

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

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TestAmerica Job ID: 580-80167-2

Client Project/Site: Portland Harbor Pre-Remedial Design

For:

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Authorized for release by:  
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*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

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

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# Case Narrative

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

TestAmerica Job ID: 580-80167-2

**Job ID: 580-80167-2**

**Laboratory: TestAmerica Seattle**

## Narrative

### CASE NARRATIVE

Client: AECOM

Project: Portland Harbor Pre-Remedial Design

Report Number: 580-80167-2

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

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

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

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

#### RECEIPT

Thirty-six samples were received on 9/7/2018 12:35 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 0.9° C, 1.3° C, 1.7° C, 2.0° C, 2.2° C and 3.2° C.

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

This report contains results for 1613B Dioxins / Furans, performed at TestAmerica Sacramento.

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

#### DIOXIN/ FURAN

Samples PDI-SC-S129-0to2 (580-80167-1), PDI-SC-S129-2to4 (580-80167-2), PDI-SC-S129-4to5.3 (580-80167-3), PDI-SC-S155-0to2.1 (580-80167-4), PDI-SC-S155-2.1to4.2 (580-80167-5), PDI-SC-S155-4.2to5.3 (580-80167-6), PDI-SC-S121-0to1.8 (580-80167-7), PDI-SC-S121-1.8to3.4 (580-80167-8), PDI-SC-S255-0to2.1 (580-80167-9), PDI-SC-S255-0to2.1D (580-80167-10), PDI-SC-S255-2.1to4.3 (580-80167-11), PDI-SC-S112-0to2 (580-80167-12), PDI-SC-S112-2to4 (580-80167-13), PDI-SC-S112-4to6 (580-80167-14), PDI-SC-S113C-0to1.1 (580-80167-16), PDI-SC-S113C-1.1to3.1 (580-80167-17), PDI-SC-S113C-3.1to5.6 (580-80167-18), PDI-SC-S113C-5.6to6.6 (580-80167-19), PDI-SC-S260-0to1.3 (580-80167-20), PDI-SC-S260-1.3to2.6 (580-80167-21), PDI-SC-S260-2.6to4.2 (580-80167-22), PDI-SC-S260-4.2to6 (580-80167-23), PDI-SC-S260-6to7 (580-80167-24), PDI-SC-S019-0to2 (580-80167-25), PDI-SC-S019-2to4 (580-80167-26), PDI-SC-S019-4to6 (580-80167-27), PDI-SC-S019-6to8 (580-80167-28), PDI-SC-S019-8to10 (580-80167-29), PDI-SC-S019-10to12 (580-80167-30), PDI-SC-S019-12to13.7 (580-80167-31), PDI-SC-S019-13.7to14.7 (580-80167-32) and PDI-SC-S019-10to12D (580-80167-36) were analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 09/13/2018, 09/14/2018 and 09/25/2018 and analyzed on 09/20/2018, 09/21/2018, 09/26/2018, 09/27/2018 and 09/28/2018.

Several analytes were detected in method blank MB 320-245460/1-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 320-245749/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

# Case Narrative

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### Laboratory: TestAmerica Seattle (Continued)

1,2,3,4,7,8,9-HpCDF, 1,2,3,7,8,9-HxCDF and OCDD were detected in method blank MB 320-247773/1-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: PDI-SC-S129-0to2 (580-80167-1), PDI-SC-S129-2to4 (580-80167-2), PDI-SC-S129-4to5.3 (580-80167-3), PDI-SC-S155-0to2.1 (580-80167-4), PDI-SC-S155-2.1to4.2 (580-80167-5), PDI-SC-S155-4.2to5.3 (580-80167-6), PDI-SC-S121-0to1.8 (580-80167-7), PDI-SC-S121-1.8to3.4 (580-80167-8), PDI-SC-S255-0to2.1 (580-80167-9), PDI-SC-S255-0to2.1D (580-80167-10), PDI-SC-S255-2.1to4.3 (580-80167-11), PDI-SC-S112-0to2 (580-80167-12), PDI-SC-S112-2to4 (580-80167-13), PDI-SC-S112-4to6 (580-80167-14), PDI-SC-S113C-0to1.1 (580-80167-16), PDI-SC-S113C-3.1to5.6 (580-80167-18), PDI-SC-S113C-5.6to6.6 (580-80167-19), PDI-SC-S260-0to1.3 (580-80167-20), PDI-SC-S260-1.3to2.6 (580-80167-21), PDI-SC-S260-2.6to4.2 (580-80167-22), PDI-SC-S260-4.2to6 (580-80167-23), PDI-SC-S260-6to7 (580-80167-24), PDI-SC-S019-0to2 (580-80167-25), PDI-SC-S019-2to4 (580-80167-26), PDI-SC-S019-4to6 (580-80167-27), PDI-SC-S019-6to8 (580-80167-28), PDI-SC-S019-8to10 (580-80167-29), PDI-SC-S019-10to12 (580-80167-30), PDI-SC-S019-12to13.7 (580-80167-31), PDI-SC-S019-13.7to14.7 (580-80167-32), PDI-SC-S019-10to12D (580-80167-36), (CCV 320-247158/2), (CCV 320-246911/111), (LCS 320-245749/2-A), (LCSD 320-245749/3-A), (MB 320-245749/1-A), (CCV 320-246902/98), (CCV 320-246809/83), (LCS 320-245460/2-A), (LCSD 320-245460/3-A) and (MB 320-245460/1-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 associated with the following samples run on instrument 11D2 exceeded this criteria: PDI-SC-S129-0to2 (580-80167-1), PDI-SC-S129-2to4 (580-80167-2), PDI-SC-S129-4to5.3 (580-80167-3), PDI-SC-S155-0to2.1 (580-80167-4), PDI-SC-S155-2.1to4.2 (580-80167-5), PDI-SC-S121-1.8to3.4 (580-80167-8), PDI-SC-S255-2.1to4.3 (580-80167-11), PDI-SC-S112-0to2 (580-80167-12), PDI-SC-S112-2to4 (580-80167-13), PDI-SC-S112-4to6 (580-80167-14), PDI-SC-S113C-0to1.1 (580-80167-16), PDI-SC-S113C-1.1to3.1 (580-80167-17), (CCV 320-248394/2), PDI-SC-S260-0to1.3 (580-80167-20), PDI-SC-S260-1.3to2.6 (580-80167-21), PDI-SC-S260-2.6to4.2 (580-80167-22), PDI-SC-S019-0to2 (580-80167-25), PDI-SC-S019-2to4 (580-80167-26), PDI-SC-S019-4to6 (580-80167-27), PDI-SC-S019-6to8 (580-80167-28), PDI-SC-S019-8to10 (580-80167-29), PDI-SC-S019-10to12 (580-80167-30), PDI-SC-S019-12to13.7 (580-80167-31), PDI-SC-S019-13.7to14.7 (580-80167-32), PDI-SC-S019-10to12D (580-80167-36), (CCV 320-247835/2), (CCV 320-248310/2), and (CCV 320-247181/1). 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 3D5 exceeded this criteria: PDI-SC-S113C-1.1to3.1 (580-80167-17), (CCV 320-247547/2), (LCS 320-246650/2-A), (LCSD 320-246650/3-A), (MB 320-246650/1-A), (CCV 320-248108/16), (LCS 320-247773/2-A), (LCSD 320-247773/3-A), MB 320-247773/1-A, and (WDM 320-247547/1). 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 concentration of one or more analytes associated with the following samples exceeded the instrument calibration range: PDI-SC-S129-2to4 (580-80167-2), PDI-SC-S129-4to5.3 (580-80167-3), PDI-SC-S121-1.8to3.4 (580-80167-8), PDI-SC-S112-0to2 (580-80167-12), PDI-SC-S112-2to4 (580-80167-13), PDI-SC-S112-4to6 (580-80167-14), PDI-SC-S260-1.3to2.6 (580-80167-21), PDI-SC-S019-2to4 (580-80167-26), PDI-SC-S019-4to6 (580-80167-27) and PDI-SC-S019-6to8 (580-80167-28). 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-S129-2to4 (580-80167-2) AND PDI-SC-S260-1.3to2.6 (580-80167-21). The reporting limit (RL) for the affected analytes has been raised to be equal to the EDL, and a "G" qualifier applied.

The following sample was diluted due to the nature of the sample matrix: PDI-SC-S113C-0to1.1 (580-80167-16). Elevated reporting limits

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

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### Laboratory: TestAmerica Seattle (Continued)

(RLs) are provided.

Due to the matrix, the initial volumes used for the following samples deviated from the standard procedure: PDI-SC-S129-0to2 (580-80167-1), PDI-SC-S129-2to4 (580-80167-2), PDI-SC-S129-4to5.3 (580-80167-3), PDI-SC-S155-0to2.1 (580-80167-4), PDI-SC-S155-2.1to4.2 (580-80167-5), PDI-SC-S155-4.2to5.3 (580-80167-6), PDI-SC-S121-0to1.8 (580-80167-7), PDI-SC-S121-1.8to3.4 (580-80167-8), PDI-SC-S255-0to2.1 (580-80167-9), PDI-SC-S255-0to2.1D (580-80167-10), PDI-SC-S255-2.1to4.3 (580-80167-11), PDI-SC-S112-0to2 (580-80167-12), PDI-SC-S112-2to4 (580-80167-13), PDI-SC-S112-4to6 (580-80167-14), PDI-SC-S113C-0to1.1 (580-80167-16), PDI-SC-S113C-1.1to3.1 (580-80167-17), PDI-SC-S113C-3.1to5.6 (580-80167-18), PDI-SC-S113C-5.6to6.6 (580-80167-19), PDI-SC-S260-0to1.3 (580-80167-20), PDI-SC-S260-1.3to2.6 (580-80167-21), PDI-SC-S260-2.6to4.2 (580-80167-22), PDI-SC-S260-4.2to6 (580-80167-23), PDI-SC-S260-6to7 (580-80167-24), PDI-SC-S019-0to2 (580-80167-25), PDI-SC-S019-2to4 (580-80167-26), PDI-SC-S019-4to6 (580-80167-27), PDI-SC-S019-6to8 (580-80167-28), PDI-SC-S019-8to10 (580-80167-29), PDI-SC-S019-10to12 (580-80167-30), PDI-SC-S019-12to13.7 (580-80167-31), PDI-SC-S019-13.7to14.7 (580-80167-32) and PDI-SC-S019-10to12D (580-80167-36).

Sample PDI-SC-S113C-0to1.1 (580-80167-16)[20X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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-180905 (580-80167-15), PDI-RB-SS-180906 (580-80167-33), PDI-RB-LL-180907 (580-80167-34) and PDI-RB-AL-180905 (580-80167-35) were analyzed for Dioxin/ Furan in accordance with 1613B.** The samples were prepared on 09/12/2018 and analyzed on 09/22/2018.

Several analytes were detected in method blank MB 320-245166/1-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.

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/or 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 10D5 exceeded this criteria: PDI-RB-SS-180905 (580-80167-15), PDI-RB-SS-180906 (580-80167-33), PDI-RB-LL-180907 (580-80167-34), PDI-RB-AL-180905 (580-80167-35), (CCV 320-247160/16), (LCS 320-245166/2-A), (LCSD 320-245166/3-A), (MB 320-245166/1-A), and (CCV 320-247158/2). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

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

# Definitions/Glossary

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

TestAmerica Job ID: 580-80167-2

## Qualifiers

### Dioxin

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

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
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: 580-80167-2

**Client Sample ID: PDI-SC-S129-0to2**

**Lab Sample ID: 580-80167-1**

Date Collected: 09/05/18 14:20

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 47.6

## 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	0.11	B	0.0053	0.0018	ug/Kg	☼	09/13/18 13:38	09/20/18 10:38	1
1,2,3,4,6,7,8-HpCDF	0.019	B	0.0053	0.00042	ug/Kg	☼	09/13/18 13:38	09/20/18 10:38	1
1,2,3,4,7,8,9-HpCDF	0.0018	J B	0.0053	0.00042	ug/Kg	☼	09/13/18 13:38	09/20/18 10:38	1
1,2,3,4,7,8-HxCDD	0.0013	J B	0.0053	0.000087	ug/Kg	☼	09/13/18 13:38	09/20/18 10:38	1
1,2,3,4,7,8-HxCDF	0.0031	J	0.0053	0.00017	ug/Kg	☼	09/13/18 13:38	09/20/18 10:38	1
1,2,3,6,7,8-HxCDD	0.0058	B	0.0053	0.000084	ug/Kg	☼	09/13/18 13:38	09/20/18 10:38	1
1,2,3,6,7,8-HxCDF	0.0016	J	0.0053	0.00015	ug/Kg	☼	09/13/18 13:38	09/20/18 10:38	1
1,2,3,7,8,9-HxCDD	0.0033	J B	0.0053	0.000078	ug/Kg	☼	09/13/18 13:38	09/20/18 10:38	1
1,2,3,7,8,9-HxCDF	0.0026	J B	0.0053	0.00011	ug/Kg	☼	09/13/18 13:38	09/20/18 10:38	1
1,2,3,7,8-PeCDD	0.00077	J	0.0053	0.000065	ug/Kg	☼	09/13/18 13:38	09/20/18 10:38	1
1,2,3,7,8-PeCDF	0.0013	J B	0.0053	0.00012	ug/Kg	☼	09/13/18 13:38	09/20/18 10:38	1
2,3,4,6,7,8-HxCDF	0.00078	J	0.0053	0.00013	ug/Kg	☼	09/13/18 13:38	09/20/18 10:38	1
2,3,4,7,8-PeCDF	0.00080	J B	0.0053	0.00012	ug/Kg	☼	09/13/18 13:38	09/20/18 10:38	1
2,3,7,8-TCDD	0.00029	J	0.0011	0.000048	ug/Kg	☼	09/13/18 13:38	09/20/18 10:38	1
OCDD	1.1	B	0.011	0.00063	ug/Kg	☼	09/13/18 13:38	09/20/18 10:38	1
OCDF	0.061	B	0.011	0.00011	ug/Kg	☼	09/13/18 13:38	09/20/18 10:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	44		23 - 140	09/13/18 13:38	09/20/18 10:38	1
13C-1,2,3,4,6,7,8-HpCDF	33		28 - 143	09/13/18 13:38	09/20/18 10:38	1
13C-1,2,3,4,7,8,9-HpCDF	41		26 - 138	09/13/18 13:38	09/20/18 10:38	1
13C-1,2,3,4,7,8-HxCDD	47		32 - 141	09/13/18 13:38	09/20/18 10:38	1
13C-1,2,3,4,7,8-HxCDF	47		26 - 152	09/13/18 13:38	09/20/18 10:38	1
13C-1,2,3,6,7,8-HxCDD	48		28 - 130	09/13/18 13:38	09/20/18 10:38	1
13C-1,2,3,6,7,8-HxCDF	49		26 - 123	09/13/18 13:38	09/20/18 10:38	1
13C-1,2,3,7,8,9-HxCDF	51		29 - 147	09/13/18 13:38	09/20/18 10:38	1
13C-1,2,3,7,8-PeCDD	52		25 - 181	09/13/18 13:38	09/20/18 10:38	1
13C-1,2,3,7,8-PeCDF	49		24 - 185	09/13/18 13:38	09/20/18 10:38	1
13C-2,3,4,6,7,8-HxCDF	50		28 - 136	09/13/18 13:38	09/20/18 10:38	1
13C-2,3,4,7,8-PeCDF	51		21 - 178	09/13/18 13:38	09/20/18 10:38	1
13C-2,3,7,8-TCDD	56		25 - 164	09/13/18 13:38	09/20/18 10:38	1
13C-OCDD	33		17 - 157	09/13/18 13:38	09/20/18 10:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	68		35 - 197	09/13/18 13:38	09/20/18 10:38	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	0.00086	J B q	0.0011	0.00064	ug/Kg	☼	09/13/18 13:38	09/21/18 14:32	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	59		24 - 169	09/13/18 13:38	09/21/18 14:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	64		35 - 197	09/13/18 13:38	09/21/18 14:32	1

TestAmerica Seattle

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S129-2to4**

**Lab Sample ID: 580-80167-2**

Date Collected: 09/05/18 14:25

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 51.8

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.72	G B	0.0063	0.0063	ug/Kg	☼	09/13/18 13:38	09/20/18 11:24	1
1,2,3,4,6,7,8-HpCDF	0.069	B	0.0048	0.00072	ug/Kg	☼	09/13/18 13:38	09/20/18 11:24	1
1,2,3,4,7,8,9-HpCDF	0.0046	J B	0.0048	0.0012	ug/Kg	☼	09/13/18 13:38	09/20/18 11:24	1
1,2,3,4,7,8-HxCDD	0.0059	B	0.0048	0.00031	ug/Kg	☼	09/13/18 13:38	09/20/18 11:24	1
1,2,3,4,7,8-HxCDF	0.0099		0.0048	0.00056	ug/Kg	☼	09/13/18 13:38	09/20/18 11:24	1
1,2,3,6,7,8-HxCDD	0.049	B	0.0048	0.00031	ug/Kg	☼	09/13/18 13:38	09/20/18 11:24	1
1,2,3,6,7,8-HxCDF	0.0050		0.0048	0.00052	ug/Kg	☼	09/13/18 13:38	09/20/18 11:24	1
1,2,3,7,8,9-HxCDD	0.014	B	0.0048	0.00028	ug/Kg	☼	09/13/18 13:38	09/20/18 11:24	1
1,2,3,7,8,9-HxCDF	0.0019	J B	0.0048	0.00042	ug/Kg	☼	09/13/18 13:38	09/20/18 11:24	1
1,2,3,7,8-PeCDD	0.0038	J	0.0048	0.00013	ug/Kg	☼	09/13/18 13:38	09/20/18 11:24	1
1,2,3,7,8-PeCDF	0.0037	J B	0.0048	0.00030	ug/Kg	☼	09/13/18 13:38	09/20/18 11:24	1
2,3,4,6,7,8-HxCDF	0.0032	J	0.0048	0.00045	ug/Kg	☼	09/13/18 13:38	09/20/18 11:24	1
2,3,4,7,8-PeCDF	0.0025	J B	0.0048	0.00031	ug/Kg	☼	09/13/18 13:38	09/20/18 11:24	1
2,3,7,8-TCDD	0.0011		0.00096	0.000046	ug/Kg	☼	09/13/18 13:38	09/20/18 11:24	1
OCDD	6.2	E B	0.0096	0.0023	ug/Kg	☼	09/13/18 13:38	09/20/18 11:24	1
OCDF	0.13	B	0.0096	0.00012	ug/Kg	☼	09/13/18 13:38	09/20/18 11:24	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	49		23 - 140	09/13/18 13:38	09/20/18 11:24	1
13C-1,2,3,4,6,7,8-HpCDF	38		28 - 143	09/13/18 13:38	09/20/18 11:24	1
13C-1,2,3,4,7,8,9-HpCDF	32		26 - 138	09/13/18 13:38	09/20/18 11:24	1
13C-1,2,3,4,7,8-HxCDD	55		32 - 141	09/13/18 13:38	09/20/18 11:24	1
13C-1,2,3,4,7,8-HxCDF	57		26 - 152	09/13/18 13:38	09/20/18 11:24	1
13C-1,2,3,6,7,8-HxCDD	53		28 - 130	09/13/18 13:38	09/20/18 11:24	1
13C-1,2,3,6,7,8-HxCDF	59		26 - 123	09/13/18 13:38	09/20/18 11:24	1
13C-1,2,3,7,8,9-HxCDF	54		29 - 147	09/13/18 13:38	09/20/18 11:24	1
13C-1,2,3,7,8-PeCDD	58		25 - 181	09/13/18 13:38	09/20/18 11:24	1
13C-1,2,3,7,8-PeCDF	54		24 - 185	09/13/18 13:38	09/20/18 11:24	1
13C-2,3,4,6,7,8-HxCDF	55		28 - 136	09/13/18 13:38	09/20/18 11:24	1
13C-2,3,4,7,8-PeCDF	55		21 - 178	09/13/18 13:38	09/20/18 11:24	1
13C-2,3,7,8-TCDD	59		25 - 164	09/13/18 13:38	09/20/18 11:24	1
13C-OCDD	42		17 - 157	09/13/18 13:38	09/20/18 11:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	75		35 - 197	09/13/18 13:38	09/20/18 11:24	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	0.0041	B	0.00096	0.00032	ug/Kg	☼	09/13/18 13:38	09/21/18 15:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	66		24 - 169	09/13/18 13:38	09/21/18 15:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	75		35 - 197	09/13/18 13:38	09/21/18 15:10	1



# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S129-4to5.3**

**Lab Sample ID: 580-80167-3**

Date Collected: 09/05/18 14:30

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 54.7

## 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	0.96	B	0.0046	0.0040	ug/Kg	☼	09/13/18 13:38	09/20/18 12:10	1
1,2,3,4,6,7,8-HpCDF	0.095	B	0.0046	0.00094	ug/Kg	☼	09/13/18 13:38	09/20/18 12:10	1
1,2,3,4,7,8,9-HpCDF	0.0060	B	0.0046	0.0013	ug/Kg	☼	09/13/18 13:38	09/20/18 12:10	1
1,2,3,4,7,8-HxCDD	0.0075	B	0.0046	0.00043	ug/Kg	☼	09/13/18 13:38	09/20/18 12:10	1
1,2,3,4,7,8-HxCDF	0.020		0.0046	0.00070	ug/Kg	☼	09/13/18 13:38	09/20/18 12:10	1
1,2,3,6,7,8-HxCDD	0.067	B	0.0046	0.00042	ug/Kg	☼	09/13/18 13:38	09/20/18 12:10	1
1,2,3,6,7,8-HxCDF	0.0089		0.0046	0.00064	ug/Kg	☼	09/13/18 13:38	09/20/18 12:10	1
1,2,3,7,8,9-HxCDD	0.016	B	0.0046	0.00039	ug/Kg	☼	09/13/18 13:38	09/20/18 12:10	1
1,2,3,7,8,9-HxCDF	0.0022	J B	0.0046	0.00051	ug/Kg	☼	09/13/18 13:38	09/20/18 12:10	1
1,2,3,7,8-PeCDD	0.0047		0.0046	0.00025	ug/Kg	☼	09/13/18 13:38	09/20/18 12:10	1
1,2,3,7,8-PeCDF	0.0084	B	0.0046	0.00064	ug/Kg	☼	09/13/18 13:38	09/20/18 12:10	1
2,3,4,6,7,8-HxCDF	0.0047		0.0046	0.00055	ug/Kg	☼	09/13/18 13:38	09/20/18 12:10	1
2,3,4,7,8-PeCDF	0.0043	J B	0.0046	0.00066	ug/Kg	☼	09/13/18 13:38	09/20/18 12:10	1
2,3,7,8-TCDD	0.0014		0.00091	0.000074	ug/Kg	☼	09/13/18 13:38	09/20/18 12:10	1
OCDD	8.6	E B	0.0091	0.0027	ug/Kg	☼	09/13/18 13:38	09/20/18 12:10	1
OCDF	0.16	B	0.0091	0.00011	ug/Kg	☼	09/13/18 13:38	09/20/18 12:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	45		23 - 140	09/13/18 13:38	09/20/18 12:10	1
13C-1,2,3,4,6,7,8-HpCDF	36		28 - 143	09/13/18 13:38	09/20/18 12:10	1
13C-1,2,3,4,7,8,9-HpCDF	34		26 - 138	09/13/18 13:38	09/20/18 12:10	1
13C-1,2,3,4,7,8-HxCDD	51		32 - 141	09/13/18 13:38	09/20/18 12:10	1
13C-1,2,3,4,7,8-HxCDF	54		26 - 152	09/13/18 13:38	09/20/18 12:10	1
13C-1,2,3,6,7,8-HxCDD	51		28 - 130	09/13/18 13:38	09/20/18 12:10	1
13C-1,2,3,6,7,8-HxCDF	55		26 - 123	09/13/18 13:38	09/20/18 12:10	1
13C-1,2,3,7,8,9-HxCDF	51		29 - 147	09/13/18 13:38	09/20/18 12:10	1
13C-1,2,3,7,8-PeCDD	53		25 - 181	09/13/18 13:38	09/20/18 12:10	1
13C-1,2,3,7,8-PeCDF	51		24 - 185	09/13/18 13:38	09/20/18 12:10	1
13C-2,3,4,6,7,8-HxCDF	52		28 - 136	09/13/18 13:38	09/20/18 12:10	1
13C-2,3,4,7,8-PeCDF	53		21 - 178	09/13/18 13:38	09/20/18 12:10	1
13C-2,3,7,8-TCDD	56		25 - 164	09/13/18 13:38	09/20/18 12:10	1
13C-OCDD	40		17 - 157	09/13/18 13:38	09/20/18 12:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	72		35 - 197	09/13/18 13:38	09/20/18 12:10	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	0.0043	B	0.00091	0.00023	ug/Kg	☼	09/13/18 13:38	09/21/18 15:48	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	65		24 - 169	09/13/18 13:38	09/21/18 15:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	70		35 - 197	09/13/18 13:38	09/21/18 15:48	1

TestAmerica Seattle

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S155-0to2.1**

**Lab Sample ID: 580-80167-4**

Date Collected: 09/05/18 16:00

Matrix: Solid

Date Received: 09/07/18 12:35

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	0.055	B	0.0046	0.00030	ug/Kg	☼	09/13/18 13:38	09/20/18 12:56	1
1,2,3,4,6,7,8-HpCDF	0.012	q B	0.0046	0.00020	ug/Kg	☼	09/13/18 13:38	09/20/18 12:56	1
1,2,3,4,7,8,9-HpCDF	0.0015	J B	0.0046	0.00024	ug/Kg	☼	09/13/18 13:38	09/20/18 12:56	1
1,2,3,4,7,8-HxCDD	0.00075	J B	0.0046	0.000049	ug/Kg	☼	09/13/18 13:38	09/20/18 12:56	1
1,2,3,4,7,8-HxCDF	0.0047		0.0046	0.000089	ug/Kg	☼	09/13/18 13:38	09/20/18 12:56	1
1,2,3,6,7,8-HxCDD	0.0024	J B	0.0046	0.000046	ug/Kg	☼	09/13/18 13:38	09/20/18 12:56	1
1,2,3,6,7,8-HxCDF	0.0013	J	0.0046	0.000082	ug/Kg	☼	09/13/18 13:38	09/20/18 12:56	1
1,2,3,7,8,9-HxCDD	0.0017	J B	0.0046	0.000043	ug/Kg	☼	09/13/18 13:38	09/20/18 12:56	1
1,2,3,7,8,9-HxCDF	0.0013	J B	0.0046	0.000063	ug/Kg	☼	09/13/18 13:38	09/20/18 12:56	1
1,2,3,7,8-PeCDD	0.00038	J	0.0046	0.000041	ug/Kg	☼	09/13/18 13:38	09/20/18 12:56	1
1,2,3,7,8-PeCDF	0.0025	J B	0.0046	0.000084	ug/Kg	☼	09/13/18 13:38	09/20/18 12:56	1
2,3,4,6,7,8-HxCDF	0.00042	J	0.0046	0.000067	ug/Kg	☼	09/13/18 13:38	09/20/18 12:56	1
2,3,4,7,8-PeCDF	0.0012	J B	0.0046	0.000093	ug/Kg	☼	09/13/18 13:38	09/20/18 12:56	1
2,3,7,8-TCDD	0.00018	J q	0.00092	0.000029	ug/Kg	☼	09/13/18 13:38	09/20/18 12:56	1
OCDD	0.48	B	0.0092	0.00024	ug/Kg	☼	09/13/18 13:38	09/20/18 12:56	1
OCDF	0.045	B	0.0092	0.000049	ug/Kg	☼	09/13/18 13:38	09/20/18 12:56	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	62		23 - 140	09/13/18 13:38	09/20/18 12:56	1
13C-1,2,3,4,6,7,8-HpCDF	53		28 - 143	09/13/18 13:38	09/20/18 12:56	1
13C-1,2,3,4,7,8,9-HpCDF	55		26 - 138	09/13/18 13:38	09/20/18 12:56	1
13C-1,2,3,4,7,8-HxCDD	61		32 - 141	09/13/18 13:38	09/20/18 12:56	1
13C-1,2,3,4,7,8-HxCDF	64		26 - 152	09/13/18 13:38	09/20/18 12:56	1
13C-1,2,3,6,7,8-HxCDD	63		28 - 130	09/13/18 13:38	09/20/18 12:56	1
13C-1,2,3,6,7,8-HxCDF	68		26 - 123	09/13/18 13:38	09/20/18 12:56	1
13C-1,2,3,7,8,9-HxCDF	63		29 - 147	09/13/18 13:38	09/20/18 12:56	1
13C-1,2,3,7,8-PeCDD	62		25 - 181	09/13/18 13:38	09/20/18 12:56	1
13C-1,2,3,7,8-PeCDF	58		24 - 185	09/13/18 13:38	09/20/18 12:56	1
13C-2,3,4,6,7,8-HxCDF	65		28 - 136	09/13/18 13:38	09/20/18 12:56	1
13C-2,3,4,7,8-PeCDF	58		21 - 178	09/13/18 13:38	09/20/18 12:56	1
13C-2,3,7,8-TCDD	64		25 - 164	09/13/18 13:38	09/20/18 12:56	1
13C-OCDD	55		17 - 157	09/13/18 13:38	09/20/18 12:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	79		35 - 197	09/13/18 13:38	09/20/18 12:56	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	0.0030	B	0.00092	0.00034	ug/Kg	☼	09/13/18 13:38	09/21/18 16:26	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	63		24 - 169	09/13/18 13:38	09/21/18 16:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	72		35 - 197	09/13/18 13:38	09/21/18 16:26	1

TestAmerica Seattle

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S155-2.1to4.2**

**Lab Sample ID: 580-80167-5**

Date Collected: 09/05/18 16:05

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 73.9

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.28	B	0.0034	0.00064	ug/Kg	☼	09/13/18 13:38	09/20/18 13:42	1
1,2,3,4,6,7,8-HpCDF	0.11	B	0.0034	0.00056	ug/Kg	☼	09/13/18 13:38	09/20/18 13:42	1
1,2,3,4,7,8,9-HpCDF	0.024	B	0.0034	0.00081	ug/Kg	☼	09/13/18 13:38	09/20/18 13:42	1
1,2,3,4,7,8-HxCDD	0.0019	J B	0.0034	0.000097	ug/Kg	☼	09/13/18 13:38	09/20/18 13:42	1
1,2,3,4,7,8-HxCDF	0.081		0.0034	0.00096	ug/Kg	☼	09/13/18 13:38	09/20/18 13:42	1
1,2,3,6,7,8-HxCDD	0.011	B	0.0034	0.00011	ug/Kg	☼	09/13/18 13:38	09/20/18 13:42	1
1,2,3,6,7,8-HxCDF	0.019		0.0034	0.00088	ug/Kg	☼	09/13/18 13:38	09/20/18 13:42	1
1,2,3,7,8,9-HxCDD	0.0036	B	0.0034	0.000093	ug/Kg	☼	09/13/18 13:38	09/20/18 13:42	1
1,2,3,7,8,9-HxCDF	0.0015	J B	0.0034	0.00077	ug/Kg	☼	09/13/18 13:38	09/20/18 13:42	1
1,2,3,7,8-PeCDD	0.0010	J	0.0034	0.00011	ug/Kg	☼	09/13/18 13:38	09/20/18 13:42	1
1,2,3,7,8-PeCDF	0.029	B	0.0034	0.00049	ug/Kg	☼	09/13/18 13:38	09/20/18 13:42	1
2,3,4,6,7,8-HxCDF	0.0026	J	0.0034	0.00082	ug/Kg	☼	09/13/18 13:38	09/20/18 13:42	1
2,3,4,7,8-PeCDF	0.010	B	0.0034	0.00053	ug/Kg	☼	09/13/18 13:38	09/20/18 13:42	1
2,3,7,8-TCDD	0.00062	J	0.00067	0.000039	ug/Kg	☼	09/13/18 13:38	09/20/18 13:42	1
OCDD	2.7	B	0.0067	0.00064	ug/Kg	☼	09/13/18 13:38	09/20/18 13:42	1
OCDF	0.44	B	0.0067	0.00014	ug/Kg	☼	09/13/18 13:38	09/20/18 13:42	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	65		23 - 140	09/13/18 13:38	09/20/18 13:42	1
13C-1,2,3,4,6,7,8-HpCDF	53		28 - 143	09/13/18 13:38	09/20/18 13:42	1
13C-1,2,3,4,7,8,9-HpCDF	42		26 - 138	09/13/18 13:38	09/20/18 13:42	1
13C-1,2,3,4,7,8-HxCDD	76		32 - 141	09/13/18 13:38	09/20/18 13:42	1
13C-1,2,3,4,7,8-HxCDF	85		26 - 152	09/13/18 13:38	09/20/18 13:42	1
13C-1,2,3,6,7,8-HxCDD	69		28 - 130	09/13/18 13:38	09/20/18 13:42	1
13C-1,2,3,6,7,8-HxCDF	87		26 - 123	09/13/18 13:38	09/20/18 13:42	1
13C-1,2,3,7,8,9-HxCDF	68		29 - 147	09/13/18 13:38	09/20/18 13:42	1
13C-1,2,3,7,8-PeCDD	78		25 - 181	09/13/18 13:38	09/20/18 13:42	1
13C-1,2,3,7,8-PeCDF	70		24 - 185	09/13/18 13:38	09/20/18 13:42	1
13C-2,3,4,6,7,8-HxCDF	76		28 - 136	09/13/18 13:38	09/20/18 13:42	1
13C-2,3,4,7,8-PeCDF	69		21 - 178	09/13/18 13:38	09/20/18 13:42	1
13C-2,3,7,8-TCDD	64		25 - 164	09/13/18 13:38	09/20/18 13:42	1
13C-OCDD	60		17 - 157	09/13/18 13:38	09/20/18 13:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	71		35 - 197	09/13/18 13:38	09/20/18 13:42	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.015	B	0.00067	0.00039	ug/Kg	☼	09/13/18 13:38	09/21/18 17:04	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	75		24 - 169	09/13/18 13:38	09/21/18 17:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	74		35 - 197	09/13/18 13:38	09/21/18 17:04	1

TestAmerica Seattle

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S155-4.2to5.3**

**Lab Sample ID: 580-80167-6**

**Date Collected: 09/05/18 16:10**

**Matrix: Solid**

**Date Received: 09/07/18 12:35**

**Percent Solids: 73.8**

**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	0.0023	J B	0.0033	0.000070	ug/Kg	☼	09/13/18 13:38	09/20/18 14:28	1
1,2,3,4,6,7,8-HpCDF	0.00042	J B	0.0033	0.000044	ug/Kg	☼	09/13/18 13:38	09/20/18 14:28	1
1,2,3,4,7,8,9-HpCDF	0.00027	J B	0.0033	0.000054	ug/Kg	☼	09/13/18 13:38	09/20/18 14:28	1
1,2,3,4,7,8-HxCDD	0.00013	J B	0.0033	0.000023	ug/Kg	☼	09/13/18 13:38	09/20/18 14:28	1
1,2,3,4,7,8-HxCDF	0.00023	J	0.0033	0.000031	ug/Kg	☼	09/13/18 13:38	09/20/18 14:28	1
1,2,3,6,7,8-HxCDD	0.00017	J B	0.0033	0.000023	ug/Kg	☼	09/13/18 13:38	09/20/18 14:28	1
1,2,3,6,7,8-HxCDF	0.00011	J	0.0033	0.000028	ug/Kg	☼	09/13/18 13:38	09/20/18 14:28	1
1,2,3,7,8,9-HxCDD	0.00021	J q B	0.0033	0.000021	ug/Kg	☼	09/13/18 13:38	09/20/18 14:28	1
1,2,3,7,8,9-HxCDF	0.00085	J B	0.0033	0.000023	ug/Kg	☼	09/13/18 13:38	09/20/18 14:28	1
1,2,3,7,8-PeCDD	0.000060	J	0.0033	0.000022	ug/Kg	☼	09/13/18 13:38	09/20/18 14:28	1
1,2,3,7,8-PeCDF	0.00029	J B	0.0033	0.000022	ug/Kg	☼	09/13/18 13:38	09/20/18 14:28	1
2,3,4,6,7,8-HxCDF	ND		0.0033	0.000023	ug/Kg	☼	09/13/18 13:38	09/20/18 14:28	1
2,3,4,7,8-PeCDF	0.000087	J B	0.0033	0.000024	ug/Kg	☼	09/13/18 13:38	09/20/18 14:28	1
2,3,7,8-TCDD	ND		0.00066	0.000016	ug/Kg	☼	09/13/18 13:38	09/20/18 14:28	1
2,3,7,8-TCDF	0.00016	J B	0.00066	0.000015	ug/Kg	☼	09/13/18 13:38	09/20/18 14:28	1
OCDD	0.019	B	0.0066	0.000082	ug/Kg	☼	09/13/18 13:38	09/20/18 14:28	1
OCDF	0.0019	J B	0.0066	0.000050	ug/Kg	☼	09/13/18 13:38	09/20/18 14:28	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	61		23 - 140	09/13/18 13:38	09/20/18 14:28	1
13C-1,2,3,4,6,7,8-HpCDF	51		28 - 143	09/13/18 13:38	09/20/18 14:28	1
13C-1,2,3,4,7,8,9-HpCDF	55		26 - 138	09/13/18 13:38	09/20/18 14:28	1
13C-1,2,3,4,7,8-HxCDD	66		32 - 141	09/13/18 13:38	09/20/18 14:28	1
13C-1,2,3,4,7,8-HxCDF	70		26 - 152	09/13/18 13:38	09/20/18 14:28	1
13C-1,2,3,6,7,8-HxCDD	67		28 - 130	09/13/18 13:38	09/20/18 14:28	1
13C-1,2,3,6,7,8-HxCDF	74		26 - 123	09/13/18 13:38	09/20/18 14:28	1
13C-1,2,3,7,8,9-HxCDF	64		29 - 147	09/13/18 13:38	09/20/18 14:28	1
13C-1,2,3,7,8-PeCDD	63		25 - 181	09/13/18 13:38	09/20/18 14:28	1
13C-1,2,3,7,8-PeCDF	59		24 - 185	09/13/18 13:38	09/20/18 14:28	1
13C-2,3,4,6,7,8-HxCDF	69		28 - 136	09/13/18 13:38	09/20/18 14:28	1
13C-2,3,4,7,8-PeCDF	59		21 - 178	09/13/18 13:38	09/20/18 14:28	1
13C-2,3,7,8-TCDD	66		25 - 164	09/13/18 13:38	09/20/18 14:28	1
13C-2,3,7,8-TCDF	58		24 - 169	09/13/18 13:38	09/20/18 14:28	1
13C-OCDD	52		17 - 157	09/13/18 13:38	09/20/18 14:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	74		35 - 197	09/13/18 13:38	09/20/18 14:28	1

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S121-0to1.8**

**Lab Sample ID: 580-80167-7**

Date Collected: 09/05/18 17:25

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 80.4

**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	0.041	B	0.0031	0.00018	ug/Kg	☼	09/13/18 13:38	09/20/18 15:14	1
1,2,3,4,6,7,8-HpCDF	0.0042	B	0.0031	0.00016	ug/Kg	☼	09/13/18 13:38	09/20/18 15:14	1
1,2,3,4,7,8,9-HpCDF	0.00036	J B	0.0031	0.00018	ug/Kg	☼	09/13/18 13:38	09/20/18 15:14	1
1,2,3,4,7,8-HxCDD	0.00039	J B	0.0031	0.000040	ug/Kg	☼	09/13/18 13:38	09/20/18 15:14	1
1,2,3,4,7,8-HxCDF	0.00059	J	0.0031	0.000056	ug/Kg	☼	09/13/18 13:38	09/20/18 15:14	1
1,2,3,6,7,8-HxCDD	0.0024	J B	0.0031	0.000041	ug/Kg	☼	09/13/18 13:38	09/20/18 15:14	1
1,2,3,6,7,8-HxCDF	0.00031	J	0.0031	0.000054	ug/Kg	☼	09/13/18 13:38	09/20/18 15:14	1
1,2,3,7,8,9-HxCDD	0.0010	J B	0.0031	0.000037	ug/Kg	☼	09/13/18 13:38	09/20/18 15:14	1
1,2,3,7,8,9-HxCDF	0.0011	J B	0.0031	0.000038	ug/Kg	☼	09/13/18 13:38	09/20/18 15:14	1
1,2,3,7,8-PeCDD	0.00023	J	0.0031	0.000032	ug/Kg	☼	09/13/18 13:38	09/20/18 15:14	1
1,2,3,7,8-PeCDF	0.00040	J B	0.0031	0.000029	ug/Kg	☼	09/13/18 13:38	09/20/18 15:14	1
2,3,4,6,7,8-HxCDF	0.00040	J	0.0031	0.000040	ug/Kg	☼	09/13/18 13:38	09/20/18 15:14	1
2,3,4,7,8-PeCDF	0.00019	J B	0.0031	0.000031	ug/Kg	☼	09/13/18 13:38	09/20/18 15:14	1
2,3,7,8-TCDD	ND		0.00062	0.000051	ug/Kg	☼	09/13/18 13:38	09/20/18 15:14	1
2,3,7,8-TCDF	0.00035	J B	0.00062	0.000014	ug/Kg	☼	09/13/18 13:38	09/20/18 15:14	1
OCDD	0.41	B	0.0062	0.00021	ug/Kg	☼	09/13/18 13:38	09/20/18 15:14	1
OCDF	0.010	B	0.0062	0.000084	ug/Kg	☼	09/13/18 13:38	09/20/18 15:14	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	43		23 - 140	09/13/18 13:38	09/20/18 15:14	1
13C-1,2,3,4,6,7,8-HpCDF	36		28 - 143	09/13/18 13:38	09/20/18 15:14	1
13C-1,2,3,4,7,8,9-HpCDF	42		26 - 138	09/13/18 13:38	09/20/18 15:14	1
13C-1,2,3,4,7,8-HxCDD	50		32 - 141	09/13/18 13:38	09/20/18 15:14	1
13C-1,2,3,4,7,8-HxCDF	52		26 - 152	09/13/18 13:38	09/20/18 15:14	1
13C-1,2,3,6,7,8-HxCDD	50		28 - 130	09/13/18 13:38	09/20/18 15:14	1
13C-1,2,3,6,7,8-HxCDF	53		26 - 123	09/13/18 13:38	09/20/18 15:14	1
13C-1,2,3,7,8,9-HxCDF	53		29 - 147	09/13/18 13:38	09/20/18 15:14	1
13C-1,2,3,7,8-PeCDD	52		25 - 181	09/13/18 13:38	09/20/18 15:14	1
13C-1,2,3,7,8-PeCDF	50		24 - 185	09/13/18 13:38	09/20/18 15:14	1
13C-2,3,4,6,7,8-HxCDF	54		28 - 136	09/13/18 13:38	09/20/18 15:14	1
13C-2,3,4,7,8-PeCDF	52		21 - 178	09/13/18 13:38	09/20/18 15:14	1
13C-2,3,7,8-TCDD	58		25 - 164	09/13/18 13:38	09/20/18 15:14	1
13C-2,3,7,8-TCDF	54		24 - 169	09/13/18 13:38	09/20/18 15:14	1
13C-OCDD	33		17 - 157	09/13/18 13:38	09/20/18 15:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	75		35 - 197	09/13/18 13:38	09/20/18 15:14	1

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S121-1.8to3.4**

**Lab Sample ID: 580-80167-8**

Date Collected: 09/05/18 17:30

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 77.5

## 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	0.25	B	0.0032	0.00097	ug/Kg	☼	09/13/18 13:38	09/20/18 16:00	1
1,2,3,4,6,7,8-HpCDF	0.028	B	0.0032	0.00029	ug/Kg	☼	09/13/18 13:38	09/20/18 16:00	1
1,2,3,4,7,8,9-HpCDF	0.0015	J B	0.0032	0.00044	ug/Kg	☼	09/13/18 13:38	09/20/18 16:00	1
1,2,3,4,7,8-HxCDD	0.0013	J B	0.0032	0.00010	ug/Kg	☼	09/13/18 13:38	09/20/18 16:00	1
1,2,3,4,7,8-HxCDF	0.0033		0.0032	0.00016	ug/Kg	☼	09/13/18 13:38	09/20/18 16:00	1
1,2,3,6,7,8-HxCDD	0.0097	B	0.0032	0.00010	ug/Kg	☼	09/13/18 13:38	09/20/18 16:00	1
1,2,3,6,7,8-HxCDF	0.0012	J	0.0032	0.00015	ug/Kg	☼	09/13/18 13:38	09/20/18 16:00	1
1,2,3,7,8,9-HxCDD	0.0031	J B	0.0032	0.000092	ug/Kg	☼	09/13/18 13:38	09/20/18 16:00	1
1,2,3,7,8,9-HxCDF	0.0014	J B	0.0032	0.00011	ug/Kg	☼	09/13/18 13:38	09/20/18 16:00	1
1,2,3,7,8-PeCDD	0.00083	J	0.0032	0.000096	ug/Kg	☼	09/13/18 13:38	09/20/18 16:00	1
1,2,3,7,8-PeCDF	0.0029	J B	0.0032	0.000087	ug/Kg	☼	09/13/18 13:38	09/20/18 16:00	1
2,3,4,6,7,8-HxCDF	ND		0.0032	0.00011	ug/Kg	☼	09/13/18 13:38	09/20/18 16:00	1
2,3,4,7,8-PeCDF	0.0015	J B	0.0032	0.000093	ug/Kg	☼	09/13/18 13:38	09/20/18 16:00	1
2,3,7,8-TCDD	0.00023	J	0.00064	0.000053	ug/Kg	☼	09/13/18 13:38	09/20/18 16:00	1
OCDD	3.1	E B	0.0064	0.0011	ug/Kg	☼	09/13/18 13:38	09/20/18 16:00	1
OCDF	0.14	B	0.0064	0.000077	ug/Kg	☼	09/13/18 13:38	09/20/18 16:00	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	56		23 - 140	09/13/18 13:38	09/20/18 16:00	1
13C-1,2,3,4,6,7,8-HpCDF	48		28 - 143	09/13/18 13:38	09/20/18 16:00	1
13C-1,2,3,4,7,8,9-HpCDF	44		26 - 138	09/13/18 13:38	09/20/18 16:00	1
13C-1,2,3,4,7,8-HxCDD	54		32 - 141	09/13/18 13:38	09/20/18 16:00	1
13C-1,2,3,4,7,8-HxCDF	54		26 - 152	09/13/18 13:38	09/20/18 16:00	1
13C-1,2,3,6,7,8-HxCDD	55		28 - 130	09/13/18 13:38	09/20/18 16:00	1
13C-1,2,3,6,7,8-HxCDF	51		26 - 123	09/13/18 13:38	09/20/18 16:00	1
13C-1,2,3,7,8,9-HxCDF	56		29 - 147	09/13/18 13:38	09/20/18 16:00	1
13C-1,2,3,7,8-PeCDD	54		25 - 181	09/13/18 13:38	09/20/18 16:00	1
13C-1,2,3,7,8-PeCDF	52		24 - 185	09/13/18 13:38	09/20/18 16:00	1
13C-2,3,4,6,7,8-HxCDF	56		28 - 136	09/13/18 13:38	09/20/18 16:00	1
13C-2,3,4,7,8-PeCDF	53		21 - 178	09/13/18 13:38	09/20/18 16:00	1
13C-2,3,7,8-TCDD	57		25 - 164	09/13/18 13:38	09/20/18 16:00	1
13C-OCDD	51		17 - 157	09/13/18 13:38	09/20/18 16:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	71		35 - 197	09/13/18 13:38	09/20/18 16:00	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0017	B	0.00064	0.00016	ug/Kg	☼	09/13/18 13:38	09/21/18 17:42	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	58		24 - 169	09/13/18 13:38	09/21/18 17:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	71		35 - 197	09/13/18 13:38	09/21/18 17:42	1

TestAmerica Seattle

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S255-0to2.1**

**Lab Sample ID: 580-80167-9**

Date Collected: 09/05/18 19:45

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 66.2

**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	0.023	B	0.0038	0.00012	ug/Kg	☼	09/13/18 13:38	09/20/18 20:50	1
1,2,3,4,6,7,8-HpCDF	0.0049	B	0.0038	0.000090	ug/Kg	☼	09/13/18 13:38	09/20/18 20:50	1
1,2,3,4,7,8,9-HpCDF	0.00056	J B	0.0038	0.00010	ug/Kg	☼	09/13/18 13:38	09/20/18 20:50	1
1,2,3,4,7,8-HxCDD	0.00041	J B	0.0038	0.000032	ug/Kg	☼	09/13/18 13:38	09/20/18 20:50	1
1,2,3,4,7,8-HxCDF	0.00054	J	0.0038	0.000053	ug/Kg	☼	09/13/18 13:38	09/20/18 20:50	1
1,2,3,6,7,8-HxCDD	0.00095	J B	0.0038	0.000031	ug/Kg	☼	09/13/18 13:38	09/20/18 20:50	1
1,2,3,6,7,8-HxCDF	0.00030	J	0.0038	0.000048	ug/Kg	☼	09/13/18 13:38	09/20/18 20:50	1
1,2,3,7,8,9-HxCDD	0.00084	J B	0.0038	0.000029	ug/Kg	☼	09/13/18 13:38	09/20/18 20:50	1
1,2,3,7,8,9-HxCDF	0.0010	J B	0.0038	0.000037	ug/Kg	☼	09/13/18 13:38	09/20/18 20:50	1
1,2,3,7,8-PeCDD	0.00021	J	0.0038	0.000035	ug/Kg	☼	09/13/18 13:38	09/20/18 20:50	1
1,2,3,7,8-PeCDF	0.00036	J B	0.0038	0.000038	ug/Kg	☼	09/13/18 13:38	09/20/18 20:50	1
2,3,4,6,7,8-HxCDF	0.00018	J	0.0038	0.000040	ug/Kg	☼	09/13/18 13:38	09/20/18 20:50	1
2,3,4,7,8-PeCDF	0.00023	J B	0.0038	0.000042	ug/Kg	☼	09/13/18 13:38	09/20/18 20:50	1
2,3,7,8-TCDD	0.000061	J q	0.00075	0.000025	ug/Kg	☼	09/13/18 13:38	09/20/18 20:50	1
2,3,7,8-TCDF	0.00048	J B	0.00075	0.000052	ug/Kg	☼	09/13/18 13:38	09/20/18 20:50	1
OCDD	0.20	B	0.0075	0.00012	ug/Kg	☼	09/13/18 13:38	09/20/18 20:50	1
OCDF	0.018	B	0.0075	0.000035	ug/Kg	☼	09/13/18 13:38	09/20/18 20:50	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	60		23 - 140	09/13/18 13:38	09/20/18 20:50	1
13C-1,2,3,4,6,7,8-HpCDF	50		28 - 143	09/13/18 13:38	09/20/18 20:50	1
13C-1,2,3,4,7,8,9-HpCDF	55		26 - 138	09/13/18 13:38	09/20/18 20:50	1
13C-1,2,3,4,7,8-HxCDD	60		32 - 141	09/13/18 13:38	09/20/18 20:50	1
13C-1,2,3,4,7,8-HxCDF	62		26 - 152	09/13/18 13:38	09/20/18 20:50	1
13C-1,2,3,6,7,8-HxCDD	63		28 - 130	09/13/18 13:38	09/20/18 20:50	1
13C-1,2,3,6,7,8-HxCDF	65		26 - 123	09/13/18 13:38	09/20/18 20:50	1
13C-1,2,3,7,8,9-HxCDF	62		29 - 147	09/13/18 13:38	09/20/18 20:50	1
13C-1,2,3,7,8-PeCDD	60		25 - 181	09/13/18 13:38	09/20/18 20:50	1
13C-1,2,3,7,8-PeCDF	58		24 - 185	09/13/18 13:38	09/20/18 20:50	1
13C-2,3,4,6,7,8-HxCDF	63		28 - 136	09/13/18 13:38	09/20/18 20:50	1
13C-2,3,4,7,8-PeCDF	58		21 - 178	09/13/18 13:38	09/20/18 20:50	1
13C-2,3,7,8-TCDD	64		25 - 164	09/13/18 13:38	09/20/18 20:50	1
13C-2,3,7,8-TCDF	59		24 - 169	09/13/18 13:38	09/20/18 20:50	1
13C-OCDD	49		17 - 157	09/13/18 13:38	09/20/18 20:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	74		35 - 197	09/13/18 13:38	09/20/18 20:50	1

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S255-0to2.1D**

**Lab Sample ID: 580-80167-10**

Date Collected: 09/05/18 19:45

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 65.6

**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	0.022	B	0.0038	0.00014	ug/Kg	☼	09/13/18 13:38	09/20/18 21:36	1
1,2,3,4,6,7,8-HpCDF	0.0044	B	0.0038	0.000083	ug/Kg	☼	09/13/18 13:38	09/20/18 21:36	1
1,2,3,4,7,8,9-HpCDF	0.00049	J B	0.0038	0.00010	ug/Kg	☼	09/13/18 13:38	09/20/18 21:36	1
1,2,3,4,7,8-HxCDD	0.00039	J B	0.0038	0.000030	ug/Kg	☼	09/13/18 13:38	09/20/18 21:36	1
1,2,3,4,7,8-HxCDF	0.00053	J	0.0038	0.000042	ug/Kg	☼	09/13/18 13:38	09/20/18 21:36	1
1,2,3,6,7,8-HxCDD	0.0012	J B	0.0038	0.000030	ug/Kg	☼	09/13/18 13:38	09/20/18 21:36	1
1,2,3,6,7,8-HxCDF	0.00034	J	0.0038	0.000038	ug/Kg	☼	09/13/18 13:38	09/20/18 21:36	1
1,2,3,7,8,9-HxCDD	0.00079	J B	0.0038	0.000028	ug/Kg	☼	09/13/18 13:38	09/20/18 21:36	1
1,2,3,7,8,9-HxCDF	0.00097	J B	0.0038	0.000030	ug/Kg	☼	09/13/18 13:38	09/20/18 21:36	1
1,2,3,7,8-PeCDD	0.00017	J q	0.0038	0.000033	ug/Kg	☼	09/13/18 13:38	09/20/18 21:36	1
1,2,3,7,8-PeCDF	0.00037	J B	0.0038	0.000033	ug/Kg	☼	09/13/18 13:38	09/20/18 21:36	1
2,3,4,6,7,8-HxCDF	0.00019	J	0.0038	0.000032	ug/Kg	☼	09/13/18 13:38	09/20/18 21:36	1
2,3,4,7,8-PeCDF	0.00019	J B q	0.0038	0.000036	ug/Kg	☼	09/13/18 13:38	09/20/18 21:36	1
2,3,7,8-TCDD	0.000079	J q	0.00075	0.000023	ug/Kg	☼	09/13/18 13:38	09/20/18 21:36	1
2,3,7,8-TCDF	0.00048	J B	0.00075	0.000056	ug/Kg	☼	09/13/18 13:38	09/20/18 21:36	1
OCDD	0.20	B	0.0075	0.00013	ug/Kg	☼	09/13/18 13:38	09/20/18 21:36	1
OCDF	0.017	B	0.0075	0.000038	ug/Kg	☼	09/13/18 13:38	09/20/18 21:36	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	59		23 - 140	09/13/18 13:38	09/20/18 21:36	1
13C-1,2,3,4,6,7,8-HpCDF	50		28 - 143	09/13/18 13:38	09/20/18 21:36	1
13C-1,2,3,4,7,8,9-HpCDF	53		26 - 138	09/13/18 13:38	09/20/18 21:36	1
13C-1,2,3,4,7,8-HxCDD	58		32 - 141	09/13/18 13:38	09/20/18 21:36	1
13C-1,2,3,4,7,8-HxCDF	61		26 - 152	09/13/18 13:38	09/20/18 21:36	1
13C-1,2,3,6,7,8-HxCDD	59		28 - 130	09/13/18 13:38	09/20/18 21:36	1
13C-1,2,3,6,7,8-HxCDF	63		26 - 123	09/13/18 13:38	09/20/18 21:36	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147	09/13/18 13:38	09/20/18 21:36	1
13C-1,2,3,7,8-PeCDD	59		25 - 181	09/13/18 13:38	09/20/18 21:36	1
13C-1,2,3,7,8-PeCDF	56		24 - 185	09/13/18 13:38	09/20/18 21:36	1
13C-2,3,4,6,7,8-HxCDF	62		28 - 136	09/13/18 13:38	09/20/18 21:36	1
13C-2,3,4,7,8-PeCDF	57		21 - 178	09/13/18 13:38	09/20/18 21:36	1
13C-2,3,7,8-TCDD	61		25 - 164	09/13/18 13:38	09/20/18 21:36	1
13C-2,3,7,8-TCDF	56		24 - 169	09/13/18 13:38	09/20/18 21:36	1
13C-OCDD	51		17 - 157	09/13/18 13:38	09/20/18 21:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	76		35 - 197	09/13/18 13:38	09/20/18 21:36	1



# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S255-2.1to4.3**

**Lab Sample ID: 580-80167-11**

Date Collected: 09/05/18 19:50

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 63.7

## 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	0.24	B	0.0038	0.00087	ug/Kg	☼	09/13/18 13:38	09/20/18 22:22	1
1,2,3,4,6,7,8-HpCDF	0.050	B	0.0038	0.00054	ug/Kg	☼	09/13/18 13:38	09/20/18 22:22	1
1,2,3,4,7,8,9-HpCDF	0.0032	J B	0.0038	0.00077	ug/Kg	☼	09/13/18 13:38	09/20/18 22:22	1
1,2,3,4,7,8-HxCDD	0.0013	J B	0.0038	0.000086	ug/Kg	☼	09/13/18 13:38	09/20/18 22:22	1
1,2,3,4,7,8-HxCDF	0.0037	J	0.0038	0.00021	ug/Kg	☼	09/13/18 13:38	09/20/18 22:22	1
1,2,3,6,7,8-HxCDD	0.0062	B	0.0038	0.000083	ug/Kg	☼	09/13/18 13:38	09/20/18 22:22	1
1,2,3,6,7,8-HxCDF	0.0013	J	0.0038	0.00018	ug/Kg	☼	09/13/18 13:38	09/20/18 22:22	1
1,2,3,7,8,9-HxCDD	0.0032	J B	0.0038	0.000078	ug/Kg	☼	09/13/18 13:38	09/20/18 22:22	1
1,2,3,7,8,9-HxCDF	0.00085	J B	0.0038	0.00014	ug/Kg	☼	09/13/18 13:38	09/20/18 22:22	1
1,2,3,7,8-PeCDD	0.00068	J	0.0038	0.000083	ug/Kg	☼	09/13/18 13:38	09/20/18 22:22	1
1,2,3,7,8-PeCDF	0.00043	J B	0.0038	0.00018	ug/Kg	☼	09/13/18 13:38	09/20/18 22:22	1
2,3,4,6,7,8-HxCDF	0.00061	J	0.0038	0.00016	ug/Kg	☼	09/13/18 13:38	09/20/18 22:22	1
2,3,4,7,8-PeCDF	0.00065	J B	0.0038	0.00019	ug/Kg	☼	09/13/18 13:38	09/20/18 22:22	1
2,3,7,8-TCDD	0.00016	J q	0.00077	0.000028	ug/Kg	☼	09/13/18 13:38	09/20/18 22:22	1
OCDD	2.6	B	0.0077	0.0010	ug/Kg	☼	09/13/18 13:38	09/20/18 22:22	1
OCDF	0.38	B	0.0077	0.00011	ug/Kg	☼	09/13/18 13:38	09/20/18 22:22	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	76		23 - 140	09/13/18 13:38	09/20/18 22:22	1
13C-1,2,3,4,6,7,8-HpCDF	58		28 - 143	09/13/18 13:38	09/20/18 22:22	1
13C-1,2,3,4,7,8,9-HpCDF	56		26 - 138	09/13/18 13:38	09/20/18 22:22	1
13C-1,2,3,4,7,8-HxCDD	77		32 - 141	09/13/18 13:38	09/20/18 22:22	1
13C-1,2,3,4,7,8-HxCDF	79		26 - 152	09/13/18 13:38	09/20/18 22:22	1
13C-1,2,3,6,7,8-HxCDD	77		28 - 130	09/13/18 13:38	09/20/18 22:22	1
13C-1,2,3,6,7,8-HxCDF	83		26 - 123	09/13/18 13:38	09/20/18 22:22	1
13C-1,2,3,7,8,9-HxCDF	77		29 - 147	09/13/18 13:38	09/20/18 22:22	1
13C-1,2,3,7,8-PeCDD	76		25 - 181	09/13/18 13:38	09/20/18 22:22	1
13C-1,2,3,7,8-PeCDF	71		24 - 185	09/13/18 13:38	09/20/18 22:22	1
13C-2,3,4,6,7,8-HxCDF	79		28 - 136	09/13/18 13:38	09/20/18 22:22	1
13C-2,3,4,7,8-PeCDF	71		21 - 178	09/13/18 13:38	09/20/18 22:22	1
13C-2,3,7,8-TCDD	79		25 - 164	09/13/18 13:38	09/20/18 22:22	1
13C-OCDD	67		17 - 157	09/13/18 13:38	09/20/18 22:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	74		35 - 197	09/13/18 13:38	09/20/18 22:22	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.00051	J B	0.00077	0.00012	ug/Kg	☼	09/13/18 13:38	09/21/18 18:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	77		24 - 169	09/13/18 13:38	09/21/18 18:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	67		35 - 197	09/13/18 13:38	09/21/18 18:20	1

TestAmerica Seattle

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S112-0to2**

**Lab Sample ID: 580-80167-12**

Date Collected: 09/05/18 21:00

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 44.3

**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	0.87	B	0.0055	0.0034	ug/Kg	☼	09/13/18 13:38	09/20/18 23:08	1
1,2,3,4,6,7,8-HpCDF	0.20	B	0.0055	0.0012	ug/Kg	☼	09/13/18 13:38	09/20/18 23:08	1
1,2,3,4,7,8,9-HpCDF	0.0099	B	0.0055	0.0015	ug/Kg	☼	09/13/18 13:38	09/20/18 23:08	1
1,2,3,4,7,8-HxCDD	0.0052	J B	0.0055	0.00038	ug/Kg	☼	09/13/18 13:38	09/20/18 23:08	1
1,2,3,4,7,8-HxCDF	0.065		0.0055	0.00060	ug/Kg	☼	09/13/18 13:38	09/20/18 23:08	1
1,2,3,6,7,8-HxCDD	0.048	B	0.0055	0.00036	ug/Kg	☼	09/13/18 13:38	09/20/18 23:08	1
1,2,3,6,7,8-HxCDF	0.022		0.0055	0.00057	ug/Kg	☼	09/13/18 13:38	09/20/18 23:08	1
1,2,3,7,8,9-HxCDD	0.013	B	0.0055	0.00034	ug/Kg	☼	09/13/18 13:38	09/20/18 23:08	1
1,2,3,7,8,9-HxCDF	0.0033	J B	0.0055	0.00045	ug/Kg	☼	09/13/18 13:38	09/20/18 23:08	1
1,2,3,7,8-PeCDD	0.0028	J	0.0055	0.00015	ug/Kg	☼	09/13/18 13:38	09/20/18 23:08	1
1,2,3,7,8-PeCDF	0.13	B	0.0055	0.0011	ug/Kg	☼	09/13/18 13:38	09/20/18 23:08	1
2,3,4,6,7,8-HxCDF	0.0069		0.0055	0.00046	ug/Kg	☼	09/13/18 13:38	09/20/18 23:08	1
2,3,4,7,8-PeCDF	0.094	B	0.0055	0.0013	ug/Kg	☼	09/13/18 13:38	09/20/18 23:08	1
2,3,7,8-TCDD	0.00072	J	0.0011	0.000051	ug/Kg	☼	09/13/18 13:38	09/20/18 23:08	1
OCDD	7.5	E B	0.011	0.0032	ug/Kg	☼	09/13/18 13:38	09/20/18 23:08	1
OCDF	0.32	B	0.011	0.00012	ug/Kg	☼	09/13/18 13:38	09/20/18 23:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	62		23 - 140	09/13/18 13:38	09/20/18 23:08	1
13C-1,2,3,4,6,7,8-HpCDF	49		28 - 143	09/13/18 13:38	09/20/18 23:08	1
13C-1,2,3,4,7,8,9-HpCDF	50		26 - 138	09/13/18 13:38	09/20/18 23:08	1
13C-1,2,3,4,7,8-HxCDD	59		32 - 141	09/13/18 13:38	09/20/18 23:08	1
13C-1,2,3,4,7,8-HxCDF	62		26 - 152	09/13/18 13:38	09/20/18 23:08	1
13C-1,2,3,6,7,8-HxCDD	62		28 - 130	09/13/18 13:38	09/20/18 23:08	1
13C-1,2,3,6,7,8-HxCDF	67		26 - 123	09/13/18 13:38	09/20/18 23:08	1
13C-1,2,3,7,8,9-HxCDF	65		29 - 147	09/13/18 13:38	09/20/18 23:08	1
13C-1,2,3,7,8-PeCDD	68		25 - 181	09/13/18 13:38	09/20/18 23:08	1
13C-1,2,3,7,8-PeCDF	64		24 - 185	09/13/18 13:38	09/20/18 23:08	1
13C-2,3,4,6,7,8-HxCDF	65		28 - 136	09/13/18 13:38	09/20/18 23:08	1
13C-2,3,4,7,8-PeCDF	60		21 - 178	09/13/18 13:38	09/20/18 23:08	1
13C-2,3,7,8-TCDD	67		25 - 164	09/13/18 13:38	09/20/18 23:08	1
13C-OCDD	56		17 - 157	09/13/18 13:38	09/20/18 23:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	76		35 - 197	09/13/18 13:38	09/20/18 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	0.25	B	0.0011	0.0011	ug/Kg	☼	09/13/18 13:38	09/21/18 18:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	69		24 - 169	09/13/18 13:38	09/21/18 18:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	72		35 - 197	09/13/18 13:38	09/21/18 18:57	1

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S112-2to4**

**Lab Sample ID: 580-80167-13**

Date Collected: 09/05/18 21:05

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 41.9

**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	1.1	B	0.0059	0.0043	ug/Kg	☼	09/13/18 13:38	09/20/18 23:54	1
1,2,3,4,6,7,8-HpCDF	0.21	B	0.0059	0.0013	ug/Kg	☼	09/13/18 13:38	09/20/18 23:54	1
1,2,3,4,7,8,9-HpCDF	0.013	B	0.0059	0.0018	ug/Kg	☼	09/13/18 13:38	09/20/18 23:54	1
1,2,3,4,7,8-HxCDD	0.012	B	0.0059	0.00035	ug/Kg	☼	09/13/18 13:38	09/20/18 23:54	1
1,2,3,4,7,8-HxCDF	0.060		0.0059	0.0012	ug/Kg	☼	09/13/18 13:38	09/20/18 23:54	1
1,2,3,6,7,8-HxCDD	0.060	B	0.0059	0.00036	ug/Kg	☼	09/13/18 13:38	09/20/18 23:54	1
1,2,3,6,7,8-HxCDF	0.021		0.0059	0.0011	ug/Kg	☼	09/13/18 13:38	09/20/18 23:54	1
1,2,3,7,8,9-HxCDD	0.018	B	0.0059	0.00033	ug/Kg	☼	09/13/18 13:38	09/20/18 23:54	1
1,2,3,7,8,9-HxCDF	0.0029	J B	0.0059	0.00088	ug/Kg	☼	09/13/18 13:38	09/20/18 23:54	1
1,2,3,7,8-PeCDD	0.0038	J	0.0059	0.00015	ug/Kg	☼	09/13/18 13:38	09/20/18 23:54	1
1,2,3,7,8-PeCDF	0.019	B	0.0059	0.00046	ug/Kg	☼	09/13/18 13:38	09/20/18 23:54	1
2,3,4,6,7,8-HxCDF	0.0044	J	0.0059	0.00097	ug/Kg	☼	09/13/18 13:38	09/20/18 23:54	1
2,3,4,7,8-PeCDF	0.0068	B	0.0059	0.00048	ug/Kg	☼	09/13/18 13:38	09/20/18 23:54	1
2,3,7,8-TCDD	0.00082	J	0.0012	0.000060	ug/Kg	☼	09/13/18 13:38	09/20/18 23:54	1
OCDD	9.1	E B	0.012	0.0038	ug/Kg	☼	09/13/18 13:38	09/20/18 23:54	1
OCDF	0.35	B	0.012	0.00013	ug/Kg	☼	09/13/18 13:38	09/20/18 23:54	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	72		23 - 140	09/13/18 13:38	09/20/18 23:54	1
13C-1,2,3,4,6,7,8-HpCDF	58		28 - 143	09/13/18 13:38	09/20/18 23:54	1
13C-1,2,3,4,7,8,9-HpCDF	58		26 - 138	09/13/18 13:38	09/20/18 23:54	1
13C-1,2,3,4,7,8-HxCDD	75		32 - 141	09/13/18 13:38	09/20/18 23:54	1
13C-1,2,3,4,7,8-HxCDF	77		26 - 152	09/13/18 13:38	09/20/18 23:54	1
13C-1,2,3,6,7,8-HxCDD	73		28 - 130	09/13/18 13:38	09/20/18 23:54	1
13C-1,2,3,6,7,8-HxCDF	81		26 - 123	09/13/18 13:38	09/20/18 23:54	1
13C-1,2,3,7,8,9-HxCDF	72		29 - 147	09/13/18 13:38	09/20/18 23:54	1
13C-1,2,3,7,8-PeCDD	72		25 - 181	09/13/18 13:38	09/20/18 23:54	1
13C-1,2,3,7,8-PeCDF	68		24 - 185	09/13/18 13:38	09/20/18 23:54	1
13C-2,3,4,6,7,8-HxCDF	73		28 - 136	09/13/18 13:38	09/20/18 23:54	1
13C-2,3,4,7,8-PeCDF	67		21 - 178	09/13/18 13:38	09/20/18 23:54	1
13C-2,3,7,8-TCDD	70		25 - 164	09/13/18 13:38	09/20/18 23:54	1
13C-OCDD	64		17 - 157	09/13/18 13:38	09/20/18 23:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	76		35 - 197	09/13/18 13:38	09/20/18 23:54	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	0.0052	B	0.0012	0.00035	ug/Kg	☼	09/13/18 13:38	09/21/18 19:35	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	70		24 - 169	09/13/18 13:38	09/21/18 19:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	77		35 - 197	09/13/18 13:38	09/21/18 19:35	1

TestAmerica Seattle

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S112-4to6**

**Lab Sample ID: 580-80167-14**

Date Collected: 09/05/18 21:10

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 46.3

## 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	0.98	B	0.0054	0.0031	ug/Kg	☼	09/13/18 13:38	09/21/18 00:40	1
1,2,3,4,6,7,8-HpCDF	0.42	B	0.0054	0.0015	ug/Kg	☼	09/13/18 13:38	09/21/18 00:40	1
1,2,3,4,7,8,9-HpCDF	0.012	B	0.0054	0.0025	ug/Kg	☼	09/13/18 13:38	09/21/18 00:40	1
1,2,3,4,7,8-HxCDD	0.0055	B	0.0054	0.00032	ug/Kg	☼	09/13/18 13:38	09/21/18 00:40	1
1,2,3,4,7,8-HxCDF	0.041		0.0054	0.0015	ug/Kg	☼	09/13/18 13:38	09/21/18 00:40	1
1,2,3,6,7,8-HxCDD	0.048	B	0.0054	0.00029	ug/Kg	☼	09/13/18 13:38	09/21/18 00:40	1
1,2,3,6,7,8-HxCDF	0.020		0.0054	0.0014	ug/Kg	☼	09/13/18 13:38	09/21/18 00:40	1
1,2,3,7,8,9-HxCDD	0.013	B	0.0054	0.00028	ug/Kg	☼	09/13/18 13:38	09/21/18 00:40	1
1,2,3,7,8,9-HxCDF	0.0030	J B	0.0054	0.0011	ug/Kg	☼	09/13/18 13:38	09/21/18 00:40	1
1,2,3,7,8-PeCDD	0.0027	J	0.0054	0.00014	ug/Kg	☼	09/13/18 13:38	09/21/18 00:40	1
1,2,3,7,8-PeCDF	0.012	B	0.0054	0.00051	ug/Kg	☼	09/13/18 13:38	09/21/18 00:40	1
2,3,4,6,7,8-HxCDF	0.0038	J	0.0054	0.0012	ug/Kg	☼	09/13/18 13:38	09/21/18 00:40	1
2,3,4,7,8-PeCDF	0.0067	B	0.0054	0.00054	ug/Kg	☼	09/13/18 13:38	09/21/18 00:40	1
2,3,7,8-TCDD	0.00089	J	0.0011	0.000053	ug/Kg	☼	09/13/18 13:38	09/21/18 00:40	1
OCDD	8.9	E B	0.011	0.0025	ug/Kg	☼	09/13/18 13:38	09/21/18 00:40	1
OCDF	0.50	B	0.011	0.00015	ug/Kg	☼	09/13/18 13:38	09/21/18 00:40	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	60		23 - 140	09/13/18 13:38	09/21/18 00:40	1
13C-1,2,3,4,6,7,8-HpCDF	49		28 - 143	09/13/18 13:38	09/21/18 00:40	1
13C-1,2,3,4,7,8,9-HpCDF	40		26 - 138	09/13/18 13:38	09/21/18 00:40	1
13C-1,2,3,4,7,8-HxCDD	63		32 - 141	09/13/18 13:38	09/21/18 00:40	1
13C-1,2,3,4,7,8-HxCDF	68		26 - 152	09/13/18 13:38	09/21/18 00:40	1
13C-1,2,3,6,7,8-HxCDD	62		28 - 130	09/13/18 13:38	09/21/18 00:40	1
13C-1,2,3,6,7,8-HxCDF	72		26 - 123	09/13/18 13:38	09/21/18 00:40	1
13C-1,2,3,7,8,9-HxCDF	64		29 - 147	09/13/18 13:38	09/21/18 00:40	1
13C-1,2,3,7,8-PeCDD	70		25 - 181	09/13/18 13:38	09/21/18 00:40	1
13C-1,2,3,7,8-PeCDF	64		24 - 185	09/13/18 13:38	09/21/18 00:40	1
13C-2,3,4,6,7,8-HxCDF	67		28 - 136	09/13/18 13:38	09/21/18 00:40	1
13C-2,3,4,7,8-PeCDF	63		21 - 178	09/13/18 13:38	09/21/18 00:40	1
13C-2,3,7,8-TCDD	66		25 - 164	09/13/18 13:38	09/21/18 00:40	1
13C-OCDD	53		17 - 157	09/13/18 13:38	09/21/18 00:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	76		35 - 197	09/13/18 13:38	09/21/18 00:40	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0075	B	0.0011	0.00027	ug/Kg	☼	09/13/18 13:38	09/21/18 20:13	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	75		24 - 169	09/13/18 13:38	09/21/18 20:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	76		35 - 197	09/13/18 13:38	09/21/18 20:13	1

TestAmerica Seattle

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-RB-SS-180905**

**Lab Sample ID: 580-80167-15**

**Date Collected: 09/05/18 20:00**

**Matrix: Water**

**Date Received: 09/07/18 12:35**

**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	1.9	J B q	48	0.36	pg/L		09/12/18 07:52	09/22/18 01:21	1
1,2,3,4,6,7,8-HpCDF	0.87	J B q	48	0.26	pg/L		09/12/18 07:52	09/22/18 01:21	1
1,2,3,4,7,8,9-HpCDF	2.1	J B q	48	0.34	pg/L		09/12/18 07:52	09/22/18 01:21	1
1,2,3,4,7,8-HxCDD	1.3	J B	48	0.18	pg/L		09/12/18 07:52	09/22/18 01:21	1
1,2,3,4,7,8-HxCDF	0.34	J B q	48	0.23	pg/L		09/12/18 07:52	09/22/18 01:21	1
1,2,3,6,7,8-HxCDD	ND		48	0.17	pg/L		09/12/18 07:52	09/22/18 01:21	1
1,2,3,6,7,8-HxCDF	0.30	J B q	48	0.22	pg/L		09/12/18 07:52	09/22/18 01:21	1
1,2,3,7,8,9-HxCDD	0.42	J B	48	0.16	pg/L		09/12/18 07:52	09/22/18 01:21	1
1,2,3,7,8,9-HxCDF	5.7	J B	48	0.16	pg/L		09/12/18 07:52	09/22/18 01:21	1
1,2,3,7,8-PeCDD	ND		48	0.17	pg/L		09/12/18 07:52	09/22/18 01:21	1
1,2,3,7,8-PeCDF	1.1	J B	48	0.16	pg/L		09/12/18 07:52	09/22/18 01:21	1
2,3,4,6,7,8-HxCDF	ND		48	0.17	pg/L		09/12/18 07:52	09/22/18 01:21	1
2,3,4,7,8-PeCDF	0.58	J B q	48	0.18	pg/L		09/12/18 07:52	09/22/18 01:21	1
2,3,7,8-TCDD	ND		9.5	0.16	pg/L		09/12/18 07:52	09/22/18 01:21	1
2,3,7,8-TCDF	2.0	J B	9.5	0.095	pg/L		09/12/18 07:52	09/22/18 01:21	1
OCDD	40	J B	95	0.53	pg/L		09/12/18 07:52	09/22/18 01:21	1
OCDF	5.1	J B q	95	0.40	pg/L		09/12/18 07:52	09/22/18 01:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	73		23 - 140	09/12/18 07:52	09/22/18 01:21	1
13C-1,2,3,4,6,7,8-HpCDF	65		28 - 143	09/12/18 07:52	09/22/18 01:21	1
13C-1,2,3,4,7,8,9-HpCDF	67		26 - 138	09/12/18 07:52	09/22/18 01:21	1
13C-1,2,3,4,7,8-HxCDD	72		32 - 141	09/12/18 07:52	09/22/18 01:21	1
13C-1,2,3,4,7,8-HxCDF	75		26 - 152	09/12/18 07:52	09/22/18 01:21	1
13C-1,2,3,6,7,8-HxCDD	74		28 - 130	09/12/18 07:52	09/22/18 01:21	1
13C-1,2,3,6,7,8-HxCDF	77		26 - 123	09/12/18 07:52	09/22/18 01:21	1
13C-1,2,3,7,8,9-HxCDF	77		29 - 147	09/12/18 07:52	09/22/18 01:21	1
13C-1,2,3,7,8-PeCDD	71		25 - 181	09/12/18 07:52	09/22/18 01:21	1
13C-1,2,3,7,8-PeCDF	69		24 - 185	09/12/18 07:52	09/22/18 01:21	1
13C-2,3,4,6,7,8-HxCDF	78		28 - 136	09/12/18 07:52	09/22/18 01:21	1
13C-2,3,4,7,8-PeCDF	68		21 - 178	09/12/18 07:52	09/22/18 01:21	1
13C-2,3,7,8-TCDD	79		25 - 164	09/12/18 07:52	09/22/18 01:21	1
13C-2,3,7,8-TCDF	72		24 - 169	09/12/18 07:52	09/22/18 01:21	1
13C-OCDD	61		17 - 157	09/12/18 07:52	09/22/18 01:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	79		35 - 197	09/12/18 07:52	09/22/18 01:21	1

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S113C-0to1.1**

**Lab Sample ID: 580-80167-16**

Date Collected: 09/06/18 14:40

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 50.8

**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	1.5	B	0.097	0.0083	ug/Kg	☼	09/13/18 13:38	09/21/18 23:49	20
1,2,3,4,6,7,8-HpCDF	0.088	J B	0.097	0.0026	ug/Kg	☼	09/13/18 13:38	09/21/18 23:49	20
1,2,3,4,7,8,9-HpCDF	0.019	J B	0.097	0.0032	ug/Kg	☼	09/13/18 13:38	09/21/18 23:49	20
1,2,3,4,7,8-HxCDD	0.0052	J B	0.097	0.0019	ug/Kg	☼	09/13/18 13:38	09/21/18 23:49	20
1,2,3,4,7,8-HxCDF	0.099	J	0.097	0.0015	ug/Kg	☼	09/13/18 13:38	09/21/18 23:49	20
1,2,3,6,7,8-HxCDD	0.031	J B	0.097	0.0019	ug/Kg	☼	09/13/18 13:38	09/21/18 23:49	20
1,2,3,6,7,8-HxCDF	0.024	J	0.097	0.0013	ug/Kg	☼	09/13/18 13:38	09/21/18 23:49	20
1,2,3,7,8,9-HxCDD	0.023	J B	0.097	0.0017	ug/Kg	☼	09/13/18 13:38	09/21/18 23:49	20
1,2,3,7,8,9-HxCDF	0.0044	J B	0.097	0.0011	ug/Kg	☼	09/13/18 13:38	09/21/18 23:49	20
1,2,3,7,8-PeCDD	0.0032	J	0.097	0.00075	ug/Kg	☼	09/13/18 13:38	09/21/18 23:49	20
1,2,3,7,8-PeCDF	0.051	J B	0.097	0.00099	ug/Kg	☼	09/13/18 13:38	09/21/18 23:49	20
2,3,4,6,7,8-HxCDF	0.0051	J	0.097	0.0014	ug/Kg	☼	09/13/18 13:38	09/21/18 23:49	20
2,3,4,7,8-PeCDF	0.022	J B	0.097	0.0010	ug/Kg	☼	09/13/18 13:38	09/21/18 23:49	20
2,3,7,8-TCDD	0.0014	J	0.019	0.00060	ug/Kg	☼	09/13/18 13:38	09/21/18 23:49	20
OCDD	9.1	B	0.19	0.0076	ug/Kg	☼	09/13/18 13:38	09/21/18 23:49	20
OCDF	0.37	B	0.19	0.0047	ug/Kg	☼	09/13/18 13:38	09/21/18 23:49	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	33		23 - 140	09/13/18 13:38	09/21/18 23:49	20
13C-1,2,3,4,6,7,8-HpCDF	29		28 - 143	09/13/18 13:38	09/21/18 23:49	20
13C-1,2,3,4,7,8,9-HpCDF	31		26 - 138	09/13/18 13:38	09/21/18 23:49	20
13C-1,2,3,4,7,8-HxCDD	47		32 - 141	09/13/18 13:38	09/21/18 23:49	20
13C-1,2,3,4,7,8-HxCDF	60		26 - 152	09/13/18 13:38	09/21/18 23:49	20
13C-1,2,3,6,7,8-HxCDD	49		28 - 130	09/13/18 13:38	09/21/18 23:49	20
13C-1,2,3,6,7,8-HxCDF	67		26 - 123	09/13/18 13:38	09/21/18 23:49	20
13C-1,2,3,7,8,9-HxCDF	57		29 - 147	09/13/18 13:38	09/21/18 23:49	20
13C-1,2,3,7,8-PeCDD	59		25 - 181	09/13/18 13:38	09/21/18 23:49	20
13C-1,2,3,7,8-PeCDF	54		24 - 185	09/13/18 13:38	09/21/18 23:49	20
13C-2,3,4,6,7,8-HxCDF	51		28 - 136	09/13/18 13:38	09/21/18 23:49	20
13C-2,3,4,7,8-PeCDF	49		21 - 178	09/13/18 13:38	09/21/18 23:49	20
13C-2,3,7,8-TCDD	65		25 - 164	09/13/18 13:38	09/21/18 23:49	20
13C-OCDD	24		17 - 157	09/13/18 13:38	09/21/18 23:49	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	73		35 - 197	09/13/18 13:38	09/21/18 23:49	20

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.031	B	0.00097	0.00096	ug/Kg	☼	09/13/18 13:38	09/21/18 20:51	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	64		24 - 169	09/13/18 13:38	09/21/18 20:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	74		35 - 197	09/13/18 13:38	09/21/18 20:51	1

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S113C-1.1to3.1**

**Lab Sample ID: 580-80167-17**

Date Collected: 09/06/18 14:45

Matrix: Solid

Date Received: 09/07/18 12:35

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	0.040		0.0031	0.00030	ug/Kg	☼	09/25/18 15:49	09/27/18 15:58	1
1,2,3,4,6,7,8-HpCDF	0.0031		0.0031	0.00011	ug/Kg	☼	09/25/18 15:49	09/27/18 15:58	1
1,2,3,4,7,8,9-HpCDF	0.0012	J B	0.0031	0.00015	ug/Kg	☼	09/25/18 15:49	09/27/18 15:58	1
1,2,3,4,7,8-HxCDD	0.00031	J q	0.0031	0.00026	ug/Kg	☼	09/25/18 15:49	09/27/18 15:58	1
1,2,3,4,7,8-HxCDF	0.0032		0.0031	0.00022	ug/Kg	☼	09/25/18 15:49	09/27/18 15:58	1
1,2,3,6,7,8-HxCDD	0.0010	J	0.0031	0.00026	ug/Kg	☼	09/25/18 15:49	09/27/18 15:58	1
1,2,3,6,7,8-HxCDF	0.0011	J	0.0031	0.00020	ug/Kg	☼	09/25/18 15:49	09/27/18 15:58	1
1,2,3,7,8,9-HxCDD	0.00081	J	0.0031	0.00024	ug/Kg	☼	09/25/18 15:49	09/27/18 15:58	1
1,2,3,7,8,9-HxCDF	0.0014	J B	0.0031	0.00019	ug/Kg	☼	09/25/18 15:49	09/27/18 15:58	1
1,2,3,7,8-PeCDD	ND		0.0031	0.00023	ug/Kg	☼	09/25/18 15:49	09/27/18 15:58	1
1,2,3,7,8-PeCDF	0.0024	J	0.0031	0.00018	ug/Kg	☼	09/25/18 15:49	09/27/18 15:58	1
2,3,4,6,7,8-HxCDF	0.00029	J	0.0031	0.00019	ug/Kg	☼	09/25/18 15:49	09/27/18 15:58	1
2,3,4,7,8-PeCDF	0.00084	J	0.0031	0.00017	ug/Kg	☼	09/25/18 15:49	09/27/18 15:58	1
2,3,7,8-TCDD	ND		0.00062	0.00020	ug/Kg	☼	09/25/18 15:49	09/27/18 15:58	1
OCDD	0.28	B	0.0062	0.00032	ug/Kg	☼	09/25/18 15:49	09/27/18 15:58	1
OCDF	0.012		0.0062	0.00021	ug/Kg	☼	09/25/18 15:49	09/27/18 15:58	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	77		23 - 140	09/25/18 15:49	09/27/18 15:58	1
13C-1,2,3,4,6,7,8-HpCDF	65		28 - 143	09/25/18 15:49	09/27/18 15:58	1
13C-1,2,3,4,7,8,9-HpCDF	78		26 - 138	09/25/18 15:49	09/27/18 15:58	1
13C-1,2,3,4,7,8-HxCDD	73		32 - 141	09/25/18 15:49	09/27/18 15:58	1
13C-1,2,3,4,7,8-HxCDF	76		26 - 152	09/25/18 15:49	09/27/18 15:58	1
13C-1,2,3,6,7,8-HxCDD	62		28 - 130	09/25/18 15:49	09/27/18 15:58	1
13C-1,2,3,6,7,8-HxCDF	76		26 - 123	09/25/18 15:49	09/27/18 15:58	1
13C-1,2,3,7,8,9-HxCDF	76		29 - 147	09/25/18 15:49	09/27/18 15:58	1
13C-1,2,3,7,8-PeCDD	103		25 - 181	09/25/18 15:49	09/27/18 15:58	1
13C-1,2,3,7,8-PeCDF	82		24 - 185	09/25/18 15:49	09/27/18 15:58	1
13C-2,3,4,6,7,8-HxCDF	64		28 - 136	09/25/18 15:49	09/27/18 15:58	1
13C-2,3,4,7,8-PeCDF	79		21 - 178	09/25/18 15:49	09/27/18 15:58	1
13C-2,3,7,8-TCDD	85		25 - 164	09/25/18 15:49	09/27/18 15:58	1
13C-OCDD	71		17 - 157	09/25/18 15:49	09/27/18 15:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	98		35 - 197	09/25/18 15:49	09/27/18 15:58	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	0.0012		0.00062	0.000044	ug/Kg	☼	09/25/18 15:49	09/28/18 06:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	81		24 - 169	09/25/18 15:49	09/28/18 06:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	84		35 - 197	09/25/18 15:49	09/28/18 06:10	1

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S113C-3.1to5.6**

**Lab Sample ID: 580-80167-18**

Date Collected: 09/06/18 14:50

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 79.7

**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	0.0064	B	0.0032	0.00011	ug/Kg	☼	09/13/18 13:38	09/21/18 02:12	1
1,2,3,4,6,7,8-HpCDF	0.00050	J B	0.0032	0.000071	ug/Kg	☼	09/13/18 13:38	09/21/18 02:12	1
1,2,3,4,7,8,9-HpCDF	0.00042	J B	0.0032	0.000075	ug/Kg	☼	09/13/18 13:38	09/21/18 02:12	1
1,2,3,4,7,8-HxCDD	0.00012	J B	0.0032	0.000031	ug/Kg	☼	09/13/18 13:38	09/21/18 02:12	1
1,2,3,4,7,8-HxCDF	0.00020	J	0.0032	0.000056	ug/Kg	☼	09/13/18 13:38	09/21/18 02:12	1
1,2,3,6,7,8-HxCDD	0.00014	J B q	0.0032	0.000031	ug/Kg	☼	09/13/18 13:38	09/21/18 02:12	1
1,2,3,6,7,8-HxCDF	0.000099	J	0.0032	0.000050	ug/Kg	☼	09/13/18 13:38	09/21/18 02:12	1
1,2,3,7,8,9-HxCDD	0.00016	J B	0.0032	0.000028	ug/Kg	☼	09/13/18 13:38	09/21/18 02:12	1
1,2,3,7,8,9-HxCDF	0.0013	J B	0.0032	0.000038	ug/Kg	☼	09/13/18 13:38	09/21/18 02:12	1
1,2,3,7,8-PeCDD	ND		0.0032	0.000054	ug/Kg	☼	09/13/18 13:38	09/21/18 02:12	1
1,2,3,7,8-PeCDF	0.00037	J B q	0.0032	0.000039	ug/Kg	☼	09/13/18 13:38	09/21/18 02:12	1
2,3,4,6,7,8-HxCDF	ND		0.0032	0.000042	ug/Kg	☼	09/13/18 13:38	09/21/18 02:12	1
2,3,4,7,8-PeCDF	0.00014	J B q	0.0032	0.000039	ug/Kg	☼	09/13/18 13:38	09/21/18 02:12	1
2,3,7,8-TCDD	ND		0.00063	0.000044	ug/Kg	☼	09/13/18 13:38	09/21/18 02:12	1
2,3,7,8-TCDF	0.00022	J B	0.00063	0.000019	ug/Kg	☼	09/13/18 13:38	09/21/18 02:12	1
OCDD	0.13	B	0.0063	0.00017	ug/Kg	☼	09/13/18 13:38	09/21/18 02:12	1
OCDF	0.0043	J B	0.0063	0.000064	ug/Kg	☼	09/13/18 13:38	09/21/18 02:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	40		23 - 140	09/13/18 13:38	09/21/18 02:12	1
13C-1,2,3,4,6,7,8-HpCDF	33		28 - 143	09/13/18 13:38	09/21/18 02:12	1
13C-1,2,3,4,7,8,9-HpCDF	40		26 - 138	09/13/18 13:38	09/21/18 02:12	1
13C-1,2,3,4,7,8-HxCDD	52		32 - 141	09/13/18 13:38	09/21/18 02:12	1
13C-1,2,3,4,7,8-HxCDF	53		26 - 152	09/13/18 13:38	09/21/18 02:12	1
13C-1,2,3,6,7,8-HxCDD	52		28 - 130	09/13/18 13:38	09/21/18 02:12	1
13C-1,2,3,6,7,8-HxCDF	57		26 - 123	09/13/18 13:38	09/21/18 02:12	1
13C-1,2,3,7,8,9-HxCDF	55		29 - 147	09/13/18 13:38	09/21/18 02:12	1
13C-1,2,3,7,8-PeCDD	51		25 - 181	09/13/18 13:38	09/21/18 02:12	1
13C-1,2,3,7,8-PeCDF	50		24 - 185	09/13/18 13:38	09/21/18 02:12	1
13C-2,3,4,6,7,8-HxCDF	54		28 - 136	09/13/18 13:38	09/21/18 02:12	1
13C-2,3,4,7,8-PeCDF	52		21 - 178	09/13/18 13:38	09/21/18 02:12	1
13C-2,3,7,8-TCDD	60		25 - 164	09/13/18 13:38	09/21/18 02:12	1
13C-2,3,7,8-TCDF	56		24 - 169	09/13/18 13:38	09/21/18 02:12	1
13C-OCDD	28		17 - 157	09/13/18 13:38	09/21/18 02:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	75		35 - 197	09/13/18 13:38	09/21/18 02:12	1



# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S113C-5.6to6.6**

**Lab Sample ID: 580-80167-19**

Date Collected: 09/06/18 14:55

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 78.7

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.0021	J B	0.0032	0.000030	ug/Kg	☼	09/13/18 13:38	09/21/18 09:36	1
1,2,3,4,6,7,8-HpCDF	0.00037	J B	0.0032	0.000022	ug/Kg	☼	09/13/18 13:38	09/21/18 09:36	1
1,2,3,4,7,8,9-HpCDF	0.00045	J B	0.0032	0.000023	ug/Kg	☼	09/13/18 13:38	09/21/18 09:36	1
1,2,3,4,7,8-HxCDD	0.00019	J B q	0.0032	0.000016	ug/Kg	☼	09/13/18 13:38	09/21/18 09:36	1
1,2,3,4,7,8-HxCDF	0.00020	J	0.0032	0.000025	ug/Kg	☼	09/13/18 13:38	09/21/18 09:36	1
1,2,3,6,7,8-HxCDD	0.00020	J B q	0.0032	0.000016	ug/Kg	☼	09/13/18 13:38	09/21/18 09:36	1
1,2,3,6,7,8-HxCDF	0.00019	J	0.0032	0.000025	ug/Kg	☼	09/13/18 13:38	09/21/18 09:36	1
1,2,3,7,8,9-HxCDD	0.00031	J B	0.0032	0.000014	ug/Kg	☼	09/13/18 13:38	09/21/18 09:36	1
1,2,3,7,8,9-HxCDF	0.0012	J B	0.0032	0.000016	ug/Kg	☼	09/13/18 13:38	09/21/18 09:36	1
1,2,3,7,8-PeCDD	0.00010	J	0.0032	0.000016	ug/Kg	☼	09/13/18 13:38	09/21/18 09:36	1
1,2,3,7,8-PeCDF	0.00036	J B	0.0032	0.000016	ug/Kg	☼	09/13/18 13:38	09/21/18 09:36	1
2,3,4,6,7,8-HxCDF	0.00014	J	0.0032	0.000019	ug/Kg	☼	09/13/18 13:38	09/21/18 09:36	1
2,3,4,7,8-PeCDF	0.000071	J B q	0.0032	0.000016	ug/Kg	☼	09/13/18 13:38	09/21/18 09:36	1
2,3,7,8-TCDD	ND		0.00064	0.0000099	ug/Kg	☼	09/13/18 13:38	09/21/18 09:36	1
2,3,7,8-TCDF	0.00011	J B	0.00064	0.0000058	ug/Kg	☼	09/13/18 13:38	09/21/18 09:36	1
OCDD	0.018	B	0.0064	0.000066	ug/Kg	☼	09/13/18 13:38	09/21/18 09:36	1
OCDF	0.0013	J B	0.0064	0.000024	ug/Kg	☼	09/13/18 13:38	09/21/18 09:36	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	42		23 - 140	09/13/18 13:38	09/21/18 09:36	1
13C-1,2,3,4,6,7,8-HpCDF	34		28 - 143	09/13/18 13:38	09/21/18 09:36	1
13C-1,2,3,4,7,8,9-HpCDF	42		26 - 138	09/13/18 13:38	09/21/18 09:36	1
13C-1,2,3,4,7,8-HxCDD	48		32 - 141	09/13/18 13:38	09/21/18 09:36	1
13C-1,2,3,4,7,8-HxCDF	50		26 - 152	09/13/18 13:38	09/21/18 09:36	1
13C-1,2,3,6,7,8-HxCDD	47		28 - 130	09/13/18 13:38	09/21/18 09:36	1
13C-1,2,3,6,7,8-HxCDF	51		26 - 123	09/13/18 13:38	09/21/18 09:36	1
13C-1,2,3,7,8,9-HxCDF	52		29 - 147	09/13/18 13:38	09/21/18 09:36	1
13C-1,2,3,7,8-PeCDD	48		25 - 181	09/13/18 13:38	09/21/18 09:36	1
13C-1,2,3,7,8-PeCDF	48		24 - 185	09/13/18 13:38	09/21/18 09:36	1
13C-2,3,4,6,7,8-HxCDF	52		28 - 136	09/13/18 13:38	09/21/18 09:36	1
13C-2,3,4,7,8-PeCDF	50		21 - 178	09/13/18 13:38	09/21/18 09:36	1
13C-2,3,7,8-TCDD	58		25 - 164	09/13/18 13:38	09/21/18 09:36	1
13C-2,3,7,8-TCDF	56		24 - 169	09/13/18 13:38	09/21/18 09:36	1
13C-OCDD	28		17 - 157	09/13/18 13:38	09/21/18 09:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	77		35 - 197	09/13/18 13:38	09/21/18 09:36	1

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S260-0to1.3**

**Lab Sample ID: 580-80167-20**

Date Collected: 09/06/18 18:00

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 44.2

## 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	0.15	B	0.0057	0.00092	ug/Kg	☼	09/13/18 13:38	09/21/18 10:22	1
1,2,3,4,6,7,8-HpCDF	0.18	B	0.0057	0.0011	ug/Kg	☼	09/13/18 13:38	09/21/18 10:22	1
1,2,3,4,7,8,9-HpCDF	0.072	B	0.0057	0.0017	ug/Kg	☼	09/13/18 13:38	09/21/18 10:22	1
1,2,3,4,7,8-HxCDD	0.0019	J q B	0.0057	0.00026	ug/Kg	☼	09/13/18 13:38	09/21/18 10:22	1
1,2,3,4,7,8-HxCDF	0.40		0.0057	0.0015	ug/Kg	☼	09/13/18 13:38	09/21/18 10:22	1
1,2,3,6,7,8-HxCDD	0.010	B	0.0057	0.00026	ug/Kg	☼	09/13/18 13:38	09/21/18 10:22	1
1,2,3,6,7,8-HxCDF	0.10		0.0057	0.0014	ug/Kg	☼	09/13/18 13:38	09/21/18 10:22	1
1,2,3,7,8,9-HxCDD	0.0050	J B	0.0057	0.00023	ug/Kg	☼	09/13/18 13:38	09/21/18 10:22	1
1,2,3,7,8,9-HxCDF	0.0072	B	0.0057	0.0011	ug/Kg	☼	09/13/18 13:38	09/21/18 10:22	1
1,2,3,7,8-PeCDD	0.0017	J	0.0057	0.00026	ug/Kg	☼	09/13/18 13:38	09/21/18 10:22	1
1,2,3,7,8-PeCDF	0.19	B	0.0057	0.0012	ug/Kg	☼	09/13/18 13:38	09/21/18 10:22	1
2,3,4,6,7,8-HxCDF	0.013		0.0057	0.0013	ug/Kg	☼	09/13/18 13:38	09/21/18 10:22	1
2,3,4,7,8-PeCDF	0.065	B	0.0057	0.0013	ug/Kg	☼	09/13/18 13:38	09/21/18 10:22	1
2,3,7,8-TCDD	0.00095	J	0.0011	0.000061	ug/Kg	☼	09/13/18 13:38	09/21/18 10:22	1
OCDD	1.5	B	0.011	0.00050	ug/Kg	☼	09/13/18 13:38	09/21/18 10:22	1
OCDF	0.42	B	0.011	0.00024	ug/Kg	☼	09/13/18 13:38	09/21/18 10:22	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	60		23 - 140	09/13/18 13:38	09/21/18 10:22	1
13C-1,2,3,4,6,7,8-HpCDF	50		28 - 143	09/13/18 13:38	09/21/18 10:22	1
13C-1,2,3,4,7,8,9-HpCDF	43		26 - 138	09/13/18 13:38	09/21/18 10:22	1
13C-1,2,3,4,7,8-HxCDD	65		32 - 141	09/13/18 13:38	09/21/18 10:22	1
13C-1,2,3,4,7,8-HxCDF	73		26 - 152	09/13/18 13:38	09/21/18 10:22	1
13C-1,2,3,6,7,8-HxCDD	63		28 - 130	09/13/18 13:38	09/21/18 10:22	1
13C-1,2,3,6,7,8-HxCDF	73		26 - 123	09/13/18 13:38	09/21/18 10:22	1
13C-1,2,3,7,8,9-HxCDF	68		29 - 147	09/13/18 13:38	09/21/18 10:22	1
13C-1,2,3,7,8-PeCDD	71		25 - 181	09/13/18 13:38	09/21/18 10:22	1
13C-1,2,3,7,8-PeCDF	62		24 - 185	09/13/18 13:38	09/21/18 10:22	1
13C-2,3,4,6,7,8-HxCDF	63		28 - 136	09/13/18 13:38	09/21/18 10:22	1
13C-2,3,4,7,8-PeCDF	57		21 - 178	09/13/18 13:38	09/21/18 10:22	1
13C-2,3,7,8-TCDD	63		25 - 164	09/13/18 13:38	09/21/18 10:22	1
13C-OCDD	48		17 - 157	09/13/18 13:38	09/21/18 10:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	73		35 - 197	09/13/18 13:38	09/21/18 10:22	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.11	B	0.0011	0.00095	ug/Kg	☼	09/13/18 13:38	09/26/18 08:53	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	74		24 - 169	09/13/18 13:38	09/26/18 08:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	93		35 - 197	09/13/18 13:38	09/26/18 08:53	1

TestAmerica Seattle

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S260-1.3to2.6**

**Lab Sample ID: 580-80167-21**

Date Collected: 09/06/18 18:05

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 53.9

## 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	0.23	B	0.0046	0.00070	ug/Kg	☼	09/13/18 13:38	09/21/18 11:08	1
1,2,3,4,6,7,8-HpCDF	0.50	B	0.0046	0.0017	ug/Kg	☼	09/13/18 13:38	09/21/18 11:08	1
1,2,3,4,7,8,9-HpCDF	0.23	B	0.0046	0.0027	ug/Kg	☼	09/13/18 13:38	09/21/18 11:08	1
1,2,3,4,7,8-HxCDD	0.0026	J B	0.0046	0.00021	ug/Kg	☼	09/13/18 13:38	09/21/18 11:08	1
1,2,3,4,7,8-HxCDF	1.1		0.0046	0.0032	ug/Kg	☼	09/13/18 13:38	09/21/18 11:08	1
1,2,3,6,7,8-HxCDD	0.011	B	0.0046	0.00020	ug/Kg	☼	09/13/18 13:38	09/21/18 11:08	1
1,2,3,6,7,8-HxCDF	0.32		0.0046	0.0029	ug/Kg	☼	09/13/18 13:38	09/21/18 11:08	1
1,2,3,7,8,9-HxCDD	0.0048	B	0.0046	0.00018	ug/Kg	☼	09/13/18 13:38	09/21/18 11:08	1
1,2,3,7,8,9-HxCDF	0.021	B	0.0046	0.0025	ug/Kg	☼	09/13/18 13:38	09/21/18 11:08	1
1,2,3,7,8-PeCDD	0.0030	J	0.0046	0.00018	ug/Kg	☼	09/13/18 13:38	09/21/18 11:08	1
1,2,3,7,8-PeCDF	0.68	B	0.0046	0.0041	ug/Kg	☼	09/13/18 13:38	09/21/18 11:08	1
2,3,4,6,7,8-HxCDF	0.054		0.0046	0.0026	ug/Kg	☼	09/13/18 13:38	09/21/18 11:08	1
2,3,4,7,8-PeCDF	0.33	B	0.0046	0.0045	ug/Kg	☼	09/13/18 13:38	09/21/18 11:08	1
2,3,7,8-TCDD	0.0023		0.00092	0.000070	ug/Kg	☼	09/13/18 13:38	09/21/18 11:08	1
OCDD	2.4	B	0.0092	0.00060	ug/Kg	☼	09/13/18 13:38	09/21/18 11:08	1
OCDF	1.1	B	0.0092	0.00031	ug/Kg	☼	09/13/18 13:38	09/21/18 11:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	70		23 - 140	09/13/18 13:38	09/21/18 11:08	1
13C-1,2,3,4,6,7,8-HpCDF	57		28 - 143	09/13/18 13:38	09/21/18 11:08	1
13C-1,2,3,4,7,8,9-HpCDF	44		26 - 138	09/13/18 13:38	09/21/18 11:08	1
13C-1,2,3,4,7,8-HxCDD	72		32 - 141	09/13/18 13:38	09/21/18 11:08	1
13C-1,2,3,4,7,8-HxCDF	86		26 - 152	09/13/18 13:38	09/21/18 11:08	1
13C-1,2,3,6,7,8-HxCDD	74		28 - 130	09/13/18 13:38	09/21/18 11:08	1
13C-1,2,3,6,7,8-HxCDF	91		26 - 123	09/13/18 13:38	09/21/18 11:08	1
13C-1,2,3,7,8,9-HxCDF	72		29 - 147	09/13/18 13:38	09/21/18 11:08	1
13C-1,2,3,7,8-PeCDD	84		25 - 181	09/13/18 13:38	09/21/18 11:08	1
13C-1,2,3,7,8-PeCDF	77		24 - 185	09/13/18 13:38	09/21/18 11:08	1
13C-2,3,4,6,7,8-HxCDF	76		28 - 136	09/13/18 13:38	09/21/18 11:08	1
13C-2,3,4,7,8-PeCDF	72		21 - 178	09/13/18 13:38	09/21/18 11:08	1
13C-2,3,7,8-TCDD	72		25 - 164	09/13/18 13:38	09/21/18 11:08	1
13C-OCDD	58		17 - 157	09/13/18 13:38	09/21/18 11:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	74		35 - 197	09/13/18 13:38	09/21/18 11:08	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	0.61	E G B	0.0016	0.0016	ug/Kg	☼	09/13/18 13:38	09/26/18 09:30	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	82		24 - 169	09/13/18 13:38	09/26/18 09:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	93		35 - 197	09/13/18 13:38	09/26/18 09:30	1

TestAmerica Seattle

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S260-2.6to4.2**

**Lab Sample ID: 580-80167-22**

Date Collected: 09/06/18 18:10

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 70.8

## 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	0.0082	B	0.0036	0.000079	ug/Kg	☼	09/13/18 13:38	09/21/18 11:54	1
1,2,3,4,6,7,8-HpCDF	0.018	B	0.0036	0.00016	ug/Kg	☼	09/13/18 13:38	09/21/18 11:54	1
1,2,3,4,7,8,9-HpCDF	0.0070	B	0.0036	0.00021	ug/Kg	☼	09/13/18 13:38	09/21/18 11:54	1
1,2,3,4,7,8-HxCDD	0.00020	J B	0.0036	0.000039	ug/Kg	☼	09/13/18 13:38	09/21/18 11:54	1
1,2,3,4,7,8-HxCDF	0.10		0.0036	0.00050	ug/Kg	☼	09/13/18 13:38	09/21/18 11:54	1
1,2,3,6,7,8-HxCDD	0.00046	J B	0.0036	0.000041	ug/Kg	☼	09/13/18 13:38	09/21/18 11:54	1
1,2,3,6,7,8-HxCDF	0.021		0.0036	0.00046	ug/Kg	☼	09/13/18 13:38	09/21/18 11:54	1
1,2,3,7,8,9-HxCDD	0.00045	J B	0.0036	0.000037	ug/Kg	☼	09/13/18 13:38	09/21/18 11:54	1
1,2,3,7,8,9-HxCDF	0.0020	J B	0.0036	0.00034	ug/Kg	☼	09/13/18 13:38	09/21/18 11:54	1
1,2,3,7,8-PeCDD	0.00012	J	0.0036	0.000056	ug/Kg	☼	09/13/18 13:38	09/21/18 11:54	1
1,2,3,7,8-PeCDF	0.098	B	0.0036	0.00045	ug/Kg	☼	09/13/18 13:38	09/21/18 11:54	1
2,3,4,6,7,8-HxCDF	0.0048		0.0036	0.00037	ug/Kg	☼	09/13/18 13:38	09/21/18 11:54	1
2,3,4,7,8-PeCDF	0.041	B	0.0036	0.00047	ug/Kg	☼	09/13/18 13:38	09/21/18 11:54	1
2,3,7,8-TCDD	0.00023	J	0.00071	0.000052	ug/Kg	☼	09/13/18 13:38	09/21/18 11:54	1
OCDD	0.096	B	0.0071	0.000090	ug/Kg	☼	09/13/18 13:38	09/21/18 11:54	1
OCDF	0.026	B	0.0071	0.000079	ug/Kg	☼	09/13/18 13:38	09/21/18 11:54	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	61		23 - 140	09/13/18 13:38	09/21/18 11:54	1
13C-1,2,3,4,6,7,8-HpCDF	50		28 - 143	09/13/18 13:38	09/21/18 11:54	1
13C-1,2,3,4,7,8,9-HpCDF	51		26 - 138	09/13/18 13:38	09/21/18 11:54	1
13C-1,2,3,4,7,8-HxCDD	63		32 - 141	09/13/18 13:38	09/21/18 11:54	1
13C-1,2,3,4,7,8-HxCDF	59		26 - 152	09/13/18 13:38	09/21/18 11:54	1
13C-1,2,3,6,7,8-HxCDD	61		28 - 130	09/13/18 13:38	09/21/18 11:54	1
13C-1,2,3,6,7,8-HxCDF	61		26 - 123	09/13/18 13:38	09/21/18 11:54	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147	09/13/18 13:38	09/21/18 11:54	1
13C-1,2,3,7,8-PeCDD	79		25 - 181	09/13/18 13:38	09/21/18 11:54	1
13C-1,2,3,7,8-PeCDF	72		24 - 185	09/13/18 13:38	09/21/18 11:54	1
13C-2,3,4,6,7,8-HxCDF	62		28 - 136	09/13/18 13:38	09/21/18 11:54	1
13C-2,3,4,7,8-PeCDF	74		21 - 178	09/13/18 13:38	09/21/18 11:54	1
13C-2,3,7,8-TCDD	76		25 - 164	09/13/18 13:38	09/21/18 11:54	1
13C-OCDD	57		17 - 157	09/13/18 13:38	09/21/18 11:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	90		35 - 197	09/13/18 13:38	09/21/18 11:54	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	0.036	B	0.00071	0.00028	ug/Kg	☼	09/13/18 13:38	09/26/18 08:15	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	73		24 - 169	09/13/18 13:38	09/26/18 08:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	90		35 - 197	09/13/18 13:38	09/26/18 08:15	1

TestAmerica Seattle

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S260-4.2to6**

**Lab Sample ID: 580-80167-23**

Date Collected: 09/06/18 18:15

Matrix: Solid

Date Received: 09/07/18 12:35

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	0.0010	J B	0.0032	0.000041	ug/Kg	☼	09/14/18 15:37	09/21/18 12:40	1
1,2,3,4,6,7,8-HpCDF	0.00029	J B	0.0032	0.000042	ug/Kg	☼	09/14/18 15:37	09/21/18 12:40	1
1,2,3,4,7,8,9-HpCDF	0.00036	J B	0.0032	0.000052	ug/Kg	☼	09/14/18 15:37	09/21/18 12:40	1
1,2,3,4,7,8-HxCDD	0.000094	J B q	0.0032	0.000021	ug/Kg	☼	09/14/18 15:37	09/21/18 12:40	1
1,2,3,4,7,8-HxCDF	0.00038	J	0.0032	0.000049	ug/Kg	☼	09/14/18 15:37	09/21/18 12:40	1
1,2,3,6,7,8-HxCDD	0.000064	J B	0.0032	0.000020	ug/Kg	☼	09/14/18 15:37	09/21/18 12:40	1
1,2,3,6,7,8-HxCDF	0.00021	J B	0.0032	0.000047	ug/Kg	☼	09/14/18 15:37	09/21/18 12:40	1
1,2,3,7,8,9-HxCDD	0.00013	J B	0.0032	0.000019	ug/Kg	☼	09/14/18 15:37	09/21/18 12:40	1
1,2,3,7,8,9-HxCDF	0.0012	J B	0.0032	0.000034	ug/Kg	☼	09/14/18 15:37	09/21/18 12:40	1
1,2,3,7,8-PeCDD	ND		0.0032	0.000024	ug/Kg	☼	09/14/18 15:37	09/21/18 12:40	1
1,2,3,7,8-PeCDF	0.00036	J B	0.0032	0.000028	ug/Kg	☼	09/14/18 15:37	09/21/18 12:40	1
2,3,4,6,7,8-HxCDF	ND		0.0032	0.000036	ug/Kg	☼	09/14/18 15:37	09/21/18 12:40	1
2,3,4,7,8-PeCDF	ND		0.0032	0.000030	ug/Kg	☼	09/14/18 15:37	09/21/18 12:40	1
2,3,7,8-TCDD	ND		0.00063	0.000037	ug/Kg	☼	09/14/18 15:37	09/21/18 12:40	1
2,3,7,8-TCDF	0.00021	J B	0.00063	0.000025	ug/Kg	☼	09/14/18 15:37	09/21/18 12:40	1
OCDD	0.015	B	0.0063	0.000073	ug/Kg	☼	09/14/18 15:37	09/21/18 12:40	1
OCDF	0.00083	J B	0.0063	0.000053	ug/Kg	☼	09/14/18 15:37	09/21/18 12:40	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	60		23 - 140	09/14/18 15:37	09/21/18 12:40	1
13C-1,2,3,4,6,7,8-HpCDF	48		28 - 143	09/14/18 15:37	09/21/18 12:40	1
13C-1,2,3,4,7,8,9-HpCDF	52		26 - 138	09/14/18 15:37	09/21/18 12:40	1
13C-1,2,3,4,7,8-HxCDD	56		32 - 141	09/14/18 15:37	09/21/18 12:40	1
13C-1,2,3,4,7,8-HxCDF	56		26 - 152	09/14/18 15:37	09/21/18 12:40	1
13C-1,2,3,6,7,8-HxCDD	57		28 - 130	09/14/18 15:37	09/21/18 12:40	1
13C-1,2,3,6,7,8-HxCDF	57		26 - 123	09/14/18 15:37	09/21/18 12:40	1
13C-1,2,3,7,8,9-HxCDF	57		29 - 147	09/14/18 15:37	09/21/18 12:40	1
13C-1,2,3,7,8-PeCDD	59		25 - 181	09/14/18 15:37	09/21/18 12:40	1
13C-1,2,3,7,8-PeCDF	54		24 - 185	09/14/18 15:37	09/21/18 12:40	1
13C-2,3,4,6,7,8-HxCDF	58		28 - 136	09/14/18 15:37	09/21/18 12:40	1
13C-2,3,4,7,8-PeCDF	54		21 - 178	09/14/18 15:37	09/21/18 12:40	1
13C-2,3,7,8-TCDD	58		25 - 164	09/14/18 15:37	09/21/18 12:40	1
13C-2,3,7,8-TCDF	53		24 - 169	09/14/18 15:37	09/21/18 12:40	1
13C-OCDD	50		17 - 157	09/14/18 15:37	09/21/18 12:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	72		35 - 197	09/14/18 15:37	09/21/18 12:40	1

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S260-6to7**

**Lab Sample ID: 580-80167-24**

Date Collected: 09/06/18 18:20

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 78.5

**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	0.0015	J B	0.0032	0.000035	ug/Kg	☼	09/14/18 15:37	09/21/18 13:26	1
1,2,3,4,6,7,8-HpCDF	0.00023	J B	0.0032	0.000022	ug/Kg	☼	09/14/18 15:37	09/21/18 13:26	1
1,2,3,4,7,8,9-HpCDF	0.00045	J B	0.0032	0.000028	ug/Kg	☼	09/14/18 15:37	09/21/18 13:26	1
1,2,3,4,7,8-HxCDD	0.00013	J B	0.0032	0.000012	ug/Kg	☼	09/14/18 15:37	09/21/18 13:26	1
1,2,3,4,7,8-HxCDF	0.00013	J	0.0032	0.000034	ug/Kg	☼	09/14/18 15:37	09/21/18 13:26	1
1,2,3,6,7,8-HxCDD	0.000085	J B q	0.0032	0.000013	ug/Kg	☼	09/14/18 15:37	09/21/18 13:26	1
1,2,3,6,7,8-HxCDF	0.000098	J B	0.0032	0.000029	ug/Kg	☼	09/14/18 15:37	09/21/18 13:26	1
1,2,3,7,8,9-HxCDD	0.00017	J B	0.0032	0.000011	ug/Kg	☼	09/14/18 15:37	09/21/18 13:26	1
1,2,3,7,8,9-HxCDF	0.0011	J B	0.0032	0.000022	ug/Kg	☼	09/14/18 15:37	09/21/18 13:26	1
1,2,3,7,8-PeCDD	0.000040	J q	0.0032	0.000023	ug/Kg	☼	09/14/18 15:37	09/21/18 13:26	1
1,2,3,7,8-PeCDF	0.00021	J B	0.0032	0.000017	ug/Kg	☼	09/14/18 15:37	09/21/18 13:26	1
2,3,4,6,7,8-HxCDF	0.000034	J B q	0.0032	0.000025	ug/Kg	☼	09/14/18 15:37	09/21/18 13:26	1
2,3,4,7,8-PeCDF	0.00011	J B	0.0032	0.000020	ug/Kg	☼	09/14/18 15:37	09/21/18 13:26	1
2,3,7,8-TCDD	ND		0.00064	0.000029	ug/Kg	☼	09/14/18 15:37	09/21/18 13:26	1
2,3,7,8-TCDF	0.00040	J B	0.00064	0.000018	ug/Kg	☼	09/14/18 15:37	09/21/18 13:26	1
OCDD	0.024	B	0.0064	0.000038	ug/Kg	☼	09/14/18 15:37	09/21/18 13:26	1
OCDF	0.00088	J B	0.0064	0.000033	ug/Kg	☼	09/14/18 15:37	09/21/18 13:26	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	84		23 - 140	09/14/18 15:37	09/21/18 13:26	1
13C-1,2,3,4,6,7,8-HpCDF	68		28 - 143	09/14/18 15:37	09/21/18 13:26	1
13C-1,2,3,4,7,8,9-HpCDF	74		26 - 138	09/14/18 15:37	09/21/18 13:26	1
13C-1,2,3,4,7,8-HxCDD	74		32 - 141	09/14/18 15:37	09/21/18 13:26	1
13C-1,2,3,4,7,8-HxCDF	69		26 - 152	09/14/18 15:37	09/21/18 13:26	1
13C-1,2,3,6,7,8-HxCDD	73		28 - 130	09/14/18 15:37	09/21/18 13:26	1
13C-1,2,3,6,7,8-HxCDF	77		26 - 123	09/14/18 15:37	09/21/18 13:26	1
13C-1,2,3,7,8,9-HxCDF	75		29 - 147	09/14/18 15:37	09/21/18 13:26	1
13C-1,2,3,7,8-PeCDD	75		25 - 181	09/14/18 15:37	09/21/18 13:26	1
13C-1,2,3,7,8-PeCDF	75		24 - 185	09/14/18 15:37	09/21/18 13:26	1
13C-2,3,4,6,7,8-HxCDF	75		28 - 136	09/14/18 15:37	09/21/18 13:26	1
13C-2,3,4,7,8-PeCDF	68		21 - 178	09/14/18 15:37	09/21/18 13:26	1
13C-2,3,7,8-TCDD	74		25 - 164	09/14/18 15:37	09/21/18 13:26	1
13C-2,3,7,8-TCDF	66		24 - 169	09/14/18 15:37	09/21/18 13:26	1
13C-OCDD	75		17 - 157	09/14/18 15:37	09/21/18 13:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	78		35 - 197	09/14/18 15:37	09/21/18 13:26	1

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S019-0to2**

**Lab Sample ID: 580-80167-25**

Date Collected: 09/06/18 20:20

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 56.4

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.18	B	0.0044	0.00098	ug/Kg	☼	09/14/18 15:37	09/21/18 14:12	1
1,2,3,4,6,7,8-HpCDF	0.041	B	0.0044	0.00047	ug/Kg	☼	09/14/18 15:37	09/21/18 14:12	1
1,2,3,4,7,8,9-HpCDF	0.0034	J B	0.0044	0.00054	ug/Kg	☼	09/14/18 15:37	09/21/18 14:12	1
1,2,3,4,7,8-HxCDD	0.0013	J B	0.0044	0.00012	ug/Kg	☼	09/14/18 15:37	09/21/18 14:12	1
1,2,3,4,7,8-HxCDF	0.0086		0.0044	0.00025	ug/Kg	☼	09/14/18 15:37	09/21/18 14:12	1
1,2,3,6,7,8-HxCDD	0.0068	B	0.0044	0.00012	ug/Kg	☼	09/14/18 15:37	09/21/18 14:12	1
1,2,3,6,7,8-HxCDF	0.0042	J B	0.0044	0.00022	ug/Kg	☼	09/14/18 15:37	09/21/18 14:12	1
1,2,3,7,8,9-HxCDD	0.0033	J B	0.0044	0.00011	ug/Kg	☼	09/14/18 15:37	09/21/18 14:12	1
1,2,3,7,8,9-HxCDF	0.0017	J B	0.0044	0.00017	ug/Kg	☼	09/14/18 15:37	09/21/18 14:12	1
1,2,3,7,8-PeCDD	0.00062	J	0.0044	0.000089	ug/Kg	☼	09/14/18 15:37	09/21/18 14:12	1
1,2,3,7,8-PeCDF	0.0037	J B	0.0044	0.00016	ug/Kg	☼	09/14/18 15:37	09/21/18 14:12	1
2,3,4,6,7,8-HxCDF	0.00092	J B	0.0044	0.00019	ug/Kg	☼	09/14/18 15:37	09/21/18 14:12	1
2,3,4,7,8-PeCDF	0.0015	J B	0.0044	0.00017	ug/Kg	☼	09/14/18 15:37	09/21/18 14:12	1
2,3,7,8-TCDD	0.00056	J	0.00087	0.000061	ug/Kg	☼	09/14/18 15:37	09/21/18 14:12	1
OCDD	2.7	B	0.0087	0.0010	ug/Kg	☼	09/14/18 15:37	09/21/18 14:12	1
OCDF	0.12	B	0.0087	0.000091	ug/Kg	☼	09/14/18 15:37	09/21/18 14:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	59		23 - 140	09/14/18 15:37	09/21/18 14:12	1
13C-1,2,3,4,6,7,8-HpCDF	48		28 - 143	09/14/18 15:37	09/21/18 14:12	1
13C-1,2,3,4,7,8,9-HpCDF	52		26 - 138	09/14/18 15:37	09/21/18 14:12	1
13C-1,2,3,4,7,8-HxCDD	52		32 - 141	09/14/18 15:37	09/21/18 14:12	1
13C-1,2,3,4,7,8-HxCDF	53		26 - 152	09/14/18 15:37	09/21/18 14:12	1
13C-1,2,3,6,7,8-HxCDD	52		28 - 130	09/14/18 15:37	09/21/18 14:12	1
13C-1,2,3,6,7,8-HxCDF	57		26 - 123	09/14/18 15:37	09/21/18 14:12	1
13C-1,2,3,7,8,9-HxCDF	56		29 - 147	09/14/18 15:37	09/21/18 14:12	1
13C-1,2,3,7,8-PeCDD	57		25 - 181	09/14/18 15:37	09/21/18 14:12	1
13C-1,2,3,7,8-PeCDF	55		24 - 185	09/14/18 15:37	09/21/18 14:12	1
13C-2,3,4,6,7,8-HxCDF	56		28 - 136	09/14/18 15:37	09/21/18 14:12	1
13C-2,3,4,7,8-PeCDF	57		21 - 178	09/14/18 15:37	09/21/18 14:12	1
13C-2,3,7,8-TCDD	58		25 - 164	09/14/18 15:37	09/21/18 14:12	1
13C-OCDD	51		17 - 157	09/14/18 15:37	09/21/18 14:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	74		35 - 197	09/14/18 15:37	09/21/18 14:12	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0025	B	0.00087	0.00018	ug/Kg	☼	09/14/18 15:37	09/26/18 02:34	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	55		24 - 169	09/14/18 15:37	09/26/18 02:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	76		35 - 197	09/14/18 15:37	09/26/18 02:34	1

TestAmerica Seattle

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S019-2to4**

**Lab Sample ID: 580-80167-26**

Date Collected: 09/06/18 20:25

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 54.7

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.50	B	0.0046	0.0019	ug/Kg	☼	09/14/18 15:37	09/21/18 17:41	1
1,2,3,4,6,7,8-HpCDF	0.12	B	0.0046	0.0013	ug/Kg	☼	09/14/18 15:37	09/21/18 17:41	1
1,2,3,4,7,8,9-HpCDF	0.011	B	0.0046	0.0017	ug/Kg	☼	09/14/18 15:37	09/21/18 17:41	1
1,2,3,4,7,8-HxCDD	0.0036	J B	0.0046	0.00019	ug/Kg	☼	09/14/18 15:37	09/21/18 17:41	1
1,2,3,4,7,8-HxCDF	0.021		0.0046	0.00054	ug/Kg	☼	09/14/18 15:37	09/21/18 17:41	1
1,2,3,6,7,8-HxCDD	0.018		0.0046	0.00018	ug/Kg	☼	09/14/18 15:37	09/21/18 17:41	1
1,2,3,6,7,8-HxCDF	0.010	B	0.0046	0.00049	ug/Kg	☼	09/14/18 15:37	09/21/18 17:41	1
1,2,3,7,8,9-HxCDD	0.0079	B	0.0046	0.00017	ug/Kg	☼	09/14/18 15:37	09/21/18 17:41	1
1,2,3,7,8,9-HxCDF	0.0025	J B	0.0046	0.00039	ug/Kg	☼	09/14/18 15:37	09/21/18 17:41	1
1,2,3,7,8-PeCDD	0.0019	J	0.0046	0.00014	ug/Kg	☼	09/14/18 15:37	09/21/18 17:41	1
1,2,3,7,8-PeCDF	0.0087	B	0.0046	0.00042	ug/Kg	☼	09/14/18 15:37	09/21/18 17:41	1
2,3,4,6,7,8-HxCDF	0.0026	J	0.0046	0.00045	ug/Kg	☼	09/14/18 15:37	09/21/18 17:41	1
2,3,4,7,8-PeCDF	0.0049	B	0.0046	0.00033	ug/Kg	☼	09/14/18 15:37	09/21/18 17:41	1
2,3,7,8-TCDD	0.0011		0.00092	0.000057	ug/Kg	☼	09/14/18 15:37	09/21/18 17:41	1
OCDD	6.4	E B	0.0092	0.0014	ug/Kg	☼	09/14/18 15:37	09/21/18 17:41	1
OCDF	0.74	B	0.0092	0.00018	ug/Kg	☼	09/14/18 15:37	09/21/18 17:41	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	51		23 - 140	09/14/18 15:37	09/21/18 17:41	1
13C-1,2,3,4,6,7,8-HpCDF	41		28 - 143	09/14/18 15:37	09/21/18 17:41	1
13C-1,2,3,4,7,8,9-HpCDF	42		26 - 138	09/14/18 15:37	09/21/18 17:41	1
13C-1,2,3,4,7,8-HxCDD	47		32 - 141	09/14/18 15:37	09/21/18 17:41	1
13C-1,2,3,4,7,8-HxCDF	57		26 - 152	09/14/18 15:37	09/21/18 17:41	1
13C-1,2,3,6,7,8-HxCDD	49		28 - 130	09/14/18 15:37	09/21/18 17:41	1
13C-1,2,3,6,7,8-HxCDF	58		26 - 123	09/14/18 15:37	09/21/18 17:41	1
13C-1,2,3,7,8,9-HxCDF	54		29 - 147	09/14/18 15:37	09/21/18 17:41	1
13C-1,2,3,7,8-PeCDD	71		25 - 181	09/14/18 15:37	09/21/18 17:41	1
13C-1,2,3,7,8-PeCDF	50		24 - 185	09/14/18 15:37	09/21/18 17:41	1
13C-2,3,4,6,7,8-HxCDF	50		28 - 136	09/14/18 15:37	09/21/18 17:41	1
13C-2,3,4,7,8-PeCDF	56		21 - 178	09/14/18 15:37	09/21/18 17:41	1
13C-2,3,7,8-TCDD	61		25 - 164	09/14/18 15:37	09/21/18 17:41	1
13C-OCDD	44		17 - 157	09/14/18 15:37	09/21/18 17:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	84		35 - 197	09/14/18 15:37	09/21/18 17:41	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	B	0.00092	0.00020	ug/Kg	☼	09/14/18 15:37	09/26/18 03:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	63		24 - 169	09/14/18 15:37	09/26/18 03:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	80		35 - 197	09/14/18 15:37	09/26/18 03:12	1

TestAmerica Seattle



# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S019-4to6**

**Lab Sample ID: 580-80167-27**

Date Collected: 09/06/18 20:30

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 55.0

## 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	0.53	B	0.0044	0.0014	ug/Kg	☼	09/14/18 15:37	09/21/18 18:27	1
1,2,3,4,6,7,8-HpCDF	0.15	B	0.0044	0.0014	ug/Kg	☼	09/14/18 15:37	09/21/18 18:27	1
1,2,3,4,7,8,9-HpCDF	0.012	B	0.0044	0.0019	ug/Kg	☼	09/14/18 15:37	09/21/18 18:27	1
1,2,3,4,7,8-HxCDD	0.0034	J B	0.0044	0.00019	ug/Kg	☼	09/14/18 15:37	09/21/18 18:27	1
1,2,3,4,7,8-HxCDF	0.018		0.0044	0.00065	ug/Kg	☼	09/14/18 15:37	09/21/18 18:27	1
1,2,3,6,7,8-HxCDD	0.018		0.0044	0.00019	ug/Kg	☼	09/14/18 15:37	09/21/18 18:27	1
1,2,3,6,7,8-HxCDF	0.010	B	0.0044	0.00063	ug/Kg	☼	09/14/18 15:37	09/21/18 18:27	1
1,2,3,7,8,9-HxCDD	0.0066	B	0.0044	0.00018	ug/Kg	☼	09/14/18 15:37	09/21/18 18:27	1
1,2,3,7,8,9-HxCDF	0.0017	J B	0.0044	0.00051	ug/Kg	☼	09/14/18 15:37	09/21/18 18:27	1
1,2,3,7,8-PeCDD	0.0017	J	0.0044	0.00011	ug/Kg	☼	09/14/18 15:37	09/21/18 18:27	1
1,2,3,7,8-PeCDF	0.0067	B	0.0044	0.00031	ug/Kg	☼	09/14/18 15:37	09/21/18 18:27	1
2,3,4,6,7,8-HxCDF	0.0025	J	0.0044	0.00059	ug/Kg	☼	09/14/18 15:37	09/21/18 18:27	1
2,3,4,7,8-PeCDF	0.0040	J B	0.0044	0.00030	ug/Kg	☼	09/14/18 15:37	09/21/18 18:27	1
2,3,7,8-TCDD	0.00072	J	0.00089	0.000058	ug/Kg	☼	09/14/18 15:37	09/21/18 18:27	1
OCDD	9.0	E B	0.0089	0.0018	ug/Kg	☼	09/14/18 15:37	09/21/18 18:27	1
OCDF	0.73	B	0.0089	0.00019	ug/Kg	☼	09/14/18 15:37	09/21/18 18:27	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	55		23 - 140	09/14/18 15:37	09/21/18 18:27	1
13C-1,2,3,4,6,7,8-HpCDF	45		28 - 143	09/14/18 15:37	09/21/18 18:27	1
13C-1,2,3,4,7,8,9-HpCDF	43		26 - 138	09/14/18 15:37	09/21/18 18:27	1
13C-1,2,3,4,7,8-HxCDD	58		32 - 141	09/14/18 15:37	09/21/18 18:27	1
13C-1,2,3,4,7,8-HxCDF	68		26 - 152	09/14/18 15:37	09/21/18 18:27	1
13C-1,2,3,6,7,8-HxCDD	57		28 - 130	09/14/18 15:37	09/21/18 18:27	1
13C-1,2,3,6,7,8-HxCDF	68		26 - 123	09/14/18 15:37	09/21/18 18:27	1
13C-1,2,3,7,8,9-HxCDF	59		29 - 147	09/14/18 15:37	09/21/18 18:27	1
13C-1,2,3,7,8-PeCDD	66		25 - 181	09/14/18 15:37	09/21/18 18:27	1
13C-1,2,3,7,8-PeCDF	55		24 - 185	09/14/18 15:37	09/21/18 18:27	1
13C-2,3,4,6,7,8-HxCDF	60		28 - 136	09/14/18 15:37	09/21/18 18:27	1
13C-2,3,4,7,8-PeCDF	56		21 - 178	09/14/18 15:37	09/21/18 18:27	1
13C-2,3,7,8-TCDD	54		25 - 164	09/14/18 15:37	09/21/18 18:27	1
13C-OCDD	51		17 - 157	09/14/18 15:37	09/21/18 18:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	68		35 - 197	09/14/18 15:37	09/21/18 18:27	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	0.0053	B	0.00089	0.00021	ug/Kg	☼	09/14/18 15:37	09/26/18 03:50	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	64		24 - 169	09/14/18 15:37	09/26/18 03:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	81		35 - 197	09/14/18 15:37	09/26/18 03:50	1

TestAmerica Seattle

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S019-6to8**

**Lab Sample ID: 580-80167-28**

Date Collected: 09/06/18 20:35

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 55.5

## 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	0.32	B	0.0045	0.00077	ug/Kg	☼	09/14/18 15:37	09/21/18 19:13	1
1,2,3,4,6,7,8-HpCDF	0.10	B	0.0045	0.00076	ug/Kg	☼	09/14/18 15:37	09/21/18 19:13	1
1,2,3,4,7,8,9-HpCDF	0.0091	B	0.0045	0.00095	ug/Kg	☼	09/14/18 15:37	09/21/18 19:13	1
1,2,3,4,7,8-HxCDD	0.0023	J B	0.0045	0.00016	ug/Kg	☼	09/14/18 15:37	09/21/18 19:13	1
1,2,3,4,7,8-HxCDF	0.021		0.0045	0.00048	ug/Kg	☼	09/14/18 15:37	09/21/18 19:13	1
1,2,3,6,7,8-HxCDD	0.013		0.0045	0.00017	ug/Kg	☼	09/14/18 15:37	09/21/18 19:13	1
1,2,3,6,7,8-HxCDF	0.010	B	0.0045	0.00044	ug/Kg	☼	09/14/18 15:37	09/21/18 19:13	1
1,2,3,7,8,9-HxCDD	0.0047	B	0.0045	0.00015	ug/Kg	☼	09/14/18 15:37	09/21/18 19:13	1
1,2,3,7,8,9-HxCDF	0.0018	J B	0.0045	0.00039	ug/Kg	☼	09/14/18 15:37	09/21/18 19:13	1
1,2,3,7,8-PeCDD	0.0014	J	0.0045	0.00011	ug/Kg	☼	09/14/18 15:37	09/21/18 19:13	1
1,2,3,7,8-PeCDF	0.0061	B	0.0045	0.00034	ug/Kg	☼	09/14/18 15:37	09/21/18 19:13	1
2,3,4,6,7,8-HxCDF	0.0022	J	0.0045	0.00038	ug/Kg	☼	09/14/18 15:37	09/21/18 19:13	1
2,3,4,7,8-PeCDF	0.0046	B	0.0045	0.00034	ug/Kg	☼	09/14/18 15:37	09/21/18 19:13	1
2,3,7,8-TCDD	0.00077	J	0.00091	0.000056	ug/Kg	☼	09/14/18 15:37	09/21/18 19:13	1
OCDD	5.5	E B	0.0091	0.0010	ug/Kg	☼	09/14/18 15:37	09/21/18 19:13	1
OCDF	0.38	B	0.0091	0.00012	ug/Kg	☼	09/14/18 15:37	09/21/18 19:13	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	52		23 - 140	09/14/18 15:37	09/21/18 19:13	1
13C-1,2,3,4,6,7,8-HpCDF	44		28 - 143	09/14/18 15:37	09/21/18 19:13	1
13C-1,2,3,4,7,8,9-HpCDF	46		26 - 138	09/14/18 15:37	09/21/18 19:13	1
13C-1,2,3,4,7,8-HxCDD	57		32 - 141	09/14/18 15:37	09/21/18 19:13	1
13C-1,2,3,4,7,8-HxCDF	71		26 - 152	09/14/18 15:37	09/21/18 19:13	1
13C-1,2,3,6,7,8-HxCDD	53		28 - 130	09/14/18 15:37	09/21/18 19:13	1
13C-1,2,3,6,7,8-HxCDF	69		26 - 123	09/14/18 15:37	09/21/18 19:13	1
13C-1,2,3,7,8,9-HxCDF	57		29 - 147	09/14/18 15:37	09/21/18 19:13	1
13C-1,2,3,7,8-PeCDD	66		25 - 181	09/14/18 15:37	09/21/18 19:13	1
13C-1,2,3,7,8-PeCDF	51		24 - 185	09/14/18 15:37	09/21/18 19:13	1
13C-2,3,4,6,7,8-HxCDF	55		28 - 136	09/14/18 15:37	09/21/18 19:13	1
13C-2,3,4,7,8-PeCDF	55		21 - 178	09/14/18 15:37	09/21/18 19:13	1
13C-2,3,7,8-TCDD	51		25 - 164	09/14/18 15:37	09/21/18 19:13	1
13C-OCDD	52		17 - 157	09/14/18 15:37	09/21/18 19:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	64		35 - 197	09/14/18 15:37	09/21/18 19:13	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	0.0061	B	0.00091	0.00036	ug/Kg	☼	09/14/18 15:37	09/26/18 04:27	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	61		24 - 169	09/14/18 15:37	09/26/18 04:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	79		35 - 197	09/14/18 15:37	09/26/18 04:27	1

TestAmerica Seattle

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S019-8to10**

**Lab Sample ID: 580-80167-29**

Date Collected: 09/06/18 20:40

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 58.4

**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	0.22	B	0.0042	0.00071	ug/Kg	☼	09/14/18 15:37	09/21/18 19:59	1
1,2,3,4,6,7,8-HpCDF	0.10	B	0.0042	0.0011	ug/Kg	☼	09/14/18 15:37	09/21/18 19:59	1
1,2,3,4,7,8,9-HpCDF	0.0070	B	0.0042	0.00089	ug/Kg	☼	09/14/18 15:37	09/21/18 19:59	1
1,2,3,4,7,8-HxCDD	0.0019	J B	0.0042	0.00023	ug/Kg	☼	09/14/18 15:37	09/21/18 19:59	1
1,2,3,4,7,8-HxCDF	0.011		0.0042	0.00048	ug/Kg	☼	09/14/18 15:37	09/21/18 19:59	1
1,2,3,6,7,8-HxCDD	0.0090		0.0042	0.00021	ug/Kg	☼	09/14/18 15:37	09/21/18 19:59	1
1,2,3,6,7,8-HxCDF	0.0079	B	0.0042	0.00048	ug/Kg	☼	09/14/18 15:37	09/21/18 19:59	1
1,2,3,7,8,9-HxCDD	0.0032	J B	0.0042	0.00020	ug/Kg	☼	09/14/18 15:37	09/21/18 19:59	1
1,2,3,7,8,9-HxCDF	0.0017	J B q	0.0042	0.00056	ug/Kg	☼	09/14/18 15:37	09/21/18 19:59	1
1,2,3,7,8-PeCDD	0.0011	J	0.0042	0.00018	ug/Kg	☼	09/14/18 15:37	09/21/18 19:59	1
1,2,3,7,8-PeCDF	0.0049	B	0.0042	0.00033	ug/Kg	☼	09/14/18 15:37	09/21/18 19:59	1
2,3,4,6,7,8-HxCDF	0.0019	J	0.0042	0.00050	ug/Kg	☼	09/14/18 15:37	09/21/18 19:59	1
2,3,4,7,8-PeCDF	0.0028	J B	0.0042	0.00032	ug/Kg	☼	09/14/18 15:37	09/21/18 19:59	1
2,3,7,8-TCDD	0.00087		0.00084	0.000058	ug/Kg	☼	09/14/18 15:37	09/21/18 19:59	1
OCDD	3.0	B	0.0084	0.00091	ug/Kg	☼	09/14/18 15:37	09/21/18 19:59	1
OCDF	0.26	B	0.0084	0.00023	ug/Kg	☼	09/14/18 15:37	09/21/18 19:59	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	57		23 - 140	09/14/18 15:37	09/21/18 19:59	1
13C-1,2,3,4,6,7,8-HpCDF	40		28 - 143	09/14/18 15:37	09/21/18 19:59	1
13C-1,2,3,4,7,8,9-HpCDF	50		26 - 138	09/14/18 15:37	09/21/18 19:59	1
13C-1,2,3,4,7,8-HxCDD	64		32 - 141	09/14/18 15:37	09/21/18 19:59	1
13C-1,2,3,4,7,8-HxCDF	88		26 - 152	09/14/18 15:37	09/21/18 19:59	1
13C-1,2,3,6,7,8-HxCDD	66		28 - 130	09/14/18 15:37	09/21/18 19:59	1
13C-1,2,3,6,7,8-HxCDF	86		26 - 123	09/14/18 15:37	09/21/18 19:59	1
13C-1,2,3,7,8,9-HxCDF	54		29 - 147	09/14/18 15:37	09/21/18 19:59	1
13C-1,2,3,7,8-PeCDD	82		25 - 181	09/14/18 15:37	09/21/18 19:59	1
13C-1,2,3,7,8-PeCDF	59		24 - 185	09/14/18 15:37	09/21/18 19:59	1
13C-2,3,4,6,7,8-HxCDF	69		28 - 136	09/14/18 15:37	09/21/18 19:59	1
13C-2,3,4,7,8-PeCDF	74		21 - 178	09/14/18 15:37	09/21/18 19:59	1
13C-2,3,7,8-TCDD	60		25 - 164	09/14/18 15:37	09/21/18 19:59	1
13C-OCDD	54		17 - 157	09/14/18 15:37	09/21/18 19:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	78		35 - 197	09/14/18 15:37	09/21/18 19:59	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0040	B	0.00084	0.00061	ug/Kg	☼	09/14/18 15:37	09/26/18 05:05	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	73		24 - 169	09/14/18 15:37	09/26/18 05:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	93		35 - 197	09/14/18 15:37	09/26/18 05:05	1

TestAmerica Seattle

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S019-10to12**

**Lab Sample ID: 580-80167-30**

Date Collected: 09/06/18 20:45

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 56.9

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.12	B	0.0043	0.00037	ug/Kg	☼	09/14/18 15:37	09/21/18 20:45	1
1,2,3,4,6,7,8-HpCDF	0.058	B	0.0043	0.00042	ug/Kg	☼	09/14/18 15:37	09/21/18 20:45	1
1,2,3,4,7,8,9-HpCDF	0.0040	J B	0.0043	0.00058	ug/Kg	☼	09/14/18 15:37	09/21/18 20:45	1
1,2,3,4,7,8-HxCDD	0.0010	J B	0.0043	0.00015	ug/Kg	☼	09/14/18 15:37	09/21/18 20:45	1
1,2,3,4,7,8-HxCDF	0.0073		0.0043	0.00033	ug/Kg	☼	09/14/18 15:37	09/21/18 20:45	1
1,2,3,6,7,8-HxCDD	0.0057		0.0043	0.00016	ug/Kg	☼	09/14/18 15:37	09/21/18 20:45	1
1,2,3,6,7,8-HxCDF	0.0067	B	0.0043	0.00032	ug/Kg	☼	09/14/18 15:37	09/21/18 20:45	1
1,2,3,7,8,9-HxCDD	0.0030	J B	0.0043	0.00014	ug/Kg	☼	09/14/18 15:37	09/21/18 20:45	1
1,2,3,7,8,9-HxCDF	0.0016	J B	0.0043	0.00031	ug/Kg	☼	09/14/18 15:37	09/21/18 20:45	1
1,2,3,7,8-PeCDD	ND		0.0043	0.00020	ug/Kg	☼	09/14/18 15:37	09/21/18 20:45	1
1,2,3,7,8-PeCDF	0.0046	B	0.0043	0.00024	ug/Kg	☼	09/14/18 15:37	09/21/18 20:45	1
2,3,4,6,7,8-HxCDF	0.0016	J	0.0043	0.00031	ug/Kg	☼	09/14/18 15:37	09/21/18 20:45	1
2,3,4,7,8-PeCDF	0.0031	J B	0.0043	0.00027	ug/Kg	☼	09/14/18 15:37	09/21/18 20:45	1
2,3,7,8-TCDD	0.00048	J q	0.00087	0.000063	ug/Kg	☼	09/14/18 15:37	09/21/18 20:45	1
OCDD	2.0	B	0.0087	0.00054	ug/Kg	☼	09/14/18 15:37	09/21/18 20:45	1
OCDF	0.12	B	0.0087	0.00022	ug/Kg	☼	09/14/18 15:37	09/21/18 20:45	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	48		23 - 140	09/14/18 15:37	09/21/18 20:45	1
13C-1,2,3,4,6,7,8-HpCDF	40		28 - 143	09/14/18 15:37	09/21/18 20:45	1
13C-1,2,3,4,7,8,9-HpCDF	38		26 - 138	09/14/18 15:37	09/21/18 20:45	1
13C-1,2,3,4,7,8-HxCDD	62		32 - 141	09/14/18 15:37	09/21/18 20:45	1
13C-1,2,3,4,7,8-HxCDF	76		26 - 152	09/14/18 15:37	09/21/18 20:45	1
13C-1,2,3,6,7,8-HxCDD	59		28 - 130	09/14/18 15:37	09/21/18 20:45	1
13C-1,2,3,6,7,8-HxCDF	77		26 - 123	09/14/18 15:37	09/21/18 20:45	1
13C-1,2,3,7,8,9-HxCDF	58		29 - 147	09/14/18 15:37	09/21/18 20:45	1
13C-1,2,3,7,8-PeCDD	64		25 - 181	09/14/18 15:37	09/21/18 20:45	1
13C-1,2,3,7,8-PeCDF	57		24 - 185	09/14/18 15:37	09/21/18 20:45	1
13C-2,3,4,6,7,8-HxCDF	65		28 - 136	09/14/18 15:37	09/21/18 20:45	1
13C-2,3,4,7,8-PeCDF	58		21 - 178	09/14/18 15:37	09/21/18 20:45	1
13C-2,3,7,8-TCDD	59		25 - 164	09/14/18 15:37	09/21/18 20:45	1
13C-OCDD	45		17 - 157	09/14/18 15:37	09/21/18 20:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	75		35 - 197	09/14/18 15:37	09/21/18 20:45	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	0.0047	B	0.00087	0.00031	ug/Kg	☼	09/14/18 15:37	09/26/18 05:43	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	62		24 - 169	09/14/18 15:37	09/26/18 05:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	80		35 - 197	09/14/18 15:37	09/26/18 05:43	1

TestAmerica Seattle

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S019-12to13.7**

**Lab Sample ID: 580-80167-31**

Date Collected: 09/06/18 20:50

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 58.7

## 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	0.071	B	0.0042	0.00027	ug/Kg	☼	09/14/18 15:37	09/21/18 21:31	1
1,2,3,4,6,7,8-HpCDF	0.057	B	0.0042	0.00029	ug/Kg	☼	09/14/18 15:37	09/21/18 21:31	1
1,2,3,4,7,8,9-HpCDF	0.0022	J B	0.0042	0.00036	ug/Kg	☼	09/14/18 15:37	09/21/18 21:31	1
1,2,3,4,7,8-HxCDD	0.00058	J B	0.0042	0.00011	ug/Kg	☼	09/14/18 15:37	09/21/18 21:31	1
1,2,3,4,7,8-HxCDF	0.0035	J	0.0042	0.00038	ug/Kg	☼	09/14/18 15:37	09/21/18 21:31	1
1,2,3,6,7,8-HxCDD	0.0033	J	0.0042	0.00011	ug/Kg	☼	09/14/18 15:37	09/21/18 21:31	1
1,2,3,6,7,8-HxCDF	0.0064	B	0.0042	0.00037	ug/Kg	☼	09/14/18 15:37	09/21/18 21:31	1
1,2,3,7,8,9-HxCDD	0.0018	J B	0.0042	0.000097	ug/Kg	☼	09/14/18 15:37	09/21/18 21:31	1
1,2,3,7,8,9-HxCDF	0.0013	J B	0.0042	0.00033	ug/Kg	☼	09/14/18 15:37	09/21/18 21:31	1
1,2,3,7,8-PeCDD	0.00057	J	0.0042	0.00011	ug/Kg	☼	09/14/18 15:37	09/21/18 21:31	1
1,2,3,7,8-PeCDF	0.0014	J B	0.0042	0.00036	ug/Kg	☼	09/14/18 15:37	09/21/18 21:31	1
2,3,4,6,7,8-HxCDF	0.0015	J	0.0042	0.00033	ug/Kg	☼	09/14/18 15:37	09/21/18 21:31	1
2,3,4,7,8-PeCDF	0.0015	J B	0.0042	0.00039	ug/Kg	☼	09/14/18 15:37	09/21/18 21:31	1
2,3,7,8-TCDD	0.00031	J q	0.00083	0.000053	ug/Kg	☼	09/14/18 15:37	09/21/18 21:31	1
OCDD	1.1	B	0.0083	0.00032	ug/Kg	☼	09/14/18 15:37	09/21/18 21:31	1
OCDF	0.065	B	0.0083	0.00015	ug/Kg	☼	09/14/18 15:37	09/21/18 21:31	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	43		23 - 140	09/14/18 15:37	09/21/18 21:31	1
13C-1,2,3,4,6,7,8-HpCDF	34		28 - 143	09/14/18 15:37	09/21/18 21:31	1
13C-1,2,3,4,7,8,9-HpCDF	33		26 - 138	09/14/18 15:37	09/21/18 21:31	1
13C-1,2,3,4,7,8-HxCDD	52		32 - 141	09/14/18 15:37	09/21/18 21:31	1
13C-1,2,3,4,7,8-HxCDF	68		26 - 152	09/14/18 15:37	09/21/18 21:31	1
13C-1,2,3,6,7,8-HxCDD	50		28 - 130	09/14/18 15:37	09/21/18 21:31	1
13C-1,2,3,6,7,8-HxCDF	67		26 - 123	09/14/18 15:37	09/21/18 21:31	1
13C-1,2,3,7,8,9-HxCDF	53		29 - 147	09/14/18 15:37	09/21/18 21:31	1
13C-1,2,3,7,8-PeCDD	59		25 - 181	09/14/18 15:37	09/21/18 21:31	1
13C-1,2,3,7,8-PeCDF	55		24 - 185	09/14/18 15:37	09/21/18 21:31	1
13C-2,3,4,6,7,8-HxCDF	59		28 - 136	09/14/18 15:37	09/21/18 21:31	1
13C-2,3,4,7,8-PeCDF	55		21 - 178	09/14/18 15:37	09/21/18 21:31	1
13C-2,3,7,8-TCDD	56		25 - 164	09/14/18 15:37	09/21/18 21:31	1
13C-OCDD	37		17 - 157	09/14/18 15:37	09/21/18 21:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	75		35 - 197	09/14/18 15:37	09/21/18 21:31	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	B	0.00083	0.00041	ug/Kg	☼	09/14/18 15:37	09/26/18 06:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	68		24 - 169	09/14/18 15:37	09/26/18 06:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	85		35 - 197	09/14/18 15:37	09/26/18 06:21	1

TestAmerica Seattle

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S019-13.7to14.7**

**Lab Sample ID: 580-80167-32**

Date Collected: 09/06/18 20:55

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 60.3

## 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	0.11	B	0.0041	0.00033	ug/Kg	☼	09/14/18 15:37	09/21/18 22:17	1
1,2,3,4,6,7,8-HpCDF	0.10	B	0.0041	0.00041	ug/Kg	☼	09/14/18 15:37	09/21/18 22:17	1
1,2,3,4,7,8,9-HpCDF	0.0036	J B	0.0041	0.00056	ug/Kg	☼	09/14/18 15:37	09/21/18 22:17	1
1,2,3,4,7,8-HxCDD	0.00078	J B	0.0041	0.00011	ug/Kg	☼	09/14/18 15:37	09/21/18 22:17	1
1,2,3,4,7,8-HxCDF	0.0072		0.0041	0.00035	ug/Kg	☼	09/14/18 15:37	09/21/18 22:17	1
1,2,3,6,7,8-HxCDD	0.0050		0.0041	0.00010	ug/Kg	☼	09/14/18 15:37	09/21/18 22:17	1
1,2,3,6,7,8-HxCDF	0.0098	B	0.0041	0.00033	ug/Kg	☼	09/14/18 15:37	09/21/18 22:17	1
1,2,3,7,8,9-HxCDD	0.0023	J B	0.0041	0.000097	ug/Kg	☼	09/14/18 15:37	09/21/18 22:17	1
1,2,3,7,8,9-HxCDF	0.00094	J B	0.0041	0.00032	ug/Kg	☼	09/14/18 15:37	09/21/18 22:17	1
1,2,3,7,8-PeCDD	0.00079	J	0.0041	0.00011	ug/Kg	☼	09/14/18 15:37	09/21/18 22:17	1
1,2,3,7,8-PeCDF	0.0026	J B	0.0041	0.00036	ug/Kg	☼	09/14/18 15:37	09/21/18 22:17	1
2,3,4,6,7,8-HxCDF	0.0022	J	0.0041	0.00032	ug/Kg	☼	09/14/18 15:37	09/21/18 22:17	1
2,3,4,7,8-PeCDF	0.0024	J B	0.0041	0.00039	ug/Kg	☼	09/14/18 15:37	09/21/18 22:17	1
2,3,7,8-TCDD	0.00051	J	0.00082	0.000032	ug/Kg	☼	09/14/18 15:37	09/21/18 22:17	1
OCDD	1.7	B	0.0082	0.00032	ug/Kg	☼	09/14/18 15:37	09/21/18 22:17	1
OCDF	0.12	B	0.0082	0.000084	ug/Kg	☼	09/14/18 15:37	09/21/18 22:17	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	71		23 - 140	09/14/18 15:37	09/21/18 22:17	1
13C-1,2,3,4,6,7,8-HpCDF	57		28 - 143	09/14/18 15:37	09/21/18 22:17	1
13C-1,2,3,4,7,8,9-HpCDF	55		26 - 138	09/14/18 15:37	09/21/18 22:17	1
13C-1,2,3,4,7,8-HxCDD	85		32 - 141	09/14/18 15:37	09/21/18 22:17	1
13C-1,2,3,4,7,8-HxCDF	107		26 - 152	09/14/18 15:37	09/21/18 22:17	1
13C-1,2,3,6,7,8-HxCDD	83		28 - 130	09/14/18 15:37	09/21/18 22:17	1
13C-1,2,3,6,7,8-HxCDF	106		26 - 123	09/14/18 15:37	09/21/18 22:17	1
13C-1,2,3,7,8,9-HxCDF	81		29 - 147	09/14/18 15:37	09/21/18 22:17	1
13C-1,2,3,7,8-PeCDD	80		25 - 181	09/14/18 15:37	09/21/18 22:17	1
13C-1,2,3,7,8-PeCDF	78		24 - 185	09/14/18 15:37	09/21/18 22:17	1
13C-2,3,4,6,7,8-HxCDF	89		28 - 136	09/14/18 15:37	09/21/18 22:17	1
13C-2,3,4,7,8-PeCDF	81		21 - 178	09/14/18 15:37	09/21/18 22:17	1
13C-2,3,7,8-TCDD	78		25 - 164	09/14/18 15:37	09/21/18 22:17	1
13C-OCDD	66		17 - 157	09/14/18 15:37	09/21/18 22:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	74		35 - 197	09/14/18 15:37	09/21/18 22:17	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0019	B	0.00082	0.00029	ug/Kg	☼	09/14/18 15:37	09/26/18 06:59	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	96		24 - 169	09/14/18 15:37	09/26/18 06:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197	09/14/18 15:37	09/26/18 06:59	1

TestAmerica Seattle

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-RB-SS-180906**

**Lab Sample ID: 580-80167-33**

**Date Collected: 09/06/18 21:00**

**Matrix: Water**

**Date Received: 09/07/18 12:35**

**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	0.12	pg/L		09/12/18 07:52	09/22/18 07:59	1
1,2,3,4,6,7,8-HpCDF	1.5	J q B	48	0.15	pg/L		09/12/18 07:52	09/22/18 07:59	1
1,2,3,4,7,8,9-HpCDF	2.6	J B	48	0.20	pg/L		09/12/18 07:52	09/22/18 07:59	1
1,2,3,4,7,8-HxCDD	1.5	J q B	48	0.14	pg/L		09/12/18 07:52	09/22/18 07:59	1
1,2,3,4,7,8-HxCDF	0.88	J B	48	0.19	pg/L		09/12/18 07:52	09/22/18 07:59	1
1,2,3,6,7,8-HxCDD	1.0	J B	48	0.13	pg/L		09/12/18 07:52	09/22/18 07:59	1
1,2,3,6,7,8-HxCDF	1.0	J B	48	0.19	pg/L		09/12/18 07:52	09/22/18 07:59	1
1,2,3,7,8,9-HxCDD	0.93	J q B	48	0.12	pg/L		09/12/18 07:52	09/22/18 07:59	1
1,2,3,7,8,9-HxCDF	6.0	J B	48	0.14	pg/L		09/12/18 07:52	09/22/18 07:59	1
1,2,3,7,8-PeCDD	ND		48	0.17	pg/L		09/12/18 07:52	09/22/18 07:59	1
1,2,3,7,8-PeCDF	1.5	J B	48	0.15	pg/L		09/12/18 07:52	09/22/18 07:59	1
2,3,4,6,7,8-HxCDF	0.60	J q B	48	0.15	pg/L		09/12/18 07:52	09/22/18 07:59	1
2,3,4,7,8-PeCDF	0.79	J q B	48	0.17	pg/L		09/12/18 07:52	09/22/18 07:59	1
2,3,7,8-TCDD	ND		9.6	0.15	pg/L		09/12/18 07:52	09/22/18 07:59	1
2,3,7,8-TCDF	1.6	J B	9.6	0.080	pg/L		09/12/18 07:52	09/22/18 07:59	1
OCDD	14	J B	96	0.29	pg/L		09/12/18 07:52	09/22/18 07:59	1
OCDF	5.3	J B	96	0.21	pg/L		09/12/18 07:52	09/22/18 07:59	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	91		23 - 140	09/12/18 07:52	09/22/18 07:59	1
13C-1,2,3,4,6,7,8-HpCDF	80		28 - 143	09/12/18 07:52	09/22/18 07:59	1
13C-1,2,3,4,7,8,9-HpCDF	82		26 - 138	09/12/18 07:52	09/22/18 07:59	1
13C-1,2,3,4,7,8-HxCDD	72		32 - 141	09/12/18 07:52	09/22/18 07:59	1
13C-1,2,3,4,7,8-HxCDF	75		26 - 152	09/12/18 07:52	09/22/18 07:59	1
13C-1,2,3,6,7,8-HxCDD	77		28 - 130	09/12/18 07:52	09/22/18 07:59	1
13C-1,2,3,6,7,8-HxCDF	77		26 - 123	09/12/18 07:52	09/22/18 07:59	1
13C-1,2,3,7,8,9-HxCDF	77		29 - 147	09/12/18 07:52	09/22/18 07:59	1
13C-1,2,3,7,8-PeCDD	70		25 - 181	09/12/18 07:52	09/22/18 07:59	1
13C-1,2,3,7,8-PeCDF	65		24 - 185	09/12/18 07:52	09/22/18 07:59	1
13C-2,3,4,6,7,8-HxCDF	77		28 - 136	09/12/18 07:52	09/22/18 07:59	1
13C-2,3,4,7,8-PeCDF	63		21 - 178	09/12/18 07:52	09/22/18 07:59	1
13C-2,3,7,8-TCDD	77		25 - 164	09/12/18 07:52	09/22/18 07:59	1
13C-2,3,7,8-TCDF	69		24 - 169	09/12/18 07:52	09/22/18 07:59	1
13C-OCDD	75		17 - 157	09/12/18 07:52	09/22/18 07:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	76		35 - 197	09/12/18 07:52	09/22/18 07:59	1

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-RB-LL-180907**

**Lab Sample ID: 580-80167-34**

**Date Collected: 09/07/18 10:00**

**Matrix: Water**

**Date Received: 09/07/18 12:35**

**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	1.9	J B	48	0.10	pg/L		09/12/18 07:52	09/22/18 08:45	1
1,2,3,4,6,7,8-HpCDF	1.8	J q B	48	0.13	pg/L		09/12/18 07:52	09/22/18 08:45	1
1,2,3,4,7,8,9-HpCDF	1.9	J B	48	0.17	pg/L		09/12/18 07:52	09/22/18 08:45	1
1,2,3,4,7,8-HxCDD	1.4	J B	48	0.10	pg/L		09/12/18 07:52	09/22/18 08:45	1
1,2,3,4,7,8-HxCDF	0.81	J q B	48	0.13	pg/L		09/12/18 07:52	09/22/18 08:45	1
1,2,3,6,7,8-HxCDD	0.62	J q B	48	0.098	pg/L		09/12/18 07:52	09/22/18 08:45	1
1,2,3,6,7,8-HxCDF	0.78	J B	48	0.12	pg/L		09/12/18 07:52	09/22/18 08:45	1
1,2,3,7,8,9-HxCDD	0.70	J B	48	0.092	pg/L		09/12/18 07:52	09/22/18 08:45	1
1,2,3,7,8,9-HxCDF	4.4	J B	48	0.094	pg/L		09/12/18 07:52	09/22/18 08:45	1
1,2,3,7,8-PeCDD	0.30	J q B	48	0.13	pg/L		09/12/18 07:52	09/22/18 08:45	1
1,2,3,7,8-PeCDF	1.3	J B	48	0.14	pg/L		09/12/18 07:52	09/22/18 08:45	1
2,3,4,6,7,8-HxCDF	0.50	J q B	48	0.10	pg/L		09/12/18 07:52	09/22/18 08:45	1
2,3,4,7,8-PeCDF	0.68	J B	48	0.15	pg/L		09/12/18 07:52	09/22/18 08:45	1
2,3,7,8-TCDD	ND		9.5	0.14	pg/L		09/12/18 07:52	09/22/18 08:45	1
2,3,7,8-TCDF	1.2	J B	9.5	0.073	pg/L		09/12/18 07:52	09/22/18 08:45	1
OCDD	19	J B	95	0.21	pg/L		09/12/18 07:52	09/22/18 08:45	1
OCDF	4.8	J B	95	0.16	pg/L		09/12/18 07:52	09/22/18 08:45	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	93		23 - 140	09/12/18 07:52	09/22/18 08:45	1
13C-1,2,3,4,6,7,8-HpCDF	82		28 - 143	09/12/18 07:52	09/22/18 08:45	1
13C-1,2,3,4,7,8,9-HpCDF	85		26 - 138	09/12/18 07:52	09/22/18 08:45	1
13C-1,2,3,4,7,8-HxCDD	73		32 - 141	09/12/18 07:52	09/22/18 08:45	1
13C-1,2,3,4,7,8-HxCDF	77		26 - 152	09/12/18 07:52	09/22/18 08:45	1
13C-1,2,3,6,7,8-HxCDD	75		28 - 130	09/12/18 07:52	09/22/18 08:45	1
13C-1,2,3,6,7,8-HxCDF	78		26 - 123	09/12/18 07:52	09/22/18 08:45	1
13C-1,2,3,7,8,9-HxCDF	76		29 - 147	09/12/18 07:52	09/22/18 08:45	1
13C-1,2,3,7,8-PeCDD	69		25 - 181	09/12/18 07:52	09/22/18 08:45	1
13C-1,2,3,7,8-PeCDF	65		24 - 185	09/12/18 07:52	09/22/18 08:45	1
13C-2,3,4,6,7,8-HxCDF	76		28 - 136	09/12/18 07:52	09/22/18 08:45	1
13C-2,3,4,7,8-PeCDF	64		21 - 178	09/12/18 07:52	09/22/18 08:45	1
13C-2,3,7,8-TCDD	78		25 - 164	09/12/18 07:52	09/22/18 08:45	1
13C-2,3,7,8-TCDF	70		24 - 169	09/12/18 07:52	09/22/18 08:45	1
13C-OCDD	82		17 - 157	09/12/18 07:52	09/22/18 08:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	76		35 - 197	09/12/18 07:52	09/22/18 08:45	1



# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-RB-AL-180905**

**Lab Sample ID: 580-80167-35**

**Date Collected: 09/07/18 10:15**

**Matrix: Water**

**Date Received: 09/07/18 12:35**

**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	1.0	J B	49	0.11	pg/L		09/12/18 07:52	09/22/18 09:31	1
1,2,3,4,6,7,8-HpCDF	0.70	J q B	49	0.15	pg/L		09/12/18 07:52	09/22/18 09:31	1
1,2,3,4,7,8,9-HpCDF	1.6	J q B	49	0.19	pg/L		09/12/18 07:52	09/22/18 09:31	1
1,2,3,4,7,8-HxCDD	1.3	J B	49	0.11	pg/L		09/12/18 07:52	09/22/18 09:31	1
1,2,3,4,7,8-HxCDF	0.48	J B	49	0.16	pg/L		09/12/18 07:52	09/22/18 09:31	1
1,2,3,6,7,8-HxCDD	0.27	J q B	49	0.11	pg/L		09/12/18 07:52	09/22/18 09:31	1
1,2,3,6,7,8-HxCDF	0.49	J q B	49	0.16	pg/L		09/12/18 07:52	09/22/18 09:31	1
1,2,3,7,8,9-HxCDD	ND		49	0.10	pg/L		09/12/18 07:52	09/22/18 09:31	1
1,2,3,7,8,9-HxCDF	5.1	J B	49	0.12	pg/L		09/12/18 07:52	09/22/18 09:31	1
1,2,3,7,8-PeCDD	ND		49	0.14	pg/L		09/12/18 07:52	09/22/18 09:31	1
1,2,3,7,8-PeCDF	1.1	J B	49	0.15	pg/L		09/12/18 07:52	09/22/18 09:31	1
2,3,4,6,7,8-HxCDF	0.20	J q B	49	0.12	pg/L		09/12/18 07:52	09/22/18 09:31	1
2,3,4,7,8-PeCDF	ND		49	0.17	pg/L		09/12/18 07:52	09/22/18 09:31	1
2,3,7,8-TCDD	ND		9.9	0.15	pg/L		09/12/18 07:52	09/22/18 09:31	1
2,3,7,8-TCDF	1.1	J q B	9.9	0.081	pg/L		09/12/18 07:52	09/22/18 09:31	1
OCDD	11	J B	99	0.20	pg/L		09/12/18 07:52	09/22/18 09:31	1
OCDF	2.1	J B	99	0.19	pg/L		09/12/18 07:52	09/22/18 09:31	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	91		23 - 140	09/12/18 07:52	09/22/18 09:31	1
13C-1,2,3,4,6,7,8-HpCDF	80		28 - 143	09/12/18 07:52	09/22/18 09:31	1
13C-1,2,3,4,7,8,9-HpCDF	83		26 - 138	09/12/18 07:52	09/22/18 09:31	1
13C-1,2,3,4,7,8-HxCDD	74		32 - 141	09/12/18 07:52	09/22/18 09:31	1
13C-1,2,3,4,7,8-HxCDF	77		26 - 152	09/12/18 07:52	09/22/18 09:31	1
13C-1,2,3,6,7,8-HxCDD	74		28 - 130	09/12/18 07:52	09/22/18 09:31	1
13C-1,2,3,6,7,8-HxCDF	76		26 - 123	09/12/18 07:52	09/22/18 09:31	1
13C-1,2,3,7,8,9-HxCDF	76		29 - 147	09/12/18 07:52	09/22/18 09:31	1
13C-1,2,3,7,8-PeCDD	70		25 - 181	09/12/18 07:52	09/22/18 09:31	1
13C-1,2,3,7,8-PeCDF	66		24 - 185	09/12/18 07:52	09/22/18 09:31	1
13C-2,3,4,6,7,8-HxCDF	76		28 - 136	09/12/18 07:52	09/22/18 09:31	1
13C-2,3,4,7,8-PeCDF	65		21 - 178	09/12/18 07:52	09/22/18 09:31	1
13C-2,3,7,8-TCDD	78		25 - 164	09/12/18 07:52	09/22/18 09:31	1
13C-2,3,7,8-TCDF	70		24 - 169	09/12/18 07:52	09/22/18 09:31	1
13C-OCDD	79		17 - 157	09/12/18 07:52	09/22/18 09:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	74		35 - 197	09/12/18 07:52	09/22/18 09:31	1

# Client Sample Results

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S019-10to12D**

**Lab Sample ID: 580-80167-36**

Date Collected: 09/06/18 20:45

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 57.1

## 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	0.11	B	0.0044	0.00034	ug/Kg	☼	09/14/18 15:37	09/21/18 23:03	1
1,2,3,4,6,7,8-HpCDF	0.054	B	0.0044	0.00038	ug/Kg	☼	09/14/18 15:37	09/21/18 23:03	1
1,2,3,4,7,8,9-HpCDF	0.0037	J B	0.0044	0.00046	ug/Kg	☼	09/14/18 15:37	09/21/18 23:03	1
1,2,3,4,7,8-HxCDD	0.0010	J B	0.0044	0.00011	ug/Kg	☼	09/14/18 15:37	09/21/18 23:03	1
1,2,3,4,7,8-HxCDF	0.0059		0.0044	0.00023	ug/Kg	☼	09/14/18 15:37	09/21/18 23:03	1
1,2,3,6,7,8-HxCDD	0.0053		0.0044	0.00011	ug/Kg	☼	09/14/18 15:37	09/21/18 23:03	1
1,2,3,6,7,8-HxCDF	0.0059	B	0.0044	0.00021	ug/Kg	☼	09/14/18 15:37	09/21/18 23:03	1
1,2,3,7,8,9-HxCDD	0.0028	J B	0.0044	0.00010	ug/Kg	☼	09/14/18 15:37	09/21/18 23:03	1
1,2,3,7,8,9-HxCDF	0.0012	J B	0.0044	0.00019	ug/Kg	☼	09/14/18 15:37	09/21/18 23:03	1
1,2,3,7,8-PeCDD	0.00074	J	0.0044	0.00016	ug/Kg	☼	09/14/18 15:37	09/21/18 23:03	1
1,2,3,7,8-PeCDF	0.0028	J B	0.0044	0.00018	ug/Kg	☼	09/14/18 15:37	09/21/18 23:03	1
2,3,4,6,7,8-HxCDF	0.0013	J	0.0044	0.00020	ug/Kg	☼	09/14/18 15:37	09/21/18 23:03	1
2,3,4,7,8-PeCDF	0.0019	J B	0.0044	0.00020	ug/Kg	☼	09/14/18 15:37	09/21/18 23:03	1
2,3,7,8-TCDD	0.00044	J	0.00088	0.000040	ug/Kg	☼	09/14/18 15:37	09/21/18 23:03	1
OCDD	1.9	B	0.0088	0.00038	ug/Kg	☼	09/14/18 15:37	09/21/18 23:03	1
OCDF	0.13	B	0.0088	0.00011	ug/Kg	☼	09/14/18 15:37	09/21/18 23:03	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	53		23 - 140	09/14/18 15:37	09/21/18 23:03	1
13C-1,2,3,4,6,7,8-HpCDF	42		28 - 143	09/14/18 15:37	09/21/18 23:03	1
13C-1,2,3,4,7,8,9-HpCDF	43		26 - 138	09/14/18 15:37	09/21/18 23:03	1
13C-1,2,3,4,7,8-HxCDD	62		32 - 141	09/14/18 15:37	09/21/18 23:03	1
13C-1,2,3,4,7,8-HxCDF	76		26 - 152	09/14/18 15:37	09/21/18 23:03	1
13C-1,2,3,6,7,8-HxCDD	59		28 - 130	09/14/18 15:37	09/21/18 23:03	1
13C-1,2,3,6,7,8-HxCDF	78		26 - 123	09/14/18 15:37	09/21/18 23:03	1
13C-1,2,3,7,8,9-HxCDF	61		29 - 147	09/14/18 15:37	09/21/18 23:03	1
13C-1,2,3,7,8-PeCDD	65		25 - 181	09/14/18 15:37	09/21/18 23:03	1
13C-1,2,3,7,8-PeCDF	60		24 - 185	09/14/18 15:37	09/21/18 23:03	1
13C-2,3,4,6,7,8-HxCDF	67		28 - 136	09/14/18 15:37	09/21/18 23:03	1
13C-2,3,4,7,8-PeCDF	59		21 - 178	09/14/18 15:37	09/21/18 23:03	1
13C-2,3,7,8-TCDD	58		25 - 164	09/14/18 15:37	09/21/18 23:03	1
13C-OCDD	49		17 - 157	09/14/18 15:37	09/21/18 23:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	74		35 - 197	09/14/18 15:37	09/21/18 23:03	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0024	B	0.00088	0.00031	ug/Kg	☼	09/14/18 15:37	09/26/18 07:37	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	66		24 - 169	09/14/18 15:37	09/26/18 07:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	90		35 - 197	09/14/18 15:37	09/26/18 07:37	1

TestAmerica Seattle

# QC Sample Results

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

TestAmerica Job ID: 580-80167-2

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

**Lab Sample ID: MB 320-245166/1-A**  
**Matrix: Water**  
**Analysis Batch: 247160**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 245166**

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	2.22	J	50	0.19	pg/L		09/12/18 07:52	09/22/18 05:41	1
1,2,3,4,6,7,8-HpCDF	1.81	J	50	0.19	pg/L		09/12/18 07:52	09/22/18 05:41	1
1,2,3,4,7,8,9-HpCDF	2.90	J	50	0.24	pg/L		09/12/18 07:52	09/22/18 05:41	1
1,2,3,4,7,8-HxCDD	1.87	J	50	0.13	pg/L		09/12/18 07:52	09/22/18 05:41	1
1,2,3,4,7,8-HxCDF	0.873	J	50	0.22	pg/L		09/12/18 07:52	09/22/18 05:41	1
1,2,3,6,7,8-HxCDD	0.655	J q	50	0.13	pg/L		09/12/18 07:52	09/22/18 05:41	1
1,2,3,6,7,8-HxCDF	0.743	J q	50	0.21	pg/L		09/12/18 07:52	09/22/18 05:41	1
1,2,3,7,8,9-HxCDD	1.14	J	50	0.12	pg/L		09/12/18 07:52	09/22/18 05:41	1
1,2,3,7,8,9-HxCDF	6.46	J	50	0.16	pg/L		09/12/18 07:52	09/22/18 05:41	1
1,2,3,7,8-PeCDD	0.533	J q	50	0.20	pg/L		09/12/18 07:52	09/22/18 05:41	1
1,2,3,7,8-PeCDF	1.57	J	50	0.24	pg/L		09/12/18 07:52	09/22/18 05:41	1
2,3,4,6,7,8-HxCDF	0.766	J	50	0.16	pg/L		09/12/18 07:52	09/22/18 05:41	1
2,3,4,7,8-PeCDF	0.852	J	50	0.26	pg/L		09/12/18 07:52	09/22/18 05:41	1
2,3,7,8-TCDD	ND		10	0.22	pg/L		09/12/18 07:52	09/22/18 05:41	1
2,3,7,8-TCDF	1.65	J q	10	0.12	pg/L		09/12/18 07:52	09/22/18 05:41	1
OCDD	18.1	J	100	0.36	pg/L		09/12/18 07:52	09/22/18 05:41	1
OCDF	4.39	J	100	0.30	pg/L		09/12/18 07:52	09/22/18 05:41	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	82		23 - 140	09/12/18 07:52	09/22/18 05:41	1
13C-1,2,3,4,6,7,8-HpCDF	74		28 - 143	09/12/18 07:52	09/22/18 05:41	1
13C-1,2,3,4,7,8,9-HpCDF	76		26 - 138	09/12/18 07:52	09/22/18 05:41	1
13C-1,2,3,4,7,8-HxCDD	70		32 - 141	09/12/18 07:52	09/22/18 05:41	1
13C-1,2,3,4,7,8-HxCDF	71		26 - 152	09/12/18 07:52	09/22/18 05:41	1
13C-1,2,3,6,7,8-HxCDD	71		28 - 130	09/12/18 07:52	09/22/18 05:41	1
13C-1,2,3,6,7,8-HxCDF	73		26 - 123	09/12/18 07:52	09/22/18 05:41	1
13C-1,2,3,7,8,9-HxCDF	72		29 - 147	09/12/18 07:52	09/22/18 05:41	1
13C-1,2,3,7,8-PeCDD	65		25 - 181	09/12/18 07:52	09/22/18 05:41	1
13C-1,2,3,7,8-PeCDF	61		24 - 185	09/12/18 07:52	09/22/18 05:41	1
13C-2,3,4,6,7,8-HxCDF	73		28 - 136	09/12/18 07:52	09/22/18 05:41	1
13C-2,3,4,7,8-PeCDF	62		21 - 178	09/12/18 07:52	09/22/18 05:41	1
13C-2,3,7,8-TCDD	72		25 - 164	09/12/18 07:52	09/22/18 05:41	1
13C-2,3,7,8-TCDF	66		24 - 169	09/12/18 07:52	09/22/18 05:41	1
13C-OCDD	67		17 - 157	09/12/18 07:52	09/22/18 05:41	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	73		35 - 197	09/12/18 07:52	09/22/18 05:41	1

**Lab Sample ID: LCS 320-245166/2-A**  
**Matrix: Water**  
**Analysis Batch: 247160**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 245166**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	1000	872		pg/L		87	70 - 140
1,2,3,4,6,7,8-HpCDF	1000	954		pg/L		95	82 - 122
1,2,3,4,7,8,9-HpCDF	1000	954		pg/L		95	78 - 138
1,2,3,4,7,8-HxCDD	1000	970		pg/L		97	70 - 164
1,2,3,4,7,8-HxCDF	1000	959		pg/L		96	72 - 134

TestAmerica Seattle

# QC Sample Results

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

TestAmerica Job ID: 580-80167-2

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

**Lab Sample ID: LCS 320-245166/2-A**  
**Matrix: Water**  
**Analysis Batch: 247160**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 245166**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,6,7,8-HxCDD	1000	980		pg/L		98	76 - 134
1,2,3,6,7,8-HxCDF	1000	972		pg/L		97	84 - 130
1,2,3,7,8,9-HxCDD	1000	1000		pg/L		100	64 - 162
1,2,3,7,8,9-HxCDF	1000	984		pg/L		98	78 - 130
1,2,3,7,8-PeCDD	1000	926		pg/L		93	70 - 142
1,2,3,7,8-PeCDF	1000	963		pg/L		96	80 - 134
2,3,4,6,7,8-HxCDF	1000	984		pg/L		98	70 - 156
2,3,4,7,8-PeCDF	1000	979		pg/L		98	68 - 160
2,3,7,8-TCDD	200	169		pg/L		84	67 - 158
2,3,7,8-TCDF	200	201		pg/L		100	75 - 158
OCDD	2000	1790		pg/L		90	78 - 144
OCDF	2000	2000		pg/L		100	63 - 170

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C-1,2,3,4,6,7,8-HpCDD	73		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	66		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	67		20 - 186
13C-1,2,3,4,7,8-HxCDD	62		21 - 193
13C-1,2,3,4,7,8-HxCDF	65		19 - 202
13C-1,2,3,6,7,8-HxCDD	64		25 - 163
13C-1,2,3,6,7,8-HxCDF	65		21 - 159
13C-1,2,3,7,8,9-HxCDF	66		17 - 205
13C-1,2,3,7,8-PeCDD	61		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	57		13 - 328
13C-2,3,7,8-TCDD	67		20 - 175
13C-2,3,7,8-TCDF	60		22 - 152
13C-OCDD	57		13 - 199

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	70		31 - 191

**Lab Sample ID: LCSD 320-245166/3-A**  
**Matrix: Water**  
**Analysis Batch: 247160**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 245166**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		RPD	Limit
							Limits	RPD		
1,2,3,4,6,7,8-HpCDD	1000	882		pg/L		88	70 - 140	1	50	
1,2,3,4,6,7,8-HpCDF	1000	960		pg/L		96	82 - 122	1	50	
1,2,3,4,7,8,9-HpCDF	1000	964		pg/L		96	78 - 138	1	50	
1,2,3,4,7,8-HxCDD	1000	992		pg/L		99	70 - 164	2	50	
1,2,3,4,7,8-HxCDF	1000	967		pg/L		97	72 - 134	1	50	
1,2,3,6,7,8-HxCDD	1000	953		pg/L		95	76 - 134	3	50	
1,2,3,6,7,8-HxCDF	1000	986		pg/L		99	84 - 130	1	50	
1,2,3,7,8,9-HxCDD	1000	988		pg/L		99	64 - 162	1	50	
1,2,3,7,8,9-HxCDF	1000	976		pg/L		98	78 - 130	1	50	
1,2,3,7,8-PeCDD	1000	931		pg/L		93	70 - 142	1	50	

TestAmerica Seattle

# QC Sample Results

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

TestAmerica Job ID: 580-80167-2

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

**Lab Sample ID: LCSD 320-245166/3-A**  
**Matrix: Water**  
**Analysis Batch: 247160**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 245166**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,7,8-PeCDF	1000	978		pg/L		98	80 - 134	1	50
2,3,4,6,7,8-HxCDF	1000	980		pg/L		98	70 - 156	0	50
2,3,4,7,8-PeCDF	1000	980		pg/L		98	68 - 160	0	50
2,3,7,8-TCDD	200	170		pg/L		85	67 - 158	1	50
2,3,7,8-TCDF	200	201		pg/L		100	75 - 158	0	50
OCDD	2000	1790		pg/L		90	78 - 144	0	50
OCDF	2000	2010		pg/L		101	63 - 170	1	50

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C-1,2,3,4,6,7,8-HpCDD	85		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	76		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	79		20 - 186
13C-1,2,3,4,7,8-HxCDD	70		21 - 193
13C-1,2,3,4,7,8-HxCDF	74		19 - 202
13C-1,2,3,6,7,8-HxCDD	75		25 - 163
13C-1,2,3,6,7,8-HxCDF	74		21 - 159
13C-1,2,3,7,8,9-HxCDF	75		17 - 205
13C-1,2,3,7,8-PeCDD	67		21 - 227
13C-1,2,3,7,8-PeCDF	63		21 - 192
13C-2,3,4,6,7,8-HxCDF	76		22 - 176
13C-2,3,4,7,8-PeCDF	62		13 - 328
13C-2,3,7,8-TCDD	74		20 - 175
13C-2,3,7,8-TCDF	65		22 - 152
13C-OCDD	71		13 - 199

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	73		31 - 191

**Lab Sample ID: MB 320-245460/1-A**  
**Matrix: Solid**  
**Analysis Batch: 246809**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 245460**

Analyte	MB		RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,2,3,4,6,7,8-HpCDD	0.000145	J	0.0050	0.000018	ug/Kg		09/13/18 13:38	09/20/18 08:20	1
1,2,3,4,6,7,8-HpCDF	0.000173	J	0.0050	0.000020	ug/Kg		09/13/18 13:38	09/20/18 08:20	1
1,2,3,4,7,8,9-HpCDF	0.000334	J	0.0050	0.000026	ug/Kg		09/13/18 13:38	09/20/18 08:20	1
1,2,3,4,7,8-HxCDD	0.000119	J q	0.0050	0.000014	ug/Kg		09/13/18 13:38	09/20/18 08:20	1
1,2,3,4,7,8-HxCDF	ND		0.0050	0.000036	ug/Kg		09/13/18 13:38	09/20/18 08:20	1
1,2,3,6,7,8-HxCDD	0.0000399	J q	0.0050	0.000013	ug/Kg		09/13/18 13:38	09/20/18 08:20	1
1,2,3,6,7,8-HxCDF	ND		0.0050	0.000032	ug/Kg		09/13/18 13:38	09/20/18 08:20	1
1,2,3,7,8,9-HxCDD	0.0000740	J q	0.0050	0.000012	ug/Kg		09/13/18 13:38	09/20/18 08:20	1
1,2,3,7,8,9-HxCDF	0.00123	J	0.0050	0.000026	ug/Kg		09/13/18 13:38	09/20/18 08:20	1
1,2,3,7,8-PeCDD	ND		0.0050	0.000029	ug/Kg		09/13/18 13:38	09/20/18 08:20	1
1,2,3,7,8-PeCDF	0.000275	J	0.0050	0.000026	ug/Kg		09/13/18 13:38	09/20/18 08:20	1
2,3,4,6,7,8-HxCDF	ND		0.0050	0.000026	ug/Kg		09/13/18 13:38	09/20/18 08:20	1
2,3,4,7,8-PeCDF	0.0000666	J	0.0050	0.000029	ug/Kg		09/13/18 13:38	09/20/18 08:20	1
2,3,7,8-TCDD	ND		0.0010	0.000031	ug/Kg		09/13/18 13:38	09/20/18 08:20	1
2,3,7,8-TCDF	0.000132	J	0.0010	0.000017	ug/Kg		09/13/18 13:38	09/20/18 08:20	1

TestAmerica Seattle

# QC Sample Results

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

TestAmerica Job ID: 580-80167-2

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

**Lab Sample ID: MB 320-245460/1-A**  
**Matrix: Solid**  
**Analysis Batch: 246809**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 245460**

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
OCDD	0.000443	J	0.010	0.000018	ug/Kg		09/13/18 13:38	09/20/18 08:20	1
OCDF	0.000682	J	0.010	0.000046	ug/Kg		09/13/18 13:38	09/20/18 08:20	1
MB MB									
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	75		23 - 140				09/13/18 13:38	09/20/18 08:20	1
13C-1,2,3,4,6,7,8-HpCDF	64		28 - 143				09/13/18 13:38	09/20/18 08:20	1
13C-1,2,3,4,7,8,9-HpCDF	67		26 - 138				09/13/18 13:38	09/20/18 08:20	1
13C-1,2,3,4,7,8-HxCDD	69		32 - 141				09/13/18 13:38	09/20/18 08:20	1
13C-1,2,3,4,7,8-HxCDF	68		26 - 152				09/13/18 13:38	09/20/18 08:20	1
13C-1,2,3,6,7,8-HxCDD	70		28 - 130				09/13/18 13:38	09/20/18 08:20	1
13C-1,2,3,6,7,8-HxCDF	73		26 - 123				09/13/18 13:38	09/20/18 08:20	1
13C-1,2,3,7,8,9-HxCDF	69		29 - 147				09/13/18 13:38	09/20/18 08:20	1
13C-1,2,3,7,8-PeCDD	65		25 - 181				09/13/18 13:38	09/20/18 08:20	1
13C-1,2,3,7,8-PeCDF	64		24 - 185				09/13/18 13:38	09/20/18 08:20	1
13C-2,3,4,6,7,8-HxCDF	72		28 - 136				09/13/18 13:38	09/20/18 08:20	1
13C-2,3,4,7,8-PeCDF	61		21 - 178				09/13/18 13:38	09/20/18 08:20	1
13C-2,3,7,8-TCDD	68		25 - 164				09/13/18 13:38	09/20/18 08:20	1
13C-2,3,7,8-TCDF	61		24 - 169				09/13/18 13:38	09/20/18 08:20	1
13C-OCDD	67		17 - 157				09/13/18 13:38	09/20/18 08:20	1
MB MB									
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	72		35 - 197				09/13/18 13:38	09/20/18 08:20	1

**Lab Sample ID: LCS 320-245460/2-A**  
**Matrix: Solid**  
**Analysis Batch: 246809**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 245460**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.0973		ug/Kg		97	70 - 140
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	0.107		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	0.108		ug/Kg		108	72 - 134
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	0.109		ug/Kg		109	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	0.108		ug/Kg		108	78 - 130
1,2,3,7,8-PeCDD	0.100	0.102		ug/Kg		102	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	0.109		ug/Kg		109	70 - 156
2,3,4,7,8-PeCDF	0.100	0.105		ug/Kg		105	68 - 160
2,3,7,8-TCDD	0.0200	0.0178		ug/Kg		89	67 - 158
2,3,7,8-TCDF	0.0200	0.0210		ug/Kg		105	75 - 158
OCDD	0.200	0.198		ug/Kg		99	78 - 144
OCDF	0.200	0.218		ug/Kg		109	63 - 170
LCS LCS							
Isotope Dilution	%Recovery	Qualifier	Limits				
13C-1,2,3,4,6,7,8-HpCDD	74		26 - 166				

TestAmerica Seattle

# QC Sample Results

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

TestAmerica Job ID: 580-80167-2

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

**Lab Sample ID: LCS 320-245460/2-A**  
**Matrix: Solid**  
**Analysis Batch: 246809**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 245460**

<i>Isotope Dilution</i>	<b>LCS LCS</b>		<b>Limits</b>
	<b>%Recovery</b>	<b>Qualifier</b>	
13C-1,2,3,4,6,7,8-HpCDF	65		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	66		20 - 186
13C-1,2,3,4,7,8-HxCDD	68		21 - 193
13C-1,2,3,4,7,8-HxCDF	68		19 - 202
13C-1,2,3,6,7,8-HxCDD	68		25 - 163
13C-1,2,3,6,7,8-HxCDF	71		21 - 159
13C-1,2,3,7,8,9-HxCDF	67		17 - 205
13C-1,2,3,7,8-PeCDD	64		21 - 227
13C-1,2,3,7,8-PeCDF	62		21 - 192
13C-2,3,4,6,7,8-HxCDF	69		22 - 176
13C-2,3,4,7,8-PeCDF	60		13 - 328
13C-2,3,7,8-TCDD	66		20 - 175
13C-2,3,7,8-TCDF	58		22 - 152
13C-OCDD	64		13 - 199
<b>Surrogate</b>	<b>LCS LCS</b>		<b>Limits</b>
	<b>%Recovery</b>	<b>Qualifier</b>	
37Cl4-2,3,7,8-TCDD	69		31 - 191

**Lab Sample ID: LCSD 320-245460/3-A**  
**Matrix: Solid**  
**Analysis Batch: 246809**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 245460**

<b>Analyte</b>	<b>Spike Added</b>	<b>LCSD Result</b>	<b>LCSD Qualifier</b>	<b>Unit</b>	<b>D</b>	<b>%Rec</b>	<b>%Rec. Limits</b>	<b>RPD</b>	<b>RPD Limit</b>
1,2,3,4,6,7,8-HpCDD	0.100	0.0997		ug/Kg		100	70 - 140	2	50
1,2,3,4,6,7,8-HpCDF	0.100	0.109		ug/Kg		109	82 - 122	3	50
1,2,3,4,7,8,9-HpCDF	0.100	0.109		ug/Kg		109	78 - 138	3	50
1,2,3,4,7,8-HxCDD	0.100	0.110		ug/Kg		110	70 - 164	5	50
1,2,3,4,7,8-HxCDF	0.100	0.112		ug/Kg		112	72 - 134	3	50
1,2,3,6,7,8-HxCDD	0.100	0.110		ug/Kg		110	76 - 134	3	50
1,2,3,6,7,8-HxCDF	0.100	0.110		ug/Kg		110	84 - 130	1	50
1,2,3,7,8,9-HxCDD	0.100	0.109		ug/Kg		109	64 - 162	5	50
1,2,3,7,8,9-HxCDF	0.100	0.112		ug/Kg		112	78 - 130	4	50
1,2,3,7,8-PeCDD	0.100	0.106		ug/Kg		106	70 - 142	4	50
1,2,3,7,8-PeCDF	0.100	0.109		ug/Kg		109	80 - 134	4	50
2,3,4,6,7,8-HxCDF	0.100	0.113		ug/Kg		113	70 - 156	3	50
2,3,4,7,8-PeCDF	0.100	0.108		ug/Kg		108	68 - 160	3	50
2,3,7,8-TCDD	0.0200	0.0184		ug/Kg		92	67 - 158	3	50
2,3,7,8-TCDF	0.0200	0.0216		ug/Kg		108	75 - 158	2	50
OCDD	0.200	0.201		ug/Kg		101	78 - 144	2	50
OCDF	0.200	0.223		ug/Kg		111	63 - 170	2	50
<i>Isotope Dilution</i>	<b>LCSD LCSD</b>		<b>Limits</b>						
	<b>%Recovery</b>	<b>Qualifier</b>							
13C-1,2,3,4,6,7,8-HpCDD	78		26 - 166						
13C-1,2,3,4,6,7,8-HpCDF	70		21 - 158						
13C-1,2,3,4,7,8,9-HpCDF	70		20 - 186						
13C-1,2,3,4,7,8-HxCDD	73		21 - 193						
13C-1,2,3,4,7,8-HxCDF	75		19 - 202						
13C-1,2,3,6,7,8-HxCDD	75		25 - 163						

TestAmerica Seattle

# QC Sample Results

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

TestAmerica Job ID: 580-80167-2

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

**Lab Sample ID: LCSD 320-245460/3-A**  
**Matrix: Solid**  
**Analysis Batch: 246809**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 245460**

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>LCSD Qualifier</i>	<i>LCSD Limits</i>
13C-1,2,3,6,7,8-HxCDF	79		21 - 159
13C-1,2,3,7,8,9-HxCDF	73		17 - 205
13C-1,2,3,7,8-PeCDD	72		21 - 227
13C-1,2,3,7,8-PeCDF	67		21 - 192
13C-2,3,4,6,7,8-HxCDF	74		22 - 176
13C-2,3,4,7,8-PeCDF	65		13 - 328
13C-2,3,7,8-TCDD	74		20 - 175
13C-2,3,7,8-TCDF	65		22 - 152
13C-OCDD	69		13 - 199

<i>Surrogate</i>	<i>%Recovery</i>	<i>LCSD Qualifier</i>	<i>LCSD Limits</i>
37Cl4-2,3,7,8-TCDD	72		31 - 191

**Lab Sample ID: MB 320-245749/1-A**  
**Matrix: Solid**  
**Analysis Batch: 246911**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 245749**

<i>Analyte</i>	<i>MB Result</i>	<i>MB Qualifier</i>	<i>RL</i>	<i>EDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
1,2,3,4,6,7,8-HpCDD	0.000206	J q	0.0050	0.000041	ug/Kg		09/14/18 15:37	09/21/18 07:18	1
1,2,3,4,6,7,8-HpCDF	0.000141	J	0.0050	0.000035	ug/Kg		09/14/18 15:37	09/21/18 07:18	1
1,2,3,4,7,8,9-HpCDF	0.000343	J	0.0050	0.000049	ug/Kg		09/14/18 15:37	09/21/18 07:18	1
1,2,3,4,7,8-HxCDD	0.000149	J q	0.0050	0.000025	ug/Kg		09/14/18 15:37	09/21/18 07:18	1
1,2,3,4,7,8-HxCDF	ND		0.0050	0.000034	ug/Kg		09/14/18 15:37	09/21/18 07:18	1
1,2,3,6,7,8-HxCDD	ND		0.0050	0.000071	ug/Kg		09/14/18 15:37	09/21/18 07:18	1
1,2,3,6,7,8-HxCDF	0.0000824	J	0.0050	0.000032	ug/Kg		09/14/18 15:37	09/21/18 07:18	1
1,2,3,7,8,9-HxCDD	0.0000911	J	0.0050	0.000022	ug/Kg		09/14/18 15:37	09/21/18 07:18	1
1,2,3,7,8,9-HxCDF	0.00171	J	0.0050	0.000025	ug/Kg		09/14/18 15:37	09/21/18 07:18	1
1,2,3,7,8-PeCDD	ND		0.0050	0.000025	ug/Kg		09/14/18 15:37	09/21/18 07:18	1
1,2,3,7,8-PeCDF	0.000468	J	0.0050	0.000017	ug/Kg		09/14/18 15:37	09/21/18 07:18	1
2,3,4,6,7,8-HxCDF	ND		0.0050	0.000025	ug/Kg		09/14/18 15:37	09/21/18 07:18	1
2,3,4,7,8-PeCDF	0.0000745	J	0.0050	0.000019	ug/Kg		09/14/18 15:37	09/21/18 07:18	1
2,3,7,8-TCDD	ND		0.0010	0.000018	ug/Kg		09/14/18 15:37	09/21/18 07:18	1
2,3,7,8-TCDF	0.000165	J	0.0010	0.0000088	ug/Kg		09/14/18 15:37	09/21/18 07:18	1
OCDD	0.00187	J	0.010	0.000043	ug/Kg		09/14/18 15:37	09/21/18 07:18	1
OCDF	0.000315	J	0.010	0.000021	ug/Kg		09/14/18 15:37	09/21/18 07:18	1

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>MB Qualifier</i>	<i>MB Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C-1,2,3,4,6,7,8-HpCDD	73		23 - 140	09/14/18 15:37	09/21/18 07:18	1
13C-1,2,3,4,6,7,8-HpCDF	69		28 - 143	09/14/18 15:37	09/21/18 07:18	1
13C-1,2,3,4,7,8,9-HpCDF	67		26 - 138	09/14/18 15:37	09/21/18 07:18	1
13C-1,2,3,4,7,8-HxCDD	67		32 - 141	09/14/18 15:37	09/21/18 07:18	1
13C-1,2,3,4,7,8-HxCDF	73		26 - 152	09/14/18 15:37	09/21/18 07:18	1
13C-1,2,3,6,7,8-HxCDD	72		28 - 130	09/14/18 15:37	09/21/18 07:18	1
13C-1,2,3,6,7,8-HxCDF	75		26 - 123	09/14/18 15:37	09/21/18 07:18	1
13C-1,2,3,7,8,9-HxCDF	72		29 - 147	09/14/18 15:37	09/21/18 07:18	1
13C-1,2,3,7,8-PeCDD	61		25 - 181	09/14/18 15:37	09/21/18 07:18	1
13C-1,2,3,7,8-PeCDF	59		24 - 185	09/14/18 15:37	09/21/18 07:18	1
13C-2,3,4,6,7,8-HxCDF	75		28 - 136	09/14/18 15:37	09/21/18 07:18	1

TestAmerica Seattle



# QC Sample Results

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

TestAmerica Job ID: 580-80167-2

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

**Lab Sample ID: MB 320-245749/1-A**  
**Matrix: Solid**  
**Analysis Batch: 246911**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 245749**

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C-2,3,4,7,8-PeCDF	58		21 - 178	09/14/18 15:37	09/21/18 07:18	1
13C-2,3,7,8-TCDD	69		25 - 164	09/14/18 15:37	09/21/18 07:18	1
13C-2,3,7,8-TCDF	62		24 - 169	09/14/18 15:37	09/21/18 07:18	1
13C-OCDD	62		17 - 157	09/14/18 15:37	09/21/18 07:18	1

  

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
37Cl4-2,3,7,8-TCDD	77		35 - 197	09/14/18 15:37	09/21/18 07:18	1

**Lab Sample ID: LCS 320-245749/2-A**  
**Matrix: Solid**  
**Analysis Batch: 246911**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 245749**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,6,7,8-HpCDF	0.100	0.103		ug/Kg		103	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.104		ug/Kg		104	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.102		ug/Kg		102	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.105		ug/Kg		105	72 - 134
1,2,3,6,7,8-HxCDD	0.100	0.105		ug/Kg		105	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	0.106		ug/Kg		106	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	0.0996		ug/Kg		100	70 - 142
1,2,3,7,8-PeCDF	0.100	0.103		ug/Kg		103	80 - 134
2,3,4,6,7,8-HxCDF	0.100	0.104		ug/Kg		104	70 - 156
2,3,4,7,8-PeCDF	0.100	0.102		ug/Kg		102	68 - 160
2,3,7,8-TCDD	0.0200	0.0179		ug/Kg		90	67 - 158
2,3,7,8-TCDF	0.0200	0.0211		ug/Kg		105	75 - 158
OCDD	0.200	0.194		ug/Kg		97	78 - 144
OCDF	0.200	0.217		ug/Kg		108	63 - 170

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C-1,2,3,4,6,7,8-HpCDD	76		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	68		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	68		20 - 186
13C-1,2,3,4,7,8-HxCDD	68		21 - 193
13C-1,2,3,4,7,8-HxCDF	74		19 - 202
13C-1,2,3,6,7,8-HxCDD	70		25 - 163
13C-1,2,3,6,7,8-HxCDF	75		21 - 159
13C-1,2,3,7,8,9-HxCDF	72		17 - 205
13C-1,2,3,7,8-PeCDD	63		21 - 227
13C-1,2,3,7,8-PeCDF	62		21 - 192
13C-2,3,4,6,7,8-HxCDF	75		22 - 176
13C-2,3,4,7,8-PeCDF	60		13 - 328
13C-2,3,7,8-TCDD	70		20 - 175
13C-2,3,7,8-TCDF	63		22 - 152
13C-OCDD	63		13 - 199

TestAmerica Seattle

# QC Sample Results

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

TestAmerica Job ID: 580-80167-2

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

**Lab Sample ID: LCS 320-245749/2-A**  
**Matrix: Solid**  
**Analysis Batch: 246911**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 245749**

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	76		31 - 191

**Lab Sample ID: LCSD 320-245749/3-A**  
**Matrix: Solid**  
**Analysis Batch: 246911**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 245749**

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	0.0952		ug/Kg		95	70 - 140	0	50
1,2,3,4,6,7,8-HpCDF	0.100	0.105		ug/Kg		105	82 - 122	2	50
1,2,3,4,7,8,9-HpCDF	0.100	0.106		ug/Kg		106	78 - 138	3	50
1,2,3,4,7,8-HxCDD	0.100	0.104		ug/Kg		104	70 - 164	1	50
1,2,3,4,7,8-HxCDF	0.100	0.107		ug/Kg		107	72 - 134	2	50
1,2,3,6,7,8-HxCDD	0.100	0.106		ug/Kg		106	76 - 134	1	50
1,2,3,6,7,8-HxCDF	0.100	0.105		ug/Kg		105	84 - 130	1	50
1,2,3,7,8,9-HxCDD	0.100	0.104		ug/Kg		104	64 - 162	1	50
1,2,3,7,8,9-HxCDF	0.100	0.107		ug/Kg		107	78 - 130	1	50
1,2,3,7,8-PeCDD	0.100	0.100		ug/Kg		100	70 - 142	1	50
1,2,3,7,8-PeCDF	0.100	0.104		ug/Kg		104	80 - 134	0	50
2,3,4,6,7,8-HxCDF	0.100	0.107		ug/Kg		107	70 - 156	3	50
2,3,4,7,8-PeCDF	0.100	0.103		ug/Kg		103	68 - 160	1	50
2,3,7,8-TCDD	0.0200	0.0178		ug/Kg		89	67 - 158	1	50
2,3,7,8-TCDF	0.0200	0.0217		ug/Kg		108	75 - 158	3	50
OCDD	0.200	0.194		ug/Kg		97	78 - 144	0	50
OCDF	0.200	0.216		ug/Kg		108	63 - 170	0	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	78		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	69		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	70		20 - 186
13C-1,2,3,4,7,8-HxCDD	73		21 - 193
13C-1,2,3,4,7,8-HxCDF	76		19 - 202
13C-1,2,3,6,7,8-HxCDD	71		25 - 163
13C-1,2,3,6,7,8-HxCDF	78		21 - 159
13C-1,2,3,7,8,9-HxCDF	74		17 - 205
13C-1,2,3,7,8-PeCDD	64		21 - 227
13C-1,2,3,7,8-PeCDF	62		21 - 192
13C-2,3,4,6,7,8-HxCDF	76		22 - 176
13C-2,3,4,7,8-PeCDF	61		13 - 328
13C-2,3,7,8-TCDD	71		20 - 175
13C-2,3,7,8-TCDF	64		22 - 152
13C-OCDD	64		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
37Cl4-2,3,7,8-TCDD	78		31 - 191

# QC Sample Results

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

TestAmerica Job ID: 580-80167-2

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

**Lab Sample ID: MB 320-247773/1-A**  
**Matrix: Solid**  
**Analysis Batch: 248108**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 247773**

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	ND		0.0050	0.00014	ug/Kg		09/25/18 15:49	09/27/18 12:45	1
1,2,3,4,6,7,8-HpCDF	ND		0.0050	0.000097	ug/Kg		09/25/18 15:49	09/27/18 12:45	1
1,2,3,4,7,8,9-HpCDF	0.000717	J q	0.0050	0.00014	ug/Kg		09/25/18 15:49	09/27/18 12:45	1
1,2,3,4,7,8-HxCDD	ND		0.0050	0.00012	ug/Kg		09/25/18 15:49	09/27/18 12:45	1
1,2,3,4,7,8-HxCDF	ND		0.0050	0.00013	ug/Kg		09/25/18 15:49	09/27/18 12:45	1
1,2,3,6,7,8-HxCDD	ND		0.0050	0.00012	ug/Kg		09/25/18 15:49	09/27/18 12:45	1
1,2,3,6,7,8-HxCDF	ND		0.0050	0.00012	ug/Kg		09/25/18 15:49	09/27/18 12:45	1
1,2,3,7,8,9-HxCDD	ND		0.0050	0.00011	ug/Kg		09/25/18 15:49	09/27/18 12:45	1
1,2,3,7,8,9-HxCDF	0.00106	J	0.0050	0.00010	ug/Kg		09/25/18 15:49	09/27/18 12:45	1
1,2,3,7,8-PeCDD	ND		0.0050	0.00021	ug/Kg		09/25/18 15:49	09/27/18 12:45	1
1,2,3,7,8-PeCDF	ND		0.0050	0.00018	ug/Kg		09/25/18 15:49	09/27/18 12:45	1
2,3,4,6,7,8-HxCDF	ND		0.0050	0.000098	ug/Kg		09/25/18 15:49	09/27/18 12:45	1
2,3,4,7,8-PeCDF	ND		0.0050	0.00018	ug/Kg		09/25/18 15:49	09/27/18 12:45	1
2,3,7,8-TCDD	ND		0.0010	0.00018	ug/Kg		09/25/18 15:49	09/27/18 12:45	1
2,3,7,8-TCDF	ND		0.0010	0.00011	ug/Kg		09/25/18 15:49	09/27/18 12:45	1
OCDD	0.00116	J	0.010	0.00049	ug/Kg		09/25/18 15:49	09/27/18 12:45	1
OCDF	ND		0.010	0.00041	ug/Kg		09/25/18 15:49	09/27/18 12:45	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	81		23 - 140	09/25/18 15:49	09/27/18 12:45	1
13C-1,2,3,4,6,7,8-HpCDF	79		28 - 143	09/25/18 15:49	09/27/18 12:45	1
13C-1,2,3,4,7,8,9-HpCDF	80		26 - 138	09/25/18 15:49	09/27/18 12:45	1
13C-1,2,3,4,7,8-HxCDD	77		32 - 141	09/25/18 15:49	09/27/18 12:45	1
13C-1,2,3,4,7,8-HxCDF	70		26 - 152	09/25/18 15:49	09/27/18 12:45	1
13C-1,2,3,6,7,8-HxCDD	68		28 - 130	09/25/18 15:49	09/27/18 12:45	1
13C-1,2,3,6,7,8-HxCDF	69		26 - 123	09/25/18 15:49	09/27/18 12:45	1
13C-1,2,3,7,8,9-HxCDF	77		29 - 147	09/25/18 15:49	09/27/18 12:45	1
13C-1,2,3,7,8-PeCDD	93		25 - 181	09/25/18 15:49	09/27/18 12:45	1
13C-1,2,3,7,8-PeCDF	83		24 - 185	09/25/18 15:49	09/27/18 12:45	1
13C-2,3,4,6,7,8-HxCDF	71		28 - 136	09/25/18 15:49	09/27/18 12:45	1
13C-2,3,4,7,8-PeCDF	87		21 - 178	09/25/18 15:49	09/27/18 12:45	1
13C-2,3,7,8-TCDD	72		25 - 164	09/25/18 15:49	09/27/18 12:45	1
13C-2,3,7,8-TCDF	72		24 - 169	09/25/18 15:49	09/27/18 12:45	1
13C-OCDD	81		17 - 157	09/25/18 15:49	09/27/18 12:45	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	85		35 - 197	09/25/18 15:49	09/27/18 12:45	1

**Lab Sample ID: LCS 320-247773/2-A**  
**Matrix: Solid**  
**Analysis Batch: 248108**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 247773**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.0986		ug/Kg		99	70 - 140
1,2,3,4,6,7,8-HpCDF	0.100	0.101		ug/Kg		101	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.104		ug/Kg		104	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.100		ug/Kg		100	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.105		ug/Kg		105	72 - 134

TestAmerica Seattle

# QC Sample Results

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

TestAmerica Job ID: 580-80167-2

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

**Lab Sample ID: LCS 320-247773/2-A**  
**Matrix: Solid**  
**Analysis Batch: 248108**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 247773**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,6,7,8-HxCDD	0.100	0.103		ug/Kg		103	76 - 134
1,2,3,6,7,8-HxCDF	0.100	0.107		ug/Kg		107	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	0.106		ug/Kg		106	78 - 130
1,2,3,7,8-PeCDD	0.100	0.100		ug/Kg		100	70 - 142
1,2,3,7,8-PeCDF	0.100	0.104		ug/Kg		104	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	0.102		ug/Kg		102	68 - 160
2,3,7,8-TCDD	0.0200	0.0207		ug/Kg		103	67 - 158
2,3,7,8-TCDF	0.0200	0.0200		ug/Kg		100	75 - 158
OCDD	0.200	0.205		ug/Kg		103	78 - 144
OCDF	0.200	0.196		ug/Kg		98	63 - 170

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C-1,2,3,4,6,7,8-HpCDD	89		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	81		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	86		20 - 186
13C-1,2,3,4,7,8-HxCDD	80		21 - 193
13C-1,2,3,4,7,8-HxCDF	71		19 - 202
13C-1,2,3,6,7,8-HxCDD	74		25 - 163
13C-1,2,3,6,7,8-HxCDF	75		21 - 159
13C-1,2,3,7,8,9-HxCDF	83		17 - 205
13C-1,2,3,7,8-PeCDD	85		21 - 227
13C-1,2,3,7,8-PeCDF	79		21 - 192
13C-2,3,4,6,7,8-HxCDF	78		22 - 176
13C-2,3,4,7,8-PeCDF	76		13 - 328
13C-2,3,7,8-TCDD	77		20 - 175
13C-2,3,7,8-TCDF	74		22 - 152
13C-OCDD	89		13 - 199

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	87		31 - 191

**Lab Sample ID: LCSD 320-247773/3-A**  
**Matrix: Solid**  
**Analysis Batch: 248108**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 247773**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		RPD
							Limits	RPD	
1,2,3,4,6,7,8-HpCDD	0.100	0.0986		ug/Kg		99	70 - 140	0	50
1,2,3,4,6,7,8-HpCDF	0.100	0.0991		ug/Kg		99	82 - 122	2	50
1,2,3,4,7,8,9-HpCDF	0.100	0.100		ug/Kg		100	78 - 138	4	50
1,2,3,4,7,8-HxCDD	0.100	0.0998		ug/Kg		100	70 - 164	1	50
1,2,3,4,7,8-HxCDF	0.100	0.105		ug/Kg		105	72 - 134	0	50
1,2,3,6,7,8-HxCDD	0.100	0.102		ug/Kg		102	76 - 134	1	50
1,2,3,6,7,8-HxCDF	0.100	0.103		ug/Kg		103	84 - 130	4	50
1,2,3,7,8,9-HxCDD	0.100	0.103		ug/Kg		103	64 - 162	2	50
1,2,3,7,8,9-HxCDF	0.100	0.106		ug/Kg		106	78 - 130	0	50
1,2,3,7,8-PeCDD	0.100	0.0999		ug/Kg		100	70 - 142	0	50

TestAmerica Seattle

# QC Sample Results

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

TestAmerica Job ID: 580-80167-2

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

Lab Sample ID: LCSD 320-247773/3-A  
 Matrix: Solid  
 Analysis Batch: 248108

Client Sample ID: Lab Control Sample Dup  
 Prep Type: Total/NA  
 Prep Batch: 247773

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,7,8-PeCDF	0.100	0.103		ug/Kg		103	80 - 134	1	50
2,3,4,6,7,8-HxCDF	0.100	0.107		ug/Kg		107	70 - 156	2	50
2,3,4,7,8-PeCDF	0.100	0.101		ug/Kg		101	68 - 160	1	50
2,3,7,8-TCDD	0.0200	0.0192		ug/Kg		96	67 - 158	7	50
2,3,7,8-TCDF	0.0200	0.0195		ug/Kg		97	75 - 158	3	50
OCDD	0.200	0.206		ug/Kg		103	78 - 144	0	50
OCDF	0.200	0.207		ug/Kg		103	63 - 170	5	50

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C-1,2,3,4,6,7,8-HpCDD	90		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	81		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	88		20 - 186
13C-1,2,3,4,7,8-HxCDD	82		21 - 193
13C-1,2,3,4,7,8-HxCDF	75		19 - 202
13C-1,2,3,6,7,8-HxCDD	75		25 - 163
13C-1,2,3,6,7,8-HxCDF	77		21 - 159
13C-1,2,3,7,8,9-HxCDF	84		17 - 205
13C-1,2,3,7,8-PeCDD	94		21 - 227
13C-1,2,3,7,8-PeCDF	93		21 - 192
13C-2,3,4,6,7,8-HxCDF	75		22 - 176
13C-2,3,4,7,8-PeCDF	89		13 - 328
13C-2,3,7,8-TCDD	78		20 - 175
13C-2,3,7,8-TCDF	76		22 - 152
13C-OCDD	85		13 - 199

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	85		31 - 191

# Lab Chronicle

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S129-0to2**

**Date Collected: 09/05/18 14:20**

**Date Received: 09/07/18 12:35**

**Lab Sample ID: 580-80167-1**

**Matrix: Solid**

**Percent Solids: 47.6**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246809	09/20/18 10:38	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	247181	09/21/18 14:32	ALM	TAL SAC

**Client Sample ID: PDI-SC-S129-2to4**

**Date Collected: 09/05/18 14:25**

**Date Received: 09/07/18 12:35**

**Lab Sample ID: 580-80167-2**

**Matrix: Solid**

**Percent Solids: 51.8**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246809	09/20/18 11:24	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	247181	09/21/18 15:10	ALM	TAL SAC

**Client Sample ID: PDI-SC-S129-4to5.3**

**Date Collected: 09/05/18 14:30**

**Date Received: 09/07/18 12:35**

**Lab Sample ID: 580-80167-3**

**Matrix: Solid**

**Percent Solids: 54.7**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246809	09/20/18 12:10	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	247181	09/21/18 15:48	ALM	TAL SAC

**Client Sample ID: PDI-SC-S155-0to2.1**

**Date Collected: 09/05/18 16:00**

**Date Received: 09/07/18 12:35**

**Lab Sample ID: 580-80167-4**

**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			245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246809	09/20/18 12:56	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	247181	09/21/18 16:26	ALM	TAL SAC

**Client Sample ID: PDI-SC-S155-2.1to4.2**

**Date Collected: 09/05/18 16:05**

**Date Received: 09/07/18 12:35**

**Lab Sample ID: 580-80167-5**

**Matrix: Solid**

**Percent Solids: 73.9**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246809	09/20/18 13:42	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245460	09/13/18 13:38	SR1	TAL SAC

TestAmerica Seattle

# Lab Chronicle

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S155-2.1to4.2**

**Lab Sample ID: 580-80167-5**

Date Collected: 09/05/18 16:05

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 73.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1613B	RA	1	247181	09/21/18 17:04	ALM	TAL SAC

**Client Sample ID: PDI-SC-S155-4.2to5.3**

**Lab Sample ID: 580-80167-6**

Date Collected: 09/05/18 16:10

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 73.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246809	09/20/18 14:28	AS	TAL SAC

**Client Sample ID: PDI-SC-S121-0to1.8**

**Lab Sample ID: 580-80167-7**

Date Collected: 09/05/18 17:25

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 80.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246809	09/20/18 15:14	AS	TAL SAC

**Client Sample ID: PDI-SC-S121-1.8to3.4**

**Lab Sample ID: 580-80167-8**

Date Collected: 09/05/18 17:30

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 77.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246809	09/20/18 16:00	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	247181	09/21/18 17:42	ALM	TAL SAC

**Client Sample ID: PDI-SC-S255-0to2.1**

**Lab Sample ID: 580-80167-9**

Date Collected: 09/05/18 19:45

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 66.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246902	09/20/18 20:50	AS	TAL SAC

**Client Sample ID: PDI-SC-S255-0to2.1D**

**Lab Sample ID: 580-80167-10**

Date Collected: 09/05/18 19:45

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 65.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246902	09/20/18 21:36	AS	TAL SAC

TestAmerica Seattle

# Lab Chronicle

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S255-2.1to4.3**

**Lab Sample ID: 580-80167-11**

**Date Collected: 09/05/18 19:50**

**Matrix: Solid**

**Date Received: 09/07/18 12:35**

**Percent Solids: 63.7**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246902	09/20/18 22:22	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	247181	09/21/18 18:20	ALM	TAL SAC

**Client Sample ID: PDI-SC-S112-0to2**

**Lab Sample ID: 580-80167-12**

**Date Collected: 09/05/18 21:00**

**Matrix: Solid**

**Date Received: 09/07/18 12:35**

**Percent Solids: 44.3**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246902	09/20/18 23:08	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	247181	09/21/18 18:57	ALM	TAL SAC

**Client Sample ID: PDI-SC-S112-2to4**

**Lab Sample ID: 580-80167-13**

**Date Collected: 09/05/18 21:05**

**Matrix: Solid**

**Date Received: 09/07/18 12:35**

**Percent Solids: 41.9**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246902	09/20/18 23:54	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	247181	09/21/18 19:35	ALM	TAL SAC

**Client Sample ID: PDI-SC-S112-4to6**

**Lab Sample ID: 580-80167-14**

**Date Collected: 09/05/18 21:10**

**Matrix: Solid**

**Date Received: 09/07/18 12:35**

**Percent Solids: 46.3**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246902	09/21/18 00:40	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	247181	09/21/18 20:13	ALM	TAL SAC

**Client Sample ID: PDI-RB-SS-180905**

**Lab Sample ID: 580-80167-15**

**Date Collected: 09/05/18 20:00**

**Matrix: Water**

**Date Received: 09/07/18 12:35**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			245166	09/12/18 07:52	ITH	TAL SAC
Total/NA	Analysis	1613B		1	247158	09/22/18 01:21	AS	TAL SAC

TestAmerica Seattle



# Lab Chronicle

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S113C-0to1.1**

**Lab Sample ID: 580-80167-16**

**Date Collected: 09/06/18 14:40**

**Matrix: Solid**

**Date Received: 09/07/18 12:35**

**Percent Solids: 50.8**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B		20	247158	09/21/18 23:49	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	247181	09/21/18 20:51	ALM	TAL SAC

**Client Sample ID: PDI-SC-S113C-1.1to3.1**

**Lab Sample ID: 580-80167-17**

**Date Collected: 09/06/18 14:45**

**Matrix: Solid**

**Date Received: 09/07/18 12:35**

**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	RA		247773	09/25/18 15:49	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	248394	09/28/18 06:10	KSS	TAL SAC
Total/NA	Prep	HRMS-Sox			247773	09/25/18 15:49	SR1	TAL SAC
Total/NA	Analysis	1613B		1	248108	09/27/18 15:58	AS	TAL SAC

**Client Sample ID: PDI-SC-S113C-3.1to5.6**

**Lab Sample ID: 580-80167-18**

**Date Collected: 09/06/18 14:50**

**Matrix: Solid**

**Date Received: 09/07/18 12:35**

**Percent Solids: 79.7**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246902	09/21/18 02:12	AS	TAL SAC

**Client Sample ID: PDI-SC-S113C-5.6to6.6**

**Lab Sample ID: 580-80167-19**

**Date Collected: 09/06/18 14:55**

**Matrix: Solid**

**Date Received: 09/07/18 12:35**

**Percent Solids: 78.7**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246911	09/21/18 09:36	AS	TAL SAC

**Client Sample ID: PDI-SC-S260-0to1.3**

**Lab Sample ID: 580-80167-20**

**Date Collected: 09/06/18 18:00**

**Matrix: Solid**

**Date Received: 09/07/18 12:35**

**Percent Solids: 44.2**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246911	09/21/18 10:22	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	247835	09/26/18 08:53	AS	TAL SAC

TestAmerica Seattle

# Lab Chronicle

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S260-1.3to2.6**

**Lab Sample ID: 580-80167-21**

**Date Collected: 09/06/18 18:05**

**Matrix: Solid**

**Date Received: 09/07/18 12:35**

**Percent Solids: 53.9**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246911	09/21/18 11:08	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	247835	09/26/18 09:30	AS	TAL SAC

**Client Sample ID: PDI-SC-S260-2.6to4.2**

**Lab Sample ID: 580-80167-22**

**Date Collected: 09/06/18 18:10**

**Matrix: Solid**

**Date Received: 09/07/18 12:35**

**Percent Solids: 70.8**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246911	09/21/18 11:54	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245460	09/13/18 13:38	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	247835	09/26/18 08:15	AS	TAL SAC

**Client Sample ID: PDI-SC-S260-4.2to6**

**Lab Sample ID: 580-80167-23**

**Date Collected: 09/06/18 18:15**

**Matrix: Solid**

**Date Received: 09/07/18 12:35**

**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			245749	09/14/18 15:37	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246911	09/21/18 12:40	AS	TAL SAC

**Client Sample ID: PDI-SC-S260-6to7**

**Lab Sample ID: 580-80167-24**

**Date Collected: 09/06/18 18:20**

**Matrix: Solid**

**Date Received: 09/07/18 12:35**

**Percent Solids: 78.5**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245749	09/14/18 15:37	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246911	09/21/18 13:26	AS	TAL SAC

**Client Sample ID: PDI-SC-S019-0to2**

**Lab Sample ID: 580-80167-25**

**Date Collected: 09/06/18 20:20**

**Matrix: Solid**

**Date Received: 09/07/18 12:35**

**Percent Solids: 56.4**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245749	09/14/18 15:37	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246911	09/21/18 14:12	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245749	09/14/18 15:37	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	247835	09/26/18 02:34	AS	TAL SAC

TestAmerica Seattle

# Lab Chronicle

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S019-2to4**

**Lab Sample ID: 580-80167-26**

**Date Collected: 09/06/18 20:25**

**Matrix: Solid**

**Date Received: 09/07/18 12:35**

**Percent Solids: 54.7**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245749	09/14/18 15:37	SR1	TAL SAC
Total/NA	Analysis	1613B		1	247158	09/21/18 17:41	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245749	09/14/18 15:37	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	247835	09/26/18 03:12	AS	TAL SAC

**Client Sample ID: PDI-SC-S019-4to6**

**Lab Sample ID: 580-80167-27**

**Date Collected: 09/06/18 20:30**

**Matrix: Solid**

**Date Received: 09/07/18 12:35**

**Percent Solids: 55.0**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245749	09/14/18 15:37	SR1	TAL SAC
Total/NA	Analysis	1613B		1	247158	09/21/18 18:27	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245749	09/14/18 15:37	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	247835	09/26/18 03:50	AS	TAL SAC

**Client Sample ID: PDI-SC-S019-6to8**

**Lab Sample ID: 580-80167-28**

**Date Collected: 09/06/18 20:35**

**Matrix: Solid**

**Date Received: 09/07/18 12:35**

**Percent Solids: 55.5**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245749	09/14/18 15:37	SR1	TAL SAC
Total/NA	Analysis	1613B		1	247158	09/21/18 19:13	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245749	09/14/18 15:37	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	247835	09/26/18 04:27	AS	TAL SAC

**Client Sample ID: PDI-SC-S019-8to10**

**Lab Sample ID: 580-80167-29**

**Date Collected: 09/06/18 20:40**

**Matrix: Solid**

**Date Received: 09/07/18 12:35**

**Percent Solids: 58.4**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245749	09/14/18 15:37	SR1	TAL SAC
Total/NA	Analysis	1613B		1	247158	09/21/18 19:59	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245749	09/14/18 15:37	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	247835	09/26/18 05:05	AS	TAL SAC

**Client Sample ID: PDI-SC-S019-10to12**

**Lab Sample ID: 580-80167-30**

**Date Collected: 09/06/18 20:45**

**Matrix: Solid**

**Date Received: 09/07/18 12:35**

**Percent Solids: 56.9**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245749	09/14/18 15:37	SR1	TAL SAC
Total/NA	Analysis	1613B		1	247158	09/21/18 20:45	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245749	09/14/18 15:37	SR1	TAL SAC

TestAmerica Seattle

# Lab Chronicle

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-SC-S019-10to12**

**Lab Sample ID: 580-80167-30**

Date Collected: 09/06/18 20:45

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 56.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1613B	RA	1	247835	09/26/18 05:43	AS	TAL SAC

**Client Sample ID: PDI-SC-S019-12to13.7**

**Lab Sample ID: 580-80167-31**

Date Collected: 09/06/18 20:50

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 58.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245749	09/14/18 15:37	SR1	TAL SAC
Total/NA	Analysis	1613B		1	247158	09/21/18 21:31	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245749	09/14/18 15:37	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	247835	09/26/18 06:21	AS	TAL SAC

**Client Sample ID: PDI-SC-S019-13.7to14.7**

**Lab Sample ID: 580-80167-32**

Date Collected: 09/06/18 20:55

Matrix: Solid

Date Received: 09/07/18 12:35

Percent Solids: 60.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245749	09/14/18 15:37	SR1	TAL SAC
Total/NA	Analysis	1613B		1	247158	09/21/18 22:17	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245749	09/14/18 15:37	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	247835	09/26/18 06:59	AS	TAL SAC

**Client Sample ID: PDI-RB-SS-180906**

**Lab Sample ID: 580-80167-33**

Date Collected: 09/06/18 21:00

Matrix: Water

Date Received: 09/07/18 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			245166	09/12/18 07:52	ITH	TAL SAC
Total/NA	Analysis	1613B		1	247160	09/22/18 07:59	AS	TAL SAC

**Client Sample ID: PDI-RB-LL-180907**

**Lab Sample ID: 580-80167-34**

Date Collected: 09/07/18 10:00

Matrix: Water

Date Received: 09/07/18 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			245166	09/12/18 07:52	ITH	TAL SAC
Total/NA	Analysis	1613B		1	247160	09/22/18 08:45	AS	TAL SAC

# Lab Chronicle

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

TestAmerica Job ID: 580-80167-2

**Client Sample ID: PDI-RB-AL-180905**

**Lab Sample ID: 580-80167-35**

**Date Collected: 09/07/18 10:15**

**Matrix: Water**

**Date Received: 09/07/18 12:35**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			245166	09/12/18 07:52	ITH	TAL SAC
Total/NA	Analysis	1613B		1	247160	09/22/18 09:31	AS	TAL SAC

**Client Sample ID: PDI-SC-S019-10to12D**

**Lab Sample ID: 580-80167-36**

**Date Collected: 09/06/18 20:45**

**Matrix: Solid**

**Date Received: 09/07/18 12:35**

**Percent Solids: 57.1**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245749	09/14/18 15:37	SR1	TAL SAC
Total/NA	Analysis	1613B		1	247158	09/21/18 23:03	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245749	09/14/18 15:37	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	247835	09/26/18 07:37	AS	TAL SAC

**Laboratory References:**

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

# Accreditation/Certification Summary

Client: AECOM

TestAmerica Job ID: 580-80167-2

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
Nevada	State Program	9	WA000502019-1	07-31-19
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: 580-80167-2

Project/Site: Portland Harbor Pre-Remedial Design

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-80167-1	PDI-SC-S129-0to2	Solid	09/05/18 14:20	09/07/18 12:35
580-80167-2	PDI-SC-S129-2to4	Solid	09/05/18 14:25	09/07/18 12:35
580-80167-3	PDI-SC-S129-4to5.3	Solid	09/05/18 14:30	09/07/18 12:35
580-80167-4	PDI-SC-S155-0to2.1	Solid	09/05/18 16:00	09/07/18 12:35
580-80167-5	PDI-SC-S155-2.1to4.2	Solid	09/05/18 16:05	09/07/18 12:35
580-80167-6	PDI-SC-S155-4.2to5.3	Solid	09/05/18 16:10	09/07/18 12:35
580-80167-7	PDI-SC-S121-0to1.8	Solid	09/05/18 17:25	09/07/18 12:35
580-80167-8	PDI-SC-S121-1.8to3.4	Solid	09/05/18 17:30	09/07/18 12:35
580-80167-9	PDI-SC-S255-0to2.1	Solid	09/05/18 19:45	09/07/18 12:35
580-80167-10	PDI-SC-S255-0to2.1D	Solid	09/05/18 19:45	09/07/18 12:35
580-80167-11	PDI-SC-S255-2.1to4.3	Solid	09/05/18 19:50	09/07/18 12:35
580-80167-12	PDI-SC-S112-0to2	Solid	09/05/18 21:00	09/07/18 12:35
580-80167-13	PDI-SC-S112-2to4	Solid	09/05/18 21:05	09/07/18 12:35
580-80167-14	PDI-SC-S112-4to6	Solid	09/05/18 21:10	09/07/18 12:35
580-80167-15	PDI-RB-SS-180905	Water	09/05/18 20:00	09/07/18 12:35
580-80167-16	PDI-SC-S113C-0to1.1	Solid	09/06/18 14:40	09/07/18 12:35
580-80167-17	PDI-SC-S113C-1.1to3.1	Solid	09/06/18 14:45	09/07/18 12:35
580-80167-18	PDI-SC-S113C-3.1to5.6	Solid	09/06/18 14:50	09/07/18 12:35
580-80167-19	PDI-SC-S113C-5.6to6.6	Solid	09/06/18 14:55	09/07/18 12:35
580-80167-20	PDI-SC-S260-0to1.3	Solid	09/06/18 18:00	09/07/18 12:35
580-80167-21	PDI-SC-S260-1.3to2.6	Solid	09/06/18 18:05	09/07/18 12:35
580-80167-22	PDI-SC-S260-2.6to4.2	Solid	09/06/18 18:10	09/07/18 12:35
580-80167-23	PDI-SC-S260-4.2to6	Solid	09/06/18 18:15	09/07/18 12:35
580-80167-24	PDI-SC-S260-6to7	Solid	09/06/18 18:20	09/07/18 12:35
580-80167-25	PDI-SC-S019-0to2	Solid	09/06/18 20:20	09/07/18 12:35
580-80167-26	PDI-SC-S019-2to4	Solid	09/06/18 20:25	09/07/18 12:35
580-80167-27	PDI-SC-S019-4to6	Solid	09/06/18 20:30	09/07/18 12:35
580-80167-28	PDI-SC-S019-6to8	Solid	09/06/18 20:35	09/07/18 12:35
580-80167-29	PDI-SC-S019-8to10	Solid	09/06/18 20:40	09/07/18 12:35
580-80167-30	PDI-SC-S019-10to12	Solid	09/06/18 20:45	09/07/18 12:35
580-80167-31	PDI-SC-S019-12to13.7	Solid	09/06/18 20:50	09/07/18 12:35
580-80167-32	PDI-SC-S019-13.7to14.7	Solid	09/06/18 20:55	09/07/18 12:35
580-80167-33	PDI-RB-SS-180906	Water	09/06/18 21:00	09/07/18 12:35
580-80167-34	PDI-RB-LL-180907	Water	09/07/18 10:00	09/07/18 12:35
580-80167-35	PDI-RB-AL-180905	Water	09/07/18 10:15	09/07/18 12:35
580-80167-36	PDI-SC-S019-10to12D	Solid	09/06/18 20:45	09/07/18 12:35

TestAmerica Seattle

# 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  
 21 days  
 Other

**Site Contact:** Jennifer Ray  
**Laboratory Contact:** Elaine Walker  
Date: 9/7/18  
Carrier: Courier  
COC No. 1 of 3 pages



Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCDD's 1638	Archive	Grain size ASTM D7928/D6913	PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 9060, 160.3	Asterberg Limits ASTM D4318	Sample Specific Notes:
PDI-SC-S129 - 0 to 2	9/5/2018	14:20	SC		DH	4		X	X	X	X		
PDI-SC-S129 - 2 to 4	9/5/2018	14:25	SC		DH		X	X	X	X	X		
PDI-SC-S129 - 4 to 5.3	9/5/2018	14:30	SC		DH		X	X	X	X	X		
PDI-SC-S155 - 0 to 2.1	9/5/2018	16:00	SC		DH		X	X	X	X	X		
PDI-SC-S155 - 2.1 to 4.2	9/5/2018	16:05	SC		DH		X	X	X	X	X		
PDI-SC-S155 - 4.2 to 5.3	9/5/2018	16:10	SC		DH		X	X	X	X	X		
PDI-SC-S121 - 0 to 1.8	9/5/2018	17:25	SC		DH		X	X	X	X	X		
PDI-SC-S121 - 1.8 to 3.4	9/5/2018	17:30	SC		DH		X	X	X	X	X		
PDI-SC-S255 - 0 to 2.1	9/5/2018	19:45	SC		DH		X	X	X	X	X		
PDI-SC-S255 - 0 to 2.1D	9/5/2018	19:45	SC		DH		X	X	X	X	X		
PDI-SC-S255 - 2.1 to 4.3	9/5/2018	19:50	SC		DH		X	X	X	X	X		
PDI-SC-S112 - 0 to 2	9/5/2018	21:00	SC		DH		X	X	X	X	X		

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

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

1.7, 2.0, 1.3, 3.2, 2.2, 0.9

**Relinquished by:** *[Signature]* Company: AECOM Date/Time: 9/7/18 1212  
**Relinquished by:** *[Signature]* Company: M.E. Date/Time: 9/7/18 1235  
**Relinquished by:** *[Signature]* Company: TAPOR Date/Time: 9/7/18 1235

**Received by:** *[Signature]* Company: M.E. Date/Time: 9/7/18 1212  
**Received by:** *[Signature]* Company: TAPOR Date/Time: 9/7/18 1235  
**Requested by:** *[Signature]* Company: TAPOR Date/Time: 9/7/18 1235

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





# 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  
 21 days  
 Other

Site Contact: Jennifer Ray  
 Laboratory Contact: Elaine-Walker  
 Date: 9/7/18  
 Carrier: Courier  
 COC No. 1 of 3 pages

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction		Archival	Grain size ASTM D7928/D6913	PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 9060, 160.3	Aterberg Limits ASTM D4318	Sample Specific Notes:
							PDD/Fs 1613B	AG					
PDI-SC-S112 - 2 to 4	9/5/2018	21:05	SC		DH	4	X	X					
PDI-SC-S112 - 4 to 6	9/5/2018	21:10	SC		DH	7	X	X					
PDI-RB-SS-180905	9/5/2018	20:00	W		DH	4	X	X					
PDI-SC-S113C - 0 to 1.1	9/6/2018	14:40	SC		ED	4	X	X					
PDI-SC-S113C - 1.1 to 3.1	9/6/2018	14:45	SC		ED	4	X	X					
PDI-SC-S113C - 3.1 to 5.6	9/6/2018	14:50	SC	MS/MSD	ED	4	X	X					
PDI-SC-S113C - 5.6 to 6.6	9/6/2018	14:55	SC		ED	4	X	X					
PDI-SC-S260 - 0 to 1.3	9/6/2018	18:00	SC		ED	1	X	X					
PDI-SC-S260 - 1.3 to 2.6	9/6/2018	18:05	SC		ED	1	X	X					
PDI-SC-S260 - 2.6 to 4.2	9/6/2018	18:10	SC		ED	1	X	X					
PDI-SC-S260 - 4.2 to 6	9/6/2018	18:15	SC		ED	1	X	X					
PDI-SC-S260 - 6 to 7	9/6/2018	18:20	SC		ED	1	X	X					

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

Special Instructions/QC Requirements & Comments: Separate reports for each lab  
 Return To Client  
 Dispose By Lab  
 Archive For 12 Months

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
<i>[Signature]</i>	AECOM	9/7/18 12:22	<i>[Signature]</i>	M.E.	9/7/18 12:12
<i>[Signature]</i>	M.E.	9/7/18 12:35	<i>[Signature]</i>	APOR	9/7/18 12:35
<i>[Signature]</i>					





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		Date: 9/7/18		COC No. 1			
AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1+(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Subsurface Sediment Sample Type:		Analysis Turnaround Time Calendar (C) or Work Days (W) W		21 days		Other _____		Laboratory Contact: Elaine-Walker		Carrier: Courier		7 of 3 pages							
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCDD/FS 1613B	Archive	Grain size ASTM D-9280/0913	PCB Analytes, PAHs, Total Organic Carbon, Total Solids 8082A, 8270B-SIM, 9060, 160.3	Atterberg Limits ASTM D4318	580-80167 Chain of Custody						
PDI-SC-S129 - 0 to 2	9/5/2018	14:20	SC		DH	4		x	x	x	x								
PDI-SC-S129 - 2 to 4	9/5/2018	14:25	SC		DH			x	x	x	x								
PDI-SC-S129 - 4 to 5.3	9/5/2018	14:30	SC		DH			x	x	x	x								
PDI-SC-S155 - 0 to 2.1	9/5/2018	16:00	SC		DH			x	x	x	x								
PDI-SC-S155 - 2.1 to 4.2	9/5/2018	16:05	SC		DH			x	x	x	x								
PDI-SC-S155 - 4.2 to 5.3	9/5/2018	16:10	SC		DH			x	x	x	x								
PDI-SC-S121 - 0 to 1.8	9/5/2018	17:25	SC		DH			x	x	x	x								
PDI-SC-S121 - 1.8 to 3.4	9/5/2018	17:30	SC		DH			x	x	x	x								
PDI-SC-S255 - 0 to 2.1	9/5/2018	19:45	SC		DH			x	x	x	x								
PDI-SC-S255 - 0 to 2.1D	9/5/2018	19:45	SC		DH	3		x	x	x	x								
PDI-SC-S255 - 2.1 to 4.3	9/5/2018	19:50	SC		DH			x	x	x	x								
PDI-SC-S112 - 0 to 2	9/5/2018	21:00	SC		DH			x	x	x	x								
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Col								AG	AG	WMG	WMG	AG							
Preservative: HCl = Hydrochloric Acid, 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"/> Sposal By Lab		<input checked="" type="checkbox"/> Archive For 12 Months							
Special Instructions/QC Requirements & Comments: Separate reports for each lab																			
1.7, 2.0, 1.3, 3.2, 2.2, 0.9																			
Relinquished by: <i>[Signature]</i>	Company: AECOM	Date/Time: 9/7/18 1212	Received by: <i>[Signature]</i>		Company: M.E.	Date/Time: 9/7/18 1212	Relinquished by: <i>[Signature]</i>		Company: M.E.	Date/Time: 9/7/18 1235	Received by: <i>[Signature]</i>		Company: TAPOR	Date/Time: 9/7/18 1235	Relinquished by: <i>[Signature]</i>		Company: TAPOR	Date/Time: 9/10/18 1700	
FR5 = 2.1/2.1, 1.3/1.3, 2.8/2.8 w/CS.																			

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				Date: 9/7/18		COC No: 1						
AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1-(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling		Analysis Turnaround Time Calendar ( C ) or Work Days (W) W				Laboratory Contact: Elaine-Walker				Carrier: Courier		2 of 5 pages						
Portland, OR Project #: 60566335 Study: Subsurface Sediment Sample Type:		<input checked="" type="checkbox"/> 21 days <input type="checkbox"/> Other _____				PCDD/Fs 1613B Archive Grain Size ASTM D7928/0913 PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 9060, 160.3 Atterberg Limits ASTM D4318 WB-RB-A WB-D/F WB-PAH WB-TOL												
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCDD/Fs 1613B	Archive	Grain Size ASTM D7928/0913	PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 9060, 160.3	Atterberg Limits ASTM D4318	WB-RB-A	WB-D/F	WB-PAH	WB-TOL	Sample Specific Notes:	
PDI-SC-S112 - 2 to 4	9/5/2018	21:05	SC		DH	4		x	x	x	x							
PDI-SC-S112 - 4 to 6	9/5/2018	21:10	SC		DH	↓		x	x	x	x							
PDI-RB-SS-180905	9/5/2018	20:00	W		DH	7		x	x	x	x		x	x	x	x		
PDI-SC-S113C - 0 to 1.1	9/6/2018	14:40	SC		ED	4		x	x	x	x							
PDI-SC-S113C - 1.1 to 3.1	9/6/2018	14:45	SC		ED	4		x	x	x	x							
PDI-SC-S113C - 3.1 to 5.6	9/6/2018	14:50	SC	MS/MSD	ED	6		x	x	x	x							
PDI-SC-S113C - 5.6 to 6.6	9/6/2018	14:55	SC		ED	4		x	x	x	x							
PDI-SC-S260 - 0 to 1.3	9/6/2018	18:00	SC		ED	↓		x	x	x	x							
PDI-SC-S260 - 1.3 to 2.6	9/6/2018	18:05	SC		ED	↓		x	x	x	x							
PDI-SC-S260 - 2.6 to 4.2	9/6/2018	18:10	SC		ED	↓		x	x	x	x							
PDI-SC-S260 - 4.2 to 6	9/6/2018	18:15	SC		ED	↓		x	x	x	x							
PDI-SC-S260 - 6 to 7	9/6/2018	18:20	SC		ED	↓		x	x	x	x							
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Col							AG	AG	WMG	WMG	AG							
Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid																		
Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)																		
							Sample Disposal											
							<input type="checkbox"/> Return To Client		<input checked="" type="checkbox"/> Disposal By Lab		<input checked="" type="checkbox"/> Archive For 12 Months							
Special Instructions/QC Requirements & Comments: Separate reports for each lab																		
Relinquished by:	Company: AECOM	Date/Time: 9/7/18 1212	Received by:	Company: M.E.	Date/Time: 9/7/18 1212													
Relinquished by:	Company: M.E.	Date/Time: 9/7/18 1235	Received by:	Company: TAROR	Date/Time: 9/7/18 1235													
Relinquished by:	Company: TAROR	Date/Time: 9/12/18 1700	Received by:	Company: SEA TA	Date/Time: 9.12.18 0940													

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 Laboratory Contact: Elaine-Walker				Date: 9/7/18		COC No: 1											
AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1-(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Subsurface Sediment Sample Type:		Analysis Turnaround Time Calendar (C) or Work Days (W) W <input checked="" type="checkbox"/> 21 days <input type="checkbox"/> Other _____				Carrier: Courier				3 of 3 pages													
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCDD/Fs 1613B	Archive	Grain Size ASTM D 92/8/D6913	PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 9060, 160J	Atterberg Limits ASTM D4318	WA-PCB-A	WA-DIF	WA-PAH	WA-TOC	Sample Specific Notes:						
PDI-SC-S019 - 0 to 2	9/6/2018	20:20	SC	MS/MS	ED	64		x	x	x	x												
PDI-SC-S019 - 2 to 4	9/6/2018	20:25	SC	MS/MS	ED	6		x	x	x	x												
PDI-SC-S019 - 4 to 6	9/6/2018	20:30	SC		ED	4		x	x	x	x												
PDI-SC-S019 - 6 to 8	9/6/2018	20:35	SC		ED			x	x	x	x												
PDI-SC-S019 - 8 to 10	9/6/2018	20:40	SC		ED			x	x	x	x												
PDI-SC-S019 - 10 to 12	9/6/2018	20:45	SC		ED			x	x	x	x												
PDI-SC-S019 - 12 to 13.7	9/6/2018	20:50	SC		ED			x	x	x	x												
PDI-SC-S019 - 13.7 to 14.7	9/6/2018	20:55	SC		ED			x	x	x	x												
PDI-RB-SS-180906	9/6/2018	21:00	SC		ED	7							x	x	x	x							
PDI-RB-LL-180907	9/7/2018	10:00	SC		DH	7							x	x	x	x							
PDI-RB-AL-180907	9/7/2018	10:15	SC		DH	7							x	x	x	x							
PDI-SC-S019-10 to 12 D	9/6/18	20:45	SC		ED	3		x	x		x												
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Container Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)							Sample Disposal <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Sposal By Lab <input checked="" type="checkbox"/> Archive For 12 Months																
Special Instructions/QC Requirements & Comments: Separate reports for each lab																							
Relinquished by: [Signature]		Company: AECOM		Date/Time: 9/7/18 1212		Received by: [Signature]		Company: M.E.		Date/Time: 9/7/18 1212		Relinquished by: [Signature]		Company: M.E.		Date/Time: 9/7/18 1235		Received by: [Signature]		Company: TAPOR		Date/Time: 9/7/18 1235	
Relinquished by: [Signature]		Company: M.E.		Date/Time: 9/10/18 1700		Received by: [Signature]		Company: TAPOR		Date/Time: 9/12/18 0940		Relinquished by: [Signature]		Company: TAPOR		Date/Time: 9/12/18 0940		Received by: [Signature]		Company: SEA TA		Date/Time: 9/12/18 0940	

# Chain of Custody Record



THE LEADER IN ENVIRONMENTAL TESTING

<b>Client Information (Sub Contract Lab)</b>		Lab P#:	Walker, Elaine M	Carrier Tracking No(s):	COC No: 580-59098.1
Shipping/Receiving		Phone:	E-Mail: elaine.walker@testamericainc.com	State of Origin:	Page: Page 1 of 1
Company		Accreditations Required (See note):		Job #:	580-80167-1
TestAmerica Laboratories, Inc.		Due Date Requested: 9/25/2018		Preservation Codes:	
Address: 880 Riverside Parkway, City: West Sacramento State, Zip: CA, 95605 Phone: 916-373-5600(Tel) 916-372-1059(Fax) Email:		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:	
Project Name: Portland Harbor Pre-Remedial Design Site:		Project #: 58012120 SSOW#:		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)	
<b>Analysis Requested</b>		Perform MS/MSD (Yes or No)		Total Number of Containers	
1613B/1613B_Sox_Sep_P (MOD) Full List w/o Totals		X		2	
Field Filtered Sample (Yes or No)		X		2	
Sample Date		Sample Time		Sample Instructions/Note:	
9/5/18	20:00 Pacific	Water	X	2	
9/6/18	21:00 Pacific	Water	X	2	
9/7/18	10:00 Pacific	Water	X	2	
9/7/18	10:15 Pacific	Water	X	1	
Sample Identification - Client ID (Lab ID)		Sample Type (C=Comp, G=grab)		Matrix (W=water, S=solid, O=volatile, B=trace, A=Ar)	
PDI-RB-SS-180905 (580-80167-15)			Water		
PDI-RB-SS-180906 (580-80167-33)			Water		
PDI-RB-LL-180907 (580-80167-34)			Water		
PDI-RB-AL-180905 (580-80167-35)			Water		

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: 2  
 Return To Client  
 Disposal By Lab  
 Archive For Months

Special Instructions/QC Requirements:

Empty Kit Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Method of Shipment: \_\_\_\_\_  
 Relinquished by: *Austin* Date/Time: 9/10/18 17:00 Company: *TA-Sac*  
 Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
 Custody Seals Intact:  Yes  No  
 Custody Seal No.: 492286  
 Cooler Temperature(s) °C and Other Remarks: 0.0









**Chain of Custody Record**

<b>Client Information (Sub Contract Lab)</b>		Lab P/N: Walker, Elaine M	Carrier Tracking No(s):
Client Contact: Shipping/Receiving		E-Mail: elaine.walker@testamericainc.com	State of Origin: Oregon
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):	
Address: 880 Riverside Parkway, West Sacramento, CA, 95605		Due Date Requested: 9/25/2018	
Phone: 916-373-5600(Tel) 916-372-1059(Fax)		TAT Requested (days):	
Email:		PO #:	
Project Name: Portland Harbor Pre-Remedial Design		WO #:	
Site:		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=volatile)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1613B/HRMS_Sox_P (MOD) Full List w/o Totals	1613B/1613B_Sox_Sep_P (MOD) Full List w/o Totals	Analysis Requested		Total Number of Containers	Special Instructions/Note:
									Preservation Code:	Preservation Code:		
PDI-SC-S113C-5.6to6.6 (580-80167-19)	9/6/18	14:55 Pacific	Solid	Solid	X	X					1	
PDI-SC-S260-0to1.3 (580-80167-20)	9/6/18	18:00 Pacific	Solid	Solid	X	X					1	
PDI-SC-S260-1.3to2.6 (580-80167-21)	9/6/18	18:05 Pacific	Solid	Solid	X	X					1	
PDI-SC-S260-2.6to4.2 (580-80167-22)	9/6/18	18:10 Pacific	Solid	Solid	X	X					1	
PDI-SC-S260-4.2to6 (580-80167-23)	9/6/18	18:15 Pacific	Solid	Solid	X	X					1	
PDI-SC-S260-6to7 (580-80167-24)	9/6/18	18:20 Pacific	Solid	Solid	X	X					1	
PDI-SC-S019-0to2 (580-80167-25)	9/6/18	20:20 Pacific	Solid	Solid	X	X					1	
PDI-SC-S019-2to4 (580-80167-26)	9/6/18	20:25 Pacific	Solid	Solid	X	X					1	
PDI-SC-S019-4to6 (580-80167-27)	9/6/18	20:30 Pacific	Solid	Solid	X	X					1	

  

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

<b>Possible Hazard Identification</b>		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Unconfirmed		Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For <input type="checkbox"/> Months	
Deliverable Requested: I, II, III, IV, Other (specify)		Special Instructions/QC Requirements:	
Empty Kit Relinquished by:	Date:	Method of Shipment:	Time:
Relinquished by: <i>A. Astina</i>	9/16/18	Received by: <i>M. Walsh</i>	9/15
Relinquished by:		Received by:	
Relinquished by:		Received by:	
Custody Seals Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Custody Seal No.: 492295	Company: TAPOR	Company: WA-Sac
Cooler Temperature(s) °C and Other Remarks: 2.8			



**Chain of Custody Record**

<b>Client Information (Sub Contract Lab)</b>		Lab P/N:	Walker, Elaine M	Carrier Tracking No(s):	COC No:
Client Contact:		E-Mail:	elaine-walker@testamericainc.com	State of Origin:	580-59096.4
Shipping/Receiving		Accreditations Required (See note):		Page:	Page 4 of 4
Company:		TestAmerica Laboratories, Inc.		Job #:	580-80167-1
Address:		880 Riverside Parkway,		<b>Analysis Requested</b>	
City:		West Sacramento		1613B/HRMS_Sox_P (MOD) Full List w/o Totals	
State, Zip:		CA, 95605		1613B/1613B_Sox_Sep_P (MOD) Full List w/o Totals	
Phone:		916-373-5600(Tel) 916-372-1059(Fax)		Field Filtered Sample (Yes or No)	
Email:				Perform MS/MSD (Yes or No)	
Project Name:		Portland Harbor Pre-Remedial Design		Total Number of Containers	
Site:					

  

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, G=gas, BT=tissue, A=air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1613B/HRMS_Sox_P (MOD) Full List w/o Totals	1613B/1613B_Sox_Sep_P (MOD) Full List w/o Totals	Analysis Requested	Preservation Codes:	Total Number of Containers	Special Instructions/Note:
PDI-SC-S019-6108 (580-80167-28)	9/6/18	20:35 Pacific	Solid	Solid	X	X				A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	1	
PDI-SC-S019-81010 (580-80167-29)	9/6/18	20:40 Pacific	Solid	Solid	X	X					1	
PDI-SC-S019-101012 (580-80167-30)	9/6/18	20:45 Pacific	Solid	Solid	X	X					1	
PDI-SC-S019-121013.7 (580-80167-31)	9/6/18	20:50 Pacific	Solid	Solid	X	X					1	
PDI-SC-S019-13.71014.7 (580-80167-32)	9/6/18	20:55 Pacific	Solid	Solid	X	X					1	
PDI-RB-SS-180906 (580-80167-33)	9/6/18	21:00 Pacific	Water	Water		X					2	
PDI-RB-LL-180907 (580-80167-34)	9/7/18	10:00 Pacific	Water	Water		X					2	
PDI-RB-AL-180905 (580-80167-35)	9/7/18	10:15 Pacific	Water	Water		X					1	
PDI-SC-S019-101012D (580-80167-36)	9/6/18	20:45 Pacific	Solid	Solid	X	X					1	

  

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

<b>Possible Hazard Identification</b>		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Unconfirmed		Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
Deliverable Requested: I, II, III, IV, Other (specify)		Special Instructions/QC Requirements:	
Primary Deliverable Rank: 2		Method of Shipment:	
Empty Kit Relinquished by:		Date:	
Relinquished by: <i>[Signature]</i>		Date/Time: 9/10/18	
Relinquished by:		Date/Time: 9/12/18 915	
Relinquished by:		Date/Time:	
Relinquished by:		Date/Time:	
Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:	
492295		2.8	



# Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-80167-2

**Login Number: 80167**

**List Source: TestAmerica Seattle**

**List Number: 1**

**Creator: O'Connell, Jason I**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> 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 <math><6\text{mm}</math> (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: 580-80167-2

**Login Number: 80167**  
**List Number: 2**  
**Creator: Gooch, Mayce**

**List Source: TestAmerica Sacramento**  
**List Creation: 09/11/18 12:13 PM**

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	492286
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	0.0c
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: 580-80167-2

**Login Number: 80167**  
**List Number: 3**  
**Creator: Gooch, Mayce**

**List Source: TestAmerica Sacramento**  
**List Creation: 09/12/18 11:51 AM**

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	492295
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	2.8c
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: 580-80167-2

**Login Number: 80167**

**List Number: 4**

**Creator: Turpen, Troy**

**List Source: TestAmerica Sacramento**

**List Creation: 09/14/18 10:01 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	492295
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	2.8 C, AK-2
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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sacramento

## Sample Receiving Notes



580-80167 Field Sheet

Job

Tracking # 4423 0751 0045 SO / (PO) FO / 2-Day / SAT / Ground / UPS / Courier /  
Drop Off / 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: #1 C was recieved w/ cracked lid. Replaced and marked.

MG 9/11/18

Therm. ID: AK-2 / AK-3 / ~~AK-5~~ / AK-6 / HACCP / Other  
(+0.7°C)

Ice \_\_\_\_\_ Wet \_\_\_\_\_ Gel \_\_\_\_\_ Other \_\_\_\_\_

Cooler Custody Seal: 49228e

Sample Custody Seal: \_\_\_\_\_

Cooler ID: \_\_\_\_\_

Temp: Observed 0.0 Corrected 0.0

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: MG Date: 9/11/18

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

WISE





# Isotope Dilution Summary

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

TestAmerica Job ID: 580-80167-2

## 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)
580-80167-1	PDI-SC-S129-0to2	44	33	41	47	47	48	49	51
580-80167-1 - RA	PDI-SC-S129-0to2								
580-80167-2	PDI-SC-S129-2to4	49	38	32	55	57	53	59	54
580-80167-2 - RA	PDI-SC-S129-2to4								
580-80167-3	PDI-SC-S129-4to5.3	45	36	34	51	54	51	55	51
580-80167-3 - RA	PDI-SC-S129-4to5.3								
580-80167-4	PDI-SC-S155-0to2.1	62	53	55	61	64	63	68	63
580-80167-4 - RA	PDI-SC-S155-0to2.1								
580-80167-5	PDI-SC-S155-2.1to4.2	65	53	42	76	85	69	87	68
580-80167-5 - RA	PDI-SC-S155-2.1to4.2								
580-80167-6	PDI-SC-S155-4.2to5.3	61	51	55	66	70	67	74	64
580-80167-7	PDI-SC-S121-0to1.8	43	36	42	50	52	50	53	53
580-80167-8	PDI-SC-S121-1.8to3.4	56	48	44	54	54	55	51	56
580-80167-8 - RA	PDI-SC-S121-1.8to3.4								
580-80167-9	PDI-SC-S255-0to2.1	60	50	55	60	62	63	65	62
580-80167-10	PDI-SC-S255-0to2.1D	59	50	53	58	61	59	63	60
580-80167-11	PDI-SC-S255-2.1to4.3	76	58	56	77	79	77	83	77
580-80167-11 - RA	PDI-SC-S255-2.1to4.3								
580-80167-12	PDI-SC-S112-0to2	62	49	50	59	62	62	67	65
580-80167-12 - RA	PDI-SC-S112-0to2								
580-80167-13	PDI-SC-S112-2to4	72	58	58	75	77	73	81	72
580-80167-13 - RA	PDI-SC-S112-2to4								
580-80167-14	PDI-SC-S112-4to6	60	49	40	63	68	62	72	64
580-80167-14 - RA	PDI-SC-S112-4to6								
580-80167-16	PDI-SC-S113C-0to1.1	33	29	31	47	60	49	67	57
580-80167-16 - RA	PDI-SC-S113C-0to1.1								
580-80167-17	PDI-SC-S113C-1.1to3.1	77	65	78	73	76	62	76	76
580-80167-17 - RA	PDI-SC-S113C-1.1to3.1								
580-80167-18	PDI-SC-S113C-3.1to5.6	40	33	40	52	53	52	57	55
580-80167-19	PDI-SC-S113C-5.6to6.6	42	34	42	48	50	47	51	52
580-80167-20	PDI-SC-S260-0to1.3	60	50	43	65	73	63	73	68
580-80167-20 - RA	PDI-SC-S260-0to1.3								
580-80167-21	PDI-SC-S260-1.3to2.6	70	57	44	72	86	74	91	72
580-80167-21 - RA	PDI-SC-S260-1.3to2.6								
580-80167-22	PDI-SC-S260-2.6to4.2	61	50	51	63	59	61	61	60
580-80167-22 - RA	PDI-SC-S260-2.6to4.2								
580-80167-23	PDI-SC-S260-4.2to6	60	48	52	56	56	57	57	57
580-80167-24	PDI-SC-S260-6to7	84	68	74	74	69	73	77	75
580-80167-25	PDI-SC-S019-0to2	59	48	52	52	53	52	57	56
580-80167-25 - RA	PDI-SC-S019-0to2								
580-80167-26	PDI-SC-S019-2to4	51	41	42	47	57	49	58	54
580-80167-26 - RA	PDI-SC-S019-2to4								
580-80167-27	PDI-SC-S019-4to6	55	45	43	58	68	57	68	59
580-80167-27 - RA	PDI-SC-S019-4to6								
580-80167-28	PDI-SC-S019-6to8	52	44	46	57	71	53	69	57
580-80167-28 - RA	PDI-SC-S019-6to8								
580-80167-29	PDI-SC-S019-8to10	57	40	50	64	88	66	86	54
580-80167-29 - RA	PDI-SC-S019-8to10								
580-80167-30	PDI-SC-S019-10to12	48	40	38	62	76	59	77	58

TestAmerica Seattle

# Isotope Dilution Summary

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

TestAmerica Job ID: 580-80167-2

## 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)							
		HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	HxCDD (32-141)	HxCDF (26-152)	HxDD (28-130)	HxDF (26-123)	HxCF (29-147)
580-80167-30 - RA	PDI-SC-S019-10to12								
580-80167-31	PDI-SC-S019-12to13.7	43	34	33	52	68	50	67	53
580-80167-31 - RA	PDI-SC-S019-12to13.7								
580-80167-32	PDI-SC-S019-13.7to14.7	71	57	55	85	107	83	106	81
580-80167-32 - RA	PDI-SC-S019-13.7to14.7								
580-80167-36	PDI-SC-S019-10to12D	53	42	43	62	76	59	78	61
580-80167-36 - RA	PDI-SC-S019-10to12D								
MB 320-245460/1-A	Method Blank	75	64	67	69	68	70	73	69
MB 320-245749/1-A	Method Blank	73	69	67	67	73	72	75	72
MB 320-247773/1-A	Method Blank	81	79	80	77	70	68	69	77

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)
580-80167-1	PDI-SC-S129-0to2	52	49	50	51	56		33
580-80167-1 - RA	PDI-SC-S129-0to2						59	
580-80167-2	PDI-SC-S129-2to4	58	54	55	55	59		42
580-80167-2 - RA	PDI-SC-S129-2to4						66	
580-80167-3	PDI-SC-S129-4to5.3	53	51	52	53	56		40
580-80167-3 - RA	PDI-SC-S129-4to5.3						65	
580-80167-4	PDI-SC-S155-0to2.1	62	58	65	58	64		55
580-80167-4 - RA	PDI-SC-S155-0to2.1						63	
580-80167-5	PDI-SC-S155-2.1to4.2	78	70	76	69	64		60
580-80167-5 - RA	PDI-SC-S155-2.1to4.2						75	
580-80167-6	PDI-SC-S155-4.2to5.3	63	59	69	59	66	58	52
580-80167-7	PDI-SC-S121-0to1.8	52	50	54	52	58	54	33
580-80167-8	PDI-SC-S121-1.8to3.4	54	52	56	53	57		51
580-80167-8 - RA	PDI-SC-S121-1.8to3.4						58	
580-80167-9	PDI-SC-S255-0to2.1	60	58	63	58	64	59	49
580-80167-10	PDI-SC-S255-0to2.1D	59	56	62	57	61	56	51
580-80167-11	PDI-SC-S255-2.1to4.3	76	71	79	71	79		67
580-80167-11 - RA	PDI-SC-S255-2.1to4.3						77	
580-80167-12	PDI-SC-S112-0to2	68	64	65	60	67		56
580-80167-12 - RA	PDI-SC-S112-0to2						69	
580-80167-13	PDI-SC-S112-2to4	72	68	73	67	70		64
580-80167-13 - RA	PDI-SC-S112-2to4						70	
580-80167-14	PDI-SC-S112-4to6	70	64	67	63	66		53
580-80167-14 - RA	PDI-SC-S112-4to6						75	
580-80167-16	PDI-SC-S113C-0to1.1	59	54	51	49	65		24
580-80167-16 - RA	PDI-SC-S113C-0to1.1						64	
580-80167-17	PDI-SC-S113C-1.1to3.1	103	82	64	79	85		71
580-80167-17 - RA	PDI-SC-S113C-1.1to3.1						81	
580-80167-18	PDI-SC-S113C-3.1to5.6	51	50	54	52	60	56	28
580-80167-19	PDI-SC-S113C-5.6to6.6	48	48	52	50	58	56	28
580-80167-20	PDI-SC-S260-0to1.3	71	62	63	57	63		48
580-80167-20 - RA	PDI-SC-S260-0to1.3						74	
580-80167-21	PDI-SC-S260-1.3to2.6	84	77	76	72	72		58
580-80167-21 - RA	PDI-SC-S260-1.3to2.6						82	
580-80167-22	PDI-SC-S260-2.6to4.2	79	72	62	74	76		57
580-80167-22 - RA	PDI-SC-S260-2.6to4.2						73	

TestAmerica Seattle

# Isotope Dilution Summary

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

TestAmerica Job ID: 580-80167-2

## 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)	<sup>13</sup> CHxCF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)
580-80167-23	PDI-SC-S260-4.2to6	59	54	58	54	58	53	50
580-80167-24	PDI-SC-S260-6to7	75	75	75	68	74	66	75
580-80167-25	PDI-SC-S019-0to2	57	55	56	57	58		51
580-80167-25 - RA	PDI-SC-S019-0to2						55	
580-80167-26	PDI-SC-S019-2to4	71	50	50	56	61		44
580-80167-26 - RA	PDI-SC-S019-2to4						63	
580-80167-27	PDI-SC-S019-4to6	66	55	60	56	54		51
580-80167-27 - RA	PDI-SC-S019-4to6						64	
580-80167-28	PDI-SC-S019-6to8	66	51	55	55	51		52
580-80167-28 - RA	PDI-SC-S019-6to8						61	
580-80167-29	PDI-SC-S019-8to10	82	59	69	74	60		54
580-80167-29 - RA	PDI-SC-S019-8to10						73	
580-80167-30	PDI-SC-S019-10to12	64	57	65	58	59		45
580-80167-30 - RA	PDI-SC-S019-10to12						62	
580-80167-31	PDI-SC-S019-12to13.7	59	55	59	55	56		37
580-80167-31 - RA	PDI-SC-S019-12to13.7						68	
580-80167-32	PDI-SC-S019-13.7to14.7	80	78	89	81	78		66
580-80167-32 - RA	PDI-SC-S019-13.7to14.7						96	
580-80167-36	PDI-SC-S019-10to12D	65	60	67	59	58		49
580-80167-36 - RA	PDI-SC-S019-10to12D						66	
MB 320-245460/1-A	Method Blank	65	64	72	61	68	61	67
MB 320-245749/1-A	Method Blank	61	59	75	58	69	62	62
MB 320-247773/1-A	Method Blank	93	83	71	87	72	72	81

**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
- <sup>13</sup>CHxCF = 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 320-245460/2-A	Lab Control Sample	74	65	66	68	68	68	71	67
LCS 320-245749/2-A	Lab Control Sample	76	68	68	68	74	70	75	72

TestAmerica Seattle

# Isotope Dilution Summary

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

TestAmerica Job ID: 580-80167-2

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

**Matrix: Solid**

**Prep Type: Total/NA**

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDD (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	HxCDD (21-193)	HxCDF (19-202)	HxDD (25-163)	HxDF (21-159)	HxCF (17-205)
LCS 320-247773/2-A	Lab Control Sample	89	81	86	80	71	74	75	83
LCSD 320-245460/3-A	Lab Control Sample Dup	78	70	70	73	75	75	79	73
LCSD 320-245749/3-A	Lab Control Sample Dup	78	69	70	73	76	71	78	74
LCSD 320-247773/3-A	Lab Control Sample Dup	90	81	88	82	75	75	77	84

### 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 320-245460/2-A	Lab Control Sample	64	62	69	60	66	58	64
LCS 320-245749/2-A	Lab Control Sample	63	62	75	60	70	63	63
LCS 320-247773/2-A	Lab Control Sample	85	79	78	76	77	74	89
LCSD 320-245460/3-A	Lab Control Sample Dup	72	67	74	65	74	65	69
LCSD 320-245749/3-A	Lab Control Sample Dup	64	62	76	61	71	64	64
LCSD 320-247773/3-A	Lab Control Sample Dup	94	93	75	89	78	76	85

#### 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)
580-80167-15	PDI-RB-SS-180905	73	65	67	72	75	74	77	77
580-80167-33	PDI-RB-SS-180906	91	80	82	72	75	77	77	77
580-80167-34	PDI-RB-LL-180907	93	82	85	73	77	75	78	76
580-80167-35	PDI-RB-AL-180905	91	80	83	74	77	74	76	76
MB 320-245166/1-A	Method Blank	82	74	76	70	71	71	73	72

### 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)
580-80167-15	PDI-RB-SS-180905	71	69	78	68	79	72	61
580-80167-33	PDI-RB-SS-180906	70	65	77	63	77	69	75
580-80167-34	PDI-RB-LL-180907	69	65	76	64	78	70	82
580-80167-35	PDI-RB-AL-180905	70	66	76	65	78	70	79

TestAmerica Seattle

# Isotope Dilution Summary

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

TestAmerica Job ID: 580-80167-2

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

Matrix: Water

Prep Type: Total/NA

### 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)
MB 320-245166/1-A	Method Blank	65	61	73	62	72	66	67

#### 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 (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	HxCDD (21-193)	HxCDF (19-202)	HxDD (25-163)	HxDF (21-159)	HxCF (17-205)
LCS 320-245166/2-A	Lab Control Sample	73	66	67	62	65	64	65	66
LCSD 320-245166/3-A	Lab Control Sample Dup	85	76	79	70	74	75	74	75

### 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 320-245166/2-A	Lab Control Sample	61	57	66	57	67	60	57
LCSD 320-245166/3-A	Lab Control Sample Dup	67	63	76	62	74	65	71

#### Surrogate Legend

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

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