)
- ___ IV. Data Validation Report
- ___ V. EDD

INVOICE INFORMATION

P.O. # 623
Bill To: Bill Fox
PO Box 623
Gig Harbor, WA 98335

TURNAROUND REQUIREMENTS

- ___ 24 hr. ___ 48 hr.
- ___ 5 day
- X Standard (15 working days)
- ___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: ___ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Lauren Fox	Signature: [illegible]	Signature:	Signature:
Date/Time: 7/30/15 1:50p	Date/Time: 7/30/15 1605	Date/Time:	Date/Time:
Printed Name: LaurenFox	Printed Name: T Smith	Printed Name:	Printed Name:
Firm: CME	Firm: ALS	Firm:	Firm:

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DNR-00008457

PC H2

Cooler Receipt and Preservation Form

Client / Project: Cosmo Marine Eng. Service Request *K15* 08281

Received: 7/30/15 Opened: 7/30/15 By: [illegible] Unloaded: 7/30/15 By: [illegible]

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

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
5.9	5.9	3.8	3.8	0	337			
5.7	5.5	5.1	4.9	-0.2	342			

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

Sample ID on Bottle	Sample ID on COC	Identified by:

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

Notes, Discrepancies, & Resolutions: _____

Page _____ ***of*** _____

General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/15 - 07/30/15
Sample Matrix:	Sediment	**Date Received:**	07/30/15
Analysis Method:	350.1M	**Units:**	mg/Kg
Prep Method:	EPA Plumb 5-1981 KCl	**Basis:**	Dry

Ammonia as Nitrogen

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
OF13-1	K1508281-001	**19.9**	0.67	0.06	1	08/07/15 15:38	8/4/15	
OF13-2	K1508281-002	**10.1**	0.67	0.06	1	08/07/15 15:38	8/4/15	
OF13-3	K1508281-003	**4.06**	0.62	0.05	1	08/07/15 15:38	8/4/15	
OF12-3	K1508281-004	**6.84**	0.58	0.05	1	08/07/15 15:38	8/4/15	
OF12-1	K1508281-005	**2.94**	0.60	0.05	1	08/07/15 15:38	8/4/15	
OF6-1	K1508281-006	**3.06**	0.62	0.05	1	08/07/15 15:38	8/4/15	
OF6-2	K1508281-007	**13.1**	0.69	0.06	1	08/07/15 15:38	8/4/15	
OF6-3	K1508281-008	**6.47**	0.61	0.05	1	08/07/15 15:38	8/4/15	
Method Blank	K1508281-MB	ND	0.50	0.04	1	08/07/15 15:38	8/4/15	U

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/15
Sample Matrix:	Sediment	**Date Received:**	07/30/15
		Date Analyzed:	08/07/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	OF13-1	**Units:**	mg/Kg
Lab Code:	K1508281-001	**Basis:**	Dry

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1508281-001DUP Result	Average	RPD	RPD Limit
Ammonia as Nitrogen	350.1M	0.66	0.06	19.9	20.1	20.0	<1	32

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/15
Sample Matrix:	Sediment	**Date Received:**	07/30/15
		Date Analyzed:	08/7/15
		Date Extracted:	08/4/15

Duplicate Matrix Spike Summary
Ammonia as Nitrogen

Sample Name:	OF13-1	**Units:**	mg/Kg
Lab Code:	K1508281-001	**Basis:**	Dry
Analysis Method:	350.1M		
Prep Method:	EPA Plumb 5-1981 KCl		

		Matrix Spike K1508281-001MS			**Duplicate Matrix Spike** K1508281-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Ammonia as Nitrogen	19.9	626	662	92	612	649	91	55-135	2	32

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Analyzed:**	08/07/15
Sample Matrix:	Sediment	**Date Extracted:**	08/04/15

Lab Control Sample Summary
Ammonia as Nitrogen

Analysis Method:	350.1M	**Units:**	mg/Kg
Prep Method:	EPA Plumb 5-1981 KCl	**Basis:**	Dry
		Analysis Lot:	456875

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1508281-LCS	9.20	9.56	96	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/15 - 07/30/15
Sample Matrix:	Sediment	**Date Received:**	07/30/15
Analysis Method:	9030M	**Units:**	mg/Kg
Prep Method:	EPA 9030B Modified	**Basis:**	Dry

Sulfide, Total

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
OF13-1	K1508281-001	**12.9**	0.67	0.27	1	08/05/15 19:52	8/5/15	
OF13-2	K1508281-002	**63.5**	2.7	1.1	4	08/05/15 19:52	8/5/15	
OF13-3	K1508281-003	**0.67**	0.62	0.25	1	08/05/15 19:52	8/5/15	
OF12-3	K1508281-004	**5.24**	0.59	0.24	1	08/05/15 19:52	8/5/15	
OF12-1	K1508281-005	**0.40**	0.60	0.25	1	08/05/15 19:52	8/5/15	**J**
OF6-1	K1508281-006	**35.6**	6.3	2.6	10	08/05/15 19:52	8/5/15	
OF6-2	K1508281-007	**333**	69	28	100	08/05/15 19:52	8/5/15	
OF6-3	K1508281-008	**53.0**	2.5	1.0	4	08/05/15 19:52	8/5/15	
Method Blank	K1508281-MB	ND	0.50	0.20	1	08/05/15 19:52	8/5/15	U

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QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/15
Sample Matrix:	Sediment	**Date Received:**	07/30/15
		Date Analyzed:	08/05/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	OF6-2	**Units:**	mg/Kg
Lab Code:	K1508281-007	**Basis:**	Dry

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1508281-007DUP Result	Average	RPD	RPD Limit
Sulfide, Total	9030M	69	28	333	306	319	8	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/15
Sample Matrix:	Sediment	**Date Received:**	07/30/15
		Date Analyzed:	08/5/15
		Date Extracted:	08/5/15

Duplicate Matrix Spike Summary
Sulfide, Total

Sample Name:	OF6-2	**Units:**	mg/Kg
Lab Code:	K1508281-007	**Basis:**	Dry
Analysis Method:	9030M		
Prep Method:	EPA 9030B Modified		

		Matrix Spike K1508281-007MS			**Duplicate Matrix Spike** K1508281-007DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Sulfide, Total	333	1620	1350	95	1620	1370	94	45-150	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Analyzed:**	08/05/15
Sample Matrix:	Sediment	**Date Extracted:**	08/05/15

Lab Control Sample Summary
Sulfide, Total

Analysis Method:	9030M	**Units:**	mg/Kg
Prep Method:	EPA 9030B Modified	**Basis:**	Dry
		Analysis Lot:	456405

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1508281-LCS	7.47	8.30	90	55-130

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/15 - 07/30/15
Sample Matrix:	Sediment	**Date Received:**	07/30/15
Analysis Method:	9060	**Units:**	Percent
Prep Method:	Method	**Basis:**	Dry, per Method

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
OF13-1	K1508281-001	**0.71**	0.10	0.02	1	08/18/15 12:19	8/13/15	
OF13-2	K1508281-002	**0.57**	0.10	0.02	1	08/18/15 12:19	8/13/15	
OF13-3	K1508281-003	**0.22**	0.10	0.02	1	08/18/15 12:19	8/13/15	
OF12-3	K1508281-004	**0.41**	0.10	0.02	1	08/18/15 12:19	8/13/15	
OF12-1	K1508281-005	**0.33**	0.10	0.02	1	08/18/15 12:19	8/13/15	
OF6-1	K1508281-006	**0.24**	0.10	0.02	1	08/18/15 12:19	8/13/15	
OF6-2	K1508281-007	**2.00**	0.10	0.02	1	08/18/15 12:19	8/13/15	
OF6-3	K1508281-008	**0.23**	0.10	0.02	1	08/18/15 12:19	8/13/15	
Method Blank	K1508281-MB	ND U	0.10	0.02	1	08/18/15 12:19	8/13/15	

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QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/15
Sample Matrix:	Sediment	**Date Received:**	07/30/15
		Date Analyzed:	08/18/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	OF6-3	**Units:**	Percent
Lab Code:	K1508281-008	**Basis:**	Dry, per Method

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1508281-008DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic (TOC)	9060	0.10	0.02	0.23	0.23	0.230	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/15
Sample Matrix:	Sediment	**Date Received:**	07/30/15
		Date Analyzed:	08/18/15
		Date Extracted:	08/13/15

Duplicate Matrix Spike Summary
Carbon, Total Organic (TOC)

Sample Name:	OF6-3	**Units:**	Percent
Lab Code:	K1508281-008	**Basis:**	Dry, per Method
Analysis Method:	9060		
Prep Method:	Method		

		Matrix Spike K1508281-008MS			Duplicate Matrix Spike K1508281-008DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Carbon, Total Organic (TOC)	0.23	2.97	2.43	113	2.95	2.41	113	70-122	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Analyzed:**	08/18/15
Sample Matrix:	Sediment	**Date Extracted:**	08/13/15

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method:	9060	**Units:**	Percent
Prep Method:	Method	**Basis:**	Dry, per Method
		Analysis Lot:	458482

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1508281-LCS	0.590	0.54	109	72-122

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	7/29/2015
Sample Matrix:	Sediment	**Date Received:**	7/30/2015
		Date Analyzed:	8/4/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: OF13-1
Lab Code: K1508281-001

Sand Fraction: Dry Weight (Grams)	68.5846
Sand Fraction: Weight Recovered (Grams)	67.9538
Sand Fraction: Percent Recovery	99.08

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	15.7707	21.48
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	6.7092	9.14
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	3.0529	4.16
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	29.5511	40.25
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	12.1830	16.59
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	0.6688	0.91
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	1.0000	1.36
Clay (< 0.0039 mm)	> 8 Ø	1.4350	1.95
	Total	70.3707	95.84

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	7/29/2015
Sample Matrix:	Sediment	**Date Received:**	7/30/2015
		Date Analyzed:	8/4/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: OF13-2
Lab Code: K1508281-002

Sand Fraction: Dry Weight (Grams)	74.0199
Sand Fraction: Weight Recovered (Grams)	74.1824
Sand Fraction: Percent Recovery	100.22

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	22.9472	27.81
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	9.2118	11.16
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	7.6593	9.28
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	18.4941	22.41
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	14.6027	17.70
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	1.2483	1.51
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	1.8950	2.30
Clay (< 0.0039 mm)	> 8 Ø	1.6500	2.00
	Total	77.7084	94.17

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	7/29/2015
Sample Matrix:	Sediment	**Date Received:**	7/30/2015
		Date Analyzed:	8/4/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: OF13-3
Lab Code: K1508281-003

Sand Fraction: Dry Weight (Grams)	78.4616
Sand Fraction: Weight Recovered (Grams)	78.3754
Sand Fraction: Percent Recovery	99.89

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	32.0509	38.03
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	10.1108	12.00
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	12.6858	15.05
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	19.1459	22.72
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	4.0807	4.84
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	0.2717	0.32
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	0.5250	0.62
Clay (< 0.0039 mm)	> 8 Ø	0.7550	0.90
	Total	79.6258	94.48

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	7/29/2015
Sample Matrix:	Sediment	**Date Received:**	7/30/2015
		Date Analyzed:	8/4/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: OF12-3
Lab Code: K1508281-004

Sand Fraction: Dry Weight (Grams)	84.2537
Sand Fraction: Weight Recovered (Grams)	84.1665
Sand Fraction: Percent Recovery	99.90

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	21.6336	25.49
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	9.1814	10.82
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	9.9637	11.74
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	25.2685	29.77
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	17.1633	20.22
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	0.9453	1.11
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	0.6050	0.71
Clay (< 0.0039 mm)	> 8 Ø	0.7500	0.88
	Total	85.5108	100.74

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	7/30/2015
Sample Matrix:	Sediment	**Date Received:**	7/30/2015
		Date Analyzed:	8/4/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: OF12-1
Lab Code: K1508281-005

Sand Fraction: Dry Weight (Grams)	92.4991
Sand Fraction: Weight Recovered (Grams)	92.4812
Sand Fraction: Percent Recovery	99.98

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	44.4589	49.23
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	8.6485	9.58
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	8.7910	9.73
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	17.0127	18.84
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	11.9108	13.19
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	1.5639	1.73
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	0.9250	1.02
Clay (< 0.0039 mm)	> 8 Ø	0.5200	0.58
	Total	93.8308	103.90

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	7/30/2015
Sample Matrix:	Sediment	**Date Received:**	7/30/2015
		Date Analyzed:	8/4/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: OF6-1
Lab Code: K1508281-006

Sand Fraction: Dry Weight (Grams)	76.9275
Sand Fraction: Weight Recovered (Grams)	76.8766
Sand Fraction: Percent Recovery	99.93

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	0.8583	1.08
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	0.9627	1.21
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	3.1500	3.96
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	22.5819	28.36
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	47.8785	60.13
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	1.4323	1.80
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	0.3350	0.42
Clay (< 0.0039 mm)	> 8 Ø	0.8400	1.06
	Total	78.0387	98.02

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	7/30/2015
Sample Matrix:	Sediment	**Date Received:**	7/30/2015
		Date Analyzed:	8/4/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: OF6-2
Lab Code: K1508281-007

Sand Fraction: Dry Weight (Grams)	70.1989
Sand Fraction: Weight Recovered (Grams)	70.2595
Sand Fraction: Percent Recovery	100.09

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	5.8548	7.69
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	1.2532	1.65
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	1.5794	2.08
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	7.0912	9.32
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	49.7125	65.33
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	4.7337	6.22
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	1.6350	2.15
Clay (< 0.0039 mm)	> 8 Ø	1.7150	2.25
	Total	73.5748	96.69

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	7/30/2015
Sample Matrix:	Sediment	**Date Received:**	7/30/2015
		Date Analyzed:	8/4/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: OF6-3
Lab Code: K1508281-008

Sand Fraction: Dry Weight (Grams)	77.1976
Sand Fraction: Weight Recovered (Grams)	77.2063
Sand Fraction: Percent Recovery	100.01

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	3.2896	4.01
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	3.3211	4.04
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	4.5963	5.60
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	16.8459	20.52
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	44.8841	54.67
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	4.2186	5.14
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	0.5950	0.72
Clay (< 0.0039 mm)	> 8 Ø	0.9250	1.13
	Total	78.6756	95.83

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	7/30/2015
Sample Matrix:	Sediment	**Date Received:**	7/30/2015
		Date Analyzed:	8/4/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: OF6-3
Lab Code: K1508281-008 DUP

Sand Fraction: Dry Weight (Grams)	83.1145
Sand Fraction: Weight Recovered (Grams)	82.9788
Sand Fraction: Percent Recovery	99.84

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	3.9516	4.57
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	3.4624	4.00
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	4.8910	5.65
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	18.2309	21.07
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	50.0616	57.87
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	2.3628	2.73
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	0.4950	0.57
Clay (< 0.0039 mm)	> 8 Ø	1.0250	1.18
	Total	84.4803	97.64

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	7/30/2015
Sample Matrix:	Sediment	**Date Received:**	7/30/2015
		Date Analyzed:	8/4/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: OF6-3
Lab Code: K1508281-008 TRP

Sand Fraction: Dry Weight (Grams)	82.5020
Sand Fraction: Weight Recovered (Grams)	82.0250
Sand Fraction: Percent Recovery	99.42

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	4.1575	4.85
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	3.5229	4.11
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	4.9729	5.80
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	17.5945	20.51
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	47.3770	55.24
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	4.3674	5.09
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	0.5450	0.64
Clay (< 0.0039 mm)	> 8 Ø	1.0100	1.18
	Total	83.5472	97.42

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/15 - 07/30/15
Sample Matrix:	Sediment	**Date Received:**	07/30/15
Analysis Method:	PSEP TS	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
OF13-1	K1508281-001	**74.3**	-	-	1	08/07/15 13:16	
OF13-2	K1508281-002	**74.4**	-	-	1	08/07/15 13:16	
OF13-3	K1508281-003	**80.7**	-	-	1	08/07/15 13:16	
OF12-3	K1508281-004	**84.6**	-	-	1	08/07/15 13:16	
OF12-1	K1508281-005	**83.0**	-	-	1	08/07/15 13:16	
OF6-1	K1508281-006	**79.1**	-	-	1	08/07/15 13:16	
OF6-2	K1508281-007	**72.7**	-	-	1	08/07/15 13:16	
OF6-3	K1508281-008	**81.2**	-	-	1	08/07/15 13:16	

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QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/15
Sample Matrix:	Sediment	**Date Received:**	07/30/15
		Date Analyzed:	08/07/15

Triplicate Sample Summary
General Chemistry Parameters

Sample Name:	OF13-1	**Units:**	Percent
Lab Code:	K1508281-001	**Basis:**	As Received
Analysis Method:	PSEP TS		
Prep Method:	None		

Analyte Name	MRL	MDL	Sample Result	Duplicate K1508281-001DUP Result	Triplicate K1508281-001TRP Result	Average	RSD	RSD Limit
Solids, Total	-	-	74.3	77.8	73.3	75.1	3	10

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SuperSet Reference:15-0000341622 rev 00

DNR-00008483

Metals

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Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project No.:	Bremerton 2015	**Date Collected:**	7/29/2015
Project Name:	Bremerton Sediment Sampling	**Date Received:**	7/30/2015
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: OF13-1 **Lab Code:** K1508281-001

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	6010C	4.1	2.1	2.0	08/18/15	08/19/15	2.2	J	
Cadmium	6010C	0.21	0.10	2.0	08/18/15	08/19/15	0.10	U	
Chromium	6010C	0.8	0.3	2.0	08/18/15	08/19/15	12.3		
Copper	6010C	0.8	0.4	2.0	08/18/15	08/19/15	9.6		
Lead	6010C	2.1	0.7	2.0	08/18/15	08/19/15	9.8		
Mercury	7471B	0.019	0.002	1.0	08/11/15	08/11/15	0.031		N
Silver	6010C	0.8	0.3	2.0	08/18/15	08/19/15	0.3	U	
Zinc	6010C	1.0	0.2	2.0	08/18/15	08/19/15	34.3		

% Solids: 74.3

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Cosmopolitan Engineering Group
Project No.: Bremerton 2015
Project Name: Bremerton Sediment Sampling
Matrix: SEDIMENT

Service Request: K1508281
Date Collected: 7/29/2015
Date Received: 7/30/2015
Units: mg/Kg
Basis: DRY

Sample Name: OF13-2
Lab Code: K1508281-002

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	6010C	2.6	1.3	2.0	08/18/15	08/19/15	1.8	J	
Cadmium	6010C	0.13	0.06	2.0	08/18/15	08/19/15	0.13	J	
Chromium	6010C	0.5	0.2	2.0	08/18/15	08/19/15	11.5		
Copper	6010C	0.5	0.3	2.0	08/18/15	08/19/15	13.7		
Lead	6010C	1.3	0.5	2.0	08/18/15	08/19/15	11.5		
Mercury	7471B	0.019	0.002	1.0	08/11/15	08/11/15	0.043		N
Silver	6010C	0.5	0.2	2.0	08/18/15	08/19/15	0.2	U	
Zinc	6010C	0.6	0.1	2.0	08/18/15	08/19/15	45.1		

% Solids: 74.4

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Cosmopolitan Engineering Group
Project No.: Bremerton 2015
Project Name: Bremerton Sediment Sampling
Matrix: SEDIMENT

Service Request: K1508281
Date Collected: 7/29/2015
Date Received: 7/30/2015
Units: mg/Kg
Basis: DRY

Sample Name: OF13-3
Lab Code: K1508281-003

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	6010C	4.1	2.1	2.0	08/18/15	08/19/15	2.1	U	
Cadmium	6010C	0.20	0.10	2.0	08/18/15	08/19/15	0.10	U	
Chromium	6010C	0.8	0.3	2.0	08/18/15	08/19/15	10.1		
Copper	6010C	0.8	0.4	2.0	08/18/15	08/19/15	16.9		
Lead	6010C	2.1	0.7	2.0	08/18/15	08/19/15	44.0		
Mercury	7471B	0.018	0.002	1.0	08/11/15	08/11/15	0.014	J	N
Silver	6010C	0.8	0.3	2.0	08/18/15	08/19/15	0.3	U	
Zinc	6010C	1.0	0.2	2.0	08/18/15	08/19/15	45.7		

% Solids: 80.7

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Cosmopolitan Engineering Group
Project No.: Bremerton 2015
Project Name: Bremerton Sediment Sampling
Matrix: SEDIMENT

Service Request: K1508281
Date Collected: 7/29/2015
Date Received: 7/30/2015
Units: mg/Kg
Basis: DRY

Sample Name: OF12-3
Lab Code: K1508281-004

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	6010C	4.2	2.1	2.0	08/18/15	08/19/15	2.1	U	
Cadmium	6010C	0.21	0.10	2.0	08/18/15	08/19/15	0.10	U	
Chromium	6010C	0.8	0.3	2.0	08/18/15	08/19/15	16.0		
Copper	6010C	0.8	0.4	2.0	08/18/15	08/19/15	13.0		
Lead	6010C	2.1	0.7	2.0	08/18/15	08/19/15	7.9		
Mercury	7471B	0.019	0.002	1.0	08/11/15	08/11/15	0.020		N
Silver	6010C	0.8	0.3	2.0	08/18/15	08/19/15	0.3	U	
Zinc	6010C	1.1	0.2	2.0	08/18/15	08/19/15	32.8		

% Solids: 84.6

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Cosmopolitan Engineering Group
Project No.: Bremerton 2015
Project Name: Bremerton Sediment Sampling
Matrix: SEDIMENT

Service Request: K1508281
Date Collected: 7/30/2015
Date Received: 7/30/2015
Units: mg/Kg
Basis: DRY

Sample Name: OF12-1
Lab Code: K1508281-005

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	6010C	3.9	2.0	2.0	08/18/15	08/19/15	2.0	U	
Cadmium	6010C	0.20	0.10	2.0	08/18/15	08/19/15	0.10	U	
Chromium	6010C	0.8	0.3	2.0	08/18/15	08/19/15	15.2		
Copper	6010C	0.8	0.4	2.0	08/18/15	08/19/15	9.1		
Lead	6010C	2.0	0.7	2.0	08/18/15	08/19/15	7.1		
Mercury	7471B	0.019	0.002	1.0	08/11/15	08/11/15	0.019		N
Silver	6010C	0.8	0.3	2.0	08/18/15	08/19/15	0.3	U	
Zinc	6010C	1.0	0.2	2.0	08/18/15	08/19/15	18.9		

% Solids: 83.0

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Cosmopolitan Engineering Group
Project No.: Bremerton 2015
Project Name: Bremerton Sediment Sampling
Matrix: SEDIMENT

Service Request: K1508281
Date Collected: 7/30/2015
Date Received: 7/30/2015
Units: mg/Kg
Basis: DRY

Sample Name: OF6-1
Lab Code: K1508281-006

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	6010C	4.1	2.1	2.0	08/18/15	08/19/15	2.3	J	
Cadmium	6010C	0.21	0.10	2.0	08/18/15	08/19/15	0.10	U	
Chromium	6010C	0.8	0.3	2.0	08/18/15	08/19/15	13.7		
Copper	6010C	0.8	0.4	2.0	08/18/15	08/19/15	6.4		
Lead	6010C	2.1	0.7	2.0	08/18/15	08/19/15	7.6		
Mercury	7471B	0.020	0.002	1.0	08/11/15	08/11/15	0.017	J	N
Silver	6010C	0.8	0.3	2.0	08/18/15	08/19/15	0.3	U	
Zinc	6010C	1.0	0.2	2.0	08/18/15	08/19/15	34.2		

% Solids: 79.1

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Cosmopolitan Engineering Group
Project No.: Bremerton 2015
Project Name: Bremerton Sediment Sampling
Matrix: SEDIMENT

Service Request: K1508281
Date Collected: 7/30/2015
Date Received: 7/30/2015
Units: mg/Kg
Basis: DRY

Sample Name: OF6-2
Lab Code: K1508281-007

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	6010C	3.5	1.8	2.0	08/18/15	08/19/15	1.8	U	
Cadmium	6010C	0.18	0.09	2.0	08/18/15	08/19/15	0.12	J	
Chromium	6010C	0.7	0.3	2.0	08/18/15	08/19/15	14.1		
Copper	6010C	0.7	0.4	2.0	08/18/15	08/19/15	7.7		
Lead	6010C	1.8	0.6	2.0	08/18/15	08/19/15	7.7		
Mercury	7471B	0.020	0.002	1.0	08/11/15	08/11/15	0.027		N
Silver	6010C	0.7	0.3	2.0	08/18/15	08/19/15	0.3	J	
Zinc	6010C	0.9	0.2	2.0	08/18/15	08/19/15	38.6		

% Solids: 72.7

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Cosmopolitan Engineering Group
Project No.: Bremerton 2015
Project Name: Bremerton Sediment Sampling
Matrix: SEDIMENT

Service Request: K1508281
Date Collected: 7/30/2015
Date Received: 7/30/2015
Units: mg/Kg
Basis: DRY

Sample Name: OF6-3
Lab Code: K1508281-008

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	6010C	3.0	1.5	2.0	08/18/15	08/19/15	1.5	U	
Cadmium	6010C	0.15	0.08	2.0	08/18/15	08/19/15	0.08	U	
Chromium	6010C	0.6	0.2	2.0	08/18/15	08/19/15	15.4		
Copper	6010C	0.6	0.3	2.0	08/18/15	08/19/15	5.9		
Lead	6010C	1.5	0.5	2.0	08/18/15	08/19/15	10.4		
Mercury	7471B	0.018	0.002	1.0	08/11/15	08/11/15	0.015	J	N
Silver	6010C	0.6	0.2	2.0	08/18/15	08/19/15	0.2	U	
Zinc	6010C	0.8	0.2	2.0	08/18/15	08/19/15	25.5		

% Solids: 81.2

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Cosmopolitan Engineering Group
Service Request: K1508281
Project No.: Bremerton 2015
Date Collected:
Project Name: Bremerton Sediment Sampling
Date Received:
Matrix: SEDIMENT
Units: mg/Kg
Basis: DRY

Sample Name: Method Blank
Lab Code: KQ1508801-04

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	7471B	0.020	0.002	1.0	08/11/15	08/11/15	0.002	U	N

% Solids: 100.0

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Cosmopolitan Engineering Group
Service Request: K1508281
Project No.: Bremerton 2015
Date Collected:
Project Name: Bremerton Sediment Sampling
Date Received:
Matrix: SEDIMENT
Units: mg/Kg
Basis: DRY

Sample Name: Method Blank
Lab Code: KQ1509042-02

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	6010C	4.0	2.0	2.0	08/18/15	08/19/15	2.0	U	
Cadmium	6010C	0.20	0.10	2.0	08/18/15	08/19/15	0.10	U	
Chromium	6010C	0.8	0.3	2.0	08/18/15	08/19/15	0.3	U	
Copper	6010C	0.8	0.4	2.0	08/18/15	08/19/15	0.4	U	
Lead	6010C	2.0	0.7	2.0	08/18/15	08/19/15	0.7	U	
Silver	6010C	0.8	0.3	2.0	08/18/15	08/19/15	0.3	U	
Zinc	6010C	1.0	0.2	2.0	08/18/15	08/19/15	0.2	U	

% Solids: 100.0

Comments:

Metals

- 5A -

SPIKE SAMPLE RECOVERY

Client: Cosmopolitan Engineering Group **Service Request:** K1508281

Project No.: Bremerton 2015 **Units:** MG/KG

Project Name: Bremerton Sediment Sampling **Basis:** DRY

Matrix: SEDIMENT **% Solids:** 99.1

Sample Name: Batch QC1S **Lab Code:** K1508261-029S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	80 - 120	1.17		0.538		0.48	132	N	7471B

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 5A -

SPIKE SAMPLE RECOVERY

Client: Cosmopolitan Engineering Group **Service Request:** K1508281

Project No.: Bremerton 2015 **Units:** MG/KG

Project Name: Bremerton Sediment Sampling **Basis:** DRY

Matrix: SEDIMENT **% Solids:** 99.1

Sample Name: Batch QC1SD **Lab Code:** K1508261-029SD

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	80 - 120	0.977		0.538		0.48	91		7471B

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 5A -

SPIKE SAMPLE RECOVERY

Client: Cosmopolitan Engineering Group **Service Request:** K1508281

Project No.: Bremerton 2015 **Units:** MG/KG

Project Name: Bremerton Sediment Sampling **Basis:** DRY

Matrix: SEDIMENT **% Solids:** 74.3

Sample Name: OF13-1S **Lab Code:** K1508281-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Arsenic	75 - 125	92.7		2.2	J	104.33	87		6010C
Cadmium	75 - 125	9.12		0.10	U	10.43	87		6010C
Chromium	75 - 125	50.0		12.3		41.73	90		6010C
Copper	75 - 125	53.6		9.6		52.17	84		6010C
Lead	75 - 125	98.4		9.8		104.33	85		6010C
Silver	75 - 125	8.3		0.3	U	10.43	80		6010C
Zinc	75 - 125	113		34.3		104.33	75		6010C

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 6 -

DUPLICATES

Client: Cosmopolitan Engineering Group **Service Request:** K1508281

Project No.: Bremerton 2015 **Units:** MG/KG

Project Name: Bremerton Sediment Sampling **Basis:** DRY

Matrix: SEDIMENT **% Solids:** 99.1

Sample Name: Batch QC1D **Lab Code:** K1508261-029D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury	20	0.538		0.517		4.0		7471B

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

- 6 -

DUPLICATES

Client: Cosmopolitan Engineering Group **Service Request:** K1508281

Project No.: Bremerton 2015 **Units:** MG/KG

Project Name: Bremerton Sediment Sampling **Basis:** DRY

Matrix: SEDIMENT **% Solids:** 99.1

Sample Name: Batch QC1SD **Lab Code:** K1508261-029SD

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury	20	1.17		0.977		18.0		7471B

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

- 6 -

DUPLICATES

Client: Cosmopolitan Engineering Group **Service Request:** K1508281

Project No.: Bremerton 2015 **Units:** MG/KG

Project Name: Bremerton Sediment Sampling **Basis:** DRY

Matrix: SEDIMENT **% Solids:** 74.3

Sample Name: OF13-1D **Lab Code:** K1508281-001D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Arsenic		2.2	J	2.0	U	200.0		6010C
Cadmium		0.10	U	0.10	U			6010C
Chromium	20	12.3		13.3		7.8		6010C
Copper	20	9.6		8.4		13.3		6010C
Lead		9.8		11.9		19.4		6010C
Silver		0.3	U	0.3	U			6010C
Zinc	20	34.3		30.5		11.7		6010C

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals
- 7 -
LABORATORY CONTROL SAMPLE

Client: Cosmopolitan Engineering Group **Service Request:** K1508281

Project No.: Bremerton 2015

Project Name: Bremerton Sediment Sampling

Aqueous LCS Source: **Solid LCS Source:** ERA D080-540

Analyte	Aqueous (ug/L) True	Aqueous (ug/L) Found	Aqueous (ug/L) %R	Solid (mg/kg) True	Solid (mg/kg) Found	Solid (mg/kg) C Limits		Solid (mg/kg) %R
Arsenic				99.6	92.8	69	131	93
Cadmium				182	168	74	126	92
Chromium				136	129	70	130	95
Copper				102	98.5	74	126	97
Lead				115	106	72	129	92
Mercury				19.9	18.7	51	148	94
Silver				40.4	38.0	66	134	94
Zinc				161	138	81	119	86

Polychlorinated Biphenyls (PCBs)

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Polychlorinated Biphenyls (PCBs)

Sample Name:	OF13-1	**Units:**	ug/Kg
Lab Code:	K1508281-001	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	14	2.9	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1221	ND	U	27	2.9	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1232	ND	U	14	2.9	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1242	ND	U	14	2.9	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1248	ND	U	14	2.9	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1254	ND	U	14	2.9	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1260	ND	U	14	2.9	1	08/03/15	08/06/15	KWG1507105	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	75	43-148	08/06/15	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Polychlorinated Biphenyls (PCBs)

Sample Name:	OF13-2	**Units:**	ug/Kg
Lab Code:	K1508281-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	14	2.9	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1221	ND	U	27	2.9	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1232	ND	U	14	2.9	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1242	ND	U	14	2.9	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1248	ND	U	14	2.9	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1254	ND	U	14	2.9	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1260	ND	U	14	2.9	1	08/03/15	08/06/15	KWG1507105	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	84	43-148	08/06/15	Acceptable

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Polychlorinated Biphenyls (PCBs)

Sample Name:	OF13-3	**Units:**	ug/Kg
Lab Code:	K1508281-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	13	2.6	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1221	ND	U	25	2.6	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1232	ND	U	13	2.6	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1242	**3.2**	JP	13	2.6	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1248	ND	U	13	2.6	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1254	**16**		13	2.6	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1260	ND	U	13	2.6	1	08/03/15	08/06/15	KWG1507105	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	81	43-148	08/06/15	Acceptable

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Polychlorinated Biphenyls (PCBs)

Sample Name:	OF12-3	**Units:**	ug/Kg
Lab Code:	K1508281-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	12	2.5	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1221	ND	U	24	2.5	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1232	ND	Ui	12	3.0	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1242	ND	U	12	2.5	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1248	ND	U	12	2.5	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1254	ND	U	12	2.5	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1260	ND	U	12	2.5	1	08/03/15	08/06/15	KWG1507105	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	85	43-148	08/06/15	Acceptable

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Polychlorinated Biphenyls (PCBs)

Sample Name:	OF12-1	**Units:**	ug/Kg
Lab Code:	K1508281-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	12	2.6	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1221	ND	Ui	24	8.7	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1232	ND	U	12	2.6	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1242	ND	U	12	2.6	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1248	ND	U	12	2.6	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1254	ND	U	12	2.6	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1260	ND	U	12	2.6	1	08/03/15	08/06/15	KWG1507105	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	76	43-148	08/06/15	Acceptable

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Polychlorinated Biphenyls (PCBs)

Sample Name:	OF6-1	**Units:**	ug/Kg
Lab Code:	K1508281-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	13	2.7	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1221	ND	U	26	2.7	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1232	ND	U	13	2.7	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1242	ND	U	13	2.7	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1248	ND	U	13	2.7	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1254	ND	U	13	2.7	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1260	ND	U	13	2.7	1	08/03/15	08/06/15	KWG1507105	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	58	43-148	08/06/15	Acceptable

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Polychlorinated Biphenyls (PCBs)

Sample Name:	OF6-2	**Units:**	ug/Kg
Lab Code:	K1508281-007	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	14	2.9	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1221	ND	U	28	2.9	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1232	ND	U	14	2.9	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1242	ND	U	14	2.9	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1248	ND	U	14	2.9	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1254	ND	U	14	2.9	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1260	**200**		14	2.9	1	08/03/15	08/06/15	KWG1507105	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	88	43-148	08/06/15	Acceptable

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Polychlorinated Biphenyls (PCBs)

Sample Name:	OF6-3	**Units:**	ug/Kg
Lab Code:	K1508281-008	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	13	2.6	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1221	ND	U	25	2.6	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1232	ND	U	13	2.6	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1242	ND	U	13	2.6	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1248	ND	U	13	2.6	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1254	ND	U	13	2.6	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1260	ND	U	13	2.6	1	08/03/15	08/06/15	KWG1507105	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	73	43-148	08/06/15	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1507105-4	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	9.9	2.1	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1221	ND	U	20	2.1	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1232	ND	U	9.9	2.1	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1242	ND	U	9.9	2.1	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1248	ND	U	9.9	2.1	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1254	ND	U	9.9	2.1	1	08/03/15	08/06/15	KWG1507105	
Aroclor 1260	ND	U	9.9	2.1	1	08/03/15	08/06/15	KWG1507105	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	89	43-148	08/06/15	Acceptable

Comments:

QA/QC Report

Client: Cosmopolitan Engineering Group
Project: Bremerton Sediment Sampling/Bremerton 2015
Sample Matrix: Sediment
Service Request: K1508281

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541
Analysis Method: 8082A
Units: Percent
Level: Low

Sample Name	Lab Code	Sur1
OF13-1	K1508281-001	75
OF13-2	K1508281-002	84
OF13-3	K1508281-003	81
OF12-3	K1508281-004	85
OF12-1	K1508281-005	76
OF6-1	K1508281-006	58
OF6-2	K1508281-007	88
OF6-3	K1508281-008	73
Method Blank	KWG1507105-4	89
OF6-2MS	KWG1507105-1	63
OF6-2DMS	KWG1507105-2	105
Lab Control Sample	KWG1507105-3	89

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 43-148

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Extracted:**	08/03/2015
Sample Matrix:	Sediment	**Date Analyzed:**	08/06/2015

Matrix Spike/Duplicate Matrix Spike Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	OF6-2	**Units:**	ug/Kg
Lab Code:	K1508281-007	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1507105

		OF6-2MS KWG1507105-1 Matrix Spike			OF6-2DMS KWG1507105-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Aroclor 1016	ND	165	273	60	223	274	82	23-145	30	40
Aroclor 1260	200	187	273	-6 *	237	274	12 *	24-148	24	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Extracted:**	08/03/2015
Sample Matrix:	Sediment	**Date Analyzed:**	08/06/2015

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	8082A	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1507105

	Lab Control Sample KWG1507105-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Aroclor 1016	153	200	77	42-122
Aroclor 1260	186	200	93	50-124

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Semi-Volatile Organic Compounds by GC/MS

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	OF13-1	**Units:**	ug/Kg
Lab Code:	K1508281-001	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	ND	U	210	31	10	08/04/15	08/30/15	KWG1507192	
1,4-Dichlorobenzene	ND	U	67	25	10	08/04/15	08/30/15	KWG1507192	
1,2-Dichlorobenzene	ND	U	67	24	10	08/04/15	08/30/15	KWG1507192	
Benzyl Alcohol	ND	U	140	49	10	08/04/15	08/30/15	KWG1507192	
Benzoic Acid	ND	U	4000	960	10	08/04/15	08/30/15	KWG1507192	
1,2,4-Trichlorobenzene	ND	U	67	26	10	08/04/15	08/30/15	KWG1507192	
2-Methylphenol	ND	U	75	41	10	08/04/15	08/30/15	KWG1507192	
4-Methylphenol†	ND	U	75	45	10	08/04/15	08/30/15	KWG1507192	
2,4-Dimethylphenol	ND	U	340	63	10	08/04/15	08/30/15	KWG1507192	
Naphthalene	ND	U	67	29	10	08/04/15	08/30/15	KWG1507192	
Hexachlorobutadiene	ND	U	67	30	10	08/04/15	08/30/15	KWG1507192	
2-Methylnaphthalene	ND	U	67	28	10	08/04/15	08/30/15	KWG1507192	
Acenaphthylene	**35**	JD	67	26	10	08/04/15	08/30/15	KWG1507192	
Dimethyl Phthalate	ND	U	67	40	10	08/04/15	08/30/15	KWG1507192	
Acenaphthene	ND	U	67	32	10	08/04/15	08/30/15	KWG1507192	
Dibenzofuran	ND	U	67	34	10	08/04/15	08/30/15	KWG1507192	
Fluorene	ND	U	67	33	10	08/04/15	08/30/15	KWG1507192	
Diethyl Phthalate	ND	U	67	37	10	08/04/15	08/30/15	KWG1507192	
N-Nitrosodiphenylamine	ND	U	67	32	10	08/04/15	08/30/15	KWG1507192	
Hexachlorobenzene	ND	U	67	33	10	08/04/15	08/30/15	KWG1507192	
Pentachlorophenol	ND	U	670	53	10	08/04/15	08/30/15	KWG1507192	
Phenanthrene	**120**	D	67	36	10	08/04/15	08/30/15	KWG1507192	
Anthracene	**38**	JD	67	32	10	08/04/15	08/30/15	KWG1507192	
Di-n-butyl Phthalate	ND	U	140	48	10	08/04/15	08/30/15	KWG1507192	
Fluoranthene	**350**	D	67	37	10	08/04/15	08/30/15	KWG1507192	
Pyrene	**440**	D	67	37	10	08/04/15	08/30/15	KWG1507192	
Butyl Benzyl Phthalate	ND	U	67	37	10	08/04/15	08/30/15	KWG1507192	
Benz(a)anthracene	**150**	D	67	36	10	08/04/15	08/30/15	KWG1507192	
Chrysene	**150**	D	67	41	10	08/04/15	08/30/15	KWG1507192	
Bis(2-ethylhexyl) Phthalate	ND	U	670	89	10	08/04/15	08/30/15	KWG1507192	
Di-n-octyl Phthalate	ND	U	67	32	10	08/04/15	08/30/15	KWG1507192	
Benzo(b)fluoranthene	**180**	D	67	34	10	08/04/15	08/30/15	KWG1507192	
Benzo(k)fluoranthene	**56**	JD	67	40	10	08/04/15	08/30/15	KWG1507192	
Benzo(a)pyrene	**180**	D	67	36	10	08/04/15	08/30/15	KWG1507192	

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	OF13-1	**Units:**	ug/Kg
Lab Code:	K1508281-001	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Indeno(1,2,3-cd)pyrene	**130**	D	67	32	10	08/04/15	08/30/15	KWG1507192	
Dibenz(a,h)anthracene	ND	U	67	30	10	08/04/15	08/30/15	KWG1507192	
Benzo(g,h,i)perylene	**140**	D	67	37	10	08/04/15	08/30/15	KWG1507192	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Phenol-d6	66	20-86	08/30/15	Acceptable
Nitrobenzene-d5	70	27-91	08/30/15	Acceptable
2-Fluorobiphenyl	74	25-97	08/30/15	Acceptable
2,4,6-Tribromophenol	92	10-119	08/30/15	Acceptable
Terphenyl-d14	70	33-129	08/30/15	Acceptable

† Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	OF13-2	**Units:**	ug/Kg
Lab Code:	K1508281-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	ND	U	210	31	10	08/04/15	08/30/15	KWG1507192	
1,4-Dichlorobenzene	ND	U	68	25	10	08/04/15	08/30/15	KWG1507192	
1,2-Dichlorobenzene	ND	U	68	24	10	08/04/15	08/30/15	KWG1507192	
Benzyl Alcohol	ND	U	140	49	10	08/04/15	08/30/15	KWG1507192	
Benzoic Acid	ND	U	4000	960	10	08/04/15	08/30/15	KWG1507192	
1,2,4-Trichlorobenzene	ND	U	68	26	10	08/04/15	08/30/15	KWG1507192	
2-Methylphenol	ND	U	75	41	10	08/04/15	08/30/15	KWG1507192	
4-Methylphenol†	ND	U	75	45	10	08/04/15	08/30/15	KWG1507192	
2,4-Dimethylphenol	ND	U	340	63	10	08/04/15	08/30/15	KWG1507192	
Naphthalene	**29**	JD	68	29	10	08/04/15	08/30/15	KWG1507192	
Hexachlorobutadiene	ND	U	68	30	10	08/04/15	08/30/15	KWG1507192	
2-Methylnaphthalene	ND	U	68	28	10	08/04/15	08/30/15	KWG1507192	
Acenaphthylene	ND	U	68	26	10	08/04/15	08/30/15	KWG1507192	
Dimethyl Phthalate	ND	U	68	40	10	08/04/15	08/30/15	KWG1507192	
Acenaphthene	ND	U	68	32	10	08/04/15	08/30/15	KWG1507192	
Dibenzofuran	ND	U	68	34	10	08/04/15	08/30/15	KWG1507192	
Fluorene	ND	U	68	33	10	08/04/15	08/30/15	KWG1507192	
Diethyl Phthalate	ND	U	68	37	10	08/04/15	08/30/15	KWG1507192	
N-Nitrosodiphenylamine	ND	U	68	32	10	08/04/15	08/30/15	KWG1507192	
Hexachlorobenzene	ND	U	68	33	10	08/04/15	08/30/15	KWG1507192	
Pentachlorophenol	ND	U	680	53	10	08/04/15	08/30/15	KWG1507192	
Phenanthrene	**75**	D	68	36	10	08/04/15	08/30/15	KWG1507192	
Anthracene	ND	U	68	32	10	08/04/15	08/30/15	KWG1507192	
Di-n-butyl Phthalate	ND	U	140	48	10	08/04/15	08/30/15	KWG1507192	
Fluoranthene	**92**	D	68	37	10	08/04/15	08/30/15	KWG1507192	
Pyrene	**99**	D	68	37	10	08/04/15	08/30/15	KWG1507192	
Butyl Benzyl Phthalate	ND	U	68	37	10	08/04/15	08/30/15	KWG1507192	
Benz(a)anthracene	**58**	JD	68	36	10	08/04/15	08/30/15	KWG1507192	
Chrysene	**61**	JD	68	41	10	08/04/15	08/30/15	KWG1507192	
Bis(2-ethylhexyl) Phthalate	**140**	JD	680	89	10	08/04/15	08/30/15	KWG1507192	
Di-n-octyl Phthalate	ND	U	68	32	10	08/04/15	08/30/15	KWG1507192	
Benzo(b)fluoranthene	**69**	D	68	34	10	08/04/15	08/30/15	KWG1507192	
Benzo(k)fluoranthene	ND	U	68	40	10	08/04/15	08/30/15	KWG1507192	
Benzo(a)pyrene	**59**	JD	68	36	10	08/04/15	08/30/15	KWG1507192	

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	OF13-2	**Units:**	ug/Kg
Lab Code:	K1508281-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Indeno(1,2,3-cd)pyrene	**40**	JD	68	32	10	08/04/15	08/30/15	KWG1507192	
Dibenz(a,h)anthracene	ND	U	68	30	10	08/04/15	08/30/15	KWG1507192	
Benzo(g,h,i)perylene	**39**	JD	68	37	10	08/04/15	08/30/15	KWG1507192	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Phenol-d6	43	20-86	08/30/15	Acceptable
Nitrobenzene-d5	33	27-91	08/30/15	Acceptable
2-Fluorobiphenyl	40	25-97	08/30/15	Acceptable
2,4,6-Tribromophenol	55	10-119	08/30/15	Acceptable
Terphenyl-d14	42	33-129	08/30/15	Acceptable

† Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	OF13-3	**Units:**	ug/Kg
Lab Code:	K1508281-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	ND	U	93	16	5	08/04/15	08/30/15	KWG1507192	
1,4-Dichlorobenzene	ND	U	31	13	5	08/04/15	08/30/15	KWG1507192	
1,2-Dichlorobenzene	ND	U	31	12	5	08/04/15	08/30/15	KWG1507192	
Benzyl Alcohol	ND	U	62	25	5	08/04/15	08/30/15	KWG1507192	
Benzoic Acid	ND	U	2000	480	5	08/04/15	08/30/15	KWG1507192	
1,2,4-Trichlorobenzene	ND	U	31	13	5	08/04/15	08/30/15	KWG1507192	
2-Methylphenol	ND	U	38	21	5	08/04/15	08/30/15	KWG1507192	
4-Methylphenol†	ND	U	38	23	5	08/04/15	08/30/15	KWG1507192	
2,4-Dimethylphenol	ND	U	160	32	5	08/04/15	08/30/15	KWG1507192	
Naphthalene	ND	U	31	15	5	08/04/15	08/30/15	KWG1507192	
Hexachlorobutadiene	ND	U	31	15	5	08/04/15	08/30/15	KWG1507192	
2-Methylnaphthalene	ND	U	31	14	5	08/04/15	08/30/15	KWG1507192	
Acenaphthylene	ND	U	31	13	5	08/04/15	08/30/15	KWG1507192	
Dimethyl Phthalate	ND	U	31	20	5	08/04/15	08/30/15	KWG1507192	
Acenaphthene	ND	U	31	16	5	08/04/15	08/30/15	KWG1507192	
Dibenzofuran	ND	U	31	17	5	08/04/15	08/30/15	KWG1507192	
Fluorene	ND	U	31	17	5	08/04/15	08/30/15	KWG1507192	
Diethyl Phthalate	ND	U	31	19	5	08/04/15	08/30/15	KWG1507192	
N-Nitrosodiphenylamine	ND	U	31	16	5	08/04/15	08/30/15	KWG1507192	
Hexachlorobenzene	ND	U	31	17	5	08/04/15	08/30/15	KWG1507192	
Pentachlorophenol	ND	U	310	27	5	08/04/15	08/30/15	KWG1507192	
Phenanthrene	ND	U	31	18	5	08/04/15	08/30/15	KWG1507192	
Anthracene	ND	U	31	16	5	08/04/15	08/30/15	KWG1507192	
Di-n-butyl Phthalate	ND	U	62	24	5	08/04/15	08/30/15	KWG1507192	
Fluoranthene	ND	U	31	19	5	08/04/15	08/30/15	KWG1507192	
Pyrene	ND	U	31	19	5	08/04/15	08/30/15	KWG1507192	
Butyl Benzyl Phthalate	ND	U	31	19	5	08/04/15	08/30/15	KWG1507192	
Benz(a)anthracene	ND	U	31	18	5	08/04/15	08/30/15	KWG1507192	
Chrysene	ND	U	31	21	5	08/04/15	08/30/15	KWG1507192	
Bis(2-ethylhexyl) Phthalate	ND	U	310	45	5	08/04/15	08/30/15	KWG1507192	
Di-n-octyl Phthalate	ND	U	31	16	5	08/04/15	08/30/15	KWG1507192	
Benzo(b)fluoranthene	ND	U	31	17	5	08/04/15	08/30/15	KWG1507192	
Benzo(k)fluoranthene	ND	U	31	20	5	08/04/15	08/30/15	KWG1507192	
Benzo(a)pyrene	ND	U	31	18	5	08/04/15	08/30/15	KWG1507192	

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	OF13-3	**Units:**	ug/Kg
Lab Code:	K1508281-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Indeno(1,2,3-cd)pyrene	ND	U	31	16	5	08/04/15	08/30/15	KWG1507192	
Dibenz(a,h)anthracene	ND	U	31	15	5	08/04/15	08/30/15	KWG1507192	
Benzo(g,h,i)perylene	ND	U	31	19	5	08/04/15	08/30/15	KWG1507192	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Phenol-d6	48	20-86	08/30/15	Acceptable
Nitrobenzene-d5	42	27-91	08/30/15	Acceptable
2-Fluorobiphenyl	49	25-97	08/30/15	Acceptable
2,4,6-Tribromophenol	69	10-119	08/30/15	Acceptable
Terphenyl-d14	60	33-129	08/30/15	Acceptable

† Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	OF12-3	**Units:**	ug/Kg
Lab Code:	K1508281-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	**57**	JD	180	31	10	08/04/15	08/30/15	KWG1507192	
1,4-Dichlorobenzene	ND	U	59	25	10	08/04/15	08/30/15	KWG1507192	
1,2-Dichlorobenzene	ND	U	59	24	10	08/04/15	08/30/15	KWG1507192	
Benzyl Alcohol	ND	U	120	49	10	08/04/15	08/30/15	KWG1507192	
Benzoic Acid	ND	U	4000	960	10	08/04/15	08/30/15	KWG1507192	
1,2,4-Trichlorobenzene	ND	U	59	26	10	08/04/15	08/30/15	KWG1507192	
2-Methylphenol	ND	U	75	41	10	08/04/15	08/30/15	KWG1507192	
4-Methylphenol†	ND	U	75	45	10	08/04/15	08/30/15	KWG1507192	
2,4-Dimethylphenol	ND	U	300	63	10	08/04/15	08/30/15	KWG1507192	
Naphthalene	ND	U	59	29	10	08/04/15	08/30/15	KWG1507192	
Hexachlorobutadiene	ND	U	59	30	10	08/04/15	08/30/15	KWG1507192	
2-Methylnaphthalene	ND	U	59	28	10	08/04/15	08/30/15	KWG1507192	
Acenaphthylene	**42**	JD	59	26	10	08/04/15	08/30/15	KWG1507192	
Dimethyl Phthalate	ND	U	59	40	10	08/04/15	08/30/15	KWG1507192	
Acenaphthene	ND	U	59	32	10	08/04/15	08/30/15	KWG1507192	
Dibenzofuran	ND	U	59	34	10	08/04/15	08/30/15	KWG1507192	
Fluorene	ND	U	59	33	10	08/04/15	08/30/15	KWG1507192	
Diethyl Phthalate	ND	U	59	37	10	08/04/15	08/30/15	KWG1507192	
N-Nitrosodiphenylamine	ND	U	59	32	10	08/04/15	08/30/15	KWG1507192	
Hexachlorobenzene	ND	U	59	33	10	08/04/15	08/30/15	KWG1507192	
Pentachlorophenol	ND	U	590	53	10	08/04/15	08/30/15	KWG1507192	
Phenanthrene	**52**	JD	59	36	10	08/04/15	08/30/15	KWG1507192	
Anthracene	ND	U	59	32	10	08/04/15	08/30/15	KWG1507192	
Di-n-butyl Phthalate	ND	U	120	48	10	08/04/15	08/30/15	KWG1507192	
Fluoranthene	**190**	D	59	37	10	08/04/15	08/30/15	KWG1507192	
Pyrene	**240**	D	59	37	10	08/04/15	08/30/15	KWG1507192	
Butyl Benzyl Phthalate	ND	U	59	37	10	08/04/15	08/30/15	KWG1507192	
Benz(a)anthracene	**130**	D	59	36	10	08/04/15	08/30/15	KWG1507192	
Chrysene	**120**	D	59	41	10	08/04/15	08/30/15	KWG1507192	
Bis(2-ethylhexyl) Phthalate	ND	U	590	89	10	08/04/15	08/30/15	KWG1507192	
Di-n-octyl Phthalate	ND	U	59	32	10	08/04/15	08/30/15	KWG1507192	
Benzo(b)fluoranthene	**170**	D	59	34	10	08/04/15	08/30/15	KWG1507192	
Benzo(k)fluoranthene	**43**	JD	59	40	10	08/04/15	08/30/15	KWG1507192	
Benzo(a)pyrene	**180**	D	59	36	10	08/04/15	08/30/15	KWG1507192	

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	OF12-3	**Units:**	ug/Kg
Lab Code:	K1508281-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Indeno(1,2,3-cd)pyrene	**110**	D	59	32	10	08/04/15	08/30/15	KWG1507192	
Dibenz(a,h)anthracene	ND	U	59	30	10	08/04/15	08/30/15	KWG1507192	
Benzo(g,h,i)perylene	**120**	D	59	37	10	08/04/15	08/30/15	KWG1507192	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Phenol-d6	55	20-86	08/30/15	Acceptable
Nitrobenzene-d5	58	27-91	08/30/15	Acceptable
2-Fluorobiphenyl	62	25-97	08/30/15	Acceptable
2,4,6-Tribromophenol	64	10-119	08/30/15	Acceptable
Terphenyl-d14	53	33-129	08/30/15	Acceptable

† Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	OF12-1	**Units:**	ug/Kg
Lab Code:	K1508281-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	ND	U	190	31	10	08/04/15	08/30/15	KWG1507192	
1,4-Dichlorobenzene	ND	U	61	25	10	08/04/15	08/30/15	KWG1507192	
1,2-Dichlorobenzene	ND	U	61	24	10	08/04/15	08/30/15	KWG1507192	
Benzyl Alcohol	ND	U	130	49	10	08/04/15	08/30/15	KWG1507192	
Benzoic Acid	ND	U	4000	960	10	08/04/15	08/30/15	KWG1507192	
1,2,4-Trichlorobenzene	ND	U	61	26	10	08/04/15	08/30/15	KWG1507192	
2-Methylphenol	ND	U	75	41	10	08/04/15	08/30/15	KWG1507192	
4-Methylphenol†	ND	U	75	45	10	08/04/15	08/30/15	KWG1507192	
2,4-Dimethylphenol	ND	U	310	63	10	08/04/15	08/30/15	KWG1507192	
Naphthalene	ND	U	61	29	10	08/04/15	08/30/15	KWG1507192	
Hexachlorobutadiene	ND	U	61	30	10	08/04/15	08/30/15	KWG1507192	
2-Methylnaphthalene	ND	U	61	28	10	08/04/15	08/30/15	KWG1507192	
Acenaphthylene	**33**	JD	61	26	10	08/04/15	08/30/15	KWG1507192	
Dimethyl Phthalate	ND	U	61	40	10	08/04/15	08/30/15	KWG1507192	
Acenaphthene	ND	U	61	32	10	08/04/15	08/30/15	KWG1507192	
Dibenzofuran	ND	U	61	34	10	08/04/15	08/30/15	KWG1507192	
Fluorene	ND	U	61	33	10	08/04/15	08/30/15	KWG1507192	
Diethyl Phthalate	ND	U	61	37	10	08/04/15	08/30/15	KWG1507192	
N-Nitrosodiphenylamine	ND	U	61	32	10	08/04/15	08/30/15	KWG1507192	
Hexachlorobenzene	ND	U	61	33	10	08/04/15	08/30/15	KWG1507192	
Pentachlorophenol	ND	U	610	53	10	08/04/15	08/30/15	KWG1507192	
Phenanthrene	**42**	JD	61	36	10	08/04/15	08/30/15	KWG1507192	
Anthracene	ND	U	61	32	10	08/04/15	08/30/15	KWG1507192	
Di-n-butyl Phthalate	ND	U	130	48	10	08/04/15	08/30/15	KWG1507192	
Fluoranthene	**140**	D	61	37	10	08/04/15	08/30/15	KWG1507192	
Pyrene	**260**	D	61	37	10	08/04/15	08/30/15	KWG1507192	
Butyl Benzyl Phthalate	ND	U	61	37	10	08/04/15	08/30/15	KWG1507192	
Benz(a)anthracene	**100**	D	61	36	10	08/04/15	08/30/15	KWG1507192	
Chrysene	**100**	D	61	41	10	08/04/15	08/30/15	KWG1507192	
Bis(2-ethylhexyl) Phthalate	ND	U	610	89	10	08/04/15	08/30/15	KWG1507192	
Di-n-octyl Phthalate	ND	U	61	32	10	08/04/15	08/30/15	KWG1507192	
Benzo(b)fluoranthene	**130**	D	61	34	10	08/04/15	08/30/15	KWG1507192	
Benzo(k)fluoranthene	**45**	JD	61	40	10	08/04/15	08/30/15	KWG1507192	
Benzo(a)pyrene	**140**	D	61	36	10	08/04/15	08/30/15	KWG1507192	

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	OF12-1	**Units:**	ug/Kg
Lab Code:	K1508281-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Indeno(1,2,3-cd)pyrene	**100**	D	61	32	10	08/04/15	08/30/15	KWG1507192	
Dibenz(a,h)anthracene	ND	U	61	30	10	08/04/15	08/30/15	KWG1507192	
Benzo(g,h,i)perylene	**110**	D	61	37	10	08/04/15	08/30/15	KWG1507192	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Phenol-d6	69	20-86	08/30/15	Acceptable
Nitrobenzene-d5	58	27-91	08/30/15	Acceptable
2-Fluorobiphenyl	69	25-97	08/30/15	Acceptable
2,4,6-Tribromophenol	59	10-119	08/30/15	Acceptable
Terphenyl-d14	61	33-129	08/30/15	Acceptable

† Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	OF6-1	**Units:**	ug/Kg
Lab Code:	K1508281-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	ND	U	95	16	5	08/04/15	08/30/15	KWG1507192	
1,4-Dichlorobenzene	ND	U	32	13	5	08/04/15	08/30/15	KWG1507192	
1,2-Dichlorobenzene	ND	U	32	12	5	08/04/15	08/30/15	KWG1507192	
Benzyl Alcohol	ND	U	63	25	5	08/04/15	08/30/15	KWG1507192	
Benzoic Acid	ND	U	2000	480	5	08/04/15	08/30/15	KWG1507192	
1,2,4-Trichlorobenzene	ND	U	32	13	5	08/04/15	08/30/15	KWG1507192	
2-Methylphenol	ND	U	38	21	5	08/04/15	08/30/15	KWG1507192	
4-Methylphenol†	ND	U	38	23	5	08/04/15	08/30/15	KWG1507192	
2,4-Dimethylphenol	ND	U	160	32	5	08/04/15	08/30/15	KWG1507192	
Naphthalene	ND	U	32	15	5	08/04/15	08/30/15	KWG1507192	
Hexachlorobutadiene	ND	U	32	15	5	08/04/15	08/30/15	KWG1507192	
2-Methylnaphthalene	ND	U	32	14	5	08/04/15	08/30/15	KWG1507192	
Acenaphthylene	ND	U	32	13	5	08/04/15	08/30/15	KWG1507192	
Dimethyl Phthalate	ND	U	32	20	5	08/04/15	08/30/15	KWG1507192	
Acenaphthene	ND	U	32	16	5	08/04/15	08/30/15	KWG1507192	
Dibenzofuran	ND	U	32	17	5	08/04/15	08/30/15	KWG1507192	
Fluorene	ND	U	32	17	5	08/04/15	08/30/15	KWG1507192	
Diethyl Phthalate	ND	U	32	19	5	08/04/15	08/30/15	KWG1507192	
N-Nitrosodiphenylamine	ND	U	32	16	5	08/04/15	08/30/15	KWG1507192	
Hexachlorobenzene	ND	U	32	17	5	08/04/15	08/30/15	KWG1507192	
Pentachlorophenol	ND	U	320	27	5	08/04/15	08/30/15	KWG1507192	
Phenanthrene	**51**	D	32	18	5	08/04/15	08/30/15	KWG1507192	
Anthracene	ND	U	32	16	5	08/04/15	08/30/15	KWG1507192	
Di-n-butyl Phthalate	ND	U	63	24	5	08/04/15	08/30/15	KWG1507192	
Fluoranthene	**130**	D	32	19	5	08/04/15	08/30/15	KWG1507192	
Pyrene	**89**	D	32	19	5	08/04/15	08/30/15	KWG1507192	
Butyl Benzyl Phthalate	ND	U	32	19	5	08/04/15	08/30/15	KWG1507192	
Benz(a)anthracene	**47**	D	32	18	5	08/04/15	08/30/15	KWG1507192	
Chrysene	**53**	D	32	21	5	08/04/15	08/30/15	KWG1507192	
Bis(2-ethylhexyl) Phthalate	**79**	JD	320	45	5	08/04/15	08/30/15	KWG1507192	
Di-n-octyl Phthalate	ND	U	32	16	5	08/04/15	08/30/15	KWG1507192	
Benzo(b)fluoranthene	**70**	D	32	17	5	08/04/15	08/30/15	KWG1507192	
Benzo(k)fluoranthene	**26**	JD	32	20	5	08/04/15	08/30/15	KWG1507192	
Benzo(a)pyrene	**55**	D	32	18	5	08/04/15	08/30/15	KWG1507192	

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	OF6-1	**Units:**	ug/Kg
Lab Code:	K1508281-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Indeno(1,2,3-cd)pyrene	**42**	D	32	16	5	08/04/15	08/30/15	KWG1507192	
Dibenz(a,h)anthracene	ND	U	32	15	5	08/04/15	08/30/15	KWG1507192	
Benzo(g,h,i)perylene	**35**	D	32	19	5	08/04/15	08/30/15	KWG1507192	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Phenol-d6	47	20-86	08/30/15	Acceptable
Nitrobenzene-d5	42	27-91	08/30/15	Acceptable
2-Fluorobiphenyl	53	25-97	08/30/15	Acceptable
2,4,6-Tribromophenol	62	10-119	08/30/15	Acceptable
Terphenyl-d14	54	33-129	08/30/15	Acceptable

† Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	OF6-2	**Units:**	ug/Kg
Lab Code:	K1508281-007	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	ND	U	210	31	10	08/04/15	08/30/15	KWG1507192	
1,4-Dichlorobenzene	ND	U	69	25	10	08/04/15	08/30/15	KWG1507192	
1,2-Dichlorobenzene	ND	U	69	24	10	08/04/15	08/30/15	KWG1507192	
Benzyl Alcohol	ND	U	140	49	10	08/04/15	08/30/15	KWG1507192	
Benzoic Acid	ND	U	4000	960	10	08/04/15	08/30/15	KWG1507192	
1,2,4-Trichlorobenzene	ND	U	69	26	10	08/04/15	08/30/15	KWG1507192	
2-Methylphenol	ND	U	75	41	10	08/04/15	08/30/15	KWG1507192	
4-Methylphenol†	ND	U	75	45	10	08/04/15	08/30/15	KWG1507192	
2,4-Dimethylphenol	ND	U	350	63	10	08/04/15	08/30/15	KWG1507192	
Naphthalene	**30**	JD	69	29	10	08/04/15	08/30/15	KWG1507192	
Hexachlorobutadiene	ND	U	69	30	10	08/04/15	08/30/15	KWG1507192	
2-Methylnaphthalene	ND	U	69	28	10	08/04/15	08/30/15	KWG1507192	
Acenaphthylene	ND	U	69	26	10	08/04/15	08/30/15	KWG1507192	
Dimethyl Phthalate	**91**	D	69	40	10	08/04/15	08/30/15	KWG1507192	
Acenaphthene	**120**	D	69	32	10	08/04/15	08/30/15	KWG1507192	
Dibenzofuran	**48**	JD	69	34	10	08/04/15	08/30/15	KWG1507192	
Fluorene	**100**	D	69	33	10	08/04/15	08/30/15	KWG1507192	
Diethyl Phthalate	ND	U	69	37	10	08/04/15	08/30/15	KWG1507192	
N-Nitrosodiphenylamine	ND	U	69	32	10	08/04/15	08/30/15	KWG1507192	
Hexachlorobenzene	ND	U	69	33	10	08/04/15	08/30/15	KWG1507192	
Pentachlorophenol	ND	U	690	53	10	08/04/15	08/30/15	KWG1507192	
Phenanthrene	**1100**	D	69	36	10	08/04/15	08/30/15	KWG1507192	
Anthracene	**310**	D	69	32	10	08/04/15	08/30/15	KWG1507192	
Di-n-butyl Phthalate	ND	U	140	48	10	08/04/15	08/30/15	KWG1507192	
Fluoranthene	**1400**	D	69	37	10	08/04/15	08/30/15	KWG1507192	
Pyrene	**1100**	D	69	37	10	08/04/15	08/30/15	KWG1507192	
Butyl Benzyl Phthalate	ND	U	69	37	10	08/04/15	08/30/15	KWG1507192	
Benz(a)anthracene	**500**	D	69	36	10	08/04/15	08/30/15	KWG1507192	
Chrysene	**560**	D	69	41	10	08/04/15	08/30/15	KWG1507192	
Bis(2-ethylhexyl) Phthalate	**3000**	DX	690	89	10	08/04/15	08/30/15	KWG1507192	
Di-n-octyl Phthalate	**490**	D	69	32	10	08/04/15	08/30/15	KWG1507192	
Benzo(b)fluoranthene	**610**	D	69	34	10	08/04/15	08/30/15	KWG1507192	
Benzo(k)fluoranthene	**220**	D	69	40	10	08/04/15	08/30/15	KWG1507192	
Benzo(a)pyrene	**520**	D	69	36	10	08/04/15	08/30/15	KWG1507192	

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	OF6-2	**Units:**	ug/Kg
Lab Code:	K1508281-007	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Indeno(1,2,3-cd)pyrene	**320**	D	69	32	10	08/04/15	08/30/15	KWG1507192	
Dibenz(a,h)anthracene	**75**	D	69	30	10	08/04/15	08/30/15	KWG1507192	
Benzo(g,h,i)perylene	**290**	D	69	37	10	08/04/15	08/30/15	KWG1507192	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Phenol-d6	68	20-86	08/30/15	Acceptable
Nitrobenzene-d5	72	27-91	08/30/15	Acceptable
2-Fluorobiphenyl	72	25-97	08/30/15	Acceptable
2,4,6-Tribromophenol	81	10-119	08/30/15	Acceptable
Terphenyl-d14	63	33-129	08/30/15	Acceptable

† Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	OF6-3	**Units:**	ug/Kg
Lab Code:	K1508281-008	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	ND	U	92	16	5	08/04/15	08/30/15	KWG1507192	
1,4-Dichlorobenzene	ND	U	31	13	5	08/04/15	08/30/15	KWG1507192	
1,2-Dichlorobenzene	ND	U	31	12	5	08/04/15	08/30/15	KWG1507192	
Benzyl Alcohol	ND	U	62	25	5	08/04/15	08/30/15	KWG1507192	
Benzoic Acid	ND	U	2000	480	5	08/04/15	08/30/15	KWG1507192	
1,2,4-Trichlorobenzene	ND	U	31	13	5	08/04/15	08/30/15	KWG1507192	
2-Methylphenol	ND	U	38	21	5	08/04/15	08/30/15	KWG1507192	
4-Methylphenol†	ND	U	38	23	5	08/04/15	08/30/15	KWG1507192	
2,4-Dimethylphenol	ND	U	160	32	5	08/04/15	08/30/15	KWG1507192	
Naphthalene	ND	U	31	15	5	08/04/15	08/30/15	KWG1507192	
Hexachlorobutadiene	ND	U	31	15	5	08/04/15	08/30/15	KWG1507192	
2-Methylnaphthalene	ND	U	31	14	5	08/04/15	08/30/15	KWG1507192	
Acenaphthylene	ND	U	31	13	5	08/04/15	08/30/15	KWG1507192	
Dimethyl Phthalate	ND	U	31	20	5	08/04/15	08/30/15	KWG1507192	
Acenaphthene	ND	U	31	16	5	08/04/15	08/30/15	KWG1507192	
Dibenzofuran	ND	U	31	17	5	08/04/15	08/30/15	KWG1507192	
Fluorene	ND	U	31	17	5	08/04/15	08/30/15	KWG1507192	
Diethyl Phthalate	ND	U	31	19	5	08/04/15	08/30/15	KWG1507192	
N-Nitrosodiphenylamine	ND	U	31	16	5	08/04/15	08/30/15	KWG1507192	
Hexachlorobenzene	ND	U	31	17	5	08/04/15	08/30/15	KWG1507192	
Pentachlorophenol	ND	U	310	27	5	08/04/15	08/30/15	KWG1507192	
Phenanthrene	**95**	D	31	18	5	08/04/15	08/30/15	KWG1507192	
Anthracene	**16**	JD	31	16	5	08/04/15	08/30/15	KWG1507192	
Di-n-butyl Phthalate	ND	U	62	24	5	08/04/15	08/30/15	KWG1507192	
Fluoranthene	**190**	D	31	19	5	08/04/15	08/30/15	KWG1507192	
Pyrene	**160**	D	31	19	5	08/04/15	08/30/15	KWG1507192	
Butyl Benzyl Phthalate	ND	U	31	19	5	08/04/15	08/30/15	KWG1507192	
Benz(a)anthracene	**58**	D	31	18	5	08/04/15	08/30/15	KWG1507192	
Chrysene	**74**	D	31	21	5	08/04/15	08/30/15	KWG1507192	
Bis(2-ethylhexyl) Phthalate	**84**	JD	310	45	5	08/04/15	08/30/15	KWG1507192	
Di-n-octyl Phthalate	ND	U	31	16	5	08/04/15	08/30/15	KWG1507192	
Benzo(b)fluoranthene	**87**	D	31	17	5	08/04/15	08/30/15	KWG1507192	
Benzo(k)fluoranthene	**27**	JD	31	20	5	08/04/15	08/30/15	KWG1507192	
Benzo(a)pyrene	**68**	D	31	18	5	08/04/15	08/30/15	KWG1507192	

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/2015
Sample Matrix:	Sediment	**Date Received:**	07/30/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	OF6-3	**Units:**	ug/Kg
Lab Code:	K1508281-008	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Indeno(1,2,3-cd)pyrene	**50**	D	31	16	5	08/04/15	08/30/15	KWG1507192	
Dibenz(a,h)anthracene	ND	U	31	15	5	08/04/15	08/30/15	KWG1507192	
Benzo(g,h,i)perylene	**43**	D	31	19	5	08/04/15	08/30/15	KWG1507192	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Phenol-d6	62	20-86	08/30/15	Acceptable
Nitrobenzene-d5	66	27-91	08/30/15	Acceptable
2-Fluorobiphenyl	62	25-97	08/30/15	Acceptable
2,4,6-Tribromophenol	75	10-119	08/30/15	Acceptable
Terphenyl-d14	58	33-129	08/30/15	Acceptable

† Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1507192-5	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	ND	U	15	3.1	1	08/04/15	08/27/15	KWG1507192	
1,4-Dichlorobenzene	ND	U	5.0	2.5	1	08/04/15	08/27/15	KWG1507192	
1,2-Dichlorobenzene	ND	U	5.0	2.4	1	08/04/15	08/27/15	KWG1507192	
Benzyl Alcohol	ND	U	10	4.9	1	08/04/15	08/27/15	KWG1507192	
Benzoic Acid	ND	U	400	96	1	08/04/15	08/27/15	KWG1507192	
1,2,4-Trichlorobenzene	ND	U	5.0	2.6	1	08/04/15	08/27/15	KWG1507192	
2-Methylphenol	ND	U	7.5	4.1	1	08/04/15	08/27/15	KWG1507192	
4-Methylphenol†	ND	U	7.5	4.5	1	08/04/15	08/27/15	KWG1507192	
2,4-Dimethylphenol	ND	U	25	6.3	1	08/04/15	08/27/15	KWG1507192	
Naphthalene	ND	U	5.0	2.9	1	08/04/15	08/27/15	KWG1507192	
Hexachlorobutadiene	ND	U	5.0	3.0	1	08/04/15	08/27/15	KWG1507192	
2-Methylnaphthalene	ND	U	5.0	2.8	1	08/04/15	08/27/15	KWG1507192	
Acenaphthylene	ND	U	5.0	2.6	1	08/04/15	08/27/15	KWG1507192	
Dimethyl Phthalate	ND	U	5.0	4.0	1	08/04/15	08/27/15	KWG1507192	
Acenaphthene	ND	U	5.0	3.2	1	08/04/15	08/27/15	KWG1507192	
Dibenzofuran	ND	U	5.0	3.4	1	08/04/15	08/27/15	KWG1507192	
Fluorene	ND	U	5.0	3.3	1	08/04/15	08/27/15	KWG1507192	
Diethyl Phthalate	ND	U	5.0	3.7	1	08/04/15	08/27/15	KWG1507192	
N-Nitrosodiphenylamine	ND	U	5.0	3.2	1	08/04/15	08/27/15	KWG1507192	
Hexachlorobenzene	ND	U	5.0	3.3	1	08/04/15	08/27/15	KWG1507192	
Pentachlorophenol	ND	U	50	5.3	1	08/04/15	08/27/15	KWG1507192	
Phenanthrene	ND	U	5.0	3.6	1	08/04/15	08/27/15	KWG1507192	
Anthracene	ND	U	5.0	3.2	1	08/04/15	08/27/15	KWG1507192	
Di-n-butyl Phthalate	ND	U	10	4.8	1	08/04/15	08/27/15	KWG1507192	
Fluoranthene	ND	U	5.0	3.7	1	08/04/15	08/27/15	KWG1507192	
Pyrene	ND	U	5.0	3.7	1	08/04/15	08/27/15	KWG1507192	
Butyl Benzyl Phthalate	ND	U	5.0	3.7	1	08/04/15	08/27/15	KWG1507192	
Benz(a)anthracene	ND	U	5.0	3.6	1	08/04/15	08/27/15	KWG1507192	
Chrysene	ND	U	5.0	4.1	1	08/04/15	08/27/15	KWG1507192	
Bis(2-ethylhexyl) Phthalate	ND	U	50	8.9	1	08/04/15	08/27/15	KWG1507192	
Di-n-octyl Phthalate	ND	U	5.0	3.2	1	08/04/15	08/27/15	KWG1507192	
Benzo(b)fluoranthene	ND	U	5.0	3.4	1	08/04/15	08/27/15	KWG1507192	
Benzo(k)fluoranthene	ND	U	5.0	4.0	1	08/04/15	08/27/15	KWG1507192	
Benzo(a)pyrene	ND	U	5.0	3.6	1	08/04/15	08/27/15	KWG1507192	

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1507192-5	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Indeno(1,2,3-cd)pyrene	ND	U	5.0	3.2	1	08/04/15	08/27/15	KWG1507192	
Dibenz(a,h)anthracene	ND	U	5.0	3.0	1	08/04/15	08/27/15	KWG1507192	
Benzo(g,h,i)perylene	ND	U	5.0	3.7	1	08/04/15	08/27/15	KWG1507192	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Phenol-d6	47	20-86	08/27/15	Acceptable
Nitrobenzene-d5	42	27-91	08/27/15	Acceptable
2-Fluorobiphenyl	53	25-97	08/27/15	Acceptable
2,4,6-Tribromophenol	61	10-119	08/27/15	Acceptable
Terphenyl-d14	62	33-129	08/27/15	Acceptable

† Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

QA/QC Report

Client: Cosmopolitan Engineering Group
Project: Bremerton Sediment Sampling/Bremerton 2015
Sample Matrix: Sediment
Service Request: K1508281

Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270D
Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4	Sur5
OF13-1	K1508281-001	66 D	70 D	74 D	92 D	70 D
OF13-2	K1508281-002	43 D	33 D	40 D	55 D	42 D
OF13-3	K1508281-003	48 D	42 D	49 D	69 D	60 D
OF12-3	K1508281-004	55 D	58 D	62 D	64 D	53 D
OF12-1	K1508281-005	69 D	58 D	69 D	59 D	61 D
OF6-1	K1508281-006	47 D	42 D	53 D	62 D	54 D
OF6-2	K1508281-007	68 D	72 D	72 D	81 D	63 D
OF6-3	K1508281-008	62 D	66 D	62 D	75 D	58 D
Batch QC	K1508347-018	61	66	61	75	50
Batch QCDUP	KWG1507192-6	50	51	51	61	39
Method Blank	KWG1507192-5	47	42	53	61	62
Batch QCMS	KWG1507192-1	68	69	68	80	51
Batch QCDMS	KWG1507192-2	48	49	49	60	39
Lab Control Sample	KWG1507192-3	76	75	72	77	64
Duplicate Lab Control Sample	KWG1507192-4	60	64	59	74	60

Surrogate Recovery Control Limits (%)

Sur1 =	Phenol-d6	20-86	Sur5 =	Terphenyl-d14	33-129
Sur2 =	Nitrobenzene-d5	27-91			
Sur3 =	2-Fluorobiphenyl	25-97			
Sur4 =	2,4,6-Tribromophenol	10-119			

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Extracted:**	08/04/2015
Sample Matrix:	Soil	**Date Analyzed:**	08/27/2015

Matrix Spike/Duplicate Matrix Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Batch QC	**Units:**	ug/Kg
Lab Code:	K1508347-018	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1507192

		Batch QCMS KWG1507192-1 Matrix Spike			Batch QCDMS KWG1507192-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Phenol	4.2	101	154	63	61.3	154	37	15-98	49 *	40
1,4-Dichlorobenzene	ND	94.2	154	61	49.0	154	32	19-93	63 *	40
1,2,4-Trichlorobenzene	ND	89.7	154	58	54.9	154	36	23-99	48 *	40
Acenaphthene	ND	105	154	68	63.0	154	41	10-132	50 *	40
Diethyl Phthalate	ND	115	154	74	68.2	154	44	10-135	51 *	40
Pentachlorophenol	ND	139	154	90	89.3	154	58	10-123	44 *	40
Pyrene	ND	100	154	65	68.2	154	44	17-129	38	40
Benzo(a)pyrene	ND	105	154	68	68.2	154	44	13-126	43 *	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Extracted:**	08/04/2015
Sample Matrix:	Soil	**Date Analyzed:**	08/27/2015

Duplicate Sample Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Batch QC	**Units:**	ug/Kg
Lab Code:	K1508347-018	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1507192

Analyte Name	MRL	MDL	Sample Result	Batch QCDUP KWG1507192-6 Duplicate Sample Result	Average	Relative Percent Difference	RPD Limit
Phenol	19	3.1	4.2	7.9	6.1	62 #	40
1,4-Dichlorobenzene	6.2	2.5	ND	ND	ND	-	40
1,2-Dichlorobenzene	6.2	2.4	ND	ND	ND	-	40
Benzyl Alcohol	13	4.9	ND	7.1	NC	NC	40
Benzoic Acid	400	96	97	ND	NC	NC	40
1,2,4-Trichlorobenzene	6.2	2.6	ND	ND	ND	-	40
2-Methylphenol	7.5	4.1	ND	ND	ND	-	40
4-Methylphenol	7.5	4.5	9.2	18	14	66 #	40
2,4-Dimethylphenol	31	6.3	ND	ND	ND	-	40
Naphthalene	6.2	2.9	ND	ND	ND	-	40
Hexachlorobutadiene	6.2	3.0	ND	ND	ND	-	40
2-Methylnaphthalene	6.2	2.8	3.3	4.2	3.8	23 #	40
Acenaphthylene	6.2	2.6	ND	ND	ND	-	40
Dimethyl Phthalate	6.2	4.0	ND	ND	ND	-	40
Acenaphthene	6.2	3.2	ND	ND	ND	-	40
Dibenzofuran	6.2	3.4	ND	ND	ND	-	40
Fluorene	6.2	3.3	ND	ND	ND	-	40
Diethyl Phthalate	6.2	3.7	ND	ND	ND	-	40
N-Nitrosodiphenylamine	6.2	3.2	ND	ND	ND	-	40
Hexachlorobenzene	6.2	3.3	ND	ND	ND	-	40
Pentachlorophenol	62	5.3	ND	ND	ND	-	40
Phenanthrene	6.2	3.6	ND	ND	ND	-	40
Anthracene	6.2	3.2	ND	ND	ND	-	40
Di-n-butyl Phthalate	13	4.8	ND	ND	ND	-	40
Fluoranthene	6.2	3.7	ND	4.0	NC	NC	40
Pyrene	6.2	3.7	ND	4.1	NC	NC	40
Butyl Benzyl Phthalate	6.2	3.7	ND	ND	ND	-	40
Benz(a)anthracene	6.2	3.6	ND	ND	ND	-	40
Chrysene	6.2	4.1	ND	ND	ND	-	40
Bis(2-ethylhexyl) Phthalate	62	8.9	33	87	60	90 #	40
Di-n-octyl Phthalate	6.2	3.2	ND	ND	ND	-	40
Benzo(b)fluoranthene	6.2	3.4	ND	ND	ND	-	40
Benzo(k)fluoranthene	6.2	4.0	ND	ND	ND	-	40
Benzo(a)pyrene	6.2	5.7	ND	ND	ND	-	40
Indeno(1,2,3-cd)pyrene	6.2	3.2	ND	ND	ND	-	40
Dibenz(a,h)anthracene	6.2	3.0	ND	ND	ND	-	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Extracted:**	08/04/2015
Sample Matrix:	Soil	**Date Analyzed:**	08/27/2015

Duplicate Sample Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Batch QC	**Units:**	ug/Kg
Lab Code:	K1508347-018	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1507192

				Batch QCDUP KWG1507192-6 Duplicate Sample			
Analyte Name	**MRL**	**MDL**	**Sample Result**	**Result**	**Average**	**Relative Percent Difference**	**RPD Limit**
Benzo(g,h,i)perylene	6.2	3.7	ND	ND	ND	-	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: Cosmopolitan Engineering Group
Project: Bremerton Sediment Sampling/Bremerton 2015
Sample Matrix: Soil

Service Request: K1508281
Date Extracted: 08/04/2015
Date Analyzed: 08/27/2015 - 08/28/2015

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270D

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1507192

	Lab Control Sample KWG1507192-3 Lab Control Spike			Duplicate Lab Control Sample KWG1507192-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Phenol	169	250	67	150	250	60	27-97	12	40
1,4-Dichlorobenzene	164	250	66	142	250	57	28-89	14	40
1,2-Dichlorobenzene	168	250	67	141	250	56	27-91	18	40
Benzyl Alcohol	172	250	69	167	250	67	25-103	3	40
Benzoic Acid	265	750	35	127	750	17	10-96	71 *	40
1,2,4-Trichlorobenzene	166	250	66	146	250	58	27-94	13	40
2-Methylphenol	166	250	66	159	250	64	18-95	4	40
4-Methylphenol	182	250	73	169	250	67	17-99	8	40
2,4-Dimethylphenol	580	750	77	520	750	69	10-93	11	40
Naphthalene	171	250	68	155	250	62	27-93	10	40
Hexachlorobutadiene	155	250	62	149	250	60	25-96	4	40
2-Methylnaphthalene	174	250	70	161	250	65	27-96	8	40
Acenaphthylene	186	250	75	165	250	66	33-99	12	40
Dimethyl Phthalate	197	250	79	183	250	73	39-100	7	40
Acenaphthene	174	250	70	155	250	62	32-91	12	40
Dibenzofuran	178	250	71	155	250	62	34-92	14	40
Fluorene	186	250	75	166	250	66	32-96	12	40
Diethyl Phthalate	200	250	80	195	250	78	41-100	3	40
N-Nitrosodiphenylamine	179	250	72	170	250	68	36-96	5	40
Hexachlorobenzene	169	250	68	174	250	69	40-99	3	40
Pentachlorophenol	192	250	77	208	250	83	21-97	8	40
Phenanthrene	176	250	70	176	250	70	39-98	0	40
Anthracene	176	250	70	186	250	74	40-98	6	40
Di-n-butyl Phthalate	205	250	82	226	250	90	42-109	10	40
Fluoranthene	194	250	78	205	250	82	42-104	6	40
Pyrene	198	250	79	206	250	82	45-106	4	40
Butyl Benzyl Phthalate	219	250	88	232	250	93	45-111	6	40
Benz(a)anthracene	206	250	82	215	250	86	44-108	4	40
Chrysene	196	250	78	207	250	83	46-108	5	40
Bis(2-ethylhexyl) Phthalate	227	250	91	243	250	97	47-110	7	40
Di-n-octyl Phthalate	203	250	81	246	250	98	45-109	19	40
Benzo(b)fluoranthene	193	250	77	205	250	82	46-106	6	40
Benzo(k)fluoranthene	193	250	77	205	250	82	47-107	6	40
Benzo(a)pyrene	202	250	81	218	250	87	42-110	8	40
Indeno(1,2,3-cd)pyrene	190	250	76	208	250	83	47-109	9	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Cosmopolitan Engineering Group
Project: Bremerton Sediment Sampling/Bremerton 2015
Sample Matrix: Soil

Service Request: K1508281
Date Extracted: 08/04/2015
Date Analyzed: 08/27/2015 - 08/28/2015

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270D

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1507192

	Lab Control Sample KWG1507192-3 Lab Control Spike			Duplicate Lab Control Sample KWG1507192-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Dibenz(a,h)anthracene	190	250	76	203	250	81	47-106	7	40
Benzo(g,h,i)perylene	189	250	76	196	250	78	44-108	4	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Subcontract Lab Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 713 266 1599
F: +1 713 266 1599
www.alsglobal.com

August 25, 2015.

Service Request No: K1508281

Howard Holmes.

ALS Environmental
1317 South 13th Avenue
Kelso, WA 98626

Laboratory Result for: Cosmopolitan Marine Engineering.

Dear Howard:

Enclosed are the results of the sample(s) submitted to our laboratory on August 04, 2015. For Your reference, these analyses have been assigned our service request number: **K1508281.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and considered in their entirety, and ALS Environmental is not responsible for use of less than the final complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. In accordance to the TNI 2009 Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Please contact me if you have any questions. My direct line is 281-575-2279. You may also contact me via email at Arthi.Kodur@alsglobal.com

Respectfully submitted,

ALS Group USA Corp., dba ALS Environmental

Arthi Kodur
Project Manager

Page 1 of _____

For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com.

Certificate of Analysis

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

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ALS ENVIRONMENTAL

Client:	Cosmopolitan Engineering Group	**Service Request No.:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Received:**	8/4/15
Sample Matrix:	Sediment		

ALS ENVIRONMENTAL NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Eight sediment samples were received for analysis at ALS Environmental – Houston HRMS on 8/4/15.

The date of receipt currently references the date ALS Environmental-Kelso received the samples (7/30/15) and not the date ALS Environmental-Houston HRMS received the samples (8/4/15).

The samples were received at 3.1°C in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

Method Blank

The Method Blank EQ1500468-01 contained low levels of various analytes above the EDL, but below the Method Reporting Limit (MRL). 1234678 HpCDD and OCDD were above the MRL. The associated compounds in the samples are flagged with 'B' flags, which may be >10 times the concentration in the MB.

MS/MSD

EQ1500468: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu of an MS/DMS for this extraction batch. The batch quality control criteria were met.

2378-TCDF

Samples analyzed on the DB-5MSUI column were analyzed under conditions were sufficient separation between 2,3,7,8-TCDF and its closest eluter was achieved. Confirmation of this result was not required.

K flags

EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

Detection Limits

Detection limits are calculated for each analyte in each sample by measuring the height of the noise level for each quantitation ion for the associated labeled standard. The concentration equivalent to 2.5 times the height of the noise is then calculated using the appropriate response factor and the weight of the sample. The calculated concentration equals the detection limit.

The TEQ Summary results for each sample have been calculated by ALS ENVIRONMENTAL/Houston to include:

- WHO-2005 TEFs, The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds (M. Van den Berg et al., Toxicological Sciences 93(2):223-241, 2006)
- Non-detected compounds are not included in the 'Total'

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS group USA Corp dba ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

Client: Cosmopolitan Engineering Group **Service Request:**K1508281
Project: Bremerton Sediment Sampling/Bremerton 2015

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
K1508281-001	OF13-1	7/29/2015	1000
K1508281-002	OF13-2	7/29/2015	1033
K1508281-003	OF13-3	7/29/2015	0933
K1508281-004	OF12-3	7/29/2015	1127
K1508281-005	OF12-1	7/30/2015	1153
K1508281-006	OF6-1	7/30/2015	1019
K1508281-007	OF6-2	7/30/2015	1039
K1508281-008	OF6-3	7/30/2015	0957

Service Request Summary

Folder #: **K1508281**
Client Name: Cosmopolitan Engineering Group
Project Name: Bremerton Sediment Sampling
Project Number: Bremerton 2015

Report To: William Fox
Cosmopolitan Marine Engineering
9612 Kopachuck Dr NW
P.O. Box 623
Gig Harbor, WA 98335
USA
Phone Number: 253-265-2958
Cell Number:
Fax Number:
E-mail: bfox@cosmopolitaneng.com

Project Chemist: Howard Holmes
Originating Lab: KELSO
Logged By: SWOLF
Date Received: 07/30/15
Internal Due Date: 8/14/2015
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y

Report to MDL?: Y
P.O. Number: 623
EDD: Washington State Dept. of Ecology

8 8 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
8 4 oz-Glass Jar WM CLEAR Teflon Liner Zinc Acetate
8 4 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
8 16 oz-Glass Jar WM Unpreserved

Location: K-SAM-68, EHRMS-WIC 9E
Pressure Gas:

				KELSO					KELSO		KELSO	KELSO	HOUSTON
Lab Samp No.	**Client Samp No**	**Matrix**	**Collected**	NH3 Plumb/350.1M	PSEP PartSizeCB/PSEP PS	PSEP TS/PSEP TS	Sulfide/9030M	TOC/9060	Hg/7471B	Metals T/6010C	PCB LL/8082A	SVO LL/8270D	Dioxins Furans/1613B
K1508281-001	OF13-1	Sediment	07/29/15 1000	V	V	V	V	V	V	V	V	V	II
K1508281-002	OF13-2	Sediment	07/29/15 1033	V	V	V	V	V	V	V	V	V	II
K1508281-003	OF13-3	Sediment	07/29/15 0933	V	V	V	V	V	V	V	V	V	II
K1508281-004	OF12-3	Sediment	07/29/15 1127	V	V	V	V	V	V	V	V	V	II
K1508281-005	OF12-1	Sediment	07/30/15 1153	V	V	V	V	V	V	V	V	V	II
K1508281-006	OF6-1	Sediment	07/30/15 1019	V	V	V	V	V	V	V	V	V	II
K1508281-007	OF6-2	Sediment	07/30/15 1039	V	V	V	V	V	V	V	V	V	II
K1508281-008	OF6-3	Sediment	07/30/15 0957	V	V	V	V	V	V	V	V	V	II

Folder Comments:

Tier II

Service Request Summary

Folder #:	**K1508281**	Project Chemist:	Howard Holmes
Client Name:	Cosmopolitan Engineering Group	Originating Lab:	KELSO
Project Name:	Bremerton Sediment Sampling	Logged By:	SWOLF
Project Number:	Bremerton 2015	Date Received:	07/30/15
		Internal Due Date:	8/14/2015
Report To:	William Fox Cosmopolitan Marine Engineering 9612 Kopachuck Dr NW P.O. Box 623 Gig Harbor, WA 98335 USA	QAP:	LAB QAP
		Qualifier Set:	Lab Standard
		Formset:	Lab Standard
		Merged?:	Y
Phone Number:	253-265-2958	Report to MDL?:	Y
Cell Number:		P.O. Number:	623
Fax Number:		EDD:	Washington State Dept. of Ecology
E-mail:	bfox@cosmopolitaneng.com		

8	8 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
8	4 oz-Glass Jar WM CLEAR Teflon Liner Zinc Acetate
8	4 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
8	16 oz-Glass Jar WM Unpreserved

Location: K-SAM-68, EHRMS-WIC 9E

Pressure Gas:

Test Comments:

Group	Test/Method	Samples	Comments
GenChem	PSEP TS/PSEP TS	8	Plumb
GenChem	PSEP PartSizeCB/PSEP PS	8	Plumb
Metals	Metals T/6010C	16	As,Cd,Cr,Cu,Pb,Ag,Zn
Semivoa GCMS	Dioxins Furans/1613B	8	Performed at ALS-Houston,HRMS full list (8/5/15)

Data Qualifier Flags – Dioxin/Furans

B Indicates the associated analyte is found in the method blank, as well as in the sample

C 2378-TCDF is detected on the DB-5 column above the MRL, confirmation analysis was performed on a second column (DB-225.) The results from both the DB-5 column and the DB-225 column are included in this data package. The results from the DB-225 analyses should be used to evaluate the 2378-TCDF in the samples. The confirmed result are used in determining the TEQ value for TCDF.

E The reported result is above the instrument calibration range and is an estimated value.

J Indicates an estimated value – used when the analyte concentration is below the method reporting limit (MRL) and above the estimated detection limit (EDL)

K Ion abundance ratios between the primary and secondary ions were outside of theoretical acceptance limits. The reported result is an estimated maximum possible concentration (EMPC)

i The associated MRL/MDL has been elevated due to matrix interference.

U Indicates the compound was analyzed for, but not detected (ND)

Y C13-Labeled standard percent recoveries are outside of method acceptance limits

S Peak is saturated; data not reportable

P Indicates chlorodiphenyl ether interference present at the retention time of the target compound.

X See case narrative

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

ALS Environmental

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
American Association for Laboratory Accreditation	2897.01	11/30/2015
Arizona Department of Health Services	AZ0793	5/27/2016
Arkansas Department of Environmental Quality	14-038-0	6/16/2016
California Department of Health Services	2452	2/28/2017
Florida Department of Health	E87611	6/30/2016
Illinois Environmental Protection Agency	200057	10/6/2015
Kansas Department of Health and Environment	E-10406	1/31/2016
Louisiana Department of Environmental Quality	03048	6/30/2016
Louisiana Department of Health and Hospitals	LA150026	12/31/2015
Maine Center for Disease Control and Prevention	2014019	6/5/2016
Maryland Department of the Environment	343	6/30/2016
Michigan Depratment of Environmental Quality	9971	6/30/2016
Minnesota Department of Health	840911	12/31/2015
Nebraska Department of Health and Human Services	NE-OS-25-13	6/30/2016
New Mexico Environment Department	TX02694	6/30/2016
New York Department of Health	11707	4/1/2016
Oklahoma Department of Environmental Quality	2014 124	8/31/2015
Oregon Environmental Laboratory Accreditation Program	TX200002	3/24/2016
Pennsylvania Department of Environmental Protection	68-03441	6/30/2016
Texas Commision on Environmental Quality	TX104704216-14-5	6/30/2016
United States Department of Agriculture	P330-14-00067	2/21/2017
Washington Department of Health	c819	11/14/2015
West Virginia Department of Environmental Protection	347	6/30/2016

ALS ENVIRONMENTAL – Houston

Data Processing/Form Production and Peer Review Signatures

SR# Unique ID K1508281 DB-5 DB-5MSUI DB-225 SPB-Octyl

First Level – Data Processing – to be filled by person generating the forms

Date:	Analyst:	Samples:
08/17/15	TC	-001, -002

Second Level – Data Review – to be filled by person doing peer review

Date:	Analyst:	Samples:
08/19/15	LKL	001, 002

ALS ENVIRONMENTAL – Houston

Data Processing/Form Production and Peer Review Signatures

SR# Unique ID K1508281 DB-5 DB-5MSUI DB-225 SPB-Octyl

First Level – Data Processing – to be filled by person generating the forms

Date:	Analyst:	Samples:
08/18/15	JC	-003, -004, -005, -006, -007, -008

Second Level – Data Review – to be filled by person doing peer review

Date:	Analyst:	Samples:
08/19/15	LKL	003 – 008

Chain of Custody

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

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Intra-Network Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

ALS Contact: Howard Holmes

Project Name: Bremerton Sediment Sampling
Project Number: Bremerton 2015
Project Manager: William Fox
Company: Cosmopolitan Marine Engineering

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	Dioxins Furans 1613B
K1508281-001	OF13-1	1	Sediment	7/29/15	1000	7/30/15	HOUSTON	V
K1508281-002	OF13-2	1	Sediment	7/29/15	1033	7/30/15	HOUSTON	V
K1508281-003	OF13-3	1	Sediment	7/29/15	0933	7/30/15	HOUSTON	V
K1508281-004	OF12-3	1	Sediment	7/29/15	1127	7/30/15	HOUSTON	V
K1508281-005	OF12-1	1	Sediment	7/30/15	1153	7/30/15	HOUSTON	V
K1508281-006	OF6-1	1	Sediment	7/30/15	1019	7/30/15	HOUSTON	V
K1508281-007	OF6-2	1	Sediment	7/30/15	1039	7/30/15	HOUSTON	V
K1508281-008	OF6-3	1	Sediment	7/30/15	0957	7/30/15	HOUSTON	V

K1508281 5
Cosmopolitan Marine Engineering
Bremerton Sediment Sampling

Test Comments
Dioxins Furans - 1613B K1508281-001,2,3,4,5,6,7,8 Performed at ALS-Houston, HRMS

Folder Comments:
Tier II

HZ

Special Instructions/Comments	Turnaround Requirements	Report Requirements	Invoice Information
Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com. pH Checked _____	____ **RUSH** (Surcharges Apply) **PLEASE CIRCLE WORK DAYS** 1 2 3 4 5 ____ **STANDARD** Requested FAX Date: _____ Requested Report Date: 08/14/15	____ I. Results Only X II. Results + QC Summaries ____ III. Results + QC and Calibration Summaries ____ IV. Data Validation Report with Raw Data PQL/MDL/J Y EDD Y	PO# 51K1508281 Bill to

Relinquished By: [signature] 8/3/15 1202 Received By: [signature] 8/4/15 Airbill Number: _____

K1508281

ALS Environmental

Cooler Receipt Form

Project Chemist: AK

Client/Project: Cosmopolitan Marine Engineering

Thermometer ID: SMO 4

Date/Time Received: 8/4/15 815 Initials: AL

Date/Time Logged in: 8/4/15 Initials: AL

1. Method of delivery: ○ US Mail ✓ Fed Ex ○ UPS ○ DHL ○ Courier ○ Client
2. Samples received in: ✓ Cooler ○ Box ○ Envelope ○ Other
3. Were custody seals on coolers? ✓ Yes ○ No
   Were they intact? ✓ Yes ○ No ○ N/A
   Were they signed and dated? ✓ Yes ○ No ○ N/A
   If yes, how many and where? 1 seal
4. Packing Material: ✓ Inserts ○ Baggies ✓ Bubble Wrap ✓ Gel Packs ○ Wet Ice ○ Sleeves ○ Other
5. Foreign or Regulated Soil? ○ Yes ✓ No Location of Sampling:

Cooler Tracking Number	COC ID	Date Opened	Time Opened	Opened By	Temp. °C	Temp Blank?
6447 9264 5762		8/4/15	9:24	AL	2.9/3.1	☐
						☐
						☐
						☐

6. Were custody papers properly filled out (ink, signed, dated, etc)? ✓ Yes ○ No
7. Did all bottles arrive in good condition (not broken, no signs of leakage)? ✓ Yes ○ No
8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? ✓ Yes ○ No
9. Were appropriate bottles/containers and volumes received for the requested tests? ✓ Yes ○ No
10. Did sample labels and tags agree with custody documents? ✓ Yes ○ No

Notes, Discrepancies, & Resolutions:

Service request Label: K1508281 5
Cosmopolitan Marine Engineering
Bremerton Sediment Sampling

Effective 10/04/2013

ALS Environmental - Houston HRMS

10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 713 266 1599
F: +1 713 266 1599
www.alsglobal.com

SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

Preparation Information Benchsheets

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

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Preparation Information Benchsheet

Prep Run#: 241787 **Prep WorkFlow:** OrgExtS(365) **Status:** Prepped
Team: Semivoa GCMS/DEDWARDS **Prep Method:** Method Soxhlet **Prep Date/Time:** 8/6/15 12:15 PM

#	Lab Code	Client ID	B#	Method /Test	pH	Matrix	Amt. Ext.	Sample Description
1	E1500736-001	APRIL 2015	.01	1613B/Dioxins Furans		Sludge, Solid	10.234g	Solids Brown Sludge
2	E1500753-001	1507170-001D	.01	1613B/Dioxins Furans		Soil	10.244g	Black Soil w/Rocks
3	EQ1500468-01	MB		1613B/Dioxins Furans		Solid	10.126g	
4	EQ1500468-02	LCS		1613B/Dioxins Furans		Solid	10.391g	
5	EQ1500468-03	DLCS		1613B/Dioxins Furans		Solid	10.201g	
6	K1507873-001	15-200708005 Super Soft Plus	.02	1613B/Dioxins Furans		Pulp Sheet	10.136g	White Pulp Paper
7	K1507874-001	W25G140552 Debonder RW	.02	1613B/Dioxins Furans		Pulp Sheet	10.249g	White Pulp Paper
8	K1507978-001	N45614082A PN	.05	1613B/Dioxins Furans		Pulp Sheet	10.425g	White Pulp Paper
9	K1508281-001	OF13-1	.02	1613B/Dioxins Furans		Sediment	10.336g	Big Amounts of Debri / Sediment / Moist
10	K1508281-002	OF13-2	.02	1613B/Dioxins Furans		Sediment	10.341g	Big Amounts of Debri / Sediment / Moist
11	K1508281-003	OF13-3	.02	1613B/Dioxins Furans		Sediment	10.281g	Big Amounts of Debri / Sediment / Moist
12	K1508281-004	OF12-3	.02	1613B/Dioxins Furans		Sediment	10.191g	Green Sediment Moist
13	K1508281-005	OF12-1	.02	1613B/Dioxins Furans		Sediment	10.157g	Big Amounts of Debri / Sediment / Moist
14	K1508281-006	OF6-1	.02	1613B/Dioxins Furans		Sediment	10.341g	Green Sediment Moist
15	K1508281-007	OF6-2	.02	1613B/Dioxins Furans		Sediment	10.107g	Green Sediment Moist
16	K1508281-008	OF6-3	.02	1613B/Dioxins Furans		Sediment	10.298g	Green Sediment Moist

Preparation Information Benchsheet

Prep Run#: 241787 **Prep WorkFlow:** OrgExtS(365) **Status:** Prepped
Team: Semivoa GCMS/DEDWARDS **Prep Method:** Method Soxhlet **Prep Date/Time:** 8/6/15 12:15 PM

Spiking Solutions

Name:	8290/1613B Cleanup Working Standard	Inventory ID	82940	Logbook Ref:	82940 DE 7/30/15 8ng/ml	Expires On:	02/26/2016

E1500736-001	100.00µL	E1500753-001	100.00µL	EQ1500468-01	100.00µL	EQ1500468-02	100.00µL	EQ1500468-03	100.00µL	K1507873-001	100.00µL
K1507874-001	100.00µL	K1507978-001	100.00µL	K1508281-001	100.00µL	K1508281-002	100.00µL	K1508281-003	100.00µL	K1508281-004	100.00µL
K1508281-005	100.00µL	K1508281-006	100.00µL	K1508281-007	100.00µL	K1508281-008	100.00µL				

Name:	1613B Labeled Working Standard	Inventory ID	82968	Logbook Ref:	82968 DE 8/3/15 2-4ng/ml	Expires On:	01/30/2016

E1500736-001	1,000.00µL	E1500753-001	1,000.00µL	EQ1500468-01	1,000.00µL	EQ1500468-02	1,000.00µL	EQ1500468-03	1,000.00µL	K1507873-001	1,000.00µL
K1507874-001	1,000.00µL	K1507978-001	1,000.00µL	K1508281-001	1,000.00µL	K1508281-002	1,000.00µL	K1508281-003	1,000.00µL	K1508281-004	1,000.00µL
K1508281-005	1,000.00µL										

Name:	1613B Matrix Working Standard	Inventory ID	82970	Logbook Ref:	2-20ng/ml 82970 DE 8/3/15	Expires On:	05/19/2016

EQ1500468-02	100.00µL	EQ1500468-03	100.00µL

Name:	1613B Labeled Working Standard	Inventory ID	83003	Logbook Ref:	83003 2-4 ng/mL LM 8/3/15	Expires On:	07/21/2016

K1508281-008	1,000.00µL

Name:	1613B Labeled Working Standard	Inventory ID	83004	Logbook Ref:	83004 2-4 ng/mL LM 8/3/15	Expires On:	07/21/2016

K1508281-006	1,000.00µL	K1508281-007	1,000.00µL

Preparation Materials

Carbon, High Purity	AL 07/28/15 (82889)	Ethyl Acetate 99.9% Minimum EtOAc	AL 07/16/15 (82546)	Glass Wool	AL 04/17/15 (80420)
Hexanes 95%	AL 07/29/15 (82908)	Dichloromethane (Methylene Chloride) 99.9% MeCl2	AL 07/27/15 (82887)	Sodium Sulfate Anhydrous Reagent Grade Na2SO4	AL 07/15/15 (82507)
Tridecane (n-Tridecane)	AL 07/23/15 (82774)	Silica Gel Reagent Grade	AL 06/04/15 (81560)	Toluene 99.9% Minimum	AL 08/05/15 (83043)
Sodium Chloride Reagent Grade NaCl	C2-65-5 (38670)	Sodium Hydroxide Reagent Grade NaOH	LM 09/02/14 (74232)	Sulfuric Acid Reagent Grade H2SO4	LM 3/4/15 (79265)

Preparation Steps

Step:	Extraction	Step:	Acid Clean	Step:	Silica Gel Clean	Step:	Final Volume
Started:	8/6/15 12:15	Started:	8/8/15 10:20	Started:	8/8/15 12:10	Started:	8/12/15 08:50
Finished:	8/7/15 06:50	Finished:	8/8/15 11:05	Finished:	8/8/15 14:30	Finished:	8/12/15 09:15
By:	DEDWARDS	By:	CDIAZ	By:	CDIAZ	By:	CDIAZ
Comments		Comments		Comments		Comments	

Preparation Information Benchsheet

Prep Run#: 241787
Team: Semivoa GCMS/DEDWARDS

Prep WorkFlow: OrgExtS(365)
Prep Method: Method Soxhlet

Status: Prepped
Prep Date/Time: 8/6/15 12:15 PM

Comments: _____

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By:	_____	Date:	_____	Extracts Examined
Received By:	_____	Date:	_____	Yes No

Analytical Results

ALS Environmental - Houston HRMS
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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/15 10:00
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF13-1	**Units:**	ng/Kg
Lab Code:	K1508281-001	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/15/15 05:28
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.336g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300894	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300883

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.194	0.651			1
1,2,3,7,8-PeCDD	ND	U	0.228	3.26			1
1,2,3,4,7,8-HxCDD	ND	U	0.162	3.26			1
1,2,3,6,7,8-HxCDD	0.433**BJK**		0.161	3.26	0.79	1.000	1
1,2,3,7,8,9-HxCDD	ND	U	0.147	3.26			1
1,2,3,4,6,7,8-HpCDD	9.28**B**		0.194	3.26	1.06	1.000	1
OCDD	54.8**B**		0.340	6.51	0.86	1.000	1
2,3,7,8-TCDF	ND	U	0.239	0.651			1
1,2,3,7,8-PeCDF	ND	U	0.200	3.26			1
2,3,4,7,8-PeCDF	2.39**J**		0.206	3.26	1.49	1.002	1
1,2,3,4,7,8-HxCDF	0.191**JK**		0.117	3.26	2.16	1.000	1
1,2,3,6,7,8-HxCDF	0.466**J**		0.111	3.26	1.14	1.000	1
1,2,3,7,8,9-HxCDF	ND	U	0.0978	3.26			1
2,3,4,6,7,8-HxCDF	1.20**J**		0.121	3.26	1.37	1.000	1
1,2,3,4,6,7,8-HpCDF	2.70**BJ**		0.146	3.26	1.01	1.000	1
1,2,3,4,7,8,9-HpCDF	ND	U	0.200	3.26			1
OCDF	7.32**B**		0.406	6.51	0.85	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/15 10:00
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF13-1	**Units:**	ng/Kg
Lab Code:	K1508281-001	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/15/15 05:28
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.336g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300894	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300883

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.194	0.651			1
Total Penta-Dioxins	ND	U	0.228	3.26			1
Total Hexa-Dioxins	1.65**J**		0.156	3.26	1.13		1
Total Hepta-Dioxins	25.4		0.194	3.26	0.94		1
Total Tetra-Furans	7.91		0.239	0.651	0.75		1
Total Penta-Furans	31.6		0.203	3.26	1.70		1
Total Hexa-Furans	15.4		0.111	3.26	1.06		1
Total Hepta-Furans	10.6		0.171	3.26	1.01		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/15 10:00
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF13-1	**Units:**	Percent
Lab Code:	K1508281-001	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/15/15 05:28
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.336g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300894	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300883

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1341.221	67		25-164	0.78	1.019
13C-1,2,3,7,8-PeCDD	2000	1269.388	63		25-181	1.56	1.183
13C-1,2,3,4,7,8-HxCDD	2000	1321.085	66		32-141	1.25	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1455.777	73		28-130	1.27	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1210.872	61		23-140	1.07	1.067
13C-OCDD	4000	2330.126	58		17-157	0.89	1.142
13C-2,3,7,8-TCDF	2000	1324.393	66		24-169	0.78	0.992
13C-1,2,3,7,8-PeCDF	2000	1377.602	69		24-185	1.56	1.140
13C-2,3,4,7,8-PeCDF	2000	1347.439	67		21-178	1.57	1.173
13C-1,2,3,4,7,8-HxCDF	2000	1397.400	70		26-152	0.51	0.971
13C-1,2,3,6,7,8-HxCDF	2000	1440.883	72		26-123	0.51	0.974
13C-1,2,3,7,8,9-HxCDF	2000	1858.755	93		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1427.338	71		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1203.723	60		28-143	0.44	1.042
13C-1,2,3,4,7,8,9-HpCDF	2000	1184.831	59		26-138	0.43	1.080
37Cl-2,3,7,8-TCDD	800	596.914	75		35-197	NA	1.021

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/15 10:00
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF13-1	**Units:**	ng/Kg
Lab Code:	K1508281-001	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.194	0.651	1	1	
1,2,3,7,8-PeCDD	ND	0.228	3.26	1	1	
1,2,3,4,7,8-HxCDD	ND	0.162	3.26	1	0.1	
1,2,3,6,7,8-HxCDD	**0.433**	0.161	3.26	1	0.1	0.0433
1,2,3,7,8,9-HxCDD	ND	0.147	3.26	1	0.1	
1,2,3,4,6,7,8-HpCDD	**9.28**	0.194	3.26	1	0.01	0.0928
OCDD	**54.8**	0.340	6.51	1	0.0003	0.0164
2,3,7,8-TCDF	ND	0.239	0.651	1	0.1	
1,2,3,7,8-PeCDF	ND	0.200	3.26	1	0.03	
2,3,4,7,8-PeCDF	**2.39**	0.206	3.26	1	0.3	0.717
1,2,3,4,7,8-HxCDF	**0.191**	0.117	3.26	1	0.1	0.0191
1,2,3,6,7,8-HxCDF	**0.466**	0.111	3.26	1	0.1	0.0466
1,2,3,7,8,9-HxCDF	ND	0.0978	3.26	1	0.1	
2,3,4,6,7,8-HxCDF	**1.20**	0.121	3.26	1	0.1	0.120
1,2,3,4,6,7,8-HpCDF	**2.70**	0.146	3.26	1	0.01	0.0270
1,2,3,4,7,8,9-HpCDF	ND	0.200	3.26	1	0.01	
OCDF	**7.32**	0.406	6.51	1	0.0003	0.00220
		Total TEQ				1.08

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/15 10:33
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF13-2	**Units:**	ng/Kg
Lab Code:	K1508281-002	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/15/15 06:16
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.341g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300895	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300883

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.226	0.650			1
1,2,3,7,8-PeCDD	ND	U	0.200	3.25			1
1,2,3,4,7,8-HxCDD	ND	U	0.237	3.25			1
1,2,3,6,7,8-HxCDD	0.713**BJ**		0.251	3.25	1.33	1.000	1
1,2,3,7,8,9-HxCDD	0.374**BJ**		0.222	3.25	1.28	1.007	1
1,2,3,4,6,7,8-HpCDD	14.4**B**		0.241	3.25	1.04	1.000	1
OCDD	117**B**		0.300	6.50	0.90	1.000	1
2,3,7,8-TCDF	ND	U	0.265	0.650			1
1,2,3,7,8-PeCDF	ND	U	0.177	3.25			1
2,3,4,7,8-PeCDF	ND	U	0.178	3.25			1
1,2,3,4,7,8-HxCDF	ND	U	0.153	3.25			1
1,2,3,6,7,8-HxCDF	0.217**BJ**		0.151	3.25	1.27	1.000	1
1,2,3,7,8,9-HxCDF	ND	U	0.134	3.25			1
2,3,4,6,7,8-HxCDF	0.392**J**		0.155	3.25	1.16	1.000	1
1,2,3,4,6,7,8-HpCDF	3.70**B**		0.133	3.25	1.03	1.000	1
1,2,3,4,7,8,9-HpCDF	0.303**BJ**		0.182	3.25	1.01	1.000	1
OCDF	10.6**B**		0.355	6.50	0.92	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/15 10:33
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF13-2	**Units:**	ng/Kg
Lab Code:	K1508281-002	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/15/15 06:16
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.341g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300895	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300883

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.226	0.650			1
Total Penta-Dioxins	ND	U	0.200	3.25			1
Total Hexa-Dioxins	2.83**J**		0.236	3.25	1.21		1
Total Hepta-Dioxins	37.1		0.241	3.25	1.00		1
Total Tetra-Furans	0.824		0.265	0.650	0.75		1
Total Penta-Furans	5.13		0.177	3.25	1.45		1
Total Hexa-Furans	5.72		0.147	3.25	1.33		1
Total Hepta-Furans	13.9		0.155	3.25	1.03		1

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/15 10:33
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF13-2	**Units:**	Percent
Lab Code:	K1508281-002	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/15/15 06:16
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.341g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300895	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300883

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1363.855	68		25-164	0.78	1.019
13C-1,2,3,7,8-PeCDD	2000	1361.916	68		25-181	1.58	1.183
13C-1,2,3,4,7,8-HxCDD	2000	1408.917	70		32-141	1.26	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1455.358	73		28-130	1.25	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1266.918	63		23-140	1.06	1.066
13C-OCDD	4000	2489.523	62		17-157	0.91	1.141
13C-2,3,7,8-TCDF	2000	1350.588	68		24-169	0.78	0.992
13C-1,2,3,7,8-PeCDF	2000	1424.383	71		24-185	1.56	1.140
13C-2,3,4,7,8-PeCDF	2000	1398.235	70		21-178	1.55	1.173
13C-1,2,3,4,7,8-HxCDF	2000	1420.521	71		26-152	0.52	0.971
13C-1,2,3,6,7,8-HxCDF	2000	1444.031	72		26-123	0.52	0.974
13C-1,2,3,7,8,9-HxCDF	2000	1866.359	93		29-147	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1461.886	73		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1300.675	65		28-143	0.43	1.042
13C-1,2,3,4,7,8,9-HpCDF	2000	1222.966	61		26-138	0.44	1.079
37Cl-2,3,7,8-TCDD	800	612.320	77		35-197	NA	1.021

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/15 10:33
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF13-2	**Units:**	ng/Kg
Lab Code:	K1508281-002	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.226	0.650	1	1	
1,2,3,7,8-PeCDD	ND	0.200	3.25	1	1	
1,2,3,4,7,8-HxCDD	ND	0.237	3.25	1	0.1	
1,2,3,6,7,8-HxCDD	**0.713**	0.251	3.25	1	0.1	0.0713
1,2,3,7,8,9-HxCDD	**0.374**	0.222	3.25	1	0.1	0.0374
1,2,3,4,6,7,8-HpCDD	**14.4**	0.241	3.25	1	0.01	0.144
OCDD	**117**	0.300	6.50	1	0.0003	0.0351
2,3,7,8-TCDF	ND	0.265	0.650	1	0.1	
1,2,3,7,8-PeCDF	ND	0.177	3.25	1	0.03	
2,3,4,7,8-PeCDF	ND	0.178	3.25	1	0.3	
1,2,3,4,7,8-HxCDF	ND	0.153	3.25	1	0.1	
1,2,3,6,7,8-HxCDF	**0.217**	0.151	3.25	1	0.1	0.0217
1,2,3,7,8,9-HxCDF	ND	0.134	3.25	1	0.1	
2,3,4,6,7,8-HxCDF	**0.392**	0.155	3.25	1	0.1	0.0392
1,2,3,4,6,7,8-HpCDF	**3.70**	0.133	3.25	1	0.01	0.0370
1,2,3,4,7,8,9-HpCDF	**0.303**	0.182	3.25	1	0.01	0.00303
OCDF	**10.6**	0.355	6.50	1	0.0003	0.00318
		Total TEQ				0.392

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/15 09:33
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF13-3	**Units:**	ng/Kg
Lab Code:	K1508281-003	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/17/15 20:29
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.281g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300946	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300943

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.638	0.638			1
1,2,3,7,8-PeCDD	ND	U	0.818	3.01			1
1,2,3,4,7,8-HxCDD	ND	U	0.501	3.01			1
1,2,3,6,7,8-HxCDD	ND	U	0.484	3.01			1
1,2,3,7,8,9-HxCDD	ND	U	0.448	3.01			1
1,2,3,4,6,7,8-HpCDD	14.9**B**		0.884	3.01	1.07	1.000	1
OCDD	65.3**B**		0.821	6.03	0.87	1.000	1
2,3,7,8-TCDF	ND	U	0.882	0.882			1
1,2,3,7,8-PeCDF	ND	U	0.514	3.01			1
2,3,4,7,8-PeCDF	ND	U	0.505	3.01			1
1,2,3,4,7,8-HxCDF	ND	U	0.419	3.01			1
1,2,3,6,7,8-HxCDF	ND	U	0.404	3.01			1
1,2,3,7,8,9-HxCDF	ND	U	0.403	3.01			1
2,3,4,6,7,8-HxCDF	ND	U	0.424	3.01			1
1,2,3,4,6,7,8-HpCDF	1.53**BJ**		0.401	3.01	1.15	1.000	1
1,2,3,4,7,8,9-HpCDF	ND	U	0.620	3.01			1
OCDF	5.59**BJ**		1.04	6.03	1.01	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/15 09:33
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF13-3	**Units:**	ng/Kg
Lab Code:	K1508281-003	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/17/15 20:29
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.281g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300946	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300943

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.638	0.638			1
Total Penta-Dioxins	ND	U	0.818	3.01			1
Total Hexa-Dioxins	3.17		0.476	3.01	1.06		1
Total Hepta-Dioxins	29.9		0.884	3.01	1.01		1
Total Tetra-Furans	ND	U	0.882	0.882			1
Total Penta-Furans	3.40		0.510	3.01	1.57		1
Total Hexa-Furans	2.25**J**		0.411	3.01	1.15		1
Total Hepta-Furans	7.50		0.496	3.01	1.15		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/15 09:33
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF13-3	**Units:**	Percent
Lab Code:	K1508281-003	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/17/15 20:29
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.281g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300946	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300943

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1178.241	59		25-164	0.76	1.019
13C-1,2,3,7,8-PeCDD	2000	1335.928	67		25-181	1.56	1.184
13C-1,2,3,4,7,8-HxCDD	2000	1214.479	61		32-141	1.24	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1495.712	75		28-130	1.23	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1376.183	69		23-140	1.07	1.066
13C-OCDD	4000	3195.038	80		17-157	0.88	1.140
13C-2,3,7,8-TCDF	2000	1145.261	57		24-169	0.77	0.992
13C-1,2,3,7,8-PeCDF	2000	1364.874	68		24-185	1.53	1.142
13C-2,3,4,7,8-PeCDF	2000	1393.401	70		21-178	1.57	1.175
13C-1,2,3,4,7,8-HxCDF	2000	1274.730	64		26-152	0.51	0.971
13C-1,2,3,6,7,8-HxCDF	2000	1442.432	72		26-123	0.52	0.974
13C-1,2,3,7,8,9-HxCDF	2000	1692.189	85		29-147	0.50	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1404.952	70		28-136	0.52	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	1514.287	76		28-143	0.43	1.042
13C-1,2,3,4,7,8,9-HpCDF	2000	1310.453	66		26-138	0.42	1.079
37Cl-2,3,7,8-TCDD	800	510.993	64		35-197	NA	1.021

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/15 09:33
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF13-3	**Units:**	ng/Kg
Lab Code:	K1508281-003	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.638	0.638	1	1	
1,2,3,7,8-PeCDD	ND	0.818	3.01	1	1	
1,2,3,4,7,8-HxCDD	ND	0.501	3.01	1	0.1	
1,2,3,6,7,8-HxCDD	ND	0.484	3.01	1	0.1	
1,2,3,7,8,9-HxCDD	ND	0.448	3.01	1	0.1	
1,2,3,4,6,7,8-HpCDD	**14.9**	0.884	3.01	1	0.01	0.149
OCDD	**65.3**	0.821	6.03	1	0.0003	0.0196
2,3,7,8-TCDF	ND	0.882	0.882	1	0.1	
1,2,3,7,8-PeCDF	ND	0.514	3.01	1	0.03	
2,3,4,7,8-PeCDF	ND	0.505	3.01	1	0.3	
1,2,3,4,7,8-HxCDF	ND	0.419	3.01	1	0.1	
1,2,3,6,7,8-HxCDF	ND	0.404	3.01	1	0.1	
1,2,3,7,8,9-HxCDF	ND	0.403	3.01	1	0.1	
2,3,4,6,7,8-HxCDF	ND	0.424	3.01	1	0.1	
1,2,3,4,6,7,8-HpCDF	**1.53**	0.401	3.01	1	0.01	0.0153
1,2,3,4,7,8,9-HpCDF	ND	0.620	3.01	1	0.01	
OCDF	**5.59**	1.04	6.03	1	0.0003	0.00168
		Total TEQ				0.186

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/15 11:27
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF12-3	**Units:**	ng/Kg
Lab Code:	K1508281-004	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/17/15 21:18
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.191g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300947	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300943

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.199	0.580			1
1,2,3,7,8-PeCDD	ND	U	0.253	2.90			1
1,2,3,4,7,8-HxCDD	ND	U	0.192	2.90			1
1,2,3,6,7,8-HxCDD	0.553**BJ**		0.192	2.90	1.40	1.000	1
1,2,3,7,8,9-HxCDD	0.240**BJK**		0.175	2.90	1.59	1.007	1
1,2,3,4,6,7,8-HpCDD	7.12**B**		0.402	2.90	1.03	1.000	1
OCDD	41.7**B**		0.818	5.80	0.88	1.000	1
2,3,7,8-TCDF	ND	U	0.423	0.580			1
1,2,3,7,8-PeCDF	ND	U	0.178	2.90			1
2,3,4,7,8-PeCDF	ND	U	0.182	2.90			1
1,2,3,4,7,8-HxCDF	0.310**J**		0.154	2.90	1.13	1.000	1
1,2,3,6,7,8-HxCDF	0.313**BJK**		0.152	2.90	1.98	1.000	1
1,2,3,7,8,9-HxCDF	ND	U	0.144	2.90			1
2,3,4,6,7,8-HxCDF	0.567**J**		0.158	2.90	1.10	1.000	1
1,2,3,4,6,7,8-HpCDF	1.90**BJ**		0.154	2.90	1.09	1.000	1
1,2,3,4,7,8,9-HpCDF	ND	U	0.215	2.90			1
OCDF	5.80**BJ**		0.512	5.80	0.88	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/15 11:27
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF12-3	**Units:**	ng/Kg
Lab Code:	K1508281-004	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/17/15 21:18
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.191g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300947	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300943

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.199	0.580			1
Total Penta-Dioxins	0.563**J**		0.253	2.90	1.33		1
Total Hexa-Dioxins	4.12		0.186	2.90	1.23		1
Total Hepta-Dioxins	18.7		0.402	2.90	1.02		1
Total Tetra-Furans	4.99		0.423	0.580	0.72		1
Total Penta-Furans	17.9		0.180	2.90	1.45		1
Total Hexa-Furans	8.34		0.151	2.90	1.24		1
Total Hepta-Furans	8.01		0.182	2.90	1.09		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/15 11:27
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF12-3	**Units:**	Percent
Lab Code:	K1508281-004	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/17/15 21:18
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.191g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300947	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300943

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1412.948	71		25-164	0.77	1.019
13C-1,2,3,7,8-PeCDD	2000	1294.168	65		25-181	1.57	1.184
13C-1,2,3,4,7,8-HxCDD	2000	1343.665	67		32-141	1.24	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1472.220	74		28-130	1.24	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1201.069	60		23-140	1.06	1.066
13C-OCDD	4000	2169.997	54		17-157	0.88	1.140
13C-2,3,7,8-TCDF	2000	1386.732	69		24-169	0.78	0.992
13C-1,2,3,7,8-PeCDF	2000	1355.727	68		24-185	1.55	1.142
13C-2,3,4,7,8-PeCDF	2000	1332.687	67		21-178	1.54	1.174
13C-1,2,3,4,7,8-HxCDF	2000	1395.022	70		26-152	0.51	0.971
13C-1,2,3,6,7,8-HxCDF	2000	1482.461	74		26-123	0.51	0.974
13C-1,2,3,7,8,9-HxCDF	2000	1853.149	93		29-147	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1473.199	74		28-136	0.51	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	1253.181	63		28-143	0.44	1.042
13C-1,2,3,4,7,8,9-HpCDF	2000	1204.280	60		26-138	0.44	1.079
37Cl-2,3,7,8-TCDD	800	614.002	77		35-197	NA	1.020

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/29/15 11:27
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF12-3	**Units:**	ng/Kg
Lab Code:	K1508281-004	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.199	0.580	1	1	
1,2,3,7,8-PeCDD	ND	0.253	2.90	1	1	
1,2,3,4,7,8-HxCDD	ND	0.192	2.90	1	0.1	
1,2,3,6,7,8-HxCDD	**0.553**	0.192	2.90	1	0.1	0.0553
1,2,3,7,8,9-HxCDD	**0.240**	0.175	2.90	1	0.1	0.0240
1,2,3,4,6,7,8-HpCDD	**7.12**	0.402	2.90	1	0.01	0.0712
OCDD	**41.7**	0.818	5.80	1	0.0003	0.0125
2,3,7,8-TCDF	ND	0.423	0.580	1	0.1	
1,2,3,7,8-PeCDF	ND	0.178	2.90	1	0.03	
2,3,4,7,8-PeCDF	ND	0.182	2.90	1	0.3	
1,2,3,4,7,8-HxCDF	**0.310**	0.154	2.90	1	0.1	0.0310
1,2,3,6,7,8-HxCDF	**0.313**	0.152	2.90	1	0.1	0.0313
1,2,3,7,8,9-HxCDF	ND	0.144	2.90	1	0.1	
2,3,4,6,7,8-HxCDF	**0.567**	0.158	2.90	1	0.1	0.0567
1,2,3,4,6,7,8-HpCDF	**1.90**	0.154	2.90	1	0.01	0.0190
1,2,3,4,7,8,9-HpCDF	ND	0.215	2.90	1	0.01	
OCDF	**5.80**	0.512	5.80	1	0.0003	0.00174
	Total TEQ					0.303

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/15 11:53
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF12-1	**Units:**	ng/Kg
Lab Code:	K1508281-005	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/17/15 22:06
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.157g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300948	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300943

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.197	0.593			1
1,2,3,7,8-PeCDD	ND	U	0.196	2.97			1
1,2,3,4,7,8-HxCDD	1.18**J**		0.223	2.97	1.16	1.000	1
1,2,3,6,7,8-HxCDD	2.13**J**		0.217	2.97	1.28	1.000	1
1,2,3,7,8,9-HxCDD	1.23**JK**		0.200	2.97	1.61	1.007	1
1,2,3,4,6,7,8-HpCDD	88.1		0.272	2.97	1.06	1.000	1
OCDD	265		0.779	5.93	0.87	1.000	1
2,3,7,8-TCDF	ND	U	0.297	0.593			1
1,2,3,7,8-PeCDF	ND	U	0.193	2.97			1
2,3,4,7,8-PeCDF	ND	U	0.193	2.97			1
1,2,3,4,7,8-HxCDF	0.295**J**		0.130	2.97	1.11	1.000	1
1,2,3,6,7,8-HxCDF	0.214**BJ**		0.120	2.97	1.13	1.000	1
1,2,3,7,8,9-HxCDF	ND	U	0.111	2.97			1
2,3,4,6,7,8-HxCDF	0.354**JK**		0.128	2.97	1.49	1.000	1
1,2,3,4,6,7,8-HpCDF	2.69**BJ**		0.155	2.97	1.06	1.000	1
1,2,3,4,7,8,9-HpCDF	0.314**BJ**		0.213	2.97	1.04	1.000	1
OCDF	7.63**B**		0.521	5.93	0.83	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/15 11:53
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF12-1	**Units:**	ng/Kg
Lab Code:	K1508281-005	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/17/15 22:06
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.157g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300948	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300943

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.197	0.593			1
Total Penta-Dioxins	1.27**J**		0.196	2.97	1.52		1
Total Hexa-Dioxins	31.5		0.213	2.97	1.25		1
Total Hepta-Dioxins	181		0.272	2.97	1.02		1
Total Tetra-Furans	0.963		0.297	0.593	0.70		1
Total Penta-Furans	5.68		0.193	2.97	1.71		1
Total Hexa-Furans	4.66		0.121	2.97	1.11		1
Total Hepta-Furans	10.8		0.181	2.97	1.06		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/15 11:53
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF12-1	**Units:**	Percent
Lab Code:	K1508281-005	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/17/15 22:06
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.157g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300948	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300943

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1387.396	69		25-164	0.78	1.020
13C-1,2,3,7,8-PeCDD	2000	1321.392	66		25-181	1.54	1.185
13C-1,2,3,4,7,8-HxCDD	2000	1227.578	61		32-141	1.24	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1443.148	72		28-130	1.25	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1212.003	61		23-140	1.04	1.066
13C-OCDD	4000	2491.769	62		17-157	0.89	1.141
13C-2,3,7,8-TCDF	2000	1362.385	68		24-169	0.77	0.992
13C-1,2,3,7,8-PeCDF	2000	1357.940	68		24-185	1.53	1.142
13C-2,3,4,7,8-PeCDF	2000	1345.428	67		21-178	1.53	1.175
13C-1,2,3,4,7,8-HxCDF	2000	1271.720	64		26-152	0.51	0.971
13C-1,2,3,6,7,8-HxCDF	2000	1412.948	71		26-123	0.51	0.974
13C-1,2,3,7,8,9-HxCDF	2000	1818.371	91		29-147	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1397.133	70		28-136	0.51	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1227.916	61		28-143	0.43	1.042
13C-1,2,3,4,7,8,9-HpCDF	2000	1193.649	60		26-138	0.44	1.079
37Cl-2,3,7,8-TCDD	800	613.739	77		35-197	NA	1.021

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/15 11:53
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF12-1	**Units:**	ng/Kg
Lab Code:	K1508281-005	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.197	0.593	1	1	
1,2,3,7,8-PeCDD	ND	0.196	2.97	1	1	
1,2,3,4,7,8-HxCDD	**1.18**	0.223	2.97	1	0.1	0.118
1,2,3,6,7,8-HxCDD	**2.13**	0.217	2.97	1	0.1	0.213
1,2,3,7,8,9-HxCDD	**1.23**	0.200	2.97	1	0.1	0.123
1,2,3,4,6,7,8-HpCDD	**88.1**	0.272	2.97	1	0.01	0.881
OCDD	**265**	0.779	5.93	1	0.0003	0.0795
2,3,7,8-TCDF	ND	0.297	0.593	1	0.1	
1,2,3,7,8-PeCDF	ND	0.193	2.97	1	0.03	
2,3,4,7,8-PeCDF	ND	0.193	2.97	1	0.3	
1,2,3,4,7,8-HxCDF	**0.295**	0.130	2.97	1	0.1	0.0295
1,2,3,6,7,8-HxCDF	**0.214**	0.120	2.97	1	0.1	0.0214
1,2,3,7,8,9-HxCDF	ND	0.111	2.97	1	0.1	
2,3,4,6,7,8-HxCDF	**0.354**	0.128	2.97	1	0.1	0.0354
1,2,3,4,6,7,8-HpCDF	**2.69**	0.155	2.97	1	0.01	0.0269
1,2,3,4,7,8,9-HpCDF	**0.314**	0.213	2.97	1	0.01	0.00314
OCDF	**7.63**	0.521	5.93	1	0.0003	0.00229
	Total TEQ					1.53

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/15 10:19
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF6-1	**Units:**	ng/Kg
Lab Code:	K1508281-006	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/17/15 22:55
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.341g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300949	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300943

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.232	0.611			1
1,2,3,7,8-PeCDD	ND	U	0.266	3.06			1
1,2,3,4,7,8-HxCDD	1.22**J**		0.280	3.06	1.25	1.000	1
1,2,3,6,7,8-HxCDD	2.48**J**		0.276	3.06	1.29	1.000	1
1,2,3,7,8,9-HxCDD	1.72**J**		0.253	3.06	1.29	1.005	1
1,2,3,4,6,7,8-HpCDD	70.0		0.817	3.06	1.02	1.000	1
OCDD	225		0.747	6.11	0.86	1.000	1
2,3,7,8-TCDF	ND	U	0.571	0.611			1
1,2,3,7,8-PeCDF	ND	U	0.240	3.06			1
2,3,4,7,8-PeCDF	ND	U	0.245	3.06			1
1,2,3,4,7,8-HxCDF	0.497**JK**		0.153	3.06	1.02	1.000	1
1,2,3,6,7,8-HxCDF	ND	U	0.145	3.06			1
1,2,3,7,8,9-HxCDF	ND	U	0.146	3.06			1
2,3,4,6,7,8-HxCDF	0.403**JK**		0.148	3.06	1.79	1.000	1
1,2,3,4,6,7,8-HpCDF	3.44**B**		0.234	3.06	1.07	1.000	1
1,2,3,4,7,8,9-HpCDF	0.907**BJK**		0.442	3.06	1.30	1.000	1
OCDF	7.50**B**		0.555	6.11	0.91	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/15 10:19
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF6-1	**Units:**	ng/Kg
Lab Code:	K1508281-006	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/17/15 22:55
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.341g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300949	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300943

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.232	0.611			1
Total Penta-Dioxins	ND	U	0.266	3.06			1
Total Hexa-Dioxins	38.7		0.269	3.06	1.27		1
Total Hepta-Dioxins	179		0.817	3.06	1.05		1
Total Tetra-Furans	0.757		0.571	0.611	0.79		1
Total Penta-Furans	1.26**J**		0.242	3.06	1.41		1
Total Hexa-Furans	3.27		0.147	3.06	1.25		1
Total Hepta-Furans	16.1		0.315	3.06	1.07		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/15 10:19
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF6-1	**Units:**	Percent
Lab Code:	K1508281-006	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/17/15 22:55
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.341g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300949	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300943

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1150.259	58		25-164	0.78	1.019
13C-1,2,3,7,8-PeCDD	2000	1094.110	55		25-181	1.58	1.184
13C-1,2,3,4,7,8-HxCDD	2000	1036.670	52		32-141	1.24	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1244.328	62		28-130	1.25	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1019.233	51		23-140	1.05	1.067
13C-OCDD	4000	1907.358	48		17-157	0.89	1.141
13C-2,3,7,8-TCDF	2000	1127.942	56		24-169	0.77	0.992
13C-1,2,3,7,8-PeCDF	2000	1132.021	57		24-185	1.55	1.142
13C-2,3,4,7,8-PeCDF	2000	1120.325	56		21-178	1.54	1.174
13C-1,2,3,4,7,8-HxCDF	2000	1065.098	53		26-152	0.51	0.971
13C-1,2,3,6,7,8-HxCDF	2000	1158.110	58		26-123	0.51	0.974
13C-1,2,3,7,8,9-HxCDF	2000	1340.238	67		29-147	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1158.322	58		28-136	0.51	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	884.777	44		28-143	0.44	1.042
13C-1,2,3,4,7,8,9-HpCDF	2000	638.902	32		26-138	0.43	1.079
37Cl-2,3,7,8-TCDD	800	619.825	77		35-197	NA	1.020

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/15 10:19
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF6-1	**Units:**	ng/Kg
Lab Code:	K1508281-006	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.232	0.611	1	1	
1,2,3,7,8-PeCDD	ND	0.266	3.06	1	1	
1,2,3,4,7,8-HxCDD	**1.22**	0.280	3.06	1	0.1	0.122
1,2,3,6,7,8-HxCDD	**2.48**	0.276	3.06	1	0.1	0.248
1,2,3,7,8,9-HxCDD	**1.72**	0.253	3.06	1	0.1	0.172
1,2,3,4,6,7,8-HpCDD	**70.0**	0.817	3.06	1	0.01	0.700
OCDD	**225**	0.747	6.11	1	0.0003	0.0675
2,3,7,8-TCDF	ND	0.571	0.611	1	0.1	
1,2,3,7,8-PeCDF	ND	0.240	3.06	1	0.03	
2,3,4,7,8-PeCDF	ND	0.245	3.06	1	0.3	
1,2,3,4,7,8-HxCDF	**0.497**	0.153	3.06	1	0.1	0.0497
1,2,3,6,7,8-HxCDF	ND	0.145	3.06	1	0.1	
1,2,3,7,8,9-HxCDF	ND	0.146	3.06	1	0.1	
2,3,4,6,7,8-HxCDF	**0.403**	0.148	3.06	1	0.1	0.0403
1,2,3,4,6,7,8-HpCDF	**3.44**	0.234	3.06	1	0.01	0.0344
1,2,3,4,7,8,9-HpCDF	**0.907**	0.442	3.06	1	0.01	0.00907
OCDF	**7.50**	0.555	6.11	1	0.0003	0.00225
		Total TEQ				1.45

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/15 10:39
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF6-2	**Units:**	ng/Kg
Lab Code:	K1508281-007	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/17/15 23:44
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.107g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300950	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300943

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.651	0.680			1
1,2,3,7,8-PeCDD	ND	U	0.578	3.40			1
1,2,3,4,7,8-HxCDD	ND	U	0.428	3.40			1
1,2,3,6,7,8-HxCDD	0.691**BJK**		0.424	3.40	1.51	1.000	1
1,2,3,7,8,9-HxCDD	ND	U	0.388	3.40			1
1,2,3,4,6,7,8-HpCDD	16.4**B**		0.516	3.40	1.04	1.000	1
OCDD	137**B**		1.72	6.80	0.87	1.000	1
2,3,7,8-TCDF	ND	U	0.615	0.680			1
1,2,3,7,8-PeCDF	ND	U	0.526	3.40			1
2,3,4,7,8-PeCDF	ND	U	0.514	3.40			1
1,2,3,4,7,8-HxCDF	ND	U	0.271	3.40			1
1,2,3,6,7,8-HxCDF	ND	U	0.265	3.40			1
1,2,3,7,8,9-HxCDF	ND	U	0.251	3.40			1
2,3,4,6,7,8-HxCDF	ND	U	0.276	3.40			1
1,2,3,4,6,7,8-HpCDF	3.07**BJ**		0.354	3.40	1.00	1.000	1
1,2,3,4,7,8,9-HpCDF	ND	U	0.525	3.40			1
OCDF	8.96**B**		0.939	6.80	0.85	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/15 10:39
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF6-2	**Units:**	ng/Kg
Lab Code:	K1508281-007	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/17/15 23:44
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.107g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300950	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300943

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.651	0.680			1
Total Penta-Dioxins	ND	U	0.578	3.40			1
Total Hexa-Dioxins	5.51		0.413	3.40	1.30		1
Total Hepta-Dioxins	48.7		0.516	3.40	0.97		1
Total Tetra-Furans	ND	U	0.615	0.680			1
Total Penta-Furans	2.01**J**		0.520	3.40	1.68		1
Total Hexa-Furans	1.82**J**		0.265	3.40	1.16		1
Total Hepta-Furans	12.2		0.430	3.40	1.00		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/15 10:39
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF6-2	**Units:**	Percent
Lab Code:	K1508281-007	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/17/15 23:44
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.107g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300950	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300943

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1400.783	70		25-164	0.75	1.019
13C-1,2,3,7,8-PeCDD	2000	1602.742	80		25-181	1.55	1.184
13C-1,2,3,4,7,8-HxCDD	2000	1396.049	70		32-141	1.25	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1609.451	80		28-130	1.26	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1420.778	71		23-140	1.06	1.067
13C-OCDD	4000	2787.893	70		17-157	0.88	1.141
13C-2,3,7,8-TCDF	2000	1349.050	67		24-169	0.76	0.992
13C-1,2,3,7,8-PeCDF	2000	1611.695	81		24-185	1.55	1.142
13C-2,3,4,7,8-PeCDF	2000	1637.044	82		21-178	1.56	1.175
13C-1,2,3,4,7,8-HxCDF	2000	1412.175	71		26-152	0.51	0.972
13C-1,2,3,6,7,8-HxCDF	2000	1512.600	76		26-123	0.52	0.974
13C-1,2,3,7,8,9-HxCDF	2000	1886.493	94		29-147	0.49	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1512.474	76		28-136	0.51	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1435.909	72		28-143	0.43	1.042
13C-1,2,3,4,7,8,9-HpCDF	2000	1333.120	67		26-138	0.43	1.079
37Cl-2,3,7,8-TCDD	800	638.712	80		35-197	NA	1.021

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/15 10:39
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF6-2	**Units:**	ng/Kg
Lab Code:	K1508281-007	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.651	0.680	1	1	
1,2,3,7,8-PeCDD	ND	0.578	3.40	1	1	
1,2,3,4,7,8-HxCDD	ND	0.428	3.40	1	0.1	
1,2,3,6,7,8-HxCDD	**0.691**	0.424	3.40	1	0.1	0.0691
1,2,3,7,8,9-HxCDD	ND	0.388	3.40	1	0.1	
1,2,3,4,6,7,8-HpCDD	**16.4**	0.516	3.40	1	0.01	0.164
OCDD	**137**	1.72	6.80	1	0.0003	0.0411
2,3,7,8-TCDF	ND	0.615	0.680	1	0.1	
1,2,3,7,8-PeCDF	ND	0.526	3.40	1	0.03	
2,3,4,7,8-PeCDF	ND	0.514	3.40	1	0.3	
1,2,3,4,7,8-HxCDF	ND	0.271	3.40	1	0.1	
1,2,3,6,7,8-HxCDF	ND	0.265	3.40	1	0.1	
1,2,3,7,8,9-HxCDF	ND	0.251	3.40	1	0.1	
2,3,4,6,7,8-HxCDF	ND	0.276	3.40	1	0.1	
1,2,3,4,6,7,8-HpCDF	**3.07**	0.354	3.40	1	0.01	0.0307
1,2,3,4,7,8,9-HpCDF	ND	0.525	3.40	1	0.01	
OCDF	**8.96**	0.939	6.80	1	0.0003	0.00269
		Total TEQ				0.308

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/15 09:57
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF6-3	**Units:**	ng/Kg
Lab Code:	K1508281-008	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/18/15 00:32
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.298g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300951	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300943

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.156	0.598			1
1,2,3,7,8-PeCDD	ND	U	0.174	2.99			1
1,2,3,4,7,8-HxCDD	ND	U	0.210	2.99			1
1,2,3,6,7,8-HxCDD	0.327**BJK**		0.202	2.99	1.58	1.000	1
1,2,3,7,8,9-HxCDD	ND	U	0.187	2.99			1
1,2,3,4,6,7,8-HpCDD	6.85**B**		0.225	2.99	1.08	1.000	1
OCDD	45.7**B**		0.589	5.98	0.86	1.000	1
2,3,7,8-TCDF	ND	U	0.343	0.598			1
1,2,3,7,8-PeCDF	ND	U	0.169	2.99			1
2,3,4,7,8-PeCDF	ND	U	0.168	2.99			1
1,2,3,4,7,8-HxCDF	ND	U	0.128	2.99			1
1,2,3,6,7,8-HxCDF	ND	U	0.126	2.99			1
1,2,3,7,8,9-HxCDF	ND	U	0.115	2.99			1
2,3,4,6,7,8-HxCDF	ND	U	0.130	2.99			1
1,2,3,4,6,7,8-HpCDF	1.83**BJ**		0.188	2.99	1.07	1.000	1
1,2,3,4,7,8,9-HpCDF	ND	U	0.240	2.99			1
OCDF	6.79**B**		0.421	5.98	0.84	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/15 09:57
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF6-3	**Units:**	ng/Kg
Lab Code:	K1508281-008	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/18/15 00:32
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.298g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300951	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300943

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.156	0.598			1
Total Penta-Dioxins	ND	U	0.174	2.99			1
Total Hexa-Dioxins	0.879**J**		0.199	2.99	1.09		1
Total Hepta-Dioxins	17.5		0.225	2.99	1.02		1
Total Tetra-Furans	1.02		0.343	0.598	0.82		1
Total Penta-Furans	0.804**J**		0.169	2.99	1.55		1
Total Hexa-Furans	1.33**J**		0.124	2.99	1.34		1
Total Hepta-Furans	7.60		0.213	2.99	1.07		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/15 09:57
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF6-3	**Units:**	Percent
Lab Code:	K1508281-008	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/18/15 00:32
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.298g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300951	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300943

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1483.532	74		25-164	0.78	1.019
13C-1,2,3,7,8-PeCDD	2000	1436.236	72		25-181	1.57	1.184
13C-1,2,3,4,7,8-HxCDD	2000	1343.677	67		32-141	1.25	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1568.987	78		28-130	1.23	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1223.860	61		23-140	1.03	1.066
13C-OCDD	4000	2083.132	52		17-157	0.89	1.141
13C-2,3,7,8-TCDF	2000	1439.560	72		24-169	0.77	0.992
13C-1,2,3,7,8-PeCDF	2000	1480.916	74		24-185	1.55	1.142
13C-2,3,4,7,8-PeCDF	2000	1480.607	74		21-178	1.55	1.175
13C-1,2,3,4,7,8-HxCDF	2000	1412.608	71		26-152	0.51	0.971
13C-1,2,3,6,7,8-HxCDF	2000	1507.127	75		26-123	0.51	0.974
13C-1,2,3,7,8,9-HxCDF	2000	1998.566	100		29-147	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1526.640	76		28-136	0.52	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	1202.241	60		28-143	0.44	1.042
13C-1,2,3,4,7,8,9-HpCDF	2000	1282.951	64		26-138	0.43	1.079
37Cl-2,3,7,8-TCDD	800	674.239	84		35-197	NA	1.020

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	07/30/15 09:57
Sample Matrix:	Sediment	**Date Received:**	07/30/15 16:05
Sample Name:	OF6-3	**Units:**	ng/Kg
Lab Code:	K1508281-008	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.156	0.598	1	1	
1,2,3,7,8-PeCDD	ND	0.174	2.99	1	1	
1,2,3,4,7,8-HxCDD	ND	0.210	2.99	1	0.1	
1,2,3,6,7,8-HxCDD	**0.327**	0.202	2.99	1	0.1	0.0327
1,2,3,7,8,9-HxCDD	ND	0.187	2.99	1	0.1	
1,2,3,4,6,7,8-HpCDD	**6.85**	0.225	2.99	1	0.01	0.0685
OCDD	**45.7**	0.589	5.98	1	0.0003	0.0137
2,3,7,8-TCDF	ND	0.343	0.598	1	0.1	
1,2,3,7,8-PeCDF	ND	0.169	2.99	1	0.03	
2,3,4,7,8-PeCDF	ND	0.168	2.99	1	0.3	
1,2,3,4,7,8-HxCDF	ND	0.128	2.99	1	0.1	
1,2,3,6,7,8-HxCDF	ND	0.126	2.99	1	0.1	
1,2,3,7,8,9-HxCDF	ND	0.115	2.99	1	0.1	
2,3,4,6,7,8-HxCDF	ND	0.130	2.99	1	0.1	
1,2,3,4,6,7,8-HpCDF	**1.83**	0.188	2.99	1	0.01	0.0183
1,2,3,4,7,8,9-HpCDF	ND	0.240	2.99	1	0.01	
OCDF	**6.79**	0.421	5.98	1	0.0003	0.00204
		Total TEQ				0.135

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1500468-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/21/15 19:42
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.126g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P600043	**Blank File Name:**	P600043
ICAL Date:	08/19/15	**Cal Ver. File Name:**	P600040

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.0625	0.494			1
1,2,3,7,8-PeCDD	ND	U	0.0534	2.47			1
1,2,3,4,7,8-HxCDD	ND	U	0.0510	2.47			1
1,2,3,6,7,8-HxCDD	0.187**JK**		0.0510	2.47	1.70	1.000	1
1,2,3,7,8,9-HxCDD	0.0799**J**		0.0461	2.47	1.29	1.007	1
1,2,3,4,6,7,8-HpCDD	3.61		0.0368	2.47	1.02	1.000	1
OCDD	15.4		0.0541	4.94	0.90	1.000	1
2,3,7,8-TCDF	ND	U	0.0507	0.494			1
1,2,3,7,8-PeCDF	ND	U	0.0384	2.47			1
2,3,4,7,8-PeCDF	ND	U	0.0380	2.47			1
1,2,3,4,7,8-HxCDF	ND	U	0.0241	2.47			1
1,2,3,6,7,8-HxCDF	0.0390**JK**		0.0222	2.47	0.87	1.000	1
1,2,3,7,8,9-HxCDF	ND	U	0.0175	2.47			1
2,3,4,6,7,8-HxCDF	ND	U	0.0233	2.47			1
1,2,3,4,6,7,8-HpCDF	1.04**J**		0.0314	2.47	1.01	1.000	1
1,2,3,4,7,8,9-HpCDF	0.0920**JK**		0.0390	2.47	1.73	1.000	1
OCDF	3.81**J**		0.0653	4.94	0.92	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1500468-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/21/15 19:42
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.126g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P600043	**Blank File Name:**	P600043
ICAL Date:	08/19/15	**Cal Ver. File Name:**	P600040

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.0625	0.494			1
Total Penta-Dioxins	ND	U	0.0534	2.47			1
Total Hexa-Dioxins	0.593**J**		0.0492	2.47	1.23		1
Total Hepta-Dioxins	9.08		0.0368	2.47	1.09		1
Total Tetra-Furans	0.248**J**		0.0507	0.494	0.80		1
Total Penta-Furans	ND	U	0.0382	2.47			1
Total Hexa-Furans	0.598**J**		0.0214	2.47	1.24		1
Total Hepta-Furans	4.77		0.0350	2.47	1.01		1

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	Percent
Lab Code:	EQ1500468-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/21/15 19:42
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.126g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P600043	**Blank File Name:**	P600043
ICAL Date:	08/19/15	**Cal Ver. File Name:**	P600040

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1088.711	54		25-164	0.79	1.018
13C-1,2,3,7,8-PeCDD	2000	1309.232	65		25-181	1.57	1.168
13C-1,2,3,4,7,8-HxCDD	2000	1317.923	66		32-141	1.26	0.992
13C-1,2,3,6,7,8-HxCDD	2000	1388.136	69		28-130	1.27	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1363.202	68		23-140	1.06	1.066
13C-OCDD	4000	2910.966	73		17-157	0.90	1.142
13C-2,3,7,8-TCDF	2000	1228.503	61		24-169	0.80	0.993
13C-1,2,3,7,8-PeCDF	2000	1322.796	66		24-185	1.57	1.129
13C-2,3,4,7,8-PeCDF	2000	1321.275	66		21-178	1.58	1.159
13C-1,2,3,4,7,8-HxCDF	2000	1284.249	64		26-152	0.52	0.972
13C-1,2,3,6,7,8-HxCDF	2000	1396.882	70		26-123	0.52	0.976
13C-1,2,3,7,8,9-HxCDF	2000	1979.189	99		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1339.265	67		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1276.685	64		28-143	0.45	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	1143.725	57		26-138	0.45	1.079
37Cl-2,3,7,8-TCDD	800	468.863	59		35-197	NA	1.019

Accuracy & Precision

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QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Analyzed:**	08/15/15
Sample Matrix:	Sediment	**Date Extracted:**	08/06/15

Duplicate Lab Control Sample Summary
Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Units:**	ng/Kg
Prep Method:	Method Soxhlet	**Basis:**	Dry
		Analysis Lot:	458579

	Lab Control Sample EQ1500468-02			Duplicate Lab Control Sample EQ1500468-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
1,2,3,4,6,7,8-HpCDD	111	96.2	116	117	98.0	119	70-140	5	50
1,2,3,4,7,8-HxCDD	114	96.2	118	117	98.0	119	70-164	3	50
1,2,3,6,7,8-HxCDD	109	96.2	114	114	98.0	116	76-134	4	50
1,2,3,7,8,9-HxCDD	109	96.2	113	110	98.0	112	64-162	1	50
1,2,3,7,8-PeCDD	115	96.2	119	118	98.0	120	70-142	3	50
2,3,7,8-TCDD	21.4	19.2	111	21.8	19.6	111	67-158	2	50
OCDD	220	192	114	222	196	113	78-144	<1	50
1,2,3,4,6,7,8-HpCDF	115	96.2	119	118	98.0	121	82-122	3	50
1,2,3,4,7,8,9-HpCDF	114	96.2	119	118	98.0	120	78-138	3	50
1,2,3,4,7,8-HxCDF	115	96.2	120	120	98.0	122	72-134	3	50
1,2,3,6,7,8-HxCDF	113	96.2	117	116	98.0	118	84-130	3	50
1,2,3,7,8,9-HxCDF	76.5	96.2	79	77.9	98.0	79	78-130	2	50
1,2,3,7,8-PeCDF	107	96.2	111	111	98.0	113	80-134	3	50
2,3,4,6,7,8-HxCDF	111	96.2	115	114	98.0	117	70-156	3	50
2,3,4,7,8-PeCDF	116	96.2	120	118	98.0	121	68-160	2	50
2,3,7,8-TCDF	22.8	19.2	118	23.3	19.6	119	75-158	2	50
OCDF	215	192	111	212	196	108	63-170	<1	50

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1500468-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/15/15 17:10
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.391g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300903	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300899

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	21.4		0.187	0.481	0.77	1.001	1
1,2,3,7,8-PeCDD	115		0.182	2.41	1.56	1.001	1
1,2,3,4,7,8-HxCDD	114		0.152	2.41	1.22	1.000	1
1,2,3,6,7,8-HxCDD	109		0.156	2.41	1.26	1.000	1
1,2,3,7,8,9-HxCDD	109		0.140	2.41	1.20	1.007	1
1,2,3,4,6,7,8-HpCDD	111		0.156	2.41	1.00	1.000	1
OCDD	220		1.07	4.81	0.87	1.000	1
2,3,7,8-TCDF	22.8		0.312	0.481	0.79	1.001	1
1,2,3,7,8-PeCDF	107		0.282	2.41	1.57	1.000	1
2,3,4,7,8-PeCDF	116		0.292	2.41	1.54	1.000	1
1,2,3,4,7,8-HxCDF	115		0.0777	2.41	1.24	1.000	1
1,2,3,6,7,8-HxCDF	113		0.0733	2.41	1.25	1.000	1
1,2,3,7,8,9-HxCDF	76.5		0.0669	2.41	1.26	1.000	1
2,3,4,6,7,8-HxCDF	111		0.0766	2.41	1.26	1.000	1
1,2,3,4,6,7,8-HpCDF	115		0.247	2.41	1.03	1.000	1
1,2,3,4,7,8,9-HpCDF	114		0.319	2.41	1.03	1.000	1
OCDF	215		0.249	4.81	0.89	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1500468-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/15/15 17:10
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.391g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300903	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300899

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	21.4		0.187	0.481	0.77		1
Total Penta-Dioxins	115		0.182	2.41	1.56		1
Total Hexa-Dioxins	332		0.149	2.41	1.22		1
Total Hepta-Dioxins	118		0.156	2.41	0.94		1
Total Tetra-Furans	23.3		0.312	0.481	0.84		1
Total Penta-Furans	223		0.287	2.41	1.57		1
Total Hexa-Furans	416		0.0731	2.41	1.24		1
Total Hepta-Furans	233		0.281	2.41	1.03		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1500468-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/15/15 17:10
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.391g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300903	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300899

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1312.601	66		25-164	0.78	1.019
13C-1,2,3,7,8-PeCDD	2000	1298.989	65		25-181	1.58	1.182
13C-1,2,3,4,7,8-HxCDD	2000	1344.916	67		32-141	1.26	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1423.339	71		28-130	1.25	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1227.679	61		23-140	1.05	1.066
13C-OCDD	4000	2503.906	63		17-157	0.90	1.141
13C-2,3,7,8-TCDF	2000	1271.558	64		24-169	0.78	0.992
13C-1,2,3,7,8-PeCDF	2000	1411.547	71		24-185	1.56	1.141
13C-2,3,4,7,8-PeCDF	2000	1375.318	69		21-178	1.55	1.173
13C-1,2,3,4,7,8-HxCDF	2000	1351.864	68		26-152	0.51	0.971
13C-1,2,3,6,7,8-HxCDF	2000	1411.920	71		26-123	0.51	0.974
13C-1,2,3,7,8,9-HxCDF	2000	1825.986	91		29-147	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1417.656	71		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1219.878	61		28-143	0.44	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	1238.990	62		26-138	0.43	1.079
37Cl-2,3,7,8-TCDD	800	582.531	73		35-197	NA	1.020

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1500468-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/15/15 17:58
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.201g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300904	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300899

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	21.8		0.220	0.490	0.78	1.001	1
1,2,3,7,8-PeCDD	118		0.214	2.45	1.52	1.000	1
1,2,3,4,7,8-HxCDD	117		0.143	2.45	1.25	1.000	1
1,2,3,6,7,8-HxCDD	114		0.142	2.45	1.23	1.000	1
1,2,3,7,8,9-HxCDD	110		0.130	2.45	1.19	1.007	1
1,2,3,4,6,7,8-HpCDD	117		0.158	2.45	1.03	1.001	1
OCDD	222		0.493	4.90	0.87	1.000	1
2,3,7,8-TCDF	23.3		0.245	0.490	0.72	1.001	1
1,2,3,7,8-PeCDF	111		0.171	2.45	1.55	1.001	1
2,3,4,7,8-PeCDF	118		0.177	2.45	1.55	1.001	1
1,2,3,4,7,8-HxCDF	120		0.0771	2.45	1.25	1.001	1
1,2,3,6,7,8-HxCDF	116		0.0721	2.45	1.25	1.000	1
1,2,3,7,8,9-HxCDF	77.9		0.0618	2.45	1.27	1.000	1
2,3,4,6,7,8-HxCDF	114		0.0751	2.45	1.23	1.000	1
1,2,3,4,6,7,8-HpCDF	118		0.214	2.45	1.03	1.000	1
1,2,3,4,7,8,9-HpCDF	118		0.295	2.45	1.03	1.000	1
OCDF	212		0.356	4.90	0.90	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1500468-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/15/15 17:58
Prep Method:	Method Soxhlet	**Date Extracted:**	8/6/15
Sample Amount:	10.201g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P300904	**Blank File Name:**	P600043
ICAL Date:	07/06/15	**Cal Ver. File Name:**	P300899

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	21.8		0.220	0.490	0.78		1
Total Penta-Dioxins	118		0.214	2.45	1.52		1
Total Hexa-Dioxins	341		0.138	2.45	1.25		1
Total Hepta-Dioxins	123		0.158	2.45	1.04		1
Total Tetra-Furans	23.3		0.245	0.490	0.72		1
Total Penta-Furans	232		0.174	2.45	1.44		1
Total Hexa-Furans	428		0.0708	2.45	1.25		1
Total Hepta-Furans	240		0.250	2.45	1.03		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1508281
Project:	Bremerton Sediment Sampling/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1500468-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/15/15 17:58
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		GC Column:	DB-5MSUI
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Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1300.568	65		25-164	0.78	1.019
13C-1,2,3,7,8-PeCDD	2000	1340.145	67		25-181	1.56	1.183
13C-1,2,3,4,7,8-HxCDD	2000	1361.583	68		32-141	1.25	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1483.906	74		28-130	1.23	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1272.817	64		23-140	1.04	1.066
13C-OCDD	4000	2684.152	67		17-157	0.90	1.141
13C-2,3,7,8-TCDF	2000	1285.115	64		24-169	0.77	0.992
13C-1,2,3,7,8-PeCDF	2000	1406.965	70		24-185	1.55	1.141
13C-2,3,4,7,8-PeCDF	2000	1376.223	69		21-178	1.56	1.173
13C-1,2,3,4,7,8-HxCDF	2000	1386.482	69		26-152	0.52	0.971
13C-1,2,3,6,7,8-HxCDF	2000	1451.043	73		26-123	0.52	0.974
13C-1,2,3,7,8,9-HxCDF	2000	1887.655	94		29-147	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1470.388	74		28-136	0.51	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1329.589	66		28-143	0.44	1.042
13C-1,2,3,4,7,8,9-HpCDF	2000	1261.491	63		26-138	0.44	1.079
37Cl-2,3,7,8-TCDD	800	565.012	71		35-197	NA	1.020

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September 2 , 2015

Analytical Report for Service Request No: K1509053

illiam ox
Cosmopolitan Marine Engineering
9612 Kopachuck Dr
P. . Box 623
ig Harbor, A 9 335

RE: Bremerton 2015 / Bremerton 2015

Dear illiam,

Enclosed are the results of the sample(s) submitted to our laboratory August 1 , 2015
or your reference, these analyses have been assigned our service request number **K1509053.**

Analyses were performed according to our laboratory's ELAP approved quality assurance program. The test results meet requirements of the current ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. or a specific list of ELAP accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS roup SA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. ou may also contact me via email at howard.holmes alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager

RI HT S L TI S RI HT PART ER

DNR-00008605

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RI HT S L TI S RI HT PART ER

DNR-00008606

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

DNR-00008607

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
ISO 17025	http://www.pjlabs.com/	L14-50
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
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ALS ENVIRONMENTAL

Client:	Cosmopolitan Engineering Group	**Service Request No.:**	K1509053
Project:	Bremerton 2015/ Bremerton 2015	**Date Received:**	08/18/15
Sample Matrix:	Sediment		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Duplicate (DUP), Matrix Spike (MS), Matrix/Duplicate Matrix Spike (MS/DMS), Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Thirteen sediment samples were received for analysis at ALS Environmental on 08/18/15. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Total Metals

Matrix Spike Recovery Exceptions:
The control criteria for matrix spike recovery of Copper and Zinc for the Batch QC1 sample were not applicable. The analyzed concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

No other anomalies associated with the analysis of these samples were observed.

PCB Aroclors by EPA Method 8082

Elevated Detection Limits:
The detection limit was elevated for several Aroclors in sample WP-1. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the normal limit. The results were flagged to indicate the matrix interference.

Sample Confirmation Notes:
The confirmation comparison criteria of 40% difference for Aroclor 1254 was exceeded in sample WP-2. The lower of the two values was reported because no evidence of a matrix interference was observed.

Approved by_____

DNR-00008611

Second Source Exceptions:
The analysis of PCB Aroclors by EPA 8082 requires the use of dual column confirmation. When the Initial Calibration Verification (ICV) criteria are met for both columns, the lower of the two sample results is generally reported. The criteria were not met for Aroclor 1260 in CAL 13624. The data quality was not affected. No further corrective action was necessary

Sample Notes and Discussion:
Two Aroclors were identified in WP-1 and WP-5: Aroclor 1254 and Aroclor 1260. When mixtures of PCB Aroclors are present in a sample, correct identification and quantitative analysis of the individual Aroclors can be subjective.

Three Aroclors were identified in WP-2, WP-3, and WP-4: Aroclor 1242, Aroclor 1254, and Aroclor 1260. When mixtures of PCB Aroclors are present in a sample, correct identification and quantitative analysis of the individual Aroclors can be subjective. In particular, when mixtures are present, differentiating Aroclor 1242 from Aroclor 1248 can be difficult.

A review of the sample chromatograms indicated the presence of PCB patterns that spanned the entire elution range from Aroclor 1242 through the end of Aroclor 1260. Based on individual PCB peaks in the early portion of the chromatogram, Aroclor 1242 was identified and quantitated. Aroclor 1260 was identified based on the presence of late eluting PCB peaks in the chromatogram. The remainder of the PCB pattern was identified as Aroclor 1254 because PCB peak height in the middle of the chromatogram was larger than could be attributed to either Aroclor 1242, Aroclor 1248, or Aroclor 1260.

When Aroclor mixtures are present in a sample, care is taken to minimize the possibility of double-counting PCBs. Analytical peaks are selected based on the best resolution possible for that particular sample. However, when a mixture of Aroclors 1242, 1254 and 1260 are present in a sample, the potential exists for a high bias from contribution of one Aroclor to another due to common peaks or peaks that cannot be completely resolved.

Matrix Spike Recovery Exceptions:
The matrix spike recovery of Aroclor 1016 for Batch QC was outside control criteria because of matrix interference. The chromatogram indicated the presence of Aroclor 1248, which prevented accurate quantitation of the target analytes. The problem stemmed from common peaks for Aroclor 1016 and 1248. Complete resolution of these two Aroclors was not possible, so a portion of Aroclor 1248 is unavoidably quantitated as Aroclor 1016. The net effect was a high bias to the value reported for Aroclor 1016. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

<u>Semivolatile Organic Compounds by EPA Method 8270</u>

Calibration Verification Exceptions:
The following analytes were flagged as outside the lower control criterion for Continuing Calibration Verification (CCV) MS06\0910F002.D: Benzoic Acid. In accordance with the EPA Method 8270D, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The CCV met these criteria. In accordance with ALS standard operating procedures, an MRL check standard containing the analyte of concern was analyzed. The MRL check standard verifies instrument sensitivity was adequate to detect the analyte at the MRL on the day of analysis. Because the sensitivity was shown to be adequate to detect the analyte in question, the data quality has not been significantly affected. No further corrective action was required.

The following analytes were flagged as outside the control criterion for Continuing Calibration Verification (CCV) MS06\0910F002.D: Hexachlorobutadiene. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The CCV met these criteria. No further corrective action was required.

Approved by_____

Surrogate Exceptions:
The control criteria were exceeded for 2-Fluorobiphenyl and Terphenyl-d14 in sample WP-3 due to matrix interference. The presence of non-target background components prevented adequate resolution of the surrogate. Accurate quantitation was not possible. No further corrective action was appropriate.

Internal Standard Exceptions:
The internal standard recovery of Chrysene-d12 in sample WP-2 was outside control criteria because of suspected matrix interference. The sample was reanalyzed at a dilution. The internal standard in question was within control criteria in the diluted analysis. All affected analytes were reported from the diluted analysis. No further corrective action was appropriate.

Lab Control Sample Exceptions:
The advisory criterion was exceeded for Benzoic Acid in the replicate Laboratory Control Samples (LCS/DLCS) KWG1507842-3 and KWG1507842-4. As per the ALS/Kelso Standard Operating Procedure (SOP) for this method, this compound is not included in the subset of analytes used to control the analysis. The recovery information reported for this analyte is for advisory purposes only (i.e. to provide additional detail related to the performance of each individual compound). No further corrective action was required.

Elevated Detection Limits:
Sample WP-2 required dilutions due to the presence of elevated levels of Butyl Benzyl Phthalate and Bis(2-ethylhexyl) Phthalate. The reporting limits were adjusted to reflect the dilution.

Sample WP-3 required dilution due to the presence of elevated levels of Fluoranthene and Bis(2-ethylhexyl) Phthalate. The reporting limits were adjusted to reflect the dilution.

Sample Notes and Discussion:
The following analytes could not be adequately resolved in sample WP-2: Benzo(b)fluoranthene and Benzo(k)fluoranthene. The results for these compounds were integrated together and reported as Benzo(b)fluoranthene. The results for both analytes were flagged with "X" to indicate the issue.

The results reported for Benz(a)anthracene in sample WP-2 may contain a slight bias. The chromatogram indicated the presence of non-target background components. The matrix interference may have resulted in a slight high bias in the affected sample. The results were flagged with "X" to indicate the issue.

No other anomalies associated with the analysis of these samples were observed.

<u>Dioxins and Furans by EPA Method 1613B</u>

The analysis for Dioxins and Furans was performed at ALS Environmental in Houston, Texas. The data for this analysis is included in the corresponding section of this report.

Approved by_____

Chain of Custody

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CHAIN OF CUSTODY

ALS Environmental

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SR# W15091053

PAGE 1 OF 2 COC#

PROJECT NAME: Bremerton 2015
PROJECT NUMBER: Bremerton 2015
PROJECT MANAGER: Bill Fox
COMPANY NAME: Cosmopolitan Marine Engineering
ADDRESS: 9612 Kopachuck Dr NW
CITY/STATE/ZIP: Gig Harbor, WA 98335
E-MAIL ADDRESS: bfox@cosmopolitaneng.com
PHONE #: 253-265-2958 FAX #:
SAMPLER'S SIGNATURE: Lauren Fox

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☒ 8270LL☐ SIM PAH☐	Volatile Organics 624☐ 8260☐ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCBs Aroclors ☒ Congeners ☐	Pesticides/Herbicides 608☐ 8081☐ 8141☐ 8151☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	Metals, Total or Dissolved (See List below)	Cyanide☐ Hex-Chrom☐	(circle) pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS, Turb.	(circle) NH3-N, COD, TKN, DOC, NO2+NO3, T-Phos	TOX 9020☐ AOX 1650☐ 506☐	Alkalinity ☐ CO3☐ HCO3☐	Dioxins/Furans 1613☒ 8290☐	Dissolved Gases RSK 175☐ Methane☐ Ethane☐ Ethene☐ CO2☐	NH3-Plumb 350.1M, PSEP TS	Sulfide 9030M	PSEP Particle Size	REMARKS
WP-1	8/17/15	10:45		sed	4	X				X			X			X			X		X	X	X	
WP-2	8/17/15	10:32		sed	4	X				X			X			X			X		X	X	X	
WP-3	8/17/15	10:02		sed	4	X				X			X			X			X		X	X	X	
WP-4	8/17/15	11:02		sed	4	X				X			X			X			X		X	X	X	
WP-5	8/17/15	11:21		sed	4	X				X			X			X			X		X	X	X	
EP-3	8/17/15	12:39		sed	1																		X	
EP-4	8/17/15	13:05		sed	1																		X	
OF12-2	8/17/15	14:12		sed	1																		X	

REPORT REQUIREMENTS

- ☒ I. Routine Report: Method Blank, Surrogate, as required
- ___ II. Report Dup., MS, MSD as required
- ___ III. CLP Like Summary (no raw data)
- ___ IV. Data Validation Report
- ___ V. EDD

INVOICE INFORMATION

P.O. #
Bill To: CME
PO Box 623
Gig Harbor, WA 98335

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 day
☒ Standard (15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al (As) Sb Ba Be B Ca (Cr) Co (Cu) (Mo) Fe (Pb) Mg Mn Mo Ni K (Ag) Na Se Sr Tl Sn V (Zn) (Hg)

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: ___ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Lauren Fox — Date/Time: 8/18/15 11:45	Signature: [signature] — Date/Time: 8/18/15 1405	Signature: — Date/Time:	Signature: — Date/Time:
Printed Name: Lauren Fox — Firm: CME	Printed Name: Anna Plymale — Firm: MB	Printed Name: — Firm:	Printed Name: — Firm:

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SR# H1509053

PAGE 2 OF 2 COC#

PROJECT NAME: Bremerton 2015
PROJECT NUMBER: Bremerton 2015
PROJECT MANAGER: Bill Fox
COMPANY NAME: Cosmopolitan Marine Engineering
ADDRESS: 9612 Kopachuck Dr NW
CITY/STATE/ZIP: Gig Harbor, WA 98335
E-MAIL ADDRESS: bfox@cosmopolitaneng.com
PHONE #: 253-265-2958 FAX #:
SAMPLER'S SIGNATURE: Lauren Fox

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☒ 8270LL☐ SIM PAH☐	Volatile Organics 624☐ 8260☐ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCBs Aroclors☒ Congeners☐	Pesticides/Herbicides 608☐ 8081☐ 8141☐ 8151☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	Metals, Total or Dissolved (See List below)	Cyanide☐ Hex-Chrom☐	(circle) pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS, Turb.	(circle) NH3-N, COD, TKN, TOC, DOC, NO2+NO3, T-Phos	TOX 9020☐ AOX 1650☐ 506☐	Alkalinity ☐ CO3☐ HCO3☐	Dioxins/Furans 1613☒ 8290☐	Dissolved Gases RSK 175☐ Methane☐ Ethane☐ Ethene☐ CO2☐	NH3-Plumb 350.1M, PSEP TS	Sulfide 9030M	PSEP Particle Size	REMARKS
EP-1	8/18/15	8:09		sed	2																		X	2 8oz jars
EP-5	8/18/15	8:40		sed	2																		X	2 8oz jars
OF7-2	8/18/15	9:07		sed	4	X				X			X			X		X		X	X	X		
OF7-1	8/18/15	9:52		sed	3	X				X			X			X		X		X	X			
OF7-3	8/18/15	10:45		sed	4	X				X			X			X		X		X	X	X		

REPORT REQUIREMENTS

X I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
___ IV. Data Validation Report
___ V. EDD

INVOICE INFORMATION

P.O. #
Bill To: BME
PO Box 623
Gig Harbor, WA 98335

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 day
X Standard (15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Lauren Fox — Date/Time: 8/18/15 11:45	Signature: [illegible] — Date/Time: 8/18/15 1405	Signature: — Date/Time:	Signature: — Date/Time:
Printed Name: Lauren Fox — Firm: CME	Printed Name: Anna Ryazvile — Firm: ALS	Printed Name: — Firm:	Printed Name: — Firm:

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DNR-00008616

PC #2

Cooler Receipt and Preservation Form

Client / Project: Cosmo. Marine Engineering Service Request K15 09053

Received: 8/18/15 Opened: 8/18/15 By: KL Unloaded: 8/18/15 By: KL

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

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-2.8	-2.8	8.2	8.2	.0	349	1 of 2		
3.9	4.0	3.3	3.4	+0.1	323	2 of 2		

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

Sample ID on Bottle	Sample ID on COC	Identified by:

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

Notes, Discrepancies, & Resolutions: *Sample DF 7-3 has a ~~date of~~ time of 10:45 on COC all jars have 10:22

Page ____ *of* ____

Total Solids

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 - 08/18/15
Sample Matrix:	Sediment	**Date Received:**	08/18/15
Analysis Method:	PSEP TS	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
WP-1	K1509053-001	**28.2**	-	-	1	08/19/15 16:58	
WP-2	K1509053-002	**29.1**	-	-	1	08/19/15 16:58	
WP-3	K1509053-003	**47.7**	-	-	1	08/19/15 16:58	
WP-4	K1509053-004	**31.2**	-	-	1	08/19/15 16:58	
WP-5	K1509053-005	**24.8**	-	-	1	08/19/15 16:58	
EP-3	K1509053-006	**95.6**	-	-	1	08/19/15 16:58	
EP-4	K1509053-007	**94.5**	-	-	1	08/19/15 16:58	
OF12-2	K1509053-008	**81.0**	-	-	1	08/19/15 16:58	
EP-1	K1509053-009	**95.0**	-	-	1	08/19/15 16:58	
EP-5	K1509053-010	**94.7**	-	-	1	08/19/15 16:58	
OF7-2	K1509053-011	**75.5**	-	-	1	08/19/15 16:58	
OF7-1	K1509053-012	**77.3**	-	-	1	08/19/15 16:58	
OF7-3	K1509053-013	**72.5**	-	-	1	08/19/15 16:58	

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QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 - 08/18/15
Sample Matrix:	Sediment	**Date Received:**	08/18/15
Analysis Method:	PSEP TS	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Replicate Sample Summary
Solids, Total

Sample Name:	Lab Code:	MRL	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
WP-1	K1509053-001DUP	-	-	28.2	28.1	28.2	<1	10	08/19/15
OF7-2	K1509053-011DUP	-	-	75.5	75.7	75.6	<1	10	08/19/15

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 - 08/18/15
Sample Matrix:	Sediment	**Date Received:**	08/18/15
Analysis Method:	350.1M	**Units:**	mg/Kg
Prep Method:	EPA Plumb 5-1981 KCl	**Basis:**	Dry

Ammonia as Nitrogen

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
WP-1	K1509053-001	**96.2**	3.5	0.3	2	08/25/15 10:51	8/20/15	
WP-2	K1509053-002	**22.7**	1.7	0.2	1	08/25/15 10:51	8/20/15	
WP-3	K1509053-003	**9.6**	1.0	0.09	1	08/25/15 10:51	8/20/15	
WP-4	K1509053-004	**18.6**	1.6	0.2	1	08/25/15 10:51	8/20/15	
WP-5	K1509053-005	**44.9**	2.0	0.2	1	08/25/15 10:51	8/20/15	
OF7-2	K1509053-011	**5.65**	0.65	0.06	1	08/25/15 10:51	8/20/15	
OF7-1	K1509053-012	**5.10**	0.63	0.06	1	08/25/15 10:51	8/20/15	
OF7-3	K1509053-013	**4.94**	0.68	0.06	1	08/25/15 10:51	8/20/15	
Method Blank	K1509053-MB	**0.09**	0.50	0.04	1	08/25/15 10:51	8/20/15	**J**

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QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project	Bremerton 2015/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
		Date Analyzed:	08/25/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1508937-001	**Basis:**	Dry

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1508937-001DUP Result	Average	RPD	RPD Limit
Ammonia as Nitrogen	350.1M	0.91	0.08	38.9	40.2	39.6	3	32

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	N/A
Sample Matrix:	Sediment	**Date Received:**	N/A
		Date Analyzed:	08/25/15
		Date Extracted:	08/20/15

Duplicate Matrix Spike Summary
Ammonia as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1508937-001	**Basis:**	Dry
Analysis Method:	350.1M		
Prep Method:	EPA Plumb 5-1981 KCl		

		Matrix Spike K1508937-001MS			**Duplicate Matrix Spike** K1508937-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Ammonia as Nitrogen	38.9	716	898	75	849	882	92	55-135	17	32

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Analyzed:**	08/25/15
Sample Matrix:	Sediment	**Date Extracted:**	08/20/15

Lab Control Sample Summary
Ammonia as Nitrogen

Analysis Method:	350.1M	**Units:**	mg/Kg
Prep Method:	EPA Plumb 5-1981 KCl	**Basis:**	Dry
		Analysis Lot:	458774

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1509053-LCS	15.2	16.2	94	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 - 08/18/15
Sample Matrix:	Sediment	**Date Received:**	08/18/15
Analysis Method:	9030M	**Units:**	mg/Kg
Prep Method:	EPA 9030B Modified	**Basis:**	Dry

Sulfide, Total

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
WP-1	K1509053-001	**1390**	180	80	100	08/19/15 21:23	8/19/15	
WP-2	K1509053-002	**1360**	140	60	80	08/19/15 21:23	8/19/15	
WP-3	K1509053-003	**1520**	100	50	100	08/19/15 21:23	8/19/15	
WP-4	K1509053-004	**610**	130	60	80	08/19/15 21:23	8/19/15	
WP-5	K1509053-005	**900**	160	70	80	08/19/15 21:23	8/19/15	
OF7-2	K1509053-011	**36.1**	2.6	1.1	4	08/19/15 21:23	8/19/15	
OF7-1	K1509053-012	**6.71**	0.65	0.26	1	08/19/15 21:23	8/19/15	
OF7-3	K1509053-013	**40.8**	6.9	2.8	10	08/19/15 21:23	8/19/15	
Method Blank	K1509053-MB	ND	0.50	0.20	1	08/19/15 21:23	8/19/15	U

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QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15
Sample Matrix:	Sediment	**Date Received:**	08/18/15
		Date Analyzed:	08/19/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	WP-1	**Units:**	mg/Kg
Lab Code:	K1509053-001	**Basis:**	Dry

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1509053-001DUP Result	Average	RPD	RPD Limit
Sulfide, Total	9030M	180	80	1390	1600	1490	14	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15
Sample Matrix:	Sediment	**Date Received:**	08/18/15
		Date Analyzed:	08/19/15
		Date Extracted:	08/19/15

Duplicate Matrix Spike Summary
Sulfide, Total

Sample Name:	WP-1	**Units:**	mg/Kg
Lab Code:	K1509053-001	**Basis:**	Dry
Analysis Method:	9030M		
Prep Method:	EPA 9030B Modified		

		Matrix Spike K1509053-001MS			Duplicate Matrix Spike K1509053-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Sulfide, Total	1390	4180	2820	99	4070	2830	95	45-150	3	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Analyzed:**	08/19/15
Sample Matrix:	Sediment	**Date Extracted:**	08/19/15

Lab Control Sample Summary
Sulfide, Total

Analysis Method:	9030M	**Units:**	mg/Kg
Prep Method:	EPA 9030B Modified	**Basis:**	Dry
		Analysis Lot:	458556

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1509053-LCS	5.78	8.06	72	55-130

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 - 08/18/15
Sample Matrix:	Sediment	**Date Received:**	08/18/15
Analysis Method:	9060	**Units:**	Percent
Prep Method:	Method	**Basis:**	Dry, per Method

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
WP-1	K1509053-001	**4.49**	0.10	0.02	1	09/07/15 18:17	9/7/15	
WP-2	K1509053-002	**8.43**	0.10	0.02	1	09/07/15 18:17	9/7/15	
WP-3	K1509053-003	**3.87**	0.10	0.02	1	09/07/15 18:17	9/7/15	
WP-4	K1509053-004	**5.57**	0.10	0.02	1	09/07/15 18:17	9/7/15	
WP-5	K1509053-005	**3.85**	0.10	0.02	1	09/07/15 18:17	9/7/15	
OF7-2	K1509053-011	**0.28**	0.10	0.02	1	09/07/15 18:17	9/7/15	
OF7-1	K1509053-012	**0.41**	0.10	0.02	1	09/07/15 18:17	9/7/15	
OF7-3	K1509053-013	**0.34**	0.10	0.02	1	09/07/15 18:17	9/7/15	
Method Blank	K1509053-MB	ND U	0.10	0.02	1	09/07/15 18:17	9/7/15	

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QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project	Bremerton 2015/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
		Date Analyzed:	09/07/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	Percent
Lab Code:	K1508445-001	**Basis:**	Dry, per Method

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K1508445-001DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic (TOC)	9060	0.10	0.02	2.76	2.65	2.71	4	20

Results flagged with an asterisk (*) indicate values outside control criteria.

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	N/A
Sample Matrix:	Sediment	**Date Received:**	N/A
		Date Analyzed:	09/7/15
		Date Extracted:	09/7/15

Duplicate Matrix Spike Summary
Carbon, Total Organic (TOC)

Sample Name:	Batch QC	**Units:**	Percent
Lab Code:	K1508445-001	**Basis:**	Dry, per Method
Analysis Method:	9060		
Prep Method:	Method		

		Matrix Spike K1508445-001MS			Duplicate Matrix Spike K1508445-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Carbon, Total Organic (TOC)	2.76	5.71	3.01	98	5.60	2.99	95	70-122	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Analyzed:**	09/07/15
Sample Matrix:	Sediment	**Date Extracted:**	09/07/15

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method:	9060	**Units:**	Percent
Prep Method:	Method	**Basis:**	Dry, per Method
		Analysis Lot:	461498

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1509053-LCS	0.590	0.54	109	72-122

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	8/17/2015
Sample Matrix:	Sediment	**Date Received:**	8/18/2015
		Date Analyzed:	9/9/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: WP-1
Lab Code: K1509053-001

Sand Fraction: Dry Weight (Grams)	0.5145
Sand Fraction: Weight Recovered (Grams)	0.4957
Sand Fraction: Percent Recovery	96.35

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	0.0000	0.00
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	0.0091	0.11
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	0.0203	0.24
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	0.0308	0.37
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	0.0668	0.80
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	0.1213	1.45
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	5.6650	67.49
Clay (< 0.0039 mm)	> 8 Ø	2.6750	31.87
	Total	8.5883	102.33

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	8/17/2015
Sample Matrix:	Sediment	**Date Received:**	8/18/2015
		Date Analyzed:	9/9/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: WP-2
Lab Code: K1509053-002

Sand Fraction: Dry Weight (Grams)	2.0225
Sand Fraction: Weight Recovered (Grams)	2.0319
Sand Fraction: Percent Recovery	100.46

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	0.3014	3.84
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	0.3035	3.87
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	0.2201	2.80
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	0.5511	7.02
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	0.4543	5.79
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	0.1260	1.61
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	3.7900	48.28
Clay (< 0.0039 mm)	> 8 Ø	2.3900	30.45
	Total	8.1364	103.66

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	8/17/2015
Sample Matrix:	Sediment	**Date Received:**	8/18/2015
		Date Analyzed:	9/9/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: WP-3
Lab Code: K1509053-003

Sand Fraction: Dry Weight (Grams)	7.8015
Sand Fraction: Weight Recovered (Grams)	7.8990
Sand Fraction: Percent Recovery	101.25

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	0.2326	1.53
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	0.3086	2.03
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	0.8942	5.88
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	3.0690	20.18
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	2.5228	16.59
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	0.8283	5.45
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	4.5000	29.60
Clay (< 0.0039 mm)	> 8 Ø	2.8000	18.42
	Total	15.1555	99.68

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	8/17/2015
Sample Matrix:	Sediment	**Date Received:**	8/18/2015
		Date Analyzed:	9/9/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: WP-4
Lab Code: K1509053-004

Sand Fraction: Dry Weight (Grams)	1.4440
Sand Fraction: Weight Recovered (Grams)	1.4538
Sand Fraction: Percent Recovery	100.68

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	0.0810	0.83
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	0.1637	1.68
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	0.1629	1.68
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	0.3863	3.97
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	0.4603	4.73
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	0.1771	1.82
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	5.4700	56.25
Clay (< 0.0039 mm)	> 8 Ø	3.3050	33.99
	Total	10.2063	104.95

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	8/17/2015
Sample Matrix:	Sediment	**Date Received:**	8/18/2015
		Date Analyzed:	9/9/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: WP-5
Lab Code: K1509053-005

Sand Fraction: Dry Weight (Grams)	0.4004
Sand Fraction: Weight Recovered (Grams)	0.3944
Sand Fraction: Percent Recovery	98.50

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	0.0000	0.00
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	0.0070	0.09
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	0.0087	0.12
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	0.0123	0.17
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	0.0159	0.21
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	0.0984	1.33
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	4.8700	65.74
Clay (< 0.0039 mm)	> 8 Ø	2.7000	36.44
	Total	7.7123	104.10

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	8/17/2015
Sample Matrix:	Sediment	**Date Received:**	8/18/2015
		Date Analyzed:	9/9/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: EP-3
Lab Code: K1509053-006

Sand Fraction: Dry Weight (Grams)	99.2294
Sand Fraction: Weight Recovered (Grams)	99.2453
Sand Fraction: Percent Recovery	100.02

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	98.8240	98.79
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	0.1756	0.18
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	0.0530	0.05
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	0.0442	0.04
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	0.0643	0.06
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	0.0635	0.06
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	0.1050	0.10
Clay (< 0.0039 mm)	> 8 Ø	0.2000	0.20
	Total	99.5296	99.48

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	8/17/2015
Sample Matrix:	Sediment	**Date Received:**	8/18/2015
		Date Analyzed:	9/9/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: EP-4
Lab Code: K1509053-007

Sand Fraction: Dry Weight (Grams)	109.1471
Sand Fraction: Weight Recovered (Grams)	109.1079
Sand Fraction: Percent Recovery	99.96

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	108.7636	102.85
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	0.2008	0.19
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	0.0391	0.04
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	0.0256	0.02
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	0.0333	0.03
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	0.0350	0.03
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	0.0600	0.06
Clay (< 0.0039 mm)	> 8 Ø	0.0900	0.09
	Total	109.2474	103.31

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	8/17/2015
Sample Matrix:	Sediment	**Date Received:**	8/18/2015
		Date Analyzed:	9/9/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: OF12-2
Lab Code: K1509053-008

Sand Fraction: Dry Weight (Grams)	90.8091
Sand Fraction: Weight Recovered (Grams)	90.8328
Sand Fraction: Percent Recovery	100.03

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	85.9260	88.73
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	2.1761	2.25
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	0.7513	0.78
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	1.5111	1.56
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	0.3516	0.36
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	0.0807	0.08
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	0.0900	0.09
Clay (< 0.0039 mm)	> 8 Ø	0.3000	0.31
	Total	91.1868	94.16

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	8/18/2015
Sample Matrix:	Sediment	**Date Received:**	8/18/2015
		Date Analyzed:	9/9/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: EP-1
Lab Code: K1509053-009

Sand Fraction: Dry Weight (Grams)	91.8386
Sand Fraction: Weight Recovered (Grams)	91.9133
Sand Fraction: Percent Recovery	100.08

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	91.5809	92.31
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	0.1478	0.15
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	0.0179	0.02
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	0.0246	0.02
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	0.0441	0.04
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	0.0569	0.06
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	-0.0300	0.00
Clay (< 0.0039 mm)	> 8 Ø	0.4750	0.48
	Total	92.3172	93.08

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	8/18/2015
Sample Matrix:	Sediment	**Date Received:**	8/18/2015
		Date Analyzed:	9/9/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: EP-5
Lab Code: K1509053-010

Sand Fraction:	Dry Weight (Grams)	88.9909
Sand Fraction:	Weight Recovered (Grams)	89.0385
Sand Fraction:	Percent Recovery	100.05

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	86.7860	89.73
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	1.6084	1.66
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	0.2996	0.31
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	0.1662	0.17
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	0.0944	0.10
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	0.0639	0.07
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	0.0100	0.01
Clay (< 0.0039 mm)	> 8 Ø	0.5450	0.56
	Total	89.5735	92.61

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	8/18/2015
Sample Matrix:	Sediment	**Date Received:**	8/18/2015
		Date Analyzed:	9/9/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: OF7-2
Lab Code: K1509053-011

Sand Fraction:	Dry Weight (Grams)	49.8707
Sand Fraction:	Weight Recovered (Grams)	49.8818
Sand Fraction:	Percent Recovery	100.02

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	1.2417	2.34
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	0.8151	1.54
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	2.4540	4.63
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	13.0884	24.69
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	25.5762	48.24
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	6.4401	12.15
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	1.5600	2.94
Clay (< 0.0039 mm)	> 8 Ø	1.7550	3.31
	Total	52.9305	99.84

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	8/18/2015
Sample Matrix:	Sediment	**Date Received:**	8/18/2015
		Date Analyzed:	9/9/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: OF7-3
Lab Code: K1509053-013

Sand Fraction: Dry Weight (Grams)	40.6135
Sand Fraction: Weight Recovered (Grams)	40.5499
Sand Fraction: Percent Recovery	99.84

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	0.0425	0.10
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	0.1274	0.29
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	1.0504	2.36
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	10.4945	23.61
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	25.1779	56.65
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	3.5799	8.06
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	1.6900	3.80
Clay (< 0.0039 mm)	> 8 Ø	2.1000	4.73
	Total	44.2626	99.60

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
		Date Analyzed:	9/9/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: Batch QC
Lab Code: K1509063-003

Sand Fraction: Dry Weight (Grams)	12.8770
Sand Fraction: Weight Recovered (Grams)	12.8405
Sand Fraction: Percent Recovery	99.72

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	0.0046	0.03
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	0.0100	0.06
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	0.0271	0.15
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	0.2067	1.17
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	9.1963	52.15
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	2.8131	15.95
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	4.4100	25.01
Clay (< 0.0039 mm)	> 8 Ø	1.3650	7.74
	Total	18.0328	102.26

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
		Date Analyzed:	9/9/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: Batch QC
Lab Code: K1509063-003 DUP

Sand Fraction: Dry Weight (Grams)	12.6845
Sand Fraction: Weight Recovered (Grams)	12.6384
Sand Fraction: Percent Recovery	99.64

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	0.0038	0.02
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	0.0177	0.10
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	0.0262	0.15
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	0.1474	0.86
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	8.2931	48.12
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	3.5939	20.85
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	3.6900	21.41
Clay (< 0.0039 mm)	> 8 Ø	1.8300	10.62
	Total	17.6021	102.13

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
		Date Analyzed:	9/9/2015

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: Batch QC
Lab Code: K1509063-003 TRP

Sand Fraction: Dry Weight (Grams)	12.4027
Sand Fraction: Weight Recovered (Grams)	12.3921
Sand Fraction: Percent Recovery	99.91

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	0.0030	0.02
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	0.0075	0.04
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	0.0204	0.12
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	0.2164	1.28
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	9.0080	53.25
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	2.6566	15.70
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	4.3600	25.77
Clay (< 0.0039 mm)	> 8 Ø	1.2750	7.54
	Total	17.5469	103.72

Metals

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Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Metals
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INORGANIC ANALYSIS DATA PACKAGE

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project No.:	Bremerton 2015	**Date Collected:**	08/17/15
Project Name:	Bremerton 2015	**Date Received:**	08/18/15
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: WP-1 **Lab Code:** K1509053-001

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	6010C	4.6	0.9	2.0	08/22/15	08/22/15	11.7		
Cadmium	6010C	0.23	0.05	2.0	08/22/15	08/22/15	1.60		
Chromium	6010C	0.9	0.1	2.0	08/22/15	08/22/15	58.4		
Copper	6010C	0.9	0.3	2.0	08/22/15	08/22/15	129		
Lead	6010C	2.3	0.5	2.0	08/22/15	08/22/15	66.3		
Mercury	7471B	0.020	0.002	1.0	08/26/15	08/27/15	0.784		
Silver	6010C	0.9	0.2	2.0	08/22/15	08/22/15	1.5		
Zinc	6010C	1.1	0.2	2.0	08/22/15	08/22/15	159		

% Solids: 28.2

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Cosmopolitan Engineering Group
Service Request: K1509053
Project No.: Bremerton 2015
Date Collected: 08/17/15
Project Name: Bremerton 2015
Date Received: 08/18/15
Matrix: SEDIMENT
Units: mg/Kg
Basis: DRY

Sample Name: WP-2
Lab Code: K1509053-002

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	6010C	4.6	0.9	2.0	08/22/15	08/22/15	12.9		
Cadmium	6010C	0.23	0.05	2.0	08/22/15	08/22/15	2.41		
Chromium	6010C	0.9	0.1	2.0	08/22/15	08/22/15	67.2		
Copper	6010C	0.9	0.3	2.0	08/22/15	08/22/15	147		
Lead	6010C	2.3	0.5	2.0	08/22/15	08/22/15	79.1		
Mercury	7471B	0.019	0.002	1.0	08/26/15	08/27/15	0.882		
Silver	6010C	0.9	0.2	2.0	08/22/15	08/22/15	4.1		
Zinc	6010C	1.2	0.2	2.0	08/22/15	08/22/15	207		

% Solids: 29.1

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project No.:	Bremerton 2015	**Date Collected:**	08/17/15
Project Name:	Bremerton 2015	**Date Received:**	08/18/15
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: WP-3 **Lab Code:** K1509053-003

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	6010C	2.8	0.6	2.0	08/22/15	08/22/15	12.9		
Cadmium	6010C	0.14	0.03	2.0	08/22/15	08/22/15	1.41		
Chromium	6010C	0.6	0.1	2.0	08/22/15	08/22/15	44.2		
Copper	6010C	0.6	0.2	2.0	08/22/15	08/22/15	113		
Lead	6010C	1.4	0.3	2.0	08/22/15	08/22/15	77.2		
Mercury	7471B	0.032	0.003	2.0	08/26/15	08/27/15	1.04		
Silver	6010C	0.6	0.1	2.0	08/22/15	08/22/15	3.2		
Zinc	6010C	0.7	0.1	2.0	08/22/15	08/22/15	271		

% Solids: 47.7

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project No.:	Bremerton 2015	**Date Collected:**	08/17/15
Project Name:	Bremerton 2015	**Date Received:**	08/18/15
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: WP-4 **Lab Code:** K1509053-004

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	6010C	4.0	0.8	2.0	08/22/15	08/22/15	14.0		
Cadmium	6010C	0.20	0.04	2.0	08/22/15	08/22/15	2.47		
Chromium	6010C	0.8	0.1	2.0	08/22/15	08/22/15	69.6		
Copper	6010C	0.8	0.3	2.0	08/22/15	08/22/15	158		
Lead	6010C	2.0	0.4	2.0	08/22/15	08/22/15	107		
Mercury	7471B	0.035	0.004	2.0	08/26/15	08/27/15	1.04		
Silver	6010C	0.8	0.2	2.0	08/22/15	08/22/15	4.3		
Zinc	6010C	1.0	0.2	2.0	08/22/15	08/22/15	229		

% Solids: 31.2

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project No.:	Bremerton 2015	**Date Collected:**	08/17/15
Project Name:	Bremerton 2015	**Date Received:**	08/18/15
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: WP-5 **Lab Code:** K1509053-005

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	6010C	5.3	1.1	2.0	08/22/15	08/22/15	12.1		
Cadmium	6010C	0.27	0.05	2.0	08/22/15	08/22/15	1.12		
Chromium	6010C	1.1	0.1	2.0	08/22/15	08/22/15	56.0		
Copper	6010C	1.1	0.4	2.0	08/22/15	08/22/15	120		
Lead	6010C	2.7	0.5	2.0	08/22/15	08/22/15	59.7		
Mercury	7471B	0.019	0.002	1.0	08/26/15	08/27/15	0.742		
Silver	6010C	1.1	0.3	2.0	08/22/15	08/22/15	1.0	J	
Zinc	6010C	1.3	0.3	2.0	08/22/15	08/22/15	140		

% Solids: 24.8

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Cosmopolitan Engineering Group
Service Request: K1509053
Project No.: Bremerton 2015
Date Collected: 08/18/15
Project Name: Bremerton 2015
Date Received: 08/18/15
Matrix: SEDIMENT
Units: mg/Kg
Basis: DRY

Sample Name: OF7-2
Lab Code: K1509053-011

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	6010C	3.5	0.7	2.0	08/22/15	08/22/15	1.9	J	
Cadmium	6010C	0.17	0.03	2.0	08/22/15	08/22/15	0.07	J	
Chromium	6010C	0.7	0.1	2.0	08/22/15	08/22/15	10.3		
Copper	6010C	0.7	0.3	2.0	08/22/15	08/22/15	4.3		
Lead	6010C	1.7	0.3	2.0	08/22/15	08/22/15	4.6		
Mercury	7471B	0.019	0.002	1.0	08/26/15	08/27/15	0.065		
Silver	6010C	0.7	0.2	2.0	08/22/15	08/22/15	0.2	U	
Zinc	6010C	0.9	0.2	2.0	08/22/15	08/22/15	17.4		

% Solids: 75.5

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project No.:	Bremerton 2015	**Date Collected:**	08/18/15
Project Name:	Bremerton 2015	**Date Received:**	08/18/15
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: OF7-1 **Lab Code:** K1509053-012

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	6010C	3.6	0.7	2.0	08/22/15	08/22/15	2.7	J	
Cadmium	6010C	0.18	0.04	2.0	08/22/15	08/22/15	0.11	J	
Chromium	6010C	0.7	0.1	2.0	08/22/15	08/22/15	17.1		
Copper	6010C	0.7	0.3	2.0	08/22/15	08/22/15	8.1		
Lead	6010C	1.8	0.4	2.0	08/22/15	08/22/15	9.1		
Mercury	7471B	0.018	0.002	1.0	08/26/15	08/27/15	0.064		
Silver	6010C	0.7	0.2	2.0	08/22/15	08/22/15	0.2	U	
Zinc	6010C	0.9	0.2	2.0	08/22/15	08/22/15	28.6		

% Solids: 77.3

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Cosmopolitan Engineering Group
Service Request: K1509053
Project No.: Bremerton 2015
Date Collected: 08/18/15
Project Name: Bremerton 2015
Date Received: 08/18/15
Matrix: SEDIMENT
Units: mg/Kg
Basis: DRY

Sample Name: OF7-3
Lab Code: K1509053-013

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	6010C	2.9	0.6	2.0	08/22/15	08/22/15	3.0		
Cadmium	6010C	0.14	0.03	2.0	08/22/15	08/22/15	0.20		
Chromium	6010C	0.6	0.1	2.0	08/22/15	08/22/15	13.1		
Copper	6010C	0.6	0.2	2.0	08/22/15	08/22/15	6.3		
Lead	6010C	1.4	0.3	2.0	08/22/15	08/22/15	6.7		
Mercury	7471B	0.019	0.002	1.0	08/26/15	08/27/15	0.061		
Silver	6010C	0.6	0.1	2.0	08/22/15	08/22/15	0.1	U	
Zinc	6010C	0.7	0.1	2.0	08/22/15	08/22/15	26.0		

% Solids: 72.5

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Cosmopolitan Engineering Group
Service Request: K1509053
Project No.: Bremerton 2015
Date Collected:
Project Name: Bremerton 2015
Date Received:
Matrix: SOIL
Units: mg/Kg
Basis: DRY

Sample Name: Method Blank
Lab Code: KQ1509278-03

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	6010C	4.0	0.8	2.0	08/22/15	08/22/15	0.8	U	
Cadmium	6010C	0.20	0.04	2.0	08/22/15	08/22/15	0.04	U	
Chromium	6010C	0.8	0.1	2.0	08/22/15	08/22/15	0.2	J	
Copper	6010C	0.8	0.3	2.0	08/22/15	08/22/15	0.3	U	
Lead	6010C	2.0	0.4	2.0	08/22/15	08/22/15	0.4	U	
Silver	6010C	0.8	0.2	2.0	08/22/15	08/22/15	0.2	U	
Zinc	6010C	1.0	0.2	2.0	08/22/15	08/22/15	0.2	U	

% Solids: 100.0

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: Cosmopolitan Engineering Group
Service Request: K1509053
Project No.: Bremerton 2015
Date Collected:
Project Name: Bremerton 2015
Date Received:
Matrix: SEDIMENT
Units: mg/Kg
Basis: DRY

Sample Name: Method Blank
Lab Code: KQ1509466-03

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	7471B	0.018	0.002	1.0	08/26/15	08/27/15	0.002	U	

% Solids: 100.0

Comments:

Metals

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SPIKE SAMPLE RECOVERY

Client: Cosmopolitan Engineering Group **Service Request:** K1509053

Project No.: Bremerton 2015 **Units:** MG/KG

Project Name: Bremerton 2015 **Basis:** DRY

Matrix: SLUDGE **% Solids:** 20.8

Sample Name: Batch QC1S **Lab Code:** K1508680-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Arsenic	75 - 125	165		5.8	J	160.00	99.5		6010C
Cadmium	75 - 125	16.9		0.98		16.00	99.5		6010C
Chromium	75 - 125	84.0		18.3		65.00	101.1		6010C
Copper		824		758		81.00	81.5		6010C
Lead	75 - 125	175		22.4		160.00	95.4		6010C
Silver	75 - 125	19.1		3.9		16.00	95.0		6010C
Zinc		817		668		160.00	93.1		6010C

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 5A -

SPIKE SAMPLE RECOVERY

Client: Cosmopolitan Engineering Group **Service Request:** K1509053

Project No.: Bremerton 2015 **Units:** MG/KG

Project Name: Bremerton 2015 **Basis:** DRY

Matrix: SOIL **% Solids:** 29.2

Sample Name: Batch QC2S **Lab Code:** K1509063-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	80 - 120	0.572		0.101		0.48	98.1		7471B

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

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SPIKE SAMPLE RECOVERY

Client: Cosmopolitan Engineering Group **Service Request:** K1509053

Project No.: Bremerton 2015 **Units:** MG/KG

Project Name: Bremerton 2015 **Basis:** DRY

Matrix: SOIL **% Solids:** 29.2

Sample Name: Batch QC2SD **Lab Code:** K1509063-001SD

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	80 - 120	0.549		0.101		0.48	93.3		7471B

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

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DUPLICATES

Client: Cosmopolitan Engineering Group **Service Request:** K1509053

Project No.: Bremerton 2015 **Units:** MG/KG

Project Name: Bremerton 2015 **Basis:** DRY

Matrix: SLUDGE **% Solids:** 20.8

Sample Name: Batch QC1D **Lab Code:** K1508680-001D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Arsenic		5.8	J	5.3	J	9.0		6010C
Cadmium		0.98		1.05		6.9		6010C
Chromium	20	18.3		17.9		2.2		6010C
Copper	20	758		749		1.2		6010C
Lead	20	22.4		20.3		9.8		6010C
Silver		3.9		4.0		2.5		6010C
Zinc	20	668		671		0.4		6010C

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

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DUPLICATES

Client: Cosmopolitan Engineering Group **Service Request:** K1509053

Project No.: Bremerton 2015 **Units:** MG/KG

Project Name: Bremerton 2015 **Basis:** DRY

Matrix: SOIL **% Solids:** 29.2

Sample Name: Batch QC2SD **Lab Code:** K1509063-001SD

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury	20	0.572		0.549		4.1		7471B

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

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LABORATORY CONTROL SAMPLE

Client: Cosmopolitan Engineering Group **Service Request:** K1509053

Project No.: Bremerton 2015

Project Name: Bremerton 2015

Aqueous LCS Source: **Solid LCS Source:** ERA D080-540

Analyte	Aqueous (ug/L) True	Aqueous (ug/L) Found	Aqueous (ug/L) %R	Solid (mg/kg) True	Solid (mg/kg) Found	Solid (mg/kg) C	Solid (mg/kg) Limits	Solid (mg/kg) %R
Arsenic				99.6	105		69 131	105.4
Cadmium				182	179		74 126	98.4
Chromium				136	141		70 130	103.7
Copper				102	106		74 126	103.9
Lead				115	112		72 129	97.4
Mercury				19.9	20.7		51 148	104.0
Silver				40.4	40.9		66 134	101.2
Zinc				161	157		81 119	97.5

Polychlorinated Biphenyls (PCBs)

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Polychlorinated Biphenyls (PCBs)

Sample Name:	WP-1	**Units:**	ug/Kg
Lab Code:	K1509053-001	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	18	5.2	1	08/20/15	08/31/15	KWG1507856	
Aroclor 1221	ND	U	36	3.8	1	08/20/15	08/31/15	KWG1507856	
Aroclor 1232	ND	Ui	18	6.6	1	08/20/15	08/31/15	KWG1507856	
Aroclor 1242	ND	Ui	18	6.1	1	08/20/15	08/31/15	KWG1507856	
Aroclor 1248	ND	Ui	18	4.4	1	08/20/15	08/31/15	KWG1507856	
Aroclor 1254	**31**		18	3.8	1	08/20/15	08/31/15	KWG1507856	
Aroclor 1260	**21**		18	3.8	1	08/20/15	08/31/15	KWG1507856	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	79	43-148	08/31/15	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Polychlorinated Biphenyls (PCBs)

Sample Name:	WP-2	**Units:**	ug/Kg
Lab Code:	K1509053-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	18	3.6	1	08/20/15	08/31/15	KWG1507856	
Aroclor 1221	ND	U	35	3.6	1	08/20/15	08/31/15	KWG1507856	
Aroclor 1232	ND	U	18	3.6	1	08/20/15	08/31/15	KWG1507856	
Aroclor 1242	**36**		18	3.6	1	08/20/15	08/31/15	KWG1507856	
Aroclor 1248	ND	U	18	3.6	1	08/20/15	08/31/15	KWG1507856	
Aroclor 1254	**78**	P	18	3.6	1	08/20/15	08/31/15	KWG1507856	
Aroclor 1260	**64**		18	3.6	1	08/20/15	08/31/15	KWG1507856	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	72	43-148	08/31/15	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Polychlorinated Biphenyls (PCBs)

Sample Name:	WP-3	**Units:**	ug/Kg
Lab Code:	K1509053-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	11	2.2	1	08/20/15	09/03/15	KWG1507856	
Aroclor 1221	ND	U	21	2.2	1	08/20/15	09/03/15	KWG1507856	
Aroclor 1232	ND	U	11	2.2	1	08/20/15	09/03/15	KWG1507856	
Aroclor 1242	**70**		11	2.2	1	08/20/15	09/03/15	KWG1507856	
Aroclor 1248	ND	U	11	2.2	1	08/20/15	09/03/15	KWG1507856	
Aroclor 1254	**140**		11	2.2	1	08/20/15	09/03/15	KWG1507856	
Aroclor 1260	**100**		11	2.2	1	08/20/15	09/03/15	KWG1507856	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	83	43-148	09/03/15	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Polychlorinated Biphenyls (PCBs)

Sample Name:	WP-4	**Units:**	ug/Kg
Lab Code:	K1509053-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	16	3.4	1	08/20/15	08/31/15	KWG1507856	
Aroclor 1221	ND	U	32	3.4	1	08/20/15	08/31/15	KWG1507856	
Aroclor 1232	ND	U	16	3.4	1	08/20/15	08/31/15	KWG1507856	
Aroclor 1242	**13**	J	16	3.4	1	08/20/15	08/31/15	KWG1507856	
Aroclor 1248	ND	U	16	3.4	1	08/20/15	08/31/15	KWG1507856	
Aroclor 1254	**39**		16	3.4	1	08/20/15	08/31/15	KWG1507856	
Aroclor 1260	**33**		16	3.4	1	08/20/15	08/31/15	KWG1507856	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	65	43-148	08/31/15	Acceptable

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Polychlorinated Biphenyls (PCBs)

Sample Name:	WP-5	**Units:**	ug/Kg
Lab Code:	K1509053-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	21	4.3	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1221	ND	U	41	4.3	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1232	ND	U	21	4.3	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1242	ND	U	21	4.3	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1248	ND	U	21	4.3	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1254	**9.1**	J	21	4.3	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1260	**11**	J	21	4.3	1	08/20/15	09/01/15	KWG1507856	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	69	43-148	09/01/15	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/18/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Polychlorinated Biphenyls (PCBs)

Sample Name:	OF7-2	**Units:**	ug/Kg
Lab Code:	K1509053-011	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	6.6	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1221	ND	U	14	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1232	ND	U	6.6	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1242	ND	U	6.6	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1248	ND	U	6.6	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1254	ND	U	6.6	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1260	ND	U	6.6	2.1	1	08/20/15	09/01/15	KWG1507856	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	73	43-148	09/01/15	Acceptable

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/18/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Polychlorinated Biphenyls (PCBs)

Sample Name:	OF7-1	**Units:**	ug/Kg
Lab Code:	K1509053-012	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	6.5	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1221	ND	U	13	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1232	ND	U	6.5	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1242	ND	U	6.5	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1248	ND	U	6.5	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1254	ND	U	6.5	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1260	ND	U	6.5	2.1	1	08/20/15	09/01/15	KWG1507856	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	78	43-148	09/01/15	Acceptable

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/18/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Polychlorinated Biphenyls (PCBs)

Sample Name:	OF7-3	**Units:**	ug/Kg
Lab Code:	K1509053-013	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	6.9	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1221	ND	U	14	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1232	ND	U	6.9	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1242	ND	U	6.9	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1248	ND	U	6.9	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1254	ND	U	6.9	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1260	ND	U	6.9	2.1	1	08/20/15	09/01/15	KWG1507856	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	51	43-148	09/01/15	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1507856-4	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	5.0	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1221	ND	U	9.9	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1232	ND	U	5.0	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1242	ND	U	5.0	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1248	ND	U	5.0	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1254	ND	U	5.0	2.1	1	08/20/15	09/01/15	KWG1507856	
Aroclor 1260	ND	U	5.0	2.1	1	08/20/15	09/01/15	KWG1507856	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	83	43-148	09/01/15	Acceptable

Comments:

QA/QC Report

Client: Cosmopolitan Engineering Group
Project: Bremerton 2015/Bremerton 2015
Sample Matrix: Soil

Service Request: K1509053

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3541
Analysis Method: 8082A

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1
Batch QC	K1509039-001	102 D
WP-1	K1509053-001	79
WP-2	K1509053-002	72
WP-3	K1509053-003	83
WP-4	K1509053-004	65
WP-5	K1509053-005	69
OF7-2	K1509053-011	73
OF7-1	K1509053-012	78
OF7-3	K1509053-013	51
Method Blank	KWG1507856-4	83
Batch QCMS	KWG1507856-1	80 D
Batch QCDMS	KWG1507856-2	96 D
Lab Control Sample	KWG1507856-3	70

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 43-148

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Extracted:**	08/20/2015
Sample Matrix:	Soil	**Date Analyzed:**	09/02/2015

Matrix Spike/Duplicate Matrix Spike Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	Batch QC	**Units:**	ug/Kg
Lab Code:	K1509039-001	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8082A	**Extraction Lot:**	KWG1507856

		Batch QCMS KWG1507856-1 Matrix Spike			Batch QCDMS KWG1507856-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Aroclor 1016	ND	595	197	302 *	343	194	177 *	23-145	54 *	40
Aroclor 1260	470	709	197	123	625	194	82	24-148	13	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Extracted:**	08/20/2015
Sample Matrix:	Soil	**Date Analyzed:**	09/01/2015

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	8082A	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1507856

	Lab Control Sample KWG1507856-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Aroclor 1016	127	200	64	42-122
Aroclor 1260	167	200	83	50-124

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Semi-Volatile Organic Compounds by GC/MS

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	WP-1	**Units:**	ug/Kg
Lab Code:	K1509053-001	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	ND	U	53	5.5	1	08/20/15	09/10/15	KWG1507842	
1,4-Dichlorobenzene	ND	U	18	4.5	1	08/20/15	09/10/15	KWG1507842	
1,2-Dichlorobenzene	ND	U	18	4.3	1	08/20/15	09/10/15	KWG1507842	
Benzyl Alcohol	ND	U	36	8.7	1	08/20/15	09/10/15	KWG1507842	
Benzoic Acid	ND	U	710	170	1	08/20/15	09/10/15	KWG1507842	*
1,2,4-Trichlorobenzene	ND	U	18	4.6	1	08/20/15	09/10/15	KWG1507842	
2-Methylphenol	ND	U	18	7.3	1	08/20/15	09/10/15	KWG1507842	
4-Methylphenol†	ND	U	18	8.0	1	08/20/15	09/10/15	KWG1507842	
2,4-Dimethylphenol	ND	U	89	12	1	08/20/15	09/10/15	KWG1507842	
Naphthalene	ND	U	18	5.2	1	08/20/15	09/10/15	KWG1507842	
Hexachlorobutadiene	ND	U	18	5.3	1	08/20/15	09/10/15	KWG1507842	
2-Methylnaphthalene	ND	U	18	5.0	1	08/20/15	09/10/15	KWG1507842	
Acenaphthylene	ND	U	18	4.6	1	08/20/15	09/10/15	KWG1507842	
Dimethyl Phthalate	ND	U	18	7.1	1	08/20/15	09/10/15	KWG1507842	
Acenaphthene	ND	U	18	5.7	1	08/20/15	09/10/15	KWG1507842	
Dibenzofuran	**7.0**	J	18	6.1	1	08/20/15	09/10/15	KWG1507842	
Fluorene	**5.9**	J	18	5.9	1	08/20/15	09/10/15	KWG1507842	
Diethyl Phthalate	ND	U	18	6.6	1	08/20/15	09/10/15	KWG1507842	
N-Nitrosodiphenylamine	ND	U	18	5.7	1	08/20/15	09/10/15	KWG1507842	
Hexachlorobenzene	ND	U	18	5.9	1	08/20/15	09/10/15	KWG1507842	
Pentachlorophenol	ND	U	180	9.4	1	08/20/15	09/10/15	KWG1507842	
Phenanthrene	**25**		18	6.4	1	08/20/15	09/10/15	KWG1507842	
Anthracene	**7.3**	J	18	5.7	1	08/20/15	09/10/15	KWG1507842	
Di-n-butyl Phthalate	**19**	J	36	8.5	1	08/20/15	09/10/15	KWG1507842	
Fluoranthene	**50**		18	6.6	1	08/20/15	09/10/15	KWG1507842	
Pyrene	**52**		18	6.6	1	08/20/15	09/10/15	KWG1507842	
Butyl Benzyl Phthalate	ND	U	18	6.6	1	08/20/15	09/10/15	KWG1507842	
Benz(a)anthracene	**32**		18	6.4	1	08/20/15	09/10/15	KWG1507842	
Chrysene	**38**		18	7.3	1	08/20/15	09/10/15	KWG1507842	
Bis(2-ethylhexyl) Phthalate	**430**		180	16	1	08/20/15	09/10/15	KWG1507842	
Di-n-octyl Phthalate	ND	U	18	5.7	1	08/20/15	09/10/15	KWG1507842	
Benzo(b)fluoranthene	**46**		18	6.1	1	08/20/15	09/10/15	KWG1507842	
Benzo(k)fluoranthene	**17**	J	18	7.1	1	08/20/15	09/10/15	KWG1507842	

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	WP-1	**Units:**	ug/Kg
Lab Code:	K1509053-001	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzo(a)pyrene	**43**		18	6.4	1	08/20/15	09/10/15	KWG1507842	
Indeno(1,2,3-cd)pyrene	**34**		18	5.7	1	08/20/15	09/10/15	KWG1507842	
Dibenz(a,h)anthracene	ND	U	18	5.3	1	08/20/15	09/10/15	KWG1507842	
Benzo(g,h,i)perylene	**30**		18	6.6	1	08/20/15	09/10/15	KWG1507842	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Phenol-d6	35	20-86	09/10/15	Acceptable
Nitrobenzene-d5	38	27-91	09/10/15	Acceptable
2-Fluorobiphenyl	31	25-97	09/10/15	Acceptable
2,4,6-Tribromophenol	52	10-119	09/10/15	Acceptable
Terphenyl-d14	34	33-129	09/10/15	Acceptable

† **Analyte Comments**

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	WP-2	**Units:**	ug/Kg
Lab Code:	K1509053-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	**62**		52	5.4	1	08/20/15	09/10/15	KWG1507842	
1,4-Dichlorobenzene	**56**		18	4.3	1	08/20/15	09/10/15	KWG1507842	
1,2-Dichlorobenzene	ND	U	18	4.2	1	08/20/15	09/10/15	KWG1507842	
Benzyl Alcohol	ND	U	35	8.4	1	08/20/15	09/10/15	KWG1507842	
Benzoic Acid	ND	U	690	170	1	08/20/15	09/10/15	KWG1507842	*
1,2,4-Trichlorobenzene	**12**	J	18	4.5	1	08/20/15	09/10/15	KWG1507842	
2-Methylphenol	ND	U	18	7.1	1	08/20/15	09/10/15	KWG1507842	
4-Methylphenol†	**48**		18	7.8	1	08/20/15	09/10/15	KWG1507842	
2,4-Dimethylphenol	ND	U	86	11	1	08/20/15	09/10/15	KWG1507842	
Naphthalene	**39**		18	5.0	1	08/20/15	09/10/15	KWG1507842	
Hexachlorobutadiene	ND	U	18	5.2	1	08/20/15	09/10/15	KWG1507842	
2-Methylnaphthalene	**60**		18	4.8	1	08/20/15	09/10/15	KWG1507842	
Acenaphthylene	**17**	J	18	4.5	1	08/20/15	09/10/15	KWG1507842	
Dimethyl Phthalate	ND	U	18	6.9	1	08/20/15	09/10/15	KWG1507842	
Acenaphthene	**15**	J	18	5.5	1	08/20/15	09/10/15	KWG1507842	
Dibenzofuran	ND	U	18	5.9	1	08/20/15	09/10/15	KWG1507842	
Fluorene	**27**		18	5.7	1	08/20/15	09/10/15	KWG1507842	
Diethyl Phthalate	**44**		18	6.4	1	08/20/15	09/10/15	KWG1507842	
N-Nitrosodiphenylamine	ND	U	18	5.5	1	08/20/15	09/10/15	KWG1507842	
Hexachlorobenzene	ND	U	18	5.7	1	08/20/15	09/10/15	KWG1507842	
Pentachlorophenol	ND	U	180	9.1	1	08/20/15	09/10/15	KWG1507842	
Phenanthrene	**140**		18	6.2	1	08/20/15	09/10/15	KWG1507842	
Anthracene	**46**		18	5.5	1	08/20/15	09/10/15	KWG1507842	
Di-n-butyl Phthalate	**130**		35	8.3	1	08/20/15	09/10/15	KWG1507842	
Fluoranthene	**150**		18	6.4	1	08/20/15	09/10/15	KWG1507842	
Pyrene	**230**	D	86	32	5	08/20/15	09/16/15	KWG1507842	
Butyl Benzyl Phthalate	**4500**	D	86	32	5	08/20/15	09/16/15	KWG1507842	
Benz(a)anthracene	**140**	DX	86	31	5	08/20/15	09/16/15	KWG1507842	
Chrysene	**120**	D	86	36	5	08/20/15	09/16/15	KWG1507842	
Bis(2-ethylhexyl) Phthalate	**8500**	D	1800	160	10	08/20/15	09/18/15	KWG1507842	
Di-n-octyl Phthalate	**140**		18	5.5	1	08/20/15	09/10/15	KWG1507842	
Benzo(b)fluoranthene	**140**	X	18	5.9	1	08/20/15	09/10/15	KWG1507842	
Benzo(k)fluoranthene	ND	UX	18	6.9	1	08/20/15	09/10/15	KWG1507842	

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	WP-2	**Units:**	ug/Kg
Lab Code:	K1509053-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzo(a)pyrene	**98**		18	6.2	1	08/20/15	09/10/15	KWG1507842	
Indeno(1,2,3-cd)pyrene	**59**		18	5.5	1	08/20/15	09/10/15	KWG1507842	
Dibenz(a,h)anthracene	**16**	J	18	5.2	1	08/20/15	09/10/15	KWG1507842	
Benzo(g,h,i)perylene	**71**		18	6.4	1	08/20/15	09/10/15	KWG1507842	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Phenol-d6	31	20-86	09/10/15	Acceptable
Nitrobenzene-d5	47	27-91	09/10/15	Acceptable
2-Fluorobiphenyl	29	25-97	09/10/15	Acceptable
2,4,6-Tribromophenol	50	10-119	09/10/15	Acceptable
Terphenyl-d14	35	33-129	09/16/15	Acceptable

† Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	WP-3	**Units:**	ug/Kg
Lab Code:	K1509053-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	ND	U	32	3.3	1	08/20/15	09/10/15	KWG1507842	
1,4-Dichlorobenzene	**85**		11	2.6	1	08/20/15	09/10/15	KWG1507842	
1,2-Dichlorobenzene	ND	U	11	2.5	1	08/20/15	09/10/15	KWG1507842	
Benzyl Alcohol	ND	U	21	5.1	1	08/20/15	09/10/15	KWG1507842	
Benzoic Acid	ND	U	420	100	1	08/20/15	09/10/15	KWG1507842	*
1,2,4-Trichlorobenzene	ND	U	11	2.7	1	08/20/15	09/10/15	KWG1507842	
2-Methylphenol	ND	U	11	4.3	1	08/20/15	09/10/15	KWG1507842	
4-Methylphenol†	**65**		11	4.7	1	08/20/15	09/10/15	KWG1507842	
2,4-Dimethylphenol	ND	U	52	6.6	1	08/20/15	09/10/15	KWG1507842	
Naphthalene	**6.6**	J	11	3.1	1	08/20/15	09/10/15	KWG1507842	
Hexachlorobutadiene	ND	U	11	3.2	1	08/20/15	09/10/15	KWG1507842	
2-Methylnaphthalene	**14**		11	3.0	1	08/20/15	09/10/15	KWG1507842	
Acenaphthylene	**14**		11	2.7	1	08/20/15	09/10/15	KWG1507842	
Dimethyl Phthalate	ND	U	11	4.2	1	08/20/15	09/10/15	KWG1507842	
Acenaphthene	**15**		11	3.4	1	08/20/15	09/10/15	KWG1507842	
Dibenzofuran	**9.1**	J	11	3.6	1	08/20/15	09/10/15	KWG1507842	
Fluorene	**27**		11	3.5	1	08/20/15	09/10/15	KWG1507842	
Diethyl Phthalate	ND	U	11	3.9	1	08/20/15	09/10/15	KWG1507842	
N-Nitrosodiphenylamine	ND	U	11	3.4	1	08/20/15	09/10/15	KWG1507842	
Hexachlorobenzene	ND	U	11	3.5	1	08/20/15	09/10/15	KWG1507842	
Pentachlorophenol	ND	U	110	5.5	1	08/20/15	09/10/15	KWG1507842	
Phenanthrene	**390**		11	3.8	1	08/20/15	09/10/15	KWG1507842	
Anthracene	**190**		11	3.4	1	08/20/15	09/10/15	KWG1507842	
Di-n-butyl Phthalate	**31**		21	5.0	1	08/20/15	09/10/15	KWG1507842	
Fluoranthene	**1300**	D	52	20	5	08/20/15	09/16/15	KWG1507842	
Pyrene	**980**		11	3.9	1	08/20/15	09/10/15	KWG1507842	
Butyl Benzyl Phthalate	**140**		11	3.9	1	08/20/15	09/10/15	KWG1507842	
Benz(a)anthracene	**620**		11	3.8	1	08/20/15	09/10/15	KWG1507842	
Chrysene	**540**		11	4.3	1	08/20/15	09/10/15	KWG1507842	
Bis(2-ethylhexyl) Phthalate	**1800**	D	520	47	5	08/20/15	09/16/15	KWG1507842	
Di-n-octyl Phthalate	ND	U	11	3.4	1	08/20/15	09/10/15	KWG1507842	
Benzo(b)fluoranthene	**700**		11	3.6	1	08/20/15	09/10/15	KWG1507842	
Benzo(k)fluoranthene	**230**		11	4.2	1	08/20/15	09/10/15	KWG1507842	

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	WP-3	**Units:**	ug/Kg
Lab Code:	K1509053-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzo(a)pyrene	**600**		11	3.8	1	08/20/15	09/10/15	KWG1507842	
Indeno(1,2,3-cd)pyrene	**410**		11	3.4	1	08/20/15	09/10/15	KWG1507842	
Dibenz(a,h)anthracene	**89**		11	3.2	1	08/20/15	09/10/15	KWG1507842	
Benzo(g,h,i)perylene	**370**		11	3.9	1	08/20/15	09/10/15	KWG1507842	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Phenol-d6	21	20-86	09/10/15	Acceptable
Nitrobenzene-d5	30	27-91	09/10/15	Acceptable
2-Fluorobiphenyl	24	25-97	09/10/15	Outside Control Limits
2,4,6-Tribromophenol	39	10-119	09/10/15	Acceptable
Terphenyl-d14	22	33-129	09/10/15	Outside Control Limits

† **Analyte Comments**

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	WP-4	**Units:**	ug/Kg
Lab Code:	K1509053-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	ND	U	48	5.0	1	08/20/15	09/10/15	KWG1507842	
1,4-Dichlorobenzene	**19**		16	4.0	1	08/20/15	09/10/15	KWG1507842	
1,2-Dichlorobenzene	ND	U	16	3.9	1	08/20/15	09/10/15	KWG1507842	
Benzyl Alcohol	ND	U	32	7.9	1	08/20/15	09/10/15	KWG1507842	
Benzoic Acid	ND	U	640	160	1	08/20/15	09/10/15	KWG1507842	*
1,2,4-Trichlorobenzene	**10**	J	16	4.2	1	08/20/15	09/10/15	KWG1507842	
2-Methylphenol	ND	U	16	6.6	1	08/20/15	09/10/15	KWG1507842	
4-Methylphenol†	ND	U	16	7.2	1	08/20/15	09/10/15	KWG1507842	
2,4-Dimethylphenol	ND	U	80	11	1	08/20/15	09/10/15	KWG1507842	
Naphthalene	ND	U	16	4.7	1	08/20/15	09/10/15	KWG1507842	
Hexachlorobutadiene	ND	U	16	4.8	1	08/20/15	09/10/15	KWG1507842	
2-Methylnaphthalene	**18**		16	4.5	1	08/20/15	09/10/15	KWG1507842	
Acenaphthylene	**9.2**	J	16	4.2	1	08/20/15	09/10/15	KWG1507842	
Dimethyl Phthalate	**15**	J	16	6.4	1	08/20/15	09/10/15	KWG1507842	
Acenaphthene	ND	U	16	5.2	1	08/20/15	09/10/15	KWG1507842	
Dibenzofuran	ND	U	16	5.5	1	08/20/15	09/10/15	KWG1507842	
Fluorene	**11**	J	16	5.3	1	08/20/15	09/10/15	KWG1507842	
Diethyl Phthalate	ND	U	16	6.0	1	08/20/15	09/10/15	KWG1507842	
N-Nitrosodiphenylamine	ND	U	16	5.2	1	08/20/15	09/10/15	KWG1507842	
Hexachlorobenzene	ND	U	16	5.3	1	08/20/15	09/10/15	KWG1507842	
Pentachlorophenol	ND	U	160	8.5	1	08/20/15	09/10/15	KWG1507842	
Phenanthrene	**69**		16	5.8	1	08/20/15	09/10/15	KWG1507842	
Anthracene	**23**		16	5.2	1	08/20/15	09/10/15	KWG1507842	
Di-n-butyl Phthalate	**29**	J	32	7.7	1	08/20/15	09/10/15	KWG1507842	
Fluoranthene	**130**		16	6.0	1	08/20/15	09/10/15	KWG1507842	
Pyrene	**130**		16	6.0	1	08/20/15	09/10/15	KWG1507842	
Butyl Benzyl Phthalate	**190**		16	6.0	1	08/20/15	09/10/15	KWG1507842	
Benz(a)anthracene	**75**		16	5.8	1	08/20/15	09/10/15	KWG1507842	
Chrysene	**78**		16	6.6	1	08/20/15	09/10/15	KWG1507842	
Bis(2-ethylhexyl) Phthalate	**590**		160	15	1	08/20/15	09/10/15	KWG1507842	
Di-n-octyl Phthalate	ND	U	16	5.2	1	08/20/15	09/10/15	KWG1507842	
Benzo(b)fluoranthene	**96**		16	5.5	1	08/20/15	09/10/15	KWG1507842	
Benzo(k)fluoranthene	**37**		16	6.4	1	08/20/15	09/10/15	KWG1507842	

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	WP-4	**Units:**	ug/Kg
Lab Code:	K1509053-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzo(a)pyrene	**89**		16	5.8	1	08/20/15	09/10/15	KWG1507842	
Indeno(1,2,3-cd)pyrene	**70**		16	5.2	1	08/20/15	09/10/15	KWG1507842	
Dibenz(a,h)anthracene	**17**		16	4.8	1	08/20/15	09/10/15	KWG1507842	
Benzo(g,h,i)perylene	**73**		16	6.0	1	08/20/15	09/10/15	KWG1507842	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Phenol-d6	33	20-86	09/10/15	Acceptable
Nitrobenzene-d5	51	27-91	09/10/15	Acceptable
2-Fluorobiphenyl	41	25-97	09/10/15	Acceptable
2,4,6-Tribromophenol	70	10-119	09/10/15	Acceptable
Terphenyl-d14	38	33-129	09/10/15	Acceptable

† **Analyte Comments**

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	WP-5	**Units:**	ug/Kg
Lab Code:	K1509053-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	ND	U	61	6.3	1	08/20/15	09/10/15	KWG1507842	
1,4-Dichlorobenzene	ND	U	21	5.1	1	08/20/15	09/10/15	KWG1507842	
1,2-Dichlorobenzene	ND	U	21	4.9	1	08/20/15	09/10/15	KWG1507842	
Benzyl Alcohol	ND	U	41	9.9	1	08/20/15	09/10/15	KWG1507842	
Benzoic Acid	ND	U	810	200	1	08/20/15	09/10/15	KWG1507842	*
1,2,4-Trichlorobenzene	ND	U	21	5.3	1	08/20/15	09/10/15	KWG1507842	
2-Methylphenol	ND	U	21	8.3	1	08/20/15	09/10/15	KWG1507842	
4-Methylphenol†	ND	U	21	9.1	1	08/20/15	09/10/15	KWG1507842	
2,4-Dimethylphenol	ND	U	110	13	1	08/20/15	09/10/15	KWG1507842	
Naphthalene	ND	U	21	5.9	1	08/20/15	09/10/15	KWG1507842	
Hexachlorobutadiene	ND	U	21	6.1	1	08/20/15	09/10/15	KWG1507842	
2-Methylnaphthalene	ND	U	21	5.7	1	08/20/15	09/10/15	KWG1507842	
Acenaphthylene	**5.5**	J	21	5.3	1	08/20/15	09/10/15	KWG1507842	
Dimethyl Phthalate	ND	U	21	8.1	1	08/20/15	09/10/15	KWG1507842	
Acenaphthene	ND	U	21	6.5	1	08/20/15	09/10/15	KWG1507842	
Dibenzofuran	ND	U	21	6.9	1	08/20/15	09/10/15	KWG1507842	
Fluorene	ND	U	21	6.7	1	08/20/15	09/10/15	KWG1507842	
Diethyl Phthalate	ND	U	21	7.5	1	08/20/15	09/10/15	KWG1507842	
N-Nitrosodiphenylamine	ND	U	21	6.5	1	08/20/15	09/10/15	KWG1507842	
Hexachlorobenzene	ND	U	21	6.7	1	08/20/15	09/10/15	KWG1507842	
Pentachlorophenol	ND	U	210	11	1	08/20/15	09/10/15	KWG1507842	
Phenanthrene	**21**		21	7.3	1	08/20/15	09/10/15	KWG1507842	
Anthracene	**12**	J	21	6.5	1	08/20/15	09/10/15	KWG1507842	
Di-n-butyl Phthalate	**15**	J	41	9.7	1	08/20/15	09/10/15	KWG1507842	
Fluoranthene	**58**		21	7.5	1	08/20/15	09/10/15	KWG1507842	
Pyrene	**59**		21	7.5	1	08/20/15	09/10/15	KWG1507842	
Butyl Benzyl Phthalate	**64**		21	7.5	1	08/20/15	09/10/15	KWG1507842	
Benz(a)anthracene	**38**		21	7.3	1	08/20/15	09/10/15	KWG1507842	
Chrysene	**42**		21	8.3	1	08/20/15	09/10/15	KWG1507842	
Bis(2-ethylhexyl) Phthalate	**73**	J	210	18	1	08/20/15	09/10/15	KWG1507842	
Di-n-octyl Phthalate	ND	U	21	6.5	1	08/20/15	09/10/15	KWG1507842	
Benzo(b)fluoranthene	**59**		21	6.9	1	08/20/15	09/10/15	KWG1507842	
Benzo(k)fluoranthene	**23**		21	8.1	1	08/20/15	09/10/15	KWG1507842	

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	WP-5	**Units:**	ug/Kg
Lab Code:	K1509053-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzo(a)pyrene	**52**		21	7.3	1	08/20/15	09/10/15	KWG1507842	
Indeno(1,2,3-cd)pyrene	**43**		21	6.5	1	08/20/15	09/10/15	KWG1507842	
Dibenz(a,h)anthracene	**11**	J	21	6.1	1	08/20/15	09/10/15	KWG1507842	
Benzo(g,h,i)perylene	**41**		21	7.5	1	08/20/15	09/10/15	KWG1507842	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Phenol-d6	25	20-86	09/10/15	Acceptable
Nitrobenzene-d5	31	27-91	09/10/15	Acceptable
2-Fluorobiphenyl	33	25-97	09/10/15	Acceptable
2,4,6-Tribromophenol	46	10-119	09/10/15	Acceptable
Terphenyl-d14	35	33-129	09/10/15	Acceptable

† **Analyte Comments**

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/18/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	OF7-2	**Units:**	ug/Kg
Lab Code:	K1509053-011	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	**11**	J	20	3.1	1	08/20/15	09/11/15	KWG1507842	
1,4-Dichlorobenzene	ND	U	6.6	2.5	1	08/20/15	09/11/15	KWG1507842	
1,2-Dichlorobenzene	ND	U	6.6	2.4	1	08/20/15	09/11/15	KWG1507842	
Benzyl Alcohol	ND	U	14	4.9	1	08/20/15	09/11/15	KWG1507842	
Benzoic Acid	ND	U	400	96	1	08/20/15	09/11/15	KWG1507842	*
1,2,4-Trichlorobenzene	ND	U	6.6	2.6	1	08/20/15	09/11/15	KWG1507842	
2-Methylphenol	ND	U	7.5	4.1	1	08/20/15	09/11/15	KWG1507842	
4-Methylphenol†	ND	U	7.5	4.5	1	08/20/15	09/11/15	KWG1507842	
2,4-Dimethylphenol	ND	U	33	6.3	1	08/20/15	09/11/15	KWG1507842	
Naphthalene	ND	U	6.6	2.9	1	08/20/15	09/11/15	KWG1507842	
Hexachlorobutadiene	ND	U	6.6	3.0	1	08/20/15	09/11/15	KWG1507842	
2-Methylnaphthalene	ND	U	6.6	2.8	1	08/20/15	09/11/15	KWG1507842	
Acenaphthylene	**3.5**	J	6.6	2.6	1	08/20/15	09/11/15	KWG1507842	
Dimethyl Phthalate	ND	U	6.6	4.0	1	08/20/15	09/11/15	KWG1507842	
Acenaphthene	ND	U	6.6	3.2	1	08/20/15	09/11/15	KWG1507842	
Dibenzofuran	ND	U	6.6	3.4	1	08/20/15	09/11/15	KWG1507842	
Fluorene	ND	U	6.6	3.3	1	08/20/15	09/11/15	KWG1507842	
Diethyl Phthalate	ND	U	6.6	3.7	1	08/20/15	09/11/15	KWG1507842	
N-Nitrosodiphenylamine	ND	U	6.6	3.2	1	08/20/15	09/11/15	KWG1507842	
Hexachlorobenzene	ND	U	6.6	3.3	1	08/20/15	09/11/15	KWG1507842	
Pentachlorophenol	ND	U	66	5.3	1	08/20/15	09/11/15	KWG1507842	
Phenanthrene	**6.4**	J	6.6	3.6	1	08/20/15	09/11/15	KWG1507842	
Anthracene	**7.0**		6.6	3.2	1	08/20/15	09/11/15	KWG1507842	
Di-n-butyl Phthalate	ND	U	14	4.8	1	08/20/15	09/11/15	KWG1507842	
Fluoranthene	**24**		6.6	3.7	1	08/20/15	09/11/15	KWG1507842	
Pyrene	**27**		6.6	3.7	1	08/20/15	09/11/15	KWG1507842	
Butyl Benzyl Phthalate	ND	U	6.6	3.7	1	08/20/15	09/11/15	KWG1507842	
Benz(a)anthracene	**15**		6.6	3.6	1	08/20/15	09/11/15	KWG1507842	
Chrysene	**16**		6.6	4.1	1	08/20/15	09/11/15	KWG1507842	
Bis(2-ethylhexyl) Phthalate	ND	U	66	8.9	1	08/20/15	09/11/15	KWG1507842	
Di-n-octyl Phthalate	ND	U	6.6	3.2	1	08/20/15	09/11/15	KWG1507842	
Benzo(b)fluoranthene	**16**		6.6	3.4	1	08/20/15	09/11/15	KWG1507842	
Benzo(k)fluoranthene	**5.7**	J	6.6	4.0	1	08/20/15	09/11/15	KWG1507842	

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/18/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	OF7-2	**Units:**	ug/Kg
Lab Code:	K1509053-011	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzo(a)pyrene	**16**		6.6	3.6	1	08/20/15	09/11/15	KWG1507842	
Indeno(1,2,3-cd)pyrene	**11**		6.6	3.2	1	08/20/15	09/11/15	KWG1507842	
Dibenz(a,h)anthracene	ND	U	6.6	3.0	1	08/20/15	09/11/15	KWG1507842	
Benzo(g,h,i)perylene	**11**		6.6	3.7	1	08/20/15	09/11/15	KWG1507842	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Phenol-d6	37	20-86	09/11/15	Acceptable
Nitrobenzene-d5	49	27-91	09/11/15	Acceptable
2-Fluorobiphenyl	41	25-97	09/11/15	Acceptable
2,4,6-Tribromophenol	69	10-119	09/11/15	Acceptable
Terphenyl-d14	44	33-129	09/11/15	Acceptable

† **Analyte Comments**

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/18/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	OF7-1	**Units:**	ug/Kg
Lab Code:	K1509053-012	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	ND	U	20	3.1	1	08/20/15	09/11/15	KWG1507842	
1,4-Dichlorobenzene	ND	U	6.5	2.5	1	08/20/15	09/11/15	KWG1507842	
1,2-Dichlorobenzene	ND	U	6.5	2.4	1	08/20/15	09/11/15	KWG1507842	
Benzyl Alcohol	ND	U	13	4.9	1	08/20/15	09/11/15	KWG1507842	
Benzoic Acid	ND	U	400	96	1	08/20/15	09/11/15	KWG1507842	*
1,2,4-Trichlorobenzene	ND	U	6.5	2.6	1	08/20/15	09/11/15	KWG1507842	
2-Methylphenol	ND	U	7.5	4.1	1	08/20/15	09/11/15	KWG1507842	
4-Methylphenol†	ND	U	7.5	4.5	1	08/20/15	09/11/15	KWG1507842	
2,4-Dimethylphenol	ND	U	33	6.3	1	08/20/15	09/11/15	KWG1507842	
Naphthalene	ND	U	6.5	2.9	1	08/20/15	09/11/15	KWG1507842	
Hexachlorobutadiene	ND	U	6.5	3.0	1	08/20/15	09/11/15	KWG1507842	
2-Methylnaphthalene	ND	U	6.5	2.8	1	08/20/15	09/11/15	KWG1507842	
Acenaphthylene	ND	U	6.5	2.6	1	08/20/15	09/11/15	KWG1507842	
Dimethyl Phthalate	ND	U	6.5	4.0	1	08/20/15	09/11/15	KWG1507842	
Acenaphthene	ND	U	6.5	3.2	1	08/20/15	09/11/15	KWG1507842	
Dibenzofuran	ND	U	6.5	3.4	1	08/20/15	09/11/15	KWG1507842	
Fluorene	ND	U	6.5	3.3	1	08/20/15	09/11/15	KWG1507842	
Diethyl Phthalate	ND	U	6.5	3.7	1	08/20/15	09/11/15	KWG1507842	
N-Nitrosodiphenylamine	ND	U	6.5	3.2	1	08/20/15	09/11/15	KWG1507842	
Hexachlorobenzene	ND	U	6.5	3.3	1	08/20/15	09/11/15	KWG1507842	
Pentachlorophenol	ND	U	65	5.3	1	08/20/15	09/11/15	KWG1507842	
Phenanthrene	**15**		6.5	3.6	1	08/20/15	09/11/15	KWG1507842	
Anthracene	**5.2**	J	6.5	3.2	1	08/20/15	09/11/15	KWG1507842	
Di-n-butyl Phthalate	ND	U	13	4.8	1	08/20/15	09/11/15	KWG1507842	
Fluoranthene	**21**		6.5	3.7	1	08/20/15	09/11/15	KWG1507842	
Pyrene	**26**		6.5	3.7	1	08/20/15	09/11/15	KWG1507842	
Butyl Benzyl Phthalate	ND	U	6.5	3.7	1	08/20/15	09/11/15	KWG1507842	
Benz(a)anthracene	**13**		6.5	3.6	1	08/20/15	09/11/15	KWG1507842	
Chrysene	**16**		6.5	4.1	1	08/20/15	09/11/15	KWG1507842	
Bis(2-ethylhexyl) Phthalate	ND	U	65	8.9	1	08/20/15	09/11/15	KWG1507842	
Di-n-octyl Phthalate	ND	U	6.5	3.2	1	08/20/15	09/11/15	KWG1507842	
Benzo(b)fluoranthene	**14**		6.5	3.4	1	08/20/15	09/11/15	KWG1507842	
Benzo(k)fluoranthene	**4.8**	J	6.5	4.0	1	08/20/15	09/11/15	KWG1507842	

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/18/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	OF7-1	**Units:**	ug/Kg
Lab Code:	K1509053-012	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzo(a)pyrene	**15**		6.5	3.6	1	08/20/15	09/11/15	KWG1507842	
Indeno(1,2,3-cd)pyrene	**13**		6.5	3.2	1	08/20/15	09/11/15	KWG1507842	
Dibenz(a,h)anthracene	**4.7**	J	6.5	3.0	1	08/20/15	09/11/15	KWG1507842	
Benzo(g,h,i)perylene	**10**		6.5	3.7	1	08/20/15	09/11/15	KWG1507842	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Phenol-d6	28	20-86	09/11/15	Acceptable
Nitrobenzene-d5	42	27-91	09/11/15	Acceptable
2-Fluorobiphenyl	35	25-97	09/11/15	Acceptable
2,4,6-Tribromophenol	65	10-119	09/11/15	Acceptable
Terphenyl-d14	45	33-129	09/11/15	Acceptable

† **Analyte Comments**

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/18/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	OF7-3	**Units:**	ug/Kg
Lab Code:	K1509053-013	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	ND	U	21	3.1	1	08/20/15	09/11/15	KWG1507842	
1,4-Dichlorobenzene	ND	U	6.9	2.5	1	08/20/15	09/11/15	KWG1507842	
1,2-Dichlorobenzene	ND	U	6.9	2.4	1	08/20/15	09/11/15	KWG1507842	
Benzyl Alcohol	ND	U	14	4.9	1	08/20/15	09/11/15	KWG1507842	
Benzoic Acid	ND	U	400	96	1	08/20/15	09/11/15	KWG1507842	*
1,2,4-Trichlorobenzene	ND	U	6.9	2.6	1	08/20/15	09/11/15	KWG1507842	
2-Methylphenol	ND	U	7.5	4.1	1	08/20/15	09/11/15	KWG1507842	
4-Methylphenol†	ND	U	7.5	4.5	1	08/20/15	09/11/15	KWG1507842	
2,4-Dimethylphenol	ND	U	35	6.3	1	08/20/15	09/11/15	KWG1507842	
Naphthalene	ND	U	6.9	2.9	1	08/20/15	09/11/15	KWG1507842	
Hexachlorobutadiene	ND	U	6.9	3.0	1	08/20/15	09/11/15	KWG1507842	
2-Methylnaphthalene	ND	U	6.9	2.8	1	08/20/15	09/11/15	KWG1507842	
Acenaphthylene	**2.8**	J	6.9	2.6	1	08/20/15	09/11/15	KWG1507842	
Dimethyl Phthalate	ND	U	6.9	4.0	1	08/20/15	09/11/15	KWG1507842	
Acenaphthene	ND	U	6.9	3.2	1	08/20/15	09/11/15	KWG1507842	
Dibenzofuran	ND	U	6.9	3.4	1	08/20/15	09/11/15	KWG1507842	
Fluorene	ND	U	6.9	3.3	1	08/20/15	09/11/15	KWG1507842	
Diethyl Phthalate	ND	U	6.9	3.7	1	08/20/15	09/11/15	KWG1507842	
N-Nitrosodiphenylamine	ND	U	6.9	3.2	1	08/20/15	09/11/15	KWG1507842	
Hexachlorobenzene	ND	U	6.9	3.3	1	08/20/15	09/11/15	KWG1507842	
Pentachlorophenol	ND	U	69	5.3	1	08/20/15	09/11/15	KWG1507842	
Phenanthrene	**8.2**		6.9	3.6	1	08/20/15	09/11/15	KWG1507842	
Anthracene	**8.5**		6.9	3.2	1	08/20/15	09/11/15	KWG1507842	
Di-n-butyl Phthalate	ND	U	14	4.8	1	08/20/15	09/11/15	KWG1507842	
Fluoranthene	**19**		6.9	3.7	1	08/20/15	09/11/15	KWG1507842	
Pyrene	**22**		6.9	3.7	1	08/20/15	09/11/15	KWG1507842	
Butyl Benzyl Phthalate	ND	U	6.9	3.7	1	08/20/15	09/11/15	KWG1507842	
Benz(a)anthracene	**11**		6.9	3.6	1	08/20/15	09/11/15	KWG1507842	
Chrysene	**9.5**		6.9	4.1	1	08/20/15	09/11/15	KWG1507842	
Bis(2-ethylhexyl) Phthalate	ND	U	69	8.9	1	08/20/15	09/11/15	KWG1507842	
Di-n-octyl Phthalate	ND	U	6.9	3.2	1	08/20/15	09/11/15	KWG1507842	
Benzo(b)fluoranthene	**9.4**		6.9	3.4	1	08/20/15	09/11/15	KWG1507842	
Benzo(k)fluoranthene	ND	U	6.9	4.0	1	08/20/15	09/11/15	KWG1507842	

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/18/2015
Sample Matrix:	Sediment	**Date Received:**	08/18/2015

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	OF7-3	**Units:**	ug/Kg
Lab Code:	K1509053-013	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzo(a)pyrene	**12**		6.9	3.6	1	08/20/15	09/11/15	KWG1507842	
Indeno(1,2,3-cd)pyrene	**6.7**	J	6.9	3.2	1	08/20/15	09/11/15	KWG1507842	
Dibenz(a,h)anthracene	ND	U	6.9	3.0	1	08/20/15	09/11/15	KWG1507842	
Benzo(g,h,i)perylene	**8.1**		6.9	3.7	1	08/20/15	09/11/15	KWG1507842	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Phenol-d6	31	20-86	09/11/15	Acceptable
Nitrobenzene-d5	46	27-91	09/11/15	Acceptable
2-Fluorobiphenyl	36	25-97	09/11/15	Acceptable
2,4,6-Tribromophenol	61	10-119	09/11/15	Acceptable
Terphenyl-d14	33	33-129	09/11/15	Acceptable

† **Analyte Comments**

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1507842-5	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	ND	U	15	3.1	1	08/20/15	09/10/15	KWG1507842	
1,4-Dichlorobenzene	ND	U	5.0	2.5	1	08/20/15	09/10/15	KWG1507842	
1,2-Dichlorobenzene	ND	U	5.0	2.4	1	08/20/15	09/10/15	KWG1507842	
Benzyl Alcohol	ND	U	9.9	4.9	1	08/20/15	09/10/15	KWG1507842	
Benzoic Acid	ND	U	400	96	1	08/20/15	09/10/15	KWG1507842	*
1,2,4-Trichlorobenzene	ND	U	5.0	2.6	1	08/20/15	09/10/15	KWG1507842	
2-Methylphenol	ND	U	7.5	4.1	1	08/20/15	09/10/15	KWG1507842	
4-Methylphenol†	ND	U	7.5	4.5	1	08/20/15	09/10/15	KWG1507842	
2,4-Dimethylphenol	ND	U	25	6.3	1	08/20/15	09/10/15	KWG1507842	
Naphthalene	ND	U	5.0	2.9	1	08/20/15	09/10/15	KWG1507842	
Hexachlorobutadiene	ND	U	5.0	3.0	1	08/20/15	09/10/15	KWG1507842	
2-Methylnaphthalene	ND	U	5.0	2.8	1	08/20/15	09/10/15	KWG1507842	
Acenaphthylene	ND	U	5.0	2.6	1	08/20/15	09/10/15	KWG1507842	
Dimethyl Phthalate	ND	U	5.0	4.0	1	08/20/15	09/10/15	KWG1507842	
Acenaphthene	ND	U	5.0	3.2	1	08/20/15	09/10/15	KWG1507842	
Dibenzofuran	ND	U	5.0	3.4	1	08/20/15	09/10/15	KWG1507842	
Fluorene	ND	U	5.0	3.3	1	08/20/15	09/10/15	KWG1507842	
Diethyl Phthalate	ND	U	5.0	3.7	1	08/20/15	09/10/15	KWG1507842	
N-Nitrosodiphenylamine	ND	U	5.0	3.2	1	08/20/15	09/10/15	KWG1507842	
Hexachlorobenzene	ND	U	5.0	3.3	1	08/20/15	09/10/15	KWG1507842	
Pentachlorophenol	ND	U	50	5.3	1	08/20/15	09/10/15	KWG1507842	
Phenanthrene	ND	U	5.0	3.6	1	08/20/15	09/10/15	KWG1507842	
Anthracene	ND	U	5.0	3.2	1	08/20/15	09/10/15	KWG1507842	
Di-n-butyl Phthalate	ND	U	10	4.8	1	08/20/15	09/10/15	KWG1507842	
Fluoranthene	ND	U	5.0	3.7	1	08/20/15	09/10/15	KWG1507842	
Pyrene	ND	U	5.0	3.7	1	08/20/15	09/10/15	KWG1507842	
Butyl Benzyl Phthalate	ND	U	5.0	3.7	1	08/20/15	09/10/15	KWG1507842	
Benz(a)anthracene	ND	U	5.0	3.6	1	08/20/15	09/10/15	KWG1507842	
Chrysene	ND	U	5.0	4.1	1	08/20/15	09/10/15	KWG1507842	
Bis(2-ethylhexyl) Phthalate	ND	U	50	8.9	1	08/20/15	09/10/15	KWG1507842	
Di-n-octyl Phthalate	ND	U	5.0	3.2	1	08/20/15	09/10/15	KWG1507842	
Benzo(b)fluoranthene	ND	U	5.0	3.4	1	08/20/15	09/10/15	KWG1507842	
Benzo(k)fluoranthene	ND	U	5.0	4.0	1	08/20/15	09/10/15	KWG1507842	

Comments:

Analytical Results

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1507842-5	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzo(a)pyrene	ND	U	5.0	3.6	1	08/20/15	09/10/15	KWG1507842	
Indeno(1,2,3-cd)pyrene	ND	U	5.0	3.2	1	08/20/15	09/10/15	KWG1507842	
Dibenz(a,h)anthracene	ND	U	5.0	3.0	1	08/20/15	09/10/15	KWG1507842	
Benzo(g,h,i)perylene	ND	U	5.0	3.7	1	08/20/15	09/10/15	KWG1507842	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Phenol-d6	34	20-86	09/10/15	Acceptable
Nitrobenzene-d5	47	27-91	09/10/15	Acceptable
2-Fluorobiphenyl	46	25-97	09/10/15	Acceptable
2,4,6-Tribromophenol	70	10-119	09/10/15	Acceptable
Terphenyl-d14	54	33-129	09/10/15	Acceptable

† **Analyte Comments**

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

QA/QC Report

Client: Cosmopolitan Engineering Group
Project: Bremerton 2015/Bremerton 2015
Sample Matrix: Sediment

Service Request: K1509053

Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270D

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4	Sur5
WP-1	K1509053-001	35	38	31	52	34
WP-2	K1509053-002	31	47	29	50	35 D
WP-3	K1509053-003	21	30	24 *	39	22 *
WP-4	K1509053-004	33	51	41	70	38
WP-5	K1509053-005	25	31	33	46	35
OF7-2	K1509053-011	37	49	41	69	44
OF7-1	K1509053-012	28	42	35	65	45
OF7-3	K1509053-013	31	46	36	61	33
Batch QC	K1509063-003	48	66	53	77	42
Method Blank	KWG1507842-5	34	47	46	70	54
Batch QCMS	KWG1507842-1	38	56	47	66	43
Batch QCDMS	KWG1507842-2	36	51	41	72	41
Lab Control Sample	KWG1507842-3	38	51	48	69	53
Duplicate Lab Control Sample	KWG1507842-4	43	60	49	64	52

Surrogate Recovery Control Limits (%)

Sur1	=	Phenol-d6	20-86	Sur5	=	Terphenyl-d14	33-129
Sur2	=	Nitrobenzene-d5	27-91				
Sur3	=	2-Fluorobiphenyl	25-97				
Sur4	=	2,4,6-Tribromophenol	10-119				

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Extracted:**	08/20/2015
Sample Matrix:	Sediment	**Date Analyzed:**	09/11/2015

Matrix Spike/Duplicate Matrix Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Batch QC	**Units:**	ug/Kg
Lab Code:	K1509063-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1507842

		Batch QCMS KWG1507842-1 Matrix Spike			Batch QCDMS KWG1507842-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Phenol	ND	74.5	208	36	79.6	208	38	15-98	7	40
1,4-Dichlorobenzene	ND	92.5	208	44	82.5	208	40	19-93	11	40
1,2,4-Trichlorobenzene	ND	104	208	50	99.2	208	48	23-99	5	40
Acenaphthene	ND	114	208	55	97.0	208	47	10-132	16	40
Diethyl Phthalate	ND	159	208	76	130	208	63	10-135	20	40
Pentachlorophenol	ND	192	208	92	152	208	73	10-123	23	40
Pyrene	7.4	149	208	68	112	208	50	17-129	29	40
Benzo(a)pyrene	8.4	152	208	69	114	208	51	13-126	29	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: Cosmopolitan Engineering Group
Project: Bremerton 2015/Bremerton 2015
Sample Matrix: Sediment

Service Request: K1509053
Date Extracted: 08/20/2015
Date Analyzed: 09/10/2015

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270D

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1507842

	Lab Control Sample KWG1507842-3 Lab Control Spike				Duplicate Lab Control Sample KWG1507842-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**		**Result**	**Spike Amount**	**%Rec**		**%Rec Limits**	**RPD**	**RPD Limit**
Phenol	95.5	250	38		105	250	42		27-97	9	40
1,4-Dichlorobenzene	96.5	250	39		110	250	44		28-89	13	40
1,2-Dichlorobenzene	103	250	41		115	250	46		27-91	11	40
Benzyl Alcohol	83.5	250	33		114	250	46		25-103	31	40
Benzoic Acid	ND	750	0	*	ND	750	0	*	10-96	NC	40
1,2,4-Trichlorobenzene	119	250	48		126	250	50		27-94	6	40
2-Methylphenol	96.6	250	39		117	250	47		18-95	19	40
4-Methylphenol	116	250	46		120	250	48		17-99	4	40
2,4-Dimethylphenol	313	750	42		350	750	47		10-93	11	40
Naphthalene	106	250	42		119	250	48		27-93	11	40
Hexachlorobutadiene	131	250	52		149	250	60		25-96	13	40
2-Methylnaphthalene	112	250	45		122	250	49		27-96	9	40
Acenaphthylene	116	250	46		140	250	56		33-99	19	40
Dimethyl Phthalate	148	250	59		169	250	68		39-100	13	40
Acenaphthene	119	250	47		129	250	52		32-91	9	40
Dibenzofuran	117	250	47		142	250	57		34-92	19	40
Fluorene	126	250	50		147	250	59		32-96	16	40
Diethyl Phthalate	168	250	67		199	250	79		41-100	17	40
N-Nitrosodiphenylamine	128	250	51		143	250	57		36-96	11	40
Hexachlorobenzene	132	250	53		151	250	61		40-99	14	40
Pentachlorophenol	137	250	55		173	250	69		21-97	23	40
Phenanthrene	143	250	57		151	250	60		39-98	5	40
Anthracene	142	250	57		149	250	60		40-98	5	40
Di-n-butyl Phthalate	183	250	73		190	250	76		42-109	4	40
Fluoranthene	161	250	64		169	250	68		42-104	5	40
Pyrene	154	250	61		179	250	72		45-106	15	40
Butyl Benzyl Phthalate	185	250	74		209	250	83		45-111	12	40
Benz(a)anthracene	151	250	60		183	250	73		44-108	20	40
Chrysene	151	250	61		176	250	70		46-108	15	40
Bis(2-ethylhexyl) Phthalate	184	250	74		222	250	89		47-110	18	40
Di-n-octyl Phthalate	176	250	71		211	250	84		45-109	18	40
Benzo(b)fluoranthene	152	250	61		173	250	69		46-106	13	40
Benzo(k)fluoranthene	148	250	59		175	250	70		47-107	17	40
Benzo(a)pyrene	153	250	61		174	250	70		42-110	13	40
Indeno(1,2,3-cd)pyrene	162	250	65		199	250	80		47-109	21	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Cosmopolitan Engineering Group
Project: Bremerton 2015/Bremerton 2015
Sample Matrix: Sediment

Service Request: K1509053
Date Extracted: 08/20/2015
Date Analyzed: 09/10/2015

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270D

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1507842

	Lab Control Sample KWG1507842-3 Lab Control Spike			Duplicate Lab Control Sample KWG1507842-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Dibenz(a,h)anthracene	162	250	65	195	250	78	47-106	18	40
Benzo(g,h,i)perylene	159	250	64	195	250	78	44-108	20	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Subcontract Lab Results

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September 9, 2015. Service Request No: K1509053

Howard Holmes.

ALS Environmental
1317 South 13th Avenue
Kelso, WA 98626

Laboratory Results for: Cosmopolitan Marine Engineering.

Dear Howard:

Enclosed are the results of the sample(s) submitted to our laboratory on August 20, 2015. For Your reference, these analyses have been assigned our service request number: **K1509053.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and considered in their entirety, and ALS Environmental is not responsible for use of less than the final complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. In accordance to the TNI 2009 Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Please contact me if you have any questions. My direct line is 281-575-2279. You may also contact me via email at Arthi.Kodur@alsglobal.com

Respectfully submitted,

ALS Group USA Corp., dba ALS Environmental

Arthi Kodur
Project Manager

Page 1 of _____

For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com.

Certificate of Analysis

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DNR-00008704

ALS ENVIRONMENTAL

Client:	Cosmopolitan Engineering Group	**Service Request No.:**	K1509053
Project:	Bremerton 2015	**Date Received:**	8/20/15
Sample Matrix:	Sediment		

ALS ENVIRONMENTAL NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Eight sediment samples were received for analysis at ALS Environmental – Houston HRMS on 8/20/15.

The date of receipt currently references the date ALS Environmental-Kelso received the samples (8/18/15) and not the date ALS Environmental-Houston HRMS received the samples (8/20/15).

The samples were received at 4.5°C in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

Method Blank

The Method Blank EQ1500519-01 contained low levels of various analytes were above the EDL, but below the Method Reporting Limit (MRL).

The associated compounds in the samples are flagged with 'B' flags.

MS/MSD

EQ1500519: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu of an MS/DMS for this extraction batch. 1,2,3,4,6,7,8-HpCDF, OCDF and 1,2,3,7,8,9-HxCDF were outside the control limit for EQ1500519-03(DLCS). 1,2,3,7,8,9 HxCDF was also outside the control limit for EQ1500519-02 (LCS).

2378-TCDF

Samples analyzed on the DB-5MSUI column were analyzed under conditions were sufficient separation between 2,3,7,8-TCDF and its closest eluter was achieved. Confirmation of this result was not required.

K flags

EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

Detection Limits

Detection limits are calculated for each analyte in each sample by measuring the height of the noise level for each quantitation ion for the associated labeled standard. The concentration equivalent to 2.5 times the height of the noise is then calculated using the appropriate response factor and the weight of the sample. The calculated concentration equals the detection limit.

The TEQ Summary results for each sample have been calculated by ALS ENVIRONMENTAL/Houston to include:

- WHO-2005 TEFs, The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds (M. Van den Berg et al., Toxicological Sciences 93(2):223-241, 2006)
- Non-detected compounds are not included in the 'Total'

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS group USA Corp dba ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
K1509053-001	WP-1	8/17/2015	1045
K1509053-002	WP-2	8/17/2015	1032
K1509053-003	WP-3	8/17/2015	1002
K1509053-004	WP-4	8/17/2015	1102
K1509053-005	WP-5	8/17/2015	1121
K1509053-006	EP-3	8/17/2015	1239
K1509053-007	EP-4	8/17/2015	1305
K1509053-008	OF12-2	8/17/2015	1412
K1509053-009	EP-1	8/18/2015	0809
K1509053-010	EP-5	8/18/2015	0840
K1509053-011	OF7-2	8/18/2015	0907
K1509053-012	OF7-1	8/18/2015	0952
K1509053-013	OF7-3	8/18/2015	1045

Data Qualifier Flags – Dioxin/Furans

B Indicates the associated analyte is found in the method blank, as well as in the sample

C 2378-TCDF is detected on the DB-5 column above the MRL, confirmation analysis was performed on a second column (DB-225.) The results from both the DB-5 column and the DB-225 column are included in this data package. The results from the DB-225 analyses should be used to evaluate the 2378-TCDF in the samples. The confirmed result are used in determining the TEQ value for TCDF.

E The reported result is above the instrument calibration range and is an estimated value.

J Indicates an estimated value – used when the analyte concentration is below the method reporting limit (MRL) and above the estimated detection limit (EDL)

K Ion abundance ratios between the primary and secondary ions were outside of theoretical acceptance limits. The reported result is an estimated maximum possible concentration (EMPC)

i The associated MRL/MDL has been elevated due to matrix interference.

U Indicates the compound was analyzed for, but not detected (ND)

Y C13-Labeled standard percent recoveries are outside of method acceptance limits

S Peak is saturated; data not reportable

P Indicates chlorodiphenyl ether interference present at the retention time of the target compound.

X See case narrative

DNR-00008708

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

ALS Environmental

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
American Association for Laboratory Accreditation	2897.01	11/30/2015
Arizona Department of Health Services	AZ0793	5/27/2016
Arkansas Department of Environmental Quality	14-038-0	6/16/2016
California Department of Health Services	2452	2/28/2017
Florida Department of Health	E87611	6/30/2016
Illinois Environmental Protection Agency	200057	10/6/2015
Kansas Department of Health and Environment	E-10406	1/31/2016
Louisiana Department of Environmental Quality	03048	6/30/2016
Louisiana Department of Health and Hospitals	LA150026	12/31/2015
Maine Center for Disease Control and Prevention	2014019	6/5/2016
Maryland Department of the Environment	343	6/30/2016
Michigan Depratment of Environmental Quality	9971	6/30/2016
Minnesota Department of Health	840911	12/31/2015
Nebraska Department of Health and Human Services	NE-OS-25-13	6/30/2016
New Mexico Environment Department	TX02694	6/30/2016
New York Department of Health	11707	4/1/2016
Oregon Environmental Laboratory Accreditation Program	TX200002	3/24/2016
Pennsylvania Department of Environmental Protection	68-03441	6/30/2016
Texas Commision on Environmental Quality	TX104704216-14-5	6/30/2016
United States Department of Agriculture	P330-14-00067	2/21/2017
Washington Department of Health	c819	11/14/2015
West Virginia Department of Environmental Protection	347	6/30/2016

ALS Environmental – Houston HRMS
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID: K1509053 DB-5 DB-5MSUI SPB-Octyl

First Level - Data Processing - to be filled by person generating the forms

Date: 9/4/15	Analyst: cer	Samples: 1-5, 11

Second Level - Data Review – to be filled by person doing peer review

Date: 09/08/15	Analyst: [illegible]	Samples: 001, 005, 011

ALS Environmental – Houston HRMS
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID K1509053 DB-5 DB-5MSUI SPB-Octyl

First Level - Data Processing - to be filled by person generating the forms

Date: 9/8/15	Analyst: cee	Samples: 12/13

Second Level - Data Review – to be filled by person doing peer review

Date: 09/08/15	Analyst:	Samples: 012,013

PEER REVIEW PAGE_R04012013.DOC

Chain of Custody

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Intra-Network Chain of Custody

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ALS Contact: Howard Holmes

Project Name: Bremerton 2015
Project Number: Bremerton 2015
Project Manager: William Fox
Company: Cosmopolitan Marine Engineering

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	Dioxins Furans 1613B
K1509053-001	WP-1	1	Sediment	8/17/15	1045	8/18/15	HOUSTON	V
K1509053-002	WP-2		Sediment	8/17/15	1032	8/18/15	HOUSTON	V
K1509053-003	WP-3		Sediment	8/17/15	1002	8/18/15	HOUSTON	V
K1509053-004	WP-4		Sediment	8/17/15	1102	8/18/15	HOUSTON	V
K1509053-005	WP-5		Sediment	8/17/15	1121	8/18/15	HOUSTON	V
K1509053-011	OF7-2		Sediment	8/18/15	0907	8/18/15	HOUSTON	V
K1509053-012	OF7-1		Sediment	8/18/15	0952	8/18/15	HOUSTON	V
K1509053-013	OF7-3		Sediment	8/18/15	1045	8/18/15	HOUSTON	V

Test Comments
Dioxins Furans - 1613B K1509053-001,2,3,4,5,11,12,13 Performed at ALS-Houston, HRMS

Folder Comments:
Tier II

K1509053 5
Cosmopolitan Marine Engineering
Bremerton 2015

Special Instructions/Comments
Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com.

pH Checked _____

Turnaround Requirements
____ **RUSH** (Surcharges Apply)
PLEASE CIRCLE WORK DAYS
1 2 3 4 5
____ **STANDARD**
Requested FAX Date: _____
Requested Report Date: 09/04/15

Report Requirements
____ I. Results Only
____ II. Results + QC Summaries
____ III. Results + QC and Calibration Summaries
____ IV. Data Validation Report with Raw Data
PQL/MDL/J Y
EDD Y

Invoice Information
PO# 51K1509053
Bill to

Relinquished By: 8/19/15 1201 Received By: 8/20/15 Airbill Number: _____

ALS Environmental

Cooler Receipt Form

Project Chemist AK

Client/Project Cosmopolitan Marine Engineering

Thermometer ID SMO 4

Date/Time Received: 8/20/15 915 Initials: AL

Date/Time Logged in: 8/20/15 Initials AL

1. Method of delivery: ○ US Mail ✓ Fed Ex ○ UPS ○ DHL ○ Courier ○ Client

2. Samples received in: ✓ Cooler ○ Box ○ Envelope ○ Other

3. Were custody seals on coolers? ✓ Yes ○ No

Were they intact? ✓ Yes ○ No ○ N/A

Were they signed and dated? ✓ Yes ○ No ○ N/A

If yes, how many and where? 1 Seal

4. Packing Material: ○ Inserts ○ Baggies ✓ Bubble Wrap ✓ Gel Packs ○ Wet Ice ○ Sleeves ○ Other

5. Foreign or Regulated Soil? ○ Yes ✓ No Location of Sampling:

Cooler Tracking Number	COC ID	Date Opened	Time Opened	Opened By	Temp. °C	Temp Blank?
6447 9265 0978		8/20/15	1027	AL	4.3/4.5	✓
						☐
						☐
						☐

6. Were custody papers properly filled out (ink, signed, dated, etc)? ✓ Yes ○ No

7. Did all bottles arrive in good condition (not broken, no signs of leakage)? ✓ Yes ○ No

8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? ✓ Yes ○ No

9. Were appropriate bottles/containers and volumes received for the requested tests? ✓ Yes ○ No

10. Did sample labels and tags agree with custody documents? ✓ Yes ○ No

Notes, Discrepancies, & Resolutions:

Service request Label: K1509053 5

Cosmopolitan Marine Engineering
Bremerton 2015

Effective 10/04/2013

ALS Environmental - Houston HRMS

DNR-00008715

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SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

Preparation Information Benchsheets

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Preparation Information Benchsheet

Prep Run#: 243475 **Prep WorkFlow:** OrgExtS(365) **Status:** Prepped
Team: Semivoa GCMS/DEDWARDS **Prep Method:** Method Soxhlet **Prep Date/Time:** 8/27/15 08:00 AM

#	Lab Code	Client ID	B#	Method /Test	pH	Matrix	Amt. Ext.	Sample Description
1	E1500736-001RE	APRIL 2015	.01	1613B/Dioxins Furans		Sludge, Solid	10.214g	Solids Brown Sludge
2	E1500740-001	SPE016-10G Dioxin and Furans in Soil	.01	1613B/Dioxins Furans		Soil	10.283g	Brown Soil
3	E1500753-001RE	1507170-001D	.01	1613B/Dioxins Furans		Soil	10.109g	Black Soil w/Rocks
4	E1500822-001	3 month Composite: L.S. Dioxin Testing	.01	1613B/Dioxins Furans		Sludge, Solid	10.412g	Brown Soil Solids Ball Soft
5	E1500823-001	3 month Composite: L.S. Dioxin Testing	.01	1613B/Dioxins Furans		Sludge, Solid	10.323g	Brown Soil Solids Ball Soft
6	E1500843-001	SQC #3	.01	1613B/Dioxins Furans		Sludge, Solid	10.274g	Black Soil Soft Moist
7	EQ1500519-01	MB		1613B/Dioxins Furans		Solid	10.073g	
8	EQ1500519-02	LCS		1613B/Dioxins Furans		Solid	10.334g	
9	EQ1500519-03	DLCS		1613B/Dioxins Furans		Solid	10.089g	
10	K1506897-006	Composite	.06	1613B/Dioxins Furans		Paper	10.392g	Brown Paperboard Strips
11	K1507873-001RE	15-200708005 Super Soft Plus	.02	1613B/Dioxins Furans		Pulp Sheet	10.085g	White Pulp Paper
12	K1507874-001RE	W25G140552 Debonder RW	.02	1613B/Dioxins Furans		Pulp Sheet	10.461g	White Pulp Paper
13	K1507978-001RE	N45614082A PN	.05	1613B/Dioxins Furans		Pulp Sheet	10.379g	White Pulp Paper
14	K1509053-001	WP-1	.02	1613B/Dioxins Furans		Sediment	10.249g	Green Watery Sludge
15	K1509053-002	WP-2	.02	1613B/Dioxins Furans		Sediment	10.116g	Green Watery Sludge
16	K1509053-003	WP-3	.02	1613B/Dioxins Furans		Sediment	10.137g	Green Watery Sludge
17	K1509053-004	WP-4	.02	1613B/Dioxins Furans		Sediment	10.262g	Green Watery Sludge
18	K1509053-005	WP-5	.02	1613B/Dioxins Furans		Sediment	10.192g	Green Watery Sludge
19	K1509053-011	OF7-2	.02	1613B/Dioxins Furans		Sediment	10.123g	Green Watery Sediment w/Rocks
20	K1509053-012	OF7-1	.02	1613B/Dioxins Furans		Sediment	10.072g	Green Watery Sediment w/Rocks
21	K1509053-013	OF7-3	.02	1613B/Dioxins Furans		Sediment	10.494g	Green Watery Sediment w/Rocks

Preparation Information Benchsheet

Prep Run#: 243475 **Prep WorkFlow:** OrgExtS(365) **Status:** Prepped
Team: Semivoa GCMS/DEDWARDS **Prep Method:** Method Soxhlet **Prep Date/Time:** 8/27/15 08:00 AM

Spiking Solutions

Name: 8290/1613B Cleanup Working Standard Inventory ID 83209 Logbook Ref: 83209 CID 8/12/15 8 ng/ml EXT Expires On: 02/08/2016

E1500736-001	100.00µL	E1500740-001	100.00µL	E1500753-001	100.00µL	E1500822-001	100.00µL	E1500823-001	100.00µL	E1500843-001	100.00µL
EQ1500519-01	100.00µL	EQ1500519-02	100.00µL	EQ1500519-03	100.00µL	K1506897-006	100.00µL	K1507873-001	100.00µL	K1507874-001	100.00µL
K1507978-001	100.00µL	K1509053-001	100.00µL	K1509053-002	100.00µL	K1509053-003	100.00µL	K1509053-004	100.00µL	K1509053-005	100.00µL
K1509053-011	100.00µL	K1509053-012	100.00µL	K1509053-013	100.00µL						

Name: 1613B Matrix Working Standard Inventory ID 83502 Logbook Ref: 83502 DE 8/20/15 2-20ng/ml Expires On: 02/16/2016

EQ1500519-02	100.00µL	EQ1500519-03	100.00µL

Name: 1613B Labeled Working Standard Inventory ID 83569 Logbook Ref: 83569 2-4ng/mL LM 8/25/15 Expires On: 08/25/2016

E1500736-001	1,000.00µL	E1500740-001	1,000.00µL	E1500753-001	1,000.00µL	E1500822-001	1,000.00µL	E1500823-001	1,000.00µL	E1500843-001	1,000.00µL
EQ1500519-01	1,000.00µL	EQ1500519-02	1,000.00µL	EQ1500519-03	1,000.00µL	K1506897-006	1,000.00µL	K1507873-001	1,000.00µL	K1507874-001	1,000.00µL
K1507978-001	1,000.00µL	K1509053-001	1,000.00µL	K1509053-002	1,000.00µL	K1509053-003	1,000.00µL	K1509053-004	1,000.00µL	K1509053-005	1,000.00µL
K1509053-011	1,000.00µL	K1509053-012	1,000.00µL	K1509053-013	1,000.00µL						

Preparation Materials

Carbon, High Purity	AL 08/24/15 (83544)	Ethyl Acetate 99.9% Minimum EtOAc	AL 07/16/15 (82546)	Glass Wool	AL 04/17/15 (80420)
Sulfuric Acid Reagent Grade H2SO4	LM 3/4/15 (79265)	Hexanes 95%	LM 8/27/15 (83726)	Dichloromethane (Methylene Chloride) 99.9% MeCl2	AL 07/27/15 (82887)
Sodium Chloride Reagent Grade NaCl	C2-65-5 (38670)	Sodium Hydroxide Reagent Grade NaOH	LM 09/02/14 (74232)	Sodium Sulfate Anhydrous Reagent Grade Na2SO4	AL 07/15/15 (82507)
Tridecane (n-Tridecane)	LM 8/27/15 (83731)	Silica Gel	CID 08/18/2018 (83330)	Toluene 99.9% Minimum	LM 8/27/15 (83727)

Preparation Steps

Step:	Extraction	Step:	Acid Clean	Step:	Silica Gel Clean	Step:	Final Volume
Started:	8/27/15 08:00	Started:	8/28/15 13:50	Started:	8/29/15 08:00	Started:	8/29/15 09:20
Finished:	8/28/15 07:00	Finished:	8/28/15 14:30	Finished:	8/29/15 10:30	Finished:	8/29/15 10:20
By:	DEDWARDS	By:	CDIAZ	By:	CDIAZ	By:	CDIAZ
Comments		Comments		Comments		Comments	

Comments: _____

Reviewed By: ak Date: 9/1/15

Preparation Information Benchsheet

Prep Run#: 243475
Team: Semivoa GCMS/DEDWARDS

Prep WorkFlow: OrgExtS(365)
Prep Method: Method Soxhlet

Status: Prepped
Prep Date/Time: 8/27/15 08:00 AM

Chain of Custody

Relinquished By:	_____	Date:	_____	Extracts Examined
Received By:	_____	Date:	_____	Yes No

Analytical Results

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

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ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 10:45
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	WP-1	**Units:**	ng/Kg
Lab Code:	K1509053-001	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/03/15 17:53
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.249g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301229	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301224

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.322	1.73			1
1,2,3,7,8-PeCDD	1.11**J**		0.741	8.65	1.66	1.000	1
1,2,3,4,7,8-HxCDD	1.19**J**		0.408	8.65	1.06	1.000	1
1,2,3,6,7,8-HxCDD	5.40**J**		0.439	8.65	1.17	1.000	1
1,2,3,7,8,9-HxCDD	2.70**J**		0.399	8.65	1.06	1.007	1
1,2,3,4,6,7,8-HpCDD	92.0		0.795	8.65	0.97	1.000	1
OCDD	770		1.12	17.3	0.90	1.000	1
2,3,7,8-TCDF	1.50**J**		0.947	1.73	0.67	1.001	1
1,2,3,7,8-PeCDF	ND	U	0.446	8.65			1
2,3,4,7,8-PeCDF	2.00**J**		0.466	8.65	1.53	1.000	1
1,2,3,4,7,8-HxCDF	2.13**J**		0.270	8.65	1.29	1.000	1
1,2,3,6,7,8-HxCDF	1.27**JK**		0.248	8.65	1.53	1.000	1
1,2,3,7,8,9-HxCDF	ND	U	0.200	8.65			1
2,3,4,6,7,8-HxCDF	1.69**JK**		0.264	8.65	0.94	1.000	1
1,2,3,4,6,7,8-HpCDF	20.6		0.432	8.65	0.99	1.000	1
1,2,3,4,7,8,9-HpCDF	2.27**JK**		0.491	8.65	0.86	1.000	1
OCDF	38.2		1.43	17.3	0.89	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 10:45
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	WP-1	**Units:**	ng/Kg
Lab Code:	K1509053-001	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/03/15 17:53
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.249g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301229	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301224

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	3.89		0.322	1.73	0.66		1
Total Penta-Dioxins	3.82	**J**	0.741	8.65	1.61		1
Total Hexa-Dioxins	51.4		0.415	8.65	1.32		1
Total Hepta-Dioxins	272		0.795	8.65	1.04		1
Total Tetra-Furans	4.60		0.947	1.73	0.78		1
Total Penta-Furans	19.1		0.455	8.65	1.65		1
Total Hexa-Furans	23.1		0.241	8.65	1.16		1
Total Hepta-Furans	52.7		0.460	8.65	0.99		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 10:45
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	WP-1	**Units:**	Percent
Lab Code:	K1509053-001	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/03/15 17:53
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.249g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301229	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301224

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1527.206	76		25-164	0.75	1.019
13C-1,2,3,7,8-PeCDD	2000	1489.302	74		25-181	1.54	1.173
13C-1,2,3,4,7,8-HxCDD	2000	1445.698	72		32-141	1.27	0.992
13C-1,2,3,6,7,8-HxCDD	2000	1361.935	68		28-130	1.27	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1374.057	69		23-140	1.07	1.067
13C-OCDD	4000	2530.329	63		17-157	0.89	1.142
13C-2,3,7,8-TCDF	2000	1364.575	68		24-169	0.79	0.994
13C-1,2,3,7,8-PeCDF	2000	1455.243	73		24-185	1.59	1.133
13C-2,3,4,7,8-PeCDF	2000	1473.405	74		21-178	1.59	1.164
13C-1,2,3,4,7,8-HxCDF	2000	1332.742	67		26-152	0.51	0.972
13C-1,2,3,6,7,8-HxCDF	2000	1361.246	68		26-123	0.52	0.975
13C-1,2,3,7,8,9-HxCDF	2000	2147.119	107		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1439.695	72		28-136	0.51	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1198.355	60		28-143	0.44	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	1424.421	71		26-138	0.44	1.079
37Cl-2,3,7,8-TCDD	800	679.692	85		35-197	NA	1.020

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 10:45
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	WP-1	**Units:**	ng/Kg
Lab Code:	K1509053-001	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.322	1.73	1	1	
1,2,3,7,8-PeCDD	**1.11**	0.741	8.65	1	1	1.11
1,2,3,4,7,8-HxCDD	**1.19**	0.408	8.65	1	0.1	0.119
1,2,3,6,7,8-HxCDD	**5.40**	0.439	8.65	1	0.1	0.540
1,2,3,7,8,9-HxCDD	**2.70**	0.399	8.65	1	0.1	0.270
1,2,3,4,6,7,8-HpCDD	**92.0**	0.795	8.65	1	0.01	0.920
OCDD	**770**	1.12	17.3	1	0.0003	0.231
2,3,7,8-TCDF	**1.50**	0.947	1.73	1	0.1	0.150
1,2,3,7,8-PeCDF	ND	0.446	8.65	1	0.03	
2,3,4,7,8-PeCDF	**2.00**	0.466	8.65	1	0.3	0.600
1,2,3,4,7,8-HxCDF	**2.13**	0.270	8.65	1	0.1	0.213
1,2,3,6,7,8-HxCDF	**1.27**	0.248	8.65	1	0.1	0.127
1,2,3,7,8,9-HxCDF	ND	0.200	8.65	1	0.1	
2,3,4,6,7,8-HxCDF	**1.69**	0.264	8.65	1	0.1	0.169
1,2,3,4,6,7,8-HpCDF	**20.6**	0.432	8.65	1	0.01	0.206
1,2,3,4,7,8,9-HpCDF	**2.27**	0.491	8.65	1	0.01	0.0227
OCDF	**38.2**	1.43	17.3	1	0.0003	0.0115
		Total TEQ				4.69

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 10:32
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	WP-2	**Units:**	ng/Kg
Lab Code:	K1509053-002	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/03/15 18:42
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.116g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301230	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301224

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.963	1.70			1
1,2,3,7,8-PeCDD	3.59**JK**		1.99	8.49	2.41	1.001	1
1,2,3,4,7,8-HxCDD	3.57**J**		0.979	8.49	1.30	1.000	1
1,2,3,6,7,8-HxCDD	21.6		1.04	8.49	1.38	1.000	1
1,2,3,7,8,9-HxCDD	9.61		0.950	8.49	1.08	1.007	1
1,2,3,4,6,7,8-HpCDD	428		1.82	8.49	1.02	1.000	1
OCDD	3890		2.14	17.0	0.89	1.000	1
2,3,7,8-TCDF	5.38		2.97	2.97	0.88	1.001	1
1,2,3,7,8-PeCDF	1.71**JK**		1.58	8.49	1.12	1.001	1
2,3,4,7,8-PeCDF	5.71**JK**		1.59	8.49	1.83	1.001	1
1,2,3,4,7,8-HxCDF	4.92**J**		0.727	8.49	1.22	1.000	1
1,2,3,6,7,8-HxCDF	3.38**JK**		0.684	8.49	1.02	1.000	1
1,2,3,7,8,9-HxCDF	1.09**JK**		0.512	8.49	0.98	1.001	1
2,3,4,6,7,8-HxCDF	5.25**J**		0.732	8.49	1.19	1.000	1
1,2,3,4,6,7,8-HpCDF	62.7		1.11	8.49	1.02	1.000	1
1,2,3,4,7,8,9-HpCDF	3.68**J**		1.30	8.49	1.20	1.000	1
OCDF	102		3.66	17.0	0.91	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 10:32
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	WP-2	**Units:**	ng/Kg
Lab Code:	K1509053-002	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/03/15 18:42
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.116g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301230	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301224

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	8.16		0.963	1.70	0.77		1
Total Penta-Dioxins	19.5		1.99	8.49	1.69		1
Total Hexa-Dioxins	178		0.987	8.49	1.27		1
Total Hepta-Dioxins	1140		1.82	8.49	1.05		1
Total Tetra-Furans	11.4		2.97	2.97	0.70		1
Total Penta-Furans	34.2		1.58	8.49	1.39		1
Total Hexa-Furans	83.7		0.649	8.49	1.22		1
Total Hepta-Furans	170		1.20	8.49	1.02		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 10:32
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	WP-2	**Units:**	Percent
Lab Code:	K1509053-002	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/03/15 18:42
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.116g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301230	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301224

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1520.396	76		25-164	0.75	1.019
13C-1,2,3,7,8-PeCDD	2000	1678.896	84		25-181	1.58	1.173
13C-1,2,3,4,7,8-HxCDD	2000	1329.852	66		32-141	1.26	0.992
13C-1,2,3,6,7,8-HxCDD	2000	1265.850	63		28-130	1.29	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1333.604	67		23-140	1.08	1.066
13C-OCDD	4000	2586.569	65		17-157	0.91	1.142
13C-2,3,7,8-TCDF	2000	1334.951	67		24-169	0.78	0.994
13C-1,2,3,7,8-PeCDF	2000	1609.666	80		24-185	1.60	1.133
13C-2,3,4,7,8-PeCDF	2000	1685.957	84		21-178	1.58	1.164
13C-1,2,3,4,7,8-HxCDF	2000	1237.432	62		26-152	0.52	0.972
13C-1,2,3,6,7,8-HxCDF	2000	1238.890	62		26-123	0.51	0.975
13C-1,2,3,7,8,9-HxCDF	2000	2069.396	103		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1322.551	66		28-136	0.50	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1247.321	62		28-143	0.43	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	1439.496	72		26-138	0.43	1.079
37Cl-2,3,7,8-TCDD	800	612.072	77		35-197	NA	1.020

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 10:32
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	WP-2	**Units:**	ng/Kg
Lab Code:	K1509053-002	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.963	1.70	1	1	
1,2,3,7,8-PeCDD	**3.59**	1.99	8.49	1	1	3.59
1,2,3,4,7,8-HxCDD	**3.57**	0.979	8.49	1	0.1	0.357
1,2,3,6,7,8-HxCDD	**21.6**	1.04	8.49	1	0.1	2.16
1,2,3,7,8,9-HxCDD	**9.61**	0.950	8.49	1	0.1	0.961
1,2,3,4,6,7,8-HpCDD	**428**	1.82	8.49	1	0.01	4.28
OCDD	**3890**	2.14	17.0	1	0.0003	1.17
2,3,7,8-TCDF	**5.38**	2.97	2.97	1	0.1	0.538
1,2,3,7,8-PeCDF	**1.71**	1.58	8.49	1	0.03	0.0513
2,3,4,7,8-PeCDF	**5.71**	1.59	8.49	1	0.3	1.71
1,2,3,4,7,8-HxCDF	**4.92**	0.727	8.49	1	0.1	0.492
1,2,3,6,7,8-HxCDF	**3.38**	0.684	8.49	1	0.1	0.338
1,2,3,7,8,9-HxCDF	**1.09**	0.512	8.49	1	0.1	0.109
2,3,4,6,7,8-HxCDF	**5.25**	0.732	8.49	1	0.1	0.525
1,2,3,4,6,7,8-HpCDF	**62.7**	1.11	8.49	1	0.01	0.627
1,2,3,4,7,8,9-HpCDF	**3.68**	1.30	8.49	1	0.01	0.0368
OCDF	**102**	3.66	17.0	1	0.0003	0.0306
		Total TEQ				17.0

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 10:02
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	WP-3	**Units:**	ng/Kg
Lab Code:	K1509053-003	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/03/15 19:30
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.137g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301231	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301224

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	0.561**JK**		0.394	1.03	0.57	1.001	1
1,2,3,7,8-PeCDD	1.69**JK**		0.999	5.17	2.82	1.000	1
1,2,3,4,7,8-HxCDD	2.36**J**		0.456	5.17	1.33	1.000	1
1,2,3,6,7,8-HxCDD	23.3		0.496	5.17	1.22	1.000	1
1,2,3,7,8,9-HxCDD	6.25		0.448	5.17	1.12	1.006	1
1,2,3,4,6,7,8-HpCDD	530		0.848	5.17	1.03	1.000	1
OCDD	5800		0.878	10.3	0.89	1.000	1
2,3,7,8-TCDF	3.30		1.24	1.24	0.89	1.001	1
1,2,3,7,8-PeCDF	ND	U	0.763	5.17			1
2,3,4,7,8-PeCDF	5.33		0.750	5.17	1.61	1.000	1
1,2,3,4,7,8-HxCDF	4.97**J**		0.212	5.17	1.10	1.000	1
1,2,3,6,7,8-HxCDF	2.91**J**		0.196	5.17	1.34	1.000	1
1,2,3,7,8,9-HxCDF	0.844**J**		0.158	5.17	1.24	1.001	1
2,3,4,6,7,8-HxCDF	3.84**J**		0.205	5.17	1.41	1.000	1
1,2,3,4,6,7,8-HpCDF	64.7**P**		0.585	5.17	1.07	1.000	1
1,2,3,4,7,8,9-HpCDF	4.02**J**		0.668	5.17	1.02	1.000	1
OCDF	132		1.81	10.3	0.93	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 10:02
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	WP-3	**Units:**	ng/Kg
Lab Code:	K1509053-003	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/03/15 19:30
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.137g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301231	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301224

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	4.40		0.394	1.03	0.84		1
Total Penta-Dioxins	4.58	**J**	0.999	5.17	1.40		1
Total Hexa-Dioxins	129		0.466	5.17	1.24		1
Total Hepta-Dioxins	1160		0.848	5.17	1.03		1
Total Tetra-Furans	12.9		1.24	1.24	0.74		1
Total Penta-Furans	45.9		0.756	5.17	1.55		1
Total Hexa-Furans	90.1		0.189	5.17	1.11		1
Total Hepta-Furans	210		0.624	5.17	1.07		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 10:02
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	WP-3	**Units:**	Percent
Lab Code:	K1509053-003	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/03/15 19:30
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.137g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301231	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301224

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1641.224	82		25-164	0.77	1.019
13C-1,2,3,7,8-PeCDD	2000	1777.334	89		25-181	1.57	1.173
13C-1,2,3,4,7,8-HxCDD	2000	1526.302	76		32-141	1.27	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1426.767	71		28-130	1.25	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1518.794	76		23-140	1.07	1.066
13C-OCDD	4000	2852.665	71		17-157	0.90	1.142
13C-2,3,7,8-TCDF	2000	1427.092	71		24-169	0.80	0.994
13C-1,2,3,7,8-PeCDF	2000	1714.342	86		24-185	1.57	1.134
13C-2,3,4,7,8-PeCDF	2000	1802.492	90		21-178	1.60	1.165
13C-1,2,3,4,7,8-HxCDF	2000	1391.351	70		26-152	0.51	0.971
13C-1,2,3,6,7,8-HxCDF	2000	1438.529	72		26-123	0.51	0.975
13C-1,2,3,7,8,9-HxCDF	2000	2307.502	115		29-147	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1535.070	77		28-136	0.51	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1431.925	72		28-143	0.44	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	1609.535	80		26-138	0.44	1.079
37Cl-2,3,7,8-TCDD	800	667.540	83		35-197	NA	1.020

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 10:02
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	WP-3	**Units:**	ng/Kg
Lab Code:	K1509053-003	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	**0.561**	0.394	1.03	1	1	0.561
1,2,3,7,8-PeCDD	**1.69**	0.999	5.17	1	1	1.69
1,2,3,4,7,8-HxCDD	**2.36**	0.456	5.17	1	0.1	0.236
1,2,3,6,7,8-HxCDD	**23.3**	0.496	5.17	1	0.1	2.33
1,2,3,7,8,9-HxCDD	**6.25**	0.448	5.17	1	0.1	0.625
1,2,3,4,6,7,8-HpCDD	**530**	0.848	5.17	1	0.01	5.30
OCDD	**5800**	0.878	10.3	1	0.0003	1.74
2,3,7,8-TCDF	**3.30**	1.24	1.24	1	0.1	0.330
1,2,3,7,8-PeCDF	ND	0.763	5.17	1	0.03	
2,3,4,7,8-PeCDF	**5.33**	0.750	5.17	1	0.3	1.60
1,2,3,4,7,8-HxCDF	**4.97**	0.212	5.17	1	0.1	0.497
1,2,3,6,7,8-HxCDF	**2.91**	0.196	5.17	1	0.1	0.291
1,2,3,7,8,9-HxCDF	**0.844**	0.158	5.17	1	0.1	0.0844
2,3,4,6,7,8-HxCDF	**3.84**	0.205	5.17	1	0.1	0.384
1,2,3,4,6,7,8-HpCDF	**64.7**	0.585	5.17	1	0.01	0.647
1,2,3,4,7,8,9-HpCDF	**4.02**	0.668	5.17	1	0.01	0.0402
OCDF	**132**	1.81	10.3	1	0.0003	0.0396
		Total TEQ				16.4

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 11:02
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	WP-4	**Units:**	ng/Kg
Lab Code:	K1509053-004	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/03/15 20:19
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.262g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301232	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301224

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	1.98	1.98			1
1,2,3,7,8-PeCDD	ND	U	4.08	7.81			1
1,2,3,4,7,8-HxCDD	ND	U	1.98	7.81			1
1,2,3,6,7,8-HxCDD	18.6**K**		2.31	7.81	1.49	1.000	1
1,2,3,7,8,9-HxCDD	7.08**J**		2.02	7.81	1.14	1.007	1
1,2,3,4,6,7,8-HpCDD	710		3.36	7.81	1.07	1.000	1
OCDD	6040		3.11	15.6	0.89	1.000	1
2,3,7,8-TCDF	ND	U	3.10	3.10			1
1,2,3,7,8-PeCDF	ND	U	2.47	7.81			1
2,3,4,7,8-PeCDF	ND	U	2.56	7.81			1
1,2,3,4,7,8-HxCDF	3.91**JK**		1.20	7.81	0.94	1.000	1
1,2,3,6,7,8-HxCDF	2.74**JK**		1.18	7.81	1.54	1.000	1
1,2,3,7,8,9-HxCDF	ND	U	0.859	7.81			1
2,3,4,6,7,8-HxCDF	3.65**J**		1.16	7.81	1.42	1.000	1
1,2,3,4,6,7,8-HpCDF	43.5		2.23	7.81	1.03	1.000	1
1,2,3,4,7,8,9-HpCDF	5.90**JK**		2.29	7.81	1.62	1.000	1
OCDF	109		5.82	15.6	0.84	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 11:02
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	WP-4	**Units:**	ng/Kg
Lab Code:	K1509053-004	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/03/15 20:19
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.262g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301232	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301224

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	4.69		1.98	1.98	0.71		1
Total Penta-Dioxins	ND	U	4.08	7.81			1
Total Hexa-Dioxins	215		2.10	7.81	1.28		1
Total Hepta-Dioxins	2550		3.36	7.81	1.03		1
Total Tetra-Furans	ND	U	5.36	5.36			1
Total Penta-Furans	20.6		2.51	7.81	1.40		1
Total Hexa-Furans	48.0		1.08	7.81	1.38		1
Total Hepta-Furans	130		2.26	7.81	1.03		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 11:02
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	WP-4	**Units:**	Percent
Lab Code:	K1509053-004	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/03/15 20:19
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.262g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301232	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301224

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	855.359	43		25-164	0.77	1.019
13C-1,2,3,7,8-PeCDD	2000	849.845	42		25-181	1.55	1.173
13C-1,2,3,4,7,8-HxCDD	2000	763.301	38		32-141	1.29	0.991
13C-1,2,3,6,7,8-HxCDD	2000	720.599	36		28-130	1.30	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	847.256	42		23-140	1.07	1.065
13C-OCDD	4000	2096.086	52		17-157	0.89	1.141
13C-2,3,7,8-TCDF	2000	777.473	39		24-169	0.78	0.994
13C-1,2,3,7,8-PeCDF	2000	844.478	42		24-185	1.56	1.134
13C-2,3,4,7,8-PeCDF	2000	880.498	44		21-178	1.63	1.165
13C-1,2,3,4,7,8-HxCDF	2000	720.735	36		26-152	0.51	0.971
13C-1,2,3,6,7,8-HxCDF	2000	736.157	37		26-123	0.51	0.974
13C-1,2,3,7,8,9-HxCDF	2000	1142.086	57		29-147	0.50	1.007
13C-2,3,4,6,7,8-HxCDF	2000	791.036	40		28-136	0.51	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	749.325	37		28-143	0.42	1.040
13C-1,2,3,4,7,8,9-HpCDF	2000	887.524	44		26-138	0.44	1.078
37Cl-2,3,7,8-TCDD	800	372.429	47		35-197	NA	1.020

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 11:02
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	WP-4	**Units:**	ng/Kg
Lab Code:	K1509053-004	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	1.98	1.98	1	1	
1,2,3,7,8-PeCDD	ND	4.08	7.81	1	1	
1,2,3,4,7,8-HxCDD	ND	1.98	7.81	1	0.1	
1,2,3,6,7,8-HxCDD	**18.6**	2.31	7.81	1	0.1	1.86
1,2,3,7,8,9-HxCDD	**7.08**	2.02	7.81	1	0.1	0.708
1,2,3,4,6,7,8-HpCDD	**710**	3.36	7.81	1	0.01	7.10
OCDD	**6040**	3.11	15.6	1	0.0003	1.81
2,3,7,8-TCDF	ND	3.10	3.10	1	0.1	
1,2,3,7,8-PeCDF	ND	2.47	7.81	1	0.03	
2,3,4,7,8-PeCDF	ND	2.56	7.81	1	0.3	
1,2,3,4,7,8-HxCDF	**3.91**	1.20	7.81	1	0.1	0.391
1,2,3,6,7,8-HxCDF	**2.74**	1.18	7.81	1	0.1	0.274
1,2,3,7,8,9-HxCDF	ND	0.859	7.81	1	0.1	
2,3,4,6,7,8-HxCDF	**3.65**	1.16	7.81	1	0.1	0.365
1,2,3,4,6,7,8-HpCDF	**43.5**	2.23	7.81	1	0.01	0.435
1,2,3,4,7,8,9-HpCDF	**5.90**	2.29	7.81	1	0.01	0.0590
OCDF	**109**	5.82	15.6	1	0.0003	0.0327
		Total TEQ				13.0

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 11:21
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	WP-5	**Units:**	ng/Kg
Lab Code:	K1509053-005	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/03/15 21:08
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.192g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301233	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301224

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.416	1.98			1
1,2,3,7,8-PeCDD	ND	U	0.929	9.89			1
1,2,3,4,7,8-HxCDD	0.996**J**		0.382	9.89	1.28	1.000	1
1,2,3,6,7,8-HxCDD	3.52**J**		0.402	9.89	1.28	1.000	1
1,2,3,7,8,9-HxCDD	2.01**JK**		0.370	9.89	1.44	1.007	1
1,2,3,4,6,7,8-HpCDD	56.8		0.841	9.89	1.02	1.000	1
OCDD	437		1.09	19.8	0.89	1.000	1
2,3,7,8-TCDF	ND	U	1.20	1.98			1
1,2,3,7,8-PeCDF	ND	U	0.590	9.89			1
2,3,4,7,8-PeCDF	ND	U	0.607	9.89			1
1,2,3,4,7,8-HxCDF	1.16**JK**		0.315	9.89	1.54	1.000	1
1,2,3,6,7,8-HxCDF	0.824**J**		0.300	9.89	1.25	1.000	1
1,2,3,7,8,9-HxCDF	ND	U	0.233	9.89			1
2,3,4,6,7,8-HxCDF	1.26**JK**		0.305	9.89	1.60	1.000	1
1,2,3,4,6,7,8-HpCDF	12.9**P**		0.385	9.89	0.97	1.000	1
1,2,3,4,7,8,9-HpCDF	0.824**JK**		0.445	9.89	0.50	1.000	1
OCDF	21.4		1.83	19.8	0.84	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 11:21
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	WP-5	**Units:**	ng/Kg
Lab Code:	K1509053-005	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/03/15 21:08
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.192g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301233	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301224

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.416	1.98			1
Total Penta-Dioxins	ND	U	0.929	9.89			1
Total Hexa-Dioxins	32.2		0.385	9.89	1.27		1
Total Hepta-Dioxins	174		0.841	9.89	1.02		1
Total Tetra-Furans	ND	U	1.20	1.98			1
Total Penta-Furans	10.1		0.598	9.89	1.50		1
Total Hexa-Furans	13.1		0.283	9.89	1.33		1
Total Hepta-Furans	32.6		0.413	9.89	0.97		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 11:21
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	WP-5	**Units:**	Percent
Lab Code:	K1509053-005	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/03/15 21:08
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.192g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301233	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301224

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1503.951	75		25-164	0.77	1.019
13C-1,2,3,7,8-PeCDD	2000	1522.625	76		25-181	1.57	1.174
13C-1,2,3,4,7,8-HxCDD	2000	1364.986	68		32-141	1.27	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1331.286	67		28-130	1.28	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1330.467	67		23-140	1.08	1.066
13C-OCDD	4000	2466.072	62		17-157	0.89	1.142
13C-2,3,7,8-TCDF	2000	1340.454	67		24-169	0.79	0.994
13C-1,2,3,7,8-PeCDF	2000	1472.831	74		24-185	1.58	1.134
13C-2,3,4,7,8-PeCDF	2000	1493.252	75		21-178	1.58	1.165
13C-1,2,3,4,7,8-HxCDF	2000	1285.758	64		26-152	0.52	0.971
13C-1,2,3,6,7,8-HxCDF	2000	1320.448	66		26-123	0.51	0.975
13C-1,2,3,7,8,9-HxCDF	2000	2085.334	104		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1378.632	69		28-136	0.51	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1201.454	60		28-143	0.45	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	1331.205	67		26-138	0.44	1.079
37Cl-2,3,7,8-TCDD	800	694.886	87		35-197	NA	1.020

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/17/15 11:21
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	WP-5	**Units:**	ng/Kg
Lab Code:	K1509053-005	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B
Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.416	1.98	1	1	
1,2,3,7,8-PeCDD	ND	0.929	9.89	1	1	
1,2,3,4,7,8-HxCDD	**0.996**	0.382	9.89	1	0.1	0.0996
1,2,3,6,7,8-HxCDD	**3.52**	0.402	9.89	1	0.1	0.352
1,2,3,7,8,9-HxCDD	**2.01**	0.370	9.89	1	0.1	0.201
1,2,3,4,6,7,8-HpCDD	**56.8**	0.841	9.89	1	0.01	0.568
OCDD	**437**	1.09	19.8	1	0.0003	0.131
2,3,7,8-TCDF	ND	1.20	1.98	1	0.1	
1,2,3,7,8-PeCDF	ND	0.590	9.89	1	0.03	
2,3,4,7,8-PeCDF	ND	0.607	9.89	1	0.3	
1,2,3,4,7,8-HxCDF	**1.16**	0.315	9.89	1	0.1	0.116
1,2,3,6,7,8-HxCDF	**0.824**	0.300	9.89	1	0.1	0.0824
1,2,3,7,8,9-HxCDF	ND	0.233	9.89	1	0.1	
2,3,4,6,7,8-HxCDF	**1.26**	0.305	9.89	1	0.1	0.126
1,2,3,4,6,7,8-HpCDF	**12.9**	0.385	9.89	1	0.01	0.129
1,2,3,4,7,8,9-HpCDF	**0.824**	0.445	9.89	1	0.01	0.00824
OCDF	**21.4**	1.83	19.8	1	0.0003	0.00642
		Total TEQ				1.82

2005 WHO TEFs, ND = 0

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/18/15 09:07
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	OF7-2	**Units:**	ng/Kg
Lab Code:	K1509053-011	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/03/15 21:56
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.123g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301234	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301224

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.112	0.654			1
1,2,3,7,8-PeCDD	ND	U	0.364	3.27			1
1,2,3,4,7,8-HxCDD	ND	U	0.103	3.27			1
1,2,3,6,7,8-HxCDD	0.667**J**		0.111	3.27	1.25	1.000	1
1,2,3,7,8,9-HxCDD	0.386**BJ**		0.101	3.27	1.32	1.006	1
1,2,3,4,6,7,8-HpCDD	8.40		0.349	3.27	1.03	1.000	1
OCDD	55.0		0.401	6.54	0.91	1.000	1
2,3,7,8-TCDF	ND	U	0.371	0.654			1
1,2,3,7,8-PeCDF	ND	U	0.214	3.27			1
2,3,4,7,8-PeCDF	ND	U	0.225	3.27			1
1,2,3,4,7,8-HxCDF	0.281**JK**		0.0775	3.27	0.87	1.000	1
1,2,3,6,7,8-HxCDF	0.172**J**		0.0706	3.27	1.08	1.000	1
1,2,3,7,8,9-HxCDF	0.115**BJK**		0.0643	3.27	1.61	1.000	1
2,3,4,6,7,8-HxCDF	0.307**JK**		0.0746	3.27	1.49	1.000	1
1,2,3,4,6,7,8-HpCDF	1.75**BJ**		0.179	3.27	0.88	1.000	1
1,2,3,4,7,8,9-HpCDF	ND	U	0.226	3.27			1
OCDF	2.23**BJ**		0.597	6.54	0.90	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/18/15 09:07
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	OF7-2	**Units:**	ng/Kg
Lab Code:	K1509053-011	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/03/15 21:56
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.123g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301234	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301224

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	0.491**J**		0.112	0.654	0.75		1
Total Penta-Dioxins	ND	U	0.364	3.27			1
Total Hexa-Dioxins	9.34		0.105	3.27	1.18		1
Total Hepta-Dioxins	28.6		0.349	3.27	1.03		1
Total Tetra-Furans	12.7		0.371	0.654	0.73		1
Total Penta-Furans	13.5		0.219	3.27	1.60		1
Total Hexa-Furans	3.51		0.0711	3.27	1.18		1
Total Hepta-Furans	2.63**J**		0.201	3.27	1.11		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/18/15 09:07
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	OF7-2	**Units:**	Percent
Lab Code:	K1509053-011	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/03/15 21:56
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.123g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301234	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301224

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1526.588	76		25-164	0.76	1.019
13C-1,2,3,7,8-PeCDD	2000	1517.778	76		25-181	1.57	1.174
13C-1,2,3,4,7,8-HxCDD	2000	1395.529	70		32-141	1.26	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1324.136	66		28-130	1.27	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1214.079	61		23-140	1.07	1.066
13C-OCDD	4000	2016.715	50		17-157	0.90	1.142
13C-2,3,7,8-TCDF	2000	1318.585	66		24-169	0.79	0.994
13C-1,2,3,7,8-PeCDF	2000	1488.579	74		24-185	1.59	1.134
13C-2,3,4,7,8-PeCDF	2000	1512.993	76		21-178	1.59	1.165
13C-1,2,3,4,7,8-HxCDF	2000	1271.762	64		26-152	0.52	0.971
13C-1,2,3,6,7,8-HxCDF	2000	1316.687	66		26-123	0.51	0.975
13C-1,2,3,7,8,9-HxCDF	2000	1892.319	95		29-147	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1380.420	69		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	988.943	49		28-143	0.44	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	1005.733	50		26-138	0.44	1.079
37Cl-2,3,7,8-TCDD	800	668.979	84		35-197	NA	1.020

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/18/15 09:07
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	OF7-2	**Units:**	ng/Kg
Lab Code:	K1509053-011	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.112	0.654	1	1	
1,2,3,7,8-PeCDD	ND	0.364	3.27	1	1	
1,2,3,4,7,8-HxCDD	ND	0.103	3.27	1	0.1	
1,2,3,6,7,8-HxCDD	**0.667**	0.111	3.27	1	0.1	0.0667
1,2,3,7,8,9-HxCDD	**0.386**	0.101	3.27	1	0.1	0.0386
1,2,3,4,6,7,8-HpCDD	**8.40**	0.349	3.27	1	0.01	0.0840
OCDD	**55.0**	0.401	6.54	1	0.0003	0.0165
2,3,7,8-TCDF	ND	0.371	0.654	1	0.1	
1,2,3,7,8-PeCDF	ND	0.214	3.27	1	0.03	
2,3,4,7,8-PeCDF	ND	0.225	3.27	1	0.3	
1,2,3,4,7,8-HxCDF	**0.281**	0.0775	3.27	1	0.1	0.0281
1,2,3,6,7,8-HxCDF	**0.172**	0.0706	3.27	1	0.1	0.0172
1,2,3,7,8,9-HxCDF	**0.115**	0.0643	3.27	1	0.1	0.0115
2,3,4,6,7,8-HxCDF	**0.307**	0.0746	3.27	1	0.1	0.0307
1,2,3,4,6,7,8-HpCDF	**1.75**	0.179	3.27	1	0.01	0.0175
1,2,3,4,7,8,9-HpCDF	ND	0.226	3.27	1	0.01	
OCDF	**2.23**	0.597	6.54	1	0.0003	0.000669
		Total TEQ				0.311

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/18/15 09:52
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	OF7-1	**Units:**	ng/Kg
Lab Code:	K1509053-012	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/04/15 04:25
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.072g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301242	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301237

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.0799	0.642			1
1,2,3,7,8-PeCDD	ND	U	0.166	3.21			1
1,2,3,4,7,8-HxCDD	ND	U	0.111	3.21			1
1,2,3,6,7,8-HxCDD	0.628**J**		0.119	3.21	1.32	1.001	1
1,2,3,7,8,9-HxCDD	0.390**BJK**		0.109	3.21	0.97	1.007	1
1,2,3,4,6,7,8-HpCDD	6.44		0.177	3.21	0.98	1.000	1
OCDD	43.5		0.209	6.42	0.87	1.000	1
2,3,7,8-TCDF	ND	U	0.260	0.642			1
1,2,3,7,8-PeCDF	ND	U	0.163	3.21			1
2,3,4,7,8-PeCDF	0.608**JK**		0.168	3.21	1.09	1.001	1
1,2,3,4,7,8-HxCDF	0.569**J**		0.0847	3.21	1.13	1.000	1
1,2,3,6,7,8-HxCDF	0.377**J**		0.0817	3.21	1.15	1.000	1
1,2,3,7,8,9-HxCDF	0.177**BJK**		0.0618	3.21	1.50	1.001	1
2,3,4,6,7,8-HxCDF	0.462**J**		0.0837	3.21	1.30	1.000	1
1,2,3,4,6,7,8-HpCDF	3.25		0.0747	3.21	0.95	1.000	1
1,2,3,4,7,8,9-HpCDF	0.664**J**		0.0853	3.21	1.16	1.000	1
OCDF	22.1		0.279	6.42	0.82	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/18/15 09:52
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	OF7-1	**Units:**	ng/Kg
Lab Code:	K1509053-012	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/04/15 04:25
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.072g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301242	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301237

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.0799	0.642			1
Total Penta-Dioxins	ND	U	0.166	3.21			1
Total Hexa-Dioxins	0.628**J**		0.113	3.21	1.32		1
Total Hepta-Dioxins	15.2		0.177	3.21	0.99		1
Total Tetra-Furans	ND	U	0.260	0.642			1
Total Penta-Furans	4.74		0.165	3.21	1.59		1
Total Hexa-Furans	4.89		0.0765	3.21	1.12		1
Total Hepta-Furans	7.61		0.0798	3.21	0.95		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/18/15 09:52
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	OF7-1	**Units:**	Percent
Lab Code:	K1509053-012	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/04/15 04:25
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.072g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301242	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301237

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1614.890	81		25-164	0.75	1.019
13C-1,2,3,7,8-PeCDD	2000	1630.093	82		25-181	1.58	1.174
13C-1,2,3,4,7,8-HxCDD	2000	1465.543	73		32-141	1.30	0.992
13C-1,2,3,6,7,8-HxCDD	2000	1446.908	72		28-130	1.28	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1439.941	72		23-140	1.07	1.066
13C-OCDD	4000	2842.395	71		17-157	0.90	1.142
13C-2,3,7,8-TCDF	2000	1423.763	71		24-169	0.79	0.993
13C-1,2,3,7,8-PeCDF	2000	1590.527	80		24-185	1.58	1.134
13C-2,3,4,7,8-PeCDF	2000	1622.366	81		21-178	1.57	1.165
13C-1,2,3,4,7,8-HxCDF	2000	1405.137	70		26-152	0.52	0.972
13C-1,2,3,6,7,8-HxCDF	2000	1418.695	71		26-123	0.52	0.975
13C-1,2,3,7,8,9-HxCDF	2000	2320.276	116		29-147	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1486.268	74		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1310.551	66		28-143	0.44	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	1517.428	76		26-138	0.44	1.079
37Cl-2,3,7,8-TCDD	800	659.439	82		35-197	NA	1.020

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/18/15 09:52
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	OF7-1	**Units:**	ng/Kg
Lab Code:	K1509053-012	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.0799	0.642	1	1	
1,2,3,7,8-PeCDD	ND	0.166	3.21	1	1	
1,2,3,4,7,8-HxCDD	ND	0.111	3.21	1	0.1	
1,2,3,6,7,8-HxCDD	**0.628**	0.119	3.21	1	0.1	0.0628
1,2,3,7,8,9-HxCDD	**0.390**	0.109	3.21	1	0.1	0.0390
1,2,3,4,6,7,8-HpCDD	**6.44**	0.177	3.21	1	0.01	0.0644
OCDD	**43.5**	0.209	6.42	1	0.0003	0.0131
2,3,7,8-TCDF	ND	0.260	0.642	1	0.1	
1,2,3,7,8-PeCDF	ND	0.163	3.21	1	0.03	
2,3,4,7,8-PeCDF	**0.608**	0.168	3.21	1	0.3	0.182
1,2,3,4,7,8-HxCDF	**0.569**	0.0847	3.21	1	0.1	0.0569
1,2,3,6,7,8-HxCDF	**0.377**	0.0817	3.21	1	0.1	0.0377
1,2,3,7,8,9-HxCDF	**0.177**	0.0618	3.21	1	0.1	0.0177
2,3,4,6,7,8-HxCDF	**0.462**	0.0837	3.21	1	0.1	0.0462
1,2,3,4,6,7,8-HpCDF	**3.25**	0.0747	3.21	1	0.01	0.0325
1,2,3,4,7,8,9-HpCDF	**0.664**	0.0853	3.21	1	0.01	0.00664
OCDF	**22.1**	0.279	6.42	1	0.0003	0.00663
		Total TEQ				0.566

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/18/15 10:45
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	OF7-3	**Units:**	ng/Kg
Lab Code:	K1509053-013	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/04/15 05:14
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.494g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301243	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301237

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.106	0.657			1
1,2,3,7,8-PeCDD	ND	U	0.183	3.29			1
1,2,3,4,7,8-HxCDD	0.235**JK**		0.0470	3.29	1.00	1.000	1
1,2,3,6,7,8-HxCDD	0.493**JK**		0.0489	3.29	1.71	1.001	1
1,2,3,7,8,9-HxCDD	0.271**BJ**		0.0453	3.29	1.34	1.007	1
1,2,3,4,6,7,8-HpCDD	5.10		0.142	3.29	0.97	1.000	1
OCDD	35.2		0.226	6.57	0.89	1.000	1
2,3,7,8-TCDF	ND	U	0.263	0.657			1
1,2,3,7,8-PeCDF	ND	U	0.134	3.29			1
2,3,4,7,8-PeCDF	0.260**J**		0.137	3.29	1.34	1.000	1
1,2,3,4,7,8-HxCDF	0.200**JK**		0.0542	3.29	1.01	1.000	1
1,2,3,6,7,8-HxCDF	0.147**JK**		0.0504	3.29	0.86	1.000	1
1,2,3,7,8,9-HxCDF	0.0624**BJK**		0.0404	3.29	0.64	1.000	1
2,3,4,6,7,8-HxCDF	0.153**JK**		0.0533	3.29	0.80	1.000	1
1,2,3,4,6,7,8-HpCDF	1.34**BJ**		0.0976	3.29	1.05	1.000	1
1,2,3,4,7,8,9-HpCDF	ND	U	0.117	3.29			1
OCDF	3.12**BJ**		0.377	6.57	0.89	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/18/15 10:45
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	OF7-3	**Units:**	ng/Kg
Lab Code:	K1509053-013	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/04/15 05:14
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.494g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301243	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301237

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.106	0.657			1
Total Penta-Dioxins	ND	U	0.183	3.29			1
Total Hexa-Dioxins	4.31		0.0470	3.29	1.12		1
Total Hepta-Dioxins	13.7		0.142	3.29	1.11		1
Total Tetra-Furans	0.777		0.263	0.657	0.80		1
Total Penta-Furans	1.95**J**		0.135	3.29	1.60		1
Total Hexa-Furans	1.53**J**		0.0488	3.29	1.22		1
Total Hepta-Furans	3.55		0.107	3.29	1.05		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/18/15 10:45
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	OF7-3	**Units:**	Percent
Lab Code:	K1509053-013	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	09/04/15 05:14
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.494g	**Instrument Name:**	E-HRMS-05
		GC Column:	DB-5MSUI
Data File Name:	P301243	**Blank File Name:**	P600275
ICAL Date:	08/21/15	**Cal Ver. File Name:**	P301237

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1502.620	75		25-164	0.76	1.019
13C-1,2,3,7,8-PeCDD	2000	1542.340	77		25-181	1.59	1.175
13C-1,2,3,4,7,8-HxCDD	2000	1453.134	73		32-141	1.29	0.992
13C-1,2,3,6,7,8-HxCDD	2000	1418.183	71		28-130	1.25	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1325.655	66		23-140	1.06	1.067
13C-OCDD	4000	2349.400	59		17-157	0.90	1.142
13C-2,3,7,8-TCDF	2000	1340.763	67		24-169	0.80	0.994
13C-1,2,3,7,8-PeCDF	2000	1493.312	75		24-185	1.58	1.135
13C-2,3,4,7,8-PeCDF	2000	1527.747	76		21-178	1.58	1.166
13C-1,2,3,4,7,8-HxCDF	2000	1353.499	68		26-152	0.52	0.972
13C-1,2,3,6,7,8-HxCDF	2000	1388.821	69		26-123	0.53	0.975
13C-1,2,3,7,8,9-HxCDF	2000	2173.499	109		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1462.568	73		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1247.319	62		28-143	0.44	1.042
13C-1,2,3,4,7,8,9-HpCDF	2000	1369.301	68		26-138	0.44	1.080
37Cl-2,3,7,8-TCDD	800	626.439	78		35-197	NA	1.020

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	08/18/15 10:45
Sample Matrix:	Sediment	**Date Received:**	08/18/15 14:05
Sample Name:	OF7-3	**Units:**	ng/Kg
Lab Code:	K1509053-013	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B
Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.106	0.657	1	1	
1,2,3,7,8-PeCDD	ND	0.183	3.29	1	1	
1,2,3,4,7,8-HxCDD	**0.235**	0.0470	3.29	1	0.1	0.0235
1,2,3,6,7,8-HxCDD	**0.493**	0.0489	3.29	1	0.1	0.0493
1,2,3,7,8,9-HxCDD	**0.271**	0.0453	3.29	1	0.1	0.0271
1,2,3,4,6,7,8-HpCDD	**5.10**	0.142	3.29	1	0.01	0.0510
OCDD	**35.2**	0.226	6.57	1	0.0003	0.0106
2,3,7,8-TCDF	ND	0.263	0.657	1	0.1	
1,2,3,7,8-PeCDF	ND	0.134	3.29	1	0.03	
2,3,4,7,8-PeCDF	**0.260**	0.137	3.29	1	0.3	0.0780
1,2,3,4,7,8-HxCDF	**0.200**	0.0542	3.29	1	0.1	0.0200
1,2,3,6,7,8-HxCDF	**0.147**	0.0504	3.29	1	0.1	0.0147
1,2,3,7,8,9-HxCDF	**0.0624**	0.0404	3.29	1	0.1	0.00624
2,3,4,6,7,8-HxCDF	**0.153**	0.0533	3.29	1	0.1	0.0153
1,2,3,4,6,7,8-HpCDF	**1.34**	0.0976	3.29	1	0.01	0.0134
1,2,3,4,7,8,9-HpCDF	ND	0.117	3.29	1	0.01	
OCDF	**3.12**	0.377	6.57	1	0.0003	0.000936
		Total TEQ				0.310

2005 WHO TEFs, ND = 0

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1500519-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/31/15 12:53
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.073g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P600275	**Blank File Name:**	P600275
ICAL Date:	08/19/15	**Cal Ver. File Name:**	P600274

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.0470	0.496			1
1,2,3,7,8-PeCDD	ND	U	0.0569	2.48			1
1,2,3,4,7,8-HxCDD	ND	U	0.0590	2.48			1
1,2,3,6,7,8-HxCDD	ND	U	0.0639	2.48			1
1,2,3,7,8,9-HxCDD	0.0920**JK**		0.0554	2.48	1.52	1.007	1
1,2,3,4,6,7,8-HpCDD	0.311**J**		0.0752	2.48	0.90	1.000	1
OCDD	0.893**J**		0.0711	4.96	0.95	1.000	1
2,3,7,8-TCDF	ND	U	0.0288	0.496			1
1,2,3,7,8-PeCDF	ND	U	0.0425	2.48			1
2,3,4,7,8-PeCDF	ND	U	0.0454	2.48			1
1,2,3,4,7,8-HxCDF	ND	U	0.0437	2.48			1
1,2,3,6,7,8-HxCDF	ND	U	0.0413	2.48			1
1,2,3,7,8,9-HxCDF	0.0793**J**		0.0311	2.48	1.29	1.000	1
2,3,4,6,7,8-HxCDF	ND	U	0.0421	2.48			1
1,2,3,4,6,7,8-HpCDF	0.249**JK**		0.0506	2.48	0.83	1.000	1
1,2,3,4,7,8,9-HpCDF	ND	U	0.0615	2.48			1
OCDF	1.75**J**		0.0723	4.96	0.91	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1500519-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/31/15 12:53
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.073g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P600275	**Blank File Name:**	P600275
ICAL Date:	08/19/15	**Cal Ver. File Name:**	P600274

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.0470	0.496			1
Total Penta-Dioxins	ND	U	0.0569	2.48			1
Total Hexa-Dioxins	ND	U	0.0593	2.48			1
Total Hepta-Dioxins	0.690**J**		0.0752	2.48	1.15		1
Total Tetra-Furans	0.802		0.0288	0.496	0.81		1
Total Penta-Furans	ND	U	0.0439	2.48			1
Total Hexa-Furans	0.0793**J**		0.0389	2.48	1.29		1
Total Hepta-Furans	0.146**J**		0.0558	2.48	1.14		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	Percent
Lab Code:	EQ1500519-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/31/15 12:53
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.073g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P600275	**Blank File Name:**	P600275
ICAL Date:	08/19/15	**Cal Ver. File Name:**	P600274

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1153.452	58		25-164	0.79	1.019
13C-1,2,3,7,8-PeCDD	2000	1289.395	64		25-181	1.57	1.171
13C-1,2,3,4,7,8-HxCDD	2000	1357.468	68		32-141	1.25	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1365.083	68		28-130	1.25	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1177.151	59		23-140	1.04	1.065
13C-OCDD	4000	2319.052	58		17-157	0.90	1.141
13C-2,3,7,8-TCDF	2000	1276.176	64		24-169	0.78	0.993
13C-1,2,3,7,8-PeCDF	2000	1316.684	66		24-185	1.57	1.132
13C-2,3,4,7,8-PeCDF	2000	1259.876	63		21-178	1.57	1.162
13C-1,2,3,4,7,8-HxCDF	2000	1250.781	63		26-152	0.52	0.972
13C-1,2,3,6,7,8-HxCDF	2000	1337.413	67		26-123	0.52	0.975
13C-1,2,3,7,8,9-HxCDF	2000	1945.200	97		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1313.707	66		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1127.080	56		28-143	0.45	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	1041.904	52		26-138	0.44	1.079
37Cl-2,3,7,8-TCDD	800	502.420	63		35-197	NA	1.019

Accuracy & Precision

ALS Environmental - Houston HRMS
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Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Analyzed:**	08/31/15
Sample Matrix:	Sediment	**Date Extracted:**	08/27/15

Duplicate Lab Control Sample Summary
Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Units:**	ng/Kg
Prep Method:	Method Soxhlet	**Basis:**	Dry
		Analysis Lot:	460420

	Lab Control Sample EQ1500519-02			Duplicate Lab Control Sample EQ1500519-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
1,2,3,4,6,7,8-HpCDD	104	96.8	107	108	99.1	109	70-140	4	50
1,2,3,4,7,8-HxCDD	110	96.8	113	112	99.1	113	70-164	3	50
1,2,3,6,7,8-HxCDD	108	96.8	111	112	99.1	113	76-134	4	50
1,2,3,7,8,9-HxCDD	106	96.8	110	98.4	99.1	99	64-162	8	50
1,2,3,7,8-PeCDD	110	96.8	113	114	99.1	115	70-142	4	50
2,3,7,8-TCDD	20.7	19.4	107	21.9	19.8	110	67-158	6	50
OCDD	193	194	100	201	198	101	78-144	4	50
1,2,3,4,6,7,8-HpCDF	109	96.8	113	128	99.1	129 *	82-122	16	50
1,2,3,4,7,8,9-HpCDF	106	96.8	109	114	99.1	115	78-138	7	50
1,2,3,4,7,8-HxCDF	110	96.8	113	117	99.1	118	72-134	6	50
1,2,3,6,7,8-HxCDF	105	96.8	109	110	99.1	111	84-130	4	50
1,2,3,7,8,9-HxCDF	71.2	96.8	74 *	72.2	99.1	73 *	78-130	1	50
1,2,3,7,8-PeCDF	102	96.8	105	105	99.1	106	80-134	3	50
2,3,4,6,7,8-HxCDF	105	96.8	109	111	99.1	112	70-156	5	50
2,3,4,7,8-PeCDF	109	96.8	113	113	99.1	114	68-160	4	50
2,3,7,8-TCDF	21.3	19.4	110	22.5	19.8	113	75-158	5	50
OCDF	168	194	87	453	198	229 *	63-170	92 *	50

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1500519-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/31/15 17:47
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.334g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P600281	**Blank File Name:**	P600275
ICAL Date:	08/19/15	**Cal Ver. File Name:**	P600274

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	20.7		0.0293	0.484	0.77	1.001	1
1,2,3,7,8-PeCDD	110		0.0467	2.42	1.56	1.000	1
1,2,3,4,7,8-HxCDD	110		0.0584	2.42	1.25	1.000	1
1,2,3,6,7,8-HxCDD	108		0.0612	2.42	1.25	1.000	1
1,2,3,7,8,9-HxCDD	106		0.0539	2.42	1.25	1.007	1
1,2,3,4,6,7,8-HpCDD	104		0.0755	2.42	1.03	1.000	1
OCDD	193		0.0834	4.84	0.89	1.000	1
2,3,7,8-TCDF	21.3		0.0225	0.484	0.76	1.001	1
1,2,3,7,8-PeCDF	102		0.0342	2.42	1.54	1.001	1
2,3,4,7,8-PeCDF	109		0.0354	2.42	1.53	1.000	1
1,2,3,4,7,8-HxCDF	110		0.0445	2.42	1.23	1.000	1
1,2,3,6,7,8-HxCDF	105		0.0420	2.42	1.23	1.000	1
1,2,3,7,8,9-HxCDF	71.2		0.0311	2.42	1.24	1.000	1
2,3,4,6,7,8-HxCDF	105		0.0460	2.42	1.22	1.000	1
1,2,3,4,6,7,8-HpCDF	109		0.0939	2.42	1.03	1.000	1
1,2,3,4,7,8,9-HpCDF	106		0.0843	2.42	1.03	1.000	1
OCDF	168		0.0627	4.84	0.89	1.005	1

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1500519-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/31/15 17:47
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.334g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P600281	**Blank File Name:**	P600275
ICAL Date:	08/19/15	**Cal Ver. File Name:**	P600274

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	20.7		0.0293	0.484	0.77		1
Total Penta-Dioxins	110		0.0467	2.42	1.56		1
Total Hexa-Dioxins	324		0.0577	2.42	1.25		1
Total Hepta-Dioxins	105		0.0755	2.42	0.93		1
Total Tetra-Furans	22.6		0.0225	0.484	0.71		1
Total Penta-Furans	214		0.0348	2.42	1.36		1
Total Hexa-Furans	391		0.0400	2.42	1.23		1
Total Hepta-Furans	216		0.0887	2.42	1.03		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1500519-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/31/15 17:47
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.334g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P600281	**Blank File Name:**	P600275
ICAL Date:	08/19/15	**Cal Ver. File Name:**	P600274

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1335.063	67		25-164	0.79	1.018
13C-1,2,3,7,8-PeCDD	2000	1623.285	81		25-181	1.56	1.171
13C-1,2,3,4,7,8-HxCDD	2000	1539.172	77		32-141	1.27	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1545.871	77		28-130	1.27	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1280.155	64		23-140	1.05	1.065
13C-OCDD	4000	2583.929	65		17-157	0.91	1.142
13C-2,3,7,8-TCDF	2000	1445.975	72		24-169	0.79	0.993
13C-1,2,3,7,8-PeCDF	2000	1597.402	80		24-185	1.56	1.132
13C-2,3,4,7,8-PeCDF	2000	1560.705	78		21-178	1.57	1.162
13C-1,2,3,4,7,8-HxCDF	2000	1473.970	74		26-152	0.52	0.972
13C-1,2,3,6,7,8-HxCDF	2000	1568.492	78		26-123	0.52	0.975
13C-1,2,3,7,8,9-HxCDF	2000	2250.441	113		29-147	0.53	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1466.002	73		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1044.985	52		28-143	0.45	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	1206.299	60		26-138	0.44	1.079
37Cl-2,3,7,8-TCDD	800	561.553	70		35-197	NA	1.019

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1500519-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/31/15 18:36
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.089g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P600282	**Blank File Name:**	P600275
ICAL Date:	08/19/15	**Cal Ver. File Name:**	P600274

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	21.9		0.0373	0.496	0.78	1.000	1
1,2,3,7,8-PeCDD	114		0.0604	2.48	1.55	1.000	1
1,2,3,4,7,8-HxCDD	112		0.0560	2.48	1.25	1.000	1
1,2,3,6,7,8-HxCDD	112		0.0582	2.48	1.26	1.000	1
1,2,3,7,8,9-HxCDD	98.4		0.0516	2.48	1.26	1.006	1
1,2,3,4,6,7,8-HpCDD	108		0.0703	2.48	1.05	1.000	1
OCDD	201		0.105	4.96	0.88	1.000	1
2,3,7,8-TCDF	22.5		0.0339	0.496	0.75	1.001	1
1,2,3,7,8-PeCDF	105		0.0840	2.48	1.54	1.001	1
2,3,4,7,8-PeCDF	113		0.0865	2.48	1.55	1.000	1
1,2,3,4,7,8-HxCDF	117		0.128	2.48	1.24	1.000	1
1,2,3,6,7,8-HxCDF	110		0.122	2.48	1.23	1.000	1
1,2,3,7,8,9-HxCDF	72.2		0.110	2.48	1.24	1.000	1
2,3,4,6,7,8-HxCDF	111		0.139	2.48	1.25	1.000	1
1,2,3,4,6,7,8-HpCDF	128		0.170	2.48	1.02	1.000	1
1,2,3,4,7,8,9-HpCDF	114		0.170	2.48	1.02	1.000	1
OCDF	453		0.102	4.96	0.89	1.005	1

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Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1500519-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/31/15 18:36
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.089g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P600282	**Blank File Name:**	P600275
ICAL Date:	08/19/15	**Cal Ver. File Name:**	P600274

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	21.9		0.0373	0.496	0.78		1
Total Penta-Dioxins	114		0.0604	2.48	1.55		1
Total Hexa-Dioxins	323		0.0551	2.48	1.25		1
Total Hepta-Dioxins	109		0.0703	2.48	0.96		1
Total Tetra-Furans	25.9		0.0339	0.496	0.76		1
Total Penta-Furans	226		0.0852	2.48	1.36		1
Total Hexa-Furans	415		0.124	2.48	1.25		1
Total Hepta-Furans	249		0.170	2.48	1.02		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Cosmopolitan Engineering Group	**Service Request:**	K1509053
Project:	Bremerton 2015/Bremerton 2015	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1500519-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	08/31/15 18:36
Prep Method:	Method Soxhlet	**Date Extracted:**	8/27/15
Sample Amount:	10.089g	**Instrument Name:**	E-HRMS-08
		GC Column:	DB-5MSUI
Data File Name:	P600282	**Blank File Name:**	P600275
ICAL Date:	08/19/15	**Cal Ver. File Name:**	P600274

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1086.111	54		25-164	0.79	1.019
13C-1,2,3,7,8-PeCDD	2000	1351.474	68		25-181	1.56	1.171
13C-1,2,3,4,7,8-HxCDD	2000	1556.274	78		32-141	1.27	0.992
13C-1,2,3,6,7,8-HxCDD	2000	1612.970	81		28-130	1.26	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1176.088	59		23-140	1.06	1.065
13C-OCDD	4000	2286.586	57		17-157	0.90	1.142
13C-2,3,7,8-TCDF	2000	1181.051	59		24-169	0.79	0.993
13C-1,2,3,7,8-PeCDF	2000	1327.413	66		24-185	1.57	1.132
13C-2,3,4,7,8-PeCDF	2000	1289.288	64		21-178	1.57	1.162
13C-1,2,3,4,7,8-HxCDF	2000	1545.320	77		26-152	0.53	0.972
13C-1,2,3,6,7,8-HxCDF	2000	1625.614	81		26-123	0.52	0.975
13C-1,2,3,7,8,9-HxCDF	2000	1920.525	96		29-147	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1417.254	71		28-136	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1082.966	54		28-143	0.44	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	1118.615	56		26-138	0.45	1.079
37Cl-2,3,7,8-TCDD	800	466.161	58		35-197	NA	1.019

MARINE ENGINEERING

Appendix B

Tables 8-1 and 8-2 from Ecology's *Sediment Cleanup User's Manual II*

Civil and

Environmental

Consulting

Table 8-1. Marine and freshwater sediment chemical criteria for protection of the benthic community.

	SMS Freshwater Sediment[a]		SMS Marine Sediment[b]		Marine Sediment AETs[c]	
Analyte	**SCO**	**CSL**	**SQS/SCO**	**CSL/SIZ Max**	**SCO**	**CSL**
Conventional Pollutants	**mg/kg dw**					
Ammonia	230	300				
Total sulfides	39	61				
Metals	**mg/kg dw**		**mg/kg dw**		**mg/kg dw**	
Arsenic	14	120	57	93	57	93
Cadmium	2.1	5.4	5.1	6.7	5.1	6.7
Chromium	72	88	260	270	260	270
Copper	400	1200	390	390	390	390
Lead	360	*> 1300*	450	530	450	530
Mercury	0.66	0.8	0.41	0.59	0.41	0.59
Nickel	26	110				
Selenium	11	*> 20*				
Silver	0.57	1.7	6.1	6.1	6.1	6.1
Zinc	3200	*> 4200*	410	960	410	960
Organometallics	**µg/kg dw**					
Monobutyltin	540	*> 4800*				
Dibutyltin	910	130000				
Tributyltin	47	320				
Tetrabutyltin	97	*> 97*				
Organic Chemicals	**µg/kg dw**		**µg/kg dw (except *)**		**µg/kg dw**	
2,4-Dimethylphenol			29	29	29	29
2-Methylphenol			63	63	63	63
4-Methylphenol	260	2000	670	670	670	670
Benzoic acid	2900	3800	650	650	650	650
Benzyl alcohol			57	73	57	73
Dibenzofuran	200	680	15*	58*	540	540
Phenol	120	210	420	1200	420	1200
N-nitrosodiphenylamine			11*	11*	28	40
Phthalates	**µg/kg dw**		**mg/kg OC**		**µg/kg dw**	
Bis(2-Ethylhexyl)phthalate	500	22000	47	78	1300	1900
Butylbenzyl phthalate			4.9	64	63	900
Diethyl phthalate			61	110	200	*>1200*
Dimethyl phthalate			53	53	71	160
Di-n-butyl phthalate	380	1000	220	1700	1400	1400
Di-n-octyl phthalate	39	*> 1100*	58	4500	6200	6200

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Table 8-1 (continued). Marine and freshwater sediment chemical criteria for protection of the benthic community.

	SMS Freshwater Sediment[a]		SMS Marine Sediment[b]		Marine Sediment AETs[c]	
Analyte	**SCO**	**CSL**	**SQS/SCO**	**CSL/SIZ Max**	**SCO**	**CSL**
Pesticides and PCBs	**µg/kg dw**		**mg/kg OC**		**µg/kg dw**	
beta-Hexachlorocyclohexane	7.2	11				
Carbazole	900	1100				
Dieldrin	4.9	9.3				
Endrin ketone	8.5	**				
Total Aroclors	110	2500	12	65	130	1000
Total o, o' and p,p' dichlorodiphenyldichloroethanes (DDDs)	310	860				
Total o, o' and p,p' dichlorodiphenyldichloroethylenes (DDEs)	21	33				
Total o, o' and p,p' dichlorodiphenyltrichloroethanes (DDTs)	100	8100				
Polycyclic Aromatic Hydrocarbons	**µg/kg dw**		**mg/kg OC**		**µg/kg dw**	
Total PAHs	17000	30000				
LPAH			370	780	5200	5200
Naphthalene			99	170	2100	2100
Acenaphthylene			66	66	1300	1300
Acenaphthene			16	57	500	500
Fluorene			23	79	540	540
Phenanthrene			100	480	1500	1500
Anthracene			220	1200	960	960
2-Methylnaphthalene			38	64	670	670
Total HPAH			960	5300	12000	17000
Fluoranthene			160	1200	1700	2500
Pyrene			1000	1400	2600	3300
Benz[a]anthracene			110	270	1300	1600
Chrysene			110	460	1400	2800
Total benzofluoranthenes			230	450	3200	3600
Benzo[a]pyrene			99	210	1600	1600
Indeno[1,2,3-c,d]pyrene			34	88	600	690
Dibenzo[a,h]anthracene			12	33	230	230
Benzo[g,h,i]perylene			31	78	670	720
Bulk Petroleum Hydrocarbons	**mg/kg dw**					
TPH-Diesel	340	510				
TPH-Residual	3600	4400				

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Table 8-1 (continued). Marine and freshwater sediment chemical criteria for protection of the benthic community.

	SMS Freshwater Sediment[a]		SMS Marine Sediment[b]		Marine Sediment AETs[c]	
Analyte	**SCO**	**CSL**	**SQS/SCO**	**CSL/SIZ Max**	**SCO**	**CSL**
Chlorinated Organics	**ug/kg dw**		**mg/kg OC**		**ug/kg dw**	
1,2,4-Trichlorobenzene			0.81	1.8	31	51
1,2-Dichlorobenzene			2.3	2.3	35	50
1,4-Dichlorobenzene			3.1	9	110	110
Hexachlorobenzene			0.38	2.3	22	70
Hexachlorobutadiene			3.9	6.2	11	120
Pentachlorophenol * ug/kg dry weight	1200	*> 1200*	360	690	360	690

a, All freshwater values are dry weight normalized.

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

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

> *Italicized blue* "greater than" value indicates that the toxic level is unknown, but above the concentration shown.

* mg/kg OC

** CSL criteria does not exist

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Table 8-2. Marine biological criteria (SQS/SCO & CSL and performance standards) for each biological test.

Biological Test Endpoint	Performance Standard		SQS/SCO	CSL
	Control	Reference		
Amphipod				
10-Day mortality	M_C < 10%	M_R < 25%	M_T > 25% Absolute *and* M_T vs. M_R SD (p = 0.05)	M_T – M_R > 30% *and* M_T vs. M_R SD (p = 0.05)
Larval				
Bivalve or echinoderm abnormality /mortality	N_C / I > 0.70	N_R / N_C ≥ 0.65	N_T / N_R < 0.85 *and* N_T vs. N_R SD (p = 0.10)	N_T / N_R > 0.70 *and* N_T vs. N_R SD (p = 0.10)
Juvenile Polychaete				
***Neanthes* 20-day growth**	M_C < 10% *and* MIG_C > 0.72 mg/individual·day (or case-by-case)	MIG_R / MIG_C > 0.80	MIG_T / MIG_R < 0.70 *and* MIG_T vs. MIG_R SD (p = 0.05)	MIG_T / MIG_R < 0.50 *and* MIG_T vs. MIG_R SD (p = 0.05)
Microtox				
Microtox decreased luminescence	Case-by-case	Case-by-case	ML_T / ML_R < 0.80 *and* ML_T vs. ML_R SD (p = 0.05)	
Benthic Community				
Benthic Abundance	See notes below		A_T / A_R < 0.50 For any one of the three major taxa Class Crustacea, Phylum Mollusca, or Class Polychaeta	A_T / A_R < 0.50 For any one of the three major taxa Class Crustacea, Phylum Mollusca, or Class Polychaeta

A = Abundance; C = Control; R = Reference; T = Test; F = Final; M = Mortality; N = Normal Survivorship expressed as actual counts; I = Initial count; MIG = Mean Individual Growth Rate expressed in mg/ind/day Ash Free Dry Weight; ML = Mean Light output; BLD = Blank Corrected Light Decrease; SD = Significantly Different.

For the Amphipod, Juvenile Polychaete, and Microtox tests, a statistical significance at p = 0.05 equals an exceedance of the criteria. For the Larval test, a statistical significance at p = 0.10 equals an exceedance of the criteria.

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COSMOPOLITAN

MARINE ENGINEERING

Appendix C

Proposed Laboratory Analytes and Methods

Civil and

Environmental

Consulting

Analytes Monitored for the Bremerton Sediment Study, Round II

Chemical Parameter	Sediment Quality Standards (SQS)	Recommended Sample Preparation Methods	Recommended Sample Cleanup Methods	Recommended Analytical Methods
METALS	**(mg/kg dry weight, ppm)**			
Arsenic	57	EPA 6010/6020	–	EPA 6010/6020
Cadmium	5.1	EPA 6010/6020	–	EPA 6010/6020
Chromium	260	EPA 6010/6020	–	EPA 6010/6020
Copper	390	EPA 6010/6020	–	EPA 6010/6020
Lead	450	EPA 6010/6020	–	EPA 6010/6020
Mercury	0.41	EPA 7471	–	EPA 7471
Silver	6.1	EPA 6010/6020	–	EPA 6010/6020
Zinc	410	EPA 6010/6020	–	EPA 6010/6020
NONIONIZABLE ORGANIC COMPOUNDS	**(mg/kg organic carbon[1], ppm OC)**			
Aromatic Hydrocarbons				
Total LPAH[2]	370			
Naphthalene	99	EPA 3550-mod	EPA 3660B	EPA 8270
Acenaphthylene	66	EPA 3550-mod	EPA 3660B	EPA 8270
Acenaphthene	16	EPA 3550-mod	EPA 3660B	EPA 8270
Fluorene	23	EPA 3550-mod	EPA 3660B	EPA 8270
Phenanthrene	100	EPA 3550-mod	EPA 3660B	EPA 8270
Anthracene	220	EPA 3550-mod	EPA 3660B	EPA 8270
2-Methylnaphthalene	38	EPA 3550-mod	–	EPA 8270
Total HPAH[3]	960			
Fluoranthene	160	EPA 3550-mod	EPA 3660B	EPA 8270
Pyrene	1,000	EPA 3550-mod	EPA 3660B	EPA 8270
Benzo[a]anthracene	110	EPA 3550-mod	EPA 3660B	EPA 8270
Chrysene	110	EPA 3550-mod	EPA 3660B	EPA 8270
Total benzofluoranthenes[4]	230	EPA 3550-mod	EPA 3660B	EPA 8270
Benzo[a]pyrene	99	EPA 3550-mod	EPA 3660B	EPA 8270
Indeno[1,2,3-c,d]pyrene	34	EPA 3550-mod	EPA 3660B	EPA 8270
Dibenzo[a,h]anthracene	12	EPA 3550-mod	EPA 3660B	EPA 8270
Benzo[g,h,i]perylene	31	EPA 3550-mod	EPA 3660B	EPA 8270

Analytes Monitored for the Bremerton Sediment Study, Round II

Chemical Parameter	Sediment Quality Standards (SQS)	Recommended Sample Preparation Methods	Recommended Sample Cleanup Methods	Recommended Analytical Methods
CHLORINATED BENZENES				
1,2-Dichlorobenzene	2.3	EPA 3550-mod	–	EPA 8270
1,4-Dichlorobenzene	3.1	EPA 3550-mod	EPA 3660B	EPA 8270
1,2,4-Trichlorobenzene	0.81	EPA 3550-mod	–	EPA 8270
Hexachlorobenzene	0.38	EPA 3550-mod/3540	EPA 3660B	EPA 8270/8081
PHTHALATE ESTERS				
Dimethyl phthalate	53	EPA 3550-mod	EPA 3660B	EPA 8270
Diethyl phthalate	61	EPA 3550-mod	EPA 3660B	EPA 8270
Di-n-butyl phthalate	220	EPA 3550-mod	EPA 3660B	EPA 8270
Butyl benzyl phthalate	4.9	EPA 3550-mod	EPA 3660B	EPA 8270
Bis[2-ethylhexyl]phthalate	47	EPA 3550-mod	EPA 3660B	EPA 8270
Di-n-octyl phthalate	58	EPA 3550-mod	EPA 3660B	EPA 8270
MISCELLANEOUS				
Dibenzofuran	15	EPA 3550-mod	–	EPA 8270
Hexachlorobutadiene	3.9	EPA 3550-mod/3540	EPA 3660B	EPA 8270/8081
N-nitrosodiphenylamine	11	EPA 3550-mod	–	EPA 8270
Total PCBs	12	EPA 3540	EPA 3660B	EPA 8082
IONIZABLE ORGANIC COMPOUNDS	**(µg/kg dry weight, ppb)**			
Phenol	420	EPA 3550-mod	EPA 3660B	EPA 8151/8270
2-Methylphenol	63	EPA 3550-mod	EPA 3660B	EPA 8151/8270
4-Methylphenol	670	EPA 3550-mod	EPA 3660B	EPA 8151/8270
2,4-Dimethylphenol	29	EPA 3550-mod	EPA 3660B	EPA 8151/8270
Pentachlorophenol	360	EPA 3550-mod	EPA 3660B	EPA 8151/8270
Benzyl alcohol	57	EPA 3550-mod	–	EPA 8151/8270
Benzoic acid	650	EPA 3550-mod	–	EPA 8151/8270

Analytes Monitored for the Bremerton Sediment Study, Round II

Chemical Parameter	Sediment Quality Standards (SQS)	Recommended Sample Preparation Methods	Recommended Sample Cleanup Methods	Recommended Analytical Methods
CONVENTIONAL SEDIMENT VARIABLES				
Ammonia	–	–	–	Plumb (1981)
Grain size	–	–	–	PSEP, 1997a / ASTM D-422
Total solids	–	–	–	PSEP, 1997a
Total organic carbon (TOC)	–	–	–	9060
Total sulfides	–	–	–	Plumb (1981) / 9030B
Total Volatile Solids (TVS) [5]	–	–	–	EPA 160.4

[1] The listed values represent concentrations in parts per million "normalized" on a total organic carbon basis. To normalize to total organic carbon, the dry-weight concentration for each parameter is divided by the decimal fraction representing the percent total organic carbon content of the sediment.

[2] The total LPAH criterion under the SMS represents the sum of the concentrations of the following LPAH compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, and anthracene. The total LPAH criterion is not the sum of the corresponding criteria listed for the individual LPAH compounds.

[3] The total HPAH criterion under the SMS represents the sum of the concentrations of the following HPAH compounds: fluoranthene, pyrene, benz[a]anthracene, chrysene, total benzofluoranthenes, benzo[a]pyrene, indeno[1,2,3-c,d]pyrene, dibenzo[a,h]anthracene, and benzo[g,h,i]perylene. The total HPAH criterion is not the sum of the corresponding criteria listed for the individual HPAH compounds.

[4] The total benzofluoranthenes criterion represents the sum of the concentrations of the b, j, and k isomers of benzofluoranthene.

[5] West Plant stations only

Notes: Where laboratory analysis indicates a chemical is not detected in a sediment sample, the detection limit shall be reported with U (Undetected) qualifier code and shall be at or below the Marine Sediment Quality Standards (SQS) chemical criteria (Table 1). Where the result is an estimated concentration that is less than the MRL but greater than or equal to the MDL, the detection limit shall be reported with a J flag. Where chemical criteria in Table 1 represent the sums of individual compounds (e.g., total LPAHs and total HPAHs), isomers (e.g., total benzofluoranthenes), or groups of congeners (e.g., total PCBs), the following methods shall be applied: (i) Where chemical analyses identify an undetected value for every individual compound/isomer/ congener, then the single highest detection limit shall represent the sum of the respective compounds/isomers/congeners; and (ii) Where chemical analyses detect one or more individual compound/isomers/ congeners, only the detected concentrations will be added to represent the group sum.

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Appendix D

Tables 4-6 and 4-7 from Ecology's *Sediment Cleanup User's Manual II*

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Table 4-6. Minimum sediment sample sizes and acceptable containers for physical/chemical analyses and sediment toxicity tests.

Sample Type	Minimum Sample Size[a]	Container Type[b]
Physical/Chemical Analyses		
Grain size	100–150 g	P,G
Total solids	50 g	P,G
Total volatile solids	50 g	P,G
Total organic carbon	25 g	P,G
Ammonia	25 g	P,G
Total sulfides	50 g	P,G[c]
Acid volatile sulfides	50 g	G[c]
Oil and grease	100 g	G
Metals (except mercury)	50 g	P,G
Mercury	1 g	P,G
Methyl Mercury	100 g	G, T[c]
Organotins	100 g	G (for bulk sediment) Pc, T (for interstitial water)
Volatile organic compounds	50 g	G,T
Semivolatile organic compounds	50–100 g	G
Pesticides and PCBs	50–100 g	G,T
Biological Toxicity Tests		
Marine		
Amphipod (*Rhepoxynius abronius, Ampelisca abdita*, or *Eohaustorius estuarius*)	0.25 L per replicate (1.25 L per station)	G
Bivalve larvae (*Crassostrea gigas, Mytilus* sp.)	200 g (wet weight) per station	G
Echinoderm larvae (*Strongylocentrotus purpuratus, Strongylocentrotus droebachiensis,* or *Dendraster excentricus*)	200 g (wet weight) per station	G
Juvenile polychaete (*Neanthes* sp.)	0.25 L per replicate (1.25 L per station)	G
Microtox® 100% porewater	0.5 L per station	G
Freshwater		
Amphipod (*Hyalella azteca*)	0.1 L per replicate (0.8 L per station)	G
Midge (*Chironomus tentans*)	0.1 L per replicate (0.8 L per station)	G
Frog embryo *(Xenopus laevis)*	45 g (dry weight) per station	G
Microtox® 100% porewater	0.5 L per station	G

It is recommended that adequate sample volume is collected and properly archived to duplicate the tests or analyses in case they must be repeated.

a, Recommended minimum field sample sizes (wet weight basis) for one laboratory analysis. If additional laboratory analyses are required (e.g., laboratory replicates, allowance for having to repeat

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an analysis), the field sample size should be increased accordingly. For some chemical analyses, smaller sample sizes may be used if comparable sensitivity can be obtained by adjusting instrumentation, extract volume, or other factors of the analysis.

b, P - linear polyethylene; G - borosilicate glass; Pc – Polycarbonate; T - polytetrafluorethylene (PTFE, Teflon®)-lined cap.

c, No headspace or air pockets should remain. If such samples are frozen in glass containers, breakage of the container is likely to occur.

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Table 4-7. Storage temperatures and maximum holding times for physical/chemical analyses and sediment toxicity tests.

Sample Type	Sample Preservation Technique	Maximum Holding Time
Grain size	Cool, 4°C	6 months
Total solids	Cool, 4°C Freeze, -18°C	14 days 6 months
Total volatile solids	Cool, 4°C Freeze, -18°C	14 days 6 months
Total organic carbon	Cool, 4°C Freeze, -18°C	14 days 6 months
Ammonia	Cool, 4°C	7 days
Total sulfides	Cool, 4°C, zero headspace required (a 250 ml sample for 5 ml of 2 N zinc acetate)	7 days
Acid Volatile Sulfides	Cool, 4°C, zero headspace required	14 days
Oil and grease	Cool, 4°C Freeze, -18°C	28 days 6 months
Metals (except mercury)	Cool, 4°C Freeze, -18°C	6 months 2 years
Mercury	Freeze, -18°C	28 days
Methyl Mercury	Freeze, -18°C	8 days
Organotins After extraction	Cool, 4°C Freeze, -18°C (for interstitial water analysis, extract water prior to freezing) Cool, 4°C	14 days 1 year 40 days
Semivolatile organic compounds, pesticides, PCBs, PCDD/PCDF After extraction	Cool, 4°C Freeze, -18°C Cool, 4°C	14 days 1 year 40 days
Volatile organic compounds	Cool, 4°C, zero headspace required	14 days
Sediment toxicity tests	Cool, 4°C Cool, 4°C, nitrogen atmosphere	2 weeks[a] 8 weeks[a]

PCB - polychlorinated biphenyl
PCDD - polychlorinated dibenzo-p-dioxin
PCDF - polychlorinated dibenzofuran

a, The PSEP (1995) protocols recommend a maximum holding time of 2 weeks, but recognize that it may be necessary under certain circumstances to extend the holding time to accommodate a tiered testing strategy in which chemical analyses are conducted prior to toxicity testing. The DMMP, for example, allows sediments to be stored in the dark in a nitrogen atmosphere at 4°C for up to 8 weeks. The 8-week holding time applies to reference and to test sediments which should be collected at the same time.

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Appendix E

Tables 5-3 – 5-5 from Ecology's *Sediment Cleanup User's Manual II*

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Table 5-3. Quality control procedures for organic analyses.

Quality Control Procedure	Frequency	Control Limit	Corrective Action
Instrument Quality Assurance/ Quality Control			
Initial Calibration[a]	Before sample analysis and when continuing calibration does not meet method requirements. See reference method(s) in Table 5-1.	See reference method(s) in Table 5-1	Laboratory to recalibrate and reanalyze affect samples
Continuing Calibration[a]	Method-specific. See reference method(s) in Table 5-1	Method – specific. See reference method(s) in Table 5-1	Laboratory to recalibrate if correlation coefficient or response factor does not meet requirements
Method Quality Assurance/Quality Control			
Holding Times[ab]	All samples.	See Chapter 4	Laboratory to qualify results if holding times are exceeded. Data validator will use professional judgment to qualify results as estimated or reject data.
Method Detection Limits (MDL)[ab]	Update method detection limit studies annually.	See reference method(s) in Table 5-1.	Revise detection limits.
Method Blanks[ab]	One per sample batch or every 20 samples, whichever is more frequent, or when there is a change in reagents.	Analyte concentration ≤ PQL. Control limits are not applicable if sample concentrations are < MDL.	Laboratory to eliminate or greatly reduce laboratory contamination due to glassware, or reagents, or analytical system. Re-digest and reanalyze affected samples.
Analytical Laboratory Duplicates [ab] and Matrix Spike Duplicates [ab]	One duplicate analysis with every sample batch or every 20 samples, whichever is more frequent. Use analytical replicates when samples are expected to contain target analytes. Use matrix spike duplicates when samples are not expected to contain target analytes.	Compound and matrix specific. Use intra-laboratory control chart results if sufficient data are available to generate control charts. Otherwise use analytical method default criteria.	Laboratory to re-digest and reanalyze samples if analytical problems are suspected, or to qualify the data if sample homogeneity problems are suspected and the project manager is consulted.
Matrix Spikes[ab]	One per sample batch or every 20 samples, whichever is more frequent. Spiked with the same analytes at the same concentration as the laboratory control sample.	Compound and matrix specific, recovery should not exceed method or performance -based intra-laboratory control chart limits.	Laboratory to re-digest and reanalyze samples if analytical problems suspected. Matrix interferences should be assessed and explained in case narrative accompanying the data package.
Surrogate Spikes[ab]	Added to every organics sample as specified in analytical protocol.	Compound specific, recovery should not exceed the control limits specified in the method or performance-based intra-laboratory control limits.	Follow corrective actions specified in analytical method.
Laboratory Control Samples[ab]	One per analytical batch or every 20 samples, whichever is more frequent.	Compound specific, recovery should not exceed performance-based intra-laboratory control limits.	Laboratory to correct problem to verify the analysis can be performed in a clean matrix with acceptable precision and recovery; then re-extract and reanalyze affected samples.
Certified or Standard Reference Material [ab]	Project specific requirement or at project manager's discretion.	Compound specific, recovery should be within accepted control or advisory limits.	Laboratory to re-extract and reanalyze samples if analytical problems suspected, or to qualify the data after consultation.

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Table 5-3 (continued). Quality control procedures for organic analyses.

Quality Control Procedure	Frequency	Control Limit	Corrective Action
Field Quality Assurance/Quality Control			
Field Duplicates	At project manager's discretion	Project, matrix, and compound specific	Modify field sample homogenization procedures.
Field Blanks	At project manager's discretion	Analyte concentration ≤ PQL	Compare to method blank results to rule out laboratory contamination. Modify sample collection and equipment decontamination procedures. Quality associated data.

a, Subject to QA2 review
b, Subject to QA1 review

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Table 5-4. Quality control procedures for metals analyses.

Quality Control Procedure	Frequency	Control Limit	Corrective Action
Instrument Quality Assurance/Quality Control			
Initial Calibration[a]	Daily .	Correlation coefficient ≥0.995.	Laboratory to optimize and recalibrate the instrument and reanalyze any affected samples.
Initial Calibration Verification[a]	Immediately after initial calibration.	90-110% recovery for ICP-AES, ICP-MS and GFAA (80-120% for Mercury), or method based.	Laboratory to resolve discrepancy prior to sample analysis.
Continuing Calibration Verification [a]	After every 10 samples or every 2 hours, whichever is more frequent, and after the last sample.	90-110% recovery for ICP-AES and GFAA, 85-115% for ICP-MS (80-120% for mercury).	Laboratory to recalibrate and reanalyze affected samples.
Initial and Continuing Calibration Blanks [a]	Immediately after initial calibration, then 10% of samples or every 2 hours, whichever is more frequent, and after the last sample.	Analyte concentration ≤ PQL.	Laboratory to recalibrate and reanalyze affected samples
ICP Interelement Interference Check Samples [a]	At the beginning and end of each analytical sequence or twice per 8-hour shift, whichever is more frequent.	80-120% of the true value.	Laboratory to correct problem, recalibrate, and reanalyze affected samples.
Method Quality Assurance/Quality Control			
Holding Times [ab]	All samples.	See Chapter 4.	Laboratory to qualify results if holding times are exceeded. Data validator will use professional judgment to qualify results as estimated or to reject data.
Method Detection Limits [ab]	Update method detection limit studies annually.	See reference method(s) in Table 5-1.	Revise detection limits.
Method Blanks [ab]	With every sample batch or every 20 samples, whichever is more frequent.	Analyte concentration ≤ PQL. Control limits are not applicable if sample concentrations are < MDL	Laboratory to re-digest and reanalyze samples.
Analytical (Laboratory) Duplicates[ab] or Matrix Spike Duplicates [ab]	One duplicate analysis with every sample batch or every 20 samples, whichever is more frequent; Use analytical replicates when samples are expected to contain target analytes. Use matrix spike replicates when samples are not expected to contain target analytes.	Analyte and matrix specific. Use intra-laboratory control chart limits if sufficient data are available to generate control charts; otherwise use analytical method default criteria.	Laboratory to re-digest and reanalyze samples if analytical problems are suspected, or to qualify the data if sample homogeneity problems are suspected and the project manager is consulted.
Matrix Spikes [ab]	With every sample batch or every 20 samples, whichever is more frequent.	75-125% recovery applied when the sample concentration is ≤4 times the spiked concentration for a particular analyte.	Laboratory may be able to correct or minimize problem, or qualify and accept data.

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Table 5-4 (continued). Quality control procedures for metals analyses.

Quality Control Procedure	Frequency	Control Limit	Corrective Action
Laboratory Control Samples [ab]	With every sample batch or every 20 samples, whichever is more frequent.	80 - 120% recovery, or performance based intra-laboratory control limits, whichever is lower.	Laboratory to correct problem to verify the analysis can be performed in a clean matrix with acceptable precision and recovery; then reanalyze affected samples.
Certified or Standard Reference Material[ab]	Project specific requirement or at project manager's discretion.	Compound specific, recovery should be within accepted control or advisory limits.	Laboratory to re-digest and reanalyze samples if analytical problems suspected, or to qualify the data after the project manager is consulted.
Field Quality Assurance/Quality Control			
Field Duplicates	At project manager's discretion	Project, matrix, and analyte specific.	Modify field sample homogenization procedures.
Field Blanks	At project manager's discretion.	Analyte concentration ≤ PQL.	Compare to method blank results to rule out laboratory contamination; modify sample collection and equipment decontamination procedures.

Notes:

GFAA - graphite furnace atomic absorption
ICP-MS - inductively coupled plasma/mass spectrometry
ICP-AES - inductively coupled plasma/atomic emission spectrometry

Instrument and method QA/QC to monitor the performance of the instrument and sample preparation procedures are the responsibility of the analytical laboratory.

When an instrument or method control limit is exceeded, the laboratory is responsible for correcting the problem and reanalyzing the samples.

Instrument and method QA/QC results reported in the final data package should always meet control limits with a very small number of exceptions that apply to difficult analytes as specified by EPA CLP.

If instrument and method QA/QC procedures meet control limits, laboratory procedures are deemed to be adequate.

Matrix and field QA/QC procedures monitor matrix effects, field procedures, and variability.

Although poor analytical procedures may also result in poor spike recovery or duplicate results, the laboratory is not held responsible for meeting control limits for these QA/QC samples.

Except in the possible case of unreasonably large exceedances, any reanalysis will be performed at the request and expense of the project manager.

a, Subject to QA2 review.
b, Subject to QA1 review.

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Table 5-5. Quality control procedures for conventional analyses.

Suggested Control Limit							
Analyte	**Initial Calibration**	**Continuing Calibration**	**Calibration Blanks**	**Laboratory Control Samples**	**Matrix Spikes**	**Laboratory Duplicates**	**Method Blank**
Ammonia	Correlation coefficient ≥0.995	90 -110% recovery	Analyte concentration ≤ PQL	80 -120% recovery	75 -125% recovery	20% RSD	Analyte concentration ≤ PQL
Grain size	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	20% RSD	Not applicable
Total organic carbon	Correlation coefficient ≥ 0.995	90-110% recovery	Analyte concentration ≤ PQL	80-120% recovery	75-125% recovery	20% RSD	Analyte concentration ≤ PQL
Total sulfides	Correlation coefficient ≥ 0.990	85 -115% recovery	Not applicable	65 -135% recovery	65 -135% recovery	20% RSD	Analyte concentration ≤ PQL
Total solids	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	20% RSD	Analyte concentration ≤ PQL

RSD - relative standard deviation

EPA and PSEP control limits are not available for conventional analytes.

The control limits provided above are suggested limits only. They are based on EPA control limits for metals analyses (see Table 5-2), and an attempt has been made to take into consideration the expected analytical accuracy using PSEP methodology.

Corrective action to be taken when control limits are exceeded is left to the Project Manager's discretion.

The corrective action indicated for metals in Table 5-4 may be applied to conventional analytes.

When applicable, the QA/QC procedures indicated in this table should be completed at the same frequency as for metals analyses (see Table 5-4*).*

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