

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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TestAmerica Job ID: 580-79099-2

Client Project/Site: Portland Harbor Pre-Remedial Design

For:
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Authorized for release by:
8/14/2018 3:57:02 PM

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Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Job ID: 580-79099-2

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE

Client: AECOM

Project: Portland Harbor Pre-Remedial Design

Report Number: 580-79099-2

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interferences thereby enabling the quantification of target analytes.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

Thirty-one samples were received on 7/25/2018 1:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 0.7° C, 1.3° C, 2.7° C, 3.0° C, 3.4° C and 4.9° C.

A sample container was provided to be archived frozen at the TestAmerica Sacramento laboratory pending potential additional analyses.

This report contains results of Dioxins / Furans by Method 1613B, performed by TestAmerica Sacramento.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

DIOXIN/ FURAN

Samples PDI-SC-S045-0to2 (580-79099-1), PDI-SC-S045-2to4 (580-79099-2), PDI-SC-S045-4to6 (580-79099-3), PDI-SC-S042-0to2 (580-79099-4), PDI-SC-S042-2to4 (580-79099-5), PDI-SC-S042-4to6 (580-79099-6), PDI-SC-S061-0to3 (580-79099-7), PDI-SC-S061-3to4.5 (580-79099-8), PDI-SC-S061-4.5to6 (580-79099-9), PDI-SC-S066-0to2 (580-79099-10), PDI-SC-S066-2to4 (580-79099-11), PDI-SC-S066-4to5.8 (580-79099-12), PDI-SC-S066-5.8to6.6 (580-79099-13), PDI-SC-S082-0to2 (580-79099-14), PDI-SC-S082-2to4 (580-79099-15), PDI-SC-S082-4to6 (580-79099-16), PDI-SC-S095-0to2 (580-79099-17), PDI-SC-S095-2to4 (580-79099-18), PDI-SC-S095-4to6 (580-79099-19), PDI-SC-S064-0to2 (580-79099-20), PDI-SC-S064-2to3.5 (580-79099-21), PDI-SC-S064-3.5to4.8 (580-79099-22), PDI-SC-S154-0to1 (580-79099-23), PDI-SC-S154-1to3 (580-79099-24), PDI-SC-S154-3to4 (580-79099-25), PDI-SC-S127-0to2 (580-79099-26), PDI-SC-S127-2to4 (580-79099-27), PDI-SC-S127-4to5.6 (580-79099-28), PDI-SC-S127-2to4D (580-79099-29) and PDI-SC-S095-0to2D (580-79099-30) were analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 08/01/2018 and 08/03/2018 and analyzed on 08/07/2018, 08/08/2018, 08/09/2018 and 08/10/2018.

Several analytes were detected in method blank MB 320-237398/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

Several analytes were detected in method blank MB 320-237898/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

Case Narrative

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Job ID: 580-79099-2 (Continued)

Laboratory: TestAmerica Seattle (Continued)

The following samples exhibited elevated noise or matrix interferences for one or more analytes causing elevation of the detection limit (EDL): PDI-SC-S061-3to4.5 (580-79099-8), PDI-SC-S095-0to2 (580-79099-17), PDI-SC-S095-2to4 (580-79099-18), PDI-SC-S064-2to3.5 (580-79099-21) and PDI-SC-S154-1to3 (580-79099-24). The reporting limit (RL) for the affected analytes has been raised to be equal to the EDL, and a "G" qualifier applied.

The concentration of one or more analytes associated with the following samples exceeded the instrument calibration range: PDI-SC-S082-2to4 (580-79099-15), PDI-SC-S095-0to2 (580-79099-17), PDI-SC-S064-2to3.5 (580-79099-21), PDI-SC-S064-3.5to4.8 (580-79099-22), and PDI-SC-S095-0to2D (580-79099-30). These analytes have been qualified; however, the peaks did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range.

The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: PDI-SC-S061-3to4.5 (580-79099-8) and PDI-SC-S066-4to5.8 (580-79099-12). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s). All detection limits are below the lower calibration.

EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD associated with the following sample run on instrument 11D2 exceeded this criteria: PDI-SC-S042-0to2 (580-79099-4), PDI-SC-S042-4to6 (580-79099-6), PDI-SC-S061-3to4.5 (580-79099-8), PDI-SC-S066-2to4 (580-79099-11), PDI-SC-S082-0to2 (580-79099-14), PDI-SC-S082-2to4 (580-79099-15), PDI-SC-S095-0to2 (580-79099-17), PDI-SC-S095-2to4 (580-79099-18), PDI-SC-S095-4to6 (580-79099-19), PDI-SC-S127-2to4 (580-79099-27), PDI-SC-S127-2to4D (580-79099-29) and PDI-SC-S095-0to2D (580-79099-30). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

Due to the matrix, the initial volumes used for the following samples deviated from the standard procedure: PDI-SC-S045-0to2 (580-79099-1), PDI-SC-S045-2to4 (580-79099-2), PDI-SC-S045-4to6 (580-79099-3), PDI-SC-S042-0to2 (580-79099-4), PDI-SC-S042-2to4 (580-79099-5), PDI-SC-S042-4to6 (580-79099-6), PDI-SC-S061-0to3 (580-79099-7), PDI-SC-S061-3to4.5 (580-79099-8), PDI-SC-S061-4.5to6 (580-79099-9), PDI-SC-S066-0to2 (580-79099-10), PDI-SC-S066-2to4 (580-79099-11), PDI-SC-S066-4to5.8 (580-79099-12), PDI-SC-S066-5.8to6.6 (580-79099-13), PDI-SC-S082-0to2 (580-79099-14), PDI-SC-S082-2to4 (580-79099-15), PDI-SC-S082-4to6 (580-79099-16), PDI-SC-S095-0to2 (580-79099-17), PDI-SC-S095-2to4 (580-79099-18), PDI-SC-S095-4to6 (580-79099-19), PDI-SC-S064-0to2 (580-79099-20), PDI-SC-S064-2to3.5 (580-79099-21), PDI-SC-S064-3.5to4.8 (580-79099-22), PDI-SC-S154-0to1 (580-79099-23), PDI-SC-S154-1to3 (580-79099-24), PDI-SC-S154-3to4 (580-79099-25), PDI-SC-S127-0to2 (580-79099-26), PDI-SC-S127-2to4 (580-79099-27), PDI-SC-S127-4to5.6 (580-79099-28), PDI-SC-S127-2to4D (580-79099-29) and PDI-SC-S095-0to2D (580-79099-30). The reporting limits (RLs) have been adjusted proportionately. Samples are associated with preparation batch 320-237398.

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

DIOXIN/ FURAN

Sample PDI-RB-SS-180724 (580-79099-31) was analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 08/01/2018 and analyzed on 08/04/2018.

Several analytes were detected in method blank MB 320-237382/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

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

Definitions/Glossary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Qualifiers

Dioxin

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.
*	Isotope Dilution analyte is outside acceptance limits.
E	Result exceeded calibration range.
G	The reported quantitation limit has been raised due to an exhibited elevated noise or matrix interference

Glossary

Abbreviation

These commonly used abbreviations may or may not be present in this report.

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

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S045-0to2

Date Collected: 07/23/18 09:55

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-1

Matrix: Solid

Percent Solids: 76.5

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.0033	B	0.0033	0.000041	ug/Kg	✉	08/03/18 14:44	08/08/18 01:36	1
1,2,3,4,6,7,8-HxCDF	0.00053	J B	0.0033	0.000021	ug/Kg	✉	08/03/18 14:44	08/08/18 01:36	1
1,2,3,4,7,8,9-HxCDF	0.00015	J	0.0033	0.000024	ug/Kg	✉	08/03/18 14:44	08/08/18 01:36	1
1,2,3,4,7,8-HxCDD	0.00014	J B q	0.0033	0.000034	ug/Kg	✉	08/03/18 14:44	08/08/18 01:36	1
1,2,3,4,7,8-HxCDF	ND		0.0033	0.000061	ug/Kg	✉	08/03/18 14:44	08/08/18 01:36	1
1,2,3,6,7,8-HxCDD	0.00020	J	0.0033	0.000033	ug/Kg	✉	08/03/18 14:44	08/08/18 01:36	1
1,2,3,6,7,8-HxCDF	ND		0.0033	0.000063	ug/Kg	✉	08/03/18 14:44	08/08/18 01:36	1
1,2,3,7,8,9-HxCDD	0.00022	J	0.0033	0.000031	ug/Kg	✉	08/03/18 14:44	08/08/18 01:36	1
1,2,3,7,8,9-HxCDF	0.00011	J B	0.0033	0.000030	ug/Kg	✉	08/03/18 14:44	08/08/18 01:36	1
1,2,3,7,8-PeCDD	0.000081	J	0.0033	0.000040	ug/Kg	✉	08/03/18 14:44	08/08/18 01:36	1
1,2,3,7,8-PeCDF	ND		0.0033	0.000032	ug/Kg	✉	08/03/18 14:44	08/08/18 01:36	1
2,3,4,6,7,8-HxCDF	0.000071	J	0.0033	0.000036	ug/Kg	✉	08/03/18 14:44	08/08/18 01:36	1
2,3,4,7,8-PeCDF	0.000080	J	0.0033	0.000035	ug/Kg	✉	08/03/18 14:44	08/08/18 01:36	1
2,3,7,8-TCDD	ND		0.00065	0.000025	ug/Kg	✉	08/03/18 14:44	08/08/18 01:36	1
2,3,7,8-TCDF	0.000099	J	0.00065	0.000022	ug/Kg	✉	08/03/18 14:44	08/08/18 01:36	1
OCDD	0.029	B	0.0065	0.000038	ug/Kg	✉	08/03/18 14:44	08/08/18 01:36	1
OCDF	0.0014	J B	0.0065	0.000036	ug/Kg	✉	08/03/18 14:44	08/08/18 01:36	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	55			23 - 140			08/03/18 14:44	08/08/18 01:36	1
13C-1,2,3,4,6,7,8-HxCDF	52			28 - 143			08/03/18 14:44	08/08/18 01:36	1
13C-1,2,3,4,7,8,9-HxCDF	58			26 - 138			08/03/18 14:44	08/08/18 01:36	1
13C-1,2,3,4,7,8-HxCDD	53			32 - 141			08/03/18 14:44	08/08/18 01:36	1
13C-1,2,3,4,7,8-HxCDF	53			26 - 152			08/03/18 14:44	08/08/18 01:36	1
13C-1,2,3,6,7,8-HxCDD	54			28 - 130			08/03/18 14:44	08/08/18 01:36	1
13C-1,2,3,6,7,8-HxCDF	53			26 - 123			08/03/18 14:44	08/08/18 01:36	1
13C-1,2,3,7,8,9-HxCDF	57			29 - 147			08/03/18 14:44	08/08/18 01:36	1
13C-1,2,3,7,8-PeCDD	48			25 - 181			08/03/18 14:44	08/08/18 01:36	1
13C-1,2,3,7,8-PeCDF	51			24 - 185			08/03/18 14:44	08/08/18 01:36	1
13C-2,3,4,6,7,8-HxCDF	56			28 - 136			08/03/18 14:44	08/08/18 01:36	1
13C-2,3,4,7,8-PeCDF	51			21 - 178			08/03/18 14:44	08/08/18 01:36	1
13C-2,3,7,8-TCDD	59			25 - 164			08/03/18 14:44	08/08/18 01:36	1
13C-2,3,7,8-TCDF	60			24 - 169			08/03/18 14:44	08/08/18 01:36	1
13C-OCDD	50			17 - 157			08/03/18 14:44	08/08/18 01:36	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97			35 - 197			08/03/18 14:44	08/08/18 01:36	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S045-2to4

Date Collected: 07/23/18 10:00

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-2

Matrix: Solid

Percent Solids: 72.6

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.0021	J B	0.0035	0.000049	ug/Kg	✉	08/01/18 13:56	08/07/18 00:45	1
1,2,3,4,6,7,8-HxCDF	0.00027	J B q	0.0035	0.000025	ug/Kg	✉	08/01/18 13:56	08/07/18 00:45	1
1,2,3,4,7,8,9-HxCDF	0.00015	J B	0.0035	0.000026	ug/Kg	✉	08/01/18 13:56	08/07/18 00:45	1
1,2,3,4,7,8-HxCDD	0.00016	J B	0.0035	0.000047	ug/Kg	✉	08/01/18 13:56	08/07/18 00:45	1
1,2,3,4,7,8-HxCDF	ND		0.0035	0.000057	ug/Kg	✉	08/01/18 13:56	08/07/18 00:45	1
1,2,3,6,7,8-HxCDD	0.00016	J q	0.0035	0.000045	ug/Kg	✉	08/01/18 13:56	08/07/18 00:45	1
1,2,3,6,7,8-HxCDF	ND		0.0035	0.000057	ug/Kg	✉	08/01/18 13:56	08/07/18 00:45	1
1,2,3,7,8,9-HxCDD	0.00034	J B q	0.0035	0.000042	ug/Kg	✉	08/01/18 13:56	08/07/18 00:45	1
1,2,3,7,8,9-HxCDF	0.00012	J	0.0035	0.000027	ug/Kg	✉	08/01/18 13:56	08/07/18 00:45	1
1,2,3,7,8-PeCDD	ND		0.0035	0.000045	ug/Kg	✉	08/01/18 13:56	08/07/18 00:45	1
1,2,3,7,8-PeCDF	0.000059	J q	0.0035	0.000026	ug/Kg	✉	08/01/18 13:56	08/07/18 00:45	1
2,3,4,6,7,8-HxCDF	0.000074	J	0.0035	0.000033	ug/Kg	✉	08/01/18 13:56	08/07/18 00:45	1
2,3,4,7,8-PeCDD	ND		0.0035	0.000027	ug/Kg	✉	08/01/18 13:56	08/07/18 00:45	1
2,3,7,8-TCDD	0.000094	J q	0.00069	0.000031	ug/Kg	✉	08/01/18 13:56	08/07/18 00:45	1
2,3,7,8-TCDF	ND		0.00069	0.000017	ug/Kg	✉	08/01/18 13:56	08/07/18 00:45	1
OCDD	0.018	B	0.0069	0.000059	ug/Kg	✉	08/01/18 13:56	08/07/18 00:45	1
OCDF	0.00091	J B	0.0069	0.000048	ug/Kg	✉	08/01/18 13:56	08/07/18 00:45	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	44			23 - 140			08/01/18 13:56	08/07/18 00:45	1
13C-1,2,3,4,6,7,8-HxCDF	39			28 - 143			08/01/18 13:56	08/07/18 00:45	1
13C-1,2,3,4,7,8,9-HxCDF	47			26 - 138			08/01/18 13:56	08/07/18 00:45	1
13C-1,2,3,4,7,8-HxCDD	41			32 - 141			08/01/18 13:56	08/07/18 00:45	1
13C-1,2,3,4,7,8-HxCDF	40			26 - 152			08/01/18 13:56	08/07/18 00:45	1
13C-1,2,3,6,7,8-HxCDD	43			28 - 130			08/01/18 13:56	08/07/18 00:45	1
13C-1,2,3,6,7,8-HxCDF	40			26 - 123			08/01/18 13:56	08/07/18 00:45	1
13C-1,2,3,7,8,9-HxCDF	43			29 - 147			08/01/18 13:56	08/07/18 00:45	1
13C-1,2,3,7,8-PeCDD	40			25 - 181			08/01/18 13:56	08/07/18 00:45	1
13C-1,2,3,7,8-PeCDF	41			24 - 185			08/01/18 13:56	08/07/18 00:45	1
13C-2,3,4,6,7,8-HxCDF	43			28 - 136			08/01/18 13:56	08/07/18 00:45	1
13C-2,3,4,7,8-PeCDD	43			21 - 178			08/01/18 13:56	08/07/18 00:45	1
13C-2,3,7,8-TCDD	52			25 - 164			08/01/18 13:56	08/07/18 00:45	1
13C-2,3,7,8-TCDF	53			24 - 169			08/01/18 13:56	08/07/18 00:45	1
13C-OCDD	39			17 - 157			08/01/18 13:56	08/07/18 00:45	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	93			35 - 197			08/01/18 13:56	08/07/18 00:45	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S045-4to6

Date Collected: 07/23/18 10:05

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-3

Matrix: Solid

Percent Solids: 73.1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.0025	J B	0.0034	0.000058	ug/Kg	✉	08/01/18 13:56	08/07/18 01:31	1
1,2,3,4,6,7,8-HpCDF	0.00011	J B q	0.0034	0.000030	ug/Kg	✉	08/01/18 13:56	08/07/18 01:31	1
1,2,3,4,7,8,9-HpCDF	0.000068	J B	0.0034	0.000031	ug/Kg	✉	08/01/18 13:56	08/07/18 01:31	1
1,2,3,4,7,8-HxCDD	0.00015	J B q	0.0034	0.000050	ug/Kg	✉	08/01/18 13:56	08/07/18 01:31	1
1,2,3,4,7,8-HxCDF	ND		0.0034	0.000044	ug/Kg	✉	08/01/18 13:56	08/07/18 01:31	1
1,2,3,6,7,8-HxCDD	0.00012	J q	0.0034	0.000046	ug/Kg	✉	08/01/18 13:56	08/07/18 01:31	1
1,2,3,6,7,8-HxCDF	ND		0.0034	0.000045	ug/Kg	✉	08/01/18 13:56	08/07/18 01:31	1
1,2,3,7,8,9-HxCDD	0.00048	J B	0.0034	0.000044	ug/Kg	✉	08/01/18 13:56	08/07/18 01:31	1
1,2,3,7,8,9-HxCDF	0.000050	J q	0.0034	0.000022	ug/Kg	✉	08/01/18 13:56	08/07/18 01:31	1
1,2,3,7,8-PeCDD	ND		0.0034	0.000045	ug/Kg	✉	08/01/18 13:56	08/07/18 01:31	1
1,2,3,7,8-PeCDF	ND		0.0034	0.000031	ug/Kg	✉	08/01/18 13:56	08/07/18 01:31	1
2,3,4,6,7,8-HxCDF	ND		0.0034	0.000026	ug/Kg	✉	08/01/18 13:56	08/07/18 01:31	1
2,3,4,7,8-PeCDF	ND		0.0034	0.000033	ug/Kg	✉	08/01/18 13:56	08/07/18 01:31	1
2,3,7,8-TCDD	0.00013	J q	0.00067	0.000028	ug/Kg	✉	08/01/18 13:56	08/07/18 01:31	1
2,3,7,8-TCDF	ND		0.00067	0.000014	ug/Kg	✉	08/01/18 13:56	08/07/18 01:31	1
OCDD	0.020	B	0.0067	0.000053	ug/Kg	✉	08/01/18 13:56	08/07/18 01:31	1
OCDF	0.00049	J B	0.0067	0.000054	ug/Kg	✉	08/01/18 13:56	08/07/18 01:31	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	34			23 - 140			08/01/18 13:56	08/07/18 01:31	1
13C-1,2,3,4,6,7,8-HpCDF	31			28 - 143			08/01/18 13:56	08/07/18 01:31	1
13C-1,2,3,4,7,8,9-HpCDF	37			26 - 138			08/01/18 13:56	08/07/18 01:31	1
13C-1,2,3,4,7,8-HxCDD	32			32 - 141			08/01/18 13:56	08/07/18 01:31	1
13C-1,2,3,4,7,8-HxCDF	32			26 - 152			08/01/18 13:56	08/07/18 01:31	1
13C-1,2,3,6,7,8-HxCDD	34			28 - 130			08/01/18 13:56	08/07/18 01:31	1
13C-1,2,3,6,7,8-HxCDF	32			26 - 123			08/01/18 13:56	08/07/18 01:31	1
13C-1,2,3,7,8,9-HxCDF	35			29 - 147			08/01/18 13:56	08/07/18 01:31	1
13C-1,2,3,7,8-PeCDD	32			25 - 181			08/01/18 13:56	08/07/18 01:31	1
13C-1,2,3,7,8-PeCDF	33			24 - 185			08/01/18 13:56	08/07/18 01:31	1
13C-2,3,4,6,7,8-HxCDF	34			28 - 136			08/01/18 13:56	08/07/18 01:31	1
13C-2,3,4,7,8-PeCDD	35			21 - 178			08/01/18 13:56	08/07/18 01:31	1
13C-2,3,7,8-TCDD	43			25 - 164			08/01/18 13:56	08/07/18 01:31	1
13C-2,3,7,8-TCDF	44			24 - 169			08/01/18 13:56	08/07/18 01:31	1
13C-OCDD	30			17 - 157			08/01/18 13:56	08/07/18 01:31	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	78			35 - 197			08/01/18 13:56	08/07/18 01:31	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S042-0to2

Date Collected: 07/23/18 11:25

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-4

Matrix: Solid

Percent Solids: 54.1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.14	B	0.0045	0.00079	ug/Kg	✉	08/03/18 14:44	08/08/18 02:22	1
1,2,3,4,6,7,8-HxCDF	0.019	B	0.0045	0.00026	ug/Kg	✉	08/03/18 14:44	08/08/18 02:22	1
1,2,3,4,7,8,9-HxCDF	0.0012	J	0.0045	0.00030	ug/Kg	✉	08/03/18 14:44	08/08/18 02:22	1
1,2,3,4,7,8-HxCDD	0.0014	J B	0.0045	0.00013	ug/Kg	✉	08/03/18 14:44	08/08/18 02:22	1
1,2,3,4,7,8-HxCDF	0.0026	J	0.0045	0.00027	ug/Kg	✉	08/03/18 14:44	08/08/18 02:22	1
1,2,3,6,7,8-HxCDD	0.0077		0.0045	0.00013	ug/Kg	✉	08/03/18 14:44	08/08/18 02:22	1
1,2,3,6,7,8-HxCDF	0.0015	J	0.0045	0.00027	ug/Kg	✉	08/03/18 14:44	08/08/18 02:22	1
1,2,3,7,8,9-HxCDD	0.0037	J	0.0045	0.00012	ug/Kg	✉	08/03/18 14:44	08/08/18 02:22	1
1,2,3,7,8,9-HxCDF	ND		0.0045	0.00012	ug/Kg	✉	08/03/18 14:44	08/08/18 02:22	1
1,2,3,7,8-PeCDD	ND		0.0045	0.00012	ug/Kg	✉	08/03/18 14:44	08/08/18 02:22	1
1,2,3,7,8-PeCDF	0.0010	J	0.0045	0.00013	ug/Kg	✉	08/03/18 14:44	08/08/18 02:22	1
2,3,4,6,7,8-HxCDF	0.00083	J	0.0045	0.00016	ug/Kg	✉	08/03/18 14:44	08/08/18 02:22	1
2,3,4,7,8-PeCDF	0.00085	J	0.0045	0.00013	ug/Kg	✉	08/03/18 14:44	08/08/18 02:22	1
2,3,7,8-TCDD	0.00046	J	0.00090	0.000051	ug/Kg	✉	08/03/18 14:44	08/08/18 02:22	1
OCDD	1.3	B	0.0090	0.00055	ug/Kg	✉	08/03/18 14:44	08/08/18 02:22	1
OCDF	0.053	B	0.0090	0.000074	ug/Kg	✉	08/03/18 14:44	08/08/18 02:22	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	45		23 - 140				08/03/18 14:44	08/08/18 02:22	1
13C-1,2,3,4,6,7,8-HxCDF	41		28 - 143				08/03/18 14:44	08/08/18 02:22	1
13C-1,2,3,4,7,8,9-HxCDF	44		26 - 138				08/03/18 14:44	08/08/18 02:22	1
13C-1,2,3,4,7,8-HxCDD	46		32 - 141				08/03/18 14:44	08/08/18 02:22	1
13C-1,2,3,4,7,8-HxCDF	47		26 - 152				08/03/18 14:44	08/08/18 02:22	1
13C-1,2,3,6,7,8-HxCDD	48		28 - 130				08/03/18 14:44	08/08/18 02:22	1
13C-1,2,3,6,7,8-HxCDF	47		26 - 123				08/03/18 14:44	08/08/18 02:22	1
13C-1,2,3,7,8,9-HxCDF	51		29 - 147				08/03/18 14:44	08/08/18 02:22	1
13C-1,2,3,7,8-PeCDD	47		25 - 181				08/03/18 14:44	08/08/18 02:22	1
13C-1,2,3,7,8-PeCDF	49		24 - 185				08/03/18 14:44	08/08/18 02:22	1
13C-2,3,4,6,7,8-HxCDF	49		28 - 136				08/03/18 14:44	08/08/18 02:22	1
13C-2,3,4,7,8-PeCDF	51		21 - 178				08/03/18 14:44	08/08/18 02:22	1
13C-2,3,7,8-TCDD	56		25 - 164				08/03/18 14:44	08/08/18 02:22	1
13C-OCDD	39		17 - 157				08/03/18 14:44	08/08/18 02:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	98		35 - 197				08/03/18 14:44	08/08/18 02:22	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0017		0.00090	0.00021	ug/Kg	✉	08/03/18 14:44	08/10/18 19:13	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	53		24 - 169				08/03/18 14:44	08/10/18 19:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	95		35 - 197				08/03/18 14:44	08/10/18 19:13	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S042-2to4

Date Collected: 07/23/18 11:30

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-5

Matrix: Solid

Percent Solids: 64.6

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.21	B	0.0038	0.0011	ug/Kg	✉	08/01/18 13:56	08/07/18 02:17	1
1,2,3,4,6,7,8-HxCDF	0.043	B	0.0038	0.00047	ug/Kg	✉	08/01/18 13:56	08/07/18 02:17	1
1,2,3,4,7,8,9-HxCDF	ND		0.0038	0.00068	ug/Kg	✉	08/01/18 13:56	08/07/18 02:17	1
1,2,3,4,7,8-HxCDD	0.0016	J B	0.0038	0.00021	ug/Kg	✉	08/01/18 13:56	08/07/18 02:17	1
1,2,3,4,7,8-HxCDF	0.0063		0.0038	0.00044	ug/Kg	✉	08/01/18 13:56	08/07/18 02:17	1
1,2,3,6,7,8-HxCDD	0.010		0.0038	0.00020	ug/Kg	✉	08/01/18 13:56	08/07/18 02:17	1
1,2,3,6,7,8-HxCDF	0.0038		0.0038	0.00045	ug/Kg	✉	08/01/18 13:56	08/07/18 02:17	1
1,2,3,7,8,9-HxCDD	0.0030	J B	0.0038	0.00019	ug/Kg	✉	08/01/18 13:56	08/07/18 02:17	1
1,2,3,7,8,9-HxCDF	ND		0.0038	0.00021	ug/Kg	✉	08/01/18 13:56	08/07/18 02:17	1
1,2,3,7,8-PeCDD	0.00079	J q	0.0038	0.00018	ug/Kg	✉	08/01/18 13:56	08/07/18 02:17	1
1,2,3,7,8-PeCDF	0.0024	J	0.0038	0.00029	ug/Kg	✉	08/01/18 13:56	08/07/18 02:17	1
2,3,4,6,7,8-HxCDF	0.0012	J	0.0038	0.00026	ug/Kg	✉	08/01/18 13:56	08/07/18 02:17	1
2,3,4,7,8-PeCDF	0.0017	J	0.0038	0.00030	ug/Kg	✉	08/01/18 13:56	08/07/18 02:17	1
2,3,7,8-TCDD	0.00039	J q	0.00076	0.000039	ug/Kg	✉	08/01/18 13:56	08/07/18 02:17	1
OCDD	2.3	B	0.0076	0.00092	ug/Kg	✉	08/01/18 13:56	08/07/18 02:17	1
OCDF	0.11	B	0.0076	0.000075	ug/Kg	✉	08/01/18 13:56	08/07/18 02:17	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	43		23 - 140				08/01/18 13:56	08/07/18 02:17	1
13C-1,2,3,4,6,7,8-HxCDF	39		28 - 143				08/01/18 13:56	08/07/18 02:17	1
13C-1,2,3,4,7,8,9-HxCDF	35		26 - 138				08/01/18 13:56	08/07/18 02:17	1
13C-1,2,3,4,7,8-HxCDD	49		32 - 141				08/01/18 13:56	08/07/18 02:17	1
13C-1,2,3,4,7,8-HxCDF	48		26 - 152				08/01/18 13:56	08/07/18 02:17	1
13C-1,2,3,6,7,8-HxCDD	50		28 - 130				08/01/18 13:56	08/07/18 02:17	1
13C-1,2,3,6,7,8-HxCDF	47		26 - 123				08/01/18 13:56	08/07/18 02:17	1
13C-1,2,3,7,8,9-HxCDF	49		29 - 147				08/01/18 13:56	08/07/18 02:17	1
13C-1,2,3,7,8-PeCDD	49		25 - 181				08/01/18 13:56	08/07/18 02:17	1
13C-1,2,3,7,8-PeCDF	50		24 - 185				08/01/18 13:56	08/07/18 02:17	1
13C-2,3,4,6,7,8-HxCDF	50		28 - 136				08/01/18 13:56	08/07/18 02:17	1
13C-2,3,4,7,8-PeCDF	51		21 - 178				08/01/18 13:56	08/07/18 02:17	1
13C-2,3,7,8-TCDD	54		25 - 164				08/01/18 13:56	08/07/18 02:17	1
13C-OCDD	41		17 - 157				08/01/18 13:56	08/07/18 02:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	91		35 - 197				08/01/18 13:56	08/07/18 02:17	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0018		0.00076	0.00028	ug/Kg	✉	08/01/18 13:56	08/09/18 21:17	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	49		24 - 169				08/01/18 13:56	08/09/18 21:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	85		35 - 197				08/01/18 13:56	08/09/18 21:17	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S042-4to6

Date Collected: 07/23/18 11:35

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-6

Matrix: Solid

Percent Solids: 63.4

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.19	B	0.0039	0.00091	ug/Kg	✉	08/03/18 14:44	08/08/18 03:07	1
1,2,3,4,6,7,8-HpCDF	0.050	B	0.0039	0.00044	ug/Kg	✉	08/03/18 14:44	08/08/18 03:07	1
1,2,3,4,7,8,9-HpCDF	0.0032	J	0.0039	0.00053	ug/Kg	✉	08/03/18 14:44	08/08/18 03:07	1
1,2,3,4,7,8-HxCDD	0.0014	J B	0.0039	0.00011	ug/Kg	✉	08/03/18 14:44	08/08/18 03:07	1
1,2,3,4,7,8-HxCDF	0.014		0.0039	0.00033	ug/Kg	✉	08/03/18 14:44	08/08/18 03:07	1
1,2,3,6,7,8-HxCDD	0.0075		0.0039	0.00010	ug/Kg	✉	08/03/18 14:44	08/08/18 03:07	1
1,2,3,6,7,8-HxCDF	0.0052		0.0039	0.00034	ug/Kg	✉	08/03/18 14:44	08/08/18 03:07	1
1,2,3,7,8,9-HxCDD	0.0028	J	0.0039	0.000099	ug/Kg	✉	08/03/18 14:44	08/08/18 03:07	1
1,2,3,7,8,9-HxCDF	0.00036	J B	0.0039	0.00016	ug/Kg	✉	08/03/18 14:44	08/08/18 03:07	1
1,2,3,7,8-PeCDD	0.00081	J	0.0039	0.000089	ug/Kg	✉	08/03/18 14:44	08/08/18 03:07	1
1,2,3,7,8-PeCDF	0.0063		0.0039	0.00025	ug/Kg	✉	08/03/18 14:44	08/08/18 03:07	1
2,3,4,6,7,8-HxCDF	0.0013	J	0.0039	0.00020	ug/Kg	✉	08/03/18 14:44	08/08/18 03:07	1
2,3,4,7,8-PeCDF	0.0023	J	0.0039	0.00028	ug/Kg	✉	08/03/18 14:44	08/08/18 03:07	1
2,3,7,8-TCDD	0.00061	J	0.00077	0.000039	ug/Kg	✉	08/03/18 14:44	08/08/18 03:07	1
OCDD	2.5	B	0.0077	0.00094	ug/Kg	✉	08/03/18 14:44	08/08/18 03:07	1
OCDF	0.12	B	0.0077	0.000081	ug/Kg	✉	08/03/18 14:44	08/08/18 03:07	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	46		23 - 140				08/03/18 14:44	08/08/18 03:07	1
13C-1,2,3,4,6,7,8-HpCDF	44		28 - 143				08/03/18 14:44	08/08/18 03:07	1
13C-1,2,3,4,7,8,9-HpCDF	44		26 - 138				08/03/18 14:44	08/08/18 03:07	1
13C-1,2,3,4,7,8-HxCDD	48		32 - 141				08/03/18 14:44	08/08/18 03:07	1
13C-1,2,3,4,7,8-HxCDF	48		26 - 152				08/03/18 14:44	08/08/18 03:07	1
13C-1,2,3,6,7,8-HxCDD	48		28 - 130				08/03/18 14:44	08/08/18 03:07	1
13C-1,2,3,6,7,8-HxCDF	48		26 - 123				08/03/18 14:44	08/08/18 03:07	1
13C-1,2,3,7,8,9-HxCDF	50		29 - 147				08/03/18 14:44	08/08/18 03:07	1
13C-1,2,3,7,8-PeCDD	49		25 - 181				08/03/18 14:44	08/08/18 03:07	1
13C-1,2,3,7,8-PeCDF	50		24 - 185				08/03/18 14:44	08/08/18 03:07	1
13C-2,3,4,6,7,8-HxCDF	50		28 - 136				08/03/18 14:44	08/08/18 03:07	1
13C-2,3,4,7,8-PeCDF	51		21 - 178				08/03/18 14:44	08/08/18 03:07	1
13C-2,3,7,8-TCDD	56		25 - 164				08/03/18 14:44	08/08/18 03:07	1
13C-OCDD	44		17 - 157				08/03/18 14:44	08/08/18 03:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	102		35 - 197				08/03/18 14:44	08/08/18 03:07	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0029		0.00077	0.00020	ug/Kg	✉	08/03/18 14:44	08/10/18 19:51	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	51		24 - 169				08/03/18 14:44	08/10/18 19:51	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	101		35 - 197				08/03/18 14:44	08/10/18 19:51	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S061-0to3

Date Collected: 07/23/18 13:40

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-7

Matrix: Solid

Percent Solids: 81.4

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.13	B	0.0030	0.0013	ug/Kg	✉	08/03/18 14:44	08/08/18 03:53	1
1,2,3,4,6,7,8-HxCDF	0.0091	B	0.0030	0.00013	ug/Kg	✉	08/03/18 14:44	08/08/18 03:53	1
1,2,3,4,7,8,9-HxCDF	0.0011	J	0.0030	0.00016	ug/Kg	✉	08/03/18 14:44	08/08/18 03:53	1
1,2,3,4,7,8-HxCDD	0.00051	J B	0.0030	0.000086	ug/Kg	✉	08/03/18 14:44	08/08/18 03:53	1
1,2,3,4,7,8-HxCDF	0.0038		0.0030	0.00014	ug/Kg	✉	08/03/18 14:44	08/08/18 03:53	1
1,2,3,6,7,8-HxCDD	0.0021	J	0.0030	0.000083	ug/Kg	✉	08/03/18 14:44	08/08/18 03:53	1
1,2,3,6,7,8-HxCDF	0.00070	J	0.0030	0.00014	ug/Kg	✉	08/03/18 14:44	08/08/18 03:53	1
1,2,3,7,8,9-HxCDD	0.0013	J	0.0030	0.000077	ug/Kg	✉	08/03/18 14:44	08/08/18 03:53	1
1,2,3,7,8,9-HxCDF	ND		0.0030	0.000067	ug/Kg	✉	08/03/18 14:44	08/08/18 03:53	1
1,2,3,7,8-PeCDD	0.00019	J	0.0030	0.000031	ug/Kg	✉	08/03/18 14:44	08/08/18 03:53	1
1,2,3,7,8-PeCDF	0.00023	J	0.0030	0.000074	ug/Kg	✉	08/03/18 14:44	08/08/18 03:53	1
2,3,4,6,7,8-HxCDF	0.00030	J	0.0030	0.000084	ug/Kg	✉	08/03/18 14:44	08/08/18 03:53	1
2,3,4,7,8-PeCDF	0.00084	J	0.0030	0.000081	ug/Kg	✉	08/03/18 14:44	08/08/18 03:53	1
2,3,7,8-TCDD	ND		0.00060	0.000022	ug/Kg	✉	08/03/18 14:44	08/08/18 03:53	1
2,3,7,8-TCDF	0.00020	J	0.00060	0.000020	ug/Kg	✉	08/03/18 14:44	08/08/18 03:53	1
OCDD	0.98	B	0.0060	0.00042	ug/Kg	✉	08/03/18 14:44	08/08/18 03:53	1
OCDF	0.019	B	0.0060	0.000023	ug/Kg	✉	08/03/18 14:44	08/08/18 03:53	1
Isotope Dilution	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
13C-1,2,3,4,6,7,8-HxCDD	73		23 - 140			08/03/18 14:44	08/08/18 03:53	1	
13C-1,2,3,4,6,7,8-HxCDF	71		28 - 143			08/03/18 14:44	08/08/18 03:53	1	
13C-1,2,3,4,7,8,9-HxCDF	74		26 - 138			08/03/18 14:44	08/08/18 03:53	1	
13C-1,2,3,4,7,8-HxCDD	66		32 - 141			08/03/18 14:44	08/08/18 03:53	1	
13C-1,2,3,4,7,8-HxCDF	66		26 - 152			08/03/18 14:44	08/08/18 03:53	1	
13C-1,2,3,6,7,8-HxCDD	66		28 - 130			08/03/18 14:44	08/08/18 03:53	1	
13C-1,2,3,6,7,8-HxCDF	67		26 - 123			08/03/18 14:44	08/08/18 03:53	1	
13C-1,2,3,7,8,9-HxCDF	68		29 - 147			08/03/18 14:44	08/08/18 03:53	1	
13C-1,2,3,7,8-PeCDD	59		25 - 181			08/03/18 14:44	08/08/18 03:53	1	
13C-1,2,3,7,8-PeCDF	60		24 - 185			08/03/18 14:44	08/08/18 03:53	1	
13C-2,3,4,6,7,8-HxCDF	67		28 - 136			08/03/18 14:44	08/08/18 03:53	1	
13C-2,3,4,7,8-PeCDD	59		21 - 178			08/03/18 14:44	08/08/18 03:53	1	
13C-2,3,7,8-TCDD	67		25 - 164			08/03/18 14:44	08/08/18 03:53	1	
13C-2,3,7,8-TCDF	65		24 - 169			08/03/18 14:44	08/08/18 03:53	1	
13C-OCDD	71		17 - 157			08/03/18 14:44	08/08/18 03:53	1	
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
37Cl-2,3,7,8-TCDD	101		35 - 197			08/03/18 14:44	08/08/18 03:53	1	

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S061-3to4.5

Date Collected: 07/23/18 13:45

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-8

Matrix: Solid

Percent Solids: 61.3

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.45	G B	0.0070	0.0070	ug/Kg	✉	08/01/18 13:56	08/07/18 03:03	1
1,2,3,4,6,7,8-HpCDF	0.045	G B	0.0045	0.0045	ug/Kg	✉	08/01/18 13:56	08/07/18 03:03	1
1,2,3,4,7,8,9-HpCDF	ND	G	0.0063	0.0063	ug/Kg	✉	08/01/18 13:56	08/07/18 03:03	1
1,2,3,4,7,8-HxCDD	0.0028	J B	0.0040	0.00034	ug/Kg	✉	08/01/18 13:56	08/07/18 03:03	1
1,2,3,4,7,8-HxCDF	0.0082		0.0040	0.00064	ug/Kg	✉	08/01/18 13:56	08/07/18 03:03	1
1,2,3,6,7,8-HxCDD	0.015		0.0040	0.00030	ug/Kg	✉	08/01/18 13:56	08/07/18 03:03	1
1,2,3,6,7,8-HxCDF	0.0031	J	0.0040	0.00065	ug/Kg	✉	08/01/18 13:56	08/07/18 03:03	1
1,2,3,7,8,9-HxCDD	0.0056	B	0.0040	0.00029	ug/Kg	✉	08/01/18 13:56	08/07/18 03:03	1
1,2,3,7,8,9-HxCDF	ND		0.0040	0.00030	ug/Kg	✉	08/01/18 13:56	08/07/18 03:03	1
1,2,3,7,8-PeCDD	0.0017	J	0.0040	0.00015	ug/Kg	✉	08/01/18 13:56	08/07/18 03:03	1
1,2,3,7,8-PeCDF	0.0023	J	0.0040	0.00021	ug/Kg	✉	08/01/18 13:56	08/07/18 03:03	1
2,3,4,6,7,8-HxCDF	0.0013	J	0.0040	0.00035	ug/Kg	✉	08/01/18 13:56	08/07/18 03:03	1
2,3,4,7,8-PeCDF	0.0025	J	0.0040	0.00021	ug/Kg	✉	08/01/18 13:56	08/07/18 03:03	1
2,3,7,8-TCDD	0.00054	J	0.00080	0.000080	ug/Kg	✉	08/01/18 13:56	08/07/18 03:03	1
OCDD	0.023	B	0.0080	0.0015	ug/Kg	✉	08/01/18 13:56	08/07/18 03:03	1
OCDF	0.12	B	0.0080	0.00017	ug/Kg	✉	08/01/18 13:56	08/07/18 03:03	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	28		23 - 140				08/01/18 13:56	08/07/18 03:03	1
13C-1,2,3,4,6,7,8-HpCDF	26	*	28 - 143				08/01/18 13:56	08/07/18 03:03	1
13C-1,2,3,4,7,8,9-HpCDF	24	*	26 - 138				08/01/18 13:56	08/07/18 03:03	1
13C-1,2,3,4,7,8-HxCDD	45		32 - 141				08/01/18 13:56	08/07/18 03:03	1
13C-1,2,3,4,7,8-HxCDF	46		26 - 152				08/01/18 13:56	08/07/18 03:03	1
13C-1,2,3,6,7,8-HxCDD	42		28 - 130				08/01/18 13:56	08/07/18 03:03	1
13C-1,2,3,6,7,8-HxCDF	45		26 - 123				08/01/18 13:56	08/07/18 03:03	1
13C-1,2,3,7,8,9-HxCDF	44		29 - 147				08/01/18 13:56	08/07/18 03:03	1
13C-1,2,3,7,8-PeCDD	43		25 - 181				08/01/18 13:56	08/07/18 03:03	1
13C-1,2,3,7,8-PeCDF	43		24 - 185				08/01/18 13:56	08/07/18 03:03	1
13C-2,3,4,6,7,8-HxCDF	46		28 - 136				08/01/18 13:56	08/07/18 03:03	1
13C-2,3,4,7,8-PeCDF	43		21 - 178				08/01/18 13:56	08/07/18 03:03	1
13C-2,3,7,8-TCDD	48		25 - 164				08/01/18 13:56	08/07/18 03:03	1
13C-OCDD	25		17 - 157				08/01/18 13:56	08/07/18 03:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	82		35 - 197				08/01/18 13:56	08/07/18 03:03	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0029		0.00080	0.00026	ug/Kg	✉	08/01/18 13:56	08/10/18 16:04	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	45		24 - 169				08/01/18 13:56	08/10/18 16:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	79		35 - 197				08/01/18 13:56	08/10/18 16:04	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S061-4.5to6

Date Collected: 07/23/18 13:50

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-9

Matrix: Solid

Percent Solids: 70.4

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.10	B	0.0035	0.00053	ug/Kg	✉	08/03/18 14:44	08/08/18 04:39	1
1,2,3,4,6,7,8-HxCDF	0.0091	B	0.0035	0.00019	ug/Kg	✉	08/03/18 14:44	08/08/18 04:39	1
1,2,3,4,7,8,9-HxCDF	0.00070	J	0.0035	0.00020	ug/Kg	✉	08/03/18 14:44	08/08/18 04:39	1
1,2,3,4,7,8-HxCDD	0.00068	J B	0.0035	0.00011	ug/Kg	✉	08/03/18 14:44	08/08/18 04:39	1
1,2,3,4,7,8-HxCDF	0.0019	J	0.0035	0.00015	ug/Kg	✉	08/03/18 14:44	08/08/18 04:39	1
1,2,3,6,7,8-HxCDD	0.0030	J	0.0035	0.00011	ug/Kg	✉	08/03/18 14:44	08/08/18 04:39	1
1,2,3,6,7,8-HxCDF	0.00060	J	0.0035	0.00015	ug/Kg	✉	08/03/18 14:44	08/08/18 04:39	1
1,2,3,7,8,9-HxCDD	0.0015	J	0.0035	0.000098	ug/Kg	✉	08/03/18 14:44	08/08/18 04:39	1
1,2,3,7,8,9-HxCDF	0.000070	J B q	0.0035	0.000069	ug/Kg	✉	08/03/18 14:44	08/08/18 04:39	1
1,2,3,7,8-PeCDD	0.00028	J	0.0035	0.000097	ug/Kg	✉	08/03/18 14:44	08/08/18 04:39	1
1,2,3,7,8-PeCDF	0.00041	J	0.0035	0.000075	ug/Kg	✉	08/03/18 14:44	08/08/18 04:39	1
2,3,4,6,7,8-HxCDF	0.00028	J	0.0035	0.000086	ug/Kg	✉	08/03/18 14:44	08/08/18 04:39	1
2,3,4,7,8-PeCDF	0.00045	J	0.0035	0.000079	ug/Kg	✉	08/03/18 14:44	08/08/18 04:39	1
2,3,7,8-TCDD	ND		0.00070	0.00011	ug/Kg	✉	08/03/18 14:44	08/08/18 04:39	1
2,3,7,8-TCDF	0.00054	J	0.00070	0.000043	ug/Kg	✉	08/03/18 14:44	08/08/18 04:39	1
OCDD	0.88	B	0.0070	0.00040	ug/Kg	✉	08/03/18 14:44	08/08/18 04:39	1
OCDF	0.023	B	0.0070	0.000046	ug/Kg	✉	08/03/18 14:44	08/08/18 04:39	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	47			23 - 140			08/03/18 14:44	08/08/18 04:39	1
13C-1,2,3,4,6,7,8-HxCDF	44			28 - 143			08/03/18 14:44	08/08/18 04:39	1
13C-1,2,3,4,7,8,9-HxCDF	50			26 - 138			08/03/18 14:44	08/08/18 04:39	1
13C-1,2,3,4,7,8-HxCDD	46			32 - 141			08/03/18 14:44	08/08/18 04:39	1
13C-1,2,3,4,7,8-HxCDF	46			26 - 152			08/03/18 14:44	08/08/18 04:39	1
13C-1,2,3,6,7,8-HxCDD	48			28 - 130			08/03/18 14:44	08/08/18 04:39	1
13C-1,2,3,6,7,8-HxCDF	46			26 - 123			08/03/18 14:44	08/08/18 04:39	1
13C-1,2,3,7,8,9-HxCDF	51			29 - 147			08/03/18 14:44	08/08/18 04:39	1
13C-1,2,3,7,8-PeCDD	44			25 - 181			08/03/18 14:44	08/08/18 04:39	1
13C-1,2,3,7,8-PeCDF	47			24 - 185			08/03/18 14:44	08/08/18 04:39	1
13C-2,3,4,6,7,8-HxCDF	50			28 - 136			08/03/18 14:44	08/08/18 04:39	1
13C-2,3,4,7,8-PeCDD	49			21 - 178			08/03/18 14:44	08/08/18 04:39	1
13C-2,3,7,8-TCDD	57			25 - 164			08/03/18 14:44	08/08/18 04:39	1
13C-2,3,7,8-TCDF	61			24 - 169			08/03/18 14:44	08/08/18 04:39	1
13C-OCDD	41			17 - 157			08/03/18 14:44	08/08/18 04:39	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl-2,3,7,8-TCDD	100			35 - 197			08/03/18 14:44	08/08/18 04:39	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S066-0to2

Date Collected: 07/23/18 15:20

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-10

Matrix: Solid

Percent Solids: 75.2

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.14	B	0.0033	0.00037	ug/Kg	✉	08/03/18 14:44	08/08/18 05:25	1
1,2,3,4,6,7,8-HxCDF	0.017	B	0.0033	0.00013	ug/Kg	✉	08/03/18 14:44	08/08/18 05:25	1
1,2,3,4,7,8,9-HxCDF	0.00058	J	0.0033	0.00030	ug/Kg	✉	08/03/18 14:44	08/08/18 05:25	1
1,2,3,4,7,8-HxCDD	0.00040	J B	0.0033	0.00019	ug/Kg	✉	08/03/18 14:44	08/08/18 05:25	1
1,2,3,4,7,8-HxCDF	0.00088	J	0.0033	0.00012	ug/Kg	✉	08/03/18 14:44	08/08/18 05:25	1
1,2,3,6,7,8-HxCDD	0.032		0.0033	0.00018	ug/Kg	✉	08/03/18 14:44	08/08/18 05:25	1
1,2,3,6,7,8-HxCDF	0.00047	J q	0.0033	0.00012	ug/Kg	✉	08/03/18 14:44	08/08/18 05:25	1
1,2,3,7,8,9-HxCDD	0.0091		0.0033	0.00017	ug/Kg	✉	08/03/18 14:44	08/08/18 05:25	1
1,2,3,7,8,9-HxCDF	0.000053	J B	0.0033	0.000052	ug/Kg	✉	08/03/18 14:44	08/08/18 05:25	1
1,2,3,7,8-PeCDD	0.00019	J	0.0033	0.000051	ug/Kg	✉	08/03/18 14:44	08/08/18 05:25	1
1,2,3,7,8-PeCDF	0.00024	J q	0.0033	0.000044	ug/Kg	✉	08/03/18 14:44	08/08/18 05:25	1
2,3,4,6,7,8-HxCDF	0.00027	J	0.0033	0.000070	ug/Kg	✉	08/03/18 14:44	08/08/18 05:25	1
2,3,4,7,8-PeCDF	0.00017	J	0.0033	0.000047	ug/Kg	✉	08/03/18 14:44	08/08/18 05:25	1
2,3,7,8-TCDD	ND		0.00066	0.000075	ug/Kg	✉	08/03/18 14:44	08/08/18 05:25	1
2,3,7,8-TCDF	0.00038	J	0.00066	0.000032	ug/Kg	✉	08/03/18 14:44	08/08/18 05:25	1
OCDD	0.59	B	0.0066	0.00019	ug/Kg	✉	08/03/18 14:44	08/08/18 05:25	1
OCDF	0.033	B	0.0066	0.000040	ug/Kg	✉	08/03/18 14:44	08/08/18 05:25	1
Isotope Dilution	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
13C-1,2,3,4,6,7,8-HxCDD	55		23 - 140			08/03/18 14:44	08/08/18 05:25	1	
13C-1,2,3,4,6,7,8-HxCDF	55		28 - 143			08/03/18 14:44	08/08/18 05:25	1	
13C-1,2,3,4,7,8,9-HxCDF	35		26 - 138			08/03/18 14:44	08/08/18 05:25	1	
13C-1,2,3,4,7,8-HxCDD	58		32 - 141			08/03/18 14:44	08/08/18 05:25	1	
13C-1,2,3,4,7,8-HxCDF	59		26 - 152			08/03/18 14:44	08/08/18 05:25	1	
13C-1,2,3,6,7,8-HxCDD	59		28 - 130			08/03/18 14:44	08/08/18 05:25	1	
13C-1,2,3,6,7,8-HxCDF	58		26 - 123			08/03/18 14:44	08/08/18 05:25	1	
13C-1,2,3,7,8,9-HxCDF	61		29 - 147			08/03/18 14:44	08/08/18 05:25	1	
13C-1,2,3,7,8-PeCDD	54		25 - 181			08/03/18 14:44	08/08/18 05:25	1	
13C-1,2,3,7,8-PeCDF	57		24 - 185			08/03/18 14:44	08/08/18 05:25	1	
13C-2,3,4,6,7,8-HxCDF	59		28 - 136			08/03/18 14:44	08/08/18 05:25	1	
13C-2,3,4,7,8-PeCDD	57		21 - 178			08/03/18 14:44	08/08/18 05:25	1	
13C-2,3,7,8-TCDD	65		25 - 164			08/03/18 14:44	08/08/18 05:25	1	
13C-2,3,7,8-TCDF	65		24 - 169			08/03/18 14:44	08/08/18 05:25	1	
13C-OCDD	50		17 - 157			08/03/18 14:44	08/08/18 05:25	1	
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
37Cl-2,3,7,8-TCDD	98		35 - 197			08/03/18 14:44	08/08/18 05:25	1	

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S066-2to4

Date Collected: 07/23/18 15:25

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-11

Matrix: Solid

Percent Solids: 62.9

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.025	B	0.0040	0.00018	ug/Kg	✉	08/01/18 13:56	08/07/18 03:49	1
1,2,3,4,6,7,8-HpCDF	0.010	B	0.0040	0.00015	ug/Kg	✉	08/01/18 13:56	08/07/18 03:49	1
1,2,3,4,7,8,9-HpCDF	0.00081	J B	0.0040	0.00023	ug/Kg	✉	08/01/18 13:56	08/07/18 03:49	1
1,2,3,4,7,8-HxCDD	0.00060	J B	0.0040	0.000081	ug/Kg	✉	08/01/18 13:56	08/07/18 03:49	1
1,2,3,4,7,8-HxCDF	ND		0.0040	0.00032	ug/Kg	✉	08/01/18 13:56	08/07/18 03:49	1
1,2,3,6,7,8-HxCDD	0.0021	J	0.0040	0.000085	ug/Kg	✉	08/01/18 13:56	08/07/18 03:49	1
1,2,3,6,7,8-HxCDF	0.0017	J	0.0040	0.00029	ug/Kg	✉	08/01/18 13:56	08/07/18 03:49	1
1,2,3,7,8,9-HxCDD	0.0015	J B	0.0040	0.000076	ug/Kg	✉	08/01/18 13:56	08/07/18 03:49	1
1,2,3,7,8,9-HxCDF	ND		0.0040	0.00018	ug/Kg	✉	08/01/18 13:56	08/07/18 03:49	1
1,2,3,7,8-PeCDD	0.0011	J	0.0040	0.00012	ug/Kg	✉	08/01/18 13:56	08/07/18 03:49	1
1,2,3,7,8-PeCDF	ND		0.0040	0.00042	ug/Kg	✉	08/01/18 13:56	08/07/18 03:49	1
2,3,4,6,7,8-HxCDF	0.0015	J	0.0040	0.00019	ug/Kg	✉	08/01/18 13:56	08/07/18 03:49	1
2,3,4,7,8-PeCDF	0.0012	J	0.0040	0.00047	ug/Kg	✉	08/01/18 13:56	08/07/18 03:49	1
2,3,7,8-TCDD	0.00031	J q	0.00079	0.000062	ug/Kg	✉	08/01/18 13:56	08/07/18 03:49	1
OCDD	0.30	B	0.0079	0.00022	ug/Kg	✉	08/01/18 13:56	08/07/18 03:49	1
OCDF	0.021	B	0.0079	0.00014	ug/Kg	✉	08/01/18 13:56	08/07/18 03:49	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	35			23 - 140			08/01/18 13:56	08/07/18 03:49	1
13C-1,2,3,4,6,7,8-HpCDF	34			28 - 143			08/01/18 13:56	08/07/18 03:49	1
13C-1,2,3,4,7,8,9-HpCDF	31			26 - 138			08/01/18 13:56	08/07/18 03:49	1
13C-1,2,3,4,7,8-HxCDD	55			32 - 141			08/01/18 13:56	08/07/18 03:49	1
13C-1,2,3,4,7,8-HxCDF	63			26 - 152			08/01/18 13:56	08/07/18 03:49	1
13C-1,2,3,6,7,8-HxCDD	50			28 - 130			08/01/18 13:56	08/07/18 03:49	1
13C-1,2,3,6,7,8-HxCDF	61			26 - 123			08/01/18 13:56	08/07/18 03:49	1
13C-1,2,3,7,8,9-HxCDF	50			29 - 147			08/01/18 13:56	08/07/18 03:49	1
13C-1,2,3,7,8-PeCDD	55			25 - 181			08/01/18 13:56	08/07/18 03:49	1
13C-1,2,3,7,8-PeCDF	53			24 - 185			08/01/18 13:56	08/07/18 03:49	1
13C-2,3,4,6,7,8-HxCDF	49			28 - 136			08/01/18 13:56	08/07/18 03:49	1
13C-2,3,4,7,8-PeCDF	53			21 - 178			08/01/18 13:56	08/07/18 03:49	1
13C-2,3,7,8-TCDD	48			25 - 164			08/01/18 13:56	08/07/18 03:49	1
13C-OCDD	34			17 - 157			08/01/18 13:56	08/07/18 03:49	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	91			35 - 197			08/01/18 13:56	08/07/18 03:49	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.00068	J	0.00079	0.00041	ug/Kg	✉	08/01/18 13:56	08/10/18 16:41	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	58			24 - 169			08/01/18 13:56	08/10/18 16:41	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	106			35 - 197			08/01/18 13:56	08/10/18 16:41	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S066-4to5.8

Date Collected: 07/23/18 15:30

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-12

Matrix: Solid

Percent Solids: 72.6

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.0056	B	0.0034	0.00011	ug/Kg	✉	08/01/18 13:56	08/07/18 04:35	1
1,2,3,4,6,7,8-HxCDF	0.0017	J B	0.0034	0.00011	ug/Kg	✉	08/01/18 13:56	08/07/18 04:35	1
1,2,3,4,7,8,9-HxCDF	ND		0.0034	0.00021	ug/Kg	✉	08/01/18 13:56	08/07/18 04:35	1
1,2,3,4,7,8-HxCDD	0.00018	J B	0.0034	0.000061	ug/Kg	✉	08/01/18 13:56	08/07/18 04:35	1
1,2,3,4,7,8-HxCDF	ND		0.0034	0.00012	ug/Kg	✉	08/01/18 13:56	08/07/18 04:35	1
1,2,3,6,7,8-HxCDD	0.00036	J	0.0034	0.000059	ug/Kg	✉	08/01/18 13:56	08/07/18 04:35	1
1,2,3,6,7,8-HxCDF	ND		0.0034	0.00012	ug/Kg	✉	08/01/18 13:56	08/07/18 04:35	1
1,2,3,7,8,9-HxCDD	0.00042	J B	0.0034	0.000055	ug/Kg	✉	08/01/18 13:56	08/07/18 04:35	1
1,2,3,7,8,9-HxCDF	ND		0.0034	0.000055	ug/Kg	✉	08/01/18 13:56	08/07/18 04:35	1
1,2,3,7,8-PeCDD	0.00019	J	0.0034	0.000050	ug/Kg	✉	08/01/18 13:56	08/07/18 04:35	1
1,2,3,7,8-PeCDF	ND		0.0034	0.000092	ug/Kg	✉	08/01/18 13:56	08/07/18 04:35	1
2,3,4,6,7,8-HxCDF	0.00022	J	0.0034	0.000068	ug/Kg	✉	08/01/18 13:56	08/07/18 04:35	1
2,3,4,7,8-PeCDD	ND		0.0034	0.000095	ug/Kg	✉	08/01/18 13:56	08/07/18 04:35	1
2,3,7,8-TCDD	ND		0.00068	0.000040	ug/Kg	✉	08/01/18 13:56	08/07/18 04:35	1
2,3,7,8-TCDF	0.00026	J	0.00068	0.000090	ug/Kg	✉	08/01/18 13:56	08/07/18 04:35	1
OCDD	0.080	B	0.0068	0.00015	ug/Kg	✉	08/01/18 13:56	08/07/18 04:35	1
OCDF	0.0027	J B	0.0068	0.00011	ug/Kg	✉	08/01/18 13:56	08/07/18 04:35	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	33			23 - 140			08/01/18 13:56	08/07/18 04:35	1
13C-1,2,3,4,6,7,8-HxCDF	30			28 - 143			08/01/18 13:56	08/07/18 04:35	1
13C-1,2,3,4,7,8,9-HxCDF	22	*		26 - 138			08/01/18 13:56	08/07/18 04:35	1
13C-1,2,3,4,7,8-HxCDD	51			32 - 141			08/01/18 13:56	08/07/18 04:35	1
13C-1,2,3,4,7,8-HxCDF	51			26 - 152			08/01/18 13:56	08/07/18 04:35	1
13C-1,2,3,6,7,8-HxCDD	48			28 - 130			08/01/18 13:56	08/07/18 04:35	1
13C-1,2,3,6,7,8-HxCDF	51			26 - 123			08/01/18 13:56	08/07/18 04:35	1
13C-1,2,3,7,8,9-HxCDF	50			29 - 147			08/01/18 13:56	08/07/18 04:35	1
13C-1,2,3,7,8-PeCDD	48			25 - 181			08/01/18 13:56	08/07/18 04:35	1
13C-1,2,3,7,8-PeCDF	49			24 - 185			08/01/18 13:56	08/07/18 04:35	1
13C-2,3,4,6,7,8-HxCDF	50			28 - 136			08/01/18 13:56	08/07/18 04:35	1
13C-2,3,4,7,8-PeCDD	51			21 - 178			08/01/18 13:56	08/07/18 04:35	1
13C-2,3,7,8-TCDD	52			25 - 164			08/01/18 13:56	08/07/18 04:35	1
13C-2,3,7,8-TCDF	55			24 - 169			08/01/18 13:56	08/07/18 04:35	1
13C-OCDD	32			17 - 157			08/01/18 13:56	08/07/18 04:35	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	96			35 - 197			08/01/18 13:56	08/07/18 04:35	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S066-5.8to6.6

Date Collected: 07/23/18 15:35

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-13

Matrix: Solid

Percent Solids: 69.5

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.0054	B	0.0035	0.000072	ug/Kg	✉	08/01/18 13:56	08/07/18 05:21	1
1,2,3,4,6,7,8-HxCDF	0.0019	J B q	0.0035	0.000079	ug/Kg	✉	08/01/18 13:56	08/07/18 05:21	1
1,2,3,4,7,8,9-HxCDF	ND		0.0035	0.00017	ug/Kg	✉	08/01/18 13:56	08/07/18 05:21	1
1,2,3,4,7,8-HxCDD	0.00021	J B	0.0035	0.000044	ug/Kg	✉	08/01/18 13:56	08/07/18 05:21	1
1,2,3,4,7,8-HxCDF	ND		0.0035	0.00010	ug/Kg	✉	08/01/18 13:56	08/07/18 05:21	1
1,2,3,6,7,8-HxCDD	0.00034	J	0.0035	0.000041	ug/Kg	✉	08/01/18 13:56	08/07/18 05:21	1
1,2,3,6,7,8-HxCDF	0.00025	J q	0.0035	0.00011	ug/Kg	✉	08/01/18 13:56	08/07/18 05:21	1
1,2,3,7,8,9-HxCDD	0.00037	J B q	0.0035	0.000039	ug/Kg	✉	08/01/18 13:56	08/07/18 05:21	1
1,2,3,7,8,9-HxCDF	ND		0.0035	0.000047	ug/Kg	✉	08/01/18 13:56	08/07/18 05:21	1
1,2,3,7,8-PeCDD	0.00013	J	0.0035	0.000040	ug/Kg	✉	08/01/18 13:56	08/07/18 05:21	1
1,2,3,7,8-PeCDF	0.00014	J	0.0035	0.000047	ug/Kg	✉	08/01/18 13:56	08/07/18 05:21	1
2,3,4,6,7,8-HxCDF	0.00019	J	0.0035	0.000060	ug/Kg	✉	08/01/18 13:56	08/07/18 05:21	1
2,3,4,7,8-PeCDF	0.00018	J	0.0035	0.000051	ug/Kg	✉	08/01/18 13:56	08/07/18 05:21	1
2,3,7,8-TCDD	ND		0.00070	0.000031	ug/Kg	✉	08/01/18 13:56	08/07/18 05:21	1
2,3,7,8-TCDF	0.00031	J	0.00070	0.000067	ug/Kg	✉	08/01/18 13:56	08/07/18 05:21	1
OCDD	0.075	B	0.0070	0.000090	ug/Kg	✉	08/01/18 13:56	08/07/18 05:21	1
OCDF	0.0025	J B	0.0070	0.000067	ug/Kg	✉	08/01/18 13:56	08/07/18 05:21	1
Isotope Dilution		%Recovery	Qualifier	Limits		Prepared	Analyzed	Dil Fac	
13C-1,2,3,4,6,7,8-HxCDD	42			23 - 140		08/01/18 13:56	08/07/18 05:21	1	
13C-1,2,3,4,6,7,8-HxCDF	40			28 - 143		08/01/18 13:56	08/07/18 05:21	1	
13C-1,2,3,4,7,8,9-HxCDF	27			26 - 138		08/01/18 13:56	08/07/18 05:21	1	
13C-1,2,3,4,7,8-HxCDD	51			32 - 141		08/01/18 13:56	08/07/18 05:21	1	
13C-1,2,3,4,7,8-HxCDF	50			26 - 152		08/01/18 13:56	08/07/18 05:21	1	
13C-1,2,3,6,7,8-HxCDD	51			28 - 130		08/01/18 13:56	08/07/18 05:21	1	
13C-1,2,3,6,7,8-HxCDF	49			26 - 123		08/01/18 13:56	08/07/18 05:21	1	
13C-1,2,3,7,8,9-HxCDF	51			29 - 147		08/01/18 13:56	08/07/18 05:21	1	
13C-1,2,3,7,8-PeCDD	49			25 - 181		08/01/18 13:56	08/07/18 05:21	1	
13C-1,2,3,7,8-PeCDF	49			24 - 185		08/01/18 13:56	08/07/18 05:21	1	
13C-2,3,4,6,7,8-HxCDF	51			28 - 136		08/01/18 13:56	08/07/18 05:21	1	
13C-2,3,4,7,8-PeCDF	49			21 - 178		08/01/18 13:56	08/07/18 05:21	1	
13C-2,3,7,8-TCDD	52			25 - 164		08/01/18 13:56	08/07/18 05:21	1	
13C-2,3,7,8-TCDF	50			24 - 169		08/01/18 13:56	08/07/18 05:21	1	
13C-OCDD	42			17 - 157		08/01/18 13:56	08/07/18 05:21	1	
Surrogate		%Recovery	Qualifier	Limits		Prepared	Analyzed	Dil Fac	
37Cl-2,3,7,8-TCDD	95			35 - 197		08/01/18 13:56	08/07/18 05:21	1	

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S082-0to2

Date Collected: 07/24/18 10:00

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-14

Matrix: Solid

Percent Solids: 51.6

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.86	B	0.0048	0.0034	ug/Kg	⊗	08/01/18 13:56	08/07/18 06:07	1
1,2,3,4,6,7,8-HpCDF	0.13	B	0.0048	0.0014	ug/Kg	⊗	08/01/18 13:56	08/07/18 06:07	1
1,2,3,4,7,8,9-HpCDF	0.0065	B	0.0048	0.0019	ug/Kg	⊗	08/01/18 13:56	08/07/18 06:07	1
1,2,3,4,7,8-HxCDD	0.0038	J B	0.0048	0.00025	ug/Kg	⊗	08/01/18 13:56	08/07/18 06:07	1
1,2,3,4,7,8-HxCDF	0.0077		0.0048	0.0013	ug/Kg	⊗	08/01/18 13:56	08/07/18 06:07	1
1,2,3,6,7,8-HxCDD	0.024		0.0048	0.00025	ug/Kg	⊗	08/01/18 13:56	08/07/18 06:07	1
1,2,3,6,7,8-HxCDF	0.0046	J	0.0048	0.0014	ug/Kg	⊗	08/01/18 13:56	08/07/18 06:07	1
1,2,3,7,8,9-HxCDD	0.0082	B	0.0048	0.00023	ug/Kg	⊗	08/01/18 13:56	08/07/18 06:07	1
1,2,3,7,8,9-HxCDF	0.0014	J	0.0048	0.00059	ug/Kg	⊗	08/01/18 13:56	08/07/18 06:07	1
1,2,3,7,8-PeCDD	0.0016	J	0.0048	0.00032	ug/Kg	⊗	08/01/18 13:56	08/07/18 06:07	1
1,2,3,7,8-PeCDF	0.0026	J	0.0048	0.00040	ug/Kg	⊗	08/01/18 13:56	08/07/18 06:07	1
2,3,4,6,7,8-HxCDF	0.0025	J	0.0048	0.00081	ug/Kg	⊗	08/01/18 13:56	08/07/18 06:07	1
2,3,4,7,8-PeCDF	0.0030	J	0.0048	0.00042	ug/Kg	⊗	08/01/18 13:56	08/07/18 06:07	1
2,3,7,8-TCDD	0.00049	J q	0.00095	0.000080	ug/Kg	⊗	08/01/18 13:56	08/07/18 06:07	1
OCDD	8.5	E B	0.0095	0.0027	ug/Kg	⊗	08/01/18 13:56	08/07/18 06:07	1
OCDF	0.61	B	0.0095	0.00023	ug/Kg	⊗	08/01/18 13:56	08/07/18 06:07	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	44		23 - 140				08/01/18 13:56	08/07/18 06:07	1
13C-1,2,3,4,6,7,8-HpCDF	41		28 - 143				08/01/18 13:56	08/07/18 06:07	1
13C-1,2,3,4,7,8,9-HpCDF	40		26 - 138				08/01/18 13:56	08/07/18 06:07	1
13C-1,2,3,4,7,8-HxCDD	48		32 - 141				08/01/18 13:56	08/07/18 06:07	1
13C-1,2,3,4,7,8-HxCDF	46		26 - 152				08/01/18 13:56	08/07/18 06:07	1
13C-1,2,3,6,7,8-HxCDD	47		28 - 130				08/01/18 13:56	08/07/18 06:07	1
13C-1,2,3,6,7,8-HxCDF	45		26 - 123				08/01/18 13:56	08/07/18 06:07	1
13C-1,2,3,7,8,9-HxCDF	51		29 - 147				08/01/18 13:56	08/07/18 06:07	1
13C-1,2,3,7,8-PeCDD	46		25 - 181				08/01/18 13:56	08/07/18 06:07	1
13C-1,2,3,7,8-PeCDF	47		24 - 185				08/01/18 13:56	08/07/18 06:07	1
13C-2,3,4,6,7,8-HxCDF	48		28 - 136				08/01/18 13:56	08/07/18 06:07	1
13C-2,3,4,7,8-PeCDF	47		21 - 178				08/01/18 13:56	08/07/18 06:07	1
13C-2,3,7,8-TCDD	53		25 - 164				08/01/18 13:56	08/07/18 06:07	1
13C-OCDD	42		17 - 157				08/01/18 13:56	08/07/18 06:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	88		35 - 197				08/01/18 13:56	08/07/18 06:07	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0036		0.00095	0.00035	ug/Kg	⊗	08/01/18 13:56	08/10/18 17:19	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	47		24 - 169				08/01/18 13:56	08/10/18 17:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	88		35 - 197				08/01/18 13:56	08/10/18 17:19	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S082-2to4

Date Collected: 07/24/18 10:05

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-15

Matrix: Solid

Percent Solids: 60.5

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.37	B	0.0041	0.0016	ug/Kg	✉	08/01/18 13:56	08/07/18 06:53	1
1,2,3,4,6,7,8-HxCDF	0.053	B	0.0041	0.00060	ug/Kg	✉	08/01/18 13:56	08/07/18 06:53	1
1,2,3,4,7,8,9-HxCDF	ND		0.0041	0.00079	ug/Kg	✉	08/01/18 13:56	08/07/18 06:53	1
1,2,3,4,7,8-HxCDD	0.0021	J B	0.0041	0.00016	ug/Kg	✉	08/01/18 13:56	08/07/18 06:53	1
1,2,3,4,7,8-HxCDF	0.0033	J	0.0041	0.00045	ug/Kg	✉	08/01/18 13:56	08/07/18 06:53	1
1,2,3,6,7,8-HxCDD	0.011		0.0041	0.00015	ug/Kg	✉	08/01/18 13:56	08/07/18 06:53	1
1,2,3,6,7,8-HxCDF	0.0025	J	0.0041	0.00047	ug/Kg	✉	08/01/18 13:56	08/07/18 06:53	1
1,2,3,7,8,9-HxCDD	0.0040	J B	0.0041	0.00014	ug/Kg	✉	08/01/18 13:56	08/07/18 06:53	1
1,2,3,7,8,9-HxCDF	ND		0.0041	0.00020	ug/Kg	✉	08/01/18 13:56	08/07/18 06:53	1
1,2,3,7,8-PeCDD	0.00097	J	0.0041	0.00012	ug/Kg	✉	08/01/18 13:56	08/07/18 06:53	1
1,2,3,7,8-PeCDF	0.0016	J	0.0041	0.00016	ug/Kg	✉	08/01/18 13:56	08/07/18 06:53	1
2,3,4,6,7,8-HxCDF	0.0011	J	0.0041	0.00026	ug/Kg	✉	08/01/18 13:56	08/07/18 06:53	1
2,3,4,7,8-PeCDF	0.0018	J	0.0041	0.00016	ug/Kg	✉	08/01/18 13:56	08/07/18 06:53	1
2,3,7,8-TCDD	0.00044	J	0.00083	0.000063	ug/Kg	✉	08/01/18 13:56	08/07/18 06:53	1
OCDD	3.6	E B	0.0083	0.00094	ug/Kg	✉	08/01/18 13:56	08/07/18 06:53	1
OCDF	0.21	B	0.0083	0.00013	ug/Kg	✉	08/01/18 13:56	08/07/18 06:53	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	33		23 - 140				08/01/18 13:56	08/07/18 06:53	1
13C-1,2,3,4,6,7,8-HxCDF	30		28 - 143				08/01/18 13:56	08/07/18 06:53	1
13C-1,2,3,4,7,8,9-HxCDF	30		26 - 138				08/01/18 13:56	08/07/18 06:53	1
13C-1,2,3,4,7,8-HxCDD	41		32 - 141				08/01/18 13:56	08/07/18 06:53	1
13C-1,2,3,4,7,8-HxCDF	39		26 - 152				08/01/18 13:56	08/07/18 06:53	1
13C-1,2,3,6,7,8-HxCDD	40		28 - 130				08/01/18 13:56	08/07/18 06:53	1
13C-1,2,3,6,7,8-HxCDF	37		26 - 123				08/01/18 13:56	08/07/18 06:53	1
13C-1,2,3,7,8,9-HxCDF	42		29 - 147				08/01/18 13:56	08/07/18 06:53	1
13C-1,2,3,7,8-PeCDD	41		25 - 181				08/01/18 13:56	08/07/18 06:53	1
13C-1,2,3,7,8-PeCDF	42		24 - 185				08/01/18 13:56	08/07/18 06:53	1
13C-2,3,4,6,7,8-HxCDF	41		28 - 136				08/01/18 13:56	08/07/18 06:53	1
13C-2,3,4,7,8-PeCDF	44		21 - 178				08/01/18 13:56	08/07/18 06:53	1
13C-2,3,7,8-TCDD	48		25 - 164				08/01/18 13:56	08/07/18 06:53	1
13C-OCDD	31		17 - 157				08/01/18 13:56	08/07/18 06:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	87		35 - 197				08/01/18 13:56	08/07/18 06:53	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0040		0.00083	0.00026	ug/Kg	✉	08/01/18 13:56	08/10/18 17:57	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	46		24 - 169				08/01/18 13:56	08/10/18 17:57	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	90		35 - 197				08/01/18 13:56	08/10/18 17:57	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S082-4to6

Date Collected: 07/24/18 10:10

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-16

Matrix: Solid

Percent Solids: 66.8

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.014	B	0.0036	0.00013	ug/Kg	✉	08/01/18 13:56	08/07/18 11:15	1
1,2,3,4,6,7,8-HpCDF	0.0021	J B	0.0036	0.000079	ug/Kg	✉	08/01/18 13:56	08/07/18 11:15	1
1,2,3,4,7,8,9-HpCDF	0.00022	J B	0.0036	0.000081	ug/Kg	✉	08/01/18 13:56	08/07/18 11:15	1
1,2,3,4,7,8-HxCDD	0.00021	J B	0.0036	0.000043	ug/Kg	✉	08/01/18 13:56	08/07/18 11:15	1
1,2,3,4,7,8-HxCDF	0.00016	J	0.0036	0.000086	ug/Kg	✉	08/01/18 13:56	08/07/18 11:15	1
1,2,3,6,7,8-HxCDD	0.00044	J q	0.0036	0.000043	ug/Kg	✉	08/01/18 13:56	08/07/18 11:15	1
1,2,3,6,7,8-HxCDF	ND		0.0036	0.000088	ug/Kg	✉	08/01/18 13:56	08/07/18 11:15	1
1,2,3,7,8,9-HxCDD	0.00038	J B	0.0036	0.000039	ug/Kg	✉	08/01/18 13:56	08/07/18 11:15	1
1,2,3,7,8,9-HxCDF	ND		0.0036	0.000038	ug/Kg	✉	08/01/18 13:56	08/07/18 11:15	1
1,2,3,7,8-PeCDD	ND		0.0036	0.000090	ug/Kg	✉	08/01/18 13:56	08/07/18 11:15	1
1,2,3,7,8-PeCDF	ND		0.0036	0.000051	ug/Kg	✉	08/01/18 13:56	08/07/18 11:15	1
2,3,4,6,7,8-HxCDF	0.000067	J	0.0036	0.000049	ug/Kg	✉	08/01/18 13:56	08/07/18 11:15	1
2,3,4,7,8-PeCDD	ND		0.0036	0.000054	ug/Kg	✉	08/01/18 13:56	08/07/18 11:15	1
2,3,7,8-TCDD	ND		0.00073	0.000048	ug/Kg	✉	08/01/18 13:56	08/07/18 11:15	1
2,3,7,8-TCDF	0.000087	J q	0.00073	0.000041	ug/Kg	✉	08/01/18 13:56	08/07/18 11:15	1
OCDD	0.13	B	0.0073	0.000098	ug/Kg	✉	08/01/18 13:56	08/07/18 11:15	1
OCDF	0.0093	B	0.0073	0.000054	ug/Kg	✉	08/01/18 13:56	08/07/18 11:15	1
Isotope Dilution		%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	44			23 - 140			08/01/18 13:56	08/07/18 11:15	1
13C-1,2,3,4,6,7,8-HpCDF	39			28 - 143			08/01/18 13:56	08/07/18 11:15	1
13C-1,2,3,4,7,8,9-HpCDF	47			26 - 138			08/01/18 13:56	08/07/18 11:15	1
13C-1,2,3,4,7,8-HxCDD	44			32 - 141			08/01/18 13:56	08/07/18 11:15	1
13C-1,2,3,4,7,8-HxCDF	43			26 - 152			08/01/18 13:56	08/07/18 11:15	1
13C-1,2,3,6,7,8-HxCDD	45			28 - 130			08/01/18 13:56	08/07/18 11:15	1
13C-1,2,3,6,7,8-HxCDF	43			26 - 123			08/01/18 13:56	08/07/18 11:15	1
13C-1,2,3,7,8,9-HxCDF	48			29 - 147			08/01/18 13:56	08/07/18 11:15	1
13C-1,2,3,7,8-PeCDD	46			25 - 181			08/01/18 13:56	08/07/18 11:15	1
13C-1,2,3,7,8-PeCDF	46			24 - 185			08/01/18 13:56	08/07/18 11:15	1
13C-2,3,4,6,7,8-HxCDF	46			28 - 136			08/01/18 13:56	08/07/18 11:15	1
13C-2,3,4,7,8-PeCDD	49			21 - 178			08/01/18 13:56	08/07/18 11:15	1
13C-2,3,7,8-TCDD	54			25 - 164			08/01/18 13:56	08/07/18 11:15	1
13C-2,3,7,8-TCDF	57			24 - 169			08/01/18 13:56	08/07/18 11:15	1
13C-OCDD	40			17 - 157			08/01/18 13:56	08/07/18 11:15	1
Surrogate		%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
37Cl-2,3,7,8-TCDD	97			35 - 197			08/01/18 13:56	08/07/18 11:15	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S095-0to2

Date Collected: 07/24/18 12:15

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-17

Matrix: Solid

Percent Solids: 54.8

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.76	B	0.0045	0.0031	ug/Kg	✉	08/01/18 13:56	08/07/18 12:01	1
1,2,3,4,6,7,8-HxCDF	0.078	B	0.0045	0.0011	ug/Kg	✉	08/01/18 13:56	08/07/18 12:01	1
1,2,3,4,7,8,9-HxCDF	0.011	B	0.0045	0.0019	ug/Kg	✉	08/01/18 13:56	08/07/18 12:01	1
1,2,3,4,7,8-HxCDD	0.0013	J B	0.0045	0.00040	ug/Kg	✉	08/01/18 13:56	08/07/18 12:01	1
1,2,3,4,7,8-HxCDF	0.062		0.0045	0.00057	ug/Kg	✉	08/01/18 13:56	08/07/18 12:01	1
1,2,3,6,7,8-HxCDD	0.011		0.0045	0.00037	ug/Kg	✉	08/01/18 13:56	08/07/18 12:01	1
1,2,3,6,7,8-HxCDF	0.016		0.0045	0.00058	ug/Kg	✉	08/01/18 13:56	08/07/18 12:01	1
1,2,3,7,8,9-HxCDD	0.0033	J B	0.0045	0.00035	ug/Kg	✉	08/01/18 13:56	08/07/18 12:01	1
1,2,3,7,8,9-HxCDF	0.0013	J	0.0045	0.00029	ug/Kg	✉	08/01/18 13:56	08/07/18 12:01	1
1,2,3,7,8-PeCDD	ND		0.0045	0.00096	ug/Kg	✉	08/01/18 13:56	08/07/18 12:01	1
1,2,3,7,8-PeCDF	0.055		0.0045	0.00063	ug/Kg	✉	08/01/18 13:56	08/07/18 12:01	1
2,3,4,6,7,8-HxCDF	0.0043	J	0.0045	0.00043	ug/Kg	✉	08/01/18 13:56	08/07/18 12:01	1
2,3,4,7,8-PeCDF	0.028		0.0045	0.00080	ug/Kg	✉	08/01/18 13:56	08/07/18 12:01	1
2,3,7,8-TCDD	0.00078	J	0.00090	0.00012	ug/Kg	✉	08/01/18 13:56	08/07/18 12:01	1
OCDD	5.2	E B	0.0090	0.0013	ug/Kg	✉	08/01/18 13:56	08/07/18 12:01	1
OCDF	0.23	B	0.0090	0.00013	ug/Kg	✉	08/01/18 13:56	08/07/18 12:01	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	41		23 - 140				08/01/18 13:56	08/07/18 12:01	1
13C-1,2,3,4,6,7,8-HxCDF	37		28 - 143				08/01/18 13:56	08/07/18 12:01	1
13C-1,2,3,4,7,8,9-HxCDF	31		26 - 138				08/01/18 13:56	08/07/18 12:01	1
13C-1,2,3,4,7,8-HxCDD	49		32 - 141				08/01/18 13:56	08/07/18 12:01	1
13C-1,2,3,4,7,8-HxCDF	53		26 - 152				08/01/18 13:56	08/07/18 12:01	1
13C-1,2,3,6,7,8-HxCDD	48		28 - 130				08/01/18 13:56	08/07/18 12:01	1
13C-1,2,3,6,7,8-HxCDF	54		26 - 123				08/01/18 13:56	08/07/18 12:01	1
13C-1,2,3,7,8,9-HxCDF	50		29 - 147				08/01/18 13:56	08/07/18 12:01	1
13C-1,2,3,7,8-PeCDD	50		25 - 181				08/01/18 13:56	08/07/18 12:01	1
13C-1,2,3,7,8-PeCDF	47		24 - 185				08/01/18 13:56	08/07/18 12:01	1
13C-2,3,4,6,7,8-HxCDF	38		28 - 136				08/01/18 13:56	08/07/18 12:01	1
13C-2,3,4,7,8-PeCDF	50		21 - 178				08/01/18 13:56	08/07/18 12:01	1
13C-2,3,7,8-TCDD	54		25 - 164				08/01/18 13:56	08/07/18 12:01	1
13C-OCDD	42		17 - 157				08/01/18 13:56	08/07/18 12:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	90		35 - 197				08/01/18 13:56	08/07/18 12:01	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.040	G	0.0012	0.0012	ug/Kg	✉	08/01/18 13:56	08/10/18 15:26	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	53		24 - 169				08/01/18 13:56	08/10/18 15:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	89		35 - 197				08/01/18 13:56	08/10/18 15:26	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S095-2to4

Date Collected: 07/24/18 12:20

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-18

Matrix: Solid

Percent Solids: 58.2

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.29	B	0.0042	0.00090	ug/Kg	✉	08/03/18 14:44	08/08/18 06:11	1
1,2,3,4,6,7,8-HxCDF	0.37	B	0.0042	0.00093	ug/Kg	✉	08/03/18 14:44	08/08/18 06:11	1
1,2,3,4,7,8,9-HxCDF	0.0028	J	0.0042	0.0019	ug/Kg	✉	08/03/18 14:44	08/08/18 06:11	1
1,2,3,4,7,8-HxCDD	0.00094	J B	0.0042	0.00018	ug/Kg	✉	08/03/18 14:44	08/08/18 06:11	1
1,2,3,4,7,8-HxCDF	0.0065		0.0042	0.0019	ug/Kg	✉	08/03/18 14:44	08/08/18 06:11	1
1,2,3,6,7,8-HxCDD	0.011		0.0042	0.00015	ug/Kg	✉	08/03/18 14:44	08/08/18 06:11	1
1,2,3,6,7,8-HxCDF	0.011		0.0042	0.0017	ug/Kg	✉	08/03/18 14:44	08/08/18 06:11	1
1,2,3,7,8,9-HxCDD	0.0034	J	0.0042	0.00015	ug/Kg	✉	08/03/18 14:44	08/08/18 06:11	1
1,2,3,7,8,9-HxCDF	ND		0.0042	0.00081	ug/Kg	✉	08/03/18 14:44	08/08/18 06:11	1
1,2,3,7,8-PeCDD	0.0012	J	0.0042	0.00017	ug/Kg	✉	08/03/18 14:44	08/08/18 06:11	1
1,2,3,7,8-PeCDF	ND		0.0042	0.00091	ug/Kg	✉	08/03/18 14:44	08/08/18 06:11	1
2,3,4,6,7,8-HxCDF	0.0049		0.0042	0.00088	ug/Kg	✉	08/03/18 14:44	08/08/18 06:11	1
2,3,4,7,8-PeCDF	0.0032	J	0.0042	0.0010	ug/Kg	✉	08/03/18 14:44	08/08/18 06:11	1
2,3,7,8-TCDD	0.00031	J q	0.00084	0.000059	ug/Kg	✉	08/03/18 14:44	08/08/18 06:11	1
OCDD	3.3	B	0.0084	0.00081	ug/Kg	✉	08/03/18 14:44	08/08/18 06:11	1
OCDF	0.23	B	0.0084	0.00014	ug/Kg	✉	08/03/18 14:44	08/08/18 06:11	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	38		23 - 140				08/03/18 14:44	08/08/18 06:11	1
13C-1,2,3,4,6,7,8-HxCDF	39		28 - 143				08/03/18 14:44	08/08/18 06:11	1
13C-1,2,3,4,7,8,9-HxCDF	28		26 - 138				08/03/18 14:44	08/08/18 06:11	1
13C-1,2,3,4,7,8-HxCDD	51		32 - 141				08/03/18 14:44	08/08/18 06:11	1
13C-1,2,3,4,7,8-HxCDF	55		26 - 152				08/03/18 14:44	08/08/18 06:11	1
13C-1,2,3,6,7,8-HxCDD	49		28 - 130				08/03/18 14:44	08/08/18 06:11	1
13C-1,2,3,6,7,8-HxCDF	55		26 - 123				08/03/18 14:44	08/08/18 06:11	1
13C-1,2,3,7,8,9-HxCDF	53		29 - 147				08/03/18 14:44	08/08/18 06:11	1
13C-1,2,3,7,8-PeCDD	50		25 - 181				08/03/18 14:44	08/08/18 06:11	1
13C-1,2,3,7,8-PeCDF	53		24 - 185				08/03/18 14:44	08/08/18 06:11	1
13C-2,3,4,6,7,8-HxCDF	47		28 - 136				08/03/18 14:44	08/08/18 06:11	1
13C-2,3,4,7,8-PeCDF	50		21 - 178				08/03/18 14:44	08/08/18 06:11	1
13C-2,3,7,8-TCDD	58		25 - 164				08/03/18 14:44	08/08/18 06:11	1
13C-OCDD	30		17 - 157				08/03/18 14:44	08/08/18 06:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	98		35 - 197				08/03/18 14:44	08/08/18 06:11	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND	G	0.0023	0.0023	ug/Kg	✉	08/03/18 14:44	08/10/18 20:29	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	53		24 - 169				08/03/18 14:44	08/10/18 20:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	85		35 - 197				08/03/18 14:44	08/10/18 20:29	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S095-4to6

Date Collected: 07/24/18 12:25

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-19

Matrix: Solid

Percent Solids: 60.2

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.0087	B	0.0040	0.000076	ug/Kg	✉	08/01/18 13:56	08/07/18 12:47	1
1,2,3,4,6,7,8-HpCDF	0.0054	B	0.0040	0.000071	ug/Kg	✉	08/01/18 13:56	08/07/18 12:47	1
1,2,3,4,7,8,9-HpCDF	0.00051	J B	0.0040	0.00011	ug/Kg	✉	08/01/18 13:56	08/07/18 12:47	1
1,2,3,4,7,8-HxCDD	0.00034	J B	0.0040	0.000054	ug/Kg	✉	08/01/18 13:56	08/07/18 12:47	1
1,2,3,4,7,8-HxCDF	0.0012	J	0.0040	0.00019	ug/Kg	✉	08/01/18 13:56	08/07/18 12:47	1
1,2,3,6,7,8-HxCDD	0.00084	J	0.0040	0.000050	ug/Kg	✉	08/01/18 13:56	08/07/18 12:47	1
1,2,3,6,7,8-HxCDF	0.0012	J	0.0040	0.00018	ug/Kg	✉	08/01/18 13:56	08/07/18 12:47	1
1,2,3,7,8,9-HxCDD	0.00064	J B	0.0040	0.000047	ug/Kg	✉	08/01/18 13:56	08/07/18 12:47	1
1,2,3,7,8,9-HxCDF	0.00019	J	0.0040	0.000080	ug/Kg	✉	08/01/18 13:56	08/07/18 12:47	1
1,2,3,7,8-PeCDD	0.00051	J	0.0040	0.000095	ug/Kg	✉	08/01/18 13:56	08/07/18 12:47	1
1,2,3,7,8-PeCDF	ND		0.0040	0.00023	ug/Kg	✉	08/01/18 13:56	08/07/18 12:47	1
2,3,4,6,7,8-HxCDF	0.00060	J q	0.0040	0.000095	ug/Kg	✉	08/01/18 13:56	08/07/18 12:47	1
2,3,4,7,8-PeCDF	0.00075	J	0.0040	0.00024	ug/Kg	✉	08/01/18 13:56	08/07/18 12:47	1
2,3,7,8-TCDD	0.00020	J q	0.00081	0.000063	ug/Kg	✉	08/01/18 13:56	08/07/18 12:47	1
OCDD	0.15	B	0.0081	0.000084	ug/Kg	✉	08/01/18 13:56	08/07/18 12:47	1
OCDF	0.0043	J B	0.0081	0.000051	ug/Kg	✉	08/01/18 13:56	08/07/18 12:47	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	48			23 - 140			08/01/18 13:56	08/07/18 12:47	1
13C-1,2,3,4,6,7,8-HpCDF	46			28 - 143			08/01/18 13:56	08/07/18 12:47	1
13C-1,2,3,4,7,8,9-HpCDF	40			26 - 138			08/01/18 13:56	08/07/18 12:47	1
13C-1,2,3,4,7,8-HxCDD	56			32 - 141			08/01/18 13:56	08/07/18 12:47	1
13C-1,2,3,4,7,8-HxCDF	56			26 - 152			08/01/18 13:56	08/07/18 12:47	1
13C-1,2,3,6,7,8-HxCDD	54			28 - 130			08/01/18 13:56	08/07/18 12:47	1
13C-1,2,3,6,7,8-HxCDF	55			26 - 123			08/01/18 13:56	08/07/18 12:47	1
13C-1,2,3,7,8,9-HxCDF	57			29 - 147			08/01/18 13:56	08/07/18 12:47	1
13C-1,2,3,7,8-PeCDD	54			25 - 181			08/01/18 13:56	08/07/18 12:47	1
13C-1,2,3,7,8-PeCDF	55			24 - 185			08/01/18 13:56	08/07/18 12:47	1
13C-2,3,4,6,7,8-HxCDF	52			28 - 136			08/01/18 13:56	08/07/18 12:47	1
13C-2,3,4,7,8-PeCDF	55			21 - 178			08/01/18 13:56	08/07/18 12:47	1
13C-2,3,7,8-TCDD	60			25 - 164			08/01/18 13:56	08/07/18 12:47	1
13C-OCDD	47			17 - 157			08/01/18 13:56	08/07/18 12:47	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	100			35 - 197			08/01/18 13:56	08/07/18 12:47	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.00041	J q	0.00081	0.00022	ug/Kg	✉	08/01/18 13:56	08/10/18 18:35	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	53			24 - 169			08/01/18 13:56	08/10/18 18:35	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	92			35 - 197			08/01/18 13:56	08/10/18 18:35	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S064-0to2

Date Collected: 07/24/18 16:40

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-20

Matrix: Solid

Percent Solids: 55.6

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.19	B	0.0044	0.0013	ug/Kg	⊗	08/01/18 13:56	08/07/18 13:33	1
1,2,3,4,6,7,8-HpCDF	0.045	B	0.0044	0.00049	ug/Kg	⊗	08/01/18 13:56	08/07/18 13:33	1
1,2,3,4,7,8,9-HpCDF	0.0059	B	0.0044	0.00070	ug/Kg	⊗	08/01/18 13:56	08/07/18 13:33	1
1,2,3,4,7,8-HxCDD	0.0017	J B	0.0044	0.00014	ug/Kg	⊗	08/01/18 13:56	08/07/18 13:33	1
1,2,3,4,7,8-HxCDF	0.022		0.0044	0.00040	ug/Kg	⊗	08/01/18 13:56	08/07/18 13:33	1
1,2,3,6,7,8-HxCDD	0.0070		0.0044	0.00014	ug/Kg	⊗	08/01/18 13:56	08/07/18 13:33	1
1,2,3,6,7,8-HxCDF	0.0085		0.0044	0.00042	ug/Kg	⊗	08/01/18 13:56	08/07/18 13:33	1
1,2,3,7,8,9-HxCDD	0.0039	J B	0.0044	0.00013	ug/Kg	⊗	08/01/18 13:56	08/07/18 13:33	1
1,2,3,7,8,9-HxCDF	0.00059	J	0.0044	0.00019	ug/Kg	⊗	08/01/18 13:56	08/07/18 13:33	1
1,2,3,7,8-PeCDD	0.00094	J	0.0044	0.00013	ug/Kg	⊗	08/01/18 13:56	08/07/18 13:33	1
1,2,3,7,8-PeCDF	0.014		0.0044	0.00031	ug/Kg	⊗	08/01/18 13:56	08/07/18 13:33	1
2,3,4,6,7,8-HxCDF	0.0016	J	0.0044	0.00025	ug/Kg	⊗	08/01/18 13:56	08/07/18 13:33	1
2,3,4,7,8-PeCDF	0.0079		0.0044	0.00031	ug/Kg	⊗	08/01/18 13:56	08/07/18 13:33	1
2,3,7,8-TCDD	0.00054	J q	0.00088	0.000057	ug/Kg	⊗	08/01/18 13:56	08/07/18 13:33	1
OCDD	2.8	B	0.0088	0.00070	ug/Kg	⊗	08/01/18 13:56	08/07/18 13:33	1
OCDF	0.13	B	0.0088	0.000096	ug/Kg	⊗	08/01/18 13:56	08/07/18 13:33	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	38			23 - 140			08/01/18 13:56	08/07/18 13:33	1
13C-1,2,3,4,6,7,8-HpCDF	38			28 - 143			08/01/18 13:56	08/07/18 13:33	1
13C-1,2,3,4,7,8,9-HpCDF	35			26 - 138			08/01/18 13:56	08/07/18 13:33	1
13C-1,2,3,4,7,8-HxCDD	46			32 - 141			08/01/18 13:56	08/07/18 13:33	1
13C-1,2,3,4,7,8-HxCDF	46			26 - 152			08/01/18 13:56	08/07/18 13:33	1
13C-1,2,3,6,7,8-HxCDD	45			28 - 130			08/01/18 13:56	08/07/18 13:33	1
13C-1,2,3,6,7,8-HxCDF	45			26 - 123			08/01/18 13:56	08/07/18 13:33	1
13C-1,2,3,7,8,9-HxCDF	47			29 - 147			08/01/18 13:56	08/07/18 13:33	1
13C-1,2,3,7,8-PeCDD	46			25 - 181			08/01/18 13:56	08/07/18 13:33	1
13C-1,2,3,7,8-PeCDF	46			24 - 185			08/01/18 13:56	08/07/18 13:33	1
13C-2,3,4,6,7,8-HxCDF	45			28 - 136			08/01/18 13:56	08/07/18 13:33	1
13C-2,3,4,7,8-PeCDF	47			21 - 178			08/01/18 13:56	08/07/18 13:33	1
13C-2,3,7,8-TCDD	49			25 - 164			08/01/18 13:56	08/07/18 13:33	1
13C-OCDD	38			17 - 157			08/01/18 13:56	08/07/18 13:33	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	83			35 - 197			08/01/18 13:56	08/07/18 13:33	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.015		0.00088	0.00033	ug/Kg	⊗	08/01/18 13:56	08/09/18 22:32	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	47			24 - 169			08/01/18 13:56	08/09/18 22:32	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	80			35 - 197			08/01/18 13:56	08/09/18 22:32	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S064-2to3.5

Lab Sample ID: 580-79099-21

Date Collected: 07/24/18 16:45

Matrix: Solid

Date Received: 07/25/18 13:50

Percent Solids: 56.4

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.46	G B	0.0060	0.0060	ug/Kg	✉	08/01/18 13:56	08/07/18 14:19	1
1,2,3,4,6,7,8-HpCDF	0.13	B	0.0044	0.0014	ug/Kg	✉	08/01/18 13:56	08/07/18 14:19	1
1,2,3,4,7,8,9-HpCDF	0.020	B	0.0044	0.0021	ug/Kg	✉	08/01/18 13:56	08/07/18 14:19	1
1,2,3,4,7,8-HxCDD	0.0036	J B	0.0044	0.00023	ug/Kg	✉	08/01/18 13:56	08/07/18 14:19	1
1,2,3,4,7,8-HxCDF	0.070		0.0044	0.0012	ug/Kg	✉	08/01/18 13:56	08/07/18 14:19	1
1,2,3,6,7,8-HxCDD	0.017		0.0044	0.00025	ug/Kg	✉	08/01/18 13:56	08/07/18 14:19	1
1,2,3,6,7,8-HxCDF	0.027		0.0044	0.0011	ug/Kg	✉	08/01/18 13:56	08/07/18 14:19	1
1,2,3,7,8,9-HxCDD	0.0071	B	0.0044	0.00022	ug/Kg	✉	08/01/18 13:56	08/07/18 14:19	1
1,2,3,7,8,9-HxCDF	0.0017	J	0.0044	0.00060	ug/Kg	✉	08/01/18 13:56	08/07/18 14:19	1
1,2,3,7,8-PeCDD	0.0022	J	0.0044	0.00029	ug/Kg	✉	08/01/18 13:56	08/07/18 14:19	1
1,2,3,7,8-PeCDF	0.047		0.0044	0.00076	ug/Kg	✉	08/01/18 13:56	08/07/18 14:19	1
2,3,4,6,7,8-HxCDF	0.0052		0.0044	0.00063	ug/Kg	✉	08/01/18 13:56	08/07/18 14:19	1
2,3,4,7,8-PeCDF	0.018		0.0044	0.00080	ug/Kg	✉	08/01/18 13:56	08/07/18 14:19	1
2,3,7,8-TCDD	0.0013		0.00089	0.000074	ug/Kg	✉	08/01/18 13:56	08/07/18 14:19	1
OCDD	6.3	E B	0.0089	0.0014	ug/Kg	✉	08/01/18 13:56	08/07/18 14:19	1
OCDF	0.47	B	0.0089	0.00018	ug/Kg	✉	08/01/18 13:56	08/07/18 14:19	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	35		23 - 140				08/01/18 13:56	08/07/18 14:19	1
13C-1,2,3,4,6,7,8-HpCDF	35		28 - 143				08/01/18 13:56	08/07/18 14:19	1
13C-1,2,3,4,7,8,9-HpCDF	30		26 - 138				08/01/18 13:56	08/07/18 14:19	1
13C-1,2,3,4,7,8-HxCDD	53		32 - 141				08/01/18 13:56	08/07/18 14:19	1
13C-1,2,3,4,7,8-HxCDF	64		26 - 152				08/01/18 13:56	08/07/18 14:19	1
13C-1,2,3,6,7,8-HxCDD	46		28 - 130				08/01/18 13:56	08/07/18 14:19	1
13C-1,2,3,6,7,8-HxCDF	59		26 - 123				08/01/18 13:56	08/07/18 14:19	1
13C-1,2,3,7,8,9-HxCDF	56		29 - 147				08/01/18 13:56	08/07/18 14:19	1
13C-1,2,3,7,8-PeCDD	62		25 - 181				08/01/18 13:56	08/07/18 14:19	1
13C-1,2,3,7,8-PeCDF	54		24 - 185				08/01/18 13:56	08/07/18 14:19	1
13C-2,3,4,6,7,8-HxCDF	44		28 - 136				08/01/18 13:56	08/07/18 14:19	1
13C-2,3,4,7,8-PeCDF	61		21 - 178				08/01/18 13:56	08/07/18 14:19	1
13C-2,3,7,8-TCDD	54		25 - 164				08/01/18 13:56	08/07/18 14:19	1
13C-OCDD	36		17 - 157				08/01/18 13:56	08/07/18 14:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	96		35 - 197				08/01/18 13:56	08/07/18 14:19	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.023		0.00089	0.00045	ug/Kg	✉	08/01/18 13:56	08/09/18 23:10	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	62		24 - 169				08/01/18 13:56	08/09/18 23:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	93		35 - 197				08/01/18 13:56	08/09/18 23:10	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S064-3.5to4.8

Lab Sample ID: 580-79099-22

Date Collected: 07/24/18 16:50

Matrix: Solid

Date Received: 07/25/18 13:50

Percent Solids: 55.7

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.50	B	0.0044	0.0016	ug/Kg	✉	08/01/18 13:56	08/07/18 15:05	1
1,2,3,4,6,7,8-HpCDF	0.17	B	0.0044	0.0025	ug/Kg	✉	08/01/18 13:56	08/07/18 15:05	1
1,2,3,4,7,8,9-HpCDF	0.024	B	0.0044	0.0038	ug/Kg	✉	08/01/18 13:56	08/07/18 15:05	1
1,2,3,4,7,8-HxCDD	0.0039	J B	0.0044	0.00042	ug/Kg	✉	08/01/18 13:56	08/07/18 15:05	1
1,2,3,4,7,8-HxCDF	0.089		0.0044	0.00095	ug/Kg	✉	08/01/18 13:56	08/07/18 15:05	1
1,2,3,6,7,8-HxCDD	0.019		0.0044	0.00045	ug/Kg	✉	08/01/18 13:56	08/07/18 15:05	1
1,2,3,6,7,8-HxCDF	0.032		0.0044	0.00084	ug/Kg	✉	08/01/18 13:56	08/07/18 15:05	1
1,2,3,7,8,9-HxCDD	0.0091	B	0.0044	0.00040	ug/Kg	✉	08/01/18 13:56	08/07/18 15:05	1
1,2,3,7,8,9-HxCDF	0.0020	J	0.0044	0.00053	ug/Kg	✉	08/01/18 13:56	08/07/18 15:05	1
1,2,3,7,8-PeCDD	0.0025	J	0.0044	0.00033	ug/Kg	✉	08/01/18 13:56	08/07/18 15:05	1
1,2,3,7,8-PeCDF	0.053		0.0044	0.00060	ug/Kg	✉	08/01/18 13:56	08/07/18 15:05	1
2,3,4,6,7,8-HxCDF	0.0075		0.0044	0.00053	ug/Kg	✉	08/01/18 13:56	08/07/18 15:05	1
2,3,4,7,8-PeCDF	0.024		0.0044	0.00057	ug/Kg	✉	08/01/18 13:56	08/07/18 15:05	1
2,3,7,8-TCDD	0.0012		0.00089	0.000088	ug/Kg	✉	08/01/18 13:56	08/07/18 15:05	1
OCDD	6.8	E B	0.0089	0.0013	ug/Kg	✉	08/01/18 13:56	08/07/18 15:05	1
OCDF	0.53	B	0.0089	0.00024	ug/Kg	✉	08/01/18 13:56	08/07/18 15:05	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	38		23 - 140				08/01/18 13:56	08/07/18 15:05	1
13C-1,2,3,4,6,7,8-HpCDF	35		28 - 143				08/01/18 13:56	08/07/18 15:05	1
13C-1,2,3,4,7,8,9-HpCDF	34		26 - 138				08/01/18 13:56	08/07/18 15:05	1
13C-1,2,3,4,7,8-HxCDD	52		32 - 141				08/01/18 13:56	08/07/18 15:05	1
13C-1,2,3,4,7,8-HxCDF	67		26 - 152				08/01/18 13:56	08/07/18 15:05	1
13C-1,2,3,6,7,8-HxCDD	47		28 - 130				08/01/18 13:56	08/07/18 15:05	1
13C-1,2,3,6,7,8-HxCDF	63		26 - 123				08/01/18 13:56	08/07/18 15:05	1
13C-1,2,3,7,8,9-HxCDF	55		29 - 147				08/01/18 13:56	08/07/18 15:05	1
13C-1,2,3,7,8-PeCDD	64		25 - 181				08/01/18 13:56	08/07/18 15:05	1
13C-1,2,3,7,8-PeCDF	54		24 - 185				08/01/18 13:56	08/07/18 15:05	1
13C-2,3,4,6,7,8-HxCDF	43		28 - 136				08/01/18 13:56	08/07/18 15:05	1
13C-2,3,4,7,8-PeCDF	71		21 - 178				08/01/18 13:56	08/07/18 15:05	1
13C-2,3,7,8-TCDD	56		25 - 164				08/01/18 13:56	08/07/18 15:05	1
13C-OCDD	41		17 - 157				08/01/18 13:56	08/07/18 15:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	103		35 - 197				08/01/18 13:56	08/07/18 15:05	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.024		0.00089	0.00063	ug/Kg	✉	08/01/18 13:56	08/09/18 23:48	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	67		24 - 169				08/01/18 13:56	08/09/18 23:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	106		35 - 197				08/01/18 13:56	08/09/18 23:48	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S154-0to1

Date Collected: 07/24/18 15:30

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-23

Matrix: Solid

Percent Solids: 51.8

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.14	B	0.0048	0.00094	ug/Kg	✉	08/01/18 13:56	08/07/18 15:51	1
1,2,3,4,6,7,8-HpCDF	0.058	B	0.0048	0.00057	ug/Kg	✉	08/01/18 13:56	08/07/18 15:51	1
1,2,3,4,7,8,9-HpCDF	0.019	B	0.0048	0.00069	ug/Kg	✉	08/01/18 13:56	08/07/18 15:51	1
1,2,3,4,7,8-HxCDD	0.0017	J B	0.0048	0.00063	ug/Kg	✉	08/01/18 13:56	08/07/18 15:51	1
1,2,3,4,7,8-HxCDF	0.13		0.0048	0.00073	ug/Kg	✉	08/01/18 13:56	08/07/18 15:51	1
1,2,3,6,7,8-HxCDD	0.0057		0.0048	0.00059	ug/Kg	✉	08/01/18 13:56	08/07/18 15:51	1
1,2,3,6,7,8-HxCDF	0.026		0.0048	0.00079	ug/Kg	✉	08/01/18 13:56	08/07/18 15:51	1
1,2,3,7,8,9-HxCDD	0.0041	J B	0.0048	0.00056	ug/Kg	✉	08/01/18 13:56	08/07/18 15:51	1
1,2,3,7,8,9-HxCDF	0.0019	J	0.0048	0.00034	ug/Kg	✉	08/01/18 13:56	08/07/18 15:51	1
1,2,3,7,8-PeCDD	0.00090	J q	0.0048	0.00018	ug/Kg	✉	08/01/18 13:56	08/07/18 15:51	1
1,2,3,7,8-PeCDF	0.091		0.0048	0.00062	ug/Kg	✉	08/01/18 13:56	08/07/18 15:51	1
2,3,4,6,7,8-HxCDF	0.0037	J	0.0048	0.00044	ug/Kg	✉	08/01/18 13:56	08/07/18 15:51	1
2,3,4,7,8-PeCDF	0.037		0.0048	0.00070	ug/Kg	✉	08/01/18 13:56	08/07/18 15:51	1
2,3,7,8-TCDD	0.00040	J q	0.00095	0.00013	ug/Kg	✉	08/01/18 13:56	08/07/18 15:51	1
OCDD	1.2	B	0.0095	0.00099	ug/Kg	✉	08/01/18 13:56	08/07/18 15:51	1
OCDF	0.13	B	0.0095	0.00022	ug/Kg	✉	08/01/18 13:56	08/07/18 15:51	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	58		23 - 140				08/01/18 13:56	08/07/18 15:51	1
13C-1,2,3,4,6,7,8-HpCDF	56		28 - 143				08/01/18 13:56	08/07/18 15:51	1
13C-1,2,3,4,7,8,9-HpCDF	56		26 - 138				08/01/18 13:56	08/07/18 15:51	1
13C-1,2,3,4,7,8-HxCDD	63		32 - 141				08/01/18 13:56	08/07/18 15:51	1
13C-1,2,3,4,7,8-HxCDF	63		26 - 152				08/01/18 13:56	08/07/18 15:51	1
13C-1,2,3,6,7,8-HxCDD	62		28 - 130				08/01/18 13:56	08/07/18 15:51	1
13C-1,2,3,6,7,8-HxCDF	61		26 - 123				08/01/18 13:56	08/07/18 15:51	1
13C-1,2,3,7,8,9-HxCDF	67		29 - 147				08/01/18 13:56	08/07/18 15:51	1
13C-1,2,3,7,8-PeCDD	58		25 - 181				08/01/18 13:56	08/07/18 15:51	1
13C-1,2,3,7,8-PeCDF	61		24 - 185				08/01/18 13:56	08/07/18 15:51	1
13C-2,3,4,6,7,8-HxCDF	64		28 - 136				08/01/18 13:56	08/07/18 15:51	1
13C-2,3,4,7,8-PeCDF	59		21 - 178				08/01/18 13:56	08/07/18 15:51	1
13C-2,3,7,8-TCDD	66		25 - 164				08/01/18 13:56	08/07/18 15:51	1
13C-OCDD	55		17 - 157				08/01/18 13:56	08/07/18 15:51	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	107		35 - 197				08/01/18 13:56	08/07/18 15:51	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.098		0.00095	0.00046	ug/Kg	✉	08/01/18 13:56	08/10/18 00:26	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	60		24 - 169				08/01/18 13:56	08/10/18 00:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	105		35 - 197				08/01/18 13:56	08/10/18 00:26	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S154-1to3

Date Collected: 07/24/18 15:35

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-24

Matrix: Solid

Percent Solids: 78.8

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.077	B	0.0032	0.00038	ug/Kg	✉	08/01/18 13:56	08/07/18 16:37	1
1,2,3,4,6,7,8-HxCDF	0.053	B	0.0032	0.00039	ug/Kg	✉	08/01/18 13:56	08/07/18 16:37	1
1,2,3,4,7,8,9-HxCDF	0.018	B	0.0032	0.00045	ug/Kg	✉	08/01/18 13:56	08/07/18 16:37	1
1,2,3,4,7,8-HxCDD	0.00089	J B	0.0032	0.00013	ug/Kg	✉	08/01/18 13:56	08/07/18 16:37	1
1,2,3,4,7,8-HxCDF	0.12		0.0032	0.00082	ug/Kg	✉	08/01/18 13:56	08/07/18 16:37	1
1,2,3,6,7,8-HxCDD	0.0029	J	0.0032	0.00012	ug/Kg	✉	08/01/18 13:56	08/07/18 16:37	1
1,2,3,6,7,8-HxCDF	0.027		0.0032	0.00084	ug/Kg	✉	08/01/18 13:56	08/07/18 16:37	1
1,2,3,7,8,9-HxCDD	0.0020	J q B	0.0032	0.00011	ug/Kg	✉	08/01/18 13:56	08/07/18 16:37	1
1,2,3,7,8,9-HxCDF	0.0013	J	0.0032	0.00037	ug/Kg	✉	08/01/18 13:56	08/07/18 16:37	1
1,2,3,7,8-PeCDD	ND		0.0032	0.00011	ug/Kg	✉	08/01/18 13:56	08/07/18 16:37	1
1,2,3,7,8-PeCDF	0.073		0.0032	0.00056	ug/Kg	✉	08/01/18 13:56	08/07/18 16:37	1
2,3,4,6,7,8-HxCDF	0.0034		0.0032	0.00049	ug/Kg	✉	08/01/18 13:56	08/07/18 16:37	1
2,3,4,7,8-PeCDF	0.026		0.0032	0.00060	ug/Kg	✉	08/01/18 13:56	08/07/18 16:37	1
2,3,7,8-TCDD	ND		0.00064	0.00017	ug/Kg	✉	08/01/18 13:56	08/07/18 16:37	1
OCDD	0.76	B	0.0064	0.00024	ug/Kg	✉	08/01/18 13:56	08/07/18 16:37	1
OCDF	0.098	B	0.0064	0.00010	ug/Kg	✉	08/01/18 13:56	08/07/18 16:37	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	49		23 - 140				08/01/18 13:56	08/07/18 16:37	1
13C-1,2,3,4,6,7,8-HxCDF	48		28 - 143				08/01/18 13:56	08/07/18 16:37	1
13C-1,2,3,4,7,8,9-HxCDF	49		26 - 138				08/01/18 13:56	08/07/18 16:37	1
13C-1,2,3,4,7,8-HxCDD	51		32 - 141				08/01/18 13:56	08/07/18 16:37	1
13C-1,2,3,4,7,8-HxCDF	50		26 - 152				08/01/18 13:56	08/07/18 16:37	1
13C-1,2,3,6,7,8-HxCDD	51		28 - 130				08/01/18 13:56	08/07/18 16:37	1
13C-1,2,3,6,7,8-HxCDF	48		26 - 123				08/01/18 13:56	08/07/18 16:37	1
13C-1,2,3,7,8,9-HxCDF	53		29 - 147				08/01/18 13:56	08/07/18 16:37	1
13C-1,2,3,7,8-PeCDD	48		25 - 181				08/01/18 13:56	08/07/18 16:37	1
13C-1,2,3,7,8-PeCDF	48		24 - 185				08/01/18 13:56	08/07/18 16:37	1
13C-2,3,4,6,7,8-HxCDF	51		28 - 136				08/01/18 13:56	08/07/18 16:37	1
13C-2,3,4,7,8-PeCDF	48		21 - 178				08/01/18 13:56	08/07/18 16:37	1
13C-2,3,7,8-TCDD	54		25 - 164				08/01/18 13:56	08/07/18 16:37	1
13C-OCDD	48		17 - 157				08/01/18 13:56	08/07/18 16:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	86		35 - 197				08/01/18 13:56	08/07/18 16:37	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.064		0.00064	0.00047	ug/Kg	✉	08/01/18 13:56	08/10/18 01:04	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	42		24 - 169				08/01/18 13:56	08/10/18 01:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	76		35 - 197				08/01/18 13:56	08/10/18 01:04	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S154-3to4

Date Collected: 07/24/18 15:40

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-25

Matrix: Solid

Percent Solids: 74.2

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.0021	J B	0.0033	0.000073	ug/Kg	✉	08/01/18 13:56	08/07/18 17:23	1
1,2,3,4,6,7,8-HxCDF	0.00022	J B q	0.0033	0.000067	ug/Kg	✉	08/01/18 13:56	08/07/18 17:23	1
1,2,3,4,7,8,9-HxCDF	ND		0.0033	0.000075	ug/Kg	✉	08/01/18 13:56	08/07/18 17:23	1
1,2,3,4,7,8-HxCDD	ND		0.0033	0.000047	ug/Kg	✉	08/01/18 13:56	08/07/18 17:23	1
1,2,3,4,7,8-HxCDF	ND		0.0033	0.000055	ug/Kg	✉	08/01/18 13:56	08/07/18 17:23	1
1,2,3,6,7,8-HxCDD	0.000090	J	0.0033	0.000046	ug/Kg	✉	08/01/18 13:56	08/07/18 17:23	1
1,2,3,6,7,8-HxCDF	ND		0.0033	0.000054	ug/Kg	✉	08/01/18 13:56	08/07/18 17:23	1
1,2,3,7,8,9-HxCDD	0.00032	J B	0.0033	0.000043	ug/Kg	✉	08/01/18 13:56	08/07/18 17:23	1
1,2,3,7,8,9-HxCDF	ND		0.0033	0.000024	ug/Kg	✉	08/01/18 13:56	08/07/18 17:23	1
1,2,3,7,8-PeCDD	ND		0.0033	0.000042	ug/Kg	✉	08/01/18 13:56	08/07/18 17:23	1
1,2,3,7,8-PeCDF	0.000080	J	0.0033	0.000025	ug/Kg	✉	08/01/18 13:56	08/07/18 17:23	1
2,3,4,6,7,8-HxCDF	ND		0.0033	0.000031	ug/Kg	✉	08/01/18 13:56	08/07/18 17:23	1
2,3,4,7,8-PeCDF	ND		0.0033	0.000027	ug/Kg	✉	08/01/18 13:56	08/07/18 17:23	1
2,3,7,8-TCDD	ND		0.00067	0.000025	ug/Kg	✉	08/01/18 13:56	08/07/18 17:23	1
2,3,7,8-TCDF	0.000079	J q	0.00067	0.000019	ug/Kg	✉	08/01/18 13:56	08/07/18 17:23	1
OCDD	0.020	B	0.0067	0.000052	ug/Kg	✉	08/01/18 13:56	08/07/18 17:23	1
OCDF	0.00061	J B	0.0067	0.000042	ug/Kg	✉	08/01/18 13:56	08/07/18 17:23	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	54		23 - 140				08/01/18 13:56	08/07/18 17:23	1
13C-1,2,3,4,6,7,8-HxCDF	52		28 - 143				08/01/18 13:56	08/07/18 17:23	1
13C-1,2,3,4,7,8,9-HxCDF	56		26 - 138				08/01/18 13:56	08/07/18 17:23	1
13C-1,2,3,4,7,8-HxCDD	46		32 - 141				08/01/18 13:56	08/07/18 17:23	1
13C-1,2,3,4,7,8-HxCDF	44		26 - 152				08/01/18 13:56	08/07/18 17:23	1
13C-1,2,3,6,7,8-HxCDD	46		28 - 130				08/01/18 13:56	08/07/18 17:23	1
13C-1,2,3,6,7,8-HxCDF	44		26 - 123				08/01/18 13:56	08/07/18 17:23	1
13C-1,2,3,7,8,9-HxCDF	48		29 - 147				08/01/18 13:56	08/07/18 17:23	1
13C-1,2,3,7,8-PeCDD	40		25 - 181				08/01/18 13:56	08/07/18 17:23	1
13C-1,2,3,7,8-PeCDF	41		24 - 185				08/01/18 13:56	08/07/18 17:23	1
13C-2,3,4,6,7,8-HxCDF	47		28 - 136				08/01/18 13:56	08/07/18 17:23	1
13C-2,3,4,7,8-PeCDF	41		21 - 178				08/01/18 13:56	08/07/18 17:23	1
13C-2,3,7,8-TCDD	48		25 - 164				08/01/18 13:56	08/07/18 17:23	1
13C-2,3,7,8-TCDF	47		24 - 169				08/01/18 13:56	08/07/18 17:23	1
13C-OCDD	53		17 - 157				08/01/18 13:56	08/07/18 17:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl-2,3,7,8-TCDD	86		35 - 197				08/01/18 13:56	08/07/18 17:23	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S127-0to2

Date Collected: 07/24/18 17:45

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-26

Matrix: Solid

Percent Solids: 66.9

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.13	B	0.0037	0.0015	ug/Kg	✉	08/01/18 13:56	08/07/18 18:09	1
1,2,3,4,6,7,8-HpCDF	0.050	B	0.0037	0.00046	ug/Kg	✉	08/01/18 13:56	08/07/18 18:09	1
1,2,3,4,7,8,9-HpCDF	0.016	B	0.0037	0.00053	ug/Kg	✉	08/01/18 13:56	08/07/18 18:09	1
1,2,3,4,7,8-HxCDD	0.0011	J B	0.0037	0.000072	ug/Kg	✉	08/01/18 13:56	08/07/18 18:09	1
1,2,3,4,7,8-HxCDF	0.088		0.0037	0.00027	ug/Kg	✉	08/01/18 13:56	08/07/18 18:09	1
1,2,3,6,7,8-HxCDD	0.0056		0.0037	0.000091	ug/Kg	✉	08/01/18 13:56	08/07/18 18:09	1
1,2,3,6,7,8-HxCDF	0.020		0.0037	0.00025	ug/Kg	✉	08/01/18 13:56	08/07/18 18:09	1
1,2,3,7,8,9-HxCDD	0.0027	J B	0.0037	0.000074	ug/Kg	✉	08/01/18 13:56	08/07/18 18:09	1
1,2,3,7,8,9-HxCDF	0.0015	J	0.0037	0.00014	ug/Kg	✉	08/01/18 13:56	08/07/18 18:09	1
1,2,3,7,8-PeCDD	0.00077	J	0.0037	0.00013	ug/Kg	✉	08/01/18 13:56	08/07/18 18:09	1
1,2,3,7,8-PeCDF	0.058		0.0037	0.00058	ug/Kg	✉	08/01/18 13:56	08/07/18 18:09	1
2,3,4,6,7,8-HxCDF	0.0033	J	0.0037	0.00016	ug/Kg	✉	08/01/18 13:56	08/07/18 18:09	1
2,3,4,7,8-PeCDF	0.020		0.0037	0.00030	ug/Kg	✉	08/01/18 13:56	08/07/18 18:09	1
2,3,7,8-TCDD	0.00043	J q	0.00074	0.000052	ug/Kg	✉	08/01/18 13:56	08/07/18 18:09	1
OCDD	1.3	B	0.0074	0.00038	ug/Kg	✉	08/01/18 13:56	08/07/18 18:09	1
OCDF	0.13	B	0.0074	0.00012	ug/Kg	✉	08/01/18 13:56	08/07/18 18:09	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	37		23 - 140				08/01/18 13:56	08/07/18 18:09	1
13C-1,2,3,4,6,7,8-HpCDF	35		28 - 143				08/01/18 13:56	08/07/18 18:09	1
13C-1,2,3,4,7,8,9-HpCDF	42		26 - 138				08/01/18 13:56	08/07/18 18:09	1
13C-1,2,3,4,7,8-HxCDD	46		32 - 141				08/01/18 13:56	08/07/18 18:09	1
13C-1,2,3,4,7,8-HxCDF	50		26 - 152				08/01/18 13:56	08/07/18 18:09	1
13C-1,2,3,6,7,8-HxCDD	39		28 - 130				08/01/18 13:56	08/07/18 18:09	1
13C-1,2,3,6,7,8-HxCDF	47		26 - 123				08/01/18 13:56	08/07/18 18:09	1
13C-1,2,3,7,8,9-HxCDF	52		29 - 147				08/01/18 13:56	08/07/18 18:09	1
13C-1,2,3,7,8-PeCDD	38		25 - 181				08/01/18 13:56	08/07/18 18:09	1
13C-1,2,3,7,8-PeCDF	40		24 - 185				08/01/18 13:56	08/07/18 18:09	1
13C-2,3,4,6,7,8-HxCDF	38		28 - 136				08/01/18 13:56	08/07/18 18:09	1
13C-2,3,4,7,8-PeCDF	61		21 - 178				08/01/18 13:56	08/07/18 18:09	1
13C-2,3,7,8-TCDD	60		25 - 164				08/01/18 13:56	08/07/18 18:09	1
13C-OCDD	32		17 - 157				08/01/18 13:56	08/07/18 18:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	111		35 - 197				08/01/18 13:56	08/07/18 18:09	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.039		0.00074	0.00037	ug/Kg	✉	08/01/18 13:56	08/10/18 01:41	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	62		24 - 169				08/01/18 13:56	08/10/18 01:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	134		35 - 197				08/01/18 13:56	08/10/18 01:41	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S127-2to4

Date Collected: 07/24/18 17:30

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-27

Matrix: Solid

Percent Solids: 66.9

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.10	B	0.0037	0.00067	ug/Kg	✉	08/03/18 14:44	08/08/18 15:07	1
1,2,3,4,6,7,8-HpCDF	0.11	B	0.0037	0.00063	ug/Kg	✉	08/03/18 14:44	08/08/18 15:07	1
1,2,3,4,7,8,9-HpCDF	0.047		0.0037	0.00072	ug/Kg	✉	08/03/18 14:44	08/08/18 15:07	1
1,2,3,4,7,8-HxCDD	0.00091	J B	0.0037	0.00010	ug/Kg	✉	08/03/18 14:44	08/08/18 15:07	1
1,2,3,4,7,8-HxCDF	0.23		0.0037	0.0012	ug/Kg	✉	08/03/18 14:44	08/08/18 15:07	1
1,2,3,6,7,8-HxCDD	0.0040		0.0037	0.000098	ug/Kg	✉	08/03/18 14:44	08/08/18 15:07	1
1,2,3,6,7,8-HxCDF	0.058		0.0037	0.0012	ug/Kg	✉	08/03/18 14:44	08/08/18 15:07	1
1,2,3,7,8,9-HxCDD	0.0023	J	0.0037	0.000091	ug/Kg	✉	08/03/18 14:44	08/08/18 15:07	1
1,2,3,7,8,9-HxCDF	0.0030	J B	0.0037	0.00055	ug/Kg	✉	08/03/18 14:44	08/08/18 15:07	1
1,2,3,7,8-PeCDD	0.00056	J	0.0037	0.000094	ug/Kg	✉	08/03/18 14:44	08/08/18 15:07	1
1,2,3,7,8-PeCDF	0.14		0.0037	0.00087	ug/Kg	✉	08/03/18 14:44	08/08/18 15:07	1
2,3,4,6,7,8-HxCDF	0.0078		0.0037	0.00073	ug/Kg	✉	08/03/18 14:44	08/08/18 15:07	1
2,3,4,7,8-PeCDF	0.057		0.0037	0.00090	ug/Kg	✉	08/03/18 14:44	08/08/18 15:07	1
2,3,7,8-TCDD	0.00037	J q	0.00075	0.000047	ug/Kg	✉	08/03/18 14:44	08/08/18 15:07	1
OCDD	1.4	B	0.0075	0.00048	ug/Kg	✉	08/03/18 14:44	08/08/18 15:07	1
OCDF	0.25	B	0.0075	0.00012	ug/Kg	✉	08/03/18 14:44	08/08/18 15:07	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	51		23 - 140				08/03/18 14:44	08/08/18 15:07	1
13C-1,2,3,4,6,7,8-HpCDF	49		28 - 143				08/03/18 14:44	08/08/18 15:07	1
13C-1,2,3,4,7,8,9-HpCDF	51		26 - 138				08/03/18 14:44	08/08/18 15:07	1
13C-1,2,3,4,7,8-HxCDD	51		32 - 141				08/03/18 14:44	08/08/18 15:07	1
13C-1,2,3,4,7,8-HxCDF	52		26 - 152				08/03/18 14:44	08/08/18 15:07	1
13C-1,2,3,6,7,8-HxCDD	52		28 - 130				08/03/18 14:44	08/08/18 15:07	1
13C-1,2,3,6,7,8-HxCDF	52		26 - 123				08/03/18 14:44	08/08/18 15:07	1
13C-1,2,3,7,8,9-HxCDF	55		29 - 147				08/03/18 14:44	08/08/18 15:07	1
13C-1,2,3,7,8-PeCDD	59		25 - 181				08/03/18 14:44	08/08/18 15:07	1
13C-1,2,3,7,8-PeCDF	60		24 - 185				08/03/18 14:44	08/08/18 15:07	1
13C-2,3,4,6,7,8-HxCDF	53		28 - 136				08/03/18 14:44	08/08/18 15:07	1
13C-2,3,4,7,8-PeCDF	61		21 - 178				08/03/18 14:44	08/08/18 15:07	1
13C-2,3,7,8-TCDD	59		25 - 164				08/03/18 14:44	08/08/18 15:07	1
13C-OCDD	47		17 - 157				08/03/18 14:44	08/08/18 15:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	103		35 - 197				08/03/18 14:44	08/08/18 15:07	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.085		0.00075	0.00043	ug/Kg	✉	08/03/18 14:44	08/10/18 21:06	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	50		24 - 169				08/03/18 14:44	08/10/18 21:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	95		35 - 197				08/03/18 14:44	08/10/18 21:06	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S127-4to5.6

Date Collected: 07/24/18 17:35

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-28

Matrix: Solid

Percent Solids: 73.9

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.092	B	0.0034	0.00041	ug/Kg	✉	08/01/18 13:56	08/07/18 18:55	1
1,2,3,4,6,7,8-HpCDF	0.087	B	0.0034	0.00037	ug/Kg	✉	08/01/18 13:56	08/07/18 18:55	1
1,2,3,4,7,8,9-HpCDF	0.028	B	0.0034	0.00050	ug/Kg	✉	08/01/18 13:56	08/07/18 18:55	1
1,2,3,4,7,8-HxCDD	0.00077	J B	0.0034	0.00011	ug/Kg	✉	08/01/18 13:56	08/07/18 18:55	1
1,2,3,4,7,8-HxCDF	0.17		0.0034	0.00085	ug/Kg	✉	08/01/18 13:56	08/07/18 18:55	1
1,2,3,6,7,8-HxCDD	0.0034		0.0034	0.00011	ug/Kg	✉	08/01/18 13:56	08/07/18 18:55	1
1,2,3,6,7,8-HxCDF	0.038		0.0034	0.00089	ug/Kg	✉	08/01/18 13:56	08/07/18 18:55	1
1,2,3,7,8,9-HxCDD	0.0018	J q B	0.0034	0.00010	ug/Kg	✉	08/01/18 13:56	08/07/18 18:55	1
1,2,3,7,8,9-HxCDF	0.0022	J	0.0034	0.00038	ug/Kg	✉	08/01/18 13:56	08/07/18 18:55	1
1,2,3,7,8-PeCDD	0.00048	J	0.0034	0.000095	ug/Kg	✉	08/01/18 13:56	08/07/18 18:55	1
1,2,3,7,8-PeCDF	0.088		0.0034	0.00059	ug/Kg	✉	08/01/18 13:56	08/07/18 18:55	1
2,3,4,6,7,8-HxCDF	0.0046		0.0034	0.00048	ug/Kg	✉	08/01/18 13:56	08/07/18 18:55	1
2,3,4,7,8-PeCDF	0.028		0.0034	0.00062	ug/Kg	✉	08/01/18 13:56	08/07/18 18:55	1
2,3,7,8-TCDD	0.00045	J	0.00068	0.000050	ug/Kg	✉	08/01/18 13:56	08/07/18 18:55	1
OCDD	1.3	B	0.0068	0.00029	ug/Kg	✉	08/01/18 13:56	08/07/18 18:55	1
OCDF	0.20	B	0.0068	0.000095	ug/Kg	✉	08/01/18 13:56	08/07/18 18:55	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	33		23 - 140				08/01/18 13:56	08/07/18 18:55	1
13C-1,2,3,4,6,7,8-HpCDF	36		28 - 143				08/01/18 13:56	08/07/18 18:55	1
13C-1,2,3,4,7,8,9-HpCDF	35		26 - 138				08/01/18 13:56	08/07/18 18:55	1
13C-1,2,3,4,7,8-HxCDD	42		32 - 141				08/01/18 13:56	08/07/18 18:55	1
13C-1,2,3,4,7,8-HxCDF	42		26 - 152				08/01/18 13:56	08/07/18 18:55	1
13C-1,2,3,6,7,8-HxCDD	42		28 - 130				08/01/18 13:56	08/07/18 18:55	1
13C-1,2,3,6,7,8-HxCDF	42		26 - 123				08/01/18 13:56	08/07/18 18:55	1
13C-1,2,3,7,8,9-HxCDF	45		29 - 147				08/01/18 13:56	08/07/18 18:55	1
13C-1,2,3,7,8-PeCDD	39		25 - 181				08/01/18 13:56	08/07/18 18:55	1
13C-1,2,3,7,8-PeCDF	41		24 - 185				08/01/18 13:56	08/07/18 18:55	1
13C-2,3,4,6,7,8-HxCDF	44		28 - 136				08/01/18 13:56	08/07/18 18:55	1
13C-2,3,4,7,8-PeCDF	43		21 - 178				08/01/18 13:56	08/07/18 18:55	1
13C-2,3,7,8-TCDD	48		25 - 164				08/01/18 13:56	08/07/18 18:55	1
13C-OCDD	34		17 - 157				08/01/18 13:56	08/07/18 18:55	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	76		35 - 197				08/01/18 13:56	08/07/18 18:55	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.044		0.00068	0.00038	ug/Kg	✉	08/01/18 13:56	08/10/18 02:19	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	41		24 - 169				08/01/18 13:56	08/10/18 02:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	70		35 - 197				08/01/18 13:56	08/10/18 02:19	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S127-2to4D

Date Collected: 07/24/18 17:30

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-29

Matrix: Solid

Percent Solids: 66.3

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.067	B	0.0037	0.00040	ug/Kg	✉	08/03/18 14:44	08/08/18 15:53	1
1,2,3,4,6,7,8-HpCDF	0.068	B	0.0037	0.00050	ug/Kg	✉	08/03/18 14:44	08/08/18 15:53	1
1,2,3,4,7,8,9-HpCDF	0.026		0.0037	0.00056	ug/Kg	✉	08/03/18 14:44	08/08/18 15:53	1
1,2,3,4,7,8-HxCDD	0.00059	J B	0.0037	0.00011	ug/Kg	✉	08/03/18 14:44	08/08/18 15:53	1
1,2,3,4,7,8-HxCDF	0.12		0.0037	0.00068	ug/Kg	✉	08/03/18 14:44	08/08/18 15:53	1
1,2,3,6,7,8-HxCDD	0.0027	J	0.0037	0.00011	ug/Kg	✉	08/03/18 14:44	08/08/18 15:53	1
1,2,3,6,7,8-HxCDF	0.029		0.0037	0.00073	ug/Kg	✉	08/03/18 14:44	08/08/18 15:53	1
1,2,3,7,8,9-HxCDD	0.0013	J q	0.0037	0.00010	ug/Kg	✉	08/03/18 14:44	08/08/18 15:53	1
1,2,3,7,8,9-HxCDF	0.0015	J B	0.0037	0.00031	ug/Kg	✉	08/03/18 14:44	08/08/18 15:53	1
1,2,3,7,8-PeCDD	0.00040	J	0.0037	0.000085	ug/Kg	✉	08/03/18 14:44	08/08/18 15:53	1
1,2,3,7,8-PeCDF	0.063		0.0037	0.00061	ug/Kg	✉	08/03/18 14:44	08/08/18 15:53	1
2,3,4,6,7,8-HxCDF	0.0035	J	0.0037	0.00039	ug/Kg	✉	08/03/18 14:44	08/08/18 15:53	1
2,3,4,7,8-PeCDF	0.022		0.0037	0.00062	ug/Kg	✉	08/03/18 14:44	08/08/18 15:53	1
2,3,7,8-TCDD	0.00032	J q	0.00073	0.000043	ug/Kg	✉	08/03/18 14:44	08/08/18 15:53	1
OCDD	0.94	B	0.0073	0.00037	ug/Kg	✉	08/03/18 14:44	08/08/18 15:53	1
OCDF	0.17	B	0.0073	0.00010	ug/Kg	✉	08/03/18 14:44	08/08/18 15:53	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	36		23 - 140				08/03/18 14:44	08/08/18 15:53	1
13C-1,2,3,4,6,7,8-HpCDF	32		28 - 143				08/03/18 14:44	08/08/18 15:53	1
13C-1,2,3,4,7,8,9-HpCDF	38		26 - 138				08/03/18 14:44	08/08/18 15:53	1
13C-1,2,3,4,7,8-HxCDD	38		32 - 141				08/03/18 14:44	08/08/18 15:53	1
13C-1,2,3,4,7,8-HxCDF	37		26 - 152				08/03/18 14:44	08/08/18 15:53	1
13C-1,2,3,6,7,8-HxCDD	38		28 - 130				08/03/18 14:44	08/08/18 15:53	1
13C-1,2,3,6,7,8-HxCDF	37		26 - 123				08/03/18 14:44	08/08/18 15:53	1
13C-1,2,3,7,8,9-HxCDF	42		29 - 147				08/03/18 14:44	08/08/18 15:53	1
13C-1,2,3,7,8-PeCDD	40		25 - 181				08/03/18 14:44	08/08/18 15:53	1
13C-1,2,3,7,8-PeCDF	42		24 - 185				08/03/18 14:44	08/08/18 15:53	1
13C-2,3,4,6,7,8-HxCDF	41		28 - 136				08/03/18 14:44	08/08/18 15:53	1
13C-2,3,4,7,8-PeCDF	44		21 - 178				08/03/18 14:44	08/08/18 15:53	1
13C-2,3,7,8-TCDD	50		25 - 164				08/03/18 14:44	08/08/18 15:53	1
13C-OCDD	30		17 - 157				08/03/18 14:44	08/08/18 15:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	96		35 - 197				08/03/18 14:44	08/08/18 15:53	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.034		0.00073	0.00022	ug/Kg	✉	08/03/18 14:44	08/10/18 21:44	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	49		24 - 169				08/03/18 14:44	08/10/18 21:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	95		35 - 197				08/03/18 14:44	08/10/18 21:44	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S095-0to2D

Date Collected: 07/24/18 12:15

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-30

Matrix: Solid

Percent Solids: 55.7

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.63	B	0.0044	0.0033	ug/Kg	✉	08/03/18 14:44	08/08/18 16:39	1
1,2,3,4,6,7,8-HpCDF	0.085	B	0.0044	0.00092	ug/Kg	✉	08/03/18 14:44	08/08/18 16:39	1
1,2,3,4,7,8,9-HpCDF	0.015		0.0044	0.0015	ug/Kg	✉	08/03/18 14:44	08/08/18 16:39	1
1,2,3,4,7,8-HxCDD	0.0011	J B	0.0044	0.00025	ug/Kg	✉	08/03/18 14:44	08/08/18 16:39	1
1,2,3,4,7,8-HxCDF	0.069		0.0044	0.00040	ug/Kg	✉	08/03/18 14:44	08/08/18 16:39	1
1,2,3,6,7,8-HxCDD	0.0098		0.0044	0.00029	ug/Kg	✉	08/03/18 14:44	08/08/18 16:39	1
1,2,3,6,7,8-HxCDF	0.017		0.0044	0.00037	ug/Kg	✉	08/03/18 14:44	08/08/18 16:39	1
1,2,3,7,8,9-HxCDD	0.0031	J	0.0044	0.00025	ug/Kg	✉	08/03/18 14:44	08/08/18 16:39	1
1,2,3,7,8,9-HxCDF	0.00096	J q B	0.0044	0.00022	ug/Kg	✉	08/03/18 14:44	08/08/18 16:39	1
1,2,3,7,8-PeCDD	0.00080	J	0.0044	0.00027	ug/Kg	✉	08/03/18 14:44	08/08/18 16:39	1
1,2,3,7,8-PeCDF	0.051		0.0044	0.0012	ug/Kg	✉	08/03/18 14:44	08/08/18 16:39	1
2,3,4,6,7,8-HxCDF	0.0041	J	0.0044	0.00024	ug/Kg	✉	08/03/18 14:44	08/08/18 16:39	1
2,3,4,7,8-PeCDF	0.026		0.0044	0.0011	ug/Kg	✉	08/03/18 14:44	08/08/18 16:39	1
2,3,7,8-TCDD	0.00041	J q	0.00089	0.00010	ug/Kg	✉	08/03/18 14:44	08/08/18 16:39	1
OCDD	4.5	E B	0.0089	0.0011	ug/Kg	✉	08/03/18 14:44	08/08/18 16:39	1
OCDF	0.24	B	0.0089	0.00012	ug/Kg	✉	08/03/18 14:44	08/08/18 16:39	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	35			23 - 140			08/03/18 14:44	08/08/18 16:39	1
13C-1,2,3,4,6,7,8-HpCDF	31			28 - 143			08/03/18 14:44	08/08/18 16:39	1
13C-1,2,3,4,7,8,9-HpCDF	28			26 - 138			08/03/18 14:44	08/08/18 16:39	1
13C-1,2,3,4,7,8-HxCDD	43			32 - 141			08/03/18 14:44	08/08/18 16:39	1
13C-1,2,3,4,7,8-HxCDF	55			26 - 152			08/03/18 14:44	08/08/18 16:39	1
13C-1,2,3,6,7,8-HxCDD	37			28 - 130			08/03/18 14:44	08/08/18 16:39	1
13C-1,2,3,6,7,8-HxCDF	50			26 - 123			08/03/18 14:44	08/08/18 16:39	1
13C-1,2,3,7,8,9-HxCDF	50			29 - 147			08/03/18 14:44	08/08/18 16:39	1
13C-1,2,3,7,8-PeCDD	49			25 - 181			08/03/18 14:44	08/08/18 16:39	1
13C-1,2,3,7,8-PeCDF	36			24 - 185			08/03/18 14:44	08/08/18 16:39	1
13C-2,3,4,6,7,8-HxCDF	38			28 - 136			08/03/18 14:44	08/08/18 16:39	1
13C-2,3,4,7,8-PeCDF	51			21 - 178			08/03/18 14:44	08/08/18 16:39	1
13C-2,3,7,8-TCDD	51			25 - 164			08/03/18 14:44	08/08/18 16:39	1
13C-OCDD	32			17 - 157			08/03/18 14:44	08/08/18 16:39	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	88			35 - 197			08/03/18 14:44	08/08/18 16:39	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.051		0.00089	0.00074	ug/Kg	✉	08/03/18 14:44	08/10/18 22:22	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	60			24 - 169			08/03/18 14:44	08/10/18 22:22	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	112			35 - 197			08/03/18 14:44	08/10/18 22:22	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-RB-SS-180724

Lab Sample ID: 580-79099-31

Date Collected: 07/24/18 14:00

Matrix: Water

Date Received: 07/25/18 13:50

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	1.7	J B	48	0.14	pg/L	08/01/18 12:52	08/04/18 21:58		1
1,2,3,4,6,7,8-HpCDF	1.6	J q B	48	0.28	pg/L	08/01/18 12:52	08/04/18 21:58		1
1,2,3,4,7,8,9-HpCDF	ND		48	0.36	pg/L	08/01/18 12:52	08/04/18 21:58		1
1,2,3,4,7,8-HxCDD	1.3	J q B	48	0.19	pg/L	08/01/18 12:52	08/04/18 21:58		1
1,2,3,4,7,8-HxCDF	ND		48	0.28	pg/L	08/01/18 12:52	08/04/18 21:58		1
1,2,3,6,7,8-HxCDD	0.31	J q B	48	0.18	pg/L	08/01/18 12:52	08/04/18 21:58		1
1,2,3,6,7,8-HxCDF	ND		48	0.28	pg/L	08/01/18 12:52	08/04/18 21:58		1
1,2,3,7,8,9-HxCDD	0.68	J B	48	0.17	pg/L	08/01/18 12:52	08/04/18 21:58		1
1,2,3,7,8,9-HxCDF	0.64	J B	48	0.14	pg/L	08/01/18 12:52	08/04/18 21:58		1
1,2,3,7,8-PeCDD	ND		48	0.18	pg/L	08/01/18 12:52	08/04/18 21:58		1
1,2,3,7,8-PeCDF	ND		48	0.19	pg/L	08/01/18 12:52	08/04/18 21:58		1
2,3,4,6,7,8-HxCDF	ND		48	0.16	pg/L	08/01/18 12:52	08/04/18 21:58		1
2,3,4,7,8-PeCDF	ND		48	0.20	pg/L	08/01/18 12:52	08/04/18 21:58		1
2,3,7,8-TCDD	ND		9.5	0.13	pg/L	08/01/18 12:52	08/04/18 21:58		1
2,3,7,8-TCDF	ND		9.5	0.077	pg/L	08/01/18 12:52	08/04/18 21:58		1
OCDD	22	J B	95	0.23	pg/L	08/01/18 12:52	08/04/18 21:58		1
OCDF	5.2	J B	95	0.17	pg/L	08/01/18 12:52	08/04/18 21:58		1
Isotope Dilution	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
13C-1,2,3,4,6,7,8-HpCDD	68		23 - 140			08/01/18 12:52	08/04/18 21:58		1
13C-1,2,3,4,6,7,8-HpCDF	68		28 - 143			08/01/18 12:52	08/04/18 21:58		1
13C-1,2,3,4,7,8,9-HpCDF	70		26 - 138			08/01/18 12:52	08/04/18 21:58		1
13C-1,2,3,4,7,8-HxCDD	66		32 - 141			08/01/18 12:52	08/04/18 21:58		1
13C-1,2,3,4,7,8-HxCDF	68		26 - 152			08/01/18 12:52	08/04/18 21:58		1
13C-1,2,3,6,7,8-HxCDD	68		28 - 130			08/01/18 12:52	08/04/18 21:58		1
13C-1,2,3,6,7,8-HxCDF	69		26 - 123			08/01/18 12:52	08/04/18 21:58		1
13C-1,2,3,7,8,9-HxCDF	70		29 - 147			08/01/18 12:52	08/04/18 21:58		1
13C-1,2,3,7,8-PeCDD	64		25 - 181			08/01/18 12:52	08/04/18 21:58		1
13C-1,2,3,7,8-PeCDF	66		24 - 185			08/01/18 12:52	08/04/18 21:58		1
13C-2,3,4,6,7,8-HxCDF	73		28 - 136			08/01/18 12:52	08/04/18 21:58		1
13C-2,3,4,7,8-PeCDF	68		21 - 178			08/01/18 12:52	08/04/18 21:58		1
13C-2,3,7,8-TCDD	72		25 - 164			08/01/18 12:52	08/04/18 21:58		1
13C-2,3,7,8-TCDF	75		24 - 169			08/01/18 12:52	08/04/18 21:58		1
13C-OCDD	59		17 - 157			08/01/18 12:52	08/04/18 21:58		1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
37Cl4-2,3,7,8-TCDD	101		35 - 197			08/01/18 12:52	08/04/18 21:58		1

TestAmerica Seattle

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-237382/1-A

Matrix: Water

Analysis Batch: 238348

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 237382

Analyte	MB		RL	EDL	Unit	D	Prepared		Analyzed	Dil Fac
	Result	Qualifier					Prepared	Analyzed		
1,2,3,4,6,7,8-HxCDD	1.98	J	50	0.22	pg/L	08/01/18 12:52	08/04/18 18:54		1	
1,2,3,4,6,7,8-HpCDD	1.47	J q	50	0.37	pg/L	08/01/18 12:52	08/04/18 18:54		1	
1,2,3,4,7,8,9-HpCDF	ND		50	0.46	pg/L	08/01/18 12:52	08/04/18 18:54		1	
1,2,3,4,7,8-HxCDF	1.51	J q	50	0.26	pg/L	08/01/18 12:52	08/04/18 18:54		1	
1,2,3,4,7,8-HxCDF	ND		50	0.41	pg/L	08/01/18 12:52	08/04/18 18:54		1	
1,2,3,6,7,8-HxCDD	0.420	J q	50	0.26	pg/L	08/01/18 12:52	08/04/18 18:54		1	
1,2,3,6,7,8-HxCDF	ND		50	0.42	pg/L	08/01/18 12:52	08/04/18 18:54		1	
1,2,3,7,8,9-HxCDD	0.658	J	50	0.24	pg/L	08/01/18 12:52	08/04/18 18:54		1	
1,2,3,7,8,9-HxCDF	0.490	J	50	0.20	pg/L	08/01/18 12:52	08/04/18 18:54		1	
1,2,3,7,8-PeCDD	ND		50	0.27	pg/L	08/01/18 12:52	08/04/18 18:54		1	
1,2,3,7,8-PeCDF	ND		50	0.23	pg/L	08/01/18 12:52	08/04/18 18:54		1	
2,3,4,6,7,8-HxCDF	ND		50	0.23	pg/L	08/01/18 12:52	08/04/18 18:54		1	
2,3,4,7,8-PeCDF	ND		50	0.24	pg/L	08/01/18 12:52	08/04/18 18:54		1	
2,3,7,8-TCDD	ND		10	0.14	pg/L	08/01/18 12:52	08/04/18 18:54		1	
2,3,7,8-TCDF	ND		10	0.11	pg/L	08/01/18 12:52	08/04/18 18:54		1	
OCDD	15.6	J	100	0.27	pg/L	08/01/18 12:52	08/04/18 18:54		1	
OCDF	6.42	J	100	0.24	pg/L	08/01/18 12:52	08/04/18 18:54		1	

MB MB

Isotope Dilution	MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C-1,2,3,4,6,7,8-HpCDD	54		23 - 140	08/01/18 12:52	08/04/18 18:54	1
13C-1,2,3,4,6,7,8-HpCDF	53		28 - 143	08/01/18 12:52	08/04/18 18:54	1
13C-1,2,3,4,7,8,9-HpCDF	55		26 - 138	08/01/18 12:52	08/04/18 18:54	1
13C-1,2,3,4,7,8-HxCDD	51		32 - 141	08/01/18 12:52	08/04/18 18:54	1
13C-1,2,3,4,7,8-HxCDF	53		26 - 152	08/01/18 12:52	08/04/18 18:54	1
13C-1,2,3,6,7,8-HxCDD	54		28 - 130	08/01/18 12:52	08/04/18 18:54	1
13C-1,2,3,6,7,8-HxCDF	54		26 - 123	08/01/18 12:52	08/04/18 18:54	1
13C-1,2,3,7,8,9-HxCDF	57		29 - 147	08/01/18 12:52	08/04/18 18:54	1
13C-1,2,3,7,8-PeCDD	54		25 - 181	08/01/18 12:52	08/04/18 18:54	1
13C-1,2,3,7,8-PeCDF	56		24 - 185	08/01/18 12:52	08/04/18 18:54	1
13C-2,3,4,6,7,8-HxCDF	57		28 - 136	08/01/18 12:52	08/04/18 18:54	1
13C-2,3,4,7,8-PeCDF	58		21 - 178	08/01/18 12:52	08/04/18 18:54	1
13C-2,3,7,8-TCDD	66		25 - 164	08/01/18 12:52	08/04/18 18:54	1
13C-2,3,7,8-TCDF	69		24 - 169	08/01/18 12:52	08/04/18 18:54	1
13C-OCDD	50		17 - 157	08/01/18 12:52	08/04/18 18:54	1

MB MB

Surrogate	MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
37Cl-2,3,7,8-TCDD	98		35 - 197	08/01/18 12:52	08/04/18 18:54	1

Lab Sample ID: LCS 320-237382/2-A

Matrix: Water

Analysis Batch: 238348

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 237382

Analyte	Spike		LCS	LCS	%Rec.		
	Added	Result	Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	1000	1050		pg/L	105	70 - 140	
1,2,3,4,6,7,8-HpCDF	1000	1060		pg/L	106	82 - 122	
1,2,3,4,7,8,9-HpCDF	1000	1090		pg/L	109	78 - 138	
1,2,3,4,7,8-HxCDD	1000	1050		pg/L	105	70 - 164	
1,2,3,4,7,8-HxCDF	1000	1070		pg/L	107	72 - 134	

TestAmerica Seattle

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-237382/2-A

Matrix: Water

Analysis Batch: 238348

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 237382

%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,6,7,8-HxCDD	1000	1080		pg/L	108	76 - 134	
1,2,3,6,7,8-HxCDF	1000	1080		pg/L	108	84 - 130	
1,2,3,7,8,9-HxCDD	1000	1080		pg/L	108	64 - 162	
1,2,3,7,8,9-HxCDF	1000	1080		pg/L	108	78 - 130	
1,2,3,7,8-PeCDD	1000	1080		pg/L	108	70 - 142	
1,2,3,7,8-PeCDF	1000	1080		pg/L	108	80 - 134	
2,3,4,6,7,8-HxCDF	1000	1080		pg/L	108	70 - 156	
2,3,4,7,8-PeCDF	1000	1080		pg/L	108	68 - 160	
2,3,7,8-TCDD	200	206		pg/L	103	67 - 158	
2,3,7,8-TCDF	200	212		pg/L	106	75 - 158	
OCDD	2000	2040		pg/L	102	78 - 144	
OCDF	2000	2210		pg/L	110	63 - 170	

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	78		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	78		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	80		20 - 186
13C-1,2,3,4,7,8-HxCDD	75		21 - 193
13C-1,2,3,4,7,8-HxCDF	76		19 - 202
13C-1,2,3,6,7,8-HxCDD	73		25 - 163
13C-1,2,3,6,7,8-HxCDF	76		21 - 159
13C-1,2,3,7,8,9-HxCDF	78		17 - 205
13C-1,2,3,7,8-PeCDD	70		21 - 227
13C-1,2,3,7,8-PeCDF	72		21 - 192
13C-2,3,4,6,7,8-HxCDF	79		22 - 176
13C-2,3,4,7,8-PeCDF	73		13 - 328
13C-2,3,7,8-TCDD	74		20 - 175
13C-2,3,7,8-TCDF	76		22 - 152
13C-OCDD	72		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	92		31 - 191

Lab Sample ID: LCSD 320-237382/3-A

Matrix: Water

Analysis Batch: 238348

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 237382

%Rec.

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,2,3,4,6,7,8-HpCDD	1000	1100		pg/L	110	70 - 140		5	50
1,2,3,4,6,7,8-HpCDF	1000	1090		pg/L	109	82 - 122		3	50
1,2,3,4,7,8,9-HpCDF	1000	1130		pg/L	113	78 - 138		4	50
1,2,3,4,7,8-HxCDD	1000	1090		pg/L	109	70 - 164		4	50
1,2,3,4,7,8-HxCDF	1000	1120		pg/L	112	72 - 134		5	50
1,2,3,6,7,8-HxCDD	1000	1110		pg/L	111	76 - 134		3	50
1,2,3,6,7,8-HxCDF	1000	1110		pg/L	111	84 - 130		3	50
1,2,3,7,8,9-HxCDD	1000	1130		pg/L	113	64 - 162		5	50
1,2,3,7,8,9-HxCDF	1000	1110		pg/L	111	78 - 130		3	50
1,2,3,7,8-PeCDD	1000	1100		pg/L	110	70 - 142		3	50

TestAmerica Seattle

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-237382/3-A

Matrix: Water

Analysis Batch: 238348

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 237382

%Rec.

RPD

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,2,3,7,8-PeCDF	1000	1120		pg/L	112	80 - 134	4	50	
2,3,4,6,7,8-HxCDF	1000	1120		pg/L	112	70 - 156	4	50	
2,3,4,7,8-PeCDF	1000	1120		pg/L	112	68 - 160	4	50	
2,3,7,8-TCDD	200	216		pg/L	108	67 - 158	5	50	
2,3,7,8-TCDF	200	219		pg/L	110	75 - 158	3	50	
OCDD	2000	2170		pg/L	108	78 - 144	6	50	
OCDF	2000	2340		pg/L	117	63 - 170	6	50	

Isotope Dilution	LCSD	LCSD	Limits
	%Recovery	Qualifier	
13C-1,2,3,4,6,7,8-HpCDD	77		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	78		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	79		20 - 186
13C-1,2,3,4,7,8-HxCDD	74		21 - 193
13C-1,2,3,4,7,8-HxCDF	76		19 - 202
13C-1,2,3,6,7,8-HxCDD	75		25 - 163
13C-1,2,3,6,7,8-HxCDF	76		21 - 159
13C-1,2,3,7,8,9-HxCDF	78		17 - 205
13C-1,2,3,7,8-PeCDD	70		21 - 227
13C-1,2,3,7,8-PeCDF	72		21 - 192
13C-2,3,4,6,7,8-HxCDF	79		22 - 176
13C-2,3,4,7,8-PeCDF	73		13 - 328
13C-2,3,7,8-TCDD	76		20 - 175
13C-2,3,7,8-TCDF	78		22 - 152
13C-OCDD	69		13 - 199

Surrogate	LCSD	LCSD	Limits
	%Recovery	Qualifier	
37Cl-2,3,7,8-TCDD	95		31 - 191

Lab Sample ID: MB 320-237398/1-A

Matrix: Solid

Analysis Batch: 238368

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 237398

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.000326	J	0.0050	0.000042	ug/Kg	08/01/18 13:56	08/06/18 22:27		1
1,2,3,4,6,7,8-HpCDF	0.000312	J q	0.0050	0.000051	ug/Kg	08/01/18 13:56	08/06/18 22:27		1
1,2,3,4,7,8,9-HpCDF	0.000280	J	0.0050	0.000062	ug/Kg	08/01/18 13:56	08/06/18 22:27		1
1,2,3,4,7,8-HxCDD	0.000180	J	0.0050	0.000050	ug/Kg	08/01/18 13:56	08/06/18 22:27		1
1,2,3,4,7,8-HxCDF	ND		0.0050	0.000085	ug/Kg	08/01/18 13:56	08/06/18 22:27		1
1,2,3,6,7,8-HxCDD	ND		0.0050	0.000049	ug/Kg	08/01/18 13:56	08/06/18 22:27		1
1,2,3,6,7,8-HxCDF	ND		0.0050	0.000085	ug/Kg	08/01/18 13:56	08/06/18 22:27		1
1,2,3,7,8,9-HxCDD	0.000181	J	0.0050	0.000045	ug/Kg	08/01/18 13:56	08/06/18 22:27		1
1,2,3,7,8,9-HxCDF	ND		0.0050	0.000045	ug/Kg	08/01/18 13:56	08/06/18 22:27		1
1,2,3,7,8-PeCDD	ND		0.0050	0.000060	ug/Kg	08/01/18 13:56	08/06/18 22:27		1
1,2,3,7,8-PeCDF	ND		0.0050	0.000045	ug/Kg	08/01/18 13:56	08/06/18 22:27		1
2,3,4,6,7,8-HxCDF	ND		0.0050	0.000052	ug/Kg	08/01/18 13:56	08/06/18 22:27		1
2,3,4,7,8-PeCDF	ND		0.0050	0.000050	ug/Kg	08/01/18 13:56	08/06/18 22:27		1
2,3,7,8-TCDD	ND		0.0010	0.000037	ug/Kg	08/01/18 13:56	08/06/18 22:27		1
2,3,7,8-TCDF	ND		0.0010	0.000042	ug/Kg	08/01/18 13:56	08/06/18 22:27		1

TestAmerica Seattle

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-237398/1-A

Matrix: Solid

Analysis Batch: 238368

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 237398

Analyte	MB		RL	EDL	Unit	D	Prepared		Dil Fac
	Result	Qualifier					Prepared	Analyzed	
OCDD	0.00190	J	0.010	0.000036	ug/Kg		08/01/18 13:56	08/06/18 22:27	1
OCDF	0.00183	J	0.010	0.000055	ug/Kg		08/01/18 13:56	08/06/18 22:27	1
Isotope Dilution									
13C-1,2,3,4,6,7,8-HpCDD	59		23 - 140				08/01/18 13:56	08/06/18 22:27	1
13C-1,2,3,4,6,7,8-HpCDF	56		28 - 143				08/01/18 13:56	08/06/18 22:27	1
13C-1,2,3,4,7,8,9-HpCDF	58		26 - 138				08/01/18 13:56	08/06/18 22:27	1
13C-1,2,3,4,7,8-HxCDD	50		32 - 141				08/01/18 13:56	08/06/18 22:27	1
13C-1,2,3,4,7,8-HxCDF	50		26 - 152				08/01/18 13:56	08/06/18 22:27	1
13C-1,2,3,6,7,8-HxCDD	53		28 - 130				08/01/18 13:56	08/06/18 22:27	1
13C-1,2,3,6,7,8-HxCDF	50		26 - 123				08/01/18 13:56	08/06/18 22:27	1
13C-1,2,3,7,8,9-HxCDF	51		29 - 147				08/01/18 13:56	08/06/18 22:27	1
13C-1,2,3,7,8-PeCDD	45		25 - 181				08/01/18 13:56	08/06/18 22:27	1
13C-1,2,3,7,8-PeCDF	45		24 - 185				08/01/18 13:56	08/06/18 22:27	1
13C-2,3,4,6,7,8-HxCDF	51		28 - 136				08/01/18 13:56	08/06/18 22:27	1
13C-2,3,4,7,8-PeCDF	44		21 - 178				08/01/18 13:56	08/06/18 22:27	1
13C-2,3,7,8-TCDD	51		25 - 164				08/01/18 13:56	08/06/18 22:27	1
13C-2,3,7,8-TCDF	49		24 - 169				08/01/18 13:56	08/06/18 22:27	1
13C-OCDD	61		17 - 157				08/01/18 13:56	08/06/18 22:27	1
Surrogate									
37Cl4-2,3,7,8-TCDD	76		35 - 197				Prepared	Analyzed	Dil Fac
							08/01/18 13:56	08/06/18 22:27	1

Lab Sample ID: LCS 320-237398/2-A

Matrix: Solid

Analysis Batch: 238368

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 237398

Analyte	Spike		LCS	LCS	Unit	D	%Rec	%Rec.	
	Added	Result	Qualifier	Unit	D	%Rec	Limits		
1,2,3,4,6,7,8-HpCDD	0.100	0.114		ug/Kg		114	70 - 140		
1,2,3,4,6,7,8-HpCDF	0.100	0.112		ug/Kg		112	82 - 122		
1,2,3,4,7,8,9-HpCDF	0.100	0.116		ug/Kg		116	78 - 138		
1,2,3,4,7,8-HxCDD	0.100	0.112		ug/Kg		112	70 - 164		
1,2,3,4,7,8-HxCDF	0.100	0.113		ug/Kg		113	72 - 134		
1,2,3,6,7,8-HxCDD	0.100	0.112		ug/Kg		112	76 - 134		
1,2,3,6,7,8-HxCDF	0.100	0.113		ug/Kg		113	84 - 130		
1,2,3,7,8,9-HxCDD	0.100	0.113		ug/Kg		113	64 - 162		
1,2,3,7,8,9-HxCDF	0.100	0.112		ug/Kg		112	78 - 130		
1,2,3,7,8-PeCDD	0.100	0.113		ug/Kg		113	70 - 142		
1,2,3,7,8-PeCDF	0.100	0.117		ug/Kg		117	80 - 134		
2,3,4,6,7,8-HxCDF	0.100	0.111		ug/Kg		111	70 - 156		
2,3,4,7,8-PeCDF	0.100	0.117		ug/Kg		117	68 - 160		
2,3,7,8-TCDD	0.0200	0.0214		ug/Kg		107	67 - 158		
2,3,7,8-TCDF	0.0200	0.0221		ug/Kg		110	75 - 158		
OCDD	0.200	0.219		ug/Kg		109	78 - 144		
OCDF	0.200	0.223		ug/Kg		112	63 - 170		
Isotope Dilution									
13C-1,2,3,4,6,7,8-HpCDD	52		26 - 166						

TestAmerica Seattle

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-237398/2-A

Matrix: Solid

Analysis Batch: 238368

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 237398

<i>Isotope Dilution</i>	<i>LCS</i>	<i>LCS</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
13C-1,2,3,4,6,7,8-HpCDD	50				21 - 158
13C-1,2,3,4,7,8,9-HpCDF	51				20 - 186
13C-1,2,3,4,7,8-HxCDD	43				21 - 193
13C-1,2,3,4,7,8-HxCDF	42				19 - 202
13C-1,2,3,6,7,8-HxCDD	47				25 - 163
13C-1,2,3,6,7,8-HxCDF	43				21 - 159
13C-1,2,3,7,8-HxCDF	43				17 - 205
13C-1,2,3,7,8-PeCDD	39				21 - 227
13C-1,2,3,7,8-PeCDF	39				21 - 192
13C-2,3,4,6,7,8-HxCDF	45				22 - 176
13C-2,3,4,7,8-PeCDF	39				13 - 328
13C-2,3,7,8-TCDD	45				20 - 175
13C-2,3,7,8-TCDF	44				22 - 152
13C-OCDD	54				13 - 199
<i>Surrogate</i>	<i>LCS</i>	<i>LCS</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
37Cl4-2,3,7,8-TCDD	68				31 - 191

Lab Sample ID: LCSD 320-237398/3-A

Matrix: Solid

Analysis Batch: 238368

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 237398

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec.</i>	<i>RPD</i>	<i>Limit</i>
1,2,3,4,6,7,8-HpCDD	0.100	0.112		ug/Kg		112	70 - 140	1	50
1,2,3,4,6,7,8-HpCDF	0.100	0.113		ug/Kg		113	82 - 122	1	50
1,2,3,4,7,8,9-HpCDF	0.100	0.115		ug/Kg		115	78 - 138	1	50
1,2,3,4,7,8-HxCDD	0.100	0.111		ug/Kg		111	70 - 164	1	50
1,2,3,4,7,8-HxCDF	0.100	0.112		ug/Kg		112	72 - 134	1	50
1,2,3,6,7,8-HxCDD	0.100	0.113		ug/Kg		113	76 - 134	1	50
1,2,3,6,7,8-HxCDF	0.100	0.112		ug/Kg		112	84 - 130	1	50
1,2,3,7,8,9-HxCDD	0.100	0.114		ug/Kg		114	64 - 162	1	50
1,2,3,7,8,9-HxCDF	0.100	0.113		ug/Kg		113	78 - 130	1	50
1,2,3,7,8-PeCDD	0.100	0.113		ug/Kg		113	70 - 142	0	50
1,2,3,7,8-PeCDF	0.100	0.118		ug/Kg		118	80 - 134	0	50
2,3,4,6,7,8-HxCDF	0.100	0.113		ug/Kg		113	70 - 156	1	50
2,3,4,7,8-PeCDF	0.100	0.116		ug/Kg		116	68 - 160	1	50
2,3,7,8-TCDD	0.0200	0.0211		ug/Kg		105	67 - 158	1	50
2,3,7,8-TCDF	0.0200	0.0215		ug/Kg		107	75 - 158	3	50
OCDD	0.200	0.220		ug/Kg		110	78 - 144	1	50
OCDF	0.200	0.227		ug/Kg		114	63 - 170	2	50

<i>Isotope Dilution</i>	<i>LCSD</i>	<i>LCSD</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
13C-1,2,3,4,6,7,8-HpCDD	55				26 - 166
13C-1,2,3,4,6,7,8-HpCDF	51				21 - 158
13C-1,2,3,4,7,8,9-HpCDF	54				20 - 186
13C-1,2,3,4,7,8-HxCDD	45				21 - 193
13C-1,2,3,4,7,8-HxCDF	45				19 - 202
13C-1,2,3,6,7,8-HxCDD	47				25 - 163

TestAmerica Seattle

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-237398/3-A

Matrix: Solid

Analysis Batch: 238368

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 237398

<i>Isotope Dilution</i>	<i>LCSD</i>	<i>LCSD</i>	<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C-1,2,3,6,7,8-HxCDF	45		21 - 159
13C-1,2,3,7,8,9-HxCDF	46		17 - 205
13C-1,2,3,7,8-PeCDD	40		21 - 227
13C-1,2,3,7,8-PeCDF	40		21 - 192
13C-2,3,4,6,7,8-HxCDF	46		22 - 176
13C-2,3,4,7,8-PeCDF	40		13 - 328
13C-2,3,7,8-TCDD	47		20 - 175
13C-2,3,7,8-TCDF	45		22 - 152
13C-OCDD	57		13 - 199

<i>Surrogate</i>	<i>LCSD</i>	<i>LCSD</i>	<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
37Cl4-2,3,7,8-TCDD	69		31 - 191

Lab Sample ID: MB 320-237898/1-A

Matrix: Solid

Analysis Batch: 238955

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 237898

<i>Analyte</i>	<i>MB</i>	<i>MB</i>	<i>Result</i>	<i>Qualifier</i>	<i>RL</i>	<i>EDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
1,2,3,4,6,7,8-HpCDD			0.000146	J	0.0050	0.000028	ug/Kg		08/03/18 14:44	08/07/18 23:18	1
1,2,3,4,6,7,8-HpCDF			0.000116	J	0.0050	0.000022	ug/Kg		08/03/18 14:44	08/07/18 23:18	1
1,2,3,4,7,8,9-HpCDF			ND		0.0050	0.000027	ug/Kg		08/03/18 14:44	08/07/18 23:18	1
1,2,3,4,7,8-HxCDD			0.000117	J q	0.0050	0.000036	ug/Kg		08/03/18 14:44	08/07/18 23:18	1
1,2,3,4,7,8-HxCDF			ND		0.0050	0.000043	ug/Kg		08/03/18 14:44	08/07/18 23:18	1
1,2,3,6,7,8-HxCDD			ND		0.0050	0.000035	ug/Kg		08/03/18 14:44	08/07/18 23:18	1
1,2,3,6,7,8-HxCDF			ND		0.0050	0.000043	ug/Kg		08/03/18 14:44	08/07/18 23:18	1
1,2,3,7,8,9-HxCDD			ND		0.0050	0.000033	ug/Kg		08/03/18 14:44	08/07/18 23:18	1
1,2,3,7,8,9-HxCDF			0.0000451	J q	0.0050	0.000022	ug/Kg		08/03/18 14:44	08/07/18 23:18	1
1,2,3,7,8-PeCDD			ND		0.0050	0.000055	ug/Kg		08/03/18 14:44	08/07/18 23:18	1
1,2,3,7,8-PeCDF			ND		0.0050	0.000030	ug/Kg		08/03/18 14:44	08/07/18 23:18	1
2,3,4,6,7,8-HxCDF			ND		0.0050	0.000026	ug/Kg		08/03/18 14:44	08/07/18 23:18	1
2,3,4,7,8-PeCDF			ND		0.0050	0.000032	ug/Kg		08/03/18 14:44	08/07/18 23:18	1
2,3,7,8-TCDD			ND		0.0010	0.000039	ug/Kg		08/03/18 14:44	08/07/18 23:18	1
2,3,7,8-TCDF			ND		0.0010	0.000029	ug/Kg		08/03/18 14:44	08/07/18 23:18	1
OCDD			0.00180	J	0.010	0.000027	ug/Kg		08/03/18 14:44	08/07/18 23:18	1
OCDF			0.000347	J	0.010	0.000040	ug/Kg		08/03/18 14:44	08/07/18 23:18	1

<i>Isotope Dilution</i>	<i>MB</i>	<i>MB</i>	<i>Result</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>	
13C-1,2,3,4,6,7,8-HpCDD			76		23 - 140		08/03/18 14:44	08/07/18 23:18	1
13C-1,2,3,4,6,7,8-HpCDF			75		28 - 143		08/03/18 14:44	08/07/18 23:18	1
13C-1,2,3,4,7,8,9-HpCDF			77		26 - 138		08/03/18 14:44	08/07/18 23:18	1
13C-1,2,3,4,7,8-HxCDD			67		32 - 141		08/03/18 14:44	08/07/18 23:18	1
13C-1,2,3,4,7,8-HxCDF			68		26 - 152		08/03/18 14:44	08/07/18 23:18	1
13C-1,2,3,6,7,8-HxCDD			68		28 - 130		08/03/18 14:44	08/07/18 23:18	1
13C-1,2,3,6,7,8-HxCDF			69		26 - 123		08/03/18 14:44	08/07/18 23:18	1
13C-1,2,3,7,8,9-HxCDF			69		29 - 147		08/03/18 14:44	08/07/18 23:18	1
13C-1,2,3,7,8-PeCDF			57		25 - 181		08/03/18 14:44	08/07/18 23:18	1
13C-1,2,3,7,8-PeCDD			60		24 - 185		08/03/18 14:44	08/07/18 23:18	1
13C-2,3,4,6,7,8-HxCDF			69		28 - 136		08/03/18 14:44	08/07/18 23:18	1

TestAmerica Seattle

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-237898/1-A

Matrix: Solid

Analysis Batch: 238955

<i>Isotope Dilution</i>	<i>MB</i>	<i>MB</i>	<i>Qualifier</i>	<i>Limits</i>
	<i>%Recovery</i>			
13C-2,3,4,7,8-PeCDF	59			21 - 178
13C-2,3,7,8-TCDD	68			25 - 164
13C-2,3,7,8-TCDF	67			24 - 169
13C-OCDD	73			17 - 157

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 237898

<i>Surrogate</i>	<i>MB</i>	<i>MB</i>	<i>Qualifier</i>	<i>Limits</i>
	<i>%Recovery</i>			
37Cl4-2,3,7,8-TCDD	97			35 - 197

<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
08/03/18 14:44	08/07/18 23:18	1
08/03/18 14:44	08/07/18 23:18	1
08/03/18 14:44	08/07/18 23:18	1
08/03/18 14:44	08/07/18 23:18	1

Lab Sample ID: LCS 320-237898/2-A

Matrix: Solid

Analysis Batch: 238955

<i>Analyte</i>	<i>Spike</i>	<i>LCS</i>	<i>LCS</i>	<i>Unit</i>	<i>D</i>	<i>%Rec.</i>	<i>Limits</i>
	<i>Added</i>	<i>Result</i>	<i>Qualifier</i>				
1,2,3,4,6,7,8-HpCDD	0.100	0.112		ug/Kg		112	70 - 140
1,2,3,4,6,7,8-HpCDF	0.100	0.115		ug/Kg		115	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.115		ug/Kg		115	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.112		ug/Kg		112	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.112		ug/Kg		112	72 - 134
1,2,3,6,7,8-HxCDD	0.100	0.111		ug/Kg		111	76 - 134
1,2,3,6,7,8-HxCDF	0.100	0.114		ug/Kg		114	84 - 130
1,2,3,7,8,9-HxCDD	0.100	0.113		ug/Kg		113	64 - 162
1,2,3,7,8,9-HxCDF	0.100	0.113		ug/Kg		113	78 - 130
1,2,3,7,8-PeCDD	0.100	0.115		ug/Kg		115	70 - 142
1,2,3,7,8-PeCDF	0.100	0.118		ug/Kg		118	80 - 134
2,3,4,6,7,8-HxCDF	0.100	0.113		ug/Kg		113	70 - 156
2,3,4,7,8-PeCDF	0.100	0.120		ug/Kg		120	68 - 160
2,3,7,8-TCDD	0.0200	0.0216		ug/Kg		108	67 - 158
2,3,7,8-TCDF	0.0200	0.0220		ug/Kg		110	75 - 158
OCDD	0.200	0.221		ug/Kg		110	78 - 144
OCDF	0.200	0.231		ug/Kg		116	63 - 170

<i>Isotope Dilution</i>	<i>LCS</i>	<i>LCS</i>	<i>Qualifier</i>	<i>Limits</i>
	<i>%Recovery</i>			
13C-1,2,3,4,6,7,8-HpCDD	72			26 - 166
13C-1,2,3,4,6,7,8-HpCDF	70			21 - 158
13C-1,2,3,4,7,8,9-HpCDF	73			20 - 186
13C-1,2,3,4,7,8-HxCDD	65			21 - 193
13C-1,2,3,4,7,8-HxCDF	66			19 - 202
13C-1,2,3,6,7,8-HxCDD	67			25 - 163
13C-1,2,3,6,7,8-HxCDF	66			21 - 159
13C-1,2,3,7,8,9-HxCDF	66			17 - 205
13C-1,2,3,7,8-PeCDD	56			21 - 227
13C-1,2,3,7,8-PeCDF	59			21 - 192
13C-2,3,4,6,7,8-HxCDF	67			22 - 176
13C-2,3,4,7,8-PeCDF	58			13 - 328
13C-2,3,7,8-TCDD	66			20 - 175
13C-2,3,7,8-TCDF	65			22 - 152
13C-OCDD	71			13 - 199

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 237898

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-237898/2-A

Matrix: Solid

Analysis Batch: 238955

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 237898

Surrogate	LCS	LCS	
	%Recovery	Qualifier	Limits
37Cl4-2,3,7,8-TCDD	96		31 - 191

Lab Sample ID: LCSD 320-237898/3-A

Matrix: Solid

Analysis Batch: 238955

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 237898

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.	RPD	Limit
1,2,3,4,6,7,8-HxCDD	0.100	0.111		ug/Kg		111	70 - 140	1	50
1,2,3,4,6,7,8-HxCDF	0.100	0.113		ug/Kg		113	82 - 122	1	50
1,2,3,4,7,8,9-HxCDF	0.100	0.114		ug/Kg		114	78 - 138	0	50
1,2,3,4,7,8-HxCDD	0.100	0.112		ug/Kg		112	70 - 164	0	50
1,2,3,4,7,8-HxCDF	0.100	0.112		ug/Kg		112	72 - 134	0	50
1,2,3,6,7,8-HxCDD	0.100	0.113		ug/Kg		113	76 - 134	2	50
1,2,3,6,7,8-HxCDF	0.100	0.111		ug/Kg		111	84 - 130	2	50
1,2,3,7,8,9-HxCDD	0.100	0.115		ug/Kg		115	64 - 162	1	50
1,2,3,7,8,9-HxCDF	0.100	0.114		ug/Kg		114	78 - 130	0	50
1,2,3,7,8-PeCDD	0.100	0.115		ug/Kg		115	70 - 142	1	50
1,2,3,7,8-PeCDF	0.100	0.119		ug/Kg		119	80 - 134	1	50
2,3,4,6,7,8-HxCDF	0.100	0.114		ug/Kg		114	70 - 156	1	50
2,3,4,7,8-PeCDF	0.100	0.119		ug/Kg		119	68 - 160	1	50
2,3,7,8-TCDD	0.0200	0.0216		ug/Kg		108	67 - 158	0	50
2,3,7,8-TCDF	0.0200	0.0221		ug/Kg		111	75 - 158	0	50
OCDD	0.200	0.221		ug/Kg		111	78 - 144	0	50
OCDF	0.200	0.233		ug/Kg		116	63 - 170	1	50

Isotope Dilution	LCSD	LCSD	
	%Recovery	Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	76		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	73		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	77		20 - 186
13C-1,2,3,4,7,8-HxCDD	68		21 - 193
13C-1,2,3,4,7,8-HxCDF	68		19 - 202
13C-1,2,3,6,7,8-HxCDD	68		25 - 163
13C-1,2,3,6,7,8-HxCDF	69		21 - 159
13C-1,2,3,7,8,9-HxCDF	69		17 - 205
13C-1,2,3,7,8-PeCDD	59		21 - 227
13C-1,2,3,7,8-PeCDF	61		21 - 192
13C-2,3,4,6,7,8-HxCDF	69		22 - 176
13C-2,3,4,7,8-PeCDF	61		13 - 328
13C-2,3,7,8-TCDD	68		20 - 175
13C-2,3,7,8-TCDF	67		22 - 152
13C-OCDD	75		13 - 199

Surrogate	LCSD	LCSD	
	%Recovery	Qualifier	Limits
37Cl4-2,3,7,8-TCDD	101		31 - 191

TestAmerica Seattle

Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S045-0to2

Date Collected: 07/23/18 09:55

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-1

Matrix: Solid

Percent Solids: 76.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237898	08/03/18 14:44	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238955	08/08/18 01:36	KSS	TAL SAC

Client Sample ID: PDI-SC-S045-2to4

Date Collected: 07/23/18 10:00

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-2

Matrix: Solid

Percent Solids: 72.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238368	08/07/18 00:45	ALM	TAL SAC

Client Sample ID: PDI-SC-S045-4to6

Date Collected: 07/23/18 10:05

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-3

Matrix: Solid

Percent Solids: 73.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238368	08/07/18 01:31	ALM	TAL SAC

Client Sample ID: PDI-SC-S042-0to2

Date Collected: 07/23/18 11:25

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-4

Matrix: Solid

Percent Solids: 54.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237898	08/03/18 14:44	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238955	08/08/18 02:22	KSS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		237898	08/03/18 14:44	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	239686	08/10/18 19:13	AS	TAL SAC

Client Sample ID: PDI-SC-S042-2to4

Date Collected: 07/23/18 11:30

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-5

Matrix: Solid

Percent Solids: 64.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238368	08/07/18 02:17	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	239178	08/09/18 21:17	SMA	TAL SAC

TestAmerica Seattle

Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S042-4to6

Date Collected: 07/23/18 11:35

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-6

Matrix: Solid

Percent Solids: 63.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237898	08/03/18 14:44	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238955	08/08/18 03:07	KSS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		237898	08/03/18 14:44	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	239686	08/10/18 19:51	AS	TAL SAC

Client Sample ID: PDI-SC-S061-0to3

Date Collected: 07/23/18 13:40

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-7

Matrix: Solid

Percent Solids: 81.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237898	08/03/18 14:44	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238955	08/08/18 03:53	KSS	TAL SAC

Client Sample ID: PDI-SC-S061-3to4.5

Date Collected: 07/23/18 13:45

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-8

Matrix: Solid

Percent Solids: 61.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238368	08/07/18 03:03	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	239686	08/10/18 16:04	AS	TAL SAC

Client Sample ID: PDI-SC-S061-4.5to6

Date Collected: 07/23/18 13:50

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-9

Matrix: Solid

Percent Solids: 70.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237898	08/03/18 14:44	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238955	08/08/18 04:39	KSS	TAL SAC

Client Sample ID: PDI-SC-S066-0to2

Date Collected: 07/23/18 15:20

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-10

Matrix: Solid

Percent Solids: 75.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237898	08/03/18 14:44	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238955	08/08/18 05:25	KSS	TAL SAC

TestAmerica Seattle

Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S066-2to4

Date Collected: 07/23/18 15:25

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-11

Matrix: Solid

Percent Solids: 62.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238368	08/07/18 03:49	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	239686	08/10/18 16:41	AS	TAL SAC

Client Sample ID: PDI-SC-S066-4to5.8

Date Collected: 07/23/18 15:30

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-12

Matrix: Solid

Percent Solids: 72.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238368	08/07/18 04:35	ALM	TAL SAC

Client Sample ID: PDI-SC-S066-5.8to6.6

Date Collected: 07/23/18 15:35

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-13

Matrix: Solid

Percent Solids: 69.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238368	08/07/18 05:21	ALM	TAL SAC

Client Sample ID: PDI-SC-S082-0to2

Date Collected: 07/24/18 10:00

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-14

Matrix: Solid

Percent Solids: 51.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238368	08/07/18 06:07	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	239686	08/10/18 17:19	AS	TAL SAC

Client Sample ID: PDI-SC-S082-2to4

Date Collected: 07/24/18 10:05

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-15

Matrix: Solid

Percent Solids: 60.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238368	08/07/18 06:53	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	239686	08/10/18 17:57	AS	TAL SAC

TestAmerica Seattle

Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S082-4to6

Date Collected: 07/24/18 10:10

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-16

Matrix: Solid

Percent Solids: 66.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238370	08/07/18 11:15	ALM	TAL SAC

Client Sample ID: PDI-SC-S095-0to2

Date Collected: 07/24/18 12:15

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-17

Matrix: Solid

Percent Solids: 54.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238370	08/07/18 12:01	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	239686	08/10/18 15:26	AS	TAL SAC

Client Sample ID: PDI-SC-S095-2to4

Date Collected: 07/24/18 12:20

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-18

Matrix: Solid

Percent Solids: 58.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237898	08/03/18 14:44	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238955	08/08/18 06:11	KSS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		237898	08/03/18 14:44	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	239686	08/10/18 20:29	AS	TAL SAC

Client Sample ID: PDI-SC-S095-4to6

Date Collected: 07/24/18 12:25

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-19

Matrix: Solid

Percent Solids: 60.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238370	08/07/18 12:47	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	239686	08/10/18 18:35	AS	TAL SAC

Client Sample ID: PDI-SC-S064-0to2

Date Collected: 07/24/18 16:40

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-20

Matrix: Solid

Percent Solids: 55.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238370	08/07/18 13:33	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	239178	08/09/18 22:32	SMA	TAL SAC

TestAmerica Seattle

Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S064-2to3.5

Date Collected: 07/24/18 16:45

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-21

Matrix: Solid

Percent Solids: 56.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238370	08/07/18 14:19	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	239178	08/09/18 23:10	SMA	TAL SAC

Client Sample ID: PDI-SC-S064-3.5to4.8

Date Collected: 07/24/18 16:50

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-22

Matrix: Solid

Percent Solids: 55.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238370	08/07/18 15:05	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	239178	08/09/18 23:48	SMA	TAL SAC

Client Sample ID: PDI-SC-S154-0to1

Date Collected: 07/24/18 15:30

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-23

Matrix: Solid

Percent Solids: 51.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238370	08/07/18 15:51	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	239178	08/10/18 00:26	SMA	TAL SAC

Client Sample ID: PDI-SC-S154-1to3

Date Collected: 07/24/18 15:35

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-24

Matrix: Solid

Percent Solids: 78.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238370	08/07/18 16:37	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	239178	08/10/18 01:04	SMA	TAL SAC

Client Sample ID: PDI-SC-S154-3to4

Date Collected: 07/24/18 15:40

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-25

Matrix: Solid

Percent Solids: 74.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238370	08/07/18 17:23	ALM	TAL SAC

TestAmerica Seattle

Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S127-0to2

Date Collected: 07/24/18 17:45

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-26

Matrix: Solid

Percent Solids: 66.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238370	08/07/18 18:09	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	239178	08/10/18 01:41	SMA	TAL SAC

Client Sample ID: PDI-SC-S127-2to4

Date Collected: 07/24/18 17:30

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-27

Matrix: Solid

Percent Solids: 66.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237898	08/03/18 14:44	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238956	08/08/18 15:07	KSS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		237898	08/03/18 14:44	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	239686	08/10/18 21:06	AS	TAL SAC

Client Sample ID: PDI-SC-S127-4to5.6

Date Collected: 07/24/18 17:35

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-28

Matrix: Solid

Percent Solids: 73.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238370	08/07/18 18:55	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		237398	08/01/18 13:56	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	239178	08/10/18 02:19	SMA	TAL SAC

Client Sample ID: PDI-SC-S127-2to4D

Date Collected: 07/24/18 17:30

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-29

Matrix: Solid

Percent Solids: 66.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237898	08/03/18 14:44	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238956	08/08/18 15:53	KSS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		237898	08/03/18 14:44	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	239686	08/10/18 21:44	AS	TAL SAC

Client Sample ID: PDI-SC-S095-0to2D

Date Collected: 07/24/18 12:15

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-30

Matrix: Solid

Percent Solids: 55.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			237898	08/03/18 14:44	SR1	TAL SAC
Total/NA	Analysis	1613B		1	238956	08/08/18 16:39	KSS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		237898	08/03/18 14:44	SR1	TAL SAC

TestAmerica Seattle

Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Client Sample ID: PDI-SC-S095-0to2D

Date Collected: 07/24/18 12:15

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-30

Matrix: Solid

Percent Solids: 55.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1613B	RA	1	239686	08/10/18 22:22	AS	TAL SAC

Client Sample ID: PDI-RB-SS-180724

Date Collected: 07/24/18 14:00

Date Received: 07/25/18 13:50

Lab Sample ID: 580-79099-31

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			237382	08/01/18 12:52	ITH	TAL SAC
Total/NA	Analysis	1613B		1	238348	08/04/18 21:58	ALM	TAL SAC

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Laboratory: TestAmerica Seattle

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-024	01-19-19
ANAB	DoD ELAP		L2236	01-19-19
ANAB	ISO/IEC 17025		L2236	01-19-19
California	State Program	9	2901	11-05-18
Montana (UST)	State Program	8	N/A	04-30-20
Oregon	NELAP	10	WA100007	11-05-18
US Fish & Wildlife	Federal		LE058448-0	07-31-19
USDA	Federal		P330-14-00126	02-10-20
Washington	State Program	10	C553	02-17-19

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-020	01-20-21
ANAB	DoD ELAP		L2468	01-20-21
Arizona	State Program	9	AZ0708	08-11-19
Arkansas DEQ	State Program	6	88-0691	06-17-19
California	State Program	9	2897	01-31-19
Colorado	State Program	8	CA00044	08-31-19
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-19
Georgia	State Program	4	N/A	01-28-19
Hawaii	State Program	9	N/A	01-29-19
Illinois	NELAP	5	200060	03-17-19
Kansas	NELAP	7	E-10375	10-31-18
Louisiana	NELAP	6	30612	06-30-19
Maine	State Program	1	CA0004	04-14-20
Michigan	State Program	5	9947	01-31-20
Nevada	State Program	9	CA00044	07-31-19
New Hampshire	NELAP	1	2997	04-18-19
New Jersey	NELAP	2	CA005	06-30-19
New York	NELAP	2	11666	03-31-19
Oregon	NELAP	10	4040	01-29-19
Pennsylvania	NELAP	3	68-01272	03-31-19
Texas	NELAP	6	T104704399	05-31-19
US Fish & Wildlife	Federal		LE148388-0	07-31-19
USDA	Federal		P330-18-00239	01-17-21
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-19
Vermont	State Program	1	VT-4040	04-30-19
Virginia	NELAP	3	460278	03-14-19
Washington	State Program	10	C581	05-05-19
West Virginia (DW)	State Program	3	9930C	12-31-18
Wyoming	State Program	8	8TMS-L	01-28-19

Sample Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-79099-1	PDI-SC-S045-0to2	Solid	07/23/18 09:55	07/25/18 13:50
580-79099-2	PDI-SC-S045-2to4	Solid	07/23/18 10:00	07/25/18 13:50
580-79099-3	PDI-SC-S045-4to6	Solid	07/23/18 10:05	07/25/18 13:50
580-79099-4	PDI-SC-S042-0to2	Solid	07/23/18 11:25	07/25/18 13:50
580-79099-5	PDI-SC-S042-2to4	Solid	07/23/18 11:30	07/25/18 13:50
580-79099-6	PDI-SC-S042-4to6	Solid	07/23/18 11:35	07/25/18 13:50
580-79099-7	PDI-SC-S061-0to3	Solid	07/23/18 13:40	07/25/18 13:50
580-79099-8	PDI-SC-S061-3to4.5	Solid	07/23/18 13:45	07/25/18 13:50
580-79099-9	PDI-SC-S061-4.5to6	Solid	07/23/18 13:50	07/25/18 13:50
580-79099-10	PDI-SC-S066-0to2	Solid	07/23/18 15:20	07/25/18 13:50
580-79099-11	PDI-SC-S066-2to4	Solid	07/23/18 15:25	07/25/18 13:50
580-79099-12	PDI-SC-S066-4to5.8	Solid	07/23/18 15:30	07/25/18 13:50
580-79099-13	PDI-SC-S066-5.8to6.6	Solid	07/23/18 15:35	07/25/18 13:50
580-79099-14	PDI-SC-S082-0to2	Solid	07/24/18 10:00	07/25/18 13:50
580-79099-15	PDI-SC-S082-2to4	Solid	07/24/18 10:05	07/25/18 13:50
580-79099-16	PDI-SC-S082-4to6	Solid	07/24/18 10:10	07/25/18 13:50
580-79099-17	PDI-SC-S095-0to2	Solid	07/24/18 12:15	07/25/18 13:50
580-79099-18	PDI-SC-S095-2to4	Solid	07/24/18 12:20	07/25/18 13:50
580-79099-19	PDI-SC-S095-4to6	Solid	07/24/18 12:25	07/25/18 13:50
580-79099-20	PDI-SC-S064-0to2	Solid	07/24/18 16:40	07/25/18 13:50
580-79099-21	PDI-SC-S064-2to3.5	Solid	07/24/18 16:45	07/25/18 13:50
580-79099-22	PDI-SC-S064-3.5to4.8	Solid	07/24/18 16:50	07/25/18 13:50
580-79099-23	PDI-SC-S154-0to1	Solid	07/24/18 15:30	07/25/18 13:50
580-79099-24	PDI-SC-S154-1to3	Solid	07/24/18 15:35	07/25/18 13:50
580-79099-25	PDI-SC-S154-3to4	Solid	07/24/18 15:40	07/25/18 13:50
580-79099-26	PDI-SC-S127-0to2	Solid	07/24/18 17:45	07/25/18 13:50
580-79099-27	PDI-SC-S127-2to4	Solid	07/24/18 17:30	07/25/18 13:50
580-79099-28	PDI-SC-S127-4to5.6	Solid	07/24/18 17:35	07/25/18 13:50
580-79099-29	PDI-SC-S127-2to4D	Solid	07/24/18 17:30	07/25/18 13:50
580-79099-30	PDI-SC-S095-0to2D	Solid	07/24/18 12:15	07/25/18 13:50
580-79099-31	PDI-RB-SS-180724	Water	07/24/18 14:00	07/25/18 13:50

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TestAmerica Seattle

TestAmerica-Seattle		SUBSURFACE SEDIMENT										CHAIN OF CUSTODY									
5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047	Client Contact	Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010					Site Contact: Jennifer Ray / Michaela McCraig Tel: (206) 438-2261 / (206) 438-2010					Date: 7/25/18 Carrier: Courier									
AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1+(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Subsurface Sediment Sample Type:																					
												Atterberg Limits ASTM D4318 Total Solids 8082A, 8270D-SIM, 9060, 1603 PCB Acrodetors, PAHS, Total Organic Carbon, Grain size ASTM D7928/D6913 PCDD/FS 1613B Archive									
												Sample Specific Notes:									
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction														
PDI-SC-S045 - 0 to 2	7/23/2018	9:55	SC		TP	4															
PDI-SC-S045 - 2 to 4	7/23/2018	10:00	SC		TP	4															
PDI-SC-S045 - 4 to 6	7/23/2018	10:05	SC		TP	4															
PDI-SC-S042 - 0 to 2	7/23/2018	11:25	SC		TP	4															
PDI-SC-S042 - 2 to 4	7/23/2018	11:30	SC		TP	4															
PDI-SC-S042 - 4 to 6	7/23/2018	11:35	SC		TP	4															
PDI-SC-S061 - 0 to 3	7/23/2018	13:40	SC		TP	4															
PDI-SC-S061 - 3 to 4.5	7/23/2018	13:45	SC		TP	4															
PDI-SC-S061 - 4.5 to 6	7/23/2018	13:50	SC		TP	4															
PDI-SC-S066 - 0 to 2	7/23/2018	15:20	SC		TP	4															
PDI-SC-S066 - 2 to 4	7/23/2018	15:25	SC		TP	4															
PDI-SC-S066 - 4 to 5.8	7/23/2018	15:30	SC		TP	4															
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=Amber glass, G=glass, RC=Resin Coil Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid Fraction: D = Dissolved, PPT = Particulate, T = Total (unfiltered)												580-79099 Chain of Custody									
												Sample Disposal									
												<input type="checkbox"/> Return To Client	<input checked="" type="checkbox"/> Disposal By Lab	<input checked="" type="checkbox"/> Archive For 12 Months							
												07/09/18, 301, 207, 163, 30									
Relinquished by: <i>Michele</i>	Company: <i>NECOM</i>	Date/Time: <i>7-25-18 /310</i>	Received by: <i>Jessica M. E.</i>	Company: <i>NECOM</i>	Date/Time: <i>7-25-18 /310</i>	Received by: <i>M. E.</i>	Company: <i>NECOM</i>	Date/Time: <i>7-25-18 /350</i>	Received by: <i>Jessica M. E.</i>	Company: <i>NECOM</i>	Date/Time: <i>7-25-18 /350</i>	Received by: <i>M. E.</i>	Company: <i>NECOM</i>	Date/Time: <i>7-25-18 /350</i>	Received by: <i>M. E.</i>	Company: <i>NECOM</i>	Date/Time: <i>7-25-18 /350</i>				

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TestAmerica-Seattle		SUBSURFACE SEDIMENT														
		CHAIN OF CUSTODY														
5755-8th-Street-East Tacoma, WA 98424-1317	Ph: 253-922-2310 Fax: 253-922-5047	Client Contact	Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 338-2010	Site Contact: Jennifer Ray / Michaela McCraig Laboratory Contact: Elaine Walker	Date: 7/25/18											
AECOM					COC No: 1 <i>7</i> 2 of <i>7</i> pages											
1111 3rd Ave Suite 1600 Seattle, WA 98101	Phone: (206) 438-2700 Fax: 1-(866) 495-5288	Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling	Analysis Turnaround Time Calendar (C) or Work Days (W) W <input checked="" type="checkbox"/> 21 days <input type="checkbox"/> Other _____	PCB Aroclors, PAHs, Total Organic Carbon, 9060, 1603 Total Solids 8082A, 8270D-SIM, 9060, 1603 Aerobic/Anaerobic Limits ASTM D4318 Grain size ASTM D7928/D6913	Carrier: Courier											
Portland, OR	Project #: 60566335 Study: Subsurface Sediment	Sample Type:			Sample Specific Notes:											
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCDD/Fs 1613B	PCB	Grain size ASTM D7928/D6913	PCB Aroclors, PAHs, Total Organic Carbon, 9060, 1603 Total Solids 8082A, 8270D-SIM, 9060, 1603 Aerobic/Anaerobic Limits ASTM D4318 Grain size ASTM D7928/D6913	Sample Specific Notes:				
PDI-SC-S066 - 5.8 to 6.6	7/23/2018	15:35	SC	<i>TP</i>	4	x	x									
PDI-SC-S082 - 0 to 2	7/24/2018	10:00	SC	<i>TP</i>	4	x	x									
PDI-SC-S082 - 2 to 4	7/24/2018	10:05	SC	<i>TP</i>	4	x	x									
PDI-SC-S082 - 4 to 6	7/24/2018	10:10	SC	<i>TP</i>	4	x	x									
PDI-SC-S095 - 0 to 2	7/24/2018	12:15	SC	<i>TS</i>	4	x	x									
PDI-SC-S095 - 2 to 4	7/24/2018	12:20	SC	<i>TS</i>	4	x	x									
PDI-SC-S095 - 4 to 6	7/24/2018	12:25	SC	<i>TS</i>	4	x	x									
PDI-SC-S064 - 0 to 2	7/24/2018	16:40	SC	<i>TP</i>	4	x	x									
PDI-SC-S064 - 2 to 3.5	7/24/2018	16:45	SC	<i>TP</i>	4	x	x									
PDI-SC-S064 - 3.5 to 4.8	7/24/2018	16:50	SC	<i>TP</i>	4	x	x									
PDI-SC-S154 - 0 to 1	7/24/2018	15:30	SC	<i>TP</i>	4	x	x									
PDI-SC-S154 - 1 to 3	7/24/2018	15:35	SC	MS/MSD	<i>TP</i>	6	x	x								
Container Type: WMG-Wide Mouth Glass Jar, P-HDPE, PP-Polypropylene, AG=amber glass, G=glass, RC=Resin Col												AG	WMG	WMG	AG	
Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid																
Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)												<input type="checkbox"/> Sample Disposal	<input type="checkbox"/> Return To Client	<input checked="" type="checkbox"/> Disposal By Lab	<input type="checkbox"/> Archive For 12 Months	
Special Instructions/QC Requirements & Comments: Separate reports for each lab																
Relinquished by: <i>John Smith</i>	Company: <i>AECOM</i>	Date/Time: <i>7-25-18 / 305</i>	Received by: <i>Julia May</i>	Company: <i>AECOM</i>	Date/Time: <i>7-25-18 / 1310</i>											
Relinquished by: <i>John May</i>	Company: <i>AECOM</i>	Date/Time: <i>7/25/18 1300</i>	Received by: <i>John May</i>	Company: <i>AECOM</i>	Date/Time: <i>7/25/18 1310</i>											
Relinquished by: <i>John May</i>	Company: <i>AECOM</i>	Date/Time: <i>7/25/18 1300</i>	Received by: <i>John May</i>	Company: <i>AECOM</i>	Date/Time: <i>7/25/18 1310</i>											

TestAmerica-Seattle		SUBSURFACE SEDIMENT										
		CHAIN OF CUSTODY										
5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047		Client Contact		Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010 Analysis Turnaround Time		Site Contact: Jennifer Ray / Michaela McCong Laboratory Contact: Elaine-Walker		Date: 7/25/18 Carrier: Courier				
AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1-(866) 495-5288	Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling	<input checked="" type="checkbox"/> Calendar (C) or Work Days (W) _W										
Portland, OR Project #: 60566335 Study: Subsurface Sediment	Sample Type:	<input type="checkbox"/> Other _____										
Sample Identification		Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCDD/Fs 1613B	Grain size ASTM D7928/D6913	PCB Analyzers, PAHS, Total Organic Carbon, Total Solids 8082A, 8270D, STM, 9060, 1603, Total Aroclors, PCBs, Arsenic Limits ASTM D4318	Sample Specific Notes: <i>TAC</i> <i>DBA</i> <i>DBE</i> <i>DBP</i>
PDI-SC-S154 - 3 to 4 -PDI-SC-S154 - 4 to 6	7/24/2018 15:40 SC		<i>J5</i>	4	x	x	x					
PDI-SC-S127 - 0 to 2	7/24/2018 17:45 SC		<i>J5</i>	4	x	x	x					
PDI-SC-S127 - 2 to 4	7/24/2018 17:30 SC		<i>J5</i>	4	x	x	x					
PDI-SC-S127 - 4 to 6 5.6	7/24/2018 17:35 SC		<i>J5</i>	4	x	x	x					
PDI-SC-S127 - 0 to +	7/24/2018 18:00 SC			4	x	x	x					
PDI-SC-S127 - 2 to 4D	7/24/2018 17:30 SC		<i>J5</i>	4	x	x	x					
<i>PDI-SC-S127-D</i>												
<i>PDI-SC-S154-0 to 2D</i>	<i>7/24/18 12:15 SC</i>		<i>J5</i>	3	x	x	x					
<i>PDI-SC-S154-0 to 2D</i>	<i>7/27/18 14:00 W</i>		<i>J5</i>	8	x	x	x					
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=Amber glass, G=glass, RC=Resin Coil												
Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid												
Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)												
Sample Disposal: <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For 12 Months												
Special Instructions/QC Requirements & Comments: Separate reports for each lab												
Relinquished by: <i>Michael Walker</i>	Company: <i>AECOM</i>	Date/Time: <i>7-25-18 13:35</i>	Received by: <i>Johnnie M.</i>	Company: <i>AN-E-</i>	Date/Time: <i>7/25/18 13:10</i>							
Relinquished by: <i>Michael Walker</i>	Company: <i>M.E.</i>	Date/Time: <i>7/25/18 13:50</i>	Received by: <i>Johnnie M.</i>	Company: <i>AN-E-</i>	Date/Time: <i>7/25/18 13:50</i>							

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TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047		SUBSURFACE SEDIMENT CHAIN OF CUSTODY												
Client Contact		Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010					Site Contact: Jennifer Ray / Michaela McCraig Laboratory Contact: Elaine Walker				Date: 7/25/18 Carrier: Courier			COC No. 1 1 of 2 pages
AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101		Analysis Turnaround Time Calendar (C) or Work Days (W) W												
Phone: (206) 438-2700 Fax: 1-(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling		<input checked="" type="checkbox"/> 21 days <input type="checkbox"/> Other _____												
Portland, OR Project # 60566335 Study: Subsurface Sediment														
Sample Type														
Sample Identification		Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCDD/PCDFs 1614B	Archive	Grain size ASTM D7928(D91.3)	PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D, SIM, 9060, 160.3	Atterberg Limits (ASTM D4318)	Sample Specific Notes:
PDI-SC-S045 - 0 to 2		7/23/2018	9:55	SC		TP	4	x	x	x	x			
PDI-SC-S045 - 2 to 4		7/23/2018	10:00	SC		TP	4	x	x	x	x			
PDI-SC-S045 - 4 to 6		7/23/2018	10:05	SC		TP	4	x	x	x	x			
PDI-SC-S042 - 0 to 2		7/23/2018	11:25	SC		TP	4	x	x	x	x			
PDI-SC-S042 - 2 to 4		7/23/2018	11:30	SC		TP	4	x	x	x	x			
PDI-SC-S042 - 4 to 6		7/23/2018	11:35	SC		TP	4	x	x	x	x			
PDI-SC-S061 - 0 to 3		7/23/2018	13:40	SC		TP	4	x	x	x	x			
PDI-SC-S061 - 3 to 4.5		7/23/2018	13:45	SC		TP	4	x	x	x	x			
PDI-SC-S061 - 4.5 to 6		7/23/2018	13:50	SC		TP	4	x	x	x	x			
PDI-SC-S066 - 0 to 2		7/23/2018	15:20	SC		TP	4	x	x	x	x			
PDI-SC-S066 - 2 to 4		7/23/2018	15:25	SC		TP	4	x	x	x	x			
PDI-SC-S066 - 4 to 5.8		7/23/2018	15:30	SC		TP	4	x	x	x	x			
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Container Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid														
Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)														
Sample Disposal <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input checked="" type="checkbox"/> Archive For 12 Months														
Special Instructions/QC Requirements & Comments: Separate reports for each lab														
087, 409, 304, 207, 103, 300														
Relinquished by: <i>Jennifer Ray</i>	Company: <i>AECOM</i>	Date/Time: <i>7-25-18 1310</i>	Received by: <i>Jennifer Ray</i>	Company: <i>M-E.</i>	Date/Time: <i>7/25/18 1310</i>									
Relinquished by: <i>Jennifer Ray</i>	Company: <i>M-E.</i>	Date/Time: <i>7/25/18 1350</i>	Received by: <i>Michaela McCraig</i>	Company: <i>TAPOR</i>	Date/Time: <i>7/25/18 1350</i>									
Relinquished by: <i>Jennifer Ray</i>	Company: <i>TAPOR</i>	Date/Time: <i>7/25/18 1700</i>	Received by: <i>Tom Blanks</i>	Company: <i>TA-Sea</i>	Date/Time:									
IR5 = 1.0 / 1.0														
IR5 = 3.3 / 3.3 w/L.S.														
IR5 = -14 / -14														

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TestAmerica-Seattle
5755-8th-Street-East
Tacoma, WA 98424-1317
Ph: 253-922-2310 Fax: 253-922-5047

SUBSURFACE SEDIMENT CHAIN OF CUSTODY

Client Contact		Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010										Site Contact: Jennifer Ray / Michaela McCoog		Date: 7/25/18		COC No: 1 <i>3</i>			
		Analysis Turnaround Time Calendar (C) or Work Days (W)										Laboratory Contact: Elaine-Walker		Carrier: Courier		2 of <i>11</i> pages			
AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101		<input checked="" type="checkbox"/> 21 days <input type="checkbox"/> Other _____										PCDD/Fs 1613B Grain size ASTM D7928D6913 PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 3082A, 8270D-SIM, 9060, 1603 Afterberg Limits ASTM D4318							
Phone: (206) 438-2700 Fax: 1-(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling																			
Portland, OR Project #: 60566335 Study: Subsurface Sediment																			
Sample Type:																			
																Sample Specific Notes:			
Sample Identification		Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCDD/Fs 1613B	Archive	Grain size ASTM D7928D6913	PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 3082A, 8270D-SIM, 9060, 1603 Afterberg Limits ASTM D4318							
PDI-SC-S066 - 5.8 to 6.6		7/23/2018	15:35	SC		<i>TP</i>	4		x	x	x	x							
PDI-SC-S082 - 0 to 2		7/24/2018	10:00	SC		<i>TP</i>	4		x	x	x	x							
PDI-SC-S082 - 2 to 4		7/24/2018	10:05	SC		<i>TP</i>	4		x	x	x	x							
PDI-SC-S082 - 4 to 6		7/24/2018	10:10	SC		<i>TP</i>	4		x	x	x	x							
PDI-SC-S095 - 0 to 2		7/24/2018	12:15	SC		<i>JS</i>	4		x	x	x	x							
PDI-SC-S095 - 2 to 4		7/24/2018	12:20	SC		<i>JS</i>	4		x	x	x	x							
PDI-SC-S095 - 4 to 6		7/24/2018	12:25	SC		<i>JS</i>	4		x	x	x	x							
PDI-SC-S064 - 0 to 2		7/24/2018	16:40	SC		<i>TP</i>	4		x	x	x	x							
PDI-SC-S064 - 2 to 3.5		7/24/2018	16:45	SC		<i>TP</i>	4		x	x	x	x							
PDI-SC-S064 - 3.5 to 4.8		7/24/2018	16:50	SC		<i>TP</i>	4		x	x	x	x							
PDI-SC-S154 - 0 to 1		7/24/2018	15:30	SC		<i>TPJS</i>	4		x	x	x	x							
PDI-SC-S154 - 1 to 3		7/24/2018	15:35	SC	MS/MSD	<i>TPJS</i>	6		x	x	x	x							
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Col														AG	AG	WMG	WMG	AG	
Preservative: HCl = Hydrochloric Acid, H ₃ PO ₄ = Phosphoric Acid, HNO ₃ = Nitric Acid																			
Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)														Sample Disposal					
														<input type="checkbox"/> Return To Client	<input checked="" type="checkbox"/> Disposal By Lab	<input checked="" type="checkbox"/> Archive For 12 Months			
Special Instructions/QC Requirements & Comments: Separate reports for each lab														<i>IR5</i> { 1.0/1.0 3.3/3.3 -7.4/-1.4					
Relinquished by: <i>John Hawk</i>	Company: <i>AECOM</i>	Date/Time: <i>7-25-18 1305</i>	Received by: <i>Jessica M</i>	Company: <i>M.E.</i>	Date/Time: <i>7/25/18 1310</i>														
Relinquished by: <i>Benjamin M</i>	Company: <i>M.E.</i>	Date/Time: <i>7/25/18 1350</i>	Received by: <i>Elspeth Rogers</i>	Company: <i>TAPOR</i>	Date/Time: <i>7/25/18 1350</i>														
Relinquished by: <i>Elspeth Rogers</i>	Company: <i>TAPOR</i>	Date/Time: <i>7/25/18 1700</i>	Received by: <i>Tom Blunk</i>	Company: <i>TA-Sea</i>	Date/Time: <i>7/26/18 0915</i>														

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047		<h3 style="text-align: center;">SUBSURFACE SEDIMENT CHAIN OF CUSTODY</h3>															
Client Contact AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1-(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Subsurface Sediment Sample Type: <i>[Handwritten]</i>		Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010				Site Contact: Jennifer Ray / Michaela McCool Laboratory Contact: Elaine-Walker				Date: 7/25/18				COC No. 1 3 of 3 pages			
		Analysis Turnaround Time <input checked="" type="checkbox"/> Calendar (C) or Work Days (W) <i>W</i>															
		<input checked="" type="checkbox"/> 21 days															
		<input type="checkbox"/> Other _____															
														Sample Specific Notes: <i>[Handwritten notes and signatures]</i>			
Sample Identification		Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB/DDT's 1613B	Archive	Grain size ASTM D792/806913	PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270ID-SIM, 9160, 160.3	Afterberg Limits ASTM D4348	DFT	PCB	PRT	TDC
PDI-SC-S154 - 3 to 4		7/24/2018	15:40	SC		JS	4		x	x	x	x					
PDI-SC-S154 - 4 to 6		7/24/2018	15:45	SC			4		x	x	x	x					
PDI-SC-S127 - 0 to 2		7/24/2018	17:45	SC		JS	4		x	x	x	x					
PDI-SC-S127 - 2 to 4		7/24/2018	17:30	SC		JS	4		x	x	x	x					
PDI-SC-S127 - 4 to 85.6		7/24/2018	17:35	SC		JS	4		x	x	x	x					
PDI-SC-S127 - 0 to 1		7/24/2018	18:00	SC			4		x	x	x	x					
PDI-SC-S127 - 2 to 4D		7/24/2018	17:30	SC		JS	13		x	x	x	x					
<i>PDI-SC-S127 0m</i>																	
PDI-SC-S095-0 to 2D		7/24/18	12:15	SC		JS	3		x	x		x					
PDI-RB-SS-180724		7/24/18	14:00	W		JS	8						x	x	x	x	
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Container Preservative: HCl = Hydrochloric Acid, H ₃ PO ₄ = Phosphoric Acid, HNO ₃ = Nitric Acid														<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input checked="" type="checkbox"/> Archive For 12 Months			
Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered) Special Instructions/QC Requirements & Comments: Separate reports for each lab														<i>IR 5</i> { 1.0 / 1.0 3.3 / 3.3 -1.4 / -1.4			
Relinquished by: <i>Michael M</i>	Company: AECOM	Date/Time: 7-25-18 13:25		Received by: <i>Jennifer Ray</i>	Company: M-E-	Date/Time: 7/25/18 13:10											
Relinquished by: <i>Deevee M</i>	Company: M-E-	Date/Time: 7/25/18 13:50		Received by: <i>M. E. -</i>	Company: TA-PCP	Date/Time: 7/25/18 13:50											
Relinquished by: <i>B. Dooley</i>	Company: TA-PCP	Date/Time: 7/25/18 17:00		Received by: <i>Tony Blunt Jr.</i>	Company: TA-Sea	Date/Time: 7/26/18 09:15											

Chain of Custody Record

Client Information (Sub Contract Lab)		Sampler:	Lab Fld: Walker, Elaine M	Carrier Tracking No(s): 580-57479.1																																																																																
Client Contact: Shipping/Receiving Company: Address: City: State, Zip: Phone: Email: Project Name: Site:	Phone: 916-373-5600(Tel) 916-372-1059(Fax)	E-Mail: elaine.walker@testamericainc.com	State of Origin: Oregon	Page: 1 of 4 Job #: 580-79099-2																																																																																
Accreditations Required (See note):																																																																																				
Analysis Requested <div style="display: flex; justify-content: space-between;"> <div style="flex: 1;"> <p>Due Date Requested: 8/10/2018</p> <p>TAT Requested (days):</p> <p>PO #:</p> <p>WO #:</p> <p>Project #: 58012120</p> <p>SSOW#:</p> </div> <div style="flex: 1;"> <p>Total Number of Containers</p> <p>1613B/H/IRMS-Sox_P (MOD) Full List w/o Totals</p> <p>1613B/1613B-Sox_Sep_P (MOD) Full List w/o Totals</p> <p>Part Form MS/MSD (yes or No)</p> </div> </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Sample Identification - Client ID (Lab ID)</th> <th style="text-align: left;">Sample Date</th> <th style="text-align: left;">Sample Time</th> <th style="text-align: left;">Sample Type (C=comp, G=grab)</th> <th style="text-align: left;">Matrix (Wetware, Specified, OnTissue, Air)</th> <th style="text-align: left;">Field Filtered Sample (Yes or No)</th> <th style="text-align: left;">Preservation Code:</th> <th style="text-align: left;">Special Instructions/Note:</th> </tr> </thead> <tbody> <tr><td>PDI-SC-S045-01o2 (580-79099-1)</td><td>7/23/18</td><td>09:55</td><td>Solid</td><td>X</td><td></td><td></td><td></td></tr> <tr><td>PDI-SC-S045-21o4 (580-79099-2)</td><td>7/23/18</td><td>10:00</td><td>Solid</td><td>X</td><td></td><td></td><td></td></tr> <tr><td>PDI-SC-S045-41o6 (580-79099-3)</td><td>7/23/18</td><td>10:05</td><td>Solid</td><td>X</td><td></td><td></td><td></td></tr> <tr><td>PDI-SC-S042-01o2 (580-79099-4)</td><td>7/23/18</td><td>11:25</td><td>Solid</td><td>X</td><td></td><td></td><td></td></tr> <tr><td>PDI-SC-S042-21o4 (580-79099-5)</td><td>7/23/18</td><td>11:30</td><td>Solid</td><td>X</td><td></td><td></td><td></td></tr> <tr><td>PDI-SC-S042-41o6 (580-79099-6)</td><td>7/23/18</td><td>11:35</td><td>Solid</td><td>X</td><td></td><td></td><td></td></tr> <tr><td>PDI-SC-S061-01o3 (580-79099-7)</td><td>7/23/18</td><td>13:40</td><td>Solid</td><td>X</td><td></td><td></td><td></td></tr> <tr><td>PDI-SC-S061-31o4.5 (580-79099-8)</td><td>7/23/18</td><td>13:45</td><td>Solid</td><td>X</td><td></td><td></td><td></td></tr> <tr><td>PDI-SC-S061-4-51o6 (580-79099-9)</td><td>7/23/18</td><td>13:50</td><td>Solid</td><td>X</td><td></td><td></td><td></td></tr> </tbody> </table>					Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (Wetware, Specified, OnTissue, Air)	Field Filtered Sample (Yes or No)	Preservation Code:	Special Instructions/Note:	PDI-SC-S045-01o2 (580-79099-1)	7/23/18	09:55	Solid	X				PDI-SC-S045-21o4 (580-79099-2)	7/23/18	10:00	Solid	X				PDI-SC-S045-41o6 (580-79099-3)	7/23/18	10:05	Solid	X				PDI-SC-S042-01o2 (580-79099-4)	7/23/18	11:25	Solid	X				PDI-SC-S042-21o4 (580-79099-5)	7/23/18	11:30	Solid	X				PDI-SC-S042-41o6 (580-79099-6)	7/23/18	11:35	Solid	X				PDI-SC-S061-01o3 (580-79099-7)	7/23/18	13:40	Solid	X				PDI-SC-S061-31o4.5 (580-79099-8)	7/23/18	13:45	Solid	X				PDI-SC-S061-4-51o6 (580-79099-9)	7/23/18	13:50	Solid	X			
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (Wetware, Specified, OnTissue, Air)	Field Filtered Sample (Yes or No)	Preservation Code:	Special Instructions/Note:																																																																													
PDI-SC-S045-01o2 (580-79099-1)	7/23/18	09:55	Solid	X																																																																																
PDI-SC-S045-21o4 (580-79099-2)	7/23/18	10:00	Solid	X																																																																																
PDI-SC-S045-41o6 (580-79099-3)	7/23/18	10:05	Solid	X																																																																																
PDI-SC-S042-01o2 (580-79099-4)	7/23/18	11:25	Solid	X																																																																																
PDI-SC-S042-21o4 (580-79099-5)	7/23/18	11:30	Solid	X																																																																																
PDI-SC-S042-41o6 (580-79099-6)	7/23/18	11:35	Solid	X																																																																																
PDI-SC-S061-01o3 (580-79099-7)	7/23/18	13:40	Solid	X																																																																																
PDI-SC-S061-31o4.5 (580-79099-8)	7/23/18	13:45	Solid	X																																																																																
PDI-SC-S061-4-51o6 (580-79099-9)	7/23/18	13:50	Solid	X																																																																																
Preservation Codes: <div style="display: flex; justify-content: space-between;"> <div style="flex: 1;"> A - HCl B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - Di Water K - EDTA L - EDA Other: </div> <div style="flex: 1;"> M - Hexane N - None O - AstaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify) </div> </div>																																																																																				
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For Months																																																																																				
Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) Empty Kit Relinquished by: <i>M. Walker</i> Relinquished by: <i>M. Walker</i> Relinquished by: <i>M. Walker</i> Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.: <i>58099-2</i>																																																																																				
Primary Deliverable Rank: 2 <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Date:</th> <th style="text-align: left;">Time:</th> <th style="text-align: left;">Method of Shipment:</th> </tr> </thead> <tbody> <tr><td>Date/Time: 7/26/18</td><td>1700</td><td>Company</td></tr> <tr><td>Date/Time: 7/26/18</td><td>1700</td><td>Company</td></tr> <tr><td>Date/Time:</td><td></td><td>Company</td></tr> </tbody> </table>					Date:	Time:	Method of Shipment:	Date/Time: 7/26/18	1700	Company	Date/Time: 7/26/18	1700	Company	Date/Time:		Company																																																																				
Date:	Time:	Method of Shipment:																																																																																		
Date/Time: 7/26/18	1700	Company																																																																																		
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Cocler Temperature(s) °C and Other Remarks: 3.7 °C 2.6 °C 0.5 °C																																																																																				

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Ver. 09/20/2016

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analytic & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other institutions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicity to TestAmerica Laboratories, Inc.

Possible Hazard Identification**Unconfirmed****Deliverable Requested: I, II, III, IV, Other (specify)****Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)** Return To Client Disposal By Lab Archive For Months

Chain of Custody Record

Client Information (Sub Contract Lab)		Sampler:	Lab P.M. Name:	Carrier Tracking No(s):	COC No: 580-57479-2
Client Contact:	Phone:	E-Mail: elaine.walker@testamericainc.com	State of Origin:	Oregon	Page: Page 2 of 4
Shipping/Receiving Company:	Accreditations Required (See note):				
TestAmerica Laboratories, Inc.	Address:	Due Date Requested:	Analysis Requested		
880 Riverside Parkway, City: West Sacramento State/Zip: CA, 95605 Phone: 916-372-1059(Fax) Email: Project Name: Portland Harbor Pre-Remedial Design Site:	TAT Requested (days): PO #: WO #: Project #: 58012120 SSOW#:				
<p>1613B/HRMS_Sox_P (M0D) Full List w/o Totals</p>					
<input checked="" type="checkbox"/> To/From MS/MSD (yes or No) <input checked="" type="checkbox"/> Perform MS/MSD (yes or No) <input checked="" type="checkbox"/> Filtered Sample (yes or No) <input checked="" type="checkbox"/> Used Filtered Sample (yes or No)					
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (Water, Solid, Suspension, Br/Tissue, Ash)
		Preservation Code:			
PDI-SC-S066-01o2 (580-79099-10)	7/23/18	15:20	Solid	X	2
PDI-SC-S066-21o4 (580-79099-11)	7/23/18	15:25	Solid	X	2
PDI-SC-S066-41o5.8 (580-79099-12)	7/23/18	15:30	Solid	X	2
PDI-SC-S066-5.81o6.6 (580-79099-13)	7/23/18	15:35	Solid	X	2
PDI-SC-S082-01o2 (580-79099-14)	7/24/18	10:00	Solid	X	2
PDI-SC-S082-21o4 (580-79099-15)	7/24/18	10:05	Solid	X	2
PDI-SC-S062-41o6 (580-79099-16)	7/24/18	10:10	Solid	X	2
PDI-SC-S095-01o2 (580-79099-17)	7/24/18	12:15	Solid	X	2
PDI-SC-S095-21o4 (580-79099-18)	7/24/18	12:20	Solid	X	2

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analytic & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. I

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)		
<input type="checkbox"/> Unconfirmed	<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For Months		
Deliverable Requested: I, II, III, IV. Other (specify)			
Empty Kit Relinquished by:	Primary Deliverable Rank: 2	Special Instructions/QC Requirements:	
Relinquished by:	Date/Time:	Received By:	Method of Shipment:
Relinquished by:	Date/Time:	Received By:	Date/Time:
Custody Seals Intact:	Custody Seal No.: <i>5001/5</i>	Colder Temperature(s) °C, and Other Remarks: <i>3.6°C 0.5°C</i>	

Chain of Custody Record

Client Information (Sub Contract Lab)		Sampler	Lab PM: Walker, Elaine M	Carrier Tracking No(s):	COC No: 580-57479.3
Client Contact: Shipping/Receiving	Phone:	E-Mail: elaine.walker@testamericainc.com		State of Origin: Oregon	Page: 3 of 4
Company: TestAmerica Laboratories, Inc.				Job #: 580-79099-2	
Address: 880 Riverside Parkway, City: West Sacramento	Date Requested: 8/10/2018	TAT Requested (days): 1	Analysis Requested		
State/Zip: CA, 95605	PO #:				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	WO #:				
Email: Project Name: Portland Harbor Pre-Remedial Design	Project #: 5801240	SSDW#:			
Site: Portland Harbor Pre-Remedial Design					
Total Number of Containers					
1613B/HRMS-Sox-P (MOD) Full List w/o Totals					
1613B/HRMS-Sox-P (MOD) Full List w/o Totals					
Perform MS/MSD (yes or No)					
1613B/Sox-Sep-P (MOD) Full List w/o Totals					
1613B/Sox-Sep-P (MOD) Full List w/o Totals					
Special Instructions/Note:					
Other:					
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix (Water, Soil, Oil/Water/Oil, Air/Air)	Preservation Code:
PDI-SC-SD095-4lo6 (580-79099-19)	7/24/18	12:25	Solid	X	
PDI-SC-SD064-0lo2 (580-79099-20)	7/24/18	16:40	Solid	X	
PDI-SC-SD064-2lo3.5 (580-79099-21)	7/24/18	16:45	Solid	X	
PDI-SC-SD064-3.5lo4.8 (580-79099-22)	7/24/18	16:50	Solid	X	
PDI-SC-S154-1lo1 (580-79099-23)	7/24/18	15:30	Solid	X	
PDI-SC-S154-1lo3 (580-79099-24)	7/24/18	15:35	Solid	X	
PDI-SC-S154-3lo4 (580-79099-25)	7/24/18	15:40	Solid	X	
PDI-SC-S127-0lo2 (580-79099-26)	7/24/18	17:45	Solid	X	
PDI-SC-S127-2lo4 (580-79099-27)	7/24/18	17:30	Solid	X	
Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. I					
Possible Hazard Identification					
Unconfirmed					
Deliverable Requested: I, II, III, IV, Other (specify)					
Primary Deliverable Rank: 2					
Empty Kit Relinquished by: <i>M. Mayan</i>	Date/Time: 7/24/18	Date/Time: 17:00	Received by: <i>J. H. H. R.</i>	Time: 09:10	Method of Shipment: Company
Relinquished by: <i>M. Mayan</i>	Date/Time: 7/24/18	Date/Time: 17:00	Received by: <i>J. H. H. R.</i>	Time: 09:10	Method of Shipment: Company
Relinquished by: <i>M. Mayan</i>	Date/Time: 7/24/18	Date/Time: 17:00	Received by: <i>J. H. H. R.</i>	Time: 09:10	Method of Shipment: Company
Custody Seals Intact: Yes □ No	Custody Seal No.: Seal 5	Cooler Temperature(s) °C and Other Remarks: 3.7 °C 2.6 °C 0.5 °C			

Chain of Custody Record

Client Information (Sub Contract Lab)		Sampler:	Lab P/M:	Carrier Tracking No(s):	
Client Contact:	Phone:	Walker, Elaine M	E-Mail: elaine.walker@testamericanalab.com	State of Origin:	COC No.: 580-57479.4
Shipping/Receiving Company:	Address:	Accreditations Required (See note): 580-79099-2			
TestAmerica Laboratories, Inc.	880 Riverside Parkway, .	Due Date Requested: 8/10/2018	TAT Requested (days):	Analysis Requested	
City: West Sacramento	State, Zip: CA, 95605	PO #:	WO #:		
Phone: 916-372-1059(Fax)	Email:	Project #: 58012120	SSOW#:		
Site: Portland Harbor Pre-Remedial Design					
Sample Identification - Client ID (Lab ID)					
PDI-SC-S127-4105.6 (580-79099-28)	Sample Date: 7/24/18	Sample Time: 17:35 Pacific	Sample Type (C=Comp, G=grab): Solid	Matrix (WATER, Sewage, Oil/water, Br/Tissue, A=Air): X	Preservation Code: X
PDI-SC-S127-2104D (580-79099-29)	7/24/18	17:30 Pacific	Solid	X	2
PDI-SC-S095-0102D (580-79099-30)	7/24/18	12:15 Pacific	Solid	X	2
PDI-RB-SS-180724 (580-79099-31)	7/24/18	14:00 Pacific	Water	X	2
1613B/1613E_Sox_Sep_P (M0D) Full List w/o Totals					
1613B/HRMS_Sox_P (M0D) Full List w/o Totals					
Perform MS/MSD (Yes or No)					
1613B/1613E_Sox_Sep_P (M0D) Full List w/o Totals					
Total Number of Containers					
Other:					
Special Instructions/Note:					

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analysis & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. |

Possible Hazard Identification		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Unconfirmed	<input type="checkbox"/> Return To Client	<input type="checkbox"/> Disposal By Lab	<input type="checkbox"/> Archive For Months
Deliverable Requested: I, II, III, IV, Other (specify)		Special Instructions/QC Requirements:	
Empty Kit Relinquished by:	Date/Time:	Received by:	Method of Shipment:
Relinquished by: <i>M. Bergman</i>	Date/Time: 7/20/18	Company <i>THA</i>	Company <i>27 July 18 09:10 24 hr Sec</i>
Relinquished by:	Date/Time:	Received by:	Date/Time:
Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No.: <i>Seals</i>	Cooler Temperature(s) °C and Other Remarks: <i>2.6 °C</i>	Date/Time:

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-79099-2

Login Number: 79099

List Source: TestAmerica Seattle

List Number: 1

Creator: Rogers, Angeline D

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-79099-2

Login Number: 79099

List Source: TestAmerica Sacramento

List Number: 2

List Creation: 07/27/18 02:05 PM

Creator: Gooch, Mayce

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.7c 2.6c 0.5c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-79099-2

Login Number: 79099

List Source: TestAmerica Sacramento

List Number: 3

List Creation: 07/27/18 02:41 PM

Creator: Gooch, Mayce

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.7c 2.6c 0.5c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		HxCDD (23-140)	HxCDF (28-143)	HxCDF2 (26-138)	HxCDD (32-141)	HxCDF (26-152)	HxD (28-130)	HxDF (26-123)	HxCF (29-147)
580-79099-1	PDI-SC-S045-0to2	55	52	58	53	53	54	53	57
580-79099-2	PDI-SC-S045-2to4	44	39	47	41	40	43	40	43
580-79099-3	PDI-SC-S045-4to6	34	31	37	32	32	34	32	35
580-79099-4	PDI-SC-S042-0to2	45	41	44	46	47	48	47	51
580-79099-4 - RA	PDI-SC-S042-0to2								
580-79099-5	PDI-SC-S042-2to4	43	39	35	49	48	50	47	49
580-79099-5 - RA	PDI-SC-S042-2to4								
580-79099-6	PDI-SC-S042-4to6	46	44	44	48	48	48	48	50
580-79099-6 - RA	PDI-SC-S042-4to6								
580-79099-7	PDI-SC-S061-0to3	73	71	74	66	66	66	67	68
580-79099-8	PDI-SC-S061-3to4.5	28	26 *	24 *	45	46	42	45	44
580-79099-8 - RA	PDI-SC-S061-3to4.5								
580-79099-9	PDI-SC-S061-4.5to6	47	44	50	46	46	48	46	51
580-79099-10	PDI-SC-S066-0to2	55	55	35	58	59	59	58	61
580-79099-11	PDI-SC-S066-2to4	35	34	31	55	63	50	61	50
580-79099-11 - RA	PDI-SC-S066-2to4								
580-79099-12	PDI-SC-S066-4to5.8	33	30	22 *	51	51	48	51	50
580-79099-13	PDI-SC-S066-5.8to6.6	42	40	27	51	50	51	49	51
580-79099-14	PDI-SC-S082-0to2	44	41	40	48	46	47	45	51
580-79099-14 - RA	PDI-SC-S082-0to2								
580-79099-15	PDI-SC-S082-2to4	33	30	30	41	39	40	37	42
580-79099-15 - RA	PDI-SC-S082-2to4								
580-79099-16	PDI-SC-S082-4to6	44	39	47	44	43	45	43	48
580-79099-17	PDI-SC-S095-0to2	41	37	31	49	53	48	54	50
580-79099-17 - RA	PDI-SC-S095-0to2								
580-79099-18	PDI-SC-S095-2to4	38	39	28	51	55	49	55	53
580-79099-18 - RA	PDI-SC-S095-2to4								
580-79099-19	PDI-SC-S095-4to6	48	46	40	56	56	54	55	57
580-79099-19 - RA	PDI-SC-S095-4to6								
580-79099-20	PDI-SC-S064-0to2	38	38	35	46	46	45	45	47
580-79099-20 - RA	PDI-SC-S064-0to2								
580-79099-21	PDI-SC-S064-2to3.5	35	35	30	53	64	46	59	56
580-79099-21 - RA	PDI-SC-S064-2to3.5								
580-79099-22	PDI-SC-S064-3.5to4.8	38	35	34	52	67	47	63	55
580-79099-22 - RA	PDI-SC-S064-3.5to4.8								
580-79099-23	PDI-SC-S154-0to1	58	56	56	63	63	62	61	67
580-79099-23 - RA	PDI-SC-S154-0to1								
580-79099-24	PDI-SC-S154-1to3	49	48	49	51	50	51	48	53
580-79099-24 - RA	PDI-SC-S154-1to3								
580-79099-25	PDI-SC-S154-3to4	54	52	56	46	44	46	44	48
580-79099-26	PDI-SC-S127-0to2	37	35	42	46	50	39	47	52
580-79099-26 - RA	PDI-SC-S127-0to2								
580-79099-27	PDI-SC-S127-2to4	51	49	51	51	52	52	52	55
580-79099-27 - RA	PDI-SC-S127-2to4								
580-79099-28	PDI-SC-S127-4to5.6	33	36	35	42	42	42	42	45
580-79099-28 - RA	PDI-SC-S127-4to5.6								
580-79099-29	PDI-SC-S127-2to4D	36	32	38	38	37	38	37	42
580-79099-29 - RA	PDI-SC-S127-2to4D								
580-79099-30	PDI-SC-S095-0to2D	35	31	28	43	55	37	50	50

TestAmerica Seattle

Isotope Dilution Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		HxCDD (23-140)	HxCDF (28-143)	HxCDF2 (26-138)	HxCDD (32-141)	HxCDF (26-152)	HxD (28-130)	HxDF (26-123)	HxCF (29-147)
580-79099-30 - RA	PDI-SC-S095-0to2D								
MB 320-237398/1-A	Method Blank	59	56	58	50	50	53	50	51
MB 320-237898/1-A	Method Blank	76	75	77	67	68	68	69	69
Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PeCDD (25-181)	PeCDF (24-185)	13CHxCF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)	
580-79099-1	PDI-SC-S045-0to2	48	51	56	51	59	60	50	
580-79099-2	PDI-SC-S045-2to4	40	41	43	43	52	53	39	
580-79099-3	PDI-SC-S045-4to6	32	33	34	35	43	44	30	
580-79099-4	PDI-SC-S042-0to2	47	49	49	51	56		39	
580-79099-4 - RA	PDI-SC-S042-0to2						53		
580-79099-5	PDI-SC-S042-2to4	49	50	50	51	54		41	
580-79099-5 - RA	PDI-SC-S042-2to4						49		
580-79099-6	PDI-SC-S042-4to6	49	50	50	51	56		44	
580-79099-6 - RA	PDI-SC-S042-4to6						51		
580-79099-7	PDI-SC-S061-0to3	59	60	67	59	67	65	71	
580-79099-8	PDI-SC-S061-3to4.5	43	43	46	43	48		25	
580-79099-8 - RA	PDI-SC-S061-3to4.5						45		
580-79099-9	PDI-SC-S061-4.5to6	44	47	50	49	57	61	41	
580-79099-10	PDI-SC-S066-0to2	54	57	59	57	65	65	50	
580-79099-11	PDI-SC-S066-2to4	55	53	49	53	48		34	
580-79099-11 - RA	PDI-SC-S066-2to4						58		
580-79099-12	PDI-SC-S066-4to5.8	48	49	50	51	52	55	32	
580-79099-13	PDI-SC-S066-5.8to6.6	49	49	51	49	52	50	42	
580-79099-14	PDI-SC-S082-0to2	46	47	48	47	53		42	
580-79099-14 - RA	PDI-SC-S082-0to2						47		
580-79099-15	PDI-SC-S082-2to4	41	42	41	44	48		31	
580-79099-15 - RA	PDI-SC-S082-2to4						46		
580-79099-16	PDI-SC-S082-4to6	46	46	46	49	54	57	40	
580-79099-17	PDI-SC-S095-0to2	50	47	38	50	54		42	
580-79099-17 - RA	PDI-SC-S095-0to2						53		
580-79099-18	PDI-SC-S095-2to4	50	53	47	50	58		30	
580-79099-18 - RA	PDI-SC-S095-2to4						53		
580-79099-19	PDI-SC-S095-4to6	54	55	52	55	60		47	
580-79099-19 - RA	PDI-SC-S095-4to6						53		
580-79099-20	PDI-SC-S064-0to2	46	46	45	47	49		38	
580-79099-20 - RA	PDI-SC-S064-0to2						47		
580-79099-21	PDI-SC-S064-2to3.5	62	54	44	61	54		36	
580-79099-21 - RA	PDI-SC-S064-2to3.5						62		
580-79099-22	PDI-SC-S064-3.5to4.8	64	54	43	71	56		41	
580-79099-22 - RA	PDI-SC-S064-3.5to4.8						67		
580-79099-23	PDI-SC-S154-0to1	58	61	64	59	66		55	
580-79099-23 - RA	PDI-SC-S154-0to1						60		
580-79099-24	PDI-SC-S154-1to3	48	48	51	48	54		48	
580-79099-24 - RA	PDI-SC-S154-1to3						42		
580-79099-25	PDI-SC-S154-3to4	40	41	47	41	48	47	53	
580-79099-26	PDI-SC-S127-0to2	38	40	38	61	60		32	
580-79099-26 - RA	PDI-SC-S127-0to2						62		
580-79099-27	PDI-SC-S127-2to4	59	60	53	61	59		47	

TestAmerica Seattle

Isotope Dilution Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)						
		PeCDD (25-181)	PeCDF (24-185)	13CHxCF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)
580-79099-27 - RA	PDI-SC-S127-2to4							
580-79099-28	PDI-SC-S127-4to5.6	39	41	44	43	48		34
580-79099-28 - RA	PDI-SC-S127-4to5.6						41	
580-79099-29	PDI-SC-S127-2to4D	40	42	41	44	50		30
580-79099-29 - RA	PDI-SC-S127-2to4D						49	
580-79099-30	PDI-SC-S095-0to2D	49	36	38	51	51		32
580-79099-30 - RA	PDI-SC-S095-0to2D						60	
MB 320-237398/1-A	Method Blank	45	45	51	44	51	49	61
MB 320-237898/1-A	Method Blank	57	60	69	59	68	67	73

Surrogate Legend

HpCDD = 13C-1,2,3,4,6,7,8-HpCDD

HpCDF = 13C-1,2,3,4,6,7,8-HpCDF

HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF2

HxCDD = 13C-1,2,3,4,7,8-HxCDD

HxCDF = 13C-1,2,3,4,7,8-HxCDF

HxDD = 13C-1,2,3,6,7,8-HxDD

HxDF = 13C-1,2,3,6,7,8-HxDF

HxCF = 13C-1,2,3,7,8,9-HxCF

PeCDD = 13C-1,2,3,7,8-PeCDD

PeCDF = 13C-1,2,3,7,8-PeCDF

13CHxCF = 13C-2,3,4,6,7,8-HxCDF

PeCF = 13C-2,3,4,7,8-PeCF

TCDD = 13C-2,3,7,8-TCDD

TCDF = 13C-2,3,7,8-TCDF

OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		HpCDD (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	HxCDD (21-193)	HxCDF (19-202)	HxDD (25-163)	HxDF (21-159)	HxCF (17-205)
LCS 320-237398/2-A	Lab Control Sample	52	50	51	43	42	47	43	43
LCS 320-237898/2-A	Lab Control Sample	72	70	73	65	66	67	66	66
LCSD 320-237398/3-A	Lab Control Sample Dup	55	51	54	45	45	47	45	46
LCSD 320-237898/3-A	Lab Control Sample Dup	76	73	77	68	68	68	69	69

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)						
		PeCDD (21-227)	PeCDF (21-192)	13CHxCF (22-176)	PeCF (13-328)	TCDD (20-175)	TCDF (22-152)	OCDD (13-199)
LCS 320-237398/2-A	Lab Control Sample	39	39	45	39	45	44	54
LCS 320-237898/2-A	Lab Control Sample	56	59	67	58	66	65	71
LCSD 320-237398/3-A	Lab Control Sample Dup	40	40	46	40	47	45	57
LCSD 320-237898/3-A	Lab Control Sample Dup	59	61	69	61	68	67	75

Surrogate Legend

HpCDD = 13C-1,2,3,4,6,7,8-HpCDD

HpCDF = 13C-1,2,3,4,6,7,8-HpCDF

HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF2

HxCDD = 13C-1,2,3,4,7,8-HxCDD

TestAmerica Seattle

Isotope Dilution Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

HxCDF = 13C-1,2,3,4,7,8-HxCDF
 HxDD = 13C-1,2,3,6,7,8-HxCDD
 HxDF = 13C-1,2,3,6,7,8-HxCDF
 HxCF = 13C-1,2,3,7,8,9-HxCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF = 13C-1,2,3,7,8-PeCDF
 13CHxCF = 13C-2,3,4,6,7,8-HxCDF
 PeCF = 13C-2,3,4,7,8-PeCDF
 TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	HxCDD (32-141)	HxCDF (26-152)	HxDD (28-130)	HxDF (26-123)	HxCF (29-147)
580-79099-31	PDI-RB-SS-180724	68	68	70	66	68	68	69	70
MB 320-237382/1-A	Method Blank	54	53	55	51	53	54	54	57
Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PeCDD (25-181)	PeCDF (24-185)	13CHxCF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)	
580-79099-31	PDI-RB-SS-180724	64	66	73	68	72	75	59	
MB 320-237382/1-A	Method Blank	54	56	57	58	66	69	50	

Surrogate Legend

HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF2
 HxCDD = 13C-1,2,3,4,7,8-HxCDD
 HxCDF = 13C-1,2,3,4,7,8-HxCDF
 HxDD = 13C-1,2,3,6,7,8-HxCDD
 HxDF = 13C-1,2,3,6,7,8-HxCDF
 HxCF = 13C-1,2,3,7,8,9-HxCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF = 13C-1,2,3,7,8-PeCDF
 13CHxCF = 13C-2,3,4,6,7,8-HxCDF
 PeCF = 13C-2,3,4,7,8-PeCDF
 TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		HpCDD (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	HxCDD (21-193)	HxCDF (19-202)	HxDD (25-163)	HxDF (21-159)	HxCF (17-205)
LCS 320-237382/2-A	Lab Control Sample	78	78	80	75	76	73	76	78
LCSD 320-237382/3-A	Lab Control Sample Dup	77	78	79	74	76	75	76	78
Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PeCDD (21-227)	PeCDF (21-192)	13CHxCF (22-176)	PeCF (13-328)	TCDD (20-175)	TCDF (22-152)	OCDD (13-199)	
LCS 320-237382/2-A	Lab Control Sample	70	72	79	73	74	76	72	

TestAmerica Seattle

Isotope Dilution Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79099-2

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)						
		PeCDD (21-227)	PeCDF (21-192)	13CHxCF (22-176)	PeCF (13-328)	TCDD (20-175)	TCDF (22-152)	OCDD (13-199)
LCSD 320-237382/3-A	Lab Control Sample Dup	70	72	79	73	76	78	69

Surrogate Legend

HxCDD = 13C-1,2,3,4,6,7,8-HxCDD

HxCDF = 13C-1,2,3,4,6,7,8-HxCDF

HxCDF2 = 13C-1,2,3,4,7,8,9-HxCDF2

HxCDD = 13C-1,2,3,4,7,8-HxCDD

HxCDF = 13C-1,2,3,4,7,8-HxCDF

HxDL = 13C-1,2,3,6,7,8-HxDL

HxDL = 13C-1,2,3,6,7,8-HxDL

HxCDF = 13C-1,2,3,7,8-HxCDF

PeCDD = 13C-1,2,3,7,8-PeCDD

PeCDF = 13C-1,2,3,7,8-PeCDF

13CHxCF = 13C-2,3,4,6,7,8-HxCDF

PeCF = 13C-2,3,4,7,8-PeCF

TCDD = 13C-2,3,7,8-TCDD

TCDF = 13C-2,3,7,8-TCDF

OCDD = 13C-OCDD