

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

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

TestAmerica Job ID: 580-79329-2

Client Project/Site: Portland Harbor Pre-Remedial Design

For:

AECOM
1111 Third Ave
Suite 1600
Seattle, Washington 98101

Attn: Amy Dahl

M. Elaine Walker

Authorized for release by:
8/26/2018 4:36:38 PM

Elaine Walker, Project Manager II
(253)248-4972
elaine.walker@testamericainc.com

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

1

2

3

4

5

6

7

8

9

10

11

12

13



Table of Contents

Cover Page	1
Table of Contents	2
Case Narrative	3
Definitions	6
Client Sample Results	7
QC Sample Results	49
Chronicle	60
Certification Summary	69
Sample Summary	70
Chain of Custody	71
Receipt Checklists	93
Field Data Sheets	97
Isotope Dilution Summary	102

Case Narrative

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

TestAmerica Job ID: 580-79329-2

Job ID: 580-79329-2

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE

Client: AECOM

Project: Portland Harbor Pre-Remedial Design

Report Number: 580-79329-2

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

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

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

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

RECEIPT

The samples were received on 08/03/2018; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was C.

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-S144-0to2 (580-79329-1), PDI-SC-S144-2to4 (580-79329-2), PDI-SC-S144-4to6 (580-79329-3), PDI-SC-S144-6to8 (580-79329-4), PDI-SC-S144-8to10 (580-79329-5), PDI-SC-S144-10to12.1 (580-79329-6), PDI-SC-S086-0to2 (580-79329-7), PDI-SC-S086-0to2D (580-79329-8), PDI-SC-S086-2to3.3 (580-79329-9), PDI-SC-S218-0to2 (580-79329-10), PDI-SC-S218-2to4.5 (580-79329-11), PDI-SC-S218-4.5to6 (580-79329-12), PDI-SC-S172-2to4 (580-79329-13), PDI-SC-S172-2to4D (580-79329-14), PDI-SC-S172-4to6 (580-79329-15), PDI-SC-S172-6to8.1 (580-79329-16), PDI-SC-S178-0to2 (580-79329-17), PDI-SC-S178-2to3.7 (580-79329-18), PDI-SC-S178-3.7to4.7 (580-79329-19), PDI-SC-S178-4.7to6.7 (580-79329-20), PDI-SC-S178-6.7to8.7 (580-79329-21), PDI-SC-S178-8.7to10.7 (580-79329-22), PDI-SC-S178-10.7to12.7 (580-79329-23), PDI-SC-S178-12.7to14 (580-79329-24), PDI-SC-S083-0to1.6 (580-79329-25), PDI-SC-S083-1.6to3.5 (580-79329-26), PDI-SC-S083-3.5to5.0 (580-79329-27), PDI-SC-S083-5to6.6 (580-79329-28), PDI-SC-S032-0to2 (580-79329-29), PDI-SC-S032-2to4 (580-79329-30), PDI-SC-S032-4to6 (580-79329-31), PDI-SC-S032-6to8 (580-79329-32), PDI-SC-S032-8to10 (580-79329-33), PDI-SC-S032-10to12 (580-79329-34), PDI-SC-S032-12to14 (580-79329-35), PDI-SC-S172-0to2 (580-79329-36), PDI-SC-S218-6to8 (580-79329-37), PDI-SC-S218-8to10 (580-79329-38) and PDI-SC-S228-0to2.3 (580-79329-39) were analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 08/14/2018, 08/15/2018 and 08/17/2018 and analyzed on 08/16/2018, 08/17/2018, 08/18/2018, 08/21/2018, 08/22/2018, 08/23/2018 and 08/24/2018.

1,2,3,4,7,8-HxCDD and OCDD were detected in method blank MB 320-239750/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

Several analytes were detected in method blank MB 320-240044/1-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.

1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF, 1,2,3,4,7,8-HxCDD and OCDD were detected in method blank MB

Case Narrative

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

TestAmerica Job ID: 580-79329-2

Job ID: 580-79329-2 (Continued)

Laboratory: TestAmerica Seattle (Continued)

320-240515/1-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.

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 and 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 10D5 exceeded this criteria: (CCV 320-239903/2), (LCS 320-238927/2-A), (LCSD 320-238927/3-A), (MB 320-238927/1-A), PDI-SC-S218-2to4.5 (580-79329-11), PDI-SC-S218-4.5to6 (580-79329-12), PDI-SC-S172-2to4 (580-79329-13), PDI-SC-S172-2to4D (580-79329-14), PDI-SC-S172-4to6 (580-79329-15), PDI-SC-S172-6to8.1 (580-79329-16), PDI-SC-S178-0to2 (580-79329-17), PDI-SC-S178-2to3.7 (580-79329-18), PDI-SC-S178-3.7to4.7 (580-79329-19), PDI-SC-S178-4.7to6.7 (580-79329-20), PDI-SC-S178-6.7to8.7 (580-79329-21), PDI-SC-S178-8.7to10.7 (580-79329-22), (CCV 320-240862/27), (CCV 320-240865/40), (CCV 320-240867/52), (LCS 320-240044/2-A), (MB 320-240044/1-A), (CCV 320-241645/14), (LCS 320-240515/2-A), (LCSD 320-240515/3-A) and (MB 320-240515/1-A). 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 and 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 4D5 exceeded this criteria: PDI-SC-S144-0to2 (580-79329-1), PDI-SC-S144-2to4 (580-79329-2), PDI-SC-S144-4to6 (580-79329-3), PDI-SC-S144-6to8 (580-79329-4), PDI-SC-S144-8to10 (580-79329-5), PDI-SC-S144-10to12.1 (580-79329-6), PDI-SC-S086-0to2D (580-79329-8), PDI-SC-S086-2to3.3 (580-79329-9), (CCV 320-240517/2), (LCS 320-239750/2-A), (LCSD 320-239750/3-A) and (MB 320-239750/1-A). 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.

The automated resolution check scheduled to be performed on 8/17/2018 at 0530 hrs. did not print due to the computer error. Upon arrival to work the same morning the analyst performed a manual ending resolution check at 0725 hrs. which indicated the instrument maintained greater than 10,000 resolution. This delay in printing the ending resolution check has no impact on the data. PDI-SC-S144-6to8 (580-79329-4), (CCV 320-240517/2) and (WDM 320-240517/1).

The concentration of one or more analytes associated with the following samples exceeded the instrument calibration range: PDI-SC-S144-0to2 (580-79329-1), PDI-SC-S144-2to4 (580-79329-2), PDI-SC-S144-4to6 (580-79329-3), PDI-SC-S218-0to2 (580-79329-10), PDI-SC-S218-2to4.5 (580-79329-11), PDI-SC-S172-2to4 (580-79329-13) and PDI-SC-S178-0to2 (580-79329-17). 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.

The following samples exhibited elevated noise or matrix interferences for one or more analytes causing elevation of the detection limit (EDL): PDI-SC-S144-0to2 (580-79329-1), PDI-SC-S144-2to4 (580-79329-2), PDI-SC-S144-4to6 (580-79329-3), PDI-SC-S218-0to2 (580-79329-10), PDI-SC-S218-2to4.5 (580-79329-11), PDI-SC-S172-2to4 (580-79329-13), PDI-SC-S083-5to6.6 (580-79329-28), PDI-SC-S172-0to2 (580-79329-36). The reporting limit (RL) for the affected analytes has been raised to be equal to the EDL, and a "G" qualifier applied.

The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: PDI-SC-S178-2to3.7 (580-79329-18), PDI-SC-S178-3.7to4.7 (580-79329-19) and PDI-SC-S083-5to6.6 (580-79329-28). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample.

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-S144-0to2 (580-79329-1), PDI-SC-S144-2to4 (580-79329-2), PDI-SC-S144-4to6 (580-79329-3), PDI-SC-S144-6to8 (580-79329-4), PDI-SC-S086-0to2D (580-79329-8), PDI-SC-S086-2to3.3 (580-79329-9), PDI-SC-S218-0to2 (580-79329-10), PDI-SC-S218-2to4.5 (580-79329-11), PDI-SC-S172-2to4 (580-79329-13), PDI-SC-S172-2to4D (580-79329-14), PDI-SC-S172-4to6 (580-79329-15), PDI-SC-S178-0to2 (580-79329-17), PDI-SC-S178-2to3.7 (580-79329-18), PDI-SC-S083-0to1.6 (580-79329-25), (CCV 320-241235/3), and (CCV 320-241201/2). 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.

Case Narrative

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

TestAmerica Job ID: 580-79329-2

Job ID: 580-79329-2 (Continued)

Laboratory: TestAmerica Seattle (Continued)

The following samples were diluted due to the nature of the sample matrix: PDI-SC-S083-1.6to3.5 (580-79329-26) and PDI-SC-S083-3.5to5.0 (580-79329-27). Elevated reporting limits (RLs) are provided.

The following sample was diluted due to matrix effects shifting isotope dilution analytes severely enough to impact target analyte quantitation: PDI-SC-S086-0to2 (580-79329-7). Elevated reporting limits (RLs) are provided.

Due to the matrix, the initial volumes used for the following samples deviated from the standard procedure: PDI-SC-S144-0to2 (580-79329-1), PDI-SC-S144-2to4 (580-79329-2), PDI-SC-S144-4to6 (580-79329-3), PDI-SC-S144-6to8 (580-79329-4), PDI-SC-S144-8to10 (580-79329-5), PDI-SC-S144-10to12.1 (580-79329-6), PDI-SC-S086-0to2 (580-79329-7), PDI-SC-S086-0to2D (580-79329-8), PDI-SC-S086-2to3.3 (580-79329-9), PDI-SC-S218-0to2 (580-79329-10), PDI-SC-S218-2to4.5 (580-79329-11), PDI-SC-S218-4.5to6 (580-79329-12), PDI-SC-S172-2to4 (580-79329-13), PDI-SC-S172-2to4D (580-79329-14), PDI-SC-S172-4to6 (580-79329-15), PDI-SC-S172-6to8.1 (580-79329-16), PDI-SC-S178-0to2 (580-79329-17), PDI-SC-S178-2to3.7 (580-79329-18), PDI-SC-S178-3.7to4.7 (580-79329-19), PDI-SC-S178-4.7to6.7 (580-79329-20), PDI-SC-S178-6.7to8.7 (580-79329-21), PDI-SC-S178-8.7to10.7 (580-79329-22), PDI-SC-S178-10.7to12.7 (580-79329-23), PDI-SC-S178-12.7to14 (580-79329-24), PDI-SC-S083-0to1.6 (580-79329-25), PDI-SC-S083-1.6to3.5 (580-79329-26), PDI-SC-S083-3.5to5.0 (580-79329-27), PDI-SC-S083-5to6.6 (580-79329-28), PDI-SC-S032-0to2 (580-79329-29), PDI-SC-S032-2to4 (580-79329-30), PDI-SC-S032-4to6 (580-79329-31), PDI-SC-S032-6to8 (580-79329-32), PDI-SC-S032-8to10 (580-79329-33), PDI-SC-S032-10to12 (580-79329-34), PDI-SC-S032-12to14 (580-79329-35), PDI-SC-S172-0to2 (580-79329-36), PDI-SC-S218-6to8 (580-79329-37), PDI-SC-S218-8to10 (580-79329-38) and PDI-SC-S228-0to2.3 (580-79329-39). The reporting limits (RLs) have been adjusted proportionately.

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

DIOXIN/ FURAN - RINSE BLANK

Samples PDI-RB-SS-180801 (580-79329-44), PDI-RB-SS-180802-1645 (580-79329-45) and PDI-RB-SS-180802 (580-79329-46) were analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 08/09/2018 and analyzed on 08/15/2018.

Several analytes were detected in method blank MB 320-238927/1-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. Refer to the QC report for details.

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 10D5 exceeded this criteria: PDI-RB-SS-180801 (580-79329-44), PDI-RB-SS-180802-1645 (580-79329-45), PDI-RB-SS-180802 (580-79329-46) and (CCV 320-239905/16). 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.

Definitions/Glossary

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

TestAmerica Job ID: 580-79329-2

Qualifiers

Dioxin

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

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: 580-79329-2

Client Sample ID: PDI-SC-S144-0to2

Lab Sample ID: 580-79329-1

Date Collected: 08/01/18 11:50

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 47.5

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	1.1	G	0.018	0.018	ug/Kg	☼	08/14/18 09:34	08/16/18 22:11	1
1,2,3,4,6,7,8-HpCDF	0.11		0.0053	0.0025	ug/Kg	☼	08/14/18 09:34	08/16/18 22:11	1
1,2,3,4,7,8,9-HpCDF	0.0073		0.0053	0.0030	ug/Kg	☼	08/14/18 09:34	08/16/18 22:11	1
1,2,3,4,7,8-HxCDD	0.013	B	0.0053	0.00087	ug/Kg	☼	08/14/18 09:34	08/16/18 22:11	1
1,2,3,4,7,8-HxCDF	0.017		0.0053	0.0020	ug/Kg	☼	08/14/18 09:34	08/16/18 22:11	1
1,2,3,6,7,8-HxCDD	0.074		0.0053	0.00089	ug/Kg	☼	08/14/18 09:34	08/16/18 22:11	1
1,2,3,6,7,8-HxCDF	0.0086		0.0053	0.0020	ug/Kg	☼	08/14/18 09:34	08/16/18 22:11	1
1,2,3,7,8,9-HxCDD	0.033		0.0053	0.00078	ug/Kg	☼	08/14/18 09:34	08/16/18 22:11	1
1,2,3,7,8,9-HxCDF	ND		0.0053	0.0027	ug/Kg	☼	08/14/18 09:34	08/16/18 22:11	1
1,2,3,7,8-PeCDD	0.0067		0.0053	0.00033	ug/Kg	☼	08/14/18 09:34	08/16/18 22:11	1
1,2,3,7,8-PeCDF	0.0045	J	0.0053	0.00025	ug/Kg	☼	08/14/18 09:34	08/16/18 22:11	1
2,3,4,6,7,8-HxCDF	0.0043	J	0.0053	0.0018	ug/Kg	☼	08/14/18 09:34	08/16/18 22:11	1
2,3,4,7,8-PeCDF	0.0038	J	0.0053	0.00027	ug/Kg	☼	08/14/18 09:34	08/16/18 22:11	1
2,3,7,8-TCDD	0.0014		0.0011	0.00014	ug/Kg	☼	08/14/18 09:34	08/16/18 22:11	1
OCDD	10	E B G	0.031	0.031	ug/Kg	☼	08/14/18 09:34	08/16/18 22:11	1
OCDF	0.24		0.011	0.00088	ug/Kg	☼	08/14/18 09:34	08/16/18 22:11	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	55		23 - 140	08/14/18 09:34	08/16/18 22:11	1
13C-1,2,3,4,6,7,8-HpCDF	49		28 - 143	08/14/18 09:34	08/16/18 22:11	1
13C-1,2,3,4,7,8,9-HpCDF	56		26 - 138	08/14/18 09:34	08/16/18 22:11	1
13C-1,2,3,4,7,8-HxCDD	61		32 - 141	08/14/18 09:34	08/16/18 22:11	1
13C-1,2,3,4,7,8-HxCDF	57		26 - 152	08/14/18 09:34	08/16/18 22:11	1
13C-1,2,3,6,7,8-HxCDD	52		28 - 130	08/14/18 09:34	08/16/18 22:11	1
13C-1,2,3,6,7,8-HxCDF	55		26 - 123	08/14/18 09:34	08/16/18 22:11	1
13C-1,2,3,7,8,9-HxCDF	44		29 - 147	08/14/18 09:34	08/16/18 22:11	1
13C-1,2,3,7,8-PeCDD	73		25 - 181	08/14/18 09:34	08/16/18 22:11	1
13C-1,2,3,7,8-PeCDF	72		24 - 185	08/14/18 09:34	08/16/18 22:11	1
13C-2,3,4,6,7,8-HxCDF	57		28 - 136	08/14/18 09:34	08/16/18 22:11	1
13C-2,3,4,7,8-PeCDF	74		21 - 178	08/14/18 09:34	08/16/18 22:11	1
13C-2,3,7,8-TCDD	63		25 - 164	08/14/18 09:34	08/16/18 22:11	1
13C-OCDD	61		17 - 157	08/14/18 09:34	08/16/18 22:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	88		35 - 197	08/14/18 09:34	08/16/18 22:11	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0022		0.0011	0.00079	ug/Kg	☼	08/14/18 09:34	08/21/18 00:17	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	58		24 - 169	08/14/18 09:34	08/21/18 00:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	91		35 - 197	08/14/18 09:34	08/21/18 00:17	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S144-2to4

Lab Sample ID: 580-79329-2

Date Collected: 08/01/18 11:55

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 54.4

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	0.82	G	0.012	0.012	ug/Kg	☼	08/14/18 09:34	08/16/18 22:54	1
1,2,3,4,6,7,8-HpCDF	0.15		0.0046	0.0034	ug/Kg	☼	08/14/18 09:34	08/16/18 22:54	1
1,2,3,4,7,8,9-HpCDF	0.013		0.0046	0.0041	ug/Kg	☼	08/14/18 09:34	08/16/18 22:54	1
1,2,3,4,7,8-HxCDD	0.0067	B	0.0046	0.00061	ug/Kg	☼	08/14/18 09:34	08/16/18 22:54	1
1,2,3,4,7,8-HxCDF	0.034		0.0046	0.0023	ug/Kg	☼	08/14/18 09:34	08/16/18 22:54	1
1,2,3,6,7,8-HxCDD	0.039		0.0046	0.00060	ug/Kg	☼	08/14/18 09:34	08/16/18 22:54	1
1,2,3,6,7,8-HxCDF	0.013		0.0046	0.0022	ug/Kg	☼	08/14/18 09:34	08/16/18 22:54	1
1,2,3,7,8,9-HxCDD	0.016		0.0046	0.00053	ug/Kg	☼	08/14/18 09:34	08/16/18 22:54	1
1,2,3,7,8,9-HxCDF	ND		0.0046	0.0030	ug/Kg	☼	08/14/18 09:34	08/16/18 22:54	1
1,2,3,7,8-PeCDD	0.0026	J	0.0046	0.00032	ug/Kg	☼	08/14/18 09:34	08/16/18 22:54	1
1,2,3,7,8-PeCDF	0.0072		0.0046	0.0012	ug/Kg	☼	08/14/18 09:34	08/16/18 22:54	1
2,3,4,6,7,8-HxCDF	ND		0.0046	0.0031	ug/Kg	☼	08/14/18 09:34	08/16/18 22:54	1
2,3,4,7,8-PeCDF	0.0062		0.0046	0.0013	ug/Kg	☼	08/14/18 09:34	08/16/18 22:54	1
2,3,7,8-TCDD	0.0011		0.00091	0.00010	ug/Kg	☼	08/14/18 09:34	08/16/18 22:54	1
OCDD	8.2	E B G	0.020	0.020	ug/Kg	☼	08/14/18 09:34	08/16/18 22:54	1
OCDF	0.34		0.0091	0.00099	ug/Kg	☼	08/14/18 09:34	08/16/18 22:54	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	63		23 - 140	08/14/18 09:34	08/16/18 22:54	1
13C-1,2,3,4,6,7,8-HpCDF	55		28 - 143	08/14/18 09:34	08/16/18 22:54	1
13C-1,2,3,4,7,8,9-HpCDF	63		26 - 138	08/14/18 09:34	08/16/18 22:54	1
13C-1,2,3,4,7,8-HxCDD	61		32 - 141	08/14/18 09:34	08/16/18 22:54	1
13C-1,2,3,4,7,8-HxCDF	66		26 - 152	08/14/18 09:34	08/16/18 22:54	1
13C-1,2,3,6,7,8-HxCDD	59		28 - 130	08/14/18 09:34	08/16/18 22:54	1
13C-1,2,3,6,7,8-HxCDF	65		26 - 123	08/14/18 09:34	08/16/18 22:54	1
13C-1,2,3,7,8,9-HxCDF	51		29 - 147	08/14/18 09:34	08/16/18 22:54	1
13C-1,2,3,7,8-PeCDD	82		25 - 181	08/14/18 09:34	08/16/18 22:54	1
13C-1,2,3,7,8-PeCDF	79		24 - 185	08/14/18 09:34	08/16/18 22:54	1
13C-2,3,4,6,7,8-HxCDF	54		28 - 136	08/14/18 09:34	08/16/18 22:54	1
13C-2,3,4,7,8-PeCDF	79		21 - 178	08/14/18 09:34	08/16/18 22:54	1
13C-2,3,7,8-TCDD	63		25 - 164	08/14/18 09:34	08/16/18 22:54	1
13C-OCDD	75		17 - 157	08/14/18 09:34	08/16/18 22:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	89		35 - 197	08/14/18 09:34	08/16/18 22:54	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	0.0029		0.00091	0.00037	ug/Kg	☼	08/14/18 09:34	08/21/18 00:55	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	58		24 - 169	08/14/18 09:34	08/21/18 00:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197	08/14/18 09:34	08/21/18 00:55	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S144-4to6

Lab Sample ID: 580-79329-3

Date Collected: 08/01/18 12:00

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 57.0

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	0.78	G	0.012	0.012	ug/Kg	☼	08/14/18 09:34	08/16/18 23:37	1
1,2,3,4,6,7,8-HpCDF	0.21	G	0.0058	0.0058	ug/Kg	☼	08/14/18 09:34	08/16/18 23:37	1
1,2,3,4,7,8,9-HpCDF	0.021	G	0.0064	0.0064	ug/Kg	☼	08/14/18 09:34	08/16/18 23:37	1
1,2,3,4,7,8-HxCDD	0.0045	B	0.0044	0.00073	ug/Kg	☼	08/14/18 09:34	08/16/18 23:37	1
1,2,3,4,7,8-HxCDF	0.050		0.0044	0.0020	ug/Kg	☼	08/14/18 09:34	08/16/18 23:37	1
1,2,3,6,7,8-HxCDD	0.031		0.0044	0.00072	ug/Kg	☼	08/14/18 09:34	08/16/18 23:37	1
1,2,3,6,7,8-HxCDF	0.015		0.0044	0.0020	ug/Kg	☼	08/14/18 09:34	08/16/18 23:37	1
1,2,3,7,8,9-HxCDD	0.012		0.0044	0.00064	ug/Kg	☼	08/14/18 09:34	08/16/18 23:37	1
1,2,3,7,8,9-HxCDF	ND		0.0044	0.0023	ug/Kg	☼	08/14/18 09:34	08/16/18 23:37	1
1,2,3,7,8-PeCDD	0.0021	J	0.0044	0.00068	ug/Kg	☼	08/14/18 09:34	08/16/18 23:37	1
1,2,3,7,8-PeCDF	0.0063		0.0044	0.0013	ug/Kg	☼	08/14/18 09:34	08/16/18 23:37	1
2,3,4,6,7,8-HxCDF	0.0039	J q	0.0044	0.0023	ug/Kg	☼	08/14/18 09:34	08/16/18 23:37	1
2,3,4,7,8-PeCDF	0.0096		0.0044	0.0014	ug/Kg	☼	08/14/18 09:34	08/16/18 23:37	1
2,3,7,8-TCDD	0.00084	J q	0.00087	0.00013	ug/Kg	☼	08/14/18 09:34	08/16/18 23:37	1
OCDD	7.4	E B G	0.017	0.017	ug/Kg	☼	08/14/18 09:34	08/16/18 23:37	1
OCDF	0.74		0.0087	0.0017	ug/Kg	☼	08/14/18 09:34	08/16/18 23:37	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	54		23 - 140	08/14/18 09:34	08/16/18 23:37	1
13C-1,2,3,4,6,7,8-HpCDF	47		28 - 143	08/14/18 09:34	08/16/18 23:37	1
13C-1,2,3,4,7,8,9-HpCDF	55		26 - 138	08/14/18 09:34	08/16/18 23:37	1
13C-1,2,3,4,7,8-HxCDD	57		32 - 141	08/14/18 09:34	08/16/18 23:37	1
13C-1,2,3,4,7,8-HxCDF	63		26 - 152	08/14/18 09:34	08/16/18 23:37	1
13C-1,2,3,6,7,8-HxCDD	50		28 - 130	08/14/18 09:34	08/16/18 23:37	1
13C-1,2,3,6,7,8-HxCDF	60		26 - 123	08/14/18 09:34	08/16/18 23:37	1
13C-1,2,3,7,8,9-HxCDF	50		29 - 147	08/14/18 09:34	08/16/18 23:37	1
13C-1,2,3,7,8-PeCDD	79		25 - 181	08/14/18 09:34	08/16/18 23:37	1
13C-1,2,3,7,8-PeCDF	77		24 - 185	08/14/18 09:34	08/16/18 23:37	1
13C-2,3,4,6,7,8-HxCDF	51		28 - 136	08/14/18 09:34	08/16/18 23:37	1
13C-2,3,4,7,8-PeCDF	79		21 - 178	08/14/18 09:34	08/16/18 23:37	1
13C-2,3,7,8-TCDD	60		25 - 164	08/14/18 09:34	08/16/18 23:37	1
13C-OCDD	67		17 - 157	08/14/18 09:34	08/16/18 23:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	92		35 - 197	08/14/18 09:34	08/16/18 23:37	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0032		0.00087	0.00030	ug/Kg	☼	08/14/18 09:34	08/21/18 01:33	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	59		24 - 169	08/14/18 09:34	08/21/18 01:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197	08/14/18 09:34	08/21/18 01:33	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S144-6to8

Lab Sample ID: 580-79329-4

Date Collected: 08/01/18 12:05

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 59.1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.10		0.0041	0.00080	ug/Kg	☼	08/14/18 09:34	08/17/18 00:20	1
1,2,3,4,6,7,8-HpCDF	0.16		0.0041	0.0014	ug/Kg	☼	08/14/18 09:34	08/17/18 00:20	1
1,2,3,4,7,8,9-HpCDF	0.0037	J	0.0041	0.0018	ug/Kg	☼	08/14/18 09:34	08/17/18 00:20	1
1,2,3,4,7,8-HxCDD	0.0013	J B	0.0041	0.00030	ug/Kg	☼	08/14/18 09:34	08/17/18 00:20	1
1,2,3,4,7,8-HxCDF	0.0093		0.0041	0.0013	ug/Kg	☼	08/14/18 09:34	08/17/18 00:20	1
1,2,3,6,7,8-HxCDD	0.0070		0.0041	0.00028	ug/Kg	☼	08/14/18 09:34	08/17/18 00:20	1
1,2,3,6,7,8-HxCDF	0.013		0.0041	0.0013	ug/Kg	☼	08/14/18 09:34	08/17/18 00:20	1
1,2,3,7,8,9-HxCDD	0.0027	J	0.0041	0.00025	ug/Kg	☼	08/14/18 09:34	08/17/18 00:20	1
1,2,3,7,8,9-HxCDF	ND		0.0041	0.0018	ug/Kg	☼	08/14/18 09:34	08/17/18 00:20	1
1,2,3,7,8-PeCDD	0.0012	J	0.0041	0.00051	ug/Kg	☼	08/14/18 09:34	08/17/18 00:20	1
1,2,3,7,8-PeCDF	0.0016	J	0.0041	0.0011	ug/Kg	☼	08/14/18 09:34	08/17/18 00:20	1
2,3,4,6,7,8-HxCDF	0.0027	J	0.0041	0.0014	ug/Kg	☼	08/14/18 09:34	08/17/18 00:20	1
2,3,4,7,8-PeCDF	0.0028	J	0.0041	0.0012	ug/Kg	☼	08/14/18 09:34	08/17/18 00:20	1
2,3,7,8-TCDD	0.00048	J q	0.00083	0.00013	ug/Kg	☼	08/14/18 09:34	08/17/18 00:20	1
OCDD	1.3	B	0.0083	0.0032	ug/Kg	☼	08/14/18 09:34	08/17/18 00:20	1
OCDF	0.13		0.0083	0.00054	ug/Kg	☼	08/14/18 09:34	08/17/18 00:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	56		23 - 140	08/14/18 09:34	08/17/18 00:20	1
13C-1,2,3,4,6,7,8-HpCDF	51		28 - 143	08/14/18 09:34	08/17/18 00:20	1
13C-1,2,3,4,7,8,9-HpCDF	55		26 - 138	08/14/18 09:34	08/17/18 00:20	1
13C-1,2,3,4,7,8-HxCDD	64		32 - 141	08/14/18 09:34	08/17/18 00:20	1
13C-1,2,3,4,7,8-HxCDF	68		26 - 152	08/14/18 09:34	08/17/18 00:20	1
13C-1,2,3,6,7,8-HxCDD	56		28 - 130	08/14/18 09:34	08/17/18 00:20	1
13C-1,2,3,6,7,8-HxCDF	65		26 - 123	08/14/18 09:34	08/17/18 00:20	1
13C-1,2,3,7,8,9-HxCDF	49		29 - 147	08/14/18 09:34	08/17/18 00:20	1
13C-1,2,3,7,8-PeCDD	79		25 - 181	08/14/18 09:34	08/17/18 00:20	1
13C-1,2,3,7,8-PeCDF	76		24 - 185	08/14/18 09:34	08/17/18 00:20	1
13C-2,3,4,6,7,8-HxCDF	62		28 - 136	08/14/18 09:34	08/17/18 00:20	1
13C-2,3,4,7,8-PeCDF	77		21 - 178	08/14/18 09:34	08/17/18 00:20	1
13C-2,3,7,8-TCDD	60		25 - 164	08/14/18 09:34	08/17/18 00:20	1
13C-OCDD	71		17 - 157	08/14/18 09:34	08/17/18 00:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	92		35 - 197	08/14/18 09:34	08/17/18 00:20	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	0.0011		0.00083	0.00047	ug/Kg	☼	08/14/18 09:34	08/21/18 02:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	57		24 - 169	08/14/18 09:34	08/21/18 02:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	93		35 - 197	08/14/18 09:34	08/21/18 02:10	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S144-8to10

Lab Sample ID: 580-79329-5

Date Collected: 08/01/18 12:10

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 61.7

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	0.0031	J	0.0040	0.00026	ug/Kg	☼	08/14/18 09:34	08/17/18 01:03	1
1,2,3,4,6,7,8-HpCDF	0.0023	J	0.0040	0.00022	ug/Kg	☼	08/14/18 09:34	08/17/18 01:03	1
1,2,3,4,7,8,9-HpCDF	ND		0.0040	0.00027	ug/Kg	☼	08/14/18 09:34	08/17/18 01:03	1
1,2,3,4,7,8-HxCDD	0.00029	J B	0.0040	0.00019	ug/Kg	☼	08/14/18 09:34	08/17/18 01:03	1
1,2,3,4,7,8-HxCDF	ND		0.0040	0.00022	ug/Kg	☼	08/14/18 09:34	08/17/18 01:03	1
1,2,3,6,7,8-HxCDD	0.00088	J	0.0040	0.00019	ug/Kg	☼	08/14/18 09:34	08/17/18 01:03	1
1,2,3,6,7,8-HxCDF	ND		0.0040	0.00021	ug/Kg	☼	08/14/18 09:34	08/17/18 01:03	1
1,2,3,7,8,9-HxCDD	0.00038	J q	0.0040	0.00017	ug/Kg	☼	08/14/18 09:34	08/17/18 01:03	1
1,2,3,7,8,9-HxCDF	ND		0.0040	0.00031	ug/Kg	☼	08/14/18 09:34	08/17/18 01:03	1
1,2,3,7,8-PeCDD	ND		0.0040	0.00022	ug/Kg	☼	08/14/18 09:34	08/17/18 01:03	1
1,2,3,7,8-PeCDF	ND		0.0040	0.00015	ug/Kg	☼	08/14/18 09:34	08/17/18 01:03	1
2,3,4,6,7,8-HxCDF	ND		0.0040	0.00021	ug/Kg	☼	08/14/18 09:34	08/17/18 01:03	1
2,3,4,7,8-PeCDF	ND		0.0040	0.00016	ug/Kg	☼	08/14/18 09:34	08/17/18 01:03	1
2,3,7,8-TCDD	ND		0.00081	0.000071	ug/Kg	☼	08/14/18 09:34	08/17/18 01:03	1
2,3,7,8-TCDF	0.00039	J	0.00081	0.00011	ug/Kg	☼	08/14/18 09:34	08/17/18 01:03	1
OCDD	0.030	B	0.0081	0.00042	ug/Kg	☼	08/14/18 09:34	08/17/18 01:03	1
OCDF	0.0023	J	0.0081	0.00024	ug/Kg	☼	08/14/18 09:34	08/17/18 01:03	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	55		23 - 140	08/14/18 09:34	08/17/18 01:03	1
13C-1,2,3,4,6,7,8-HpCDF	54		28 - 143	08/14/18 09:34	08/17/18 01:03	1
13C-1,2,3,4,7,8,9-HpCDF	53		26 - 138	08/14/18 09:34	08/17/18 01:03	1
13C-1,2,3,4,7,8-HxCDD	68		32 - 141	08/14/18 09:34	08/17/18 01:03	1
13C-1,2,3,4,7,8-HxCDF	67		26 - 152	08/14/18 09:34	08/17/18 01:03	1
13C-1,2,3,6,7,8-HxCDD	52		28 - 130	08/14/18 09:34	08/17/18 01:03	1
13C-1,2,3,6,7,8-HxCDF	64		26 - 123	08/14/18 09:34	08/17/18 01:03	1
13C-1,2,3,7,8,9-HxCDF	47		29 - 147	08/14/18 09:34	08/17/18 01:03	1
13C-1,2,3,7,8-PeCDD	77		25 - 181	08/14/18 09:34	08/17/18 01:03	1
13C-1,2,3,7,8-PeCDF	75		24 - 185	08/14/18 09:34	08/17/18 01:03	1
13C-2,3,4,6,7,8-HxCDF	63		28 - 136	08/14/18 09:34	08/17/18 01:03	1
13C-2,3,4,7,8-PeCDF	76		21 - 178	08/14/18 09:34	08/17/18 01:03	1
13C-2,3,7,8-TCDD	61		25 - 164	08/14/18 09:34	08/17/18 01:03	1
13C-2,3,7,8-TCDF	62		24 - 169	08/14/18 09:34	08/17/18 01:03	1
13C-OCDD	66		17 - 157	08/14/18 09:34	08/17/18 01:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	91		35 - 197	08/14/18 09:34	08/17/18 01:03	1

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S144-10to12.1

Lab Sample ID: 580-79329-6

Date Collected: 08/01/18 12:15

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 62.3

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	0.0027	J	0.0040	0.00022	ug/Kg	☼	08/14/18 09:34	08/17/18 01:45	1
1,2,3,4,6,7,8-HpCDF	0.0011	J q	0.0040	0.00021	ug/Kg	☼	08/14/18 09:34	08/17/18 01:45	1
1,2,3,4,7,8,9-HpCDF	0.0010	J	0.0040	0.00026	ug/Kg	☼	08/14/18 09:34	08/17/18 01:45	1
1,2,3,4,7,8-HxCDD	0.00028	J B q	0.0040	0.00015	ug/Kg	☼	08/14/18 09:34	08/17/18 01:45	1
1,2,3,4,7,8-HxCDF	0.00029	J q	0.0040	0.00013	ug/Kg	☼	08/14/18 09:34	08/17/18 01:45	1
1,2,3,6,7,8-HxCDD	0.00047	J q	0.0040	0.00015	ug/Kg	☼	08/14/18 09:34	08/17/18 01:45	1
1,2,3,6,7,8-HxCDF	0.00024	J q	0.0040	0.00012	ug/Kg	☼	08/14/18 09:34	08/17/18 01:45	1
1,2,3,7,8,9-HxCDD	0.00074	J	0.0040	0.00013	ug/Kg	☼	08/14/18 09:34	08/17/18 01:45	1
1,2,3,7,8,9-HxCDF	0.00042	J	0.0040	0.00019	ug/Kg	☼	08/14/18 09:34	08/17/18 01:45	1
1,2,3,7,8-PeCDD	ND		0.0040	0.00012	ug/Kg	☼	08/14/18 09:34	08/17/18 01:45	1
1,2,3,7,8-PeCDF	ND		0.0040	0.000089	ug/Kg	☼	08/14/18 09:34	08/17/18 01:45	1
2,3,4,6,7,8-HxCDF	0.00056	J q	0.0040	0.00012	ug/Kg	☼	08/14/18 09:34	08/17/18 01:45	1
2,3,4,7,8-PeCDF	ND		0.0040	0.000095	ug/Kg	☼	08/14/18 09:34	08/17/18 01:45	1
2,3,7,8-TCDD	ND		0.00079	0.000070	ug/Kg	☼	08/14/18 09:34	08/17/18 01:45	1
2,3,7,8-TCDF	0.00019	J	0.00079	0.000054	ug/Kg	☼	08/14/18 09:34	08/17/18 01:45	1
OCDD	0.018	B	0.0079	0.00033	ug/Kg	☼	08/14/18 09:34	08/17/18 01:45	1
OCDF	0.0033	J	0.0079	0.00045	ug/Kg	☼	08/14/18 09:34	08/17/18 01:45	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	57		23 - 140	08/14/18 09:34	08/17/18 01:45	1
13C-1,2,3,4,6,7,8-HpCDF	53		28 - 143	08/14/18 09:34	08/17/18 01:45	1
13C-1,2,3,4,7,8,9-HpCDF	55		26 - 138	08/14/18 09:34	08/17/18 01:45	1
13C-1,2,3,4,7,8-HxCDD	64		32 - 141	08/14/18 09:34	08/17/18 01:45	1
13C-1,2,3,4,7,8-HxCDF	64		26 - 152	08/14/18 09:34	08/17/18 01:45	1
13C-1,2,3,6,7,8-HxCDD	52		28 - 130	08/14/18 09:34	08/17/18 01:45	1
13C-1,2,3,6,7,8-HxCDF	60		26 - 123	08/14/18 09:34	08/17/18 01:45	1
13C-1,2,3,7,8,9-HxCDF	44		29 - 147	08/14/18 09:34	08/17/18 01:45	1
13C-1,2,3,7,8-PeCDD	72		25 - 181	08/14/18 09:34	08/17/18 01:45	1
13C-1,2,3,7,8-PeCDF	70		24 - 185	08/14/18 09:34	08/17/18 01:45	1
13C-2,3,4,6,7,8-HxCDF	61		28 - 136	08/14/18 09:34	08/17/18 01:45	1
13C-2,3,4,7,8-PeCDF	70		21 - 178	08/14/18 09:34	08/17/18 01:45	1
13C-2,3,7,8-TCDD	60		25 - 164	08/14/18 09:34	08/17/18 01:45	1
13C-2,3,7,8-TCDF	60		24 - 169	08/14/18 09:34	08/17/18 01:45	1
13C-OCDD	68		17 - 157	08/14/18 09:34	08/17/18 01:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	89		35 - 197	08/14/18 09:34	08/17/18 01:45	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S086-0to2

Lab Sample ID: 580-79329-7

Date Collected: 08/02/18 09:20

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 78.4

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	0.11		0.063	0.0029	ug/Kg	☼	08/14/18 09:34	08/18/18 12:10	20
1,2,3,4,6,7,8-HpCDF	0.015	J	0.063	0.0012	ug/Kg	☼	08/14/18 09:34	08/18/18 12:10	20
1,2,3,4,7,8,9-HpCDF	ND		0.063	0.0017	ug/Kg	☼	08/14/18 09:34	08/18/18 12:10	20
1,2,3,4,7,8-HxCDD	ND		0.063	0.00087	ug/Kg	☼	08/14/18 09:34	08/18/18 12:10	20
1,2,3,4,7,8-HxCDF	0.0031	J q	0.063	0.0011	ug/Kg	☼	08/14/18 09:34	08/18/18 12:10	20
1,2,3,6,7,8-HxCDD	0.0027	J	0.063	0.00077	ug/Kg	☼	08/14/18 09:34	08/18/18 12:10	20
1,2,3,6,7,8-HxCDF	ND		0.063	0.00097	ug/Kg	☼	08/14/18 09:34	08/18/18 12:10	20
1,2,3,7,8,9-HxCDD	0.0025	J	0.063	0.00076	ug/Kg	☼	08/14/18 09:34	08/18/18 12:10	20
1,2,3,7,8,9-HxCDF	ND		0.063	0.00063	ug/Kg	☼	08/14/18 09:34	08/18/18 12:10	20
1,2,3,7,8-PeCDD	ND		0.063	0.00093	ug/Kg	☼	08/14/18 09:34	08/18/18 12:10	20
1,2,3,7,8-PeCDF	ND		0.063	0.00074	ug/Kg	☼	08/14/18 09:34	08/18/18 12:10	20
2,3,4,6,7,8-HxCDF	ND		0.063	0.00076	ug/Kg	☼	08/14/18 09:34	08/18/18 12:10	20
2,3,4,7,8-PeCDF	ND		0.063	0.00088	ug/Kg	☼	08/14/18 09:34	08/18/18 12:10	20
2,3,7,8-TCDD	ND		0.013	0.0020	ug/Kg	☼	08/14/18 09:34	08/18/18 12:10	20
2,3,7,8-TCDF	ND		0.013	0.0020	ug/Kg	☼	08/14/18 09:34	08/18/18 12:10	20
OCDD	0.89	B	0.13	0.0034	ug/Kg	☼	08/14/18 09:34	08/18/18 12:10	20
OCDF	0.038	J	0.13	0.0018	ug/Kg	☼	08/14/18 09:34	08/18/18 12:10	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	62		23 - 140	08/14/18 09:34	08/18/18 12:10	20
13C-1,2,3,4,6,7,8-HpCDF	51		28 - 143	08/14/18 09:34	08/18/18 12:10	20
13C-1,2,3,4,7,8,9-HpCDF	65		26 - 138	08/14/18 09:34	08/18/18 12:10	20
13C-1,2,3,4,7,8-HxCDD	55		32 - 141	08/14/18 09:34	08/18/18 12:10	20
13C-1,2,3,4,7,8-HxCDF	48		26 - 152	08/14/18 09:34	08/18/18 12:10	20
13C-1,2,3,6,7,8-HxCDD	52		28 - 130	08/14/18 09:34	08/18/18 12:10	20
13C-1,2,3,6,7,8-HxCDF	43		26 - 123	08/14/18 09:34	08/18/18 12:10	20
13C-1,2,3,7,8,9-HxCDF	64		29 - 147	08/14/18 09:34	08/18/18 12:10	20
13C-1,2,3,7,8-PeCDD	88		25 - 181	08/14/18 09:34	08/18/18 12:10	20
13C-1,2,3,7,8-PeCDF	82		24 - 185	08/14/18 09:34	08/18/18 12:10	20
13C-2,3,4,6,7,8-HxCDF	53		28 - 136	08/14/18 09:34	08/18/18 12:10	20
13C-2,3,4,7,8-PeCDF	72		21 - 178	08/14/18 09:34	08/18/18 12:10	20
13C-2,3,7,8-TCDD	69		25 - 164	08/14/18 09:34	08/18/18 12:10	20
13C-2,3,7,8-TCDF	75		24 - 169	08/14/18 09:34	08/18/18 12:10	20
13C-OCDD	64		17 - 157	08/14/18 09:34	08/18/18 12:10	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	107		35 - 197	08/14/18 09:34	08/18/18 12:10	20

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S086-0to2D

Lab Sample ID: 580-79329-8

Date Collected: 08/02/18 09:20

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 80.3

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	0.019		0.0031	0.00020	ug/Kg	☼	08/14/18 09:34	08/17/18 03:11	1
1,2,3,4,6,7,8-HpCDF	0.0032		0.0031	0.00015	ug/Kg	☼	08/14/18 09:34	08/17/18 03:11	1
1,2,3,4,7,8,9-HpCDF	ND		0.0031	0.00019	ug/Kg	☼	08/14/18 09:34	08/17/18 03:11	1
1,2,3,4,7,8-HxCDD	0.00022	J B q	0.0031	0.00019	ug/Kg	☼	08/14/18 09:34	08/17/18 03:11	1
1,2,3,4,7,8-HxCDF	0.0012	J	0.0031	0.00011	ug/Kg	☼	08/14/18 09:34	08/17/18 03:11	1
1,2,3,6,7,8-HxCDD	0.00054	J q	0.0031	0.00018	ug/Kg	☼	08/14/18 09:34	08/17/18 03:11	1
1,2,3,6,7,8-HxCDF	0.00042	J	0.0031	0.00011	ug/Kg	☼	08/14/18 09:34	08/17/18 03:11	1
1,2,3,7,8,9-HxCDD	0.00032	J	0.0031	0.00016	ug/Kg	☼	08/14/18 09:34	08/17/18 03:11	1
1,2,3,7,8,9-HxCDF	ND		0.0031	0.00013	ug/Kg	☼	08/14/18 09:34	08/17/18 03:11	1
1,2,3,7,8-PeCDD	ND		0.0031	0.00010	ug/Kg	☼	08/14/18 09:34	08/17/18 03:11	1
1,2,3,7,8-PeCDF	0.00057	J	0.0031	0.000069	ug/Kg	☼	08/14/18 09:34	08/17/18 03:11	1
2,3,4,6,7,8-HxCDF	ND		0.0031	0.00012	ug/Kg	☼	08/14/18 09:34	08/17/18 03:11	1
2,3,4,7,8-PeCDF	0.00031	J q	0.0031	0.000071	ug/Kg	☼	08/14/18 09:34	08/17/18 03:11	1
2,3,7,8-TCDD	ND		0.00062	0.00012	ug/Kg	☼	08/14/18 09:34	08/17/18 03:11	1
OCDD	0.17	B	0.0062	0.00045	ug/Kg	☼	08/14/18 09:34	08/17/18 03:11	1
OCDF	0.0070		0.0062	0.00042	ug/Kg	☼	08/14/18 09:34	08/17/18 03:11	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	60		23 - 140	08/14/18 09:34	08/17/18 03:11	1
13C-1,2,3,4,6,7,8-HpCDF	59		28 - 143	08/14/18 09:34	08/17/18 03:11	1
13C-1,2,3,4,7,8,9-HpCDF	64		26 - 138	08/14/18 09:34	08/17/18 03:11	1
13C-1,2,3,4,7,8-HxCDD	65		32 - 141	08/14/18 09:34	08/17/18 03:11	1
13C-1,2,3,4,7,8-HxCDF	71		26 - 152	08/14/18 09:34	08/17/18 03:11	1
13C-1,2,3,6,7,8-HxCDD	58		28 - 130	08/14/18 09:34	08/17/18 03:11	1
13C-1,2,3,6,7,8-HxCDF	67		26 - 123	08/14/18 09:34	08/17/18 03:11	1
13C-1,2,3,7,8,9-HxCDF	53		29 - 147	08/14/18 09:34	08/17/18 03:11	1
13C-1,2,3,7,8-PeCDD	70		25 - 181	08/14/18 09:34	08/17/18 03:11	1
13C-1,2,3,7,8-PeCDF	70		24 - 185	08/14/18 09:34	08/17/18 03:11	1
13C-2,3,4,6,7,8-HxCDF	58		28 - 136	08/14/18 09:34	08/17/18 03:11	1
13C-2,3,4,7,8-PeCDF	67		21 - 178	08/14/18 09:34	08/17/18 03:11	1
13C-2,3,7,8-TCDD	58		25 - 164	08/14/18 09:34	08/17/18 03:11	1
13C-OCDD	73		17 - 157	08/14/18 09:34	08/17/18 03:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	88		35 - 197	08/14/18 09:34	08/17/18 03:11	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.00043	J q	0.00062	0.00015	ug/Kg	☼	08/14/18 09:34	08/21/18 02:48	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	55		24 - 169	08/14/18 09:34	08/21/18 02:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	96		35 - 197	08/14/18 09:34	08/21/18 02:48	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S086-2to3.3

Lab Sample ID: 580-79329-9

Date Collected: 08/02/18 09:25

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 76.7

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	0.099		0.0032	0.00094	ug/Kg	☼	08/14/18 09:34	08/17/18 03:54	1
1,2,3,4,6,7,8-HpCDF	0.0046		0.0032	0.00018	ug/Kg	☼	08/14/18 09:34	08/17/18 03:54	1
1,2,3,4,7,8,9-HpCDF	ND		0.0032	0.00023	ug/Kg	☼	08/14/18 09:34	08/17/18 03:54	1
1,2,3,4,7,8-HxCDD	0.00023	J B q	0.0032	0.00015	ug/Kg	☼	08/14/18 09:34	08/17/18 03:54	1
1,2,3,4,7,8-HxCDF	0.0019	J	0.0032	0.00016	ug/Kg	☼	08/14/18 09:34	08/17/18 03:54	1
1,2,3,6,7,8-HxCDD	0.0017	J	0.0032	0.00015	ug/Kg	☼	08/14/18 09:34	08/17/18 03:54	1
1,2,3,6,7,8-HxCDF	0.00054	J	0.0032	0.00014	ug/Kg	☼	08/14/18 09:34	08/17/18 03:54	1
1,2,3,7,8,9-HxCDD	0.0011	J	0.0032	0.00013	ug/Kg	☼	08/14/18 09:34	08/17/18 03:54	1
1,2,3,7,8,9-HxCDF	ND		0.0032	0.00021	ug/Kg	☼	08/14/18 09:34	08/17/18 03:54	1
1,2,3,7,8-PeCDD	ND		0.0032	0.00032	ug/Kg	☼	08/14/18 09:34	08/17/18 03:54	1
1,2,3,7,8-PeCDF	0.0010	J	0.0032	0.00017	ug/Kg	☼	08/14/18 09:34	08/17/18 03:54	1
2,3,4,6,7,8-HxCDF	ND		0.0032	0.00014	ug/Kg	☼	08/14/18 09:34	08/17/18 03:54	1
2,3,4,7,8-PeCDF	0.00043	J	0.0032	0.00015	ug/Kg	☼	08/14/18 09:34	08/17/18 03:54	1
2,3,7,8-TCDD	ND		0.00065	0.000055	ug/Kg	☼	08/14/18 09:34	08/17/18 03:54	1
2,3,7,8-TCDF	0.00064	J q	0.00065	0.000065	ug/Kg	☼	08/14/18 09:34	08/17/18 03:54	1
OCDD	0.74	B	0.0065	0.0016	ug/Kg	☼	08/14/18 09:34	08/17/18 03:54	1
OCDF	0.029		0.0065	0.00023	ug/Kg	☼	08/14/18 09:34	08/17/18 03:54	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	56		23 - 140	08/14/18 09:34	08/17/18 03:54	1
13C-1,2,3,4,6,7,8-HpCDF	57		28 - 143	08/14/18 09:34	08/17/18 03:54	1
13C-1,2,3,4,7,8,9-HpCDF	58		26 - 138	08/14/18 09:34	08/17/18 03:54	1
13C-1,2,3,4,7,8-HxCDD	67		32 - 141	08/14/18 09:34	08/17/18 03:54	1
13C-1,2,3,4,7,8-HxCDF	68		26 - 152	08/14/18 09:34	08/17/18 03:54	1
13C-1,2,3,6,7,8-HxCDD	59		28 - 130	08/14/18 09:34	08/17/18 03:54	1
13C-1,2,3,6,7,8-HxCDF	67		26 - 123	08/14/18 09:34	08/17/18 03:54	1
13C-1,2,3,7,8,9-HxCDF	48		29 - 147	08/14/18 09:34	08/17/18 03:54	1
13C-1,2,3,7,8-PeCDD	77		25 - 181	08/14/18 09:34	08/17/18 03:54	1
13C-1,2,3,7,8-PeCDF	75		24 - 185	08/14/18 09:34	08/17/18 03:54	1
13C-2,3,4,6,7,8-HxCDF	63		28 - 136	08/14/18 09:34	08/17/18 03:54	1
13C-2,3,4,7,8-PeCDF	68		21 - 178	08/14/18 09:34	08/17/18 03:54	1
13C-2,3,7,8-TCDD	65		25 - 164	08/14/18 09:34	08/17/18 03:54	1
13C-2,3,7,8-TCDF	63		24 - 169	08/14/18 09:34	08/17/18 03:54	1
13C-OCDD	57		17 - 157	08/14/18 09:34	08/17/18 03:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	91		35 - 197	08/14/18 09:34	08/17/18 03:54	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S218-0to2

Lab Sample ID: 580-79329-10

Date Collected: 08/02/18 11:20

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 56.1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.32	B G	0.0047	0.0047	ug/Kg	☼	08/15/18 11:35	08/21/18 19:54	1
1,2,3,4,6,7,8-HpCDF	0.045	B q	0.0044	0.0016	ug/Kg	☼	08/15/18 11:35	08/21/18 19:54	1
1,2,3,4,7,8,9-HpCDF	ND		0.0044	0.0021	ug/Kg	☼	08/15/18 11:35	08/21/18 19:54	1
1,2,3,4,7,8-HxCDD	0.00080	J B	0.0044	0.00026	ug/Kg	☼	08/15/18 11:35	08/21/18 19:54	1
1,2,3,4,7,8-HxCDF	0.0023	J	0.0044	0.00051	ug/Kg	☼	08/15/18 11:35	08/21/18 19:54	1
1,2,3,6,7,8-HxCDD	0.0062	q	0.0044	0.00024	ug/Kg	☼	08/15/18 11:35	08/21/18 19:54	1
1,2,3,6,7,8-HxCDF	0.0019	J	0.0044	0.00043	ug/Kg	☼	08/15/18 11:35	08/21/18 19:54	1
1,2,3,7,8,9-HxCDD	0.0038	J	0.0044	0.00023	ug/Kg	☼	08/15/18 11:35	08/21/18 19:54	1
1,2,3,7,8,9-HxCDF	ND		0.0044	0.00030	ug/Kg	☼	08/15/18 11:35	08/21/18 19:54	1
1,2,3,7,8-PeCDD	0.00078	J q	0.0044	0.00014	ug/Kg	☼	08/15/18 11:35	08/21/18 19:54	1
1,2,3,7,8-PeCDF	0.00069	J	0.0044	0.00017	ug/Kg	☼	08/15/18 11:35	08/21/18 19:54	1
2,3,4,6,7,8-HxCDF	0.00082	J	0.0044	0.00033	ug/Kg	☼	08/15/18 11:35	08/21/18 19:54	1
2,3,4,7,8-PeCDF	0.00083	J	0.0044	0.00018	ug/Kg	☼	08/15/18 11:35	08/21/18 19:54	1
2,3,7,8-TCDD	0.0021		0.00088	0.000094	ug/Kg	☼	08/15/18 11:35	08/21/18 19:54	1
OCDD	5.1	E B	0.0088	0.0035	ug/Kg	☼	08/15/18 11:35	08/21/18 19:54	1
OCDF	0.45	B	0.0088	0.00036	ug/Kg	☼	08/15/18 11:35	08/21/18 19:54	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	55		23 - 140	08/15/18 11:35	08/21/18 19:54	1
13C-1,2,3,4,6,7,8-HpCDF	42		28 - 143	08/15/18 11:35	08/21/18 19:54	1
13C-1,2,3,4,7,8,9-HpCDF	48		26 - 138	08/15/18 11:35	08/21/18 19:54	1
13C-1,2,3,4,7,8-HxCDD	53		32 - 141	08/15/18 11:35	08/21/18 19:54	1
13C-1,2,3,4,7,8-HxCDF	52		26 - 152	08/15/18 11:35	08/21/18 19:54	1
13C-1,2,3,6,7,8-HxCDD	52		28 - 130	08/15/18 11:35	08/21/18 19:54	1
13C-1,2,3,6,7,8-HxCDF	51		26 - 123	08/15/18 11:35	08/21/18 19:54	1
13C-1,2,3,7,8,9-HxCDF	57		29 - 147	08/15/18 11:35	08/21/18 19:54	1
13C-1,2,3,7,8-PeCDD	59		25 - 181	08/15/18 11:35	08/21/18 19:54	1
13C-1,2,3,7,8-PeCDF	57		24 - 185	08/15/18 11:35	08/21/18 19:54	1
13C-2,3,4,6,7,8-HxCDF	52		28 - 136	08/15/18 11:35	08/21/18 19:54	1
13C-2,3,4,7,8-PeCDF	58		21 - 178	08/15/18 11:35	08/21/18 19:54	1
13C-2,3,7,8-TCDD	58		25 - 164	08/15/18 11:35	08/21/18 19:54	1
13C-OCDD	59		17 - 157	08/15/18 11:35	08/21/18 19:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197	08/15/18 11:35	08/21/18 19:54	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	0.0011		0.00088	0.00021	ug/Kg	☼	08/15/18 11:35	08/21/18 15:39	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	50		24 - 169	08/15/18 11:35	08/21/18 15:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	79		35 - 197	08/15/18 11:35	08/21/18 15:39	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S218-2to4.5

Lab Sample ID: 580-79329-11

Date Collected: 08/02/18 11:25

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 61.9

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	0.26		0.0040	0.0020	ug/Kg	☼	08/14/18 09:34	08/17/18 11:53	1
1,2,3,4,6,7,8-HpCDF	0.050		0.0040	0.00073	ug/Kg	☼	08/14/18 09:34	08/17/18 11:53	1
1,2,3,4,7,8,9-HpCDF	0.0025	J	0.0040	0.00086	ug/Kg	☼	08/14/18 09:34	08/17/18 11:53	1
1,2,3,4,7,8-HxCDD	0.0020	J B	0.0040	0.00032	ug/Kg	☼	08/14/18 09:34	08/17/18 11:53	1
1,2,3,4,7,8-HxCDF	0.0039	J	0.0040	0.00056	ug/Kg	☼	08/14/18 09:34	08/17/18 11:53	1
1,2,3,6,7,8-HxCDD	0.010		0.0040	0.00031	ug/Kg	☼	08/14/18 09:34	08/17/18 11:53	1
1,2,3,6,7,8-HxCDF	0.0032	J	0.0040	0.00059	ug/Kg	☼	08/14/18 09:34	08/17/18 11:53	1
1,2,3,7,8,9-HxCDD	0.0044		0.0040	0.00029	ug/Kg	☼	08/14/18 09:34	08/17/18 11:53	1
1,2,3,7,8,9-HxCDF	ND		0.0040	0.00028	ug/Kg	☼	08/14/18 09:34	08/17/18 11:53	1
1,2,3,7,8-PeCDD	0.00099	J q	0.0040	0.00034	ug/Kg	☼	08/14/18 09:34	08/17/18 11:53	1
1,2,3,7,8-PeCDF	0.0012	J	0.0040	0.00032	ug/Kg	☼	08/14/18 09:34	08/17/18 11:53	1
2,3,4,6,7,8-HxCDF	0.0013	J	0.0040	0.00042	ug/Kg	☼	08/14/18 09:34	08/17/18 11:53	1
2,3,4,7,8-PeCDF	0.0014	J	0.0040	0.00036	ug/Kg	☼	08/14/18 09:34	08/17/18 11:53	1
2,3,7,8-TCDD	0.0021		0.00080	0.00019	ug/Kg	☼	08/14/18 09:34	08/17/18 11:53	1
OCDD	3.2	G E B	0.011	0.011	ug/Kg	☼	08/14/18 09:34	08/17/18 11:53	1
OCDF	0.23		0.0080	0.00028	ug/Kg	☼	08/14/18 09:34	08/17/18 11:53	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	44		23 - 140				08/14/18 09:34	08/17/18 11:53	1
13C-1,2,3,4,6,7,8-HpCDF	45		28 - 143				08/14/18 09:34	08/17/18 11:53	1
13C-1,2,3,4,7,8,9-HpCDF	46		26 - 138				08/14/18 09:34	08/17/18 11:53	1
13C-1,2,3,4,7,8-HxCDD	49		32 - 141				08/14/18 09:34	08/17/18 11:53	1
13C-1,2,3,4,7,8-HxCDF	52		26 - 152				08/14/18 09:34	08/17/18 11:53	1
13C-1,2,3,6,7,8-HxCDD	48		28 - 130				08/14/18 09:34	08/17/18 11:53	1
13C-1,2,3,6,7,8-HxCDF	51		26 - 123				08/14/18 09:34	08/17/18 11:53	1
13C-1,2,3,7,8,9-HxCDF	56		29 - 147				08/14/18 09:34	08/17/18 11:53	1
13C-1,2,3,7,8-PeCDD	52		25 - 181				08/14/18 09:34	08/17/18 11:53	1
13C-1,2,3,7,8-PeCDF	56		24 - 185				08/14/18 09:34	08/17/18 11:53	1
13C-2,3,4,6,7,8-HxCDF	53		28 - 136				08/14/18 09:34	08/17/18 11:53	1
13C-2,3,4,7,8-PeCDF	57		21 - 178				08/14/18 09:34	08/17/18 11:53	1
13C-2,3,7,8-TCDD	58		25 - 164				08/14/18 09:34	08/17/18 11:53	1
13C-OCDD	34		17 - 157				08/14/18 09:34	08/17/18 11:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	104		35 - 197				08/14/18 09:34	08/17/18 11:53	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0016		0.00080	0.00075	ug/Kg	☼	08/14/18 09:34	08/21/18 04:04	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	55		24 - 169				08/14/18 09:34	08/21/18 04:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	86		35 - 197				08/14/18 09:34	08/21/18 04:04	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S218-4.5to6

Lab Sample ID: 580-79329-12

Date Collected: 08/02/18 11:30

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 88.7

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	0.020		0.0028	0.00018	ug/Kg	☼	08/14/18 09:34	08/17/18 12:39	1
1,2,3,4,6,7,8-HpCDF	0.022		0.0028	0.00013	ug/Kg	☼	08/14/18 09:34	08/17/18 12:39	1
1,2,3,4,7,8,9-HpCDF	0.00040	J	0.0028	0.00014	ug/Kg	☼	08/14/18 09:34	08/17/18 12:39	1
1,2,3,4,7,8-HxCDD	0.00023	J q B	0.0028	0.000044	ug/Kg	☼	08/14/18 09:34	08/17/18 12:39	1
1,2,3,4,7,8-HxCDF	0.00052	J	0.0028	0.00017	ug/Kg	☼	08/14/18 09:34	08/17/18 12:39	1
1,2,3,6,7,8-HxCDD	0.00092	J	0.0028	0.000043	ug/Kg	☼	08/14/18 09:34	08/17/18 12:39	1
1,2,3,6,7,8-HxCDF	0.00082	J	0.0028	0.00017	ug/Kg	☼	08/14/18 09:34	08/17/18 12:39	1
1,2,3,7,8,9-HxCDD	0.00048	J	0.0028	0.000040	ug/Kg	☼	08/14/18 09:34	08/17/18 12:39	1
1,2,3,7,8,9-HxCDF	ND		0.0028	0.000087	ug/Kg	☼	08/14/18 09:34	08/17/18 12:39	1
1,2,3,7,8-PeCDD	0.00015	J	0.0028	0.000037	ug/Kg	☼	08/14/18 09:34	08/17/18 12:39	1
1,2,3,7,8-PeCDF	ND		0.0028	0.000089	ug/Kg	☼	08/14/18 09:34	08/17/18 12:39	1
2,3,4,6,7,8-HxCDF	0.00028	J q	0.0028	0.00012	ug/Kg	☼	08/14/18 09:34	08/17/18 12:39	1
2,3,4,7,8-PeCDF	0.00019	J	0.0028	0.000094	ug/Kg	☼	08/14/18 09:34	08/17/18 12:39	1
2,3,7,8-TCDD	0.000097	J q	0.00056	0.000025	ug/Kg	☼	08/14/18 09:34	08/17/18 12:39	1
2,3,7,8-TCDF	0.00021	J	0.00056	0.00011	ug/Kg	☼	08/14/18 09:34	08/17/18 12:39	1
OCDD	0.33	B	0.0056	0.00014	ug/Kg	☼	08/14/18 09:34	08/17/18 12:39	1
OCDF	0.027		0.0056	0.000044	ug/Kg	☼	08/14/18 09:34	08/17/18 12:39	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	43		23 - 140	08/14/18 09:34	08/17/18 12:39	1
13C-1,2,3,4,6,7,8-HpCDF	42		28 - 143	08/14/18 09:34	08/17/18 12:39	1
13C-1,2,3,4,7,8,9-HpCDF	47		26 - 138	08/14/18 09:34	08/17/18 12:39	1
13C-1,2,3,4,7,8-HxCDD	51		32 - 141	08/14/18 09:34	08/17/18 12:39	1
13C-1,2,3,4,7,8-HxCDF	52		26 - 152	08/14/18 09:34	08/17/18 12:39	1
13C-1,2,3,6,7,8-HxCDD	50		28 - 130	08/14/18 09:34	08/17/18 12:39	1
13C-1,2,3,6,7,8-HxCDF	53		26 - 123	08/14/18 09:34	08/17/18 12:39	1
13C-1,2,3,7,8,9-HxCDF	57		29 - 147	08/14/18 09:34	08/17/18 12:39	1
13C-1,2,3,7,8-PeCDD	53		25 - 181	08/14/18 09:34	08/17/18 12:39	1
13C-1,2,3,7,8-PeCDF	55		24 - 185	08/14/18 09:34	08/17/18 12:39	1
13C-2,3,4,6,7,8-HxCDF	54		28 - 136	08/14/18 09:34	08/17/18 12:39	1
13C-2,3,4,7,8-PeCDF	57		21 - 178	08/14/18 09:34	08/17/18 12:39	1
13C-2,3,7,8-TCDD	58		25 - 164	08/14/18 09:34	08/17/18 12:39	1
13C-2,3,7,8-TCDF	61		24 - 169	08/14/18 09:34	08/17/18 12:39	1
13C-OCDD	30		17 - 157	08/14/18 09:34	08/17/18 12:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	103		35 - 197	08/14/18 09:34	08/17/18 12:39	1

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S172-2to4

Lab Sample ID: 580-79329-13

Date Collected: 08/02/18 17:55

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 52.6

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	0.47	G	0.0062	0.0062	ug/Kg	☼	08/14/18 09:34	08/17/18 13:25	1
1,2,3,4,6,7,8-HpCDF	0.078		0.0047	0.0025	ug/Kg	☼	08/14/18 09:34	08/17/18 13:25	1
1,2,3,4,7,8,9-HpCDF	0.0047	q	0.0047	0.0028	ug/Kg	☼	08/14/18 09:34	08/17/18 13:25	1
1,2,3,4,7,8-HxCDD	0.0031	J q B	0.0047	0.00060	ug/Kg	☼	08/14/18 09:34	08/17/18 13:25	1
1,2,3,4,7,8-HxCDF	0.0071		0.0047	0.00086	ug/Kg	☼	08/14/18 09:34	08/17/18 13:25	1
1,2,3,6,7,8-HxCDD	0.020		0.0047	0.00055	ug/Kg	☼	08/14/18 09:34	08/17/18 13:25	1
1,2,3,6,7,8-HxCDF	0.0059		0.0047	0.00084	ug/Kg	☼	08/14/18 09:34	08/17/18 13:25	1
1,2,3,7,8,9-HxCDD	0.0080		0.0047	0.00053	ug/Kg	☼	08/14/18 09:34	08/17/18 13:25	1
1,2,3,7,8,9-HxCDF	ND		0.0047	0.00043	ug/Kg	☼	08/14/18 09:34	08/17/18 13:25	1
1,2,3,7,8-PeCDD	0.0012	J q	0.0047	0.00055	ug/Kg	☼	08/14/18 09:34	08/17/18 13:25	1
1,2,3,7,8-PeCDF	0.0021	J	0.0047	0.00046	ug/Kg	☼	08/14/18 09:34	08/17/18 13:25	1
2,3,4,6,7,8-HxCDF	0.0021	J	0.0047	0.00059	ug/Kg	☼	08/14/18 09:34	08/17/18 13:25	1
2,3,4,7,8-PeCDF	0.0024	J	0.0047	0.00051	ug/Kg	☼	08/14/18 09:34	08/17/18 13:25	1
2,3,7,8-TCDD	0.0011	q	0.00093	0.00015	ug/Kg	☼	08/14/18 09:34	08/17/18 13:25	1
OCDD	4.2	G E B	0.021	0.021	ug/Kg	☼	08/14/18 09:34	08/17/18 13:25	1
OCDF	0.26		0.0093	0.00025	ug/Kg	☼	08/14/18 09:34	08/17/18 13:25	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	52		23 - 140	08/14/18 09:34	08/17/18 13:25	1
13C-1,2,3,4,6,7,8-HpCDF	50		28 - 143	08/14/18 09:34	08/17/18 13:25	1
13C-1,2,3,4,7,8,9-HpCDF	52		26 - 138	08/14/18 09:34	08/17/18 13:25	1
13C-1,2,3,4,7,8-HxCDD	51		32 - 141	08/14/18 09:34	08/17/18 13:25	1
13C-1,2,3,4,7,8-HxCDF	54		26 - 152	08/14/18 09:34	08/17/18 13:25	1
13C-1,2,3,6,7,8-HxCDD	53		28 - 130	08/14/18 09:34	08/17/18 13:25	1
13C-1,2,3,6,7,8-HxCDF	54		26 - 123	08/14/18 09:34	08/17/18 13:25	1
13C-1,2,3,7,8,9-HxCDF	57		29 - 147	08/14/18 09:34	08/17/18 13:25	1
13C-1,2,3,7,8-PeCDD	53		25 - 181	08/14/18 09:34	08/17/18 13:25	1
13C-1,2,3,7,8-PeCDF	54		24 - 185	08/14/18 09:34	08/17/18 13:25	1
13C-2,3,4,6,7,8-HxCDF	55		28 - 136	08/14/18 09:34	08/17/18 13:25	1
13C-2,3,4,7,8-PeCDF	54		21 - 178	08/14/18 09:34	08/17/18 13:25	1
13C-2,3,7,8-TCDD	57		25 - 164	08/14/18 09:34	08/17/18 13:25	1
13C-OCDD	39		17 - 157	08/14/18 09:34	08/17/18 13:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	104		35 - 197	08/14/18 09:34	08/17/18 13:25	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		0.00093	0.00033	ug/Kg	☼	08/14/18 09:34	08/21/18 04:42	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	55		24 - 169	08/14/18 09:34	08/21/18 04:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	95		35 - 197	08/14/18 09:34	08/21/18 04:42	1

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S172-2to4D

Lab Sample ID: 580-79329-14

Date Collected: 08/02/18 17:55

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 51.7

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	0.37		0.0047	0.0046	ug/Kg	☼	08/14/18 09:34	08/17/18 14:11	1
1,2,3,4,6,7,8-HpCDF	0.062		0.0047	0.0013	ug/Kg	☼	08/14/18 09:34	08/17/18 14:11	1
1,2,3,4,7,8,9-HpCDF	0.0039	J	0.0047	0.0014	ug/Kg	☼	08/14/18 09:34	08/17/18 14:11	1
1,2,3,4,7,8-HxCDD	0.0025	J B	0.0047	0.00027	ug/Kg	☼	08/14/18 09:34	08/17/18 14:11	1
1,2,3,4,7,8-HxCDF	0.0061		0.0047	0.00058	ug/Kg	☼	08/14/18 09:34	08/17/18 14:11	1
1,2,3,6,7,8-HxCDD	0.015		0.0047	0.00025	ug/Kg	☼	08/14/18 09:34	08/17/18 14:11	1
1,2,3,6,7,8-HxCDF	0.0047		0.0047	0.00060	ug/Kg	☼	08/14/18 09:34	08/17/18 14:11	1
1,2,3,7,8,9-HxCDD	0.0061		0.0047	0.00024	ug/Kg	☼	08/14/18 09:34	08/17/18 14:11	1
1,2,3,7,8,9-HxCDF	ND		0.0047	0.00029	ug/Kg	☼	08/14/18 09:34	08/17/18 14:11	1
1,2,3,7,8-PeCDD	0.0013	J	0.0047	0.00034	ug/Kg	☼	08/14/18 09:34	08/17/18 14:11	1
1,2,3,7,8-PeCDF	0.0025	J	0.0047	0.00029	ug/Kg	☼	08/14/18 09:34	08/17/18 14:11	1
2,3,4,6,7,8-HxCDF	0.0016	J	0.0047	0.00040	ug/Kg	☼	08/14/18 09:34	08/17/18 14:11	1
2,3,4,7,8-PeCDF	0.0021	J	0.0047	0.00030	ug/Kg	☼	08/14/18 09:34	08/17/18 14:11	1
2,3,7,8-TCDD	0.00052	J q	0.00094	0.000085	ug/Kg	☼	08/14/18 09:34	08/17/18 14:11	1
OCDD	3.3	B	0.0094	0.0069	ug/Kg	☼	08/14/18 09:34	08/17/18 14:11	1
OCDF	0.21		0.0094	0.00015	ug/Kg	☼	08/14/18 09:34	08/17/18 14:11	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	53		23 - 140	08/14/18 09:34	08/17/18 14:11	1
13C-1,2,3,4,6,7,8-HpCDF	52		28 - 143	08/14/18 09:34	08/17/18 14:11	1
13C-1,2,3,4,7,8,9-HpCDF	55		26 - 138	08/14/18 09:34	08/17/18 14:11	1
13C-1,2,3,4,7,8-HxCDD	58		32 - 141	08/14/18 09:34	08/17/18 14:11	1
13C-1,2,3,4,7,8-HxCDF	61		26 - 152	08/14/18 09:34	08/17/18 14:11	1
13C-1,2,3,6,7,8-HxCDD	58		28 - 130	08/14/18 09:34	08/17/18 14:11	1
13C-1,2,3,6,7,8-HxCDF	60		26 - 123	08/14/18 09:34	08/17/18 14:11	1
13C-1,2,3,7,8,9-HxCDF	65		29 - 147	08/14/18 09:34	08/17/18 14:11	1
13C-1,2,3,7,8-PeCDD	59		25 - 181	08/14/18 09:34	08/17/18 14:11	1
13C-1,2,3,7,8-PeCDF	62		24 - 185	08/14/18 09:34	08/17/18 14:11	1
13C-2,3,4,6,7,8-HxCDF	63		28 - 136	08/14/18 09:34	08/17/18 14:11	1
13C-2,3,4,7,8-PeCDF	63		21 - 178	08/14/18 09:34	08/17/18 14:11	1
13C-2,3,7,8-TCDD	64		25 - 164	08/14/18 09:34	08/17/18 14:11	1
13C-OCDD	41		17 - 157	08/14/18 09:34	08/17/18 14:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	103		35 - 197	08/14/18 09:34	08/17/18 14:11	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0026		0.00094	0.00026	ug/Kg	☼	08/14/18 09:34	08/21/18 05:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	59		24 - 169	08/14/18 09:34	08/21/18 05:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	89		35 - 197	08/14/18 09:34	08/21/18 05:20	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S172-4to6

Lab Sample ID: 580-79329-15

Date Collected: 08/02/18 18:00

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 68.9

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	0.044		0.0036	0.00030	ug/Kg	☼	08/14/18 09:34	08/17/18 14:57	1
1,2,3,4,6,7,8-HpCDF	0.023		0.0036	0.00019	ug/Kg	☼	08/14/18 09:34	08/17/18 14:57	1
1,2,3,4,7,8,9-HpCDF	0.00084	J	0.0036	0.00024	ug/Kg	☼	08/14/18 09:34	08/17/18 14:57	1
1,2,3,4,7,8-HxCDD	0.00048	J B	0.0036	0.000072	ug/Kg	☼	08/14/18 09:34	08/17/18 14:57	1
1,2,3,4,7,8-HxCDF	0.0013	J	0.0036	0.00020	ug/Kg	☼	08/14/18 09:34	08/17/18 14:57	1
1,2,3,6,7,8-HxCDD	0.0019	J	0.0036	0.000068	ug/Kg	☼	08/14/18 09:34	08/17/18 14:57	1
1,2,3,6,7,8-HxCDF	0.0018	J	0.0036	0.00020	ug/Kg	☼	08/14/18 09:34	08/17/18 14:57	1
1,2,3,7,8,9-HxCDD	0.0010	J	0.0036	0.000064	ug/Kg	☼	08/14/18 09:34	08/17/18 14:57	1
1,2,3,7,8,9-HxCDF	ND		0.0036	0.00010	ug/Kg	☼	08/14/18 09:34	08/17/18 14:57	1
1,2,3,7,8-PeCDD	0.00027	J	0.0036	0.000078	ug/Kg	☼	08/14/18 09:34	08/17/18 14:57	1
1,2,3,7,8-PeCDF	0.00031	J	0.0036	0.00015	ug/Kg	☼	08/14/18 09:34	08/17/18 14:57	1
2,3,4,6,7,8-HxCDF	0.00049	J	0.0036	0.00014	ug/Kg	☼	08/14/18 09:34	08/17/18 14:57	1
2,3,4,7,8-PeCDF	0.00043	J	0.0036	0.00016	ug/Kg	☼	08/14/18 09:34	08/17/18 14:57	1
2,3,7,8-TCDD	0.00026	J	0.00072	0.000027	ug/Kg	☼	08/14/18 09:34	08/17/18 14:57	1
OCDD	0.60	B	0.0072	0.00019	ug/Kg	☼	08/14/18 09:34	08/17/18 14:57	1
OCDF	0.045		0.0072	0.000047	ug/Kg	☼	08/14/18 09:34	08/17/18 14:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	49		23 - 140	08/14/18 09:34	08/17/18 14:57	1
13C-1,2,3,4,6,7,8-HpCDF	50		28 - 143	08/14/18 09:34	08/17/18 14:57	1
13C-1,2,3,4,7,8,9-HpCDF	47		26 - 138	08/14/18 09:34	08/17/18 14:57	1
13C-1,2,3,4,7,8-HxCDD	56		32 - 141	08/14/18 09:34	08/17/18 14:57	1
13C-1,2,3,4,7,8-HxCDF	58		26 - 152	08/14/18 09:34	08/17/18 14:57	1
13C-1,2,3,6,7,8-HxCDD	59		28 - 130	08/14/18 09:34	08/17/18 14:57	1
13C-1,2,3,6,7,8-HxCDF	61		26 - 123	08/14/18 09:34	08/17/18 14:57	1
13C-1,2,3,7,8,9-HxCDF	61		29 - 147	08/14/18 09:34	08/17/18 14:57	1
13C-1,2,3,7,8-PeCDD	58		25 - 181	08/14/18 09:34	08/17/18 14:57	1
13C-1,2,3,7,8-PeCDF	60		24 - 185	08/14/18 09:34	08/17/18 14:57	1
13C-2,3,4,6,7,8-HxCDF	59		28 - 136	08/14/18 09:34	08/17/18 14:57	1
13C-2,3,4,7,8-PeCDF	61		21 - 178	08/14/18 09:34	08/17/18 14:57	1
13C-2,3,7,8-TCDD	64		25 - 164	08/14/18 09:34	08/17/18 14:57	1
13C-OCDD	36		17 - 157	08/14/18 09:34	08/17/18 14:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	103		35 - 197	08/14/18 09:34	08/17/18 14:57	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	0.00052	J	0.00072	0.00015	ug/Kg	☼	08/14/18 09:34	08/21/18 05:58	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	56		24 - 169	08/14/18 09:34	08/21/18 05:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	94		35 - 197	08/14/18 09:34	08/21/18 05:58	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S172-6to8.1

Lab Sample ID: 580-79329-16

Date Collected: 08/02/18 18:05

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 67.9

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	0.037		0.0036	0.00058	ug/Kg	☼	08/14/18 09:34	08/17/18 15:43	1
1,2,3,4,6,7,8-HpCDF	0.025		0.0036	0.00030	ug/Kg	☼	08/14/18 09:34	08/17/18 15:43	1
1,2,3,4,7,8,9-HpCDF	0.00095	J	0.0036	0.00033	ug/Kg	☼	08/14/18 09:34	08/17/18 15:43	1
1,2,3,4,7,8-HxCDD	0.00045	J B	0.0036	0.000071	ug/Kg	☼	08/14/18 09:34	08/17/18 15:43	1
1,2,3,4,7,8-HxCDF	0.0012	J	0.0036	0.00017	ug/Kg	☼	08/14/18 09:34	08/17/18 15:43	1
1,2,3,6,7,8-HxCDD	0.0019	J	0.0036	0.000068	ug/Kg	☼	08/14/18 09:34	08/17/18 15:43	1
1,2,3,6,7,8-HxCDF	0.0023	J	0.0036	0.00018	ug/Kg	☼	08/14/18 09:34	08/17/18 15:43	1
1,2,3,7,8,9-HxCDD	0.00099	J	0.0036	0.000064	ug/Kg	☼	08/14/18 09:34	08/17/18 15:43	1
1,2,3,7,8,9-HxCDF	ND		0.0036	0.000088	ug/Kg	☼	08/14/18 09:34	08/17/18 15:43	1
1,2,3,7,8-PeCDD	0.00031	J	0.0036	0.000065	ug/Kg	☼	08/14/18 09:34	08/17/18 15:43	1
1,2,3,7,8-PeCDF	0.00035	J q	0.0036	0.00013	ug/Kg	☼	08/14/18 09:34	08/17/18 15:43	1
2,3,4,6,7,8-HxCDF	0.00048	J	0.0036	0.00012	ug/Kg	☼	08/14/18 09:34	08/17/18 15:43	1
2,3,4,7,8-PeCDF	0.00028	J q	0.0036	0.00014	ug/Kg	☼	08/14/18 09:34	08/17/18 15:43	1
2,3,7,8-TCDD	0.00014	J q	0.00073	0.000038	ug/Kg	☼	08/14/18 09:34	08/17/18 15:43	1
2,3,7,8-TCDF	0.00055	J	0.00073	0.00013	ug/Kg	☼	08/14/18 09:34	08/17/18 15:43	1
OCDD	0.60	B	0.0073	0.0011	ug/Kg	☼	08/14/18 09:34	08/17/18 15:43	1
OCDF	0.044		0.0073	0.000074	ug/Kg	☼	08/14/18 09:34	08/17/18 15:43	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	52		23 - 140	08/14/18 09:34	08/17/18 15:43	1
13C-1,2,3,4,6,7,8-HpCDF	51		28 - 143	08/14/18 09:34	08/17/18 15:43	1
13C-1,2,3,4,7,8,9-HpCDF	52		26 - 138	08/14/18 09:34	08/17/18 15:43	1
13C-1,2,3,4,7,8-HxCDD	58		32 - 141	08/14/18 09:34	08/17/18 15:43	1
13C-1,2,3,4,7,8-HxCDF	60		26 - 152	08/14/18 09:34	08/17/18 15:43	1
13C-1,2,3,6,7,8-HxCDD	56		28 - 130	08/14/18 09:34	08/17/18 15:43	1
13C-1,2,3,6,7,8-HxCDF	58		26 - 123	08/14/18 09:34	08/17/18 15:43	1
13C-1,2,3,7,8,9-HxCDF	62		29 - 147	08/14/18 09:34	08/17/18 15:43	1
13C-1,2,3,7,8-PeCDD	61		25 - 181	08/14/18 09:34	08/17/18 15:43	1
13C-1,2,3,7,8-PeCDF	63		24 - 185	08/14/18 09:34	08/17/18 15:43	1
13C-2,3,4,6,7,8-HxCDF	60		28 - 136	08/14/18 09:34	08/17/18 15:43	1
13C-2,3,4,7,8-PeCDF	64		21 - 178	08/14/18 09:34	08/17/18 15:43	1
13C-2,3,7,8-TCDD	65		25 - 164	08/14/18 09:34	08/17/18 15:43	1
13C-2,3,7,8-TCDF	70		24 - 169	08/14/18 09:34	08/17/18 15:43	1
13C-OCDD	39		17 - 157	08/14/18 09:34	08/17/18 15:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	107		35 - 197	08/14/18 09:34	08/17/18 15:43	1

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S178-0to2

Lab Sample ID: 580-79329-17

Date Collected: 08/02/18 15:55

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 48.5

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	0.47		0.0051	0.0016	ug/Kg	☼	08/14/18 09:34	08/17/18 16:29	1
1,2,3,4,6,7,8-HpCDF	0.12		0.0051	0.00097	ug/Kg	☼	08/14/18 09:34	08/17/18 16:29	1
1,2,3,4,7,8,9-HpCDF	0.0063		0.0051	0.0016	ug/Kg	☼	08/14/18 09:34	08/17/18 16:29	1
1,2,3,4,7,8-HxCDD	0.0037	J B	0.0051	0.00058	ug/Kg	☼	08/14/18 09:34	08/17/18 16:29	1
1,2,3,4,7,8-HxCDF	0.010		0.0051	0.0011	ug/Kg	☼	08/14/18 09:34	08/17/18 16:29	1
1,2,3,6,7,8-HxCDD	0.022		0.0051	0.00057	ug/Kg	☼	08/14/18 09:34	08/17/18 16:29	1
1,2,3,6,7,8-HxCDF	0.0070		0.0051	0.0011	ug/Kg	☼	08/14/18 09:34	08/17/18 16:29	1
1,2,3,7,8,9-HxCDD	0.0091		0.0051	0.00053	ug/Kg	☼	08/14/18 09:34	08/17/18 16:29	1
1,2,3,7,8,9-HxCDF	ND		0.0051	0.00052	ug/Kg	☼	08/14/18 09:34	08/17/18 16:29	1
1,2,3,7,8-PeCDD	0.0020	J q	0.0051	0.00062	ug/Kg	☼	08/14/18 09:34	08/17/18 16:29	1
1,2,3,7,8-PeCDF	0.0025	J q	0.0051	0.00047	ug/Kg	☼	08/14/18 09:34	08/17/18 16:29	1
2,3,4,6,7,8-HxCDF	0.0024	J	0.0051	0.00073	ug/Kg	☼	08/14/18 09:34	08/17/18 16:29	1
2,3,4,7,8-PeCDF	0.0026	J	0.0051	0.00050	ug/Kg	☼	08/14/18 09:34	08/17/18 16:29	1
2,3,7,8-TCDD	0.0020		0.0010	0.000064	ug/Kg	☼	08/14/18 09:34	08/17/18 16:29	1
OCDD	4.8	E B	0.010	0.0012	ug/Kg	☼	08/14/18 09:34	08/17/18 16:29	1
OCDF	0.42		0.010	0.00020	ug/Kg	☼	08/14/18 09:34	08/17/18 16:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	34		23 - 140	08/14/18 09:34	08/17/18 16:29	1
13C-1,2,3,4,6,7,8-HpCDF	34		28 - 143	08/14/18 09:34	08/17/18 16:29	1
13C-1,2,3,4,7,8,9-HpCDF	26		26 - 138	08/14/18 09:34	08/17/18 16:29	1
13C-1,2,3,4,7,8-HxCDD	55		32 - 141	08/14/18 09:34	08/17/18 16:29	1
13C-1,2,3,4,7,8-HxCDF	57		26 - 152	08/14/18 09:34	08/17/18 16:29	1
13C-1,2,3,6,7,8-HxCDD	52		28 - 130	08/14/18 09:34	08/17/18 16:29	1
13C-1,2,3,6,7,8-HxCDF	57		26 - 123	08/14/18 09:34	08/17/18 16:29	1
13C-1,2,3,7,8,9-HxCDF	59		29 - 147	08/14/18 09:34	08/17/18 16:29	1
13C-1,2,3,7,8-PeCDD	58		25 - 181	08/14/18 09:34	08/17/18 16:29	1
13C-1,2,3,7,8-PeCDF	61		24 - 185	08/14/18 09:34	08/17/18 16:29	1
13C-2,3,4,6,7,8-HxCDF	58		28 - 136	08/14/18 09:34	08/17/18 16:29	1
13C-2,3,4,7,8-PeCDF	63		21 - 178	08/14/18 09:34	08/17/18 16:29	1
13C-2,3,7,8-TCDD	63		25 - 164	08/14/18 09:34	08/17/18 16:29	1
13C-OCDD	24		17 - 157	08/14/18 09:34	08/17/18 16:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	99		35 - 197	08/14/18 09:34	08/17/18 16:29	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	0.0039		0.0010	0.00037	ug/Kg	☼	08/14/18 09:34	08/21/18 06:36	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	56		24 - 169	08/14/18 09:34	08/21/18 06:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	88		35 - 197	08/14/18 09:34	08/21/18 06:36	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S178-2to3.7

Lab Sample ID: 580-79329-18

Date Collected: 08/02/18 16:00

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 51.2

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	0.24		0.0048	0.00096	ug/Kg	☼	08/14/18 09:34	08/17/18 17:15	1
1,2,3,4,6,7,8-HpCDF	0.14		0.0048	0.00077	ug/Kg	☼	08/14/18 09:34	08/17/18 17:15	1
1,2,3,4,7,8,9-HpCDF	0.0044	J	0.0048	0.0014	ug/Kg	☼	08/14/18 09:34	08/17/18 17:15	1
1,2,3,4,7,8-HxCDD	0.0023	J B	0.0048	0.00032	ug/Kg	☼	08/14/18 09:34	08/17/18 17:15	1
1,2,3,4,7,8-HxCDF	0.0055		0.0048	0.0012	ug/Kg	☼	08/14/18 09:34	08/17/18 17:15	1
1,2,3,6,7,8-HxCDD	0.010		0.0048	0.00031	ug/Kg	☼	08/14/18 09:34	08/17/18 17:15	1
1,2,3,6,7,8-HxCDF	0.0091		0.0048	0.0012	ug/Kg	☼	08/14/18 09:34	08/17/18 17:15	1
1,2,3,7,8,9-HxCDD	0.0047	J	0.0048	0.00029	ug/Kg	☼	08/14/18 09:34	08/17/18 17:15	1
1,2,3,7,8,9-HxCDF	ND		0.0048	0.00059	ug/Kg	☼	08/14/18 09:34	08/17/18 17:15	1
1,2,3,7,8-PeCDD	0.0014	J	0.0048	0.00045	ug/Kg	☼	08/14/18 09:34	08/17/18 17:15	1
1,2,3,7,8-PeCDF	0.0015	J	0.0048	0.00044	ug/Kg	☼	08/14/18 09:34	08/17/18 17:15	1
2,3,4,6,7,8-HxCDF	0.0020	J	0.0048	0.00083	ug/Kg	☼	08/14/18 09:34	08/17/18 17:15	1
2,3,4,7,8-PeCDF	0.0015	J	0.0048	0.00046	ug/Kg	☼	08/14/18 09:34	08/17/18 17:15	1
2,3,7,8-TCDD	0.00073	J q	0.00097	0.000054	ug/Kg	☼	08/14/18 09:34	08/17/18 17:15	1
OCDD	3.3	B	0.0097	0.00084	ug/Kg	☼	08/14/18 09:34	08/17/18 17:15	1
OCDF	0.28		0.0097	0.00020	ug/Kg	☼	08/14/18 09:34	08/17/18 17:15	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	29		23 - 140	08/14/18 09:34	08/17/18 17:15	1
13C-1,2,3,4,6,7,8-HpCDF	31		28 - 143	08/14/18 09:34	08/17/18 17:15	1
13C-1,2,3,4,7,8,9-HpCDF	22	*	26 - 138	08/14/18 09:34	08/17/18 17:15	1
13C-1,2,3,4,7,8-HxCDD	50		32 - 141	08/14/18 09:34	08/17/18 17:15	1
13C-1,2,3,4,7,8-HxCDF	54		26 - 152	08/14/18 09:34	08/17/18 17:15	1
13C-1,2,3,6,7,8-HxCDD	50		28 - 130	08/14/18 09:34	08/17/18 17:15	1
13C-1,2,3,6,7,8-HxCDF	55		26 - 123	08/14/18 09:34	08/17/18 17:15	1
13C-1,2,3,7,8,9-HxCDF	54		29 - 147	08/14/18 09:34	08/17/18 17:15	1
13C-1,2,3,7,8-PeCDD	54		25 - 181	08/14/18 09:34	08/17/18 17:15	1
13C-1,2,3,7,8-PeCDF	56		24 - 185	08/14/18 09:34	08/17/18 17:15	1
13C-2,3,4,6,7,8-HxCDF	54		28 - 136	08/14/18 09:34	08/17/18 17:15	1
13C-2,3,4,7,8-PeCDF	58		21 - 178	08/14/18 09:34	08/17/18 17:15	1
13C-2,3,7,8-TCDD	57		25 - 164	08/14/18 09:34	08/17/18 17:15	1
13C-OCDD	22		17 - 157	08/14/18 09:34	08/17/18 17:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	99		35 - 197	08/14/18 09:34	08/17/18 17:15	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	0.0013		0.00097	0.00030	ug/Kg	☼	08/14/18 09:34	08/21/18 07:13	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	56		24 - 169	08/14/18 09:34	08/21/18 07:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	93		35 - 197	08/14/18 09:34	08/21/18 07:13	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S178-3.7to4.7

Lab Sample ID: 580-79329-19

Date Collected: 08/02/18 16:05

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 59.5

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	0.13	B	0.0042	0.0012	ug/Kg	☼	08/17/18 11:36	08/23/18 15:35	1
1,2,3,4,6,7,8-HpCDF	0.079	B	0.0042	0.00066	ug/Kg	☼	08/17/18 11:36	08/23/18 15:35	1
1,2,3,4,7,8,9-HpCDF	0.0031	J B	0.0042	0.00074	ug/Kg	☼	08/17/18 11:36	08/23/18 15:35	1
1,2,3,4,7,8-HxCDD	0.0014	J B	0.0042	0.00024	ug/Kg	☼	08/17/18 11:36	08/23/18 15:35	1
1,2,3,4,7,8-HxCDF	0.0034	J	0.0042	0.00092	ug/Kg	☼	08/17/18 11:36	08/23/18 15:35	1
1,2,3,6,7,8-HxCDD	0.0059		0.0042	0.00023	ug/Kg	☼	08/17/18 11:36	08/23/18 15:35	1
1,2,3,6,7,8-HxCDF	0.0073		0.0042	0.00094	ug/Kg	☼	08/17/18 11:36	08/23/18 15:35	1
1,2,3,7,8,9-HxCDD	0.0032	J	0.0042	0.00021	ug/Kg	☼	08/17/18 11:36	08/23/18 15:35	1
1,2,3,7,8,9-HxCDF	ND		0.0042	0.00049	ug/Kg	☼	08/17/18 11:36	08/23/18 15:35	1
1,2,3,7,8-PeCDD	0.00075	J	0.0042	0.00016	ug/Kg	☼	08/17/18 11:36	08/23/18 15:35	1
1,2,3,7,8-PeCDF	0.00088	J	0.0042	0.00035	ug/Kg	☼	08/17/18 11:36	08/23/18 15:35	1
2,3,4,6,7,8-HxCDF	0.0012	J	0.0042	0.00071	ug/Kg	☼	08/17/18 11:36	08/23/18 15:35	1
2,3,4,7,8-PeCDF	0.00092	J	0.0042	0.00038	ug/Kg	☼	08/17/18 11:36	08/23/18 15:35	1
2,3,7,8-TCDD	0.00042	J q	0.00083	0.000036	ug/Kg	☼	08/17/18 11:36	08/23/18 15:35	1
OCDD	2.2	B	0.0083	0.00089	ug/Kg	☼	08/17/18 11:36	08/23/18 15:35	1
OCDF	0.17		0.0083	0.00011	ug/Kg	☼	08/17/18 11:36	08/23/18 15:35	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	31		23 - 140	08/17/18 11:36	08/23/18 15:35	1
13C-1,2,3,4,6,7,8-HpCDF	27	*	28 - 143	08/17/18 11:36	08/23/18 15:35	1
13C-1,2,3,4,7,8,9-HpCDF	28		26 - 138	08/17/18 11:36	08/23/18 15:35	1
13C-1,2,3,4,7,8-HxCDD	37		32 - 141	08/17/18 11:36	08/23/18 15:35	1
13C-1,2,3,4,7,8-HxCDF	37		26 - 152	08/17/18 11:36	08/23/18 15:35	1
13C-1,2,3,6,7,8-HxCDD	39		28 - 130	08/17/18 11:36	08/23/18 15:35	1
13C-1,2,3,6,7,8-HxCDF	38		26 - 123	08/17/18 11:36	08/23/18 15:35	1
13C-1,2,3,7,8,9-HxCDF	40		29 - 147	08/17/18 11:36	08/23/18 15:35	1
13C-1,2,3,7,8-PeCDD	43		25 - 181	08/17/18 11:36	08/23/18 15:35	1
13C-1,2,3,7,8-PeCDF	42		24 - 185	08/17/18 11:36	08/23/18 15:35	1
13C-2,3,4,6,7,8-HxCDF	39		28 - 136	08/17/18 11:36	08/23/18 15:35	1
13C-2,3,4,7,8-PeCDF	44		21 - 178	08/17/18 11:36	08/23/18 15:35	1
13C-2,3,7,8-TCDD	51		25 - 164	08/17/18 11:36	08/23/18 15:35	1
13C-OCDD	20		17 - 157	08/17/18 11:36	08/23/18 15:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	124		35 - 197	08/17/18 11:36	08/23/18 15:35	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	0.00074	J	0.00083	0.00047	ug/Kg	☼	08/17/18 11:36	08/24/18 11:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	49		24 - 169	08/17/18 11:36	08/24/18 11:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	109		35 - 197	08/17/18 11:36	08/24/18 11:57	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S178-4.7to6.7

Lab Sample ID: 580-79329-20

Date Collected: 08/02/18 16:10

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 65.2

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	0.0026	J	0.0038	0.000096	ug/Kg	☼	08/14/18 09:34	08/17/18 18:01	1
1,2,3,4,6,7,8-HpCDF	0.00070	J q	0.0038	0.00011	ug/Kg	☼	08/14/18 09:34	08/17/18 18:01	1
1,2,3,4,7,8,9-HpCDF	ND		0.0038	0.00011	ug/Kg	☼	08/14/18 09:34	08/17/18 18:01	1
1,2,3,4,7,8-HxCDD	ND		0.0038	0.000065	ug/Kg	☼	08/14/18 09:34	08/17/18 18:01	1
1,2,3,4,7,8-HxCDF	ND		0.0038	0.000078	ug/Kg	☼	08/14/18 09:34	08/17/18 18:01	1
1,2,3,6,7,8-HxCDD	0.00016	J q	0.0038	0.000064	ug/Kg	☼	08/14/18 09:34	08/17/18 18:01	1
1,2,3,6,7,8-HxCDF	ND		0.0038	0.000083	ug/Kg	☼	08/14/18 09:34	08/17/18 18:01	1
1,2,3,7,8,9-HxCDD	0.00016	J q	0.0038	0.000059	ug/Kg	☼	08/14/18 09:34	08/17/18 18:01	1
1,2,3,7,8,9-HxCDF	ND		0.0038	0.000038	ug/Kg	☼	08/14/18 09:34	08/17/18 18:01	1
1,2,3,7,8-PeCDD	ND		0.0038	0.000056	ug/Kg	☼	08/14/18 09:34	08/17/18 18:01	1
1,2,3,7,8-PeCDF	ND		0.0038	0.000048	ug/Kg	☼	08/14/18 09:34	08/17/18 18:01	1
2,3,4,6,7,8-HxCDF	ND		0.0038	0.000055	ug/Kg	☼	08/14/18 09:34	08/17/18 18:01	1
2,3,4,7,8-PeCDF	ND		0.0038	0.000052	ug/Kg	☼	08/14/18 09:34	08/17/18 18:01	1
2,3,7,8-TCDD	ND		0.00075	0.000031	ug/Kg	☼	08/14/18 09:34	08/17/18 18:01	1
2,3,7,8-TCDF	ND		0.00075	0.000028	ug/Kg	☼	08/14/18 09:34	08/17/18 18:01	1
OCDD	0.035	B	0.0075	0.00010	ug/Kg	☼	08/14/18 09:34	08/17/18 18:01	1
OCDF	0.0025	J	0.0075	0.000073	ug/Kg	☼	08/14/18 09:34	08/17/18 18:01	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	44		23 - 140	08/14/18 09:34	08/17/18 18:01	1
13C-1,2,3,4,6,7,8-HpCDF	43		28 - 143	08/14/18 09:34	08/17/18 18:01	1
13C-1,2,3,4,7,8,9-HpCDF	49		26 - 138	08/14/18 09:34	08/17/18 18:01	1
13C-1,2,3,4,7,8-HxCDD	51		32 - 141	08/14/18 09:34	08/17/18 18:01	1
13C-1,2,3,4,7,8-HxCDF	52		26 - 152	08/14/18 09:34	08/17/18 18:01	1
13C-1,2,3,6,7,8-HxCDD	50		28 - 130	08/14/18 09:34	08/17/18 18:01	1
13C-1,2,3,6,7,8-HxCDF	52		26 - 123	08/14/18 09:34	08/17/18 18:01	1
13C-1,2,3,7,8,9-HxCDF	57		29 - 147	08/14/18 09:34	08/17/18 18:01	1
13C-1,2,3,7,8-PeCDD	54		25 - 181	08/14/18 09:34	08/17/18 18:01	1
13C-1,2,3,7,8-PeCDF	56		24 - 185	08/14/18 09:34	08/17/18 18:01	1
13C-2,3,4,6,7,8-HxCDF	53		28 - 136	08/14/18 09:34	08/17/18 18:01	1
13C-2,3,4,7,8-PeCDF	57		21 - 178	08/14/18 09:34	08/17/18 18:01	1
13C-2,3,7,8-TCDD	61		25 - 164	08/14/18 09:34	08/17/18 18:01	1
13C-2,3,7,8-TCDF	65		24 - 169	08/14/18 09:34	08/17/18 18:01	1
13C-OCDD	32		17 - 157	08/14/18 09:34	08/17/18 18:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	106		35 - 197	08/14/18 09:34	08/17/18 18:01	1

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S178-6.7to8.7

Lab Sample ID: 580-79329-21

Date Collected: 08/02/18 16:15

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 67.3

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	0.0018	J	0.0037	0.000058	ug/Kg	☼	08/14/18 09:34	08/18/18 03:29	1
1,2,3,4,6,7,8-HpCDF	ND		0.0037	0.00018	ug/Kg	☼	08/14/18 09:34	08/18/18 03:29	1
1,2,3,4,7,8,9-HpCDF	ND		0.0037	0.00020	ug/Kg	☼	08/14/18 09:34	08/18/18 03:29	1
1,2,3,4,7,8-HxCDD	0.00015	J B	0.0037	0.000050	ug/Kg	☼	08/14/18 09:34	08/18/18 03:29	1
1,2,3,4,7,8-HxCDF	ND		0.0037	0.000043	ug/Kg	☼	08/14/18 09:34	08/18/18 03:29	1
1,2,3,6,7,8-HxCDD	0.00010	J q	0.0037	0.000047	ug/Kg	☼	08/14/18 09:34	08/18/18 03:29	1
1,2,3,6,7,8-HxCDF	ND		0.0037	0.000044	ug/Kg	☼	08/14/18 09:34	08/18/18 03:29	1
1,2,3,7,8,9-HxCDD	0.00020	J	0.0037	0.000044	ug/Kg	☼	08/14/18 09:34	08/18/18 03:29	1
1,2,3,7,8,9-HxCDF	ND		0.0037	0.000023	ug/Kg	☼	08/14/18 09:34	08/18/18 03:29	1
1,2,3,7,8-PeCDD	ND		0.0037	0.000041	ug/Kg	☼	08/14/18 09:34	08/18/18 03:29	1
1,2,3,7,8-PeCDF	ND		0.0037	0.000027	ug/Kg	☼	08/14/18 09:34	08/18/18 03:29	1
2,3,4,6,7,8-HxCDF	ND		0.0037	0.000030	ug/Kg	☼	08/14/18 09:34	08/18/18 03:29	1
2,3,4,7,8-PeCDF	ND		0.0037	0.000029	ug/Kg	☼	08/14/18 09:34	08/18/18 03:29	1
2,3,7,8-TCDD	0.00012	J q	0.00074	0.000015	ug/Kg	☼	08/14/18 09:34	08/18/18 03:29	1
2,3,7,8-TCDF	ND		0.00074	0.000011	ug/Kg	☼	08/14/18 09:34	08/18/18 03:29	1
OCDD	0.025	B	0.0074	0.000047	ug/Kg	☼	08/14/18 09:34	08/18/18 03:29	1
OCDF	0.00087	J	0.0074	0.000027	ug/Kg	☼	08/14/18 09:34	08/18/18 03:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	52		23 - 140	08/14/18 09:34	08/18/18 03:29	1
13C-1,2,3,4,6,7,8-HpCDF	49		28 - 143	08/14/18 09:34	08/18/18 03:29	1
13C-1,2,3,4,7,8,9-HpCDF	54		26 - 138	08/14/18 09:34	08/18/18 03:29	1
13C-1,2,3,4,7,8-HxCDD	48		32 - 141	08/14/18 09:34	08/18/18 03:29	1
13C-1,2,3,4,7,8-HxCDF	53		26 - 152	08/14/18 09:34	08/18/18 03:29	1
13C-1,2,3,6,7,8-HxCDD	53		28 - 130	08/14/18 09:34	08/18/18 03:29	1
13C-1,2,3,6,7,8-HxCDF	56		26 - 123	08/14/18 09:34	08/18/18 03:29	1
13C-1,2,3,7,8,9-HxCDF	57		29 - 147	08/14/18 09:34	08/18/18 03:29	1
13C-1,2,3,7,8-PeCDD	50		25 - 181	08/14/18 09:34	08/18/18 03:29	1
13C-1,2,3,7,8-PeCDF	53		24 - 185	08/14/18 09:34	08/18/18 03:29	1
13C-2,3,4,6,7,8-HxCDF	55		28 - 136	08/14/18 09:34	08/18/18 03:29	1
13C-2,3,4,7,8-PeCDF	53		21 - 178	08/14/18 09:34	08/18/18 03:29	1
13C-2,3,7,8-TCDD	61		25 - 164	08/14/18 09:34	08/18/18 03:29	1
13C-2,3,7,8-TCDF	63		24 - 169	08/14/18 09:34	08/18/18 03:29	1
13C-OCDD	39		17 - 157	08/14/18 09:34	08/18/18 03:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	104		35 - 197	08/14/18 09:34	08/18/18 03:29	1

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S178-8.7to10.7

Lab Sample ID: 580-79329-22

Date Collected: 08/02/18 16:20

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 67.2

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	0.0010	J	0.0037	0.000046	ug/Kg	☼	08/14/18 09:34	08/18/18 04:14	1
1,2,3,4,6,7,8-HpCDF	ND		0.0037	0.00012	ug/Kg	☼	08/14/18 09:34	08/18/18 04:14	1
1,2,3,4,7,8,9-HpCDF	ND		0.0037	0.00013	ug/Kg	☼	08/14/18 09:34	08/18/18 04:14	1
1,2,3,4,7,8-HxCDD	0.000076	J q B	0.0037	0.000036	ug/Kg	☼	08/14/18 09:34	08/18/18 04:14	1
1,2,3,4,7,8-HxCDF	ND		0.0037	0.000028	ug/Kg	☼	08/14/18 09:34	08/18/18 04:14	1
1,2,3,6,7,8-HxCDD	0.000048	J q	0.0037	0.000034	ug/Kg	☼	08/14/18 09:34	08/18/18 04:14	1
1,2,3,6,7,8-HxCDF	ND		0.0037	0.000030	ug/Kg	☼	08/14/18 09:34	08/18/18 04:14	1
1,2,3,7,8,9-HxCDD	0.00011	J q	0.0037	0.000032	ug/Kg	☼	08/14/18 09:34	08/18/18 04:14	1
1,2,3,7,8,9-HxCDF	ND		0.0037	0.000015	ug/Kg	☼	08/14/18 09:34	08/18/18 04:14	1
1,2,3,7,8-PeCDD	ND		0.0037	0.000034	ug/Kg	☼	08/14/18 09:34	08/18/18 04:14	1
1,2,3,7,8-PeCDF	ND		0.0037	0.000019	ug/Kg	☼	08/14/18 09:34	08/18/18 04:14	1
2,3,4,6,7,8-HxCDF	ND		0.0037	0.000021	ug/Kg	☼	08/14/18 09:34	08/18/18 04:14	1
2,3,4,7,8-PeCDF	ND		0.0037	0.000021	ug/Kg	☼	08/14/18 09:34	08/18/18 04:14	1
2,3,7,8-TCDD	0.00016	J q	0.00074	0.000016	ug/Kg	☼	08/14/18 09:34	08/18/18 04:14	1
2,3,7,8-TCDF	ND		0.00074	0.0000095	ug/Kg	☼	08/14/18 09:34	08/18/18 04:14	1
OCDD	0.011	B	0.0074	0.000035	ug/Kg	☼	08/14/18 09:34	08/18/18 04:14	1
OCDF	0.00031	J	0.0074	0.000020	ug/Kg	☼	08/14/18 09:34	08/18/18 04:14	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	58		23 - 140	08/14/18 09:34	08/18/18 04:14	1
13C-1,2,3,4,6,7,8-HpCDF	52		28 - 143	08/14/18 09:34	08/18/18 04:14	1
13C-1,2,3,4,7,8,9-HpCDF	59		26 - 138	08/14/18 09:34	08/18/18 04:14	1
13C-1,2,3,4,7,8-HxCDD	53		32 - 141	08/14/18 09:34	08/18/18 04:14	1
13C-1,2,3,4,7,8-HxCDF	59		26 - 152	08/14/18 09:34	08/18/18 04:14	1
13C-1,2,3,6,7,8-HxCDD	58		28 - 130	08/14/18 09:34	08/18/18 04:14	1
13C-1,2,3,6,7,8-HxCDF	61		26 - 123	08/14/18 09:34	08/18/18 04:14	1
13C-1,2,3,7,8,9-HxCDF	62		29 - 147	08/14/18 09:34	08/18/18 04:14	1
13C-1,2,3,7,8-PeCDD	53		25 - 181	08/14/18 09:34	08/18/18 04:14	1
13C-1,2,3,7,8-PeCDF	57		24 - 185	08/14/18 09:34	08/18/18 04:14	1
13C-2,3,4,6,7,8-HxCDF	60		28 - 136	08/14/18 09:34	08/18/18 04:14	1
13C-2,3,4,7,8-PeCDF	58		21 - 178	08/14/18 09:34	08/18/18 04:14	1
13C-2,3,7,8-TCDD	66		25 - 164	08/14/18 09:34	08/18/18 04:14	1
13C-2,3,7,8-TCDF	70		24 - 169	08/14/18 09:34	08/18/18 04:14	1
13C-OCDD	42		17 - 157	08/14/18 09:34	08/18/18 04:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	103		35 - 197	08/14/18 09:34	08/18/18 04:14	1

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S178-10.7to12.7

Lab Sample ID: 580-79329-23

Date Collected: 08/02/18 16:25

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 67.7

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	0.00074	J B	0.0037	0.000080	ug/Kg	☼	08/15/18 11:35	08/21/18 21:31	1
1,2,3,4,6,7,8-HpCDF	ND		0.0037	0.000050	ug/Kg	☼	08/15/18 11:35	08/21/18 21:31	1
1,2,3,4,7,8,9-HpCDF	ND		0.0037	0.000063	ug/Kg	☼	08/15/18 11:35	08/21/18 21:31	1
1,2,3,4,7,8-HxCDD	ND		0.0037	0.000056	ug/Kg	☼	08/15/18 11:35	08/21/18 21:31	1
1,2,3,4,7,8-HxCDF	ND		0.0037	0.000066	ug/Kg	☼	08/15/18 11:35	08/21/18 21:31	1
1,2,3,6,7,8-HxCDD	ND		0.0037	0.000053	ug/Kg	☼	08/15/18 11:35	08/21/18 21:31	1
1,2,3,6,7,8-HxCDF	ND		0.0037	0.000058	ug/Kg	☼	08/15/18 11:35	08/21/18 21:31	1
1,2,3,7,8,9-HxCDD	ND		0.0037	0.000051	ug/Kg	☼	08/15/18 11:35	08/21/18 21:31	1
1,2,3,7,8,9-HxCDF	ND		0.0037	0.000038	ug/Kg	☼	08/15/18 11:35	08/21/18 21:31	1
1,2,3,7,8-PeCDD	ND		0.0037	0.000065	ug/Kg	☼	08/15/18 11:35	08/21/18 21:31	1
1,2,3,7,8-PeCDF	ND		0.0037	0.000031	ug/Kg	☼	08/15/18 11:35	08/21/18 21:31	1
2,3,4,6,7,8-HxCDF	ND		0.0037	0.000040	ug/Kg	☼	08/15/18 11:35	08/21/18 21:31	1
2,3,4,7,8-PeCDF	ND		0.0037	0.000032	ug/Kg	☼	08/15/18 11:35	08/21/18 21:31	1
2,3,7,8-TCDD	ND		0.00074	0.000056	ug/Kg	☼	08/15/18 11:35	08/21/18 21:31	1
2,3,7,8-TCDF	ND		0.00074	0.000026	ug/Kg	☼	08/15/18 11:35	08/21/18 21:31	1
OCDD	0.0078	B	0.0074	0.00013	ug/Kg	☼	08/15/18 11:35	08/21/18 21:31	1
OCDF	ND		0.0074	0.00010	ug/Kg	☼	08/15/18 11:35	08/21/18 21:31	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	53		23 - 140	08/15/18 11:35	08/21/18 21:31	1
13C-1,2,3,4,6,7,8-HpCDF	44		28 - 143	08/15/18 11:35	08/21/18 21:31	1
13C-1,2,3,4,7,8,9-HpCDF	53		26 - 138	08/15/18 11:35	08/21/18 21:31	1
13C-1,2,3,4,7,8-HxCDD	50		32 - 141	08/15/18 11:35	08/21/18 21:31	1
13C-1,2,3,4,7,8-HxCDF	48		26 - 152	08/15/18 11:35	08/21/18 21:31	1
13C-1,2,3,6,7,8-HxCDD	49		28 - 130	08/15/18 11:35	08/21/18 21:31	1
13C-1,2,3,6,7,8-HxCDF	47		26 - 123	08/15/18 11:35	08/21/18 21:31	1
13C-1,2,3,7,8,9-HxCDF	54		29 - 147	08/15/18 11:35	08/21/18 21:31	1
13C-1,2,3,7,8-PeCDD	53		25 - 181	08/15/18 11:35	08/21/18 21:31	1
13C-1,2,3,7,8-PeCDF	51		24 - 185	08/15/18 11:35	08/21/18 21:31	1
13C-2,3,4,6,7,8-HxCDF	50		28 - 136	08/15/18 11:35	08/21/18 21:31	1
13C-2,3,4,7,8-PeCDF	52		21 - 178	08/15/18 11:35	08/21/18 21:31	1
13C-2,3,7,8-TCDD	56		25 - 164	08/15/18 11:35	08/21/18 21:31	1
13C-2,3,7,8-TCDF	56		24 - 169	08/15/18 11:35	08/21/18 21:31	1
13C-OCDD	53		17 - 157	08/15/18 11:35	08/21/18 21:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	96		35 - 197	08/15/18 11:35	08/21/18 21:31	1

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S178-12.7to14

Lab Sample ID: 580-79329-24

Date Collected: 08/02/18 16:30

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 66.7

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	0.00097	J B	0.0037	0.000077	ug/Kg	☼	08/15/18 11:35	08/21/18 22:19	1
1,2,3,4,6,7,8-HpCDF	ND		0.0037	0.000057	ug/Kg	☼	08/15/18 11:35	08/21/18 22:19	1
1,2,3,4,7,8,9-HpCDF	ND		0.0037	0.000071	ug/Kg	☼	08/15/18 11:35	08/21/18 22:19	1
1,2,3,4,7,8-HxCDD	0.00020	J B	0.0037	0.000053	ug/Kg	☼	08/15/18 11:35	08/21/18 22:19	1
1,2,3,4,7,8-HxCDF	ND		0.0037	0.000090	ug/Kg	☼	08/15/18 11:35	08/21/18 22:19	1
1,2,3,6,7,8-HxCDD	ND		0.0037	0.000051	ug/Kg	☼	08/15/18 11:35	08/21/18 22:19	1
1,2,3,6,7,8-HxCDF	ND		0.0037	0.000074	ug/Kg	☼	08/15/18 11:35	08/21/18 22:19	1
1,2,3,7,8,9-HxCDD	ND		0.0037	0.000048	ug/Kg	☼	08/15/18 11:35	08/21/18 22:19	1
1,2,3,7,8,9-HxCDF	ND		0.0037	0.000050	ug/Kg	☼	08/15/18 11:35	08/21/18 22:19	1
1,2,3,7,8-PeCDD	ND		0.0037	0.000077	ug/Kg	☼	08/15/18 11:35	08/21/18 22:19	1
1,2,3,7,8-PeCDF	ND		0.0037	0.000038	ug/Kg	☼	08/15/18 11:35	08/21/18 22:19	1
2,3,4,6,7,8-HxCDF	ND		0.0037	0.000051	ug/Kg	☼	08/15/18 11:35	08/21/18 22:19	1
2,3,4,7,8-PeCDF	ND		0.0037	0.000038	ug/Kg	☼	08/15/18 11:35	08/21/18 22:19	1
2,3,7,8-TCDD	ND		0.00074	0.000055	ug/Kg	☼	08/15/18 11:35	08/21/18 22:19	1
2,3,7,8-TCDF	ND		0.00074	0.000026	ug/Kg	☼	08/15/18 11:35	08/21/18 22:19	1
OCDD	0.0093	B	0.0074	0.000097	ug/Kg	☼	08/15/18 11:35	08/21/18 22:19	1
OCDF	ND		0.0074	0.000080	ug/Kg	☼	08/15/18 11:35	08/21/18 22:19	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	52		23 - 140	08/15/18 11:35	08/21/18 22:19	1
13C-1,2,3,4,6,7,8-HpCDF	43		28 - 143	08/15/18 11:35	08/21/18 22:19	1
13C-1,2,3,4,7,8,9-HpCDF	52		26 - 138	08/15/18 11:35	08/21/18 22:19	1
13C-1,2,3,4,7,8-HxCDD	48		32 - 141	08/15/18 11:35	08/21/18 22:19	1
13C-1,2,3,4,7,8-HxCDF	44		26 - 152	08/15/18 11:35	08/21/18 22:19	1
13C-1,2,3,6,7,8-HxCDD	47		28 - 130	08/15/18 11:35	08/21/18 22:19	1
13C-1,2,3,6,7,8-HxCDF	44		26 - 123	08/15/18 11:35	08/21/18 22:19	1
13C-1,2,3,7,8,9-HxCDF	51		29 - 147	08/15/18 11:35	08/21/18 22:19	1
13C-1,2,3,7,8-PeCDD	51		25 - 181	08/15/18 11:35	08/21/18 22:19	1
13C-1,2,3,7,8-PeCDF	48		24 - 185	08/15/18 11:35	08/21/18 22:19	1
13C-2,3,4,6,7,8-HxCDF	47		28 - 136	08/15/18 11:35	08/21/18 22:19	1
13C-2,3,4,7,8-PeCDF	50		21 - 178	08/15/18 11:35	08/21/18 22:19	1
13C-2,3,7,8-TCDD	54		25 - 164	08/15/18 11:35	08/21/18 22:19	1
13C-2,3,7,8-TCDF	52		24 - 169	08/15/18 11:35	08/21/18 22:19	1
13C-OCDD	52		17 - 157	08/15/18 11:35	08/21/18 22:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	96		35 - 197	08/15/18 11:35	08/21/18 22:19	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S083-0to1.6

Lab Sample ID: 580-79329-25

Date Collected: 08/01/18 17:30

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 35.5

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	0.14	B	0.0070	0.0021	ug/Kg	☼	08/15/18 11:35	08/21/18 23:08	1
1,2,3,4,6,7,8-HpCDF	0.025	B	0.0070	0.00067	ug/Kg	☼	08/15/18 11:35	08/21/18 23:08	1
1,2,3,4,7,8,9-HpCDF	0.0035	J q	0.0070	0.00082	ug/Kg	☼	08/15/18 11:35	08/21/18 23:08	1
1,2,3,4,7,8-HxCDD	0.0013	J B	0.0070	0.00022	ug/Kg	☼	08/15/18 11:35	08/21/18 23:08	1
1,2,3,4,7,8-HxCDF	0.022		0.0070	0.00046	ug/Kg	☼	08/15/18 11:35	08/21/18 23:08	1
1,2,3,6,7,8-HxCDD	0.0049	J	0.0070	0.00021	ug/Kg	☼	08/15/18 11:35	08/21/18 23:08	1
1,2,3,6,7,8-HxCDF	0.0060	J	0.0070	0.00039	ug/Kg	☼	08/15/18 11:35	08/21/18 23:08	1
1,2,3,7,8,9-HxCDD	0.0035	J	0.0070	0.00020	ug/Kg	☼	08/15/18 11:35	08/21/18 23:08	1
1,2,3,7,8,9-HxCDF	0.00041	J B	0.0070	0.00026	ug/Kg	☼	08/15/18 11:35	08/21/18 23:08	1
1,2,3,7,8-PeCDD	0.00079	J	0.0070	0.00018	ug/Kg	☼	08/15/18 11:35	08/21/18 23:08	1
1,2,3,7,8-PeCDF	0.0082		0.0070	0.00020	ug/Kg	☼	08/15/18 11:35	08/21/18 23:08	1
2,3,4,6,7,8-HxCDF	0.0012	J	0.0070	0.00028	ug/Kg	☼	08/15/18 11:35	08/21/18 23:08	1
2,3,4,7,8-PeCDF	0.0032	J	0.0070	0.00021	ug/Kg	☼	08/15/18 11:35	08/21/18 23:08	1
2,3,7,8-TCDD	0.00039	J q	0.0014	0.00017	ug/Kg	☼	08/15/18 11:35	08/21/18 23:08	1
OCDD	1.2	B	0.014	0.00084	ug/Kg	☼	08/15/18 11:35	08/21/18 23:08	1
OCDF	0.067	B	0.014	0.00020	ug/Kg	☼	08/15/18 11:35	08/21/18 23:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	61		23 - 140	08/15/18 11:35	08/21/18 23:08	1
13C-1,2,3,4,6,7,8-HpCDF	51		28 - 143	08/15/18 11:35	08/21/18 23:08	1
13C-1,2,3,4,7,8,9-HpCDF	61		26 - 138	08/15/18 11:35	08/21/18 23:08	1
13C-1,2,3,4,7,8-HxCDD	59		32 - 141	08/15/18 11:35	08/21/18 23:08	1
13C-1,2,3,4,7,8-HxCDF	54		26 - 152	08/15/18 11:35	08/21/18 23:08	1
13C-1,2,3,6,7,8-HxCDD	53		28 - 130	08/15/18 11:35	08/21/18 23:08	1
13C-1,2,3,6,7,8-HxCDF	54		26 - 123	08/15/18 11:35	08/21/18 23:08	1
13C-1,2,3,7,8,9-HxCDF	62		29 - 147	08/15/18 11:35	08/21/18 23:08	1
13C-1,2,3,7,8-PeCDD	62		25 - 181	08/15/18 11:35	08/21/18 23:08	1
13C-1,2,3,7,8-PeCDF	60		24 - 185	08/15/18 11:35	08/21/18 23:08	1
13C-2,3,4,6,7,8-HxCDF	54		28 - 136	08/15/18 11:35	08/21/18 23:08	1
13C-2,3,4,7,8-PeCDF	59		21 - 178	08/15/18 11:35	08/21/18 23:08	1
13C-2,3,7,8-TCDD	60		25 - 164	08/15/18 11:35	08/21/18 23:08	1
13C-OCDD	65		17 - 157	08/15/18 11:35	08/21/18 23:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197	08/15/18 11:35	08/21/18 23:08	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	0.0074		0.0014	0.00031	ug/Kg	☼	08/15/18 11:35	08/21/18 16:17	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	60		24 - 169	08/15/18 11:35	08/21/18 16:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	89		35 - 197	08/15/18 11:35	08/21/18 16:17	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S083-1.6to3.5

Lab Sample ID: 580-79329-26

Date Collected: 08/01/18 17:35

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 81.1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.046	B	0.031	0.0010	ug/Kg	☼	08/15/18 11:35	08/21/18 23:56	10
1,2,3,4,6,7,8-HpCDF	0.0030	J B	0.031	0.00049	ug/Kg	☼	08/15/18 11:35	08/21/18 23:56	10
1,2,3,4,7,8,9-HpCDF	ND		0.031	0.00066	ug/Kg	☼	08/15/18 11:35	08/21/18 23:56	10
1,2,3,4,7,8-HxCDD	0.00045	J B q	0.031	0.00032	ug/Kg	☼	08/15/18 11:35	08/21/18 23:56	10
1,2,3,4,7,8-HxCDF	ND		0.031	0.00064	ug/Kg	☼	08/15/18 11:35	08/21/18 23:56	10
1,2,3,6,7,8-HxCDD	0.0017	J	0.031	0.00031	ug/Kg	☼	08/15/18 11:35	08/21/18 23:56	10
1,2,3,6,7,8-HxCDF	ND		0.031	0.00053	ug/Kg	☼	08/15/18 11:35	08/21/18 23:56	10
1,2,3,7,8,9-HxCDD	0.0010	J	0.031	0.00030	ug/Kg	☼	08/15/18 11:35	08/21/18 23:56	10
1,2,3,7,8,9-HxCDF	ND		0.031	0.00035	ug/Kg	☼	08/15/18 11:35	08/21/18 23:56	10
1,2,3,7,8-PeCDD	ND		0.031	0.00039	ug/Kg	☼	08/15/18 11:35	08/21/18 23:56	10
1,2,3,7,8-PeCDF	0.00053	J q	0.031	0.00024	ug/Kg	☼	08/15/18 11:35	08/21/18 23:56	10
2,3,4,6,7,8-HxCDF	ND		0.031	0.00039	ug/Kg	☼	08/15/18 11:35	08/21/18 23:56	10
2,3,4,7,8-PeCDF	ND		0.031	0.00026	ug/Kg	☼	08/15/18 11:35	08/21/18 23:56	10
2,3,7,8-TCDD	ND		0.0061	0.00036	ug/Kg	☼	08/15/18 11:35	08/21/18 23:56	10
2,3,7,8-TCDF	ND		0.0061	0.00023	ug/Kg	☼	08/15/18 11:35	08/21/18 23:56	10
OCDD	0.38	B	0.061	0.00095	ug/Kg	☼	08/15/18 11:35	08/21/18 23:56	10
OCDF	0.016	J B	0.061	0.00074	ug/Kg	☼	08/15/18 11:35	08/21/18 23:56	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	60		23 - 140	08/15/18 11:35	08/21/18 23:56	10
13C-1,2,3,4,6,7,8-HpCDF	58		28 - 143	08/15/18 11:35	08/21/18 23:56	10
13C-1,2,3,4,7,8,9-HpCDF	61		26 - 138	08/15/18 11:35	08/21/18 23:56	10
13C-1,2,3,4,7,8-HxCDD	59		32 - 141	08/15/18 11:35	08/21/18 23:56	10
13C-1,2,3,4,7,8-HxCDF	57		26 - 152	08/15/18 11:35	08/21/18 23:56	10
13C-1,2,3,6,7,8-HxCDD	55		28 - 130	08/15/18 11:35	08/21/18 23:56	10
13C-1,2,3,6,7,8-HxCDF	56		26 - 123	08/15/18 11:35	08/21/18 23:56	10
13C-1,2,3,7,8,9-HxCDF	62		29 - 147	08/15/18 11:35	08/21/18 23:56	10
13C-1,2,3,7,8-PeCDD	60		25 - 181	08/15/18 11:35	08/21/18 23:56	10
13C-1,2,3,7,8-PeCDF	62		24 - 185	08/15/18 11:35	08/21/18 23:56	10
13C-2,3,4,6,7,8-HxCDF	54		28 - 136	08/15/18 11:35	08/21/18 23:56	10
13C-2,3,4,7,8-PeCDF	58		21 - 178	08/15/18 11:35	08/21/18 23:56	10
13C-2,3,7,8-TCDD	62		25 - 164	08/15/18 11:35	08/21/18 23:56	10
13C-2,3,7,8-TCDF	63		24 - 169	08/15/18 11:35	08/21/18 23:56	10
13C-OCDD	50		17 - 157	08/15/18 11:35	08/21/18 23:56	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	99		35 - 197	08/15/18 11:35	08/21/18 23:56	10

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S083-3.5to5.0

Lab Sample ID: 580-79329-27

Date Collected: 08/01/18 17:40

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 79.9

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	0.20	B	0.031	0.0034	ug/Kg	☼	08/15/18 11:35	08/22/18 00:45	10
1,2,3,4,6,7,8-HpCDF	0.0085	J B	0.031	0.00056	ug/Kg	☼	08/15/18 11:35	08/22/18 00:45	10
1,2,3,4,7,8,9-HpCDF	ND		0.031	0.00081	ug/Kg	☼	08/15/18 11:35	08/22/18 00:45	10
1,2,3,4,7,8-HxCDD	0.00073	J B	0.031	0.00049	ug/Kg	☼	08/15/18 11:35	08/22/18 00:45	10
1,2,3,4,7,8-HxCDF	0.0016	J	0.031	0.00096	ug/Kg	☼	08/15/18 11:35	08/22/18 00:45	10
1,2,3,6,7,8-HxCDD	0.0031	J	0.031	0.00048	ug/Kg	☼	08/15/18 11:35	08/22/18 00:45	10
1,2,3,6,7,8-HxCDF	ND		0.031	0.00079	ug/Kg	☼	08/15/18 11:35	08/22/18 00:45	10
1,2,3,7,8,9-HxCDD	ND		0.031	0.00045	ug/Kg	☼	08/15/18 11:35	08/22/18 00:45	10
1,2,3,7,8,9-HxCDF	ND		0.031	0.00054	ug/Kg	☼	08/15/18 11:35	08/22/18 00:45	10
1,2,3,7,8-PeCDD	ND		0.031	0.00045	ug/Kg	☼	08/15/18 11:35	08/22/18 00:45	10
1,2,3,7,8-PeCDF	0.0013	J q	0.031	0.00032	ug/Kg	☼	08/15/18 11:35	08/22/18 00:45	10
2,3,4,6,7,8-HxCDF	ND		0.031	0.00056	ug/Kg	☼	08/15/18 11:35	08/22/18 00:45	10
2,3,4,7,8-PeCDF	ND		0.031	0.00033	ug/Kg	☼	08/15/18 11:35	08/22/18 00:45	10
2,3,7,8-TCDD	ND		0.0062	0.00036	ug/Kg	☼	08/15/18 11:35	08/22/18 00:45	10
2,3,7,8-TCDF	0.00096	J q	0.0062	0.00025	ug/Kg	☼	08/15/18 11:35	08/22/18 00:45	10
OCDD	1.6	B	0.062	0.0019	ug/Kg	☼	08/15/18 11:35	08/22/18 00:45	10
OCDF	0.063	B	0.062	0.0010	ug/Kg	☼	08/15/18 11:35	08/22/18 00:45	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	44		23 - 140	08/15/18 11:35	08/22/18 00:45	10
13C-1,2,3,4,6,7,8-HpCDF	48		28 - 143	08/15/18 11:35	08/22/18 00:45	10
13C-1,2,3,4,7,8,9-HpCDF	52		26 - 138	08/15/18 11:35	08/22/18 00:45	10
13C-1,2,3,4,7,8-HxCDD	54		32 - 141	08/15/18 11:35	08/22/18 00:45	10
13C-1,2,3,4,7,8-HxCDF	49		26 - 152	08/15/18 11:35	08/22/18 00:45	10
13C-1,2,3,6,7,8-HxCDD	48		28 - 130	08/15/18 11:35	08/22/18 00:45	10
13C-1,2,3,6,7,8-HxCDF	51		26 - 123	08/15/18 11:35	08/22/18 00:45	10
13C-1,2,3,7,8,9-HxCDF	53		29 - 147	08/15/18 11:35	08/22/18 00:45	10
13C-1,2,3,7,8-PeCDD	55		25 - 181	08/15/18 11:35	08/22/18 00:45	10
13C-1,2,3,7,8-PeCDF	54		24 - 185	08/15/18 11:35	08/22/18 00:45	10
13C-2,3,4,6,7,8-HxCDF	50		28 - 136	08/15/18 11:35	08/22/18 00:45	10
13C-2,3,4,7,8-PeCDF	56		21 - 178	08/15/18 11:35	08/22/18 00:45	10
13C-2,3,7,8-TCDD	57		25 - 164	08/15/18 11:35	08/22/18 00:45	10
13C-2,3,7,8-TCDF	60		24 - 169	08/15/18 11:35	08/22/18 00:45	10
13C-OCDD	33		17 - 157	08/15/18 11:35	08/22/18 00:45	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197	08/15/18 11:35	08/22/18 00:45	10

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S083-5to6.6

Lab Sample ID: 580-79329-28

Date Collected: 08/01/18 17:45

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 79.1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.25	B G	0.0059	0.0059	ug/Kg	☼	08/15/18 11:35	08/17/18 22:45	1
1,2,3,4,6,7,8-HpCDF	0.011	B	0.0032	0.00039	ug/Kg	☼	08/15/18 11:35	08/17/18 22:45	1
1,2,3,4,7,8,9-HpCDF	0.0011	J	0.0032	0.00061	ug/Kg	☼	08/15/18 11:35	08/17/18 22:45	1
1,2,3,4,7,8-HxCDD	0.00074	J B	0.0032	0.00016	ug/Kg	☼	08/15/18 11:35	08/17/18 22:45	1
1,2,3,4,7,8-HxCDF	0.0018	J	0.0032	0.00014	ug/Kg	☼	08/15/18 11:35	08/17/18 22:45	1
1,2,3,6,7,8-HxCDD	0.0032	q	0.0032	0.00015	ug/Kg	☼	08/15/18 11:35	08/17/18 22:45	1
1,2,3,6,7,8-HxCDF	0.00063	J	0.0032	0.00012	ug/Kg	☼	08/15/18 11:35	08/17/18 22:45	1
1,2,3,7,8,9-HxCDD	0.0028	J	0.0032	0.00014	ug/Kg	☼	08/15/18 11:35	08/17/18 22:45	1
1,2,3,7,8,9-HxCDF	ND		0.0032	0.000099	ug/Kg	☼	08/15/18 11:35	08/17/18 22:45	1
1,2,3,7,8-PeCDD	0.00036	J	0.0032	0.000077	ug/Kg	☼	08/15/18 11:35	08/17/18 22:45	1
1,2,3,7,8-PeCDF	0.00096	J	0.0032	0.000063	ug/Kg	☼	08/15/18 11:35	08/17/18 22:45	1
2,3,4,6,7,8-HxCDF	0.00033	J q	0.0032	0.000098	ug/Kg	☼	08/15/18 11:35	08/17/18 22:45	1
2,3,4,7,8-PeCDF	0.00062	J	0.0032	0.000046	ug/Kg	☼	08/15/18 11:35	08/17/18 22:45	1
2,3,7,8-TCDD	ND		0.00063	0.00013	ug/Kg	☼	08/15/18 11:35	08/17/18 22:45	1
OCDD	2.0	B	0.0063	0.0021	ug/Kg	☼	08/15/18 11:35	08/17/18 22:45	1
OCDF	0.086	B	0.0063	0.00050	ug/Kg	☼	08/15/18 11:35	08/17/18 22:45	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	25		23 - 140	08/15/18 11:35	08/17/18 22:45	1
13C-1,2,3,4,6,7,8-HpCDF	29		28 - 143	08/15/18 11:35	08/17/18 22:45	1
13C-1,2,3,4,7,8,9-HpCDF	32		26 - 138	08/15/18 11:35	08/17/18 22:45	1
13C-1,2,3,4,7,8-HxCDD	44		32 - 141	08/15/18 11:35	08/17/18 22:45	1
13C-1,2,3,4,7,8-HxCDF	40		26 - 152	08/15/18 11:35	08/17/18 22:45	1
13C-1,2,3,6,7,8-HxCDD	42		28 - 130	08/15/18 11:35	08/17/18 22:45	1
13C-1,2,3,6,7,8-HxCDF	38		26 - 123	08/15/18 11:35	08/17/18 22:45	1
13C-1,2,3,7,8,9-HxCDF	53		29 - 147	08/15/18 11:35	08/17/18 22:45	1
13C-1,2,3,7,8-PeCDD	91		25 - 181	08/15/18 11:35	08/17/18 22:45	1
13C-1,2,3,7,8-PeCDF	66		24 - 185	08/15/18 11:35	08/17/18 22:45	1
13C-2,3,4,6,7,8-HxCDF	35		28 - 136	08/15/18 11:35	08/17/18 22:45	1
13C-2,3,4,7,8-PeCDF	64		21 - 178	08/15/18 11:35	08/17/18 22:45	1
13C-2,3,7,8-TCDD	51		25 - 164	08/15/18 11:35	08/17/18 22:45	1
13C-OCDD	13	*	17 - 157	08/15/18 11:35	08/17/18 22:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	84		35 - 197	08/15/18 11:35	08/17/18 22:45	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.00063	0.00050	ug/Kg	☼	08/15/18 11:35	08/22/18 01:28	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	57		24 - 169	08/15/18 11:35	08/22/18 01:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	100		35 - 197	08/15/18 11:35	08/22/18 01:28	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S032-0to2

Lab Sample ID: 580-79329-29

Date Collected: 08/01/18 15:40

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 80.1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.017	B	0.0031	0.00031	ug/Kg	☼	08/15/18 11:35	08/17/18 23:34	1
1,2,3,4,6,7,8-HpCDF	0.0073	B	0.0031	0.00014	ug/Kg	☼	08/15/18 11:35	08/17/18 23:34	1
1,2,3,4,7,8,9-HpCDF	ND		0.0031	0.00017	ug/Kg	☼	08/15/18 11:35	08/17/18 23:34	1
1,2,3,4,7,8-HxCDD	0.00030	J B	0.0031	0.000072	ug/Kg	☼	08/15/18 11:35	08/17/18 23:34	1
1,2,3,4,7,8-HxCDF	ND		0.0031	0.00016	ug/Kg	☼	08/15/18 11:35	08/17/18 23:34	1
1,2,3,6,7,8-HxCDD	0.00085	J	0.0031	0.000065	ug/Kg	☼	08/15/18 11:35	08/17/18 23:34	1
1,2,3,6,7,8-HxCDF	ND		0.0031	0.00013	ug/Kg	☼	08/15/18 11:35	08/17/18 23:34	1
1,2,3,7,8,9-HxCDD	0.00056	J	0.0031	0.000063	ug/Kg	☼	08/15/18 11:35	08/17/18 23:34	1
1,2,3,7,8,9-HxCDF	ND		0.0031	0.000094	ug/Kg	☼	08/15/18 11:35	08/17/18 23:34	1
1,2,3,7,8-PeCDD	ND		0.0031	0.000082	ug/Kg	☼	08/15/18 11:35	08/17/18 23:34	1
1,2,3,7,8-PeCDF	0.00020	J q	0.0031	0.000065	ug/Kg	☼	08/15/18 11:35	08/17/18 23:34	1
2,3,4,6,7,8-HxCDF	0.00021	J	0.0031	0.000096	ug/Kg	☼	08/15/18 11:35	08/17/18 23:34	1
2,3,4,7,8-PeCDF	0.00020	J	0.0031	0.000075	ug/Kg	☼	08/15/18 11:35	08/17/18 23:34	1
2,3,7,8-TCDD	ND		0.00062	0.000051	ug/Kg	☼	08/15/18 11:35	08/17/18 23:34	1
2,3,7,8-TCDF	0.00036	J	0.00062	0.000073	ug/Kg	☼	08/15/18 11:35	08/17/18 23:34	1
OCDD	0.18	B	0.0062	0.00022	ug/Kg	☼	08/15/18 11:35	08/17/18 23:34	1
OCDF	0.010	B	0.0062	0.00010	ug/Kg	☼	08/15/18 11:35	08/17/18 23:34	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	56		23 - 140	08/15/18 11:35	08/17/18 23:34	1
13C-1,2,3,4,6,7,8-HpCDF	47		28 - 143	08/15/18 11:35	08/17/18 23:34	1
13C-1,2,3,4,7,8,9-HpCDF	63		26 - 138	08/15/18 11:35	08/17/18 23:34	1
13C-1,2,3,4,7,8-HxCDD	60		32 - 141	08/15/18 11:35	08/17/18 23:34	1
13C-1,2,3,4,7,8-HxCDF	47		26 - 152	08/15/18 11:35	08/17/18 23:34	1
13C-1,2,3,6,7,8-HxCDD	56		28 - 130	08/15/18 11:35	08/17/18 23:34	1
13C-1,2,3,6,7,8-HxCDF	45		26 - 123	08/15/18 11:35	08/17/18 23:34	1
13C-1,2,3,7,8,9-HxCDF	62		29 - 147	08/15/18 11:35	08/17/18 23:34	1
13C-1,2,3,7,8-PeCDD	78		25 - 181	08/15/18 11:35	08/17/18 23:34	1
13C-1,2,3,7,8-PeCDF	64		24 - 185	08/15/18 11:35	08/17/18 23:34	1
13C-2,3,4,6,7,8-HxCDF	53		28 - 136	08/15/18 11:35	08/17/18 23:34	1
13C-2,3,4,7,8-PeCDF	65		21 - 178	08/15/18 11:35	08/17/18 23:34	1
13C-2,3,7,8-TCDD	63		25 - 164	08/15/18 11:35	08/17/18 23:34	1
13C-2,3,7,8-TCDF	63		24 - 169	08/15/18 11:35	08/17/18 23:34	1
13C-OCDD	65		17 - 157	08/15/18 11:35	08/17/18 23:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	95		35 - 197	08/15/18 11:35	08/17/18 23:34	1

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S032-2to4

Lab Sample ID: 580-79329-30

Date Collected: 08/01/18 15:45

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 79.1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.015	B	0.0031	0.00030	ug/Kg	☼	08/15/18 11:35	08/18/18 00:22	1
1,2,3,4,6,7,8-HpCDF	0.0093	B	0.0031	0.00020	ug/Kg	☼	08/15/18 11:35	08/18/18 00:22	1
1,2,3,4,7,8,9-HpCDF	ND		0.0031	0.00025	ug/Kg	☼	08/15/18 11:35	08/18/18 00:22	1
1,2,3,4,7,8-HxCDD	0.00028	J B	0.0031	0.00013	ug/Kg	☼	08/15/18 11:35	08/18/18 00:22	1
1,2,3,4,7,8-HxCDF	ND		0.0031	0.00034	ug/Kg	☼	08/15/18 11:35	08/18/18 00:22	1
1,2,3,6,7,8-HxCDD	0.00074	J	0.0031	0.00012	ug/Kg	☼	08/15/18 11:35	08/18/18 00:22	1
1,2,3,6,7,8-HxCDF	ND		0.0031	0.00031	ug/Kg	☼	08/15/18 11:35	08/18/18 00:22	1
1,2,3,7,8,9-HxCDD	0.00058	J	0.0031	0.00011	ug/Kg	☼	08/15/18 11:35	08/18/18 00:22	1
1,2,3,7,8,9-HxCDF	ND		0.0031	0.00024	ug/Kg	☼	08/15/18 11:35	08/18/18 00:22	1
1,2,3,7,8-PeCDD	0.00010	J q	0.0031	0.000083	ug/Kg	☼	08/15/18 11:35	08/18/18 00:22	1
1,2,3,7,8-PeCDF	ND		0.0031	0.00011	ug/Kg	☼	08/15/18 11:35	08/18/18 00:22	1
2,3,4,6,7,8-HxCDF	ND		0.0031	0.00025	ug/Kg	☼	08/15/18 11:35	08/18/18 00:22	1
2,3,4,7,8-PeCDF	0.00025	J	0.0031	0.00012	ug/Kg	☼	08/15/18 11:35	08/18/18 00:22	1
2,3,7,8-TCDD	ND		0.00062	0.000045	ug/Kg	☼	08/15/18 11:35	08/18/18 00:22	1
2,3,7,8-TCDF	0.00035	J	0.00062	0.00011	ug/Kg	☼	08/15/18 11:35	08/18/18 00:22	1
OCDD	0.16	B	0.0062	0.00025	ug/Kg	☼	08/15/18 11:35	08/18/18 00:22	1
OCDF	0.012	B	0.0062	0.00014	ug/Kg	☼	08/15/18 11:35	08/18/18 00:22	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	49		23 - 140	08/15/18 11:35	08/18/18 00:22	1
13C-1,2,3,4,6,7,8-HpCDF	38		28 - 143	08/15/18 11:35	08/18/18 00:22	1
13C-1,2,3,4,7,8,9-HpCDF	49		26 - 138	08/15/18 11:35	08/18/18 00:22	1
13C-1,2,3,4,7,8-HxCDD	50		32 - 141	08/15/18 11:35	08/18/18 00:22	1
13C-1,2,3,4,7,8-HxCDF	49		26 - 152	08/15/18 11:35	08/18/18 00:22	1
13C-1,2,3,6,7,8-HxCDD	48		28 - 130	08/15/18 11:35	08/18/18 00:22	1
13C-1,2,3,6,7,8-HxCDF	43		26 - 123	08/15/18 11:35	08/18/18 00:22	1
13C-1,2,3,7,8,9-HxCDF	50		29 - 147	08/15/18 11:35	08/18/18 00:22	1
13C-1,2,3,7,8-PeCDD	60		25 - 181	08/15/18 11:35	08/18/18 00:22	1
13C-1,2,3,7,8-PeCDF	52		24 - 185	08/15/18 11:35	08/18/18 00:22	1
13C-2,3,4,6,7,8-HxCDF	46		28 - 136	08/15/18 11:35	08/18/18 00:22	1
13C-2,3,4,7,8-PeCDF	52		21 - 178	08/15/18 11:35	08/18/18 00:22	1
13C-2,3,7,8-TCDD	54		25 - 164	08/15/18 11:35	08/18/18 00:22	1
13C-2,3,7,8-TCDF	50		24 - 169	08/15/18 11:35	08/18/18 00:22	1
13C-OCDD	55		17 - 157	08/15/18 11:35	08/18/18 00:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	95		35 - 197	08/15/18 11:35	08/18/18 00:22	1

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S032-4to6

Lab Sample ID: 580-79329-31

Date Collected: 08/01/18 15:50

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 65.8

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	0.00083	J B	0.0037	0.000088	ug/Kg	☼	08/15/18 11:35	08/18/18 01:11	1
1,2,3,4,6,7,8-HpCDF	0.00072	J B q	0.0037	0.000083	ug/Kg	☼	08/15/18 11:35	08/18/18 01:11	1
1,2,3,4,7,8,9-HpCDF	ND		0.0037	0.00010	ug/Kg	☼	08/15/18 11:35	08/18/18 01:11	1
1,2,3,4,7,8-HxCDD	0.00026	J B	0.0037	0.000074	ug/Kg	☼	08/15/18 11:35	08/18/18 01:11	1
1,2,3,4,7,8-HxCDF	ND		0.0037	0.00015	ug/Kg	☼	08/15/18 11:35	08/18/18 01:11	1
1,2,3,6,7,8-HxCDD	ND		0.0037	0.000068	ug/Kg	☼	08/15/18 11:35	08/18/18 01:11	1
1,2,3,6,7,8-HxCDF	ND		0.0037	0.00013	ug/Kg	☼	08/15/18 11:35	08/18/18 01:11	1
1,2,3,7,8,9-HxCDD	ND		0.0037	0.000066	ug/Kg	☼	08/15/18 11:35	08/18/18 01:11	1
1,2,3,7,8,9-HxCDF	ND		0.0037	0.000084	ug/Kg	☼	08/15/18 11:35	08/18/18 01:11	1
1,2,3,7,8-PeCDD	ND		0.0037	0.000069	ug/Kg	☼	08/15/18 11:35	08/18/18 01:11	1
1,2,3,7,8-PeCDF	ND		0.0037	0.000058	ug/Kg	☼	08/15/18 11:35	08/18/18 01:11	1
2,3,4,6,7,8-HxCDF	ND		0.0037	0.000090	ug/Kg	☼	08/15/18 11:35	08/18/18 01:11	1
2,3,4,7,8-PeCDF	ND		0.0037	0.000069	ug/Kg	☼	08/15/18 11:35	08/18/18 01:11	1
2,3,7,8-TCDD	ND		0.00075	0.000057	ug/Kg	☼	08/15/18 11:35	08/18/18 01:11	1
2,3,7,8-TCDF	ND		0.00075	0.000055	ug/Kg	☼	08/15/18 11:35	08/18/18 01:11	1
OCDD	0.0084	B	0.0075	0.00010	ug/Kg	☼	08/15/18 11:35	08/18/18 01:11	1
OCDF	0.00080	J B	0.0075	0.00013	ug/Kg	☼	08/15/18 11:35	08/18/18 01:11	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	37		23 - 140	08/15/18 11:35	08/18/18 01:11	1
13C-1,2,3,4,6,7,8-HpCDF	32		28 - 143	08/15/18 11:35	08/18/18 01:11	1
13C-1,2,3,4,7,8,9-HpCDF	42		26 - 138	08/15/18 11:35	08/18/18 01:11	1
13C-1,2,3,4,7,8-HxCDD	43		32 - 141	08/15/18 11:35	08/18/18 01:11	1
13C-1,2,3,4,7,8-HxCDF	36		26 - 152	08/15/18 11:35	08/18/18 01:11	1
13C-1,2,3,6,7,8-HxCDD	41		28 - 130	08/15/18 11:35	08/18/18 01:11	1
13C-1,2,3,6,7,8-HxCDF	33		26 - 123	08/15/18 11:35	08/18/18 01:11	1
13C-1,2,3,7,8,9-HxCDF	46		29 - 147	08/15/18 11:35	08/18/18 01:11	1
13C-1,2,3,7,8-PeCDD	56		25 - 181	08/15/18 11:35	08/18/18 01:11	1
13C-1,2,3,7,8-PeCDF	54		24 - 185	08/15/18 11:35	08/18/18 01:11	1
13C-2,3,4,6,7,8-HxCDF	40		28 - 136	08/15/18 11:35	08/18/18 01:11	1
13C-2,3,4,7,8-PeCDF	50		21 - 178	08/15/18 11:35	08/18/18 01:11	1
13C-2,3,7,8-TCDD	53		25 - 164	08/15/18 11:35	08/18/18 01:11	1
13C-2,3,7,8-TCDF	54		24 - 169	08/15/18 11:35	08/18/18 01:11	1
13C-OCDD	43		17 - 157	08/15/18 11:35	08/18/18 01:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	94		35 - 197	08/15/18 11:35	08/18/18 01:11	1

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S032-6to8

Lab Sample ID: 580-79329-32

Date Collected: 08/01/18 15:55

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 67.3

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	0.00081	J B	0.0037	0.00027	ug/Kg	☼	08/15/18 11:35	08/18/18 01:59	1
1,2,3,4,6,7,8-HpCDF	ND		0.0037	0.00020	ug/Kg	☼	08/15/18 11:35	08/18/18 01:59	1
1,2,3,4,7,8,9-HpCDF	ND		0.0037	0.00023	ug/Kg	☼	08/15/18 11:35	08/18/18 01:59	1
1,2,3,4,7,8-HxCDD	ND		0.0037	0.00020	ug/Kg	☼	08/15/18 11:35	08/18/18 01:59	1
1,2,3,4,7,8-HxCDF	ND		0.0037	0.00023	ug/Kg	☼	08/15/18 11:35	08/18/18 01:59	1
1,2,3,6,7,8-HxCDD	ND		0.0037	0.00019	ug/Kg	☼	08/15/18 11:35	08/18/18 01:59	1
1,2,3,6,7,8-HxCDF	ND		0.0037	0.00020	ug/Kg	☼	08/15/18 11:35	08/18/18 01:59	1
1,2,3,7,8,9-HxCDD	ND		0.0037	0.00018	ug/Kg	☼	08/15/18 11:35	08/18/18 01:59	1
1,2,3,7,8,9-HxCDF	ND		0.0037	0.00015	ug/Kg	☼	08/15/18 11:35	08/18/18 01:59	1
1,2,3,7,8-PeCDD	ND		0.0037	0.00026	ug/Kg	☼	08/15/18 11:35	08/18/18 01:59	1
1,2,3,7,8-PeCDF	ND		0.0037	0.00019	ug/Kg	☼	08/15/18 11:35	08/18/18 01:59	1
2,3,4,6,7,8-HxCDF	ND		0.0037	0.00014	ug/Kg	☼	08/15/18 11:35	08/18/18 01:59	1
2,3,4,7,8-PeCDF	ND		0.0037	0.00021	ug/Kg	☼	08/15/18 11:35	08/18/18 01:59	1
2,3,7,8-TCDD	ND		0.00074	0.00011	ug/Kg	☼	08/15/18 11:35	08/18/18 01:59	1
2,3,7,8-TCDF	ND		0.00074	0.000081	ug/Kg	☼	08/15/18 11:35	08/18/18 01:59	1
OCDD	0.0064	J B	0.0074	0.00024	ug/Kg	☼	08/15/18 11:35	08/18/18 01:59	1
OCDF	ND		0.0074	0.00023	ug/Kg	☼	08/15/18 11:35	08/18/18 01:59	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	61		23 - 140	08/15/18 11:35	08/18/18 01:59	1
13C-1,2,3,4,6,7,8-HpCDF	50		28 - 143	08/15/18 11:35	08/18/18 01:59	1
13C-1,2,3,4,7,8,9-HpCDF	65		26 - 138	08/15/18 11:35	08/18/18 01:59	1
13C-1,2,3,4,7,8-HxCDD	57		32 - 141	08/15/18 11:35	08/18/18 01:59	1
13C-1,2,3,4,7,8-HxCDF	48		26 - 152	08/15/18 11:35	08/18/18 01:59	1
13C-1,2,3,6,7,8-HxCDD	53		28 - 130	08/15/18 11:35	08/18/18 01:59	1
13C-1,2,3,6,7,8-HxCDF	45		26 - 123	08/15/18 11:35	08/18/18 01:59	1
13C-1,2,3,7,8,9-HxCDF	58		29 - 147	08/15/18 11:35	08/18/18 01:59	1
13C-1,2,3,7,8-PeCDD	72		25 - 181	08/15/18 11:35	08/18/18 01:59	1
13C-1,2,3,7,8-PeCDF	59		24 - 185	08/15/18 11:35	08/18/18 01:59	1
13C-2,3,4,6,7,8-HxCDF	55		28 - 136	08/15/18 11:35	08/18/18 01:59	1
13C-2,3,4,7,8-PeCDF	59		21 - 178	08/15/18 11:35	08/18/18 01:59	1
13C-2,3,7,8-TCDD	60		25 - 164	08/15/18 11:35	08/18/18 01:59	1
13C-2,3,7,8-TCDF	61		24 - 169	08/15/18 11:35	08/18/18 01:59	1
13C-OCDD	69		17 - 157	08/15/18 11:35	08/18/18 01:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	94		35 - 197	08/15/18 11:35	08/18/18 01:59	1

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S032-8to10

Lab Sample ID: 580-79329-33

Date Collected: 08/01/18 16:00

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 71.2

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	0.00037	J B	0.0035	0.000073	ug/Kg	☼	08/15/18 11:35	08/18/18 02:47	1
1,2,3,4,6,7,8-HpCDF	0.00023	J B q	0.0035	0.000069	ug/Kg	☼	08/15/18 11:35	08/18/18 02:47	1
1,2,3,4,7,8,9-HpCDF	ND		0.0035	0.000079	ug/Kg	☼	08/15/18 11:35	08/18/18 02:47	1
1,2,3,4,7,8-HxCDD	ND		0.0035	0.000077	ug/Kg	☼	08/15/18 11:35	08/18/18 02:47	1
1,2,3,4,7,8-HxCDF	ND		0.0035	0.000082	ug/Kg	☼	08/15/18 11:35	08/18/18 02:47	1
1,2,3,6,7,8-HxCDD	ND		0.0035	0.000070	ug/Kg	☼	08/15/18 11:35	08/18/18 02:47	1
1,2,3,6,7,8-HxCDF	ND		0.0035	0.000073	ug/Kg	☼	08/15/18 11:35	08/18/18 02:47	1
1,2,3,7,8,9-HxCDD	ND		0.0035	0.000068	ug/Kg	☼	08/15/18 11:35	08/18/18 02:47	1
1,2,3,7,8,9-HxCDF	ND		0.0035	0.000046	ug/Kg	☼	08/15/18 11:35	08/18/18 02:47	1
1,2,3,7,8-PeCDD	ND		0.0035	0.000063	ug/Kg	☼	08/15/18 11:35	08/18/18 02:47	1
1,2,3,7,8-PeCDF	ND		0.0035	0.000054	ug/Kg	☼	08/15/18 11:35	08/18/18 02:47	1
2,3,4,6,7,8-HxCDF	ND		0.0035	0.000050	ug/Kg	☼	08/15/18 11:35	08/18/18 02:47	1
2,3,4,7,8-PeCDF	ND		0.0035	0.000054	ug/Kg	☼	08/15/18 11:35	08/18/18 02:47	1
2,3,7,8-TCDD	ND		0.00069	0.000046	ug/Kg	☼	08/15/18 11:35	08/18/18 02:47	1
2,3,7,8-TCDF	ND		0.00069	0.000042	ug/Kg	☼	08/15/18 11:35	08/18/18 02:47	1
OCDD	0.0037	J B	0.0069	0.00011	ug/Kg	☼	08/15/18 11:35	08/18/18 02:47	1
OCDF	0.00013	J B	0.0069	0.00011	ug/Kg	☼	08/15/18 11:35	08/18/18 02:47	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	48		23 - 140	08/15/18 11:35	08/18/18 02:47	1
13C-1,2,3,4,6,7,8-HpCDF	40		28 - 143	08/15/18 11:35	08/18/18 02:47	1
13C-1,2,3,4,7,8,9-HpCDF	55		26 - 138	08/15/18 11:35	08/18/18 02:47	1
13C-1,2,3,4,7,8-HxCDD	43		32 - 141	08/15/18 11:35	08/18/18 02:47	1
13C-1,2,3,4,7,8-HxCDF	38		26 - 152	08/15/18 11:35	08/18/18 02:47	1
13C-1,2,3,6,7,8-HxCDD	43		28 - 130	08/15/18 11:35	08/18/18 02:47	1
13C-1,2,3,6,7,8-HxCDF	35		26 - 123	08/15/18 11:35	08/18/18 02:47	1
13C-1,2,3,7,8,9-HxCDF	52		29 - 147	08/15/18 11:35	08/18/18 02:47	1
13C-1,2,3,7,8-PeCDD	55		25 - 181	08/15/18 11:35	08/18/18 02:47	1
13C-1,2,3,7,8-PeCDF	48		24 - 185	08/15/18 11:35	08/18/18 02:47	1
13C-2,3,4,6,7,8-HxCDF	43		28 - 136	08/15/18 11:35	08/18/18 02:47	1
13C-2,3,4,7,8-PeCDF	52		21 - 178	08/15/18 11:35	08/18/18 02:47	1
13C-2,3,7,8-TCDD	53		25 - 164	08/15/18 11:35	08/18/18 02:47	1
13C-2,3,7,8-TCDF	55		24 - 169	08/15/18 11:35	08/18/18 02:47	1
13C-OCDD	60		17 - 157	08/15/18 11:35	08/18/18 02:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	89		35 - 197	08/15/18 11:35	08/18/18 02:47	1

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S032-10to12

Lab Sample ID: 580-79329-34

Date Collected: 08/01/18 16:05

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 68.9

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	0.00030	J B q	0.0036	0.000045	ug/Kg	☼	08/15/18 11:35	08/18/18 03:36	1
1,2,3,4,6,7,8-HpCDF	0.000033	J B q	0.0036	0.000026	ug/Kg	☼	08/15/18 11:35	08/18/18 03:36	1
1,2,3,4,7,8,9-HpCDF	ND		0.0036	0.000034	ug/Kg	☼	08/15/18 11:35	08/18/18 03:36	1
1,2,3,4,7,8-HxCDD	ND		0.0036	0.000063	ug/Kg	☼	08/15/18 11:35	08/18/18 03:36	1
1,2,3,4,7,8-HxCDF	ND		0.0036	0.000095	ug/Kg	☼	08/15/18 11:35	08/18/18 03:36	1
1,2,3,6,7,8-HxCDD	ND		0.0036	0.000057	ug/Kg	☼	08/15/18 11:35	08/18/18 03:36	1
1,2,3,6,7,8-HxCDF	ND		0.0036	0.000081	ug/Kg	☼	08/15/18 11:35	08/18/18 03:36	1
1,2,3,7,8,9-HxCDD	ND		0.0036	0.000056	ug/Kg	☼	08/15/18 11:35	08/18/18 03:36	1
1,2,3,7,8,9-HxCDF	ND		0.0036	0.000060	ug/Kg	☼	08/15/18 11:35	08/18/18 03:36	1
1,2,3,7,8-PeCDD	ND		0.0036	0.000046	ug/Kg	☼	08/15/18 11:35	08/18/18 03:36	1
1,2,3,7,8-PeCDF	ND		0.0036	0.000040	ug/Kg	☼	08/15/18 11:35	08/18/18 03:36	1
2,3,4,6,7,8-HxCDF	ND		0.0036	0.000059	ug/Kg	☼	08/15/18 11:35	08/18/18 03:36	1
2,3,4,7,8-PeCDF	ND		0.0036	0.000045	ug/Kg	☼	08/15/18 11:35	08/18/18 03:36	1
2,3,7,8-TCDD	ND		0.00071	0.000048	ug/Kg	☼	08/15/18 11:35	08/18/18 03:36	1
2,3,7,8-TCDF	ND		0.00071	0.000033	ug/Kg	☼	08/15/18 11:35	08/18/18 03:36	1
OCDD	0.0043	J B	0.0071	0.000069	ug/Kg	☼	08/15/18 11:35	08/18/18 03:36	1
OCDF	ND		0.0071	0.000074	ug/Kg	☼	08/15/18 11:35	08/18/18 03:36	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	55		23 - 140	08/15/18 11:35	08/18/18 03:36	1
13C-1,2,3,4,6,7,8-HpCDF	49		28 - 143	08/15/18 11:35	08/18/18 03:36	1
13C-1,2,3,4,7,8,9-HpCDF	58		26 - 138	08/15/18 11:35	08/18/18 03:36	1
13C-1,2,3,4,7,8-HxCDD	52		32 - 141	08/15/18 11:35	08/18/18 03:36	1
13C-1,2,3,4,7,8-HxCDF	47		26 - 152	08/15/18 11:35	08/18/18 03:36	1
13C-1,2,3,6,7,8-HxCDD	52		28 - 130	08/15/18 11:35	08/18/18 03:36	1
13C-1,2,3,6,7,8-HxCDF	43		26 - 123	08/15/18 11:35	08/18/18 03:36	1
13C-1,2,3,7,8,9-HxCDF	56		29 - 147	08/15/18 11:35	08/18/18 03:36	1
13C-1,2,3,7,8-PeCDD	61		25 - 181	08/15/18 11:35	08/18/18 03:36	1
13C-1,2,3,7,8-PeCDF	50		24 - 185	08/15/18 11:35	08/18/18 03:36	1
13C-2,3,4,6,7,8-HxCDF	50		28 - 136	08/15/18 11:35	08/18/18 03:36	1
13C-2,3,4,7,8-PeCDF	49		21 - 178	08/15/18 11:35	08/18/18 03:36	1
13C-2,3,7,8-TCDD	55		25 - 164	08/15/18 11:35	08/18/18 03:36	1
13C-2,3,7,8-TCDF	56		24 - 169	08/15/18 11:35	08/18/18 03:36	1
13C-OCDD	64		17 - 157	08/15/18 11:35	08/18/18 03:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	95		35 - 197	08/15/18 11:35	08/18/18 03:36	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S032-12to14

Lab Sample ID: 580-79329-35

Date Collected: 08/01/18 16:10

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 70.4

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.0013	J B	0.0035	0.000091	ug/Kg	☼	08/15/18 11:35	08/18/18 08:08	1
1,2,3,4,6,7,8-HpCDF	0.00024	J B q	0.0035	0.000047	ug/Kg	☼	08/15/18 11:35	08/18/18 08:08	1
1,2,3,4,7,8,9-HpCDF	ND		0.0035	0.000058	ug/Kg	☼	08/15/18 11:35	08/18/18 08:08	1
1,2,3,4,7,8-HxCDD	ND		0.0035	0.000065	ug/Kg	☼	08/15/18 11:35	08/18/18 08:08	1
1,2,3,4,7,8-HxCDF	ND		0.0035	0.000063	ug/Kg	☼	08/15/18 11:35	08/18/18 08:08	1
1,2,3,6,7,8-HxCDD	ND		0.0035	0.000061	ug/Kg	☼	08/15/18 11:35	08/18/18 08:08	1
1,2,3,6,7,8-HxCDF	ND		0.0035	0.000054	ug/Kg	☼	08/15/18 11:35	08/18/18 08:08	1
1,2,3,7,8,9-HxCDD	0.00021	J	0.0035	0.000059	ug/Kg	☼	08/15/18 11:35	08/18/18 08:08	1
1,2,3,7,8,9-HxCDF	ND		0.0035	0.000039	ug/Kg	☼	08/15/18 11:35	08/18/18 08:08	1
1,2,3,7,8-PeCDD	ND		0.0035	0.000062	ug/Kg	☼	08/15/18 11:35	08/18/18 08:08	1
1,2,3,7,8-PeCDF	ND		0.0035	0.000043	ug/Kg	☼	08/15/18 11:35	08/18/18 08:08	1
2,3,4,6,7,8-HxCDF	ND		0.0035	0.000041	ug/Kg	☼	08/15/18 11:35	08/18/18 08:08	1
2,3,4,7,8-PeCDF	ND		0.0035	0.000045	ug/Kg	☼	08/15/18 11:35	08/18/18 08:08	1
2,3,7,8-TCDD	ND		0.00071	0.000055	ug/Kg	☼	08/15/18 11:35	08/18/18 08:08	1
2,3,7,8-TCDF	ND		0.00071	0.000040	ug/Kg	☼	08/15/18 11:35	08/18/18 08:08	1
OCDD	0.014	B	0.0071	0.00012	ug/Kg	☼	08/15/18 11:35	08/18/18 08:08	1
OCDF	0.00026	J B	0.0071	0.000079	ug/Kg	☼	08/15/18 11:35	08/18/18 08:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	47		23 - 140	08/15/18 11:35	08/18/18 08:08	1
13C-1,2,3,4,6,7,8-HpCDF	39		28 - 143	08/15/18 11:35	08/18/18 08:08	1
13C-1,2,3,4,7,8,9-HpCDF	53		26 - 138	08/15/18 11:35	08/18/18 08:08	1
13C-1,2,3,4,7,8-HxCDD	43		32 - 141	08/15/18 11:35	08/18/18 08:08	1
13C-1,2,3,4,7,8-HxCDF	40		26 - 152	08/15/18 11:35	08/18/18 08:08	1
13C-1,2,3,6,7,8-HxCDD	41		28 - 130	08/15/18 11:35	08/18/18 08:08	1
13C-1,2,3,6,7,8-HxCDF	38		26 - 123	08/15/18 11:35	08/18/18 08:08	1
13C-1,2,3,7,8,9-HxCDF	52		29 - 147	08/15/18 11:35	08/18/18 08:08	1
13C-1,2,3,7,8-PeCDD	60		25 - 181	08/15/18 11:35	08/18/18 08:08	1
13C-1,2,3,7,8-PeCDF	53		24 - 185	08/15/18 11:35	08/18/18 08:08	1
13C-2,3,4,6,7,8-HxCDF	43		28 - 136	08/15/18 11:35	08/18/18 08:08	1
13C-2,3,4,7,8-PeCDF	55		21 - 178	08/15/18 11:35	08/18/18 08:08	1
13C-2,3,7,8-TCDD	56		25 - 164	08/15/18 11:35	08/18/18 08:08	1
13C-2,3,7,8-TCDF	60		24 - 169	08/15/18 11:35	08/18/18 08:08	1
13C-OCDD	53		17 - 157	08/15/18 11:35	08/18/18 08:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	98		35 - 197	08/15/18 11:35	08/18/18 08:08	1

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S172-0to2

Lab Sample ID: 580-79329-36

Date Collected: 08/02/18 17:50

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 41.4

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.46	B G	0.0072	0.0072	ug/Kg	☼	08/15/18 11:35	08/18/18 08:56	1
1,2,3,4,6,7,8-HpCDF	0.059	B	0.0061	0.0020	ug/Kg	☼	08/15/18 11:35	08/18/18 08:56	1
1,2,3,4,7,8,9-HpCDF	ND		0.0061	0.0029	ug/Kg	☼	08/15/18 11:35	08/18/18 08:56	1
1,2,3,4,7,8-HxCDD	0.0029	J B	0.0061	0.00070	ug/Kg	☼	08/15/18 11:35	08/18/18 08:56	1
1,2,3,4,7,8-HxCDF	0.0057	J	0.0061	0.0012	ug/Kg	☼	08/15/18 11:35	08/18/18 08:56	1
1,2,3,6,7,8-HxCDD	0.017		0.0061	0.00062	ug/Kg	☼	08/15/18 11:35	08/18/18 08:56	1
1,2,3,6,7,8-HxCDF	0.0029	J	0.0061	0.0011	ug/Kg	☼	08/15/18 11:35	08/18/18 08:56	1
1,2,3,7,8,9-HxCDD	0.0084		0.0061	0.00061	ug/Kg	☼	08/15/18 11:35	08/18/18 08:56	1
1,2,3,7,8,9-HxCDF	0.00097	J B	0.0061	0.00072	ug/Kg	☼	08/15/18 11:35	08/18/18 08:56	1
1,2,3,7,8-PeCDD	ND		0.0061	0.00050	ug/Kg	☼	08/15/18 11:35	08/18/18 08:56	1
1,2,3,7,8-PeCDF	0.0016	J q	0.0061	0.00050	ug/Kg	☼	08/15/18 11:35	08/18/18 08:56	1
2,3,4,6,7,8-HxCDF	0.0017	J	0.0061	0.00079	ug/Kg	☼	08/15/18 11:35	08/18/18 08:56	1
2,3,4,7,8-PeCDF	0.0013	J q	0.0061	0.00056	ug/Kg	☼	08/15/18 11:35	08/18/18 08:56	1
2,3,7,8-TCDD	0.00046	J q	0.0012	0.00011	ug/Kg	☼	08/15/18 11:35	08/18/18 08:56	1
OCDD	3.7	B	0.012	0.0031	ug/Kg	☼	08/15/18 11:35	08/18/18 08:56	1
OCDF	0.20	B	0.012	0.00046	ug/Kg	☼	08/15/18 11:35	08/18/18 08:56	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	56		23 - 140	08/15/18 11:35	08/18/18 08:56	1
13C-1,2,3,4,6,7,8-HpCDF	44		28 - 143	08/15/18 11:35	08/18/18 08:56	1
13C-1,2,3,4,7,8,9-HpCDF	52		26 - 138	08/15/18 11:35	08/18/18 08:56	1
13C-1,2,3,4,7,8-HxCDD	50		32 - 141	08/15/18 11:35	08/18/18 08:56	1
13C-1,2,3,4,7,8-HxCDF	46		26 - 152	08/15/18 11:35	08/18/18 08:56	1
13C-1,2,3,6,7,8-HxCDD	49		28 - 130	08/15/18 11:35	08/18/18 08:56	1
13C-1,2,3,6,7,8-HxCDF	42		26 - 123	08/15/18 11:35	08/18/18 08:56	1
13C-1,2,3,7,8,9-HxCDF	56		29 - 147	08/15/18 11:35	08/18/18 08:56	1
13C-1,2,3,7,8-PeCDD	60		25 - 181	08/15/18 11:35	08/18/18 08:56	1
13C-1,2,3,7,8-PeCDF	55		24 - 185	08/15/18 11:35	08/18/18 08:56	1
13C-2,3,4,6,7,8-HxCDF	48		28 - 136	08/15/18 11:35	08/18/18 08:56	1
13C-2,3,4,7,8-PeCDF	53		21 - 178	08/15/18 11:35	08/18/18 08:56	1
13C-2,3,7,8-TCDD	59		25 - 164	08/15/18 11:35	08/18/18 08:56	1
13C-OCDD	68		17 - 157	08/15/18 11:35	08/18/18 08:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	95		35 - 197	08/15/18 11:35	08/18/18 08:56	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	0.0046	G	0.0023	0.0023	ug/Kg	☼	08/15/18 11:35	08/22/18 02:06	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	60		24 - 169	08/15/18 11:35	08/22/18 02:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	84		35 - 197	08/15/18 11:35	08/22/18 02:06	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S218-6to8

Lab Sample ID: 580-79329-37

Date Collected: 08/02/18 11:35

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 89.1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.0026	J B	0.0028	0.00016	ug/Kg	☼	08/15/18 11:35	08/18/18 09:45	1
1,2,3,4,6,7,8-HpCDF	0.00078	J B q	0.0028	0.00011	ug/Kg	☼	08/15/18 11:35	08/18/18 09:45	1
1,2,3,4,7,8,9-HpCDF	ND		0.0028	0.00011	ug/Kg	☼	08/15/18 11:35	08/18/18 09:45	1
1,2,3,4,7,8-HxCDD	ND		0.0028	0.000089	ug/Kg	☼	08/15/18 11:35	08/18/18 09:45	1
1,2,3,4,7,8-HxCDF	ND		0.0028	0.00011	ug/Kg	☼	08/15/18 11:35	08/18/18 09:45	1
1,2,3,6,7,8-HxCDD	ND		0.0028	0.000082	ug/Kg	☼	08/15/18 11:35	08/18/18 09:45	1
1,2,3,6,7,8-HxCDF	ND		0.0028	0.000099	ug/Kg	☼	08/15/18 11:35	08/18/18 09:45	1
1,2,3,7,8,9-HxCDD	ND		0.0028	0.000079	ug/Kg	☼	08/15/18 11:35	08/18/18 09:45	1
1,2,3,7,8,9-HxCDF	ND		0.0028	0.000061	ug/Kg	☼	08/15/18 11:35	08/18/18 09:45	1
1,2,3,7,8-PeCDD	ND		0.0028	0.000085	ug/Kg	☼	08/15/18 11:35	08/18/18 09:45	1
1,2,3,7,8-PeCDF	ND		0.0028	0.000060	ug/Kg	☼	08/15/18 11:35	08/18/18 09:45	1
2,3,4,6,7,8-HxCDF	ND		0.0028	0.000064	ug/Kg	☼	08/15/18 11:35	08/18/18 09:45	1
2,3,4,7,8-PeCDF	ND		0.0028	0.000063	ug/Kg	☼	08/15/18 11:35	08/18/18 09:45	1
2,3,7,8-TCDD	ND		0.00056	0.000073	ug/Kg	☼	08/15/18 11:35	08/18/18 09:45	1
2,3,7,8-TCDF	ND		0.00056	0.000056	ug/Kg	☼	08/15/18 11:35	08/18/18 09:45	1
OCDD	0.040	B	0.0056	0.00062	ug/Kg	☼	08/15/18 11:35	08/18/18 09:45	1
OCDF	0.0028	J B	0.0056	0.00041	ug/Kg	☼	08/15/18 11:35	08/18/18 09:45	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	43		23 - 140	08/15/18 11:35	08/18/18 09:45	1
13C-1,2,3,4,6,7,8-HpCDF	31		28 - 143	08/15/18 11:35	08/18/18 09:45	1
13C-1,2,3,4,7,8,9-HpCDF	50		26 - 138	08/15/18 11:35	08/18/18 09:45	1
13C-1,2,3,4,7,8-HxCDD	45		32 - 141	08/15/18 11:35	08/18/18 09:45	1
13C-1,2,3,4,7,8-HxCDF	38		26 - 152	08/15/18 11:35	08/18/18 09:45	1
13C-1,2,3,6,7,8-HxCDD	42		28 - 130	08/15/18 11:35	08/18/18 09:45	1
13C-1,2,3,6,7,8-HxCDF	34		26 - 123	08/15/18 11:35	08/18/18 09:45	1
13C-1,2,3,7,8,9-HxCDF	52		29 - 147	08/15/18 11:35	08/18/18 09:45	1
13C-1,2,3,7,8-PeCDD	62		25 - 181	08/15/18 11:35	08/18/18 09:45	1
13C-1,2,3,7,8-PeCDF	51		24 - 185	08/15/18 11:35	08/18/18 09:45	1
13C-2,3,4,6,7,8-HxCDF	43		28 - 136	08/15/18 11:35	08/18/18 09:45	1
13C-2,3,4,7,8-PeCDF	54		21 - 178	08/15/18 11:35	08/18/18 09:45	1
13C-2,3,7,8-TCDD	56		25 - 164	08/15/18 11:35	08/18/18 09:45	1
13C-2,3,7,8-TCDF	62		24 - 169	08/15/18 11:35	08/18/18 09:45	1
13C-OCDD	44		17 - 157	08/15/18 11:35	08/18/18 09:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	93		35 - 197	08/15/18 11:35	08/18/18 09:45	1

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S218-8to10

Lab Sample ID: 580-79329-38

Date Collected: 08/02/18 11:40

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 79.6

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	0.0024	J B	0.0031	0.000093	ug/Kg	☼	08/15/18 11:35	08/18/18 10:33	1
1,2,3,4,6,7,8-HpCDF	0.00063	J B	0.0031	0.000072	ug/Kg	☼	08/15/18 11:35	08/18/18 10:33	1
1,2,3,4,7,8,9-HpCDF	ND		0.0031	0.000083	ug/Kg	☼	08/15/18 11:35	08/18/18 10:33	1
1,2,3,4,7,8-HxCDD	0.00026	J B	0.0031	0.000069	ug/Kg	☼	08/15/18 11:35	08/18/18 10:33	1
1,2,3,4,7,8-HxCDF	ND		0.0031	0.000074	ug/Kg	☼	08/15/18 11:35	08/18/18 10:33	1
1,2,3,6,7,8-HxCDD	ND		0.0031	0.000063	ug/Kg	☼	08/15/18 11:35	08/18/18 10:33	1
1,2,3,6,7,8-HxCDF	ND		0.0031	0.000070	ug/Kg	☼	08/15/18 11:35	08/18/18 10:33	1
1,2,3,7,8,9-HxCDD	0.00012	J	0.0031	0.000061	ug/Kg	☼	08/15/18 11:35	08/18/18 10:33	1
1,2,3,7,8,9-HxCDF	ND		0.0031	0.000046	ug/Kg	☼	08/15/18 11:35	08/18/18 10:33	1
1,2,3,7,8-PeCDD	ND		0.0031	0.00013	ug/Kg	☼	08/15/18 11:35	08/18/18 10:33	1
1,2,3,7,8-PeCDF	ND		0.0031	0.000073	ug/Kg	☼	08/15/18 11:35	08/18/18 10:33	1
2,3,4,6,7,8-HxCDF	ND		0.0031	0.000049	ug/Kg	☼	08/15/18 11:35	08/18/18 10:33	1
2,3,4,7,8-PeCDF	ND		0.0031	0.000077	ug/Kg	☼	08/15/18 11:35	08/18/18 10:33	1
2,3,7,8-TCDD	ND		0.00062	0.000062	ug/Kg	☼	08/15/18 11:35	08/18/18 10:33	1
2,3,7,8-TCDF	ND		0.00062	0.000048	ug/Kg	☼	08/15/18 11:35	08/18/18 10:33	1
OCDD	0.034	B	0.0062	0.00022	ug/Kg	☼	08/15/18 11:35	08/18/18 10:33	1
OCDF	0.0026	J B	0.0062	0.000097	ug/Kg	☼	08/15/18 11:35	08/18/18 10:33	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	57		23 - 140	08/15/18 11:35	08/18/18 10:33	1
13C-1,2,3,4,6,7,8-HpCDF	47		28 - 143	08/15/18 11:35	08/18/18 10:33	1
13C-1,2,3,4,7,8,9-HpCDF	66		26 - 138	08/15/18 11:35	08/18/18 10:33	1
13C-1,2,3,4,7,8-HxCDD	50		32 - 141	08/15/18 11:35	08/18/18 10:33	1
13C-1,2,3,4,7,8-HxCDF	48		26 - 152	08/15/18 11:35	08/18/18 10:33	1
13C-1,2,3,6,7,8-HxCDD	50		28 - 130	08/15/18 11:35	08/18/18 10:33	1
13C-1,2,3,6,7,8-HxCDF	42		26 - 123	08/15/18 11:35	08/18/18 10:33	1
13C-1,2,3,7,8,9-HxCDF	61		29 - 147	08/15/18 11:35	08/18/18 10:33	1
13C-1,2,3,7,8-PeCDD	74		25 - 181	08/15/18 11:35	08/18/18 10:33	1
13C-1,2,3,7,8-PeCDF	64		24 - 185	08/15/18 11:35	08/18/18 10:33	1
13C-2,3,4,6,7,8-HxCDF	51		28 - 136	08/15/18 11:35	08/18/18 10:33	1
13C-2,3,4,7,8-PeCDF	67		21 - 178	08/15/18 11:35	08/18/18 10:33	1
13C-2,3,7,8-TCDD	63		25 - 164	08/15/18 11:35	08/18/18 10:33	1
13C-2,3,7,8-TCDF	68		24 - 169	08/15/18 11:35	08/18/18 10:33	1
13C-OCDD	64		17 - 157	08/15/18 11:35	08/18/18 10:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	93		35 - 197	08/15/18 11:35	08/18/18 10:33	1

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S228-0to2.3

Lab Sample ID: 580-79329-39

Date Collected: 08/03/18 09:20

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 80.3

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	0.023	B	0.0031	0.00045	ug/Kg	☼	08/15/18 11:35	08/18/18 11:21	1
1,2,3,4,6,7,8-HpCDF	0.0033	B	0.0031	0.00015	ug/Kg	☼	08/15/18 11:35	08/18/18 11:21	1
1,2,3,4,7,8,9-HpCDF	ND		0.0031	0.00029	ug/Kg	☼	08/15/18 11:35	08/18/18 11:21	1
1,2,3,4,7,8-HxCDD	0.00039	J B	0.0031	0.00014	ug/Kg	☼	08/15/18 11:35	08/18/18 11:21	1
1,2,3,4,7,8-HxCDF	0.00045	J	0.0031	0.00017	ug/Kg	☼	08/15/18 11:35	08/18/18 11:21	1
1,2,3,6,7,8-HxCDD	0.00099	J	0.0031	0.00012	ug/Kg	☼	08/15/18 11:35	08/18/18 11:21	1
1,2,3,6,7,8-HxCDF	ND		0.0031	0.00016	ug/Kg	☼	08/15/18 11:35	08/18/18 11:21	1
1,2,3,7,8,9-HxCDD	0.00076	J	0.0031	0.00012	ug/Kg	☼	08/15/18 11:35	08/18/18 11:21	1
1,2,3,7,8,9-HxCDF	ND		0.0031	0.00011	ug/Kg	☼	08/15/18 11:35	08/18/18 11:21	1
1,2,3,7,8-PeCDD	ND		0.0031	0.000070	ug/Kg	☼	08/15/18 11:35	08/18/18 11:21	1
1,2,3,7,8-PeCDF	0.00017	J	0.0031	0.000058	ug/Kg	☼	08/15/18 11:35	08/18/18 11:21	1
2,3,4,6,7,8-HxCDF	0.00020	J	0.0031	0.00011	ug/Kg	☼	08/15/18 11:35	08/18/18 11:21	1
2,3,4,7,8-PeCDF	ND		0.0031	0.000061	ug/Kg	☼	08/15/18 11:35	08/18/18 11:21	1
2,3,7,8-TCDD	0.00014	J q	0.00061	0.000044	ug/Kg	☼	08/15/18 11:35	08/18/18 11:21	1
2,3,7,8-TCDF	0.00045	J	0.00061	0.000050	ug/Kg	☼	08/15/18 11:35	08/18/18 11:21	1
OCDD	0.25	B	0.0061	0.00050	ug/Kg	☼	08/15/18 11:35	08/18/18 11:21	1
OCDF	0.0096	B	0.0061	0.00022	ug/Kg	☼	08/15/18 11:35	08/18/18 11:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	66		23 - 140	08/15/18 11:35	08/18/18 11:21	1
13C-1,2,3,4,6,7,8-HpCDF	55		28 - 143	08/15/18 11:35	08/18/18 11:21	1
13C-1,2,3,4,7,8,9-HpCDF	55		26 - 138	08/15/18 11:35	08/18/18 11:21	1
13C-1,2,3,4,7,8-HxCDD	55		32 - 141	08/15/18 11:35	08/18/18 11:21	1
13C-1,2,3,4,7,8-HxCDF	49		26 - 152	08/15/18 11:35	08/18/18 11:21	1
13C-1,2,3,6,7,8-HxCDD	54		28 - 130	08/15/18 11:35	08/18/18 11:21	1
13C-1,2,3,6,7,8-HxCDF	45		26 - 123	08/15/18 11:35	08/18/18 11:21	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147	08/15/18 11:35	08/18/18 11:21	1
13C-1,2,3,7,8-PeCDD	73		25 - 181	08/15/18 11:35	08/18/18 11:21	1
13C-1,2,3,7,8-PeCDF	63		24 - 185	08/15/18 11:35	08/18/18 11:21	1
13C-2,3,4,6,7,8-HxCDF	52		28 - 136	08/15/18 11:35	08/18/18 11:21	1
13C-2,3,4,7,8-PeCDF	65		21 - 178	08/15/18 11:35	08/18/18 11:21	1
13C-2,3,7,8-TCDD	62		25 - 164	08/15/18 11:35	08/18/18 11:21	1
13C-2,3,7,8-TCDF	64		24 - 169	08/15/18 11:35	08/18/18 11:21	1
13C-OCDD	81		17 - 157	08/15/18 11:35	08/18/18 11:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	93		35 - 197	08/15/18 11:35	08/18/18 11:21	1

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-RB-SS-180801

Lab Sample ID: 580-79329-44

Date Collected: 08/01/18 13:55

Matrix: Water

Date Received: 08/03/18 13:45

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	ND		48	0.91	pg/L		08/09/18 08:30	08/15/18 01:04	1
1,2,3,4,6,7,8-HpCDF	1.3	J B q	48	0.55	pg/L		08/09/18 08:30	08/15/18 01:04	1
1,2,3,4,7,8,9-HpCDF	ND		48	0.68	pg/L		08/09/18 08:30	08/15/18 01:04	1
1,2,3,4,7,8-HxCDD	ND		48	1.2	pg/L		08/09/18 08:30	08/15/18 01:04	1
1,2,3,4,7,8-HxCDF	ND		48	1.4	pg/L		08/09/18 08:30	08/15/18 01:04	1
1,2,3,6,7,8-HxCDD	ND		48	1.1	pg/L		08/09/18 08:30	08/15/18 01:04	1
1,2,3,6,7,8-HxCDF	ND		48	1.4	pg/L		08/09/18 08:30	08/15/18 01:04	1
1,2,3,7,8,9-HxCDD	ND		48	1.1	pg/L		08/09/18 08:30	08/15/18 01:04	1
1,2,3,7,8,9-HxCDF	ND		48	0.75	pg/L		08/09/18 08:30	08/15/18 01:04	1
1,2,3,7,8-PeCDD	ND		48	1.3	pg/L		08/09/18 08:30	08/15/18 01:04	1
1,2,3,7,8-PeCDF	ND		48	0.92	pg/L		08/09/18 08:30	08/15/18 01:04	1
2,3,4,6,7,8-HxCDF	ND		48	0.92	pg/L		08/09/18 08:30	08/15/18 01:04	1
2,3,4,7,8-PeCDF	ND		48	0.99	pg/L		08/09/18 08:30	08/15/18 01:04	1
2,3,7,8-TCDD	ND		9.6	1.2	pg/L		08/09/18 08:30	08/15/18 01:04	1
2,3,7,8-TCDF	ND		9.6	0.91	pg/L		08/09/18 08:30	08/15/18 01:04	1
OCDD	13	J B	96	0.83	pg/L		08/09/18 08:30	08/15/18 01:04	1
OCDF	ND		96	1.5	pg/L		08/09/18 08:30	08/15/18 01:04	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	88		23 - 140	08/09/18 08:30	08/15/18 01:04	1
13C-1,2,3,4,6,7,8-HpCDF	84		28 - 143	08/09/18 08:30	08/15/18 01:04	1
13C-1,2,3,4,7,8,9-HpCDF	87		26 - 138	08/09/18 08:30	08/15/18 01:04	1
13C-1,2,3,4,7,8-HxCDD	77		32 - 141	08/09/18 08:30	08/15/18 01:04	1
13C-1,2,3,4,7,8-HxCDF	79		26 - 152	08/09/18 08:30	08/15/18 01:04	1
13C-1,2,3,6,7,8-HxCDD	82		28 - 130	08/09/18 08:30	08/15/18 01:04	1
13C-1,2,3,6,7,8-HxCDF	81		26 - 123	08/09/18 08:30	08/15/18 01:04	1
13C-1,2,3,7,8,9-HxCDF	80		29 - 147	08/09/18 08:30	08/15/18 01:04	1
13C-1,2,3,7,8-PeCDD	75		25 - 181	08/09/18 08:30	08/15/18 01:04	1
13C-1,2,3,7,8-PeCDF	77		24 - 185	08/09/18 08:30	08/15/18 01:04	1
13C-2,3,4,6,7,8-HxCDF	81		28 - 136	08/09/18 08:30	08/15/18 01:04	1
13C-2,3,4,7,8-PeCDF	76		21 - 178	08/09/18 08:30	08/15/18 01:04	1
13C-2,3,7,8-TCDD	79		25 - 164	08/09/18 08:30	08/15/18 01:04	1
13C-2,3,7,8-TCDF	79		24 - 169	08/09/18 08:30	08/15/18 01:04	1
13C-OCDD	89		17 - 157	08/09/18 08:30	08/15/18 01:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	96		35 - 197	08/09/18 08:30	08/15/18 01:04	1

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-RB-SS-180802-1645

Lab Sample ID: 580-79329-45

Date Collected: 08/02/18 16:45

Matrix: Water

Date Received: 08/03/18 13:45

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	ND		49	2.5	pg/L		08/09/18 08:30	08/15/18 01:50	1
1,2,3,4,6,7,8-HpCDF	ND		49	1.5	pg/L		08/09/18 08:30	08/15/18 01:50	1
1,2,3,4,7,8,9-HpCDF	ND		49	1.8	pg/L		08/09/18 08:30	08/15/18 01:50	1
1,2,3,4,7,8-HxCDD	ND		49	2.7	pg/L		08/09/18 08:30	08/15/18 01:50	1
1,2,3,4,7,8-HxCDF	ND		49	6.6	pg/L		08/09/18 08:30	08/15/18 01:50	1
1,2,3,6,7,8-HxCDD	ND		49	2.5	pg/L		08/09/18 08:30	08/15/18 01:50	1
1,2,3,6,7,8-HxCDF	ND		49	6.3	pg/L		08/09/18 08:30	08/15/18 01:50	1
1,2,3,7,8,9-HxCDD	ND		49	2.4	pg/L		08/09/18 08:30	08/15/18 01:50	1
1,2,3,7,8,9-HxCDF	ND		49	3.5	pg/L		08/09/18 08:30	08/15/18 01:50	1
1,2,3,7,8-PeCDD	ND		49	4.5	pg/L		08/09/18 08:30	08/15/18 01:50	1
1,2,3,7,8-PeCDF	ND		49	2.7	pg/L		08/09/18 08:30	08/15/18 01:50	1
2,3,4,6,7,8-HxCDF	ND		49	4.1	pg/L		08/09/18 08:30	08/15/18 01:50	1
2,3,4,7,8-PeCDF	ND		49	2.9	pg/L		08/09/18 08:30	08/15/18 01:50	1
2,3,7,8-TCDD	ND		9.8	3.1	pg/L		08/09/18 08:30	08/15/18 01:50	1
2,3,7,8-TCDF	ND		9.8	2.5	pg/L		08/09/18 08:30	08/15/18 01:50	1
OCDD	14	J B	98	2.2	pg/L		08/09/18 08:30	08/15/18 01:50	1
OCDF	ND		98	3.7	pg/L		08/09/18 08:30	08/15/18 01:50	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	95		23 - 140	08/09/18 08:30	08/15/18 01:50	1
13C-1,2,3,4,6,7,8-HpCDF	94		28 - 143	08/09/18 08:30	08/15/18 01:50	1
13C-1,2,3,4,7,8,9-HpCDF	98		26 - 138	08/09/18 08:30	08/15/18 01:50	1
13C-1,2,3,4,7,8-HxCDD	83		32 - 141	08/09/18 08:30	08/15/18 01:50	1
13C-1,2,3,4,7,8-HxCDF	87		26 - 152	08/09/18 08:30	08/15/18 01:50	1
13C-1,2,3,6,7,8-HxCDD	94		28 - 130	08/09/18 08:30	08/15/18 01:50	1
13C-1,2,3,6,7,8-HxCDF	91		26 - 123	08/09/18 08:30	08/15/18 01:50	1
13C-1,2,3,7,8,9-HxCDF	88		29 - 147	08/09/18 08:30	08/15/18 01:50	1
13C-1,2,3,7,8-PeCDD	82		25 - 181	08/09/18 08:30	08/15/18 01:50	1
13C-1,2,3,7,8-PeCDF	83		24 - 185	08/09/18 08:30	08/15/18 01:50	1
13C-2,3,4,6,7,8-HxCDF	90		28 - 136	08/09/18 08:30	08/15/18 01:50	1
13C-2,3,4,7,8-PeCDF	83		21 - 178	08/09/18 08:30	08/15/18 01:50	1
13C-2,3,7,8-TCDD	89		25 - 164	08/09/18 08:30	08/15/18 01:50	1
13C-2,3,7,8-TCDF	88		24 - 169	08/09/18 08:30	08/15/18 01:50	1
13C-OCDD	94		17 - 157	08/09/18 08:30	08/15/18 01:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	112		35 - 197	08/09/18 08:30	08/15/18 01:50	1

Client Sample Results

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-RB-SS-180802

Lab Sample ID: 580-79329-46

Date Collected: 08/02/18 09:50

Matrix: Water

Date Received: 08/03/18 13:45

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	1.7	J B	48	0.26	pg/L		08/09/18 08:30	08/15/18 02:36	1
1,2,3,4,6,7,8-HpCDF	0.87	J B q	48	0.20	pg/L		08/09/18 08:30	08/15/18 02:36	1
1,2,3,4,7,8,9-HpCDF	0.61	J B	48	0.24	pg/L		08/09/18 08:30	08/15/18 02:36	1
1,2,3,4,7,8-HxCDD	1.4	J B	48	0.34	pg/L		08/09/18 08:30	08/15/18 02:36	1
1,2,3,4,7,8-HxCDF	ND		48	0.44	pg/L		08/09/18 08:30	08/15/18 02:36	1
1,2,3,6,7,8-HxCDD	0.43	J q	48	0.31	pg/L		08/09/18 08:30	08/15/18 02:36	1
1,2,3,6,7,8-HxCDF	ND		48	0.43	pg/L		08/09/18 08:30	08/15/18 02:36	1
1,2,3,7,8,9-HxCDD	ND		48	0.30	pg/L		08/09/18 08:30	08/15/18 02:36	1
1,2,3,7,8,9-HxCDF	0.59	J	48	0.24	pg/L		08/09/18 08:30	08/15/18 02:36	1
1,2,3,7,8-PeCDD	ND		48	0.35	pg/L		08/09/18 08:30	08/15/18 02:36	1
1,2,3,7,8-PeCDF	ND		48	0.30	pg/L		08/09/18 08:30	08/15/18 02:36	1
2,3,4,6,7,8-HxCDF	ND		48	0.30	pg/L		08/09/18 08:30	08/15/18 02:36	1
2,3,4,7,8-PeCDF	ND		48	0.33	pg/L		08/09/18 08:30	08/15/18 02:36	1
2,3,7,8-TCDD	ND		9.5	0.34	pg/L		08/09/18 08:30	08/15/18 02:36	1
2,3,7,8-TCDF	ND		9.5	0.24	pg/L		08/09/18 08:30	08/15/18 02:36	1
OCDD	17	J B	95	0.29	pg/L		08/09/18 08:30	08/15/18 02:36	1
OCDF	2.7	J B	95	0.43	pg/L		08/09/18 08:30	08/15/18 02:36	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	81		23 - 140	08/09/18 08:30	08/15/18 02:36	1
13C-1,2,3,4,6,7,8-HpCDF	79		28 - 143	08/09/18 08:30	08/15/18 02:36	1
13C-1,2,3,4,7,8,9-HpCDF	80		26 - 138	08/09/18 08:30	08/15/18 02:36	1
13C-1,2,3,4,7,8-HxCDD	74		32 - 141	08/09/18 08:30	08/15/18 02:36	1
13C-1,2,3,4,7,8-HxCDF	75		26 - 152	08/09/18 08:30	08/15/18 02:36	1
13C-1,2,3,6,7,8-HxCDD	81		28 - 130	08/09/18 08:30	08/15/18 02:36	1
13C-1,2,3,6,7,8-HxCDF	80		26 - 123	08/09/18 08:30	08/15/18 02:36	1
13C-1,2,3,7,8,9-HxCDF	75		29 - 147	08/09/18 08:30	08/15/18 02:36	1
13C-1,2,3,7,8-PeCDD	71		25 - 181	08/09/18 08:30	08/15/18 02:36	1
13C-1,2,3,7,8-PeCDF	71		24 - 185	08/09/18 08:30	08/15/18 02:36	1
13C-2,3,4,6,7,8-HxCDF	78		28 - 136	08/09/18 08:30	08/15/18 02:36	1
13C-2,3,4,7,8-PeCDF	73		21 - 178	08/09/18 08:30	08/15/18 02:36	1
13C-2,3,7,8-TCDD	78		25 - 164	08/09/18 08:30	08/15/18 02:36	1
13C-2,3,7,8-TCDF	77		24 - 169	08/09/18 08:30	08/15/18 02:36	1
13C-OCDD	79		17 - 157	08/09/18 08:30	08/15/18 02:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	95		35 - 197	08/09/18 08:30	08/15/18 02:36	1

QC Sample Results

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

TestAmerica Job ID: 580-79329-2

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

Lab Sample ID: MB 320-238927/1-A
Matrix: Water
Analysis Batch: 239903

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 238927

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	1.15	J q	50	0.20	pg/L		08/09/18 08:30	08/14/18 13:45	1
1,2,3,4,6,7,8-HpCDF	0.766	J q	50	0.16	pg/L		08/09/18 08:30	08/14/18 13:45	1
1,2,3,4,7,8,9-HpCDF	0.552	J	50	0.20	pg/L		08/09/18 08:30	08/14/18 13:45	1
1,2,3,4,7,8-HxCDD	1.70	J	50	0.31	pg/L		08/09/18 08:30	08/14/18 13:45	1
1,2,3,4,7,8-HxCDF	ND		50	0.37	pg/L		08/09/18 08:30	08/14/18 13:45	1
1,2,3,6,7,8-HxCDD	ND		50	0.29	pg/L		08/09/18 08:30	08/14/18 13:45	1
1,2,3,6,7,8-HxCDF	ND		50	0.38	pg/L		08/09/18 08:30	08/14/18 13:45	1
1,2,3,7,8,9-HxCDD	ND		50	0.27	pg/L		08/09/18 08:30	08/14/18 13:45	1
1,2,3,7,8,9-HxCDF	ND		50	0.21	pg/L		08/09/18 08:30	08/14/18 13:45	1
1,2,3,7,8-PeCDD	ND		50	0.41	pg/L		08/09/18 08:30	08/14/18 13:45	1
1,2,3,7,8-PeCDF	ND		50	0.24	pg/L		08/09/18 08:30	08/14/18 13:45	1
2,3,4,6,7,8-HxCDF	ND		50	0.25	pg/L		08/09/18 08:30	08/14/18 13:45	1
2,3,4,7,8-PeCDF	ND		50	0.26	pg/L		08/09/18 08:30	08/14/18 13:45	1
2,3,7,8-TCDD	ND		10	0.27	pg/L		08/09/18 08:30	08/14/18 13:45	1
2,3,7,8-TCDF	ND		10	0.23	pg/L		08/09/18 08:30	08/14/18 13:45	1
OCDD	4.69	J	100	0.22	pg/L		08/09/18 08:30	08/14/18 13:45	1
OCDF	2.31	J	100	0.37	pg/L		08/09/18 08:30	08/14/18 13:45	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	88		23 - 140	08/09/18 08:30	08/14/18 13:45	1
13C-1,2,3,4,6,7,8-HpCDF	86		28 - 143	08/09/18 08:30	08/14/18 13:45	1
13C-1,2,3,4,7,8,9-HpCDF	86		26 - 138	08/09/18 08:30	08/14/18 13:45	1
13C-1,2,3,4,7,8-HxCDD	83		32 - 141	08/09/18 08:30	08/14/18 13:45	1
13C-1,2,3,4,7,8-HxCDF	84		26 - 152	08/09/18 08:30	08/14/18 13:45	1
13C-1,2,3,6,7,8-HxCDD	88		28 - 130	08/09/18 08:30	08/14/18 13:45	1
13C-1,2,3,6,7,8-HxCDF	87		26 - 123	08/09/18 08:30	08/14/18 13:45	1
13C-1,2,3,7,8,9-HxCDF	83		29 - 147	08/09/18 08:30	08/14/18 13:45	1
13C-1,2,3,7,8-PeCDD	78		25 - 181	08/09/18 08:30	08/14/18 13:45	1
13C-1,2,3,7,8-PeCDF	76		24 - 185	08/09/18 08:30	08/14/18 13:45	1
13C-2,3,4,6,7,8-HxCDF	86		28 - 136	08/09/18 08:30	08/14/18 13:45	1
13C-2,3,4,7,8-PeCDF	79		21 - 178	08/09/18 08:30	08/14/18 13:45	1
13C-2,3,7,8-TCDD	83		25 - 164	08/09/18 08:30	08/14/18 13:45	1
13C-2,3,7,8-TCDF	81		24 - 169	08/09/18 08:30	08/14/18 13:45	1
13C-OCDD	84		17 - 157	08/09/18 08:30	08/14/18 13:45	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	112		35 - 197	08/09/18 08:30	08/14/18 13:45	1

Lab Sample ID: LCS 320-238927/2-A
Matrix: Water
Analysis Batch: 239903

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 238927

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	1000	943		pg/L		94	70 - 140
1,2,3,4,6,7,8-HpCDF	1000	970		pg/L		97	82 - 122
1,2,3,4,7,8,9-HpCDF	1000	994		pg/L		99	78 - 138
1,2,3,4,7,8-HxCDD	1000	995		pg/L		99	70 - 164
1,2,3,4,7,8-HxCDF	1000	1000		pg/L		100	72 - 134

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79329-2

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

Lab Sample ID: LCS 320-238927/2-A
Matrix: Water
Analysis Batch: 239903

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 238927

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,6,7,8-HxCDD	1000	954		pg/L		95	76 - 134
1,2,3,6,7,8-HxCDF	1000	980		pg/L		98	84 - 130
1,2,3,7,8,9-HxCDD	1000	983		pg/L		98	64 - 162
1,2,3,7,8,9-HxCDF	1000	994		pg/L		99	78 - 130
1,2,3,7,8-PeCDD	1000	991		pg/L		99	70 - 142
1,2,3,7,8-PeCDF	1000	1000		pg/L		100	80 - 134
2,3,4,6,7,8-HxCDF	1000	1010		pg/L		101	70 - 156
2,3,4,7,8-PeCDF	1000	1020		pg/L		102	68 - 160
2,3,7,8-TCDD	200	192		pg/L		96	67 - 158
2,3,7,8-TCDF	200	198		pg/L		99	75 - 158
OCDD	2000	1870		pg/L		93	78 - 144
OCDF	2000	1980		pg/L		99	63 - 170

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C-1,2,3,4,6,7,8-HpCDD	78		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	75		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	77		20 - 186
13C-1,2,3,4,7,8-HxCDD	71		21 - 193
13C-1,2,3,4,7,8-HxCDF	74		19 - 202
13C-1,2,3,6,7,8-HxCDD	76		25 - 163
13C-1,2,3,6,7,8-HxCDF	76		21 - 159
13C-1,2,3,7,8,9-HxCDF	75		17 - 205
13C-1,2,3,7,8-PeCDD	73		21 - 227
13C-1,2,3,7,8-PeCDF	71		21 - 192
13C-2,3,4,6,7,8-HxCDF	75		22 - 176
13C-2,3,4,7,8-PeCDF	73		13 - 328
13C-2,3,7,8-TCDD	75		20 - 175
13C-2,3,7,8-TCDF	74		22 - 152
13C-OCDD	75		13 - 199

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	107		31 - 191

Lab Sample ID: LCSD 320-238927/3-A
Matrix: Water
Analysis Batch: 239903

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 238927

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits		
							RPD	Limit	
1,2,3,4,6,7,8-HpCDD	1000	1040		pg/L		104	70 - 140	10	50
1,2,3,4,6,7,8-HpCDF	1000	1050		pg/L		105	82 - 122	8	50
1,2,3,4,7,8,9-HpCDF	1000	1060		pg/L		106	78 - 138	6	50
1,2,3,4,7,8-HxCDD	1000	1020		pg/L		102	70 - 164	2	50
1,2,3,4,7,8-HxCDF	1000	1050		pg/L		105	72 - 134	5	50
1,2,3,6,7,8-HxCDD	1000	1050		pg/L		105	76 - 134	10	50
1,2,3,6,7,8-HxCDF	1000	1040		pg/L		104	84 - 130	6	50
1,2,3,7,8,9-HxCDD	1000	1040		pg/L		104	64 - 162	5	50
1,2,3,7,8,9-HxCDF	1000	1050		pg/L		105	78 - 130	5	50
1,2,3,7,8-PeCDD	1000	1030		pg/L		103	70 - 142	3	50

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79329-2

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

Lab Sample ID: LCSD 320-238927/3-A
Matrix: Water
Analysis Batch: 239903

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 238927

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,7,8-PeCDF	1000	1050		pg/L		105	80 - 134	5	50
2,3,4,6,7,8-HxCDF	1000	1050		pg/L		105	70 - 156	4	50
2,3,4,7,8-PeCDF	1000	1060		pg/L		106	68 - 160	4	50
2,3,7,8-TCDD	200	199		pg/L		100	67 - 158	3	50
2,3,7,8-TCDF	200	210		pg/L		105	75 - 158	6	50
OCDD	2000	2080		pg/L		104	78 - 144	11	50
OCDF	2000	2220		pg/L		111	63 - 170	11	50

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C-1,2,3,4,6,7,8-HpCDD	78		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	79		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	80		20 - 186
13C-1,2,3,4,7,8-HxCDD	77		21 - 193
13C-1,2,3,4,7,8-HxCDF	79		19 - 202
13C-1,2,3,6,7,8-HxCDD	80		25 - 163
13C-1,2,3,6,7,8-HxCDF	81		21 - 159
13C-1,2,3,7,8,9-HxCDF	79		17 - 205
13C-1,2,3,7,8-PeCDD	77		21 - 227
13C-1,2,3,7,8-PeCDF	73		21 - 192
13C-2,3,4,6,7,8-HxCDF	82		22 - 176
13C-2,3,4,7,8-PeCDF	77		13 - 328
13C-2,3,7,8-TCDD	78		20 - 175
13C-2,3,7,8-TCDF	78		22 - 152
13C-OCDD	73		13 - 199

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	113		31 - 191

Lab Sample ID: MB 320-239750/1-A
Matrix: Solid
Analysis Batch: 240517

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 239750

Analyte	MB		RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,2,3,4,6,7,8-HpCDD	ND		0.0050	0.000054	ug/Kg		08/14/18 09:34	08/16/18 20:03	1
1,2,3,4,6,7,8-HpCDF	ND		0.0050	0.000063	ug/Kg		08/14/18 09:34	08/16/18 20:03	1
1,2,3,4,7,8,9-HpCDF	ND		0.0050	0.000081	ug/Kg		08/14/18 09:34	08/16/18 20:03	1
1,2,3,4,7,8-HxCDD	0.000226	J	0.0050	0.000059	ug/Kg		08/14/18 09:34	08/16/18 20:03	1
1,2,3,4,7,8-HxCDF	ND		0.0050	0.000038	ug/Kg		08/14/18 09:34	08/16/18 20:03	1
1,2,3,6,7,8-HxCDD	ND		0.0050	0.000056	ug/Kg		08/14/18 09:34	08/16/18 20:03	1
1,2,3,6,7,8-HxCDF	ND		0.0050	0.000036	ug/Kg		08/14/18 09:34	08/16/18 20:03	1
1,2,3,7,8,9-HxCDD	ND		0.0050	0.000051	ug/Kg		08/14/18 09:34	08/16/18 20:03	1
1,2,3,7,8,9-HxCDF	ND		0.0050	0.000052	ug/Kg		08/14/18 09:34	08/16/18 20:03	1
1,2,3,7,8-PeCDD	ND		0.0050	0.000067	ug/Kg		08/14/18 09:34	08/16/18 20:03	1
1,2,3,7,8-PeCDF	ND		0.0050	0.000048	ug/Kg		08/14/18 09:34	08/16/18 20:03	1
2,3,4,6,7,8-HxCDF	ND		0.0050	0.000032	ug/Kg		08/14/18 09:34	08/16/18 20:03	1
2,3,4,7,8-PeCDF	ND		0.0050	0.000055	ug/Kg		08/14/18 09:34	08/16/18 20:03	1
2,3,7,8-TCDD	ND		0.0010	0.000056	ug/Kg		08/14/18 09:34	08/16/18 20:03	1
2,3,7,8-TCDF	ND		0.0010	0.000040	ug/Kg		08/14/18 09:34	08/16/18 20:03	1

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79329-2

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

Lab Sample ID: MB 320-239750/1-A
Matrix: Solid
Analysis Batch: 240517

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 239750

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
OCDD	0.000420	J q	0.010	0.000087	ug/Kg		08/14/18 09:34	08/16/18 20:03	1
OCDF	ND		0.010	0.000097	ug/Kg		08/14/18 09:34	08/16/18 20:03	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C-1,2,3,4,6,7,8-HpCDD	74		23 - 140				08/14/18 09:34	08/16/18 20:03	1
13C-1,2,3,4,6,7,8-HpCDF	70		28 - 143				08/14/18 09:34	08/16/18 20:03	1
13C-1,2,3,4,7,8,9-HpCDF	73		26 - 138				08/14/18 09:34	08/16/18 20:03	1
13C-1,2,3,4,7,8-HxCDD	72		32 - 141				08/14/18 09:34	08/16/18 20:03	1
13C-1,2,3,4,7,8-HxCDF	69		26 - 152				08/14/18 09:34	08/16/18 20:03	1
13C-1,2,3,6,7,8-HxCDD	66		28 - 130				08/14/18 09:34	08/16/18 20:03	1
13C-1,2,3,6,7,8-HxCDF	68		26 - 123				08/14/18 09:34	08/16/18 20:03	1
13C-1,2,3,7,8,9-HxCDF	53		29 - 147				08/14/18 09:34	08/16/18 20:03	1
13C-1,2,3,7,8-PeCDD	87		25 - 181				08/14/18 09:34	08/16/18 20:03	1
13C-1,2,3,7,8-PeCDF	84		24 - 185				08/14/18 09:34	08/16/18 20:03	1
13C-2,3,4,6,7,8-HxCDF	72		28 - 136				08/14/18 09:34	08/16/18 20:03	1
13C-2,3,4,7,8-PeCDF	82		21 - 178				08/14/18 09:34	08/16/18 20:03	1
13C-2,3,7,8-TCDD	71		25 - 164				08/14/18 09:34	08/16/18 20:03	1
13C-2,3,7,8-TCDF	72		24 - 169				08/14/18 09:34	08/16/18 20:03	1
13C-OCDD	80		17 - 157				08/14/18 09:34	08/16/18 20:03	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
37Cl4-2,3,7,8-TCDD	86		35 - 197				08/14/18 09:34	08/16/18 20:03	1

Lab Sample ID: LCS 320-239750/2-A
Matrix: Solid
Analysis Batch: 240517

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 239750

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.107		ug/Kg		107	70 - 140
1,2,3,4,6,7,8-HpCDF	0.100	0.113		ug/Kg		113	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.109		ug/Kg		109	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.115		ug/Kg		115	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.111		ug/Kg		111	72 - 134
1,2,3,6,7,8-HxCDD	0.100	0.109		ug/Kg		109	76 - 134
1,2,3,6,7,8-HxCDF	0.100	0.110		ug/Kg		110	84 - 130
1,2,3,7,8,9-HxCDD	0.100	0.112		ug/Kg		112	64 - 162
1,2,3,7,8,9-HxCDF	0.100	0.106		ug/Kg		106	78 - 130
1,2,3,7,8-PeCDD	0.100	0.107		ug/Kg		107	70 - 142
1,2,3,7,8-PeCDF	0.100	0.108		ug/Kg		108	80 - 134
2,3,4,6,7,8-HxCDF	0.100	0.109		ug/Kg		109	70 - 156
2,3,4,7,8-PeCDF	0.100	0.110		ug/Kg		110	68 - 160
2,3,7,8-TCDD	0.0200	0.0218		ug/Kg		109	67 - 158
2,3,7,8-TCDF	0.0200	0.0223		ug/Kg		111	75 - 158
OCDD	0.200	0.226		ug/Kg		113	78 - 144
OCDF	0.200	0.210		ug/Kg		105	63 - 170
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
13C-1,2,3,4,6,7,8-HpCDD	76		26 - 166				

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79329-2

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

Lab Sample ID: LCS 320-239750/2-A
Matrix: Solid
Analysis Batch: 240517

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 239750

<i>Isotope Dilution</i>	LCS		Limits
	%Recovery	Qualifier	
13C-1,2,3,4,6,7,8-HpCDF	71		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	73		20 - 186
13C-1,2,3,4,7,8-HxCDD	73		21 - 193
13C-1,2,3,4,7,8-HxCDF	71		19 - 202
13C-1,2,3,6,7,8-HxCDD	69		25 - 163
13C-1,2,3,6,7,8-HxCDF	71		21 - 159
13C-1,2,3,7,8,9-HxCDF	54		17 - 205
13C-1,2,3,7,8-PeCDD	89		21 - 227
13C-1,2,3,7,8-PeCDF	87		21 - 192
13C-2,3,4,6,7,8-HxCDF	74		22 - 176
13C-2,3,4,7,8-PeCDF	86		13 - 328
13C-2,3,7,8-TCDD	73		20 - 175
13C-2,3,7,8-TCDF	72		22 - 152
13C-OCDD	80		13 - 199
	LCS		
	%Recovery	Qualifier	Limits
Surrogate			
37Cl4-2,3,7,8-TCDD	91		31 - 191

Lab Sample ID: LCSD 320-239750/3-A
Matrix: Solid
Analysis Batch: 240517

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 239750

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	0.107		ug/Kg		107	70 - 140	1	50
1,2,3,4,6,7,8-HpCDF	0.100	0.109		ug/Kg		109	82 - 122	4	50
1,2,3,4,7,8,9-HpCDF	0.100	0.113		ug/Kg		113	78 - 138	3	50
1,2,3,4,7,8-HxCDD	0.100	0.105		ug/Kg		105	70 - 164	9	50
1,2,3,4,7,8-HxCDF	0.100	0.109		ug/Kg		109	72 - 134	1	50
1,2,3,6,7,8-HxCDD	0.100	0.110		ug/Kg		110	76 - 134	1	50
1,2,3,6,7,8-HxCDF	0.100	0.111		ug/Kg		111	84 - 130	1	50
1,2,3,7,8,9-HxCDD	0.100	0.110		ug/Kg		110	64 - 162	2	50
1,2,3,7,8,9-HxCDF	0.100	0.110		ug/Kg		110	78 - 130	4	50
1,2,3,7,8-PeCDD	0.100	0.113		ug/Kg		113	70 - 142	5	50
1,2,3,7,8-PeCDF	0.100	0.110		ug/Kg		110	80 - 134	1	50
2,3,4,6,7,8-HxCDF	0.100	0.110		ug/Kg		110	70 - 156	1	50
2,3,4,7,8-PeCDF	0.100	0.109		ug/Kg		109	68 - 160	1	50
2,3,7,8-TCDD	0.0200	0.0216		ug/Kg		108	67 - 158	1	50
2,3,7,8-TCDF	0.0200	0.0220		ug/Kg		110	75 - 158	1	50
OCDD	0.200	0.229		ug/Kg		115	78 - 144	1	50
OCDF	0.200	0.217		ug/Kg		108	63 - 170	3	50
	LCSD								
	%Recovery	Qualifier	Limits						
Isotope Dilution									
13C-1,2,3,4,6,7,8-HpCDD	74		26 - 166						
13C-1,2,3,4,6,7,8-HpCDF	72		21 - 158						
13C-1,2,3,4,7,8,9-HpCDF	70		20 - 186						
13C-1,2,3,4,7,8-HxCDD	78		21 - 193						
13C-1,2,3,4,7,8-HxCDF	74		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: 580-79329-2

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

Lab Sample ID: LCSD 320-239750/3-A
Matrix: Solid
Analysis Batch: 240517

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 239750

<i>Isotope Dilution</i>	<i>LCSD LCSD</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C-1,2,3,6,7,8-HxCDF	69		21 - 159
13C-1,2,3,7,8,9-HxCDF	53		17 - 205
13C-1,2,3,7,8-PeCDD	86		21 - 227
13C-1,2,3,7,8-PeCDF	85		21 - 192
13C-2,3,4,6,7,8-HxCDF	71		22 - 176
13C-2,3,4,7,8-PeCDF	86		13 - 328
13C-2,3,7,8-TCDD	73		20 - 175
13C-2,3,7,8-TCDF	71		22 - 152
13C-OCDD	76		13 - 199
LCSD LCSD			
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
37Cl4-2,3,7,8-TCDD	89		31 - 191

Lab Sample ID: MB 320-240044/1-A
Matrix: Solid
Analysis Batch: 240867

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 240044

<i>Analyte</i>	<i>MB MB</i>		<i>RL</i>	<i>EDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>Result</i>	<i>Qualifier</i>							
1,2,3,4,6,7,8-HpCDD	0.000101	J	0.0050	0.000013	ug/Kg		08/15/18 11:35	08/18/18 08:34	1
1,2,3,4,6,7,8-HpCDF	0.0000547	J q	0.0050	0.000031	ug/Kg		08/15/18 11:35	08/18/18 08:34	1
1,2,3,4,7,8,9-HpCDF	ND		0.0050	0.000038	ug/Kg		08/15/18 11:35	08/18/18 08:34	1
1,2,3,4,7,8-HxCDD	0.000177	J	0.0050	0.000029	ug/Kg		08/15/18 11:35	08/18/18 08:34	1
1,2,3,4,7,8-HxCDF	ND		0.0050	0.000019	ug/Kg		08/15/18 11:35	08/18/18 08:34	1
1,2,3,6,7,8-HxCDD	ND		0.0050	0.000028	ug/Kg		08/15/18 11:35	08/18/18 08:34	1
1,2,3,6,7,8-HxCDF	ND		0.0050	0.000019	ug/Kg		08/15/18 11:35	08/18/18 08:34	1
1,2,3,7,8,9-HxCDD	ND		0.0050	0.000026	ug/Kg		08/15/18 11:35	08/18/18 08:34	1
1,2,3,7,8,9-HxCDF	0.0000351	J q	0.0050	0.000011	ug/Kg		08/15/18 11:35	08/18/18 08:34	1
1,2,3,7,8-PeCDD	ND		0.0050	0.000027	ug/Kg		08/15/18 11:35	08/18/18 08:34	1
1,2,3,7,8-PeCDF	ND		0.0050	0.000023	ug/Kg		08/15/18 11:35	08/18/18 08:34	1
2,3,4,6,7,8-HxCDF	ND		0.0050	0.000014	ug/Kg		08/15/18 11:35	08/18/18 08:34	1
2,3,4,7,8-PeCDF	ND		0.0050	0.000026	ug/Kg		08/15/18 11:35	08/18/18 08:34	1
2,3,7,8-TCDD	ND		0.0010	0.000011	ug/Kg		08/15/18 11:35	08/18/18 08:34	1
2,3,7,8-TCDF	ND		0.0010	0.0000091	ug/Kg		08/15/18 11:35	08/18/18 08:34	1
OCDD	0.000681	J	0.010	0.000017	ug/Kg		08/15/18 11:35	08/18/18 08:34	1
OCDF	0.000117	J	0.010	0.000015	ug/Kg		08/15/18 11:35	08/18/18 08:34	1
MB MB									
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C-1,2,3,4,6,7,8-HpCDD	76		23 - 140				08/15/18 11:35	08/18/18 08:34	1
13C-1,2,3,4,6,7,8-HpCDF	75		28 - 143				08/15/18 11:35	08/18/18 08:34	1
13C-1,2,3,4,7,8,9-HpCDF	72		26 - 138				08/15/18 11:35	08/18/18 08:34	1
13C-1,2,3,4,7,8-HxCDD	65		32 - 141				08/15/18 11:35	08/18/18 08:34	1
13C-1,2,3,4,7,8-HxCDF	74		26 - 152				08/15/18 11:35	08/18/18 08:34	1
13C-1,2,3,6,7,8-HxCDD	73		28 - 130				08/15/18 11:35	08/18/18 08:34	1
13C-1,2,3,6,7,8-HxCDF	78		26 - 123				08/15/18 11:35	08/18/18 08:34	1
13C-1,2,3,7,8,9-HxCDF	74		29 - 147				08/15/18 11:35	08/18/18 08:34	1
13C-1,2,3,7,8-PeCDD	52		25 - 181				08/15/18 11:35	08/18/18 08:34	1
13C-1,2,3,7,8-PeCDF	58		24 - 185				08/15/18 11:35	08/18/18 08:34	1
13C-2,3,4,6,7,8-HxCDF	76		28 - 136				08/15/18 11:35	08/18/18 08:34	1

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79329-2

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

Lab Sample ID: MB 320-240044/1-A
Matrix: Solid
Analysis Batch: 240867

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 240044

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C-2,3,4,7,8-PeCDF	56		21 - 178	08/15/18 11:35	08/18/18 08:34	1
13C-2,3,7,8-TCDD	70		25 - 164	08/15/18 11:35	08/18/18 08:34	1
13C-2,3,7,8-TCDF	70		24 - 169	08/15/18 11:35	08/18/18 08:34	1
13C-OCDD	61		17 - 157	08/15/18 11:35	08/18/18 08:34	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
37Cl4-2,3,7,8-TCDD	99		35 - 197	08/15/18 11:35	08/18/18 08:34	1

Lab Sample ID: LCS 320-240044/2-A
Matrix: Solid
Analysis Batch: 240867

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 240044

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,6,7,8-HpCDF	0.100	0.106		ug/Kg		106	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.110		ug/Kg		110	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.110		ug/Kg		110	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.111		ug/Kg		111	72 - 134
1,2,3,6,7,8-HxCDD	0.100	0.111		ug/Kg		111	76 - 134
1,2,3,6,7,8-HxCDF	0.100	0.111		ug/Kg		111	84 - 130
1,2,3,7,8,9-HxCDD	0.100	0.111		ug/Kg		111	64 - 162
1,2,3,7,8,9-HxCDF	0.100	0.111		ug/Kg		111	78 - 130
1,2,3,7,8-PeCDD	0.100	0.101		ug/Kg		101	70 - 142
1,2,3,7,8-PeCDF	0.100	0.114		ug/Kg		114	80 - 134
2,3,4,6,7,8-HxCDF	0.100	0.111		ug/Kg		111	70 - 156
2,3,4,7,8-PeCDF	0.100	0.115		ug/Kg		115	68 - 160
2,3,7,8-TCDD	0.0200	0.0198		ug/Kg		99	67 - 158
2,3,7,8-TCDF	0.0200	0.0219		ug/Kg		109	75 - 158
OCDD	0.200	0.206		ug/Kg		103	78 - 144
OCDF	0.200	0.230		ug/Kg		115	63 - 170

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C-1,2,3,4,6,7,8-HpCDD	72		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	73		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	70		20 - 186
13C-1,2,3,4,7,8-HxCDD	63		21 - 193
13C-1,2,3,4,7,8-HxCDF	70		19 - 202
13C-1,2,3,6,7,8-HxCDD	69		25 - 163
13C-1,2,3,6,7,8-HxCDF	74		21 - 159
13C-1,2,3,7,8,9-HxCDF	71		17 - 205
13C-1,2,3,7,8-PeCDD	26		21 - 227
13C-1,2,3,7,8-PeCDF	26		21 - 192
13C-2,3,4,6,7,8-HxCDF	71		22 - 176
13C-2,3,4,7,8-PeCDF	32		13 - 328
13C-2,3,7,8-TCDD	68		20 - 175
13C-2,3,7,8-TCDF	67		22 - 152
13C-OCDD	60		13 - 199

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79329-2

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

Lab Sample ID: LCS 320-240044/2-A
Matrix: Solid
Analysis Batch: 240867

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 240044

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	97		31 - 191

Lab Sample ID: LCSD 320-240044/3-A
Matrix: Solid
Analysis Batch: 241278

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 240044

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	0.102		ug/Kg		102	70 - 140	0	50
1,2,3,4,6,7,8-HpCDF	0.100	0.101		ug/Kg		101	82 - 122	5	50
1,2,3,4,7,8,9-HpCDF	0.100	0.107		ug/Kg		107	78 - 138	3	50
1,2,3,4,7,8-HxCDD	0.100	0.0995		ug/Kg		99	70 - 164	10	50
1,2,3,4,7,8-HxCDF	0.100	0.105		ug/Kg		105	72 - 134	6	50
1,2,3,6,7,8-HxCDD	0.100	0.107		ug/Kg		107	76 - 134	4	50
1,2,3,6,7,8-HxCDF	0.100	0.107		ug/Kg		107	84 - 130	4	50
1,2,3,7,8,9-HxCDD	0.100	0.107		ug/Kg		107	64 - 162	4	50
1,2,3,7,8,9-HxCDF	0.100	0.105		ug/Kg		105	78 - 130	6	50
1,2,3,7,8-PeCDD	0.100	0.101		ug/Kg		101	70 - 142	0	50
1,2,3,7,8-PeCDF	0.100	0.106		ug/Kg		106	80 - 134	8	50
2,3,4,6,7,8-HxCDF	0.100	0.108		ug/Kg		108	70 - 156	3	50
2,3,4,7,8-PeCDF	0.100	0.105		ug/Kg		105	68 - 160	9	50
2,3,7,8-TCDD	0.0200	0.0193		ug/Kg		96	67 - 158	2	50
2,3,7,8-TCDF	0.0200	0.0196		ug/Kg		98	75 - 158	11	50
OCDD	0.200	0.210		ug/Kg		105	78 - 144	2	50
OCDF	0.200	0.204		ug/Kg		102	63 - 170	12	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	77		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	69		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	73		20 - 186
13C-1,2,3,4,7,8-HxCDD	68		21 - 193
13C-1,2,3,4,7,8-HxCDF	64		19 - 202
13C-1,2,3,6,7,8-HxCDD	67		25 - 163
13C-1,2,3,6,7,8-HxCDF	64		21 - 159
13C-1,2,3,7,8,9-HxCDF	67		17 - 205
13C-1,2,3,7,8-PeCDD	59		21 - 227
13C-1,2,3,7,8-PeCDF	57		21 - 192
13C-2,3,4,6,7,8-HxCDF	66		22 - 176
13C-2,3,4,7,8-PeCDF	53		13 - 328
13C-2,3,7,8-TCDD	66		20 - 175
13C-2,3,7,8-TCDF	64		22 - 152
13C-OCDD	83		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
37Cl4-2,3,7,8-TCDD	95		31 - 191

QC Sample Results

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

TestAmerica Job ID: 580-79329-2

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

Lab Sample ID: MB 320-240515/1-A

Matrix: Solid

Analysis Batch: 241645

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 240515

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.0000759	J q	0.0050	0.000016	ug/Kg		08/17/18 11:36	08/23/18 13:17	1
1,2,3,4,6,7,8-HpCDF	0.0000580	J q	0.0050	0.000024	ug/Kg		08/17/18 11:36	08/23/18 13:17	1
1,2,3,4,7,8,9-HpCDF	0.0000835	J	0.0050	0.000030	ug/Kg		08/17/18 11:36	08/23/18 13:17	1
1,2,3,4,7,8-HxCDD	0.000123	J q	0.0050	0.000036	ug/Kg		08/17/18 11:36	08/23/18 13:17	1
1,2,3,4,7,8-HxCDF	ND		0.0050	0.000041	ug/Kg		08/17/18 11:36	08/23/18 13:17	1
1,2,3,6,7,8-HxCDD	ND		0.0050	0.000033	ug/Kg		08/17/18 11:36	08/23/18 13:17	1
1,2,3,6,7,8-HxCDF	ND		0.0050	0.000041	ug/Kg		08/17/18 11:36	08/23/18 13:17	1
1,2,3,7,8,9-HxCDD	ND		0.0050	0.000031	ug/Kg		08/17/18 11:36	08/23/18 13:17	1
1,2,3,7,8,9-HxCDF	ND		0.0050	0.000025	ug/Kg		08/17/18 11:36	08/23/18 13:17	1
1,2,3,7,8-PeCDD	ND		0.0050	0.000039	ug/Kg		08/17/18 11:36	08/23/18 13:17	1
1,2,3,7,8-PeCDF	ND		0.0050	0.000025	ug/Kg		08/17/18 11:36	08/23/18 13:17	1
2,3,4,6,7,8-HxCDF	ND		0.0050	0.000034	ug/Kg		08/17/18 11:36	08/23/18 13:17	1
2,3,4,7,8-PeCDF	ND		0.0050	0.000027	ug/Kg		08/17/18 11:36	08/23/18 13:17	1
2,3,7,8-TCDD	ND		0.0010	0.000028	ug/Kg		08/17/18 11:36	08/23/18 13:17	1
2,3,7,8-TCDF	ND		0.0010	0.000023	ug/Kg		08/17/18 11:36	08/23/18 13:17	1
OCDD	0.000444	J	0.010	0.000025	ug/Kg		08/17/18 11:36	08/23/18 13:17	1
OCDF	ND		0.010	0.000040	ug/Kg		08/17/18 11:36	08/23/18 13:17	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	68		23 - 140	08/17/18 11:36	08/23/18 13:17	1
13C-1,2,3,4,6,7,8-HpCDF	64		28 - 143	08/17/18 11:36	08/23/18 13:17	1
13C-1,2,3,4,7,8,9-HpCDF	60		26 - 138	08/17/18 11:36	08/23/18 13:17	1
13C-1,2,3,4,7,8-HxCDD	61		32 - 141	08/17/18 11:36	08/23/18 13:17	1
13C-1,2,3,4,7,8-HxCDF	63		26 - 152	08/17/18 11:36	08/23/18 13:17	1
13C-1,2,3,6,7,8-HxCDD	69		28 - 130	08/17/18 11:36	08/23/18 13:17	1
13C-1,2,3,6,7,8-HxCDF	67		26 - 123	08/17/18 11:36	08/23/18 13:17	1
13C-1,2,3,7,8,9-HxCDF	63		29 - 147	08/17/18 11:36	08/23/18 13:17	1
13C-1,2,3,7,8-PeCDD	61		25 - 181	08/17/18 11:36	08/23/18 13:17	1
13C-1,2,3,7,8-PeCDF	56		24 - 185	08/17/18 11:36	08/23/18 13:17	1
13C-2,3,4,6,7,8-HxCDF	65		28 - 136	08/17/18 11:36	08/23/18 13:17	1
13C-2,3,4,7,8-PeCDF	55		21 - 178	08/17/18 11:36	08/23/18 13:17	1
13C-2,3,7,8-TCDD	65		25 - 164	08/17/18 11:36	08/23/18 13:17	1
13C-2,3,7,8-TCDF	58		24 - 169	08/17/18 11:36	08/23/18 13:17	1
13C-OCDD	53		17 - 157	08/17/18 11:36	08/23/18 13:17	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	118		35 - 197	08/17/18 11:36	08/23/18 13:17	1

Lab Sample ID: LCS 320-240515/2-A

Matrix: Solid

Analysis Batch: 241645

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 240515

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.0970		ug/Kg		97	70 - 140
1,2,3,4,6,7,8-HpCDF	0.100	0.104		ug/Kg		104	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.107		ug/Kg		107	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.105		ug/Kg		105	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.106		ug/Kg		106	72 - 134

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79329-2

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

Lab Sample ID: LCS 320-240515/2-A
Matrix: Solid
Analysis Batch: 241645

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 240515

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,6,7,8-HxCDD	0.100	0.106		ug/Kg		106	76 - 134
1,2,3,6,7,8-HxCDF	0.100	0.106		ug/Kg		106	84 - 130
1,2,3,7,8,9-HxCDD	0.100	0.104		ug/Kg		104	64 - 162
1,2,3,7,8,9-HxCDF	0.100	0.107		ug/Kg		107	78 - 130
1,2,3,7,8-PeCDD	0.100	0.0988		ug/Kg		99	70 - 142
1,2,3,7,8-PeCDF	0.100	0.105		ug/Kg		105	80 - 134
2,3,4,6,7,8-HxCDF	0.100	0.107		ug/Kg		107	70 - 156
2,3,4,7,8-PeCDF	0.100	0.105		ug/Kg		105	68 - 160
2,3,7,8-TCDD	0.0200	0.0179		ug/Kg		90	67 - 158
2,3,7,8-TCDF	0.0200	0.0202		ug/Kg		101	75 - 158
OCDD	0.200	0.197		ug/Kg		99	78 - 144
OCDF	0.200	0.215		ug/Kg		108	63 - 170

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C-1,2,3,4,6,7,8-HpCDD	63		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	59		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	57		20 - 186
13C-1,2,3,4,7,8-HxCDD	57		21 - 193
13C-1,2,3,4,7,8-HxCDF	59		19 - 202
13C-1,2,3,6,7,8-HxCDD	62		25 - 163
13C-1,2,3,6,7,8-HxCDF	63		21 - 159
13C-1,2,3,7,8,9-HxCDF	58		17 - 205
13C-1,2,3,7,8-PeCDD	56		21 - 227
13C-1,2,3,7,8-PeCDF	52		21 - 192
13C-2,3,4,6,7,8-HxCDF	59		22 - 176
13C-2,3,4,7,8-PeCDF	52		13 - 328
13C-2,3,7,8-TCDD	61		20 - 175
13C-2,3,7,8-TCDF	54		22 - 152
13C-OCDD	50		13 - 199

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	123		31 - 191

Lab Sample ID: LCSD 320-240515/3-A
Matrix: Solid
Analysis Batch: 241645

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 240515

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits		
							RPD	Limit	
1,2,3,4,6,7,8-HpCDD	0.100	0.0960		ug/Kg		96	70 - 140	1	50
1,2,3,4,6,7,8-HpCDF	0.100	0.103		ug/Kg		103	82 - 122	1	50
1,2,3,4,7,8,9-HpCDF	0.100	0.107		ug/Kg		107	78 - 138	0	50
1,2,3,4,7,8-HxCDD	0.100	0.103		ug/Kg		103	70 - 164	2	50
1,2,3,4,7,8-HxCDF	0.100	0.105		ug/Kg		105	72 - 134	1	50
1,2,3,6,7,8-HxCDD	0.100	0.104		ug/Kg		104	76 - 134	1	50
1,2,3,6,7,8-HxCDF	0.100	0.106		ug/Kg		106	84 - 130	0	50
1,2,3,7,8,9-HxCDD	0.100	0.109		ug/Kg		109	64 - 162	4	50
1,2,3,7,8,9-HxCDF	0.100	0.105		ug/Kg		105	78 - 130	2	50
1,2,3,7,8-PeCDD	0.100	0.0988		ug/Kg		99	70 - 142	0	50

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79329-2

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

Lab Sample ID: LCSD 320-240515/3-A
Matrix: Solid
Analysis Batch: 241645

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 240515

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,7,8-PeCDF	0.100	0.105		ug/Kg		105	80 - 134	0	50
2,3,4,6,7,8-HxCDF	0.100	0.107		ug/Kg		107	70 - 156	0	50
2,3,4,7,8-PeCDF	0.100	0.104		ug/Kg		104	68 - 160	0	50
2,3,7,8-TCDD	0.0200	0.0177		ug/Kg		89	67 - 158	1	50
2,3,7,8-TCDF	0.0200	0.0206		ug/Kg		103	75 - 158	2	50
OCDD	0.200	0.199		ug/Kg		99	78 - 144	1	50
OCDF	0.200	0.216		ug/Kg		108	63 - 170	0	50

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C-1,2,3,4,6,7,8-HpCDD	61		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	56		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	54		20 - 186
13C-1,2,3,4,7,8-HxCDD	52		21 - 193
13C-1,2,3,4,7,8-HxCDF	53		19 - 202
13C-1,2,3,6,7,8-HxCDD	57		25 - 163
13C-1,2,3,6,7,8-HxCDF	58		21 - 159
13C-1,2,3,7,8,9-HxCDF	57		17 - 205
13C-1,2,3,7,8-PeCDD	54		21 - 227
13C-1,2,3,7,8-PeCDF	51		21 - 192
13C-2,3,4,6,7,8-HxCDF	57		22 - 176
13C-2,3,4,7,8-PeCDF	48		13 - 328
13C-2,3,7,8-TCDD	59		20 - 175
13C-2,3,7,8-TCDF	53		22 - 152
13C-OCDD	48		13 - 199

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	128		31 - 191

Lab Chronicle

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S144-0to2

Date Collected: 08/01/18 11:50

Date Received: 08/03/18 13:45

Lab Sample ID: 580-79329-1

Matrix: Solid

Percent Solids: 47.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	241201	08/21/18 00:17	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240517	08/16/18 22:11	AS	TAL SAC

Client Sample ID: PDI-SC-S144-2to4

Date Collected: 08/01/18 11:55

Date Received: 08/03/18 13:45

Lab Sample ID: 580-79329-2

Matrix: Solid

Percent Solids: 54.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	241201	08/21/18 00:55	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240517	08/16/18 22:54	AS	TAL SAC

Client Sample ID: PDI-SC-S144-4to6

Date Collected: 08/01/18 12:00

Date Received: 08/03/18 13:45

Lab Sample ID: 580-79329-3

Matrix: Solid

Percent Solids: 57.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	241201	08/21/18 01:33	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240517	08/16/18 23:37	AS	TAL SAC

Client Sample ID: PDI-SC-S144-6to8

Date Collected: 08/01/18 12:05

Date Received: 08/03/18 13:45

Lab Sample ID: 580-79329-4

Matrix: Solid

Percent Solids: 59.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	241201	08/21/18 02:10	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240517	08/17/18 00:20	AS	TAL SAC

Client Sample ID: PDI-SC-S144-8to10

Date Collected: 08/01/18 12:10

Date Received: 08/03/18 13:45

Lab Sample ID: 580-79329-5

Matrix: Solid

Percent Solids: 61.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240517	08/17/18 01:03	AS	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S144-10to12.1

Lab Sample ID: 580-79329-6

Date Collected: 08/01/18 12:15

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 62.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240517	08/17/18 01:45	AS	TAL SAC

Client Sample ID: PDI-SC-S086-0to2

Lab Sample ID: 580-79329-7

Date Collected: 08/02/18 09:20

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 78.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		20	240994	08/18/18 12:10	AS	TAL SAC

Client Sample ID: PDI-SC-S086-0to2D

Lab Sample ID: 580-79329-8

Date Collected: 08/02/18 09:20

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 80.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	241201	08/21/18 02:48	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240517	08/17/18 03:11	AS	TAL SAC

Client Sample ID: PDI-SC-S086-2to3.3

Lab Sample ID: 580-79329-9

Date Collected: 08/02/18 09:25

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 76.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240517	08/17/18 03:54	AS	TAL SAC

Client Sample ID: PDI-SC-S218-0to2

Lab Sample ID: 580-79329-10

Date Collected: 08/02/18 11:20

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 56.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		240044	08/15/18 11:35	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	241235	08/21/18 15:39	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			240044	08/15/18 11:35	SR1	TAL SAC
Total/NA	Analysis	1613B		1	241278	08/21/18 19:54	AS	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S218-2to4.5

Lab Sample ID: 580-79329-11

Date Collected: 08/02/18 11:25

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 61.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240862	08/17/18 11:53	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	241201	08/21/18 04:04	AS	TAL SAC

Client Sample ID: PDI-SC-S218-4.5to6

Lab Sample ID: 580-79329-12

Date Collected: 08/02/18 11:30

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 88.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240862	08/17/18 12:39	AS	TAL SAC

Client Sample ID: PDI-SC-S172-2to4

Lab Sample ID: 580-79329-13

Date Collected: 08/02/18 17:55

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 52.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240862	08/17/18 13:25	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	241201	08/21/18 04:42	AS	TAL SAC

Client Sample ID: PDI-SC-S172-2to4D

Lab Sample ID: 580-79329-14

Date Collected: 08/02/18 17:55

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 51.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240862	08/17/18 14:11	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	241201	08/21/18 05:20	AS	TAL SAC

Client Sample ID: PDI-SC-S172-4to6

Lab Sample ID: 580-79329-15

Date Collected: 08/02/18 18:00

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 68.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240862	08/17/18 14:57	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	241201	08/21/18 05:58	AS	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S172-6to8.1

Lab Sample ID: 580-79329-16

Date Collected: 08/02/18 18:05

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 67.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240862	08/17/18 15:43	AS	TAL SAC

Client Sample ID: PDI-SC-S178-0to2

Lab Sample ID: 580-79329-17

Date Collected: 08/02/18 15:55

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 48.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240862	08/17/18 16:29	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	241201	08/21/18 06:36	AS	TAL SAC

Client Sample ID: PDI-SC-S178-2to3.7

Lab Sample ID: 580-79329-18

Date Collected: 08/02/18 16:00

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 51.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240862	08/17/18 17:15	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	241201	08/21/18 07:13	AS	TAL SAC

Client Sample ID: PDI-SC-S178-3.7to4.7

Lab Sample ID: 580-79329-19

Date Collected: 08/02/18 16:05

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 59.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240515	08/17/18 11:36	SR1	TAL SAC
Total/NA	Analysis	1613B		1	241645	08/23/18 15:35	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		240515	08/17/18 11:36	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	241895	08/24/18 11:57	SMA	TAL SAC

Client Sample ID: PDI-SC-S178-4.7to6.7

Lab Sample ID: 580-79329-20

Date Collected: 08/02/18 16:10

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 65.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240862	08/17/18 18:01	AS	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S178-6.7to8.7

Lab Sample ID: 580-79329-21

Date Collected: 08/02/18 16:15

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 67.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240865	08/18/18 03:29	AS	TAL SAC

Client Sample ID: PDI-SC-S178-8.7to10.7

Lab Sample ID: 580-79329-22

Date Collected: 08/02/18 16:20

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 67.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			239750	08/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240865	08/18/18 04:14	AS	TAL SAC

Client Sample ID: PDI-SC-S178-10.7to12.7

Lab Sample ID: 580-79329-23

Date Collected: 08/02/18 16:25

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 67.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240044	08/15/18 11:35	SR1	TAL SAC
Total/NA	Analysis	1613B		1	241278	08/21/18 21:31	AS	TAL SAC

Client Sample ID: PDI-SC-S178-12.7to14

Lab Sample ID: 580-79329-24

Date Collected: 08/02/18 16:30

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 66.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240044	08/15/18 11:35	SR1	TAL SAC
Total/NA	Analysis	1613B		1	241278	08/21/18 22:19	AS	TAL SAC

Client Sample ID: PDI-SC-S083-0to1.6

Lab Sample ID: 580-79329-25

Date Collected: 08/01/18 17:30

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 35.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		240044	08/15/18 11:35	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	241235	08/21/18 16:17	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			240044	08/15/18 11:35	SR1	TAL SAC
Total/NA	Analysis	1613B		1	241278	08/21/18 23:08	AS	TAL SAC

Client Sample ID: PDI-SC-S083-1.6to3.5

Lab Sample ID: 580-79329-26

Date Collected: 08/01/18 17:35

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 81.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240044	08/15/18 11:35	SR1	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S083-1.6to3.5

Lab Sample ID: 580-79329-26

Date Collected: 08/01/18 17:35

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 81.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1613B		10	241278	08/21/18 23:56	AS	TAL SAC

Client Sample ID: PDI-SC-S083-3.5to5.0

Lab Sample ID: 580-79329-27

Date Collected: 08/01/18 17:40

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 79.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240044	08/15/18 11:35	SR1	TAL SAC
Total/NA	Analysis	1613B		10	241278	08/22/18 00:45	AS	TAL SAC

Client Sample ID: PDI-SC-S083-5to6.6

Lab Sample ID: 580-79329-28

Date Collected: 08/01/18 17:45

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 79.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		240044	08/15/18 11:35	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	241316	08/22/18 01:28	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			240044	08/15/18 11:35	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240993	08/17/18 22:45	AS	TAL SAC

Client Sample ID: PDI-SC-S032-0to2

Lab Sample ID: 580-79329-29

Date Collected: 08/01/18 15:40

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 80.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240044	08/15/18 11:35	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240993	08/17/18 23:34	AS	TAL SAC

Client Sample ID: PDI-SC-S032-2to4

Lab Sample ID: 580-79329-30

Date Collected: 08/01/18 15:45

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 79.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240044	08/15/18 11:35	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240993	08/18/18 00:22	AS	TAL SAC

Client Sample ID: PDI-SC-S032-4to6

Lab Sample ID: 580-79329-31

Date Collected: 08/01/18 15:50

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 65.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240044	08/15/18 11:35	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240993	08/18/18 01:11	AS	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S032-6to8

Date Collected: 08/01/18 15:55

Date Received: 08/03/18 13:45

Lab Sample ID: 580-79329-32

Matrix: Solid

Percent Solids: 67.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240044	08/15/18 11:35	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240993	08/18/18 01:59	AS	TAL SAC

Client Sample ID: PDI-SC-S032-8to10

Date Collected: 08/01/18 16:00

Date Received: 08/03/18 13:45

Lab Sample ID: 580-79329-33

Matrix: Solid

Percent Solids: 71.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240044	08/15/18 11:35	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240993	08/18/18 02:47	AS	TAL SAC

Client Sample ID: PDI-SC-S032-10to12

Date Collected: 08/01/18 16:05

Date Received: 08/03/18 13:45

Lab Sample ID: 580-79329-34

Matrix: Solid

Percent Solids: 68.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240044	08/15/18 11:35	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240993	08/18/18 03:36	AS	TAL SAC

Client Sample ID: PDI-SC-S032-12to14

Date Collected: 08/01/18 16:10

Date Received: 08/03/18 13:45

Lab Sample ID: 580-79329-35

Matrix: Solid

Percent Solids: 70.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240044	08/15/18 11:35	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240994	08/18/18 08:08	AS	TAL SAC

Client Sample ID: PDI-SC-S172-0to2

Date Collected: 08/02/18 17:50

Date Received: 08/03/18 13:45

Lab Sample ID: 580-79329-36

Matrix: Solid

Percent Solids: 41.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		240044	08/15/18 11:35	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	241316	08/22/18 02:06	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			240044	08/15/18 11:35	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240994	08/18/18 08:56	AS	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 580-79329-2

Client Sample ID: PDI-SC-S218-6to8

Lab Sample ID: 580-79329-37

Date Collected: 08/02/18 11:35

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 89.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240044	08/15/18 11:35	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240994	08/18/18 09:45	AS	TAL SAC

Client Sample ID: PDI-SC-S218-8to10

Lab Sample ID: 580-79329-38

Date Collected: 08/02/18 11:40

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 79.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240044	08/15/18 11:35	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240994	08/18/18 10:33	AS	TAL SAC

Client Sample ID: PDI-SC-S228-0to2.3

Lab Sample ID: 580-79329-39

Date Collected: 08/03/18 09:20

Matrix: Solid

Date Received: 08/03/18 13:45

Percent Solids: 80.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240044	08/15/18 11:35	SR1	TAL SAC
Total/NA	Analysis	1613B		1	240994	08/18/18 11:21	AS	TAL SAC

Client Sample ID: PDI-RB-SS-180801

Lab Sample ID: 580-79329-44

Date Collected: 08/01/18 13:55

Matrix: Water

Date Received: 08/03/18 13:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			238927	08/09/18 08:30	ITH	TAL SAC
Total/NA	Analysis	1613B		1	239905	08/15/18 01:04	AS	TAL SAC

Client Sample ID: PDI-RB-SS-180802-1645

Lab Sample ID: 580-79329-45

Date Collected: 08/02/18 16:45

Matrix: Water

Date Received: 08/03/18 13:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			238927	08/09/18 08:30	ITH	TAL SAC
Total/NA	Analysis	1613B		1	239905	08/15/18 01:50	AS	TAL SAC

Client Sample ID: PDI-RB-SS-180802

Lab Sample ID: 580-79329-46

Date Collected: 08/02/18 09:50

Matrix: Water

Date Received: 08/03/18 13:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			238927	08/09/18 08:30	ITH	TAL SAC
Total/NA	Analysis	1613B		1	239905	08/15/18 02:36	AS	TAL SAC

TestAmerica Seattle

Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79329-2

Laboratory References:

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

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Accreditation/Certification Summary

Client: AECOM

TestAmerica Job ID: 580-79329-2

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

Laboratory: TestAmerica Sacramento

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

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

Sample Summary

Client: AECOM

TestAmerica Job ID: 580-79329-2

Project/Site: Portland Harbor Pre-Remedial Design

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-79329-1	PDI-SC-S144-0to2	Solid	08/01/18 11:50	08/03/18 13:45
580-79329-2	PDI-SC-S144-2to4	Solid	08/01/18 11:55	08/03/18 13:45
580-79329-3	PDI-SC-S144-4to6	Solid	08/01/18 12:00	08/03/18 13:45
580-79329-4	PDI-SC-S144-6to8	Solid	08/01/18 12:05	08/03/18 13:45
580-79329-5	PDI-SC-S144-8to10	Solid	08/01/18 12:10	08/03/18 13:45
580-79329-6	PDI-SC-S144-10to12.1	Solid	08/01/18 12:15	08/03/18 13:45
580-79329-7	PDI-SC-S086-0to2	Solid	08/02/18 09:20	08/03/18 13:45
580-79329-8	PDI-SC-S086-0to2D	Solid	08/02/18 09:20	08/03/18 13:45
580-79329-9	PDI-SC-S086-2to3.3	Solid	08/02/18 09:25	08/03/18 13:45
580-79329-10	PDI-SC-S218-0to2	Solid	08/02/18 11:20	08/03/18 13:45
580-79329-11	PDI-SC-S218-2to4.5	Solid	08/02/18 11:25	08/03/18 13:45
580-79329-12	PDI-SC-S218-4.5to6	Solid	08/02/18 11:30	08/03/18 13:45
580-79329-13	PDI-SC-S172-2to4	Solid	08/02/18 17:55	08/03/18 13:45
580-79329-14	PDI-SC-S172-2to4D	Solid	08/02/18 17:55	08/03/18 13:45
580-79329-15	PDI-SC-S172-4to6	Solid	08/02/18 18:00	08/03/18 13:45
580-79329-16	PDI-SC-S172-6to8.1	Solid	08/02/18 18:05	08/03/18 13:45
580-79329-17	PDI-SC-S178-0to2	Solid	08/02/18 15:55	08/03/18 13:45
580-79329-18	PDI-SC-S178-2to3.7	Solid	08/02/18 16:00	08/03/18 13:45
580-79329-19	PDI-SC-S178-3.7to4.7	Solid	08/02/18 16:05	08/03/18 13:45
580-79329-20	PDI-SC-S178-4.7to6.7	Solid	08/02/18 16:10	08/03/18 13:45
580-79329-21	PDI-SC-S178-6.7to8.7	Solid	08/02/18 16:15	08/03/18 13:45
580-79329-22	PDI-SC-S178-8.7to10.7	Solid	08/02/18 16:20	08/03/18 13:45
580-79329-23	PDI-SC-S178-10.7to12.7	Solid	08/02/18 16:25	08/03/18 13:45
580-79329-24	PDI-SC-S178-12.7to14	Solid	08/02/18 16:30	08/03/18 13:45
580-79329-25	PDI-SC-S083-0to1.6	Solid	08/01/18 17:30	08/03/18 13:45
580-79329-26	PDI-SC-S083-1.6to3.5	Solid	08/01/18 17:35	08/03/18 13:45
580-79329-27	PDI-SC-S083-3.5to5.0	Solid	08/01/18 17:40	08/03/18 13:45
580-79329-28	PDI-SC-S083-5to6.6	Solid	08/01/18 17:45	08/03/18 13:45
580-79329-29	PDI-SC-S032-0to2	Solid	08/01/18 15:40	08/03/18 13:45
580-79329-30	PDI-SC-S032-2to4	Solid	08/01/18 15:45	08/03/18 13:45
580-79329-31	PDI-SC-S032-4to6	Solid	08/01/18 15:50	08/03/18 13:45
580-79329-32	PDI-SC-S032-6to8	Solid	08/01/18 15:55	08/03/18 13:45
580-79329-33	PDI-SC-S032-8to10	Solid	08/01/18 16:00	08/03/18 13:45
580-79329-34	PDI-SC-S032-10to12	Solid	08/01/18 16:05	08/03/18 13:45
580-79329-35	PDI-SC-S032-12to14	Solid	08/01/18 16:10	08/03/18 13:45
580-79329-36	PDI-SC-S172-0to2	Solid	08/02/18 17:50	08/03/18 13:45
580-79329-37	PDI-SC-S218-6to8	Solid	08/02/18 11:35	08/03/18 13:45
580-79329-38	PDI-SC-S218-8to10	Solid	08/02/18 11:40	08/03/18 13:45
580-79329-39	PDI-SC-S228-0to2.3	Solid	08/03/18 09:20	08/03/18 13:45
580-79329-44	PDI-RB-SS-180801	Water	08/01/18 13:55	08/03/18 13:45
580-79329-45	PDI-RB-SS-180802-1645	Water	08/02/18 16:45	08/03/18 13:45
580-79329-46	PDI-RB-SS-180802	Water	08/02/18 09:50	08/03/18 13:45

**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: Subsurface Sediment
Sample Type:

Project Contact: Amy Dahl / Chelsea Cook
Tel: (206) 438-2261 / (206) 438-2010

Site Contact: Jennifer Ray / Michaela McCoog
Laboratory Contact: Elaine Walker

Analysis Turnaround Time
Calendar (C) or Work Days (W) W
 21 days
 Other _____

Date: 8/3/18
Carrier: Courier

COC No: 1 of 4 pages



Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction			Sample Specific Notes:
							PCDD/Fs 16138	Archive	Grain size ASTM D7928/D6913	
PDI-SC-S144 - 0 to 2	8/1/2018	11:50	SC		ED	4	X	X	X	
PDI-SC-S144 - 2 to 4	8/1/2018	11:55	SC		ED	4	X	X	X	
PDI-SC-S144 - 4 to 6	8/1/2018	12:00	SC		ED	4	X	X	X	
PDI-SC-S144 - 6 to 8	8/1/2018	12:05	SC		ED	4	X	X	X	
PDI-SC-S144 - 8 to 10	8/1/2018	12:10	SC		ED	4	X	X	X	
PDI-SC-S144 - 10 to 12.1	8/1/2018	12:15	SC		ED	4	X	X	X	
PDI-SC-S086 - 0 to 2	8/2/2018	9:20	SC		ED	3	X	X	X	
PDI-SC-S086 - 0 to 2D	8/2/2018	9:20	SC		ED	3	X	X	X	
PDI-SC-S086 - 2 to 3.3	8/2/2018	9:25	SC		ED	4	X	X	X	
PDI-SC-S218 - 0 to 2	8/2/2018	11:20	SC		ED	4	X	X	X	
PDI-SC-S218 - 2 to 4.5	8/2/2018	11:25	SC		ED	4	X	X	X	
PDI-SC-S218 - 4.5 to 6	8/2/2018	11:30	SC		ED	4	X	X	X	

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

Sample Disposal
 Return To Client Dispose By Lab Archive For 12 Months

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

1.2, 2.3, 4.6, 5.1, 1.7, 2.4, 2.2, 3.9

Relinquished by: <i>[Signature]</i>	Company: AECOM	Date/Time: 8/3/18 13:05	Received by: <i>[Signature]</i>	Company: M.E.	Date/Time: 8/5/18 1305
Relinquished by: <i>[Signature]</i>	Company: M.E.	Date/Time: 8/3/18 1345	Received by: <i>[Signature]</i>	Company: APOK	Date/Time: 8/5/18 1345
Relinquished by: <i>[Signature]</i>	Company: M.E.	Date/Time: 8/3/18 1345	Received by: <i>[Signature]</i>	Company:	Date/Time:



**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	Project Contact: Amy Dahl / Chelsea Cook Tel: (206) 438-2261 / (206) 438-2010 Analysis Turnaround Time Calendar (C) or Work Days (W) <input checked="" type="checkbox"/> W 21 days Other <input type="checkbox"/>	Site Contact: Jennifer Ray / Michaela McCooog Date: 8/3/18 Carrier: Courier Laboratory Contact: Elaine-Walker COC No: 1 of 4 pages				
Grain size ASTM D928/D6913 PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 1603, Aterberg Limits ASTM D4318							
PCDFs 1613B Archive Fraction							
Sample Identification PDI-SC-S172 - 2 to 4 PDI-SC-S172 - 2 to 4D PDI-SC-S172 - 4 to 6 PDI-SC-S172 - 6 to 8, 1 PDI-SC-S178 - 0 to 2 PDI-SC-S178 - 2 to 3.7 PDI-SC-S178 - 3.7 to 4.7 PDI-SC-S178 - 4.7 to 6.7 PDI-SC-S178 - 6.7 to 8.7 PDI-SC-S178 - 8.7 to 10.7 PDI-SC-S178 - 10.7 to 12.7 PDI-SC-S178 - 12.7 to 14	Sample Date 8/2/2018 8/2/2018 8/2/2018 8/2/2018 8/2/2018 8/2/2018 8/2/2018 8/2/2018 8/2/2018 8/2/2018 8/2/2018 8/2/2018	Sample Time 17:55 17:55 18:00 18:05 15:55 16:00 16:05 16:10 16:15 16:20 16:25 16:30	Matrix SC SC SC SC SC SC SC SC SC SC SC SC	QC Sample ED ED ED ED ED ED ED ED ED ED ED ED	Sampler's Initials ED ED ED ED ED ED ED ED ED ED ED ED	Total No. of Cont. 4 4 4 5 4 4 4 4 4 4 4 4 4	
Container Type: WMG-Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Colu Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid Fractions: D = Dissolved, PRT = Particulate, T = Total (unfiltered)							
Special Instructions/QC Requirements & Comments: Separate reports for each lab				Sample Disposal <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Dispose By Lab <input checked="" type="checkbox"/> Archive For 12 Months			
Relinquished by: 	Company: AECOM	Date/Time: 8/3/18 13:05	Received by: 	Company: M-E	Date/Time: 8/3/18 13:05		
Relinquished by: 	Company: M-E	Date/Time: 8/3/18 13:45	Received by: 	Company: TARK	Date/Time: 8/3/18 13:45		
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:		



**SUBSURFACE SEDIMENT
CHAIN OF CUSTODY**

Test America-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047		Client Contact Project Contact: Amy Dahl / Chealsey Cook Tel: (206) 438-2261 / (206) 438-2010 Analysis Turnaround Time Calendar (C) or Work Days (W) <u>W</u> 21 days <input checked="" type="checkbox"/> Calendar <input type="checkbox"/> Other		Site Contact: Jennifer Ray / Michaela McCoog Laboratory Contact: Elaine-Walker Date: 8/3/18 Carrier: Courier		COC No: 1 of 4 pages											
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 #: 60560335 Study: Subsurface Sediment Sample Type:		Project Contact: Amy Dahl / Chealsey Cook Tel: (206) 438-2261 / (206) 438-2010 Analysis Turnaround Time Calendar (C) or Work Days (W) <u>W</u> 21 days <input checked="" type="checkbox"/> Calendar <input type="checkbox"/> Other		Site Contact: Jennifer Ray / Michaela McCoog Laboratory Contact: Elaine-Walker Date: 8/3/18 Carrier: Courier		COC No: 1 of 4 pages											
Sample Identification PDI-SC-S083 - 0 to 1.6 PDI-SC-S083 - 1.6 to 3.5 PDI-SC-S083 - 3.5 to 5.0 PDI-SC-S083 - 5 to 6.6 PDI-SC-S032 - 0 to 2 PDI-SC-S032 - 2 to 4 PDI-SC-S032 - 4 to 6 PDI-SC-S032 - 6 to 8 PDI-SC-S032 - 8 to 10 PDI-SC-S032 - 10 to 12 PDI-SC-S032 - 12 to 14 PDI-SC-S172 - 0 to 2		Sample Date 8/1/2018 8/1/2018 8/1/2018 8/1/2018 8/1/2018 8/1/2018 8/1/2018 8/1/2018 8/1/2018 8/1/2018 8/2/2018		Sample Time 17:30 17:35 17:40 17:45 15:40 15:45 15:50 15:55 16:00 16:05 16:10 17:50		Matrix SC SC SC SC SC SC SC SC SC SC SC		QC Sample ED ED ED ED ED ED ED ED ED ED ED		Sampler's Initials ED ED ED ED ED ED ED ED ED ED ED		Total No. of Cont. 4 4 4 4 4 4 4 4 6 4 4 4		Fraction PCDD/Fs 1613B Archive Grain size ASTM D7928/D6913 PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8770D-SIM, 9060, 1603 Alterberg Limits ASTM D4318		Sample Specific Notes:	
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Colour Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)		Sample Disposal <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Dispose By Lab <input checked="" type="checkbox"/> Ship For 12 Months		Special Instructions/QC Requirements & Comments: Separate reports for each lab													
Relinquished by: <i>[Signature]</i> Company: AECOM Date/Time: 8/3/18 13:05		Relinquished by: <i>[Signature]</i> Company: M.E. Date/Time: 8/3/18 13:45		Relinquished by: <i>[Signature]</i> Company: M.E. Date/Time: 8/3/18 13:05		Relinquished by: <i>[Signature]</i> Company: APOK Date/Time: 8/5/18 13:05											



**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 Contact: Amy Dahl / Chelsey Cook
 Tel: (206) 438-2261 / (206) 438-2010
 Analysis Turnaround Time
 Calendar (C) or Work Days (W) W 21 days
 Other

Site Contact: Jennifer Ray / Michaela McCoig
 Date: 8/3/18
 Carrier: Courier
 Laboratory Contact: Elaine Walker
 Date: 8/3/18
 COC No: 1 of 4 pages

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction				Sample Specific Notes:
							PCDD/Fs 1613B	PCB Aroclors, PAHs, Total Organic Carbon	Grain size ASTM D7928/D6913	Afterberg Limits ASTM D4318	
PDI-SC-S218 - 6 to 8	8/2/2018	11:35	SC	MS/MSD	ED	7	X	X	X	X	
PDI-SC-S218 - 8 to 10	8/2/2018	11:40	SC		ED	4	X	X	X	X	
PDI-SC-S228 - 0 to 2.3	8/3/2018	9:20	SC		ED	4	X	X	X	X	
PDI-SC-S221 - 0 to 2	8/3/2018	10:15	SC		ED	4	X	X	X	X	
PDI-SC-S221 - 2 to 4	8/3/2018	10:20	SC	MS/MSD	ED	6	X	X	X	X	
PDI-SC-S221 - 4 to 6	8/3/2018	10:25	SC		ED	4	X	X	X	X	
PDI-SC-S221 - 6 to 8.1	8/3/2018	10:30	SC		ED	4	X	X	X	X	
PDI-PA-55 - 180801	8/1/18 13:55		SC		ED	7	X	X	X	X	On hold
PDI-PC-55 - 180802 - 145	8/2/18 16:45		SC		ED	7	X	X	X	X	8/3/18
PDI-PC-55 - 180802	8/2/18 09:50		SC		ED	7	X	X	X	X	
- to -			SC		ED		X	X	X	X	
- to -			SC		ED		X	X	X	X	

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

Return To Client Ship By Lab Ship For 12 Months

Sample Disposal
 AG AG AG WMG WMG AG
 AG AG AG WMG WMG AG

Relinquished by: *[Signature]* Date/Time: 8/2/18 13:55 Company: AECOM
 Relinquished by: *[Signature]* Date/Time: 8/3/18 13:45 Company: M.E.
 Relinquished by: *[Signature]* Date/Time: 8/3/18 13:45 Company: M.E.

Received by: *[Signature]* Date/Time: 8/3/18 13:45 Company: M.E.
 Received by: *[Signature]* Date/Time: 8/3/18 13:45 Company: TAPAK
 Received by: *[Signature]* Date/Time: 8/3/18 13:45 Company: TAPAK

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: Subsurface Sediment
 Sample Type:

**SUBSURFACE SEDIMENT
 CHAIN OF CUSTODY**

Project Contact: Amy Dahl / Chelsey Cook **Site Contact:** Jennifer Ray / Michaela McCoog **Date:** 8/3/18 **COC No:** 1
Tel: (206) 438-2261 / (206) 438-2010 **Laboratory Contact:** Elaine-Walker **Carrier:** Courier **1** of **4** pages

Analysis Turnaround Time
 Calendar (C) or Work Days (W) W _____
 21 days
 Other _____

580-79329 Chain of Custody

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCDD/Fs 1613B	Aroclor	Grain size ASTM D7928/D6913	PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270B-SIM, 9060, 160.3	Atterberg Limits ASTM D4318	Sample Specific Notes:
PDI-SC-S144 - 0 to 2	8/1/2018	11:50	SC		ED	4		x	x	x	x		
PDI-SC-S144 - 2 to 4	8/1/2018	11:55	SC		ED	4		x	x	x	x		
PDI-SC-S144 - 4 to 6	8/1/2018	12:00	SC		ED	4		x	x	x	x		
PDI-SC-S144 - 6 to 8	8/1/2018	12:05	SC		ED	4		x	x	x	x		
PDI-SC-S144 - 8 to 10	8/1/2018	12:10	SC		ED	4		x	x	x	x		
PDI-SC-S144 - 10 to 12.1	8/1/2018	12:15	SC		ED	4		x	x	x	x		
PDI-SC-S086 - 0 to 2	8/2/2018	9:20	SC		ED	5		x	x	x	x		
PDI-SC-S086 - 0 to 2D	8/2/2018	9:20	SC		ED	3		x	x		x		
PDI-SC-S086 - 2 to 3.3	8/2/2018	9:25	SC		ED	4		x	x	x	x		
PDI-SC-S218 - 0 to 2	8/2/2018	11:20	SC		ED	4		x	x	x	x		
PDI-SC-S218 - 2 to 4.5	8/2/2018	11:25	SC		ED	4		x	x	x	x		
PDI-SC-S218 - 4.5 to 6	8/2/2018	11:30	SC		ED	4		x	x	x	x		

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

1, 2, 2.3, 4, 6, 3.1, 1.7, 2.4, 2.2, 3.9

Relinquished by: <i>[Signature]</i>	Company: AECOM	Date/Time: 8/3/18 13:05	Received by: <i>[Signature]</i>	Company: M.E.	Date/Time: 8/3/18 1305
Relinquished by: <i>[Signature]</i>	Company: M.E.	Date/Time: 8/3/18 1345	Received by: <i>[Signature]</i>	Company: TAPOL	Date/Time: 8/5/18 1345
Relinquished by: <i>[Signature]</i>	Company: TAPOL	Date/Time: 8/3/18 1700	Received by: <i>[Signature]</i>	Company: SEA DA	Date/Time: 8/4/18 1020

IR5 = 0.8/0.8 w/c.s. IR5 = 0.1/0.1 w/c.s.
 IR5 = 1.2/1.2 w/c.s. IR5 = 0.4/0.4 w/c.s.

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 Laboratory Contact: Elaine-Walker	Date: 8/3/18	COC No: 1 2 of 4 pages
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		
<input checked="" type="checkbox"/> 21 days <input type="checkbox"/> Other _____				

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCDD/Fs 1613B	Archive	Grain size ASTM D9728/D9913	PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8770D-SIM, 9060, 160,3	Alterberg Limits ASTM D4318	Sample Specific Notes:
PDI-SC-S172 - 2 to 4	8/2/2018	17:55	SC		ED	4							
PDI-SC-S172 - 2 to 4D	8/2/2018	17:55	SC		ED	3							
PDI-SC-S172 - 4 to 6	8/2/2018	18:00	SC		ED	4							
PDI-SC-S172 - 6 to 8.4	8/2/2018	18:05	SC		ED	4							
PDI-SC-S178 - 0 to 2	8/2/2018	15:55	SC		ED	5							
PDI-SC-S178 - 2 to 3.7	8/2/2018	16:00	SC		ED	4							
PDI-SC-S178 - 3.7 to 4.7	8/2/2018	16:05	SC		ED	4							
PDI-SC-S178 - 4.7 to 6.7	8/2/2018	16:10	SC		ED	4							
PDI-SC-S178 - 6.7 to 8.7	8/2/2018	16:15	SC		ED	4							
PDI-SC-S178 - 8.7 to 10.7	8/2/2018	16:20	SC		ED	4							
PDI-SC-S178 - 10.7 to 12.7	8/2/2018	16:25	SC		ED	4							
PDI-SC-S178 - 12.7 to 14	8/2/2018	16:30	SC		ED	4							

Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Column
 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>RA</i>	Company: AECOM	Date/Time: 8/3/18 13:05	Received by: <i>Jennifer Ray</i>	Company: M-E	Date/Time: 8/3/18 13:05
Relinquished by: <i>Jennifer Ray</i>	Company: M-E	Date/Time: 8/3/18 13:45	Received by: <i>Elaine Walker</i>	Company: TAPAK	Date/Time: 8/3/18 13:45
Relinquished by: <i>Elaine Walker</i>	Company: TAPAK	Date/Time: 8/3/18 17:00	Received by: <i>B. Lane</i>	Company: SEA TA	Date/Time: 8/4/18 10:20

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	Site Contact: Jennifer Ray / Michaela McCoog	Date: 8/3/18	COC No: 1
AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101	Tel: (206) 438-2261 / (206) 438-2010	Laboratory Contact: Elaine-Walker	Carrier: Courier	4 of 4 pages
Phone: (206) 438-2700 Fax: 1+(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling	Analysis Turnaround Time Calendar (C) or Work Days (W) W			
Portland, OR	<input checked="" type="checkbox"/> 21 days			
Project #: 60566335 Study: Subsurface Sediment	<input type="checkbox"/> Other _____			
Sample Type:				

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCDD/Fs 1613B	Archive	Grain size ASTM D7928/D9613	PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 9060, 160.3	Asterberg Limits ASTM D4318	WR-PC6A	WR-PAHs	WR-DIF	WR-TOC	Sample Specific Notes:
PDI-SC-S218 - 6 to 8	8/2/2018	11:35	SC	MS/MSD	ED	7		x	x	x	x	x					
PDI-SC-S218 - 8 to 10	8/2/2018	11:40	SC		ED	4		x	x	x	x						
PDI-SC-S228 - 0 to 2.3	8/3/2018	9:20	SC		ED	4		x	x	x	x						
PDI-SC-S221 - 0 to 2	8/3/2018	10:15	SC		ED	4		x	x	x	x						
PDI-SC-S221 - 2 to 4	8/3/2018	10:20	SC	MS/MSD	ED	6		x	x	x	x						On hold
PDI-SC-S221 - 4 to 6	8/3/2018	10:25	SC		ED	4		x	x	x	x						↓ Per Account
PDI-SC-S221 - 6 to 8.1	8/3/2018	10:30	SC		ED	4		x	x	x	x						
PDI-RB-SS-180801	8/1/18	13:55	SC		ED	7		x	x	x	x		x	x	x	x	
PDI-RB-SS-180802	8/1/18	16:45	SC		ED	7		x	x	x	x		x	x	x	x	
PDI-RB-SS-180802	8/2/18	09:50	SC		ED	7		x	x	x	x		x	x	x	x	
- to			SC		ED			x	x	x	x						
- to			SC		ED			x	x	x	x						

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

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: <i>[Signature]</i>	Company: AECOM	Date/Time: 8/2/18 1305	Received by: <i>[Signature]</i>	Company: M.E.	Date/Time: 8/3/18 1305
Relinquished by: <i>[Signature]</i>	Company: M.E.	Date/Time: 8/3/18 1345	Received by: <i>[Signature]</i>	Company: TAPOR	Date/Time: 8/3/18 1345
Relinquished by: <i>[Signature]</i>	Company: TAPOR	Date/Time: 8/3/18 1700	Received by: <i>[Signature]</i>	Company: SRA TA	Date/Time: 8/14/18 1020

Ruses

**SUBSURFACE SEDIMENT
CHAIN OF CUSTODY**

TestAmerica-Seattle 5755-9th-Street-East Tacoma, WA 98424-1317 PH: 253-922-2310 Fax: 253-922-5047	Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010 Analysis Turnaround Time Calendar (C) or Work Days (W) _ W <input checked="" type="checkbox"/> 21 days <input type="checkbox"/> Other _____	Site Contact: Jennifer Ray / Michaela McCoog Laboratory Contact: Elaine Walker Date: 8/3/18 Carrier: Courier	COC No: 1 of 4 pages		
Client Contact 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: _____ Sample Identification PDI-SC-S144 - 0 to 2 PDI-SC-S144 - 2 to 4 PDI-SC-S144 - 4 to 6 PDI-SC-S144 - 6 to 8 PDI-SC-S144 - 8 to 10 PDI-SC-S144 - 10 to 12.1 PDI-SC-S086 - 0 to 2 PDI-SC-S086 - 0 to 2D PDI-SC-S086 - 2 to 3.3 PDI-SC-S218 - 0 to 2 PDI-SC-S218 - 2 to 4.5 PDI-SC-S218 - 4.5 to 6	Fraction FCD/R/ 1613B Archive Grain size ASTM D7928/D6913 PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 9060, 1603 Aterberg Limits ASTM D4318	Sample Specific Notes: 580-79329 Chain of Custody		
Sample Date 8/1/2018 8/1/2018 8/1/2018 8/1/2018 8/1/2018 8/1/2018 8/2/2018 8/2/2018 8/2/2018 8/2/2018 8/2/2018	Sample Time 11:50 11:55 12:00 12:05 12:10 12:15 9:20 9:20 9:25 11:20 11:25 11:30	Matrix SC SC SC SC SC SC SC SC SC SC SC	QC Sample 	Sampler's Initials ED ED ED ED ED ED ED ED ED ED ED	Total No. of Cont. 4 4 4 4 4 4 3 4 4 4 4
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 = Particulates, T = Total (unfiltered)					
Sample Disposal <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Ship For 12 Months <input type="checkbox"/> Posal By Lab					

1.2, 2.3, 4.6, 3.1, 1.7, 2.4, 2.2, 3.9

IR5 = 0.8/0.8 w/c.s. IR5 = 0.1/0.1 w/c.s.
 IR5 = 1.2/1.2 w/c.s. IR5 = 0.4/0.4 w/c.s.

Relinquished by: *Ruse* Date/Time: 8/3/18 13:05 Company: *ACOR*

Relinquished by: *Michaela McCoog* Date/Time: 8/3/18 1345 Company: *M.E.*

Relinquished by: *Elaine Walker* Date/Time: 8/3/18 1700 Company: *TAROK*

Relinquished by: *M.E.* Date/Time: 8/5/18 1005 Company: *M.E.*

Relinquished by: *TAROK* Date/Time: 8/5/18 1345 Company: *TAROK*

Relinquished by: *SEA TA* Date/Time: 8/4/18 1020 Company: *SEA TA*

- 1
- 2
- 3
- 4
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- 6
- 7
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- 10
- 11
- 12
- 13

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
 ABCOM
 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:

Project Contact: Amy Dahl / Chelsey Cook
 Tel: (206) 438-2261 / (206) 438-2010
 Analysis Turnaround Time
 Calendar (C) or Work Days (W) _W_
 21 days
 Other _____

Site Contact: Jennifer Ray / Michaela McCaug
 Date: 8/3/18
Laboratory Contact: Elaine Walker
 Carrier: Courier
 COC No: 1 of 4 pages

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fracton	PCDD/Fs 1613B	Archive	Grain size ASTM D7928/D6913	PCB Aroclors, PAHs, Total Organic Carbon, Attterberg Limits ASTM D4318	Sample Specific Notes:
PDI-SC-S172 - 2 to 4	8/2/2018	17:55	SC		ED	4		X	X	X		
PDI-SC-S172 - 2 to 4D	8/2/2018	17:55	SC		ED	4		X	X	X		
PDI-SC-S172 - 4 to 6	8/2/2018	18:00	SC		ED	4		X	X	X		
PDI-SC-S172 - 6 to 8.1	8/2/2018	18:05	SC		ED	4		X	X	X		
PDI-SC-S178 - 0 to 2	8/2/2018	15:55	SC		ED	6		X	X	X		
PDI-SC-S178 - 2 to 3.7	8/2/2018	16:00	SC		ED	4		X	X	X		
PDI-SC-S178 - 3.7 to 4.7	8/2/2018	16:05	SC		ED	4		X	X	X		
PDI-SC-S178 - 4.7 to 6.7	8/2/2018	16:10	SC		ED	4		X	X	X		
PDI-SC-S178 - 6.7 to 8.7	8/2/2018	16:15	SC		ED	4		X	X	X		
PDI-SC-S178 - 8.7 to 10.7	8/2/2018	16:20	SC		ED	4		X	X	X		
PDI-SC-S178 - 10.7 to 12.7	8/2/2018	16:25	SC		ED	4		X	X	X		
PDI-SC-S178 - 12.7 to 14	8/2/2018	16:30	SC		ED	4		X	X	X		

Container Type: WIMG-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
Fracton: D = Dissolved, PRT = Particulate, T = Total (unfiltered)

Return To Client X Inposal By Lab X Ship For 12 Months

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
<i>[Signature]</i>	ABCOM	8/3/18 13:05	<i>[Signature]</i>	M-E	8/3/18 13:05
<i>[Signature]</i>	M-E	8/3/18 13:15	<i>[Signature]</i>	ABCOM	8/3/18 13:15
<i>[Signature]</i>	ABCOM	8/3/18 17:00	<i>[Signature]</i>	SEA-TA	8/4/18 10:20

Per Account 8/7/18 KR

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: Subsurface Sediment

Sample Type: _____

Project Contact: Amy Dahl / Chelsey Cook
Tel: (206) 438-2261 / (206) 438-2010
Analysis Turnaround Time
Calendar (C) or Work Days (W) W
 21 days
 Other _____

Site Contact: Jennifer Ray / Michaela McCoog
Laboratory Contact: Elaine Walker
Date: 8/3/18
Carrier: Courier
COC No: 1
3 of 4 pages

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fracton			Sample Specific Notes:
							PCDFs 1613B	Grain size ASTM D7928/D6913	PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 9060, 1603	
PDI-SC-S083 - 0 to 1.6	8/1/2018	17:30	SC		ED	4	X	X	X	
PDI-SC-S083 - 1.6 to 3.5	8/1/2018	17:35	SC		ED	4	X	X	X	
PDI-SC-S083 - 3.5 to 5.0	8/1/2018	17:40	SC		ED	4	X	X	X	
PDI-SC-S083 - 5 to 6.6	8/1/2018	17:45	SC		ED	4	X	X	X	
PDI-SC-S032 - 0 to 2	8/1/2018	15:40	SC		ED	4	X	X	X	
PDI-SC-S032 - 2 to 4	8/1/2018	15:45	SC		ED	4	X	X	X	
PDI-SC-S032 - 4 to 6	8/1/2018	15:50	SC		ED	4	X	X	X	
PDI-SC-S032 - 6 to 8	8/1/2018	15:55	SC		ED	4	X	X	X	
PDI-SC-S032 - 8 to 10	8/1/2018	16:00	SC	15:50SD	ED	6	X	X	X	
PDI-SC-S032 - 10 to 12	8/1/2018	16:05	SC		ED	4	X	X	X	
PDI-SC-S032 - 12 to 14	8/1/2018	16:10	SC		ED	4	X	X	X	
PDI-SC-S172 - 0 to 2	8/2/2018	17:50	SC		ED	4	X	X	X	

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

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

Relinquished by: *R-2* Date/Time: 8/3/18 13:05 Company: AECOM
Relinquished by: *Amy Dahl* Date/Time: 8/3/18 13:45 Company: M-E
Relinquished by: *[Signature]* Date/Time: 8/3/18 17:05 Company: AROK
[Signature] Date/Time: 8/14/18 10:20 Company: SEA-TR



SUBSURFACE SEDIMENT

CHAIN OF CUSTODY

TestAmerica-Seattle 5755 8th Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047		Project Contact: Amy Daitl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010 Analysis Turnaround Time Calendar (C) or Work Days (W) <input checked="" type="checkbox"/> W <input type="checkbox"/> C 21 days <input type="checkbox"/> Other		Date: 8/3/18 Carrier: Courier		COC No: 1 of 4 pages									
Client Contact AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1+(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Subsurface Sediment Sample Type:		Site Contact: Jennifer Ray / Michaela McCooog Laboratory Contact: Elaine Walker Afterberg Limits ASTM D4318 Total Solids 8082A, 8270D-SIM4, 9060, 1603 PCB Aroclors, PAHs, Total Organic Carbon, Grain size ASTM D7928/D6913 Archive PCDFs 1613B Kraton		Date: 8/3/18 Carrier: Courier		COC No: 1 of 4 pages									
Sample Identification PDI-SC-S218 - 6 to 8 PDI-SC-S218 - 8 to 10 PDI-SC-S228 - 0 to 2.3 PDI-SC-S221 - 0 to 2 PDI-SC-S221 - 2 to 4 PDI-SC-S221 - 4 to 6 PDI-SC-S221 - 6 to 8 PDI-SC-S221 - 8 to 10		Sample Date 8/2/2018 8/2/2018 8/2/2018 8/2/2018 8/2/2018 8/2/2018 8/2/2018		Sample Time 11:35 11:40 9:20 10:15 10:20 10:25 10:30 8:11R 13:55 8:11R 16:45 8:12R 09:50		Matrix SC SC SC SC SC SC SC SC SC SC SC		QC Sample MS/MSD MS/MSD MS/MSD MS/MSD MS/MSD MS/MSD MS/MSD MS/MSD MS/MSD MS/MSD MS/MSD MS/MSD		Sampler's Initials ED ED ED ED ED ED ED ED ED ED ED ED		Total No. of Cont. 7 4 4 4 4 4 4 7 7 7		Sample Specific Notes: On hold Per Account ↓	
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Container Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)		Sample Disposal <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Dispose By Lab <input checked="" type="checkbox"/> Archive For 12 Months		Company: AECOM Company: M.E. Company: AERON		Date/Time: 8/2/18 13:00 Date/Time: 8/3/18 1345 Date/Time: 8/3/18 1700		Received by: Received by: Received by:		Company: M.E. Company: AERON Company: SEA		Date/Time: 8/3/18 1345 Date/Time: 8/3/18 1345 Date/Time: 8/4/18 1020			

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

Relinquished by:
 Relinquished by:
 Relinquished by:





Chain of Custody Record

Client Information (Sub Contract Lab)		Sampler:	Lab PIN:	Carrier Tracking Not(s):	COC No:							
Client Contact: 880 Riverside Parkway, West Sacramento, CA 95605		Walker, Elaine M	580-57765-1		580-57765-1							
Shipping/Receiving Company: TestAmerica Laboratories, Inc.		E-Mail: elaine.walker@testamerica.com	State of Origin: Oregon		Page: Page 1 of 1							
Address: 880 Riverside Parkway, West Sacramento, CA 95605		Phone: 916-373-5600 (Tel) 916-372-1059 (Fax)	Accreditations Required (See note):		Job #: 580-79329-1							
City: West Sacramento		Due Date Requested: 8/21/2018										
State, Zip: CA, 95605		TAT Requested (days):										
Phone: 916-373-5600 (Tel) 916-372-1059 (Fax)		PO #:										
Email:		WO #:										
Project Name: Portland Harbor Pre-Remedial Design		Project #:										
Site: 58012120		SSOW#:										
Sample Identification - Client ID (Lab ID)			Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=Water, S=Soil, O=Overhead, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1613B/HRMS_Sox_P (MDD) Full List w/o Totals	AutoDP/PH Frozen Archive Container billed @ \$0.	Total Number of Containers	Special Instructions/Note:
PDI-SC-S144-0to2 (580-79329-1)			8/1/18	11:50 Pacific	Solid	Solid	X	X	X	2		
PDI-SC-S144-2to4 (580-79329-2)			8/1/18	11:55 Pacific	Solid	Solid	X	X	X	2		
PDI-SC-S144-4to6 (580-79329-3)			8/1/18	12:00 Pacific	Solid	Solid	X	X	X	2		
PDI-SC-S144-6to8 (580-79329-4)			8/1/18	12:05 Pacific	Solid	Solid	X	X	X	2		
PDI-SC-S144-8to10 (580-79329-5)			8/1/18	12:10 Pacific	Solid	Solid	X	X	X	2		
PDI-SC-S144-10to12.1 (580-79329-6)			8/1/18	12:15 Pacific	Solid	Solid	X	X	X	2		
PDI-SC-S086-0to2 (580-79329-7)			8/2/18	09:20 Pacific	Solid	Solid	X	X	X	2		
PDI-SC-S086-2to2D (580-79329-8)			8/2/18	09:20 Pacific	Solid	Solid	X	X	X	2		
PDI-SC-S086-2to3.3 (580-79329-9)			8/2/18	09:25 Pacific	Solid	Solid	X	X	X	2		
<p>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/test/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.</p>												
Possible Hazard Identification												
Unconfirmed												
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2												
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)												
Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months												
Special Instructions/OC Requirements:												
Empty Kit Relinquished by: _____ Date: _____ Time: _____ Method of Shipment: _____												
Relinquished by: _____ Date/Time: 8/3/18 1710 Company: MAPOL Company												
Relinquished by: _____ Date/Time: 8/4/18 0930 Company: TA-GLS Company												
Relinquished by: _____ Date/Time: _____ Company: _____												
Custody Seals Intact: _____ Custody Seal No.: _____ Cooler Temperature(s) °C and Other Remarks: 6.8												
A Yes Δ No												





Chain of Custody Record

Client Information (Sub Contract Lab)		Lab PM: Walker, Elaine M	Carrier Tracking No(s):	COC No: 580-57870.1	
Client Contact: Shipping/Receiving		E-Mail: elaine.walker@testamericainc.com	State of Origin: Oregon	Page: Page 1 of 4	
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):			
Address: 880 Riverside Parkway, West Sacramento, CA, 95605		Job #: 580-79329-4			
Phone: 916-373-5600(Tel) 916-372-1059(Fax)		Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - PH 4-5 X - EDTA L - EDA Other:			
Due Date Requested: 8/21/2018		Analysis Requested:			
TAT Requested (days):		Total Number of containers			
PO #:		AutoDP/ PH Frozen Archive Container billed @ \$0.			
WO #:		Perform MS/MSD (Yes or No)			
Project #: 58012120		Field Filled Sample (Yes or No)			
SSOW#:		Preservation Code:			
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=swab, BT=Tapwater, A=Air)	Special Instructions/Note:
PDI-SC-S218-0162 (580-79329-10)	8/2/18	11:20 Pacific	Solid	Solid	X
PDI-SC-S218-2164.5 (580-79329-11)	8/2/18	11:25 Pacific	Solid	Solid	X
PDI-SC-S218-4.5166 (580-79329-12)	8/2/18	11:30 Pacific	Solid	Solid	X
PDI-SC-S172-2164 (580-79329-13)	8/2/18	17:55 Pacific	Solid	Solid	X
PDI-SC-S172-2164D (580-79329-14)	8/2/18	17:55 Pacific	Solid	Solid	X
PDI-SC-S172-4166 (580-79329-15)	8/2/18	18:00 Pacific	Solid	Solid	X
PDI-SC-S172-6168.1 (580-79329-16)	8/2/18	18:05 Pacific	Solid	Solid	X
PDI-SC-S178-0162 (580-79329-17)	8/2/18	15:55 Pacific	Solid	Solid	X
PDI-SC-S178-2163.7 (580-79329-18)	8/2/18	16:00 Pacific	Solid	Solid	X

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/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
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) _____
 Primary Deliverable Rank: 1
 Date: _____ Time: _____
 Method of Shipment: _____
 Special Instructions/QC Requirements: _____
 Return To Client
 Disposal By Lab
 Archive For _____ Months

Empty Kit Relinquished by: _____ Date: _____
 Custody Seals Intact: Yes No
 Cooler Temperature(s) °C and Other Remarks: 4.5 2.8 4.4 4.1 5.7

Chain of Custody Record

Client Information (Sub Contract Lab)		Lab P/N:	Walker, Elaine M		Carrier Tracking No(s):	580-57870.2	
Client Contact:		Phone:	elaine.walker@testamericainc.com		State of Origin:	Oregon	
Company:		TestAmerica Laboratories, Inc.		Accreditations Required (See note):			
Address:		880 Riverside Parkway,		Preservation Codes:			
City:		West Sacramento		A - HCL			
State, Zip:		CA, 95605		B - NaOH			
Phone:		916-373-5600(Tel) 916-372-1059(Fax)		C - Zn Acetate			
Email:				D - Nitric Acid			
Project Name:		Portland Harbor Pre-Remedial Design		E - NaHSO4			
Site:				F - MeOH			
Due Date Requested:		8/21/2018		G - Amchlor			
TAT Requested (days):				H - Ascorbic Acid			
PO #:				I - Ice			
WO #:				J - DI Water			
Project #:		58012120		K - EDTA			
SSOW#:				L - EDA			
				M - Hexane			
				N - None			
				O - AsNaO2			
				P - Na2O4S			
				Q - Na2SO3			
				R - Na2S2O3			
				S - H2SO4			
				T - TSP Dodecahydrate			
				U - Acetone			
				V - MCAA			
				W - pH 4-5			
				Z - other (specify)			
				Other:			
				Total Number of containers			
				Autoclave/ PH Frozen Archive Container billed @ \$0			
				Perform MS/MSD (Yes or No)			
				Field Filtered Sample (Yes or No)			
				Preservation Code:			
				Matrix (W=water, S=solid, O=organic, BT=Tissue, A=Air)			
				Sample Type (C=Comp, G=grab)			
				Sample Time			
				Sample Date			
				Sample Identification - Client ID (Lab ID)			
				PDI-SC-S178-3.7to4.7 (580-79329-19)			
				PDI-SC-S178-4.7to6.7 (580-79329-20)			
				PDI-SC-S178-6.7to8.7 (580-79329-21)			
				PDI-SC-S178-8.7to10.7 (580-79329-22)			
				PDI-SC-S178-10.7to12.7 (580-79329-23)			
				PDI-SC-S178-12.7to14 (580-79329-24)			
				PDI-SC-S083-0to1.6 (580-79329-25)			
				PDI-SC-S083-1.6to3.5 (580-79329-26)			
				PDI-SC-S083-3.5to5.0 (580-79329-27)			
				Special Instructions/Note:			
				Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. I			
				Possible Hazard Identification			
				Unconfirmed			
				Deliverable Requested: I, II, III, IV, Other (specify)			
				Primary Deliverable Rank: 1			
				Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)			
				Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months			
				Special Instructions/QC Requirements:			
				Empty Kit Relinquished by:			
				Relinquished by: <i>[Signature]</i> Date: 8/21/18			
				Relinquished by: <i>[Signature]</i> Date: 8/21/18			
				Relinquished by: <i>[Signature]</i> Date: 8/21/18			
				Custody Seals Intact: <i>[Signature]</i> Custody Seal No.: 577			
				Cooler Temperature(s) °C and Other Remarks: 4-5 20g 44 26 577			

Chain of Custody Record

Client Information (Sub Contract Lab)		Lab P/N:	Walker, Elaine M	Carrier Tracking No(s):	580-57870.3				
Client Contact:		Phone:	elaine.walker@testamericainc.com	State of Origin:	Oregon				
Shipping/Receiving		Accreditations Required (See note):							
Company:		TestAmerica Laboratories, Inc.							
Address:		880 Riverside Parkway,							
City:		West Sacramento							
State, Zip:		CA, 95605							
Phone:		916-373-5600(Tel) 916-372-1059(Fax)							
Email:									
Project Name:		Portland Harbor Pre-Remedial Design							
Site:									
Due Date Requested:		8/21/2018							
TAT Requested (days):									
PO #:									
WO #:									
Project #:		58012120							
SSOW#:									
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix (W=water, S=solid, O=soil, BT=tissue, A=AP)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Auto/PH Frozen Archive Container billed @ \$0.	Total Number of containers	Special Instructions/Note:
PDI-SC-S083-5106.6 (580-79329-28)	8/1/18	17:45 Pacific	Solid	Solid	X	X		2	
PDI-SC-S032-0102 (580-79329-29)	8/1/18	15:40 Pacific	Solid	Solid	X	X		2	
PDI-SC-S032-2104 (580-79329-30)	8/1/18	15:45 Pacific	Solid	Solid	X	X		2	
PDI-SC-S032-4106 (580-79329-31)	8/1/18	15:50 Pacific	Solid	Solid	X	X		2	
PDI-SC-S032-6108 (580-79329-32)	8/1/18	15:55 Pacific	Solid	Solid	X	X		2	
PDI-SC-S032-81010 (580-79329-33)	8/1/18	16:00 Pacific	Solid	Solid	X	X		2	
PDI-SC-S032-101012 (580-79329-34)	8/1/18	16:05 Pacific	Solid	Solid	X	X		2	
PDI-SC-S032-121014 (580-79329-35)	8/1/18	16:10 Pacific	Solid	Solid	X	X		2	
PDI-SC-S172-0102 (580-79329-36)	8/2/18	17:50 Pacific	Solid	Solid	X	X		2	

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

Possible Hazard Identification
Unconfirmed

Deliverable Requested: I, II, III, IV, Other (specify) _____ Primary Deliverable Rank: 1

Empty Kit Relinquished by: _____ Date: _____

Relinquished by: _____ Date: 8/21/18

Relinquished by: _____ Date: 8/21/18

Relinquished by: _____ Date: 8/21/18

Custody Seals Intact: _____ Custody Seal No.: _____

Special Instructions/Note: _____

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months

Special Instructions/QC Requirements: _____

Received by: _____ Date: 8/18/18 930

Received by: _____ Date: _____

Received by: _____ Date: _____

Cooler Temperature(s) °C and Other Remarks: 4-5 2-6 4-4 41 87

Ver: 09/20/2016

1 2 3 4 5 6 7 8 9 10

Lab 1 2 3

1/2 Container Received with cracked Lid. Replaced

Chain of Custody Record

Client Information (Sub Contract Lab)		Lab P/M: Walker, Elaine M	Carrier Tracking No(s):	COC No: 580-57870.4
Client Contact: Shipping/Receiving		Phone: elaine.walker@testamericainc.com	State of Origin: Oregon	Page: Page 4 of 4
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): 580-79329-4		
Address: 880 Riverside Parkway, City: West Sacramento State, Zip: CA, 95605		Analysis Requested		
Phone: 916-373-5600(Tel) 916-372-1059(Fax)		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:		
Email: Project Name: Portland Harbor Pre-Remedial Design Site:		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 X - other (specify)		
Due Date Requested: 8/21/2018		Total Number of containers		
TAT Requested (days):		Auto/PH Frozen Archive Container billed @ \$0		
PO #:		Perform MS/MSD (Yes or No)		
WO #:		Field Filtered Sample (Yes or No)		
Project #: 58012120		Preservation Code:		
SSOW#:		Matrix (W-water, S-solid, O-organolith, BT-Tissue, AA-Air)		
Sample Identification - Client ID (Lab ID)		Sample Date		
Sample Time	Sample Type (C-Comp, G-grab)	Sample Time	Matrix	Field Filtered Sample (Yes or No)
8/2/18	11:35 Pacific	11:35 Pacific	Solid	X
8/2/18	11:40 Pacific	11:40 Pacific	Solid	X
8/3/18	09:20 Pacific	09:20 Pacific	Solid	X
Special Instructions/Note:				
PDI-SC-S218-6108 (580-79329-37)				
PDI-SC-S218-81010 (580-79329-38)				
PDI-SC-S228-0102.3 (580-79329-39)				
Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. I				
Possible Hazard Identification				
Unconfirmed				
Deliverable Requested: I, II, III, IV, Other (specify)				
Primary Deliverable Rank: 1				
Empty Kit Relinquished by:				
Relinquished by: [Signature]				
Relinquished by: [Signature]				
Relinquished by: [Signature]				
Custody Seals Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Custody Seal No.: 4.5 2.8 4.4 4.1 5.7				
Special Instructions/QC Requirements:				
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)				
Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months				
Method of Shipment:				
Received by: [Signature]				
Received by: [Signature]				
Received by: [Signature]				
Cooler Temperature(s) °C and Other Remarks: 4.5 2.8 4.4 4.1 5.7				



Chain of Custody Record



Client Information (Sub Contract Lab)		Lab P/M: Walker, Elaine M	Carrier Tracking No(s):
Client Contact: Shipping/Receiving		Phone: Elaine.walker@testamericainc.com	State of Origin: Oregon
Company: TestAmerica Laboratories, Inc.		E-Mail: elaine.walker@testamericainc.com	Page 2 of 4
Address: 880 Riverside Parkway, West Sacramento, CA, 95605		Accreditations Required (See note):	Job #: 580-79329-2
City: West Sacramento		Due Date Requested: 8/21/2018	Preservation Codes:
State: CA		TAT Requested (days):	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:
Phone: 916-373-5600(Tel) 916-372-1059(Fax)		PO #:	M - Hexane N - None O - AsNaO2 P - Na2OAS Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)
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=organic, BT=BIOTISSUE, A=Air)	Field Filtered Sample (Yes or No)	1613B/HRMS_Sox_P (MOD) Full List w/ Totals	1613B/HRMS_Sox_P (MOD) Full List w/ Totals	Total Number of Containers	Special Instructions/Note:
PDI-SC-S178-3.7to4.7 (580-79329-19)	8/2/18	16:05 Pacific	Solid	Solid	X			2	
PDI-SC-S178-4.7to6.7 (580-79329-20)	8/2/18	16:10 Pacific	Solid	Solid	X			2	
PDI-SC-S178-6.7to8.7 (580-79329-21)	8/2/18	16:15 Pacific	Solid	Solid	X			2	
PDI-SC-S178-8.7to10.7 (580-79329-22)	8/2/18	16:20 Pacific	Solid	Solid	X			2	
PDI-SC-S178-10.7to12.7 (580-79329-23)	8/2/18	16:25 Pacific	Solid	Solid	X			2	
PDI-SC-S178-12.7to14 (580-79329-24)	8/2/18	16:30 Pacific	Solid	Solid	X			2	
PDI-SC-S083-0to1.6 (580-79329-25)	8/1/18	17:30 Pacific	Solid	Solid	X			2	
PDI-SC-S083-1.6to3.5 (580-79329-26)	8/1/18	17:35 Pacific	Solid	Solid	X			2	
PDI-SC-S083-3.5to5.0 (580-79329-27)	8/1/18	17:40 Pacific	Solid	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. I

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) _____ Primary Deliverable Rank: 2
 Special Instructions/OC Requirements:

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months

Empty Kit Relinquished by: _____ Date: _____ Time: _____ Method of Shipment: _____

Relinquished by: *M. Deane* Date/Time: 8/18/18 Company: TH-Sac
 Relinquished by: _____ Date/Time: _____ Company: _____
 Relinquished by: _____ Date/Time: _____ Company: _____

Custody Seals Intact: *Yes* Δ No _____ Custody Seal No.: _____
 Cooler Temperature(s) °C and Other Remarks: 4.5 2.0 4.4 4.1 5.7



Ver: 09/20/2016

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-79329-2

Login Number: 79329

List Source: TestAmerica Seattle

List Number: 1

Creator: O'Connell, Jason I

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



Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-79329-2

Login Number: 79329

List Source: TestAmerica Sacramento

List Number: 2

Creator: Her, David A

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	0.8
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: 580-79329-2

Login Number: 79329

List Number: 5

Creator: Her, David A

List Source: TestAmerica Sacramento

List Creation: 08/08/18 04:29 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq 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	4.5c, 2.8c, 4.4c, 4.1c, 5.7c
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.	False	Refer to Job Narrative for details.
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 <math><6\text{mm}</math> (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: 580-79329-2

Login Number: 79329

List Number: 6

Creator: Her, David A

List Source: TestAmerica Sacramento

List Creation: 08/08/18 04:40 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= 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 <6mm (1/4").		
Multiphasic samples are not present.		
Samples do not require splitting or compositing.		
Residual Chlorine Checked.		

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sacramento



580-79329 Field Sheet

Job: _____

Tracking # 4423 0750 8586

SO (PO) / FO / 2-Day / Ground / UPS / Courier / GSO /
OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Notes: _____

Therm. ID: AK-2 / AK-3 / (AK-5) / AK-6 / HACCP / Other _____

Ice Wet Gel _____ Other _____

Cooler Custody Seal: Seal 1

Sample Custody Seal: —

Cooler ID: 1 of 5

Temp: Observed 1 of 5 cc 8/8/18 7.5°C

From: Temp Blank Sample
NCM Filed: Yes No

	Yes	No	NA
Perchlorate has headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
CoC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample date/times are provided.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zero headspace?*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Multiphasic samples are not present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample temp OK?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample out of temp?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Initials: EC Date: 8/8/18

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

Job: _____

Tracking # 4423 0750 8597

SO / PO / FO / 2-Day / Ground / UPS / Courier / GSO /
OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

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: 2 of 5

Temp: Observed 2.8°C

From: Temp Blank Sample
NCM Filed: Yes No

	Yes	No	NA
Perchlorate has headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
CoC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample date/times are provided.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zero headspace?*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Multiphasic samples are not present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample temp OK?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample out of temp?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Initials: GL Date: 8/8/18

*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: 580-79329-2

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

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	HxCDD (32-141)	HxCDF (26-152)	HxDD (28-130)	HxDF (26-123)	HxCF (29-147)
580-79329-1	PDI-SC-S144-0to2	55	49	56	61	57	52	55	44
580-79329-1 - RA	PDI-SC-S144-0to2								
580-79329-2	PDI-SC-S144-2to4	63	55	63	61	66	59	65	51
580-79329-2 - RA	PDI-SC-S144-2to4								
580-79329-3	PDI-SC-S144-4to6	54	47	55	57	63	50	60	50
580-79329-3 - RA	PDI-SC-S144-4to6								
580-79329-4	PDI-SC-S144-6to8	56	51	55	64	68	56	65	49
580-79329-4 - RA	PDI-SC-S144-6to8								
580-79329-5	PDI-SC-S144-8to10	55	54	53	68	67	52	64	47
580-79329-6	PDI-SC-S144-10to12.1	57	53	55	64	64	52	60	44
580-79329-7	PDI-SC-S086-0to2	62	51	65	55	48	52	43	64
580-79329-8	PDI-SC-S086-0to2D	60	59	64	65	71	58	67	53
580-79329-8 - RA	PDI-SC-S086-0to2D								
580-79329-9	PDI-SC-S086-2to3.3	56	57	58	67	68	59	67	48
580-79329-10 - RA	PDI-SC-S218-0to2								
580-79329-10	PDI-SC-S218-0to2	55	42	48	53	52	52	51	57
580-79329-11	PDI-SC-S218-2to4.5	44	45	46	49	52	48	51	56
580-79329-11 - RA	PDI-SC-S218-2to4.5								
580-79329-12	PDI-SC-S218-4.5to6	43	42	47	51	52	50	53	57
580-79329-13	PDI-SC-S172-2to4	52	50	52	51	54	53	54	57
580-79329-13 - RA	PDI-SC-S172-2to4								
580-79329-14	PDI-SC-S172-2to4D	53	52	55	58	61	58	60	65
580-79329-14 - RA	PDI-SC-S172-2to4D								
580-79329-15	PDI-SC-S172-4to6	49	50	47	56	58	59	61	61
580-79329-15 - RA	PDI-SC-S172-4to6								
580-79329-16	PDI-SC-S172-6to8.1	52	51	52	58	60	56	58	62
580-79329-17	PDI-SC-S178-0to2	34	34	26	55	57	52	57	59
580-79329-17 - RA	PDI-SC-S178-0to2								
580-79329-18	PDI-SC-S178-2to3.7	29	31	22 *	50	54	50	55	54
580-79329-18 - RA	PDI-SC-S178-2to3.7								
580-79329-19	PDI-SC-S178-3.7to4.7	31	27 *	28	37	37	39	38	40
580-79329-19 - RA	PDI-SC-S178-3.7to4.7								
580-79329-20	PDI-SC-S178-4.7to6.7	44	43	49	51	52	50	52	57
580-79329-21	PDI-SC-S178-6.7to8.7	52	49	54	48	53	53	56	57
580-79329-22	PDI-SC-S178-8.7to10.7	58	52	59	53	59	58	61	62
580-79329-23	PDI-SC-S178-10.7to12.7	53	44	53	50	48	49	47	54
580-79329-24	PDI-SC-S178-12.7to14	52	43	52	48	44	47	44	51
580-79329-25 - RA	PDI-SC-S083-0to1.6								
580-79329-25	PDI-SC-S083-0to1.6	61	51	61	59	54	53	54	62
580-79329-26	PDI-SC-S083-1.6to3.5	60	58	61	59	57	55	56	62
580-79329-27	PDI-SC-S083-3.5to5.0	44	48	52	54	49	48	51	53
580-79329-28	PDI-SC-S083-5to6.6	25	29	32	44	40	42	38	53
580-79329-28 - RA	PDI-SC-S083-5to6.6								
580-79329-29	PDI-SC-S032-0to2	56	47	63	60	47	56	45	62
580-79329-30	PDI-SC-S032-2to4	49	38	49	50	49	48	43	50
580-79329-31	PDI-SC-S032-4to6	37	32	42	43	36	41	33	46
580-79329-32	PDI-SC-S032-6to8	61	50	65	57	48	53	45	58
580-79329-33	PDI-SC-S032-8to10	48	40	55	43	38	43	35	52
580-79329-34	PDI-SC-S032-10to12	55	49	58	52	47	52	43	56

TestAmerica Seattle

Isotope Dilution Summary

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

TestAmerica Job ID: 580-79329-2

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 (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	HxCDD (32-141)	HxCDF (26-152)	HxDD (28-130)	HxDF (26-123)	HxCF (29-147)
580-79329-35	PDI-SC-S032-12to14	47	39	53	43	40	41	38	52
580-79329-36	PDI-SC-S172-0to2	56	44	52	50	46	49	42	56
580-79329-36 - RA	PDI-SC-S172-0to2								
580-79329-37	PDI-SC-S218-6to8	43	31	50	45	38	42	34	52
580-79329-38	PDI-SC-S218-8to10	57	47	66	50	48	50	42	61
580-79329-39	PDI-SC-S228-0to2.3	66	55	55	55	49	54	45	60
MB 320-239750/1-A	Method Blank	74	70	73	72	69	66	68	53
MB 320-240044/1-A	Method Blank	76	75	72	65	74	73	78	74
MB 320-240515/1-A	Method Blank	68	64	60	61	63	69	67	63

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PeCDD (25-181)	PeCDF (24-185)	13CHxCF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)
580-79329-1	PDI-SC-S144-0to2	73	72	57	74	63		61
580-79329-1 - RA	PDI-SC-S144-0to2						58	
580-79329-2	PDI-SC-S144-2to4	82	79	54	79	63		75
580-79329-2 - RA	PDI-SC-S144-2to4						58	
580-79329-3	PDI-SC-S144-4to6	79	77	51	79	60		67
580-79329-3 - RA	PDI-SC-S144-4to6						59	
580-79329-4	PDI-SC-S144-6to8	79	76	62	77	60		71
580-79329-4 - RA	PDI-SC-S144-6to8						57	
580-79329-5	PDI-SC-S144-8to10	77	75	63	76	61	62	66
580-79329-6	PDI-SC-S144-10to12.1	72	70	61	70	60	60	68
580-79329-7	PDI-SC-S086-0to2	88	82	53	72	69	75	64
580-79329-8	PDI-SC-S086-0to2D	70	70	58	67	58		73
580-79329-8 - RA	PDI-SC-S086-0to2D						55	
580-79329-9	PDI-SC-S086-2to3.3	77	75	63	68	65	63	57
580-79329-10 - RA	PDI-SC-S218-0to2						50	
580-79329-10	PDI-SC-S218-0to2	59	57	52	58	58		59
580-79329-11	PDI-SC-S218-2to4.5	52	56	53	57	58		34
580-79329-11 - RA	PDI-SC-S218-2to4.5						55	
580-79329-12	PDI-SC-S218-4.5to6	53	55	54	57	58	61	30
580-79329-13	PDI-SC-S172-2to4	53	54	55	54	57		39
580-79329-13 - RA	PDI-SC-S172-2to4						55	
580-79329-14	PDI-SC-S172-2to4D	59	62	63	63	64		41
580-79329-14 - RA	PDI-SC-S172-2to4D						59	
580-79329-15	PDI-SC-S172-4to6	58	60	59	61	64		36
580-79329-15 - RA	PDI-SC-S172-4to6						56	
580-79329-16	PDI-SC-S172-6to8.1	61	63	60	64	65	70	39
580-79329-17	PDI-SC-S178-0to2	58	61	58	63	63		24
580-79329-17 - RA	PDI-SC-S178-0to2						56	
580-79329-18	PDI-SC-S178-2to3.7	54	56	54	58	57		22
580-79329-18 - RA	PDI-SC-S178-2to3.7						56	
580-79329-19	PDI-SC-S178-3.7to4.7	43	42	39	44	51		20
580-79329-19 - RA	PDI-SC-S178-3.7to4.7						49	
580-79329-20	PDI-SC-S178-4.7to6.7	54	56	53	57	61	65	32
580-79329-21	PDI-SC-S178-6.7to8.7	50	53	55	53	61	63	39
580-79329-22	PDI-SC-S178-8.7to10.7	53	57	60	58	66	70	42
580-79329-23	PDI-SC-S178-10.7to12.7	53	51	50	52	56	56	53
580-79329-24	PDI-SC-S178-12.7to14	51	48	47	50	54	52	52

TestAmerica Seattle

Isotope Dilution Summary

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

TestAmerica Job ID: 580-79329-2

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)
580-79329-25 - RA	PDI-SC-S083-0to1.6						60	
580-79329-25	PDI-SC-S083-0to1.6	62	60	54	59	60		65
580-79329-26	PDI-SC-S083-1.6to3.5	60	62	54	58	62	63	50
580-79329-27	PDI-SC-S083-3.5to5.0	55	54	50	56	57	60	33
580-79329-28	PDI-SC-S083-5to6.6	91	66	35	64	51		13 *
580-79329-28 - RA	PDI-SC-S083-5to6.6						57	
580-79329-29	PDI-SC-S032-0to2	78	64	53	65	63	63	65
580-79329-30	PDI-SC-S032-2to4	60	52	46	52	54	50	55
580-79329-31	PDI-SC-S032-4to6	56	54	40	50	53	54	43
580-79329-32	PDI-SC-S032-6to8	72	59	55	59	60	61	69
580-79329-33	PDI-SC-S032-8to10	55	48	43	52	53	55	60
580-79329-34	PDI-SC-S032-10to12	61	50	50	49	55	56	64
580-79329-35	PDI-SC-S032-12to14	60	53	43	55	56	60	53
580-79329-36	PDI-SC-S172-0to2	60	55	48	53	59		68
580-79329-36 - RA	PDI-SC-S172-0to2						60	
580-79329-37	PDI-SC-S218-6to8	62	51	43	54	56	62	44
580-79329-38	PDI-SC-S218-8to10	74	64	51	67	63	68	64
580-79329-39	PDI-SC-S228-0to2.3	73	63	52	65	62	64	81
MB 320-239750/1-A	Method Blank	87	84	72	82	71	72	80
MB 320-240044/1-A	Method Blank	52	58	76	56	70	70	61
MB 320-240515/1-A	Method Blank	61	56	65	55	65	58	53

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 320-239750/2-A	Lab Control Sample	76	71	73	73	71	69	71	54
LCS 320-240044/2-A	Lab Control Sample	72	73	70	63	70	69	74	71
LCS 320-240515/2-A	Lab Control Sample	63	59	57	57	59	62	63	58
LCSD 320-239750/3-A	Lab Control Sample Dup	74	72	70	78	74	67	69	53

TestAmerica Seattle

Isotope Dilution Summary

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

TestAmerica Job ID: 580-79329-2

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)
LCSD 320-240044/3-A	Lab Control Sample Dup	77	69	73	68	64	67	64	67
LCSD 320-240515/3-A	Lab Control Sample Dup	61	56	54	52	53	57	58	57

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 320-239750/2-A	Lab Control Sample	89	87	74	86	73	72	80
LCS 320-240044/2-A	Lab Control Sample	26	26	71	32	68	67	60
LCS 320-240515/2-A	Lab Control Sample	56	52	59	52	61	54	50
LCSD 320-239750/3-A	Lab Control Sample Dup	86	85	71	86	73	71	76
LCSD 320-240044/3-A	Lab Control Sample Dup	59	57	66	53	66	64	83
LCSD 320-240515/3-A	Lab Control Sample Dup	54	51	57	48	59	53	48

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)
580-79329-44	PDI-RB-SS-180801	88	84	87	77	79	82	81	80
580-79329-45	PDI-RB-SS-180802-1645	95	94	98	83	87	94	91	88
580-79329-46	PDI-RB-SS-180802	81	79	80	74	75	81	80	75
MB 320-238927/1-A	Method Blank	88	86	86	83	84	88	87	83

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PeCDD (25-181)	PeCDF (24-185)	13CHxCF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)
580-79329-44	PDI-RB-SS-180801	75	77	81	76	79	79	89
580-79329-45	PDI-RB-SS-180802-1645	82	83	90	83	89	88	94
580-79329-46	PDI-RB-SS-180802	71	71	78	73	78	77	79
MB 320-238927/1-A	Method Blank	78	76	86	79	83	81	84

Surrogate Legend

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

TestAmerica Seattle

Isotope Dilution Summary

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

TestAmerica Job ID: 580-79329-2

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 (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	HxCDD (21-193)	HxCDF (19-202)	HxDD (25-163)	HxDF (21-159)	HxCF (17-205)
LCS 320-238927/2-A	Lab Control Sample	78	75	77	71	74	76	76	75
LCSD 320-238927/3-A	Lab Control Sample Dup	78	79	80	77	79	80	81	79

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 320-238927/2-A	Lab Control Sample	73	71	75	73	75	74	75
LCSD 320-238927/3-A	Lab Control Sample Dup	77	73	82	77	78	78	73

Surrogate Legend

HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-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