

ANALYTICAL REPORT

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TestAmerica Job ID: 580-79257-2

Client Project/Site: Portland Harbor Pre-Remedial Design
Revision: 2

For:

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3/5/2019 2:01:00 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: 580-79257-2

Job ID: 580-79257-2

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE

Client: AECOM

Project: Portland Harbor Pre-Remedial Design

Report Number: 580-79257-2

REVISION 2: MARCH 5, 2019

This revision was required because the 13C-2,3,7,8-TCDF isotope dilution was initially reported twice for sample PDI-SC-S062-4to6 (580-79257-3). It has been reported only from the reanalysis in this revision.

REVISION 1: AUGUST 27, 2018

This revision was required to add the raw data for the area count for m/z 321.89 for 2,3,7,8-TCDD.

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

The samples were received on 08/01/2018; the samples arrived in good condition, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.5° C, 5.1° C and 5.2° 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-S062-0to2 (580-79257-1), PDI-SC-S062-2to4 (580-79257-2), PDI-SC-S062-4to6 (580-79257-3), PDI-SC-S062-6to7.7 (580-79257-4), PDI-SC-S023-0to2 (580-79257-5), PDI-SC-S023-2to3.9 (580-79257-6), PDI-SC-S023-3.9to5.3 (580-79257-7), PDI-SC-S023-5.3to7.2 (580-79257-8), PDI-SC-S023-7.2to8.8 (580-79257-9), PDI-SC-S031-0to2 (580-79257-10), PDI-SC-S031-2to4 (580-79257-11), PDI-SC-S031-4to5.5 (580-79257-12), PDI-SC-S031-5.5to7 (580-79257-13), PDI-SC-S031-7to9.2 (580-79257-14), PDI-SC-S038-0to2 (580-79257-15), PDI-SC-S038-2to3.4 (580-79257-16), PDI-SC-S038-3.4to5.4 (580-79257-17), PDI-SC-S038-5.4to7.2 (580-79257-18), PDI-SC-S085-0to2 (580-79257-19), PDI-SC-S085-2to4 (580-79257-20), PDI-SC-S085-4to6.4 (580-79257-21) and PDI-SC-S085-4to6.4D (580-79257-22) were analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 08/13/2018 and analyzed on 08/16/2018, 08/17/2018, 08/18/2018 and 08/20/2018.

Several analytes were detected in method blank MB 320-239583/1-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.

OCDD was detected in method blank MB 320-239564/1-A at a level that was above the method detection limit but below the reporting limit.

Case Narrative

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Job ID: 580-79257-2 (Continued)

Laboratory: TestAmerica Seattle (Continued)

The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

The concentration of one or more analytes associated with the following sample exceeded the instrument calibration range: PDI-SC-S023-2to3.9 (580-79257-6). These analytes have been qualified; however, the peak(s) 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.

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 samples run on instrument 11D2 exceeded this criteria: PDI-SC-S062-0to2 (580-79257-1), PDI-SC-S062-2to4 (580-79257-2), PDI-SC-S062-4to6 (580-79257-3), PDI-SC-S062-6to7.7 (580-79257-4) and (CCV 320-240639/2). 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.

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 samples run on instrument 11D2 exceeded this criteria: PDI-SC-S023-0to2 (580-79257-5), PDI-SC-S023-2to3.9 (580-79257-6), PDI-SC-S023-3.9to5.3 (580-79257-7), PDI-SC-S023-5.3to7.2 (580-79257-8), PDI-SC-S023-7.2to8.8 (580-79257-9), PDI-SC-S031-0to2 (580-79257-10), PDI-SC-S031-2to4 (580-79257-11), PDI-SC-S085-0to2 (580-79257-19) and (CCV 320-240997/2). 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.

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

Dioxin Prep

Method(s) HRMS-Sox: Due to the matrix, the initial volumes used for the following samples deviated from the standard procedure: PDI-SC-S062-0to2 (580-79257-1), PDI-SC-S062-2to4 (580-79257-2), PDI-SC-S062-4to6 (580-79257-3), PDI-SC-S062-6to7.7 (580-79257-4), PDI-SC-S023-0to2 (580-79257-5), PDI-SC-S023-2to3.9 (580-79257-6), PDI-SC-S023-3.9to5.3 (580-79257-7), PDI-SC-S023-5.3to7.2 (580-79257-8), PDI-SC-S023-7.2to8.8 (580-79257-9), PDI-SC-S031-0to2 (580-79257-10), PDI-SC-S031-2to4 (580-79257-11) and PDI-SC-S031-4to5.5 (580-79257-12). The reporting limits (RLs) have been adjusted proportionately. Samples are associated with preparation batch 320-239564.

Method(s) HRMS-Sox: Due to the matrix, the initial volumes used for the following samples deviated from the standard procedure: PDI-SC-S031-5.5to7 (580-79257-13), PDI-SC-S031-7to9.2 (580-79257-14), PDI-SC-S038-0to2 (580-79257-15), PDI-SC-S038-2to3.4 (580-79257-16), PDI-SC-S038-3.4to5.4 (580-79257-17), PDI-SC-S038-5.4to7.2 (580-79257-18), PDI-SC-S085-0to2 (580-79257-19), PDI-SC-S085-2to4 (580-79257-20), PDI-SC-S085-4to6.4 (580-79257-21) and PDI-SC-S085-4to6.4D (580-79257-22). The reporting limits (RLs) have been adjusted proportionately. Samples are associated with preparation batch 320-239583.

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-180731 (580-79257-23) was analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 08/06/2018 and analyzed on 08/09/2018.

1,2,3,4,6,7,8-HpCDD, OCDD and OCDF were detected in method blank MB 320-238271/1-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: 580-79257-2

Qualifiers

Dioxin

Qualifier	Qualifier Description
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.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.
E	Result exceeded calibration range.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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: 580-79257-2

Client Sample ID: PDI-SC-S062-0to2

Date Collected: 07/31/18 15:30

Date Received: 08/01/18 14:10

Lab Sample ID: 580-79257-1

Matrix: Solid

Percent Solids: 45.6

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	0.061		0.0054	0.0015	ug/Kg	☼	08/13/18 10:41	08/16/18 02:15	1
1,2,3,4,6,7,8-HpCDF	0.014	q	0.0054	0.00040	ug/Kg	☼	08/13/18 10:41	08/16/18 02:15	1
1,2,3,4,7,8,9-HpCDF	0.0041	J	0.0054	0.00044	ug/Kg	☼	08/13/18 10:41	08/16/18 02:15	1
1,2,3,4,7,8-HxCDD	0.00081	J	0.0054	0.00012	ug/Kg	☼	08/13/18 10:41	08/16/18 02:15	1
1,2,3,4,7,8-HxCDF	0.035		0.0054	0.00034	ug/Kg	☼	08/13/18 10:41	08/16/18 02:15	1
1,2,3,6,7,8-HxCDD	0.0023	J	0.0054	0.00010	ug/Kg	☼	08/13/18 10:41	08/16/18 02:15	1
1,2,3,6,7,8-HxCDF	0.0070		0.0054	0.00030	ug/Kg	☼	08/13/18 10:41	08/16/18 02:15	1
1,2,3,7,8,9-HxCDD	0.0018	J	0.0054	0.00010	ug/Kg	☼	08/13/18 10:41	08/16/18 02:15	1
1,2,3,7,8,9-HxCDF	0.00037	J q	0.0054	0.00022	ug/Kg	☼	08/13/18 10:41	08/16/18 02:15	1
1,2,3,7,8-PeCDD	0.00041	J	0.0054	0.00011	ug/Kg	☼	08/13/18 10:41	08/16/18 02:15	1
1,2,3,7,8-PeCDF	0.012		0.0054	0.00015	ug/Kg	☼	08/13/18 10:41	08/16/18 02:15	1
2,3,4,6,7,8-HxCDF	0.00084	J	0.0054	0.00022	ug/Kg	☼	08/13/18 10:41	08/16/18 02:15	1
2,3,4,7,8-PeCDF	0.0024	J	0.0054	0.00018	ug/Kg	☼	08/13/18 10:41	08/16/18 02:15	1
2,3,7,8-TCDD	ND		0.0011	0.00014	ug/Kg	☼	08/13/18 10:41	08/16/18 02:15	1
OCDD	0.54	B	0.011	0.00043	ug/Kg	☼	08/13/18 10:41	08/16/18 02:15	1
OCDF	0.036		0.011	0.00013	ug/Kg	☼	08/13/18 10:41	08/16/18 02:15	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	52		23 - 140	08/13/18 10:41	08/16/18 02:15	1
13C-1,2,3,4,6,7,8-HpCDF	41		28 - 143	08/13/18 10:41	08/16/18 02:15	1
13C-1,2,3,4,7,8,9-HpCDF	56		26 - 138	08/13/18 10:41	08/16/18 02:15	1
13C-1,2,3,4,7,8-HxCDD	51		32 - 141	08/13/18 10:41	08/16/18 02:15	1
13C-1,2,3,4,7,8-HxCDF	46		26 - 152	08/13/18 10:41	08/16/18 02:15	1
13C-1,2,3,6,7,8-HxCDD	51		28 - 130	08/13/18 10:41	08/16/18 02:15	1
13C-1,2,3,6,7,8-HxCDF	43		26 - 123	08/13/18 10:41	08/16/18 02:15	1
13C-1,2,3,7,8,9-HxCDF	57		29 - 147	08/13/18 10:41	08/16/18 02:15	1
13C-1,2,3,7,8-PeCDD	67		25 - 181	08/13/18 10:41	08/16/18 02:15	1
13C-1,2,3,7,8-PeCDF	64		24 - 185	08/13/18 10:41	08/16/18 02:15	1
13C-2,3,4,6,7,8-HxCDF	49		28 - 136	08/13/18 10:41	08/16/18 02:15	1
13C-2,3,4,7,8-PeCDF	63		21 - 178	08/13/18 10:41	08/16/18 02:15	1
13C-2,3,7,8-TCDD	60		25 - 164	08/13/18 10:41	08/16/18 02:15	1
13C-OCDD	61		17 - 157	08/13/18 10:41	08/16/18 02:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	96		35 - 197	08/13/18 10:41	08/16/18 02:15	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	0.0025		0.0011	0.00027	ug/Kg	☼	08/13/18 10:41	08/17/18 23:40	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	58		24 - 169	08/13/18 10:41	08/17/18 23:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	90		35 - 197	08/13/18 10:41	08/17/18 23:40	1

TestAmerica Seattle

Client Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S062-2to4

Date Collected: 07/31/18 15:35

Date Received: 08/01/18 14:10

Lab Sample ID: 580-79257-2

Matrix: Solid

Percent Solids: 50.5

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-HpCDD	0.087		0.0049	0.0017	ug/Kg	☼	08/13/18 10:41	08/16/18 03:03	1
1,2,3,4,6,7,8-HpCDF	0.014		0.0049	0.00049	ug/Kg	☼	08/13/18 10:41	08/16/18 03:03	1
1,2,3,4,7,8,9-HpCDF	0.0011	J	0.0049	0.00054	ug/Kg	☼	08/13/18 10:41	08/16/18 03:03	1
1,2,3,4,7,8-HxCDD	0.00097	J	0.0049	0.00013	ug/Kg	☼	08/13/18 10:41	08/16/18 03:03	1
1,2,3,4,7,8-HxCDF	0.0032	J	0.0049	0.00021	ug/Kg	☼	08/13/18 10:41	08/16/18 03:03	1
1,2,3,6,7,8-HxCDD	0.0032	J	0.0049	0.00012	ug/Kg	☼	08/13/18 10:41	08/16/18 03:03	1
1,2,3,6,7,8-HxCDF	0.0012	J	0.0049	0.00019	ug/Kg	☼	08/13/18 10:41	08/16/18 03:03	1
1,2,3,7,8,9-HxCDD	0.0024	J	0.0049	0.00011	ug/Kg	☼	08/13/18 10:41	08/16/18 03:03	1
1,2,3,7,8,9-HxCDF	ND		0.0049	0.00017	ug/Kg	☼	08/13/18 10:41	08/16/18 03:03	1
1,2,3,7,8-PeCDD	0.00033	J q	0.0049	0.00014	ug/Kg	☼	08/13/18 10:41	08/16/18 03:03	1
1,2,3,7,8-PeCDF	0.0013	J	0.0049	0.00010	ug/Kg	☼	08/13/18 10:41	08/16/18 03:03	1
2,3,4,6,7,8-HxCDF	0.00047	J	0.0049	0.00014	ug/Kg	☼	08/13/18 10:41	08/16/18 03:03	1
2,3,4,7,8-PeCDF	0.00072	J	0.0049	0.00011	ug/Kg	☼	08/13/18 10:41	08/16/18 03:03	1
2,3,7,8-TCDD	0.00042	J	0.00097	0.000092	ug/Kg	☼	08/13/18 10:41	08/16/18 03:03	1
OCDD	0.77	B	0.0097	0.00064	ug/Kg	☼	08/13/18 10:41	08/16/18 03:03	1
OCDF	0.049		0.0097	0.00014	ug/Kg	☼	08/13/18 10:41	08/16/18 03:03	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	59		23 - 140				08/13/18 10:41	08/16/18 03:03	1
13C-1,2,3,4,6,7,8-HpCDF	42		28 - 143				08/13/18 10:41	08/16/18 03:03	1
13C-1,2,3,4,7,8,9-HpCDF	63		26 - 138				08/13/18 10:41	08/16/18 03:03	1
13C-1,2,3,4,7,8-HxCDD	57		32 - 141				08/13/18 10:41	08/16/18 03:03	1
13C-1,2,3,4,7,8-HxCDF	53		26 - 152				08/13/18 10:41	08/16/18 03:03	1
13C-1,2,3,6,7,8-HxCDD	53		28 - 130				08/13/18 10:41	08/16/18 03:03	1
13C-1,2,3,6,7,8-HxCDF	49		26 - 123				08/13/18 10:41	08/16/18 03:03	1
13C-1,2,3,7,8,9-HxCDF	57		29 - 147				08/13/18 10:41	08/16/18 03:03	1
13C-1,2,3,7,8-PeCDD	70		25 - 181				08/13/18 10:41	08/16/18 03:03	1
13C-1,2,3,7,8-PeCDF	66		24 - 185				08/13/18 10:41	08/16/18 03:03	1
13C-2,3,4,6,7,8-HxCDF	56		28 - 136				08/13/18 10:41	08/16/18 03:03	1
13C-2,3,4,7,8-PeCDF	69		21 - 178				08/13/18 10:41	08/16/18 03:03	1
13C-2,3,7,8-TCDD	59		25 - 164				08/13/18 10:41	08/16/18 03:03	1
13C-OCDD	69		17 - 157				08/13/18 10:41	08/16/18 03:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	95		35 - 197				08/13/18 10:41	08/16/18 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	0.0019		0.00097	0.00023	ug/Kg	☼	08/13/18 10:41	08/18/18 00:18	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	57		24 - 169				08/13/18 10:41	08/18/18 00:18	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	92		35 - 197				08/13/18 10:41	08/18/18 00:18	1

TestAmerica Seattle

Client Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S062-4to6

Date Collected: 07/31/18 15:40

Date Received: 08/01/18 14:10

Lab Sample ID: 580-79257-3

Matrix: Solid

Percent Solids: 51.9

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	0.098		0.0047	0.0016	ug/Kg	☼	08/13/18 10:41	08/16/18 03:52	1
1,2,3,4,6,7,8-HpCDF	0.014		0.0047	0.00049	ug/Kg	☼	08/13/18 10:41	08/16/18 03:52	1
1,2,3,4,7,8,9-HpCDF	0.0013	J	0.0047	0.00057	ug/Kg	☼	08/13/18 10:41	08/16/18 03:52	1
1,2,3,4,7,8-HxCDD	0.0010	J	0.0047	0.00012	ug/Kg	☼	08/13/18 10:41	08/16/18 03:52	1
1,2,3,4,7,8-HxCDF	0.0040	J	0.0047	0.00021	ug/Kg	☼	08/13/18 10:41	08/16/18 03:52	1
1,2,3,6,7,8-HxCDD	0.0038	J	0.0047	0.00011	ug/Kg	☼	08/13/18 10:41	08/16/18 03:52	1
1,2,3,6,7,8-HxCDF	0.0014	J q	0.0047	0.00018	ug/Kg	☼	08/13/18 10:41	08/16/18 03:52	1
1,2,3,7,8,9-HxCDD	0.0026	J	0.0047	0.00011	ug/Kg	☼	08/13/18 10:41	08/16/18 03:52	1
1,2,3,7,8,9-HxCDF	0.00018	J q	0.0047	0.00013	ug/Kg	☼	08/13/18 10:41	08/16/18 03:52	1
1,2,3,7,8-PeCDD	0.00043	J	0.0047	0.000094	ug/Kg	☼	08/13/18 10:41	08/16/18 03:52	1
1,2,3,7,8-PeCDF	0.0024	J	0.0047	0.00011	ug/Kg	☼	08/13/18 10:41	08/16/18 03:52	1
2,3,4,6,7,8-HxCDF	0.00055	J	0.0047	0.00013	ug/Kg	☼	08/13/18 10:41	08/16/18 03:52	1
2,3,4,7,8-PeCDF	0.0016	J	0.0047	0.00013	ug/Kg	☼	08/13/18 10:41	08/16/18 03:52	1
2,3,7,8-TCDD	0.00030	J q	0.00094	0.000074	ug/Kg	☼	08/13/18 10:41	08/16/18 03:52	1
OCDD	0.83	B	0.0094	0.00067	ug/Kg	☼	08/13/18 10:41	08/16/18 03:52	1
OCDF	0.046		0.0094	0.00015	ug/Kg	☼	08/13/18 10:41	08/16/18 03:52	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	50		23 - 140				08/13/18 10:41	08/16/18 03:52	1
13C-1,2,3,4,6,7,8-HpCDF	36		28 - 143				08/13/18 10:41	08/16/18 03:52	1
13C-1,2,3,4,7,8,9-HpCDF	49		26 - 138				08/13/18 10:41	08/16/18 03:52	1
13C-1,2,3,4,7,8-HxCDD	55		32 - 141				08/13/18 10:41	08/16/18 03:52	1
13C-1,2,3,4,7,8-HxCDF	46		26 - 152				08/13/18 10:41	08/16/18 03:52	1
13C-1,2,3,6,7,8-HxCDD	52		28 - 130				08/13/18 10:41	08/16/18 03:52	1
13C-1,2,3,6,7,8-HxCDF	44		26 - 123				08/13/18 10:41	08/16/18 03:52	1
13C-1,2,3,7,8,9-HxCDF	59		29 - 147				08/13/18 10:41	08/16/18 03:52	1
13C-1,2,3,7,8-PeCDD	73		25 - 181				08/13/18 10:41	08/16/18 03:52	1
13C-1,2,3,7,8-PeCDF	64		24 - 185				08/13/18 10:41	08/16/18 03:52	1
13C-2,3,4,6,7,8-HxCDF	52		28 - 136				08/13/18 10:41	08/16/18 03:52	1
13C-2,3,4,7,8-PeCDF	67		21 - 178				08/13/18 10:41	08/16/18 03:52	1
13C-2,3,7,8-TCDD	61		25 - 164				08/13/18 10:41	08/16/18 03:52	1
13C-OCDD	58		17 - 157				08/13/18 10:41	08/16/18 03:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	98		35 - 197				08/13/18 10:41	08/16/18 03:52	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	0.0082		0.00094	0.00024	ug/Kg	☼	08/13/18 10:41	08/18/18 00:55	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	58		24 - 169				08/13/18 10:41	08/18/18 00:55	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	92		35 - 197				08/13/18 10:41	08/18/18 00:55	1

TestAmerica Seattle

Client Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S062-6to7.7

Date Collected: 07/31/18 15:45

Date Received: 08/01/18 14:10

Lab Sample ID: 580-79257-4

Matrix: Solid

Percent Solids: 54.5

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-HpCDD	0.065		0.0045	0.00092	ug/Kg	☼	08/13/18 10:41	08/16/18 04:40	1
1,2,3,4,6,7,8-HpCDF	0.011		0.0045	0.00041	ug/Kg	☼	08/13/18 10:41	08/16/18 04:40	1
1,2,3,4,7,8,9-HpCDF	0.0012	J	0.0045	0.00049	ug/Kg	☼	08/13/18 10:41	08/16/18 04:40	1
1,2,3,4,7,8-HxCDD	0.00075	J	0.0045	0.000088	ug/Kg	☼	08/13/18 10:41	08/16/18 04:40	1
1,2,3,4,7,8-HxCDF	0.0043	J	0.0045	0.00017	ug/Kg	☼	08/13/18 10:41	08/16/18 04:40	1
1,2,3,6,7,8-HxCDD	0.0029	J	0.0045	0.000082	ug/Kg	☼	08/13/18 10:41	08/16/18 04:40	1
1,2,3,6,7,8-HxCDF	0.0016	J	0.0045	0.00016	ug/Kg	☼	08/13/18 10:41	08/16/18 04:40	1
1,2,3,7,8,9-HxCDD	0.0021	J	0.0045	0.000079	ug/Kg	☼	08/13/18 10:41	08/16/18 04:40	1
1,2,3,7,8,9-HxCDF	0.00017	J	0.0045	0.00011	ug/Kg	☼	08/13/18 10:41	08/16/18 04:40	1
1,2,3,7,8-PeCDD	0.00037	J	0.0045	0.000091	ug/Kg	☼	08/13/18 10:41	08/16/18 04:40	1
1,2,3,7,8-PeCDF	0.0031	J	0.0045	0.00011	ug/Kg	☼	08/13/18 10:41	08/16/18 04:40	1
2,3,4,6,7,8-HxCDF	0.00045	J	0.0045	0.00012	ug/Kg	☼	08/13/18 10:41	08/16/18 04:40	1
2,3,4,7,8-PeCDF	0.0019	J	0.0045	0.00012	ug/Kg	☼	08/13/18 10:41	08/16/18 04:40	1
2,3,7,8-TCDD	0.00026	J q	0.00090	0.000066	ug/Kg	☼	08/13/18 10:41	08/16/18 04:40	1
OCDD	0.62	B	0.0090	0.00051	ug/Kg	☼	08/13/18 10:41	08/16/18 04:40	1
OCDF	0.040		0.0090	0.00017	ug/Kg	☼	08/13/18 10:41	08/16/18 04:40	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	48		23 - 140	08/13/18 10:41	08/16/18 04:40	1
13C-1,2,3,4,6,7,8-HpCDF	36		28 - 143	08/13/18 10:41	08/16/18 04:40	1
13C-1,2,3,4,7,8,9-HpCDF	50		26 - 138	08/13/18 10:41	08/16/18 04:40	1
13C-1,2,3,4,7,8-HxCDD	54		32 - 141	08/13/18 10:41	08/16/18 04:40	1
13C-1,2,3,4,7,8-HxCDF	46		26 - 152	08/13/18 10:41	08/16/18 04:40	1
13C-1,2,3,6,7,8-HxCDD	47		28 - 130	08/13/18 10:41	08/16/18 04:40	1
13C-1,2,3,6,7,8-HxCDF	42		26 - 123	08/13/18 10:41	08/16/18 04:40	1
13C-1,2,3,7,8,9-HxCDF	56		29 - 147	08/13/18 10:41	08/16/18 04:40	1
13C-1,2,3,7,8-PeCDD	70		25 - 181	08/13/18 10:41	08/16/18 04:40	1
13C-1,2,3,7,8-PeCDF	61		24 - 185	08/13/18 10:41	08/16/18 04:40	1
13C-2,3,4,6,7,8-HxCDF	48		28 - 136	08/13/18 10:41	08/16/18 04:40	1
13C-2,3,4,7,8-PeCDF	62		21 - 178	08/13/18 10:41	08/16/18 04:40	1
13C-2,3,7,8-TCDD	59		25 - 164	08/13/18 10:41	08/16/18 04:40	1
13C-OCDD	55		17 - 157	08/13/18 10:41	08/16/18 04:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	99		35 - 197	08/13/18 10:41	08/16/18 04:40	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	0.0077		0.00090	0.00024	ug/Kg	☼	08/13/18 10:41	08/18/18 01:33	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	56		24 - 169	08/13/18 10:41	08/18/18 01:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	94		35 - 197	08/13/18 10:41	08/18/18 01:33	1

TestAmerica Seattle

Client Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S023-0to2

Date Collected: 07/31/18 10:40

Date Received: 08/01/18 14:10

Lab Sample ID: 580-79257-5

Matrix: Solid

Percent Solids: 49.7

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	0.12		0.0051	0.0016	ug/Kg	☼	08/13/18 10:41	08/16/18 05:29	1
1,2,3,4,6,7,8-HpCDF	0.022		0.0051	0.00072	ug/Kg	☼	08/13/18 10:41	08/16/18 05:29	1
1,2,3,4,7,8,9-HpCDF	0.0021	J	0.0051	0.00086	ug/Kg	☼	08/13/18 10:41	08/16/18 05:29	1
1,2,3,4,7,8-HxCDD	0.00095	J q	0.0051	0.00021	ug/Kg	☼	08/13/18 10:41	08/16/18 05:29	1
1,2,3,4,7,8-HxCDF	0.0087		0.0051	0.00032	ug/Kg	☼	08/13/18 10:41	08/16/18 05:29	1
1,2,3,6,7,8-HxCDD	0.0044	J	0.0051	0.00019	ug/Kg	☼	08/13/18 10:41	08/16/18 05:29	1
1,2,3,6,7,8-HxCDF	0.0032	J	0.0051	0.00029	ug/Kg	☼	08/13/18 10:41	08/16/18 05:29	1
1,2,3,7,8,9-HxCDD	0.0024	J q	0.0051	0.00019	ug/Kg	☼	08/13/18 10:41	08/16/18 05:29	1
1,2,3,7,8,9-HxCDF	ND		0.0051	0.00018	ug/Kg	☼	08/13/18 10:41	08/16/18 05:29	1
1,2,3,7,8-PeCDD	0.00048	J	0.0051	0.00014	ug/Kg	☼	08/13/18 10:41	08/16/18 05:29	1
1,2,3,7,8-PeCDF	0.0060		0.0051	0.00020	ug/Kg	☼	08/13/18 10:41	08/16/18 05:29	1
2,3,4,6,7,8-HxCDF	0.00067	J	0.0051	0.00020	ug/Kg	☼	08/13/18 10:41	08/16/18 05:29	1
2,3,4,7,8-PeCDF	0.0021	J	0.0051	0.00019	ug/Kg	☼	08/13/18 10:41	08/16/18 05:29	1
2,3,7,8-TCDD	0.00033	J q	0.0010	0.000088	ug/Kg	☼	08/13/18 10:41	08/16/18 05:29	1
OCDD	1.4	B	0.010	0.0010	ug/Kg	☼	08/13/18 10:41	08/16/18 05:29	1
OCDF	0.067		0.010	0.00023	ug/Kg	☼	08/13/18 10:41	08/16/18 05:29	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	45		23 - 140				08/13/18 10:41	08/16/18 05:29	1
13C-1,2,3,4,6,7,8-HpCDF	36		28 - 143				08/13/18 10:41	08/16/18 05:29	1
13C-1,2,3,4,7,8,9-HpCDF	47		26 - 138				08/13/18 10:41	08/16/18 05:29	1
13C-1,2,3,4,7,8-HxCDD	50		32 - 141				08/13/18 10:41	08/16/18 05:29	1
13C-1,2,3,4,7,8-HxCDF	38		26 - 152				08/13/18 10:41	08/16/18 05:29	1
13C-1,2,3,6,7,8-HxCDD	48		28 - 130				08/13/18 10:41	08/16/18 05:29	1
13C-1,2,3,6,7,8-HxCDF	36		26 - 123				08/13/18 10:41	08/16/18 05:29	1
13C-1,2,3,7,8,9-HxCDF	56		29 - 147				08/13/18 10:41	08/16/18 05:29	1
13C-1,2,3,7,8-PeCDD	73		25 - 181				08/13/18 10:41	08/16/18 05:29	1
13C-1,2,3,7,8-PeCDF	57		24 - 185				08/13/18 10:41	08/16/18 05:29	1
13C-2,3,4,6,7,8-HxCDF	44		28 - 136				08/13/18 10:41	08/16/18 05:29	1
13C-2,3,4,7,8-PeCDF	68		21 - 178				08/13/18 10:41	08/16/18 05:29	1
13C-2,3,7,8-TCDD	61		25 - 164				08/13/18 10:41	08/16/18 05:29	1
13C-OCDD	47		17 - 157				08/13/18 10:41	08/16/18 05:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	100		35 - 197				08/13/18 10:41	08/16/18 05:29	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	0.0037		0.0010	0.00024	ug/Kg	☼	08/13/18 10:41	08/20/18 12:19	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	60		24 - 169				08/13/18 10:41	08/20/18 12:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	90		35 - 197				08/13/18 10:41	08/20/18 12:19	1

TestAmerica Seattle

Client Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S023-2to3.9

Date Collected: 07/31/18 10:45

Date Received: 08/01/18 14:10

Lab Sample ID: 580-79257-6

Matrix: Solid

Percent Solids: 53.8

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	0.33		0.0046	0.0040	ug/Kg	☼	08/13/18 10:41	08/16/18 06:17	1
1,2,3,4,6,7,8-HpCDF	0.077		0.0046	0.0018	ug/Kg	☼	08/13/18 10:41	08/16/18 06:17	1
1,2,3,4,7,8,9-HpCDF	0.0069		0.0046	0.0024	ug/Kg	☼	08/13/18 10:41	08/16/18 06:17	1
1,2,3,4,7,8-HxCDD	0.0028	J	0.0046	0.00040	ug/Kg	☼	08/13/18 10:41	08/16/18 06:17	1
1,2,3,4,7,8-HxCDF	0.020		0.0046	0.00095	ug/Kg	☼	08/13/18 10:41	08/16/18 06:17	1
1,2,3,6,7,8-HxCDD	0.012		0.0046	0.00037	ug/Kg	☼	08/13/18 10:41	08/16/18 06:17	1
1,2,3,6,7,8-HxCDF	0.0089		0.0046	0.00078	ug/Kg	☼	08/13/18 10:41	08/16/18 06:17	1
1,2,3,7,8,9-HxCDD	0.0065		0.0046	0.00036	ug/Kg	☼	08/13/18 10:41	08/16/18 06:17	1
1,2,3,7,8,9-HxCDF	ND		0.0046	0.00057	ug/Kg	☼	08/13/18 10:41	08/16/18 06:17	1
1,2,3,7,8-PeCDD	0.0016	J	0.0046	0.00019	ug/Kg	☼	08/13/18 10:41	08/16/18 06:17	1
1,2,3,7,8-PeCDF	0.010		0.0046	0.00039	ug/Kg	☼	08/13/18 10:41	08/16/18 06:17	1
2,3,4,6,7,8-HxCDF	0.0018	J	0.0046	0.00065	ug/Kg	☼	08/13/18 10:41	08/16/18 06:17	1
2,3,4,7,8-PeCDF	0.0044	J	0.0046	0.00042	ug/Kg	☼	08/13/18 10:41	08/16/18 06:17	1
2,3,7,8-TCDD	0.0012		0.00092	0.00010	ug/Kg	☼	08/13/18 10:41	08/16/18 06:17	1
OCDD	4.8	E B	0.0092	0.0025	ug/Kg	☼	08/13/18 10:41	08/16/18 06:17	1
OCDF	0.24		0.0092	0.00026	ug/Kg	☼	08/13/18 10:41	08/16/18 06:17	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	47		23 - 140				08/13/18 10:41	08/16/18 06:17	1
13C-1,2,3,4,6,7,8-HpCDF	37		28 - 143				08/13/18 10:41	08/16/18 06:17	1
13C-1,2,3,4,7,8,9-HpCDF	44		26 - 138				08/13/18 10:41	08/16/18 06:17	1
13C-1,2,3,4,7,8-HxCDD	51		32 - 141				08/13/18 10:41	08/16/18 06:17	1
13C-1,2,3,4,7,8-HxCDF	42		26 - 152				08/13/18 10:41	08/16/18 06:17	1
13C-1,2,3,6,7,8-HxCDD	48		28 - 130				08/13/18 10:41	08/16/18 06:17	1
13C-1,2,3,6,7,8-HxCDF	41		26 - 123				08/13/18 10:41	08/16/18 06:17	1
13C-1,2,3,7,8,9-HxCDF	58		29 - 147				08/13/18 10:41	08/16/18 06:17	1
13C-1,2,3,7,8-PeCDD	73		25 - 181				08/13/18 10:41	08/16/18 06:17	1
13C-1,2,3,7,8-PeCDF	64		24 - 185				08/13/18 10:41	08/16/18 06:17	1
13C-2,3,4,6,7,8-HxCDF	45		28 - 136				08/13/18 10:41	08/16/18 06:17	1
13C-2,3,4,7,8-PeCDF	65		21 - 178				08/13/18 10:41	08/16/18 06:17	1
13C-2,3,7,8-TCDD	54		25 - 164				08/13/18 10:41	08/16/18 06:17	1
13C-OCDD	56		17 - 157				08/13/18 10:41	08/16/18 06:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	90		35 - 197				08/13/18 10:41	08/16/18 06:17	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	0.0084		0.00092	0.00089	ug/Kg	☼	08/13/18 10:41	08/20/18 12:57	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	56		24 - 169				08/13/18 10:41	08/20/18 12:57	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	90		35 - 197				08/13/18 10:41	08/20/18 12:57	1

TestAmerica Seattle

Client Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S023-3.9to5.3

Lab Sample ID: 580-79257-7

Date Collected: 07/31/18 10:50

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 70.2

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	0.060		0.0035	0.00079	ug/Kg	☼	08/13/18 10:41	08/16/18 07:05	1
1,2,3,4,6,7,8-HpCDF	0.025		0.0035	0.00041	ug/Kg	☼	08/13/18 10:41	08/16/18 07:05	1
1,2,3,4,7,8,9-HpCDF	0.0012	J	0.0035	0.00053	ug/Kg	☼	08/13/18 10:41	08/16/18 07:05	1
1,2,3,4,7,8-HxCDD	0.00055	J	0.0035	0.000078	ug/Kg	☼	08/13/18 10:41	08/16/18 07:05	1
1,2,3,4,7,8-HxCDF	0.0026	J	0.0035	0.00019	ug/Kg	☼	08/13/18 10:41	08/16/18 07:05	1
1,2,3,6,7,8-HxCDD	0.0020	J	0.0035	0.000074	ug/Kg	☼	08/13/18 10:41	08/16/18 07:05	1
1,2,3,6,7,8-HxCDF	0.0019	J	0.0035	0.00018	ug/Kg	☼	08/13/18 10:41	08/16/18 07:05	1
1,2,3,7,8,9-HxCDD	0.0012	J	0.0035	0.000071	ug/Kg	☼	08/13/18 10:41	08/16/18 07:05	1
1,2,3,7,8,9-HxCDF	ND		0.0035	0.00013	ug/Kg	☼	08/13/18 10:41	08/16/18 07:05	1
1,2,3,7,8-PeCDD	0.00026	J	0.0035	0.000069	ug/Kg	☼	08/13/18 10:41	08/16/18 07:05	1
1,2,3,7,8-PeCDF	0.0012	J	0.0035	0.000082	ug/Kg	☼	08/13/18 10:41	08/16/18 07:05	1
2,3,4,6,7,8-HxCDF	0.00039	J	0.0035	0.00013	ug/Kg	☼	08/13/18 10:41	08/16/18 07:05	1
2,3,4,7,8-PeCDF	0.00069	J	0.0035	0.000091	ug/Kg	☼	08/13/18 10:41	08/16/18 07:05	1
2,3,7,8-TCDD	0.00012	J q	0.00070	0.000045	ug/Kg	☼	08/13/18 10:41	08/16/18 07:05	1
OCDD	0.97	B	0.0070	0.00059	ug/Kg	☼	08/13/18 10:41	08/16/18 07:05	1
OCDF	0.065		0.0070	0.00011	ug/Kg	☼	08/13/18 10:41	08/16/18 07:05	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	49		23 - 140				08/13/18 10:41	08/16/18 07:05	1
13C-1,2,3,4,6,7,8-HpCDF	40		28 - 143				08/13/18 10:41	08/16/18 07:05	1
13C-1,2,3,4,7,8,9-HpCDF	51		26 - 138				08/13/18 10:41	08/16/18 07:05	1
13C-1,2,3,4,7,8-HxCDD	54		32 - 141				08/13/18 10:41	08/16/18 07:05	1
13C-1,2,3,4,7,8-HxCDF	46		26 - 152				08/13/18 10:41	08/16/18 07:05	1
13C-1,2,3,6,7,8-HxCDD	47		28 - 130				08/13/18 10:41	08/16/18 07:05	1
13C-1,2,3,6,7,8-HxCDF	42		26 - 123				08/13/18 10:41	08/16/18 07:05	1
13C-1,2,3,7,8,9-HxCDF	56		29 - 147				08/13/18 10:41	08/16/18 07:05	1
13C-1,2,3,7,8-PeCDD	64		25 - 181				08/13/18 10:41	08/16/18 07:05	1
13C-1,2,3,7,8-PeCDF	61		24 - 185				08/13/18 10:41	08/16/18 07:05	1
13C-2,3,4,6,7,8-HxCDF	48		28 - 136				08/13/18 10:41	08/16/18 07:05	1
13C-2,3,4,7,8-PeCDF	59		21 - 178				08/13/18 10:41	08/16/18 07:05	1
13C-2,3,7,8-TCDD	56		25 - 164				08/13/18 10:41	08/16/18 07:05	1
13C-OCDD	58		17 - 157				08/13/18 10:41	08/16/18 07:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	99		35 - 197				08/13/18 10:41	08/16/18 07:05	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	0.0010		0.00070	0.00013	ug/Kg	☼	08/13/18 10:41	08/20/18 13:35	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	50		24 - 169				08/13/18 10:41	08/20/18 13:35	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	88		35 - 197				08/13/18 10:41	08/20/18 13:35	1

TestAmerica Seattle

Client Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S023-5.3to7.2

Date Collected: 07/31/18 10:55

Date Received: 08/01/18 14:10

Lab Sample ID: 580-79257-8

Matrix: Solid

Percent Solids: 65.5

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-HpCDD	0.10		0.0038	0.0012	ug/Kg	☼	08/13/18 10:41	08/16/18 07:54	1
1,2,3,4,6,7,8-HpCDF	0.061		0.0038	0.00085	ug/Kg	☼	08/13/18 10:41	08/16/18 07:54	1
1,2,3,4,7,8,9-HpCDF	0.0029	J	0.0038	0.0013	ug/Kg	☼	08/13/18 10:41	08/16/18 07:54	1
1,2,3,4,7,8-HxCDD	0.00095	J	0.0038	0.00015	ug/Kg	☼	08/13/18 10:41	08/16/18 07:54	1
1,2,3,4,7,8-HxCDF	0.0094		0.0038	0.00044	ug/Kg	☼	08/13/18 10:41	08/16/18 07:54	1
1,2,3,6,7,8-HxCDD	0.0039		0.0038	0.00014	ug/Kg	☼	08/13/18 10:41	08/16/18 07:54	1
1,2,3,6,7,8-HxCDF	0.0055		0.0038	0.00039	ug/Kg	☼	08/13/18 10:41	08/16/18 07:54	1
1,2,3,7,8,9-HxCDD	0.0023	J	0.0038	0.00013	ug/Kg	☼	08/13/18 10:41	08/16/18 07:54	1
1,2,3,7,8,9-HxCDF	ND		0.0038	0.00029	ug/Kg	☼	08/13/18 10:41	08/16/18 07:54	1
1,2,3,7,8-PeCDD	0.00042	J	0.0038	0.00011	ug/Kg	☼	08/13/18 10:41	08/16/18 07:54	1
1,2,3,7,8-PeCDF	0.0054		0.0038	0.00023	ug/Kg	☼	08/13/18 10:41	08/16/18 07:54	1
2,3,4,6,7,8-HxCDF	0.0012	J	0.0038	0.00035	ug/Kg	☼	08/13/18 10:41	08/16/18 07:54	1
2,3,4,7,8-PeCDF	0.0024	J	0.0038	0.00021	ug/Kg	☼	08/13/18 10:41	08/16/18 07:54	1
2,3,7,8-TCDD	0.00023	J q	0.00076	0.000063	ug/Kg	☼	08/13/18 10:41	08/16/18 07:54	1
OCDD	1.9	B	0.0076	0.0011	ug/Kg	☼	08/13/18 10:41	08/16/18 07:54	1
OCDF	0.12		0.0076	0.00015	ug/Kg	☼	08/13/18 10:41	08/16/18 07:54	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	53		23 - 140				08/13/18 10:41	08/16/18 07:54	1
13C-1,2,3,4,6,7,8-HpCDF	42		28 - 143				08/13/18 10:41	08/16/18 07:54	1
13C-1,2,3,4,7,8,9-HpCDF	48		26 - 138				08/13/18 10:41	08/16/18 07:54	1
13C-1,2,3,4,7,8-HxCDD	55		32 - 141				08/13/18 10:41	08/16/18 07:54	1
13C-1,2,3,4,7,8-HxCDF	52		26 - 152				08/13/18 10:41	08/16/18 07:54	1
13C-1,2,3,6,7,8-HxCDD	48		28 - 130				08/13/18 10:41	08/16/18 07:54	1
13C-1,2,3,6,7,8-HxCDF	48		26 - 123				08/13/18 10:41	08/16/18 07:54	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147				08/13/18 10:41	08/16/18 07:54	1
13C-1,2,3,7,8-PeCDD	74		25 - 181				08/13/18 10:41	08/16/18 07:54	1
13C-1,2,3,7,8-PeCDF	56		24 - 185				08/13/18 10:41	08/16/18 07:54	1
13C-2,3,4,6,7,8-HxCDF	47		28 - 136				08/13/18 10:41	08/16/18 07:54	1
13C-2,3,4,7,8-PeCDF	66		21 - 178				08/13/18 10:41	08/16/18 07:54	1
13C-2,3,7,8-TCDD	58		25 - 164				08/13/18 10:41	08/16/18 07:54	1
13C-OCDD	63		17 - 157				08/13/18 10:41	08/16/18 07:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	98		35 - 197				08/13/18 10:41	08/16/18 07:54	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	0.0028		0.00076	0.00019	ug/Kg	☼	08/13/18 10:41	08/20/18 14:13	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	61		24 - 169				08/13/18 10:41	08/20/18 14:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	89		35 - 197				08/13/18 10:41	08/20/18 14:13	1

TestAmerica Seattle

Client Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S023-7.2to8.8

Date Collected: 07/31/18 11:00

Date Received: 08/01/18 14:10

Lab Sample ID: 580-79257-9

Matrix: Solid

Percent Solids: 78.7

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	0.018		0.0031	0.00039	ug/Kg	☼	08/13/18 10:41	08/16/18 08:42	1
1,2,3,4,6,7,8-HpCDF	0.011		0.0031	0.00027	ug/Kg	☼	08/13/18 10:41	08/16/18 08:42	1
1,2,3,4,7,8,9-HpCDF	0.00064	J	0.0031	0.00036	ug/Kg	☼	08/13/18 10:41	08/16/18 08:42	1
1,2,3,4,7,8-HxCDD	ND		0.0031	0.00024	ug/Kg	☼	08/13/18 10:41	08/16/18 08:42	1
1,2,3,4,7,8-HxCDF	0.00092	J	0.0031	0.00026	ug/Kg	☼	08/13/18 10:41	08/16/18 08:42	1
1,2,3,6,7,8-HxCDD	0.00078	J	0.0031	0.00024	ug/Kg	☼	08/13/18 10:41	08/16/18 08:42	1
1,2,3,6,7,8-HxCDF	0.00090	J	0.0031	0.00023	ug/Kg	☼	08/13/18 10:41	08/16/18 08:42	1
1,2,3,7,8,9-HxCDD	0.00035	J q	0.0031	0.00022	ug/Kg	☼	08/13/18 10:41	08/16/18 08:42	1
1,2,3,7,8,9-HxCDF	ND		0.0031	0.00017	ug/Kg	☼	08/13/18 10:41	08/16/18 08:42	1
1,2,3,7,8-PeCDD	ND		0.0031	0.000095	ug/Kg	☼	08/13/18 10:41	08/16/18 08:42	1
1,2,3,7,8-PeCDF	0.00030	J	0.0031	0.000076	ug/Kg	☼	08/13/18 10:41	08/16/18 08:42	1
2,3,4,6,7,8-HxCDF	0.00023	J	0.0031	0.00016	ug/Kg	☼	08/13/18 10:41	08/16/18 08:42	1
2,3,4,7,8-PeCDF	0.00023	J	0.0031	0.000086	ug/Kg	☼	08/13/18 10:41	08/16/18 08:42	1
2,3,7,8-TCDD	ND		0.00063	0.000095	ug/Kg	☼	08/13/18 10:41	08/16/18 08:42	1
2,3,7,8-TCDF	0.00023	J	0.00063	0.00011	ug/Kg	☼	08/13/18 10:41	08/16/18 08:42	1
OCDD	0.34	B	0.0063	0.00073	ug/Kg	☼	08/13/18 10:41	08/16/18 08:42	1
OCDF	0.020		0.0063	0.00050	ug/Kg	☼	08/13/18 10:41	08/16/18 08:42	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	60		23 - 140	08/13/18 10:41	08/16/18 08:42	1
13C-1,2,3,4,6,7,8-HpCDF	47		28 - 143	08/13/18 10:41	08/16/18 08:42	1
13C-1,2,3,4,7,8,9-HpCDF	56		26 - 138	08/13/18 10:41	08/16/18 08:42	1
13C-1,2,3,4,7,8-HxCDD	60		32 - 141	08/13/18 10:41	08/16/18 08:42	1
13C-1,2,3,4,7,8-HxCDF	48		26 - 152	08/13/18 10:41	08/16/18 08:42	1
13C-1,2,3,6,7,8-HxCDD	56		28 - 130	08/13/18 10:41	08/16/18 08:42	1
13C-1,2,3,6,7,8-HxCDF	45		26 - 123	08/13/18 10:41	08/16/18 08:42	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147	08/13/18 10:41	08/16/18 08:42	1
13C-1,2,3,7,8-PeCDD	83		25 - 181	08/13/18 10:41	08/16/18 08:42	1
13C-1,2,3,7,8-PeCDF	74		24 - 185	08/13/18 10:41	08/16/18 08:42	1
13C-2,3,4,6,7,8-HxCDF	54		28 - 136	08/13/18 10:41	08/16/18 08:42	1
13C-2,3,4,7,8-PeCDF	72		21 - 178	08/13/18 10:41	08/16/18 08:42	1
13C-2,3,7,8-TCDD	61		25 - 164	08/13/18 10:41	08/16/18 08:42	1
13C-2,3,7,8-TCDF	67		24 - 169	08/13/18 10:41	08/16/18 08:42	1
13C-OCDD	58		17 - 157	08/13/18 10:41	08/16/18 08:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	102		35 - 197	08/13/18 10:41	08/16/18 08:42	1

TestAmerica Seattle

Client Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S031-0to2

Lab Sample ID: 580-79257-10

Date Collected: 07/31/18 16:55

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 53.3

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	0.22		0.0046	0.0019	ug/Kg	☼	08/13/18 10:41	08/16/18 09:30	1
1,2,3,4,6,7,8-HpCDF	0.046	q	0.0046	0.0010	ug/Kg	☼	08/13/18 10:41	08/16/18 09:30	1
1,2,3,4,7,8,9-HpCDF	0.0025	J q	0.0046	0.0015	ug/Kg	☼	08/13/18 10:41	08/16/18 09:30	1
1,2,3,4,7,8-HxCDD	0.0022	J	0.0046	0.00035	ug/Kg	☼	08/13/18 10:41	08/16/18 09:30	1
1,2,3,4,7,8-HxCDF	0.0062		0.0046	0.00058	ug/Kg	☼	08/13/18 10:41	08/16/18 09:30	1
1,2,3,6,7,8-HxCDD	0.010		0.0046	0.00030	ug/Kg	☼	08/13/18 10:41	08/16/18 09:30	1
1,2,3,6,7,8-HxCDF	0.0032	J	0.0046	0.00046	ug/Kg	☼	08/13/18 10:41	08/16/18 09:30	1
1,2,3,7,8,9-HxCDD	0.0043	J	0.0046	0.00030	ug/Kg	☼	08/13/18 10:41	08/16/18 09:30	1
1,2,3,7,8,9-HxCDF	ND		0.0046	0.00038	ug/Kg	☼	08/13/18 10:41	08/16/18 09:30	1
1,2,3,7,8-PeCDD	ND		0.0046	0.00040	ug/Kg	☼	08/13/18 10:41	08/16/18 09:30	1
1,2,3,7,8-PeCDF	0.0028	J	0.0046	0.00030	ug/Kg	☼	08/13/18 10:41	08/16/18 09:30	1
2,3,4,6,7,8-HxCDF	0.0015	J	0.0046	0.00039	ug/Kg	☼	08/13/18 10:41	08/16/18 09:30	1
2,3,4,7,8-PeCDF	0.0025	J	0.0046	0.00031	ug/Kg	☼	08/13/18 10:41	08/16/18 09:30	1
2,3,7,8-TCDD	0.00055	J	0.00093	0.00014	ug/Kg	☼	08/13/18 10:41	08/16/18 09:30	1
OCDD	2.3	B	0.0093	0.0014	ug/Kg	☼	08/13/18 10:41	08/16/18 09:30	1
OCDF	0.14		0.0093	0.00048	ug/Kg	☼	08/13/18 10:41	08/16/18 09:30	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	41		23 - 140				08/13/18 10:41	08/16/18 09:30	1
13C-1,2,3,4,6,7,8-HpCDF	36		28 - 143				08/13/18 10:41	08/16/18 09:30	1
13C-1,2,3,4,7,8,9-HpCDF	39		26 - 138				08/13/18 10:41	08/16/18 09:30	1
13C-1,2,3,4,7,8-HxCDD	58		32 - 141				08/13/18 10:41	08/16/18 09:30	1
13C-1,2,3,4,7,8-HxCDF	55		26 - 152				08/13/18 10:41	08/16/18 09:30	1
13C-1,2,3,6,7,8-HxCDD	47		28 - 130				08/13/18 10:41	08/16/18 09:30	1
13C-1,2,3,6,7,8-HxCDF	53		26 - 123				08/13/18 10:41	08/16/18 09:30	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147				08/13/18 10:41	08/16/18 09:30	1
13C-1,2,3,7,8-PeCDD	69		25 - 181				08/13/18 10:41	08/16/18 09:30	1
13C-1,2,3,7,8-PeCDF	56		24 - 185				08/13/18 10:41	08/16/18 09:30	1
13C-2,3,4,6,7,8-HxCDF	51		28 - 136				08/13/18 10:41	08/16/18 09:30	1
13C-2,3,4,7,8-PeCDF	61		21 - 178				08/13/18 10:41	08/16/18 09:30	1
13C-2,3,7,8-TCDD	56		25 - 164				08/13/18 10:41	08/16/18 09:30	1
13C-OCDD	47		17 - 157				08/13/18 10:41	08/16/18 09:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197				08/13/18 10:41	08/16/18 09:30	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	0.0048		0.00093	0.00019	ug/Kg	☼	08/13/18 10:41	08/20/18 15:28	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	61		24 - 169				08/13/18 10:41	08/20/18 15:28	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	95		35 - 197				08/13/18 10:41	08/20/18 15:28	1

TestAmerica Seattle

Client Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S031-2to4

Lab Sample ID: 580-79257-11

Date Collected: 07/31/18 17:00

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 67.4

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	0.054		0.0037	0.00043	ug/Kg	☼	08/13/18 10:41	08/16/18 10:19	1
1,2,3,4,6,7,8-HpCDF	0.013		0.0037	0.00024	ug/Kg	☼	08/13/18 10:41	08/16/18 10:19	1
1,2,3,4,7,8,9-HpCDF	0.00081	J	0.0037	0.00031	ug/Kg	☼	08/13/18 10:41	08/16/18 10:19	1
1,2,3,4,7,8-HxCDD	0.00067	J	0.0037	0.00019	ug/Kg	☼	08/13/18 10:41	08/16/18 10:19	1
1,2,3,4,7,8-HxCDF	0.0020	J	0.0037	0.00027	ug/Kg	☼	08/13/18 10:41	08/16/18 10:19	1
1,2,3,6,7,8-HxCDD	0.0029	J	0.0037	0.00018	ug/Kg	☼	08/13/18 10:41	08/16/18 10:19	1
1,2,3,6,7,8-HxCDF	0.00086	J	0.0037	0.00024	ug/Kg	☼	08/13/18 10:41	08/16/18 10:19	1
1,2,3,7,8,9-HxCDD	0.0012	J q	0.0037	0.00017	ug/Kg	☼	08/13/18 10:41	08/16/18 10:19	1
1,2,3,7,8,9-HxCDF	ND		0.0037	0.00017	ug/Kg	☼	08/13/18 10:41	08/16/18 10:19	1
1,2,3,7,8-PeCDD	0.00038	J q	0.0037	0.00028	ug/Kg	☼	08/13/18 10:41	08/16/18 10:19	1
1,2,3,7,8-PeCDF	0.00078	J	0.0037	0.00018	ug/Kg	☼	08/13/18 10:41	08/16/18 10:19	1
2,3,4,6,7,8-HxCDF	0.00043	J	0.0037	0.00017	ug/Kg	☼	08/13/18 10:41	08/16/18 10:19	1
2,3,4,7,8-PeCDF	0.00071	J	0.0037	0.00020	ug/Kg	☼	08/13/18 10:41	08/16/18 10:19	1
2,3,7,8-TCDD	0.00083		0.00073	0.000066	ug/Kg	☼	08/13/18 10:41	08/16/18 10:19	1
OCDD	0.60	B	0.0073	0.00048	ug/Kg	☼	08/13/18 10:41	08/16/18 10:19	1
OCDF	0.028		0.0073	0.00022	ug/Kg	☼	08/13/18 10:41	08/16/18 10:19	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	52		23 - 140				08/13/18 10:41	08/16/18 10:19	1
13C-1,2,3,4,6,7,8-HpCDF	42		28 - 143				08/13/18 10:41	08/16/18 10:19	1
13C-1,2,3,4,7,8,9-HpCDF	53		26 - 138				08/13/18 10:41	08/16/18 10:19	1
13C-1,2,3,4,7,8-HxCDD	61		32 - 141				08/13/18 10:41	08/16/18 10:19	1
13C-1,2,3,4,7,8-HxCDF	51		26 - 152				08/13/18 10:41	08/16/18 10:19	1
13C-1,2,3,6,7,8-HxCDD	50		28 - 130				08/13/18 10:41	08/16/18 10:19	1
13C-1,2,3,6,7,8-HxCDF	45		26 - 123				08/13/18 10:41	08/16/18 10:19	1
13C-1,2,3,7,8,9-HxCDF	58		29 - 147				08/13/18 10:41	08/16/18 10:19	1
13C-1,2,3,7,8-PeCDD	61		25 - 181				08/13/18 10:41	08/16/18 10:19	1
13C-1,2,3,7,8-PeCDF	53		24 - 185				08/13/18 10:41	08/16/18 10:19	1
13C-2,3,4,6,7,8-HxCDF	55		28 - 136				08/13/18 10:41	08/16/18 10:19	1
13C-2,3,4,7,8-PeCDF	53		21 - 178				08/13/18 10:41	08/16/18 10:19	1
13C-2,3,7,8-TCDD	57		25 - 164				08/13/18 10:41	08/16/18 10:19	1
13C-OCDD	52		17 - 157				08/13/18 10:41	08/16/18 10:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	95		35 - 197				08/13/18 10:41	08/16/18 10:19	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	0.00093		0.00073	0.00012	ug/Kg	☼	08/13/18 10:41	08/20/18 16:06	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	62		24 - 169				08/13/18 10:41	08/20/18 16:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	93		35 - 197				08/13/18 10:41	08/20/18 16:06	1

TestAmerica Seattle

Client Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S031-4to5.5

Lab Sample ID: 580-79257-12

Date Collected: 07/31/18 17:05

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 72.5

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-HpCDD	0.0038		0.0034	0.000095	ug/Kg	☼	08/13/18 10:41	08/16/18 17:40	1
1,2,3,4,6,7,8-HpCDF	0.0012	J	0.0034	0.000054	ug/Kg	☼	08/13/18 10:41	08/16/18 17:40	1
1,2,3,4,7,8,9-HpCDF	0.00014	J	0.0034	0.000066	ug/Kg	☼	08/13/18 10:41	08/16/18 17:40	1
1,2,3,4,7,8-HxCDD	0.00014	J	0.0034	0.000056	ug/Kg	☼	08/13/18 10:41	08/16/18 17:40	1
1,2,3,4,7,8-HxCDF	0.00032	J	0.0034	0.000063	ug/Kg	☼	08/13/18 10:41	08/16/18 17:40	1
1,2,3,6,7,8-HxCDD	0.00019	J q	0.0034	0.000051	ug/Kg	☼	08/13/18 10:41	08/16/18 17:40	1
1,2,3,6,7,8-HxCDF	0.00015	J	0.0034	0.000060	ug/Kg	☼	08/13/18 10:41	08/16/18 17:40	1
1,2,3,7,8,9-HxCDD	0.00027	J	0.0034	0.000050	ug/Kg	☼	08/13/18 10:41	08/16/18 17:40	1
1,2,3,7,8,9-HxCDF	ND		0.0034	0.000041	ug/Kg	☼	08/13/18 10:41	08/16/18 17:40	1
1,2,3,7,8-PeCDD	ND		0.0034	0.000053	ug/Kg	☼	08/13/18 10:41	08/16/18 17:40	1
1,2,3,7,8-PeCDF	ND		0.0034	0.000039	ug/Kg	☼	08/13/18 10:41	08/16/18 17:40	1
2,3,4,6,7,8-HxCDF	0.000098	J	0.0034	0.000046	ug/Kg	☼	08/13/18 10:41	08/16/18 17:40	1
2,3,4,7,8-PeCDF	ND		0.0034	0.000041	ug/Kg	☼	08/13/18 10:41	08/16/18 17:40	1
2,3,7,8-TCDD	ND		0.00067	0.000031	ug/Kg	☼	08/13/18 10:41	08/16/18 17:40	1
2,3,7,8-TCDF	0.00011	J	0.00067	0.000022	ug/Kg	☼	08/13/18 10:41	08/16/18 17:40	1
OCDD	0.043	B	0.0067	0.000076	ug/Kg	☼	08/13/18 10:41	08/16/18 17:40	1
OCDF	0.0030	J	0.0067	0.000097	ug/Kg	☼	08/13/18 10:41	08/16/18 17:40	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	56		23 - 140	08/13/18 10:41	08/16/18 17:40	1
13C-1,2,3,4,6,7,8-HpCDF	49		28 - 143	08/13/18 10:41	08/16/18 17:40	1
13C-1,2,3,4,7,8,9-HpCDF	64		26 - 138	08/13/18 10:41	08/16/18 17:40	1
13C-1,2,3,4,7,8-HxCDD	51		32 - 141	08/13/18 10:41	08/16/18 17:40	1
13C-1,2,3,4,7,8-HxCDF	43		26 - 152	08/13/18 10:41	08/16/18 17:40	1
13C-1,2,3,6,7,8-HxCDD	49		28 - 130	08/13/18 10:41	08/16/18 17:40	1
13C-1,2,3,6,7,8-HxCDF	38		26 - 123	08/13/18 10:41	08/16/18 17:40	1
13C-1,2,3,7,8,9-HxCDF	58		29 - 147	08/13/18 10:41	08/16/18 17:40	1
13C-1,2,3,7,8-PeCDD	75		25 - 181	08/13/18 10:41	08/16/18 17:40	1
13C-1,2,3,7,8-PeCDF	66		24 - 185	08/13/18 10:41	08/16/18 17:40	1
13C-2,3,4,6,7,8-HxCDF	45		28 - 136	08/13/18 10:41	08/16/18 17:40	1
13C-2,3,4,7,8-PeCDF	68		21 - 178	08/13/18 10:41	08/16/18 17:40	1
13C-2,3,7,8-TCDD	67		25 - 164	08/13/18 10:41	08/16/18 17:40	1
13C-2,3,7,8-TCDF	64		24 - 169	08/13/18 10:41	08/16/18 17:40	1
13C-OCDD	70		17 - 157	08/13/18 10:41	08/16/18 17:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	112		35 - 197	08/13/18 10:41	08/16/18 17:40	1

TestAmerica Seattle

Client Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S031-5.5to7

Lab Sample ID: 580-79257-13

Date Collected: 07/31/18 17:10

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 68.3

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	0.0016	J B	0.0036	0.00018	ug/Kg	☼	08/13/18 11:51	08/16/18 18:28	1
1,2,3,4,6,7,8-HpCDF	0.00053	J q B	0.0036	0.00011	ug/Kg	☼	08/13/18 11:51	08/16/18 18:28	1
1,2,3,4,7,8,9-HpCDF	ND		0.0036	0.00010	ug/Kg	☼	08/13/18 11:51	08/16/18 18:28	1
1,2,3,4,7,8-HxCDD	ND		0.0036	0.00011	ug/Kg	☼	08/13/18 11:51	08/16/18 18:28	1
1,2,3,4,7,8-HxCDF	ND		0.0036	0.00013	ug/Kg	☼	08/13/18 11:51	08/16/18 18:28	1
1,2,3,6,7,8-HxCDD	ND		0.0036	0.00011	ug/Kg	☼	08/13/18 11:51	08/16/18 18:28	1
1,2,3,6,7,8-HxCDF	ND		0.0036	0.00012	ug/Kg	☼	08/13/18 11:51	08/16/18 18:28	1
1,2,3,7,8,9-HxCDD	ND		0.0036	0.00010	ug/Kg	☼	08/13/18 11:51	08/16/18 18:28	1
1,2,3,7,8,9-HxCDF	ND		0.0036	0.000098	ug/Kg	☼	08/13/18 11:51	08/16/18 18:28	1
1,2,3,7,8-PeCDD	ND		0.0036	0.00014	ug/Kg	☼	08/13/18 11:51	08/16/18 18:28	1
1,2,3,7,8-PeCDF	ND		0.0036	0.000086	ug/Kg	☼	08/13/18 11:51	08/16/18 18:28	1
2,3,4,6,7,8-HxCDF	ND		0.0036	0.000087	ug/Kg	☼	08/13/18 11:51	08/16/18 18:28	1
2,3,4,7,8-PeCDF	ND		0.0036	0.000091	ug/Kg	☼	08/13/18 11:51	08/16/18 18:28	1
2,3,7,8-TCDD	ND		0.00072	0.00013	ug/Kg	☼	08/13/18 11:51	08/16/18 18:28	1
2,3,7,8-TCDF	ND		0.00072	0.00011	ug/Kg	☼	08/13/18 11:51	08/16/18 18:28	1
OCDD	0.018	B	0.0072	0.00017	ug/Kg	☼	08/13/18 11:51	08/16/18 18:28	1
OCDF	0.0010	J B	0.0072	0.00023	ug/Kg	☼	08/13/18 11:51	08/16/18 18:28	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	67		23 - 140	08/13/18 11:51	08/16/18 18:28	1
13C-1,2,3,4,6,7,8-HpCDF	44		28 - 143	08/13/18 11:51	08/16/18 18:28	1
13C-1,2,3,4,7,8,9-HpCDF	72		26 - 138	08/13/18 11:51	08/16/18 18:28	1
13C-1,2,3,4,7,8-HxCDD	59		32 - 141	08/13/18 11:51	08/16/18 18:28	1
13C-1,2,3,4,7,8-HxCDF	56		26 - 152	08/13/18 11:51	08/16/18 18:28	1
13C-1,2,3,6,7,8-HxCDD	55		28 - 130	08/13/18 11:51	08/16/18 18:28	1
13C-1,2,3,6,7,8-HxCDF	52		26 - 123	08/13/18 11:51	08/16/18 18:28	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147	08/13/18 11:51	08/16/18 18:28	1
13C-1,2,3,7,8-PeCDD	71		25 - 181	08/13/18 11:51	08/16/18 18:28	1
13C-1,2,3,7,8-PeCDF	61		24 - 185	08/13/18 11:51	08/16/18 18:28	1
13C-2,3,4,6,7,8-HxCDF	61		28 - 136	08/13/18 11:51	08/16/18 18:28	1
13C-2,3,4,7,8-PeCDF	61		21 - 178	08/13/18 11:51	08/16/18 18:28	1
13C-2,3,7,8-TCDD	56		25 - 164	08/13/18 11:51	08/16/18 18:28	1
13C-2,3,7,8-TCDF	57		24 - 169	08/13/18 11:51	08/16/18 18:28	1
13C-OCDD	64		17 - 157	08/13/18 11:51	08/16/18 18:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	86		35 - 197	08/13/18 11:51	08/16/18 18:28	1

TestAmerica Seattle

Client Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S031-7to9.2

Lab Sample ID: 580-79257-14

Date Collected: 07/31/18 17:15

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 68.6

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	0.0014	J B	0.0036	0.000086	ug/Kg	✱	08/13/18 11:51	08/16/18 19:30	1
1,2,3,4,6,7,8-HpCDF	0.00018	J q B	0.0036	0.000043	ug/Kg	✱	08/13/18 11:51	08/16/18 19:30	1
1,2,3,4,7,8,9-HpCDF	ND		0.0036	0.000049	ug/Kg	✱	08/13/18 11:51	08/16/18 19:30	1
1,2,3,4,7,8-HxCDD	ND		0.0036	0.000063	ug/Kg	✱	08/13/18 11:51	08/16/18 19:30	1
1,2,3,4,7,8-HxCDF	ND		0.0036	0.00012	ug/Kg	✱	08/13/18 11:51	08/16/18 19:30	1
1,2,3,6,7,8-HxCDD	ND		0.0036	0.000057	ug/Kg	✱	08/13/18 11:51	08/16/18 19:30	1
1,2,3,6,7,8-HxCDF	ND		0.0036	0.00011	ug/Kg	✱	08/13/18 11:51	08/16/18 19:30	1
1,2,3,7,8,9-HxCDD	0.00013	J q	0.0036	0.000055	ug/Kg	✱	08/13/18 11:51	08/16/18 19:30	1
1,2,3,7,8,9-HxCDF	ND		0.0036	0.000078	ug/Kg	✱	08/13/18 11:51	08/16/18 19:30	1
1,2,3,7,8-PeCDD	ND		0.0036	0.000077	ug/Kg	✱	08/13/18 11:51	08/16/18 19:30	1
1,2,3,7,8-PeCDF	ND		0.0036	0.000043	ug/Kg	✱	08/13/18 11:51	08/16/18 19:30	1
2,3,4,6,7,8-HxCDF	ND		0.0036	0.000078	ug/Kg	✱	08/13/18 11:51	08/16/18 19:30	1
2,3,4,7,8-PeCDF	ND		0.0036	0.000045	ug/Kg	✱	08/13/18 11:51	08/16/18 19:30	1
2,3,7,8-TCDD	ND		0.00071	0.000071	ug/Kg	✱	08/13/18 11:51	08/16/18 19:30	1
2,3,7,8-TCDF	ND		0.00071	0.000051	ug/Kg	✱	08/13/18 11:51	08/16/18 19:30	1
OCDD	0.017	B	0.0071	0.00015	ug/Kg	✱	08/13/18 11:51	08/16/18 19:30	1
OCDF	0.0011	J B	0.0071	0.00011	ug/Kg	✱	08/13/18 11:51	08/16/18 19:30	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	55		23 - 140	08/13/18 11:51	08/16/18 19:30	1
13C-1,2,3,4,6,7,8-HpCDF	44		28 - 143	08/13/18 11:51	08/16/18 19:30	1
13C-1,2,3,4,7,8,9-HpCDF	61		26 - 138	08/13/18 11:51	08/16/18 19:30	1
13C-1,2,3,4,7,8-HxCDD	50		32 - 141	08/13/18 11:51	08/16/18 19:30	1
13C-1,2,3,4,7,8-HxCDF	43		26 - 152	08/13/18 11:51	08/16/18 19:30	1
13C-1,2,3,6,7,8-HxCDD	52		28 - 130	08/13/18 11:51	08/16/18 19:30	1
13C-1,2,3,6,7,8-HxCDF	42		26 - 123	08/13/18 11:51	08/16/18 19:30	1
13C-1,2,3,7,8,9-HxCDF	57		29 - 147	08/13/18 11:51	08/16/18 19:30	1
13C-1,2,3,7,8-PeCDD	66		25 - 181	08/13/18 11:51	08/16/18 19:30	1
13C-1,2,3,7,8-PeCDF	55		24 - 185	08/13/18 11:51	08/16/18 19:30	1
13C-2,3,4,6,7,8-HxCDF	48		28 - 136	08/13/18 11:51	08/16/18 19:30	1
13C-2,3,4,7,8-PeCDF	57		21 - 178	08/13/18 11:51	08/16/18 19:30	1
13C-2,3,7,8-TCDD	54		25 - 164	08/13/18 11:51	08/16/18 19:30	1
13C-2,3,7,8-TCDF	55		24 - 169	08/13/18 11:51	08/16/18 19:30	1
13C-OCDD	67		17 - 157	08/13/18 11:51	08/16/18 19:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	87		35 - 197	08/13/18 11:51	08/16/18 19:30	1

TestAmerica Seattle

Client Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S038-0to2

Lab Sample ID: 580-79257-15

Date Collected: 07/31/18 12:45

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 55.3

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	0.032	B	0.0044	0.00051	ug/Kg	☼	08/13/18 11:51	08/16/18 20:19	1
1,2,3,4,6,7,8-HpCDF	0.028	B	0.0044	0.00032	ug/Kg	☼	08/13/18 11:51	08/16/18 20:19	1
1,2,3,4,7,8,9-HpCDF	ND		0.0044	0.00051	ug/Kg	☼	08/13/18 11:51	08/16/18 20:19	1
1,2,3,4,7,8-HxCDD	0.00027	J B	0.0044	0.00015	ug/Kg	☼	08/13/18 11:51	08/16/18 20:19	1
1,2,3,4,7,8-HxCDF	0.0012	J	0.0044	0.00021	ug/Kg	☼	08/13/18 11:51	08/16/18 20:19	1
1,2,3,6,7,8-HxCDD	0.0013	J	0.0044	0.00014	ug/Kg	☼	08/13/18 11:51	08/16/18 20:19	1
1,2,3,6,7,8-HxCDF	0.0015	J	0.0044	0.00021	ug/Kg	☼	08/13/18 11:51	08/16/18 20:19	1
1,2,3,7,8,9-HxCDD	0.00066	J	0.0044	0.00013	ug/Kg	☼	08/13/18 11:51	08/16/18 20:19	1
1,2,3,7,8,9-HxCDF	ND		0.0044	0.00015	ug/Kg	☼	08/13/18 11:51	08/16/18 20:19	1
1,2,3,7,8-PeCDD	ND		0.0044	0.00014	ug/Kg	☼	08/13/18 11:51	08/16/18 20:19	1
1,2,3,7,8-PeCDF	ND		0.0044	0.00021	ug/Kg	☼	08/13/18 11:51	08/16/18 20:19	1
2,3,4,6,7,8-HxCDF	0.00064	J	0.0044	0.00016	ug/Kg	☼	08/13/18 11:51	08/16/18 20:19	1
2,3,4,7,8-PeCDF	ND		0.0044	0.00021	ug/Kg	☼	08/13/18 11:51	08/16/18 20:19	1
2,3,7,8-TCDD	ND		0.00089	0.00020	ug/Kg	☼	08/13/18 11:51	08/16/18 20:19	1
2,3,7,8-TCDF	0.00052	J q	0.00089	0.00035	ug/Kg	☼	08/13/18 11:51	08/16/18 20:19	1
OCDD	0.43	B	0.0089	0.00068	ug/Kg	☼	08/13/18 11:51	08/16/18 20:19	1
OCDF	0.034	B	0.0089	0.00038	ug/Kg	☼	08/13/18 11:51	08/16/18 20:19	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	43		23 - 140	08/13/18 11:51	08/16/18 20:19	1
13C-1,2,3,4,6,7,8-HpCDF	40		28 - 143	08/13/18 11:51	08/16/18 20:19	1
13C-1,2,3,4,7,8,9-HpCDF	45		26 - 138	08/13/18 11:51	08/16/18 20:19	1
13C-1,2,3,4,7,8-HxCDD	65		32 - 141	08/13/18 11:51	08/16/18 20:19	1
13C-1,2,3,4,7,8-HxCDF	56		26 - 152	08/13/18 11:51	08/16/18 20:19	1
13C-1,2,3,6,7,8-HxCDD	48		28 - 130	08/13/18 11:51	08/16/18 20:19	1
13C-1,2,3,6,7,8-HxCDF	47		26 - 123	08/13/18 11:51	08/16/18 20:19	1
13C-1,2,3,7,8,9-HxCDF	63		29 - 147	08/13/18 11:51	08/16/18 20:19	1
13C-1,2,3,7,8-PeCDD	105		25 - 181	08/13/18 11:51	08/16/18 20:19	1
13C-1,2,3,7,8-PeCDF	72		24 - 185	08/13/18 11:51	08/16/18 20:19	1
13C-2,3,4,6,7,8-HxCDF	53		28 - 136	08/13/18 11:51	08/16/18 20:19	1
13C-2,3,4,7,8-PeCDF	85		21 - 178	08/13/18 11:51	08/16/18 20:19	1
13C-2,3,7,8-TCDD	63		25 - 164	08/13/18 11:51	08/16/18 20:19	1
13C-2,3,7,8-TCDF	66		24 - 169	08/13/18 11:51	08/16/18 20:19	1
13C-OCDD	40		17 - 157	08/13/18 11:51	08/16/18 20:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	96		35 - 197	08/13/18 11:51	08/16/18 20:19	1

TestAmerica Seattle

Client Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S038-2to3.4

Lab Sample ID: 580-79257-16

Date Collected: 07/31/18 12:50

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 57.9

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	0.0019	J B	0.0043	0.00013	ug/Kg	✱	08/13/18 11:51	08/16/18 21:07	1
1,2,3,4,6,7,8-HpCDF	0.0011	J B	0.0043	0.00010	ug/Kg	✱	08/13/18 11:51	08/16/18 21:07	1
1,2,3,4,7,8,9-HpCDF	ND		0.0043	0.00015	ug/Kg	✱	08/13/18 11:51	08/16/18 21:07	1
1,2,3,4,7,8-HxCDD	0.00014	J B	0.0043	0.000093	ug/Kg	✱	08/13/18 11:51	08/16/18 21:07	1
1,2,3,4,7,8-HxCDF	0.00024	J	0.0043	0.00012	ug/Kg	✱	08/13/18 11:51	08/16/18 21:07	1
1,2,3,6,7,8-HxCDD	0.00012	J q	0.0043	0.000084	ug/Kg	✱	08/13/18 11:51	08/16/18 21:07	1
1,2,3,6,7,8-HxCDF	ND		0.0043	0.000095	ug/Kg	✱	08/13/18 11:51	08/16/18 21:07	1
1,2,3,7,8,9-HxCDD	0.00016	J q	0.0043	0.000082	ug/Kg	✱	08/13/18 11:51	08/16/18 21:07	1
1,2,3,7,8,9-HxCDF	ND		0.0043	0.000072	ug/Kg	✱	08/13/18 11:51	08/16/18 21:07	1
1,2,3,7,8-PeCDD	ND		0.0043	0.00014	ug/Kg	✱	08/13/18 11:51	08/16/18 21:07	1
1,2,3,7,8-PeCDF	ND		0.0043	0.000088	ug/Kg	✱	08/13/18 11:51	08/16/18 21:07	1
2,3,4,6,7,8-HxCDF	ND		0.0043	0.000069	ug/Kg	✱	08/13/18 11:51	08/16/18 21:07	1
2,3,4,7,8-PeCDF	ND		0.0043	0.000091	ug/Kg	✱	08/13/18 11:51	08/16/18 21:07	1
2,3,7,8-TCDD	ND		0.00085	0.000089	ug/Kg	✱	08/13/18 11:51	08/16/18 21:07	1
2,3,7,8-TCDF	0.00027	J	0.00085	0.000073	ug/Kg	✱	08/13/18 11:51	08/16/18 21:07	1
OCDD	0.020	B	0.0085	0.00028	ug/Kg	✱	08/13/18 11:51	08/16/18 21:07	1
OCDF	0.0028	J B	0.0085	0.00024	ug/Kg	✱	08/13/18 11:51	08/16/18 21:07	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	55		23 - 140	08/13/18 11:51	08/16/18 21:07	1
13C-1,2,3,4,6,7,8-HpCDF	42		28 - 143	08/13/18 11:51	08/16/18 21:07	1
13C-1,2,3,4,7,8,9-HpCDF	50		26 - 138	08/13/18 11:51	08/16/18 21:07	1
13C-1,2,3,4,7,8-HxCDD	66		32 - 141	08/13/18 11:51	08/16/18 21:07	1
13C-1,2,3,4,7,8-HxCDF	53		26 - 152	08/13/18 11:51	08/16/18 21:07	1
13C-1,2,3,6,7,8-HxCDD	58		28 - 130	08/13/18 11:51	08/16/18 21:07	1
13C-1,2,3,6,7,8-HxCDF	51		26 - 123	08/13/18 11:51	08/16/18 21:07	1
13C-1,2,3,7,8,9-HxCDF	64		29 - 147	08/13/18 11:51	08/16/18 21:07	1
13C-1,2,3,7,8-PeCDD	69		25 - 181	08/13/18 11:51	08/16/18 21:07	1
13C-1,2,3,7,8-PeCDF	65		24 - 185	08/13/18 11:51	08/16/18 21:07	1
13C-2,3,4,6,7,8-HxCDF	57		28 - 136	08/13/18 11:51	08/16/18 21:07	1
13C-2,3,4,7,8-PeCDF	65		21 - 178	08/13/18 11:51	08/16/18 21:07	1
13C-2,3,7,8-TCDD	57		25 - 164	08/13/18 11:51	08/16/18 21:07	1
13C-2,3,7,8-TCDF	62		24 - 169	08/13/18 11:51	08/16/18 21:07	1
13C-OCDD	51		17 - 157	08/13/18 11:51	08/16/18 21:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	89		35 - 197	08/13/18 11:51	08/16/18 21:07	1

TestAmerica Seattle

Client Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S038-3.4to5.4

Lab Sample ID: 580-79257-17

Date Collected: 07/31/18 12:55

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 59.8

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	0.0013	J B	0.0041	0.000079	ug/Kg	☼	08/13/18 11:51	08/16/18 21:55	1
1,2,3,4,6,7,8-HpCDF	0.00031	J q B	0.0041	0.000053	ug/Kg	☼	08/13/18 11:51	08/16/18 21:55	1
1,2,3,4,7,8,9-HpCDF	ND		0.0041	0.000089	ug/Kg	☼	08/13/18 11:51	08/16/18 21:55	1
1,2,3,4,7,8-HxCDD	0.00015	J B	0.0041	0.000048	ug/Kg	☼	08/13/18 11:51	08/16/18 21:55	1
1,2,3,4,7,8-HxCDF	ND		0.0041	0.000069	ug/Kg	☼	08/13/18 11:51	08/16/18 21:55	1
1,2,3,6,7,8-HxCDD	0.000081	J q	0.0041	0.000044	ug/Kg	☼	08/13/18 11:51	08/16/18 21:55	1
1,2,3,6,7,8-HxCDF	ND		0.0041	0.000058	ug/Kg	☼	08/13/18 11:51	08/16/18 21:55	1
1,2,3,7,8,9-HxCDD	0.00018	J	0.0041	0.000043	ug/Kg	☼	08/13/18 11:51	08/16/18 21:55	1
1,2,3,7,8,9-HxCDF	ND		0.0041	0.000045	ug/Kg	☼	08/13/18 11:51	08/16/18 21:55	1
1,2,3,7,8-PeCDD	ND		0.0041	0.000079	ug/Kg	☼	08/13/18 11:51	08/16/18 21:55	1
1,2,3,7,8-PeCDF	0.00010	J	0.0041	0.000046	ug/Kg	☼	08/13/18 11:51	08/16/18 21:55	1
2,3,4,6,7,8-HxCDF	ND		0.0041	0.000048	ug/Kg	☼	08/13/18 11:51	08/16/18 21:55	1
2,3,4,7,8-PeCDF	ND		0.0041	0.000052	ug/Kg	☼	08/13/18 11:51	08/16/18 21:55	1
2,3,7,8-TCDD	ND		0.00082	0.000086	ug/Kg	☼	08/13/18 11:51	08/16/18 21:55	1
2,3,7,8-TCDF	0.00022	J	0.00082	0.000066	ug/Kg	☼	08/13/18 11:51	08/16/18 21:55	1
OCDD	0.011	B	0.0082	0.00020	ug/Kg	☼	08/13/18 11:51	08/16/18 21:55	1
OCDF	0.00034	J q B	0.0082	0.00017	ug/Kg	☼	08/13/18 11:51	08/16/18 21:55	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	56		23 - 140	08/13/18 11:51	08/16/18 21:55	1
13C-1,2,3,4,6,7,8-HpCDF	43		28 - 143	08/13/18 11:51	08/16/18 21:55	1
13C-1,2,3,4,7,8,9-HpCDF	46		26 - 138	08/13/18 11:51	08/16/18 21:55	1
13C-1,2,3,4,7,8-HxCDD	66		32 - 141	08/13/18 11:51	08/16/18 21:55	1
13C-1,2,3,4,7,8-HxCDF	59		26 - 152	08/13/18 11:51	08/16/18 21:55	1
13C-1,2,3,6,7,8-HxCDD	58		28 - 130	08/13/18 11:51	08/16/18 21:55	1
13C-1,2,3,6,7,8-HxCDF	56		26 - 123	08/13/18 11:51	08/16/18 21:55	1
13C-1,2,3,7,8,9-HxCDF	69		29 - 147	08/13/18 11:51	08/16/18 21:55	1
13C-1,2,3,7,8-PeCDD	101		25 - 181	08/13/18 11:51	08/16/18 21:55	1
13C-1,2,3,7,8-PeCDF	86		24 - 185	08/13/18 11:51	08/16/18 21:55	1
13C-2,3,4,6,7,8-HxCDF	56		28 - 136	08/13/18 11:51	08/16/18 21:55	1
13C-2,3,4,7,8-PeCDF	84		21 - 178	08/13/18 11:51	08/16/18 21:55	1
13C-2,3,7,8-TCDD	63		25 - 164	08/13/18 11:51	08/16/18 21:55	1
13C-2,3,7,8-TCDF	65		24 - 169	08/13/18 11:51	08/16/18 21:55	1
13C-OCDD	65		17 - 157	08/13/18 11:51	08/16/18 21:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	96		35 - 197	08/13/18 11:51	08/16/18 21:55	1

TestAmerica Seattle

Client Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S038-5.4to7.2

Lab Sample ID: 580-79257-18

Date Collected: 07/31/18 13:00

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 56.9

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	0.0021	J B	0.0044	0.00018	ug/Kg	☼	08/13/18 11:51	08/16/18 22:44	1
1,2,3,4,6,7,8-HpCDF	0.00031	J q B	0.0044	0.00010	ug/Kg	☼	08/13/18 11:51	08/16/18 22:44	1
1,2,3,4,7,8,9-HpCDF	ND		0.0044	0.00020	ug/Kg	☼	08/13/18 11:51	08/16/18 22:44	1
1,2,3,4,7,8-HxCDD	0.00022	J B	0.0044	0.000067	ug/Kg	☼	08/13/18 11:51	08/16/18 22:44	1
1,2,3,4,7,8-HxCDF	0.00055	J	0.0044	0.00012	ug/Kg	☼	08/13/18 11:51	08/16/18 22:44	1
1,2,3,6,7,8-HxCDD	0.00018	J	0.0044	0.000069	ug/Kg	☼	08/13/18 11:51	08/16/18 22:44	1
1,2,3,6,7,8-HxCDF	0.00037	J	0.0044	0.00011	ug/Kg	☼	08/13/18 11:51	08/16/18 22:44	1
1,2,3,7,8,9-HxCDD	0.00042	J	0.0044	0.000063	ug/Kg	☼	08/13/18 11:51	08/16/18 22:44	1
1,2,3,7,8,9-HxCDF	ND		0.0044	0.000076	ug/Kg	☼	08/13/18 11:51	08/16/18 22:44	1
1,2,3,7,8-PeCDD	ND		0.0044	0.00013	ug/Kg	☼	08/13/18 11:51	08/16/18 22:44	1
1,2,3,7,8-PeCDF	0.00025	J q	0.0044	0.000069	ug/Kg	☼	08/13/18 11:51	08/16/18 22:44	1
2,3,4,6,7,8-HxCDF	0.00017	J	0.0044	0.000074	ug/Kg	☼	08/13/18 11:51	08/16/18 22:44	1
2,3,4,7,8-PeCDF	0.00035	J	0.0044	0.000082	ug/Kg	☼	08/13/18 11:51	08/16/18 22:44	1
2,3,7,8-TCDD	ND		0.00087	0.000083	ug/Kg	☼	08/13/18 11:51	08/16/18 22:44	1
2,3,7,8-TCDF	0.00078	J	0.00087	0.000063	ug/Kg	☼	08/13/18 11:51	08/16/18 22:44	1
OCDD	ND		0.0087	0.00017	ug/Kg	☼	08/13/18 11:51	08/16/18 22:44	1
OCDF	ND		0.0087	0.00017	ug/Kg	☼	08/13/18 11:51	08/16/18 22:44	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	50		23 - 140	08/13/18 11:51	08/16/18 22:44	1
13C-1,2,3,4,6,7,8-HpCDF	42		28 - 143	08/13/18 11:51	08/16/18 22:44	1
13C-1,2,3,4,7,8,9-HpCDF	54		26 - 138	08/13/18 11:51	08/16/18 22:44	1
13C-1,2,3,4,7,8-HxCDD	69		32 - 141	08/13/18 11:51	08/16/18 22:44	1
13C-1,2,3,4,7,8-HxCDF	59		26 - 152	08/13/18 11:51	08/16/18 22:44	1
13C-1,2,3,6,7,8-HxCDD	55		28 - 130	08/13/18 11:51	08/16/18 22:44	1
13C-1,2,3,6,7,8-HxCDF	46		26 - 123	08/13/18 11:51	08/16/18 22:44	1
13C-1,2,3,7,8,9-HxCDF	67		29 - 147	08/13/18 11:51	08/16/18 22:44	1
13C-1,2,3,7,8-PeCDD	88		25 - 181	08/13/18 11:51	08/16/18 22:44	1
13C-1,2,3,7,8-PeCDF	75		24 - 185	08/13/18 11:51	08/16/18 22:44	1
13C-2,3,4,6,7,8-HxCDF	58		28 - 136	08/13/18 11:51	08/16/18 22:44	1
13C-2,3,4,7,8-PeCDF	75		21 - 178	08/13/18 11:51	08/16/18 22:44	1
13C-2,3,7,8-TCDD	62		25 - 164	08/13/18 11:51	08/16/18 22:44	1
13C-2,3,7,8-TCDF	65		24 - 169	08/13/18 11:51	08/16/18 22:44	1
13C-OCDD	58		17 - 157	08/13/18 11:51	08/16/18 22:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197	08/13/18 11:51	08/16/18 22:44	1

TestAmerica Seattle

Client Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S085-0to2

Lab Sample ID: 580-79257-19

Date Collected: 08/01/18 09:30

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 58.0

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	0.0044	0.0011	ug/Kg	☼	08/13/18 11:51	08/17/18 03:16	1
1,2,3,4,6,7,8-HpCDF	0.077	B	0.0044	0.0010	ug/Kg	☼	08/13/18 11:51	08/17/18 03:16	1
1,2,3,4,7,8,9-HpCDF	0.0032	J	0.0044	0.0015	ug/Kg	☼	08/13/18 11:51	08/17/18 03:16	1
1,2,3,4,7,8-HxCDD	0.00095	J B	0.0044	0.00028	ug/Kg	☼	08/13/18 11:51	08/17/18 03:16	1
1,2,3,4,7,8-HxCDF	0.0067		0.0044	0.00046	ug/Kg	☼	08/13/18 11:51	08/17/18 03:16	1
1,2,3,6,7,8-HxCDD	0.0046		0.0044	0.00027	ug/Kg	☼	08/13/18 11:51	08/17/18 03:16	1
1,2,3,6,7,8-HxCDF	0.0074		0.0044	0.00042	ug/Kg	☼	08/13/18 11:51	08/17/18 03:16	1
1,2,3,7,8,9-HxCDD	0.0028	J	0.0044	0.00025	ug/Kg	☼	08/13/18 11:51	08/17/18 03:16	1
1,2,3,7,8,9-HxCDF	ND		0.0044	0.00040	ug/Kg	☼	08/13/18 11:51	08/17/18 03:16	1
1,2,3,7,8-PeCDD	0.00048	J q	0.0044	0.00018	ug/Kg	☼	08/13/18 11:51	08/17/18 03:16	1
1,2,3,7,8-PeCDF	0.0019	J	0.0044	0.00029	ug/Kg	☼	08/13/18 11:51	08/17/18 03:16	1
2,3,4,6,7,8-HxCDF	0.0018	J q	0.0044	0.00037	ug/Kg	☼	08/13/18 11:51	08/17/18 03:16	1
2,3,4,7,8-PeCDF	0.0017	J	0.0044	0.00027	ug/Kg	☼	08/13/18 11:51	08/17/18 03:16	1
2,3,7,8-TCDD	ND		0.00087	0.00028	ug/Kg	☼	08/13/18 11:51	08/17/18 03:16	1
OCDD	1.3	B	0.0087	0.00094	ug/Kg	☼	08/13/18 11:51	08/17/18 03:16	1
OCDF	0.11	B	0.0087	0.00034	ug/Kg	☼	08/13/18 11:51	08/17/18 03:16	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	64		23 - 140				08/13/18 11:51	08/17/18 03:16	1
13C-1,2,3,4,6,7,8-HpCDF	50		28 - 143				08/13/18 11:51	08/17/18 03:16	1
13C-1,2,3,4,7,8,9-HpCDF	62		26 - 138				08/13/18 11:51	08/17/18 03:16	1
13C-1,2,3,4,7,8-HxCDD	69		32 - 141				08/13/18 11:51	08/17/18 03:16	1
13C-1,2,3,4,7,8-HxCDF	74		26 - 152				08/13/18 11:51	08/17/18 03:16	1
13C-1,2,3,6,7,8-HxCDD	56		28 - 130				08/13/18 11:51	08/17/18 03:16	1
13C-1,2,3,6,7,8-HxCDF	67		26 - 123				08/13/18 11:51	08/17/18 03:16	1
13C-1,2,3,7,8,9-HxCDF	70		29 - 147				08/13/18 11:51	08/17/18 03:16	1
13C-1,2,3,7,8-PeCDD	150		25 - 181				08/13/18 11:51	08/17/18 03:16	1
13C-1,2,3,7,8-PeCDF	102		24 - 185				08/13/18 11:51	08/17/18 03:16	1
13C-2,3,4,6,7,8-HxCDF	56		28 - 136				08/13/18 11:51	08/17/18 03:16	1
13C-2,3,4,7,8-PeCDF	115		21 - 178				08/13/18 11:51	08/17/18 03:16	1
13C-2,3,7,8-TCDD	71		25 - 164				08/13/18 11:51	08/17/18 03:16	1
13C-OCDD	79		17 - 157				08/13/18 11:51	08/17/18 03:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	112		35 - 197				08/13/18 11:51	08/17/18 03:16	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	0.0047		0.00087	0.00052	ug/Kg	☼	08/13/18 11:51	08/20/18 18:00	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	63		24 - 169				08/13/18 11:51	08/20/18 18:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197				08/13/18 11:51	08/20/18 18:00	1

TestAmerica Seattle

Client Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S085-2to4

Lab Sample ID: 580-79257-20

Date Collected: 08/01/18 09:35

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 61.2

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	0.0023	J B	0.0041	0.00012	ug/Kg	✱	08/13/18 11:51	08/17/18 04:04	1
1,2,3,4,6,7,8-HpCDF	0.0016	J B	0.0041	0.00013	ug/Kg	✱	08/13/18 11:51	08/17/18 04:04	1
1,2,3,4,7,8,9-HpCDF	0.00033	J	0.0041	0.00011	ug/Kg	✱	08/13/18 11:51	08/17/18 04:04	1
1,2,3,4,7,8-HxCDD	ND		0.0041	0.00011	ug/Kg	✱	08/13/18 11:51	08/17/18 04:04	1
1,2,3,4,7,8-HxCDF	0.00098	J	0.0041	0.00015	ug/Kg	✱	08/13/18 11:51	08/17/18 04:04	1
1,2,3,6,7,8-HxCDD	0.00014	J	0.0041	0.00010	ug/Kg	✱	08/13/18 11:51	08/17/18 04:04	1
1,2,3,6,7,8-HxCDF	0.00047	J	0.0041	0.00015	ug/Kg	✱	08/13/18 11:51	08/17/18 04:04	1
1,2,3,7,8,9-HxCDD	0.00016	J q	0.0041	0.000099	ug/Kg	✱	08/13/18 11:51	08/17/18 04:04	1
1,2,3,7,8,9-HxCDF	ND		0.0041	0.00013	ug/Kg	✱	08/13/18 11:51	08/17/18 04:04	1
1,2,3,7,8-PeCDD	ND		0.0041	0.00019	ug/Kg	✱	08/13/18 11:51	08/17/18 04:04	1
1,2,3,7,8-PeCDF	0.00032	J	0.0041	0.00012	ug/Kg	✱	08/13/18 11:51	08/17/18 04:04	1
2,3,4,6,7,8-HxCDF	ND		0.0041	0.00012	ug/Kg	✱	08/13/18 11:51	08/17/18 04:04	1
2,3,4,7,8-PeCDF	0.00020	J q	0.0041	0.00013	ug/Kg	✱	08/13/18 11:51	08/17/18 04:04	1
2,3,7,8-TCDD	0.00035	J q	0.00082	0.000087	ug/Kg	✱	08/13/18 11:51	08/17/18 04:04	1
2,3,7,8-TCDF	0.00052	J	0.00082	0.000096	ug/Kg	✱	08/13/18 11:51	08/17/18 04:04	1
OCDD	0.014	B	0.0082	0.00016	ug/Kg	✱	08/13/18 11:51	08/17/18 04:04	1
OCDF	0.0022	J B	0.0082	0.00015	ug/Kg	✱	08/13/18 11:51	08/17/18 04:04	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	65		23 - 140	08/13/18 11:51	08/17/18 04:04	1
13C-1,2,3,4,6,7,8-HpCDF	43		28 - 143	08/13/18 11:51	08/17/18 04:04	1
13C-1,2,3,4,7,8,9-HpCDF	72		26 - 138	08/13/18 11:51	08/17/18 04:04	1
13C-1,2,3,4,7,8-HxCDD	66		32 - 141	08/13/18 11:51	08/17/18 04:04	1
13C-1,2,3,4,7,8-HxCDF	64		26 - 152	08/13/18 11:51	08/17/18 04:04	1
13C-1,2,3,6,7,8-HxCDD	107		28 - 130	08/13/18 11:51	08/17/18 04:04	1
13C-1,2,3,6,7,8-HxCDF	48		26 - 123	08/13/18 11:51	08/17/18 04:04	1
13C-1,2,3,7,8,9-HxCDF	55		29 - 147	08/13/18 11:51	08/17/18 04:04	1
13C-1,2,3,7,8-PeCDD	91		25 - 181	08/13/18 11:51	08/17/18 04:04	1
13C-1,2,3,7,8-PeCDF	74		24 - 185	08/13/18 11:51	08/17/18 04:04	1
13C-2,3,4,6,7,8-HxCDF	53		28 - 136	08/13/18 11:51	08/17/18 04:04	1
13C-2,3,4,7,8-PeCDF	79		21 - 178	08/13/18 11:51	08/17/18 04:04	1
13C-2,3,7,8-TCDD	64		25 - 164	08/13/18 11:51	08/17/18 04:04	1
13C-2,3,7,8-TCDF	57		24 - 169	08/13/18 11:51	08/17/18 04:04	1
13C-OCDD	82		17 - 157	08/13/18 11:51	08/17/18 04:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	102		35 - 197	08/13/18 11:51	08/17/18 04:04	1

TestAmerica Seattle

Client Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S085-4to6.4

Lab Sample ID: 580-79257-21

Date Collected: 08/01/18 09:40

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 63.2

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	0.0016	J B	0.0039	0.00011	ug/Kg	☼	08/13/18 11:51	08/17/18 04:53	1
1,2,3,4,6,7,8-HpCDF	0.00068	J B	0.0039	0.00010	ug/Kg	☼	08/13/18 11:51	08/17/18 04:53	1
1,2,3,4,7,8,9-HpCDF	0.00037	J	0.0039	0.000097	ug/Kg	☼	08/13/18 11:51	08/17/18 04:53	1
1,2,3,4,7,8-HxCDD	ND		0.0039	0.000065	ug/Kg	☼	08/13/18 11:51	08/17/18 04:53	1
1,2,3,4,7,8-HxCDF	0.00045	J	0.0039	0.000082	ug/Kg	☼	08/13/18 11:51	08/17/18 04:53	1
1,2,3,6,7,8-HxCDD	ND		0.0039	0.000065	ug/Kg	☼	08/13/18 11:51	08/17/18 04:53	1
1,2,3,6,7,8-HxCDF	0.00021	J q	0.0039	0.000079	ug/Kg	☼	08/13/18 11:51	08/17/18 04:53	1
1,2,3,7,8,9-HxCDD	0.00031	J	0.0039	0.000061	ug/Kg	☼	08/13/18 11:51	08/17/18 04:53	1
1,2,3,7,8,9-HxCDF	ND		0.0039	0.000066	ug/Kg	☼	08/13/18 11:51	08/17/18 04:53	1
1,2,3,7,8-PeCDD	ND		0.0039	0.000096	ug/Kg	☼	08/13/18 11:51	08/17/18 04:53	1
1,2,3,7,8-PeCDF	0.00032	J	0.0039	0.000072	ug/Kg	☼	08/13/18 11:51	08/17/18 04:53	1
2,3,4,6,7,8-HxCDF	ND		0.0039	0.000064	ug/Kg	☼	08/13/18 11:51	08/17/18 04:53	1
2,3,4,7,8-PeCDF	ND		0.0039	0.000086	ug/Kg	☼	08/13/18 11:51	08/17/18 04:53	1
2,3,7,8-TCDD	ND		0.00077	0.000071	ug/Kg	☼	08/13/18 11:51	08/17/18 04:53	1
2,3,7,8-TCDF	0.00047	J	0.00077	0.000071	ug/Kg	☼	08/13/18 11:51	08/17/18 04:53	1
OCDD	0.013	B	0.0077	0.00013	ug/Kg	☼	08/13/18 11:51	08/17/18 04:53	1
OCDF	0.0014	J B q	0.0077	0.00012	ug/Kg	☼	08/13/18 11:51	08/17/18 04:53	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	53		23 - 140	08/13/18 11:51	08/17/18 04:53	1
13C-1,2,3,4,6,7,8-HpCDF	32		28 - 143	08/13/18 11:51	08/17/18 04:53	1
13C-1,2,3,4,7,8,9-HpCDF	57		26 - 138	08/13/18 11:51	08/17/18 04:53	1
13C-1,2,3,4,7,8-HxCDD	61		32 - 141	08/13/18 11:51	08/17/18 04:53	1
13C-1,2,3,4,7,8-HxCDF	68		26 - 152	08/13/18 11:51	08/17/18 04:53	1
13C-1,2,3,6,7,8-HxCDD	48		28 - 130	08/13/18 11:51	08/17/18 04:53	1
13C-1,2,3,6,7,8-HxCDF	53		26 - 123	08/13/18 11:51	08/17/18 04:53	1
13C-1,2,3,7,8,9-HxCDF	63		29 - 147	08/13/18 11:51	08/17/18 04:53	1
13C-1,2,3,7,8-PeCDD	94		25 - 181	08/13/18 11:51	08/17/18 04:53	1
13C-1,2,3,7,8-PeCDF	72		24 - 185	08/13/18 11:51	08/17/18 04:53	1
13C-2,3,4,6,7,8-HxCDF	58		28 - 136	08/13/18 11:51	08/17/18 04:53	1
13C-2,3,4,7,8-PeCDF	74		21 - 178	08/13/18 11:51	08/17/18 04:53	1
13C-2,3,7,8-TCDD	58		25 - 164	08/13/18 11:51	08/17/18 04:53	1
13C-2,3,7,8-TCDF	57		24 - 169	08/13/18 11:51	08/17/18 04:53	1
13C-OCDD	69		17 - 157	08/13/18 11:51	08/17/18 04:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	93		35 - 197	08/13/18 11:51	08/17/18 04:53	1

TestAmerica Seattle

Client Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S085-4to6.4D

Lab Sample ID: 580-79257-22

Date Collected: 08/01/18 09:40

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 63.3

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	0.0014	J B	0.0039	0.00010	ug/Kg	☼	08/13/18 11:51	08/17/18 05:41	1
1,2,3,4,6,7,8-HpCDF	0.00046	J B	0.0039	0.000069	ug/Kg	☼	08/13/18 11:51	08/17/18 05:41	1
1,2,3,4,7,8,9-HpCDF	ND		0.0039	0.00010	ug/Kg	☼	08/13/18 11:51	08/17/18 05:41	1
1,2,3,4,7,8-HxCDD	0.00024	J B	0.0039	0.000050	ug/Kg	☼	08/13/18 11:51	08/17/18 05:41	1
1,2,3,4,7,8-HxCDF	0.00028	J	0.0039	0.000081	ug/Kg	☼	08/13/18 11:51	08/17/18 05:41	1
1,2,3,6,7,8-HxCDD	0.000099	J	0.0039	0.000051	ug/Kg	☼	08/13/18 11:51	08/17/18 05:41	1
1,2,3,6,7,8-HxCDF	ND		0.0039	0.000075	ug/Kg	☼	08/13/18 11:51	08/17/18 05:41	1
1,2,3,7,8,9-HxCDD	0.00021	J q	0.0039	0.000047	ug/Kg	☼	08/13/18 11:51	08/17/18 05:41	1
1,2,3,7,8,9-HxCDF	ND		0.0039	0.000061	ug/Kg	☼	08/13/18 11:51	08/17/18 05:41	1
1,2,3,7,8-PeCDD	ND		0.0039	0.000071	ug/Kg	☼	08/13/18 11:51	08/17/18 05:41	1
1,2,3,7,8-PeCDF	0.00011	J q	0.0039	0.000051	ug/Kg	☼	08/13/18 11:51	08/17/18 05:41	1
2,3,4,6,7,8-HxCDF	ND		0.0039	0.000058	ug/Kg	☼	08/13/18 11:51	08/17/18 05:41	1
2,3,4,7,8-PeCDF	ND		0.0039	0.000057	ug/Kg	☼	08/13/18 11:51	08/17/18 05:41	1
2,3,7,8-TCDD	ND		0.00077	0.000052	ug/Kg	☼	08/13/18 11:51	08/17/18 05:41	1
2,3,7,8-TCDF	0.00026	J	0.00077	0.000040	ug/Kg	☼	08/13/18 11:51	08/17/18 05:41	1
OCDD	0.012	B	0.0077	0.00012	ug/Kg	☼	08/13/18 11:51	08/17/18 05:41	1
OCDF	0.0010	J B q	0.0077	0.00011	ug/Kg	☼	08/13/18 11:51	08/17/18 05:41	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	59		23 - 140	08/13/18 11:51	08/17/18 05:41	1
13C-1,2,3,4,6,7,8-HpCDF	51		28 - 143	08/13/18 11:51	08/17/18 05:41	1
13C-1,2,3,4,7,8,9-HpCDF	61		26 - 138	08/13/18 11:51	08/17/18 05:41	1
13C-1,2,3,4,7,8-HxCDD	79		32 - 141	08/13/18 11:51	08/17/18 05:41	1
13C-1,2,3,4,7,8-HxCDF	77		26 - 152	08/13/18 11:51	08/17/18 05:41	1
13C-1,2,3,6,7,8-HxCDD	61		28 - 130	08/13/18 11:51	08/17/18 05:41	1
13C-1,2,3,6,7,8-HxCDF	65		26 - 123	08/13/18 11:51	08/17/18 05:41	1
13C-1,2,3,7,8,9-HxCDF	74		29 - 147	08/13/18 11:51	08/17/18 05:41	1
13C-1,2,3,7,8-PeCDD	103		25 - 181	08/13/18 11:51	08/17/18 05:41	1
13C-1,2,3,7,8-PeCDF	84		24 - 185	08/13/18 11:51	08/17/18 05:41	1
13C-2,3,4,6,7,8-HxCDF	65		28 - 136	08/13/18 11:51	08/17/18 05:41	1
13C-2,3,4,7,8-PeCDF	88		21 - 178	08/13/18 11:51	08/17/18 05:41	1
13C-2,3,7,8-TCDD	66		25 - 164	08/13/18 11:51	08/17/18 05:41	1
13C-2,3,7,8-TCDF	68		24 - 169	08/13/18 11:51	08/17/18 05:41	1
13C-OCDD	78		17 - 157	08/13/18 11:51	08/17/18 05:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197	08/13/18 11:51	08/17/18 05:41	1

TestAmerica Seattle

Client Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-RB-SS-180731

Lab Sample ID: 580-79257-23

Date Collected: 07/31/18 14:45

Matrix: Water

Date Received: 08/01/18 14:10

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	1.1	J q B	49	0.20	pg/L		08/06/18 14:34	08/09/18 20:42	1
1,2,3,4,6,7,8-HpCDF	0.60	J q	49	0.23	pg/L		08/06/18 14:34	08/09/18 20:42	1
1,2,3,4,7,8,9-HpCDF	ND		49	0.29	pg/L		08/06/18 14:34	08/09/18 20:42	1
1,2,3,4,7,8-HxCDD	1.2	J	49	0.26	pg/L		08/06/18 14:34	08/09/18 20:42	1
1,2,3,4,7,8-HxCDF	ND		49	0.33	pg/L		08/06/18 14:34	08/09/18 20:42	1
1,2,3,6,7,8-HxCDD	ND		49	0.25	pg/L		08/06/18 14:34	08/09/18 20:42	1
1,2,3,6,7,8-HxCDF	ND		49	0.33	pg/L		08/06/18 14:34	08/09/18 20:42	1
1,2,3,7,8,9-HxCDD	ND		49	0.23	pg/L		08/06/18 14:34	08/09/18 20:42	1
1,2,3,7,8,9-HxCDF	0.35	J q	49	0.16	pg/L		08/06/18 14:34	08/09/18 20:42	1
1,2,3,7,8-PeCDD	ND		49	0.28	pg/L		08/06/18 14:34	08/09/18 20:42	1
1,2,3,7,8-PeCDF	ND		49	0.22	pg/L		08/06/18 14:34	08/09/18 20:42	1
2,3,4,6,7,8-HxCDF	ND		49	0.20	pg/L		08/06/18 14:34	08/09/18 20:42	1
2,3,4,7,8-PeCDF	ND		49	0.25	pg/L		08/06/18 14:34	08/09/18 20:42	1
2,3,7,8-TCDD	ND		9.8	0.27	pg/L		08/06/18 14:34	08/09/18 20:42	1
2,3,7,8-TCDF	ND		9.8	0.15	pg/L		08/06/18 14:34	08/09/18 20:42	1
OCDD	11	J B	98	0.18	pg/L		08/06/18 14:34	08/09/18 20:42	1
OCDF	1.9	J B	98	0.23	pg/L		08/06/18 14:34	08/09/18 20:42	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	96		23 - 140	08/06/18 14:34	08/09/18 20:42	1
13C-1,2,3,4,6,7,8-HpCDF	90		28 - 143	08/06/18 14:34	08/09/18 20:42	1
13C-1,2,3,4,7,8,9-HpCDF	96		26 - 138	08/06/18 14:34	08/09/18 20:42	1
13C-1,2,3,4,7,8-HxCDD	79		32 - 141	08/06/18 14:34	08/09/18 20:42	1
13C-1,2,3,4,7,8-HxCDF	76		26 - 152	08/06/18 14:34	08/09/18 20:42	1
13C-1,2,3,6,7,8-HxCDD	82		28 - 130	08/06/18 14:34	08/09/18 20:42	1
13C-1,2,3,6,7,8-HxCDF	79		26 - 123	08/06/18 14:34	08/09/18 20:42	1
13C-1,2,3,7,8,9-HxCDF	81		29 - 147	08/06/18 14:34	08/09/18 20:42	1
13C-1,2,3,7,8-PeCDD	71		25 - 181	08/06/18 14:34	08/09/18 20:42	1
13C-1,2,3,7,8-PeCDF	71		24 - 185	08/06/18 14:34	08/09/18 20:42	1
13C-2,3,4,6,7,8-HxCDF	82		28 - 136	08/06/18 14:34	08/09/18 20:42	1
13C-2,3,4,7,8-PeCDF	69		21 - 178	08/06/18 14:34	08/09/18 20:42	1
13C-2,3,7,8-TCDD	86		25 - 164	08/06/18 14:34	08/09/18 20:42	1
13C-2,3,7,8-TCDF	81		24 - 169	08/06/18 14:34	08/09/18 20:42	1
13C-OCDD	104		17 - 157	08/06/18 14:34	08/09/18 20:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197	08/06/18 14:34	08/09/18 20:42	1

TestAmerica Seattle

QC Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

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

Lab Sample ID: MB 320-238271/1-A

Matrix: Water

Analysis Batch: 239572

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 238271

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	1.04	J	50	0.26	pg/L		08/06/18 14:34	08/09/18 16:52	1
1,2,3,4,6,7,8-HpCDF	ND		50	0.97	pg/L		08/06/18 14:34	08/09/18 16:52	1
1,2,3,4,7,8,9-HpCDF	ND		50	0.46	pg/L		08/06/18 14:34	08/09/18 16:52	1
1,2,3,4,7,8-HxCDD	ND		50	0.32	pg/L		08/06/18 14:34	08/09/18 16:52	1
1,2,3,4,7,8-HxCDF	ND		50	0.42	pg/L		08/06/18 14:34	08/09/18 16:52	1
1,2,3,6,7,8-HxCDD	ND		50	0.29	pg/L		08/06/18 14:34	08/09/18 16:52	1
1,2,3,6,7,8-HxCDF	ND		50	0.40	pg/L		08/06/18 14:34	08/09/18 16:52	1
1,2,3,7,8,9-HxCDD	ND		50	0.56	pg/L		08/06/18 14:34	08/09/18 16:52	1
1,2,3,7,8,9-HxCDF	ND		50	0.49	pg/L		08/06/18 14:34	08/09/18 16:52	1
1,2,3,7,8-PeCDD	ND		50	0.36	pg/L		08/06/18 14:34	08/09/18 16:52	1
1,2,3,7,8-PeCDF	ND		50	0.30	pg/L		08/06/18 14:34	08/09/18 16:52	1
2,3,4,6,7,8-HxCDF	ND		50	0.26	pg/L		08/06/18 14:34	08/09/18 16:52	1
2,3,4,7,8-PeCDF	ND		50	0.32	pg/L		08/06/18 14:34	08/09/18 16:52	1
2,3,7,8-TCDD	ND		10	0.33	pg/L		08/06/18 14:34	08/09/18 16:52	1
2,3,7,8-TCDF	ND		10	0.25	pg/L		08/06/18 14:34	08/09/18 16:52	1
OCDD	11.1	J	100	0.27	pg/L		08/06/18 14:34	08/09/18 16:52	1
OCDF	1.83	J	100	0.41	pg/L		08/06/18 14:34	08/09/18 16:52	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	85		23 - 140	08/06/18 14:34	08/09/18 16:52	1
13C-1,2,3,4,6,7,8-HpCDF	84		28 - 143	08/06/18 14:34	08/09/18 16:52	1
13C-1,2,3,4,7,8,9-HpCDF	85		26 - 138	08/06/18 14:34	08/09/18 16:52	1
13C-1,2,3,4,7,8-HxCDD	78		32 - 141	08/06/18 14:34	08/09/18 16:52	1
13C-1,2,3,4,7,8-HxCDF	77		26 - 152	08/06/18 14:34	08/09/18 16:52	1
13C-1,2,3,6,7,8-HxCDD	84		28 - 130	08/06/18 14:34	08/09/18 16:52	1
13C-1,2,3,6,7,8-HxCDF	81		26 - 123	08/06/18 14:34	08/09/18 16:52	1
13C-1,2,3,7,8,9-HxCDF	80		29 - 147	08/06/18 14:34	08/09/18 16:52	1
13C-1,2,3,7,8-PeCDD	73		25 - 181	08/06/18 14:34	08/09/18 16:52	1
13C-1,2,3,7,8-PeCDF	74		24 - 185	08/06/18 14:34	08/09/18 16:52	1
13C-2,3,4,6,7,8-HxCDF	82		28 - 136	08/06/18 14:34	08/09/18 16:52	1
13C-2,3,4,7,8-PeCDF	76		21 - 178	08/06/18 14:34	08/09/18 16:52	1
13C-2,3,7,8-TCDD	84		25 - 164	08/06/18 14:34	08/09/18 16:52	1
13C-2,3,7,8-TCDF	83		24 - 169	08/06/18 14:34	08/09/18 16:52	1
13C-OCDD	80		17 - 157	08/06/18 14:34	08/09/18 16:52	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197	08/06/18 14:34	08/09/18 16:52	1

Lab Sample ID: LCS 320-238271/2-A

Matrix: Water

Analysis Batch: 239572

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 238271

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	1000	1110		pg/L		111	70 - 140
1,2,3,4,6,7,8-HpCDF	1000	1110		pg/L		111	82 - 122
1,2,3,4,7,8,9-HpCDF	1000	1130		pg/L		113	78 - 138
1,2,3,4,7,8-HxCDD	1000	1120		pg/L		112	70 - 164
1,2,3,4,7,8-HxCDF	1000	1130		pg/L		113	72 - 134

TestAmerica Seattle

QC Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

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

Lab Sample ID: LCS 320-238271/2-A

Matrix: Water

Analysis Batch: 239572

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 238271

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,6,7,8-HxCDD	1000	1150		pg/L		115	76 - 134
1,2,3,6,7,8-HxCDF	1000	1130		pg/L		113	84 - 130
1,2,3,7,8,9-HxCDD	1000	1140		pg/L		114	64 - 162
1,2,3,7,8,9-HxCDF	1000	1130		pg/L		113	78 - 130
1,2,3,7,8-PeCDD	1000	1150		pg/L		115	70 - 142
1,2,3,7,8-PeCDF	1000	1180		pg/L		118	80 - 134
2,3,4,6,7,8-HxCDF	1000	1120		pg/L		112	70 - 156
2,3,4,7,8-PeCDF	1000	1190		pg/L		119	68 - 160
2,3,7,8-TCDD	200	223		pg/L		112	67 - 158
2,3,7,8-TCDF	200	227		pg/L		113	75 - 158
OCDD	2000	2140		pg/L		107	78 - 144
OCDF	2000	2270		pg/L		113	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	71		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	71		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	72		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	70		25 - 163
13C-1,2,3,6,7,8-HxCDF	68		21 - 159
13C-1,2,3,7,8,9-HxCDF	69		17 - 205
13C-1,2,3,7,8-PeCDD	61		21 - 227
13C-1,2,3,7,8-PeCDF	61		21 - 192
13C-2,3,4,6,7,8-HxCDF	70		22 - 176
13C-2,3,4,7,8-PeCDF	62		13 - 328
13C-2,3,7,8-TCDD	69		20 - 175
13C-2,3,7,8-TCDF	68		22 - 152
13C-OCDD	70		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	93		31 - 191

Lab Sample ID: LCSD 320-238271/3-A

Matrix: Water

Analysis Batch: 239572

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 238271

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
1,2,3,4,6,7,8-HpCDD	1000	1170		pg/L		117	70 - 140	4	50
1,2,3,4,6,7,8-HpCDF	1000	1140		pg/L		114	82 - 122	3	50
1,2,3,4,7,8,9-HpCDF	1000	1160		pg/L		116	78 - 138	3	50
1,2,3,4,7,8-HxCDD	1000	1160		pg/L		116	70 - 164	3	50
1,2,3,4,7,8-HxCDF	1000	1160		pg/L		116	72 - 134	3	50
1,2,3,6,7,8-HxCDD	1000	1180		pg/L		118	76 - 134	3	50
1,2,3,6,7,8-HxCDF	1000	1150		pg/L		115	84 - 130	2	50
1,2,3,7,8,9-HxCDD	1000	1190		pg/L		119	64 - 162	4	50
1,2,3,7,8,9-HxCDF	1000	1140		pg/L		114	78 - 130	1	50
1,2,3,7,8-PeCDD	1000	1190		pg/L		119	70 - 142	3	50

TestAmerica Seattle

QC Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

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

Lab Sample ID: LCSD 320-238271/3-A

Matrix: Water

Analysis Batch: 239572

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 238271

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,7,8-PeCDF	1000	1210		pg/L		121	80 - 134	2	50
2,3,4,6,7,8-HxCDF	1000	1150		pg/L		115	70 - 156	3	50
2,3,4,7,8-PeCDF	1000	1220		pg/L		122	68 - 160	2	50
2,3,7,8-TCDD	200	226		pg/L		113	67 - 158	1	50
2,3,7,8-TCDF	200	229		pg/L		114	75 - 158	1	50
OCDD	2000	2240		pg/L		112	78 - 144	5	50
OCDF	2000	2410		pg/L		120	63 - 170	6	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	66		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	67		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	68		20 - 186
13C-1,2,3,4,7,8-HxCDD	61		21 - 193
13C-1,2,3,4,7,8-HxCDF	63		19 - 202
13C-1,2,3,6,7,8-HxCDD	64		25 - 163
13C-1,2,3,6,7,8-HxCDF	65		21 - 159
13C-1,2,3,7,8,9-HxCDF	65		17 - 205
13C-1,2,3,7,8-PeCDD	58		21 - 227
13C-1,2,3,7,8-PeCDF	58		21 - 192
13C-2,3,4,6,7,8-HxCDF	66		22 - 176
13C-2,3,4,7,8-PeCDF	59		13 - 328
13C-2,3,7,8-TCDD	67		20 - 175
13C-2,3,7,8-TCDF	66		22 - 152
13C-OCDD	62		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
37Cl4-2,3,7,8-TCDD	94		31 - 191

Lab Sample ID: MB 320-239564/1-A

Matrix: Solid

Analysis Batch: 240178

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 239564

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	ND		0.0050	0.00012	ug/Kg		08/13/18 10:41	08/15/18 12:45	1
1,2,3,4,6,7,8-HpCDF	ND		0.0050	0.000069	ug/Kg		08/13/18 10:41	08/15/18 12:45	1
1,2,3,4,7,8,9-HpCDF	ND		0.0050	0.000098	ug/Kg		08/13/18 10:41	08/15/18 12:45	1
1,2,3,4,7,8-HxCDD	ND		0.0050	0.00011	ug/Kg		08/13/18 10:41	08/15/18 12:45	1
1,2,3,4,7,8-HxCDF	ND		0.0050	0.00016	ug/Kg		08/13/18 10:41	08/15/18 12:45	1
1,2,3,6,7,8-HxCDD	ND		0.0050	0.000096	ug/Kg		08/13/18 10:41	08/15/18 12:45	1
1,2,3,6,7,8-HxCDF	ND		0.0050	0.00012	ug/Kg		08/13/18 10:41	08/15/18 12:45	1
1,2,3,7,8,9-HxCDD	ND		0.0050	0.000095	ug/Kg		08/13/18 10:41	08/15/18 12:45	1
1,2,3,7,8,9-HxCDF	ND		0.0050	0.000098	ug/Kg		08/13/18 10:41	08/15/18 12:45	1
1,2,3,7,8-PeCDD	ND		0.0050	0.00016	ug/Kg		08/13/18 10:41	08/15/18 12:45	1
1,2,3,7,8-PeCDF	ND		0.0050	0.00011	ug/Kg		08/13/18 10:41	08/15/18 12:45	1
2,3,4,6,7,8-HxCDF	ND		0.0050	0.000095	ug/Kg		08/13/18 10:41	08/15/18 12:45	1
2,3,4,7,8-PeCDF	ND		0.0050	0.00012	ug/Kg		08/13/18 10:41	08/15/18 12:45	1
2,3,7,8-TCDD	ND		0.0010	0.000086	ug/Kg		08/13/18 10:41	08/15/18 12:45	1
2,3,7,8-TCDF	ND		0.0010	0.000065	ug/Kg		08/13/18 10:41	08/15/18 12:45	1

TestAmerica Seattle

QC Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

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

Lab Sample ID: MB 320-239564/1-A

Matrix: Solid

Analysis Batch: 240178

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 239564

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
OCDD	0.000569	J	0.010	0.00013	ug/Kg		08/13/18 10:41	08/15/18 12:45	1
OCDF	ND		0.010	0.00014	ug/Kg		08/13/18 10:41	08/15/18 12:45	1
Isotope Dilution	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	65		23 - 140				08/13/18 10:41	08/15/18 12:45	1
13C-1,2,3,4,6,7,8-HpCDF	65		28 - 143				08/13/18 10:41	08/15/18 12:45	1
13C-1,2,3,4,7,8,9-HpCDF	72		26 - 138				08/13/18 10:41	08/15/18 12:45	1
13C-1,2,3,4,7,8-HxCDD	67		32 - 141				08/13/18 10:41	08/15/18 12:45	1
13C-1,2,3,4,7,8-HxCDF	57		26 - 152				08/13/18 10:41	08/15/18 12:45	1
13C-1,2,3,6,7,8-HxCDD	72		28 - 130				08/13/18 10:41	08/15/18 12:45	1
13C-1,2,3,6,7,8-HxCDF	56		26 - 123				08/13/18 10:41	08/15/18 12:45	1
13C-1,2,3,7,8,9-HxCDF	70		29 - 147				08/13/18 10:41	08/15/18 12:45	1
13C-1,2,3,7,8-PeCDD	73		25 - 181				08/13/18 10:41	08/15/18 12:45	1
13C-1,2,3,7,8-PeCDF	65		24 - 185				08/13/18 10:41	08/15/18 12:45	1
13C-2,3,4,6,7,8-HxCDF	64		28 - 136				08/13/18 10:41	08/15/18 12:45	1
13C-2,3,4,7,8-PeCDF	64		21 - 178				08/13/18 10:41	08/15/18 12:45	1
13C-2,3,7,8-TCDD	68		25 - 164				08/13/18 10:41	08/15/18 12:45	1
13C-2,3,7,8-TCDF	70		24 - 169				08/13/18 10:41	08/15/18 12:45	1
13C-OCDD	86		17 - 157				08/13/18 10:41	08/15/18 12:45	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	101		35 - 197				08/13/18 10:41	08/15/18 12:45	1

Lab Sample ID: LCS 320-239564/2-A

Matrix: Solid

Analysis Batch: 240178

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 239564

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.0987		ug/Kg		99	70 - 140
1,2,3,4,6,7,8-HpCDF	0.100	0.100		ug/Kg		100	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.100		ug/Kg		100	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.108		ug/Kg		108	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.100		ug/Kg		100	72 - 134
1,2,3,6,7,8-HxCDD	0.100	0.0952		ug/Kg		95	76 - 134
1,2,3,6,7,8-HxCDF	0.100	0.100		ug/Kg		100	84 - 130
1,2,3,7,8,9-HxCDD	0.100	0.0995		ug/Kg		100	64 - 162
1,2,3,7,8,9-HxCDF	0.100	0.101		ug/Kg		101	78 - 130
1,2,3,7,8-PeCDD	0.100	0.0922		ug/Kg		92	70 - 142
1,2,3,7,8-PeCDF	0.100	0.100		ug/Kg		100	80 - 134
2,3,4,6,7,8-HxCDF	0.100	0.0998		ug/Kg		100	70 - 156
2,3,4,7,8-PeCDF	0.100	0.101		ug/Kg		101	68 - 160
2,3,7,8-TCDD	0.0200	0.0188		ug/Kg		94	67 - 158
2,3,7,8-TCDF	0.0200	0.0198		ug/Kg		99	75 - 158
OCDD	0.200	0.200		ug/Kg		100	78 - 144
OCDF	0.200	0.202		ug/Kg		101	63 - 170
Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits				
13C-1,2,3,4,6,7,8-HpCDD	68		26 - 166				

TestAmerica Seattle

QC Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

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

Lab Sample ID: LCS 320-239564/2-A

Matrix: Solid

Analysis Batch: 240178

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 239564

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDF	63		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	74		20 - 186
13C-1,2,3,4,7,8-HxCDD	69		21 - 193
13C-1,2,3,4,7,8-HxCDF	62		19 - 202
13C-1,2,3,6,7,8-HxCDD	71		25 - 163
13C-1,2,3,6,7,8-HxCDF	59		21 - 159
13C-1,2,3,7,8,9-HxCDF	75		17 - 205
13C-1,2,3,7,8-PeCDD	84		21 - 227
13C-1,2,3,7,8-PeCDF	73		21 - 192
13C-2,3,4,6,7,8-HxCDF	71		22 - 176
13C-2,3,4,7,8-PeCDF	71		13 - 328
13C-2,3,7,8-TCDD	60		20 - 175
13C-2,3,7,8-TCDF	68		22 - 152
13C-OCDD	84		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	86		31 - 191

Lab Sample ID: LCSD 320-239564/3-A

Matrix: Solid

Analysis Batch: 240178

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 239564

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,6,7,8-HpCDD	0.100	0.0985		ug/Kg		98	70 - 140	0	50
1,2,3,4,6,7,8-HpCDF	0.100	0.101		ug/Kg		101	82 - 122	1	50
1,2,3,4,7,8,9-HpCDF	0.100	0.103		ug/Kg		103	78 - 138	2	50
1,2,3,4,7,8-HxCDD	0.100	0.101		ug/Kg		101	70 - 164	6	50
1,2,3,4,7,8-HxCDF	0.100	0.101		ug/Kg		101	72 - 134	1	50
1,2,3,6,7,8-HxCDD	0.100	0.104		ug/Kg		104	76 - 134	9	50
1,2,3,6,7,8-HxCDF	0.100	0.100		ug/Kg		100	84 - 130	0	50
1,2,3,7,8,9-HxCDD	0.100	0.105		ug/Kg		105	64 - 162	5	50
1,2,3,7,8,9-HxCDF	0.100	0.0975		ug/Kg		98	78 - 130	3	50
1,2,3,7,8-PeCDD	0.100	0.0891		ug/Kg		89	70 - 142	3	50
1,2,3,7,8-PeCDF	0.100	0.100		ug/Kg		100	80 - 134	0	50
2,3,4,6,7,8-HxCDF	0.100	0.100		ug/Kg		100	70 - 156	1	50
2,3,4,7,8-PeCDF	0.100	0.102		ug/Kg		102	68 - 160	1	50
2,3,7,8-TCDD	0.0200	0.0184		ug/Kg		92	67 - 158	2	50
2,3,7,8-TCDF	0.0200	0.0195		ug/Kg		98	75 - 158	1	50
OCDD	0.200	0.200		ug/Kg		100	78 - 144	0	50
OCDF	0.200	0.209		ug/Kg		104	63 - 170	3	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	78		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	67		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	81		20 - 186
13C-1,2,3,4,7,8-HxCDD	68		21 - 193
13C-1,2,3,4,7,8-HxCDF	61		19 - 202
13C-1,2,3,6,7,8-HxCDD	67		25 - 163

TestAmerica Seattle

QC Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

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

Lab Sample ID: LCSD 320-239564/3-A

Matrix: Solid

Analysis Batch: 240178

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 239564

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,6,7,8-HxCDF	59		21 - 159
13C-1,2,3,7,8,9-HxCDF	73		17 - 205
13C-1,2,3,7,8-PeCDD	79		21 - 227
13C-1,2,3,7,8-PeCDF	75		21 - 192
13C-2,3,4,6,7,8-HxCDF	65		22 - 176
13C-2,3,4,7,8-PeCDF	66		13 - 328
13C-2,3,7,8-TCDD	68		20 - 175
13C-2,3,7,8-TCDF	68		22 - 152
13C-OCDD	96		13 - 199
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
37Cl4-2,3,7,8-TCDD	98		31 - 191

Lab Sample ID: MB 320-239583/1-A

Matrix: Solid

Analysis Batch: 240353

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 239583

Analyte	MB	MB	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,2,3,4,6,7,8-HpCDD	0.000136	J	0.0050	0.000044	ug/Kg		08/13/18 11:51	08/16/18 15:15	1
1,2,3,4,6,7,8-HpCDF	0.0000949	J q	0.0050	0.000045	ug/Kg		08/13/18 11:51	08/16/18 15:15	1
1,2,3,4,7,8,9-HpCDF	ND		0.0050	0.000055	ug/Kg		08/13/18 11:51	08/16/18 15:15	1
1,2,3,4,7,8-HxCDD	0.000138	J	0.0050	0.000051	ug/Kg		08/13/18 11:51	08/16/18 15:15	1
1,2,3,4,7,8-HxCDF	ND		0.0050	0.000046	ug/Kg		08/13/18 11:51	08/16/18 15:15	1
1,2,3,6,7,8-HxCDD	ND		0.0050	0.000047	ug/Kg		08/13/18 11:51	08/16/18 15:15	1
1,2,3,6,7,8-HxCDF	ND		0.0050	0.000042	ug/Kg		08/13/18 11:51	08/16/18 15:15	1
1,2,3,7,8,9-HxCDD	ND		0.0050	0.000045	ug/Kg		08/13/18 11:51	08/16/18 15:15	1
1,2,3,7,8,9-HxCDF	ND		0.0050	0.000030	ug/Kg		08/13/18 11:51	08/16/18 15:15	1
1,2,3,7,8-PeCDD	ND		0.0050	0.000065	ug/Kg		08/13/18 11:51	08/16/18 15:15	1
1,2,3,7,8-PeCDF	ND		0.0050	0.000044	ug/Kg		08/13/18 11:51	08/16/18 15:15	1
2,3,4,6,7,8-HxCDF	ND		0.0050	0.000030	ug/Kg		08/13/18 11:51	08/16/18 15:15	1
2,3,4,7,8-PeCDF	ND		0.0050	0.000042	ug/Kg		08/13/18 11:51	08/16/18 15:15	1
2,3,7,8-TCDD	ND		0.0010	0.000066	ug/Kg		08/13/18 11:51	08/16/18 15:15	1
2,3,7,8-TCDF	ND		0.0010	0.000046	ug/Kg		08/13/18 11:51	08/16/18 15:15	1
OCDD	0.000367	J	0.010	0.000045	ug/Kg		08/13/18 11:51	08/16/18 15:15	1
OCDF	0.000638	J	0.010	0.000048	ug/Kg		08/13/18 11:51	08/16/18 15:15	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	66		23 - 140				08/13/18 11:51	08/16/18 15:15	1
13C-1,2,3,4,6,7,8-HpCDF	58		28 - 143				08/13/18 11:51	08/16/18 15:15	1
13C-1,2,3,4,7,8,9-HpCDF	71		26 - 138				08/13/18 11:51	08/16/18 15:15	1
13C-1,2,3,4,7,8-HxCDD	67		32 - 141				08/13/18 11:51	08/16/18 15:15	1
13C-1,2,3,4,7,8-HxCDF	57		26 - 152				08/13/18 11:51	08/16/18 15:15	1
13C-1,2,3,6,7,8-HxCDD	62		28 - 130				08/13/18 11:51	08/16/18 15:15	1
13C-1,2,3,6,7,8-HxCDF	53		26 - 123				08/13/18 11:51	08/16/18 15:15	1
13C-1,2,3,7,8,9-HxCDF	71		29 - 147				08/13/18 11:51	08/16/18 15:15	1
13C-1,2,3,7,8-PeCDD	89		25 - 181				08/13/18 11:51	08/16/18 15:15	1
13C-1,2,3,7,8-PeCDF	72		24 - 185				08/13/18 11:51	08/16/18 15:15	1
13C-2,3,4,6,7,8-HxCDF	64		28 - 136				08/13/18 11:51	08/16/18 15:15	1

TestAmerica Seattle

QC Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

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

Lab Sample ID: MB 320-239583/1-A

Matrix: Solid

Analysis Batch: 240353

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 239583

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,4,7,8-PeCDF	78		21 - 178	08/13/18 11:51	08/16/18 15:15	1
13C-2,3,7,8-TCDD	62		25 - 164	08/13/18 11:51	08/16/18 15:15	1
13C-2,3,7,8-TCDF	63		24 - 169	08/13/18 11:51	08/16/18 15:15	1
13C-OCDD	102		17 - 157	08/13/18 11:51	08/16/18 15:15	1
Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	87		35 - 197	08/13/18 11:51	08/16/18 15:15	1

Lab Sample ID: LCS 320-239583/2-A

Matrix: Solid

Analysis Batch: 240353

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 239583

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.0959		ug/Kg		96	70 - 140
1,2,3,4,6,7,8-HpCDF	0.100	0.101		ug/Kg		101	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.101		ug/Kg		101	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.0994		ug/Kg		99	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.0979		ug/Kg		98	72 - 134
1,2,3,6,7,8-HxCDD	0.100	0.102		ug/Kg		102	76 - 134
1,2,3,6,7,8-HxCDF	0.100	0.0985		ug/Kg		99	84 - 130
1,2,3,7,8,9-HxCDD	0.100	0.107		ug/Kg		107	64 - 162
1,2,3,7,8,9-HxCDF	0.100	0.0998		ug/Kg		100	78 - 130
1,2,3,7,8-PeCDD	0.100	0.0890		ug/Kg		89	70 - 142
1,2,3,7,8-PeCDF	0.100	0.0993		ug/Kg		99	80 - 134
2,3,4,6,7,8-HxCDF	0.100	0.0991		ug/Kg		99	70 - 156
2,3,4,7,8-PeCDF	0.100	0.0988		ug/Kg		99	68 - 160
2,3,7,8-TCDD	0.0200	0.0188		ug/Kg		94	67 - 158
2,3,7,8-TCDF	0.0200	0.0194		ug/Kg		97	75 - 158
OCDD	0.200	0.198		ug/Kg		99	78 - 144
OCDF	0.200	0.199		ug/Kg		100	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	71		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	57		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	75		20 - 186
13C-1,2,3,4,7,8-HxCDD	59		21 - 193
13C-1,2,3,4,7,8-HxCDF	60		19 - 202
13C-1,2,3,6,7,8-HxCDD	54		25 - 163
13C-1,2,3,6,7,8-HxCDF	55		21 - 159
13C-1,2,3,7,8,9-HxCDF	62		17 - 205
13C-1,2,3,7,8-PeCDD	71		21 - 227
13C-1,2,3,7,8-PeCDF	58		21 - 192
13C-2,3,4,6,7,8-HxCDF	57		22 - 176
13C-2,3,4,7,8-PeCDF	65		13 - 328
13C-2,3,7,8-TCDD	59		20 - 175
13C-2,3,7,8-TCDF	60		22 - 152
13C-OCDD	89		13 - 199

TestAmerica Seattle

QC Sample Results

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

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

Lab Sample ID: LCS 320-239583/2-A

Matrix: Solid

Analysis Batch: 240353

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 239583

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

Lab Sample ID: LCSD 320-239583/3-A

Matrix: Solid

Analysis Batch: 240353

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 239583

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,6,7,8-HpCDD	0.100	0.0967		ug/Kg		97	70 - 140	1	50
1,2,3,4,6,7,8-HpCDF	0.100	0.0982		ug/Kg		98	82 - 122	2	50
1,2,3,4,7,8,9-HpCDF	0.100	0.0993		ug/Kg		99	78 - 138	2	50
1,2,3,4,7,8-HxCDD	0.100	0.107		ug/Kg		107	70 - 164	8	50
1,2,3,4,7,8-HxCDF	0.100	0.100		ug/Kg		100	72 - 134	2	50
1,2,3,6,7,8-HxCDD	0.100	0.0966		ug/Kg		97	76 - 134	6	50
1,2,3,6,7,8-HxCDF	0.100	0.101		ug/Kg		101	84 - 130	2	50
1,2,3,7,8,9-HxCDD	0.100	0.116		ug/Kg		116	64 - 162	9	50
1,2,3,7,8,9-HxCDF	0.100	0.100		ug/Kg		100	78 - 130	0	50
1,2,3,7,8-PeCDD	0.100	0.0891		ug/Kg		89	70 - 142	0	50
1,2,3,7,8-PeCDF	0.100	0.0989		ug/Kg		99	80 - 134	0	50
2,3,4,6,7,8-HxCDF	0.100	0.101		ug/Kg		101	70 - 156	2	50
2,3,4,7,8-PeCDF	0.100	0.101		ug/Kg		101	68 - 160	3	50
2,3,7,8-TCDD	0.0200	0.0185		ug/Kg		92	67 - 158	2	50
2,3,7,8-TCDF	0.0200	0.0192		ug/Kg		96	75 - 158	1	50
OCDD	0.200	0.197		ug/Kg		99	78 - 144	1	50
OCDF	0.200	0.183		ug/Kg		92	63 - 170	8	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	70		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	49		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	76		20 - 186
13C-1,2,3,4,7,8-HxCDD	46		21 - 193
13C-1,2,3,4,7,8-HxCDF	43		19 - 202
13C-1,2,3,6,7,8-HxCDD	46		25 - 163
13C-1,2,3,6,7,8-HxCDF	39		21 - 159
13C-1,2,3,7,8,9-HxCDF	59		17 - 205
13C-1,2,3,7,8-PeCDD	64		21 - 227
13C-1,2,3,7,8-PeCDF	50		21 - 192
13C-2,3,4,6,7,8-HxCDF	47		22 - 176
13C-2,3,4,7,8-PeCDF	49		13 - 328
13C-2,3,7,8-TCDD	57		20 - 175
13C-2,3,7,8-TCDF	48		22 - 152
13C-OCDD	88		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
37Cl4-2,3,7,8-TCDD	91		31 - 191

TestAmerica Seattle

Lab Chronicle

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S062-0to2

Date Collected: 07/31/18 15:30

Date Received: 08/01/18 14:10

Lab Sample ID: 580-79257-1

Matrix: Solid

Percent Solids: 45.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		239564	08/13/18 10:41	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	240639	08/17/18 23:40	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			239564	08/13/18 10:41	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240297	08/16/18 02:15	AS	TAL SAC

Client Sample ID: PDI-SC-S062-2to4

Date Collected: 07/31/18 15:35

Date Received: 08/01/18 14:10

Lab Sample ID: 580-79257-2

Matrix: Solid

Percent Solids: 50.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		239564	08/13/18 10:41	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	240639	08/18/18 00:18	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			239564	08/13/18 10:41	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240297	08/16/18 03:03	AS	TAL SAC

Client Sample ID: PDI-SC-S062-4to6

Date Collected: 07/31/18 15:40

Date Received: 08/01/18 14:10

Lab Sample ID: 580-79257-3

Matrix: Solid

Percent Solids: 51.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		239564	08/13/18 10:41	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	240639	08/18/18 00:55	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			239564	08/13/18 10:41	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240297	08/16/18 03:52	AS	TAL SAC

Client Sample ID: PDI-SC-S062-6to7.7

Date Collected: 07/31/18 15:45

Date Received: 08/01/18 14:10

Lab Sample ID: 580-79257-4

Matrix: Solid

Percent Solids: 54.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		239564	08/13/18 10:41	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	240639	08/18/18 01:33	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			239564	08/13/18 10:41	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240297	08/16/18 04:40	AS	TAL SAC

Client Sample ID: PDI-SC-S023-0to2

Date Collected: 07/31/18 10:40

Date Received: 08/01/18 14:10

Lab Sample ID: 580-79257-5

Matrix: Solid

Percent Solids: 49.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		239564	08/13/18 10:41	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	240997	08/20/18 12:19	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			239564	08/13/18 10:41	SR1	TAL SAC

TestAmerica Seattle

Lab Chronicle

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S023-0to2

Date Collected: 07/31/18 10:40

Date Received: 08/01/18 14:10

Lab Sample ID: 580-79257-5

Matrix: Solid

Percent Solids: 49.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1613B		1	240297	08/16/18 05:29	AS	TAL SAC

Client Sample ID: PDI-SC-S023-2to3.9

Date Collected: 07/31/18 10:45

Date Received: 08/01/18 14:10

Lab Sample ID: 580-79257-6

Matrix: Solid

Percent Solids: 53.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		239564	08/13/18 10:41	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	240997	08/20/18 12:57	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			239564	08/13/18 10:41	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240297	08/16/18 06:17	AS	TAL SAC

Client Sample ID: PDI-SC-S023-3.9to5.3

Date Collected: 07/31/18 10:50

Date Received: 08/01/18 14:10

Lab Sample ID: 580-79257-7

Matrix: Solid

Percent Solids: 70.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		239564	08/13/18 10:41	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	240997	08/20/18 13:35	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			239564	08/13/18 10:41	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240297	08/16/18 07:05	AS	TAL SAC

Client Sample ID: PDI-SC-S023-5.3to7.2

Date Collected: 07/31/18 10:55

Date Received: 08/01/18 14:10

Lab Sample ID: 580-79257-8

Matrix: Solid

Percent Solids: 65.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		239564	08/13/18 10:41	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	240997	08/20/18 14:13	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			239564	08/13/18 10:41	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240297	08/16/18 07:54	AS	TAL SAC

Client Sample ID: PDI-SC-S023-7.2to8.8

Date Collected: 07/31/18 11:00

Date Received: 08/01/18 14:10

Lab Sample ID: 580-79257-9

Matrix: Solid

Percent Solids: 78.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239564	08/13/18 10:41	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240297	08/16/18 08:42	AS	TAL SAC

TestAmerica Seattle

Lab Chronicle

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S031-0to2

Lab Sample ID: 580-79257-10

Date Collected: 07/31/18 16:55

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 53.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		239564	08/13/18 10:41	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	240997	08/20/18 15:28	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			239564	08/13/18 10:41	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240297	08/16/18 09:30	AS	TAL SAC

Client Sample ID: PDI-SC-S031-2to4

Lab Sample ID: 580-79257-11

Date Collected: 07/31/18 17:00

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 67.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		239564	08/13/18 10:41	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	240997	08/20/18 16:06	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			239564	08/13/18 10:41	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240297	08/16/18 10:19	AS	TAL SAC

Client Sample ID: PDI-SC-S031-4to5.5

Lab Sample ID: 580-79257-12

Date Collected: 07/31/18 17:05

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 72.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239564	08/13/18 10:41	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240353	08/16/18 17:40	AS	TAL SAC

Client Sample ID: PDI-SC-S031-5.5to7

Lab Sample ID: 580-79257-13

Date Collected: 07/31/18 17:10

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 68.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239583	08/13/18 11:51	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240353	08/16/18 18:28	AS	TAL SAC

Client Sample ID: PDI-SC-S031-7to9.2

Lab Sample ID: 580-79257-14

Date Collected: 07/31/18 17:15

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 68.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239583	08/13/18 11:51	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240353	08/16/18 19:30	AS	TAL SAC

TestAmerica Seattle

Lab Chronicle

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S038-0to2

Lab Sample ID: 580-79257-15

Date Collected: 07/31/18 12:45

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 55.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239583	08/13/18 11:51	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240353	08/16/18 20:19	AS	TAL SAC

Client Sample ID: PDI-SC-S038-2to3.4

Lab Sample ID: 580-79257-16

Date Collected: 07/31/18 12:50

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 57.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239583	08/13/18 11:51	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240353	08/16/18 21:07	AS	TAL SAC

Client Sample ID: PDI-SC-S038-3.4to5.4

Lab Sample ID: 580-79257-17

Date Collected: 07/31/18 12:55

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 59.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239583	08/13/18 11:51	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240353	08/16/18 21:55	AS	TAL SAC

Client Sample ID: PDI-SC-S038-5.4to7.2

Lab Sample ID: 580-79257-18

Date Collected: 07/31/18 13:00

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 56.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239583	08/13/18 11:51	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240353	08/16/18 22:44	AS	TAL SAC

Client Sample ID: PDI-SC-S085-0to2

Lab Sample ID: 580-79257-19

Date Collected: 08/01/18 09:30

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 58.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		239583	08/13/18 11:51	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	240997	08/20/18 18:00	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			239583	08/13/18 11:51	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240354	08/17/18 03:16	AS	TAL SAC

Client Sample ID: PDI-SC-S085-2to4

Lab Sample ID: 580-79257-20

Date Collected: 08/01/18 09:35

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 61.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239583	08/13/18 11:51	SR1	TAL SAC

TestAmerica Seattle

Lab Chronicle

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Client Sample ID: PDI-SC-S085-2to4

Date Collected: 08/01/18 09:35

Date Received: 08/01/18 14:10

Lab Sample ID: 580-79257-20

Matrix: Solid

Percent Solids: 61.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1613B		1	240354	08/17/18 04:04	AS	TAL SAC

Client Sample ID: PDI-SC-S085-4to6.4

Date Collected: 08/01/18 09:40

Date Received: 08/01/18 14:10

Lab Sample ID: 580-79257-21

Matrix: Solid

Percent Solids: 63.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239583	08/13/18 11:51	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240354	08/17/18 04:53	AS	TAL SAC

Client Sample ID: PDI-SC-S085-4to6.4D

Date Collected: 08/01/18 09:40

Date Received: 08/01/18 14:10

Lab Sample ID: 580-79257-22

Matrix: Solid

Percent Solids: 63.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239583	08/13/18 11:51	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240354	08/17/18 05:41	AS	TAL SAC

Client Sample ID: PDI-RB-SS-180731

Date Collected: 07/31/18 14:45

Date Received: 08/01/18 14:10

Lab Sample ID: 580-79257-23

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			238271	08/06/18 14:34	A1A	TAL SAC
Total/NA	Analysis	1613B		1	239572	08/09/18 20:42	AS	TAL SAC

Laboratory References:

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

TestAmerica Seattle

Accreditation/Certification Summary

Client: AECOM

TestAmerica Job ID: 580-79257-2

Project/Site: Portland Harbor Pre-Remedial Design

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	01-19-20
ANAB	DoD / DOE		L2236	01-19-22
ANAB	ISO/IEC 17025		L2236	01-19-22
California	State Program	9	2901	11-05-19
Montana (UST)	State Program	8	N/A	04-30-20
Nevada	State Program	9	WA000502019-1	07-31-19
Oregon	NELAP	10	WA100007	11-05-19
US Fish & Wildlife	Federal		LE058448-0	07-31-19
USDA	Federal		P330-14-00126	02-10-20
Washington	State Program	10	C553	02-17-20

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 / DOE		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	01-31-20
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	01-29-20
Illinois	NELAP	5	200060	03-17-19
Kansas	NELAP	7	E-10375	10-31-19
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	01-29-20
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	12-31-20
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	12-31-19
Wyoming	State Program	8	8TMS-L	01-28-19 *

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

TestAmerica Seattle

Sample Summary

Client: AECOM

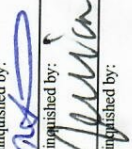
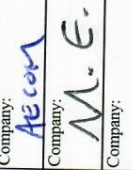
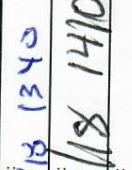
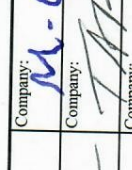
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-79257-1	PDI-SC-S062-0to2	Solid	07/31/18 15:30	08/01/18 14:10
580-79257-2	PDI-SC-S062-2to4	Solid	07/31/18 15:35	08/01/18 14:10
580-79257-3	PDI-SC-S062-4to6	Solid	07/31/18 15:40	08/01/18 14:10
580-79257-4	PDI-SC-S062-6to7.7	Solid	07/31/18 15:45	08/01/18 14:10
580-79257-5	PDI-SC-S023-0to2	Solid	07/31/18 10:40	08/01/18 14:10
580-79257-6	PDI-SC-S023-2to3.9	Solid	07/31/18 10:45	08/01/18 14:10
580-79257-7	PDI-SC-S023-3.9to5.3	Solid	07/31/18 10:50	08/01/18 14:10
580-79257-8	PDI-SC-S023-5.3to7.2	Solid	07/31/18 10:55	08/01/18 14:10
580-79257-9	PDI-SC-S023-7.2to8.8	Solid	07/31/18 11:00	08/01/18 14:10
580-79257-10	PDI-SC-S031-0to2	Solid	07/31/18 16:55	08/01/18 14:10
580-79257-11	PDI-SC-S031-2to4	Solid	07/31/18 17:00	08/01/18 14:10
580-79257-12	PDI-SC-S031-4to5.5	Solid	07/31/18 17:05	08/01/18 14:10
580-79257-13	PDI-SC-S031-5.5to7	Solid	07/31/18 17:10	08/01/18 14:10
580-79257-14	PDI-SC-S031-7to9.2	Solid	07/31/18 17:15	08/01/18 14:10
580-79257-15	PDI-SC-S038-0to2	Solid	07/31/18 12:45	08/01/18 14:10
580-79257-16	PDI-SC-S038-2to3.4	Solid	07/31/18 12:50	08/01/18 14:10
580-79257-17	PDI-SC-S038-3.4to5.4	Solid	07/31/18 12:55	08/01/18 14:10
580-79257-18	PDI-SC-S038-5.4to7.2	Solid	07/31/18 13:00	08/01/18 14:10
580-79257-19	PDI-SC-S085-0to2	Solid	08/01/18 09:30	08/01/18 14:10
580-79257-20	PDI-SC-S085-2to4	Solid	08/01/18 09:35	08/01/18 14:10
580-79257-21	PDI-SC-S085-4to6.4	Solid	08/01/18 09:40	08/01/18 14:10
580-79257-22	PDI-SC-S085-4to6.4D	Solid	08/01/18 09:40	08/01/18 14:10
580-79257-23	PDI-RB-SS-180731	Water	07/31/18 14:45	08/01/18 14:10

TestAmerica Seattle

SUBSURFACE SEDIMENT CHAIN OF CUSTODY									
Client Contact			Project Contact: Amy Dahl / Chelsey Cook			Site Contact: Jennifer Ray / Michaela McCoog		Date: 8/1/18	
TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047			Tel: (206) 438-2261 / (206) 438-2010 Analysis Turnaround Time Calendar (C) or Work Days (W) W			Laboratory Contact: Elaine-Walker		Carrier: Courier	
AFECOM 11111 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			21 days					COC No. 1 of 2 pages	
Portland, OR Project #: 60566335 Study: Subsurface Sediment			Other						
Sample Identification			Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Sample Specific Notes:
PDI-SC-S062 - 0 to 2			7/31/2018	15:30	SC		ED	4	
PDI-SC-S062 - 2 to 4			7/31/2018	15:35	SC		ED	4	
PDI-SC-S062 - 4 to 6			7/31/2018	15:40	SC		ED	4	
PDI-SC-S062 - 6 to 7.7			7/31/2018	15:45	SC		ED	4	
PDI-SC-S023 - 0 to 2			7/31/2018	10:40	SC		ED	4	
PDI-SC-S023 - 2 to 3.9			7/31/2018	10:45	SC		ED	4	
PDI-SC-S023 - 3.9 to 5.3			7/31/2018	10:50	SC		ED	4	
PDI-SC-S023 - 5.3 to 7.2			7/31/2018	10:55	SC		ED	4	
PDI-SC-S023 - 7.2 to 8.8			7/31/2018	11:00	SC		ED	4	
PDI-SC-S031 - 0 to 2			7/31/2018	16:55	SC		ED	4	
PDI-SC-S031 - 2 to 4			7/31/2018	17:00	SC		ED	4	
PDI-SC-S031 - 4 to 5.5			7/31/2018	17:05	SC		ED	4	
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)  580-79257 Chain of Custody									
Sample Disposal ☐ Return To Client ☒ Dispose By Lab ☒ Archive For 12 Months									
Special Instructions/QC Requirements & Comments: Separate reports for each lab									

Relinquished by:		Company:		Date/Time:	
 Jennifer Ray		AFECOM		8/1/18 1340	
		M.E.		8/1/18 1410	
Relinquished by:		Company:		Date/Time:	
 Amy Dahl		AFECOM		8/1/18 1340	
 Michaela McCoog		M.E.		8/1/18 1410	
Relinquished by:		Company:		Date/Time:	
 Elaine Walker		AFECOM		8/1/18 1340	
 Chelsey Cook		M.E.		8/1/18 1410	
Relinquished by:		Company:		Date/Time:	
 Amy Dahl		AFECOM		8/1/18 1340	
 Michaela McCoog		M.E.		8/1/18 1410	
Relinquished by:		Company:		Date/Time:	
 Elaine Walker		AFECOM		8/1/18 1340	
 Chelsey Cook		M.E.		8/1/18 1410	
Relinquished by:		Company:		Date/Time:	
 Amy Dahl		AFECOM		8/1/18 1340	
 Michaela McCoog		M.E.		8/1/18 1410	
Relinquished by:		Company:		Date/Time:	
 Elaine Walker		AFECOM		8/1/18 1340	

SUBSURFACE SEDIMENT CHAIN OF CUSTODY																					
Client Contact			Project Contact: Amy Dahl / Chelsey Cook			Site Contact: Jennifer Ray / Michaela McCoog			Date: 8/1/18												
AECOM			Tel: (206) 438-2261 / (206) 438-2010			Laboratory Contact: Elaine Walker			Carrier: Courier												
1111 3rd Ave Suite 1600			Analysis Turnaround Time						COC No: 1												
Seattle, WA 98101			Calendar (C) or Work Days (W) W						2 of 2 pages												
Phone: (206) 438-2700 Fax: 1+(866) 495-5288			21 days																		
Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling			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	PCDFs 1613B	Archive	Grain Size ASTM D7928/D6913	PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 9060, 1603	Alterberg Limits ASTM D4318	WA-D/Fs 1613B	WA-TOC SMS310B	WA-PAHs 8270-SIM	WA-PCB-A Congeners 1661	WA-TM-D Metals Hg	WA-NUTR-OX 160208 74714	WA-BEHP EPA 8270D-12	WA-Total Hydrocarbons Kkon-Lyng	Sample Specific Notes:
PDI-SC-S031 - 5.5 to 7	7/31/2018	17:10	SC		ED	4		X	X	X	X										
PDI-SC-S031 - 7 to 9.2	7/31/2018	17:15	SC		ED	4		X	X	X	X										
PDI-SC-S038 - 0 to 2	7/31/2018	12:45	SC		ED	4		X	X	X	X										
PDI-SC-S038 - 2 to 3.4	7/31/2018	12:50	SC		ED	5		X	X	X	X										
PDI-SC-S038 - 3.4 to 5.4	7/31/2018	12:55	SC		ED	4		X	X	X	X										
PDI-SC-S038 - 5.4 to 7.2	7/31/2018	13:00	SC		ED	6		X	X	X	X										
PDI-SC-S085 - 0 to 2	8/1/2018	9:30	SC		ED	4		X	X	X	X										
PDI-SC-S085 - 2 to 4	8/1/2018	9:35	SC		ED	4		X	X	X	X										
PDI-SC-S085 - 4 to 6.4	8/1/2018	9:40	SC		ED	4		X	X	X	X										
PDI-SC-S085 - 4 to 6.4D	8/1/2018	9:40	SC		ED	3		X	X	X	X										
PDI-RB-55-180731	7/31/18	14:45	W		ED	7		X	X	X	X										

Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Cold

Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid

Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)

Sample Disposal

☐ Return To Client ☒ Dispose By Lab ☒ Archive For 12 Months

Special Instructions/QC Requirements & Comments: Separate reports for each lab

Relinquished by: <i>[Signature]</i>	Company: AECOM	Date/Time: 8/1/18 1340	Received by: <i>[Signature]</i>	Company: M.E.	Date/Time: 8/1/18 1340
Relinquished by: <i>[Signature]</i>	Company: M.E.	Date/Time: 8/1/18 1410	Received by: <i>[Signature]</i>	Company: TAPOR	Date/Time: 8/1/18 1410
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

[illegible]

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: 8/1/18		COC No: 1		
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:		Analysis Turnaround Time Calendar (C) or Work Days (W) W ☒ 21 days ☐ Other _____				Laboratory Contact: Elaine-Walker				Carrier: Courier		2 of 2 pages		
						Fraction PCDD/Fs 1613B Aroclors Grain size ASTM D7928/D6913 PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 9060, 160.3 Atterberg Limits ASTM D4318				WQ - D/Fs 1613B WQ - TOC SMS310B WQ-PAHs 8270-SIM WQ- PCB-Aroclors 1613B WQ- PAH-D, Metals, Hg WQ-TEH-D, 60208, 7415A WQ-BEHP EPA 8270D-UL WQ- Total Solids 9060-160.3				
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.								Sample Specific Notes:
PDI-SC-S031 - 5.5 to 7	7/31/2018	17:10	SC		ED	4		x	x	x	x			
PDI-SC-S031 - 7 to 9.2	7/31/2018	17:15	SC		ED	4		x	x	x	x			
PDI-SC-S038 - 0 to 2	7/31/2018	12:45	SC		ED	4		x	x	x	x			
PDI-SC-S038 - 2 to 3.4	7/31/2018	12:50	SC		ED	5		x	x	x	x	x		
PDI-SC-S038 - 3.4 to 5.4	7/31/2018	12:55	SC		ED	4		x	x	x	x			
PDI-SC-S038 - 5.4 to 7.2	7/31/2018	13:00	SC		ED	6		x	x	x	x	x		
PDI-SC-S085 - 0 to 2	8/1/2018	9:30	SC		ED	4		x	x	x	x			
PDI-SC-S085 - 2 to 4	8/1/2018	9:35	SC		ED	4		x	x	x	x			
PDI-SC-S085 - 4 to 6.4	8/1/2018	9:40	SC	Dup	ED	4		x	x	x	x			
PDI-SC-S085 - 4 to 6.4D	8/1/2018	9:40	SC		ED	3		x	x		x			
PDI-RB-55-180731	7/31/18	14:45	W		ED	7						x	x	x
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Colu							AG	AG	WMG	WMG	AG			
Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid														
Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)							Sample Disposal ☐ Return To Client ☒ Disposal By Lab ☒ Archive For 12 Months							
Special Instructions/QC Requirements & Comments: Separate reports for each lab														
Relinquished by:		Company:		Date/Time:		Received by:		Company:		Date/Time:				
		AECOM		8/1/18 1340				M. E.		8/1/18 1340				
Relinquished by:		Company:		Date/Time:		Received by:		Company:		Date/Time:				
		M. E.		8/1/18 1410				TAPOR		8/1/18 1410				
Relinquished by:		Company:		Date/Time:		Received by:		Company:		Date/Time:				
		TAPOR		8/1/18 1700				TASed		8-2-18 0930				

JRS=0.1/0.1

Revised

SUBSURFACE SEDIMENT CHAIN OF CUSTODY

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047		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: <u>Subsurface Sediment</u> Sample Type:		Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010 Analysis Turnaround Time Calendar (C) or Work Days (W) <u>W</u> ☒ 21 days ☐ Other		Site Contact: Jennifer Ray / Michaela McCoog Laboratory Contact: Elaine Walker Date: 8/1/18 Carrier: Courier COC No: 1 of 2 pages	
Sample Identification Sample Date Sample Time Matrix QC Sample Sampler's Initials Total No. of Cont.		Analysis PCDD/Fs 1613B PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 9270D-SIM, 9060, 1603 Grain Size ASTM D7928/D6913 Atterberg Limits ASTM D4318		Sample Specific Notes:			
PDI-SC-S062 - 0 to 2	7/31/2018	15:30	SC	ED	4		
PDI-SC-S062 - 2 to 4	7/31/2018	15:35	SC	ED	4		
PDI-SC-S062 - 4 to 6	7/31/2018	15:40	SC	ED	4		
PDI-SC-S062 - 6 to 7.7	7/31/2018	15:45	SC	ED	4		
PDI-SC-S023 - 0 to 2	7/31/2018	10:40	SC	ED	4		
PDI-SC-S023 - 2 to 3.9	7/31/2018	10:45	SC	ED	4		
PDI-SC-S023 - 3.9 to 5.3	7/31/2018	10:50	SC	ED	4		
PDI-SC-S023 - 5.3 to 7.2	7/31/2018	10:55	SC	ED	4		
PDI-SC-S023 - 7.2 to 8.8	7/31/2018	11:00	SC	ED	4		
PDI-SC-S031 - 0 to 2	7/31/2018	16:55	SC	ED	4		
PDI-SC-S031 - 2 to 4	7/31/2018	17:00	SC	ED	4		
PDI-SC-S031 - 4 to 5.5	7/31/2018	17:05	SC	ED	4		



580-79257 Chain of Custody

Special Instructions/QC Requirements & Comments: Separate reports for each lab

swale 561 502, 605 ~~8/1/18~~

Relinquished by:	Company: <u>AECOM</u>	Date/Time: <u>8/1/18 1340</u>	Received by:	Company: <u>M-E</u>	Date/Time: <u>8/1/18 1340</u>
Relinquished by:	Company: <u>M-E</u>	Date/Time: <u>8/1/18 1410</u>	Received by:	Company: <u>TAPOR</u>	Date/Time: <u>8/1/18 1410</u>
Relinquished by:	Company: <u>TAPOR</u>	Date/Time: <u>8/1/18 1700</u>	Received by:	Company: <u>TASCO</u>	Date/Time: <u>8-2-18 0930</u>

RS-01/a1

Revised

SUBSURFACE SEDIMENT Per Account 8/31/18

CHAIN OF CUSTODY

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

Client Contact: AECOM 11111 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:

Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010 Analysis Turnaround Time: 21 days

Calendar (C) or Work Days (W) W

☒ 21 days

☐ Other

Site Contact: Jennifer Ray / Michaela McCoog Date: 8/1/18

Laboratory Contact: Elaine Walker Carrier: Courier

COC No: 1 of 2 pages

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Retention	PCDD/Fs 1613B	Archieve	Grain size ASTM D7928/D6913	PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 9060, 160.3	Afterberg Limits ASTM D4318	WG-D/Fs 1613B	WG-TOC SM53108	WG-PAHs 8270-SIM	WG-PCB-Aroclors 1242	WG-TH-D, HCB, HCH, HCH-OR, 16020, 4114	WG-BEHP EPA 8270-11	WG-Tributyltin Ketone-Butyltin
PDI-SC-S031 - 5.5 to 7	7/31/2018	17:10	SC		ED	4		X	X	X	X								
PDI-SC-S031 - 7 to 9.2	7/31/2018	17:15	SC		ED	4		X	X	X	X								
PDI-SC-S038 - 0 to 2	7/31/2018	12:45	SC		ED	4		X	X	X	X								
PDI-SC-S038 - 2 to 3.4	7/31/2018	12:50	SC		ED	5		X	X	X	X								
PDI-SC-S038 - 3.4 to 5.4	7/31/2018	12:55	SC		ED	4		X	X	X	X								
PDI-SC-S038 - 5.4 to 7.2	7/31/2018	13:00	SC		ED	6		X	X	X	X								
PDI-SC-S085 - 0 to 2	8/1/2018	9:30	SC		ED	4		X	X	X	X								
PDI-SC-S085 - 2 to 4	8/1/2018	9:35	SC		ED	4		X	X	X	X								
PDI-SC-S085 - 4 to 6.4	8/1/2018	9:40	SC		ED	4		X	X	X	X								
PDI-SC-S085 - 4 to 6.4D	8/1/2018	9:40	SC		ED	3		X	X	X	X								
PDI-SC-S085 - 180731	7/31/18	14:45	W		ED	7		X	X	X	X								

Container Type: WMG-Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Collu
Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid
Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)

Special Instructions/QC Requirements & Comments: Separate reports for each lab

Relinquished by: [Signature] Date/Time: 8/1/18 1340 Company: AECOM

Relinquished by: [Signature] Date/Time: 8/1/18 1410 Company: M.E.

Relinquished by: [Signature] Date/Time: 8/1/18 1700 Company: TAPOR

Received by: [Signature] Date/Time: 8/1/18 1340 Company: A.E.

Received by: [Signature] Date/Time: 8/1/18 1410 Company: TAPOR

Received by: [Signature] Date/Time: 8-2-18 0930 Company: TAPOR

PR5-0-10.1

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)		Sampler:		Lab P/N:		Carrier Tracking No(s):		COC No:	
Client Contact:		Walker, Elaine M		Walker, Elaine M		580-57764.1		580-57764.1	
Shipping/Receiving		Phone:		E-Mail:		State of Origin:		Page:	
Company:		TestAmerica Laboratories, Inc.		elaine.walker@testamericainc.com		Oregon		Page 1 of 3	
Address:		880 Riverside Parkway,		Due Date Requested:		Job #:		Preservation Codes:	
City:		West Sacramento		8/17/2018		580-79257-3		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:	
State, Zip:		CA, 95605		TAT Requested (days):				M - Hexane N - None O - AsNaO2 P - Na2OAS Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - NCAAA W - pH 4-5 Z - other (specify)	
Phone:		916-373-5600(Tel) 916-372-1059(Fax)		PO #:					
Email:				WO #:					
Project Name:		Portland Harbor Pre-Remedial Design		Project #:		58012120			
Site:				SSOW#:					

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=ore/sediment, BT=tissue, A=air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	AutoOP/PH Frozen Archive Container billed @ \$0.	Analysis Requested	Total Number of Containers	Special Instructions/Note:
PDI-SC-S062-0to2 (580-79257-1)	7/31/18	15:30 Pacific		Solid		X			2	
PDI-SC-S062-2to4 (580-79257-2)	7/31/18	15:35 Pacific		Solid		X			2	
PDI-SC-S062-4to6 (580-79257-3)	7/31/18	15:40 Pacific		Solid		X			2	
PDI-SC-S062-6to7.7 (580-79257-4)	7/31/18	15:45 Pacific		Solid		X			2	
PDI-SC-S023-0to2 (580-79257-5)	7/31/18	10:40 Pacific		Solid		X			2	
PDI-SC-S023-2to3.9 (580-79257-6)	7/31/18	10:45 Pacific		Solid		X			2	
PDI-SC-S023-3.9to5.3 (580-79257-7)	7/31/18	10:50 Pacific		Solid		X			2	
PDI-SC-S023-5.3to7.2 (580-79257-8)	7/31/18	10:55 Pacific		Solid		X			2	
PDI-SC-S023-7.2to8.8 (580-79257-9)	7/31/18	11:00 Pacific		Solid		X			2	

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. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/testing/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Unconfirmed		Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months	
Deliverable Requested: I, II, III, IV, Other (specify)		Special Instructions/OC Requirements:	
Primary Deliverable Rank: 1		Method of Shipment:	
Empty Kit Relinquished by:		Time:	
Relinquished by:		Date:	
Relinquished by:		Date:	
Relinquished by:		Date:	
Custody Seals Intact: ☐ Yes ☐ No		Custody Seal No.:	
3.1		Cooler Temperature(s) °C and Other Remarks:	

Ver: 09/20/2016

THE LEADER IN ENVIRONMENTAL TESTING

[illegible]

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

THE LEADER IN ENVIRONMENTAL TESTING

[illegible]

Ver-09/20/2016

THE LEADER IN ENVIRONMENTAL TESTING

Ver- 09/20/2016

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Ver: 09/20/2016

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-79257-2

Login Number: 79257

List Source: TestAmerica Seattle

List Number: 1

Creator: Antonson, Angeline D

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ 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.	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 $<6\text{mm}$ (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: 580-79257-2

Login Number: 79257

List Number: 3

Creator: Her, David A

List Source: TestAmerica Sacramento

List Creation: 08/04/18 01:41 PM

Question	Answer	Comment
Radioactivity wasn't checked or is <= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	3.1c
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: 580-79257-2

Login Number: 79257

List Number: 4

Creator: Her, David A

List Source: TestAmerica Sacramento

List Creation: 08/04/18 02:13 PM

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



580-79257 Field Sheet

Job: _____

Tracking # 44 23 0750 8303 SO ☒ PO ☐ FO ☐ 2-Day ☐ Ground ☐ UPS ☐ Courier ☐ GSO ☐
OnTrac ☐ Goldstreak ☐ USPS ☐ Other ☐

Notes:

Therm. ID: AK-2 / AK-3 / AK-5 / AK-6 / HACCP / Other _____Ice ☒ Wet ☒ Gel ☐ Other ☐

Cooler Custody Seal: SEAL

Sample Custody Seal: _____

Cooler ID: 10F2

Temp: Observed 3.1 °C

From: Temp Blank ☐ Sample ☒

NCM Filed: Yes ☐ No ☐

Yes No NA

Perchlorate has headspace? ☐ ☐ ☒

Alkalinity has no headspace? ☐ ☐ ☒

CoC is complete w/o discrepancies? ☒ ☐ ☐

Samples received within holding time? ☒ ☐ ☐

Sample preservatives verified? ☒ ☐ ☐

Cooler compromised/tampered with? ☐ ☒ ☐

Samples compromised/tampered with? ☐ ☒ ☐

Samples w/o discrepancies? ☒ ☐ ☐

Sample containers have legible labels? ☒ ☐ ☐

Containers are not broken or leaking? ☒ ☐ ☐

Sample date/times are provided.

Appropriate containers are used? ☒ ☐ ☐

Sample bottles are completely filled? ☒ ☐ ☐

Zero headspace?* ☐ ☐ ☒

Multiphasic samples are not present? ☒ ☐ ☐

Sample temp OK? ☒ ☐ ☐

Sample out of temp? ☐ ☒ ☐

Initials: CAF Date: 09/04/10

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Isotope Dilution Summary

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

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

Matrix: Solid

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	HxCDD (32-141)	HxCDF (26-152)	HxDD (28-130)	HxDF (26-123)	HxCF (29-147)
580-79257-1	PDI-SC-S062-0to2	52	41	56	51	46	51	43	57
580-79257-1 - RA	PDI-SC-S062-0to2								
580-79257-2	PDI-SC-S062-2to4	59	42	63	57	53	53	49	57
580-79257-2 - RA	PDI-SC-S062-2to4								
580-79257-3	PDI-SC-S062-4to6	50	36	49	55	46	52	44	59
580-79257-3 - RA	PDI-SC-S062-4to6								
580-79257-4	PDI-SC-S062-6to7.7	48	36	50	54	46	47	42	56
580-79257-4 - RA	PDI-SC-S062-6to7.7								
580-79257-5	PDI-SC-S023-0to2	45	36	47	50	38	48	36	56
580-79257-5 - RA	PDI-SC-S023-0to2								
580-79257-6	PDI-SC-S023-2to3.9	47	37	44	51	42	48	41	58
580-79257-6 - RA	PDI-SC-S023-2to3.9								
580-79257-7	PDI-SC-S023-3.9to5.3	49	40	51	54	46	47	42	56
580-79257-7 - RA	PDI-SC-S023-3.9to5.3								
580-79257-8	PDI-SC-S023-5.3to7.2	53	42	48	55	52	48	48	60
580-79257-8 - RA	PDI-SC-S023-5.3to7.2								
580-79257-9	PDI-SC-S023-7.2to8.8	60	47	56	60	48	56	45	60
580-79257-10	PDI-SC-S031-0to2	41	36	39	58	55	47	53	60
580-79257-10 - RA	PDI-SC-S031-0to2								
580-79257-11	PDI-SC-S031-2to4	52	42	53	61	51	50	45	58
580-79257-11 - RA	PDI-SC-S031-2to4								
580-79257-12	PDI-SC-S031-4to5.5	56	49	64	51	43	49	38	58
580-79257-13	PDI-SC-S031-5.5to7	67	44	72	59	56	55	52	60
580-79257-14	PDI-SC-S031-7to9.2	55	44	61	50	43	52	42	57
580-79257-15	PDI-SC-S038-0to2	43	40	45	65	56	48	47	63
580-79257-16	PDI-SC-S038-2to3.4	55	42	50	66	53	58	51	64
580-79257-17	PDI-SC-S038-3.4to5.4	56	43	46	66	59	58	56	69
580-79257-18	PDI-SC-S038-5.4to7.2	50	42	54	69	59	55	46	67
580-79257-19	PDI-SC-S085-0to2	64	50	62	69	74	56	67	70
580-79257-19 - RA	PDI-SC-S085-0to2								
580-79257-20	PDI-SC-S085-2to4	65	43	72	66	64	107	48	55
580-79257-21	PDI-SC-S085-4to6.4	53	32	57	61	68	48	53	63
580-79257-22	PDI-SC-S085-4to6.4D	59	51	61	79	77	61	65	74
MB 320-239564/1-A	Method Blank	65	65	72	67	57	72	56	70
MB 320-239583/1-A	Method Blank	66	58	71	67	57	62	53	71

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)
580-79257-1	PDI-SC-S062-0to2	67	64	49	63	60		61
580-79257-1 - RA	PDI-SC-S062-0to2						58	
580-79257-2	PDI-SC-S062-2to4	70	66	56	69	59		69
580-79257-2 - RA	PDI-SC-S062-2to4						57	
580-79257-3	PDI-SC-S062-4to6	73	64	52	67	61		58
580-79257-3 - RA	PDI-SC-S062-4to6						58	
580-79257-4	PDI-SC-S062-6to7.7	70	61	48	62	59		55
580-79257-4 - RA	PDI-SC-S062-6to7.7						56	
580-79257-5	PDI-SC-S023-0to2	73	57	44	68	61		47
580-79257-5 - RA	PDI-SC-S023-0to2						60	
580-79257-6	PDI-SC-S023-2to3.9	73	64	45	65	54		56

TestAmerica Seattle

Isotope Dilution Summary

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

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)
580-79257-6 - RA	PDI-SC-S023-2to3.9						56	
580-79257-7	PDI-SC-S023-3.9to5.3	64	61	48	59	56		58
580-79257-7 - RA	PDI-SC-S023-3.9to5.3						50	
580-79257-8	PDI-SC-S023-5.3to7.2	74	56	47	66	58		63
580-79257-8 - RA	PDI-SC-S023-5.3to7.2						61	
580-79257-9	PDI-SC-S023-7.2to8.8	83	74	54	72	61	67	58
580-79257-10	PDI-SC-S031-0to2	69	56	51	61	56		47
580-79257-10 - RA	PDI-SC-S031-0to2						61	
580-79257-11	PDI-SC-S031-2to4	61	53	55	53	57		52
580-79257-11 - RA	PDI-SC-S031-2to4						62	
580-79257-12	PDI-SC-S031-4to5.5	75	66	45	68	67	64	70
580-79257-13	PDI-SC-S031-5.5to7	71	61	61	61	56	57	64
580-79257-14	PDI-SC-S031-7to9.2	66	55	48	57	54	55	67
580-79257-15	PDI-SC-S038-0to2	105	72	53	85	63	66	40
580-79257-16	PDI-SC-S038-2to3.4	69	65	57	65	57	62	51
580-79257-17	PDI-SC-S038-3.4to5.4	101	86	56	84	63	65	65
580-79257-18	PDI-SC-S038-5.4to7.2	88	75	58	75	62	65	58
580-79257-19	PDI-SC-S085-0to2	150	102	56	115	71		79
580-79257-19 - RA	PDI-SC-S085-0to2						63	
580-79257-20	PDI-SC-S085-2to4	91	74	53	79	64	57	82
580-79257-21	PDI-SC-S085-4to6.4	94	72	58	74	58	57	69
580-79257-22	PDI-SC-S085-4to6.4D	103	84	65	88	66	68	78
MB 320-239564/1-A	Method Blank	73	65	64	64	68	70	86
MB 320-239583/1-A	Method Blank	89	72	64	78	62	63	102

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-HpCDF
 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: 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 320-239564/2-A	Lab Control Sample	68	63	74	69	62	71	59	75

TestAmerica Seattle

Isotope Dilution Summary

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79257-2

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

Matrix: Solid

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	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 320-239583/2-A	Lab Control Sample	71	57	75	59	60	54	55	62
LCSD 320-239564/3-A	Lab Control Sample Dup	78	67	81	68	61	67	59	73
LCSD 320-239583/3-A	Lab Control Sample Dup	70	49	76	46	43	46	39	59

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PeCDD (21-227)	PeCDF (21-192)	¹³ CHxCF (22-176)	PeCF (13-328)	TCDD (20-175)	TCDF (22-152)	OCDD (13-199)
LCS 320-239564/2-A	Lab Control Sample	84	73	71	71	60	68	84
LCS 320-239583/2-A	Lab Control Sample	71	58	57	65	59	60	89
LCSD 320-239564/3-A	Lab Control Sample Dup	79	75	65	66	68	68	96
LCSD 320-239583/3-A	Lab Control Sample Dup	64	50	47	49	57	48	88

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-HpCDF
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

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	HxCDD (32-141)	HxCDF (26-152)	HxDD (28-130)	HxDF (26-123)	HxCF (29-147)
580-79257-23	PDI-RB-SS-180731	96	90	96	79	76	82	79	81
MB 320-238271/1-A	Method Blank	85	84	85	78	77	84	81	80

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PeCDD (25-181)	PeCDF (24-185)	¹³ CHxCF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)
580-79257-23	PDI-RB-SS-180731	71	71	82	69	86	81	104
MB 320-238271/1-A	Method Blank	73	74	82	76	84	83	80

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-HpCDF
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

TestAmerica Seattle

Isotope Dilution Summary

Client: AECOM

TestAmerica Job ID: 580-79257-2

Project/Site: Portland Harbor Pre-Remedial Design

HxCDF = 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

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	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 320-238271/2-A	Lab Control Sample	71	71	72	65	66	70	68	69
LCSD 320-238271/3-A	Lab Control Sample Dup	66	67	68	61	63	64	65	65

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PeCDD (21-227)	PeCDF (21-192)	13CHxCF (22-176)	PeCF (13-328)	TCDD (20-175)	TCDF (22-152)	OCDD (13-199)
LCS 320-238271/2-A	Lab Control Sample	61	61	70	62	69	68	70
LCSD 320-238271/3-A	Lab Control Sample Dup	58	58	66	59	67	66	62

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-HpCDF
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

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