

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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TestAmerica Job ID: 580-79626-2

Client Project/Site: Portland Harbor Pre-Remedial Design

For:

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9/14/2018 5:24:24 PM

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

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Case Narrative

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Job ID: 580-79626-2

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE

Client: AECOM

Project: Portland Harbor Pre-Remedial Design

Report Number: 580-79626-2

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

Fifty-one samples were received on 8/15/2018 4:20 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 7 coolers at receipt time were 1.8° C, 2.3° C, 2.8° C, 3.2° C, 4.1° C, 4.2° C and 5.5° C.

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

This report contains results for Dioxins/Furans by Method 1613B, 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-S151-2to4 (580-79626-1), PDI-SC-S151-0to2 (580-79626-2), PDI-SC-S151-4to6 (580-79626-3), PDI-SC-S151-6to8 (580-79626-4), PDI-SC-S151-8to10 (580-79626-5), PDI-SC-S151-10to12 (580-79626-6), PDI-SC-S150-0to2 (580-79626-8), PDI-SC-S150-2to4 (580-79626-9), PDI-SC-S150-4to6 (580-79626-10), PDI-SC-S150-4to6D (580-79626-11), PDI-SC-S150-6to7.7 (580-79626-12), PDI-SC-S150-7.7to9.7 (580-79626-13), PDI-SC-S150-9.7to11.1 (580-79626-14), PDI-SC-S150-11.1to12.5 (580-79626-15), PDI-SC-S146-0to2 (580-79626-16), PDI-SC-S146-2to4 (580-79626-17), PDI-SC-S146-4to5 (580-79626-18), PDI-SC-S146-5to7 (580-79626-19), PDI-SC-S146-7to8 (580-79626-20), PDI-SC-S146-8to9.1 (580-79626-21), PDI-SC-S136-0to2 (580-79626-22), PDI-SC-S136-2to4 (580-79626-23), PDI-SC-S136-4to6 (580-79626-24), PDI-SC-S136-6to7 (580-79626-25), PDI-SC-S136-7to9 (580-79626-26), PDI-SC-S136-9to11.3 (580-79626-27), PDI-SC-S092-0to2 (580-79626-28), PDI-SC-S092-2to4 (580-79626-29), PDI-SC-S092-4to6 (580-79626-30), PDI-SC-S092-4to6D (580-79626-31), PDI-SC-S092-6to8 (580-79626-32), PDI-SC-S092-8to9.9 (580-79626-33), PDI-SC-S092-9.9to10.9 (580-79626-34), PDI-SC-S065-0to2 (580-79626-35), PDI-SC-S065-2to4 (580-79626-36), PDI-SC-S065-4to6 (580-79626-37), PDI-SC-S065-6to8 (580-79626-38), PDI-SC-S065-8to10 (580-79626-39), PDI-SC-S065-12to14.3 (580-79626-40), PDI-SC-S070-0to1.1 (580-79626-41), PDI-SC-S070-1.1to2.4 (580-79626-42), PDI-SC-S070-2.4to4.4 (580-79626-43), PDI-SC-S070-4.4to6.4 (580-79626-44), PDI-SC-S070-6.4to8.4 (580-79626-45), PDI-SC-S070-8.4to10.4 (580-79626-46), PDI-SC-S065-10to12 (580-79626-47) and PDI-SC-S070-10.4to12.6 (580-79626-48) were analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 08/30/2018, 08/31/2018 and 09/04/2018 and analyzed on 09/03/2018, 09/04/2018, 09/05/2018, 09/06/2018, 09/07/2018, 09/08/2018, 09/10/2018 and 09/12/2018.

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-S151-2to4 (580-79626-1), PDI-SC-S151-0to2 (580-79626-2), PDI-SC-S151-8to10

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(580-79626-5), PDI-SC-S150-2to4 (580-79626-9), PDI-SC-S136-7to9 (580-79626-26), PDI-SC-S136-9to11.3 (580-79626-27), PDI-SC-S092-0to2 (580-79626-28), (CCV 320-244808/2), (LCS 320-243400/2-A), (LCSD 320-243400/3-A), (MB 320-243400/1-A), PDI-SC-S065-4to6 (580-79626-37), PDI-SC-S065-6to8 (580-79626-38), PDI-SC-S065-8to10 (580-79626-39), PDI-SC-S065-12to14.3 (580-79626-40), PDI-SC-S070-0to1.1 (580-79626-41), PDI-SC-S070-1.1to2.4 (580-79626-42), PDI-SC-S070-2.4to4.4 (580-79626-43), PDI-SC-S070-4.4to6.4 (580-79626-44), PDI-SC-S070-6.4to8.4 (580-79626-45), PDI-SC-S070-8.4to10.4 (580-79626-46), PDI-SC-S065-10to12 (580-79626-47), (CCV 320-245065/16), PDI-SC-S070-10.4to12.6 (580-79626-48), (CCV 320-244552/42), (CCV 320-243707/29), (CCV 320-241471/2), (LCS 320-240796/2-A), (LCSD 320-240796/3-A), (MB 320-240796/1-A), (LCS 320-243160/2-A), (LCSD 320-243160/3-A), (MB 320-243160/1-A), (CCV 320-244513/27), (LCS 320-243668/2-A), (LCSD 320-243668/3-A) and (MB 320-243668/1-A). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD and 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 3D5 exceeded this criteria: PDI-SC-S150-4to6 (580-79626-10), PDI-SC-S150-4to6D (580-79626-11), PDI-SC-S150-6to7.7 (580-79626-12), PDI-SC-S150-7.7to9.7 (580-79626-13), PDI-SC-S150-9.7to11.1 (580-79626-14), PDI-SC-S150-11.1to12.5 (580-79626-15), PDI-SC-S146-0to2 (580-79626-16), PDI-SC-S146-2to4 (580-79626-17), PDI-SC-S146-4to5 (580-79626-18), PDI-SC-S146-5to7 (580-79626-19), PDI-SC-S146-7to8 (580-79626-20), PDI-SC-S146-8to9.1 (580-79626-21), PDI-SC-S136-0to2 (580-79626-22), PDI-SC-S136-2to4 (580-79626-23), PDI-SC-S136-4to6 (580-79626-24), PDI-SC-S136-6to7 (580-79626-25), PDI-SC-S092-2to4 (580-79626-29), PDI-SC-S092-4to6 (580-79626-30), PDI-SC-S092-4to6D (580-79626-31), PDI-SC-S092-6to8 (580-79626-32), PDI-SC-S092-8to9.9 (580-79626-33), PDI-SC-S092-9.9to10.9 (580-79626-34), PDI-SC-S065-0to2 (580-79626-35), PDI-SC-S065-2to4 (580-79626-36), (CCV 320-244316/9), (CCV 320-243998/2), (CCV 320-243982/1), (LCS 320-243217/2-A), (LCSD 320-243217/3-A) and (MB 320-243217/1-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-S151-2to4 (580-79626-1), PDI-SC-S151-0to2 (580-79626-2), PDI-SC-S151-4to6 (580-79626-3), PDI-SC-S151-6to8 (580-79626-4), PDI-SC-S151-8to10 (580-79626-5), PDI-SC-S151-10to12 (580-79626-6), PDI-SC-S150-0to2 (580-79626-8), PDI-SC-S150-2to4 (580-79626-9) and (CCV 320-244215/2). 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.

Several analytes were detected in method blank MB 320-243160/1-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 320-243217/1-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 320-243400/1-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 320-243668/1-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.

37Cl4-2,3,7,8-TCDD failed the surrogate recovery criteria high for PDI-SC-S150-9.7to11.1 (580-79626-14).

The following samples exhibited elevated noise or matrix interferences for one or more analytes causing elevation of the detection limit (EDL): PDI-SC-S151-2to4 (580-79626-1), PDI-SC-S151-0to2 (580-79626-2), PDI-SC-S151-4to6 (580-79626-3), PDI-SC-S151-6to8 (580-79626-4), PDI-SC-S151-8to10 (580-79626-5), PDI-SC-S151-10to12 (580-79626-6), PDI-SC-S150-0to2 (580-79626-8),

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PDI-SC-S150-2to4 (580-79626-9), PDI-SC-S150-4to6 (580-79626-10), PDI-SC-S150-4to6D (580-79626-11), PDI-SC-S150-6to7.7 (580-79626-12), PDI-SC-S146-0to2 (580-79626-16), PDI-SC-S146-2to4 (580-79626-17), PDI-SC-S146-4to5 (580-79626-18), PDI-SC-S136-6to7 (580-79626-25), PDI-SC-S136-9to11.3 (580-79626-27), PDI-SC-S092-2to4 (580-79626-29), PDI-SC-S065-2to4 (580-79626-36), and PDI-SC-S065-4to6 (580-79626-37). The reporting limit (RL) for the affected analytes has been raised to be equal to the EDL, and a "G" qualifier applied.

The concentration of one or more analytes associated with the following samples exceeded the instrument calibration range: PDI-SC-S151-6to8 (580-79626-4), PDI-SC-S151-8to10 (580-79626-5), PDI-SC-S151-10to12 (580-79626-6), PDI-SC-S150-0to2 (580-79626-8), PDI-SC-S150-2to4 (580-79626-9), PDI-SC-S150-4to6 (580-79626-10), PDI-SC-S150-4to6D (580-79626-11), PDI-SC-S150-6to7.7 (580-79626-12), PDI-SC-S146-0to2 (580-79626-16), PDI-SC-S146-2to4 (580-79626-17), PDI-SC-S146-4to5 (580-79626-18), PDI-SC-S092-0to2 (580-79626-28), and PDI-SC-S092-2to4 (580-79626-29), and PDI-SC-S065-8to10 (580-79626-39). These analytes have been qualified; however, the peaks did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range.

The concentration of 2,3,7,8-TCDF associated with the following samples exceeded the instrument calibration range: PDI-SC-S151-4to6 (580-79626-3), PDI-SC-S151-6to8 (580-79626-4), PDI-SC-S151-8to10 (580-79626-5), PDI-SC-S151-10to12 (580-79626-6), PDI-SC-S150-0to2 (580-79626-8), PDI-SC-S150-2to4 (580-79626-9), PDI-SC-S150-4to6 (580-79626-10), PDI-SC-S150-4to6D (580-79626-11), PDI-SC-S150-4to6D (580-79626-11), PDI-SC-S150-6to7.7 (580-79626-12), PDI-SC-S146-0to2 (580-79626-16), PDI-SC-S146-2to4 (580-79626-17) and PDI-SC-S146-4to5 (580-79626-18). This analyte have been qualified; however, the peak 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 cleanup recovery standard (CRS) 37CL-2378-TCDD in sample PDI-SC-S150-9.7to11.1 (580-79626-14) is above the method recommended percent recovery criteria of 197%. There is no target analyte quantitation carried out using the recovery standard so effects on the quality of the data due to this anomaly are minimal.

The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: PDI-SC-S065-12to14.3 (580-79626-40) and PDI-SC-S070-0to1.1 (580-79626-41). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples. All detection limits are below the lower calibration.

Due to the matrix, the initial volumes used for the following samples deviated from the standard procedure: PDI-SC-S151-2to4 (580-79626-1), PDI-SC-S151-0to2 (580-79626-2), PDI-SC-S151-4to6 (580-79626-3), PDI-SC-S151-6to8 (580-79626-4), PDI-SC-S151-8to10 (580-79626-5), PDI-SC-S151-10to12 (580-79626-6), PDI-SC-S150-0to2 (580-79626-8), PDI-SC-S150-2to4 (580-79626-9), PDI-SC-S150-4to6 (580-79626-10), PDI-SC-S150-4to6D (580-79626-11), PDI-SC-S150-6to7.7 (580-79626-12), PDI-SC-S150-7.7to9.7 (580-79626-13), PDI-SC-S150-9.7to11.1 (580-79626-14), PDI-SC-S150-11.1to12.5 (580-79626-15), PDI-SC-S146-0to2 (580-79626-16), PDI-SC-S146-2to4 (580-79626-17), PDI-SC-S146-4to5 (580-79626-18), PDI-SC-S146-5to7 (580-79626-19), PDI-SC-S146-7to8 (580-79626-20), PDI-SC-S146-8to9.1 (580-79626-21), PDI-SC-S136-0to2 (580-79626-22), PDI-SC-S136-2to4 (580-79626-23), PDI-SC-S136-4to6 (580-79626-24), PDI-SC-S136-6to7 (580-79626-25), PDI-SC-S136-7to9 (580-79626-26), PDI-SC-S136-9to11.3 (580-79626-27), PDI-SC-S092-0to2 (580-79626-28), PDI-SC-S092-2to4 (580-79626-29), PDI-SC-S092-4to6 (580-79626-30), PDI-SC-S092-4to6D (580-79626-31), PDI-SC-S092-6to8 (580-79626-32), PDI-SC-S092-8to9.9 (580-79626-33), PDI-SC-S092-9.9to10.9 (580-79626-34), PDI-SC-S065-0to2 (580-79626-35), PDI-SC-S065-2to4 (580-79626-36), PDI-SC-S065-4to6 (580-79626-37), PDI-SC-S065-6to8 (580-79626-38), PDI-SC-S065-8to10 (580-79626-39), PDI-SC-S065-12to14.3 (580-79626-40), PDI-SC-S070-0to1.1 (580-79626-41), PDI-SC-S070-1.1to2.4 (580-79626-42), PDI-SC-S070-2.4to4.4 (580-79626-43), PDI-SC-S070-4.4to6.4 (580-79626-44), PDI-SC-S070-6.4to8.4 (580-79626-45), PDI-SC-S070-8.4to10.4 (580-79626-46) and PDI-SC-S065-10to12 (580-79626-47). The reporting limits (RLs) have been adjusted proportionately.

Samples PDI-SC-S070-2.4to4.4 (580-79626-43)[10X] and PDI-SC-S070-8.4to10.4 (580-79626-46)[10X] 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-180814-1040 (580-79626-49), PDI-RB-SS-180815-0730 (580-79626-50) and PDI-RB-SS-180815-1340

Case Narrative

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Laboratory: TestAmerica Seattle (Continued)

(580-79626-51) were analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 08/20/2018 and 08/28/2018 and analyzed on 08/22/2018 and 09/01/2018.

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-RB-SS-180814-1040 (580-79626-49), PDI-RB-SS-180815-0730 (580-79626-50), PDI-RB-SS-180815-1340 (580-79626-51), (CCV 320-243696/45), (LCS 320-242488/2-A), (LCSD 320-242488/3-A), and (MB 320-242488/1-A).

Several analytes were detected in method blank MB 320-240796/1-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 320-242488/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

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

Definitions/Glossary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

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
X	Surrogate is outside control limits
*	Isotope Dilution analyte is outside acceptance limits.

Glossary

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

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S151-2to4

Date Collected: 08/14/18 09:35

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-1

Matrix: Solid

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	0.15	B	0.0049	0.0012	ug/Kg	✉	08/30/18 14:05	09/03/18 15:01	1
1,2,3,4,6,7,8-HpCDF	0.20		0.0049	0.00081	ug/Kg	✉	08/30/18 14:05	09/03/18 15:01	1
1,2,3,4,7,8,9-HpCDF	0.076	B	0.0049	0.00082	ug/Kg	✉	08/30/18 14:05	09/03/18 15:01	1
1,2,3,4,7,8-HxCDD	0.0013	J B	0.0049	0.00019	ug/Kg	✉	08/30/18 14:05	09/03/18 15:01	1
1,2,3,4,7,8-HxCDF	0.67		0.0049	0.0023	ug/Kg	✉	08/30/18 14:05	09/03/18 15:01	1
1,2,3,6,7,8-HxCDD	0.0065		0.0049	0.00017	ug/Kg	✉	08/30/18 14:05	09/03/18 15:01	1
1,2,3,6,7,8-HxCDF	0.15		0.0049	0.0023	ug/Kg	✉	08/30/18 14:05	09/03/18 15:01	1
1,2,3,7,8,9-HxCDD	0.0035	J	0.0049	0.00017	ug/Kg	✉	08/30/18 14:05	09/03/18 15:01	1
1,2,3,7,8,9-HxCDF	0.0077	B	0.0049	0.0014	ug/Kg	✉	08/30/18 14:05	09/03/18 15:01	1
1,2,3,7,8-PeCDD	0.00069	J	0.0049	0.000098	ug/Kg	✉	08/30/18 14:05	09/03/18 15:01	1
1,2,3,7,8-PeCDF	0.52	B	0.0049	0.0026	ug/Kg	✉	08/30/18 14:05	09/03/18 15:01	1
2,3,4,6,7,8-HxCDF	0.028		0.0049	0.0023	ug/Kg	✉	08/30/18 14:05	09/03/18 15:01	1
2,3,4,7,8-PeCDF	0.23		0.0049	0.0028	ug/Kg	✉	08/30/18 14:05	09/03/18 15:01	1
2,3,7,8-TCDD	0.00038	J q	0.00098	0.000048	ug/Kg	✉	08/30/18 14:05	09/03/18 15:01	1
OCDD	1.4	B	0.0098	0.00031	ug/Kg	✉	08/30/18 14:05	09/03/18 15:01	1
OCDF	0.33	B	0.0098	0.000093	ug/Kg	✉	08/30/18 14:05	09/03/18 15:01	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	67		23 - 140				08/30/18 14:05	09/03/18 15:01	1
13C-1,2,3,4,6,7,8-HpCDF	61		28 - 143				08/30/18 14:05	09/03/18 15:01	1
13C-1,2,3,4,7,8,9-HpCDF	62		26 - 138				08/30/18 14:05	09/03/18 15:01	1
13C-1,2,3,4,7,8-HxCDD	63		32 - 141				08/30/18 14:05	09/03/18 15:01	1
13C-1,2,3,4,7,8-HxCDF	62		26 - 152				08/30/18 14:05	09/03/18 15:01	1
13C-1,2,3,6,7,8-HxCDD	65		28 - 130				08/30/18 14:05	09/03/18 15:01	1
13C-1,2,3,6,7,8-HxCDF	64		26 - 123				08/30/18 14:05	09/03/18 15:01	1
13C-1,2,3,7,8,9-HxCDF	65		29 - 147				08/30/18 14:05	09/03/18 15:01	1
13C-1,2,3,7,8-PeCDD	69		25 - 181				08/30/18 14:05	09/03/18 15:01	1
13C-1,2,3,7,8-PeCDF	65		24 - 185				08/30/18 14:05	09/03/18 15:01	1
13C-2,3,4,6,7,8-HxCDF	63		28 - 136				08/30/18 14:05	09/03/18 15:01	1
13C-2,3,4,7,8-PeCDF	65		21 - 178				08/30/18 14:05	09/03/18 15:01	1
13C-2,3,7,8-TCDD	71		25 - 164				08/30/18 14:05	09/03/18 15:01	1
13C-OCDD	62		17 - 157				08/30/18 14:05	09/03/18 15:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	125		35 - 197				08/30/18 14:05	09/03/18 15:01	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.32	B	0.00098	0.00069	ug/Kg	✉	08/30/18 14:05	09/06/18 06:31	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	69		24 - 169				08/30/18 14:05	09/06/18 06:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	131		35 - 197				08/30/18 14:05	09/06/18 06:31	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S151-0to2

Date Collected: 08/14/18 09:30

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-2

Matrix: Solid

Percent Solids: 48.0

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	0.17	B	0.0052	0.0011	ug/Kg	✉	08/30/18 14:05	09/03/18 15:47	1
1,2,3,4,6,7,8-HpCDF	0.29		0.0052	0.0015	ug/Kg	✉	08/30/18 14:05	09/03/18 15:47	1
1,2,3,4,7,8,9-HpCDF	0.19	B	0.0052	0.0015	ug/Kg	✉	08/30/18 14:05	09/03/18 15:47	1
1,2,3,4,7,8-HxCDD	0.0011	J B	0.0052	0.00020	ug/Kg	✉	08/30/18 14:05	09/03/18 15:47	1
1,2,3,4,7,8-HxCDF	1.0		0.0052	0.0047	ug/Kg	✉	08/30/18 14:05	09/03/18 15:47	1
1,2,3,6,7,8-HxCDD	0.0043	J	0.0052	0.00019	ug/Kg	✉	08/30/18 14:05	09/03/18 15:47	1
1,2,3,6,7,8-HxCDF	0.19		0.0052	0.0047	ug/Kg	✉	08/30/18 14:05	09/03/18 15:47	1
1,2,3,7,8,9-HxCDD	0.0030	J	0.0052	0.00018	ug/Kg	✉	08/30/18 14:05	09/03/18 15:47	1
1,2,3,7,8,9-HxCDF	0.023	B	0.0052	0.0026	ug/Kg	✉	08/30/18 14:05	09/03/18 15:47	1
1,2,3,7,8-PeCDD	0.00050	J	0.0052	0.00010	ug/Kg	✉	08/30/18 14:05	09/03/18 15:47	1
1,2,3,7,8-PeCDF	0.57	B	0.0052	0.0024	ug/Kg	✉	08/30/18 14:05	09/03/18 15:47	1
2,3,4,6,7,8-HxCDF	0.017		0.0052	0.0050	ug/Kg	✉	08/30/18 14:05	09/03/18 15:47	1
2,3,4,7,8-PeCDF	0.14		0.0052	0.0025	ug/Kg	✉	08/30/18 14:05	09/03/18 15:47	1
2,3,7,8-TCDD	0.00032	J q	0.0010	0.000056	ug/Kg	✉	08/30/18 14:05	09/03/18 15:47	1
OCDD	1.4	B	0.010	0.00084	ug/Kg	✉	08/30/18 14:05	09/03/18 15:47	1
OCDF	0.49	B	0.010	0.00011	ug/Kg	✉	08/30/18 14:05	09/03/18 15:47	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	64		23 - 140				08/30/18 14:05	09/03/18 15:47	1
13C-1,2,3,4,6,7,8-HpCDF	59		28 - 143				08/30/18 14:05	09/03/18 15:47	1
13C-1,2,3,4,7,8,9-HpCDF	61		26 - 138				08/30/18 14:05	09/03/18 15:47	1
13C-1,2,3,4,7,8-HxCDD	58		32 - 141				08/30/18 14:05	09/03/18 15:47	1
13C-1,2,3,4,7,8-HxCDF	56		26 - 152				08/30/18 14:05	09/03/18 15:47	1
13C-1,2,3,6,7,8-HxCDD	59		28 - 130				08/30/18 14:05	09/03/18 15:47	1
13C-1,2,3,6,7,8-HxCDF	59		26 - 123				08/30/18 14:05	09/03/18 15:47	1
13C-1,2,3,7,8,9-HxCDF	61		29 - 147				08/30/18 14:05	09/03/18 15:47	1
13C-1,2,3,7,8-PeCDD	60		25 - 181				08/30/18 14:05	09/03/18 15:47	1
13C-1,2,3,7,8-PeCDF	58		24 - 185				08/30/18 14:05	09/03/18 15:47	1
13C-2,3,4,6,7,8-HxCDF	58		28 - 136				08/30/18 14:05	09/03/18 15:47	1
13C-2,3,4,7,8-PeCDF	58		21 - 178				08/30/18 14:05	09/03/18 15:47	1
13C-2,3,7,8-TCDD	66		25 - 164				08/30/18 14:05	09/03/18 15:47	1
13C-OCDD	59		17 - 157				08/30/18 14:05	09/03/18 15:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	122		35 - 197				08/30/18 14:05	09/03/18 15:47	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.27	B	0.0010	0.0010	ug/Kg	✉	08/30/18 14:05	09/06/18 07:09	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	66		24 - 169				08/30/18 14:05	09/06/18 07:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	115		35 - 197				08/30/18 14:05	09/06/18 07:09	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S151-4to6

Date Collected: 08/14/18 09:40

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-3

Matrix: Solid

Percent Solids: 52.7

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	0.15	B	0.0047	0.00098	ug/Kg	✉	08/30/18 14:05	09/03/18 16:33	1
1,2,3,4,6,7,8-HpCDF	0.18		0.0047	0.00057	ug/Kg	✉	08/30/18 14:05	09/03/18 16:33	1
1,2,3,4,7,8,9-HpCDF	0.065	B	0.0047	0.00062	ug/Kg	✉	08/30/18 14:05	09/03/18 16:33	1
1,2,3,4,7,8-HxCDD	0.0012	J B q	0.0047	0.00023	ug/Kg	✉	08/30/18 14:05	09/03/18 16:33	1
1,2,3,4,7,8-HxCDF	0.67		0.0047	0.0037	ug/Kg	✉	08/30/18 14:05	09/03/18 16:33	1
1,2,3,6,7,8-HxCDD	0.010		0.0047	0.00022	ug/Kg	✉	08/30/18 14:05	09/03/18 16:33	1
1,2,3,6,7,8-HxCDF	0.16		0.0047	0.0036	ug/Kg	✉	08/30/18 14:05	09/03/18 16:33	1
1,2,3,7,8,9-HxCDD	0.0038	J	0.0047	0.00020	ug/Kg	✉	08/30/18 14:05	09/03/18 16:33	1
1,2,3,7,8,9-HxCDF	0.0084	B	0.0047	0.0021	ug/Kg	✉	08/30/18 14:05	09/03/18 16:33	1
1,2,3,7,8-PeCDD	0.0011	J	0.0047	0.00014	ug/Kg	✉	08/30/18 14:05	09/03/18 16:33	1
1,2,3,7,8-PeCDF	0.43	B	0.0047	0.0022	ug/Kg	✉	08/30/18 14:05	09/03/18 16:33	1
2,3,4,6,7,8-HxCDF	0.017		0.0047	0.0037	ug/Kg	✉	08/30/18 14:05	09/03/18 16:33	1
2,3,4,7,8-PeCDF	0.17		0.0047	0.0024	ug/Kg	✉	08/30/18 14:05	09/03/18 16:33	1
2,3,7,8-TCDD	0.00036	J q	0.00093	0.00012	ug/Kg	✉	08/30/18 14:05	09/03/18 16:33	1
OCDD	1.3	B	0.0093	0.00028	ug/Kg	✉	08/30/18 14:05	09/03/18 16:33	1
OCDF	0.22	B	0.0093	0.000069	ug/Kg	✉	08/30/18 14:05	09/03/18 16:33	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	58		23 - 140				08/30/18 14:05	09/03/18 16:33	1
13C-1,2,3,4,6,7,8-HpCDF	54		28 - 143				08/30/18 14:05	09/03/18 16:33	1
13C-1,2,3,4,7,8,9-HpCDF	53		26 - 138				08/30/18 14:05	09/03/18 16:33	1
13C-1,2,3,4,7,8-HxCDD	59		32 - 141				08/30/18 14:05	09/03/18 16:33	1
13C-1,2,3,4,7,8-HxCDF	57		26 - 152				08/30/18 14:05	09/03/18 16:33	1
13C-1,2,3,6,7,8-HxCDD	57		28 - 130				08/30/18 14:05	09/03/18 16:33	1
13C-1,2,3,6,7,8-HxCDF	58		26 - 123				08/30/18 14:05	09/03/18 16:33	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147				08/30/18 14:05	09/03/18 16:33	1
13C-1,2,3,7,8-PeCDD	63		25 - 181				08/30/18 14:05	09/03/18 16:33	1
13C-1,2,3,7,8-PeCDF	61		24 - 185				08/30/18 14:05	09/03/18 16:33	1
13C-2,3,4,6,7,8-HxCDF	57		28 - 136				08/30/18 14:05	09/03/18 16:33	1
13C-2,3,4,7,8-PeCDF	62		21 - 178				08/30/18 14:05	09/03/18 16:33	1
13C-2,3,7,8-TCDD	64		25 - 164				08/30/18 14:05	09/03/18 16:33	1
13C-OCDD	52		17 - 157				08/30/18 14:05	09/03/18 16:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	122		35 - 197				08/30/18 14:05	09/03/18 16:33	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.37	E B	0.00093	0.00067	ug/Kg	✉	08/30/18 14:05	09/06/18 07:47	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	65		24 - 169				08/30/18 14:05	09/06/18 07:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	129		35 - 197				08/30/18 14:05	09/06/18 07:47	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S151-6to8

Date Collected: 08/14/18 09:45

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-4

Matrix: Solid

Percent Solids: 55.1

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	0.30	B	0.0046	0.0031	ug/Kg	✉	08/30/18 14:05	09/03/18 17:19	1
1,2,3,4,6,7,8-HpCDF	3.0	E G	0.013	0.013	ug/Kg	✉	08/30/18 14:05	09/03/18 17:19	1
1,2,3,4,7,8,9-HpCDF	1.2	B G	0.012	0.012	ug/Kg	✉	08/30/18 14:05	09/03/18 17:19	1
1,2,3,4,7,8-HxCDD	0.0034	J B	0.0046	0.00076	ug/Kg	✉	08/30/18 14:05	09/03/18 17:19	1
1,2,3,4,7,8-HxCDF	8.2	E G	0.036	0.036	ug/Kg	✉	08/30/18 14:05	09/03/18 17:19	1
1,2,3,6,7,8-HxCDD	0.014		0.0046	0.00067	ug/Kg	✉	08/30/18 14:05	09/03/18 17:19	1
1,2,3,6,7,8-HxCDF	2.1	E G	0.036	0.036	ug/Kg	✉	08/30/18 14:05	09/03/18 17:19	1
1,2,3,7,8,9-HxCDD	0.0061	q	0.0046	0.00065	ug/Kg	✉	08/30/18 14:05	09/03/18 17:19	1
1,2,3,7,8,9-HxCDF	0.11	B G	0.019	0.019	ug/Kg	✉	08/30/18 14:05	09/03/18 17:19	1
1,2,3,7,8-PeCDD	0.0021	J	0.0046	0.00066	ug/Kg	✉	08/30/18 14:05	09/03/18 17:19	1
1,2,3,7,8-PeCDF	4.5	E B G	0.022	0.022	ug/Kg	✉	08/30/18 14:05	09/03/18 17:19	1
2,3,4,6,7,8-HxCDF	0.28	G	0.030	0.030	ug/Kg	✉	08/30/18 14:05	09/03/18 17:19	1
2,3,4,7,8-PeCDF	1.6	G	0.025	0.025	ug/Kg	✉	08/30/18 14:05	09/03/18 17:19	1
2,3,7,8-TCDD	0.0011		0.00091	0.00035	ug/Kg	✉	08/30/18 14:05	09/03/18 17:19	1
OCDD	3.2	B	0.0091	0.0013	ug/Kg	✉	08/30/18 14:05	09/03/18 17:19	1
OCDF	4.5	E B	0.0091	0.0012	ug/Kg	✉	08/30/18 14:05	09/03/18 17:19	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	60		23 - 140				08/30/18 14:05	09/03/18 17:19	1
13C-1,2,3,4,6,7,8-HpCDF	54		28 - 143				08/30/18 14:05	09/03/18 17:19	1
13C-1,2,3,4,7,8,9-HpCDF	57		26 - 138				08/30/18 14:05	09/03/18 17:19	1
13C-1,2,3,4,7,8-HxCDD	61		32 - 141				08/30/18 14:05	09/03/18 17:19	1
13C-1,2,3,4,7,8-HxCDF	60		26 - 152				08/30/18 14:05	09/03/18 17:19	1
13C-1,2,3,6,7,8-HxCDD	60		28 - 130				08/30/18 14:05	09/03/18 17:19	1
13C-1,2,3,6,7,8-HxCDF	60		26 - 123				08/30/18 14:05	09/03/18 17:19	1
13C-1,2,3,7,8,9-HxCDF	62		29 - 147				08/30/18 14:05	09/03/18 17:19	1
13C-1,2,3,7,8-PeCDD	61		25 - 181				08/30/18 14:05	09/03/18 17:19	1
13C-1,2,3,7,8-PeCDF	59		24 - 185				08/30/18 14:05	09/03/18 17:19	1
13C-2,3,4,6,7,8-HxCDF	60		28 - 136				08/30/18 14:05	09/03/18 17:19	1
13C-2,3,4,7,8-PeCDF	62		21 - 178				08/30/18 14:05	09/03/18 17:19	1
13C-2,3,7,8-TCDD	67		25 - 164				08/30/18 14:05	09/03/18 17:19	1
13C-OCDD	56		17 - 157				08/30/18 14:05	09/03/18 17:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	123		35 - 197				08/30/18 14:05	09/03/18 17:19	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	2.6	E G B	0.0060	0.0060	ug/Kg	✉	08/30/18 14:05	09/06/18 08:25	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	65		24 - 169				08/30/18 14:05	09/06/18 08:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	121		35 - 197				08/30/18 14:05	09/06/18 08:25	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S151-8to10

Date Collected: 08/14/18 09:50

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-5

Matrix: Solid

Percent Solids: 60.7

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	0.23	B G	0.0044	0.0044	ug/Kg	✉	08/30/18 14:05	09/03/18 18:05	1
1,2,3,4,6,7,8-HpCDF	2.8	E G	0.0096	0.0096	ug/Kg	✉	08/30/18 14:05	09/03/18 18:05	1
1,2,3,4,7,8,9-HpCDF	1.1	B G	0.0088	0.0088	ug/Kg	✉	08/30/18 14:05	09/03/18 18:05	1
1,2,3,4,7,8-HxCDD	0.0023	J B	0.0041	0.00042	ug/Kg	✉	08/30/18 14:05	09/03/18 18:05	1
1,2,3,4,7,8-HxCDF	7.8	E G	0.020	0.020	ug/Kg	✉	08/30/18 14:05	09/03/18 18:05	1
1,2,3,6,7,8-HxCDD	0.011		0.0041	0.00039	ug/Kg	✉	08/30/18 14:05	09/03/18 18:05	1
1,2,3,6,7,8-HxCDF	2.0	E G	0.019	0.019	ug/Kg	✉	08/30/18 14:05	09/03/18 18:05	1
1,2,3,7,8,9-HxCDD	0.0045		0.0041	0.00037	ug/Kg	✉	08/30/18 14:05	09/03/18 18:05	1
1,2,3,7,8,9-HxCDF	0.12	B G	0.011	0.011	ug/Kg	✉	08/30/18 14:05	09/03/18 18:05	1
1,2,3,7,8-PeCDD	ND		0.0041	0.00076	ug/Kg	✉	08/30/18 14:05	09/03/18 18:05	1
1,2,3,7,8-PeCDF	5.0	E B G	0.022	0.022	ug/Kg	✉	08/30/18 14:05	09/03/18 18:05	1
2,3,4,6,7,8-HxCDF	0.29	G	0.014	0.014	ug/Kg	✉	08/30/18 14:05	09/03/18 18:05	1
2,3,4,7,8-PeCDF	2.0	E G	0.024	0.024	ug/Kg	✉	08/30/18 14:05	09/03/18 18:05	1
2,3,7,8-TCDD	0.0017		0.00082	0.00031	ug/Kg	✉	08/30/18 14:05	09/03/18 18:05	1
OCDD	2.7	B	0.0082	0.00067	ug/Kg	✉	08/30/18 14:05	09/03/18 18:05	1
OCDF	3.1	B	0.0082	0.00054	ug/Kg	✉	08/30/18 14:05	09/03/18 18:05	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	54		23 - 140				08/30/18 14:05	09/03/18 18:05	1
13C-1,2,3,4,6,7,8-HpCDF	30		28 - 143				08/30/18 14:05	09/03/18 18:05	1
13C-1,2,3,4,7,8,9-HpCDF	32		26 - 138				08/30/18 14:05	09/03/18 18:05	1
13C-1,2,3,4,7,8-HxCDD	69		32 - 141				08/30/18 14:05	09/03/18 18:05	1
13C-1,2,3,4,7,8-HxCDF	78		26 - 152				08/30/18 14:05	09/03/18 18:05	1
13C-1,2,3,6,7,8-HxCDD	61		28 - 130				08/30/18 14:05	09/03/18 18:05	1
13C-1,2,3,6,7,8-HxCDF	74		26 - 123				08/30/18 14:05	09/03/18 18:05	1
13C-1,2,3,7,8,9-HxCDF	67		29 - 147				08/30/18 14:05	09/03/18 18:05	1
13C-1,2,3,7,8-PeCDD	74		25 - 181				08/30/18 14:05	09/03/18 18:05	1
13C-1,2,3,7,8-PeCDF	63		24 - 185				08/30/18 14:05	09/03/18 18:05	1
13C-2,3,4,6,7,8-HxCDF	72		28 - 136				08/30/18 14:05	09/03/18 18:05	1
13C-2,3,4,7,8-PeCDF	69		21 - 178				08/30/18 14:05	09/03/18 18:05	1
13C-2,3,7,8-TCDD	63		25 - 164				08/30/18 14:05	09/03/18 18:05	1
13C-OCDD	58		17 - 157				08/30/18 14:05	09/03/18 18:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	126		35 - 197				08/30/18 14:05	09/03/18 18:05	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	3.3	E G B	0.012	0.012	ug/Kg	✉	08/30/18 14:05	09/06/18 09:03	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	107		24 - 169				08/30/18 14:05	09/06/18 09:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	134		35 - 197				08/30/18 14:05	09/06/18 09:03	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S151-10to12

Date Collected: 08/14/18 09:55

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-6

Matrix: Solid

Percent Solids: 60.6

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	0.073	B	0.0041	0.00058	ug/Kg	✉	08/30/18 14:05	09/03/18 18:51	1
1,2,3,4,6,7,8-HpCDF	0.43		0.0041	0.0012	ug/Kg	✉	08/30/18 14:05	09/03/18 18:51	1
1,2,3,4,7,8,9-HpCDF	0.076	B	0.0041	0.0023	ug/Kg	✉	08/30/18 14:05	09/03/18 18:51	1
1,2,3,4,7,8-HxCDD	0.00092	J B	0.0041	0.00021	ug/Kg	✉	08/30/18 14:05	09/03/18 18:51	1
1,2,3,4,7,8-HxCDF	0.57		0.0041	0.0034	ug/Kg	✉	08/30/18 14:05	09/03/18 18:51	1
1,2,3,6,7,8-HxCDD	0.0064		0.0041	0.00020	ug/Kg	✉	08/30/18 14:05	09/03/18 18:51	1
1,2,3,6,7,8-HxCDF	0.13		0.0041	0.0033	ug/Kg	✉	08/30/18 14:05	09/03/18 18:51	1
1,2,3,7,8,9-HxCDD	0.0022	J	0.0041	0.00019	ug/Kg	✉	08/30/18 14:05	09/03/18 18:51	1
1,2,3,7,8,9-HxCDF	0.0087	B	0.0041	0.0020	ug/Kg	✉	08/30/18 14:05	09/03/18 18:51	1
1,2,3,7,8-PeCDD	0.0010	J	0.0041	0.00016	ug/Kg	✉	08/30/18 14:05	09/03/18 18:51	1
1,2,3,7,8-PeCDF	0.44	B G	0.0050	0.0050	ug/Kg	✉	08/30/18 14:05	09/03/18 18:51	1
2,3,4,6,7,8-HxCDF	0.020		0.0041	0.0029	ug/Kg	✉	08/30/18 14:05	09/03/18 18:51	1
2,3,4,7,8-PeCDF	0.19	G	0.0058	0.0058	ug/Kg	✉	08/30/18 14:05	09/03/18 18:51	1
2,3,7,8-TCDD	0.00045	J q	0.00082	0.000089	ug/Kg	✉	08/30/18 14:05	09/03/18 18:51	1
OCDD	1.0	B	0.0082	0.00036	ug/Kg	✉	08/30/18 14:05	09/03/18 18:51	1
OCDF	0.41	B	0.0082	0.00027	ug/Kg	✉	08/30/18 14:05	09/03/18 18:51	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	54		23 - 140				08/30/18 14:05	09/03/18 18:51	1
13C-1,2,3,4,6,7,8-HpCDF	48		28 - 143				08/30/18 14:05	09/03/18 18:51	1
13C-1,2,3,4,7,8,9-HpCDF	31		26 - 138				08/30/18 14:05	09/03/18 18:51	1
13C-1,2,3,4,7,8-HxCDD	65		32 - 141				08/30/18 14:05	09/03/18 18:51	1
13C-1,2,3,4,7,8-HxCDF	66		26 - 152				08/30/18 14:05	09/03/18 18:51	1
13C-1,2,3,6,7,8-HxCDD	60		28 - 130				08/30/18 14:05	09/03/18 18:51	1
13C-1,2,3,6,7,8-HxCDF	67		26 - 123				08/30/18 14:05	09/03/18 18:51	1
13C-1,2,3,7,8,9-HxCDF	63		29 - 147				08/30/18 14:05	09/03/18 18:51	1
13C-1,2,3,7,8-PeCDD	67		25 - 181				08/30/18 14:05	09/03/18 18:51	1
13C-1,2,3,7,8-PeCDF	61		24 - 185				08/30/18 14:05	09/03/18 18:51	1
13C-2,3,4,6,7,8-HxCDF	66		28 - 136				08/30/18 14:05	09/03/18 18:51	1
13C-2,3,4,7,8-PeCDF	61		21 - 178				08/30/18 14:05	09/03/18 18:51	1
13C-2,3,7,8-TCDD	62		25 - 164				08/30/18 14:05	09/03/18 18:51	1
13C-OCDD	48		17 - 157				08/30/18 14:05	09/03/18 18:51	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	120		35 - 197				08/30/18 14:05	09/03/18 18:51	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.39	E G B	0.0019	0.0019	ug/Kg	✉	08/30/18 14:05	09/06/18 09:41	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	65		24 - 169				08/30/18 14:05	09/06/18 09:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	130		35 - 197				08/30/18 14:05	09/06/18 09:41	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S150-0to2

Date Collected: 08/14/18 12:05

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-8

Matrix: Solid

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	0.22	B G	0.0077	0.0077	ug/Kg	✉	08/30/18 14:05	09/03/18 19:37	1
1,2,3,4,6,7,8-HpCDF	3.1	E G	0.0089	0.0089	ug/Kg	✉	08/30/18 14:05	09/03/18 19:37	1
1,2,3,4,7,8,9-HpCDF	1.2	B G	0.0084	0.0084	ug/Kg	✉	08/30/18 14:05	09/03/18 19:37	1
1,2,3,4,7,8-HxCDD	0.0018	J B q	0.0053	0.00061	ug/Kg	✉	08/30/18 14:05	09/03/18 19:37	1
1,2,3,4,7,8-HxCDF	10	E G	0.051	0.051	ug/Kg	✉	08/30/18 14:05	09/03/18 19:37	1
1,2,3,6,7,8-HxCDD	0.0057		0.0053	0.00059	ug/Kg	✉	08/30/18 14:05	09/03/18 19:37	1
1,2,3,6,7,8-HxCDF	2.4	E G	0.048	0.048	ug/Kg	✉	08/30/18 14:05	09/03/18 19:37	1
1,2,3,7,8,9-HxCDD	0.0024	J q	0.0053	0.00055	ug/Kg	✉	08/30/18 14:05	09/03/18 19:37	1
1,2,3,7,8,9-HxCDF	0.14	B G	0.027	0.027	ug/Kg	✉	08/30/18 14:05	09/03/18 19:37	1
1,2,3,7,8-PeCDD	ND		0.0053	0.00039	ug/Kg	✉	08/30/18 14:05	09/03/18 19:37	1
1,2,3,7,8-PeCDF	5.8	E B G	0.031	0.031	ug/Kg	✉	08/30/18 14:05	09/03/18 19:37	1
2,3,4,6,7,8-HxCDF	0.33	G	0.041	0.041	ug/Kg	✉	08/30/18 14:05	09/03/18 19:37	1
2,3,4,7,8-PeCDF	2.9	E G	0.034	0.034	ug/Kg	✉	08/30/18 14:05	09/03/18 19:37	1
2,3,7,8-TCDD	0.00062	J q	0.0011	0.00019	ug/Kg	✉	08/30/18 14:05	09/03/18 19:37	1
OCDD	2.5	B	0.011	0.00086	ug/Kg	✉	08/30/18 14:05	09/03/18 19:37	1
OCDF	3.2	B	0.011	0.00073	ug/Kg	✉	08/30/18 14:05	09/03/18 19:37	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	58		23 - 140				08/30/18 14:05	09/03/18 19:37	1
13C-1,2,3,4,6,7,8-HpCDF	53		28 - 143				08/30/18 14:05	09/03/18 19:37	1
13C-1,2,3,4,7,8,9-HpCDF	56		26 - 138				08/30/18 14:05	09/03/18 19:37	1
13C-1,2,3,4,7,8-HxCDD	62		32 - 141				08/30/18 14:05	09/03/18 19:37	1
13C-1,2,3,4,7,8-HxCDF	60		26 - 152				08/30/18 14:05	09/03/18 19:37	1
13C-1,2,3,6,7,8-HxCDD	61		28 - 130				08/30/18 14:05	09/03/18 19:37	1
13C-1,2,3,6,7,8-HxCDF	62		26 - 123				08/30/18 14:05	09/03/18 19:37	1
13C-1,2,3,7,8,9-HxCDF	63		29 - 147				08/30/18 14:05	09/03/18 19:37	1
13C-1,2,3,7,8-PeCDD	64		25 - 181				08/30/18 14:05	09/03/18 19:37	1
13C-1,2,3,7,8-PeCDF	59		24 - 185				08/30/18 14:05	09/03/18 19:37	1
13C-2,3,4,6,7,8-HxCDF	61		28 - 136				08/30/18 14:05	09/03/18 19:37	1
13C-2,3,4,7,8-PeCDF	61		21 - 178				08/30/18 14:05	09/03/18 19:37	1
13C-2,3,7,8-TCDD	68		25 - 164				08/30/18 14:05	09/03/18 19:37	1
13C-OCDD	56		17 - 157				08/30/18 14:05	09/03/18 19:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	122		35 - 197				08/30/18 14:05	09/03/18 19:37	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	4.4	E G B	0.0060	0.0060	ug/Kg	✉	08/30/18 14:05	09/06/18 10:18	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	70		24 - 169				08/30/18 14:05	09/06/18 10:18	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	121		35 - 197				08/30/18 14:05	09/06/18 10:18	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S150-2to4

Date Collected: 08/14/18 12:10

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-9

Matrix: Solid

Percent Solids: 50.4

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	0.16	B	0.0050	0.0032	ug/Kg	✉	08/30/18 14:05	09/03/18 20:23	1
1,2,3,4,6,7,8-HpCDF	1.5	G	0.0056	0.0056	ug/Kg	✉	08/30/18 14:05	09/03/18 20:23	1
1,2,3,4,7,8,9-HpCDF	0.72	G B	0.0056	0.0056	ug/Kg	✉	08/30/18 14:05	09/03/18 20:23	1
1,2,3,4,7,8-HxCDD	0.0015	J q B	0.0050	0.00062	ug/Kg	✉	08/30/18 14:05	09/03/18 20:23	1
1,2,3,4,7,8-HxCDF	5.4	G E	0.032	0.032	ug/Kg	✉	08/30/18 14:05	09/03/18 20:23	1
1,2,3,6,7,8-HxCDD	0.0058		0.0050	0.00057	ug/Kg	✉	08/30/18 14:05	09/03/18 20:23	1
1,2,3,6,7,8-HxCDF	1.4	G	0.031	0.031	ug/Kg	✉	08/30/18 14:05	09/03/18 20:23	1
1,2,3,7,8,9-HxCDD	0.0027	J q	0.0050	0.00054	ug/Kg	✉	08/30/18 14:05	09/03/18 20:23	1
1,2,3,7,8,9-HxCDF	0.080	G B	0.017	0.017	ug/Kg	✉	08/30/18 14:05	09/03/18 20:23	1
1,2,3,7,8-PeCDD	ND		0.0050	0.00037	ug/Kg	✉	08/30/18 14:05	09/03/18 20:23	1
1,2,3,7,8-PeCDF	2.9	G E B	0.011	0.011	ug/Kg	✉	08/30/18 14:05	09/03/18 20:23	1
2,3,4,6,7,8-HxCDF	0.16	G	0.032	0.032	ug/Kg	✉	08/30/18 14:05	09/03/18 20:23	1
2,3,4,7,8-PeCDF	0.90	G	0.013	0.013	ug/Kg	✉	08/30/18 14:05	09/03/18 20:23	1
2,3,7,8-TCDD	0.00043	J q	0.0010	0.00012	ug/Kg	✉	08/30/18 14:05	09/03/18 20:23	1
OCDD	1.8	B	0.010	0.00058	ug/Kg	✉	08/30/18 14:05	09/03/18 20:23	1
OCDF	2.5	B	0.010	0.00058	ug/Kg	✉	08/30/18 14:05	09/03/18 20:23	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	59		23 - 140				08/30/18 14:05	09/03/18 20:23	1
13C-1,2,3,4,6,7,8-HpCDF	52		28 - 143				08/30/18 14:05	09/03/18 20:23	1
13C-1,2,3,4,7,8,9-HpCDF	53		26 - 138				08/30/18 14:05	09/03/18 20:23	1
13C-1,2,3,4,7,8-HxCDD	55		32 - 141				08/30/18 14:05	09/03/18 20:23	1
13C-1,2,3,4,7,8-HxCDF	54		26 - 152				08/30/18 14:05	09/03/18 20:23	1
13C-1,2,3,6,7,8-HxCDD	55		28 - 130				08/30/18 14:05	09/03/18 20:23	1
13C-1,2,3,6,7,8-HxCDF	55		26 - 123				08/30/18 14:05	09/03/18 20:23	1
13C-1,2,3,7,8,9-HxCDF	61		29 - 147				08/30/18 14:05	09/03/18 20:23	1
13C-1,2,3,7,8-PeCDD	59		25 - 181				08/30/18 14:05	09/03/18 20:23	1
13C-1,2,3,7,8-PeCDF	58		24 - 185				08/30/18 14:05	09/03/18 20:23	1
13C-2,3,4,6,7,8-HxCDF	55		28 - 136				08/30/18 14:05	09/03/18 20:23	1
13C-2,3,4,7,8-PeCDF	57		21 - 178				08/30/18 14:05	09/03/18 20:23	1
13C-2,3,7,8-TCDD	65		25 - 164				08/30/18 14:05	09/03/18 20:23	1
13C-OCDD	54		17 - 157				08/30/18 14:05	09/03/18 20:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	123		35 - 197				08/30/18 14:05	09/03/18 20:23	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	1.0	E G B	0.0018	0.0018	ug/Kg	✉	08/30/18 14:05	09/06/18 10:56	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	66		24 - 169				08/30/18 14:05	09/06/18 10:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	120		35 - 197				08/30/18 14:05	09/06/18 10:56	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S150-4to6

Date Collected: 08/14/18 12:15

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-10

Matrix: Solid

Percent Solids: 48.0

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	0.22	B	0.0051	0.0034	ug/Kg	✉	08/30/18 16:11	09/04/18 17:54	1
1,2,3,4,6,7,8-HpCDF	2.5	E G	0.035	0.035	ug/Kg	✉	08/30/18 16:11	09/04/18 17:54	1
1,2,3,4,7,8,9-HpCDF	1.1	B G	0.041	0.041	ug/Kg	✉	08/30/18 16:11	09/04/18 17:54	1
1,2,3,4,7,8-HxCDD	0.0026	J B q	0.0051	0.00062	ug/Kg	✉	08/30/18 16:11	09/04/18 17:54	1
1,2,3,4,7,8-HxCDF	6.5	E G	0.059	0.059	ug/Kg	✉	08/30/18 16:11	09/04/18 17:54	1
1,2,3,6,7,8-HxCDD	0.014		0.0051	0.00064	ug/Kg	✉	08/30/18 16:11	09/04/18 17:54	1
1,2,3,6,7,8-HxCDF	2.0	G	0.057	0.057	ug/Kg	✉	08/30/18 16:11	09/04/18 17:54	1
1,2,3,7,8,9-HxCDD	0.0062		0.0051	0.00058	ug/Kg	✉	08/30/18 16:11	09/04/18 17:54	1
1,2,3,7,8,9-HxCDF	0.069	B G	0.056	0.056	ug/Kg	✉	08/30/18 16:11	09/04/18 17:54	1
1,2,3,7,8-PeCDD	0.0017	J q	0.0051	0.00069	ug/Kg	✉	08/30/18 16:11	09/04/18 17:54	1
1,2,3,7,8-PeCDF	3.2	E B G	0.023	0.023	ug/Kg	✉	08/30/18 16:11	09/04/18 17:54	1
2,3,4,6,7,8-HxCDF	0.28	G	0.051	0.051	ug/Kg	✉	08/30/18 16:11	09/04/18 17:54	1
2,3,4,7,8-PeCDF	1.2	B G	0.027	0.027	ug/Kg	✉	08/30/18 16:11	09/04/18 17:54	1
2,3,7,8-TCDD	ND	G	0.0011	0.0011	ug/Kg	✉	08/30/18 16:11	09/04/18 17:54	1
OCDD	2.2	B	0.010	0.0026	ug/Kg	✉	08/30/18 16:11	09/04/18 17:54	1
OCDF	3.4		0.010	0.0033	ug/Kg	✉	08/30/18 16:11	09/04/18 17:54	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	60		23 - 140				08/30/18 16:11	09/04/18 17:54	1
13C-1,2,3,4,6,7,8-HpCDF	52		28 - 143				08/30/18 16:11	09/04/18 17:54	1
13C-1,2,3,4,7,8,9-HpCDF	61		26 - 138				08/30/18 16:11	09/04/18 17:54	1
13C-1,2,3,4,7,8-HxCDD	61		32 - 141				08/30/18 16:11	09/04/18 17:54	1
13C-1,2,3,4,7,8-HxCDF	63		26 - 152				08/30/18 16:11	09/04/18 17:54	1
13C-1,2,3,6,7,8-HxCDD	59		28 - 130				08/30/18 16:11	09/04/18 17:54	1
13C-1,2,3,6,7,8-HxCDF	66		26 - 123				08/30/18 16:11	09/04/18 17:54	1
13C-1,2,3,7,8,9-HxCDF	65		29 - 147				08/30/18 16:11	09/04/18 17:54	1
13C-1,2,3,7,8-PeCDD	68		25 - 181				08/30/18 16:11	09/04/18 17:54	1
13C-1,2,3,7,8-PeCDF	68		24 - 185				08/30/18 16:11	09/04/18 17:54	1
13C-2,3,4,6,7,8-HxCDF	52		28 - 136				08/30/18 16:11	09/04/18 17:54	1
13C-2,3,4,7,8-PeCDF	70		21 - 178				08/30/18 16:11	09/04/18 17:54	1
13C-2,3,7,8-TCDD	65		25 - 164				08/30/18 16:11	09/04/18 17:54	1
13C-OCDD	56		17 - 157				08/30/18 16:11	09/04/18 17:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	134		35 - 197				08/30/18 16:11	09/04/18 17:54	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	1.8	G E B	0.0032	0.0032	ug/Kg	✉	08/30/18 16:11	09/07/18 04:45	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	66		24 - 169				08/30/18 16:11	09/07/18 04:45	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	125		35 - 197				08/30/18 16:11	09/07/18 04:45	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S150-4to6D

Date Collected: 08/14/18 12:15

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-11

Matrix: Solid

Percent Solids: 48.3

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	0.17	B	0.0052	0.0029	ug/Kg	✉	08/30/18 16:11	09/04/18 18:42	1
1,2,3,4,6,7,8-HpCDF	0.97	G	0.014	0.014	ug/Kg	✉	08/30/18 16:11	09/04/18 18:42	1
1,2,3,4,7,8,9-HpCDF	0.47	B G	0.018	0.018	ug/Kg	✉	08/30/18 16:11	09/04/18 18:42	1
1,2,3,4,7,8-HxCDD	0.0022	J B	0.0052	0.00060	ug/Kg	✉	08/30/18 16:11	09/04/18 18:42	1
1,2,3,4,7,8-HxCDF	2.6	E G	0.012	0.012	ug/Kg	✉	08/30/18 16:11	09/04/18 18:42	1
1,2,3,6,7,8-HxCDD	0.011		0.0052	0.00060	ug/Kg	✉	08/30/18 16:11	09/04/18 18:42	1
1,2,3,6,7,8-HxCDF	0.74	G	0.011	0.011	ug/Kg	✉	08/30/18 16:11	09/04/18 18:42	1
1,2,3,7,8,9-HxCDD	0.0057		0.0052	0.00056	ug/Kg	✉	08/30/18 16:11	09/04/18 18:42	1
1,2,3,7,8,9-HxCDF	0.034	B G	0.010	0.010	ug/Kg	✉	08/30/18 16:11	09/04/18 18:42	1
1,2,3,7,8-PeCDD	0.0015	J	0.0052	0.00052	ug/Kg	✉	08/30/18 16:11	09/04/18 18:42	1
1,2,3,7,8-PeCDF	1.6	B G	0.012	0.012	ug/Kg	✉	08/30/18 16:11	09/04/18 18:42	1
2,3,4,6,7,8-HxCDF	0.11	G	0.010	0.010	ug/Kg	✉	08/30/18 16:11	09/04/18 18:42	1
2,3,4,7,8-PeCDF	0.67	B G	0.013	0.013	ug/Kg	✉	08/30/18 16:11	09/04/18 18:42	1
2,3,7,8-TCDD	0.00077	J q	0.0010	0.00046	ug/Kg	✉	08/30/18 16:11	09/04/18 18:42	1
OCDD	1.8	B	0.010	0.0023	ug/Kg	✉	08/30/18 16:11	09/04/18 18:42	1
OCDF	2.0		0.010	0.0023	ug/Kg	✉	08/30/18 16:11	09/04/18 18:42	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	58		23 - 140				08/30/18 16:11	09/04/18 18:42	1
13C-1,2,3,4,6,7,8-HpCDF	51		28 - 143				08/30/18 16:11	09/04/18 18:42	1
13C-1,2,3,4,7,8,9-HpCDF	57		26 - 138				08/30/18 16:11	09/04/18 18:42	1
13C-1,2,3,4,7,8-HxCDD	54		32 - 141				08/30/18 16:11	09/04/18 18:42	1
13C-1,2,3,4,7,8-HxCDF	52		26 - 152				08/30/18 16:11	09/04/18 18:42	1
13C-1,2,3,6,7,8-HxCDD	50		28 - 130				08/30/18 16:11	09/04/18 18:42	1
13C-1,2,3,6,7,8-HxCDF	55		26 - 123				08/30/18 16:11	09/04/18 18:42	1
13C-1,2,3,7,8,9-HxCDF	57		29 - 147				08/30/18 16:11	09/04/18 18:42	1
13C-1,2,3,7,8-PeCDD	59		25 - 181				08/30/18 16:11	09/04/18 18:42	1
13C-1,2,3,7,8-PeCDF	60		24 - 185				08/30/18 16:11	09/04/18 18:42	1
13C-2,3,4,6,7,8-HxCDF	52		28 - 136				08/30/18 16:11	09/04/18 18:42	1
13C-2,3,4,7,8-PeCDF	61		21 - 178				08/30/18 16:11	09/04/18 18:42	1
13C-2,3,7,8-TCDD	55		25 - 164				08/30/18 16:11	09/04/18 18:42	1
13C-OCDD	54		17 - 157				08/30/18 16:11	09/04/18 18:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	129		35 - 197				08/30/18 16:11	09/04/18 18:42	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	1.3	G E B	0.0023	0.0023	ug/Kg	✉	08/30/18 16:11	09/07/18 05:23	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	58		24 - 169				08/30/18 16:11	09/07/18 05:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	123		35 - 197				08/30/18 16:11	09/07/18 05:23	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S150-6to7.7

Date Collected: 08/14/18 12:10

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-12

Matrix: Solid

Percent Solids: 51.2

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.48	B G	0.0051	0.0051	ug/Kg	✉	08/30/18 16:11	09/04/18 19:31	1
1,2,3,4,6,7,8-HpCDF	4.6	E G	0.044	0.044	ug/Kg	✉	08/30/18 16:11	09/04/18 19:31	1
1,2,3,4,7,8,9-HpCDF	1.9	B G	0.064	0.064	ug/Kg	✉	08/30/18 16:11	09/04/18 19:31	1
1,2,3,4,7,8-HxCDD	0.0067	B	0.0048	0.0016	ug/Kg	✉	08/30/18 16:11	09/04/18 19:31	1
1,2,3,4,7,8-HxCDF	11	E G	0.048	0.048	ug/Kg	✉	08/30/18 16:11	09/04/18 19:31	1
1,2,3,6,7,8-HxCDD	0.028		0.0048	0.0014	ug/Kg	✉	08/30/18 16:11	09/04/18 19:31	1
1,2,3,6,7,8-HxCDF	3.1	E G	0.044	0.044	ug/Kg	✉	08/30/18 16:11	09/04/18 19:31	1
1,2,3,7,8,9-HxCDD	0.015		0.0048	0.0014	ug/Kg	✉	08/30/18 16:11	09/04/18 19:31	1
1,2,3,7,8,9-HxCDF	0.15	B G	0.046	0.046	ug/Kg	✉	08/30/18 16:11	09/04/18 19:31	1
1,2,3,7,8-PeCDD	0.0060		0.0048	0.0016	ug/Kg	✉	08/30/18 16:11	09/04/18 19:31	1
1,2,3,7,8-PeCDF	5.4	E B G	0.038	0.038	ug/Kg	✉	08/30/18 16:11	09/04/18 19:31	1
2,3,4,6,7,8-HxCDF	0.42	G	0.043	0.043	ug/Kg	✉	08/30/18 16:11	09/04/18 19:31	1
2,3,4,7,8-PeCDF	2.0	E B G	0.041	0.041	ug/Kg	✉	08/30/18 16:11	09/04/18 19:31	1
2,3,7,8-TCDD	ND	G	0.046	0.046	ug/Kg	✉	08/30/18 16:11	09/04/18 19:31	1
OCDD	4.4	E B	0.0096	0.0048	ug/Kg	✉	08/30/18 16:11	09/04/18 19:31	1
OCDF	6.9	E	0.0096	0.0062	ug/Kg	✉	08/30/18 16:11	09/04/18 19:31	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	64		23 - 140				08/30/18 16:11	09/04/18 19:31	1
13C-1,2,3,4,6,7,8-HpCDF	60		28 - 143				08/30/18 16:11	09/04/18 19:31	1
13C-1,2,3,4,7,8,9-HpCDF	61		26 - 138				08/30/18 16:11	09/04/18 19:31	1
13C-1,2,3,4,7,8-HxCDD	65		32 - 141				08/30/18 16:11	09/04/18 19:31	1
13C-1,2,3,4,7,8-HxCDF	73		26 - 152				08/30/18 16:11	09/04/18 19:31	1
13C-1,2,3,6,7,8-HxCDD	59		28 - 130				08/30/18 16:11	09/04/18 19:31	1
13C-1,2,3,6,7,8-HxCDF	75		26 - 123				08/30/18 16:11	09/04/18 19:31	1
13C-1,2,3,7,8,9-HxCDF	69		29 - 147				08/30/18 16:11	09/04/18 19:31	1
13C-1,2,3,7,8-PeCDD	67		25 - 181				08/30/18 16:11	09/04/18 19:31	1
13C-1,2,3,7,8-PeCDF	70		24 - 185				08/30/18 16:11	09/04/18 19:31	1
13C-2,3,4,6,7,8-HxCDF	61		28 - 136				08/30/18 16:11	09/04/18 19:31	1
13C-2,3,4,7,8-PeCDF	70		21 - 178				08/30/18 16:11	09/04/18 19:31	1
13C-2,3,7,8-TCDD	64		25 - 164				08/30/18 16:11	09/04/18 19:31	1
13C-OCDD	63		17 - 157				08/30/18 16:11	09/04/18 19:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	133		35 - 197				08/30/18 16:11	09/04/18 19:31	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	3.6	G E B	0.0072	0.0072	ug/Kg	✉	08/30/18 16:11	09/07/18 06:01	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	77		24 - 169				08/30/18 16:11	09/07/18 06:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	133		35 - 197				08/30/18 16:11	09/07/18 06:01	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S150-7.7to9.7

Date Collected: 08/14/18 12:25

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-13

Matrix: Solid

Percent Solids: 76.2

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.0030	J B	0.0033	0.00016	ug/Kg	✉	08/30/18 16:11	09/04/18 20:19	1
1,2,3,4,6,7,8-HxCDF	0.020		0.0033	0.00035	ug/Kg	✉	08/30/18 16:11	09/04/18 20:19	1
1,2,3,4,7,8,9-HxCDF	0.011	B	0.0033	0.00043	ug/Kg	✉	08/30/18 16:11	09/04/18 20:19	1
1,2,3,4,7,8-HxCDD	ND		0.0033	0.00016	ug/Kg	✉	08/30/18 16:11	09/04/18 20:19	1
1,2,3,4,7,8-HxCDF	0.074		0.0033	0.00074	ug/Kg	✉	08/30/18 16:11	09/04/18 20:19	1
1,2,3,6,7,8-HxCDD	ND		0.0033	0.00016	ug/Kg	✉	08/30/18 16:11	09/04/18 20:19	1
1,2,3,6,7,8-HxCDF	0.018		0.0033	0.00071	ug/Kg	✉	08/30/18 16:11	09/04/18 20:19	1
1,2,3,7,8,9-HxCDD	ND		0.0033	0.00015	ug/Kg	✉	08/30/18 16:11	09/04/18 20:19	1
1,2,3,7,8,9-HxCDF	0.0014	J B	0.0033	0.00064	ug/Kg	✉	08/30/18 16:11	09/04/18 20:19	1
1,2,3,7,8-PeCDD	ND		0.0033	0.00020	ug/Kg	✉	08/30/18 16:11	09/04/18 20:19	1
1,2,3,7,8-PeCDF	0.084	B	0.0033	0.0011	ug/Kg	✉	08/30/18 16:11	09/04/18 20:19	1
2,3,4,6,7,8-HxCDF	0.0034		0.0033	0.00063	ug/Kg	✉	08/30/18 16:11	09/04/18 20:19	1
2,3,4,7,8-PeCDF	0.044	B	0.0033	0.0012	ug/Kg	✉	08/30/18 16:11	09/04/18 20:19	1
2,3,7,8-TCDD	ND		0.00065	0.00013	ug/Kg	✉	08/30/18 16:11	09/04/18 20:19	1
OCDD	0.036	B	0.0065	0.00021	ug/Kg	✉	08/30/18 16:11	09/04/18 20:19	1
OCDF	0.045		0.0065	0.00063	ug/Kg	✉	08/30/18 16:11	09/04/18 20:19	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	72			23 - 140			08/30/18 16:11	09/04/18 20:19	1
13C-1,2,3,4,6,7,8-HxCDF	61			28 - 143			08/30/18 16:11	09/04/18 20:19	1
13C-1,2,3,4,7,8,9-HxCDF	76			26 - 138			08/30/18 16:11	09/04/18 20:19	1
13C-1,2,3,4,7,8-HxCDD	68			32 - 141			08/30/18 16:11	09/04/18 20:19	1
13C-1,2,3,4,7,8-HxCDF	65			26 - 152			08/30/18 16:11	09/04/18 20:19	1
13C-1,2,3,6,7,8-HxCDD	63			28 - 130			08/30/18 16:11	09/04/18 20:19	1
13C-1,2,3,6,7,8-HxCDF	66			26 - 123			08/30/18 16:11	09/04/18 20:19	1
13C-1,2,3,7,8,9-HxCDF	70			29 - 147			08/30/18 16:11	09/04/18 20:19	1
13C-1,2,3,7,8-PeCDD	70			25 - 181			08/30/18 16:11	09/04/18 20:19	1
13C-1,2,3,7,8-PeCDF	74			24 - 185			08/30/18 16:11	09/04/18 20:19	1
13C-2,3,4,6,7,8-HxCDF	66			28 - 136			08/30/18 16:11	09/04/18 20:19	1
13C-2,3,4,7,8-PeCDF	71			21 - 178			08/30/18 16:11	09/04/18 20:19	1
13C-2,3,7,8-TCDD	66			25 - 164			08/30/18 16:11	09/04/18 20:19	1
13C-OCDD	64			17 - 157			08/30/18 16:11	09/04/18 20:19	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	134			35 - 197			08/30/18 16:11	09/04/18 20:19	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.10	B	0.00065	0.00020	ug/Kg	✉	08/30/18 16:11	09/07/18 04:08	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	70			24 - 169			08/30/18 16:11	09/07/18 04:08	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	130			35 - 197			08/30/18 16:11	09/07/18 04:08	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S150-9.7to11.1

Date Collected: 08/14/18 12:30

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-14

Matrix: Solid

Percent Solids: 76.4

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	0.0016	J B	0.0032	0.00012	ug/Kg	✉	08/30/18 16:11	09/04/18 21:07	1
1,2,3,4,6,7,8-HpCDF	0.0016	J	0.0032	0.000090	ug/Kg	✉	08/30/18 16:11	09/04/18 21:07	1
1,2,3,4,7,8,9-HpCDF	0.00062	J B q	0.0032	0.00012	ug/Kg	✉	08/30/18 16:11	09/04/18 21:07	1
1,2,3,4,7,8-HxCDD	0.00020	J B	0.0032	0.000077	ug/Kg	✉	08/30/18 16:11	09/04/18 21:07	1
1,2,3,4,7,8-HxCDF	0.0032		0.0032	0.00020	ug/Kg	✉	08/30/18 16:11	09/04/18 21:07	1
1,2,3,6,7,8-HxCDD	0.00018	J	0.0032	0.000077	ug/Kg	✉	08/30/18 16:11	09/04/18 21:07	1
1,2,3,6,7,8-HxCDF	0.00091	J	0.0032	0.00019	ug/Kg	✉	08/30/18 16:11	09/04/18 21:07	1
1,2,3,7,8,9-HxCDD	0.00029	J	0.0032	0.000072	ug/Kg	✉	08/30/18 16:11	09/04/18 21:07	1
1,2,3,7,8,9-HxCDF	0.00057	J B	0.0032	0.00021	ug/Kg	✉	08/30/18 16:11	09/04/18 21:07	1
1,2,3,7,8-PeCDD	ND		0.0032	0.000094	ug/Kg	✉	08/30/18 16:11	09/04/18 21:07	1
1,2,3,7,8-PeCDF	0.0022	J B	0.0032	0.00016	ug/Kg	✉	08/30/18 16:11	09/04/18 21:07	1
2,3,4,6,7,8-HxCDF	ND		0.0032	0.00019	ug/Kg	✉	08/30/18 16:11	09/04/18 21:07	1
2,3,4,7,8-PeCDF	0.0011	J B	0.0032	0.00016	ug/Kg	✉	08/30/18 16:11	09/04/18 21:07	1
2,3,7,8-TCDD	ND		0.00064	0.000091	ug/Kg	✉	08/30/18 16:11	09/04/18 21:07	1
OCDD	0.014	B	0.0064	0.00014	ug/Kg	✉	08/30/18 16:11	09/04/18 21:07	1
OCDF	0.0034	J	0.0064	0.00011	ug/Kg	✉	08/30/18 16:11	09/04/18 21:07	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	72			23 - 140			08/30/18 16:11	09/04/18 21:07	1
13C-1,2,3,4,6,7,8-HpCDF	71			28 - 143			08/30/18 16:11	09/04/18 21:07	1
13C-1,2,3,4,7,8,9-HpCDF	83			26 - 138			08/30/18 16:11	09/04/18 21:07	1
13C-1,2,3,4,7,8-HxCDD	69			32 - 141			08/30/18 16:11	09/04/18 21:07	1
13C-1,2,3,4,7,8-HxCDF	76			26 - 152			08/30/18 16:11	09/04/18 21:07	1
13C-1,2,3,6,7,8-HxCDD	61			28 - 130			08/30/18 16:11	09/04/18 21:07	1
13C-1,2,3,6,7,8-HxCDF	69			26 - 123			08/30/18 16:11	09/04/18 21:07	1
13C-1,2,3,7,8,9-HxCDF	70			29 - 147			08/30/18 16:11	09/04/18 21:07	1
13C-1,2,3,7,8-PeCDD	97			25 - 181			08/30/18 16:11	09/04/18 21:07	1
13C-1,2,3,7,8-PeCDF	83			24 - 185			08/30/18 16:11	09/04/18 21:07	1
13C-2,3,4,6,7,8-HxCDF	66			28 - 136			08/30/18 16:11	09/04/18 21:07	1
13C-2,3,4,7,8-PeCDF	83			21 - 178			08/30/18 16:11	09/04/18 21:07	1
13C-2,3,7,8-TCDD	82			25 - 164			08/30/18 16:11	09/04/18 21:07	1
13C-OCDD	64			17 - 157			08/30/18 16:11	09/04/18 21:07	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	188			35 - 197			08/30/18 16:11	09/04/18 21:07	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0019	B	0.00064	0.000097	ug/Kg	✉	08/30/18 16:11	09/07/18 02:14	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	113			24 - 169			08/30/18 16:11	09/07/18 02:14	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	221	X		35 - 197			08/30/18 16:11	09/07/18 02:14	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S150-11.1to12.5

Date Collected: 08/14/18 12:35

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-15

Matrix: Solid

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-HxCDD	0.0018	J B	0.0034	0.000096	ug/Kg	✉	08/30/18 16:11	09/04/18 21:55	1
1,2,3,4,6,7,8-HxCDF	0.00070	J	0.0034	0.000057	ug/Kg	✉	08/30/18 16:11	09/04/18 21:55	1
1,2,3,4,7,8,9-HxCDF	0.00046	J B	0.0034	0.000072	ug/Kg	✉	08/30/18 16:11	09/04/18 21:55	1
1,2,3,4,7,8-HxCDD	ND		0.0034	0.000077	ug/Kg	✉	08/30/18 16:11	09/04/18 21:55	1
1,2,3,4,7,8-HxCDF	0.0014	J	0.0034	0.000099	ug/Kg	✉	08/30/18 16:11	09/04/18 21:55	1
1,2,3,6,7,8-HxCDD	ND		0.0034	0.000075	ug/Kg	✉	08/30/18 16:11	09/04/18 21:55	1
1,2,3,6,7,8-HxCDF	0.00050	J	0.0034	0.000091	ug/Kg	✉	08/30/18 16:11	09/04/18 21:55	1
1,2,3,7,8,9-HxCDD	0.00026	J	0.0034	0.000070	ug/Kg	✉	08/30/18 16:11	09/04/18 21:55	1
1,2,3,7,8,9-HxCDF	0.00059	J B	0.0034	0.000087	ug/Kg	✉	08/30/18 16:11	09/04/18 21:55	1
1,2,3,7,8-PeCDD	ND		0.0034	0.000067	ug/Kg	✉	08/30/18 16:11	09/04/18 21:55	1
1,2,3,7,8-PeCDF	0.0011	J B	0.0034	0.000067	ug/Kg	✉	08/30/18 16:11	09/04/18 21:55	1
2,3,4,6,7,8-HxCDF	ND		0.0034	0.000081	ug/Kg	✉	08/30/18 16:11	09/04/18 21:55	1
2,3,4,7,8-PeCDF	0.00043	J B	0.0034	0.000071	ug/Kg	✉	08/30/18 16:11	09/04/18 21:55	1
2,3,7,8-TCDD	ND		0.00068	0.000056	ug/Kg	✉	08/30/18 16:11	09/04/18 21:55	1
OCDD	0.011	B	0.0068	0.00012	ug/Kg	✉	08/30/18 16:11	09/04/18 21:55	1
OCDF	0.0013	J	0.0068	0.000084	ug/Kg	✉	08/30/18 16:11	09/04/18 21:55	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	65			23 - 140			08/30/18 16:11	09/04/18 21:55	1
13C-1,2,3,4,6,7,8-HxCDF	59			28 - 143			08/30/18 16:11	09/04/18 21:55	1
13C-1,2,3,4,7,8,9-HxCDF	68			26 - 138			08/30/18 16:11	09/04/18 21:55	1
13C-1,2,3,4,7,8-HxCDD	54			32 - 141			08/30/18 16:11	09/04/18 21:55	1
13C-1,2,3,4,7,8-HxCDF	56			26 - 152			08/30/18 16:11	09/04/18 21:55	1
13C-1,2,3,6,7,8-HxCDD	53			28 - 130			08/30/18 16:11	09/04/18 21:55	1
13C-1,2,3,6,7,8-HxCDF	59			26 - 123			08/30/18 16:11	09/04/18 21:55	1
13C-1,2,3,7,8,9-HxCDF	62			29 - 147			08/30/18 16:11	09/04/18 21:55	1
13C-1,2,3,7,8-PeCDD	58			25 - 181			08/30/18 16:11	09/04/18 21:55	1
13C-1,2,3,7,8-PeCDF	59			24 - 185			08/30/18 16:11	09/04/18 21:55	1
13C-2,3,4,6,7,8-HxCDF	58			28 - 136			08/30/18 16:11	09/04/18 21:55	1
13C-2,3,4,7,8-PeCDF	60			21 - 178			08/30/18 16:11	09/04/18 21:55	1
13C-2,3,7,8-TCDD	59			25 - 164			08/30/18 16:11	09/04/18 21:55	1
13C-OCDD	60			17 - 157			08/30/18 16:11	09/04/18 21:55	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	132			35 - 197			08/30/18 16:11	09/04/18 21:55	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.00095	B	0.00068	0.00039	ug/Kg	✉	08/30/18 16:11	09/07/18 02:52	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	64			24 - 169			08/30/18 16:11	09/07/18 02:52	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	113			35 - 197			08/30/18 16:11	09/07/18 02:52	1

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S146-0to2

Date Collected: 08/14/18 16:00

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-16

Matrix: Solid

Percent Solids: 49.1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.32	G B	0.0085	0.0085	ug/Kg	✉	08/30/18 16:11	09/05/18 02:38	1
1,2,3,4,6,7,8-HxCDF	1.2	G	0.017	0.017	ug/Kg	✉	08/30/18 16:11	09/05/18 02:38	1
1,2,3,4,7,8,9-HxCDF	0.51	G B	0.020	0.020	ug/Kg	✉	08/30/18 16:11	09/05/18 02:38	1
1,2,3,4,7,8-HxCDD	0.0024	J B	0.0050	0.00069	ug/Kg	✉	08/30/18 16:11	09/05/18 02:38	1
1,2,3,4,7,8-HxCDF	3.2	G E	0.015	0.015	ug/Kg	✉	08/30/18 16:11	09/05/18 02:38	1
1,2,3,6,7,8-HxCDD	0.0088		0.0050	0.00065	ug/Kg	✉	08/30/18 16:11	09/05/18 02:38	1
1,2,3,6,7,8-HxCDF	0.95	G	0.014	0.014	ug/Kg	✉	08/30/18 16:11	09/05/18 02:38	1
1,2,3,7,8,9-HxCDD	0.0046	J	0.0050	0.00062	ug/Kg	✉	08/30/18 16:11	09/05/18 02:38	1
1,2,3,7,8,9-HxCDF	0.059	G B	0.013	0.013	ug/Kg	✉	08/30/18 16:11	09/05/18 02:38	1
1,2,3,7,8-PeCDD	ND		0.0050	0.00049	ug/Kg	✉	08/30/18 16:11	09/05/18 02:38	1
1,2,3,7,8-PeCDF	2.0	G B	0.011	0.011	ug/Kg	✉	08/30/18 16:11	09/05/18 02:38	1
2,3,4,6,7,8-HxCDF	0.15	G	0.012	0.012	ug/Kg	✉	08/30/18 16:11	09/05/18 02:38	1
2,3,4,7,8-PeCDF	0.87	G B	0.012	0.012	ug/Kg	✉	08/30/18 16:11	09/05/18 02:38	1
2,3,7,8-TCDD	0.00067	J q	0.0010	0.00042	ug/Kg	✉	08/30/18 16:11	09/05/18 02:38	1
OCDD	5.4	E B	0.010	0.0047	ug/Kg	✉	08/30/18 16:11	09/05/18 02:38	1
OCDF	2.1		0.010	0.0022	ug/Kg	✉	08/30/18 16:11	09/05/18 02:38	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	64		23 - 140				08/30/18 16:11	09/05/18 02:38	1
13C-1,2,3,4,6,7,8-HxCDF	57		28 - 143				08/30/18 16:11	09/05/18 02:38	1
13C-1,2,3,4,7,8,9-HxCDF	70		26 - 138				08/30/18 16:11	09/05/18 02:38	1
13C-1,2,3,4,7,8-HxCDD	64		32 - 141				08/30/18 16:11	09/05/18 02:38	1
13C-1,2,3,4,7,8-HxCDF	58		26 - 152				08/30/18 16:11	09/05/18 02:38	1
13C-1,2,3,6,7,8-HxCDD	63		28 - 130				08/30/18 16:11	09/05/18 02:38	1
13C-1,2,3,6,7,8-HxCDF	55		26 - 123				08/30/18 16:11	09/05/18 02:38	1
13C-1,2,3,7,8,9-HxCDF	67		29 - 147				08/30/18 16:11	09/05/18 02:38	1
13C-1,2,3,7,8-PeCDD	91		25 - 181				08/30/18 16:11	09/05/18 02:38	1
13C-1,2,3,7,8-PeCDF	77		24 - 185				08/30/18 16:11	09/05/18 02:38	1
13C-2,3,4,6,7,8-HxCDF	56		28 - 136				08/30/18 16:11	09/05/18 02:38	1
13C-2,3,4,7,8-PeCDF	77		21 - 178				08/30/18 16:11	09/05/18 02:38	1
13C-2,3,7,8-TCDD	67		25 - 164				08/30/18 16:11	09/05/18 02:38	1
13C-OCDD	74		17 - 157				08/30/18 16:11	09/05/18 02:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	128		35 - 197				08/30/18 16:11	09/05/18 02:38	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	1.4	G E B	0.0025	0.0025	ug/Kg	✉	08/30/18 16:11	09/07/18 06:39	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	71		24 - 169				08/30/18 16:11	09/07/18 06:39	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	125		35 - 197				08/30/18 16:11	09/07/18 06:39	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S146-2to4

Date Collected: 08/14/18 16:05

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-17

Matrix: Solid

Percent Solids: 54.5

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	3.0	E B G	0.024	0.024	ug/Kg	✉	08/30/18 16:11	09/05/18 03:26	1
1,2,3,4,6,7,8-HxCDF	1.6	G	0.021	0.021	ug/Kg	✉	08/30/18 16:11	09/05/18 03:26	1
1,2,3,4,7,8,9-HxCDF	0.68	B G	0.024	0.024	ug/Kg	✉	08/30/18 16:11	09/05/18 03:26	1
1,2,3,4,7,8-HxCDD	0.0025	J B	0.0046	0.00092	ug/Kg	✉	08/30/18 16:11	09/05/18 03:26	1
1,2,3,4,7,8-HxCDF	3.4	E G	0.029	0.029	ug/Kg	✉	08/30/18 16:11	09/05/18 03:26	1
1,2,3,6,7,8-HxCDD	0.028		0.0046	0.00092	ug/Kg	✉	08/30/18 16:11	09/05/18 03:26	1
1,2,3,6,7,8-HxCDF	0.98	G	0.027	0.027	ug/Kg	✉	08/30/18 16:11	09/05/18 03:26	1
1,2,3,7,8,9-HxCDD	0.0065		0.0046	0.00086	ug/Kg	✉	08/30/18 16:11	09/05/18 03:26	1
1,2,3,7,8,9-HxCDF	0.051	B G	0.024	0.024	ug/Kg	✉	08/30/18 16:11	09/05/18 03:26	1
1,2,3,7,8-PeCDD	0.0016	J	0.0046	0.00046	ug/Kg	✉	08/30/18 16:11	09/05/18 03:26	1
1,2,3,7,8-PeCDF	2.0	E B G	0.010	0.010	ug/Kg	✉	08/30/18 16:11	09/05/18 03:26	1
2,3,4,6,7,8-HxCDF	0.12	G	0.022	0.022	ug/Kg	✉	08/30/18 16:11	09/05/18 03:26	1
2,3,4,7,8-PeCDF	0.73	B G	0.012	0.012	ug/Kg	✉	08/30/18 16:11	09/05/18 03:26	1
2,3,7,8-TCDD	0.0012		0.00091	0.00033	ug/Kg	✉	08/30/18 16:11	09/05/18 03:26	1
OCDD	52	E B G	0.038	0.038	ug/Kg	✉	08/30/18 16:11	09/05/18 03:26	1
OCDF	7.9	E	0.0091	0.0050	ug/Kg	✉	08/30/18 16:11	09/05/18 03:26	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	52		23 - 140				08/30/18 16:11	09/05/18 03:26	1
13C-1,2,3,4,6,7,8-HxCDF	46		28 - 143				08/30/18 16:11	09/05/18 03:26	1
13C-1,2,3,4,7,8,9-HxCDF	60		26 - 138				08/30/18 16:11	09/05/18 03:26	1
13C-1,2,3,4,7,8-HxCDD	61		32 - 141				08/30/18 16:11	09/05/18 03:26	1
13C-1,2,3,4,7,8-HxCDF	51		26 - 152				08/30/18 16:11	09/05/18 03:26	1
13C-1,2,3,6,7,8-HxCDD	50		28 - 130				08/30/18 16:11	09/05/18 03:26	1
13C-1,2,3,6,7,8-HxCDF	48		26 - 123				08/30/18 16:11	09/05/18 03:26	1
13C-1,2,3,7,8,9-HxCDF	59		29 - 147				08/30/18 16:11	09/05/18 03:26	1
13C-1,2,3,7,8-PeCDD	82		25 - 181				08/30/18 16:11	09/05/18 03:26	1
13C-1,2,3,7,8-PeCDF	67		24 - 185				08/30/18 16:11	09/05/18 03:26	1
13C-2,3,4,6,7,8-HxCDF	49		28 - 136				08/30/18 16:11	09/05/18 03:26	1
13C-2,3,4,7,8-PeCDF	69		21 - 178				08/30/18 16:11	09/05/18 03:26	1
13C-2,3,7,8-TCDD	60		25 - 164				08/30/18 16:11	09/05/18 03:26	1
13C-OCDD	58		17 - 157				08/30/18 16:11	09/05/18 03:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	120		35 - 197				08/30/18 16:11	09/05/18 03:26	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	1.1	G E B	0.0017	0.0017	ug/Kg	✉	08/30/18 16:11	09/07/18 07:17	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	73		24 - 169				08/30/18 16:11	09/07/18 07:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	134		35 - 197				08/30/18 16:11	09/07/18 07:17	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S146-4to5

Date Collected: 08/14/18 16:10

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-18

Matrix: Solid

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	0.54	B G	0.0052	0.0052	ug/Kg	✉	08/30/18 16:11	09/05/18 04:14	1
1,2,3,4,6,7,8-HpCDF	2.2	E G	0.021	0.021	ug/Kg	✉	08/30/18 16:11	09/05/18 04:14	1
1,2,3,4,7,8,9-HpCDF	0.99	B G	0.024	0.024	ug/Kg	✉	08/30/18 16:11	09/05/18 04:14	1
1,2,3,4,7,8-HxCDD	0.0049	B	0.0044	0.00077	ug/Kg	✉	08/30/18 16:11	09/05/18 04:14	1
1,2,3,4,7,8-HxCDF	6.4	E G	0.025	0.025	ug/Kg	✉	08/30/18 16:11	09/05/18 04:14	1
1,2,3,6,7,8-HxCDD	0.020		0.0044	0.00074	ug/Kg	✉	08/30/18 16:11	09/05/18 04:14	1
1,2,3,6,7,8-HxCDF	1.7	G	0.024	0.024	ug/Kg	✉	08/30/18 16:11	09/05/18 04:14	1
1,2,3,7,8,9-HxCDD	0.0084		0.0044	0.00071	ug/Kg	✉	08/30/18 16:11	09/05/18 04:14	1
1,2,3,7,8,9-HxCDF	0.086	B G	0.021	0.021	ug/Kg	✉	08/30/18 16:11	09/05/18 04:14	1
1,2,3,7,8-PeCDD	0.0027	J	0.0044	0.00046	ug/Kg	✉	08/30/18 16:11	09/05/18 04:14	1
1,2,3,7,8-PeCDF	4.1	E B G	0.024	0.024	ug/Kg	✉	08/30/18 16:11	09/05/18 04:14	1
2,3,4,6,7,8-HxCDF	0.31	G	0.020	0.020	ug/Kg	✉	08/30/18 16:11	09/05/18 04:14	1
2,3,4,7,8-PeCDF	1.7	B G	0.026	0.026	ug/Kg	✉	08/30/18 16:11	09/05/18 04:14	1
2,3,7,8-TCDD	0.0021		0.00089	0.00029	ug/Kg	✉	08/30/18 16:11	09/05/18 04:14	1
OCDD	8.1	E B	0.0089	0.0052	ug/Kg	✉	08/30/18 16:11	09/05/18 04:14	1
OCDF	4.3	E	0.0089	0.0029	ug/Kg	✉	08/30/18 16:11	09/05/18 04:14	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	56		23 - 140				08/30/18 16:11	09/05/18 04:14	1
13C-1,2,3,4,6,7,8-HpCDF	48		28 - 143				08/30/18 16:11	09/05/18 04:14	1
13C-1,2,3,4,7,8,9-HpCDF	61		26 - 138				08/30/18 16:11	09/05/18 04:14	1
13C-1,2,3,4,7,8-HxCDD	64		32 - 141				08/30/18 16:11	09/05/18 04:14	1
13C-1,2,3,4,7,8-HxCDF	53		26 - 152				08/30/18 16:11	09/05/18 04:14	1
13C-1,2,3,6,7,8-HxCDD	52		28 - 130				08/30/18 16:11	09/05/18 04:14	1
13C-1,2,3,6,7,8-HxCDF	49		26 - 123				08/30/18 16:11	09/05/18 04:14	1
13C-1,2,3,7,8,9-HxCDF	59		29 - 147				08/30/18 16:11	09/05/18 04:14	1
13C-1,2,3,7,8-PeCDD	79		25 - 181				08/30/18 16:11	09/05/18 04:14	1
13C-1,2,3,7,8-PeCDF	68		24 - 185				08/30/18 16:11	09/05/18 04:14	1
13C-2,3,4,6,7,8-HxCDF	48		28 - 136				08/30/18 16:11	09/05/18 04:14	1
13C-2,3,4,7,8-PeCDF	70		21 - 178				08/30/18 16:11	09/05/18 04:14	1
13C-2,3,7,8-TCDD	61		25 - 164				08/30/18 16:11	09/05/18 04:14	1
13C-OCDD	65		17 - 157				08/30/18 16:11	09/05/18 04:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	122		35 - 197				08/30/18 16:11	09/05/18 04:14	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	2.3	G E B	0.0032	0.0032	ug/Kg	✉	08/30/18 16:11	09/07/18 07:55	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	76		24 - 169				08/30/18 16:11	09/07/18 07:55	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	134		35 - 197				08/30/18 16:11	09/07/18 07:55	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S146-5to7

Date Collected: 08/14/18 16:15

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-19

Matrix: Solid

Percent Solids: 72.4

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	0.016	B	0.0035	0.00027	ug/Kg	✉	08/30/18 16:11	09/05/18 05:03	1
1,2,3,4,6,7,8-HpCDF	0.089		0.0035	0.00092	ug/Kg	✉	08/30/18 16:11	09/05/18 05:03	1
1,2,3,4,7,8,9-HpCDF	0.044	B	0.0035	0.0012	ug/Kg	✉	08/30/18 16:11	09/05/18 05:03	1
1,2,3,4,7,8-HxCDD	0.00032	J q B	0.0035	0.00017	ug/Kg	✉	08/30/18 16:11	09/05/18 05:03	1
1,2,3,4,7,8-HxCDF	0.21		0.0035	0.0011	ug/Kg	✉	08/30/18 16:11	09/05/18 05:03	1
1,2,3,6,7,8-HxCDD	0.00071	J	0.0035	0.00016	ug/Kg	✉	08/30/18 16:11	09/05/18 05:03	1
1,2,3,6,7,8-HxCDF	0.071		0.0035	0.00094	ug/Kg	✉	08/30/18 16:11	09/05/18 05:03	1
1,2,3,7,8,9-HxCDD	0.00063	J	0.0035	0.00015	ug/Kg	✉	08/30/18 16:11	09/05/18 05:03	1
1,2,3,7,8,9-HxCDF	0.0044	B	0.0035	0.00084	ug/Kg	✉	08/30/18 16:11	09/05/18 05:03	1
1,2,3,7,8-PeCDD	ND		0.0035	0.00013	ug/Kg	✉	08/30/18 16:11	09/05/18 05:03	1
1,2,3,7,8-PeCDF	0.098	B	0.0035	0.00081	ug/Kg	✉	08/30/18 16:11	09/05/18 05:03	1
2,3,4,6,7,8-HxCDF	0.010		0.0035	0.00084	ug/Kg	✉	08/30/18 16:11	09/05/18 05:03	1
2,3,4,7,8-PeCDF	0.031	B	0.0035	0.00084	ug/Kg	✉	08/30/18 16:11	09/05/18 05:03	1
2,3,7,8-TCDD	ND		0.00069	0.000092	ug/Kg	✉	08/30/18 16:11	09/05/18 05:03	1
OCDD	0.23	B	0.0069	0.00036	ug/Kg	✉	08/30/18 16:11	09/05/18 05:03	1
OCDF	0.14		0.0069	0.00039	ug/Kg	✉	08/30/18 16:11	09/05/18 05:03	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	66		23 - 140				08/30/18 16:11	09/05/18 05:03	1
13C-1,2,3,4,6,7,8-HpCDF	57		28 - 143				08/30/18 16:11	09/05/18 05:03	1
13C-1,2,3,4,7,8,9-HpCDF	71		26 - 138				08/30/18 16:11	09/05/18 05:03	1
13C-1,2,3,4,7,8-HxCDD	71		32 - 141				08/30/18 16:11	09/05/18 05:03	1
13C-1,2,3,4,7,8-HxCDF	57		26 - 152				08/30/18 16:11	09/05/18 05:03	1
13C-1,2,3,6,7,8-HxCDD	62		28 - 130				08/30/18 16:11	09/05/18 05:03	1
13C-1,2,3,6,7,8-HxCDF	53		26 - 123				08/30/18 16:11	09/05/18 05:03	1
13C-1,2,3,7,8,9-HxCDF	67		29 - 147				08/30/18 16:11	09/05/18 05:03	1
13C-1,2,3,7,8-PeCDD	91		25 - 181				08/30/18 16:11	09/05/18 05:03	1
13C-1,2,3,7,8-PeCDF	78		24 - 185				08/30/18 16:11	09/05/18 05:03	1
13C-2,3,4,6,7,8-HxCDF	59		28 - 136				08/30/18 16:11	09/05/18 05:03	1
13C-2,3,4,7,8-PeCDF	76		21 - 178				08/30/18 16:11	09/05/18 05:03	1
13C-2,3,7,8-TCDD	68		25 - 164				08/30/18 16:11	09/05/18 05:03	1
13C-OCDD	76		17 - 157				08/30/18 16:11	09/05/18 05:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	120		35 - 197				08/30/18 16:11	09/05/18 05:03	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	0.042	B	0.00069	0.00043	ug/Kg	✉	08/30/18 16:11	09/07/18 03:30	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	69		24 - 169				08/30/18 16:11	09/07/18 03:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	120		35 - 197				08/30/18 16:11	09/07/18 03:30	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S146-7to8

Date Collected: 08/14/18 16:20

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-20

Matrix: Solid

Percent Solids: 73.9

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.0015	J B	0.0033	0.00013	ug/Kg	✉	08/30/18 16:11	09/05/18 05:51	1
1,2,3,4,6,7,8-HxCDF	0.0012	J	0.0033	0.00020	ug/Kg	✉	08/30/18 16:11	09/05/18 05:51	1
1,2,3,4,7,8,9-HxCDF	0.00042	J B	0.0033	0.00024	ug/Kg	✉	08/30/18 16:11	09/05/18 05:51	1
1,2,3,4,7,8-HxCDD	0.00035	J B	0.0033	0.000092	ug/Kg	✉	08/30/18 16:11	09/05/18 05:51	1
1,2,3,4,7,8-HxCDF	0.0017	J	0.0033	0.00015	ug/Kg	✉	08/30/18 16:11	09/05/18 05:51	1
1,2,3,6,7,8-HxCDD	ND		0.0033	0.000086	ug/Kg	✉	08/30/18 16:11	09/05/18 05:51	1
1,2,3,6,7,8-HxCDF	0.00066	J q	0.0033	0.00014	ug/Kg	✉	08/30/18 16:11	09/05/18 05:51	1
1,2,3,7,8,9-HxCDD	0.00018	J	0.0033	0.000083	ug/Kg	✉	08/30/18 16:11	09/05/18 05:51	1
1,2,3,7,8,9-HxCDF	0.00068	J B q	0.0033	0.00012	ug/Kg	✉	08/30/18 16:11	09/05/18 05:51	1
1,2,3,7,8-PeCDD	ND		0.0033	0.000071	ug/Kg	✉	08/30/18 16:11	09/05/18 05:51	1
1,2,3,7,8-PeCDF	0.00096	J B	0.0033	0.000091	ug/Kg	✉	08/30/18 16:11	09/05/18 05:51	1
2,3,4,6,7,8-HxCDF	ND		0.0033	0.00012	ug/Kg	✉	08/30/18 16:11	09/05/18 05:51	1
2,3,4,7,8-PeCDF	0.00036	J B	0.0033	0.000099	ug/Kg	✉	08/30/18 16:11	09/05/18 05:51	1
2,3,7,8-TCDD	ND		0.00066	0.000086	ug/Kg	✉	08/30/18 16:11	09/05/18 05:51	1
2,3,7,8-TCDF	0.00056	J B	0.00066	0.00010	ug/Kg	✉	08/30/18 16:11	09/05/18 05:51	1
OCDD	0.018	B	0.0066	0.00022	ug/Kg	✉	08/30/18 16:11	09/05/18 05:51	1
OCDF	0.0025	J	0.0066	0.00013	ug/Kg	✉	08/30/18 16:11	09/05/18 05:51	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	54			23 - 140			08/30/18 16:11	09/05/18 05:51	1
13C-1,2,3,4,6,7,8-HxCDF	44			28 - 143			08/30/18 16:11	09/05/18 05:51	1
13C-1,2,3,4,7,8,9-HxCDF	62			26 - 138			08/30/18 16:11	09/05/18 05:51	1
13C-1,2,3,4,7,8-HxCDD	57			32 - 141			08/30/18 16:11	09/05/18 05:51	1
13C-1,2,3,4,7,8-HxCDF	46			26 - 152			08/30/18 16:11	09/05/18 05:51	1
13C-1,2,3,6,7,8-HxCDD	55			28 - 130			08/30/18 16:11	09/05/18 05:51	1
13C-1,2,3,6,7,8-HxCDF	45			26 - 123			08/30/18 16:11	09/05/18 05:51	1
13C-1,2,3,7,8,9-HxCDF	59			29 - 147			08/30/18 16:11	09/05/18 05:51	1
13C-1,2,3,7,8-PeCDD	81			25 - 181			08/30/18 16:11	09/05/18 05:51	1
13C-1,2,3,7,8-PeCDF	66			24 - 185			08/30/18 16:11	09/05/18 05:51	1
13C-2,3,4,6,7,8-HxCDF	50			28 - 136			08/30/18 16:11	09/05/18 05:51	1
13C-2,3,4,7,8-PeCDF	67			21 - 178			08/30/18 16:11	09/05/18 05:51	1
13C-2,3,7,8-TCDD	66			25 - 164			08/30/18 16:11	09/05/18 05:51	1
13C-2,3,7,8-TCDF	65			24 - 169			08/30/18 16:11	09/05/18 05:51	1
13C-OCDD	57			17 - 157			08/30/18 16:11	09/05/18 05:51	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	123			35 - 197			08/30/18 16:11	09/05/18 05:51	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S146-8to9.1

Date Collected: 08/14/18 16:25

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-21

Matrix: Solid

Percent Solids: 74.8

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.0019	J B	0.0033	0.00015	ug/Kg	⊗	08/30/18 16:11	09/05/18 06:39	1
1,2,3,4,6,7,8-HxCDF	0.00061	J	0.0033	0.000076	ug/Kg	⊗	08/30/18 16:11	09/05/18 06:39	1
1,2,3,4,7,8,9-HxCDF	0.00029	J B	0.0033	0.000096	ug/Kg	⊗	08/30/18 16:11	09/05/18 06:39	1
1,2,3,4,7,8-HxCDD	ND		0.0033	0.00012	ug/Kg	⊗	08/30/18 16:11	09/05/18 06:39	1
1,2,3,4,7,8-HxCDF	0.00099	J	0.0033	0.00017	ug/Kg	⊗	08/30/18 16:11	09/05/18 06:39	1
1,2,3,6,7,8-HxCDD	ND		0.0033	0.00011	ug/Kg	⊗	08/30/18 16:11	09/05/18 06:39	1
1,2,3,6,7,8-HxCDF	0.00041	J	0.0033	0.00016	ug/Kg	⊗	08/30/18 16:11	09/05/18 06:39	1
1,2,3,7,8,9-HxCDD	ND		0.0033	0.00011	ug/Kg	⊗	08/30/18 16:11	09/05/18 06:39	1
1,2,3,7,8,9-HxCDF	0.00065	J B q	0.0033	0.00014	ug/Kg	⊗	08/30/18 16:11	09/05/18 06:39	1
1,2,3,7,8-PeCDD	ND		0.0033	0.000082	ug/Kg	⊗	08/30/18 16:11	09/05/18 06:39	1
1,2,3,7,8-PeCDF	0.00079	J B	0.0033	0.000099	ug/Kg	⊗	08/30/18 16:11	09/05/18 06:39	1
2,3,4,6,7,8-HxCDF	ND		0.0033	0.00014	ug/Kg	⊗	08/30/18 16:11	09/05/18 06:39	1
2,3,4,7,8-PeCDF	0.00028	J B	0.0033	0.00011	ug/Kg	⊗	08/30/18 16:11	09/05/18 06:39	1
2,3,7,8-TCDD	ND		0.00067	0.00010	ug/Kg	⊗	08/30/18 16:11	09/05/18 06:39	1
OCDD	0.019	B	0.0067	0.00021	ug/Kg	⊗	08/30/18 16:11	09/05/18 06:39	1
OCDF	0.0015	J	0.0067	0.00014	ug/Kg	⊗	08/30/18 16:11	09/05/18 06:39	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	51			23 - 140			08/30/18 16:11	09/05/18 06:39	1
13C-1,2,3,4,6,7,8-HxCDF	43			28 - 143			08/30/18 16:11	09/05/18 06:39	1
13C-1,2,3,4,7,8,9-HxCDF	56			26 - 138			08/30/18 16:11	09/05/18 06:39	1
13C-1,2,3,4,7,8-HxCDD	48			32 - 141			08/30/18 16:11	09/05/18 06:39	1
13C-1,2,3,4,7,8-HxCDF	40			26 - 152			08/30/18 16:11	09/05/18 06:39	1
13C-1,2,3,6,7,8-HxCDD	49			28 - 130			08/30/18 16:11	09/05/18 06:39	1
13C-1,2,3,6,7,8-HxCDF	39			26 - 123			08/30/18 16:11	09/05/18 06:39	1
13C-1,2,3,7,8,9-HxCDF	49			29 - 147			08/30/18 16:11	09/05/18 06:39	1
13C-1,2,3,7,8-PeCDD	71			25 - 181			08/30/18 16:11	09/05/18 06:39	1
13C-1,2,3,7,8-PeCDF	57			24 - 185			08/30/18 16:11	09/05/18 06:39	1
13C-2,3,4,6,7,8-HxCDF	43			28 - 136			08/30/18 16:11	09/05/18 06:39	1
13C-2,3,4,7,8-PeCDF	59			21 - 178			08/30/18 16:11	09/05/18 06:39	1
13C-2,3,7,8-TCDD	57			25 - 164			08/30/18 16:11	09/05/18 06:39	1
13C-OCDD	56			17 - 157			08/30/18 16:11	09/05/18 06:39	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	122			35 - 197			08/30/18 16:11	09/05/18 06:39	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.00047	J B	0.00067	0.00027	ug/Kg	⊗	08/30/18 16:11	09/07/18 13:37	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	55			24 - 169			08/30/18 16:11	09/07/18 13:37	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	125			35 - 197			08/30/18 16:11	09/07/18 13:37	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S136-0to2

Date Collected: 08/14/18 17:10

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-22

Matrix: Solid

Percent Solids: 67.7

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.055	B	0.0036	0.0012	ug/Kg	✉	08/30/18 16:11	09/05/18 07:27	1
1,2,3,4,6,7,8-HxCDF	0.10		0.0036	0.0017	ug/Kg	✉	08/30/18 16:11	09/05/18 07:27	1
1,2,3,4,7,8,9-HxCDF	0.043	B	0.0036	0.0021	ug/Kg	✉	08/30/18 16:11	09/05/18 07:27	1
1,2,3,4,7,8-HxCDD	0.00082	J B	0.0036	0.00022	ug/Kg	✉	08/30/18 16:11	09/05/18 07:27	1
1,2,3,4,7,8-HxCDF	0.24		0.0036	0.0019	ug/Kg	✉	08/30/18 16:11	09/05/18 07:27	1
1,2,3,6,7,8-HxCDD	0.0025	J	0.0036	0.00020	ug/Kg	✉	08/30/18 16:11	09/05/18 07:27	1
1,2,3,6,7,8-HxCDF	0.063		0.0036	0.0018	ug/Kg	✉	08/30/18 16:11	09/05/18 07:27	1
1,2,3,7,8,9-HxCDD	0.0016	J q	0.0036	0.00020	ug/Kg	✉	08/30/18 16:11	09/05/18 07:27	1
1,2,3,7,8,9-HxCDF	0.0036	B	0.0036	0.0017	ug/Kg	✉	08/30/18 16:11	09/05/18 07:27	1
1,2,3,7,8-PeCDD	0.0013	J	0.0036	0.00019	ug/Kg	✉	08/30/18 16:11	09/05/18 07:27	1
1,2,3,7,8-PeCDF	0.11	B	0.0036	0.0010	ug/Kg	✉	08/30/18 16:11	09/05/18 07:27	1
2,3,4,6,7,8-HxCDF	0.0081		0.0036	0.0016	ug/Kg	✉	08/30/18 16:11	09/05/18 07:27	1
2,3,4,7,8-PeCDF	0.036	B	0.0036	0.0011	ug/Kg	✉	08/30/18 16:11	09/05/18 07:27	1
2,3,7,8-TCDD	0.0012		0.00072	0.00018	ug/Kg	✉	08/30/18 16:11	09/05/18 07:27	1
OCDD	0.67	B	0.0072	0.00082	ug/Kg	✉	08/30/18 16:11	09/05/18 07:27	1
OCDF	0.22		0.0072	0.00035	ug/Kg	✉	08/30/18 16:11	09/05/18 07:27	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	52		23 - 140				08/30/18 16:11	09/05/18 07:27	1
13C-1,2,3,4,6,7,8-HxCDF	43		28 - 143				08/30/18 16:11	09/05/18 07:27	1
13C-1,2,3,4,7,8,9-HxCDF	56		26 - 138				08/30/18 16:11	09/05/18 07:27	1
13C-1,2,3,4,7,8-HxCDD	50		32 - 141				08/30/18 16:11	09/05/18 07:27	1
13C-1,2,3,4,7,8-HxCDF	41		26 - 152				08/30/18 16:11	09/05/18 07:27	1
13C-1,2,3,6,7,8-HxCDD	52		28 - 130				08/30/18 16:11	09/05/18 07:27	1
13C-1,2,3,6,7,8-HxCDF	42		26 - 123				08/30/18 16:11	09/05/18 07:27	1
13C-1,2,3,7,8,9-HxCDF	51		29 - 147				08/30/18 16:11	09/05/18 07:27	1
13C-1,2,3,7,8-PeCDD	75		25 - 181				08/30/18 16:11	09/05/18 07:27	1
13C-1,2,3,7,8-PeCDF	61		24 - 185				08/30/18 16:11	09/05/18 07:27	1
13C-2,3,4,6,7,8-HxCDF	46		28 - 136				08/30/18 16:11	09/05/18 07:27	1
13C-2,3,4,7,8-PeCDF	62		21 - 178				08/30/18 16:11	09/05/18 07:27	1
13C-2,3,7,8-TCDD	62		25 - 164				08/30/18 16:11	09/05/18 07:27	1
13C-OCDD	56		17 - 157				08/30/18 16:11	09/05/18 07:27	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	126		35 - 197				08/30/18 16:11	09/05/18 07:27	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	0.066	B	0.00072	0.00042	ug/Kg	✉	08/30/18 16:11	09/07/18 14:15	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	57		24 - 169				08/30/18 16:11	09/07/18 14:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	116		35 - 197				08/30/18 16:11	09/07/18 14:15	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S136-2to4

Date Collected: 08/14/18 17:15

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-23

Matrix: Solid

Percent Solids: 79.6

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.027	B	0.0031	0.00061	ug/Kg	⊗	08/30/18 16:11	09/05/18 08:16	1
1,2,3,4,6,7,8-HpCDF	0.027		0.0031	0.00054	ug/Kg	⊗	08/30/18 16:11	09/05/18 08:16	1
1,2,3,4,7,8,9-HpCDF	0.011	B	0.0031	0.00067	ug/Kg	⊗	08/30/18 16:11	09/05/18 08:16	1
1,2,3,4,7,8-HxCDD	0.00040	J B	0.0031	0.00012	ug/Kg	⊗	08/30/18 16:11	09/05/18 08:16	1
1,2,3,4,7,8-HxCDF	0.056		0.0031	0.00062	ug/Kg	⊗	08/30/18 16:11	09/05/18 08:16	1
1,2,3,6,7,8-HxCDD	0.0013	J	0.0031	0.00011	ug/Kg	⊗	08/30/18 16:11	09/05/18 08:16	1
1,2,3,6,7,8-HxCDF	0.015		0.0031	0.00059	ug/Kg	⊗	08/30/18 16:11	09/05/18 08:16	1
1,2,3,7,8,9-HxCDD	0.00095	J	0.0031	0.00011	ug/Kg	⊗	08/30/18 16:11	09/05/18 08:16	1
1,2,3,7,8,9-HxCDF	0.00090	J B	0.0031	0.00054	ug/Kg	⊗	08/30/18 16:11	09/05/18 08:16	1
1,2,3,7,8-PeCDD	0.00094	J	0.0031	0.000080	ug/Kg	⊗	08/30/18 16:11	09/05/18 08:16	1
1,2,3,7,8-PeCDF	0.043	B	0.0031	0.00060	ug/Kg	⊗	08/30/18 16:11	09/05/18 08:16	1
2,3,4,6,7,8-HxCDF	0.0029	J	0.0031	0.00054	ug/Kg	⊗	08/30/18 16:11	09/05/18 08:16	1
2,3,4,7,8-PeCDF	0.018	B	0.0031	0.00065	ug/Kg	⊗	08/30/18 16:11	09/05/18 08:16	1
2,3,7,8-TCDD	0.0013		0.00062	0.000096	ug/Kg	⊗	08/30/18 16:11	09/05/18 08:16	1
OCDD	0.33	B	0.0062	0.00039	ug/Kg	⊗	08/30/18 16:11	09/05/18 08:16	1
OCDF	0.067		0.0062	0.00017	ug/Kg	⊗	08/30/18 16:11	09/05/18 08:16	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	55		23 - 140				08/30/18 16:11	09/05/18 08:16	1
13C-1,2,3,4,6,7,8-HpCDF	46		28 - 143				08/30/18 16:11	09/05/18 08:16	1
13C-1,2,3,4,7,8,9-HpCDF	60		26 - 138				08/30/18 16:11	09/05/18 08:16	1
13C-1,2,3,4,7,8-HxCDD	54		32 - 141				08/30/18 16:11	09/05/18 08:16	1
13C-1,2,3,4,7,8-HxCDF	45		26 - 152				08/30/18 16:11	09/05/18 08:16	1
13C-1,2,3,6,7,8-HxCDD	57		28 - 130				08/30/18 16:11	09/05/18 08:16	1
13C-1,2,3,6,7,8-HxCDF	46		26 - 123				08/30/18 16:11	09/05/18 08:16	1
13C-1,2,3,7,8,9-HxCDF	57		29 - 147				08/30/18 16:11	09/05/18 08:16	1
13C-1,2,3,7,8-PeCDD	78		25 - 181				08/30/18 16:11	09/05/18 08:16	1
13C-1,2,3,7,8-PeCDF	65		24 - 185				08/30/18 16:11	09/05/18 08:16	1
13C-2,3,4,6,7,8-HxCDF	50		28 - 136				08/30/18 16:11	09/05/18 08:16	1
13C-2,3,4,7,8-PeCDF	65		21 - 178				08/30/18 16:11	09/05/18 08:16	1
13C-2,3,7,8-TCDD	62		25 - 164				08/30/18 16:11	09/05/18 08:16	1
13C-OCDD	60		17 - 157				08/30/18 16:11	09/05/18 08:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	122		35 - 197				08/30/18 16:11	09/05/18 08:16	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.032	B	0.00062	0.00031	ug/Kg	⊗	08/30/18 16:11	09/07/18 14:53	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	64		24 - 169				08/30/18 16:11	09/07/18 14:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	119		35 - 197				08/30/18 16:11	09/07/18 14:53	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S136-4to6

Date Collected: 08/14/18 17:20

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-24

Matrix: Solid

Percent Solids: 77.6

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	0.014	B	0.0032	0.00040	ug/Kg	✉	08/30/18 16:11	09/05/18 09:04	1
1,2,3,4,6,7,8-HpCDF	0.017		0.0032	0.00040	ug/Kg	✉	08/30/18 16:11	09/05/18 09:04	1
1,2,3,4,7,8,9-HpCDF	0.0064	B	0.0032	0.00049	ug/Kg	✉	08/30/18 16:11	09/05/18 09:04	1
1,2,3,4,7,8-HxCDD	0.00019	J q B	0.0032	0.00011	ug/Kg	✉	08/30/18 16:11	09/05/18 09:04	1
1,2,3,4,7,8-HxCDF	0.030		0.0032	0.00044	ug/Kg	✉	08/30/18 16:11	09/05/18 09:04	1
1,2,3,6,7,8-HxCDD	0.00068	J	0.0032	0.00010	ug/Kg	✉	08/30/18 16:11	09/05/18 09:04	1
1,2,3,6,7,8-HxCDF	0.010		0.0032	0.00040	ug/Kg	✉	08/30/18 16:11	09/05/18 09:04	1
1,2,3,7,8,9-HxCDD	0.00062	J	0.0032	0.000097	ug/Kg	✉	08/30/18 16:11	09/05/18 09:04	1
1,2,3,7,8,9-HxCDF	0.00071	J B	0.0032	0.00040	ug/Kg	✉	08/30/18 16:11	09/05/18 09:04	1
1,2,3,7,8-PeCDD	0.00039	J q	0.0032	0.000087	ug/Kg	✉	08/30/18 16:11	09/05/18 09:04	1
1,2,3,7,8-PeCDF	0.021	B	0.0032	0.00034	ug/Kg	✉	08/30/18 16:11	09/05/18 09:04	1
2,3,4,6,7,8-HxCDF	0.0023	J	0.0032	0.00036	ug/Kg	✉	08/30/18 16:11	09/05/18 09:04	1
2,3,4,7,8-PeCDF	0.011	B	0.0032	0.00038	ug/Kg	✉	08/30/18 16:11	09/05/18 09:04	1
2,3,7,8-TCDD	0.00090		0.00065	0.000087	ug/Kg	✉	08/30/18 16:11	09/05/18 09:04	1
OCDD	0.19	B	0.0065	0.00035	ug/Kg	✉	08/30/18 16:11	09/05/18 09:04	1
OCDF	0.033		0.0065	0.00015	ug/Kg	✉	08/30/18 16:11	09/05/18 09:04	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	55		23 - 140				08/30/18 16:11	09/05/18 09:04	1
13C-1,2,3,4,6,7,8-HpCDF	47		28 - 143				08/30/18 16:11	09/05/18 09:04	1
13C-1,2,3,4,7,8,9-HpCDF	61		26 - 138				08/30/18 16:11	09/05/18 09:04	1
13C-1,2,3,4,7,8-HxCDD	54		32 - 141				08/30/18 16:11	09/05/18 09:04	1
13C-1,2,3,4,7,8-HxCDF	46		26 - 152				08/30/18 16:11	09/05/18 09:04	1
13C-1,2,3,6,7,8-HxCDD	57		28 - 130				08/30/18 16:11	09/05/18 09:04	1
13C-1,2,3,6,7,8-HxCDF	46		26 - 123				08/30/18 16:11	09/05/18 09:04	1
13C-1,2,3,7,8,9-HxCDF	56		29 - 147				08/30/18 16:11	09/05/18 09:04	1
13C-1,2,3,7,8-PeCDD	77		25 - 181				08/30/18 16:11	09/05/18 09:04	1
13C-1,2,3,7,8-PeCDF	63		24 - 185				08/30/18 16:11	09/05/18 09:04	1
13C-2,3,4,6,7,8-HxCDF	49		28 - 136				08/30/18 16:11	09/05/18 09:04	1
13C-2,3,4,7,8-PeCDF	63		21 - 178				08/30/18 16:11	09/05/18 09:04	1
13C-2,3,7,8-TCDD	62		25 - 164				08/30/18 16:11	09/05/18 09:04	1
13C-OCDD	60		17 - 157				08/30/18 16:11	09/05/18 09:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	121		35 - 197				08/30/18 16:11	09/05/18 09:04	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	0.014	B	0.00065	0.00023	ug/Kg	✉	08/30/18 16:11	09/07/18 15:31	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	60		24 - 169				08/30/18 16:11	09/07/18 15:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	114		35 - 197				08/30/18 16:11	09/07/18 15:31	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S136-6to7

Date Collected: 08/14/18 17:25

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-25

Matrix: Solid

Percent Solids: 75.8

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	0.12	B	0.0033	0.0025	ug/Kg	✉	08/30/18 16:11	09/05/18 09:52	1
1,2,3,4,6,7,8-HpCDF	0.16		0.0033	0.0029	ug/Kg	✉	08/30/18 16:11	09/05/18 09:52	1
1,2,3,4,7,8,9-HpCDF	0.054	B G	0.0036	0.0036	ug/Kg	✉	08/30/18 16:11	09/05/18 09:52	1
1,2,3,4,7,8-HxCDD	0.0015	J B	0.0033	0.00027	ug/Kg	✉	08/30/18 16:11	09/05/18 09:52	1
1,2,3,4,7,8-HxCDF	0.25		0.0033	0.0023	ug/Kg	✉	08/30/18 16:11	09/05/18 09:52	1
1,2,3,6,7,8-HxCDD	0.0061		0.0033	0.00025	ug/Kg	✉	08/30/18 16:11	09/05/18 09:52	1
1,2,3,6,7,8-HxCDF	0.077		0.0033	0.0021	ug/Kg	✉	08/30/18 16:11	09/05/18 09:52	1
1,2,3,7,8,9-HxCDD	0.0037		0.0033	0.00024	ug/Kg	✉	08/30/18 16:11	09/05/18 09:52	1
1,2,3,7,8,9-HxCDF	0.0031	J B	0.0033	0.0020	ug/Kg	✉	08/30/18 16:11	09/05/18 09:52	1
1,2,3,7,8-PeCDD	0.0045		0.0033	0.00021	ug/Kg	✉	08/30/18 16:11	09/05/18 09:52	1
1,2,3,7,8-PeCDF	0.14	B	0.0033	0.0015	ug/Kg	✉	08/30/18 16:11	09/05/18 09:52	1
2,3,4,6,7,8-HxCDF	0.015		0.0033	0.0018	ug/Kg	✉	08/30/18 16:11	09/05/18 09:52	1
2,3,4,7,8-PeCDF	0.065	B	0.0033	0.0016	ug/Kg	✉	08/30/18 16:11	09/05/18 09:52	1
2,3,7,8-TCDD	0.0037		0.00065	0.00015	ug/Kg	✉	08/30/18 16:11	09/05/18 09:52	1
OCDD	1.3	B	0.0065	0.0014	ug/Kg	✉	08/30/18 16:11	09/05/18 09:52	1
OCDF	0.38		0.0065	0.00045	ug/Kg	✉	08/30/18 16:11	09/05/18 09:52	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	48		23 - 140				08/30/18 16:11	09/05/18 09:52	1
13C-1,2,3,4,6,7,8-HpCDF	40		28 - 143				08/30/18 16:11	09/05/18 09:52	1
13C-1,2,3,4,7,8,9-HpCDF	51		26 - 138				08/30/18 16:11	09/05/18 09:52	1
13C-1,2,3,4,7,8-HxCDD	51		32 - 141				08/30/18 16:11	09/05/18 09:52	1
13C-1,2,3,4,7,8-HxCDF	41		26 - 152				08/30/18 16:11	09/05/18 09:52	1
13C-1,2,3,6,7,8-HxCDD	52		28 - 130				08/30/18 16:11	09/05/18 09:52	1
13C-1,2,3,6,7,8-HxCDF	43		26 - 123				08/30/18 16:11	09/05/18 09:52	1
13C-1,2,3,7,8,9-HxCDF	53		29 - 147				08/30/18 16:11	09/05/18 09:52	1
13C-1,2,3,7,8-PeCDD	72		25 - 181				08/30/18 16:11	09/05/18 09:52	1
13C-1,2,3,7,8-PeCDF	59		24 - 185				08/30/18 16:11	09/05/18 09:52	1
13C-2,3,4,6,7,8-HxCDF	47		28 - 136				08/30/18 16:11	09/05/18 09:52	1
13C-2,3,4,7,8-PeCDF	62		21 - 178				08/30/18 16:11	09/05/18 09:52	1
13C-2,3,7,8-TCDD	59		25 - 164				08/30/18 16:11	09/05/18 09:52	1
13C-OCDD	53		17 - 157				08/30/18 16:11	09/05/18 09:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	125		35 - 197				08/30/18 16:11	09/05/18 09:52	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.11	B	0.00065	0.00046	ug/Kg	✉	08/30/18 16:11	09/07/18 16:08	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	62		24 - 169				08/30/18 16:11	09/07/18 16:08	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	123		35 - 197				08/30/18 16:11	09/07/18 16:08	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S136-7to9

Date Collected: 08/14/18 17:30

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-26

Matrix: Solid

Percent Solids: 69.8

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	0.0076	B	0.0036	0.000066	ug/Kg	⊗	08/30/18 16:11	09/10/18 17:28	1
1,2,3,4,6,7,8-HpCDF	0.012		0.0036	0.000078	ug/Kg	⊗	08/30/18 16:11	09/10/18 17:28	1
1,2,3,4,7,8,9-HpCDF	0.0032	J B	0.0036	0.000085	ug/Kg	⊗	08/30/18 16:11	09/10/18 17:28	1
1,2,3,4,7,8-HxCDD	0.00018	J B	0.0036	0.000024	ug/Kg	⊗	08/30/18 16:11	09/10/18 17:28	1
1,2,3,4,7,8-HxCDF	0.017		0.0036	0.000079	ug/Kg	⊗	08/30/18 16:11	09/10/18 17:28	1
1,2,3,6,7,8-HxCDD	0.00039	J	0.0036	0.000022	ug/Kg	⊗	08/30/18 16:11	09/10/18 17:28	1
1,2,3,6,7,8-HxCDF	0.0042		0.0036	0.000079	ug/Kg	⊗	08/30/18 16:11	09/10/18 17:28	1
1,2,3,7,8,9-HxCDD	0.00033	J	0.0036	0.000021	ug/Kg	⊗	08/30/18 16:11	09/10/18 17:28	1
1,2,3,7,8,9-HxCDF	0.00076	J B	0.0036	0.000054	ug/Kg	⊗	08/30/18 16:11	09/10/18 17:28	1
1,2,3,7,8-PeCDD	0.00018	J	0.0036	0.000029	ug/Kg	⊗	08/30/18 16:11	09/10/18 17:28	1
1,2,3,7,8-PeCDF	0.0079	B	0.0036	0.000070	ug/Kg	⊗	08/30/18 16:11	09/10/18 17:28	1
2,3,4,6,7,8-HxCDF	0.00058	J	0.0036	0.000061	ug/Kg	⊗	08/30/18 16:11	09/10/18 17:28	1
2,3,4,7,8-PeCDF	0.0028	J B	0.0036	0.000077	ug/Kg	⊗	08/30/18 16:11	09/10/18 17:28	1
2,3,7,8-TCDD	0.00014	J q	0.00071	0.000019	ug/Kg	⊗	08/30/18 16:11	09/10/18 17:28	1
OCDD	0.10	B	0.0071	0.000062	ug/Kg	⊗	08/30/18 16:11	09/10/18 17:28	1
OCDF	0.021		0.0071	0.000034	ug/Kg	⊗	08/30/18 16:11	09/10/18 17:28	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	55			23 - 140			08/30/18 16:11	09/10/18 17:28	1
13C-1,2,3,4,6,7,8-HpCDF	47			28 - 143			08/30/18 16:11	09/10/18 17:28	1
13C-1,2,3,4,7,8,9-HpCDF	54			26 - 138			08/30/18 16:11	09/10/18 17:28	1
13C-1,2,3,4,7,8-HxCDD	50			32 - 141			08/30/18 16:11	09/10/18 17:28	1
13C-1,2,3,4,7,8-HxCDF	54			26 - 152			08/30/18 16:11	09/10/18 17:28	1
13C-1,2,3,6,7,8-HxCDD	53			28 - 130			08/30/18 16:11	09/10/18 17:28	1
13C-1,2,3,6,7,8-HxCDF	54			26 - 123			08/30/18 16:11	09/10/18 17:28	1
13C-1,2,3,7,8,9-HxCDF	57			29 - 147			08/30/18 16:11	09/10/18 17:28	1
13C-1,2,3,7,8-PeCDD	52			25 - 181			08/30/18 16:11	09/10/18 17:28	1
13C-1,2,3,7,8-PeCDF	52			24 - 185			08/30/18 16:11	09/10/18 17:28	1
13C-2,3,4,6,7,8-HxCDF	56			28 - 136			08/30/18 16:11	09/10/18 17:28	1
13C-2,3,4,7,8-PeCDF	52			21 - 178			08/30/18 16:11	09/10/18 17:28	1
13C-2,3,7,8-TCDD	59			25 - 164			08/30/18 16:11	09/10/18 17:28	1
13C-OCDD	44			17 - 157			08/30/18 16:11	09/10/18 17:28	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	119			35 - 197			08/30/18 16:11	09/10/18 17:28	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	0.0050	B	0.00071	0.000090	ug/Kg	⊗	08/30/18 16:11	09/07/18 16:46	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	61			24 - 169			08/30/18 16:11	09/07/18 16:46	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	120			35 - 197			08/30/18 16:11	09/07/18 16:46	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S136-9to11.3

Date Collected: 08/14/18 17:35

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-27

Matrix: Solid

Percent Solids: 71.7

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	0.059	B	0.0035	0.00034	ug/Kg	✉	08/30/18 16:11	09/10/18 18:14	1
1,2,3,4,6,7,8-HpCDF	0.11		0.0035	0.00053	ug/Kg	✉	08/30/18 16:11	09/10/18 18:14	1
1,2,3,4,7,8,9-HpCDF	0.042	B	0.0035	0.00076	ug/Kg	✉	08/30/18 16:11	09/10/18 18:14	1
1,2,3,4,7,8-HxCDD	0.0011	J B	0.0035	0.000085	ug/Kg	✉	08/30/18 16:11	09/10/18 18:14	1
1,2,3,4,7,8-HxCDF	0.22		0.0035	0.00082	ug/Kg	✉	08/30/18 16:11	09/10/18 18:14	1
1,2,3,6,7,8-HxCDD	0.0041		0.0035	0.000080	ug/Kg	✉	08/30/18 16:11	09/10/18 18:14	1
1,2,3,6,7,8-HxCDF	0.058		0.0035	0.00077	ug/Kg	✉	08/30/18 16:11	09/10/18 18:14	1
1,2,3,7,8,9-HxCDD	0.0021	J q	0.0035	0.000076	ug/Kg	✉	08/30/18 16:11	09/10/18 18:14	1
1,2,3,7,8,9-HxCDF	0.0038	B	0.0035	0.00057	ug/Kg	✉	08/30/18 16:11	09/10/18 18:14	1
1,2,3,7,8-PeCDD	0.0033	J	0.0035	0.000066	ug/Kg	✉	08/30/18 16:11	09/10/18 18:14	1
1,2,3,7,8-PeCDF	0.13	B	0.0035	0.00083	ug/Kg	✉	08/30/18 16:11	09/10/18 18:14	1
2,3,4,6,7,8-HxCDF	0.0086		0.0035	0.00065	ug/Kg	✉	08/30/18 16:11	09/10/18 18:14	1
2,3,4,7,8-PeCDF	0.050	B	0.0035	0.00083	ug/Kg	✉	08/30/18 16:11	09/10/18 18:14	1
2,3,7,8-TCDD	0.0021		0.00071	0.000043	ug/Kg	✉	08/30/18 16:11	09/10/18 18:14	1
OCDD	0.76	B	0.0071	0.00025	ug/Kg	✉	08/30/18 16:11	09/10/18 18:14	1
OCDF	0.28		0.0071	0.00012	ug/Kg	✉	08/30/18 16:11	09/10/18 18:14	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	51		23 - 140				08/30/18 16:11	09/10/18 18:14	1
13C-1,2,3,4,6,7,8-HpCDF	44		28 - 143				08/30/18 16:11	09/10/18 18:14	1
13C-1,2,3,4,7,8,9-HpCDF	40		26 - 138				08/30/18 16:11	09/10/18 18:14	1
13C-1,2,3,4,7,8-HxCDD	52		32 - 141				08/30/18 16:11	09/10/18 18:14	1
13C-1,2,3,4,7,8-HxCDF	55		26 - 152				08/30/18 16:11	09/10/18 18:14	1
13C-1,2,3,6,7,8-HxCDD	54		28 - 130				08/30/18 16:11	09/10/18 18:14	1
13C-1,2,3,6,7,8-HxCDF	57		26 - 123				08/30/18 16:11	09/10/18 18:14	1
13C-1,2,3,7,8,9-HxCDF	58		29 - 147				08/30/18 16:11	09/10/18 18:14	1
13C-1,2,3,7,8-PeCDD	55		25 - 181				08/30/18 16:11	09/10/18 18:14	1
13C-1,2,3,7,8-PeCDF	55		24 - 185				08/30/18 16:11	09/10/18 18:14	1
13C-2,3,4,6,7,8-HxCDF	58		28 - 136				08/30/18 16:11	09/10/18 18:14	1
13C-2,3,4,7,8-PeCDF	56		21 - 178				08/30/18 16:11	09/10/18 18:14	1
13C-2,3,7,8-TCDD	62		25 - 164				08/30/18 16:11	09/10/18 18:14	1
13C-OCDD	40		17 - 157				08/30/18 16:11	09/10/18 18:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	123		35 - 197				08/30/18 16:11	09/10/18 18:14	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	0.068	B	0.00071	0.00041	ug/Kg	✉	08/30/18 16:11	09/07/18 17:24	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	64		24 - 169				08/30/18 16:11	09/07/18 17:24	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	122		35 - 197				08/30/18 16:11	09/07/18 17:24	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S092-0to2

Date Collected: 08/14/18 09:15

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-28

Matrix: Solid

Percent Solids: 64.3

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	0.29	B	0.0038	0.0016	ug/Kg	⊗	08/31/18 11:06	09/10/18 16:42	1
1,2,3,4,6,7,8-HpCDF	0.097	B	0.0038	0.00085	ug/Kg	⊗	08/31/18 11:06	09/10/18 16:42	1
1,2,3,4,7,8,9-HpCDF	0.0073	B	0.0038	0.0014	ug/Kg	⊗	08/31/18 11:06	09/10/18 16:42	1
1,2,3,4,7,8-HxCDD	0.0022	J B	0.0038	0.00018	ug/Kg	⊗	08/31/18 11:06	09/10/18 16:42	1
1,2,3,4,7,8-HxCDF	0.031		0.0038	0.00047	ug/Kg	⊗	08/31/18 11:06	09/10/18 16:42	1
1,2,3,6,7,8-HxCDD	0.012		0.0038	0.00017	ug/Kg	⊗	08/31/18 11:06	09/10/18 16:42	1
1,2,3,6,7,8-HxCDF	0.0097	B	0.0038	0.00041	ug/Kg	⊗	08/31/18 11:06	09/10/18 16:42	1
1,2,3,7,8,9-HxCDD	0.0044		0.0038	0.00016	ug/Kg	⊗	08/31/18 11:06	09/10/18 16:42	1
1,2,3,7,8,9-HxCDF	0.0018	J B	0.0038	0.00031	ug/Kg	⊗	08/31/18 11:06	09/10/18 16:42	1
1,2,3,7,8-PeCDD	0.00097	J	0.0038	0.00010	ug/Kg	⊗	08/31/18 11:06	09/10/18 16:42	1
1,2,3,7,8-PeCDF	0.0067	B	0.0038	0.00035	ug/Kg	⊗	08/31/18 11:06	09/10/18 16:42	1
2,3,4,6,7,8-HxCDF	0.0023	J	0.0038	0.00036	ug/Kg	⊗	08/31/18 11:06	09/10/18 16:42	1
2,3,4,7,8-PeCDF	0.0056		0.0038	0.00037	ug/Kg	⊗	08/31/18 11:06	09/10/18 16:42	1
2,3,7,8-TCDD	0.00034	J q	0.00076	0.000029	ug/Kg	⊗	08/31/18 11:06	09/10/18 16:42	1
OCDD	3.1	E B	0.0076	0.0010	ug/Kg	⊗	08/31/18 11:06	09/10/18 16:42	1
OCDF	0.21	B	0.0076	0.000078	ug/Kg	⊗	08/31/18 11:06	09/10/18 16:42	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	69		23 - 140				08/31/18 11:06	09/10/18 16:42	1
13C-1,2,3,4,6,7,8-HpCDF	60		28 - 143				08/31/18 11:06	09/10/18 16:42	1
13C-1,2,3,4,7,8,9-HpCDF	52		26 - 138				08/31/18 11:06	09/10/18 16:42	1
13C-1,2,3,4,7,8-HxCDD	70		32 - 141				08/31/18 11:06	09/10/18 16:42	1
13C-1,2,3,4,7,8-HxCDF	74		26 - 152				08/31/18 11:06	09/10/18 16:42	1
13C-1,2,3,6,7,8-HxCDD	75		28 - 130				08/31/18 11:06	09/10/18 16:42	1
13C-1,2,3,6,7,8-HxCDF	79		26 - 123				08/31/18 11:06	09/10/18 16:42	1
13C-1,2,3,7,8,9-HxCDF	76		29 - 147				08/31/18 11:06	09/10/18 16:42	1
13C-1,2,3,7,8-PeCDD	70		25 - 181				08/31/18 11:06	09/10/18 16:42	1
13C-1,2,3,7,8-PeCDF	69		24 - 185				08/31/18 11:06	09/10/18 16:42	1
13C-2,3,4,6,7,8-HxCDF	76		28 - 136				08/31/18 11:06	09/10/18 16:42	1
13C-2,3,4,7,8-PeCDF	68		21 - 178				08/31/18 11:06	09/10/18 16:42	1
13C-2,3,7,8-TCDD	74		25 - 164				08/31/18 11:06	09/10/18 16:42	1
13C-OCDD	58		17 - 157				08/31/18 11:06	09/10/18 16:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	117		35 - 197				08/31/18 11:06	09/10/18 16:42	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	0.0032	B	0.00076	0.00011	ug/Kg	⊗	08/31/18 11:06	09/10/18 13:33	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	73		24 - 169				08/31/18 11:06	09/10/18 13:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	108		35 - 197				08/31/18 11:06	09/10/18 13:33	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S092-2to4

Date Collected: 08/14/18 09:20

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-29

Matrix: Solid

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	0.56	G B	0.013	0.013	ug/Kg	✉	08/31/18 11:06	09/07/18 04:08	1
1,2,3,4,6,7,8-HpCDF	0.21	G B	0.0056	0.0056	ug/Kg	✉	08/31/18 11:06	09/07/18 04:08	1
1,2,3,4,7,8,9-HpCDF	0.013	G B	0.0096	0.0096	ug/Kg	✉	08/31/18 11:06	09/07/18 04:08	1
1,2,3,4,7,8-HxCDD	0.0024	J B	0.0043	0.00090	ug/Kg	✉	08/31/18 11:06	09/07/18 04:08	1
1,2,3,4,7,8-HxCDF	0.068		0.0043	0.0024	ug/Kg	✉	08/31/18 11:06	09/07/18 04:08	1
1,2,3,6,7,8-HxCDD	0.017	B	0.0043	0.00078	ug/Kg	✉	08/31/18 11:06	09/07/18 04:08	1
1,2,3,6,7,8-HxCDF	0.031	B	0.0043	0.0021	ug/Kg	✉	08/31/18 11:06	09/07/18 04:08	1
1,2,3,7,8,9-HxCDD	0.0070		0.0043	0.00077	ug/Kg	✉	08/31/18 11:06	09/07/18 04:08	1
1,2,3,7,8,9-HxCDF	0.0036	J B	0.0043	0.0026	ug/Kg	✉	08/31/18 11:06	09/07/18 04:08	1
1,2,3,7,8-PeCDD	0.0017	J q	0.0043	0.00054	ug/Kg	✉	08/31/18 11:06	09/07/18 04:08	1
1,2,3,7,8-PeCDF	0.027	B	0.0043	0.0011	ug/Kg	✉	08/31/18 11:06	09/07/18 04:08	1
2,3,4,6,7,8-HxCDF	0.0062	B	0.0043	0.0023	ug/Kg	✉	08/31/18 11:06	09/07/18 04:08	1
2,3,4,7,8-PeCDF	0.011		0.0043	0.0012	ug/Kg	✉	08/31/18 11:06	09/07/18 04:08	1
2,3,7,8-TCDD	0.0011		0.00087	0.00038	ug/Kg	✉	08/31/18 11:06	09/07/18 04:08	1
OCDD	5.2	E B	0.0087	0.0057	ug/Kg	✉	08/31/18 11:06	09/07/18 04:08	1
OCDF	0.37	B	0.0087	0.00056	ug/Kg	✉	08/31/18 11:06	09/07/18 04:08	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	66		23 - 140				08/31/18 11:06	09/07/18 04:08	1
13C-1,2,3,4,6,7,8-HpCDF	62		28 - 143				08/31/18 11:06	09/07/18 04:08	1
13C-1,2,3,4,7,8,9-HpCDF	56		26 - 138				08/31/18 11:06	09/07/18 04:08	1
13C-1,2,3,4,7,8-HxCDD	81		32 - 141				08/31/18 11:06	09/07/18 04:08	1
13C-1,2,3,4,7,8-HxCDF	89		26 - 152				08/31/18 11:06	09/07/18 04:08	1
13C-1,2,3,6,7,8-HxCDD	88		28 - 130				08/31/18 11:06	09/07/18 04:08	1
13C-1,2,3,6,7,8-HxCDF	104		26 - 123				08/31/18 11:06	09/07/18 04:08	1
13C-1,2,3,7,8,9-HxCDF	81		29 - 147				08/31/18 11:06	09/07/18 04:08	1
13C-1,2,3,7,8-PeCDD	93		25 - 181				08/31/18 11:06	09/07/18 04:08	1
13C-1,2,3,7,8-PeCDF	90		24 - 185				08/31/18 11:06	09/07/18 04:08	1
13C-2,3,4,6,7,8-HxCDF	84		28 - 136				08/31/18 11:06	09/07/18 04:08	1
13C-2,3,4,7,8-PeCDF	88		21 - 178				08/31/18 11:06	09/07/18 04:08	1
13C-2,3,7,8-TCDD	84		25 - 164				08/31/18 11:06	09/07/18 04:08	1
13C-OCDD	56		17 - 157				08/31/18 11:06	09/07/18 04:08	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	132		35 - 197				08/31/18 11:06	09/07/18 04:08	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	0.0084	B	0.00087	0.00033	ug/Kg	✉	08/31/18 11:06	09/10/18 14:11	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	81		24 - 169				08/31/18 11:06	09/10/18 14:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	120		35 - 197				08/31/18 11:06	09/10/18 14:11	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S092-4to6

Date Collected: 08/14/18 09:25

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-30

Matrix: Solid

Percent Solids: 63.3

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.10	B	0.0039	0.0013	ug/Kg	⊗	08/31/18 11:06	09/07/18 04:56	1
1,2,3,4,6,7,8-HxCDF	0.017	B	0.0039	0.00048	ug/Kg	⊗	08/31/18 11:06	09/07/18 04:56	1
1,2,3,4,7,8,9-HxCDF	0.0015	J B	0.0039	0.00067	ug/Kg	⊗	08/31/18 11:06	09/07/18 04:56	1
1,2,3,4,7,8-HxCDD	0.00046	J q B	0.0039	0.00015	ug/Kg	⊗	08/31/18 11:06	09/07/18 04:56	1
1,2,3,4,7,8-HxCDF	0.0067		0.0039	0.00029	ug/Kg	⊗	08/31/18 11:06	09/07/18 04:56	1
1,2,3,6,7,8-HxCDD	0.0033	J B	0.0039	0.00015	ug/Kg	⊗	08/31/18 11:06	09/07/18 04:56	1
1,2,3,6,7,8-HxCDF	0.0025	J B	0.0039	0.00028	ug/Kg	⊗	08/31/18 11:06	09/07/18 04:56	1
1,2,3,7,8,9-HxCDD	0.0015	J	0.0039	0.00014	ug/Kg	⊗	08/31/18 11:06	09/07/18 04:56	1
1,2,3,7,8,9-HxCDF	0.0015	J B	0.0039	0.00029	ug/Kg	⊗	08/31/18 11:06	09/07/18 04:56	1
1,2,3,7,8-PeCDD	ND		0.0039	0.00015	ug/Kg	⊗	08/31/18 11:06	09/07/18 04:56	1
1,2,3,7,8-PeCDF	0.0025	J B	0.0039	0.00018	ug/Kg	⊗	08/31/18 11:06	09/07/18 04:56	1
2,3,4,6,7,8-HxCDF	0.00067	J B	0.0039	0.00023	ug/Kg	⊗	08/31/18 11:06	09/07/18 04:56	1
2,3,4,7,8-PeCDF	0.0011	J	0.0039	0.00019	ug/Kg	⊗	08/31/18 11:06	09/07/18 04:56	1
2,3,7,8-TCDD	ND		0.00077	0.00011	ug/Kg	⊗	08/31/18 11:06	09/07/18 04:56	1
OCDD	0.72	B	0.0077	0.00089	ug/Kg	⊗	08/31/18 11:06	09/07/18 04:56	1
OCDF	0.029	B	0.0077	0.00032	ug/Kg	⊗	08/31/18 11:06	09/07/18 04:56	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	55		23 - 140				08/31/18 11:06	09/07/18 04:56	1
13C-1,2,3,4,6,7,8-HxCDF	48		28 - 143				08/31/18 11:06	09/07/18 04:56	1
13C-1,2,3,4,7,8,9-HxCDF	55		26 - 138				08/31/18 11:06	09/07/18 04:56	1
13C-1,2,3,4,7,8-HxCDD	64		32 - 141				08/31/18 11:06	09/07/18 04:56	1
13C-1,2,3,4,7,8-HxCDF	67		26 - 152				08/31/18 11:06	09/07/18 04:56	1
13C-1,2,3,6,7,8-HxCDD	61		28 - 130				08/31/18 11:06	09/07/18 04:56	1
13C-1,2,3,6,7,8-HxCDF	71		26 - 123				08/31/18 11:06	09/07/18 04:56	1
13C-1,2,3,7,8,9-HxCDF	61		29 - 147				08/31/18 11:06	09/07/18 04:56	1
13C-1,2,3,7,8-PeCDD	73		25 - 181				08/31/18 11:06	09/07/18 04:56	1
13C-1,2,3,7,8-PeCDF	70		24 - 185				08/31/18 11:06	09/07/18 04:56	1
13C-2,3,4,6,7,8-HxCDF	65		28 - 136				08/31/18 11:06	09/07/18 04:56	1
13C-2,3,4,7,8-PeCDF	69		21 - 178				08/31/18 11:06	09/07/18 04:56	1
13C-2,3,7,8-TCDD	61		25 - 164				08/31/18 11:06	09/07/18 04:56	1
13C-OCDD	44		17 - 157				08/31/18 11:06	09/07/18 04:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	128		35 - 197				08/31/18 11:06	09/07/18 04:56	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	0.00077	q B	0.00077	0.00015	ug/Kg	⊗	08/31/18 11:06	09/10/18 14:49	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	70		24 - 169				08/31/18 11:06	09/10/18 14:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	121		35 - 197				08/31/18 11:06	09/10/18 14:49	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S092-4to6D

Date Collected: 08/14/18 09:30

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-31

Matrix: Solid

Percent Solids: 63.8

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	0.041	B	0.0038	0.00085	ug/Kg	⊗	08/31/18 11:06	09/07/18 05:44	1
1,2,3,4,6,7,8-HpCDF	0.014	B	0.0038	0.00054	ug/Kg	⊗	08/31/18 11:06	09/07/18 05:44	1
1,2,3,4,7,8,9-HpCDF	0.0014	J B	0.0038	0.00070	ug/Kg	⊗	08/31/18 11:06	09/07/18 05:44	1
1,2,3,4,7,8-HxCDD	0.00042	J B	0.0038	0.00016	ug/Kg	⊗	08/31/18 11:06	09/07/18 05:44	1
1,2,3,4,7,8-HxCDF	0.0038		0.0038	0.00031	ug/Kg	⊗	08/31/18 11:06	09/07/18 05:44	1
1,2,3,6,7,8-HxCDD	0.0016	J B	0.0038	0.00016	ug/Kg	⊗	08/31/18 11:06	09/07/18 05:44	1
1,2,3,6,7,8-HxCDF	0.0017	J B	0.0038	0.00031	ug/Kg	⊗	08/31/18 11:06	09/07/18 05:44	1
1,2,3,7,8,9-HxCDD	0.00098	J	0.0038	0.00015	ug/Kg	⊗	08/31/18 11:06	09/07/18 05:44	1
1,2,3,7,8,9-HxCDF	0.0021	J B	0.0038	0.00029	ug/Kg	⊗	08/31/18 11:06	09/07/18 05:44	1
1,2,3,7,8-PeCDD	ND		0.0038	0.00017	ug/Kg	⊗	08/31/18 11:06	09/07/18 05:44	1
1,2,3,7,8-PeCDF	0.0016	J B	0.0038	0.00016	ug/Kg	⊗	08/31/18 11:06	09/07/18 05:44	1
2,3,4,6,7,8-HxCDF	0.00062	J B	0.0038	0.00027	ug/Kg	⊗	08/31/18 11:06	09/07/18 05:44	1
2,3,4,7,8-PeCDF	0.00083	J	0.0038	0.00016	ug/Kg	⊗	08/31/18 11:06	09/07/18 05:44	1
2,3,7,8-TCDD	ND		0.00077	0.00011	ug/Kg	⊗	08/31/18 11:06	09/07/18 05:44	1
OCDD	0.39	B	0.0077	0.00071	ug/Kg	⊗	08/31/18 11:06	09/07/18 05:44	1
OCDF	0.034	B	0.0077	0.00043	ug/Kg	⊗	08/31/18 11:06	09/07/18 05:44	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	36		23 - 140				08/31/18 11:06	09/07/18 05:44	1
13C-1,2,3,4,6,7,8-HpCDF	32		28 - 143				08/31/18 11:06	09/07/18 05:44	1
13C-1,2,3,4,7,8,9-HpCDF	38		26 - 138				08/31/18 11:06	09/07/18 05:44	1
13C-1,2,3,4,7,8-HxCDD	49		32 - 141				08/31/18 11:06	09/07/18 05:44	1
13C-1,2,3,4,7,8-HxCDF	50		26 - 152				08/31/18 11:06	09/07/18 05:44	1
13C-1,2,3,6,7,8-HxCDD	45		28 - 130				08/31/18 11:06	09/07/18 05:44	1
13C-1,2,3,6,7,8-HxCDF	52		26 - 123				08/31/18 11:06	09/07/18 05:44	1
13C-1,2,3,7,8,9-HxCDF	51		29 - 147				08/31/18 11:06	09/07/18 05:44	1
13C-1,2,3,7,8-PeCDD	60		25 - 181				08/31/18 11:06	09/07/18 05:44	1
13C-1,2,3,7,8-PeCDF	61		24 - 185				08/31/18 11:06	09/07/18 05:44	1
13C-2,3,4,6,7,8-HxCDF	51		28 - 136				08/31/18 11:06	09/07/18 05:44	1
13C-2,3,4,7,8-PeCDF	66		21 - 178				08/31/18 11:06	09/07/18 05:44	1
13C-2,3,7,8-TCDD	58		25 - 164				08/31/18 11:06	09/07/18 05:44	1
13C-OCDD	29		17 - 157				08/31/18 11:06	09/07/18 05:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	136		35 - 197				08/31/18 11:06	09/07/18 05:44	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	0.00087	B	0.00077	0.00025	ug/Kg	⊗	08/31/18 11:06	09/10/18 15:27	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	65		24 - 169				08/31/18 11:06	09/10/18 15:27	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	127		35 - 197				08/31/18 11:06	09/10/18 15:27	1

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S092-6to8

Date Collected: 08/14/18 09:30

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-32

Matrix: Solid

Percent Solids: 60.9

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-HxCDD	0.0025	J B	0.0040	0.00022	ug/Kg	✉	08/31/18 11:06	09/07/18 06:33	1
1,2,3,4,6,7,8-HxCDF	0.00076	J q B	0.0040	0.00017	ug/Kg	✉	08/31/18 11:06	09/07/18 06:33	1
1,2,3,4,7,8,9-HxCDF	0.00089	J B	0.0040	0.00021	ug/Kg	✉	08/31/18 11:06	09/07/18 06:33	1
1,2,3,4,7,8-HxCDD	ND		0.0040	0.00011	ug/Kg	✉	08/31/18 11:06	09/07/18 06:33	1
1,2,3,4,7,8-HxCDF	ND		0.0040	0.00018	ug/Kg	✉	08/31/18 11:06	09/07/18 06:33	1
1,2,3,6,7,8-HxCDD	ND		0.0040	0.00012	ug/Kg	✉	08/31/18 11:06	09/07/18 06:33	1
1,2,3,6,7,8-HxCDF	ND		0.0040	0.00017	ug/Kg	✉	08/31/18 11:06	09/07/18 06:33	1
1,2,3,7,8,9-HxCDD	ND		0.0040	0.00011	ug/Kg	✉	08/31/18 11:06	09/07/18 06:33	1
1,2,3,7,8,9-HxCDF	0.0026	J B	0.0040	0.00016	ug/Kg	✉	08/31/18 11:06	09/07/18 06:33	1
1,2,3,7,8-PeCDD	ND		0.0040	0.00017	ug/Kg	✉	08/31/18 11:06	09/07/18 06:33	1
1,2,3,7,8-PeCDF	0.00051	J B	0.0040	0.00011	ug/Kg	✉	08/31/18 11:06	09/07/18 06:33	1
2,3,4,6,7,8-HxCDF	ND		0.0040	0.00016	ug/Kg	✉	08/31/18 11:06	09/07/18 06:33	1
2,3,4,7,8-PeCDD	ND		0.0040	0.00011	ug/Kg	✉	08/31/18 11:06	09/07/18 06:33	1
2,3,7,8-TCDD	ND		0.00081	0.000094	ug/Kg	✉	08/31/18 11:06	09/07/18 06:33	1
2,3,7,8-TCDF	0.00043	J B	0.00081	0.000065	ug/Kg	✉	08/31/18 11:06	09/07/18 06:33	1
OCDD	0.024	B	0.0081	0.0020	ug/Kg	✉	08/31/18 11:06	09/07/18 06:33	1
OCDF	ND		0.0081	0.0016	ug/Kg	✉	08/31/18 11:06	09/07/18 06:33	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	40			23 - 140			08/31/18 11:06	09/07/18 06:33	1
13C-1,2,3,4,6,7,8-HxCDF	35			28 - 143			08/31/18 11:06	09/07/18 06:33	1
13C-1,2,3,4,7,8,9-HxCDF	42			26 - 138			08/31/18 11:06	09/07/18 06:33	1
13C-1,2,3,4,7,8-HxCDD	52			32 - 141			08/31/18 11:06	09/07/18 06:33	1
13C-1,2,3,4,7,8-HxCDF	53			26 - 152			08/31/18 11:06	09/07/18 06:33	1
13C-1,2,3,6,7,8-HxCDD	49			28 - 130			08/31/18 11:06	09/07/18 06:33	1
13C-1,2,3,6,7,8-HxCDF	57			26 - 123			08/31/18 11:06	09/07/18 06:33	1
13C-1,2,3,7,8,9-HxCDF	55			29 - 147			08/31/18 11:06	09/07/18 06:33	1
13C-1,2,3,7,8-PeCDD	64			25 - 181			08/31/18 11:06	09/07/18 06:33	1
13C-1,2,3,7,8-PeCDF	67			24 - 185			08/31/18 11:06	09/07/18 06:33	1
13C-2,3,4,6,7,8-HxCDF	54			28 - 136			08/31/18 11:06	09/07/18 06:33	1
13C-2,3,4,7,8-PeCDD	69			21 - 178			08/31/18 11:06	09/07/18 06:33	1
13C-2,3,7,8-TCDD	61			25 - 164			08/31/18 11:06	09/07/18 06:33	1
13C-2,3,7,8-TCDF	65			24 - 169			08/31/18 11:06	09/07/18 06:33	1
13C-OCDD	31			17 - 157			08/31/18 11:06	09/07/18 06:33	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	129			35 - 197			08/31/18 11:06	09/07/18 06:33	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S092-8to9.9

Date Collected: 08/14/18 09:35

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-33

Matrix: Solid

Percent Solids: 63.9

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-HxCDD	0.0017	J B	0.0039	0.00019	ug/Kg	✉	08/31/18 11:06	09/07/18 07:21	1
1,2,3,4,6,7,8-HxCDF	0.0010	J B	0.0039	0.00017	ug/Kg	✉	08/31/18 11:06	09/07/18 07:21	1
1,2,3,4,7,8,9-HxCDF	0.00094	J B	0.0039	0.00021	ug/Kg	✉	08/31/18 11:06	09/07/18 07:21	1
1,2,3,4,7,8-HxCDD	ND		0.0039	0.00013	ug/Kg	✉	08/31/18 11:06	09/07/18 07:21	1
1,2,3,4,7,8-HxCDF	0.00088	J	0.0039	0.00016	ug/Kg	✉	08/31/18 11:06	09/07/18 07:21	1
1,2,3,6,7,8-HxCDD	ND		0.0039	0.00012	ug/Kg	✉	08/31/18 11:06	09/07/18 07:21	1
1,2,3,6,7,8-HxCDF	0.00040	J B	0.0039	0.00015	ug/Kg	✉	08/31/18 11:06	09/07/18 07:21	1
1,2,3,7,8,9-HxCDD	0.00031	J	0.0039	0.00011	ug/Kg	✉	08/31/18 11:06	09/07/18 07:21	1
1,2,3,7,8,9-HxCDF	0.0021	J B	0.0039	0.00014	ug/Kg	✉	08/31/18 11:06	09/07/18 07:21	1
1,2,3,7,8-PeCDD	ND		0.0039	0.00018	ug/Kg	✉	08/31/18 11:06	09/07/18 07:21	1
1,2,3,7,8-PeCDF	0.00048	J q B	0.0039	0.00013	ug/Kg	✉	08/31/18 11:06	09/07/18 07:21	1
2,3,4,6,7,8-HxCDF	ND		0.0039	0.00013	ug/Kg	✉	08/31/18 11:06	09/07/18 07:21	1
2,3,4,7,8-PeCDD	ND		0.0039	0.00012	ug/Kg	✉	08/31/18 11:06	09/07/18 07:21	1
2,3,7,8-TCDD	ND		0.00077	0.00012	ug/Kg	✉	08/31/18 11:06	09/07/18 07:21	1
2,3,7,8-TCDF	0.00070	J B	0.00077	0.000067	ug/Kg	✉	08/31/18 11:06	09/07/18 07:21	1
OCDD	0.014	B	0.0077	0.00040	ug/Kg	✉	08/31/18 11:06	09/07/18 07:21	1
OCDF	0.0023	J B	0.0077	0.00031	ug/Kg	✉	08/31/18 11:06	09/07/18 07:21	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	35			23 - 140			08/31/18 11:06	09/07/18 07:21	1
13C-1,2,3,4,6,7,8-HxCDF	29			28 - 143			08/31/18 11:06	09/07/18 07:21	1
13C-1,2,3,4,7,8,9-HxCDF	35			26 - 138			08/31/18 11:06	09/07/18 07:21	1
13C-1,2,3,4,7,8-HxCDD	42			32 - 141			08/31/18 11:06	09/07/18 07:21	1
13C-1,2,3,4,7,8-HxCDF	44			26 - 152			08/31/18 11:06	09/07/18 07:21	1
13C-1,2,3,6,7,8-HxCDD	44			28 - 130			08/31/18 11:06	09/07/18 07:21	1
13C-1,2,3,6,7,8-HxCDF	48			26 - 123			08/31/18 11:06	09/07/18 07:21	1
13C-1,2,3,7,8,9-HxCDF	48			29 - 147			08/31/18 11:06	09/07/18 07:21	1
13C-1,2,3,7,8-PeCDD	60			25 - 181			08/31/18 11:06	09/07/18 07:21	1
13C-1,2,3,7,8-PeCDF	58			24 - 185			08/31/18 11:06	09/07/18 07:21	1
13C-2,3,4,6,7,8-HxCDF	47			28 - 136			08/31/18 11:06	09/07/18 07:21	1
13C-2,3,4,7,8-PeCDD	64			21 - 178			08/31/18 11:06	09/07/18 07:21	1
13C-2,3,7,8-TCDD	56			25 - 164			08/31/18 11:06	09/07/18 07:21	1
13C-2,3,7,8-TCDF	62			24 - 169			08/31/18 11:06	09/07/18 07:21	1
13C-OCDD	26			17 - 157			08/31/18 11:06	09/07/18 07:21	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	128			35 - 197			08/31/18 11:06	09/07/18 07:21	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S092-9.9to10.9

Date Collected: 08/14/18 09:40

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-34

Matrix: Solid

Percent Solids: 65.7

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-HxCDD	0.0018	J B	0.0038	0.000092	ug/Kg	✉	08/31/18 11:06	09/07/18 08:09	1
1,2,3,4,6,7,8-HxCDF	0.0018	J B	0.0038	0.000081	ug/Kg	✉	08/31/18 11:06	09/07/18 08:09	1
1,2,3,4,7,8,9-HxCDF	0.0013	J B	0.0038	0.00011	ug/Kg	✉	08/31/18 11:06	09/07/18 08:09	1
1,2,3,4,7,8-HxCDD	0.00018	J B	0.0038	0.000081	ug/Kg	✉	08/31/18 11:06	09/07/18 08:09	1
1,2,3,4,7,8-HxCDF	0.0028	J	0.0038	0.00013	ug/Kg	✉	08/31/18 11:06	09/07/18 08:09	1
1,2,3,6,7,8-HxCDD	0.00017	J q B	0.0038	0.000078	ug/Kg	✉	08/31/18 11:06	09/07/18 08:09	1
1,2,3,6,7,8-HxCDF	0.0010	J B	0.0038	0.00012	ug/Kg	✉	08/31/18 11:06	09/07/18 08:09	1
1,2,3,7,8,9-HxCDD	0.00018	J	0.0038	0.000073	ug/Kg	✉	08/31/18 11:06	09/07/18 08:09	1
1,2,3,7,8,9-HxCDF	0.0027	J B	0.0038	0.00012	ug/Kg	✉	08/31/18 11:06	09/07/18 08:09	1
1,2,3,7,8-PeCDD	ND		0.0038	0.000074	ug/Kg	✉	08/31/18 11:06	09/07/18 08:09	1
1,2,3,7,8-PeCDF	0.0011	J B	0.0038	0.000062	ug/Kg	✉	08/31/18 11:06	09/07/18 08:09	1
2,3,4,6,7,8-HxCDF	0.00025	J B	0.0038	0.00011	ug/Kg	✉	08/31/18 11:06	09/07/18 08:09	1
2,3,4,7,8-PeCDF	0.00045	J	0.0038	0.000065	ug/Kg	✉	08/31/18 11:06	09/07/18 08:09	1
2,3,7,8-TCDD	ND		0.00076	0.000069	ug/Kg	✉	08/31/18 11:06	09/07/18 08:09	1
2,3,7,8-TCDF	0.00044	J B	0.00076	0.000051	ug/Kg	✉	08/31/18 11:06	09/07/18 08:09	1
OCDD	0.017	B	0.0076	0.00022	ug/Kg	✉	08/31/18 11:06	09/07/18 08:09	1
OCDF	0.0039	J B	0.0076	0.00015	ug/Kg	✉	08/31/18 11:06	09/07/18 08:09	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	58			23 - 140			08/31/18 11:06	09/07/18 08:09	1
13C-1,2,3,4,6,7,8-HxCDF	52			28 - 143			08/31/18 11:06	09/07/18 08:09	1
13C-1,2,3,4,7,8,9-HxCDF	59			26 - 138			08/31/18 11:06	09/07/18 08:09	1
13C-1,2,3,4,7,8-HxCDD	58			32 - 141			08/31/18 11:06	09/07/18 08:09	1
13C-1,2,3,4,7,8-HxCDF	58			26 - 152			08/31/18 11:06	09/07/18 08:09	1
13C-1,2,3,6,7,8-HxCDD	59			28 - 130			08/31/18 11:06	09/07/18 08:09	1
13C-1,2,3,6,7,8-HxCDF	63			26 - 123			08/31/18 11:06	09/07/18 08:09	1
13C-1,2,3,7,8,9-HxCDF	60			29 - 147			08/31/18 11:06	09/07/18 08:09	1
13C-1,2,3,7,8-PeCDD	60			25 - 181			08/31/18 11:06	09/07/18 08:09	1
13C-1,2,3,7,8-PeCDF	61			24 - 185			08/31/18 11:06	09/07/18 08:09	1
13C-2,3,4,6,7,8-HxCDF	60			28 - 136			08/31/18 11:06	09/07/18 08:09	1
13C-2,3,4,7,8-PeCDF	62			21 - 178			08/31/18 11:06	09/07/18 08:09	1
13C-2,3,7,8-TCDD	58			25 - 164			08/31/18 11:06	09/07/18 08:09	1
13C-2,3,7,8-TCDF	59			24 - 169			08/31/18 11:06	09/07/18 08:09	1
13C-OCDD	53			17 - 157			08/31/18 11:06	09/07/18 08:09	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	126			35 - 197			08/31/18 11:06	09/07/18 08:09	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S065-0to2

Date Collected: 08/14/18 11:10

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-35

Matrix: Solid

Percent Solids: 53.1

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	0.064	B	0.0047	0.0016	ug/Kg	⊗	08/31/18 11:06	09/07/18 08:58	1
1,2,3,4,6,7,8-HpCDF	0.016	B	0.0047	0.00067	ug/Kg	⊗	08/31/18 11:06	09/07/18 08:58	1
1,2,3,4,7,8,9-HpCDF	0.0026	J B	0.0047	0.00081	ug/Kg	⊗	08/31/18 11:06	09/07/18 08:58	1
1,2,3,4,7,8-HxCDD	0.00087	J B	0.0047	0.00016	ug/Kg	⊗	08/31/18 11:06	09/07/18 08:58	1
1,2,3,4,7,8-HxCDF	0.0061		0.0047	0.00032	ug/Kg	⊗	08/31/18 11:06	09/07/18 08:58	1
1,2,3,6,7,8-HxCDD	0.0027	J B	0.0047	0.00015	ug/Kg	⊗	08/31/18 11:06	09/07/18 08:58	1
1,2,3,6,7,8-HxCDF	0.0026	J B	0.0047	0.00030	ug/Kg	⊗	08/31/18 11:06	09/07/18 08:58	1
1,2,3,7,8,9-HxCDD	0.0018	J	0.0047	0.00014	ug/Kg	⊗	08/31/18 11:06	09/07/18 08:58	1
1,2,3,7,8,9-HxCDF	0.0024	J B	0.0047	0.00028	ug/Kg	⊗	08/31/18 11:06	09/07/18 08:58	1
1,2,3,7,8-PeCDD	0.00049	J	0.0047	0.00018	ug/Kg	⊗	08/31/18 11:06	09/07/18 08:58	1
1,2,3,7,8-PeCDF	0.0025	J B	0.0047	0.00018	ug/Kg	⊗	08/31/18 11:06	09/07/18 08:58	1
2,3,4,6,7,8-HxCDF	0.00083	J B	0.0047	0.00026	ug/Kg	⊗	08/31/18 11:06	09/07/18 08:58	1
2,3,4,7,8-PeCDF	0.0011	J	0.0047	0.00019	ug/Kg	⊗	08/31/18 11:06	09/07/18 08:58	1
2,3,7,8-TCDD	0.00032	J q	0.00094	0.000094	ug/Kg	⊗	08/31/18 11:06	09/07/18 08:58	1
OCDD	0.64	B	0.0094	0.00081	ug/Kg	⊗	08/31/18 11:06	09/07/18 08:58	1
OCDF	0.047	B	0.0094	0.00025	ug/Kg	⊗	08/31/18 11:06	09/07/18 08:58	1
<i>Isotope Dilution</i>	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	48			23 - 140			08/31/18 11:06	09/07/18 08:58	1
13C-1,2,3,4,6,7,8-HpCDF	42			28 - 143			08/31/18 11:06	09/07/18 08:58	1
13C-1,2,3,4,7,8,9-HpCDF	52			26 - 138			08/31/18 11:06	09/07/18 08:58	1
13C-1,2,3,4,7,8-HxCDD	54			32 - 141			08/31/18 11:06	09/07/18 08:58	1
13C-1,2,3,4,7,8-HxCDF	54			26 - 152			08/31/18 11:06	09/07/18 08:58	1
13C-1,2,3,6,7,8-HxCDD	60			28 - 130			08/31/18 11:06	09/07/18 08:58	1
13C-1,2,3,6,7,8-HxCDF	60			26 - 123			08/31/18 11:06	09/07/18 08:58	1
13C-1,2,3,7,8,9-HxCDF	62			29 - 147			08/31/18 11:06	09/07/18 08:58	1
13C-1,2,3,7,8-PeCDD	64			25 - 181			08/31/18 11:06	09/07/18 08:58	1
13C-1,2,3,7,8-PeCDF	64			24 - 185			08/31/18 11:06	09/07/18 08:58	1
13C-2,3,4,6,7,8-HxCDF	59			28 - 136			08/31/18 11:06	09/07/18 08:58	1
13C-2,3,4,7,8-PeCDF	64			21 - 178			08/31/18 11:06	09/07/18 08:58	1
13C-2,3,7,8-TCDD	64			25 - 164			08/31/18 11:06	09/07/18 08:58	1
13C-OCDD	41			17 - 157			08/31/18 11:06	09/07/18 08:58	1
<i>Surrogate</i>	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	124			35 - 197			08/31/18 11:06	09/07/18 08:58	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	0.0016	B	0.00094	0.00010	ug/Kg	⊗	08/31/18 11:06	09/10/18 16:05	1
<i>Isotope Dilution</i>	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	62			24 - 169			08/31/18 11:06	09/10/18 16:05	1
<i>Surrogate</i>	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	112			35 - 197			08/31/18 11:06	09/10/18 16:05	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S065-2to4

Date Collected: 08/14/18 11:15

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-36

Matrix: Solid

Percent Solids: 52.9

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	G B	0.0064	0.0064	ug/Kg	✉	08/31/18 11:06	09/07/18 09:46	1
1,2,3,4,6,7,8-HpCDF	0.061	B	0.0047	0.0027	ug/Kg	✉	08/31/18 11:06	09/07/18 09:46	1
1,2,3,4,7,8,9-HpCDF	0.010	B	0.0047	0.0031	ug/Kg	✉	08/31/18 11:06	09/07/18 09:46	1
1,2,3,4,7,8-HxCDD	0.0019	J B	0.0047	0.00050	ug/Kg	✉	08/31/18 11:06	09/07/18 09:46	1
1,2,3,4,7,8-HxCDF	0.037		0.0047	0.0012	ug/Kg	✉	08/31/18 11:06	09/07/18 09:46	1
1,2,3,6,7,8-HxCDD	0.0082	B	0.0047	0.00047	ug/Kg	✉	08/31/18 11:06	09/07/18 09:46	1
1,2,3,6,7,8-HxCDF	0.020	B	0.0047	0.0011	ug/Kg	✉	08/31/18 11:06	09/07/18 09:46	1
1,2,3,7,8,9-HxCDD	0.0047		0.0047	0.00045	ug/Kg	✉	08/31/18 11:06	09/07/18 09:46	1
1,2,3,7,8,9-HxCDF	0.0020	J B	0.0047	0.0011	ug/Kg	✉	08/31/18 11:06	09/07/18 09:46	1
1,2,3,7,8-PeCDD	0.0012	J	0.0047	0.00022	ug/Kg	✉	08/31/18 11:06	09/07/18 09:46	1
1,2,3,7,8-PeCDF	0.019	B	0.0047	0.00062	ug/Kg	✉	08/31/18 11:06	09/07/18 09:46	1
2,3,4,6,7,8-HxCDF	0.0031	J B	0.0047	0.0010	ug/Kg	✉	08/31/18 11:06	09/07/18 09:46	1
2,3,4,7,8-PeCDF	0.0063		0.0047	0.00061	ug/Kg	✉	08/31/18 11:06	09/07/18 09:46	1
2,3,7,8-TCDD	0.00071	J q	0.00094	0.00014	ug/Kg	✉	08/31/18 11:06	09/07/18 09:46	1
OCDD	3.1	B	0.0094	0.0035	ug/Kg	✉	08/31/18 11:06	09/07/18 09:46	1
OCDF	0.19	B	0.0094	0.00042	ug/Kg	✉	08/31/18 11:06	09/07/18 09:46	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	41		23 - 140				08/31/18 11:06	09/07/18 09:46	1
13C-1,2,3,4,6,7,8-HpCDF	35		28 - 143				08/31/18 11:06	09/07/18 09:46	1
13C-1,2,3,4,7,8,9-HpCDF	45		26 - 138				08/31/18 11:06	09/07/18 09:46	1
13C-1,2,3,4,7,8-HxCDD	47		32 - 141				08/31/18 11:06	09/07/18 09:46	1
13C-1,2,3,4,7,8-HxCDF	48		26 - 152				08/31/18 11:06	09/07/18 09:46	1
13C-1,2,3,6,7,8-HxCDD	50		28 - 130				08/31/18 11:06	09/07/18 09:46	1
13C-1,2,3,6,7,8-HxCDF	55		26 - 123				08/31/18 11:06	09/07/18 09:46	1
13C-1,2,3,7,8,9-HxCDF	53		29 - 147				08/31/18 11:06	09/07/18 09:46	1
13C-1,2,3,7,8-PeCDD	56		25 - 181				08/31/18 11:06	09/07/18 09:46	1
13C-1,2,3,7,8-PeCDF	58		24 - 185				08/31/18 11:06	09/07/18 09:46	1
13C-2,3,4,6,7,8-HxCDF	51		28 - 136				08/31/18 11:06	09/07/18 09:46	1
13C-2,3,4,7,8-PeCDF	64		21 - 178				08/31/18 11:06	09/07/18 09:46	1
13C-2,3,7,8-TCDD	57		25 - 164				08/31/18 11:06	09/07/18 09:46	1
13C-OCDD	37		17 - 157				08/31/18 11:06	09/07/18 09:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	128		35 - 197				08/31/18 11:06	09/07/18 09:46	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	0.011	B	0.00094	0.00013	ug/Kg	✉	08/31/18 11:06	09/10/18 16:43	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	56		24 - 169				08/31/18 11:06	09/10/18 16:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	113		35 - 197				08/31/18 11:06	09/10/18 16:43	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S065-4to6

Date Collected: 08/14/18 11:20

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-37

Matrix: Solid

Percent Solids: 55.1

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	0.46	B G	0.0049	0.0049	ug/Kg	✉	08/31/18 11:06	09/12/18 02:06	1
1,2,3,4,6,7,8-HpCDF	0.065	B	0.0044	0.00080	ug/Kg	✉	08/31/18 11:06	09/12/18 02:06	1
1,2,3,4,7,8,9-HpCDF	0.0087	B	0.0044	0.0013	ug/Kg	✉	08/31/18 11:06	09/12/18 02:06	1
1,2,3,4,7,8-HxCDD	0.0012	J B	0.0044	0.00020	ug/Kg	✉	08/31/18 11:06	09/12/18 02:06	1
1,2,3,4,7,8-HxCDF	0.039		0.0044	0.00047	ug/Kg	✉	08/31/18 11:06	09/12/18 02:06	1
1,2,3,6,7,8-HxCDD	0.0087		0.0044	0.00020	ug/Kg	✉	08/31/18 11:06	09/12/18 02:06	1
1,2,3,6,7,8-HxCDF	0.012	B	0.0044	0.00043	ug/Kg	✉	08/31/18 11:06	09/12/18 02:06	1
1,2,3,7,8,9-HxCDD	0.0030	J	0.0044	0.00019	ug/Kg	✉	08/31/18 11:06	09/12/18 02:06	1
1,2,3,7,8,9-HxCDF	0.0045	B	0.0044	0.00034	ug/Kg	✉	08/31/18 11:06	09/12/18 02:06	1
1,2,3,7,8-PeCDD	0.00090	J	0.0044	0.00015	ug/Kg	✉	08/31/18 11:06	09/12/18 02:06	1
1,2,3,7,8-PeCDF	0.039	B	0.0044	0.00068	ug/Kg	✉	08/31/18 11:06	09/12/18 02:06	1
2,3,4,6,7,8-HxCDF	0.0040	J	0.0044	0.00036	ug/Kg	✉	08/31/18 11:06	09/12/18 02:06	1
2,3,4,7,8-PeCDF	0.027		0.0044	0.00059	ug/Kg	✉	08/31/18 11:06	09/12/18 02:06	1
2,3,7,8-TCDD	0.00052	J q	0.00089	0.000076	ug/Kg	✉	08/31/18 11:06	09/12/18 02:06	1
OCDD	3.5	B	0.0089	0.00082	ug/Kg	✉	08/31/18 11:06	09/12/18 02:06	1
OCDF	0.18	B	0.0089	0.000093	ug/Kg	✉	08/31/18 11:06	09/12/18 02:06	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	42		23 - 140				08/31/18 11:06	09/12/18 02:06	1
13C-1,2,3,4,6,7,8-HpCDF	36		28 - 143				08/31/18 11:06	09/12/18 02:06	1
13C-1,2,3,4,7,8,9-HpCDF	29		26 - 138				08/31/18 11:06	09/12/18 02:06	1
13C-1,2,3,4,7,8-HxCDD	48		32 - 141				08/31/18 11:06	09/12/18 02:06	1
13C-1,2,3,4,7,8-HxCDF	51		26 - 152				08/31/18 11:06	09/12/18 02:06	1
13C-1,2,3,6,7,8-HxCDD	48		28 - 130				08/31/18 11:06	09/12/18 02:06	1
13C-1,2,3,6,7,8-HxCDF	53		26 - 123				08/31/18 11:06	09/12/18 02:06	1
13C-1,2,3,7,8,9-HxCDF	51		29 - 147				08/31/18 11:06	09/12/18 02:06	1
13C-1,2,3,7,8-PeCDD	52		25 - 181				08/31/18 11:06	09/12/18 02:06	1
13C-1,2,3,7,8-PeCDF	52		24 - 185				08/31/18 11:06	09/12/18 02:06	1
13C-2,3,4,6,7,8-HxCDF	49		28 - 136				08/31/18 11:06	09/12/18 02:06	1
13C-2,3,4,7,8-PeCDF	54		21 - 178				08/31/18 11:06	09/12/18 02:06	1
13C-2,3,7,8-TCDD	60		25 - 164				08/31/18 11:06	09/12/18 02:06	1
13C-OCDD	33		17 - 157				08/31/18 11:06	09/12/18 02:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	133		35 - 197				08/31/18 11:06	09/12/18 02:06	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	0.048	B	0.00089	0.00041	ug/Kg	✉	08/31/18 11:06	09/12/18 13:56	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	71		24 - 169				08/31/18 11:06	09/12/18 13:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	125		35 - 197				08/31/18 11:06	09/12/18 13:56	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S065-6to8

Date Collected: 08/14/18 11:25

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-38

Matrix: Solid

Percent Solids: 56.5

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	0.0044	0.0026	ug/Kg	⊗	08/31/18 11:06	09/12/18 02:52	1
1,2,3,4,6,7,8-HpCDF	0.13	B	0.0044	0.00085	ug/Kg	⊗	08/31/18 11:06	09/12/18 02:52	1
1,2,3,4,7,8,9-HpCDF	0.0045	B	0.0044	0.0014	ug/Kg	⊗	08/31/18 11:06	09/12/18 02:52	1
1,2,3,4,7,8-HxCDD	0.0011	J B	0.0044	0.00015	ug/Kg	⊗	08/31/18 11:06	09/12/18 02:52	1
1,2,3,4,7,8-HxCDF	0.0075		0.0044	0.00050	ug/Kg	⊗	08/31/18 11:06	09/12/18 02:52	1
1,2,3,6,7,8-HxCDD	0.0088		0.0044	0.00015	ug/Kg	⊗	08/31/18 11:06	09/12/18 02:52	1
1,2,3,6,7,8-HxCDF	0.0083	B	0.0044	0.00044	ug/Kg	⊗	08/31/18 11:06	09/12/18 02:52	1
1,2,3,7,8,9-HxCDD	0.0032	J	0.0044	0.00014	ug/Kg	⊗	08/31/18 11:06	09/12/18 02:52	1
1,2,3,7,8,9-HxCDF	0.0051	B	0.0044	0.00034	ug/Kg	⊗	08/31/18 11:06	09/12/18 02:52	1
1,2,3,7,8-PeCDD	0.0015	J	0.0044	0.00015	ug/Kg	⊗	08/31/18 11:06	09/12/18 02:52	1
1,2,3,7,8-PeCDF	0.0021	J B	0.0044	0.00096	ug/Kg	⊗	08/31/18 11:06	09/12/18 02:52	1
2,3,4,6,7,8-HxCDF	0.0040	J	0.0044	0.00043	ug/Kg	⊗	08/31/18 11:06	09/12/18 02:52	1
2,3,4,7,8-PeCDF	0.0034	J	0.0044	0.0010	ug/Kg	⊗	08/31/18 11:06	09/12/18 02:52	1
2,3,7,8-TCDD	0.00048	J q	0.00089	0.000070	ug/Kg	⊗	08/31/18 11:06	09/12/18 02:52	1
OCDD	2.7	B	0.0089	0.00061	ug/Kg	⊗	08/31/18 11:06	09/12/18 02:52	1
OCDF	0.26	B	0.0089	0.000098	ug/Kg	⊗	08/31/18 11:06	09/12/18 02:52	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	58		23 - 140				08/31/18 11:06	09/12/18 02:52	1
13C-1,2,3,4,6,7,8-HpCDF	54		28 - 143				08/31/18 11:06	09/12/18 02:52	1
13C-1,2,3,4,7,8,9-HpCDF	45		26 - 138				08/31/18 11:06	09/12/18 02:52	1
13C-1,2,3,4,7,8-HxCDD	62		32 - 141				08/31/18 11:06	09/12/18 02:52	1
13C-1,2,3,4,7,8-HxCDF	66		26 - 152				08/31/18 11:06	09/12/18 02:52	1
13C-1,2,3,6,7,8-HxCDD	63		28 - 130				08/31/18 11:06	09/12/18 02:52	1
13C-1,2,3,6,7,8-HxCDF	69		26 - 123				08/31/18 11:06	09/12/18 02:52	1
13C-1,2,3,7,8,9-HxCDF	65		29 - 147				08/31/18 11:06	09/12/18 02:52	1
13C-1,2,3,7,8-PeCDD	62		25 - 181				08/31/18 11:06	09/12/18 02:52	1
13C-1,2,3,7,8-PeCDF	59		24 - 185				08/31/18 11:06	09/12/18 02:52	1
13C-2,3,4,6,7,8-HxCDF	61		28 - 136				08/31/18 11:06	09/12/18 02:52	1
13C-2,3,4,7,8-PeCDF	58		21 - 178				08/31/18 11:06	09/12/18 02:52	1
13C-2,3,7,8-TCDD	64		25 - 164				08/31/18 11:06	09/12/18 02:52	1
13C-OCDD	49		17 - 157				08/31/18 11:06	09/12/18 02:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	131		35 - 197				08/31/18 11:06	09/12/18 02:52	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0021	B	0.00089	0.00040	ug/Kg	⊗	08/31/18 11:06	09/12/18 14:34	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	71		24 - 169				08/31/18 11:06	09/12/18 14:34	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	121		35 - 197				08/31/18 11:06	09/12/18 14:34	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S065-8to10

Date Collected: 08/14/18 11:30

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-39

Matrix: Solid

Percent Solids: 60.1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.33	B	0.0041	0.0027	ug/Kg	⊗	08/31/18 11:06	09/12/18 03:38	1
1,2,3,4,6,7,8-HxCDF	0.46	B	0.0041	0.0013	ug/Kg	⊗	08/31/18 11:06	09/12/18 03:38	1
1,2,3,4,7,8,9-HxCDF	0.0048	B	0.0041	0.0023	ug/Kg	⊗	08/31/18 11:06	09/12/18 03:38	1
1,2,3,4,7,8-HxCDD	0.00098	J B	0.0041	0.00015	ug/Kg	⊗	08/31/18 11:06	09/12/18 03:38	1
1,2,3,4,7,8-HxCDF	0.0075		0.0041	0.00046	ug/Kg	⊗	08/31/18 11:06	09/12/18 03:38	1
1,2,3,6,7,8-HxCDD	0.013		0.0041	0.00015	ug/Kg	⊗	08/31/18 11:06	09/12/18 03:38	1
1,2,3,6,7,8-HxCDF	0.016	B	0.0041	0.00042	ug/Kg	⊗	08/31/18 11:06	09/12/18 03:38	1
1,2,3,7,8,9-HxCDD	0.0035	J	0.0041	0.00013	ug/Kg	⊗	08/31/18 11:06	09/12/18 03:38	1
1,2,3,7,8,9-HxCDF	0.0033	J B	0.0041	0.00032	ug/Kg	⊗	08/31/18 11:06	09/12/18 03:38	1
1,2,3,7,8-PeCDD	0.0011	J	0.0041	0.000092	ug/Kg	⊗	08/31/18 11:06	09/12/18 03:38	1
1,2,3,7,8-PeCDF	0.0011	J B	0.0041	0.00060	ug/Kg	⊗	08/31/18 11:06	09/12/18 03:38	1
2,3,4,6,7,8-HxCDF	0.0053		0.0041	0.00038	ug/Kg	⊗	08/31/18 11:06	09/12/18 03:38	1
2,3,4,7,8-PeCDF	0.0025	J	0.0041	0.00059	ug/Kg	⊗	08/31/18 11:06	09/12/18 03:38	1
2,3,7,8-TCDD	0.00018	J q	0.00081	0.000043	ug/Kg	⊗	08/31/18 11:06	09/12/18 03:38	1
OCDD	3.5	E B	0.0081	0.00086	ug/Kg	⊗	08/31/18 11:06	09/12/18 03:38	1
OCDF	0.29	B	0.0081	0.000090	ug/Kg	⊗	08/31/18 11:06	09/12/18 03:38	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	52		23 - 140				08/31/18 11:06	09/12/18 03:38	1
13C-1,2,3,4,6,7,8-HxCDF	43		28 - 143				08/31/18 11:06	09/12/18 03:38	1
13C-1,2,3,4,7,8,9-HxCDF	36		26 - 138				08/31/18 11:06	09/12/18 03:38	1
13C-1,2,3,4,7,8-HxCDD	57		32 - 141				08/31/18 11:06	09/12/18 03:38	1
13C-1,2,3,4,7,8-HxCDF	59		26 - 152				08/31/18 11:06	09/12/18 03:38	1
13C-1,2,3,6,7,8-HxCDD	56		28 - 130				08/31/18 11:06	09/12/18 03:38	1
13C-1,2,3,6,7,8-HxCDF	61		26 - 123				08/31/18 11:06	09/12/18 03:38	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147				08/31/18 11:06	09/12/18 03:38	1
13C-1,2,3,7,8-PeCDD	60		25 - 181				08/31/18 11:06	09/12/18 03:38	1
13C-1,2,3,7,8-PeCDF	58		24 - 185				08/31/18 11:06	09/12/18 03:38	1
13C-2,3,4,6,7,8-HxCDF	58		28 - 136				08/31/18 11:06	09/12/18 03:38	1
13C-2,3,4,7,8-PeCDF	58		21 - 178				08/31/18 11:06	09/12/18 03:38	1
13C-2,3,7,8-TCDD	63		25 - 164				08/31/18 11:06	09/12/18 03:38	1
13C-OCDD	45		17 - 157				08/31/18 11:06	09/12/18 03:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	121		35 - 197				08/31/18 11:06	09/12/18 03:38	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	0.00094	B	0.00081	0.00028	ug/Kg	⊗	08/31/18 11:06	09/12/18 15:12	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	71		24 - 169				08/31/18 11:06	09/12/18 15:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	113		35 - 197				08/31/18 11:06	09/12/18 15:12	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S065-12to14.3

Date Collected: 08/14/18 11:40

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-40

Matrix: Solid

Percent Solids: 60.6

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.0029	J B	0.0041	0.000069	ug/Kg	✉	08/31/18 11:06	09/12/18 04:24	1
1,2,3,4,6,7,8-HxCDF	0.0020	J B	0.0041	0.000083	ug/Kg	✉	08/31/18 11:06	09/12/18 04:24	1
1,2,3,4,7,8,9-HxCDF	0.0012	J B	0.0041	0.00014	ug/Kg	✉	08/31/18 11:06	09/12/18 04:24	1
1,2,3,4,7,8-HxCDD	0.00018	J B	0.0041	0.000046	ug/Kg	✉	08/31/18 11:06	09/12/18 04:24	1
1,2,3,4,7,8-HxCDF	0.00071	J	0.0041	0.000089	ug/Kg	✉	08/31/18 11:06	09/12/18 04:24	1
1,2,3,6,7,8-HxCDD	0.00016	J	0.0041	0.000042	ug/Kg	✉	08/31/18 11:06	09/12/18 04:24	1
1,2,3,6,7,8-HxCDF	0.00039	J B	0.0041	0.000082	ug/Kg	✉	08/31/18 11:06	09/12/18 04:24	1
1,2,3,7,8,9-HxCDD	0.00026	J	0.0041	0.000040	ug/Kg	✉	08/31/18 11:06	09/12/18 04:24	1
1,2,3,7,8,9-HxCDF	0.0026	J B	0.0041	0.000067	ug/Kg	✉	08/31/18 11:06	09/12/18 04:24	1
1,2,3,7,8-PeCDD	ND		0.0041	0.000050	ug/Kg	✉	08/31/18 11:06	09/12/18 04:24	1
1,2,3,7,8-PeCDF	0.00044	J B	0.0041	0.000045	ug/Kg	✉	08/31/18 11:06	09/12/18 04:24	1
2,3,4,6,7,8-HxCDF	0.00010	J	0.0041	0.000072	ug/Kg	✉	08/31/18 11:06	09/12/18 04:24	1
2,3,4,7,8-PeCDF	0.00022	J	0.0041	0.000042	ug/Kg	✉	08/31/18 11:06	09/12/18 04:24	1
2,3,7,8-TCDD	ND		0.00081	0.000052	ug/Kg	✉	08/31/18 11:06	09/12/18 04:24	1
2,3,7,8-TCDF	0.00046	J B	0.00081	0.000030	ug/Kg	✉	08/31/18 11:06	09/12/18 04:24	1
OCDD	0.051	B	0.0081	0.00011	ug/Kg	✉	08/31/18 11:06	09/12/18 04:24	1
OCDF	0.0066	J B	0.0081	0.000097	ug/Kg	✉	08/31/18 11:06	09/12/18 04:24	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	34			23 - 140			08/31/18 11:06	09/12/18 04:24	1
13C-1,2,3,4,6,7,8-HxCDF	27	*		28 - 143			08/31/18 11:06	09/12/18 04:24	1
13C-1,2,3,4,7,8,9-HxCDF	21	*		26 - 138			08/31/18 11:06	09/12/18 04:24	1
13C-1,2,3,4,7,8-HxCDD	43			32 - 141			08/31/18 11:06	09/12/18 04:24	1
13C-1,2,3,4,7,8-HxCDF	50			26 - 152			08/31/18 11:06	09/12/18 04:24	1
13C-1,2,3,6,7,8-HxCDD	43			28 - 130			08/31/18 11:06	09/12/18 04:24	1
13C-1,2,3,6,7,8-HxCDF	51			26 - 123			08/31/18 11:06	09/12/18 04:24	1
13C-1,2,3,7,8,9-HxCDF	46			29 - 147			08/31/18 11:06	09/12/18 04:24	1
13C-1,2,3,7,8-PeCDD	48			25 - 181			08/31/18 11:06	09/12/18 04:24	1
13C-1,2,3,7,8-PeCDF	47			24 - 185			08/31/18 11:06	09/12/18 04:24	1
13C-2,3,4,6,7,8-HxCDF	48			28 - 136			08/31/18 11:06	09/12/18 04:24	1
13C-2,3,4,7,8-PeCDD	49			21 - 178			08/31/18 11:06	09/12/18 04:24	1
13C-2,3,7,8-TCDD	51			25 - 164			08/31/18 11:06	09/12/18 04:24	1
13C-2,3,7,8-TCDF	52			24 - 169			08/31/18 11:06	09/12/18 04:24	1
13C-OCDD	26			17 - 157			08/31/18 11:06	09/12/18 04:24	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl-2,3,7,8-TCDD	121			35 - 197			08/31/18 11:06	09/12/18 04:24	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S070-0to1.1

Date Collected: 08/14/18 12:35

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-41

Matrix: Solid

Percent Solids: 59.0

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	0.096	B	0.0042	0.0013	ug/Kg	⊗	08/31/18 11:06	09/12/18 05:10	1
1,2,3,4,6,7,8-HpCDF	0.037	B	0.0042	0.00058	ug/Kg	⊗	08/31/18 11:06	09/12/18 05:10	1
1,2,3,4,7,8,9-HpCDF	0.0048	B	0.0042	0.00069	ug/Kg	⊗	08/31/18 11:06	09/12/18 05:10	1
1,2,3,4,7,8-HxCDD	0.00089	J B	0.0042	0.00013	ug/Kg	⊗	08/31/18 11:06	09/12/18 05:10	1
1,2,3,4,7,8-HxCDF	0.012		0.0042	0.00031	ug/Kg	⊗	08/31/18 11:06	09/12/18 05:10	1
1,2,3,6,7,8-HxCDD	0.0044		0.0042	0.00015	ug/Kg	⊗	08/31/18 11:06	09/12/18 05:10	1
1,2,3,6,7,8-HxCDF	0.0054	B	0.0042	0.00032	ug/Kg	⊗	08/31/18 11:06	09/12/18 05:10	1
1,2,3,7,8,9-HxCDD	0.0026	J	0.0042	0.00013	ug/Kg	⊗	08/31/18 11:06	09/12/18 05:10	1
1,2,3,7,8,9-HxCDF	0.0030	J B	0.0042	0.00020	ug/Kg	⊗	08/31/18 11:06	09/12/18 05:10	1
1,2,3,7,8-PeCDD	0.00066	J	0.0042	0.00011	ug/Kg	⊗	08/31/18 11:06	09/12/18 05:10	1
1,2,3,7,8-PeCDF	0.0079	B	0.0042	0.00025	ug/Kg	⊗	08/31/18 11:06	09/12/18 05:10	1
2,3,4,6,7,8-HxCDF	0.0011	J	0.0042	0.00025	ug/Kg	⊗	08/31/18 11:06	09/12/18 05:10	1
2,3,4,7,8-PeCDF	0.0036	J	0.0042	0.00021	ug/Kg	⊗	08/31/18 11:06	09/12/18 05:10	1
2,3,7,8-TCDD	0.00038	J q	0.00083	0.000045	ug/Kg	⊗	08/31/18 11:06	09/12/18 05:10	1
OCDD	1.3	B	0.0083	0.00039	ug/Kg	⊗	08/31/18 11:06	09/12/18 05:10	1
OCDF	0.11	B	0.0083	0.00015	ug/Kg	⊗	08/31/18 11:06	09/12/18 05:10	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	25		23 - 140				08/31/18 11:06	09/12/18 05:10	1
13C-1,2,3,4,6,7,8-HpCDF	19	*	28 - 143				08/31/18 11:06	09/12/18 05:10	1
13C-1,2,3,4,7,8,9-HpCDF	20	*	26 - 138				08/31/18 11:06	09/12/18 05:10	1
13C-1,2,3,4,7,8-HxCDD	35		32 - 141				08/31/18 11:06	09/12/18 05:10	1
13C-1,2,3,4,7,8-HxCDF	36		26 - 152				08/31/18 11:06	09/12/18 05:10	1
13C-1,2,3,6,7,8-HxCDD	33		28 - 130				08/31/18 11:06	09/12/18 05:10	1
13C-1,2,3,6,7,8-HxCDF	36		26 - 123				08/31/18 11:06	09/12/18 05:10	1
13C-1,2,3,7,8,9-HxCDF	40		29 - 147				08/31/18 11:06	09/12/18 05:10	1
13C-1,2,3,7,8-PeCDD	41		25 - 181				08/31/18 11:06	09/12/18 05:10	1
13C-1,2,3,7,8-PeCDF	43		24 - 185				08/31/18 11:06	09/12/18 05:10	1
13C-2,3,4,6,7,8-HxCDF	39		28 - 136				08/31/18 11:06	09/12/18 05:10	1
13C-2,3,4,7,8-PeCDF	50		21 - 178				08/31/18 11:06	09/12/18 05:10	1
13C-2,3,7,8-TCDD	53		25 - 164				08/31/18 11:06	09/12/18 05:10	1
13C-OCDD	17		17 - 157				08/31/18 11:06	09/12/18 05:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	123		35 - 197				08/31/18 11:06	09/12/18 05:10	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	0.0061	B	0.00083	0.00014	ug/Kg	⊗	08/31/18 11:06	09/12/18 15:50	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	74		24 - 169				08/31/18 11:06	09/12/18 15:50	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	123		35 - 197				08/31/18 11:06	09/12/18 15:50	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S070-1.1to2.4

Date Collected: 08/14/18 12:40

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-42

Matrix: Solid

Percent Solids: 82.1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.017	B	0.0030	0.000096	ug/Kg	✉	08/31/18 11:06	09/12/18 05:56	1
1,2,3,4,6,7,8-HpCDF	0.0051	B	0.0030	0.000067	ug/Kg	✉	08/31/18 11:06	09/12/18 05:56	1
1,2,3,4,7,8,9-HpCDF	0.0011	J B	0.0030	0.000079	ug/Kg	✉	08/31/18 11:06	09/12/18 05:56	1
1,2,3,4,7,8-HxCDD	0.00032	J B	0.0030	0.000061	ug/Kg	✉	08/31/18 11:06	09/12/18 05:56	1
1,2,3,4,7,8-HxCDF	0.0019	J	0.0030	0.000083	ug/Kg	✉	08/31/18 11:06	09/12/18 05:56	1
1,2,3,6,7,8-HxCDD	0.0015	J	0.0030	0.000061	ug/Kg	✉	08/31/18 11:06	09/12/18 05:56	1
1,2,3,6,7,8-HxCDF	0.00081	J B	0.0030	0.000084	ug/Kg	✉	08/31/18 11:06	09/12/18 05:56	1
1,2,3,7,8,9-HxCDD	0.0012	J	0.0030	0.000056	ug/Kg	✉	08/31/18 11:06	09/12/18 05:56	1
1,2,3,7,8,9-HxCDF	0.0016	J B	0.0030	0.000054	ug/Kg	✉	08/31/18 11:06	09/12/18 05:56	1
1,2,3,7,8-PeCDD	0.00019	J	0.0030	0.000028	ug/Kg	✉	08/31/18 11:06	09/12/18 05:56	1
1,2,3,7,8-PeCDF	0.0013	J B	0.0030	0.000054	ug/Kg	✉	08/31/18 11:06	09/12/18 05:56	1
2,3,4,6,7,8-HxCDF	0.00025	J	0.0030	0.000062	ug/Kg	✉	08/31/18 11:06	09/12/18 05:56	1
2,3,4,7,8-PeCDF	0.00057	J	0.0030	0.000053	ug/Kg	✉	08/31/18 11:06	09/12/18 05:56	1
2,3,7,8-TCDD	ND		0.00060	0.000021	ug/Kg	✉	08/31/18 11:06	09/12/18 05:56	1
OCDD	0.16	B	0.0060	0.000080	ug/Kg	✉	08/31/18 11:06	09/12/18 05:56	1
OCDF	0.015	B	0.0060	0.000045	ug/Kg	✉	08/31/18 11:06	09/12/18 05:56	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	39			23 - 140			08/31/18 11:06	09/12/18 05:56	1
13C-1,2,3,4,6,7,8-HpCDF	35			28 - 143			08/31/18 11:06	09/12/18 05:56	1
13C-1,2,3,4,7,8,9-HpCDF	38			26 - 138			08/31/18 11:06	09/12/18 05:56	1
13C-1,2,3,4,7,8-HxCDD	44			32 - 141			08/31/18 11:06	09/12/18 05:56	1
13C-1,2,3,4,7,8-HxCDF	46			26 - 152			08/31/18 11:06	09/12/18 05:56	1
13C-1,2,3,6,7,8-HxCDD	44			28 - 130			08/31/18 11:06	09/12/18 05:56	1
13C-1,2,3,6,7,8-HxCDF	46			26 - 123			08/31/18 11:06	09/12/18 05:56	1
13C-1,2,3,7,8,9-HxCDF	50			29 - 147			08/31/18 11:06	09/12/18 05:56	1
13C-1,2,3,7,8-PeCDD	47			25 - 181			08/31/18 11:06	09/12/18 05:56	1
13C-1,2,3,7,8-PeCDF	47			24 - 185			08/31/18 11:06	09/12/18 05:56	1
13C-2,3,4,6,7,8-HxCDF	50			28 - 136			08/31/18 11:06	09/12/18 05:56	1
13C-2,3,4,7,8-PeCDF	51			21 - 178			08/31/18 11:06	09/12/18 05:56	1
13C-2,3,7,8-TCDD	56			25 - 164			08/31/18 11:06	09/12/18 05:56	1
13C-OCDD	28			17 - 157			08/31/18 11:06	09/12/18 05:56	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	122			35 - 197			08/31/18 11:06	09/12/18 05:56	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	0.00095	B	0.00060	0.000083	ug/Kg	✉	08/31/18 11:06	09/12/18 16:27	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	69			24 - 169			08/31/18 11:06	09/12/18 16:27	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	122			35 - 197			08/31/18 11:06	09/12/18 16:27	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S070-2.4to4.4

Date Collected: 08/14/18 12:45

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-43

Matrix: Solid

Percent Solids: 61.6

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	0.27	B	0.040	0.0011	ug/Kg	✉	08/31/18 11:06	09/12/18 06:42	10
1,2,3,4,6,7,8-HpCDF	0.045	B	0.040	0.00057	ug/Kg	✉	08/31/18 11:06	09/12/18 06:42	10
1,2,3,4,7,8,9-HpCDF	0.0066	J B	0.040	0.00066	ug/Kg	✉	08/31/18 11:06	09/12/18 06:42	10
1,2,3,4,7,8-HxCDD	0.0026	J B	0.040	0.00062	ug/Kg	✉	08/31/18 11:06	09/12/18 06:42	10
1,2,3,4,7,8-HxCDF	0.023	J	0.040	0.00082	ug/Kg	✉	08/31/18 11:06	09/12/18 06:42	10
1,2,3,6,7,8-HxCDD	0.0082	J q	0.040	0.00063	ug/Kg	✉	08/31/18 11:06	09/12/18 06:42	10
1,2,3,6,7,8-HxCDF	0.0072	J B	0.040	0.00082	ug/Kg	✉	08/31/18 11:06	09/12/18 06:42	10
1,2,3,7,8,9-HxCDD	0.0049	J	0.040	0.00057	ug/Kg	✉	08/31/18 11:06	09/12/18 06:42	10
1,2,3,7,8,9-HxCDF	0.0032	J B	0.040	0.00061	ug/Kg	✉	08/31/18 11:06	09/12/18 06:42	10
1,2,3,7,8-PeCDD	0.00064	J q	0.040	0.00023	ug/Kg	✉	08/31/18 11:06	09/12/18 06:42	10
1,2,3,7,8-PeCDF	0.020	J B	0.040	0.00041	ug/Kg	✉	08/31/18 11:06	09/12/18 06:42	10
2,3,4,6,7,8-HxCDF	0.0021	J	0.040	0.00062	ug/Kg	✉	08/31/18 11:06	09/12/18 06:42	10
2,3,4,7,8-PeCDF	0.0084	J	0.040	0.00041	ug/Kg	✉	08/31/18 11:06	09/12/18 06:42	10
2,3,7,8-TCDD	0.00045	J	0.0080	0.00022	ug/Kg	✉	08/31/18 11:06	09/12/18 06:42	10
OCDD	2.0	B	0.080	0.00075	ug/Kg	✉	08/31/18 11:06	09/12/18 06:42	10
OCDF	0.12	B	0.080	0.00039	ug/Kg	✉	08/31/18 11:06	09/12/18 06:42	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	47		23 - 140				08/31/18 11:06	09/12/18 06:42	10
13C-1,2,3,4,6,7,8-HpCDF	43		28 - 143				08/31/18 11:06	09/12/18 06:42	10
13C-1,2,3,4,7,8,9-HpCDF	50		26 - 138				08/31/18 11:06	09/12/18 06:42	10
13C-1,2,3,4,7,8-HxCDD	55		32 - 141				08/31/18 11:06	09/12/18 06:42	10
13C-1,2,3,4,7,8-HxCDF	58		26 - 152				08/31/18 11:06	09/12/18 06:42	10
13C-1,2,3,6,7,8-HxCDD	50		28 - 130				08/31/18 11:06	09/12/18 06:42	10
13C-1,2,3,6,7,8-HxCDF	50		26 - 123				08/31/18 11:06	09/12/18 06:42	10
13C-1,2,3,7,8,9-HxCDF	49		29 - 147				08/31/18 11:06	09/12/18 06:42	10
13C-1,2,3,7,8-PeCDD	52		25 - 181				08/31/18 11:06	09/12/18 06:42	10
13C-1,2,3,7,8-PeCDF	53		24 - 185				08/31/18 11:06	09/12/18 06:42	10
13C-2,3,4,6,7,8-HxCDF	55		28 - 136				08/31/18 11:06	09/12/18 06:42	10
13C-2,3,4,7,8-PeCDF	56		21 - 178				08/31/18 11:06	09/12/18 06:42	10
13C-2,3,7,8-TCDD	58		25 - 164				08/31/18 11:06	09/12/18 06:42	10
13C-OCDD	36		17 - 157				08/31/18 11:06	09/12/18 06:42	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	126		35 - 197				08/31/18 11:06	09/12/18 06:42	10

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	0.0080	0.00086	ug/Kg	✉	08/31/18 11:06	09/12/18 17:05	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	72		24 - 169				08/31/18 11:06	09/12/18 17:05	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	117		35 - 197				08/31/18 11:06	09/12/18 17:05	10

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S070-4.4to6.4

Date Collected: 08/14/18 12:50

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-44

Matrix: Solid

Percent Solids: 61.0

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	0.21	B	0.0040	0.00063	ug/Kg	✉	08/31/18 11:06	09/12/18 07:28	1
1,2,3,4,6,7,8-HpCDF	0.15	B	0.0040	0.00054	ug/Kg	✉	08/31/18 11:06	09/12/18 07:28	1
1,2,3,4,7,8,9-HpCDF	0.0039	J B	0.0040	0.0010	ug/Kg	✉	08/31/18 11:06	09/12/18 07:28	1
1,2,3,4,7,8-HxCDD	0.00080	J B	0.0040	0.00015	ug/Kg	✉	08/31/18 11:06	09/12/18 07:28	1
1,2,3,4,7,8-HxCDF	0.0073		0.0040	0.00035	ug/Kg	✉	08/31/18 11:06	09/12/18 07:28	1
1,2,3,6,7,8-HxCDD	0.0079		0.0040	0.00015	ug/Kg	✉	08/31/18 11:06	09/12/18 07:28	1
1,2,3,6,7,8-HxCDF	0.0094	B	0.0040	0.00033	ug/Kg	✉	08/31/18 11:06	09/12/18 07:28	1
1,2,3,7,8,9-HxCDD	0.0026	J	0.0040	0.00014	ug/Kg	✉	08/31/18 11:06	09/12/18 07:28	1
1,2,3,7,8,9-HxCDF	0.0036	J B	0.0040	0.00025	ug/Kg	✉	08/31/18 11:06	09/12/18 07:28	1
1,2,3,7,8-PeCDD	0.00079	J	0.0040	0.000082	ug/Kg	✉	08/31/18 11:06	09/12/18 07:28	1
1,2,3,7,8-PeCDF	0.0076	B	0.0040	0.00042	ug/Kg	✉	08/31/18 11:06	09/12/18 07:28	1
2,3,4,6,7,8-HxCDF	0.0028	J	0.0040	0.00028	ug/Kg	✉	08/31/18 11:06	09/12/18 07:28	1
2,3,4,7,8-PeCDF	0.0051		0.0040	0.00037	ug/Kg	✉	08/31/18 11:06	09/12/18 07:28	1
2,3,7,8-TCDD	0.00027	J q	0.00081	0.000043	ug/Kg	✉	08/31/18 11:06	09/12/18 07:28	1
OCDD	2.5	B	0.0081	0.00055	ug/Kg	✉	08/31/18 11:06	09/12/18 07:28	1
OCDF	0.15	B	0.0081	0.000082	ug/Kg	✉	08/31/18 11:06	09/12/18 07:28	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	43		23 - 140				08/31/18 11:06	09/12/18 07:28	1
13C-1,2,3,4,6,7,8-HpCDF	38		28 - 143				08/31/18 11:06	09/12/18 07:28	1
13C-1,2,3,4,7,8,9-HpCDF	30		26 - 138				08/31/18 11:06	09/12/18 07:28	1
13C-1,2,3,4,7,8-HxCDD	49		32 - 141				08/31/18 11:06	09/12/18 07:28	1
13C-1,2,3,4,7,8-HxCDF	52		26 - 152				08/31/18 11:06	09/12/18 07:28	1
13C-1,2,3,6,7,8-HxCDD	47		28 - 130				08/31/18 11:06	09/12/18 07:28	1
13C-1,2,3,6,7,8-HxCDF	53		26 - 123				08/31/18 11:06	09/12/18 07:28	1
13C-1,2,3,7,8,9-HxCDF	53		29 - 147				08/31/18 11:06	09/12/18 07:28	1
13C-1,2,3,7,8-PeCDD	49		25 - 181				08/31/18 11:06	09/12/18 07:28	1
13C-1,2,3,7,8-PeCDF	50		24 - 185				08/31/18 11:06	09/12/18 07:28	1
13C-2,3,4,6,7,8-HxCDF	51		28 - 136				08/31/18 11:06	09/12/18 07:28	1
13C-2,3,4,7,8-PeCDF	51		21 - 178				08/31/18 11:06	09/12/18 07:28	1
13C-2,3,7,8-TCDD	57		25 - 164				08/31/18 11:06	09/12/18 07:28	1
13C-OCDD	33		17 - 157				08/31/18 11:06	09/12/18 07:28	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	125		35 - 197				08/31/18 11:06	09/12/18 07:28	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	0.00081	0.00036	ug/Kg	✉	08/31/18 11:06	09/12/18 17:43	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	67		24 - 169				08/31/18 11:06	09/12/18 17:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	117		35 - 197				08/31/18 11:06	09/12/18 17:43	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S070-6.4to8.4

Date Collected: 08/14/18 12:55

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-45

Matrix: Solid

Percent Solids: 62.4

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.16	B	0.0040	0.00064	ug/Kg	⊗	08/31/18 11:06	09/12/18 08:14	1
1,2,3,4,6,7,8-HxCDF	0.15	B	0.0040	0.00050	ug/Kg	⊗	08/31/18 11:06	09/12/18 08:14	1
1,2,3,4,7,8,9-HxCDF	0.0027	J B	0.0040	0.00082	ug/Kg	⊗	08/31/18 11:06	09/12/18 08:14	1
1,2,3,4,7,8-HxCDD	0.00081	J B	0.0040	0.00013	ug/Kg	⊗	08/31/18 11:06	09/12/18 08:14	1
1,2,3,4,7,8-HxCDF	0.0036	J	0.0040	0.00033	ug/Kg	⊗	08/31/18 11:06	09/12/18 08:14	1
1,2,3,6,7,8-HxCDD	0.0076		0.0040	0.00014	ug/Kg	⊗	08/31/18 11:06	09/12/18 08:14	1
1,2,3,6,7,8-HxCDF	0.0073	B	0.0040	0.00029	ug/Kg	⊗	08/31/18 11:06	09/12/18 08:14	1
1,2,3,7,8,9-HxCDD	0.0023	J	0.0040	0.00013	ug/Kg	⊗	08/31/18 11:06	09/12/18 08:14	1
1,2,3,7,8,9-HxCDF	0.0023	J B	0.0040	0.00024	ug/Kg	⊗	08/31/18 11:06	09/12/18 08:14	1
1,2,3,7,8-PeCDD	0.00090	J	0.0040	0.000083	ug/Kg	⊗	08/31/18 11:06	09/12/18 08:14	1
1,2,3,7,8-PeCDF	0.00078	J B	0.0040	0.00042	ug/Kg	⊗	08/31/18 11:06	09/12/18 08:14	1
2,3,4,6,7,8-HxCDF	0.0027	J	0.0040	0.00027	ug/Kg	⊗	08/31/18 11:06	09/12/18 08:14	1
2,3,4,7,8-PeCDF	0.0015	J	0.0040	0.00040	ug/Kg	⊗	08/31/18 11:06	09/12/18 08:14	1
2,3,7,8-TCDD	0.00025	J	0.00080	0.000076	ug/Kg	⊗	08/31/18 11:06	09/12/18 08:14	1
OCDD	2.3	B	0.0080	0.00055	ug/Kg	⊗	08/31/18 11:06	09/12/18 08:14	1
OCDF	0.12	B	0.0080	0.000087	ug/Kg	⊗	08/31/18 11:06	09/12/18 08:14	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	53			23 - 140			08/31/18 11:06	09/12/18 08:14	1
13C-1,2,3,4,6,7,8-HxCDF	45			28 - 143			08/31/18 11:06	09/12/18 08:14	1
13C-1,2,3,4,7,8,9-HxCDF	37			26 - 138			08/31/18 11:06	09/12/18 08:14	1
13C-1,2,3,4,7,8-HxCDD	58			32 - 141			08/31/18 11:06	09/12/18 08:14	1
13C-1,2,3,4,7,8-HxCDF	63			26 - 152			08/31/18 11:06	09/12/18 08:14	1
13C-1,2,3,6,7,8-HxCDD	55			28 - 130			08/31/18 11:06	09/12/18 08:14	1
13C-1,2,3,6,7,8-HxCDF	67			26 - 123			08/31/18 11:06	09/12/18 08:14	1
13C-1,2,3,7,8,9-HxCDF	61			29 - 147			08/31/18 11:06	09/12/18 08:14	1
13C-1,2,3,7,8-PeCDD	62			25 - 181			08/31/18 11:06	09/12/18 08:14	1
13C-1,2,3,7,8-PeCDF	63			24 - 185			08/31/18 11:06	09/12/18 08:14	1
13C-2,3,4,6,7,8-HxCDF	61			28 - 136			08/31/18 11:06	09/12/18 08:14	1
13C-2,3,4,7,8-PeCDF	64			21 - 178			08/31/18 11:06	09/12/18 08:14	1
13C-2,3,7,8-TCDD	66			25 - 164			08/31/18 11:06	09/12/18 08:14	1
13C-OCDD	42			17 - 157			08/31/18 11:06	09/12/18 08:14	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	129			35 - 197			08/31/18 11:06	09/12/18 08:14	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	0.00094	B	0.00080	0.00030	ug/Kg	⊗	08/31/18 11:06	09/12/18 18:21	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	76			24 - 169			08/31/18 11:06	09/12/18 18:21	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	118			35 - 197			08/31/18 11:06	09/12/18 18:21	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S070-8.4to10.4

Date Collected: 08/14/18 13:10

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-46

Matrix: Solid

Percent Solids: 64.2

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	0.0068	J B	0.039	0.00059	ug/Kg	✉	08/31/18 11:06	09/12/18 09:00	10
1,2,3,4,6,7,8-HpCDF	0.0072	J B	0.039	0.00057	ug/Kg	✉	08/31/18 11:06	09/12/18 09:00	10
1,2,3,4,7,8,9-HpCDF	ND		0.039	0.00064	ug/Kg	✉	08/31/18 11:06	09/12/18 09:00	10
1,2,3,4,7,8-HxCDD	ND		0.039	0.00056	ug/Kg	✉	08/31/18 11:06	09/12/18 09:00	10
1,2,3,4,7,8-HxCDF	ND		0.039	0.00062	ug/Kg	✉	08/31/18 11:06	09/12/18 09:00	10
1,2,3,6,7,8-HxCDD	ND		0.039	0.00056	ug/Kg	✉	08/31/18 11:06	09/12/18 09:00	10
1,2,3,6,7,8-HxCDF	ND		0.039	0.00059	ug/Kg	✉	08/31/18 11:06	09/12/18 09:00	10
1,2,3,7,8,9-HxCDD	ND		0.039	0.00051	ug/Kg	✉	08/31/18 11:06	09/12/18 09:00	10
1,2,3,7,8,9-HxCDF	0.0026	J B q	0.039	0.00043	ug/Kg	✉	08/31/18 11:06	09/12/18 09:00	10
1,2,3,7,8-PeCDD	ND		0.039	0.00040	ug/Kg	✉	08/31/18 11:06	09/12/18 09:00	10
1,2,3,7,8-PeCDF	ND		0.039	0.00034	ug/Kg	✉	08/31/18 11:06	09/12/18 09:00	10
2,3,4,6,7,8-HxCDF	ND		0.039	0.00047	ug/Kg	✉	08/31/18 11:06	09/12/18 09:00	10
2,3,4,7,8-PeCDF	ND		0.039	0.00034	ug/Kg	✉	08/31/18 11:06	09/12/18 09:00	10
2,3,7,8-TCDD	ND		0.0078	0.00065	ug/Kg	✉	08/31/18 11:06	09/12/18 09:00	10
2,3,7,8-TCDF	0.00047	J B	0.0078	0.00024	ug/Kg	✉	08/31/18 11:06	09/12/18 09:00	10
OCDD	0.087	B	0.078	0.00073	ug/Kg	✉	08/31/18 11:06	09/12/18 09:00	10
OCDF	0.0086	J B	0.078	0.00092	ug/Kg	✉	08/31/18 11:06	09/12/18 09:00	10
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	35			23 - 140			08/31/18 11:06	09/12/18 09:00	10
13C-1,2,3,4,6,7,8-HpCDF	30			28 - 143			08/31/18 11:06	09/12/18 09:00	10
13C-1,2,3,4,7,8,9-HpCDF	34			26 - 138			08/31/18 11:06	09/12/18 09:00	10
13C-1,2,3,4,7,8-HxCDD	40			32 - 141			08/31/18 11:06	09/12/18 09:00	10
13C-1,2,3,4,7,8-HxCDF	46			26 - 152			08/31/18 11:06	09/12/18 09:00	10
13C-1,2,3,6,7,8-HxCDD	40			28 - 130			08/31/18 11:06	09/12/18 09:00	10
13C-1,2,3,6,7,8-HxCDF	48			26 - 123			08/31/18 11:06	09/12/18 09:00	10
13C-1,2,3,7,8,9-HxCDF	49			29 - 147			08/31/18 11:06	09/12/18 09:00	10
13C-1,2,3,7,8-PeCDD	45			25 - 181			08/31/18 11:06	09/12/18 09:00	10
13C-1,2,3,7,8-PeCDF	47			24 - 185			08/31/18 11:06	09/12/18 09:00	10
13C-2,3,4,6,7,8-HxCDF	48			28 - 136			08/31/18 11:06	09/12/18 09:00	10
13C-2,3,4,7,8-PeCDF	49			21 - 178			08/31/18 11:06	09/12/18 09:00	10
13C-2,3,7,8-TCDD	53			25 - 164			08/31/18 11:06	09/12/18 09:00	10
13C-2,3,7,8-TCDF	57			24 - 169			08/31/18 11:06	09/12/18 09:00	10
13C-OCDD	26			17 - 157			08/31/18 11:06	09/12/18 09:00	10
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	117			35 - 197			08/31/18 11:06	09/12/18 09:00	10

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S065-10to12

Date Collected: 08/14/18 11:35

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-47

Matrix: Solid

Percent Solids: 62.3

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.026	B	0.0041	0.00017	ug/Kg	✉	08/31/18 11:06	09/12/18 09:46	1
1,2,3,4,6,7,8-HpCDF	0.014	B	0.0041	0.00017	ug/Kg	✉	08/31/18 11:06	09/12/18 09:46	1
1,2,3,4,7,8,9-HpCDF	0.0013	J B	0.0041	0.00027	ug/Kg	✉	08/31/18 11:06	09/12/18 09:46	1
1,2,3,4,7,8-HxCDD	0.00057	J B	0.0041	0.000073	ug/Kg	✉	08/31/18 11:06	09/12/18 09:46	1
1,2,3,4,7,8-HxCDF	0.0018	J	0.0041	0.00019	ug/Kg	✉	08/31/18 11:06	09/12/18 09:46	1
1,2,3,6,7,8-HxCDD	0.0027	J	0.0041	0.000070	ug/Kg	✉	08/31/18 11:06	09/12/18 09:46	1
1,2,3,6,7,8-HxCDF	0.0023	J B	0.0041	0.00018	ug/Kg	✉	08/31/18 11:06	09/12/18 09:46	1
1,2,3,7,8,9-HxCDD	0.0013	J	0.0041	0.000066	ug/Kg	✉	08/31/18 11:06	09/12/18 09:46	1
1,2,3,7,8,9-HxCDF	0.0021	J B	0.0041	0.00013	ug/Kg	✉	08/31/18 11:06	09/12/18 09:46	1
1,2,3,7,8-PeCDD	0.0011	J	0.0041	0.000086	ug/Kg	✉	08/31/18 11:06	09/12/18 09:46	1
1,2,3,7,8-PeCDF	ND		0.0041	0.00039	ug/Kg	✉	08/31/18 11:06	09/12/18 09:46	1
2,3,4,6,7,8-HxCDF	0.00097	J	0.0041	0.00014	ug/Kg	✉	08/31/18 11:06	09/12/18 09:46	1
2,3,4,7,8-PeCDF	0.00089	J	0.0041	0.00034	ug/Kg	✉	08/31/18 11:06	09/12/18 09:46	1
2,3,7,8-TCDD	0.00036	J q	0.00081	0.000072	ug/Kg	✉	08/31/18 11:06	09/12/18 09:46	1
OCDD	0.58	B	0.0081	0.00019	ug/Kg	✉	08/31/18 11:06	09/12/18 09:46	1
OCDF	0.013	B	0.0081	0.00012	ug/Kg	✉	08/31/18 11:06	09/12/18 09:46	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	38		23 - 140				08/31/18 11:06	09/12/18 09:46	1
13C-1,2,3,4,6,7,8-HpCDF	31		28 - 143				08/31/18 11:06	09/12/18 09:46	1
13C-1,2,3,4,7,8,9-HpCDF	26		26 - 138				08/31/18 11:06	09/12/18 09:46	1
13C-1,2,3,4,7,8-HxCDD	46		32 - 141				08/31/18 11:06	09/12/18 09:46	1
13C-1,2,3,4,7,8-HxCDF	50		26 - 152				08/31/18 11:06	09/12/18 09:46	1
13C-1,2,3,6,7,8-HxCDD	45		28 - 130				08/31/18 11:06	09/12/18 09:46	1
13C-1,2,3,6,7,8-HxCDF	49		26 - 123				08/31/18 11:06	09/12/18 09:46	1
13C-1,2,3,7,8,9-HxCDF	49		29 - 147				08/31/18 11:06	09/12/18 09:46	1
13C-1,2,3,7,8-PeCDD	49		25 - 181				08/31/18 11:06	09/12/18 09:46	1
13C-1,2,3,7,8-PeCDF	47		24 - 185				08/31/18 11:06	09/12/18 09:46	1
13C-2,3,4,6,7,8-HxCDF	50		28 - 136				08/31/18 11:06	09/12/18 09:46	1
13C-2,3,4,7,8-PeCDF	52		21 - 178				08/31/18 11:06	09/12/18 09:46	1
13C-2,3,7,8-TCDD	56		25 - 164				08/31/18 11:06	09/12/18 09:46	1
13C-OCDD	28		17 - 157				08/31/18 11:06	09/12/18 09:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	122		35 - 197				08/31/18 11:06	09/12/18 09:46	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	0.00049	J B	0.00081	0.00040	ug/Kg	✉	08/31/18 11:06	09/12/18 18:59	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	66		24 - 169				08/31/18 11:06	09/12/18 18:59	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	110		35 - 197				08/31/18 11:06	09/12/18 18:59	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S070-10.4to12.6

Date Collected: 08/14/18 13:10

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-48

Matrix: Solid

Percent Solids: 63.4

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	0.0023	J B	0.0039	0.000044	ug/Kg	✉	09/04/18 09:00	09/08/18 15:40	1
1,2,3,4,6,7,8-HxCDF	0.00077	J B	0.0039	0.000055	ug/Kg	✉	09/04/18 09:00	09/08/18 15:40	1
1,2,3,4,7,8,9-HxCDF	0.00087	J B	0.0039	0.000061	ug/Kg	✉	09/04/18 09:00	09/08/18 15:40	1
1,2,3,4,7,8-HxCDD	0.00020	J B q	0.0039	0.000024	ug/Kg	✉	09/04/18 09:00	09/08/18 15:40	1
1,2,3,4,7,8-HxCDF	0.00026	J B	0.0039	0.000036	ug/Kg	✉	09/04/18 09:00	09/08/18 15:40	1
1,2,3,6,7,8-HxCDD	0.00023	J	0.0039	0.000022	ug/Kg	✉	09/04/18 09:00	09/08/18 15:40	1
1,2,3,6,7,8-HxCDF	0.00027	J B	0.0039	0.000038	ug/Kg	✉	09/04/18 09:00	09/08/18 15:40	1
1,2,3,7,8,9-HxCDD	0.00044	J B	0.0039	0.000021	ug/Kg	✉	09/04/18 09:00	09/08/18 15:40	1
1,2,3,7,8,9-HxCDF	0.0025	J B	0.0039	0.000041	ug/Kg	✉	09/04/18 09:00	09/08/18 15:40	1
1,2,3,7,8-PeCDD	ND		0.0039	0.000046	ug/Kg	✉	09/04/18 09:00	09/08/18 15:40	1
1,2,3,7,8-PeCDF	0.00041	J B	0.0039	0.000031	ug/Kg	✉	09/04/18 09:00	09/08/18 15:40	1
2,3,4,6,7,8-HxCDF	0.000093	J	0.0039	0.000041	ug/Kg	✉	09/04/18 09:00	09/08/18 15:40	1
2,3,4,7,8-PeCDF	0.000084	J q	0.0039	0.000031	ug/Kg	✉	09/04/18 09:00	09/08/18 15:40	1
2,3,7,8-TCDD	ND		0.00079	0.000021	ug/Kg	✉	09/04/18 09:00	09/08/18 15:40	1
2,3,7,8-TCDF	0.00038	J B	0.00079	0.000023	ug/Kg	✉	09/04/18 09:00	09/08/18 15:40	1
OCDD	0.026	B	0.0079	0.000053	ug/Kg	✉	09/04/18 09:00	09/08/18 15:40	1
OCDF	0.00090	J B q	0.0079	0.000042	ug/Kg	✉	09/04/18 09:00	09/08/18 15:40	1
Isotope Dilution	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	37			23 - 140			09/04/18 09:00	09/08/18 15:40	1
13C-1,2,3,4,6,7,8-HxCDF	32			28 - 143			09/04/18 09:00	09/08/18 15:40	1
13C-1,2,3,4,7,8,9-HxCDF	36			26 - 138			09/04/18 09:00	09/08/18 15:40	1
13C-1,2,3,4,7,8-HxCDD	47			32 - 141			09/04/18 09:00	09/08/18 15:40	1
13C-1,2,3,4,7,8-HxCDF	55			26 - 152			09/04/18 09:00	09/08/18 15:40	1
13C-1,2,3,6,7,8-HxCDD	40			28 - 130			09/04/18 09:00	09/08/18 15:40	1
13C-1,2,3,6,7,8-HxCDF	52			26 - 123			09/04/18 09:00	09/08/18 15:40	1
13C-1,2,3,7,8,9-HxCDF	37			29 - 147			09/04/18 09:00	09/08/18 15:40	1
13C-1,2,3,7,8-PeCDD	50			25 - 181			09/04/18 09:00	09/08/18 15:40	1
13C-1,2,3,7,8-PeCDF	49			24 - 185			09/04/18 09:00	09/08/18 15:40	1
13C-2,3,4,6,7,8-HxCDF	43			28 - 136			09/04/18 09:00	09/08/18 15:40	1
13C-2,3,4,7,8-PeCDF	51			21 - 178			09/04/18 09:00	09/08/18 15:40	1
13C-2,3,7,8-TCDD	55			25 - 164			09/04/18 09:00	09/08/18 15:40	1
13C-2,3,7,8-TCDF	52			24 - 169			09/04/18 09:00	09/08/18 15:40	1
13C-OCDD	30			17 - 157			09/04/18 09:00	09/08/18 15:40	1
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
37Cl-2,3,7,8-TCDD	141			35 - 197			09/04/18 09:00	09/08/18 15:40	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-RB-SS-180814-1040

Lab Sample ID: 580-79626-49

Matrix: Water

Date Collected: 08/14/18 10:40

Date Received: 08/15/18 16:20

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	1.0	J B	52	0.23	pg/L		08/20/18 08:53	08/22/18 21:17	1
1,2,3,4,6,7,8-HxCDF	0.79	J q B	52	0.38	pg/L		08/20/18 08:53	08/22/18 21:17	1
1,2,3,4,7,8,9-HxCDF	ND		52	0.48	pg/L		08/20/18 08:53	08/22/18 21:17	1
1,2,3,4,7,8-HxCDD	1.9	J B	52	0.42	pg/L		08/20/18 08:53	08/22/18 21:17	1
1,2,3,4,7,8-HxCDF	ND		52	0.53	pg/L		08/20/18 08:53	08/22/18 21:17	1
1,2,3,6,7,8-HxCDD	ND		52	0.39	pg/L		08/20/18 08:53	08/22/18 21:17	1
1,2,3,6,7,8-HxCDF	ND		52	0.52	pg/L		08/20/18 08:53	08/22/18 21:17	1
1,2,3,7,8,9-HxCDD	0.75	J	52	0.37	pg/L		08/20/18 08:53	08/22/18 21:17	1
1,2,3,7,8,9-HxCDF	1.4	J B	52	0.31	pg/L		08/20/18 08:53	08/22/18 21:17	1
1,2,3,7,8-PeCDD	0.95	J	52	0.39	pg/L		08/20/18 08:53	08/22/18 21:17	1
1,2,3,7,8-PeCDF	ND		52	0.33	pg/L		08/20/18 08:53	08/22/18 21:17	1
2,3,4,6,7,8-HxCDF	ND		52	0.41	pg/L		08/20/18 08:53	08/22/18 21:17	1
2,3,4,7,8-PeCDF	0.65	J q	52	0.36	pg/L		08/20/18 08:53	08/22/18 21:17	1
2,3,7,8-TCDD	ND		10	0.39	pg/L		08/20/18 08:53	08/22/18 21:17	1
2,3,7,8-TCDF	0.65	J q	10	0.33	pg/L		08/20/18 08:53	08/22/18 21:17	1
OCDD	5.8	J B	100	0.31	pg/L		08/20/18 08:53	08/22/18 21:17	1
OCDF	1.9	J B	100	0.54	pg/L		08/20/18 08:53	08/22/18 21:17	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	62		23 - 140				08/20/18 08:53	08/22/18 21:17	1
13C-1,2,3,4,6,7,8-HxCDF	57		28 - 143				08/20/18 08:53	08/22/18 21:17	1
13C-1,2,3,4,7,8,9-HxCDF	55		26 - 138				08/20/18 08:53	08/22/18 21:17	1
13C-1,2,3,4,7,8-HxCDD	55		32 - 141				08/20/18 08:53	08/22/18 21:17	1
13C-1,2,3,4,7,8-HxCDF	56		26 - 152				08/20/18 08:53	08/22/18 21:17	1
13C-1,2,3,6,7,8-HxCDD	60		28 - 130				08/20/18 08:53	08/22/18 21:17	1
13C-1,2,3,6,7,8-HxCDF	59		26 - 123				08/20/18 08:53	08/22/18 21:17	1
13C-1,2,3,7,8,9-HxCDF	58		29 - 147				08/20/18 08:53	08/22/18 21:17	1
13C-1,2,3,7,8-PeCDD	58		25 - 181				08/20/18 08:53	08/22/18 21:17	1
13C-1,2,3,7,8-PeCDF	54		24 - 185				08/20/18 08:53	08/22/18 21:17	1
13C-2,3,4,6,7,8-HxCDF	57		28 - 136				08/20/18 08:53	08/22/18 21:17	1
13C-2,3,4,7,8-PeCDF	53		21 - 178				08/20/18 08:53	08/22/18 21:17	1
13C-2,3,7,8-TCDD	63		25 - 164				08/20/18 08:53	08/22/18 21:17	1
13C-2,3,7,8-TCDF	58		24 - 169				08/20/18 08:53	08/22/18 21:17	1
13C-OCDD	52		17 - 157				08/20/18 08:53	08/22/18 21:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	101		35 - 197				08/20/18 08:53	08/22/18 21:17	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-RB-SS-180815-0730

Lab Sample ID: 580-79626-50

Matrix: Water

Date Collected: 08/15/18 07:30

Date Received: 08/15/18 16:20

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HxCDD	1.8	J B	51	0.12	pg/L	08/28/18 08:43	09/01/18 08:22		1
1,2,3,4,6,7,8-HxCDF	0.79	J q B	51	0.20	pg/L	08/28/18 08:43	09/01/18 08:22		1
1,2,3,4,7,8,9-HxCDF	1.4	J q B	51	0.23	pg/L	08/28/18 08:43	09/01/18 08:22		1
1,2,3,4,7,8-HxCDD	1.1	J q B	51	0.26	pg/L	08/28/18 08:43	09/01/18 08:22		1
1,2,3,4,7,8-HxCDF	ND		51	0.27	pg/L	08/28/18 08:43	09/01/18 08:22		1
1,2,3,6,7,8-HxCDD	ND		51	0.24	pg/L	08/28/18 08:43	09/01/18 08:22		1
1,2,3,6,7,8-HxCDF	ND		51	0.26	pg/L	08/28/18 08:43	09/01/18 08:22		1
1,2,3,7,8,9-HxCDD	ND		51	0.23	pg/L	08/28/18 08:43	09/01/18 08:22		1
1,2,3,7,8,9-HxCDF	1.9	J B	51	0.16	pg/L	08/28/18 08:43	09/01/18 08:22		1
1,2,3,7,8-PeCDD	ND		51	0.18	pg/L	08/28/18 08:43	09/01/18 08:22		1
1,2,3,7,8-PeCDF	0.45	J B	51	0.14	pg/L	08/28/18 08:43	09/01/18 08:22		1
2,3,4,6,7,8-HxCDF	ND		51	0.27	pg/L	08/28/18 08:43	09/01/18 08:22		1
2,3,4,7,8-PeCDD	ND		51	0.16	pg/L	08/28/18 08:43	09/01/18 08:22		1
2,3,7,8-TCDD	ND		10	0.14	pg/L	08/28/18 08:43	09/01/18 08:22		1
2,3,7,8-TCDF	0.46	J B	10	0.073	pg/L	08/28/18 08:43	09/01/18 08:22		1
OCDD	16	J B	100	0.23	pg/L	08/28/18 08:43	09/01/18 08:22		1
OCDF	2.8	J B	100	0.15	pg/L	08/28/18 08:43	09/01/18 08:22		1
Isotope Dilution	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
13C-1,2,3,4,6,7,8-HxCDD	91		23 - 140			08/28/18 08:43	09/01/18 08:22		1
13C-1,2,3,4,6,7,8-HxCDF	85		28 - 143			08/28/18 08:43	09/01/18 08:22		1
13C-1,2,3,4,7,8,9-HxCDF	86		26 - 138			08/28/18 08:43	09/01/18 08:22		1
13C-1,2,3,4,7,8-HxCDD	72		32 - 141			08/28/18 08:43	09/01/18 08:22		1
13C-1,2,3,4,7,8-HxCDF	73		26 - 152			08/28/18 08:43	09/01/18 08:22		1
13C-1,2,3,6,7,8-HxCDD	77		28 - 130			08/28/18 08:43	09/01/18 08:22		1
13C-1,2,3,6,7,8-HxCDF	78		26 - 123			08/28/18 08:43	09/01/18 08:22		1
13C-1,2,3,7,8,9-HxCDF	77		29 - 147			08/28/18 08:43	09/01/18 08:22		1
13C-1,2,3,7,8-PeCDD	74		25 - 181			08/28/18 08:43	09/01/18 08:22		1
13C-1,2,3,7,8-PeCDF	70		24 - 185			08/28/18 08:43	09/01/18 08:22		1
13C-2,3,4,6,7,8-HxCDF	75		28 - 136			08/28/18 08:43	09/01/18 08:22		1
13C-2,3,4,7,8-PeCDD	69		21 - 178			08/28/18 08:43	09/01/18 08:22		1
13C-2,3,7,8-TCDD	81		25 - 164			08/28/18 08:43	09/01/18 08:22		1
13C-2,3,7,8-TCDF	72		24 - 169			08/28/18 08:43	09/01/18 08:22		1
13C-OCDD	84		17 - 157			08/28/18 08:43	09/01/18 08:22		1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
37Cl4-2,3,7,8-TCDD	120		35 - 197			08/28/18 08:43	09/01/18 08:22		1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-RB-SS-180815-1340

Lab Sample ID: 580-79626-51

Matrix: Water

Date Collected: 08/15/18 13:40

Date Received: 08/15/18 16:20

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	1.4	J B	51	0.12	pg/L	08/28/18 08:43	09/01/18 09:08		1
1,2,3,4,6,7,8-HpCDF	0.47	J q B	51	0.18	pg/L	08/28/18 08:43	09/01/18 09:08		1
1,2,3,4,7,8,9-HpCDF	0.95	J q B	51	0.21	pg/L	08/28/18 08:43	09/01/18 09:08		1
1,2,3,4,7,8-HxCDD	1.4	J q B	51	0.22	pg/L	08/28/18 08:43	09/01/18 09:08		1
1,2,3,4,7,8-HxCDF	ND		51	0.29	pg/L	08/28/18 08:43	09/01/18 09:08		1
1,2,3,6,7,8-HxCDD	0.33	J B	51	0.21	pg/L	08/28/18 08:43	09/01/18 09:08		1
1,2,3,6,7,8-HxCDF	ND		51	0.29	pg/L	08/28/18 08:43	09/01/18 09:08		1
1,2,3,7,8,9-HxCDD	ND		51	0.20	pg/L	08/28/18 08:43	09/01/18 09:08		1
1,2,3,7,8,9-HxCDF	1.5	J B	51	0.18	pg/L	08/28/18 08:43	09/01/18 09:08		1
1,2,3,7,8-PeCDD	ND		51	0.17	pg/L	08/28/18 08:43	09/01/18 09:08		1
1,2,3,7,8-PeCDF	ND		51	0.16	pg/L	08/28/18 08:43	09/01/18 09:08		1
2,3,4,6,7,8-HxCDF	ND		51	0.29	pg/L	08/28/18 08:43	09/01/18 09:08		1
2,3,4,7,8-PeCDF	ND		51	0.17	pg/L	08/28/18 08:43	09/01/18 09:08		1
2,3,7,8-TCDD	ND		10	0.12	pg/L	08/28/18 08:43	09/01/18 09:08		1
2,3,7,8-TCDF	0.44	J B	10	0.067	pg/L	08/28/18 08:43	09/01/18 09:08		1
OCDD	19	J B	100	0.25	pg/L	08/28/18 08:43	09/01/18 09:08		1
OCDF	1.9	J q B	100	0.13	pg/L	08/28/18 08:43	09/01/18 09:08		1
Isotope Dilution	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
13C-1,2,3,4,6,7,8-HpCDD	89		23 - 140			08/28/18 08:43	09/01/18 09:08		1
13C-1,2,3,4,6,7,8-HpCDF	83		28 - 143			08/28/18 08:43	09/01/18 09:08		1
13C-1,2,3,4,7,8,9-HpCDF	83		26 - 138			08/28/18 08:43	09/01/18 09:08		1
13C-1,2,3,4,7,8-HxCDD	73		32 - 141			08/28/18 08:43	09/01/18 09:08		1
13C-1,2,3,4,7,8-HxCDF	73		26 - 152			08/28/18 08:43	09/01/18 09:08		1
13C-1,2,3,6,7,8-HxCDD	77		28 - 130			08/28/18 08:43	09/01/18 09:08		1
13C-1,2,3,6,7,8-HxCDF	78		26 - 123			08/28/18 08:43	09/01/18 09:08		1
13C-1,2,3,7,8,9-HxCDD	75		29 - 147			08/28/18 08:43	09/01/18 09:08		1
13C-1,2,3,7,8-PeCDD	75		25 - 181			08/28/18 08:43	09/01/18 09:08		1
13C-1,2,3,7,8-PeCDF	70		24 - 185			08/28/18 08:43	09/01/18 09:08		1
13C-2,3,4,6,7,8-HxCDF	74		28 - 136			08/28/18 08:43	09/01/18 09:08		1
13C-2,3,4,7,8-PeCDF	70		21 - 178			08/28/18 08:43	09/01/18 09:08		1
13C-2,3,7,8-TCDD	85		25 - 164			08/28/18 08:43	09/01/18 09:08		1
13C-2,3,7,8-TCDF	75		24 - 169			08/28/18 08:43	09/01/18 09:08		1
13C-OCDD	83		17 - 157			08/28/18 08:43	09/01/18 09:08		1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
37Cl4-2,3,7,8-TCDD	120		35 - 197			08/28/18 08:43	09/01/18 09:08		1

TestAmerica Seattle

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

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

Lab Sample ID: MB 320-240796/1-A

Matrix: Water

Analysis Batch: 241471

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 240796

Analyte	MB		RL	EDL	Unit	D	Prepared		Analyzed	Dil Fac
	Result	Qualifier					Prepared	Analyzed		
1,2,3,4,6,7,8-HxCDD	1.20	J	50	0.19	pg/L	08/20/18 08:53	08/22/18 14:14		1	
1,2,3,4,6,7,8-HpCDD	0.932	J	50	0.25	pg/L	08/20/18 08:53	08/22/18 14:14		1	
1,2,3,4,7,8,9-HpCDF	1.17	J	50	0.33	pg/L	08/20/18 08:53	08/22/18 14:14		1	
1,2,3,4,7,8-HxCDF	1.58	J	50	0.36	pg/L	08/20/18 08:53	08/22/18 14:14		1	
1,2,3,4,7,8-HxCDF	ND		50	0.45	pg/L	08/20/18 08:53	08/22/18 14:14		1	
1,2,3,6,7,8-HxCDD	ND		50	0.33	pg/L	08/20/18 08:53	08/22/18 14:14		1	
1,2,3,6,7,8-HxCDF	ND		50	0.44	pg/L	08/20/18 08:53	08/22/18 14:14		1	
1,2,3,7,8,9-HxCDD	ND		50	0.32	pg/L	08/20/18 08:53	08/22/18 14:14		1	
1,2,3,7,8,9-HxCDF	1.43	J	50	0.25	pg/L	08/20/18 08:53	08/22/18 14:14		1	
1,2,3,7,8-PeCDD	ND		50	0.38	pg/L	08/20/18 08:53	08/22/18 14:14		1	
1,2,3,7,8-PeCDF	ND		50	0.27	pg/L	08/20/18 08:53	08/22/18 14:14		1	
2,3,4,6,7,8-HxCDF	ND		50	0.34	pg/L	08/20/18 08:53	08/22/18 14:14		1	
2,3,4,7,8-PeCDF	ND		50	0.30	pg/L	08/20/18 08:53	08/22/18 14:14		1	
2,3,7,8-TCDD	ND		10	0.25	pg/L	08/20/18 08:53	08/22/18 14:14		1	
2,3,7,8-TCDF	ND		10	0.20	pg/L	08/20/18 08:53	08/22/18 14:14		1	
OCDD	12.0	J	100	0.25	pg/L	08/20/18 08:53	08/22/18 14:14		1	
OCDF	2.07	J	100	0.40	pg/L	08/20/18 08:53	08/22/18 14:14		1	

MB MB

Isotope Dilution	MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C-1,2,3,4,6,7,8-HpCDD	72		23 - 140	08/20/18 08:53	08/22/18 14:14	1
13C-1,2,3,4,6,7,8-HpCDF	68		28 - 143	08/20/18 08:53	08/22/18 14:14	1
13C-1,2,3,4,7,8,9-HpCDF	65		26 - 138	08/20/18 08:53	08/22/18 14:14	1
13C-1,2,3,4,7,8-HxCDD	66		32 - 141	08/20/18 08:53	08/22/18 14:14	1
13C-1,2,3,4,7,8-HxCDF	67		26 - 152	08/20/18 08:53	08/22/18 14:14	1
13C-1,2,3,6,7,8-HxCDD	72		28 - 130	08/20/18 08:53	08/22/18 14:14	1
13C-1,2,3,6,7,8-HxCDF	73		26 - 123	08/20/18 08:53	08/22/18 14:14	1
13C-1,2,3,7,8,9-HxCDF	71		29 - 147	08/20/18 08:53	08/22/18 14:14	1
13C-1,2,3,7,8-PeCDD	64		25 - 181	08/20/18 08:53	08/22/18 14:14	1
13C-1,2,3,7,8-PeCDF	61		24 - 185	08/20/18 08:53	08/22/18 14:14	1
13C-2,3,4,6,7,8-HxCDF	72		28 - 136	08/20/18 08:53	08/22/18 14:14	1
13C-2,3,4,7,8-PeCDF	60		21 - 178	08/20/18 08:53	08/22/18 14:14	1
13C-2,3,7,8-TCDD	70		25 - 164	08/20/18 08:53	08/22/18 14:14	1
13C-2,3,7,8-TCDF	65		24 - 169	08/20/18 08:53	08/22/18 14:14	1
13C-OCDD	58		17 - 157	08/20/18 08:53	08/22/18 14:14	1

MB MB

Surrogate	MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
37Cl-2,3,7,8-TCDD	98		35 - 197	08/20/18 08:53	08/22/18 14:14	1

Lab Sample ID: LCS 320-240796/2-A

Matrix: Water

Analysis Batch: 241471

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 240796

Analyte	Spike		LCS	LCS	Unit	D	%Rec	Limits
	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,2,3,4,6,7,8-HpCDD	1000	934		pg/L	93	70 - 140		
1,2,3,4,6,7,8-HpCDF	1000	1030		pg/L	103	82 - 122		
1,2,3,4,7,8,9-HpCDF	1000	1060		pg/L	106	78 - 138		
1,2,3,4,7,8-HxCDD	1000	1070		pg/L	107	70 - 164		
1,2,3,4,7,8-HxCDF	1000	1100		pg/L	110	72 - 134		

TestAmerica Seattle

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

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

Lab Sample ID: LCS 320-240796/2-A

Matrix: Water

Analysis Batch: 241471

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 240796

%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,6,7,8-HxCDD	1000	1120		pg/L	112	76 - 134	
1,2,3,6,7,8-HxCDF	1000	1110		pg/L	111	84 - 130	
1,2,3,7,8,9-HxCDD	1000	1110		pg/L	111	64 - 162	
1,2,3,7,8,9-HxCDF	1000	1120		pg/L	112	78 - 130	
1,2,3,7,8-PeCDD	1000	1110		pg/L	111	70 - 142	
1,2,3,7,8-PeCDF	1000	1170		pg/L	117	80 - 134	
2,3,4,6,7,8-HxCDF	1000	1150		pg/L	115	70 - 156	
2,3,4,7,8-PeCDF	1000	1180		pg/L	118	68 - 160	
2,3,7,8-TCDD	200	212		pg/L	106	67 - 158	
2,3,7,8-TCDF	200	245		pg/L	123	75 - 158	
OCDD	2000	1830		pg/L	91	78 - 144	
OCDF	2000	2060		pg/L	103	63 - 170	

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	45		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	43		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	41		20 - 186
13C-1,2,3,4,7,8-HxCDD	43		21 - 193
13C-1,2,3,4,7,8-HxCDF	43		19 - 202
13C-1,2,3,6,7,8-HxCDD	45		25 - 163
13C-1,2,3,6,7,8-HxCDF	45		21 - 159
13C-1,2,3,7,8,9-HxCDF	46		17 - 205
13C-1,2,3,7,8-PeCDD	44		21 - 227
13C-1,2,3,7,8-PeCDF	42		21 - 192
13C-2,3,4,6,7,8-HxCDF	47		22 - 176
13C-2,3,4,7,8-PeCDF	44		13 - 328
13C-2,3,7,8-TCDD	50		20 - 175
13C-2,3,7,8-TCDF	47		22 - 152
13C-OCDD	37		13 - 199

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

Lab Sample ID: LCSD 320-240796/3-A

Matrix: Water

Analysis Batch: 241471

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 240796

%Rec.

RPD

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,2,3,4,6,7,8-HpCDD	1000	1150		pg/L	115	70 - 140		20	50
1,2,3,4,6,7,8-HpCDF	1000	1220		pg/L	122	82 - 122		17	50
1,2,3,4,7,8,9-HpCDF	1000	1250		pg/L	125	78 - 138		16	50
1,2,3,4,7,8-HxCDD	1000	1240		pg/L	124	70 - 164		14	50
1,2,3,4,7,8-HxCDF	1000	1230		pg/L	123	72 - 134		11	50
1,2,3,6,7,8-HxCDD	1000	1250		pg/L	125	76 - 134		10	50
1,2,3,6,7,8-HxCDF	1000	1230		pg/L	123	84 - 130		11	50
1,2,3,7,8,9-HxCDD	1000	1250		pg/L	125	64 - 162		11	50
1,2,3,7,8,9-HxCDF	1000	1240		pg/L	124	78 - 130		10	50
1,2,3,7,8-PeCDD	1000	1140		pg/L	114	70 - 142		3	50

TestAmerica Seattle

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

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

Lab Sample ID: LCSD 320-240796/3-A

Matrix: Water

Analysis Batch: 241471

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 240796

Analyte	Spike	LCSD	LCSD	Unit	D	%Rec	Limits	RPD	Limit
	Added	Result	Qualifier						
1,2,3,7,8-PeCDF	1000	1200		pg/L	120	80 - 134	3	50	
2,3,4,6,7,8-HxCDF	1000	1210		pg/L	121	70 - 156	5	50	
2,3,4,7,8-PeCDF	1000	1180		pg/L	118	68 - 160	1	50	
2,3,7,8-TCDD	200	203		pg/L	101	67 - 158	4	50	
2,3,7,8-TCDF	200	230		pg/L	115	75 - 158	7	50	
OCDD	2000	2270		pg/L	113	78 - 144	22	50	
OCDF	2000	2590		pg/L	129	63 - 170	23	50	

Isotope Dilution	LCSD	LCSD	Limits
	%Recovery	Qualifier	
13C-1,2,3,4,6,7,8-HpCDD	61		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	60		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	57		20 - 186
13C-1,2,3,4,7,8-HxCDD	61		21 - 193
13C-1,2,3,4,7,8-HxCDF	63		19 - 202
13C-1,2,3,6,7,8-HxCDD	63		25 - 163
13C-1,2,3,6,7,8-HxCDF	66		21 - 159
13C-1,2,3,7,8,9-HxCDF	64		17 - 205
13C-1,2,3,7,8-PeCDD	62		21 - 227
13C-1,2,3,7,8-PeCDF	58		21 - 192
13C-2,3,4,6,7,8-HxCDF	67		22 - 176
13C-2,3,4,7,8-PeCDF	61		13 - 328
13C-2,3,7,8-TCDD	68		20 - 175
13C-2,3,7,8-TCDF	64		22 - 152
13C-OCDD	48		13 - 199

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

Lab Sample ID: MB 320-242488/1-A

Matrix: Water

Analysis Batch: 243696

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 242488

Analyte	MB	MB	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,2,3,4,6,7,8-HpCDD	2.92	J	50	0.21	pg/L	08/28/18 08:43	09/01/18 04:32		1
1,2,3,4,6,7,8-HpCDF	1.72	J	50	0.25	pg/L	08/28/18 08:43	09/01/18 04:32		1
1,2,3,4,7,8,9-HpCDF	1.99	J	50	0.27	pg/L	08/28/18 08:43	09/01/18 04:32		1
1,2,3,4,7,8-HxCDD	1.57	J q	50	0.38	pg/L	08/28/18 08:43	09/01/18 04:32		1
1,2,3,4,7,8-HxCDF	0.860	J	50	0.50	pg/L	08/28/18 08:43	09/01/18 04:32		1
1,2,3,6,7,8-HxCDD	0.863	J	50	0.35	pg/L	08/28/18 08:43	09/01/18 04:32		1
1,2,3,6,7,8-HxCDF	ND		50	0.49	pg/L	08/28/18 08:43	09/01/18 04:32		1
1,2,3,7,8,9-HxCDD	ND		50	0.34	pg/L	08/28/18 08:43	09/01/18 04:32		1
1,2,3,7,8,9-HxCDF	2.72	J	50	0.28	pg/L	08/28/18 08:43	09/01/18 04:32		1
1,2,3,7,8-PeCDD	0.775	J	50	0.25	pg/L	08/28/18 08:43	09/01/18 04:32		1
1,2,3,7,8-PeCDF	0.793	J q	50	0.23	pg/L	08/28/18 08:43	09/01/18 04:32		1
2,3,4,6,7,8-HxCDF	ND		50	0.47	pg/L	08/28/18 08:43	09/01/18 04:32		1
2,3,4,7,8-PeCDF	0.974	J q	50	0.25	pg/L	08/28/18 08:43	09/01/18 04:32		1
2,3,7,8-TCDD	ND		10	0.22	pg/L	08/28/18 08:43	09/01/18 04:32		1
2,3,7,8-TCDF	0.856	J	10	0.13	pg/L	08/28/18 08:43	09/01/18 04:32		1

TestAmerica Seattle

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

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

Lab Sample ID: MB 320-242488/1-A

Matrix: Water

Analysis Batch: 243696

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 242488

Analyte	MB		RL	EDL	Unit	D	Prepared		Dil Fac
	Result	Qualifier					Prepared	Analyzed	
OCDD	29.4	J	100	0.40	pg/L	08/28/18 08:43	09/01/18 04:32	1	
OCDF	4.43	J	100	0.20	pg/L	08/28/18 08:43	09/01/18 04:32	1	
Isotope Dilution									
13C-1,2,3,4,6,7,8-HpCDD	75		23 - 140			08/28/18 08:43	09/01/18 04:32	1	
13C-1,2,3,4,6,7,8-HpCDF	67		28 - 143			08/28/18 08:43	09/01/18 04:32	1	
13C-1,2,3,4,7,8,9-HpCDF	70		26 - 138			08/28/18 08:43	09/01/18 04:32	1	
13C-1,2,3,4,7,8-HxCDD	58		32 - 141			08/28/18 08:43	09/01/18 04:32	1	
13C-1,2,3,4,7,8-HxCDF	57		26 - 152			08/28/18 08:43	09/01/18 04:32	1	
13C-1,2,3,6,7,8-HxCDD	62		28 - 130			08/28/18 08:43	09/01/18 04:32	1	
13C-1,2,3,6,7,8-HxCDF	62		26 - 123			08/28/18 08:43	09/01/18 04:32	1	
13C-1,2,3,7,8,9-HxCDF	65		29 - 147			08/28/18 08:43	09/01/18 04:32	1	
13C-1,2,3,7,8-PeCDD	63		25 - 181			08/28/18 08:43	09/01/18 04:32	1	
13C-1,2,3,7,8-PeCDF	58		24 - 185			08/28/18 08:43	09/01/18 04:32	1	
13C-2,3,4,6,7,8-HxCDF	61		28 - 136			08/28/18 08:43	09/01/18 04:32	1	
13C-2,3,4,7,8-PeCDF	56		21 - 178			08/28/18 08:43	09/01/18 04:32	1	
13C-2,3,7,8-TCDD	70		25 - 164			08/28/18 08:43	09/01/18 04:32	1	
13C-2,3,7,8-TCDF	62		24 - 169			08/28/18 08:43	09/01/18 04:32	1	
13C-OCDD	69		17 - 157			08/28/18 08:43	09/01/18 04:32	1	
Surrogate									
37Cl4-2,3,7,8-TCDD	122		35 - 197			08/28/18 08:43	09/01/18 04:32	1	

Lab Sample ID: LCS 320-242488/2-A

Matrix: Water

Analysis Batch: 243696

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 242488

Analyte	Spike		LCS	LCS	Unit	D	%Rec	%Rec.	
	Added	Result	Qualifier	Unit	D	%Rec	Limits		
1,2,3,4,6,7,8-HpCDD	1000	995		pg/L	99	70 - 140			
1,2,3,4,6,7,8-HpCDF	1000	1060		pg/L	106	82 - 122			
1,2,3,4,7,8,9-HpCDF	1000	1050		pg/L	105	78 - 138			
1,2,3,4,7,8-HxCDD	1000	1110		pg/L	111	70 - 164			
1,2,3,4,7,8-HxCDF	1000	1110		pg/L	111	72 - 134			
1,2,3,6,7,8-HxCDD	1000	1110		pg/L	111	76 - 134			
1,2,3,6,7,8-HxCDF	1000	1100		pg/L	110	84 - 130			
1,2,3,7,8,9-HxCDD	1000	1110		pg/L	111	64 - 162			
1,2,3,7,8,9-HxCDF	1000	1100		pg/L	110	78 - 130			
1,2,3,7,8-PeCDD	1000	1130		pg/L	113	70 - 142			
1,2,3,7,8-PeCDF	1000	1190		pg/L	119	80 - 134			
2,3,4,6,7,8-HxCDF	1000	1090		pg/L	109	70 - 156			
2,3,4,7,8-PeCDF	1000	1170		pg/L	117	68 - 160			
2,3,7,8-TCDD	200	211		pg/L	105	67 - 158			
2,3,7,8-TCDF	200	242		pg/L	121	75 - 158			
OCDD	2000	1990		pg/L	100	78 - 144			
OCDF	2000	2160		pg/L	108	63 - 170			
Isotope Dilution									
13C-1,2,3,4,6,7,8-HpCDD	53		26 - 166						

TestAmerica Seattle

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

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

Lab Sample ID: LCS 320-242488/2-A

Matrix: Water

Analysis Batch: 243696

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 242488

<i>Isotope Dilution</i>	<i>LCS</i>	<i>LCS</i>	
	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
13C-1,2,3,4,6,7,8-HpCDD	49		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	51		20 - 186
13C-1,2,3,4,7,8-HxCDD	42		21 - 193
13C-1,2,3,4,7,8-HxCDF	43		19 - 202
13C-1,2,3,6,7,8-HxCDD	45		25 - 163
13C-1,2,3,6,7,8-HxCDF	47		21 - 159
13C-1,2,3,7,8-HxCDF	46		17 - 205
13C-1,2,3,7,8-PeCDD	47		21 - 227
13C-1,2,3,7,8-PeCDF	44		21 - 192
13C-2,3,4,6,7,8-HxCDF	46		22 - 176
13C-2,3,4,7,8-PeCDF	45		13 - 328
13C-2,3,7,8-TCDD	56		20 - 175
13C-2,3,7,8-TCDF	53		22 - 152
13C-OCDD	48		13 - 199
<i>Surrogate</i>	<i>LCS</i>	<i>LCS</i>	
	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
37Cl4-2,3,7,8-TCDD	119		31 - 191

Lab Sample ID: LCSD 320-242488/3-A

Matrix: Water

Analysis Batch: 243696

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 242488

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec.</i>	<i>RPD</i>	<i>Limit</i>
1,2,3,4,6,7,8-HpCDD	1000	1090		pg/L		109	70 - 140	9	50
1,2,3,4,6,7,8-HpCDF	1000	1150		pg/L		115	82 - 122	8	50
1,2,3,4,7,8,9-HpCDF	1000	1180		pg/L		118	78 - 138	12	50
1,2,3,4,7,8-HxCDD	1000	1170		pg/L		117	70 - 164	5	50
1,2,3,4,7,8-HxCDF	1000	1180		pg/L		118	72 - 134	6	50
1,2,3,6,7,8-HxCDD	1000	1180		pg/L		118	76 - 134	6	50
1,2,3,6,7,8-HxCDF	1000	1180		pg/L		118	84 - 130	7	50
1,2,3,7,8,9-HxCDD	1000	1210		pg/L		121	64 - 162	8	50
1,2,3,7,8,9-HxCDF	1000	1180		pg/L		118	78 - 130	7	50
1,2,3,7,8-PeCDD	1000	1110		pg/L		111	70 - 142	2	50
1,2,3,7,8-PeCDF	1000	1180		pg/L		118	80 - 134	1	50
2,3,4,6,7,8-HxCDF	1000	1180		pg/L		118	70 - 156	8	50
2,3,4,7,8-PeCDF	1000	1150		pg/L		115	68 - 160	1	50
2,3,7,8-TCDD	200	199		pg/L		100	67 - 158	6	50
2,3,7,8-TCDF	200	227		pg/L		114	75 - 158	7	50
OCDD	2000	2210		pg/L		110	78 - 144	10	50
OCDF	2000	2390		pg/L		119	63 - 170	10	50

<i>Isotope Dilution</i>	<i>LCS</i>	<i>LCS</i>	
	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
13C-1,2,3,4,6,7,8-HpCDD	85		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	78		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	80		20 - 186
13C-1,2,3,4,7,8-HxCDD	67		21 - 193
13C-1,2,3,4,7,8-HxCDF	68		19 - 202
13C-1,2,3,6,7,8-HxCDD	71		25 - 163

TestAmerica Seattle

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

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

Lab Sample ID: LCSD 320-242488/3-A

Matrix: Water

Analysis Batch: 243696

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 242488

<i>Isotope Dilution</i>	<i>LCSD</i>	<i>LCSD</i>	<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C-1,2,3,6,7,8-HxCDF	72		21 - 159
13C-1,2,3,7,8,9-HxCDF	71		17 - 205
13C-1,2,3,7,8-PeCDD	69		21 - 227
13C-1,2,3,7,8-PeCDF	63		21 - 192
13C-2,3,4,6,7,8-HxCDF	70		22 - 176
13C-2,3,4,7,8-PeCDF	64		13 - 328
13C-2,3,7,8-TCDD	74		20 - 175
13C-2,3,7,8-TCDF	65		22 - 152
13C-OCDD	78		13 - 199

<i>Surrogate</i>	<i>LCSD</i>	<i>LCSD</i>	<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
37Cl-4,2,3,7,8-TCDD	123		31 - 191

Lab Sample ID: MB 320-243160/1-A

Matrix: Solid

Analysis Batch: 243705

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 243160

<i>Analyte</i>	<i>MB</i>	<i>MB</i>	<i>Result</i>	<i>Qualifier</i>	<i>RL</i>	<i>EDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
1,2,3,4,6,7,8-HxCDD	0.000109	J	0.0050		0.000015		ug/Kg		08/30/18 14:05	09/02/18 19:37	1
1,2,3,4,6,7,8-HpCDF		ND	0.0050		0.000027		ug/Kg		08/30/18 14:05	09/02/18 19:37	1
1,2,3,4,7,8,9-HpCDF	0.000124	J	0.0050		0.000030		ug/Kg		08/30/18 14:05	09/02/18 19:37	1
1,2,3,4,7,8-HxCDD	0.000121	J q	0.0050		0.000032		ug/Kg		08/30/18 14:05	09/02/18 19:37	1
1,2,3,4,7,8-HxCDF		ND	0.0050		0.000035		ug/Kg		08/30/18 14:05	09/02/18 19:37	1
1,2,3,6,7,8-HxCDD		ND	0.0050		0.000028		ug/Kg		08/30/18 14:05	09/02/18 19:37	1
1,2,3,6,7,8-HxCDF		ND	0.0050		0.000035		ug/Kg		08/30/18 14:05	09/02/18 19:37	1
1,2,3,7,8,9-HxCDD		ND	0.0050		0.000027		ug/Kg		08/30/18 14:05	09/02/18 19:37	1
1,2,3,7,8,9-HxCDF	0.0000506	J	0.0050		0.000022		ug/Kg		08/30/18 14:05	09/02/18 19:37	1
1,2,3,7,8-PeCDD		ND	0.0050		0.000020		ug/Kg		08/30/18 14:05	09/02/18 19:37	1
1,2,3,7,8-PeCDF	0.000178	J	0.0050		0.000021		ug/Kg		08/30/18 14:05	09/02/18 19:37	1
2,3,4,6,7,8-HxCDD		ND	0.0050		0.000034		ug/Kg		08/30/18 14:05	09/02/18 19:37	1
2,3,4,7,8-PeCDF		ND	0.0050		0.000025		ug/Kg		08/30/18 14:05	09/02/18 19:37	1
2,3,7,8-TCDD		ND	0.0010		0.000014		ug/Kg		08/30/18 14:05	09/02/18 19:37	1
2,3,7,8-TCDF	0.0000547	J	0.0010		0.0000061		ug/Kg		08/30/18 14:05	09/02/18 19:37	1
OCDD	0.00165	J	0.010		0.000030		ug/Kg		08/30/18 14:05	09/02/18 19:37	1
OCDF	0.000212	J	0.010		0.000014		ug/Kg		08/30/18 14:05	09/02/18 19:37	1

<i>Isotope Dilution</i>	<i>MB</i>	<i>MB</i>	<i>Result</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>	
13C-1,2,3,4,6,7,8-HxCDD		95			23 - 140		08/30/18 14:05	09/02/18 19:37	1
13C-1,2,3,4,6,7,8-HpCDF		82			28 - 143		08/30/18 14:05	09/02/18 19:37	1
13C-1,2,3,4,7,8,9-HpCDF		89			26 - 138		08/30/18 14:05	09/02/18 19:37	1
13C-1,2,3,4,7,8-HxCDD		65			32 - 141		08/30/18 14:05	09/02/18 19:37	1
13C-1,2,3,4,7,8-HxCDF		66			26 - 152		08/30/18 14:05	09/02/18 19:37	1
13C-1,2,3,6,7,8-HxCDD		73			28 - 130		08/30/18 14:05	09/02/18 19:37	1
13C-1,2,3,6,7,8-HxCDF		74			26 - 123		08/30/18 14:05	09/02/18 19:37	1
13C-1,2,3,7,8,9-HxCDF		75			29 - 147		08/30/18 14:05	09/02/18 19:37	1
13C-1,2,3,7,8-PeCDD		75			25 - 181		08/30/18 14:05	09/02/18 19:37	1
13C-1,2,3,7,8-PeCDF		69			24 - 185		08/30/18 14:05	09/02/18 19:37	1
13C-2,3,4,6,7,8-HxCDF		73			28 - 136		08/30/18 14:05	09/02/18 19:37	1

TestAmerica Seattle

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

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

Lab Sample ID: MB 320-243160/1-A

Matrix: Solid

Analysis Batch: 243705

Isotope Dilution	MB	MB	%Recovery	Qualifier	Limits
	Surrogate	MB			
13C-2,3,4,7,8-PeCDF	64		64		21 - 178
13C-2,3,7,8-TCDD	79		79		25 - 164
13C-2,3,7,8-TCDF	70		70		24 - 169
13C-OCDD	87		87		17 - 157

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 243160

Surrogate	MB	MB	%Recovery	Qualifier	Limits
	Surrogate	MB			
37Cl4-2,3,7,8-TCDD	127		127		35 - 197

Prepared

Analyzed

Dil Fac

08/30/18 14:05 09/02/18 19:37 1

Lab Sample ID: LCS 320-243160/2-A

Matrix: Solid

Analysis Batch: 243705

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec.	Limits
	Added	Result	Qualifier					
1,2,3,4,6,7,8-HpCDD	0.100	0.0980		ug/Kg		98	70 - 140	
1,2,3,4,6,7,8-HpCDF	0.100	0.104		ug/Kg		104	82 - 122	
1,2,3,4,7,8,9-HpCDF	0.100	0.112		ug/Kg		112	78 - 138	
1,2,3,4,7,8-HxCDD	0.100	0.104		ug/Kg		104	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	0.107		ug/Kg		107	84 - 130	
1,2,3,7,8,9-HxCDD	0.100	0.105		ug/Kg		105	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	0.105		ug/Kg		105	80 - 134	
2,3,4,6,7,8-HxCDF	0.100	0.106		ug/Kg		106	70 - 156	
2,3,4,7,8-PeCDF	0.100	0.105		ug/Kg		105	68 - 160	
2,3,7,8-TCDD	0.0200	0.0179		ug/Kg		90	67 - 158	
2,3,7,8-TCDF	0.0200	0.0206		ug/Kg		103	75 - 158	
OCDD	0.200	0.201		ug/Kg		100	78 - 144	
OCDF	0.200	0.213		ug/Kg		106	63 - 170	

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 243160

Isotope Dilution	LCS	LCS	%Recovery	Qualifier	Limits
	Surrogate	MB			
13C-1,2,3,4,6,7,8-HpCDD	86		86		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	80		80		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	78		78		20 - 186
13C-1,2,3,4,7,8-HxCDD	69		69		21 - 193
13C-1,2,3,4,7,8-HxCDF	69		69		19 - 202
13C-1,2,3,6,7,8-HxCDD	73		73		25 - 163
13C-1,2,3,6,7,8-HxCDF	74		74		21 - 159
13C-1,2,3,7,8,9-HxCDF	72		72		17 - 205
13C-1,2,3,7,8-PeCDD	70		70		21 - 227
13C-1,2,3,7,8-PeCDF	65		65		21 - 192
13C-2,3,4,6,7,8-HxCDF	70		70		22 - 176
13C-2,3,4,7,8-PeCDF	65		65		13 - 328
13C-2,3,7,8-TCDD	76		76		20 - 175
13C-2,3,7,8-TCDF	65		65		22 - 152
13C-OCDD	82		82		13 - 199

TestAmerica Seattle

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

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

Lab Sample ID: LCS 320-243160/2-A

Matrix: Solid

Analysis Batch: 243705

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 243160

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

Lab Sample ID: LCSD 320-243160/3-A

Matrix: Solid

Analysis Batch: 243705

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 243160

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.	RPD	Limit
1,2,3,4,6,7,8-HxCDD	0.100	0.0957		ug/Kg		96	70 - 140	2	50
1,2,3,4,6,7,8-HxCDF	0.100	0.104		ug/Kg		104	82 - 122	1	50
1,2,3,4,7,8,9-HxCDF	0.100	0.106		ug/Kg		106	78 - 138	5	50
1,2,3,4,7,8-HxCDD	0.100	0.104		ug/Kg		104	70 - 164	0	50
1,2,3,4,7,8-HxCDF	0.100	0.104		ug/Kg		104	72 - 134	1	50
1,2,3,6,7,8-HxCDD	0.100	0.102		ug/Kg		102	76 - 134	3	50
1,2,3,6,7,8-HxCDF	0.100	0.105		ug/Kg		105	84 - 130	2	50
1,2,3,7,8,9-HxCDD	0.100	0.106		ug/Kg		106	64 - 162	1	50
1,2,3,7,8,9-HxCDF	0.100	0.106		ug/Kg		106	78 - 130	1	50
1,2,3,7,8-PeCDD	0.100	0.0991		ug/Kg		99	70 - 142	1	50
1,2,3,7,8-PeCDF	0.100	0.104		ug/Kg		104	80 - 134	1	50
2,3,4,6,7,8-HxCDF	0.100	0.104		ug/Kg		104	70 - 156	3	50
2,3,4,7,8-PeCDF	0.100	0.104		ug/Kg		104	68 - 160	0	50
2,3,7,8-TCDD	0.0200	0.0177		ug/Kg		88	67 - 158	1	50
2,3,7,8-TCDF	0.0200	0.0204		ug/Kg		102	75 - 158	1	50
OCDD	0.200	0.200		ug/Kg		100	78 - 144	0	50
OCDF	0.200	0.213		ug/Kg		107	63 - 170	0	50

Isotope Dilution	LCSD	LCSD	
	%Recovery	Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	78		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	71		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	73		20 - 186
13C-1,2,3,4,7,8-HxCDD	62		21 - 193
13C-1,2,3,4,7,8-HxCDF	62		19 - 202
13C-1,2,3,6,7,8-HxCDD	65		25 - 163
13C-1,2,3,6,7,8-HxCDF	65		21 - 159
13C-1,2,3,7,8,9-HxCDF	63		17 - 205
13C-1,2,3,7,8-PeCDD	63		21 - 227
13C-1,2,3,7,8-PeCDF	58		21 - 192
13C-2,3,4,6,7,8-HxCDF	62		22 - 176
13C-2,3,4,7,8-PeCDF	58		13 - 328
13C-2,3,7,8-TCDD	66		20 - 175
13C-2,3,7,8-TCDF	56		22 - 152
13C-OCDD	71		13 - 199

Surrogate	LCSD	LCSD	
	%Recovery	Qualifier	Limits
37Cl4-2,3,7,8-TCDD	130		31 - 191

TestAmerica Seattle

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

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

Lab Sample ID: MB 320-243217/1-A

Matrix: Solid

Analysis Batch: 243982

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 243217

Analyte	MB	MB	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac	
	Result	Qualifier								
1,2,3,4,6,7,8-HxCDD	0.000145	J	0.0050	0.000056	ug/Kg	08/30/18 16:11	09/04/18 15:29		1	
1,2,3,4,6,7,8-HxCDF		ND	0.0050	0.000060	ug/Kg	08/30/18 16:11	09/04/18 15:29		1	
1,2,3,4,7,8,9-HxCDF	0.000135	J q	0.0050	0.000092	ug/Kg	08/30/18 16:11	09/04/18 15:29		1	
1,2,3,4,7,8-HxCDD	0.000214	J q	0.0050	0.00010	ug/Kg	08/30/18 16:11	09/04/18 15:29		1	
1,2,3,4,7,8-HxCDF		ND	0.0050	0.00012	ug/Kg	08/30/18 16:11	09/04/18 15:29		1	
1,2,3,6,7,8-HxCDD		ND	0.0050	0.000096	ug/Kg	08/30/18 16:11	09/04/18 15:29		1	
1,2,3,6,7,8-HxCDF		ND	0.0050	0.00011	ug/Kg	08/30/18 16:11	09/04/18 15:29		1	
1,2,3,7,8,9-HxCDD		ND	0.0050	0.000091	ug/Kg	08/30/18 16:11	09/04/18 15:29		1	
1,2,3,7,8,9-HxCDF	0.000793	J	0.0050	0.00012	ug/Kg	08/30/18 16:11	09/04/18 15:29		1	
1,2,3,7,8-PeCDD		ND	0.0050	0.000086	ug/Kg	08/30/18 16:11	09/04/18 15:29		1	
1,2,3,7,8-PeCDF	0.000334	J	0.0050	0.000062	ug/Kg	08/30/18 16:11	09/04/18 15:29		1	
2,3,4,6,7,8-HxCDF		ND	0.0050	0.00011	ug/Kg	08/30/18 16:11	09/04/18 15:29		1	
2,3,4,7,8-PeCDF	0.000131	J q	0.0050	0.000064	ug/Kg	08/30/18 16:11	09/04/18 15:29		1	
2,3,7,8-TCDD		ND	0.0010	0.00011	ug/Kg	08/30/18 16:11	09/04/18 15:29		1	
2,3,7,8-TCDF	0.000244	J	0.0010	0.000080	ug/Kg	08/30/18 16:11	09/04/18 15:29		1	
OCDD	0.00141	J	0.010	0.00014	ug/Kg	08/30/18 16:11	09/04/18 15:29		1	
OCDF		ND	0.010	0.00015	ug/Kg	08/30/18 16:11	09/04/18 15:29		1	
MB MB		MB MB		MB MB		MB MB		MB MB		
Isotope Dilution	%Recovery	Qualifier	Limits					Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HxCDD	68		23 - 140					08/30/18 16:11	09/04/18 15:29	1
13C-1,2,3,4,6,7,8-HxCDF	69		28 - 143					08/30/18 16:11	09/04/18 15:29	1
13C-1,2,3,4,7,8,9-HxCDF	66		26 - 138					08/30/18 16:11	09/04/18 15:29	1
13C-1,2,3,4,7,8-HxCDD	63		32 - 141					08/30/18 16:11	09/04/18 15:29	1
13C-1,2,3,4,7,8-HxCDF	69		26 - 152					08/30/18 16:11	09/04/18 15:29	1
13C-1,2,3,6,7,8-HxCDD	78		28 - 130					08/30/18 16:11	09/04/18 15:29	1
13C-1,2,3,6,7,8-HxCDF	80		26 - 123					08/30/18 16:11	09/04/18 15:29	1
13C-1,2,3,7,8,9-HxCDF	72		29 - 147					08/30/18 16:11	09/04/18 15:29	1
13C-1,2,3,7,8-PeCDD	74		25 - 181					08/30/18 16:11	09/04/18 15:29	1
13C-1,2,3,7,8-PeCDF	72		24 - 185					08/30/18 16:11	09/04/18 15:29	1
13C-2,3,4,6,7,8-HxCDF	73		28 - 136					08/30/18 16:11	09/04/18 15:29	1
13C-2,3,4,7,8-PeCDF	74		21 - 178					08/30/18 16:11	09/04/18 15:29	1
13C-2,3,7,8-TCDD	72		25 - 164					08/30/18 16:11	09/04/18 15:29	1
13C-2,3,7,8-TCDF	72		24 - 169					08/30/18 16:11	09/04/18 15:29	1
13C-OCDD	60		17 - 157					08/30/18 16:11	09/04/18 15:29	1
MB MB		MB MB		MB MB		MB MB		MB MB		
Surrogate	%Recovery	Qualifier	Limits					Prepared	Analyzed	Dil Fac
37Cl-2,3,7,8-TCDD	132		35 - 197					08/30/18 16:11	09/04/18 15:29	1

Lab Sample ID: LCS 320-243217/2-A

Matrix: Solid

Analysis Batch: 243982

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 243217

Analyte	Spike	LCS	LCS	Unit	D	%Rec	Limits
	Added	Result	Qualifier				
1,2,3,4,6,7,8-HxCDD	0.100	0.106		ug/Kg	106	70 - 140	
1,2,3,4,6,7,8-HxCDF	0.100	0.105		ug/Kg	105	82 - 122	
1,2,3,4,7,8,9-HxCDF	0.100	0.109		ug/Kg	109	78 - 138	
1,2,3,4,7,8-HxCDD	0.100	0.109		ug/Kg	109	70 - 164	
1,2,3,4,7,8-HxCDF	0.100	0.109		ug/Kg	109	72 - 134	

TestAmerica Seattle

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

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

Lab Sample ID: LCS 320-243217/2-A

Matrix: Solid

Analysis Batch: 243982

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 243217

%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,6,7,8-HxCDD	0.100	0.107		ug/Kg		107	76 - 134
1,2,3,6,7,8-HxCDF	0.100	0.111		ug/Kg		111	84 - 130
1,2,3,7,8,9-HxCDD	0.100	0.111		ug/Kg		111	64 - 162
1,2,3,7,8,9-HxCDF	0.100	0.109		ug/Kg		109	78 - 130
1,2,3,7,8-PeCDD	0.100	0.111		ug/Kg		111	70 - 142
1,2,3,7,8-PeCDF	0.100	0.111		ug/Kg		111	80 - 134
2,3,4,6,7,8-HxCDF	0.100	0.110		ug/Kg		110	70 - 156
2,3,4,7,8-PeCDF	0.100	0.111		ug/Kg		111	68 - 160
2,3,7,8-TCDD	0.0200	0.0220		ug/Kg		110	67 - 158
2,3,7,8-TCDF	0.0200	0.0217		ug/Kg		108	75 - 158
OCDD	0.200	0.209		ug/Kg		105	78 - 144
OCDF	0.200	0.230		ug/Kg		115	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	74		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	75		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	75		20 - 186
13C-1,2,3,4,7,8-HxCDD	68		21 - 193
13C-1,2,3,4,7,8-HxCDF	72		19 - 202
13C-1,2,3,6,7,8-HxCDD	80		25 - 163
13C-1,2,3,6,7,8-HxCDF	81		21 - 159
13C-1,2,3,7,8,9-HxCDF	77		17 - 205
13C-1,2,3,7,8-PeCDD	76		21 - 227
13C-1,2,3,7,8-PeCDF	78		21 - 192
13C-2,3,4,6,7,8-HxCDF	77		22 - 176
13C-2,3,4,7,8-PeCDF	78		13 - 328
13C-2,3,7,8-TCDD	75		20 - 175
13C-2,3,7,8-TCDF	74		22 - 152
13C-OCDD	66		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	135		31 - 191

Lab Sample ID: LCSD 320-243217/3-A

Matrix: Solid

Analysis Batch: 243982

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 243217

%Rec.

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,2,3,4,6,7,8-HpCDD	0.100	0.109		ug/Kg		109	70 - 140	3	50
1,2,3,4,6,7,8-HpCDF	0.100	0.108		ug/Kg		108	82 - 122	3	50
1,2,3,4,7,8,9-HpCDF	0.100	0.112		ug/Kg		112	78 - 138	2	50
1,2,3,4,7,8-HxCDD	0.100	0.113		ug/Kg		113	70 - 164	3	50
1,2,3,4,7,8-HxCDF	0.100	0.115		ug/Kg		115	72 - 134	6	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	0.111		ug/Kg		111	84 - 130	0	50
1,2,3,7,8,9-HxCDD	0.100	0.113		ug/Kg		113	64 - 162	2	50
1,2,3,7,8,9-HxCDF	0.100	0.114		ug/Kg		114	78 - 130	4	50
1,2,3,7,8-PeCDD	0.100	0.109		ug/Kg		109	70 - 142	1	50

TestAmerica Seattle

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

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

Lab Sample ID: LCSD 320-243217/3-A

Matrix: Solid

Analysis Batch: 243982

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 243217

Analyte	Spike	LCSD	LCSD	Unit	D	%Rec	Limits	RPD	Limit
	Added	Result	Qualifier						
1,2,3,7,8-PeCDF	0.100	0.114		ug/Kg	114	80 - 134	3	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	0.115		ug/Kg	115	68 - 160	4	50	
2,3,7,8-TCDD	0.0200	0.0223		ug/Kg	111	67 - 158	1	50	
2,3,7,8-TCDF	0.0200	0.0219		ug/Kg	109	75 - 158	1	50	
OCDD	0.200	0.219		ug/Kg	109	78 - 144	4	50	
OCDF	0.200	0.234		ug/Kg	117	63 - 170	1	50	

Isotope Dilution	LCSD	LCSD	Limits
	%Recovery	Qualifier	
13C-1,2,3,4,6,7,8-HpCDD	69		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	71		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	70		20 - 186
13C-1,2,3,4,7,8-HxCDD	63		21 - 193
13C-1,2,3,4,7,8-HxCDF	66		19 - 202
13C-1,2,3,6,7,8-HxCDD	77		25 - 163
13C-1,2,3,6,7,8-HxCDF	79		21 - 159
13C-1,2,3,7,8,9-HxCDF	69		17 - 205
13C-1,2,3,7,8-PeCDD	71		21 - 227
13C-1,2,3,7,8-PeCDF	70		21 - 192
13C-2,3,4,6,7,8-HxCDF	73		22 - 176
13C-2,3,4,7,8-PeCDF	69		13 - 328
13C-2,3,7,8-TCDD	70		20 - 175
13C-2,3,7,8-TCDF	69		22 - 152
13C-OCDD	61		13 - 199
Surrogate	LCSD	LCSD	Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	129		31 - 191

Lab Sample ID: MB 320-243400/1-A

Matrix: Solid

Analysis Batch: 244808

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 243400

Analyte	MB	MB	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,2,3,4,6,7,8-HpCDD	0.0000629	J	0.0050	0.0000091	ug/Kg	08/31/18 11:06	09/10/18 14:24		1
1,2,3,4,6,7,8-HpCDF	0.0000610	J q	0.0050	0.000015	ug/Kg	08/31/18 11:06	09/10/18 14:24		1
1,2,3,4,7,8,9-HpCDF	0.000472	J	0.0050	0.000019	ug/Kg	08/31/18 11:06	09/10/18 14:24		1
1,2,3,4,7,8-HxCDD	0.000121	J	0.0050	0.000016	ug/Kg	08/31/18 11:06	09/10/18 14:24		1
1,2,3,4,7,8-HxCDF	ND		0.0050	0.000029	ug/Kg	08/31/18 11:06	09/10/18 14:24		1
1,2,3,6,7,8-HxCDD	ND		0.0050	0.000015	ug/Kg	08/31/18 11:06	09/10/18 14:24		1
1,2,3,6,7,8-HxCDF	0.0000933	J	0.0050	0.000027	ug/Kg	08/31/18 11:06	09/10/18 14:24		1
1,2,3,7,8,9-HxCDD	ND		0.0050	0.000014	ug/Kg	08/31/18 11:06	09/10/18 14:24		1
1,2,3,7,8,9-HxCDF	0.00151	J	0.0050	0.000021	ug/Kg	08/31/18 11:06	09/10/18 14:24		1
1,2,3,7,8-PeCDD	ND		0.0050	0.000021	ug/Kg	08/31/18 11:06	09/10/18 14:24		1
1,2,3,7,8-PeCDF	0.000260	J	0.0050	0.000023	ug/Kg	08/31/18 11:06	09/10/18 14:24		1
2,3,4,6,7,8-HxCDF	ND		0.0050	0.000022	ug/Kg	08/31/18 11:06	09/10/18 14:24		1
2,3,4,7,8-PeCDF	ND		0.0050	0.000026	ug/Kg	08/31/18 11:06	09/10/18 14:24		1
2,3,7,8-TCDD	ND		0.0010	0.000024	ug/Kg	08/31/18 11:06	09/10/18 14:24		1
2,3,7,8-TCDF	0.0000562	J	0.0010	0.000012	ug/Kg	08/31/18 11:06	09/10/18 14:24		1

TestAmerica Seattle

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

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

Lab Sample ID: MB 320-243400/1-A

Matrix: Solid

Analysis Batch: 244808

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 243400

Analyte	MB		RL	EDL	Unit	D	Prepared		Dil Fac
	Result	Qualifier					Prepared	Analyzed	
OCDD	0.000459	J	0.010	0.000015	ug/Kg	08/31/18 11:06	09/10/18 14:24	1	
OCDF	0.000106	J	0.010	0.000023	ug/Kg	08/31/18 11:06	09/10/18 14:24	1	
Isotope Dilution									
13C-1,2,3,4,6,7,8-HpCDD	86		23 - 140			08/31/18 11:06	09/10/18 14:24	1	
13C-1,2,3,4,6,7,8-HpCDF	78		28 - 143			08/31/18 11:06	09/10/18 14:24	1	
13C-1,2,3,4,7,8,9-HpCDF	83		26 - 138			08/31/18 11:06	09/10/18 14:24	1	
13C-1,2,3,4,7,8-HxCDD	72		32 - 141			08/31/18 11:06	09/10/18 14:24	1	
13C-1,2,3,4,7,8-HxCDF	76		26 - 152			08/31/18 11:06	09/10/18 14:24	1	
13C-1,2,3,6,7,8-HxCDD	75		28 - 130			08/31/18 11:06	09/10/18 14:24	1	
13C-1,2,3,6,7,8-HxCDF	79		26 - 123			08/31/18 11:06	09/10/18 14:24	1	
13C-1,2,3,7,8,9-HxCDF	78		29 - 147			08/31/18 11:06	09/10/18 14:24	1	
13C-1,2,3,7,8-PeCDD	66		25 - 181			08/31/18 11:06	09/10/18 14:24	1	
13C-1,2,3,7,8-PeCDF	65		24 - 185			08/31/18 11:06	09/10/18 14:24	1	
13C-2,3,4,6,7,8-HxCDF	79		28 - 136			08/31/18 11:06	09/10/18 14:24	1	
13C-2,3,4,7,8-PeCDF	63		21 - 178			08/31/18 11:06	09/10/18 14:24	1	
13C-2,3,7,8-TCDD	72		25 - 164			08/31/18 11:06	09/10/18 14:24	1	
13C-2,3,7,8-TCDF	68		24 - 169			08/31/18 11:06	09/10/18 14:24	1	
13C-OCDD	78		17 - 157			08/31/18 11:06	09/10/18 14:24	1	
Surrogate									
37Cl4-2,3,7,8-TCDD	114		35 - 197			08/31/18 11:06	09/10/18 14:24	1	

Lab Sample ID: LCS 320-243400/2-A

Matrix: Solid

Analysis Batch: 244808

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 243400

Analyte	Spike		LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.	
	Added	Result						Limits	Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.0946	ug/Kg	95	70 - 140				
1,2,3,4,6,7,8-HpCDF	0.100	0.102	ug/Kg	102	82 - 122				
1,2,3,4,7,8,9-HpCDF	0.100	0.105	ug/Kg	105	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	0.105	ug/Kg	105	72 - 134				
1,2,3,6,7,8-HxCDD	0.100	0.0990	ug/Kg	99	76 - 134				
1,2,3,6,7,8-HxCDF	0.100	0.105	ug/Kg	105	84 - 130				
1,2,3,7,8,9-HxCDD	0.100	0.107	ug/Kg	107	64 - 162				
1,2,3,7,8,9-HxCDF	0.100	0.107	ug/Kg	107	78 - 130				
1,2,3,7,8-PeCDD	0.100	0.0978	ug/Kg	98	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	0.105	ug/Kg	105	70 - 156				
2,3,4,7,8-PeCDF	0.100	0.103	ug/Kg	103	68 - 160				
2,3,7,8-TCDD	0.0200	0.0176	ug/Kg	88	67 - 158				
2,3,7,8-TCDF	0.0200	0.0204	ug/Kg	102	75 - 158				
OCDD	0.200	0.194	ug/Kg	97	78 - 144				
OCDF	0.200	0.223	ug/Kg	111	63 - 170				
Isotope Dilution									
13C-1,2,3,4,6,7,8-HpCDD	71		26 - 166						

TestAmerica Seattle

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

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

Lab Sample ID: LCS 320-243400/2-A

Matrix: Solid

Analysis Batch: 244808

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 243400

<i>Isotope Dilution</i>	<i>LCS</i>	<i>LCS</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
13C-1,2,3,4,6,7,8-HpCDD	65				21 - 158
13C-1,2,3,4,7,8,9-HpCDF	68				20 - 186
13C-1,2,3,4,7,8-HxCDD	58				21 - 193
13C-1,2,3,4,7,8-HxCDF	63				19 - 202
13C-1,2,3,6,7,8-HxCDD	63				25 - 163
13C-1,2,3,6,7,8-HxCDF	64				21 - 159
13C-1,2,3,7,8-HxCDF	62				17 - 205
13C-1,2,3,7,8-PeCDD	54				21 - 227
13C-1,2,3,7,8-PeCDF	52				21 - 192
13C-2,3,4,6,7,8-HxCDF	64				22 - 176
13C-2,3,4,7,8-PeCDF	53				13 - 328
13C-2,3,7,8-TCDD	59				20 - 175
13C-2,3,7,8-TCDF	55				22 - 152
13C-OCDD	65				13 - 199
<i>Surrogate</i>	<i>LCS</i>	<i>LCS</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
37Cl4-2,3,7,8-TCDD	111				31 - 191

Lab Sample ID: LCSD 320-243400/3-A

Matrix: Solid

Analysis Batch: 244808

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 243400

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec.</i>	<i>RPD</i>	<i>Limit</i>
1,2,3,4,6,7,8-HpCDD	0.100	0.0950		ug/Kg		95	70 - 140	0	50
1,2,3,4,6,7,8-HpCDF	0.100	0.104		ug/Kg		104	82 - 122	1	50
1,2,3,4,7,8,9-HpCDF	0.100	0.105		ug/Kg		105	78 - 138	1	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	0.103		ug/Kg		103	72 - 134	2	50
1,2,3,6,7,8-HxCDD	0.100	0.103		ug/Kg		103	76 - 134	4	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	0.108		ug/Kg		108	64 - 162	2	50
1,2,3,7,8,9-HxCDF	0.100	0.107		ug/Kg		107	78 - 130	0	50
1,2,3,7,8-PeCDD	0.100	0.0989		ug/Kg		99	70 - 142	1	50
1,2,3,7,8-PeCDF	0.100	0.104		ug/Kg		104	80 - 134	1	50
2,3,4,6,7,8-HxCDF	0.100	0.106		ug/Kg		106	70 - 156	1	50
2,3,4,7,8-PeCDF	0.100	0.103		ug/Kg		103	68 - 160	0	50
2,3,7,8-TCDD	0.0200	0.0183		ug/Kg		91	67 - 158	3	50
2,3,7,8-TCDF	0.0200	0.0208		ug/Kg		104	75 - 158	2	50
OCDD	0.200	0.194		ug/Kg		97	78 - 144	0	50
OCDF	0.200	0.223		ug/Kg		111	63 - 170	0	50

<i>Isotope Dilution</i>	<i>LCSD</i>	<i>LCSD</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
13C-1,2,3,4,6,7,8-HpCDD	97				26 - 166
13C-1,2,3,4,6,7,8-HpCDF	88				21 - 158
13C-1,2,3,4,7,8,9-HpCDF	95				20 - 186
13C-1,2,3,4,7,8-HxCDD	78				21 - 193
13C-1,2,3,4,7,8-HxCDF	84				19 - 202
13C-1,2,3,6,7,8-HxCDD	79				25 - 163

TestAmerica Seattle

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

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

Lab Sample ID: LCSD 320-243400/3-A

Matrix: Solid

Analysis Batch: 244808

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 243400

<i>Isotope Dilution</i>	<i>LCSD</i>	<i>LCSD</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
13C-1,2,3,6,7,8-HxCDF	84				21 - 159
13C-1,2,3,7,8,9-HxCDF	84				17 - 205
13C-1,2,3,7,8-PeCDD	73				21 - 227
13C-1,2,3,7,8-PeCDF	71				21 - 192
13C-2,3,4,6,7,8-HxCDF	84				22 - 176
13C-2,3,4,7,8-PeCDF	71				13 - 328
13C-2,3,7,8-TCDD	78				20 - 175
13C-2,3,7,8-TCDF	74				22 - 152
13C-OCDD	89				13 - 199
<hr/>					
<i>Surrogate</i>	<i>LCSD</i>	<i>LCSD</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
37Cl-2,3,7,8-TCDD	116				31 - 191

Lab Sample ID: MB 320-243668/1-A

Matrix: Solid

Analysis Batch: 244513

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 243668

<i>Analyte</i>	<i>MB</i>	<i>MB</i>	<i>Result</i>	<i>Qualifier</i>	<i>RL</i>	<i>EDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
1,2,3,4,6,7,8-HpCDD	0.0000959	J q	0.0050	0.000019	ug/Kg	09/04/18 09:00	09/08/18 00:37	1			
1,2,3,4,6,7,8-HpCDF	0.0000768	J q	0.0050	0.000016	ug/Kg	09/04/18 09:00	09/08/18 00:37	1			
1,2,3,4,7,8,9-HpCDF	0.000310	J	0.0050	0.000018	ug/Kg	09/04/18 09:00	09/08/18 00:37	1			
1,2,3,4,7,8-HxCDD	0.000159	J	0.0050	0.000014	ug/Kg	09/04/18 09:00	09/08/18 00:37	1			
1,2,3,4,7,8-HxCDF	0.0000528	J	0.0050	0.000027	ug/Kg	09/04/18 09:00	09/08/18 00:37	1			
1,2,3,6,7,8-HxCDD	ND		0.0050	0.000014	ug/Kg	09/04/18 09:00	09/08/18 00:37	1			
1,2,3,6,7,8-HxCDF	0.0000606	J	0.0050	0.000026	ug/Kg	09/04/18 09:00	09/08/18 00:37	1			
1,2,3,7,8,9-HxCDD	0.0000441	J q	0.0050	0.000013	ug/Kg	09/04/18 09:00	09/08/18 00:37	1			
1,2,3,7,8,9-HxCDF	0.000917	J	0.0050	0.000019	ug/Kg	09/04/18 09:00	09/08/18 00:37	1			
1,2,3,7,8-PeCDD	ND		0.0050	0.000023	ug/Kg	09/04/18 09:00	09/08/18 00:37	1			
1,2,3,7,8-PeCDF	0.000169	J	0.0050	0.000021	ug/Kg	09/04/18 09:00	09/08/18 00:37	1			
2,3,4,6,7,8-HxCDF	ND		0.0050	0.000021	ug/Kg	09/04/18 09:00	09/08/18 00:37	1			
2,3,4,7,8-PeCDF	ND		0.0050	0.000024	ug/Kg	09/04/18 09:00	09/08/18 00:37	1			
2,3,7,8-TCDD	ND		0.0010	0.000028	ug/Kg	09/04/18 09:00	09/08/18 00:37	1			
2,3,7,8-TCDF	0.0000573	J q	0.0010	0.000011	ug/Kg	09/04/18 09:00	09/08/18 00:37	1			
OCDD	0.000744	J	0.010	0.000017	ug/Kg	09/04/18 09:00	09/08/18 00:37	1			
OCDF	0.000163	J	0.010	0.000018	ug/Kg	09/04/18 09:00	09/08/18 00:37	1			

<i>Isotope Dilution</i>	<i>MB</i>	<i>MB</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C-1,2,3,4,6,7,8-HpCDD	88				23 - 140	09/04/18 09:00	09/08/18 00:37	1
13C-1,2,3,4,6,7,8-HpCDF	83				28 - 143	09/04/18 09:00	09/08/18 00:37	1
13C-1,2,3,4,7,8,9-HpCDF	86				26 - 138	09/04/18 09:00	09/08/18 00:37	1
13C-1,2,3,4,7,8-HxCDD	68				32 - 141	09/04/18 09:00	09/08/18 00:37	1
13C-1,2,3,4,7,8-HxCDF	76				26 - 152	09/04/18 09:00	09/08/18 00:37	1
13C-1,2,3,6,7,8-HxCDD	71				28 - 130	09/04/18 09:00	09/08/18 00:37	1
13C-1,2,3,6,7,8-HxCDF	78				26 - 123	09/04/18 09:00	09/08/18 00:37	1
13C-1,2,3,7,8,9-HxCDF	76				29 - 147	09/04/18 09:00	09/08/18 00:37	1
13C-1,2,3,7,8-PeCDD	64				25 - 181	09/04/18 09:00	09/08/18 00:37	1
13C-1,2,3,7,8-PeCDF	65				24 - 185	09/04/18 09:00	09/08/18 00:37	1
13C-2,3,4,6,7,8-HxCDF	77				28 - 136	09/04/18 09:00	09/08/18 00:37	1

TestAmerica Seattle

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

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

Lab Sample ID: MB 320-243668/1-A

Matrix: Solid

Analysis Batch: 244513

Isotope Dilution	MB	MB	Qualifier	Limits
	%Recovery			
13C-2,3,4,7,8-PeCDF	63			21 - 178
13C-2,3,7,8-TCDD	73			25 - 164
13C-2,3,7,8-TCDF	69			24 - 169
13C-OCDD	80			17 - 157

Surrogate	MB	MB	Qualifier	Limits
	%Recovery			
37Cl4-2,3,7,8-TCDD	123			35 - 197

Lab Sample ID: LCS 320-243668/2-A

Matrix: Solid

Analysis Batch: 244513

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec.	Limits
		Result	Qualifier					
1,2,3,4,6,7,8-HpCDD	0.100	0.0998		ug/Kg		100	70 - 140	
1,2,3,4,6,7,8-HpCDF	0.100	0.108		ug/Kg		108	82 - 122	
1,2,3,4,7,8,9-HpCDF	0.100	0.109		ug/Kg		109	78 - 138	
1,2,3,4,7,8-HxCDD	0.100	0.109		ug/Kg		109	70 - 164	
1,2,3,4,7,8-HxCDF	0.100	0.110		ug/Kg		110	72 - 134	
1,2,3,6,7,8-HxCDD	0.100	0.109		ug/Kg		109	76 - 134	
1,2,3,6,7,8-HxCDF	0.100	0.109		ug/Kg		109	84 - 130	
1,2,3,7,8,9-HxCDD	0.100	0.116		ug/Kg		116	64 - 162	
1,2,3,7,8,9-HxCDF	0.100	0.110		ug/Kg		110	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	0.108		ug/Kg		108	80 - 134	
2,3,4,6,7,8-HxCDF	0.100	0.111		ug/Kg		111	70 - 156	
2,3,4,7,8-PeCDF	0.100	0.108		ug/Kg		108	68 - 160	
2,3,7,8-TCDD	0.0200	0.0191		ug/Kg		96	67 - 158	
2,3,7,8-TCDF	0.0200	0.0214		ug/Kg		107	75 - 158	
OCDD	0.200	0.201		ug/Kg		100	78 - 144	
OCDF	0.200	0.229		ug/Kg		114	63 - 170	

Isotope Dilution	LCS	LCS	Qualifier	Limits
	%Recovery			
13C-1,2,3,4,6,7,8-HpCDD	88			26 - 166
13C-1,2,3,4,6,7,8-HpCDF	82			21 - 158
13C-1,2,3,4,7,8,9-HpCDF	87			20 - 186
13C-1,2,3,4,7,8-HxCDD	66			21 - 193
13C-1,2,3,4,7,8-HxCDF	74			19 - 202
13C-1,2,3,6,7,8-HxCDD	71			25 - 163
13C-1,2,3,6,7,8-HxCDF	75			21 - 159
13C-1,2,3,7,8,9-HxCDF	77			17 - 205
13C-1,2,3,7,8-PeCDD	66			21 - 227
13C-1,2,3,7,8-PeCDF	66			21 - 192
13C-2,3,4,6,7,8-HxCDF	77			22 - 176
13C-2,3,4,7,8-PeCDF	63			13 - 328
13C-2,3,7,8-TCDD	72			20 - 175
13C-2,3,7,8-TCDF	70			22 - 152
13C-OCDD	80			13 - 199

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 243668

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 243668

QC Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

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

Lab Sample ID: LCS 320-243668/2-A

Matrix: Solid

Analysis Batch: 244513

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 243668

Surrogate	LCS	LCS	
	%Recovery	Qualifier	Limits
37Cl4-2,3,7,8-TCDD	124		31 - 191

Lab Sample ID: LCSD 320-243668/3-A

Matrix: Solid

Analysis Batch: 244513

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 243668

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.	RPD	Limit
1,2,3,4,6,7,8-HxCDD	0.100	0.0967		ug/Kg		97	70 - 140	3	50
1,2,3,4,6,7,8-HxCDF	0.100	0.102		ug/Kg		102	82 - 122	6	50
1,2,3,4,7,8,9-HxCDF	0.100	0.105		ug/Kg		105	78 - 138	4	50
1,2,3,4,7,8-HxCDD	0.100	0.104		ug/Kg		104	70 - 164	5	50
1,2,3,4,7,8-HxCDF	0.100	0.105		ug/Kg		105	72 - 134	4	50
1,2,3,6,7,8-HxCDD	0.100	0.104		ug/Kg		104	76 - 134	5	50
1,2,3,6,7,8-HxCDF	0.100	0.105		ug/Kg		105	84 - 130	3	50
1,2,3,7,8,9-HxCDD	0.100	0.117		ug/Kg		117	64 - 162	0	50
1,2,3,7,8,9-HxCDF	0.100	0.107		ug/Kg		107	78 - 130	3	50
1,2,3,7,8-PeCDD	0.100	0.0992		ug/Kg		99	70 - 142	3	50
1,2,3,7,8-PeCDF	0.100	0.105		ug/Kg		105	80 - 134	3	50
2,3,4,6,7,8-HxCDF	0.100	0.107		ug/Kg		107	70 - 156	4	50
2,3,4,7,8-PeCDF	0.100	0.104		ug/Kg		104	68 - 160	4	50
2,3,7,8-TCDD	0.0200	0.0183		ug/Kg		91	67 - 158	4	50
2,3,7,8-TCDF	0.0200	0.0208		ug/Kg		104	75 - 158	3	50
OCDD	0.200	0.196		ug/Kg		98	78 - 144	2	50
OCDF	0.200	0.223		ug/Kg		112	63 - 170	2	50

Isotope Dilution	LCSD	LCSD	
	%Recovery	Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	88		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	65		21 - 193
13C-1,2,3,4,7,8-HxCDF	70		19 - 202
13C-1,2,3,6,7,8-HxCDD	70		25 - 163
13C-1,2,3,6,7,8-HxCDF	71		21 - 159
13C-1,2,3,7,8,9-HxCDF	77		17 - 205
13C-1,2,3,7,8-PeCDD	67		21 - 227
13C-1,2,3,7,8-PeCDF	67		21 - 192
13C-2,3,4,6,7,8-HxCDF	76		22 - 176
13C-2,3,4,7,8-PeCDF	63		13 - 328
13C-2,3,7,8-TCDD	74		20 - 175
13C-2,3,7,8-TCDF	71		22 - 152
13C-OCDD	80		13 - 199

Surrogate	LCSD	LCSD	
	%Recovery	Qualifier	Limits
37Cl4-2,3,7,8-TCDD	125		31 - 191

TestAmerica Seattle

Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S151-2to4

Date Collected: 08/14/18 09:35

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-1

Matrix: Solid

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			243160	08/30/18 14:05	SR1	TAL SAC
Total/NA	Analysis	1613B		1	243707	09/03/18 15:01	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		243160	08/30/18 14:05	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244215	09/06/18 06:31	AS	TAL SAC

Client Sample ID: PDI-SC-S151-0to2

Date Collected: 08/14/18 09:30

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-2

Matrix: Solid

Percent Solids: 48.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243160	08/30/18 14:05	SR1	TAL SAC
Total/NA	Analysis	1613B		1	243707	09/03/18 15:47	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		243160	08/30/18 14:05	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244215	09/06/18 07:09	AS	TAL SAC

Client Sample ID: PDI-SC-S151-4to6

Date Collected: 08/14/18 09:40

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-3

Matrix: Solid

Percent Solids: 52.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243160	08/30/18 14:05	SR1	TAL SAC
Total/NA	Analysis	1613B		1	243707	09/03/18 16:33	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		243160	08/30/18 14:05	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244215	09/06/18 07:47	AS	TAL SAC

Client Sample ID: PDI-SC-S151-6to8

Date Collected: 08/14/18 09:45

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-4

Matrix: Solid

Percent Solids: 55.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243160	08/30/18 14:05	SR1	TAL SAC
Total/NA	Analysis	1613B		1	243707	09/03/18 17:19	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		243160	08/30/18 14:05	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244215	09/06/18 08:25	AS	TAL SAC

Client Sample ID: PDI-SC-S151-8to10

Date Collected: 08/14/18 09:50

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-5

Matrix: Solid

Percent Solids: 60.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243160	08/30/18 14:05	SR1	TAL SAC
Total/NA	Analysis	1613B		1	243707	09/03/18 18:05	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		243160	08/30/18 14:05	SR1	TAL SAC

TestAmerica Seattle

Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S151-8to10

Date Collected: 08/14/18 09:50

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-5

Matrix: Solid

Percent Solids: 60.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1613B	RA	1	244215	09/06/18 09:03	AS	TAL SAC

Client Sample ID: PDI-SC-S151-10to12

Date Collected: 08/14/18 09:55

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-6

Matrix: Solid

Percent Solids: 60.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243160	08/30/18 14:05	SR1	TAL SAC
Total/NA	Analysis	1613B		1	243707	09/03/18 18:51	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		243160	08/30/18 14:05	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244215	09/06/18 09:41	AS	TAL SAC

Client Sample ID: PDI-SC-S150-0to2

Date Collected: 08/14/18 12:05

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-8

Matrix: Solid

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			243160	08/30/18 14:05	SR1	TAL SAC
Total/NA	Analysis	1613B		1	243707	09/03/18 19:37	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		243160	08/30/18 14:05	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244215	09/06/18 10:18	AS	TAL SAC

Client Sample ID: PDI-SC-S150-2to4

Date Collected: 08/14/18 12:10

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-9

Matrix: Solid

Percent Solids: 50.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243160	08/30/18 14:05	SR1	TAL SAC
Total/NA	Analysis	1613B		1	243707	09/03/18 20:23	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		243160	08/30/18 14:05	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244215	09/06/18 10:56	AS	TAL SAC

Client Sample ID: PDI-SC-S150-4to6

Date Collected: 08/14/18 12:15

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-10

Matrix: Solid

Percent Solids: 48.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244556	09/07/18 04:45	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B		1	243982	09/04/18 17:54	AS	TAL SAC

TestAmerica Seattle

Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S150-4to6D

Date Collected: 08/14/18 12:15

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-11

Matrix: Solid

Percent Solids: 48.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244556	09/07/18 05:23	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B		1	243982	09/04/18 18:42	AS	TAL SAC

Client Sample ID: PDI-SC-S150-6to7.7

Date Collected: 08/14/18 12:10

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-12

Matrix: Solid

Percent Solids: 51.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244556	09/07/18 06:01	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B		1	243982	09/04/18 19:31	AS	TAL SAC

Client Sample ID: PDI-SC-S150-7.7to9.7

Date Collected: 08/14/18 12:25

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-13

Matrix: Solid

Percent Solids: 76.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244556	09/07/18 04:08	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B		1	243982	09/04/18 20:19	AS	TAL SAC

Client Sample ID: PDI-SC-S150-9.7to11.1

Date Collected: 08/14/18 12:30

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-14

Matrix: Solid

Percent Solids: 76.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244556	09/07/18 02:14	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B		1	243982	09/04/18 21:07	AS	TAL SAC

Client Sample ID: PDI-SC-S150-11.1to12.5

Date Collected: 08/14/18 12:35

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-15

Matrix: Solid

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	RA		243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244556	09/07/18 02:52	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			243217	08/30/18 16:11	SR1	TAL SAC

TestAmerica Seattle

Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S150-11.1to12.5

Date Collected: 08/14/18 12:35

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-15

Matrix: Solid

Percent Solids: 73.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1613B		1	243982	09/04/18 21:55	AS	TAL SAC

Client Sample ID: PDI-SC-S146-0to2

Date Collected: 08/14/18 16:00

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-16

Matrix: Solid

Percent Solids: 49.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244556	09/07/18 06:39	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B		1	243998	09/05/18 02:38	AS	TAL SAC

Client Sample ID: PDI-SC-S146-2to4

Date Collected: 08/14/18 16:05

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-17

Matrix: Solid

Percent Solids: 54.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244556	09/07/18 07:17	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B		1	243998	09/05/18 03:26	AS	TAL SAC

Client Sample ID: PDI-SC-S146-4to5

Date Collected: 08/14/18 16:10

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-18

Matrix: Solid

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	RA		243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244556	09/07/18 07:55	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B		1	243998	09/05/18 04:14	AS	TAL SAC

Client Sample ID: PDI-SC-S146-5to7

Date Collected: 08/14/18 16:15

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-19

Matrix: Solid

Percent Solids: 72.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244556	09/07/18 03:30	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B		1	243998	09/05/18 05:03	AS	TAL SAC

TestAmerica Seattle

Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S146-7to8

Date Collected: 08/14/18 16:20

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-20

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			243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B		1	243998	09/05/18 05:51	AS	TAL SAC

Client Sample ID: PDI-SC-S146-8to9.1

Date Collected: 08/14/18 16:25

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-21

Matrix: Solid

Percent Solids: 74.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244558	09/07/18 13:37	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B		1	243998	09/05/18 06:39	AS	TAL SAC

Client Sample ID: PDI-SC-S136-0to2

Date Collected: 08/14/18 17:10

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-22

Matrix: Solid

Percent Solids: 67.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244558	09/07/18 14:15	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B		1	243998	09/05/18 07:27	AS	TAL SAC

Client Sample ID: PDI-SC-S136-2to4

Date Collected: 08/14/18 17:15

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-23

Matrix: Solid

Percent Solids: 79.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244558	09/07/18 14:53	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B		1	243998	09/05/18 08:16	AS	TAL SAC

Client Sample ID: PDI-SC-S136-4to6

Date Collected: 08/14/18 17:20

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-24

Matrix: Solid

Percent Solids: 77.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244558	09/07/18 15:31	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B		1	243998	09/05/18 09:04	AS	TAL SAC

TestAmerica Seattle

Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S136-6to7

Date Collected: 08/14/18 17:25

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-25

Matrix: Solid

Percent Solids: 75.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244558	09/07/18 16:08	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B		1	243998	09/05/18 09:52	AS	TAL SAC

Client Sample ID: PDI-SC-S136-7to9

Date Collected: 08/14/18 17:30

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-26

Matrix: Solid

Percent Solids: 69.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B		1	244808	09/10/18 17:28	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244558	09/07/18 16:46	ALM	TAL SAC

Client Sample ID: PDI-SC-S136-9to11.3

Date Collected: 08/14/18 17:35

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-27

Matrix: Solid

Percent Solids: 71.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B		1	244808	09/10/18 18:14	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		243217	08/30/18 16:11	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244558	09/07/18 17:24	ALM	TAL SAC

Client Sample ID: PDI-SC-S092-0to2

Date Collected: 08/14/18 09:15

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-28

Matrix: Solid

Percent Solids: 64.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B		1	244808	09/10/18 16:42	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244864	09/10/18 13:33	AS	TAL SAC

Client Sample ID: PDI-SC-S092-2to4

Date Collected: 08/14/18 09:20

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-29

Matrix: Solid

Percent Solids: 56.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244864	09/10/18 14:11	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			243400	08/31/18 11:06	SR1	TAL SAC

TestAmerica Seattle

Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S092-2to4

Date Collected: 08/14/18 09:20

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-29

Matrix: Solid

Percent Solids: 56.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1613B		1	244316	09/07/18 04:08	AS	TAL SAC

Client Sample ID: PDI-SC-S092-4to6

Date Collected: 08/14/18 09:25

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-30

Matrix: Solid

Percent Solids: 63.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244864	09/10/18 14:49	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B		1	244316	09/07/18 04:56	AS	TAL SAC

Client Sample ID: PDI-SC-S092-4to6D

Date Collected: 08/14/18 09:30

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-31

Matrix: Solid

Percent Solids: 63.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244864	09/10/18 15:27	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B		1	244316	09/07/18 05:44	AS	TAL SAC

Client Sample ID: PDI-SC-S092-6to8

Date Collected: 08/14/18 09:30

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-32

Matrix: Solid

Percent Solids: 60.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B		1	244316	09/07/18 06:33	AS	TAL SAC

Client Sample ID: PDI-SC-S092-8to9.9

Date Collected: 08/14/18 09:35

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-33

Matrix: Solid

Percent Solids: 63.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B		1	244316	09/07/18 07:21	AS	TAL SAC

TestAmerica Seattle

Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S092-9.9to10.9

Date Collected: 08/14/18 09:40

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-34

Matrix: Solid

Percent Solids: 65.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B		1	244316	09/07/18 08:09	AS	TAL SAC

Client Sample ID: PDI-SC-S065-0to2

Date Collected: 08/14/18 11:10

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-35

Matrix: Solid

Percent Solids: 53.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244864	09/10/18 16:05	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B		1	244316	09/07/18 08:58	AS	TAL SAC

Client Sample ID: PDI-SC-S065-2to4

Date Collected: 08/14/18 11:15

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-36

Matrix: Solid

Percent Solids: 52.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	244864	09/10/18 16:43	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B		1	244316	09/07/18 09:46	AS	TAL SAC

Client Sample ID: PDI-SC-S065-4to6

Date Collected: 08/14/18 11:20

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-37

Matrix: Solid

Percent Solids: 55.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245065	09/12/18 02:06	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	245301	09/12/18 13:56	ALM	TAL SAC

Client Sample ID: PDI-SC-S065-6to8

Date Collected: 08/14/18 11:25

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-38

Matrix: Solid

Percent Solids: 56.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245065	09/12/18 02:52	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	245301	09/12/18 14:34	ALM	TAL SAC

TestAmerica Seattle

Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S065-8to10

Date Collected: 08/14/18 11:30

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-39

Matrix: Solid

Percent Solids: 60.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245065	09/12/18 03:38	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	245301	09/12/18 15:12	ALM	TAL SAC

Client Sample ID: PDI-SC-S065-12to14.3

Date Collected: 08/14/18 11:40

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-40

Matrix: Solid

Percent Solids: 60.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245065	09/12/18 04:24	AS	TAL SAC

Client Sample ID: PDI-SC-S070-0to1.1

Date Collected: 08/14/18 12:35

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-41

Matrix: Solid

Percent Solids: 59.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245065	09/12/18 05:10	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	245301	09/12/18 15:50	ALM	TAL SAC

Client Sample ID: PDI-SC-S070-1.1to2.4

Date Collected: 08/14/18 12:40

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-42

Matrix: Solid

Percent Solids: 82.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245065	09/12/18 05:56	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	245301	09/12/18 16:27	ALM	TAL SAC

Client Sample ID: PDI-SC-S070-2.4to4.4

Date Collected: 08/14/18 12:45

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-43

Matrix: Solid

Percent Solids: 61.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B		10	245065	09/12/18 06:42	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	10	245301	09/12/18 17:05	ALM	TAL SAC

TestAmerica Seattle

Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-SC-S070-4.4to6.4

Date Collected: 08/14/18 12:50

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-44

Matrix: Solid

Percent Solids: 61.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245065	09/12/18 07:28	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	245301	09/12/18 17:43	ALM	TAL SAC

Client Sample ID: PDI-SC-S070-6.4to8.4

Date Collected: 08/14/18 12:55

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-45

Matrix: Solid

Percent Solids: 62.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245065	09/12/18 08:14	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	245301	09/12/18 18:21	ALM	TAL SAC

Client Sample ID: PDI-SC-S070-8.4to10.4

Date Collected: 08/14/18 13:10

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-46

Matrix: Solid

Percent Solids: 64.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B		10	245065	09/12/18 09:00	AS	TAL SAC

Client Sample ID: PDI-SC-S065-10to12

Date Collected: 08/14/18 11:35

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-47

Matrix: Solid

Percent Solids: 62.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245065	09/12/18 09:46	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		243400	08/31/18 11:06	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	245301	09/12/18 18:59	ALM	TAL SAC

Client Sample ID: PDI-SC-S070-10.4to12.6

Date Collected: 08/14/18 13:10

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-48

Matrix: Solid

Percent Solids: 63.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243668	09/04/18 09:00	SR1	TAL SAC
Total/NA	Analysis	1613B		1	244552	09/08/18 15:40	AS	TAL SAC

TestAmerica Seattle

Lab Chronicle

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Client Sample ID: PDI-RB-SS-180814-1040

Date Collected: 08/14/18 10:40

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-49

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			240796	08/20/18 08:53	ITH	TAL SAC
Total/NA	Analysis	1613B		1	241471	08/22/18 21:17	ALM	TAL SAC

Client Sample ID: PDI-RB-SS-180815-0730

Date Collected: 08/15/18 07:30

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-50

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			242488	08/28/18 08:43	ITH	TAL SAC
Total/NA	Analysis	1613B		1	243696	09/01/18 08:22	AS	TAL SAC

Client Sample ID: PDI-RB-SS-180815-1340

Date Collected: 08/15/18 13:40

Date Received: 08/15/18 16:20

Lab Sample ID: 580-79626-51

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			242488	08/28/18 08:43	ITH	TAL SAC
Total/NA	Analysis	1613B		1	243696	09/01/18 09:08	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

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Laboratory: TestAmerica Seattle

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-024	01-19-19
ANAB	DoD ELAP		L2236	01-19-19
ANAB	ISO/IEC 17025		L2236	01-19-19
California	State Program	9	2901	11-05-18
Montana (UST)	State Program	8	N/A	04-30-20
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

TestAmerica Seattle

Sample Summary

Client: AECOM

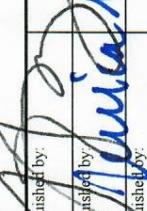
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-79626-1	PDI-SC-S151-2to4	Solid	08/14/18 09:35	08/15/18 16:20
580-79626-2	PDI-SC-S151-0to2	Solid	08/14/18 09:30	08/15/18 16:20
580-79626-3	PDI-SC-S151-4to6	Solid	08/14/18 09:40	08/15/18 16:20
580-79626-4	PDI-SC-S151-6to8	Solid	08/14/18 09:45	08/15/18 16:20
580-79626-5	PDI-SC-S151-8to10	Solid	08/14/18 09:50	08/15/18 16:20
580-79626-6	PDI-SC-S151-10to12	Solid	08/14/18 09:55	08/15/18 16:20
580-79626-8	PDI-SC-S150-0to2	Solid	08/14/18 12:05	08/15/18 16:20
580-79626-9	PDI-SC-S150-2to4	Solid	08/14/18 12:10	08/15/18 16:20
580-79626-10	PDI-SC-S150-4to6	Solid	08/14/18 12:15	08/15/18 16:20
580-79626-11	PDI-SC-S150-4to6D	Solid	08/14/18 12:15	08/15/18 16:20
580-79626-12	PDI-SC-S150-6to7.7	Solid	08/14/18 12:10	08/15/18 16:20
580-79626-13	PDI-SC-S150-7.7to9.7	Solid	08/14/18 12:25	08/15/18 16:20
580-79626-14	PDI-SC-S150-9.7to11.1	Solid	08/14/18 12:30	08/15/18 16:20
580-79626-15	PDI-SC-S150-11.1to12.5	Solid	08/14/18 12:35	08/15/18 16:20
580-79626-16	PDI-SC-S146-0to2	Solid	08/14/18 16:00	08/15/18 16:20
580-79626-17	PDI-SC-S146-2to4	Solid	08/14/18 16:05	08/15/18 16:20
580-79626-18	PDI-SC-S146-4to5	Solid	08/14/18 16:10	08/15/18 16:20
580-79626-19	PDI-SC-S146-5to7	Solid	08/14/18 16:15	08/15/18 16:20
580-79626-20	PDI-SC-S146-7to8	Solid	08/14/18 16:20	08/15/18 16:20
580-79626-21	PDI-SC-S146-8to9.1	Solid	08/14/18 16:25	08/15/18 16:20
580-79626-22	PDI-SC-S136-0to2	Solid	08/14/18 17:10	08/15/18 16:20
580-79626-23	PDI-SC-S136-2to4	Solid	08/14/18 17:15	08/15/18 16:20
580-79626-24	PDI-SC-S136-4to6	Solid	08/14/18 17:20	08/15/18 16:20
580-79626-25	PDI-SC-S136-6to7	Solid	08/14/18 17:25	08/15/18 16:20
580-79626-26	PDI-SC-S136-7to9	Solid	08/14/18 17:30	08/15/18 16:20
580-79626-27	PDI-SC-S136-9to11.3	Solid	08/14/18 17:35	08/15/18 16:20
580-79626-28	PDI-SC-S092-0to2	Solid	08/14/18 09:15	08/15/18 16:20
580-79626-29	PDI-SC-S092-2to4	Solid	08/14/18 09:20	08/15/18 16:20
580-79626-30	PDI-SC-S092-4to6	Solid	08/14/18 09:25	08/15/18 16:20
580-79626-31	PDI-SC-S092-4to6D	Solid	08/14/18 09:30	08/15/18 16:20
580-79626-32	PDI-SC-S092-6to8	Solid	08/14/18 09:30	08/15/18 16:20
580-79626-33	PDI-SC-S092-8to9.9	Solid	08/14/18 09:35	08/15/18 16:20
580-79626-34	PDI-SC-S092-9.9to10.9	Solid	08/14/18 09:40	08/15/18 16:20
580-79626-35	PDI-SC-S065-0to2	Solid	08/14/18 11:10	08/15/18 16:20
580-79626-36	PDI-SC-S065-2to4	Solid	08/14/18 11:15	08/15/18 16:20
580-79626-37	PDI-SC-S065-4to6	Solid	08/14/18 11:20	08/15/18 16:20
580-79626-38	PDI-SC-S065-6to8	Solid	08/14/18 11:25	08/15/18 16:20
580-79626-39	PDI-SC-S065-8to10	Solid	08/14/18 11:30	08/15/18 16:20
580-79626-40	PDI-SC-S065-12to14.3	Solid	08/14/18 11:40	08/15/18 16:20
580-79626-41	PDI-SC-S070-0to1.1	Solid	08/14/18 12:35	08/15/18 16:20
580-79626-42	PDI-SC-S070-1.1to2.4	Solid	08/14/18 12:40	08/15/18 16:20
580-79626-43	PDI-SC-S070-2.4to4.4	Solid	08/14/18 12:45	08/15/18 16:20
580-79626-44	PDI-SC-S070-4.4to6.4	Solid	08/14/18 12:50	08/15/18 16:20
580-79626-45	PDI-SC-S070-6.4to8.4	Solid	08/14/18 12:55	08/15/18 16:20
580-79626-46	PDI-SC-S070-8.4to10.4	Solid	08/14/18 13:10	08/15/18 16:20
580-79626-47	PDI-SC-S065-10to12	Solid	08/14/18 11:35	08/15/18 16:20
580-79626-48	PDI-SC-S070-10.4to12.6	Solid	08/14/18 13:10	08/15/18 16:20
580-79626-49	PDI-RB-SS-180814-1040	Water	08/14/18 10:40	08/15/18 16:20
580-79626-50	PDI-RB-SS-180815-0730	Water	08/15/18 07:30	08/15/18 16:20
580-79626-51	PDI-RB-SS-180815-1340	Water	08/15/18 13:40	08/15/18 16:20

TestAmerica Seattle

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SUBSURFACE SEDIMENT												
CHAIN OF CUSTODY												
<p>TestAmerica-Seattle 5755-8th Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047</p> <p>Client Contact</p> <p>AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1-(486) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project # 60566335 Study: Subsurface Sediment</p> <p>Sample Type:</p>				<p>Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010</p> <p>Analysis Turnaround Time</p> <p><input checked="" type="checkbox"/> Calendar (C) or Work Days (W) W <input type="checkbox"/> Other _____</p>				<p>Site Contact: Jennifer Ray Laboratory Contact: Elaine-Walker</p> <p>Attributes/Timing</p> <p>Total Solids 8082A, 8270D-SIM, 9060, 1600-3 PCB Aroclors, PAHs, Total Organic Carbon, Grainsize ASTM D7928/D6913 Attributelimits ASTM D4318</p> <p>Barcode:</p> <p>580-79626 Chain of Custody</p>				
Sample Specific Notes:												
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fractionation					Archive
							PCDD/PS 1613B	PCDD/PS 1613B	PCDD/PS 1613B	PCDD/PS 1613B	PCDD/PS 1613B	
PDI-SC-S151 - 2 to 4	8/14/2018	9:35	SC	ED	4		X	X	X	X	X	
PDI-SC-S151 - 0 to 2	8/14/2018	9:30	SC	ED	4		X	X	X	X	X	
PDI-SC-S151 - 4 to 6	8/14/2018	9:40	SC	MS/MSD	ED	6		X	X	X	X	
PDI-SC-S151 - 6 to 8	8/14/2018	9:45	SC	ED	4		X	X	X	X	X	
PDI-SC-S151 - 8 to 10	8/14/2018	9:50	SC	ED	4		X	X	X	X	X	
PDI-SC-S151 - 10 to 12	8/14/2018	9:55	SC	ED	4		X	X	X	X	X	
PDI-SC-S151 - 11 to 12	8/14/2018	10:00	SC	ED	4		X	X	X	X	X	
PDI-SC-S150 - 0 to 2	8/14/2018	12:05	SC	ED			X	X	X	X	X	
PDI-SC-S150 - 2 to 4	8/14/2018	12:10	SC	ED	4		X	X	X	X	X	
PDI-SC-S150 - 4 to 6	8/14/2018	12:15	SC	ED	4		X	X	X	X	X	
PDI-SC-S150 - 4 to 6D	8/14/2018	12:20	SC	ED	4		X	X	X	X	X	
PDI-SC-S150 - 6 to 7.7	8/14/2018	12:25	SC	ED	4		X	X	X	X	X	
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=Amber glass, G=glass, RC=Resin Coat												
Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid												
Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)												
<p>Special Instructions/QC Requirements & Comments: Separate reports for each lab</p> <p>Sample Disposal</p> <p><input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For 12 Months</p>												
 Relinquished by: M. G.		Date/Time: 8/15/18 1548 Company: NR		Received by:  J. Walker		Date/Time: 8/15/18 1545 Company: NR						
 Relinquished by: M. G.		Date/Time: 8/15/18 1620 Company: NR		Received by:  J. Walker		Date/Time: 8/15/18 1620 Company: NR						

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

AECOM
Client Contact
1111 3rd Ave Suite 1600
Seattle, WA 98101
Phone: (206) 438-2700 Fax: 1-(866) 495-5288

Project Name: Portland Harbor Pre-Remedial Design
Investigation and Baseline Sampling

Portland, OR
Project #: 60566335 Study: Subsurface Sediment

Sample Type:

SUBSURFACE SEDIMENT

CHAIN OF CUSTODY

Site Contact: Jennifer Ray									
Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010 Analysis Turnaround Time					Laboratory Contact: Elaine-Walker Carrier: Courier				
Date: 8/15/18									
COC No: 1 of 5 pages									
Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling									
Portland, OR Project #: 60566335 Study: Subsurface Sediment									
Sample Specific Notes:									
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Preciation	PCDD/Fs 1613B	Archive
PDI-SC-S150 - 7.7 to 9.7	8/14/2018	12:25	SC		ED	4			
PDI-SC-S150 - 9.7 to 11.1	8/14/2018	12:30	SC		ED	4			
PDI-SC-S150 - 11.1 to 12.5	8/14/2018	12:35	SC		ED	4			
PDI-SC-S146 - 0 to 2	8/14/2018	16:00	SC		ED	4			
PDI-SC-S146 - 2 to 4	8/14/2018	16:05	SC		ED	4			
PDI-SC-S146 - 4 to 5	8/14/2018	16:10	SC		ED	4			
PDI-SC-S146 - 5 to 7	8/14/2018	16:15	SC		ED	4			
PDI-SC-S146 - 7 to 8	8/14/2018	16:20	SC		ED	4			
PDI-SC-S146 - 8 to 9.1	8/14/2018	16:25	SC		ED	4			
PDI-SC-S136 - 0 to 2	8/14/2018	17:10	SC		ED	4			
PDI-SC-S136 - 2 to 4	8/14/2018	17:15	SC		ED	4			
PDI-SC-S136 - 4 to 6	8/14/2018	17:20	SC	MSGMSG	ED	4			
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=glass, RC=Resin Col									
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				
Archive For 12 Months									

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

Relinquished by: 	Company: AECOM	Date/Time: 8/15/18 1543	Received by: J. Martin Thor	Company: M-E	Date/Time: 8/15/18 1545
Relinquished by: 	Company: ME	Date/Time: 8/15/18 1620	Received by: J. Martin Thor	Company: M-E	Date/Time: 8/15/18 1620
Relinquished by: 	Company: ME	Date/Time: 8/15/18 1620	Received by: J. Martin Thor	Company: M-E	Date/Time: 8/15/18 1620

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TestAmerica-Seattle		SUBSURFACE SEDIMENT																																																																																																																																																																											
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<table border="1"> <thead> <tr> <th rowspan="2">Sample Identification</th> <th rowspan="2">Sample Date</th> <th rowspan="2">Sample Time</th> <th rowspan="2">Matrix</th> <th rowspan="2">QC Sample</th> <th rowspan="2">Sampler's Initials</th> <th rowspan="2">Total No. of Cont.</th> <th colspan="4">Fraction</th> <th rowspan="2">Sample Specific Notes:</th> </tr> <tr> <th>PCDD/Fs 1613B</th> <th>Aerobic</th> <th>Total Solids 8082A, 8270D-SIM, 9060, 160.3</th> <th>PCB Aroclors, PAHs, Total Organic Carbon</th> <th>Grain size ASTM D7928/D6913</th> <th>Atterberg Limits ASTM D4318</th> </tr> </thead> <tbody> <tr> <td>PDI-SC-S136 - 6 to 7</td> <td>8/14/2018</td> <td>17:25</td> <td>SC</td> <td></td> <td>ED</td> <td>4</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> <td></td> </tr> <tr> <td>PDI-SC-S136 - 7 to 9</td> <td>8/14/2018</td> <td>17:30</td> <td>SC</td> <td></td> <td>ED</td> <td>4</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> <td></td> </tr> <tr> <td>PDI-SC-S136 - 9 to 11.3</td> <td>8/14/2018</td> <td>17:35</td> <td>SC</td> <td></td> <td>ED</td> <td>4</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> <td></td> </tr> <tr> <td>PDI-SC-S092 - 0 to 2</td> <td>8/14/2018</td> <td>9:15</td> <td>SC</td> <td></td> <td>ED</td> <td>4</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> <td></td> </tr> <tr> <td>PDI-SC-S092 - 2 to 4</td> <td>8/14/2018</td> <td>9:20</td> <td>SC</td> <td></td> <td>ED</td> <td>5</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> <td></td> </tr> <tr> <td>PDI-SC-S092 - 4 to 6</td> <td>8/14/2018</td> <td>9:25</td> <td>SC</td> <td></td> <td>ED</td> <td>4</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> <td></td> </tr> <tr> <td>PDI-SC-S092 - 4 to 6D</td> <td>8/14/2018</td> <td>9:30</td> <td>SC</td> <td></td> <td>ED</td> <td>4</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> <td>50 % solids per AECOM</td> </tr> <tr> <td>PDI-SC-S092 - 6 to 8</td> <td>8/14/2018</td> <td>9:30</td> <td>SC</td> <td></td> <td>ED</td> <td>4</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> <td></td> </tr> <tr> <td>PDI-SC-S092 - 8 to 9.9</td> <td>8/14/2018</td> <td>9:35</td> <td>SC</td> <td></td> <td>ED</td> <td>4</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> <td></td> </tr> <tr> <td>PDI-SC-S092 - 9.9 to 10.9</td> <td>8/14/2018</td> <td>9:40</td> <td>SC</td> <td></td> <td>ED</td> <td>4</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> <td></td> </tr> <tr> <td>PDI-SC-S065 - 0 to 2</td> <td>8/14/2018</td> <td>1110</td> <td>SC</td> <td></td> <td>ED</td> <td>4</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> <td></td> </tr> <tr> <td>PDI-SC-S065 - 2 to 4</td> <td>8/14/2018</td> <td>1115</td> <td>SC</td> <td></td> <td>ED</td> <td>4</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> <td>X</td> </tr> </tbody> </table>												Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction				Sample Specific Notes:	PCDD/Fs 1613B	Aerobic	Total Solids 8082A, 8270D-SIM, 9060, 160.3	PCB Aroclors, PAHs, Total Organic Carbon	Grain size ASTM D7928/D6913	Atterberg Limits ASTM D4318	PDI-SC-S136 - 6 to 7	8/14/2018	17:25	SC		ED	4	x	x	x	x		PDI-SC-S136 - 7 to 9	8/14/2018	17:30	SC		ED	4	x	x	x	x		PDI-SC-S136 - 9 to 11.3	8/14/2018	17:35	SC		ED	4	x	x	x	x		PDI-SC-S092 - 0 to 2	8/14/2018	9:15	SC		ED	4	x	x	x	x		PDI-SC-S092 - 2 to 4	8/14/2018	9:20	SC		ED	5	x	x	x	x		PDI-SC-S092 - 4 to 6	8/14/2018	9:25	SC		ED	4	x	x	x	x		PDI-SC-S092 - 4 to 6D	8/14/2018	9:30	SC		ED	4	x	x	x	x	50 % solids per AECOM	PDI-SC-S092 - 6 to 8	8/14/2018	9:30	SC		ED	4	x	x	x	x		PDI-SC-S092 - 8 to 9.9	8/14/2018	9:35	SC		ED	4	x	x	x	x		PDI-SC-S092 - 9.9 to 10.9	8/14/2018	9:40	SC		ED	4	x	x	x	x		PDI-SC-S065 - 0 to 2	8/14/2018	1110	SC		ED	4	x	x	x	x		PDI-SC-S065 - 2 to 4	8/14/2018	1115	SC		ED	4	x	x	x	x	X
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PDI-SC-S136 - 7 to 9	8/14/2018	17:30	SC		ED	4	x	x	x	x																																																																																																																																																																			
PDI-SC-S136 - 9 to 11.3	8/14/2018	17:35	SC		ED	4	x	x	x	x																																																																																																																																																																			
PDI-SC-S092 - 0 to 2	8/14/2018	9:15	SC		ED	4	x	x	x	x																																																																																																																																																																			
PDI-SC-S092 - 2 to 4	8/14/2018	9:20	SC		ED	5	x	x	x	x																																																																																																																																																																			
PDI-SC-S092 - 4 to 6	8/14/2018	9:25	SC		ED	4	x	x	x	x																																																																																																																																																																			
PDI-SC-S092 - 4 to 6D	8/14/2018	9:30	SC		ED	4	x	x	x	x	50 % solids per AECOM																																																																																																																																																																		
PDI-SC-S092 - 6 to 8	8/14/2018	9:30	SC		ED	4	x	x	x	x																																																																																																																																																																			
PDI-SC-S092 - 8 to 9.9	8/14/2018	9:35	SC		ED	4	x	x	x	x																																																																																																																																																																			
PDI-SC-S092 - 9.9 to 10.9	8/14/2018	9:40	SC		ED	4	x	x	x	x																																																																																																																																																																			
PDI-SC-S065 - 0 to 2	8/14/2018	1110	SC		ED	4	x	x	x	x																																																																																																																																																																			
PDI-SC-S065 - 2 to 4	8/14/2018	1115	SC		ED	4	x	x	x	x	X																																																																																																																																																																		
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Coil Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid Fraction: D=Dissolved, PRT=Particulate, T=Total (unfiltered) Sample Disposal <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For 12 Months																																																																																																																																																																													
Special Instructions/QC Requirements & Comments: Separate reports for each lab																																																																																																																																																																													
Relinquished by: 	Company: AECOM	Date/Time: 8/15/18 1545	Received by: 	Date/Time: 8/15/18 1545	Company: AECOM	Date/Time: 8/15/18 1545																																																																																																																																																																							
Relinquished by: 	Company: M.E.	Date/Time: 8/15/18 1620	Received by: 	Date/Time: 8/15/18 1620	Company: M.E.	Date/Time: 8/15/18 1620																																																																																																																																																																							

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Tacoma, WA 98424-1317

Phone: 253-922-2310 Fax: 253-922-5047

Client Contact

Project Contact: Amy Dahl / Chelsey Cook

Tel: (206) 438-2261 / (206) 338-2010

Analysis Turnaround Time

Site Contact: Jennifer Ray

Laboratory Contact: Elaine-Walker

Date: 8/15/18

Carrier: Courier

COC No. 1

5 of 5 pages

SUBSURFACE SEDIMENT

CHAIN OF CUSTODY

Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling		Analysis Turnaround Time		Site Contact: Jennifer Ray		Date: 8/15/18	
Portland, OR		Calendar (C) or Work Days (W)		Laboratory Contact: Elaine-Walker		Carrier: Courier	
Project #: 60566335 Study: Subsurface Sediment		<input checked="" type="checkbox"/> 21 days	<input type="checkbox"/> Other _____				
Sample Type:							
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fractionation
PDI-SC-S065 - 4 to 6	8/14/2018	11:20	SC		ED	4	Arbitrary
PDI-SC-S065 - 6 to 8	8/14/2018	11:25	SC		ED	4	Arbitrary
PDI-SC-S065 - 8 to 10	8/14/2018	11:30	SC		ED	4	Arbitrary
PDI-SC-S065 - 12 to 14.3	8/14/2018	11:40	SC		ED	4	Arbitrary
PDI-SC-S070 - 0 to 1.1	8/14/2018	12:35	SC		ED	5	Arbitrary
PDI-SC-S070 - 1.1 to 2.4	8/14/2018	12:40	SC		ED	4	Arbitrary
PDI-SC-S070 - 2.4 to 4.4	8/14/2018	12:45	SC		ED	3	Arbitrary
PDI-SC-S070 - 4.4 to 6.4	8/14/2018	12:50	SC		ED	4	Arbitrary
PDI-SC-S070 - 6.4 to 8.4	8/14/2018	12:55	SC		ED	4	Arbitrary
PDI-SC-S070 - 8.4 to 10.4	8/14/2018	13:10	SC		ED	4	Arbitrary
PDI-SC-S070-10 to 12	8/14/2018	11:35	SC		ED	4	Arbitrary
PDI-SC-S070-10 to 12	8/14/2018	13:10	SC		ED	4	Arbitrary
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							
Relinquished by:		Company:		Date/Time:		Received by:	
<i>M. E.</i>		TestAmerica		8/15/18 1545		<i>M. E.</i>	
Relinquished by:		Company:		Date/Time:		Received by:	
<i>M. E.</i>		TestAmerica		8/15/18 1620		<i>M. E.</i>	
Relinquished by:		Company:		Date/Time:		Received by:	
Sample Disposal							
<input type="checkbox"/> Return To Client		<input checked="" type="checkbox"/> Disposal By Lab		<input type="checkbox"/> Archive For 12 Months			

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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: 8/15/18	COC No. 1 <i>2</i> of <i>5</i> pages			
		Analysis Turnaround Time Calendar (C) or Work Days (W) <u>W</u>										Carrier: Courier				
AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1+(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Subsurface Sediment Sample Type:		<input checked="" type="checkbox"/> 21 days <input type="checkbox"/> Other _____							 580-79626 Chain of Custody			Sample Specific Notes: <i>50 8/16/18 1535</i> <i>50 8/16/18 1535</i> <i>> per AECOM</i>				
		Fraction	PCDD/DFs 1613B	Archive	Grain size ASTM D7928D913	PCB Analogs, PAHs, Total Organic Carbon, Total Solids 8082A, 8270B-SIM, 9060, 160.3	Atterberg Limits ASTM D4318									
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.										
PDI-SC-S151 - 2 to 4	8/14/2018	9:35	SC		ED	4	x	x	x	x	x					
PDI-SC-S151 - 0 to 2	8/14/2018	9:30	SC		ED	4	x	x	x	x	x					
PDI-SC-S151 - 4 to 6	8/14/2018	9:40	SC	MS/MSD	ED	6	x	x	x	x	x					
PDI-SC-S151 - 6 to 8	8/14/2018	9:45	SC		ED	4	x	x	x	x	x					
PDI-SC-S151 - 8 to 10	8/14/2018	9:50	SC		ED	4	x	x	x	x	x					
PDI-SC-S151 - 10 to 12	8/14/2018	9:55	SC		ED	4	x	x	x	x	x					
PDI-SC-S151 - 11 to 12	8/14/2018	10:00	SC		ED	4	x	x	x	x	x					
PDI-SC-S150 - 0 to 2	8/14/2018	12:05	SC		ED		x	x	x	x	x					
PDI-SC-S150 - 2 to 4	8/14/2018	12:10	SC		ED	4	x	x	x	x	x					
PDI-SC-S150 - 4 to 6	8/14/2018	12:15	SC		ED	4	x	x	x	x	x					
PDI-SC-S150 - 4 to 6D	8/14/2018	12:20	SC		ED	4	x	x	x	x	x					
PDI-SC-S150 - 6 to 7.7	8/14/2018	12:20	SC		ED	4	x	x	x	x	x					
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Container Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid																
Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)							Sample Disposal									
							<input type="checkbox"/> Return To Client	<input checked="" type="checkbox"/> Disposal By Lab	<input checked="" type="checkbox"/> Archive For 12 Months							
Special Instructions/QC Requirements & Comments: Separate reports for each lab																
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:											
<i>M. E.</i>	AECOM	8/15/18 1545	<i>Union M.</i>	M. E.	8/15/18 1545											
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:											
<i>M. E.</i>	M. E.	8/15/18 1620	<i>M. E.</i>	TAPON	8/15/18 1620											
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:											
<i>B. S.</i>	SKAT	8/16/18 1720	<i>B. S.</i>	SKAT	8/17/18 0930											

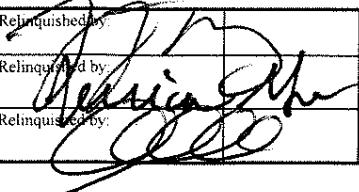
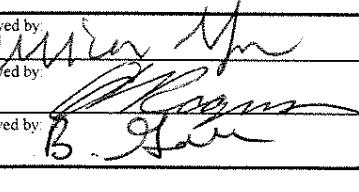
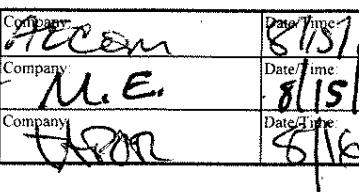
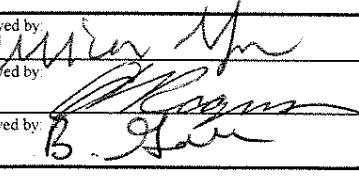
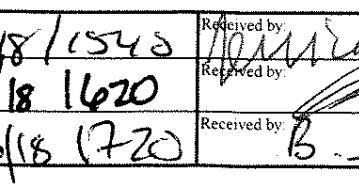
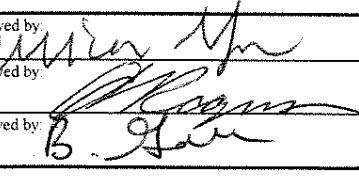
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SUBSURFACE SEDIMENT CHAIN OF CUSTODY

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				Site Contact: Jennifer Ray Laboratory Contact: Elaine-Walker				Date: 8/15/18 Carrier: Courier					
		Analysis Turnaround Time <input checked="" type="checkbox"/> 21 days <input type="checkbox"/> Other _____													
						Fraction	PCDD/PCDFs 1613B	Archive	Grain size ASTM D792/80D6913	PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SML, 9060, 160.3	Atterberg Limits ASTM D4318				
		Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.							
		PDI-SC-S150 - 7.7 to 9.7	8/14/2018	12:25	SC		ED	4	x	x	x	x			
		PDI-SC-S150 - 9.7 to 11.1	8/14/2018	12:30	SC		ED	4	x	x	x	x			
		PDI-SC-S150 - 11.1 to 12.5	8/14/2018	12:35	SC		ED	4	x	x	x	x			
		PDI-SC-S146 - 0 to 2	8/14/2018	16:00	SC		ED	4	x	x	x	x			
		PDI-SC-S146 - 2 to 4	8/14/2018	16:05	SC		ED	4	x	x	x	x			
		PDI-SC-S146 - 4 to 5	8/14/2018	16:10	SC		ED	4	x	x	x	x			
		PDI-SC-S146 - 5 to 7	8/14/2018	16:15	SC		ED	4	x	x	x	x			
		PDI-SC-S146 - 7 to 8	8/14/2018	16:20	SC		ED	4	x	x	x	x			
		PDI-SC-S146 - 8 to 9.1	8/14/2018	16:25	SC		ED	4	x	x	x	x			
		PDI-SC-S136 - 0 to 2	8/14/2018	17:10	SC		ED	4	x	x	x	x			
		PDI-SC-S136 - 2 to 4	8/14/2018	17:15	SC		ED	4	x	x	x	x			
		PDI-SC-S136 - 4 to 6	8/14/2018	17:20	SC	MSM20	ED	46	x	x	x	x			
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Container Preservative: HCl = Hydrochloric Acid, H ₃ PO ₄ = Phosphoric Acid, HNO ₃ = Nitric Acid															
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: 8/15/18 1545	Received by: 	Company: M.E.	Date/Time: 8/15/18 1545
Relinquished by: 	Company: M.E.	Date/Time: 8/15/18 1620	Received by: 	Company: TAPOR	Date/Time: 8/15/18 1620
Relinquished by: 	Company: SEA TM	Date/Time: 8/16/18 1720	Received by: 	Company: SEA TM	Date/Time: 8/17/18 0930

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: 8/15/18 Carrier: Courier				COC No: 1 1 of 5 pages			
AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1-(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project # 60566335 Study: Subsurface Sediment		Analysis Turnaround Time Calendar (C) or Work Days (W) W															
		<input checked="" type="checkbox"/> 21 days															
		<input type="checkbox"/> Other _____															
Sample Type:														Sample Specific Notes: So 8/16/18 per AECOM RN 8/17/18 1542			
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Preserv.	PCDD/PCDFs 1613B	Archive	Grain size ASTM D792/NDG913	PCBs Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270/D-SM1, 9060, 1603	Afterberg Limits ASTM Ba318					
PDI-SC-S136 - 6 to 7	8/14/2018	17:25	SC		ED	4		x	x	x	x						
PDI-SC-S136 - 7 to 9	8/14/2018	17:30	SC		ED	4		x	x	x	x						
PDI-SC-S136 - 9 to 11.3	8/14/2018	17:35	SC		ED	4		x	x	x	x						
PDI-SC-S092 - 0 to 2	8/14/2018	9:15	SC		ED	4		x	x	x	x						
PDI-SC-S092 - 2 to 4	8/14/2018	9:20	SC		ED	5		x	x	x	x	x					
PDI-SC-S092 - 4 to 6	8/14/2018	9:25	SC		ED	4		x	x	x	x						
PDI-SC-S092 - 4 to 6D	8/14/2018	9:30	SC		ED	4		x	x	*	x						
PDI-SC-S092 - 6 to 8	8/14/2018	9:30	SC		ED	4		x	x	x	x						
PDI-SC-S092 - 8 to 9.9	8/14/2018	9:35	SC		ED	4		x	x	x	x						
PDI-SC-S092 - 9.9 to 10.9	8/14/2018	9:40	SC		ED	4		x	x	x	x						
PDI-SC-S065 - 0 to 2	8/14/2018	11:0	SC		ED	4		x	x	x	x						
PDI-SC-S065 - 2 to 4	8/14/2018	11:5	SC		ED	4		x	x	x	x	x					
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Container Preservative: HCl = Hydrochloric Acid, H ₃ PO ₄ = Phosphoric Acid, HNO ₃ = Nitric Acid																	
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: 8/15/18 1545	Received by: 	Company: M-E	Date/Time: 8/15/18 1545
Relinquished by: 	Company: M.E.	Date/Time: 8/15/18 1620	Received by: 	Company: TAPOR	Date/Time: 8/15/18 1620
Relinquished by: 	Company: TAPOR	Date/Time: 8/16/18 1720	Received by: 	Company: SEA TA	Date/Time: 8/17/18 0930

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SUBSURFACE SEDIMENT CHAIN OF CUSTODY

Client Contact		Project Contact: Amy Dahl / Chelsey Cook						Site Contact: Jennifer Ray			Date: 8/15/18			COC No: 1 5 of 5 pages					
		Tel: (206) 438-2261 / (206) 438-2010																	
AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101		Analysis Turnaround Time						Laboratory Contact: Elaine-Walker			Carrier: Courier								
		Calendar (C) or Work Days (W) W																	
Phone: (206) 438-2700 Fax: 1+(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR		<input checked="" type="checkbox"/> 21 days																	
		<input type="checkbox"/> Other _____																	
Project #: 60566335 Study: Subsurface Sediment																			
Sample Type:																			
Sample Identification		Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCDD/PCDFs 1613B	Archive	Grain size ASTM D7072/D6913	PCB Aroclors, P-HMs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 9660, 1603	Atterberg Limits ASTM D4318	WQ-PCBA	WQ-PAHs	WQ-D/F	WQ-TOC	Sample Specific Notes:	
PDI-SC-S065 - 4 to 6		8/14/2018	1820	SC		ED	4		x	x	x	x							
PDI-SC-S065 - 6 to 8		8/14/2018	1125	SC		ED	4		x	x	x	x							
PDI-SC-S065 - 8 to 10		8/14/2018	1130	SC		ED	4		x	x	x	x							
PDI-SC-S065 - 12 to 14.3		8/14/2018	1140	SC		ED	4		x	x	x	x							
PDI-SC-S070 - 0 to 1.1		8/14/2018	12:35	SC		ED	5		x	x	x	x						150 8/16/18 per AECOM	
PDI-SC-S070 - 1.1 to 2.4		8/14/2018	12:40	SC		ED	4		x	x	x	x						1542	
PDI-SC-S070 - 2.4 to 4.4		8/14/2018	12:45	SC		ED	3		x	x	x	x						152 8/17/18 per AECOM	
PDI-SC-S070 - 4.4 to 6.4		8/14/2018	12:50	SC		ED	4		x	x	x	x							
PDI-SC-S070 - 6.4 to 8.4		8/14/2018	12:55	SC		ED	4		x	x	x	x							
PDI-SC-S070 - 8.4 to 10.4		8/14/2018	13:10	SC		ED	4		x	x	x	x							
PDI-SC-S070 - 10 to 12		8/14/18	1135	SC		ED	4		x	x	x	x							
PDI-SC-S070 - 10.4 to 12.6		8/14/18	1310	SC		ED	4		x	x	x	x							
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=Amber glass, G=glass, RC=Resin Container										AG	AG	WMG	WMG	AG					
Preservative: HCl = Hydrochloric Acid, H ₃ PO ₄ = Phosphoric Acid, HNO ₃ = Nitric Acid																			
Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)										Sample Disposal									
										<input type="checkbox"/> Return To Client	<input checked="" type="checkbox"/> Disposal By Lab	<input checked="" type="checkbox"/> Archive For 12 Months							
Special Instructions/QC Requirements & Comments: Separate reports for each lab																			

Relinquished by: 	Company: AECOM	Date/Time: 8/15/18 1545	Received by:	Company: M. E.	Date/Time: 8/15/18 1545
Relinquished by: 	Company: M. E.	Date/Time: 8/15/18 1620	Received by:	Company: TAPOR	Date/Time: 8/15/18 1620
Relinquished by: 	Company: TAPOR	Date/Time: 8/16/18 1720	Received by:	Company: SEA TR	Date/Time: 8/17/18 0930

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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: 8/15/18 Carrier: Courier					COC No: 1 <i>3 of 5</i> pages						
AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1-(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling		Analysis Turnaround Time <input checked="" type="checkbox"/> 21 days <input type="checkbox"/> Other _____																					
Portland, OR Project #: 60566335 Study: Subsurface Sediment Sample Type:																						Sample Specific Notes: <i>30 8/16/18 145 port AECOM</i>	
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCDD/Fs 1613B	Archive	Grain Size ASTM D7926/06913	PCB Analytes, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D, SIM, 9060, 160.3	Atterberg Limits ASTM D4318	WQ-PCBA	WQ-PAHs	WQ-DF	WQ-TOC							
PDI-RB-SS-180814-1040	8/14/18	1040	W		ED	7							X	X	X	X							
PDI-RB-SS-180815-0730	8/15/18	0730	W		ED	7							X	X	X	X							
PDI-RB-SS-180815-1340	8/15/18	1340	W		ED	7							X	X	X	X							
PDI-S-S015-0702	8/13/18	0930	SC		ED	4		X	X	X	X	X	X	X	X	X	X	X	X	X			
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Container Preservative: HCl = Hydrochloric Acid, H ₃ PO ₄ = Phosphoric Acid, HNO ₃ = Nitric Acid										AG	AG	WMG	WMG	AG									
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:	Date/Time:	Received by:	Company:	Date/Time:
<i>J. S.</i>	<i>AECOM</i>	<i>8/15/18 1545</i>	<i>Jenifer R.</i>	<i>M-E</i>	<i>8/15/18 1545</i>
<i>M. E.</i>	<i>M.E.</i>	<i>8/15/18 1620</i>	<i>Elaine-W.</i>	<i>TAPOR</i>	<i>8/15/18 1620</i>



Chain of Custody Record

Since laboratory accreditation are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analysis & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/testsmark 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 afersting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification

<i>Unconfirmed</i>	<input type="checkbox"/> <i>Return To Client</i>	<input type="checkbox"/> <i>Disposal By Lab</i>	<input type="checkbox"/> <i>Archive For</i>	<i>Months</i>
<i>Deliverable Requested:</i> I, II, III, IV, Other (specify) <i>Primary Deliverable Rank:</i> 2 <i>Special Instructions/QC Requirements:</i>				

Empty Kit Relinquished by: John Doe Date: 1/1/2023 Company: ABC Corp. Received by: John Doe Time: 10:00 AM Method of Shipment: Company Van

Relinquished by: John Doe Date: 1/1/2023 Company: ABC Corp. Received by: John Doe Time: 10:00 AM Date/time: 1/1/2023 10:00 AM Method of Shipment: Company Van

Relinquished by:	Date/Time:	Received by:	Date/Time:	Company
<i>[Signature]</i>	11/11/13 11:20	<i>[Signature]</i>	11/11/13 11:30	My Company

Custoddy Seals Intact: Custoddy Seal No.: #11111111111111111111111111111111
Cooler Temperature(s) °C and Other Remarks: 44.44

Chain of Custody Record

Client Information (Sub Contract Lab)		Sampler:	Lab P/M: Walker, Elaine M	Carrier Tracking No(s): 580-58216-2
Client Contact: Shipping/Receiving Company: TestAmerica Laboratories, Inc.	Phone:	E-Mail: elaine.walker@testamericainc.com	State of Origin: Oregon	Page: 2 of 6
Address: 880 Riverside Parkway, West Sacramento State, Zip: CA, 95605	Due Date Requested: 8/31/2018	TAT Requested (days):	Accreditations Required (See note): 580-79826-1	
Phone: 916-373-5600 (Tel) 916-372-1059 (Fax) Email: Project Name: Portland Harbor Pre-Remedial Design Site:	PO #: WO #: Project #: 58012120 SSOW#:		Analysis Requested 1613B/1613B_Sox_P (MOD) Full List w/o Totals 1613B/HRMS_Sox_P (MOD) Full List w/o Totals Perform MS/MSD (Yes or No)	
		Total Number of Containers:	Preservation Codes: A - HCl B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
		Special Instructions/Note:		
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (Water, Gasoline, Oil/Tissue, Air)
PDI-SC-S150-4lo6D (580-79826-11)	8/14/18	12:15	Solid	X
PDI-SC-S150-6lo7.7 (580-79826-12)	8/14/18	12:10	Solid	X
PDI-SC-S150-7.7lo9.7 (580-79826-13)	8/14/18	12:25	Solid	X
PDI-SC-S150-9.7lo11.1 (580-79826-14)	8/14/18	12:30	Solid	X
PDI-SC-S150-11.1lo12.5 (580-79826-15)	8/14/18	12:35	Solid	X
PDI-SC-S146-0lo2 (580-79826-16)	8/14/18	16:00	Solid	X
PDI-SC-S146-2lo4 (580-79826-17)	8/14/18	16:05	Solid	X
PDI-SC-S146-4lo5 (580-79826-18)	8/14/18	16:10	Solid	X
PDI-SC-S146-5lo7 (580-79826-19)	8/14/18	16:15	Solid	X
Preferred Sample (Yes or No): Field Filtered Sample (Yes or No): Preservative Code: Field Preservation Code:				
Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody.				
Possible Hazard Identification Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify)		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For Months		
Empty Kit Relinquished by: Relinquished by:  Relinquished by: 		Primary Deliverable Rank: 2 Date/Time: 8/14/18 17:10 Date/Time: Company		Method of Shipment: Time: Date/Time: 8/14/18 17:10 Date/Time: Company
Custody Seals Intact: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Custody Seal No.: 49		Received by:  Received by: Company		Cooler Temperature(s) °C and Other Remarks: # 11-11-Hd: 49 Ver: 09/20/2016

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Chain of Custody Record

Client Information (Sub Contract Lab)		Sampler: Lab RM: Carrier Tracking No(s): Walker, Elaine M 580-58216.3		
Client Contact: Shipping/Receiving Company:		Phone: E-Mail: State of Origin: elaine.walker@testamericainc.com Oregon		
TestAmerica Laboratories, Inc.		Address: 880 Riverside Parkway, City: West Sacramento State, Zip: CA, 95605 Phone: 916-373-5600(Tel) 916-372-1059(Fax) Email: elaine.walker@testamericainc.com		
Accreditations Required (See note): TestAmerica Laboratories, Inc.		Due Date Requested: 8/31/2018 TAT Requested (days): PO #: WQ #: Project #: 58012120 SSOW#: Site: Total Number of Containers: 1613B/HRMS-Sox-P (MOD) Full List w/o Totals 1613B/HRMS-Sox-P (MOD) Full List w/o Totals Perform Sample (Yes or No): Field Filtered Sample (Yes or No): Special Instructions/Note: Preservation Codes: A - HCl M - Hexane B - NaOH N - None C - Zn Acetate O - Ash/NaO2 D - Nitric Acid P - NaO4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodechydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify) Other:		
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=comp, G=grab) Matrix (W=water, S=solid, O=organic, A=air) Prepared By/Date/Year: Preservation Code:
PDI-SC-S146-7-to8 (580-79626-20)		8/14/18	16:20 Pacific	Solid X
PDI-SC-S146-8-to9.1 (580-79626-21)		8/14/18	16:25 Pacific	Solid X
PDI-SC-S136-0-to2 (580-79626-22)		8/14/18	17:10 Pacific	Solid X
PDI-SC-S136-2-to4 (580-79626-23)		8/14/18	17:15 Pacific	Solid X
PDI-SC-S136-4-to6 (580-79626-24)		8/14/18	17:20 Pacific	Solid X
PDI-SC-S136-6-to7 (580-79626-25)		8/14/18	17:25 Pacific	Solid X
PDI-SC-S136-7-to9 (580-79626-26)		8/14/18	17:30 Pacific	Solid X
PDI-SC-S136-9-to11.3 (580-79626-27)		8/14/18	17:35 Pacific	Solid X
PDI-SC-S092-0-to2 (580-79626-28)		8/14/18	09:15 Pacific	Solid X
Primary Deliverable Rank: 2		Date:	Time:	Method of Shipment:
Possible Hazard Identification Unconfirmed		Date/Time: 8/14/18 17:20 Relinquished by: Signature	Received by: Elaine M Company	Date/Time: 8/17/18 09:20 Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify)		Date/Time: 8/14/18 17:20 Relinquished by: Signature	Received by: Elaine M Company	Date/Time: 8/17/18 09:20 Company
Empty Kit Relinquished by: Relinquished by: Signature		Date/Time: 8/14/18 17:20 Relinquished by: Signature	Received by: Elaine M Company	Date/Time: 8/17/18 09:20 Company
Custody Seals Intact: Yes □ No □		Cooler Temperature(s) °C and Other Remarks: 8/14/18 17:20		

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

Possible Hazard Identification

Sample Disposal / A fee may be assessed if samples are retained longer than 1 month.

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Return To Client Disposal By Lab Archive For Months

Special Instructions/QC Requirements:

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Method of Shipment:
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Received by: / / Date/Time: / / Company: - / -

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Received by	Date/time:	Comments

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Volume 1 Number 1

Received by:	Date/Time:	Comments:
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Cooler Temperature(s) °C and Other Remarks: 4.9

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Chain of Custody record

Client Information (Sub Contract Lab)		Sampler:	Lab P/M: Walker, Elaine M	Carrier Tracking No(s): COC No: 580-58216-4
Client Contact:	Phone:	E-Mail: elaine.walker@testamericainc.com	State of Origin: Oregon	Page: 4 of 6
Shipping/Receiving Company:	Accreditations Required (See note): Job #: 580-79826-1			
Address: 880 Riverside Parkway, City: West Sacramento State, Zip: CA, 95605 Phone: 916-35600(Tel) 916-372-1059(Fax) Email: Project Name: Portland Harbor Pre-Remedial Design Site: SSOW#:	Due Date Requested: 8/31/2018 TAT Requested (days): PO #: WO #: Project #: 58012120 SSOW#:	Analysis Requested 1613B/1613B-Sox-P (MDD) Full List w/o Totals 1613B/HRMS-Sox-P (MDD) Full List w/o Totals Perform MS/MSD (Yes or No) Field Filtered Sample (Yes or No)		
		Total Number of Containers: Other:	Preservation Codes: A - HCl B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - Di Water K - EDTA L - EDA Z - other (specify)	
			Special Instructions/Note: 1613B/1613B-Sox-P (MDD) Full List w/o Totals 1613B/HRMS-Sox-P (MDD) Full List w/o Totals Perform MS/MSD (Yes or No) Field Filtered Sample (Yes or No)	
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (water, gasoline, oil/tissue, ash)
			Preservation Code:	
PDI-SC-S092-2104 (580-79626-29)	8/14/18	09:20	Solid	X
PDI-SC-S092-4106 (580-79626-30)	8/14/18	Pacific	Solid	X
PDI-SC-S092-4106D (580-79626-31)	8/14/18	Pacific	Solid	X
PDI-SC-S092-6108 (580-79626-32)	8/14/18	Pacific	Solid	X
PDI-SC-S092-8109.9 (580-79626-33)	8/14/18	Pacific	Solid	X
PDI-SC-S092-91010.9 (580-79626-34)	8/14/18	Pacific	Solid	X
PDI-SC-S065-0102 (580-79626-35)	8/14/18	11:10	Solid	X
PDI-SC-S065-2104 (580-79626-36)	8/14/18	Pacific	Solid	X
PDI-SC-S065-4106 (580-79626-37)	8/14/18	11:20	Pacific	X

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

Possible Hazard Identification		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Unconfirmed	Deliverable Requested: I, II, III, IV, Other (specify)	<input type="checkbox"/> Return To Client	<input type="checkbox"/> Disposal By Lab
Primary Deliverable Rank: 2		Special Instructions/QC Requirements:	
Empty Kit Relinquished by:	Date/Time: 8/16/18 12:00	Time:	Method of Shipment:
Relinquished by:	Date/Time: 8/17/18 09:30	Date/Time: 8/17/18 09:30	Company <i>JAC</i>
Relinquished by:	Date/Time:	Date/Time:	Company
Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No.: <i>#1111</i>	Cooler Temperature(s) °C and Other Remarks: <i>4.9</i>	Ver: 09/20/2016

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Chain of Custody Record

Client Information (Sub Contract Lab)		Sampler:	Lab P/M: Walker, Elaine M	Carrier Tracking No(s):	COC No: 580-58216.5
Client Contact: Shipping/Receiving Company: TestAmerica Laboratories, Inc.	Phone:	E-Mail: elaine.walker@testamericainc.com	State of Origin: Oregon	Page:	Page 5 of 6
Address: 880 Riverside Parkway, City: West Sacramento State, Zip: CA, 95605 Phone: 916-373-5600(Tel) 916-372-1059(Fax) Email: Project Name: Portland Harbor Pre-Remedial Design Site: SSOW#:	Due Date Requested: 8/31/2018 TAT Requested (days): PO #: W/O #: Project #: 5801240 SSOW#:	Analysis Requested		Job #: 580-79826-1	Preservation Codes: A - HCl B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Ammonium H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:
				Total Number of Containers	
				1613B/1613B_Sox-Sep_P (MDD) Full List w/o Totals	
				1613B/HRMS_Sox_P (MDD) Full List w/o Totals	
				Perform MS/MSD (Yes or No)	
				Field Filtered Sample (Yes or No)	
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (Water, Soil, Oil, Tissue, Air)	Special Instructions/Note:
PDI-SC-S065-61o8 (580-79626-38)	8/14/18	11:25 Pacific	Solid	X	
PDI-SC-S065-81o10 (580-79626-39)	8/14/18	11:30 Pacific	Solid	X	
PDI-SC-S065-121o14.3 (580-79626-40)	8/14/18	11:40 Pacific	Solid	X	
PDI-SC-S070-01o1.1 (580-79626-41)	8/14/18	12:35 Pacific	Solid	X	
PDI-SC-S070-1-11o2.4 (580-79626-42)	8/14/18	12:40 Pacific	Solid	X	
PDI-SC-S070-2-41o4.4 (580-79626-43)	8/14/18	12:45 Pacific	Solid	X	
PDI-SC-S070-4-41o6.4 (580-79626-44)	8/14/18	12:50 Pacific	Solid	X	
PDI-SC-S070-6-41o8.4 (580-79626-45)	8/14/18	12:55 Pacific	Solid	X	
PDI-SC-S070-8-41o10.4 (580-79626-46)	8/14/18	13:10 Pacific	Solid	X	
Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analysis & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody.					
Possible Hazard Identification		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)			
Unconfirmed		<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab		<input type="checkbox"/> Archive For Months	
Deliverable Requested: I, II, III, IV, Other (specify)		Primary Deliverable Rank: 2		Special Instructions/QC Requirements:	
Empty Kit Relinquished by:		Date: 8/16/18 1720 Date/Time:		Method of Shipment:	
Relinquished by:		Received by:	Date/Time: 8/17/18 0930 Company	Disposal by:	Date/Time: Company
Relinquished by:		Received by:	Date/Time: Company	Received by:	Date/Time: Company
Custody Seals Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Custody Seal No.: #1414		Cooler Temperature(s) °C and Other Remarks: 4.0	

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Ver: 09/20/2016

Chain of Custody Record

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

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disp.

Method of Shipment:

Received by:	Date/Time:	Company
Received by:	Date/Time:	Company
Received by:	Date/Time:	Company
Cooler Temperature(s) °C and Other Remarks:		#111! #59

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-79626-2

Login Number: 79626

List Source: TestAmerica Seattle

List Number: 1

Creator: O'Connell, Jason I

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

Isotope Dilution Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

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

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		HxCDD (23-140)	HxCDF (28-143)	HxCDF2 (26-138)	HxCDD (32-141)	HxCDF (26-152)	HxD (28-130)	HxDF (26-123)	HxCF (29-147)
580-79626-1	PDI-SC-S151-2to4	67	61	62	63	62	65	64	65
580-79626-1 - RA	PDI-SC-S151-2to4								
580-79626-2	PDI-SC-S151-0to2	64	59	61	58	56	59	59	61
580-79626-2 - RA	PDI-SC-S151-0to2								
580-79626-3	PDI-SC-S151-4to6	58	54	53	59	57	57	58	60
580-79626-3 - RA	PDI-SC-S151-4to6								
580-79626-4	PDI-SC-S151-6to8	60	54	57	61	60	60	60	62
580-79626-4 - RA	PDI-SC-S151-6to8								
580-79626-5	PDI-SC-S151-8to10	54	30	32	69	78	61	74	67
580-79626-5 - RA	PDI-SC-S151-8to10								
580-79626-6	PDI-SC-S151-10to12	54	48	31	65	66	60	67	63
580-79626-6 - RA	PDI-SC-S151-10to12								
580-79626-8	PDI-SC-S150-0to2	58	53	56	62	60	61	62	63
580-79626-8 - RA	PDI-SC-S150-0to2								
580-79626-9	PDI-SC-S150-2to4	59	52	53	55	54	55	55	61
580-79626-9 - RA	PDI-SC-S150-2to4								
580-79626-10	PDI-SC-S150-4to6	60	52	61	61	63	59	66	65
580-79626-10 - RA	PDI-SC-S150-4to6								
580-79626-11	PDI-SC-S150-4to6D	58	51	57	54	52	50	55	57
580-79626-11 - RA	PDI-SC-S150-4to6D								
580-79626-12	PDI-SC-S150-6to7.7	64	60	61	65	73	59	75	69
580-79626-12 - RA	PDI-SC-S150-6to7.7								
580-79626-13	PDI-SC-S150-7.7to9.7	72	61	76	68	65	63	66	70
580-79626-13 - RA	PDI-SC-S150-7.7to9.7								
580-79626-14	PDI-SC-S150-9.7to11.1	72	71	83	69	76	61	69	70
580-79626-14 - RA	PDI-SC-S150-9.7to11.1								
580-79626-15	PDI-SC-S150-11.1to12.5	65	59	68	54	56	53	59	62
580-79626-15 - RA	PDI-SC-S150-11.1to12.5								
580-79626-16	PDI-SC-S146-0to2	64	57	70	64	58	63	55	67
580-79626-16 - RA	PDI-SC-S146-0to2								
580-79626-17	PDI-SC-S146-2to4	52	46	60	61	51	50	48	59
580-79626-17 - RA	PDI-SC-S146-2to4								
580-79626-18	PDI-SC-S146-4to5	56	48	61	64	53	52	49	59
580-79626-18 - RA	PDI-SC-S146-4to5								
580-79626-19	PDI-SC-S146-5to7	66	57	71	71	57	62	53	67
580-79626-19 - RA	PDI-SC-S146-5to7								
580-79626-20	PDI-SC-S146-7to8	54	44	62	57	46	55	45	59
580-79626-21	PDI-SC-S146-8to9.1	51	43	56	48	40	49	39	49
580-79626-21 - RA	PDI-SC-S146-8to9.1								
580-79626-22	PDI-SC-S136-0to2	52	43	56	50	41	52	42	51
580-79626-22 - RA	PDI-SC-S136-0to2								
580-79626-23	PDI-SC-S136-2to4	55	46	60	54	45	57	46	57
580-79626-23 - RA	PDI-SC-S136-2to4								
580-79626-24	PDI-SC-S136-4to6	55	47	61	54	46	57	46	56
580-79626-24 - RA	PDI-SC-S136-4to6								
580-79626-25	PDI-SC-S136-6to7	48	40	51	51	41	52	43	53
580-79626-25 - RA	PDI-SC-S136-6to7								
580-79626-26	PDI-SC-S136-7to9	55	47	54	50	54	53	54	57
580-79626-26 - RA	PDI-SC-S136-7to9								

TestAmerica Seattle

Isotope Dilution Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

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

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		HxCDD (23-140)	HxCDF (28-143)	HxCDF2 (26-138)	HxCDD (32-141)	HxCDF (26-152)	HxD (28-130)	HxDF (26-123)	HxCF (29-147)
580-79626-27 - RA	PDI-SC-S136-9to11.3								
580-79626-27	PDI-SC-S136-9to11.3	51	44	40	52	55	54	57	58
580-79626-28	PDI-SC-S092-0to2	69	60	52	70	74	75	79	76
580-79626-28 - RA	PDI-SC-S092-0to2								
580-79626-29	PDI-SC-S092-2to4	66	62	56	81	89	88	104	81
580-79626-29 - RA	PDI-SC-S092-2to4								
580-79626-30	PDI-SC-S092-4to6	55	48	55	64	67	61	71	61
580-79626-30 - RA	PDI-SC-S092-4to6								
580-79626-31	PDI-SC-S092-4to6D	36	32	38	49	50	45	52	51
580-79626-31 - RA	PDI-SC-S092-4to6D								
580-79626-32	PDI-SC-S092-6to8	40	35	42	52	53	49	57	55
580-79626-33	PDI-SC-S092-8to9.9	35	29	35	42	44	44	48	48
580-79626-34	PDI-SC-S092-9.9to10.9	58	52	59	58	58	59	63	60
580-79626-35	PDI-SC-S065-0to2	48	42	52	54	54	60	60	62
580-79626-35 - RA	PDI-SC-S065-0to2								
580-79626-36	PDI-SC-S065-2to4	41	35	45	47	48	50	55	53
580-79626-36 - RA	PDI-SC-S065-2to4								
580-79626-37	PDI-SC-S065-4to6	42	36	29	48	51	48	53	51
580-79626-37 - RA	PDI-SC-S065-4to6								
580-79626-38	PDI-SC-S065-6to8	58	54	45	62	66	63	69	65
580-79626-38 - RA	PDI-SC-S065-6to8								
580-79626-39	PDI-SC-S065-8to10	52	43	36	57	59	56	61	60
580-79626-39 - RA	PDI-SC-S065-8to10								
580-79626-40	PDI-SC-S065-12to14.3	34	27 *	21 *	43	50	43	51	46
580-79626-41	PDI-SC-S070-0to1.1	25	19 *	20 *	35	36	33	36	40
580-79626-41 - RA	PDI-SC-S070-0to1.1								
580-79626-42	PDI-SC-S070-1.1to2.4	39	35	38	44	46	44	46	50
580-79626-42 - RA	PDI-SC-S070-1.1to2.4								
580-79626-43	PDI-SC-S070-2.4to4.4	47	43	50	55	58	50	50	49
580-79626-43 - RA	PDI-SC-S070-2.4to4.4								
580-79626-44	PDI-SC-S070-4.4to6.4	43	38	30	49	52	47	53	53
580-79626-44 - RA	PDI-SC-S070-4.4to6.4								
580-79626-45	PDI-SC-S070-6.4to8.4	53	45	37	58	63	55	67	61
580-79626-45 - RA	PDI-SC-S070-6.4to8.4								
580-79626-46	PDI-SC-S070-8.4to10.4	35	30	34	40	46	40	48	49
580-79626-47	PDI-SC-S065-10to12	38	31	26	46	50	45	49	49
580-79626-47 - RA	PDI-SC-S065-10to12								
580-79626-48	PDI-SC-S070-10.4to12.6	37	32	36	47	55	40	52	37
MB 320-243160/1-A	Method Blank	95	82	89	65	66	73	74	75
MB 320-243217/1-A	Method Blank	68	69	66	63	69	78	80	72
MB 320-243400/1-A	Method Blank	86	78	83	72	76	75	79	78
MB 320-243668/1-A	Method Blank	88	83	86	68	76	71	78	76
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)	
580-79626-1	PDI-SC-S151-2to4	69	65	63	65	71		62	
580-79626-1 - RA	PDI-SC-S151-2to4						69		
580-79626-2	PDI-SC-S151-0to2	60	58	58	58	66		59	
580-79626-2 - RA	PDI-SC-S151-0to2						66		

TestAmerica Seattle

Isotope Dilution Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

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

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)						
		PeCDD (25-181)	PeCDF (24-185)	13CHxCF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)
580-79626-3	PDI-SC-S151-4to6	63	61	57	62	64	65	52
580-79626-3 - RA	PDI-SC-S151-4to6						65	
580-79626-4	PDI-SC-S151-6to8	61	59	60	62	67		56
580-79626-4 - RA	PDI-SC-S151-6to8						65	
580-79626-5	PDI-SC-S151-8to10	74	63	72	69	63		58
580-79626-5 - RA	PDI-SC-S151-8to10						107	
580-79626-6	PDI-SC-S151-10to12	67	61	66	61	62		48
580-79626-6 - RA	PDI-SC-S151-10to12						65	
580-79626-8	PDI-SC-S150-0to2	64	59	61	61	68		56
580-79626-8 - RA	PDI-SC-S150-0to2						70	
580-79626-9	PDI-SC-S150-2to4	59	58	55	57	65		54
580-79626-9 - RA	PDI-SC-S150-2to4						66	
580-79626-10	PDI-SC-S150-4to6	68	68	52	70	65		56
580-79626-10 - RA	PDI-SC-S150-4to6						66	
580-79626-11	PDI-SC-S150-4to6D	59	60	52	61	55		54
580-79626-11 - RA	PDI-SC-S150-4to6D						58	
580-79626-12	PDI-SC-S150-6to7.7	67	70	61	70	64		63
580-79626-12 - RA	PDI-SC-S150-6to7.7						77	
580-79626-13	PDI-SC-S150-7.7to9.7	70	74	66	71	66		64
580-79626-13 - RA	PDI-SC-S150-7.7to9.7						70	
580-79626-14	PDI-SC-S150-9.7to11.1	97	83	66	83	82		64
580-79626-14 - RA	PDI-SC-S150-9.7to11.1						113	
580-79626-15	PDI-SC-S150-11.1to12.5	58	59	58	60	59		60
580-79626-15 - RA	PDI-SC-S150-11.1to12.5						64	
580-79626-16	PDI-SC-S146-0to2	91	77	56	77	67		74
580-79626-16 - RA	PDI-SC-S146-0to2						71	
580-79626-17	PDI-SC-S146-2to4	82	67	49	69	60		58
580-79626-17 - RA	PDI-SC-S146-2to4						73	
580-79626-18	PDI-SC-S146-4to5	79	68	48	70	61		65
580-79626-18 - RA	PDI-SC-S146-4to5						76	
580-79626-19	PDI-SC-S146-5to7	91	78	59	76	68		76
580-79626-19 - RA	PDI-SC-S146-5to7						69	
580-79626-20	PDI-SC-S146-7to8	81	66	50	67	66	65	57
580-79626-21	PDI-SC-S146-8to9.1	71	57	43	59	57		56
580-79626-21 - RA	PDI-SC-S146-8to9.1						55	
580-79626-22	PDI-SC-S136-0to2	75	61	46	62	62		56
580-79626-22 - RA	PDI-SC-S136-0to2						57	
580-79626-23	PDI-SC-S136-2to4	78	65	50	65	62		60
580-79626-23 - RA	PDI-SC-S136-2to4						64	
580-79626-24	PDI-SC-S136-4to6	77	63	49	63	62		60
580-79626-24 - RA	PDI-SC-S136-4to6						60	
580-79626-25	PDI-SC-S136-6to7	72	59	47	62	59		53
580-79626-25 - RA	PDI-SC-S136-6to7						62	
580-79626-26	PDI-SC-S136-7to9	52	52	56	52	59		44
580-79626-26 - RA	PDI-SC-S136-7to9						64	
580-79626-27	PDI-SC-S136-9to11.3	55	55	58	56	62		40
580-79626-27 - RA	PDI-SC-S136-9to11.3						40	
580-79626-28	PDI-SC-S092-0to2	70	69	76	68	74		58
580-79626-28 - RA	PDI-SC-S092-0to2						73	

TestAmerica Seattle

Isotope Dilution Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

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

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)						
		PeCDD (25-181)	PeCDF (24-185)	13CHxCF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)
580-79626-29	PDI-SC-S092-2to4	93	90	84	88	84	81	56
580-79626-29 - RA	PDI-SC-S092-2to4						61	44
580-79626-30	PDI-SC-S092-4to6	73	70	65	69	61	70	
580-79626-30 - RA	PDI-SC-S092-4to6						29	
580-79626-31	PDI-SC-S092-4to6D	60	61	51	66	58		
580-79626-31 - RA	PDI-SC-S092-4to6D						65	
580-79626-32	PDI-SC-S092-6to8	64	67	54	69	61	65	31
580-79626-33	PDI-SC-S092-8to9.9	60	58	47	64	56	62	26
580-79626-34	PDI-SC-S092-9.9to10.9	60	61	60	62	58	59	53
580-79626-35	PDI-SC-S065-0to2	64	64	59	64	64		41
580-79626-35 - RA	PDI-SC-S065-0to2						62	
580-79626-36	PDI-SC-S065-2to4	56	58	51	64	57		37
580-79626-36 - RA	PDI-SC-S065-2to4						56	
580-79626-37	PDI-SC-S065-4to6	52	52	49	54	60		33
580-79626-37 - RA	PDI-SC-S065-4to6						71	
580-79626-38	PDI-SC-S065-6to8	62	59	61	58	64		49
580-79626-38 - RA	PDI-SC-S065-6to8						71	
580-79626-39	PDI-SC-S065-8to10	60	58	58	58	63		45
580-79626-39 - RA	PDI-SC-S065-8to10						71	
580-79626-40	PDI-SC-S065-12to14.3	48	47	48	49	51	52	26
580-79626-41	PDI-SC-S070-0to1.1	41	43	39	50	53		17
580-79626-41 - RA	PDI-SC-S070-0to1.1						74	
580-79626-42	PDI-SC-S070-1.1to2.4	47	47	50	51	56		28
580-79626-42 - RA	PDI-SC-S070-1.1to2.4						69	
580-79626-43	PDI-SC-S070-2.4to4.4	52	53	55	56	58		36
580-79626-43 - RA	PDI-SC-S070-2.4to4.4						72	
580-79626-44	PDI-SC-S070-4.4to6.4	49	50	51	51	57		33
580-79626-44 - RA	PDI-SC-S070-4.4to6.4						67	
580-79626-45	PDI-SC-S070-6.4to8.4	62	63	61	64	66		42
580-79626-45 - RA	PDI-SC-S070-6.4to8.4						76	
580-79626-46	PDI-SC-S070-8.4to10.4	45	47	48	49	53	57	26
580-79626-47	PDI-SC-S065-10to12	49	47	50	52	56		28
580-79626-47 - RA	PDI-SC-S065-10to12						66	
580-79626-48	PDI-SC-S070-10.4to12.6	50	49	43	51	55	52	30
MB 320-243160/1-A	Method Blank	75	69	73	64	79	70	87
MB 320-243217/1-A	Method Blank	74	72	73	74	72	72	60
MB 320-243400/1-A	Method Blank	66	65	79	63	72	68	78
MB 320-243668/1-A	Method Blank	64	65	77	63	73	69	80

Surrogate Legend

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

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

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

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

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

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

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

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

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

TestAmerica Seattle

Isotope Dilution Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

PeCDF = 13C-1,2,3,7,8-PeCDF
 13CHxCF = 13C-2,3,4,6,7,8-HxCDF
 PeCF = 13C-2,3,4,7,8-PeCDF
 TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 OCDD = 13C-OCDD

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

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		HxCDD	HxCDF	HxCDF2	HxCDD	HxCDF	HxD	HxD	HxCF
(26-166)	(21-158)	(20-186)	(21-193)	(19-202)	(25-163)	(21-159)	(17-205)		
LCS 320-243160/2-A	Lab Control Sample	86	80	78	69	69	73	74	72
LCS 320-243217/2-A	Lab Control Sample	74	75	75	68	72	80	81	77
LCS 320-243400/2-A	Lab Control Sample	71	65	68	58	63	63	64	62
LCS 320-243668/2-A	Lab Control Sample	88	82	87	66	74	71	75	77
LCSD 320-243160/3-A	Lab Control Sample Dup	78	71	73	62	62	65	65	63
LCSD 320-243217/3-A	Lab Control Sample Dup	69	71	70	63	66	77	79	69
LCSD 320-243400/3-A	Lab Control Sample Dup	97	88	95	78	84	79	84	84
LCSD 320-243668/3-A	Lab Control Sample Dup	88	81	88	65	70	70	71	77

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)						
		PeCDD	PeCDF	13CHxCF	PeCF	TCDD	TCDF	OCDD
(21-227)	(21-192)	(22-176)	(13-328)	(20-175)	(22-152)	(13-199)		
LCS 320-243160/2-A	Lab Control Sample	70	65	70	65	76	65	82
LCS 320-243217/2-A	Lab Control Sample	76	78	77	78	75	74	66
LCS 320-243400/2-A	Lab Control Sample	54	52	64	53	59	55	65
LCS 320-243668/2-A	Lab Control Sample	66	66	77	63	72	70	80
LCSD 320-243160/3-A	Lab Control Sample Dup	63	58	62	58	66	56	71
LCSD 320-243217/3-A	Lab Control Sample Dup	71	70	73	69	70	69	61
LCSD 320-243400/3-A	Lab Control Sample Dup	73	71	84	71	78	74	89
LCSD 320-243668/3-A	Lab Control Sample Dup	67	67	76	63	74	71	80

Surrogate Legend

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

Isotope Dilution Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	HxCDD (32-141)	HxCDF (26-152)	HxD (28-130)	HxDf (26-123)	HxCF (29-147)
580-79626-49	PDI-RB-SS-180814-1040	62	57	55	55	56	60	59	58
580-79626-50	PDI-RB-SS-180815-0730	91	85	86	72	73	77	78	77
580-79626-51	PDI-RB-SS-180815-1340	89	83	83	73	73	77	78	75
MB 320-240796/1-A	Method Blank	72	68	65	66	67	72	73	71
MB 320-242488/1-A	Method Blank	75	67	70	58	57	62	62	65
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)	
580-79626-49	PDI-RB-SS-180814-1040	58	54	57	53	63	58	52	
580-79626-50	PDI-RB-SS-180815-0730	74	70	75	69	81	72	84	
580-79626-51	PDI-RB-SS-180815-1340	75	70	74	70	85	75	83	
MB 320-240796/1-A	Method Blank	64	61	72	60	70	65	58	
MB 320-242488/1-A	Method Blank	63	58	61	56	70	62	69	

Surrogate Legend

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

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		HpCDD (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	HxCDD (21-193)	HxCDF (19-202)	HxDD (25-163)	HxDf (21-159)	HxCF (17-205)
LCS 320-240796/2-A	Lab Control Sample	45	43	41	43	43	45	45	46
LCS 320-242488/2-A	Lab Control Sample	53	49	51	42	43	45	47	46
LCSD 320-240796/3-A	Lab Control Sample Dup	61	60	57	61	63	63	66	64
LCSD 320-242488/3-A	Lab Control Sample Dup	85	78	80	67	68	71	72	71
Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PeCDD (21-227)	PeCDF (21-192)	13CHxCF (22-176)	PeCF (13-328)	TCDD (20-175)	TCDF (22-152)	OCDD (13-199)	
LCS 320-240796/2-A	Lab Control Sample	44	42	47	44	50	47	37	
LCS 320-242488/2-A	Lab Control Sample	47	44	46	45	56	53	48	
LCSD 320-240796/3-A	Lab Control Sample Dup	62	58	67	61	68	64	48	
LCSD 320-242488/3-A	Lab Control Sample Dup	69	63	70	64	74	65	78	

TestAmerica Seattle

Isotope Dilution Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79626-2

Surrogate Legend

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

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

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

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

13CHxCDF = 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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