

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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TestAmerica Job ID: 580-79672-2

Client Project/Site: Portland Harbor Pre-Remedial Design

For:

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Authorized for release by:
9/28/2018 6:18:06 PM

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



Table of Contents

Cover Page	1
Table of Contents	2
Case Narrative	3
Definitions	7
Client Sample Results	8
QC Sample Results	63
Chronicle	82
Certification Summary	94
Sample Summary	95
Chain of Custody	97
Receipt Checklists	107
Isotope Dilution Summary	108

Case Narrative

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

TestAmerica Job ID: 580-79672-2

Job ID: 580-79672-2

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE

Client: AECOM

Project: Portland Harbor Pre-Remedial Design

Report Number: 580-79672-2

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

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

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

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

RECEIPT

The samples were received on 08/17/2018; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was C.

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

DIOXIN/ FURAN

Samples PDI-SC-S113(A)-0to2.2 (580-79672-1), PDI-SC-S113(A)-2.2to4.6 (580-79672-2), PDI-SC-S113(B)-3.6to5.6 (580-79672-3), PDI-SC-S113(B)-5.6to7.4 (580-79672-4), PDI-SC-S113(B)-7.4to10 (580-79672-5), PDI-SC-S113(B)-10to12 (580-79672-6), PDI-SC-S113(B)-12to13.8 (580-79672-7), PDI-SC-S109-0to2 (580-79672-8), PDI-SC-S109-2to4 (580-79672-9), PDI-SC-S109-4to6 (580-79672-10), PDI-SC-S109-6to8 (580-79672-11), PDI-SC-S109-8to10 (580-79672-12), PDI-SC-S109-10to11.3 (580-79672-13), PDI-SC-S131-0to2 (580-79672-14), PDI-SC-S131-2to4 (580-79672-15), PDI-SC-S131-4to6 (580-79672-16), PDI-SC-S131-6to8 (580-79672-17), PDI-SC-S256-0to2 (580-79672-18), PDI-SC-S256-2to4 (580-79672-19), PDI-SC-S256-2to4D (580-79672-20), PDI-SC-S256-4to6 (580-79672-21), PDI-SC-S256-6to8.7 (580-79672-22), PDI-SC-S256-8.7to9.7 (580-79672-23), PDI-SC-S256-9.7to10.7 (580-79672-24), PDI-SC-S232-0to2 (580-79672-25), PDI-SC-S232-2to4 (580-79672-26), PDI-SC-S232-4to6.2 (580-79672-27), PDI-SC-S263-0to2 (580-79672-28), PDI-SC-S263-2to3.8 (580-79672-29), PDI-SC-S263-3.8to5.9 (580-79672-30), PDI-SC-S108-0to1.9 (580-79672-31), PDI-SC-S108-1.9to3 (580-79672-32), PDI-SC-S108-3to4.7 (580-79672-33), PDI-SC-S108-4.7to6.7 (580-79672-34), PDI-SC-S108-6.7to8.8 (580-79672-35), PDI-SC-S108-6.7to8.8D (580-79672-36), PDI-SC-S108-8.8to9.8 (580-79672-37), PDI-SC-S157-0to2 (580-79672-38), PDI-SC-S157-2to3.7 (580-79672-39), PDI-SC-S157-3.7to6 (580-79672-40), PDI-SC-S157-6to8 (580-79672-41), PDI-SC-S157-8to10 (580-79672-42), PDI-SC-S157-10to12.4 (580-79672-43), PDI-SC-S157-12.4to14 (580-79672-44), PDI-SC-S157-14to15.9 (580-79672-45), PDI-SC-S053-0to2 (580-79672-48), PDI-SC-S053-2to4 (580-79672-49), PDI-SC-S053-4to6 (580-79672-50), PDI-SC-S053-6to8 (580-79672-51), PDI-SC-S053-8to10 (580-79672-52), PDI-SC-S053-10to12.4 (580-79672-53) and PDI-SC-S113(A)-2.2to4.6D (580-79672-54) were analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 09/05/2018, 09/06/2018 and 09/07/2018 and analyzed on 09/12/2018, 09/13/2018, 09/14/2018, 09/15/2018, 09/17/2018, 09/18/2018 and 09/19/2018.

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/or 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 10D5 exceeded this criteria: PDI-SC-S113(A)-0to2.2 (580-79672-1), PDI-SC-S113(A)-2.2to4.6 (580-79672-2), PDI-SC-S113(B)-3.6to5.6 (580-79672-3), PDI-SC-S113(B)-5.6to7.4 (580-79672-4), PDI-SC-S113(B)-7.4to10 (580-79672-5), PDI-SC-S113(B)-10to12 (580-79672-6), PDI-SC-S113(B)-12to13.8 (580-79672-7), and (CCV 320-245786/74), PDI-SC-S109-0to2

Case Narrative

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

TestAmerica Job ID: 580-79672-2

Job ID: 580-79672-2 (Continued)

Laboratory: TestAmerica Seattle (Continued)

(580-79672-8), PDI-SC-S109-4to6 (580-79672-10), PDI-SC-S109-6to8 (580-79672-11), PDI-SC-S109-8to10 (580-79672-12), PDI-SC-S109-10to11.3 (580-79672-13), PDI-SC-S131-0to2 (580-79672-14), PDI-SC-S131-2to4 (580-79672-15), PDI-SC-S131-4to6 (580-79672-16), PDI-SC-S131-6to8 (580-79672-17), PDI-SC-S256-0to2 (580-79672-18), PDI-SC-S256-2to4 (580-79672-19), PDI-SC-S256-2to4D (580-79672-20), PDI-SC-S256-4to6 (580-79672-21), PDI-SC-S256-6to8.7 (580-79672-22), PDI-SC-S256-8.7to9.7 (580-79672-23), PDI-SC-S256-9.7to10.7 (580-79672-24), PDI-SC-S232-0to2 (580-79672-25), PDI-SC-S232-2to4 (580-79672-26), PDI-SC-S232-4to6.2 (580-79672-27), PDI-SC-S263-0to2 (580-79672-28), PDI-SC-S263-2to3.8 (580-79672-29), PDI-SC-S263-3.8to5.9 (580-79672-30), (CCV 320-245751/16), (CCV 320-245750/2), (LCS 320-244175/2-A), (LCSD 320-244175/3-A), (MB 320-244175/1-A), PDI-SC-S108-0to1.9 (580-79672-31), PDI-SC-S108-1.9to3 (580-79672-32), PDI-SC-S108-3to4.7 (580-79672-33), PDI-SC-S108-4.7to6.7 (580-79672-34), PDI-SC-S108-6.7to8.8 (580-79672-35), PDI-SC-S108-6.7to8.8D (580-79672-36), (CCV 320-245549/76), (LCS 320-244236/2-A), (LCSD 320-244236/3-A), (MB 320-244236/1-A), (CCV 320-245548/61), PDI-SC-S053-0to2 (580-79672-48), PDI-SC-S053-2to4 (580-79672-49), PDI-SC-S053-4to6 (580-79672-50), PDI-SC-S053-6to8 (580-79672-51), PDI-SC-S053-8to10 (580-79672-52), PDI-SC-S113(A)-2.2to4.6D (580-79672-54), (CCV 320-246212/30), (CCV 320-246108/2), (LCSD 320-244438/3-A), (CCV 320-245063/2), (LCS 320-243331/2-A), (LCSD 320-243331/3-A), (MB 320-243331/1-A), (CCV 320-243696/45), (LCS 320-242488/2-A), (LCSD 320-242488/3-A), (MB 320-242488/1-A), (CCV 320-244812/13), (LCS 320-243983/2-A), (LCSD 320-243983/3-A), (MB 320-243983/1-A), (CCV 320-245751/16), and (WDM 320-244812/15). 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-S109-6to8 (580-79672-11), PDI-SC-S109-8to10 (580-79672-12), PDI-SC-S131-0to2 (580-79672-14), PDI-SC-S108-0to1.9 (580-79672-31), PDI-SC-S108-1.9to3 (580-79672-32), PDI-SC-S108-3to4.7 (580-79672-33), PDI-SC-S108-4.7to6.7 (580-79672-34), PDI-SC-S053-0to2 (580-79672-48), PDI-SC-S053-2to4 (580-79672-49), PDI-SC-S053-4to6 (580-79672-50), PDI-SC-S113(A)-2.2to4.6D (580-79672-54), (CCV 320-246679/2), and (CCV 320-245740/2). 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 320-243983/1-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 320-244175/1-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 320-244236/1-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 320-244409/1-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 320-244438/1-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.

The ending resolution check was done after twelve hours due to the SIOS crashing during the auto rescheck setup by the analyst during the weekend. On Monday morning on arrival of the analyst the end rescheck was done after rebooting the sios and recalling the initial calibration. The resolution check meets the method specified requirement and therefore no adverse effect on the quality of the data. PDI-SC-S108-8.8to9.8 (580-79672-37), PDI-SC-S157-0to2 (580-79672-38), PDI-SC-S157-2to3.7 (580-79672-39), PDI-SC-S157-3.7to6 (580-79672-40), PDI-SC-S157-6to8 (580-79672-41), PDI-SC-S157-8to10 (580-79672-42), PDI-SC-S157-10to12.4 (580-79672-43), PDI-SC-S157-12.4to14 (580-79672-44), PDI-SC-S157-14to15.9 (580-79672-45), (CCV 320-245905/1), (LCS 320-244409/2-A), (LCSD 320-244409/3-A), (MB 320-244409/1-A) and (WDM 320-245905/2).

Case Narrative

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

TestAmerica Job ID: 580-79672-2

Job ID: 580-79672-2 (Continued)

Laboratory: TestAmerica Seattle (Continued)

The following samples exhibited elevated noise or matrix interferences for one or more analytes causing elevation of the detection limit (EDL): PDI-SC-S131-4to6 (580-79672-16). 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-S131-2to4 (580-79672-15), PDI-SC-S131-4to6 (580-79672-16), PDI-SC-S256-9.7to10.7 (580-79672-24), PDI-SC-S232-0to2 (580-79672-25), PDI-SC-S108-0to1.9 (580-79672-31), PDI-SC-S108-1.9to3 (580-79672-32), PDI-SC-S108-3to4.7 (580-79672-33), PDI-SC-S108-4.7to6.7 (580-79672-34) and PDI-SC-S053-2to4 (580-79672-49). These analytes have been qualified; however, the peaks did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range.

The Isotope Dilution Analyte (IDA) recovery associated with the following samples are below the method recommended limit: PDI-SC-S109-10to11.3 (580-79672-13), PDI-SC-S157-3.7to6 (580-79672-40), PDI-SC-S157-6to8 (580-79672-41), PDI-SC-S157-8to10 (580-79672-42), PDI-SC-S157-12.4to14 (580-79672-44), PDI-SC-S157-14to15.9 (580-79672-45), PDI-SC-S053-6to8 (580-79672-51) and PDI-SC-S053-10to12.4 (580-79672-53). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample. All detection limits are below the lower calibration.

The following samples were diluted due to the nature of the sample matrix: PDI-SC-S109-0to2 (580-79672-8), PDI-SC-S109-4to6 (580-79672-10) and PDI-SC-S109-10to11.3 (580-79672-13). Elevated reporting limits (RLs) are provided.

Ion abundance ratios are outside criteria for the Isotope Dilution Analyte (IDA) 13C-1,2,3,4,6,7,8-HpCDF associated with the following sample: PDI-SC-S108-8.8to9.8 (580-79672-37). The theoretical area for the IDA was used to quantitate recovery and target concentration.

Ion abundance ratios are outside criteria for the Isotope Dilution Analytes (IDA) 13C-OCDD and 13C-1,2,3,4,7,8,9-HpCDF associated with the following sample: PDI-SC-S109-10to11.3 (580-79672-13). The theoretical area for the IDA was used to quantitate recovery and target concentration.

Due to the matrix, the initial volumes used for the following samples deviated from the standard procedure: PDI-SC-S113(A)-0to2.2 (580-79672-1), PDI-SC-S113(A)-2.2to4.6 (580-79672-2), PDI-SC-S113(B)-3.6to5.6 (580-79672-3), PDI-SC-S113(B)-5.6to7.4 (580-79672-4), PDI-SC-S113(B)-7.4to10 (580-79672-5), PDI-SC-S113(B)-10to12 (580-79672-6), PDI-SC-S113(B)-12to13.8 (580-79672-7), PDI-SC-S109-0to2 (580-79672-8), PDI-SC-S109-2to4 (580-79672-9), PDI-SC-S109-4to6 (580-79672-10), PDI-SC-S109-6to8 (580-79672-11), PDI-SC-S109-8to10 (580-79672-12), PDI-SC-S109-10to11.3 (580-79672-13), PDI-SC-S131-0to2 (580-79672-14), PDI-SC-S131-2to4 (580-79672-15), PDI-SC-S131-4to6 (580-79672-16), PDI-SC-S131-6to8 (580-79672-17), PDI-SC-S256-0to2 (580-79672-18), PDI-SC-S256-2to4 (580-79672-19), PDI-SC-S256-2to4D (580-79672-20), PDI-SC-S256-4to6 (580-79672-21), PDI-SC-S256-6to8.7 (580-79672-22), PDI-SC-S256-8.7to9.7 (580-79672-23), PDI-SC-S256-9.7to10.7 (580-79672-24), PDI-SC-S232-0to2 (580-79672-25), PDI-SC-S232-2to4 (580-79672-26), PDI-SC-S232-4to6.2 (580-79672-27), PDI-SC-S263-0to2 (580-79672-28), PDI-SC-S263-2to3.8 (580-79672-29), PDI-SC-S263-3.8to5.9 (580-79672-30), PDI-SC-S108-0to1.9 (580-79672-31), PDI-SC-S108-1.9to3 (580-79672-32), PDI-SC-S108-3to4.7 (580-79672-33), PDI-SC-S108-4.7to6.7 (580-79672-34), PDI-SC-S108-6.7to8.8 (580-79672-35), PDI-SC-S108-6.7to8.8D (580-79672-36), PDI-SC-S108-8.8to9.8 (580-79672-37), PDI-SC-S157-0to2 (580-79672-38), PDI-SC-S157-2to3.7 (580-79672-39), PDI-SC-S157-3.7to6 (580-79672-40), PDI-SC-S157-6to8 (580-79672-41), PDI-SC-S157-8to10 (580-79672-42), PDI-SC-S157-10to12.4 (580-79672-43), PDI-SC-S157-12.4to14 (580-79672-44), PDI-SC-S157-14to15.9 (580-79672-45), PDI-SC-S053-0to2 (580-79672-48), PDI-SC-S053-2to4 (580-79672-49), PDI-SC-S053-4to6 (580-79672-50), PDI-SC-S053-6to8 (580-79672-51), PDI-SC-S053-8to10 (580-79672-52), PDI-SC-S053-10to12.4 (580-79672-53) and PDI-SC-S113(A)-2.2to4.6D (580-79672-54). The reporting limits (RLs) have been adjusted proportionately. Samples are associated with preparation batch 320-244175.

Samples PDI-SC-S109-0to2 (580-79672-8)[20X], PDI-SC-S109-4to6 (580-79672-10)[20X], PDI-SC-S109-10to11.3 (580-79672-13)[20X] and PDI-SC-S131-6to8 (580-79672-17)[20X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

DIOXIN/ FURAN - RINSE BLANK

Samples PDI-RB-SS-180816-1110 (580-79672-46) and PDI-RB-SS-180817 (580-79672-47) were analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 08/28/2018 and 08/31/2018 and analyzed on 09/01/2018 and 09/11/2018.

Case Narrative

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

TestAmerica Job ID: 580-79672-2

Job ID: 580-79672-2 (Continued)

Laboratory: TestAmerica Seattle (Continued)

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/or 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 10D5 exceeded this criteria: PDI-RB-SS-180816-1110 (580-79672-46) and PDI-RB-SS-180817 (580-79672-47).

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.

Several analytes were detected in method blank MB 320-243331/1-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: 580-79672-2

Qualifiers

Dioxin

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

Glossary

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

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S113(A)-0to2.2

Date Collected: 08/15/18 15:25

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79672-1

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	0.15	B	0.0034	0.0010	ug/Kg	☼	09/07/18 14:03	09/17/18 03:34	1
1,2,3,4,6,7,8-HpCDF	0.063	B	0.0034	0.00028	ug/Kg	☼	09/07/18 14:03	09/17/18 03:34	1
1,2,3,4,7,8,9-HpCDF	0.019	B	0.0034	0.00037	ug/Kg	☼	09/07/18 14:03	09/17/18 03:34	1
1,2,3,4,7,8-HxCDD	0.00097	J B	0.0034	0.000058	ug/Kg	☼	09/07/18 14:03	09/17/18 03:34	1
1,2,3,4,7,8-HxCDF	0.11	B	0.0034	0.00039	ug/Kg	☼	09/07/18 14:03	09/17/18 03:34	1
1,2,3,6,7,8-HxCDD	0.0042		0.0034	0.000056	ug/Kg	☼	09/07/18 14:03	09/17/18 03:34	1
1,2,3,6,7,8-HxCDF	0.026	B	0.0034	0.00036	ug/Kg	☼	09/07/18 14:03	09/17/18 03:34	1
1,2,3,7,8,9-HxCDD	0.0028	J B	0.0034	0.000052	ug/Kg	☼	09/07/18 14:03	09/17/18 03:34	1
1,2,3,7,8,9-HxCDF	0.0034	B	0.0034	0.00027	ug/Kg	☼	09/07/18 14:03	09/17/18 03:34	1
1,2,3,7,8-PeCDD	0.00076	J	0.0034	0.000046	ug/Kg	☼	09/07/18 14:03	09/17/18 03:34	1
1,2,3,7,8-PeCDF	0.038	B	0.0034	0.00028	ug/Kg	☼	09/07/18 14:03	09/17/18 03:34	1
2,3,4,6,7,8-HxCDF	0.0036		0.0034	0.00034	ug/Kg	☼	09/07/18 14:03	09/17/18 03:34	1
2,3,4,7,8-PeCDF	0.013	B	0.0034	0.00031	ug/Kg	☼	09/07/18 14:03	09/17/18 03:34	1
2,3,7,8-TCDD	0.00038	J q	0.00068	0.000028	ug/Kg	☼	09/07/18 14:03	09/17/18 03:34	1
OCDD	1.7	B	0.0068	0.00079	ug/Kg	☼	09/07/18 14:03	09/17/18 03:34	1
OCDF	0.12	B	0.0068	0.000051	ug/Kg	☼	09/07/18 14:03	09/17/18 03:34	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	96		23 - 140	09/07/18 14:03	09/17/18 03:34	1
13C-1,2,3,4,6,7,8-HpCDF	84		28 - 143	09/07/18 14:03	09/17/18 03:34	1
13C-1,2,3,4,7,8,9-HpCDF	82		26 - 138	09/07/18 14:03	09/17/18 03:34	1
13C-1,2,3,4,7,8-HxCDD	91		32 - 141	09/07/18 14:03	09/17/18 03:34	1
13C-1,2,3,4,7,8-HxCDF	94		26 - 152	09/07/18 14:03	09/17/18 03:34	1
13C-1,2,3,6,7,8-HxCDD	92		28 - 130	09/07/18 14:03	09/17/18 03:34	1
13C-1,2,3,6,7,8-HxCDF	100		26 - 123	09/07/18 14:03	09/17/18 03:34	1
13C-1,2,3,7,8,9-HxCDF	96		29 - 147	09/07/18 14:03	09/17/18 03:34	1
13C-1,2,3,7,8-PeCDD	87		25 - 181	09/07/18 14:03	09/17/18 03:34	1
13C-1,2,3,7,8-PeCDF	83		24 - 185	09/07/18 14:03	09/17/18 03:34	1
13C-2,3,4,6,7,8-HxCDF	88		28 - 136	09/07/18 14:03	09/17/18 03:34	1
13C-2,3,4,7,8-PeCDF	80		21 - 178	09/07/18 14:03	09/17/18 03:34	1
13C-2,3,7,8-TCDD	94		25 - 164	09/07/18 14:03	09/17/18 03:34	1
13C-OCDD	82		17 - 157	09/07/18 14:03	09/17/18 03:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	77		35 - 197	09/07/18 14:03	09/17/18 03:34	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	0.013	B	0.00068	0.00014	ug/Kg	☼	09/07/18 14:03	09/17/18 19:07	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	90		24 - 169	09/07/18 14:03	09/17/18 19:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	86		35 - 197	09/07/18 14:03	09/17/18 19:07	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S113(A)-2.2to4.6

Date Collected: 08/15/18 15:30

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79672-2

Matrix: Solid

Percent Solids: 78.0

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	0.016	B	0.0032	0.00021	ug/Kg	☼	09/07/18 14:03	09/17/18 04:20	1
1,2,3,4,6,7,8-HpCDF	0.0032	B	0.0032	0.000060	ug/Kg	☼	09/07/18 14:03	09/17/18 04:20	1
1,2,3,4,7,8,9-HpCDF	0.0010	J B	0.0032	0.000076	ug/Kg	☼	09/07/18 14:03	09/17/18 04:20	1
1,2,3,4,7,8-HxCDD	0.00018	J B	0.0032	0.0000099	ug/Kg	☼	09/07/18 14:03	09/17/18 04:20	1
1,2,3,4,7,8-HxCDF	0.0040	B	0.0032	0.000026	ug/Kg	☼	09/07/18 14:03	09/17/18 04:20	1
1,2,3,6,7,8-HxCDD	0.00043	J	0.0032	0.0000097	ug/Kg	☼	09/07/18 14:03	09/17/18 04:20	1
1,2,3,6,7,8-HxCDF	0.0011	J B	0.0032	0.000024	ug/Kg	☼	09/07/18 14:03	09/17/18 04:20	1
1,2,3,7,8,9-HxCDD	0.00027	J B	0.0032	0.0000090	ug/Kg	☼	09/07/18 14:03	09/17/18 04:20	1
1,2,3,7,8,9-HxCDF	0.00063	J B	0.0032	0.000029	ug/Kg	☼	09/07/18 14:03	09/17/18 04:20	1
1,2,3,7,8-PeCDD	0.00010	J	0.0032	0.000011	ug/Kg	☼	09/07/18 14:03	09/17/18 04:20	1
1,2,3,7,8-PeCDF	0.0019	J B	0.0032	0.000021	ug/Kg	☼	09/07/18 14:03	09/17/18 04:20	1
2,3,4,6,7,8-HxCDF	0.00022	J	0.0032	0.000019	ug/Kg	☼	09/07/18 14:03	09/17/18 04:20	1
2,3,4,7,8-PeCDF	0.00085	J B	0.0032	0.000017	ug/Kg	☼	09/07/18 14:03	09/17/18 04:20	1
2,3,7,8-TCDD	0.000071	J q	0.00063	0.000010	ug/Kg	☼	09/07/18 14:03	09/17/18 04:20	1
OCDD	0.15	B	0.0063	0.000067	ug/Kg	☼	09/07/18 14:03	09/17/18 04:20	1
OCDF	0.0083	B	0.0063	0.0000094	ug/Kg	☼	09/07/18 14:03	09/17/18 04:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	83		23 - 140	09/07/18 14:03	09/17/18 04:20	1
13C-1,2,3,4,6,7,8-HpCDF	84		28 - 143	09/07/18 14:03	09/17/18 04:20	1
13C-1,2,3,4,7,8,9-HpCDF	99		26 - 138	09/07/18 14:03	09/17/18 04:20	1
13C-1,2,3,4,7,8-HxCDD	84		32 - 141	09/07/18 14:03	09/17/18 04:20	1
13C-1,2,3,4,7,8-HxCDF	90		26 - 152	09/07/18 14:03	09/17/18 04:20	1
13C-1,2,3,6,7,8-HxCDD	82		28 - 130	09/07/18 14:03	09/17/18 04:20	1
13C-1,2,3,6,7,8-HxCDF	95		26 - 123	09/07/18 14:03	09/17/18 04:20	1
13C-1,2,3,7,8,9-HxCDF	70		29 - 147	09/07/18 14:03	09/17/18 04:20	1
13C-1,2,3,7,8-PeCDD	154		25 - 181	09/07/18 14:03	09/17/18 04:20	1
13C-1,2,3,7,8-PeCDF	78		24 - 185	09/07/18 14:03	09/17/18 04:20	1
13C-2,3,4,6,7,8-HxCDF	65		28 - 136	09/07/18 14:03	09/17/18 04:20	1
13C-2,3,4,7,8-PeCDF	128		21 - 178	09/07/18 14:03	09/17/18 04:20	1
13C-2,3,7,8-TCDD	129		25 - 164	09/07/18 14:03	09/17/18 04:20	1
13C-OCDD	105		17 - 157	09/07/18 14:03	09/17/18 04:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	110		35 - 197	09/07/18 14:03	09/17/18 04:20	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.00091	B	0.00063	0.000047	ug/Kg	☼	09/07/18 14:03	09/17/18 19:45	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	165		24 - 169	09/07/18 14:03	09/17/18 19:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	119		35 - 197	09/07/18 14:03	09/17/18 19:45	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S113(B)-3.6to5.6

Lab Sample ID: 580-79672-3

Date Collected: 08/15/18 16:45

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 48.7

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	0.36	B	0.0051	0.0011	ug/Kg	☼	09/07/18 14:03	09/17/18 05:06	1
1,2,3,4,6,7,8-HpCDF	0.078	B	0.0051	0.00040	ug/Kg	☼	09/07/18 14:03	09/17/18 05:06	1
1,2,3,4,7,8,9-HpCDF	0.015	B	0.0051	0.00062	ug/Kg	☼	09/07/18 14:03	09/17/18 05:06	1
1,2,3,4,7,8-HxCDD	0.0027	J B	0.0051	0.00016	ug/Kg	☼	09/07/18 14:03	09/17/18 05:06	1
1,2,3,4,7,8-HxCDF	0.086	B	0.0051	0.00035	ug/Kg	☼	09/07/18 14:03	09/17/18 05:06	1
1,2,3,6,7,8-HxCDD	0.019		0.0051	0.00015	ug/Kg	☼	09/07/18 14:03	09/17/18 05:06	1
1,2,3,6,7,8-HxCDF	0.021	B	0.0051	0.00028	ug/Kg	☼	09/07/18 14:03	09/17/18 05:06	1
1,2,3,7,8,9-HxCDD	0.0077	B	0.0051	0.00014	ug/Kg	☼	09/07/18 14:03	09/17/18 05:06	1
1,2,3,7,8,9-HxCDF	0.0031	J B	0.0051	0.00024	ug/Kg	☼	09/07/18 14:03	09/17/18 05:06	1
1,2,3,7,8-PeCDD	0.0020	J	0.0051	0.000090	ug/Kg	☼	09/07/18 14:03	09/17/18 05:06	1
1,2,3,7,8-PeCDF	0.048	B	0.0051	0.00069	ug/Kg	☼	09/07/18 14:03	09/17/18 05:06	1
2,3,4,6,7,8-HxCDF	0.0039	J	0.0051	0.00023	ug/Kg	☼	09/07/18 14:03	09/17/18 05:06	1
2,3,4,7,8-PeCDF	0.019	B	0.0051	0.00070	ug/Kg	☼	09/07/18 14:03	09/17/18 05:06	1
2,3,7,8-TCDD	0.00094	J	0.0010	0.000074	ug/Kg	☼	09/07/18 14:03	09/17/18 05:06	1
OCDD	3.6	B	0.010	0.00064	ug/Kg	☼	09/07/18 14:03	09/17/18 05:06	1
OCDF	0.00083	J B	0.010	0.000071	ug/Kg	☼	09/07/18 14:03	09/17/18 05:06	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	82		23 - 140	09/07/18 14:03	09/17/18 05:06	1
13C-1,2,3,4,6,7,8-HpCDF	79		28 - 143	09/07/18 14:03	09/17/18 05:06	1
13C-1,2,3,4,7,8,9-HpCDF	65		26 - 138	09/07/18 14:03	09/17/18 05:06	1
13C-1,2,3,4,7,8-HxCDD	87		32 - 141	09/07/18 14:03	09/17/18 05:06	1
13C-1,2,3,4,7,8-HxCDF	99		26 - 152	09/07/18 14:03	09/17/18 05:06	1
13C-1,2,3,6,7,8-HxCDD	92		28 - 130	09/07/18 14:03	09/17/18 05:06	1
13C-1,2,3,6,7,8-HxCDF	109		26 - 123	09/07/18 14:03	09/17/18 05:06	1
13C-1,2,3,7,8,9-HxCDF	93		29 - 147	09/07/18 14:03	09/17/18 05:06	1
13C-1,2,3,7,8-PeCDD	94		25 - 181	09/07/18 14:03	09/17/18 05:06	1
13C-1,2,3,7,8-PeCDF	85		24 - 185	09/07/18 14:03	09/17/18 05:06	1
13C-2,3,4,6,7,8-HxCDF	93		28 - 136	09/07/18 14:03	09/17/18 05:06	1
13C-2,3,4,7,8-PeCDF	77		21 - 178	09/07/18 14:03	09/17/18 05:06	1
13C-2,3,7,8-TCDD	97		25 - 164	09/07/18 14:03	09/17/18 05:06	1
13C-OCDD	72		17 - 157	09/07/18 14:03	09/17/18 05:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	85		35 - 197	09/07/18 14:03	09/17/18 05:06	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	0.019	B	0.0010	0.00029	ug/Kg	☼	09/07/18 14:03	09/17/18 20:23	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	80		24 - 169	09/07/18 14:03	09/17/18 20:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	73		35 - 197	09/07/18 14:03	09/17/18 20:23	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S113(B)-5.6to7.4

Date Collected: 08/15/18 16:50

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79672-4

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	0.34	B	0.0043	0.0012	ug/Kg	☼	09/07/18 14:03	09/17/18 05:52	1
1,2,3,4,6,7,8-HpCDF	0.088	B	0.0043	0.00039	ug/Kg	☼	09/07/18 14:03	09/17/18 05:52	1
1,2,3,4,7,8,9-HpCDF	0.022	B	0.0043	0.00058	ug/Kg	☼	09/07/18 14:03	09/17/18 05:52	1
1,2,3,4,7,8-HxCDD	0.0031	J B	0.0043	0.00017	ug/Kg	☼	09/07/18 14:03	09/17/18 05:52	1
1,2,3,4,7,8-HxCDF	0.13	B	0.0043	0.00075	ug/Kg	☼	09/07/18 14:03	09/17/18 05:52	1
1,2,3,6,7,8-HxCDD	0.017		0.0043	0.00017	ug/Kg	☼	09/07/18 14:03	09/17/18 05:52	1
1,2,3,6,7,8-HxCDF	0.031	B	0.0043	0.00062	ug/Kg	☼	09/07/18 14:03	09/17/18 05:52	1
1,2,3,7,8,9-HxCDD	0.0069	B	0.0043	0.00015	ug/Kg	☼	09/07/18 14:03	09/17/18 05:52	1
1,2,3,7,8,9-HxCDF	0.0028	J B	0.0043	0.00052	ug/Kg	☼	09/07/18 14:03	09/17/18 05:52	1
1,2,3,7,8-PeCDD	0.0018	J	0.0043	0.000098	ug/Kg	☼	09/07/18 14:03	09/17/18 05:52	1
1,2,3,7,8-PeCDF	0.053	B	0.0043	0.00063	ug/Kg	☼	09/07/18 14:03	09/17/18 05:52	1
2,3,4,6,7,8-HxCDF	0.0045		0.0043	0.00056	ug/Kg	☼	09/07/18 14:03	09/17/18 05:52	1
2,3,4,7,8-PeCDF	0.020	B	0.0043	0.00064	ug/Kg	☼	09/07/18 14:03	09/17/18 05:52	1
2,3,7,8-TCDD	0.00079	J	0.00086	0.000056	ug/Kg	☼	09/07/18 14:03	09/17/18 05:52	1
OCDD	3.2	B	0.0086	0.00063	ug/Kg	☼	09/07/18 14:03	09/17/18 05:52	1
OCDF	0.19	B	0.0086	0.000075	ug/Kg	☼	09/07/18 14:03	09/17/18 05:52	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	86		23 - 140	09/07/18 14:03	09/17/18 05:52	1
13C-1,2,3,4,6,7,8-HpCDF	78		28 - 143	09/07/18 14:03	09/17/18 05:52	1
13C-1,2,3,4,7,8,9-HpCDF	71		26 - 138	09/07/18 14:03	09/17/18 05:52	1
13C-1,2,3,4,7,8-HxCDD	94		32 - 141	09/07/18 14:03	09/17/18 05:52	1
13C-1,2,3,4,7,8-HxCDF	99		26 - 152	09/07/18 14:03	09/17/18 05:52	1
13C-1,2,3,6,7,8-HxCDD	93		28 - 130	09/07/18 14:03	09/17/18 05:52	1
13C-1,2,3,6,7,8-HxCDF	110		26 - 123	09/07/18 14:03	09/17/18 05:52	1
13C-1,2,3,7,8,9-HxCDF	95		29 - 147	09/07/18 14:03	09/17/18 05:52	1
13C-1,2,3,7,8-PeCDD	89		25 - 181	09/07/18 14:03	09/17/18 05:52	1
13C-1,2,3,7,8-PeCDF	86		24 - 185	09/07/18 14:03	09/17/18 05:52	1
13C-2,3,4,6,7,8-HxCDF	93		28 - 136	09/07/18 14:03	09/17/18 05:52	1
13C-2,3,4,7,8-PeCDF	79		21 - 178	09/07/18 14:03	09/17/18 05:52	1
13C-2,3,7,8-TCDD	94		25 - 164	09/07/18 14:03	09/17/18 05:52	1
13C-OCDD	77		17 - 157	09/07/18 14:03	09/17/18 05:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	80		35 - 197	09/07/18 14:03	09/17/18 05:52	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	0.034	B	0.00086	0.00022	ug/Kg	☼	09/07/18 14:03	09/18/18 02:58	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	93		24 - 169	09/07/18 14:03	09/18/18 02:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	76		35 - 197	09/07/18 14:03	09/18/18 02:58	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S113(B)-7.4to10

Date Collected: 08/15/18 16:55

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79672-5

Matrix: Solid

Percent Solids: 77.4

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	0.069	B	0.0032	0.00028	ug/Kg	☼	09/07/18 14:03	09/17/18 06:38	1
1,2,3,4,6,7,8-HpCDF	0.015	B	0.0032	0.000078	ug/Kg	☼	09/07/18 14:03	09/17/18 06:38	1
1,2,3,4,7,8,9-HpCDF	0.0035	B	0.0032	0.000096	ug/Kg	☼	09/07/18 14:03	09/17/18 06:38	1
1,2,3,4,7,8-HxCDD	0.00048	J B	0.0032	0.000039	ug/Kg	☼	09/07/18 14:03	09/17/18 06:38	1
1,2,3,4,7,8-HxCDF	0.017	B	0.0032	0.00012	ug/Kg	☼	09/07/18 14:03	09/17/18 06:38	1
1,2,3,6,7,8-HxCDD	0.0026	J	0.0032	0.000039	ug/Kg	☼	09/07/18 14:03	09/17/18 06:38	1
1,2,3,6,7,8-HxCDF	0.0045	B	0.0032	0.000099	ug/Kg	☼	09/07/18 14:03	09/17/18 06:38	1
1,2,3,7,8,9-HxCDD	0.0014	J B	0.0032	0.000035	ug/Kg	☼	09/07/18 14:03	09/17/18 06:38	1
1,2,3,7,8,9-HxCDF	0.0010	J B	0.0032	0.000076	ug/Kg	☼	09/07/18 14:03	09/17/18 06:38	1
1,2,3,7,8-PeCDD	0.00029	J	0.0032	0.000021	ug/Kg	☼	09/07/18 14:03	09/17/18 06:38	1
1,2,3,7,8-PeCDF	0.010	B	0.0032	0.000097	ug/Kg	☼	09/07/18 14:03	09/17/18 06:38	1
2,3,4,6,7,8-HxCDF	0.00076	J	0.0032	0.000091	ug/Kg	☼	09/07/18 14:03	09/17/18 06:38	1
2,3,4,7,8-PeCDF	0.0038	B	0.0032	0.00010	ug/Kg	☼	09/07/18 14:03	09/17/18 06:38	1
2,3,7,8-TCDD	0.00012	J q	0.00064	0.000015	ug/Kg	☼	09/07/18 14:03	09/17/18 06:38	1
OCDD	0.66	B	0.0064	0.00013	ug/Kg	☼	09/07/18 14:03	09/17/18 06:38	1
OCDF	0.041	B	0.0064	0.000018	ug/Kg	☼	09/07/18 14:03	09/17/18 06:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	90		23 - 140	09/07/18 14:03	09/17/18 06:38	1
13C-1,2,3,4,6,7,8-HpCDF	75		28 - 143	09/07/18 14:03	09/17/18 06:38	1
13C-1,2,3,4,7,8,9-HpCDF	79		26 - 138	09/07/18 14:03	09/17/18 06:38	1
13C-1,2,3,4,7,8-HxCDD	93		32 - 141	09/07/18 14:03	09/17/18 06:38	1
13C-1,2,3,4,7,8-HxCDF	98		26 - 152	09/07/18 14:03	09/17/18 06:38	1
13C-1,2,3,6,7,8-HxCDD	93		28 - 130	09/07/18 14:03	09/17/18 06:38	1
13C-1,2,3,6,7,8-HxCDF	108		26 - 123	09/07/18 14:03	09/17/18 06:38	1
13C-1,2,3,7,8,9-HxCDF	99		29 - 147	09/07/18 14:03	09/17/18 06:38	1
13C-1,2,3,7,8-PeCDD	87		25 - 181	09/07/18 14:03	09/17/18 06:38	1
13C-1,2,3,7,8-PeCDF	85		24 - 185	09/07/18 14:03	09/17/18 06:38	1
13C-2,3,4,6,7,8-HxCDF	95		28 - 136	09/07/18 14:03	09/17/18 06:38	1
13C-2,3,4,7,8-PeCDF	78		21 - 178	09/07/18 14:03	09/17/18 06:38	1
13C-2,3,7,8-TCDD	93		25 - 164	09/07/18 14:03	09/17/18 06:38	1
13C-OCDD	87		17 - 157	09/07/18 14:03	09/17/18 06:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	81		35 - 197	09/07/18 14:03	09/17/18 06:38	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	0.0062	B	0.00064	0.000052	ug/Kg	☼	09/07/18 14:03	09/18/18 03:36	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	99		24 - 169	09/07/18 14:03	09/18/18 03:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	69		35 - 197	09/07/18 14:03	09/18/18 03:36	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S113(B)-10to12

Date Collected: 08/15/18 17:00

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79672-6

Matrix: Solid

Percent Solids: 82.2

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.060	B	0.0030	0.00020	ug/Kg	☼	09/07/18 14:03	09/17/18 07:24	1
1,2,3,4,6,7,8-HpCDF	0.012	B	0.0030	0.000059	ug/Kg	☼	09/07/18 14:03	09/17/18 07:24	1
1,2,3,4,7,8,9-HpCDF	0.0028	J B	0.0030	0.000073	ug/Kg	☼	09/07/18 14:03	09/17/18 07:24	1
1,2,3,4,7,8-HxCDD	0.00041	J B	0.0030	0.000033	ug/Kg	☼	09/07/18 14:03	09/17/18 07:24	1
1,2,3,4,7,8-HxCDF	0.014	B	0.0030	0.000094	ug/Kg	☼	09/07/18 14:03	09/17/18 07:24	1
1,2,3,6,7,8-HxCDD	0.0019	J	0.0030	0.000031	ug/Kg	☼	09/07/18 14:03	09/17/18 07:24	1
1,2,3,6,7,8-HxCDF	0.0034	B	0.0030	0.000085	ug/Kg	☼	09/07/18 14:03	09/17/18 07:24	1
1,2,3,7,8,9-HxCDD	0.0011	J B	0.0030	0.000029	ug/Kg	☼	09/07/18 14:03	09/17/18 07:24	1
1,2,3,7,8,9-HxCDF	0.00068	J B	0.0030	0.000065	ug/Kg	☼	09/07/18 14:03	09/17/18 07:24	1
1,2,3,7,8-PeCDD	0.00020	J	0.0030	0.000013	ug/Kg	☼	09/07/18 14:03	09/17/18 07:24	1
1,2,3,7,8-PeCDF	0.0070	B	0.0030	0.000067	ug/Kg	☼	09/07/18 14:03	09/17/18 07:24	1
2,3,4,6,7,8-HxCDF	0.00056	J	0.0030	0.000080	ug/Kg	☼	09/07/18 14:03	09/17/18 07:24	1
2,3,4,7,8-PeCDF	0.0028	J B	0.0030	0.000076	ug/Kg	☼	09/07/18 14:03	09/17/18 07:24	1
2,3,7,8-TCDD	0.000091	J q	0.00060	0.0000087	ug/Kg	☼	09/07/18 14:03	09/17/18 07:24	1
OCDD	0.54	B	0.0060	0.00015	ug/Kg	☼	09/07/18 14:03	09/17/18 07:24	1
OCDF	0.034	B	0.0060	0.000013	ug/Kg	☼	09/07/18 14:03	09/17/18 07:24	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	94		23 - 140	09/07/18 14:03	09/17/18 07:24	1
13C-1,2,3,4,6,7,8-HpCDF	83		28 - 143	09/07/18 14:03	09/17/18 07:24	1
13C-1,2,3,4,7,8,9-HpCDF	86		26 - 138	09/07/18 14:03	09/17/18 07:24	1
13C-1,2,3,4,7,8-HxCDD	97		32 - 141	09/07/18 14:03	09/17/18 07:24	1
13C-1,2,3,4,7,8-HxCDF	104		26 - 152	09/07/18 14:03	09/17/18 07:24	1
13C-1,2,3,6,7,8-HxCDD	96		28 - 130	09/07/18 14:03	09/17/18 07:24	1
13C-1,2,3,6,7,8-HxCDF	112		26 - 123	09/07/18 14:03	09/17/18 07:24	1
13C-1,2,3,7,8,9-HxCDF	104		29 - 147	09/07/18 14:03	09/17/18 07:24	1
13C-1,2,3,7,8-PeCDD	86		25 - 181	09/07/18 14:03	09/17/18 07:24	1
13C-1,2,3,7,8-PeCDF	85		24 - 185	09/07/18 14:03	09/17/18 07:24	1
13C-2,3,4,6,7,8-HxCDF	96		28 - 136	09/07/18 14:03	09/17/18 07:24	1
13C-2,3,4,7,8-PeCDF	81		21 - 178	09/07/18 14:03	09/17/18 07:24	1
13C-2,3,7,8-TCDD	96		25 - 164	09/07/18 14:03	09/17/18 07:24	1
13C-OCDD	89		17 - 157	09/07/18 14:03	09/17/18 07:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	80		35 - 197	09/07/18 14:03	09/17/18 07:24	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0045	B	0.00060	0.000047	ug/Kg	☼	09/07/18 14:03	09/18/18 04:14	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	97		24 - 169	09/07/18 14:03	09/18/18 04:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	79		35 - 197	09/07/18 14:03	09/18/18 04:14	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S113(B)-12to13.8

Lab Sample ID: 580-79672-7

Date Collected: 08/15/18 17:05

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 79.9

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.10	B	0.0031	0.00067	ug/Kg	☼	09/07/18 14:03	09/17/18 08:10	1
1,2,3,4,6,7,8-HpCDF	0.0099	B	0.0031	0.00010	ug/Kg	☼	09/07/18 14:03	09/17/18 08:10	1
1,2,3,4,7,8,9-HpCDF	0.0020	J B	0.0031	0.00014	ug/Kg	☼	09/07/18 14:03	09/17/18 08:10	1
1,2,3,4,7,8-HxCDD	0.00040	J B	0.0031	0.000026	ug/Kg	☼	09/07/18 14:03	09/17/18 08:10	1
1,2,3,4,7,8-HxCDF	0.0089	B	0.0031	0.000057	ug/Kg	☼	09/07/18 14:03	09/17/18 08:10	1
1,2,3,6,7,8-HxCDD	0.0022	J	0.0031	0.000023	ug/Kg	☼	09/07/18 14:03	09/17/18 08:10	1
1,2,3,6,7,8-HxCDF	0.0021	J B	0.0031	0.000052	ug/Kg	☼	09/07/18 14:03	09/17/18 08:10	1
1,2,3,7,8,9-HxCDD	0.0015	J B	0.0031	0.000022	ug/Kg	☼	09/07/18 14:03	09/17/18 08:10	1
1,2,3,7,8,9-HxCDF	0.0011	J B	0.0031	0.000045	ug/Kg	☼	09/07/18 14:03	09/17/18 08:10	1
1,2,3,7,8-PeCDD	0.00021	J	0.0031	0.000016	ug/Kg	☼	09/07/18 14:03	09/17/18 08:10	1
1,2,3,7,8-PeCDF	0.0045	B	0.0031	0.000061	ug/Kg	☼	09/07/18 14:03	09/17/18 08:10	1
2,3,4,6,7,8-HxCDF	0.00038	J	0.0031	0.000042	ug/Kg	☼	09/07/18 14:03	09/17/18 08:10	1
2,3,4,7,8-PeCDF	0.0019	J B	0.0031	0.000052	ug/Kg	☼	09/07/18 14:03	09/17/18 08:10	1
2,3,7,8-TCDD	0.000094	J q	0.00063	0.000011	ug/Kg	☼	09/07/18 14:03	09/17/18 08:10	1
OCDD	0.76	B	0.0063	0.00015	ug/Kg	☼	09/07/18 14:03	09/17/18 08:10	1
OCDF	0.00013	J B	0.0063	0.000015	ug/Kg	☼	09/07/18 14:03	09/17/18 08:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	90		23 - 140	09/07/18 14:03	09/17/18 08:10	1
13C-1,2,3,4,6,7,8-HpCDF	88		28 - 143	09/07/18 14:03	09/17/18 08:10	1
13C-1,2,3,4,7,8,9-HpCDF	84		26 - 138	09/07/18 14:03	09/17/18 08:10	1
13C-1,2,3,4,7,8-HxCDD	84		32 - 141	09/07/18 14:03	09/17/18 08:10	1
13C-1,2,3,4,7,8-HxCDF	104		26 - 152	09/07/18 14:03	09/17/18 08:10	1
13C-1,2,3,6,7,8-HxCDD	91		28 - 130	09/07/18 14:03	09/17/18 08:10	1
13C-1,2,3,6,7,8-HxCDF	110		26 - 123	09/07/18 14:03	09/17/18 08:10	1
13C-1,2,3,7,8,9-HxCDF	96		29 - 147	09/07/18 14:03	09/17/18 08:10	1
13C-1,2,3,7,8-PeCDD	95		25 - 181	09/07/18 14:03	09/17/18 08:10	1
13C-1,2,3,7,8-PeCDF	70		24 - 185	09/07/18 14:03	09/17/18 08:10	1
13C-2,3,4,6,7,8-HxCDF	101		28 - 136	09/07/18 14:03	09/17/18 08:10	1
13C-2,3,4,7,8-PeCDF	65		21 - 178	09/07/18 14:03	09/17/18 08:10	1
13C-2,3,7,8-TCDD	97		25 - 164	09/07/18 14:03	09/17/18 08:10	1
13C-OCDD	86		17 - 157	09/07/18 14:03	09/17/18 08:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	81		35 - 197	09/07/18 14:03	09/17/18 08:10	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	0.0032	B	0.00063	0.000079	ug/Kg	☼	09/07/18 14:03	09/18/18 04:52	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	97		24 - 169	09/07/18 14:03	09/18/18 04:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	78		35 - 197	09/07/18 14:03	09/18/18 04:52	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S109-0to2

Date Collected: 08/15/18 18:00

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79672-8

Matrix: Solid

Percent Solids: 75.6

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.061	J B	0.067	0.00038	ug/Kg	✱	09/05/18 15:15	09/13/18 19:37	20
1,2,3,4,6,7,8-HpCDF	0.013	J B	0.067	0.00063	ug/Kg	✱	09/05/18 15:15	09/13/18 19:37	20
1,2,3,4,7,8,9-HpCDF	0.0015	J B	0.067	0.00067	ug/Kg	✱	09/05/18 15:15	09/13/18 19:37	20
1,2,3,4,7,8-HxCDD	0.00058	J q B	0.067	0.00022	ug/Kg	✱	09/05/18 15:15	09/13/18 19:37	20
1,2,3,4,7,8-HxCDF	0.0051	J	0.067	0.00024	ug/Kg	✱	09/05/18 15:15	09/13/18 19:37	20
1,2,3,6,7,8-HxCDD	0.0033	J	0.067	0.00020	ug/Kg	✱	09/05/18 15:15	09/13/18 19:37	20
1,2,3,6,7,8-HxCDF	0.0019	J	0.067	0.00022	ug/Kg	✱	09/05/18 15:15	09/13/18 19:37	20
1,2,3,7,8,9-HxCDD	0.0023	J B	0.067	0.00019	ug/Kg	✱	09/05/18 15:15	09/13/18 19:37	20
1,2,3,7,8,9-HxCDF	0.0011	J B	0.067	0.00015	ug/Kg	✱	09/05/18 15:15	09/13/18 19:37	20
1,2,3,7,8-PeCDD	0.00055	J q	0.067	0.00027	ug/Kg	✱	09/05/18 15:15	09/13/18 19:37	20
1,2,3,7,8-PeCDF	0.0031	J	0.067	0.00026	ug/Kg	✱	09/05/18 15:15	09/13/18 19:37	20
2,3,4,6,7,8-HxCDF	0.00061	J	0.067	0.00017	ug/Kg	✱	09/05/18 15:15	09/13/18 19:37	20
2,3,4,7,8-PeCDF	0.0015	J	0.067	0.00028	ug/Kg	✱	09/05/18 15:15	09/13/18 19:37	20
2,3,7,8-TCDD	ND		0.013	0.00021	ug/Kg	✱	09/05/18 15:15	09/13/18 19:37	20
2,3,7,8-TCDF	0.0035	J B	0.013	0.00014	ug/Kg	✱	09/05/18 15:15	09/13/18 19:37	20
OCDD	0.56	B	0.13	0.00047	ug/Kg	✱	09/05/18 15:15	09/13/18 19:37	20
OCDF	0.031	J B	0.13	0.00026	ug/Kg	✱	09/05/18 15:15	09/13/18 19:37	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	65		23 - 140	09/05/18 15:15	09/13/18 19:37	20
13C-1,2,3,4,6,7,8-HpCDF	54		28 - 143	09/05/18 15:15	09/13/18 19:37	20
13C-1,2,3,4,7,8,9-HpCDF	62		26 - 138	09/05/18 15:15	09/13/18 19:37	20
13C-1,2,3,4,7,8-HxCDD	52		32 - 141	09/05/18 15:15	09/13/18 19:37	20
13C-1,2,3,4,7,8-HxCDF	54		26 - 152	09/05/18 15:15	09/13/18 19:37	20
13C-1,2,3,6,7,8-HxCDD	59		28 - 130	09/05/18 15:15	09/13/18 19:37	20
13C-1,2,3,6,7,8-HxCDF	59		26 - 123	09/05/18 15:15	09/13/18 19:37	20
13C-1,2,3,7,8,9-HxCDF	59		29 - 147	09/05/18 15:15	09/13/18 19:37	20
13C-1,2,3,7,8-PeCDD	59		25 - 181	09/05/18 15:15	09/13/18 19:37	20
13C-1,2,3,7,8-PeCDF	58		24 - 185	09/05/18 15:15	09/13/18 19:37	20
13C-2,3,4,6,7,8-HxCDF	58		28 - 136	09/05/18 15:15	09/13/18 19:37	20
13C-2,3,4,7,8-PeCDF	57		21 - 178	09/05/18 15:15	09/13/18 19:37	20
13C-2,3,7,8-TCDD	64		25 - 164	09/05/18 15:15	09/13/18 19:37	20
13C-2,3,7,8-TCDF	63		24 - 169	09/05/18 15:15	09/13/18 19:37	20
13C-OCDD	59		17 - 157	09/05/18 15:15	09/13/18 19:37	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	122		35 - 197	09/05/18 15:15	09/13/18 19:37	20

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S109-2to4

Date Collected: 08/15/18 18:05

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79672-9

Matrix: Solid

Percent Solids: 84.5

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	0.014	B	0.0030	0.00019	ug/Kg	☼	09/05/18 15:15	09/12/18 16:02	1
1,2,3,4,6,7,8-HpCDF	0.0023	J B	0.0030	0.000089	ug/Kg	☼	09/05/18 15:15	09/12/18 16:02	1
1,2,3,4,7,8,9-HpCDF	0.00027	J B	0.0030	0.00011	ug/Kg	☼	09/05/18 15:15	09/12/18 16:02	1
1,2,3,4,7,8-HxCDD	0.00026	J q B	0.0030	0.000051	ug/Kg	☼	09/05/18 15:15	09/12/18 16:02	1
1,2,3,4,7,8-HxCDF	0.00096	J	0.0030	0.000054	ug/Kg	☼	09/05/18 15:15	09/12/18 16:02	1
1,2,3,6,7,8-HxCDD	0.00085	J q	0.0030	0.000052	ug/Kg	☼	09/05/18 15:15	09/12/18 16:02	1
1,2,3,6,7,8-HxCDF	0.00033	J	0.0030	0.000050	ug/Kg	☼	09/05/18 15:15	09/12/18 16:02	1
1,2,3,7,8,9-HxCDD	0.00066	J B	0.0030	0.000046	ug/Kg	☼	09/05/18 15:15	09/12/18 16:02	1
1,2,3,7,8,9-HxCDF	0.00016	J q B	0.0030	0.000041	ug/Kg	☼	09/05/18 15:15	09/12/18 16:02	1
1,2,3,7,8-PeCDD	0.00016	J	0.0030	0.000053	ug/Kg	☼	09/05/18 15:15	09/12/18 16:02	1
1,2,3,7,8-PeCDF	0.00072	J	0.0030	0.000041	ug/Kg	☼	09/05/18 15:15	09/12/18 16:02	1
2,3,4,6,7,8-HxCDF	0.000084	J q	0.0030	0.000042	ug/Kg	☼	09/05/18 15:15	09/12/18 16:02	1
2,3,4,7,8-PeCDF	0.00037	J	0.0030	0.000047	ug/Kg	☼	09/05/18 15:15	09/12/18 16:02	1
2,3,7,8-TCDD	ND		0.00059	0.000041	ug/Kg	☼	09/05/18 15:15	09/12/18 16:02	1
OCDD	0.12	B	0.0059	0.00050	ug/Kg	☼	09/05/18 15:15	09/12/18 16:02	1
OCDF	0.0056	J B	0.0059	0.000075	ug/Kg	☼	09/05/18 15:15	09/12/18 16:02	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	74		23 - 140	09/05/18 15:15	09/12/18 16:02	1
13C-1,2,3,4,6,7,8-HpCDF	65		28 - 143	09/05/18 15:15	09/12/18 16:02	1
13C-1,2,3,4,7,8,9-HpCDF	76		26 - 138	09/05/18 15:15	09/12/18 16:02	1
13C-1,2,3,4,7,8-HxCDD	69		32 - 141	09/05/18 15:15	09/12/18 16:02	1
13C-1,2,3,4,7,8-HxCDF	72		26 - 152	09/05/18 15:15	09/12/18 16:02	1
13C-1,2,3,6,7,8-HxCDD	66		28 - 130	09/05/18 15:15	09/12/18 16:02	1
13C-1,2,3,6,7,8-HxCDF	72		26 - 123	09/05/18 15:15	09/12/18 16:02	1
13C-1,2,3,7,8,9-HxCDF	75		29 - 147	09/05/18 15:15	09/12/18 16:02	1
13C-1,2,3,7,8-PeCDD	63		25 - 181	09/05/18 15:15	09/12/18 16:02	1
13C-1,2,3,7,8-PeCDF	68		24 - 185	09/05/18 15:15	09/12/18 16:02	1
13C-2,3,4,6,7,8-HxCDF	74		28 - 136	09/05/18 15:15	09/12/18 16:02	1
13C-2,3,4,7,8-PeCDF	68		21 - 178	09/05/18 15:15	09/12/18 16:02	1
13C-2,3,7,8-TCDD	67		25 - 164	09/05/18 15:15	09/12/18 16:02	1
13C-OCDD	78		17 - 157	09/05/18 15:15	09/12/18 16:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	114		35 - 197	09/05/18 15:15	09/12/18 16:02	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	0.00059	B	0.00059	0.000055	ug/Kg	☼	09/05/18 15:15	09/13/18 06:03	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	63		24 - 169	09/05/18 15:15	09/13/18 06:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	122		35 - 197	09/05/18 15:15	09/13/18 06:03	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S109-4to6

Lab Sample ID: 580-79672-10

Date Collected: 08/15/18 18:10

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 84.6

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	0.0059	J B	0.058	0.00012	ug/Kg	☼	09/05/18 15:15	09/13/18 20:23	20
1,2,3,4,6,7,8-HpCDF	0.0025	J B	0.058	0.00024	ug/Kg	☼	09/05/18 15:15	09/13/18 20:23	20
1,2,3,4,7,8,9-HpCDF	ND		0.058	0.00024	ug/Kg	☼	09/05/18 15:15	09/13/18 20:23	20
1,2,3,4,7,8-HxCDD	ND		0.058	0.00010	ug/Kg	☼	09/05/18 15:15	09/13/18 20:23	20
1,2,3,4,7,8-HxCDF	0.00095	J q	0.058	0.00012	ug/Kg	☼	09/05/18 15:15	09/13/18 20:23	20
1,2,3,6,7,8-HxCDD	0.00066	J	0.058	0.00011	ug/Kg	☼	09/05/18 15:15	09/13/18 20:23	20
1,2,3,6,7,8-HxCDF	0.00033	J q	0.058	0.00012	ug/Kg	☼	09/05/18 15:15	09/13/18 20:23	20
1,2,3,7,8,9-HxCDD	0.00053	J q B	0.058	0.000094	ug/Kg	☼	09/05/18 15:15	09/13/18 20:23	20
1,2,3,7,8,9-HxCDF	ND		0.058	0.000079	ug/Kg	☼	09/05/18 15:15	09/13/18 20:23	20
1,2,3,7,8-PeCDD	ND		0.058	0.00016	ug/Kg	☼	09/05/18 15:15	09/13/18 20:23	20
1,2,3,7,8-PeCDF	ND		0.058	0.00013	ug/Kg	☼	09/05/18 15:15	09/13/18 20:23	20
2,3,4,6,7,8-HxCDF	0.00013	J q	0.058	0.000085	ug/Kg	☼	09/05/18 15:15	09/13/18 20:23	20
2,3,4,7,8-PeCDF	ND		0.058	0.00015	ug/Kg	☼	09/05/18 15:15	09/13/18 20:23	20
2,3,7,8-TCDD	ND		0.012	0.00014	ug/Kg	☼	09/05/18 15:15	09/13/18 20:23	20
2,3,7,8-TCDF	0.00041	J B	0.012	0.000068	ug/Kg	☼	09/05/18 15:15	09/13/18 20:23	20
OCDD	0.058	J B	0.12	0.00019	ug/Kg	☼	09/05/18 15:15	09/13/18 20:23	20
OCDF	0.0032	J B	0.12	0.00014	ug/Kg	☼	09/05/18 15:15	09/13/18 20:23	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	68		23 - 140	09/05/18 15:15	09/13/18 20:23	20
13C-1,2,3,4,6,7,8-HpCDF	56		28 - 143	09/05/18 15:15	09/13/18 20:23	20
13C-1,2,3,4,7,8,9-HpCDF	65		26 - 138	09/05/18 15:15	09/13/18 20:23	20
13C-1,2,3,4,7,8-HxCDD	56		32 - 141	09/05/18 15:15	09/13/18 20:23	20
13C-1,2,3,4,7,8-HxCDF	57		26 - 152	09/05/18 15:15	09/13/18 20:23	20
13C-1,2,3,6,7,8-HxCDD	57		28 - 130	09/05/18 15:15	09/13/18 20:23	20
13C-1,2,3,6,7,8-HxCDF	61		26 - 123	09/05/18 15:15	09/13/18 20:23	20
13C-1,2,3,7,8,9-HxCDF	65		29 - 147	09/05/18 15:15	09/13/18 20:23	20
13C-1,2,3,7,8-PeCDD	61		25 - 181	09/05/18 15:15	09/13/18 20:23	20
13C-1,2,3,7,8-PeCDF	60		24 - 185	09/05/18 15:15	09/13/18 20:23	20
13C-2,3,4,6,7,8-HxCDF	67		28 - 136	09/05/18 15:15	09/13/18 20:23	20
13C-2,3,4,7,8-PeCDF	58		21 - 178	09/05/18 15:15	09/13/18 20:23	20
13C-2,3,7,8-TCDD	68		25 - 164	09/05/18 15:15	09/13/18 20:23	20
13C-2,3,7,8-TCDF	66		24 - 169	09/05/18 15:15	09/13/18 20:23	20
13C-OCDD	59		17 - 157	09/05/18 15:15	09/13/18 20:23	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	128		35 - 197	09/05/18 15:15	09/13/18 20:23	20

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S109-6to8

Lab Sample ID: 580-79672-11

Date Collected: 08/15/18 18:15

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 85.5

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	0.014	B	0.0029	0.000074	ug/Kg	☼	09/06/18 12:09	09/14/18 07:43	1
1,2,3,4,6,7,8-HpCDF	0.0036	B	0.0029	0.000049	ug/Kg	☼	09/06/18 12:09	09/14/18 07:43	1
1,2,3,4,7,8,9-HpCDF	0.00081	J B	0.0029	0.000053	ug/Kg	☼	09/06/18 12:09	09/14/18 07:43	1
1,2,3,4,7,8-HxCDD	0.00016	J B	0.0029	0.000020	ug/Kg	☼	09/06/18 12:09	09/14/18 07:43	1
1,2,3,4,7,8-HxCDF	0.00092	J B	0.0029	0.000030	ug/Kg	☼	09/06/18 12:09	09/14/18 07:43	1
1,2,3,6,7,8-HxCDD	0.00068	J	0.0029	0.000019	ug/Kg	☼	09/06/18 12:09	09/14/18 07:43	1
1,2,3,6,7,8-HxCDF	0.00030	J B	0.0029	0.000028	ug/Kg	☼	09/06/18 12:09	09/14/18 07:43	1
1,2,3,7,8,9-HxCDD	0.00028	J q	0.0029	0.000018	ug/Kg	☼	09/06/18 12:09	09/14/18 07:43	1
1,2,3,7,8,9-HxCDF	0.00062	J B	0.0029	0.000019	ug/Kg	☼	09/06/18 12:09	09/14/18 07:43	1
1,2,3,7,8-PeCDD	0.000055	J q	0.0029	0.000022	ug/Kg	☼	09/06/18 12:09	09/14/18 07:43	1
1,2,3,7,8-PeCDF	0.00047	J B	0.0029	0.000025	ug/Kg	☼	09/06/18 12:09	09/14/18 07:43	1
2,3,4,6,7,8-HxCDF	0.00011	J B	0.0029	0.000023	ug/Kg	☼	09/06/18 12:09	09/14/18 07:43	1
2,3,4,7,8-PeCDF	0.00022	J B	0.0029	0.000027	ug/Kg	☼	09/06/18 12:09	09/14/18 07:43	1
2,3,7,8-TCDD	ND		0.00058	0.000034	ug/Kg	☼	09/06/18 12:09	09/14/18 07:43	1
OCDD	0.13	B	0.0058	0.000063	ug/Kg	☼	09/06/18 12:09	09/14/18 07:43	1
OCDF	0.0049	J B	0.0058	0.000024	ug/Kg	☼	09/06/18 12:09	09/14/18 07:43	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	58		23 - 140	09/06/18 12:09	09/14/18 07:43	1
13C-1,2,3,4,6,7,8-HpCDF	49		28 - 143	09/06/18 12:09	09/14/18 07:43	1
13C-1,2,3,4,7,8,9-HpCDF	55		26 - 138	09/06/18 12:09	09/14/18 07:43	1
13C-1,2,3,4,7,8-HxCDD	48		32 - 141	09/06/18 12:09	09/14/18 07:43	1
13C-1,2,3,4,7,8-HxCDF	49		26 - 152	09/06/18 12:09	09/14/18 07:43	1
13C-1,2,3,6,7,8-HxCDD	50		28 - 130	09/06/18 12:09	09/14/18 07:43	1
13C-1,2,3,6,7,8-HxCDF	49		26 - 123	09/06/18 12:09	09/14/18 07:43	1
13C-1,2,3,7,8,9-HxCDF	53		29 - 147	09/06/18 12:09	09/14/18 07:43	1
13C-1,2,3,7,8-PeCDD	49		25 - 181	09/06/18 12:09	09/14/18 07:43	1
13C-1,2,3,7,8-PeCDF	47		24 - 185	09/06/18 12:09	09/14/18 07:43	1
13C-2,3,4,6,7,8-HxCDF	51		28 - 136	09/06/18 12:09	09/14/18 07:43	1
13C-2,3,4,7,8-PeCDF	48		21 - 178	09/06/18 12:09	09/14/18 07:43	1
13C-2,3,7,8-TCDD	54		25 - 164	09/06/18 12:09	09/14/18 07:43	1
13C-OCDD	47		17 - 157	09/06/18 12:09	09/14/18 07:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	111		35 - 197	09/06/18 12:09	09/14/18 07:43	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	0.00063	B	0.00058	0.00013	ug/Kg	☼	09/06/18 12:09	09/14/18 16:13	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	52		24 - 169	09/06/18 12:09	09/14/18 16:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	104		35 - 197	09/06/18 12:09	09/14/18 16:13	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S109-8to10

Date Collected: 08/15/18 18:20

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79672-12

Matrix: Solid

Percent Solids: 72.5

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.093	B	0.0035	0.00060	ug/Kg	☼	09/06/18 12:09	09/14/18 08:29	1
1,2,3,4,6,7,8-HpCDF	0.21	B	0.0035	0.0012	ug/Kg	☼	09/06/18 12:09	09/14/18 08:29	1
1,2,3,4,7,8,9-HpCDF	0.0023	J B	0.0035	0.0016	ug/Kg	☼	09/06/18 12:09	09/14/18 08:29	1
1,2,3,4,7,8-HxCDD	0.00045	J B	0.0035	0.000064	ug/Kg	☼	09/06/18 12:09	09/14/18 08:29	1
1,2,3,4,7,8-HxCDF	0.0032	J B	0.0035	0.00034	ug/Kg	☼	09/06/18 12:09	09/14/18 08:29	1
1,2,3,6,7,8-HxCDD	0.0042		0.0035	0.000060	ug/Kg	☼	09/06/18 12:09	09/14/18 08:29	1
1,2,3,6,7,8-HxCDF	0.0037	B	0.0035	0.00030	ug/Kg	☼	09/06/18 12:09	09/14/18 08:29	1
1,2,3,7,8,9-HxCDD	0.0015	J	0.0035	0.000056	ug/Kg	☼	09/06/18 12:09	09/14/18 08:29	1
1,2,3,7,8,9-HxCDF	0.0011	J B	0.0035	0.00023	ug/Kg	☼	09/06/18 12:09	09/14/18 08:29	1
1,2,3,7,8-PeCDD	0.00053	J	0.0035	0.000043	ug/Kg	☼	09/06/18 12:09	09/14/18 08:29	1
1,2,3,7,8-PeCDF	0.00040	J q B	0.0035	0.00021	ug/Kg	☼	09/06/18 12:09	09/14/18 08:29	1
2,3,4,6,7,8-HxCDF	0.0024	J B	0.0035	0.00027	ug/Kg	☼	09/06/18 12:09	09/14/18 08:29	1
2,3,4,7,8-PeCDF	0.0011	J B	0.0035	0.00021	ug/Kg	☼	09/06/18 12:09	09/14/18 08:29	1
2,3,7,8-TCDD	0.00012	J q	0.00070	0.000030	ug/Kg	☼	09/06/18 12:09	09/14/18 08:29	1
OCDD	1.4	B	0.0070	0.00029	ug/Kg	☼	09/06/18 12:09	09/14/18 08:29	1
OCDF	0.10	B	0.0070	0.000049	ug/Kg	☼	09/06/18 12:09	09/14/18 08:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	59		23 - 140	09/06/18 12:09	09/14/18 08:29	1
13C-1,2,3,4,6,7,8-HpCDF	53		28 - 143	09/06/18 12:09	09/14/18 08:29	1
13C-1,2,3,4,7,8,9-HpCDF	53		26 - 138	09/06/18 12:09	09/14/18 08:29	1
13C-1,2,3,4,7,8-HxCDD	55		32 - 141	09/06/18 12:09	09/14/18 08:29	1
13C-1,2,3,4,7,8-HxCDF	57		26 - 152	09/06/18 12:09	09/14/18 08:29	1
13C-1,2,3,6,7,8-HxCDD	57		28 - 130	09/06/18 12:09	09/14/18 08:29	1
13C-1,2,3,6,7,8-HxCDF	60		26 - 123	09/06/18 12:09	09/14/18 08:29	1
13C-1,2,3,7,8,9-HxCDF	58		29 - 147	09/06/18 12:09	09/14/18 08:29	1
13C-1,2,3,7,8-PeCDD	53		25 - 181	09/06/18 12:09	09/14/18 08:29	1
13C-1,2,3,7,8-PeCDF	51		24 - 185	09/06/18 12:09	09/14/18 08:29	1
13C-2,3,4,6,7,8-HxCDF	54		28 - 136	09/06/18 12:09	09/14/18 08:29	1
13C-2,3,4,7,8-PeCDF	49		21 - 178	09/06/18 12:09	09/14/18 08:29	1
13C-2,3,7,8-TCDD	59		25 - 164	09/06/18 12:09	09/14/18 08:29	1
13C-OCDD	48		17 - 157	09/06/18 12:09	09/14/18 08:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	115		35 - 197	09/06/18 12:09	09/14/18 08:29	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.00032	J q B	0.00070	0.00020	ug/Kg	☼	09/06/18 12:09	09/14/18 16:51	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	56		24 - 169	09/06/18 12:09	09/14/18 16:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	112		35 - 197	09/06/18 12:09	09/14/18 16:51	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S109-10to11.3

Lab Sample ID: 580-79672-13

Date Collected: 08/15/18 18:25

Matrix: Solid

Date Received: 08/17/18 15:30

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	0.068	J B	0.089	0.0049	ug/Kg	☼	09/06/18 12:09	09/15/18 02:48	20
1,2,3,4,6,7,8-HpCDF	0.032	J B	0.089	0.0026	ug/Kg	☼	09/06/18 12:09	09/15/18 02:48	20
1,2,3,4,7,8,9-HpCDF	0.043	J B	0.089	0.0050	ug/Kg	☼	09/06/18 12:09	09/15/18 02:48	20
1,2,3,4,7,8-HxCDD	ND		0.089	0.0012	ug/Kg	☼	09/06/18 12:09	09/15/18 02:48	20
1,2,3,4,7,8-HxCDF	0.0018	J B	0.089	0.00092	ug/Kg	☼	09/06/18 12:09	09/15/18 02:48	20
1,2,3,6,7,8-HxCDD	ND		0.089	0.0012	ug/Kg	☼	09/06/18 12:09	09/15/18 02:48	20
1,2,3,6,7,8-HxCDF	0.0022	J B	0.089	0.00081	ug/Kg	☼	09/06/18 12:09	09/15/18 02:48	20
1,2,3,7,8,9-HxCDD	0.0056	J q	0.089	0.0011	ug/Kg	☼	09/06/18 12:09	09/15/18 02:48	20
1,2,3,7,8,9-HxCDF	0.0064	J B	0.089	0.00061	ug/Kg	☼	09/06/18 12:09	09/15/18 02:48	20
1,2,3,7,8-PeCDD	ND		0.089	0.00051	ug/Kg	☼	09/06/18 12:09	09/15/18 02:48	20
1,2,3,7,8-PeCDF	ND		0.089	0.00041	ug/Kg	☼	09/06/18 12:09	09/15/18 02:48	20
2,3,4,6,7,8-HxCDF	ND		0.089	0.0013	ug/Kg	☼	09/06/18 12:09	09/15/18 02:48	20
2,3,4,7,8-PeCDF	ND		0.089	0.00053	ug/Kg	☼	09/06/18 12:09	09/15/18 02:48	20
2,3,7,8-TCDD	ND		0.018	0.00068	ug/Kg	☼	09/06/18 12:09	09/15/18 02:48	20
2,3,7,8-TCDF	0.0014	J q B	0.018	0.00032	ug/Kg	☼	09/06/18 12:09	09/15/18 02:48	20
OCDD	1.3	B	0.18	0.017	ug/Kg	☼	09/06/18 12:09	09/15/18 02:48	20
OCDF	0.092	J B	0.18	0.012	ug/Kg	☼	09/06/18 12:09	09/15/18 02:48	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	5	*	23 - 140	09/06/18 12:09	09/15/18 02:48	20
13C-1,2,3,4,6,7,8-HpCDF	6	*	28 - 143	09/06/18 12:09	09/15/18 02:48	20
13C-1,2,3,4,7,8,9-HpCDF	3	q *	26 - 138	09/06/18 12:09	09/15/18 02:48	20
13C-1,2,3,4,7,8-HxCDD	17	*	32 - 141	09/06/18 12:09	09/15/18 02:48	20
13C-1,2,3,4,7,8-HxCDF	24	*	26 - 152	09/06/18 12:09	09/15/18 02:48	20
13C-1,2,3,6,7,8-HxCDD	17	*	28 - 130	09/06/18 12:09	09/15/18 02:48	20
13C-1,2,3,6,7,8-HxCDF	26		26 - 123	09/06/18 12:09	09/15/18 02:48	20
13C-1,2,3,7,8,9-HxCDF	26	*	29 - 147	09/06/18 12:09	09/15/18 02:48	20
13C-1,2,3,7,8-PeCDD	44		25 - 181	09/06/18 12:09	09/15/18 02:48	20
13C-1,2,3,7,8-PeCDF	43		24 - 185	09/06/18 12:09	09/15/18 02:48	20
13C-2,3,4,6,7,8-HxCDF	13	*	28 - 136	09/06/18 12:09	09/15/18 02:48	20
13C-2,3,4,7,8-PeCDF	34		21 - 178	09/06/18 12:09	09/15/18 02:48	20
13C-2,3,7,8-TCDD	55		25 - 164	09/06/18 12:09	09/15/18 02:48	20
13C-2,3,7,8-TCDF	52		24 - 169	09/06/18 12:09	09/15/18 02:48	20
13C-OCDD	2	q *	17 - 157	09/06/18 12:09	09/15/18 02:48	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	120		35 - 197	09/06/18 12:09	09/15/18 02:48	20

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S131-0to2

Lab Sample ID: 580-79672-14

Date Collected: 08/16/18 08:50

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 46.2

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	0.18	B	0.0055	0.00067	ug/Kg	☼	09/06/18 12:09	09/14/18 10:01	1
1,2,3,4,6,7,8-HpCDF	0.029	B	0.0055	0.00040	ug/Kg	☼	09/06/18 12:09	09/14/18 10:01	1
1,2,3,4,7,8,9-HpCDF	0.0027	J B	0.0055	0.00043	ug/Kg	☼	09/06/18 12:09	09/14/18 10:01	1
1,2,3,4,7,8-HxCDD	0.0016	J B	0.0055	0.00015	ug/Kg	☼	09/06/18 12:09	09/14/18 10:01	1
1,2,3,4,7,8-HxCDF	0.0043	J B	0.0055	0.00025	ug/Kg	☼	09/06/18 12:09	09/14/18 10:01	1
1,2,3,6,7,8-HxCDD	0.0098		0.0055	0.00016	ug/Kg	☼	09/06/18 12:09	09/14/18 10:01	1
1,2,3,6,7,8-HxCDF	0.0017	J q B	0.0055	0.00024	ug/Kg	☼	09/06/18 12:09	09/14/18 10:01	1
1,2,3,7,8,9-HxCDD	0.0053	J	0.0055	0.00014	ug/Kg	☼	09/06/18 12:09	09/14/18 10:01	1
1,2,3,7,8,9-HxCDF	0.0013	J B	0.0055	0.00017	ug/Kg	☼	09/06/18 12:09	09/14/18 10:01	1
1,2,3,7,8-PeCDD	0.0011	J	0.0055	0.000099	ug/Kg	☼	09/06/18 12:09	09/14/18 10:01	1
1,2,3,7,8-PeCDF	0.0012	J B	0.0055	0.00017	ug/Kg	☼	09/06/18 12:09	09/14/18 10:01	1
2,3,4,6,7,8-HxCDF	0.00076	J B	0.0055	0.00018	ug/Kg	☼	09/06/18 12:09	09/14/18 10:01	1
2,3,4,7,8-PeCDF	0.0010	J B	0.0055	0.00018	ug/Kg	☼	09/06/18 12:09	09/14/18 10:01	1
2,3,7,8-TCDD	0.00031	J q	0.0011	0.000085	ug/Kg	☼	09/06/18 12:09	09/14/18 10:01	1
OCDD	1.9	B	0.011	0.00031	ug/Kg	☼	09/06/18 12:09	09/14/18 10:01	1
OCDF	0.10	B	0.011	0.000065	ug/Kg	☼	09/06/18 12:09	09/14/18 10:01	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	47		23 - 140	09/06/18 12:09	09/14/18 10:01	1
13C-1,2,3,4,6,7,8-HpCDF	37		28 - 143	09/06/18 12:09	09/14/18 10:01	1
13C-1,2,3,4,7,8,9-HpCDF	43		26 - 138	09/06/18 12:09	09/14/18 10:01	1
13C-1,2,3,4,7,8-HxCDD	44		32 - 141	09/06/18 12:09	09/14/18 10:01	1
13C-1,2,3,4,7,8-HxCDF	46		26 - 152	09/06/18 12:09	09/14/18 10:01	1
13C-1,2,3,6,7,8-HxCDD	45		28 - 130	09/06/18 12:09	09/14/18 10:01	1
13C-1,2,3,6,7,8-HxCDF	47		26 - 123	09/06/18 12:09	09/14/18 10:01	1
13C-1,2,3,7,8,9-HxCDF	47		29 - 147	09/06/18 12:09	09/14/18 10:01	1
13C-1,2,3,7,8-PeCDD	41		25 - 181	09/06/18 12:09	09/14/18 10:01	1
13C-1,2,3,7,8-PeCDF	42		24 - 185	09/06/18 12:09	09/14/18 10:01	1
13C-2,3,4,6,7,8-HxCDF	48		28 - 136	09/06/18 12:09	09/14/18 10:01	1
13C-2,3,4,7,8-PeCDF	43		21 - 178	09/06/18 12:09	09/14/18 10:01	1
13C-2,3,7,8-TCDD	52		25 - 164	09/06/18 12:09	09/14/18 10:01	1
13C-OCDD	40		17 - 157	09/06/18 12:09	09/14/18 10:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	112		35 - 197	09/06/18 12:09	09/14/18 10:01	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	0.00084	J q B	0.0011	0.00025	ug/Kg	☼	09/06/18 12:09	09/14/18 17:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	51		24 - 169	09/06/18 12:09	09/14/18 17:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	106		35 - 197	09/06/18 12:09	09/14/18 17:29	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S131-2to4

Lab Sample ID: 580-79672-15

Date Collected: 08/16/18 08:55

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 50.9

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	0.60	B	0.0049	0.0021	ug/Kg	☼	09/06/18 12:09	09/14/18 16:51	1
1,2,3,4,6,7,8-HpCDF	0.065	B	0.0049	0.00065	ug/Kg	☼	09/06/18 12:09	09/14/18 16:51	1
1,2,3,4,7,8,9-HpCDF	0.0050	B	0.0049	0.0010	ug/Kg	☼	09/06/18 12:09	09/14/18 16:51	1
1,2,3,4,7,8-HxCDD	0.0054	B	0.0049	0.00035	ug/Kg	☼	09/06/18 12:09	09/14/18 16:51	1
1,2,3,4,7,8-HxCDF	0.010	B	0.0049	0.00061	ug/Kg	☼	09/06/18 12:09	09/14/18 16:51	1
1,2,3,6,7,8-HxCDD	0.040		0.0049	0.00036	ug/Kg	☼	09/06/18 12:09	09/14/18 16:51	1
1,2,3,6,7,8-HxCDF	0.0045	J B	0.0049	0.00059	ug/Kg	☼	09/06/18 12:09	09/14/18 16:51	1
1,2,3,7,8,9-HxCDD	0.014		0.0049	0.00032	ug/Kg	☼	09/06/18 12:09	09/14/18 16:51	1
1,2,3,7,8,9-HxCDF	0.0014	J B	0.0049	0.00045	ug/Kg	☼	09/06/18 12:09	09/14/18 16:51	1
1,2,3,7,8-PeCDD	0.0040	J	0.0049	0.00016	ug/Kg	☼	09/06/18 12:09	09/14/18 16:51	1
1,2,3,7,8-PeCDF	0.0028	J B	0.0049	0.00032	ug/Kg	☼	09/06/18 12:09	09/14/18 16:51	1
2,3,4,6,7,8-HxCDF	0.0027	J B	0.0049	0.00049	ug/Kg	☼	09/06/18 12:09	09/14/18 16:51	1
2,3,4,7,8-PeCDF	0.0023	J B	0.0049	0.00033	ug/Kg	☼	09/06/18 12:09	09/14/18 16:51	1
2,3,7,8-TCDD	0.00098		0.00098	0.000043	ug/Kg	☼	09/06/18 12:09	09/14/18 16:51	1
OCDD	5.2	E B	0.0098	0.0012	ug/Kg	☼	09/06/18 12:09	09/14/18 16:51	1
OCDF	0.15	B	0.0098	0.000079	ug/Kg	☼	09/06/18 12:09	09/14/18 16:51	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	44		23 - 140	09/06/18 12:09	09/14/18 16:51	1
13C-1,2,3,4,6,7,8-HpCDF	37		28 - 143	09/06/18 12:09	09/14/18 16:51	1
13C-1,2,3,4,7,8,9-HpCDF	32		26 - 138	09/06/18 12:09	09/14/18 16:51	1
13C-1,2,3,4,7,8-HxCDD	48		32 - 141	09/06/18 12:09	09/14/18 16:51	1
13C-1,2,3,4,7,8-HxCDF	50		26 - 152	09/06/18 12:09	09/14/18 16:51	1
13C-1,2,3,6,7,8-HxCDD	49		28 - 130	09/06/18 12:09	09/14/18 16:51	1
13C-1,2,3,6,7,8-HxCDF	52		26 - 123	09/06/18 12:09	09/14/18 16:51	1
13C-1,2,3,7,8,9-HxCDF	50		29 - 147	09/06/18 12:09	09/14/18 16:51	1
13C-1,2,3,7,8-PeCDD	47		25 - 181	09/06/18 12:09	09/14/18 16:51	1
13C-1,2,3,7,8-PeCDF	45		24 - 185	09/06/18 12:09	09/14/18 16:51	1
13C-2,3,4,6,7,8-HxCDF	51		28 - 136	09/06/18 12:09	09/14/18 16:51	1
13C-2,3,4,7,8-PeCDF	47		21 - 178	09/06/18 12:09	09/14/18 16:51	1
13C-2,3,7,8-TCDD	54		25 - 164	09/06/18 12:09	09/14/18 16:51	1
13C-OCDD	36		17 - 157	09/06/18 12:09	09/14/18 16:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	116		35 - 197	09/06/18 12:09	09/14/18 16:51	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	0.0046	B	0.00098	0.00026	ug/Kg	☼	09/06/18 12:09	09/15/18 04:45	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	48		24 - 169	09/06/18 12:09	09/15/18 04:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	105		35 - 197	09/06/18 12:09	09/15/18 04:45	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S131-4to6

Lab Sample ID: 580-79672-16

Date Collected: 08/16/18 09:00

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 51.7

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	1.4	G B	0.0048	0.0048	ug/Kg	☼	09/06/18 12:09	09/14/18 17:36	1
1,2,3,4,6,7,8-HpCDF	0.13	B	0.0047	0.0012	ug/Kg	☼	09/06/18 12:09	09/14/18 17:36	1
1,2,3,4,7,8,9-HpCDF	0.0097	B	0.0047	0.0020	ug/Kg	☼	09/06/18 12:09	09/14/18 17:36	1
1,2,3,4,7,8-HxCDD	0.011	B	0.0047	0.00058	ug/Kg	☼	09/06/18 12:09	09/14/18 17:36	1
1,2,3,4,7,8-HxCDF	0.026	B	0.0047	0.0011	ug/Kg	☼	09/06/18 12:09	09/14/18 17:36	1
1,2,3,6,7,8-HxCDD	0.10		0.0047	0.00061	ug/Kg	☼	09/06/18 12:09	09/14/18 17:36	1
1,2,3,6,7,8-HxCDF	0.011	B	0.0047	0.0010	ug/Kg	☼	09/06/18 12:09	09/14/18 17:36	1
1,2,3,7,8,9-HxCDD	0.024		0.0047	0.00054	ug/Kg	☼	09/06/18 12:09	09/14/18 17:36	1
1,2,3,7,8,9-HxCDF	0.0021	J B	0.0047	0.00076	ug/Kg	☼	09/06/18 12:09	09/14/18 17:36	1
1,2,3,7,8-PeCDD	0.0063		0.0047	0.00044	ug/Kg	☼	09/06/18 12:09	09/14/18 17:36	1
1,2,3,7,8-PeCDF	0.0094	B	0.0047	0.00076	ug/Kg	☼	09/06/18 12:09	09/14/18 17:36	1
2,3,4,6,7,8-HxCDF	0.0058	B	0.0047	0.00080	ug/Kg	☼	09/06/18 12:09	09/14/18 17:36	1
2,3,4,7,8-PeCDF	0.0059	B	0.0047	0.00078	ug/Kg	☼	09/06/18 12:09	09/14/18 17:36	1
2,3,7,8-TCDD	0.0016		0.00094	0.000062	ug/Kg	☼	09/06/18 12:09	09/14/18 17:36	1
OCDD	12	E B	0.0094	0.0043	ug/Kg	☼	09/06/18 12:09	09/14/18 17:36	1
OCDF	0.23	B	0.0094	0.00012	ug/Kg	☼	09/06/18 12:09	09/14/18 17:36	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	42		23 - 140	09/06/18 12:09	09/14/18 17:36	1
13C-1,2,3,4,6,7,8-HpCDF	35		28 - 143	09/06/18 12:09	09/14/18 17:36	1
13C-1,2,3,4,7,8,9-HpCDF	31		26 - 138	09/06/18 12:09	09/14/18 17:36	1
13C-1,2,3,4,7,8-HxCDD	47		32 - 141	09/06/18 12:09	09/14/18 17:36	1
13C-1,2,3,4,7,8-HxCDF	47		26 - 152	09/06/18 12:09	09/14/18 17:36	1
13C-1,2,3,6,7,8-HxCDD	45		28 - 130	09/06/18 12:09	09/14/18 17:36	1
13C-1,2,3,6,7,8-HxCDF	48		26 - 123	09/06/18 12:09	09/14/18 17:36	1
13C-1,2,3,7,8,9-HxCDF	47		29 - 147	09/06/18 12:09	09/14/18 17:36	1
13C-1,2,3,7,8-PeCDD	45		25 - 181	09/06/18 12:09	09/14/18 17:36	1
13C-1,2,3,7,8-PeCDF	44		24 - 185	09/06/18 12:09	09/14/18 17:36	1
13C-2,3,4,6,7,8-HxCDF	48		28 - 136	09/06/18 12:09	09/14/18 17:36	1
13C-2,3,4,7,8-PeCDF	46		21 - 178	09/06/18 12:09	09/14/18 17:36	1
13C-2,3,7,8-TCDD	50		25 - 164	09/06/18 12:09	09/14/18 17:36	1
13C-OCDD	35		17 - 157	09/06/18 12:09	09/14/18 17:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	117		35 - 197	09/06/18 12:09	09/14/18 17:36	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	0.0065	B	0.00094	0.00020	ug/Kg	☼	09/06/18 12:09	09/15/18 05:23	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	48		24 - 169	09/06/18 12:09	09/15/18 05:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	107		35 - 197	09/06/18 12:09	09/15/18 05:23	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S131-6to8

Date Collected: 08/16/18 09:05

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79672-17

Matrix: Solid

Percent Solids: 52.1

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-HpCDF	0.36	B	0.0047	0.0022	ug/Kg	☼	09/06/18 12:09	09/14/18 18:22	1
1,2,3,4,7,8,9-HpCDF	0.025	B	0.0047	0.0039	ug/Kg	☼	09/06/18 12:09	09/14/18 18:22	1
1,2,3,4,7,8-HxCDD	0.018	B	0.0047	0.0011	ug/Kg	☼	09/06/18 12:09	09/14/18 18:22	1
1,2,3,4,7,8-HxCDF	0.076	B	0.0047	0.0034	ug/Kg	☼	09/06/18 12:09	09/14/18 18:22	1
1,2,3,6,7,8-HxCDD	0.20		0.0047	0.0011	ug/Kg	☼	09/06/18 12:09	09/14/18 18:22	1
1,2,3,6,7,8-HxCDF	0.031	B	0.0047	0.0031	ug/Kg	☼	09/06/18 12:09	09/14/18 18:22	1
1,2,3,7,8,9-HxCDD	0.042		0.0047	0.0010	ug/Kg	☼	09/06/18 12:09	09/14/18 18:22	1
1,2,3,7,8,9-HxCDF	0.0031	J B	0.0047	0.0023	ug/Kg	☼	09/06/18 12:09	09/14/18 18:22	1
1,2,3,7,8-PeCDD	0.0058		0.0047	0.00060	ug/Kg	☼	09/06/18 12:09	09/14/18 18:22	1
1,2,3,7,8-PeCDF	0.033	B	0.0047	0.0012	ug/Kg	☼	09/06/18 12:09	09/14/18 18:22	1
2,3,4,6,7,8-HxCDF	0.013	B	0.0047	0.0027	ug/Kg	☼	09/06/18 12:09	09/14/18 18:22	1
2,3,4,7,8-PeCDF	0.015	B	0.0047	0.0012	ug/Kg	☼	09/06/18 12:09	09/14/18 18:22	1
2,3,7,8-TCDD	0.0012		0.00094	0.000060	ug/Kg	☼	09/06/18 12:09	09/14/18 18:22	1
OCDF	0.80	B	0.0094	0.00027	ug/Kg	☼	09/06/18 12:09	09/14/18 18:22	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDF	42		28 - 143	09/06/18 12:09	09/14/18 18:22	1
13C-1,2,3,4,7,8,9-HpCDF	33		26 - 138	09/06/18 12:09	09/14/18 18:22	1
13C-1,2,3,4,7,8-HxCDD	52		32 - 141	09/06/18 12:09	09/14/18 18:22	1
13C-1,2,3,4,7,8-HxCDF	55		26 - 152	09/06/18 12:09	09/14/18 18:22	1
13C-1,2,3,6,7,8-HxCDD	53		28 - 130	09/06/18 12:09	09/14/18 18:22	1
13C-1,2,3,6,7,8-HxCDF	58		26 - 123	09/06/18 12:09	09/14/18 18:22	1
13C-1,2,3,7,8,9-HxCDF	53		29 - 147	09/06/18 12:09	09/14/18 18:22	1
13C-1,2,3,7,8-PeCDD	53		25 - 181	09/06/18 12:09	09/14/18 18:22	1
13C-1,2,3,7,8-PeCDF	50		24 - 185	09/06/18 12:09	09/14/18 18:22	1
13C-2,3,4,6,7,8-HxCDF	55		28 - 136	09/06/18 12:09	09/14/18 18:22	1
13C-2,3,4,7,8-PeCDF	52		21 - 178	09/06/18 12:09	09/14/18 18:22	1
13C-2,3,7,8-TCDD	55		25 - 164	09/06/18 12:09	09/14/18 18:22	1
13C-OCDD	35		17 - 157	09/06/18 12:09	09/14/18 18:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	114		35 - 197	09/06/18 12:09	09/14/18 18:22	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	3.6	B	0.094	0.024	ug/Kg	☼	09/06/18 12:09	09/17/18 18:57	20
OCDD	32	B	0.19	0.017	ug/Kg	☼	09/06/18 12:09	09/17/18 18:57	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	54		23 - 140	09/06/18 12:09	09/17/18 18:57	20
13C-OCDD	51		17 - 157	09/06/18 12:09	09/17/18 18:57	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	114		35 - 197	09/06/18 12:09	09/17/18 18:57	20

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.017	B	0.00094	0.00022	ug/Kg	☼	09/06/18 12:09	09/15/18 06:01	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	54		24 - 169	09/06/18 12:09	09/15/18 06:01	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S131-6to8

Date Collected: 08/16/18 09:05

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79672-17

Matrix: Solid

Percent Solids: 52.1

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
37Cl4-2,3,7,8-TCDD	113		35 - 197	09/06/18 12:09	09/15/18 06:01	1

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S256-0to2

Lab Sample ID: 580-79672-18

Date Collected: 08/16/18 10:25

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 59.7

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	0.083	B	0.0042	0.00037	ug/Kg	✱	09/06/18 12:09	09/14/18 19:08	1
1,2,3,4,6,7,8-HpCDF	0.015	q B	0.0042	0.00027	ug/Kg	✱	09/06/18 12:09	09/14/18 19:08	1
1,2,3,4,7,8,9-HpCDF	0.0013	J B	0.0042	0.00031	ug/Kg	✱	09/06/18 12:09	09/14/18 19:08	1
1,2,3,4,7,8-HxCDD	0.0011	J B	0.0042	0.000066	ug/Kg	✱	09/06/18 12:09	09/14/18 19:08	1
1,2,3,4,7,8-HxCDF	0.0013	J B	0.0042	0.00014	ug/Kg	✱	09/06/18 12:09	09/14/18 19:08	1
1,2,3,6,7,8-HxCDD	0.0035	J	0.0042	0.000066	ug/Kg	✱	09/06/18 12:09	09/14/18 19:08	1
1,2,3,6,7,8-HxCDF	0.00080	J B	0.0042	0.00013	ug/Kg	✱	09/06/18 12:09	09/14/18 19:08	1
1,2,3,7,8,9-HxCDD	0.0022	J	0.0042	0.000061	ug/Kg	✱	09/06/18 12:09	09/14/18 19:08	1
1,2,3,7,8,9-HxCDF	0.00070	J q B	0.0042	0.000098	ug/Kg	✱	09/06/18 12:09	09/14/18 19:08	1
1,2,3,7,8-PeCDD	0.00048	J	0.0042	0.000071	ug/Kg	✱	09/06/18 12:09	09/14/18 19:08	1
1,2,3,7,8-PeCDF	0.00029	J B	0.0042	0.00011	ug/Kg	✱	09/06/18 12:09	09/14/18 19:08	1
2,3,4,6,7,8-HxCDF	0.00055	J B	0.0042	0.00011	ug/Kg	✱	09/06/18 12:09	09/14/18 19:08	1
2,3,4,7,8-PeCDF	0.00038	J B	0.0042	0.00012	ug/Kg	✱	09/06/18 12:09	09/14/18 19:08	1
2,3,7,8-TCDD	ND		0.00083	0.00012	ug/Kg	✱	09/06/18 12:09	09/14/18 19:08	1
2,3,7,8-TCDF	0.00076	J B	0.00083	0.000078	ug/Kg	✱	09/06/18 12:09	09/14/18 19:08	1
OCDD	0.65	B	0.0083	0.00026	ug/Kg	✱	09/06/18 12:09	09/14/18 19:08	1
OCDF	0.049	B	0.0083	0.000049	ug/Kg	✱	09/06/18 12:09	09/14/18 19:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	53		23 - 140	09/06/18 12:09	09/14/18 19:08	1
13C-1,2,3,4,6,7,8-HpCDF	45		28 - 143	09/06/18 12:09	09/14/18 19:08	1
13C-1,2,3,4,7,8,9-HpCDF	49		26 - 138	09/06/18 12:09	09/14/18 19:08	1
13C-1,2,3,4,7,8-HxCDD	55		32 - 141	09/06/18 12:09	09/14/18 19:08	1
13C-1,2,3,4,7,8-HxCDF	58		26 - 152	09/06/18 12:09	09/14/18 19:08	1
13C-1,2,3,6,7,8-HxCDD	56		28 - 130	09/06/18 12:09	09/14/18 19:08	1
13C-1,2,3,6,7,8-HxCDF	59		26 - 123	09/06/18 12:09	09/14/18 19:08	1
13C-1,2,3,7,8,9-HxCDF	58		29 - 147	09/06/18 12:09	09/14/18 19:08	1
13C-1,2,3,7,8-PeCDD	54		25 - 181	09/06/18 12:09	09/14/18 19:08	1
13C-1,2,3,7,8-PeCDF	53		24 - 185	09/06/18 12:09	09/14/18 19:08	1
13C-2,3,4,6,7,8-HxCDF	59		28 - 136	09/06/18 12:09	09/14/18 19:08	1
13C-2,3,4,7,8-PeCDF	53		21 - 178	09/06/18 12:09	09/14/18 19:08	1
13C-2,3,7,8-TCDD	61		25 - 164	09/06/18 12:09	09/14/18 19:08	1
13C-2,3,7,8-TCDF	56		24 - 169	09/06/18 12:09	09/14/18 19:08	1
13C-OCDD	44		17 - 157	09/06/18 12:09	09/14/18 19:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	114		35 - 197	09/06/18 12:09	09/14/18 19:08	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S256-2to4

Lab Sample ID: 580-79672-19

Date Collected: 08/16/18 10:30

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 59.7

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	0.27	B	0.0042	0.00099	ug/Kg	☼	09/06/18 12:09	09/14/18 19:54	1
1,2,3,4,6,7,8-HpCDF	0.044	B	0.0042	0.00055	ug/Kg	☼	09/06/18 12:09	09/14/18 19:54	1
1,2,3,4,7,8,9-HpCDF	0.0028	J B	0.0042	0.00073	ug/Kg	☼	09/06/18 12:09	09/14/18 19:54	1
1,2,3,4,7,8-HxCDD	0.0026	J B	0.0042	0.00012	ug/Kg	☼	09/06/18 12:09	09/14/18 19:54	1
1,2,3,4,7,8-HxCDF	0.0036	J B	0.0042	0.00026	ug/Kg	☼	09/06/18 12:09	09/14/18 19:54	1
1,2,3,6,7,8-HxCDD	0.011		0.0042	0.00012	ug/Kg	☼	09/06/18 12:09	09/14/18 19:54	1
1,2,3,6,7,8-HxCDF	0.0019	J B	0.0042	0.00024	ug/Kg	☼	09/06/18 12:09	09/14/18 19:54	1
1,2,3,7,8,9-HxCDD	0.0050		0.0042	0.00011	ug/Kg	☼	09/06/18 12:09	09/14/18 19:54	1
1,2,3,7,8,9-HxCDF	0.00074	J B	0.0042	0.00019	ug/Kg	☼	09/06/18 12:09	09/14/18 19:54	1
1,2,3,7,8-PeCDD	0.0012	J	0.0042	0.000097	ug/Kg	☼	09/06/18 12:09	09/14/18 19:54	1
1,2,3,7,8-PeCDF	0.00058	J q B	0.0042	0.00017	ug/Kg	☼	09/06/18 12:09	09/14/18 19:54	1
2,3,4,6,7,8-HxCDF	0.0014	J B	0.0042	0.00020	ug/Kg	☼	09/06/18 12:09	09/14/18 19:54	1
2,3,4,7,8-PeCDF	0.00097	J B	0.0042	0.00018	ug/Kg	☼	09/06/18 12:09	09/14/18 19:54	1
2,3,7,8-TCDD	0.00025	J q	0.00083	0.000033	ug/Kg	☼	09/06/18 12:09	09/14/18 19:54	1
OCDD	2.3	B	0.0083	0.00075	ug/Kg	☼	09/06/18 12:09	09/14/18 19:54	1
OCDF	0.14	B	0.0083	0.000072	ug/Kg	☼	09/06/18 12:09	09/14/18 19:54	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	52		23 - 140	09/06/18 12:09	09/14/18 19:54	1
13C-1,2,3,4,6,7,8-HpCDF	44		28 - 143	09/06/18 12:09	09/14/18 19:54	1
13C-1,2,3,4,7,8,9-HpCDF	44		26 - 138	09/06/18 12:09	09/14/18 19:54	1
13C-1,2,3,4,7,8-HxCDD	54		32 - 141	09/06/18 12:09	09/14/18 19:54	1
13C-1,2,3,4,7,8-HxCDF	55		26 - 152	09/06/18 12:09	09/14/18 19:54	1
13C-1,2,3,6,7,8-HxCDD	54		28 - 130	09/06/18 12:09	09/14/18 19:54	1
13C-1,2,3,6,7,8-HxCDF	56		26 - 123	09/06/18 12:09	09/14/18 19:54	1
13C-1,2,3,7,8,9-HxCDF	55		29 - 147	09/06/18 12:09	09/14/18 19:54	1
13C-1,2,3,7,8-PeCDD	51		25 - 181	09/06/18 12:09	09/14/18 19:54	1
13C-1,2,3,7,8-PeCDF	49		24 - 185	09/06/18 12:09	09/14/18 19:54	1
13C-2,3,4,6,7,8-HxCDF	56		28 - 136	09/06/18 12:09	09/14/18 19:54	1
13C-2,3,4,7,8-PeCDF	50		21 - 178	09/06/18 12:09	09/14/18 19:54	1
13C-2,3,7,8-TCDD	56		25 - 164	09/06/18 12:09	09/14/18 19:54	1
13C-OCDD	45		17 - 157	09/06/18 12:09	09/14/18 19:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	109		35 - 197	09/06/18 12:09	09/14/18 19:54	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.00090	B	0.00083	0.00012	ug/Kg	☼	09/06/18 12:09	09/15/18 02:13	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	49		24 - 169	09/06/18 12:09	09/15/18 02:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	104		35 - 197	09/06/18 12:09	09/15/18 02:13	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S256-2to4D

Lab Sample ID: 580-79672-20

Date Collected: 08/16/18 10:30

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 61.4

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	0.23	B	0.0040	0.00081	ug/Kg	☼	09/06/18 12:09	09/14/18 20:40	1
1,2,3,4,6,7,8-HpCDF	0.037	q B	0.0040	0.00056	ug/Kg	☼	09/06/18 12:09	09/14/18 20:40	1
1,2,3,4,7,8,9-HpCDF	0.0029	J B	0.0040	0.00080	ug/Kg	☼	09/06/18 12:09	09/14/18 20:40	1
1,2,3,4,7,8-HxCDD	0.0024	J B	0.0040	0.00014	ug/Kg	☼	09/06/18 12:09	09/14/18 20:40	1
1,2,3,4,7,8-HxCDF	0.0034	J B	0.0040	0.00028	ug/Kg	☼	09/06/18 12:09	09/14/18 20:40	1
1,2,3,6,7,8-HxCDD	0.010		0.0040	0.00014	ug/Kg	☼	09/06/18 12:09	09/14/18 20:40	1
1,2,3,6,7,8-HxCDF	0.0019	J B	0.0040	0.00027	ug/Kg	☼	09/06/18 12:09	09/14/18 20:40	1
1,2,3,7,8,9-HxCDD	0.0042		0.0040	0.00013	ug/Kg	☼	09/06/18 12:09	09/14/18 20:40	1
1,2,3,7,8,9-HxCDF	0.00067	J B	0.0040	0.00020	ug/Kg	☼	09/06/18 12:09	09/14/18 20:40	1
1,2,3,7,8-PeCDD	0.0012	J	0.0040	0.000092	ug/Kg	☼	09/06/18 12:09	09/14/18 20:40	1
1,2,3,7,8-PeCDF	0.00065	J B	0.0040	0.00013	ug/Kg	☼	09/06/18 12:09	09/14/18 20:40	1
2,3,4,6,7,8-HxCDF	0.0013	J B	0.0040	0.00021	ug/Kg	☼	09/06/18 12:09	09/14/18 20:40	1
2,3,4,7,8-PeCDF	0.00091	J B	0.0040	0.00014	ug/Kg	☼	09/06/18 12:09	09/14/18 20:40	1
2,3,7,8-TCDD	0.00026	J q	0.00081	0.000030	ug/Kg	☼	09/06/18 12:09	09/14/18 20:40	1
OCDD	1.9	B	0.0081	0.00053	ug/Kg	☼	09/06/18 12:09	09/14/18 20:40	1
OCDF	0.13	B	0.0081	0.000081	ug/Kg	☼	09/06/18 12:09	09/14/18 20:40	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	53		23 - 140	09/06/18 12:09	09/14/18 20:40	1
13C-1,2,3,4,6,7,8-HpCDF	46		28 - 143	09/06/18 12:09	09/14/18 20:40	1
13C-1,2,3,4,7,8,9-HpCDF	43		26 - 138	09/06/18 12:09	09/14/18 20:40	1
13C-1,2,3,4,7,8-HxCDD	59		32 - 141	09/06/18 12:09	09/14/18 20:40	1
13C-1,2,3,4,7,8-HxCDF	61		26 - 152	09/06/18 12:09	09/14/18 20:40	1
13C-1,2,3,6,7,8-HxCDD	59		28 - 130	09/06/18 12:09	09/14/18 20:40	1
13C-1,2,3,6,7,8-HxCDF	63		26 - 123	09/06/18 12:09	09/14/18 20:40	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147	09/06/18 12:09	09/14/18 20:40	1
13C-1,2,3,7,8-PeCDD	56		25 - 181	09/06/18 12:09	09/14/18 20:40	1
13C-1,2,3,7,8-PeCDF	54		24 - 185	09/06/18 12:09	09/14/18 20:40	1
13C-2,3,4,6,7,8-HxCDF	62		28 - 136	09/06/18 12:09	09/14/18 20:40	1
13C-2,3,4,7,8-PeCDF	56		21 - 178	09/06/18 12:09	09/14/18 20:40	1
13C-2,3,7,8-TCDD	63		25 - 164	09/06/18 12:09	09/14/18 20:40	1
13C-OCDD	45		17 - 157	09/06/18 12:09	09/14/18 20:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	114		35 - 197	09/06/18 12:09	09/14/18 20:40	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.00080	J B	0.00081	0.00012	ug/Kg	☼	09/06/18 12:09	09/15/18 02:51	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	58		24 - 169	09/06/18 12:09	09/15/18 02:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	103		35 - 197	09/06/18 12:09	09/15/18 02:51	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S256-4to6

Lab Sample ID: 580-79672-21

Date Collected: 08/16/18 10:35

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 63.7

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.21	B	0.0039	0.00071	ug/Kg	☼	09/06/18 12:09	09/14/18 21:26	1
1,2,3,4,6,7,8-HpCDF	0.035	q B	0.0039	0.00051	ug/Kg	☼	09/06/18 12:09	09/14/18 21:26	1
1,2,3,4,7,8,9-HpCDF	0.0027	J B	0.0039	0.00075	ug/Kg	☼	09/06/18 12:09	09/14/18 21:26	1
1,2,3,4,7,8-HxCDD	0.0024	J B	0.0039	0.00017	ug/Kg	☼	09/06/18 12:09	09/14/18 21:26	1
1,2,3,4,7,8-HxCDF	0.0037	J B	0.0039	0.00030	ug/Kg	☼	09/06/18 12:09	09/14/18 21:26	1
1,2,3,6,7,8-HxCDD	0.0095		0.0039	0.00017	ug/Kg	☼	09/06/18 12:09	09/14/18 21:26	1
1,2,3,6,7,8-HxCDF	0.0021	J B	0.0039	0.00028	ug/Kg	☼	09/06/18 12:09	09/14/18 21:26	1
1,2,3,7,8,9-HxCDD	0.0043		0.0039	0.00016	ug/Kg	☼	09/06/18 12:09	09/14/18 21:26	1
1,2,3,7,8,9-HxCDF	0.00070	J B	0.0039	0.00023	ug/Kg	☼	09/06/18 12:09	09/14/18 21:26	1
1,2,3,7,8-PeCDD	0.0011	J	0.0039	0.00011	ug/Kg	☼	09/06/18 12:09	09/14/18 21:26	1
1,2,3,7,8-PeCDF	0.00071	J B	0.0039	0.00020	ug/Kg	☼	09/06/18 12:09	09/14/18 21:26	1
2,3,4,6,7,8-HxCDF	0.0015	J B	0.0039	0.00024	ug/Kg	☼	09/06/18 12:09	09/14/18 21:26	1
2,3,4,7,8-PeCDF	0.0011	J B	0.0039	0.00022	ug/Kg	☼	09/06/18 12:09	09/14/18 21:26	1
2,3,7,8-TCDD	0.00028	J q	0.00079	0.000031	ug/Kg	☼	09/06/18 12:09	09/14/18 21:26	1
OCDD	1.8	B	0.0079	0.00051	ug/Kg	☼	09/06/18 12:09	09/14/18 21:26	1
OCDF	0.13	B	0.0079	0.000084	ug/Kg	☼	09/06/18 12:09	09/14/18 21:26	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	53		23 - 140	09/06/18 12:09	09/14/18 21:26	1
13C-1,2,3,4,6,7,8-HpCDF	45		28 - 143	09/06/18 12:09	09/14/18 21:26	1
13C-1,2,3,4,7,8,9-HpCDF	42		26 - 138	09/06/18 12:09	09/14/18 21:26	1
13C-1,2,3,4,7,8-HxCDD	58		32 - 141	09/06/18 12:09	09/14/18 21:26	1
13C-1,2,3,4,7,8-HxCDF	62		26 - 152	09/06/18 12:09	09/14/18 21:26	1
13C-1,2,3,6,7,8-HxCDD	60		28 - 130	09/06/18 12:09	09/14/18 21:26	1
13C-1,2,3,6,7,8-HxCDF	67		26 - 123	09/06/18 12:09	09/14/18 21:26	1
13C-1,2,3,7,8,9-HxCDF	58		29 - 147	09/06/18 12:09	09/14/18 21:26	1
13C-1,2,3,7,8-PeCDD	56		25 - 181	09/06/18 12:09	09/14/18 21:26	1
13C-1,2,3,7,8-PeCDF	53		24 - 185	09/06/18 12:09	09/14/18 21:26	1
13C-2,3,4,6,7,8-HxCDF	62		28 - 136	09/06/18 12:09	09/14/18 21:26	1
13C-2,3,4,7,8-PeCDF	53		21 - 178	09/06/18 12:09	09/14/18 21:26	1
13C-2,3,7,8-TCDD	61		25 - 164	09/06/18 12:09	09/14/18 21:26	1
13C-OCDD	47		17 - 157	09/06/18 12:09	09/14/18 21:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	117		35 - 197	09/06/18 12:09	09/14/18 21:26	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	0.0011	B	0.00079	0.00012	ug/Kg	☼	09/06/18 12:09	09/15/18 03:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	54		24 - 169	09/06/18 12:09	09/15/18 03:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	112		35 - 197	09/06/18 12:09	09/15/18 03:29	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S256-6to8.7

Lab Sample ID: 580-79672-22

Date Collected: 08/16/18 10:40

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 62.0

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	0.00058	ug/Kg	☼	09/06/18 12:09	09/14/18 22:12	1
1,2,3,4,6,7,8-HpCDF	0.040	B	0.0040	0.00057	ug/Kg	☼	09/06/18 12:09	09/14/18 22:12	1
1,2,3,4,7,8,9-HpCDF	0.0040	B	0.0040	0.00094	ug/Kg	☼	09/06/18 12:09	09/14/18 22:12	1
1,2,3,4,7,8-HxCDD	0.0024	J B	0.0040	0.00027	ug/Kg	☼	09/06/18 12:09	09/14/18 22:12	1
1,2,3,4,7,8-HxCDF	0.0037	J B	0.0040	0.00041	ug/Kg	☼	09/06/18 12:09	09/14/18 22:12	1
1,2,3,6,7,8-HxCDD	0.011		0.0040	0.00028	ug/Kg	☼	09/06/18 12:09	09/14/18 22:12	1
1,2,3,6,7,8-HxCDF	0.0035	J B	0.0040	0.00039	ug/Kg	☼	09/06/18 12:09	09/14/18 22:12	1
1,2,3,7,8,9-HxCDD	0.0044		0.0040	0.00025	ug/Kg	☼	09/06/18 12:09	09/14/18 22:12	1
1,2,3,7,8,9-HxCDF	0.00070	J B	0.0040	0.00032	ug/Kg	☼	09/06/18 12:09	09/14/18 22:12	1
1,2,3,7,8-PeCDD	0.0020	J	0.0040	0.00025	ug/Kg	☼	09/06/18 12:09	09/14/18 22:12	1
1,2,3,7,8-PeCDF	0.00091	J q B	0.0040	0.00049	ug/Kg	☼	09/06/18 12:09	09/14/18 22:12	1
2,3,4,6,7,8-HxCDF	0.0021	J B	0.0040	0.00034	ug/Kg	☼	09/06/18 12:09	09/14/18 22:12	1
2,3,4,7,8-PeCDF	0.0017	J B	0.0040	0.00052	ug/Kg	☼	09/06/18 12:09	09/14/18 22:12	1
2,3,7,8-TCDD	0.00099		0.00080	0.000054	ug/Kg	☼	09/06/18 12:09	09/14/18 22:12	1
OCDD	2.2	B	0.0080	0.00056	ug/Kg	☼	09/06/18 12:09	09/14/18 22:12	1
OCDF	0.16	B	0.0080	0.000094	ug/Kg	☼	09/06/18 12:09	09/14/18 22:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	43		23 - 140	09/06/18 12:09	09/14/18 22:12	1
13C-1,2,3,4,6,7,8-HpCDF	36		28 - 143	09/06/18 12:09	09/14/18 22:12	1
13C-1,2,3,4,7,8,9-HpCDF	27		26 - 138	09/06/18 12:09	09/14/18 22:12	1
13C-1,2,3,4,7,8-HxCDD	53		32 - 141	09/06/18 12:09	09/14/18 22:12	1
13C-1,2,3,4,7,8-HxCDF	57		26 - 152	09/06/18 12:09	09/14/18 22:12	1
13C-1,2,3,6,7,8-HxCDD	51		28 - 130	09/06/18 12:09	09/14/18 22:12	1
13C-1,2,3,6,7,8-HxCDF	58		26 - 123	09/06/18 12:09	09/14/18 22:12	1
13C-1,2,3,7,8,9-HxCDF	50		29 - 147	09/06/18 12:09	09/14/18 22:12	1
13C-1,2,3,7,8-PeCDD	53		25 - 181	09/06/18 12:09	09/14/18 22:12	1
13C-1,2,3,7,8-PeCDF	51		24 - 185	09/06/18 12:09	09/14/18 22:12	1
13C-2,3,4,6,7,8-HxCDF	54		28 - 136	09/06/18 12:09	09/14/18 22:12	1
13C-2,3,4,7,8-PeCDF	52		21 - 178	09/06/18 12:09	09/14/18 22:12	1
13C-2,3,7,8-TCDD	55		25 - 164	09/06/18 12:09	09/14/18 22:12	1
13C-OCDD	36		17 - 157	09/06/18 12:09	09/14/18 22:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	119		35 - 197	09/06/18 12:09	09/14/18 22:12	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0041	B	0.00080	0.00015	ug/Kg	☼	09/06/18 12:09	09/15/18 04:07	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	56		24 - 169	09/06/18 12:09	09/15/18 04:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	117		35 - 197	09/06/18 12:09	09/15/18 04:07	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S256-8.7to9.7

Lab Sample ID: 580-79672-23

Date Collected: 08/16/18 10:45

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 62.1

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	0.22	B	0.0039	0.00087	ug/Kg	☼	09/06/18 12:09	09/15/18 03:34	1
1,2,3,4,6,7,8-HpCDF	0.048	B	0.0039	0.00054	ug/Kg	☼	09/06/18 12:09	09/15/18 03:34	1
1,2,3,4,7,8,9-HpCDF	0.0035	J B	0.0039	0.00073	ug/Kg	☼	09/06/18 12:09	09/15/18 03:34	1
1,2,3,4,7,8-HxCDD	0.0022	J B	0.0039	0.00021	ug/Kg	☼	09/06/18 12:09	09/15/18 03:34	1
1,2,3,4,7,8-HxCDF	0.0042	B	0.0039	0.00038	ug/Kg	☼	09/06/18 12:09	09/15/18 03:34	1
1,2,3,6,7,8-HxCDD	0.012		0.0039	0.00021	ug/Kg	☼	09/06/18 12:09	09/15/18 03:34	1
1,2,3,6,7,8-HxCDF	0.0046	B	0.0039	0.00036	ug/Kg	☼	09/06/18 12:09	09/15/18 03:34	1
1,2,3,7,8,9-HxCDD	0.0051		0.0039	0.00019	ug/Kg	☼	09/06/18 12:09	09/15/18 03:34	1
1,2,3,7,8,9-HxCDF	0.00081	J B	0.0039	0.00027	ug/Kg	☼	09/06/18 12:09	09/15/18 03:34	1
1,2,3,7,8-PeCDD	0.0014	J	0.0039	0.00013	ug/Kg	☼	09/06/18 12:09	09/15/18 03:34	1
1,2,3,7,8-PeCDF	0.00097	J B	0.0039	0.00030	ug/Kg	☼	09/06/18 12:09	09/15/18 03:34	1
2,3,4,6,7,8-HxCDF	0.0019	J B	0.0039	0.00029	ug/Kg	☼	09/06/18 12:09	09/15/18 03:34	1
2,3,4,7,8-PeCDF	0.0015	J B	0.0039	0.00031	ug/Kg	☼	09/06/18 12:09	09/15/18 03:34	1
2,3,7,8-TCDD	0.00083		0.00079	0.000048	ug/Kg	☼	09/06/18 12:09	09/15/18 03:34	1
OCDD	2.6	B	0.0079	0.00072	ug/Kg	☼	09/06/18 12:09	09/15/18 03:34	1
OCDF	0.17	B	0.0079	0.000072	ug/Kg	☼	09/06/18 12:09	09/15/18 03:34	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	48		23 - 140	09/06/18 12:09	09/15/18 03:34	1
13C-1,2,3,4,6,7,8-HpCDF	40		28 - 143	09/06/18 12:09	09/15/18 03:34	1
13C-1,2,3,4,7,8,9-HpCDF	39		26 - 138	09/06/18 12:09	09/15/18 03:34	1
13C-1,2,3,4,7,8-HxCDD	50		32 - 141	09/06/18 12:09	09/15/18 03:34	1
13C-1,2,3,4,7,8-HxCDF	51		26 - 152	09/06/18 12:09	09/15/18 03:34	1
13C-1,2,3,6,7,8-HxCDD	51		28 - 130	09/06/18 12:09	09/15/18 03:34	1
13C-1,2,3,6,7,8-HxCDF	55		26 - 123	09/06/18 12:09	09/15/18 03:34	1
13C-1,2,3,7,8,9-HxCDF	52		29 - 147	09/06/18 12:09	09/15/18 03:34	1
13C-1,2,3,7,8-PeCDD	52		25 - 181	09/06/18 12:09	09/15/18 03:34	1
13C-1,2,3,7,8-PeCDF	49		24 - 185	09/06/18 12:09	09/15/18 03:34	1
13C-2,3,4,6,7,8-HxCDF	53		28 - 136	09/06/18 12:09	09/15/18 03:34	1
13C-2,3,4,7,8-PeCDF	50		21 - 178	09/06/18 12:09	09/15/18 03:34	1
13C-2,3,7,8-TCDD	55		25 - 164	09/06/18 12:09	09/15/18 03:34	1
13C-OCDD	42		17 - 157	09/06/18 12:09	09/15/18 03:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	117		35 - 197	09/06/18 12:09	09/15/18 03:34	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	0.0031	B	0.00079	0.00022	ug/Kg	☼	09/06/18 12:09	09/17/18 14:04	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	55		24 - 169	09/06/18 12:09	09/17/18 14:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	104		35 - 197	09/06/18 12:09	09/17/18 14:04	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S256-9.7to10.7

Lab Sample ID: 580-79672-24

Date Collected: 08/16/18 10:50

Matrix: Solid

Date Received: 08/17/18 15:30

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	0.21	B	0.0041	0.00098	ug/Kg	☼	09/06/18 12:09	09/15/18 04:20	1
1,2,3,4,6,7,8-HpCDF	0.063	B	0.0041	0.00056	ug/Kg	☼	09/06/18 12:09	09/15/18 04:20	1
1,2,3,4,7,8,9-HpCDF	0.0046	B	0.0041	0.0010	ug/Kg	☼	09/06/18 12:09	09/15/18 04:20	1
1,2,3,4,7,8-HxCDD	0.0019	J B	0.0041	0.00019	ug/Kg	☼	09/06/18 12:09	09/15/18 04:20	1
1,2,3,4,7,8-HxCDF	0.0049	B	0.0041	0.00053	ug/Kg	☼	09/06/18 12:09	09/15/18 04:20	1
1,2,3,6,7,8-HxCDD	0.013		0.0041	0.00019	ug/Kg	☼	09/06/18 12:09	09/15/18 04:20	1
1,2,3,6,7,8-HxCDF	0.0073	B	0.0041	0.00049	ug/Kg	☼	09/06/18 12:09	09/15/18 04:20	1
1,2,3,7,8,9-HxCDD	0.0047		0.0041	0.00017	ug/Kg	☼	09/06/18 12:09	09/15/18 04:20	1
1,2,3,7,8,9-HxCDF	0.00085	J B	0.0041	0.00038	ug/Kg	☼	09/06/18 12:09	09/15/18 04:20	1
1,2,3,7,8-PeCDD	0.0013	J	0.0041	0.00012	ug/Kg	☼	09/06/18 12:09	09/15/18 04:20	1
1,2,3,7,8-PeCDF	0.0012	J B	0.0041	0.00022	ug/Kg	☼	09/06/18 12:09	09/15/18 04:20	1
2,3,4,6,7,8-HxCDF	0.0013	J B	0.0041	0.00040	ug/Kg	☼	09/06/18 12:09	09/15/18 04:20	1
2,3,4,7,8-PeCDF	0.0014	J B	0.0041	0.00024	ug/Kg	☼	09/06/18 12:09	09/15/18 04:20	1
2,3,7,8-TCDD	0.00066	J q	0.00081	0.000048	ug/Kg	☼	09/06/18 12:09	09/15/18 04:20	1
OCDD	3.4	E B	0.0081	0.00097	ug/Kg	☼	09/06/18 12:09	09/15/18 04:20	1
OCDF	0.18	B	0.0081	0.000092	ug/Kg	☼	09/06/18 12:09	09/15/18 04:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	42		23 - 140	09/06/18 12:09	09/15/18 04:20	1
13C-1,2,3,4,6,7,8-HpCDF	35		28 - 143	09/06/18 12:09	09/15/18 04:20	1
13C-1,2,3,4,7,8,9-HpCDF	27		26 - 138	09/06/18 12:09	09/15/18 04:20	1
13C-1,2,3,4,7,8-HxCDD	48		32 - 141	09/06/18 12:09	09/15/18 04:20	1
13C-1,2,3,4,7,8-HxCDF	49		26 - 152	09/06/18 12:09	09/15/18 04:20	1
13C-1,2,3,6,7,8-HxCDD	48		28 - 130	09/06/18 12:09	09/15/18 04:20	1
13C-1,2,3,6,7,8-HxCDF	52		26 - 123	09/06/18 12:09	09/15/18 04:20	1
13C-1,2,3,7,8,9-HxCDF	48		29 - 147	09/06/18 12:09	09/15/18 04:20	1
13C-1,2,3,7,8-PeCDD	48		25 - 181	09/06/18 12:09	09/15/18 04:20	1
13C-1,2,3,7,8-PeCDF	46		24 - 185	09/06/18 12:09	09/15/18 04:20	1
13C-2,3,4,6,7,8-HxCDF	50		28 - 136	09/06/18 12:09	09/15/18 04:20	1
13C-2,3,4,7,8-PeCDF	47		21 - 178	09/06/18 12:09	09/15/18 04:20	1
13C-2,3,7,8-TCDD	51		25 - 164	09/06/18 12:09	09/15/18 04:20	1
13C-OCDD	35		17 - 157	09/06/18 12:09	09/15/18 04:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	114		35 - 197	09/06/18 12:09	09/15/18 04:20	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0019	B	0.00081	0.00025	ug/Kg	☼	09/06/18 12:09	09/17/18 14:42	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	55		24 - 169	09/06/18 12:09	09/17/18 14:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	110		35 - 197	09/06/18 12:09	09/17/18 14:42	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S232-0to2

Lab Sample ID: 580-79672-25

Date Collected: 08/16/18 15:10

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 58.8

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	0.38	B	0.0043	0.0017	ug/Kg	☼	09/06/18 12:09	09/15/18 05:06	1
1,2,3,4,6,7,8-HpCDF	0.13	B	0.0043	0.0010	ug/Kg	☼	09/06/18 12:09	09/15/18 05:06	1
1,2,3,4,7,8,9-HpCDF	0.0077	B	0.0043	0.0017	ug/Kg	☼	09/06/18 12:09	09/15/18 05:06	1
1,2,3,4,7,8-HxCDD	0.0038	J B	0.0043	0.00024	ug/Kg	☼	09/06/18 12:09	09/15/18 05:06	1
1,2,3,4,7,8-HxCDF	0.0057	B	0.0043	0.00087	ug/Kg	☼	09/06/18 12:09	09/15/18 05:06	1
1,2,3,6,7,8-HxCDD	0.013		0.0043	0.00024	ug/Kg	☼	09/06/18 12:09	09/15/18 05:06	1
1,2,3,6,7,8-HxCDF	0.014	B	0.0043	0.00083	ug/Kg	☼	09/06/18 12:09	09/15/18 05:06	1
1,2,3,7,8,9-HxCDD	0.0066		0.0043	0.00022	ug/Kg	☼	09/06/18 12:09	09/15/18 05:06	1
1,2,3,7,8,9-HxCDF	0.0012	J B	0.0043	0.00063	ug/Kg	☼	09/06/18 12:09	09/15/18 05:06	1
1,2,3,7,8-PeCDD	0.0018	J	0.0043	0.00018	ug/Kg	☼	09/06/18 12:09	09/15/18 05:06	1
1,2,3,7,8-PeCDF	0.0018	J B	0.0043	0.00057	ug/Kg	☼	09/06/18 12:09	09/15/18 05:06	1
2,3,4,6,7,8-HxCDF	0.0020	J B	0.0043	0.00069	ug/Kg	☼	09/06/18 12:09	09/15/18 05:06	1
2,3,4,7,8-PeCDF	0.0018	J B	0.0043	0.00057	ug/Kg	☼	09/06/18 12:09	09/15/18 05:06	1
2,3,7,8-TCDD	0.0026		0.00086	0.000060	ug/Kg	☼	09/06/18 12:09	09/15/18 05:06	1
OCDD	5.8	E B	0.0086	0.0014	ug/Kg	☼	09/06/18 12:09	09/15/18 05:06	1
OCDF	0.40	B	0.0086	0.00015	ug/Kg	☼	09/06/18 12:09	09/15/18 05:06	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	38		23 - 140	09/06/18 12:09	09/15/18 05:06	1
13C-1,2,3,4,6,7,8-HpCDF	32		28 - 143	09/06/18 12:09	09/15/18 05:06	1
13C-1,2,3,4,7,8,9-HpCDF	26		26 - 138	09/06/18 12:09	09/15/18 05:06	1
13C-1,2,3,4,7,8-HxCDD	44		32 - 141	09/06/18 12:09	09/15/18 05:06	1
13C-1,2,3,4,7,8-HxCDF	47		26 - 152	09/06/18 12:09	09/15/18 05:06	1
13C-1,2,3,6,7,8-HxCDD	44		28 - 130	09/06/18 12:09	09/15/18 05:06	1
13C-1,2,3,6,7,8-HxCDF	50		26 - 123	09/06/18 12:09	09/15/18 05:06	1
13C-1,2,3,7,8,9-HxCDF	45		29 - 147	09/06/18 12:09	09/15/18 05:06	1
13C-1,2,3,7,8-PeCDD	46		25 - 181	09/06/18 12:09	09/15/18 05:06	1
13C-1,2,3,7,8-PeCDF	45		24 - 185	09/06/18 12:09	09/15/18 05:06	1
13C-2,3,4,6,7,8-HxCDF	46		28 - 136	09/06/18 12:09	09/15/18 05:06	1
13C-2,3,4,7,8-PeCDF	46		21 - 178	09/06/18 12:09	09/15/18 05:06	1
13C-2,3,7,8-TCDD	51		25 - 164	09/06/18 12:09	09/15/18 05:06	1
13C-OCDD	33		17 - 157	09/06/18 12:09	09/15/18 05:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	109		35 - 197	09/06/18 12:09	09/15/18 05:06	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	0.0013	B	0.00086	0.00027	ug/Kg	☼	09/06/18 12:09	09/17/18 15:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	53		24 - 169	09/06/18 12:09	09/17/18 15:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	103		35 - 197	09/06/18 12:09	09/17/18 15:20	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S232-2to4

Lab Sample ID: 580-79672-26

Date Collected: 08/16/18 15:15

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 55.8

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	0.0044	0.00076	ug/Kg	☼	09/06/18 12:09	09/15/18 05:52	1
1,2,3,4,6,7,8-HpCDF	0.10	B	0.0044	0.00061	ug/Kg	☼	09/06/18 12:09	09/15/18 05:52	1
1,2,3,4,7,8,9-HpCDF	0.0040	J B	0.0044	0.00079	ug/Kg	☼	09/06/18 12:09	09/15/18 05:52	1
1,2,3,4,7,8-HxCDD	0.0010	J B	0.0044	0.00012	ug/Kg	☼	09/06/18 12:09	09/15/18 05:52	1
1,2,3,4,7,8-HxCDF	0.0038	J B	0.0044	0.00054	ug/Kg	☼	09/06/18 12:09	09/15/18 05:52	1
1,2,3,6,7,8-HxCDD	0.0059		0.0044	0.00012	ug/Kg	☼	09/06/18 12:09	09/15/18 05:52	1
1,2,3,6,7,8-HxCDF	0.011	B	0.0044	0.00051	ug/Kg	☼	09/06/18 12:09	09/15/18 05:52	1
1,2,3,7,8,9-HxCDD	0.0019	J	0.0044	0.00011	ug/Kg	☼	09/06/18 12:09	09/15/18 05:52	1
1,2,3,7,8,9-HxCDF	0.00084	J B	0.0044	0.00039	ug/Kg	☼	09/06/18 12:09	09/15/18 05:52	1
1,2,3,7,8-PeCDD	0.00077	J	0.0044	0.000089	ug/Kg	☼	09/06/18 12:09	09/15/18 05:52	1
1,2,3,7,8-PeCDF	0.0012	J B	0.0044	0.00033	ug/Kg	☼	09/06/18 12:09	09/15/18 05:52	1
2,3,4,6,7,8-HxCDF	0.0014	J B	0.0044	0.00043	ug/Kg	☼	09/06/18 12:09	09/15/18 05:52	1
2,3,4,7,8-PeCDF	0.0012	J B	0.0044	0.00034	ug/Kg	☼	09/06/18 12:09	09/15/18 05:52	1
2,3,7,8-TCDD	0.0010		0.00088	0.000036	ug/Kg	☼	09/06/18 12:09	09/15/18 05:52	1
OCDD	2.3	B	0.0088	0.00070	ug/Kg	☼	09/06/18 12:09	09/15/18 05:52	1
OCDF	0.17	B	0.0088	0.000092	ug/Kg	☼	09/06/18 12:09	09/15/18 05:52	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	45		23 - 140	09/06/18 12:09	09/15/18 05:52	1
13C-1,2,3,4,6,7,8-HpCDF	37		28 - 143	09/06/18 12:09	09/15/18 05:52	1
13C-1,2,3,4,7,8,9-HpCDF	37		26 - 138	09/06/18 12:09	09/15/18 05:52	1
13C-1,2,3,4,7,8-HxCDD	49		32 - 141	09/06/18 12:09	09/15/18 05:52	1
13C-1,2,3,4,7,8-HxCDF	52		26 - 152	09/06/18 12:09	09/15/18 05:52	1
13C-1,2,3,6,7,8-HxCDD	50		28 - 130	09/06/18 12:09	09/15/18 05:52	1
13C-1,2,3,6,7,8-HxCDF	54		26 - 123	09/06/18 12:09	09/15/18 05:52	1
13C-1,2,3,7,8,9-HxCDF	51		29 - 147	09/06/18 12:09	09/15/18 05:52	1
13C-1,2,3,7,8-PeCDD	50		25 - 181	09/06/18 12:09	09/15/18 05:52	1
13C-1,2,3,7,8-PeCDF	48		24 - 185	09/06/18 12:09	09/15/18 05:52	1
13C-2,3,4,6,7,8-HxCDF	52		28 - 136	09/06/18 12:09	09/15/18 05:52	1
13C-2,3,4,7,8-PeCDF	50		21 - 178	09/06/18 12:09	09/15/18 05:52	1
13C-2,3,7,8-TCDD	55		25 - 164	09/06/18 12:09	09/15/18 05:52	1
13C-OCDD	38		17 - 157	09/06/18 12:09	09/15/18 05:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	119		35 - 197	09/06/18 12:09	09/15/18 05:52	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	0.0010	B	0.00088	0.00027	ug/Kg	☼	09/06/18 12:09	09/17/18 15:58	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	58		24 - 169	09/06/18 12:09	09/17/18 15:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	109		35 - 197	09/06/18 12:09	09/17/18 15:58	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S232-4to6.2

Lab Sample ID: 580-79672-27

Date Collected: 08/16/18 15:20

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 65.9

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	0.017	B	0.0037	0.00012	ug/Kg	☼	09/06/18 12:09	09/15/18 06:38	1
1,2,3,4,6,7,8-HpCDF	0.010	B	0.0037	0.00013	ug/Kg	☼	09/06/18 12:09	09/15/18 06:38	1
1,2,3,4,7,8,9-HpCDF	0.00096	J B	0.0037	0.00015	ug/Kg	☼	09/06/18 12:09	09/15/18 06:38	1
1,2,3,4,7,8-HxCDD	0.00027	J B	0.0037	0.000032	ug/Kg	☼	09/06/18 12:09	09/15/18 06:38	1
1,2,3,4,7,8-HxCDF	0.00052	J B	0.0037	0.00010	ug/Kg	☼	09/06/18 12:09	09/15/18 06:38	1
1,2,3,6,7,8-HxCDD	0.00092	J	0.0037	0.000034	ug/Kg	☼	09/06/18 12:09	09/15/18 06:38	1
1,2,3,6,7,8-HxCDF	0.0015	J B	0.0037	0.00010	ug/Kg	☼	09/06/18 12:09	09/15/18 06:38	1
1,2,3,7,8,9-HxCDD	0.00057	J	0.0037	0.000030	ug/Kg	☼	09/06/18 12:09	09/15/18 06:38	1
1,2,3,7,8,9-HxCDF	0.00068	J B	0.0037	0.000072	ug/Kg	☼	09/06/18 12:09	09/15/18 06:38	1
1,2,3,7,8-PeCDD	0.00018	J	0.0037	0.000035	ug/Kg	☼	09/06/18 12:09	09/15/18 06:38	1
1,2,3,7,8-PeCDF	0.00022	J B	0.0037	0.000092	ug/Kg	☼	09/06/18 12:09	09/15/18 06:38	1
2,3,4,6,7,8-HxCDF	0.00030	J B q	0.0037	0.000079	ug/Kg	☼	09/06/18 12:09	09/15/18 06:38	1
2,3,4,7,8-PeCDF	0.00032	J B	0.0037	0.000097	ug/Kg	☼	09/06/18 12:09	09/15/18 06:38	1
2,3,7,8-TCDD	0.00012	J q	0.00074	0.000025	ug/Kg	☼	09/06/18 12:09	09/15/18 06:38	1
2,3,7,8-TCDF	0.00068	J B	0.00074	0.000076	ug/Kg	☼	09/06/18 12:09	09/15/18 06:38	1
OCDD	0.30	B	0.0074	0.00013	ug/Kg	☼	09/06/18 12:09	09/15/18 06:38	1
OCDF	0.018	B	0.0074	0.000043	ug/Kg	☼	09/06/18 12:09	09/15/18 06:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	39		23 - 140	09/06/18 12:09	09/15/18 06:38	1
13C-1,2,3,4,6,7,8-HpCDF	32		28 - 143	09/06/18 12:09	09/15/18 06:38	1
13C-1,2,3,4,7,8,9-HpCDF	36		26 - 138	09/06/18 12:09	09/15/18 06:38	1
13C-1,2,3,4,7,8-HxCDD	43		32 - 141	09/06/18 12:09	09/15/18 06:38	1
13C-1,2,3,4,7,8-HxCDF	43		26 - 152	09/06/18 12:09	09/15/18 06:38	1
13C-1,2,3,6,7,8-HxCDD	42		28 - 130	09/06/18 12:09	09/15/18 06:38	1
13C-1,2,3,6,7,8-HxCDF	44		26 - 123	09/06/18 12:09	09/15/18 06:38	1
13C-1,2,3,7,8,9-HxCDF	44		29 - 147	09/06/18 12:09	09/15/18 06:38	1
13C-1,2,3,7,8-PeCDD	43		25 - 181	09/06/18 12:09	09/15/18 06:38	1
13C-1,2,3,7,8-PeCDF	41		24 - 185	09/06/18 12:09	09/15/18 06:38	1
13C-2,3,4,6,7,8-HxCDF	44		28 - 136	09/06/18 12:09	09/15/18 06:38	1
13C-2,3,4,7,8-PeCDF	43		21 - 178	09/06/18 12:09	09/15/18 06:38	1
13C-2,3,7,8-TCDD	49		25 - 164	09/06/18 12:09	09/15/18 06:38	1
13C-2,3,7,8-TCDF	48		24 - 169	09/06/18 12:09	09/15/18 06:38	1
13C-OCDD	32		17 - 157	09/06/18 12:09	09/15/18 06:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	111		35 - 197	09/06/18 12:09	09/15/18 06:38	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S263-0to2

Lab Sample ID: 580-79672-28

Date Collected: 08/16/18 16:10

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 73.2

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	0.018	B	0.0034	0.00014	ug/Kg	☼	09/06/18 12:09	09/15/18 07:24	1
1,2,3,4,6,7,8-HpCDF	0.0026	J B q	0.0034	0.000068	ug/Kg	☼	09/06/18 12:09	09/15/18 07:24	1
1,2,3,4,7,8,9-HpCDF	0.00056	J B q	0.0034	0.00013	ug/Kg	☼	09/06/18 12:09	09/15/18 07:24	1
1,2,3,4,7,8-HxCDD	0.00024	J B	0.0034	0.000037	ug/Kg	☼	09/06/18 12:09	09/15/18 07:24	1
1,2,3,4,7,8-HxCDF	0.00028	J B q	0.0034	0.000051	ug/Kg	☼	09/06/18 12:09	09/15/18 07:24	1
1,2,3,6,7,8-HxCDD	0.00077	J	0.0034	0.000036	ug/Kg	☼	09/06/18 12:09	09/15/18 07:24	1
1,2,3,6,7,8-HxCDF	0.00021	J B	0.0034	0.000046	ug/Kg	☼	09/06/18 12:09	09/15/18 07:24	1
1,2,3,7,8,9-HxCDD	0.00053	J	0.0034	0.000034	ug/Kg	☼	09/06/18 12:09	09/15/18 07:24	1
1,2,3,7,8,9-HxCDF	0.00055	J B	0.0034	0.000036	ug/Kg	☼	09/06/18 12:09	09/15/18 07:24	1
1,2,3,7,8-PeCDD	0.000097	J	0.0034	0.000030	ug/Kg	☼	09/06/18 12:09	09/15/18 07:24	1
1,2,3,7,8-PeCDF	0.00019	J B	0.0034	0.000025	ug/Kg	☼	09/06/18 12:09	09/15/18 07:24	1
2,3,4,6,7,8-HxCDF	0.00010	J B q	0.0034	0.000040	ug/Kg	☼	09/06/18 12:09	09/15/18 07:24	1
2,3,4,7,8-PeCDF	0.00012	J B	0.0034	0.000026	ug/Kg	☼	09/06/18 12:09	09/15/18 07:24	1
2,3,7,8-TCDD	ND		0.00069	0.000018	ug/Kg	☼	09/06/18 12:09	09/15/18 07:24	1
2,3,7,8-TCDF	0.00022	J B	0.00069	0.000016	ug/Kg	☼	09/06/18 12:09	09/15/18 07:24	1
OCDD	0.16	B	0.0069	0.000072	ug/Kg	☼	09/06/18 12:09	09/15/18 07:24	1
OCDF	0.0087	B	0.0069	0.000026	ug/Kg	☼	09/06/18 12:09	09/15/18 07:24	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	51		23 - 140	09/06/18 12:09	09/15/18 07:24	1
13C-1,2,3,4,6,7,8-HpCDF	44		28 - 143	09/06/18 12:09	09/15/18 07:24	1
13C-1,2,3,4,7,8,9-HpCDF	34		26 - 138	09/06/18 12:09	09/15/18 07:24	1
13C-1,2,3,4,7,8-HxCDD	53		32 - 141	09/06/18 12:09	09/15/18 07:24	1
13C-1,2,3,4,7,8-HxCDF	54		26 - 152	09/06/18 12:09	09/15/18 07:24	1
13C-1,2,3,6,7,8-HxCDD	53		28 - 130	09/06/18 12:09	09/15/18 07:24	1
13C-1,2,3,6,7,8-HxCDF	56		26 - 123	09/06/18 12:09	09/15/18 07:24	1
13C-1,2,3,7,8,9-HxCDF	54		29 - 147	09/06/18 12:09	09/15/18 07:24	1
13C-1,2,3,7,8-PeCDD	50		25 - 181	09/06/18 12:09	09/15/18 07:24	1
13C-1,2,3,7,8-PeCDF	49		24 - 185	09/06/18 12:09	09/15/18 07:24	1
13C-2,3,4,6,7,8-HxCDF	55		28 - 136	09/06/18 12:09	09/15/18 07:24	1
13C-2,3,4,7,8-PeCDF	50		21 - 178	09/06/18 12:09	09/15/18 07:24	1
13C-2,3,7,8-TCDD	57		25 - 164	09/06/18 12:09	09/15/18 07:24	1
13C-2,3,7,8-TCDF	52		24 - 169	09/06/18 12:09	09/15/18 07:24	1
13C-OCDD	44		17 - 157	09/06/18 12:09	09/15/18 07:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	115		35 - 197	09/06/18 12:09	09/15/18 07:24	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S263-2to3.8

Lab Sample ID: 580-79672-29

Date Collected: 08/16/18 16:15

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 67.2

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.045	B	0.0037	0.00021	ug/Kg	☼	09/06/18 12:09	09/15/18 08:10	1
1,2,3,4,6,7,8-HpCDF	0.0053	B	0.0037	0.000076	ug/Kg	☼	09/06/18 12:09	09/15/18 08:10	1
1,2,3,4,7,8,9-HpCDF	0.0014	J B	0.0037	0.000095	ug/Kg	☼	09/06/18 12:09	09/15/18 08:10	1
1,2,3,4,7,8-HxCDD	0.00043	J B	0.0037	0.000047	ug/Kg	☼	09/06/18 12:09	09/15/18 08:10	1
1,2,3,4,7,8-HxCDF	0.00057	J B	0.0037	0.000072	ug/Kg	☼	09/06/18 12:09	09/15/18 08:10	1
1,2,3,6,7,8-HxCDD	0.0018	J	0.0037	0.000048	ug/Kg	☼	09/06/18 12:09	09/15/18 08:10	1
1,2,3,6,7,8-HxCDF	0.00044	J B	0.0037	0.000068	ug/Kg	☼	09/06/18 12:09	09/15/18 08:10	1
1,2,3,7,8,9-HxCDD	0.0010	J	0.0037	0.000044	ug/Kg	☼	09/06/18 12:09	09/15/18 08:10	1
1,2,3,7,8,9-HxCDF	0.00072	J B	0.0037	0.000049	ug/Kg	☼	09/06/18 12:09	09/15/18 08:10	1
1,2,3,7,8-PeCDD	0.00019	J	0.0037	0.000036	ug/Kg	☼	09/06/18 12:09	09/15/18 08:10	1
1,2,3,7,8-PeCDF	0.00021	J B	0.0037	0.000042	ug/Kg	☼	09/06/18 12:09	09/15/18 08:10	1
2,3,4,6,7,8-HxCDF	0.00029	J B	0.0037	0.000054	ug/Kg	☼	09/06/18 12:09	09/15/18 08:10	1
2,3,4,7,8-PeCDF	0.00019	J B	0.0037	0.000043	ug/Kg	☼	09/06/18 12:09	09/15/18 08:10	1
2,3,7,8-TCDD	ND		0.00073	0.000020	ug/Kg	☼	09/06/18 12:09	09/15/18 08:10	1
2,3,7,8-TCDF	0.00044	J B	0.00073	0.000025	ug/Kg	☼	09/06/18 12:09	09/15/18 08:10	1
OCDD	0.40	B	0.0073	0.00014	ug/Kg	☼	09/06/18 12:09	09/15/18 08:10	1
OCDF	0.024	B	0.0073	0.000037	ug/Kg	☼	09/06/18 12:09	09/15/18 08:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	41		23 - 140	09/06/18 12:09	09/15/18 08:10	1
13C-1,2,3,4,6,7,8-HpCDF	34		28 - 143	09/06/18 12:09	09/15/18 08:10	1
13C-1,2,3,4,7,8,9-HpCDF	36		26 - 138	09/06/18 12:09	09/15/18 08:10	1
13C-1,2,3,4,7,8-HxCDD	41		32 - 141	09/06/18 12:09	09/15/18 08:10	1
13C-1,2,3,4,7,8-HxCDF	43		26 - 152	09/06/18 12:09	09/15/18 08:10	1
13C-1,2,3,6,7,8-HxCDD	41		28 - 130	09/06/18 12:09	09/15/18 08:10	1
13C-1,2,3,6,7,8-HxCDF	44		26 - 123	09/06/18 12:09	09/15/18 08:10	1
13C-1,2,3,7,8,9-HxCDF	43		29 - 147	09/06/18 12:09	09/15/18 08:10	1
13C-1,2,3,7,8-PeCDD	40		25 - 181	09/06/18 12:09	09/15/18 08:10	1
13C-1,2,3,7,8-PeCDF	40		24 - 185	09/06/18 12:09	09/15/18 08:10	1
13C-2,3,4,6,7,8-HxCDF	44		28 - 136	09/06/18 12:09	09/15/18 08:10	1
13C-2,3,4,7,8-PeCDF	41		21 - 178	09/06/18 12:09	09/15/18 08:10	1
13C-2,3,7,8-TCDD	49		25 - 164	09/06/18 12:09	09/15/18 08:10	1
13C-2,3,7,8-TCDF	47		24 - 169	09/06/18 12:09	09/15/18 08:10	1
13C-OCDD	35		17 - 157	09/06/18 12:09	09/15/18 08:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	116		35 - 197	09/06/18 12:09	09/15/18 08:10	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S263-3.8to5.9

Lab Sample ID: 580-79672-30

Date Collected: 08/16/18 16:20

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 66.9

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.083	B	0.0038	0.00039	ug/Kg	☼	09/06/18 12:09	09/15/18 08:56	1
1,2,3,4,6,7,8-HpCDF	0.013	B	0.0038	0.00018	ug/Kg	☼	09/06/18 12:09	09/15/18 08:56	1
1,2,3,4,7,8,9-HpCDF	0.0013	J B	0.0038	0.00023	ug/Kg	☼	09/06/18 12:09	09/15/18 08:56	1
1,2,3,4,7,8-HxCDD	0.00080	J B	0.0038	0.000072	ug/Kg	☼	09/06/18 12:09	09/15/18 08:56	1
1,2,3,4,7,8-HxCDF	0.0013	J B	0.0038	0.00010	ug/Kg	☼	09/06/18 12:09	09/15/18 08:56	1
1,2,3,6,7,8-HxCDD	0.0051		0.0038	0.000075	ug/Kg	☼	09/06/18 12:09	09/15/18 08:56	1
1,2,3,6,7,8-HxCDF	0.00080	J B	0.0038	0.000093	ug/Kg	☼	09/06/18 12:09	09/15/18 08:56	1
1,2,3,7,8,9-HxCDD	0.0022	J	0.0038	0.000067	ug/Kg	☼	09/06/18 12:09	09/15/18 08:56	1
1,2,3,7,8,9-HxCDF	0.00074	J B	0.0038	0.000070	ug/Kg	☼	09/06/18 12:09	09/15/18 08:56	1
1,2,3,7,8-PeCDD	0.00047	J	0.0038	0.000056	ug/Kg	☼	09/06/18 12:09	09/15/18 08:56	1
1,2,3,7,8-PeCDF	0.00036	J B	0.0038	0.000087	ug/Kg	☼	09/06/18 12:09	09/15/18 08:56	1
2,3,4,6,7,8-HxCDF	0.00045	J B	0.0038	0.000076	ug/Kg	☼	09/06/18 12:09	09/15/18 08:56	1
2,3,4,7,8-PeCDF	0.00038	J B	0.0038	0.000089	ug/Kg	☼	09/06/18 12:09	09/15/18 08:56	1
2,3,7,8-TCDD	0.00034	J q	0.00075	0.000025	ug/Kg	☼	09/06/18 12:09	09/15/18 08:56	1
OCDD	0.83	B	0.0075	0.00026	ug/Kg	☼	09/06/18 12:09	09/15/18 08:56	1
OCDF	0.039	B	0.0075	0.000034	ug/Kg	☼	09/06/18 12:09	09/15/18 08:56	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	50		23 - 140	09/06/18 12:09	09/15/18 08:56	1
13C-1,2,3,4,6,7,8-HpCDF	42		28 - 143	09/06/18 12:09	09/15/18 08:56	1
13C-1,2,3,4,7,8,9-HpCDF	43		26 - 138	09/06/18 12:09	09/15/18 08:56	1
13C-1,2,3,4,7,8-HxCDD	51		32 - 141	09/06/18 12:09	09/15/18 08:56	1
13C-1,2,3,4,7,8-HxCDF	50		26 - 152	09/06/18 12:09	09/15/18 08:56	1
13C-1,2,3,6,7,8-HxCDD	49		28 - 130	09/06/18 12:09	09/15/18 08:56	1
13C-1,2,3,6,7,8-HxCDF	52		26 - 123	09/06/18 12:09	09/15/18 08:56	1
13C-1,2,3,7,8,9-HxCDF	51		29 - 147	09/06/18 12:09	09/15/18 08:56	1
13C-1,2,3,7,8-PeCDD	48		25 - 181	09/06/18 12:09	09/15/18 08:56	1
13C-1,2,3,7,8-PeCDF	47		24 - 185	09/06/18 12:09	09/15/18 08:56	1
13C-2,3,4,6,7,8-HxCDF	52		28 - 136	09/06/18 12:09	09/15/18 08:56	1
13C-2,3,4,7,8-PeCDF	49		21 - 178	09/06/18 12:09	09/15/18 08:56	1
13C-2,3,7,8-TCDD	54		25 - 164	09/06/18 12:09	09/15/18 08:56	1
13C-OCDD	43		17 - 157	09/06/18 12:09	09/15/18 08:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	116		35 - 197	09/06/18 12:09	09/15/18 08:56	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.00063	J B	0.00075	0.00013	ug/Kg	☼	09/06/18 12:09	09/17/18 16:36	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	59		24 - 169	09/06/18 12:09	09/17/18 16:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	111		35 - 197	09/06/18 12:09	09/17/18 16:36	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S108-0to1.9

Lab Sample ID: 580-79672-31

Date Collected: 08/16/18 18:15

Matrix: Solid

Date Received: 08/17/18 15:30

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	0.48	B	0.0046	0.0011	ug/Kg	☼	09/06/18 16:52	09/13/18 21:09	1
1,2,3,4,6,7,8-HpCDF	0.12	B	0.0046	0.00071	ug/Kg	☼	09/06/18 16:52	09/13/18 21:09	1
1,2,3,4,7,8,9-HpCDF	0.0052	B	0.0046	0.00085	ug/Kg	☼	09/06/18 16:52	09/13/18 21:09	1
1,2,3,4,7,8-HxCDD	0.0034	J B	0.0046	0.00026	ug/Kg	☼	09/06/18 16:52	09/13/18 21:09	1
1,2,3,4,7,8-HxCDF	0.0090	B	0.0046	0.00059	ug/Kg	☼	09/06/18 16:52	09/13/18 21:09	1
1,2,3,6,7,8-HxCDD	0.030	B	0.0046	0.00027	ug/Kg	☼	09/06/18 16:52	09/13/18 21:09	1
1,2,3,6,7,8-HxCDF	0.0063		0.0046	0.00057	ug/Kg	☼	09/06/18 16:52	09/13/18 21:09	1
1,2,3,7,8,9-HxCDD	0.0099		0.0046	0.00024	ug/Kg	☼	09/06/18 16:52	09/13/18 21:09	1
1,2,3,7,8,9-HxCDF	0.00057	J q B	0.0046	0.00044	ug/Kg	☼	09/06/18 16:52	09/13/18 21:09	1
1,2,3,7,8-PeCDD	0.0019	J	0.0046	0.00023	ug/Kg	☼	09/06/18 16:52	09/13/18 21:09	1
1,2,3,7,8-PeCDF	0.0044	J B	0.0046	0.00035	ug/Kg	☼	09/06/18 16:52	09/13/18 21:09	1
2,3,4,6,7,8-HxCDF	0.0020	J B	0.0046	0.00046	ug/Kg	☼	09/06/18 16:52	09/13/18 21:09	1
2,3,4,7,8-PeCDF	0.0027	J B	0.0046	0.00040	ug/Kg	☼	09/06/18 16:52	09/13/18 21:09	1
2,3,7,8-TCDD	0.00056	J q	0.00093	0.000051	ug/Kg	☼	09/06/18 16:52	09/13/18 21:09	1
OCDD	4.2	E B	0.0093	0.00094	ug/Kg	☼	09/06/18 16:52	09/13/18 21:09	1
OCDF	0.24	B	0.0093	0.000080	ug/Kg	☼	09/06/18 16:52	09/13/18 21:09	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	43		23 - 140	09/06/18 16:52	09/13/18 21:09	1
13C-1,2,3,4,6,7,8-HpCDF	37		28 - 143	09/06/18 16:52	09/13/18 21:09	1
13C-1,2,3,4,7,8,9-HpCDF	39		26 - 138	09/06/18 16:52	09/13/18 21:09	1
13C-1,2,3,4,7,8-HxCDD	52		32 - 141	09/06/18 16:52	09/13/18 21:09	1
13C-1,2,3,4,7,8-HxCDF	53		26 - 152	09/06/18 16:52	09/13/18 21:09	1
13C-1,2,3,6,7,8-HxCDD	50		28 - 130	09/06/18 16:52	09/13/18 21:09	1
13C-1,2,3,6,7,8-HxCDF	55		26 - 123	09/06/18 16:52	09/13/18 21:09	1
13C-1,2,3,7,8,9-HxCDF	49		29 - 147	09/06/18 16:52	09/13/18 21:09	1
13C-1,2,3,7,8-PeCDD	50		25 - 181	09/06/18 16:52	09/13/18 21:09	1
13C-1,2,3,7,8-PeCDF	47		24 - 185	09/06/18 16:52	09/13/18 21:09	1
13C-2,3,4,6,7,8-HxCDF	51		28 - 136	09/06/18 16:52	09/13/18 21:09	1
13C-2,3,4,7,8-PeCDF	49		21 - 178	09/06/18 16:52	09/13/18 21:09	1
13C-2,3,7,8-TCDD	54		25 - 164	09/06/18 16:52	09/13/18 21:09	1
13C-OCDD	36		17 - 157	09/06/18 16:52	09/13/18 21:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	76		35 - 197	09/06/18 16:52	09/13/18 21:09	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0041	B	0.00093	0.00017	ug/Kg	☼	09/06/18 16:52	09/14/18 13:42	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	57		24 - 169	09/06/18 16:52	09/14/18 13:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	74		35 - 197	09/06/18 16:52	09/14/18 13:42	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S108-1.9to3

Date Collected: 08/16/18 18:20

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79672-32

Matrix: Solid

Percent Solids: 44.6

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	0.72	B	0.0055	0.0020	ug/Kg	☼	09/06/18 16:52	09/13/18 21:55	1
1,2,3,4,6,7,8-HpCDF	0.59	B	0.0055	0.0018	ug/Kg	☼	09/06/18 16:52	09/13/18 21:55	1
1,2,3,4,7,8,9-HpCDF	0.0096	B	0.0055	0.0033	ug/Kg	☼	09/06/18 16:52	09/13/18 21:55	1
1,2,3,4,7,8-HxCDD	0.0054	J B	0.0055	0.00031	ug/Kg	☼	09/06/18 16:52	09/13/18 21:55	1
1,2,3,4,7,8-HxCDF	0.018	B	0.0055	0.0016	ug/Kg	☼	09/06/18 16:52	09/13/18 21:55	1
1,2,3,6,7,8-HxCDD	0.038	B	0.0055	0.00030	ug/Kg	☼	09/06/18 16:52	09/13/18 21:55	1
1,2,3,6,7,8-HxCDF	0.010		0.0055	0.0015	ug/Kg	☼	09/06/18 16:52	09/13/18 21:55	1
1,2,3,7,8,9-HxCDD	0.010		0.0055	0.00028	ug/Kg	☼	09/06/18 16:52	09/13/18 21:55	1
1,2,3,7,8,9-HxCDF	ND		0.0055	0.0011	ug/Kg	☼	09/06/18 16:52	09/13/18 21:55	1
1,2,3,7,8-PeCDD	0.0030	J	0.0055	0.00023	ug/Kg	☼	09/06/18 16:52	09/13/18 21:55	1
1,2,3,7,8-PeCDF	0.0068	B	0.0055	0.00051	ug/Kg	☼	09/06/18 16:52	09/13/18 21:55	1
2,3,4,6,7,8-HxCDF	0.0027	J B	0.0055	0.0012	ug/Kg	☼	09/06/18 16:52	09/13/18 21:55	1
2,3,4,7,8-PeCDF	0.0044	J B	0.0055	0.00053	ug/Kg	☼	09/06/18 16:52	09/13/18 21:55	1
2,3,7,8-TCDD	0.0013		0.0011	0.000075	ug/Kg	☼	09/06/18 16:52	09/13/18 21:55	1
OCDD	7.0	E B	0.011	0.0020	ug/Kg	☼	09/06/18 16:52	09/13/18 21:55	1
OCDF	0.58	B	0.011	0.00015	ug/Kg	☼	09/06/18 16:52	09/13/18 21:55	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	71		23 - 140	09/06/18 16:52	09/13/18 21:55	1
13C-1,2,3,4,6,7,8-HpCDF	62		28 - 143	09/06/18 16:52	09/13/18 21:55	1
13C-1,2,3,4,7,8,9-HpCDF	47		26 - 138	09/06/18 16:52	09/13/18 21:55	1
13C-1,2,3,4,7,8-HxCDD	67		32 - 141	09/06/18 16:52	09/13/18 21:55	1
13C-1,2,3,4,7,8-HxCDF	69		26 - 152	09/06/18 16:52	09/13/18 21:55	1
13C-1,2,3,6,7,8-HxCDD	69		28 - 130	09/06/18 16:52	09/13/18 21:55	1
13C-1,2,3,6,7,8-HxCDF	71		26 - 123	09/06/18 16:52	09/13/18 21:55	1
13C-1,2,3,7,8,9-HxCDF	66		29 - 147	09/06/18 16:52	09/13/18 21:55	1
13C-1,2,3,7,8-PeCDD	65		25 - 181	09/06/18 16:52	09/13/18 21:55	1
13C-1,2,3,7,8-PeCDF	62		24 - 185	09/06/18 16:52	09/13/18 21:55	1
13C-2,3,4,6,7,8-HxCDF	69		28 - 136	09/06/18 16:52	09/13/18 21:55	1
13C-2,3,4,7,8-PeCDF	61		21 - 178	09/06/18 16:52	09/13/18 21:55	1
13C-2,3,7,8-TCDD	67		25 - 164	09/06/18 16:52	09/13/18 21:55	1
13C-OCDD	65		17 - 157	09/06/18 16:52	09/13/18 21:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	77		35 - 197	09/06/18 16:52	09/13/18 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	0.0063	B	0.0011	0.00021	ug/Kg	☼	09/06/18 16:52	09/14/18 14:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	63		24 - 169	09/06/18 16:52	09/14/18 14:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	73		35 - 197	09/06/18 16:52	09/14/18 14:20	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S108-3to4.7

Lab Sample ID: 580-79672-33

Date Collected: 08/16/18 18:25

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 42.3

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	0.60	B	0.0059	0.0019	ug/Kg	☼	09/06/18 16:52	09/14/18 04:40	1
1,2,3,4,6,7,8-HpCDF	0.24	B	0.0059	0.0013	ug/Kg	☼	09/06/18 16:52	09/14/18 04:40	1
1,2,3,4,7,8,9-HpCDF	0.010	B	0.0059	0.0021	ug/Kg	☼	09/06/18 16:52	09/14/18 04:40	1
1,2,3,4,7,8-HxCDD	0.0056	J B	0.0059	0.00035	ug/Kg	☼	09/06/18 16:52	09/14/18 04:40	1
1,2,3,4,7,8-HxCDF	0.015	B	0.0059	0.0011	ug/Kg	☼	09/06/18 16:52	09/14/18 04:40	1
1,2,3,6,7,8-HxCDD	0.035	B	0.0059	0.00033	ug/Kg	☼	09/06/18 16:52	09/14/18 04:40	1
1,2,3,6,7,8-HxCDF	0.016		0.0059	0.0011	ug/Kg	☼	09/06/18 16:52	09/14/18 04:40	1
1,2,3,7,8,9-HxCDD	0.012		0.0059	0.00031	ug/Kg	☼	09/06/18 16:52	09/14/18 04:40	1
1,2,3,7,8,9-HxCDF	0.00085	J B	0.0059	0.00083	ug/Kg	☼	09/06/18 16:52	09/14/18 04:40	1
1,2,3,7,8-PeCDD	0.0033	J	0.0059	0.00032	ug/Kg	☼	09/06/18 16:52	09/14/18 04:40	1
1,2,3,7,8-PeCDF	0.0064	B	0.0059	0.00045	ug/Kg	☼	09/06/18 16:52	09/14/18 04:40	1
2,3,4,6,7,8-HxCDF	0.0029	J B	0.0059	0.00088	ug/Kg	☼	09/06/18 16:52	09/14/18 04:40	1
2,3,4,7,8-PeCDF	0.0037	J B	0.0059	0.00049	ug/Kg	☼	09/06/18 16:52	09/14/18 04:40	1
2,3,7,8-TCDD	0.0011	J	0.0012	0.000058	ug/Kg	☼	09/06/18 16:52	09/14/18 04:40	1
OCDD	6.0	E B	0.012	0.0015	ug/Kg	☼	09/06/18 16:52	09/14/18 04:40	1
OCDF	0.51	B	0.012	0.00013	ug/Kg	☼	09/06/18 16:52	09/14/18 04:40	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	70		23 - 140	09/06/18 16:52	09/14/18 04:40	1
13C-1,2,3,4,6,7,8-HpCDF	59		28 - 143	09/06/18 16:52	09/14/18 04:40	1
13C-1,2,3,4,7,8,9-HpCDF	48		26 - 138	09/06/18 16:52	09/14/18 04:40	1
13C-1,2,3,4,7,8-HxCDD	61		32 - 141	09/06/18 16:52	09/14/18 04:40	1
13C-1,2,3,4,7,8-HxCDF	62		26 - 152	09/06/18 16:52	09/14/18 04:40	1
13C-1,2,3,6,7,8-HxCDD	63		28 - 130	09/06/18 16:52	09/14/18 04:40	1
13C-1,2,3,6,7,8-HxCDF	65		26 - 123	09/06/18 16:52	09/14/18 04:40	1
13C-1,2,3,7,8,9-HxCDF	59		29 - 147	09/06/18 16:52	09/14/18 04:40	1
13C-1,2,3,7,8-PeCDD	59		25 - 181	09/06/18 16:52	09/14/18 04:40	1
13C-1,2,3,7,8-PeCDF	56		24 - 185	09/06/18 16:52	09/14/18 04:40	1
13C-2,3,4,6,7,8-HxCDF	62		28 - 136	09/06/18 16:52	09/14/18 04:40	1
13C-2,3,4,7,8-PeCDF	56		21 - 178	09/06/18 16:52	09/14/18 04:40	1
13C-2,3,7,8-TCDD	61		25 - 164	09/06/18 16:52	09/14/18 04:40	1
13C-OCDD	62		17 - 157	09/06/18 16:52	09/14/18 04:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	76		35 - 197	09/06/18 16:52	09/14/18 04:40	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0055	B	0.0012	0.00026	ug/Kg	☼	09/06/18 16:52	09/14/18 14:58	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	59		24 - 169	09/06/18 16:52	09/14/18 14:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	70		35 - 197	09/06/18 16:52	09/14/18 14:58	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S108-4.7to6.7

Lab Sample ID: 580-79672-34

Date Collected: 08/16/18 18:30

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 49.2

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	0.50	B	0.0051	0.0010	ug/Kg	☼	09/06/18 16:52	09/14/18 05:25	1
1,2,3,4,6,7,8-HpCDF	0.40	B	0.0051	0.0017	ug/Kg	☼	09/06/18 16:52	09/14/18 05:25	1
1,2,3,4,7,8,9-HpCDF	0.014	B	0.0051	0.0022	ug/Kg	☼	09/06/18 16:52	09/14/18 05:25	1
1,2,3,4,7,8-HxCDD	0.0034	J B	0.0051	0.00018	ug/Kg	☼	09/06/18 16:52	09/14/18 05:25	1
1,2,3,4,7,8-HxCDF	0.014	B	0.0051	0.0010	ug/Kg	☼	09/06/18 16:52	09/14/18 05:25	1
1,2,3,6,7,8-HxCDD	0.020	B	0.0051	0.00018	ug/Kg	☼	09/06/18 16:52	09/14/18 05:25	1
1,2,3,6,7,8-HxCDF	0.026		0.0051	0.00099	ug/Kg	☼	09/06/18 16:52	09/14/18 05:25	1
1,2,3,7,8,9-HxCDD	0.0069		0.0051	0.00016	ug/Kg	☼	09/06/18 16:52	09/14/18 05:25	1
1,2,3,7,8,9-HxCDF	0.0010	J q B	0.0051	0.00086	ug/Kg	☼	09/06/18 16:52	09/14/18 05:25	1
1,2,3,7,8-PeCDD	0.0018	J	0.0051	0.00011	ug/Kg	☼	09/06/18 16:52	09/14/18 05:25	1
1,2,3,7,8-PeCDF	0.0057	B	0.0051	0.00042	ug/Kg	☼	09/06/18 16:52	09/14/18 05:25	1
2,3,4,6,7,8-HxCDF	0.0023	J B	0.0051	0.00080	ug/Kg	☼	09/06/18 16:52	09/14/18 05:25	1
2,3,4,7,8-PeCDF	0.0029	J B	0.0051	0.00042	ug/Kg	☼	09/06/18 16:52	09/14/18 05:25	1
2,3,7,8-TCDD	0.00051	J q	0.0010	0.000047	ug/Kg	☼	09/06/18 16:52	09/14/18 05:25	1
OCDD	5.6	E B	0.010	0.0012	ug/Kg	☼	09/06/18 16:52	09/14/18 05:25	1
OCDF	0.95	B	0.010	0.00020	ug/Kg	☼	09/06/18 16:52	09/14/18 05:25	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	61		23 - 140	09/06/18 16:52	09/14/18 05:25	1
13C-1,2,3,4,6,7,8-HpCDF	55		28 - 143	09/06/18 16:52	09/14/18 05:25	1
13C-1,2,3,4,7,8,9-HpCDF	55		26 - 138	09/06/18 16:52	09/14/18 05:25	1
13C-1,2,3,4,7,8-HxCDD	64		32 - 141	09/06/18 16:52	09/14/18 05:25	1
13C-1,2,3,4,7,8-HxCDF	69		26 - 152	09/06/18 16:52	09/14/18 05:25	1
13C-1,2,3,6,7,8-HxCDD	61		28 - 130	09/06/18 16:52	09/14/18 05:25	1
13C-1,2,3,6,7,8-HxCDF	69		26 - 123	09/06/18 16:52	09/14/18 05:25	1
13C-1,2,3,7,8,9-HxCDF	58		29 - 147	09/06/18 16:52	09/14/18 05:25	1
13C-1,2,3,7,8-PeCDD	66		25 - 181	09/06/18 16:52	09/14/18 05:25	1
13C-1,2,3,7,8-PeCDF	59		24 - 185	09/06/18 16:52	09/14/18 05:25	1
13C-2,3,4,6,7,8-HxCDF	63		28 - 136	09/06/18 16:52	09/14/18 05:25	1
13C-2,3,4,7,8-PeCDF	61		21 - 178	09/06/18 16:52	09/14/18 05:25	1
13C-2,3,7,8-TCDD	59		25 - 164	09/06/18 16:52	09/14/18 05:25	1
13C-OCDD	57		17 - 157	09/06/18 16:52	09/14/18 05:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	74		35 - 197	09/06/18 16:52	09/14/18 05:25	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0032	B	0.0010	0.00034	ug/Kg	☼	09/06/18 16:52	09/14/18 15:36	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	71		24 - 169	09/06/18 16:52	09/14/18 15:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	82		35 - 197	09/06/18 16:52	09/14/18 15:36	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S108-6.7to8.8

Lab Sample ID: 580-79672-35

Date Collected: 08/16/18 18:35

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 68.7

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	0.0070	B	0.0036	0.000060	ug/Kg	☼	09/06/18 16:52	09/14/18 06:11	1
1,2,3,4,6,7,8-HpCDF	0.0047	B	0.0036	0.000071	ug/Kg	☼	09/06/18 16:52	09/14/18 06:11	1
1,2,3,4,7,8,9-HpCDF	0.00031	J B	0.0036	0.000087	ug/Kg	☼	09/06/18 16:52	09/14/18 06:11	1
1,2,3,4,7,8-HxCDD	0.00021	J B	0.0036	0.000027	ug/Kg	☼	09/06/18 16:52	09/14/18 06:11	1
1,2,3,4,7,8-HxCDF	0.00047	J B	0.0036	0.000052	ug/Kg	☼	09/06/18 16:52	09/14/18 06:11	1
1,2,3,6,7,8-HxCDD	0.00030	J B	0.0036	0.000027	ug/Kg	☼	09/06/18 16:52	09/14/18 06:11	1
1,2,3,6,7,8-HxCDF	0.00048	J	0.0036	0.000048	ug/Kg	☼	09/06/18 16:52	09/14/18 06:11	1
1,2,3,7,8,9-HxCDD	0.00024	J	0.0036	0.000025	ug/Kg	☼	09/06/18 16:52	09/14/18 06:11	1
1,2,3,7,8,9-HxCDF	0.00037	J B	0.0036	0.000036	ug/Kg	☼	09/06/18 16:52	09/14/18 06:11	1
1,2,3,7,8-PeCDD	0.000069	J	0.0036	0.000027	ug/Kg	☼	09/06/18 16:52	09/14/18 06:11	1
1,2,3,7,8-PeCDF	0.00054	J B	0.0036	0.000030	ug/Kg	☼	09/06/18 16:52	09/14/18 06:11	1
2,3,4,6,7,8-HxCDF	0.00035	J B	0.0036	0.000041	ug/Kg	☼	09/06/18 16:52	09/14/18 06:11	1
2,3,4,7,8-PeCDF	0.00024	J B	0.0036	0.000031	ug/Kg	☼	09/06/18 16:52	09/14/18 06:11	1
2,3,7,8-TCDD	ND		0.00071	0.000056	ug/Kg	☼	09/06/18 16:52	09/14/18 06:11	1
2,3,7,8-TCDF	0.00057	J B	0.00071	0.000024	ug/Kg	☼	09/06/18 16:52	09/14/18 06:11	1
OCDD	0.084	B	0.0071	0.000063	ug/Kg	☼	09/06/18 16:52	09/14/18 06:11	1
OCDF	0.011	B	0.0071	0.000038	ug/Kg	☼	09/06/18 16:52	09/14/18 06:11	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	64		23 - 140	09/06/18 16:52	09/14/18 06:11	1
13C-1,2,3,4,6,7,8-HpCDF	56		28 - 143	09/06/18 16:52	09/14/18 06:11	1
13C-1,2,3,4,7,8,9-HpCDF	60		26 - 138	09/06/18 16:52	09/14/18 06:11	1
13C-1,2,3,4,7,8-HxCDD	57		32 - 141	09/06/18 16:52	09/14/18 06:11	1
13C-1,2,3,4,7,8-HxCDF	59		26 - 152	09/06/18 16:52	09/14/18 06:11	1
13C-1,2,3,6,7,8-HxCDD	59		28 - 130	09/06/18 16:52	09/14/18 06:11	1
13C-1,2,3,6,7,8-HxCDF	60		26 - 123	09/06/18 16:52	09/14/18 06:11	1
13C-1,2,3,7,8,9-HxCDF	58		29 - 147	09/06/18 16:52	09/14/18 06:11	1
13C-1,2,3,7,8-PeCDD	55		25 - 181	09/06/18 16:52	09/14/18 06:11	1
13C-1,2,3,7,8-PeCDF	52		24 - 185	09/06/18 16:52	09/14/18 06:11	1
13C-2,3,4,6,7,8-HxCDF	58		28 - 136	09/06/18 16:52	09/14/18 06:11	1
13C-2,3,4,7,8-PeCDF	53		21 - 178	09/06/18 16:52	09/14/18 06:11	1
13C-2,3,7,8-TCDD	60		25 - 164	09/06/18 16:52	09/14/18 06:11	1
13C-2,3,7,8-TCDF	54		24 - 169	09/06/18 16:52	09/14/18 06:11	1
13C-OCDD	55		17 - 157	09/06/18 16:52	09/14/18 06:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	79		35 - 197	09/06/18 16:52	09/14/18 06:11	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S108-6.7to8.8D

Lab Sample ID: 580-79672-36

Date Collected: 08/16/18 18:35

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 70.4

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.0064	B	0.0035	0.000059	ug/Kg	☼	09/06/18 16:52	09/14/18 06:57	1
1,2,3,4,6,7,8-HpCDF	0.0047	B	0.0035	0.000087	ug/Kg	☼	09/06/18 16:52	09/14/18 06:57	1
1,2,3,4,7,8,9-HpCDF	0.00030	J B	0.0035	0.000094	ug/Kg	☼	09/06/18 16:52	09/14/18 06:57	1
1,2,3,4,7,8-HxCDD	0.00021	J B	0.0035	0.000023	ug/Kg	☼	09/06/18 16:52	09/14/18 06:57	1
1,2,3,4,7,8-HxCDF	0.00034	J B	0.0035	0.000061	ug/Kg	☼	09/06/18 16:52	09/14/18 06:57	1
1,2,3,6,7,8-HxCDD	0.00027	J B	0.0035	0.000022	ug/Kg	☼	09/06/18 16:52	09/14/18 06:57	1
1,2,3,6,7,8-HxCDF	0.00039	J	0.0035	0.000060	ug/Kg	☼	09/06/18 16:52	09/14/18 06:57	1
1,2,3,7,8,9-HxCDD	0.00020	J	0.0035	0.000021	ug/Kg	☼	09/06/18 16:52	09/14/18 06:57	1
1,2,3,7,8,9-HxCDF	0.00032	J B	0.0035	0.000043	ug/Kg	☼	09/06/18 16:52	09/14/18 06:57	1
1,2,3,7,8-PeCDD	0.000039	J q	0.0035	0.000026	ug/Kg	☼	09/06/18 16:52	09/14/18 06:57	1
1,2,3,7,8-PeCDF	0.00020	J B	0.0035	0.000029	ug/Kg	☼	09/06/18 16:52	09/14/18 06:57	1
2,3,4,6,7,8-HxCDF	ND		0.0035	0.000046	ug/Kg	☼	09/06/18 16:52	09/14/18 06:57	1
2,3,4,7,8-PeCDF	0.00012	J B	0.0035	0.000030	ug/Kg	☼	09/06/18 16:52	09/14/18 06:57	1
2,3,7,8-TCDD	ND		0.00070	0.000019	ug/Kg	☼	09/06/18 16:52	09/14/18 06:57	1
2,3,7,8-TCDF	0.00044	J B	0.00070	0.000015	ug/Kg	☼	09/06/18 16:52	09/14/18 06:57	1
OCDD	0.078	B	0.0070	0.000061	ug/Kg	☼	09/06/18 16:52	09/14/18 06:57	1
OCDF	0.012	B	0.0070	0.000036	ug/Kg	☼	09/06/18 16:52	09/14/18 06:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	55		23 - 140	09/06/18 16:52	09/14/18 06:57	1
13C-1,2,3,4,6,7,8-HpCDF	45		28 - 143	09/06/18 16:52	09/14/18 06:57	1
13C-1,2,3,4,7,8,9-HpCDF	52		26 - 138	09/06/18 16:52	09/14/18 06:57	1
13C-1,2,3,4,7,8-HxCDD	49		32 - 141	09/06/18 16:52	09/14/18 06:57	1
13C-1,2,3,4,7,8-HxCDF	51		26 - 152	09/06/18 16:52	09/14/18 06:57	1
13C-1,2,3,6,7,8-HxCDD	52		28 - 130	09/06/18 16:52	09/14/18 06:57	1
13C-1,2,3,6,7,8-HxCDF	52		26 - 123	09/06/18 16:52	09/14/18 06:57	1
13C-1,2,3,7,8,9-HxCDF	51		29 - 147	09/06/18 16:52	09/14/18 06:57	1
13C-1,2,3,7,8-PeCDD	51		25 - 181	09/06/18 16:52	09/14/18 06:57	1
13C-1,2,3,7,8-PeCDF	48		24 - 185	09/06/18 16:52	09/14/18 06:57	1
13C-2,3,4,6,7,8-HxCDF	52		28 - 136	09/06/18 16:52	09/14/18 06:57	1
13C-2,3,4,7,8-PeCDF	50		21 - 178	09/06/18 16:52	09/14/18 06:57	1
13C-2,3,7,8-TCDD	57		25 - 164	09/06/18 16:52	09/14/18 06:57	1
13C-2,3,7,8-TCDF	54		24 - 169	09/06/18 16:52	09/14/18 06:57	1
13C-OCDD	43		17 - 157	09/06/18 16:52	09/14/18 06:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	78		35 - 197	09/06/18 16:52	09/14/18 06:57	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S108-8.8to9.8

Lab Sample ID: 580-79672-37

Date Collected: 08/16/18 18:40

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 70.0

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	0.0063		0.0035	0.00044	ug/Kg	✱	09/07/18 12:27	09/15/18 03:12	1
1,2,3,4,6,7,8-HpCDF	0.0039	B	0.0035	0.00024	ug/Kg	✱	09/07/18 12:27	09/15/18 03:12	1
1,2,3,4,7,8,9-HpCDF	0.00037	J q B	0.0035	0.00026	ug/Kg	✱	09/07/18 12:27	09/15/18 03:12	1
1,2,3,4,7,8-HxCDD	0.00031	J B	0.0035	0.00014	ug/Kg	✱	09/07/18 12:27	09/15/18 03:12	1
1,2,3,4,7,8-HxCDF	0.00027	J q	0.0035	0.00012	ug/Kg	✱	09/07/18 12:27	09/15/18 03:12	1
1,2,3,6,7,8-HxCDD	0.00021	J q	0.0035	0.00015	ug/Kg	✱	09/07/18 12:27	09/15/18 03:12	1
1,2,3,6,7,8-HxCDF	0.00042	J q	0.0035	0.00011	ug/Kg	✱	09/07/18 12:27	09/15/18 03:12	1
1,2,3,7,8,9-HxCDD	0.00026	J q	0.0035	0.00013	ug/Kg	✱	09/07/18 12:27	09/15/18 03:12	1
1,2,3,7,8,9-HxCDF	0.00066	J q B	0.0035	0.000098	ug/Kg	✱	09/07/18 12:27	09/15/18 03:12	1
1,2,3,7,8-PeCDD	ND		0.0035	0.000086	ug/Kg	✱	09/07/18 12:27	09/15/18 03:12	1
1,2,3,7,8-PeCDF	0.00017	J q B	0.0035	0.000082	ug/Kg	✱	09/07/18 12:27	09/15/18 03:12	1
2,3,4,6,7,8-HxCDF	ND		0.0035	0.000088	ug/Kg	✱	09/07/18 12:27	09/15/18 03:12	1
2,3,4,7,8-PeCDF	ND		0.0035	0.000082	ug/Kg	✱	09/07/18 12:27	09/15/18 03:12	1
2,3,7,8-TCDD	ND		0.00070	0.000089	ug/Kg	✱	09/07/18 12:27	09/15/18 03:12	1
2,3,7,8-TCDF	0.00022	J B	0.00070	0.000052	ug/Kg	✱	09/07/18 12:27	09/15/18 03:12	1
OCDD	0.075	B	0.0070	0.00054	ug/Kg	✱	09/07/18 12:27	09/15/18 03:12	1
OCDF	0.010		0.0070	0.00028	ug/Kg	✱	09/07/18 12:27	09/15/18 03:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	39		23 - 140	09/07/18 12:27	09/15/18 03:12	1
13C-1,2,3,4,6,7,8-HpCDF	31	q	28 - 143	09/07/18 12:27	09/15/18 03:12	1
13C-1,2,3,4,7,8,9-HpCDF	39		26 - 138	09/07/18 12:27	09/15/18 03:12	1
13C-1,2,3,4,7,8-HxCDD	51		32 - 141	09/07/18 12:27	09/15/18 03:12	1
13C-1,2,3,4,7,8-HxCDF	47		26 - 152	09/07/18 12:27	09/15/18 03:12	1
13C-1,2,3,6,7,8-HxCDD	46		28 - 130	09/07/18 12:27	09/15/18 03:12	1
13C-1,2,3,6,7,8-HxCDF	49		26 - 123	09/07/18 12:27	09/15/18 03:12	1
13C-1,2,3,7,8,9-HxCDF	48		29 - 147	09/07/18 12:27	09/15/18 03:12	1
13C-1,2,3,7,8-PeCDD	49		25 - 181	09/07/18 12:27	09/15/18 03:12	1
13C-1,2,3,7,8-PeCDF	55		24 - 185	09/07/18 12:27	09/15/18 03:12	1
13C-2,3,4,6,7,8-HxCDF	51		28 - 136	09/07/18 12:27	09/15/18 03:12	1
13C-2,3,4,7,8-PeCDF	59		21 - 178	09/07/18 12:27	09/15/18 03:12	1
13C-2,3,7,8-TCDD	58		25 - 164	09/07/18 12:27	09/15/18 03:12	1
13C-2,3,7,8-TCDF	61		24 - 169	09/07/18 12:27	09/15/18 03:12	1
13C-OCDD	33		17 - 157	09/07/18 12:27	09/15/18 03:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	71		35 - 197	09/07/18 12:27	09/15/18 03:12	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S157-0to2

Lab Sample ID: 580-79672-38

Date Collected: 08/17/18 10:10

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 49.9

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	0.041		0.0050	0.0017	ug/Kg	☼	09/07/18 12:27	09/15/18 03:55	1
1,2,3,4,6,7,8-HpCDF	0.015	B	0.0050	0.00051	ug/Kg	☼	09/07/18 12:27	09/15/18 03:55	1
1,2,3,4,7,8,9-HpCDF	0.0012	J q B	0.0050	0.00060	ug/Kg	☼	09/07/18 12:27	09/15/18 03:55	1
1,2,3,4,7,8-HxCDD	0.00055	J q B	0.0050	0.00051	ug/Kg	☼	09/07/18 12:27	09/15/18 03:55	1
1,2,3,4,7,8-HxCDF	0.0045	J	0.0050	0.00029	ug/Kg	☼	09/07/18 12:27	09/15/18 03:55	1
1,2,3,6,7,8-HxCDD	0.0021	J	0.0050	0.00052	ug/Kg	☼	09/07/18 12:27	09/15/18 03:55	1
1,2,3,6,7,8-HxCDF	0.0022	J	0.0050	0.00027	ug/Kg	☼	09/07/18 12:27	09/15/18 03:55	1
1,2,3,7,8,9-HxCDD	0.0014	J q	0.0050	0.00046	ug/Kg	☼	09/07/18 12:27	09/15/18 03:55	1
1,2,3,7,8,9-HxCDF	0.0016	J q B	0.0050	0.00023	ug/Kg	☼	09/07/18 12:27	09/15/18 03:55	1
1,2,3,7,8-PeCDD	ND		0.0050	0.00022	ug/Kg	☼	09/07/18 12:27	09/15/18 03:55	1
1,2,3,7,8-PeCDF	0.0033	J B	0.0050	0.00020	ug/Kg	☼	09/07/18 12:27	09/15/18 03:55	1
2,3,4,6,7,8-HxCDF	0.00069	J	0.0050	0.00023	ug/Kg	☼	09/07/18 12:27	09/15/18 03:55	1
2,3,4,7,8-PeCDF	0.0012	J	0.0050	0.00021	ug/Kg	☼	09/07/18 12:27	09/15/18 03:55	1
2,3,7,8-TCDD	0.00023	J q	0.0010	0.00016	ug/Kg	☼	09/07/18 12:27	09/15/18 03:55	1
OCDD	0.50	B	0.010	0.0022	ug/Kg	☼	09/07/18 12:27	09/15/18 03:55	1
OCDF	0.032		0.010	0.00042	ug/Kg	☼	09/07/18 12:27	09/15/18 03:55	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	41		23 - 140	09/07/18 12:27	09/15/18 03:55	1
13C-1,2,3,4,6,7,8-HpCDF	32		28 - 143	09/07/18 12:27	09/15/18 03:55	1
13C-1,2,3,4,7,8,9-HpCDF	38		26 - 138	09/07/18 12:27	09/15/18 03:55	1
13C-1,2,3,4,7,8-HxCDD	47		32 - 141	09/07/18 12:27	09/15/18 03:55	1
13C-1,2,3,4,7,8-HxCDF	49		26 - 152	09/07/18 12:27	09/15/18 03:55	1
13C-1,2,3,6,7,8-HxCDD	46		28 - 130	09/07/18 12:27	09/15/18 03:55	1
13C-1,2,3,6,7,8-HxCDF	48		26 - 123	09/07/18 12:27	09/15/18 03:55	1
13C-1,2,3,7,8,9-HxCDF	48		29 - 147	09/07/18 12:27	09/15/18 03:55	1
13C-1,2,3,7,8-PeCDD	48		25 - 181	09/07/18 12:27	09/15/18 03:55	1
13C-1,2,3,7,8-PeCDF	53		24 - 185	09/07/18 12:27	09/15/18 03:55	1
13C-2,3,4,6,7,8-HxCDF	49		28 - 136	09/07/18 12:27	09/15/18 03:55	1
13C-2,3,4,7,8-PeCDF	56		21 - 178	09/07/18 12:27	09/15/18 03:55	1
13C-2,3,7,8-TCDD	57		25 - 164	09/07/18 12:27	09/15/18 03:55	1
13C-OCDD	34		17 - 157	09/07/18 12:27	09/15/18 03:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	71		35 - 197	09/07/18 12:27	09/15/18 03:55	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	0.0014	B	0.0010	0.00012	ug/Kg	☼	09/07/18 12:27	09/18/18 01:42	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	58		24 - 169	09/07/18 12:27	09/18/18 01:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	75		35 - 197	09/07/18 12:27	09/18/18 01:42	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S157-2to3.7

Lab Sample ID: 580-79672-39

Date Collected: 08/17/18 10:15

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 74.6

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	0.031		0.0033	0.0014	ug/Kg	☼	09/07/18 12:27	09/15/18 04:38	1
1,2,3,4,6,7,8-HpCDF	0.020	B	0.0033	0.00029	ug/Kg	☼	09/07/18 12:27	09/15/18 04:38	1
1,2,3,4,7,8,9-HpCDF	0.00070	J q B	0.0033	0.00033	ug/Kg	☼	09/07/18 12:27	09/15/18 04:38	1
1,2,3,4,7,8-HxCDD	0.00036	J B	0.0033	0.00017	ug/Kg	☼	09/07/18 12:27	09/15/18 04:38	1
1,2,3,4,7,8-HxCDF	0.0017	J	0.0033	0.00015	ug/Kg	☼	09/07/18 12:27	09/15/18 04:38	1
1,2,3,6,7,8-HxCDD	0.0018	J	0.0033	0.00017	ug/Kg	☼	09/07/18 12:27	09/15/18 04:38	1
1,2,3,6,7,8-HxCDF	0.0016	J q	0.0033	0.00013	ug/Kg	☼	09/07/18 12:27	09/15/18 04:38	1
1,2,3,7,8,9-HxCDD	0.00069	J q	0.0033	0.00015	ug/Kg	☼	09/07/18 12:27	09/15/18 04:38	1
1,2,3,7,8,9-HxCDF	0.00081	J q B	0.0033	0.00011	ug/Kg	☼	09/07/18 12:27	09/15/18 04:38	1
1,2,3,7,8-PeCDD	0.00023	J	0.0033	0.000083	ug/Kg	☼	09/07/18 12:27	09/15/18 04:38	1
1,2,3,7,8-PeCDF	0.0013	J B	0.0033	0.00016	ug/Kg	☼	09/07/18 12:27	09/15/18 04:38	1
2,3,4,6,7,8-HxCDF	0.00036	J q	0.0033	0.00010	ug/Kg	☼	09/07/18 12:27	09/15/18 04:38	1
2,3,4,7,8-PeCDF	0.00080	J	0.0033	0.00017	ug/Kg	☼	09/07/18 12:27	09/15/18 04:38	1
2,3,7,8-TCDD	0.00012	J q	0.00066	0.000061	ug/Kg	☼	09/07/18 12:27	09/15/18 04:38	1
OCDD	0.47	B	0.0066	0.0017	ug/Kg	☼	09/07/18 12:27	09/15/18 04:38	1
OCDF	0.019		0.0066	0.00026	ug/Kg	☼	09/07/18 12:27	09/15/18 04:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	42		23 - 140	09/07/18 12:27	09/15/18 04:38	1
13C-1,2,3,4,6,7,8-HpCDF	33		28 - 143	09/07/18 12:27	09/15/18 04:38	1
13C-1,2,3,4,7,8,9-HpCDF	42		26 - 138	09/07/18 12:27	09/15/18 04:38	1
13C-1,2,3,4,7,8-HxCDD	53		32 - 141	09/07/18 12:27	09/15/18 04:38	1
13C-1,2,3,4,7,8-HxCDF	51		26 - 152	09/07/18 12:27	09/15/18 04:38	1
13C-1,2,3,6,7,8-HxCDD	51		28 - 130	09/07/18 12:27	09/15/18 04:38	1
13C-1,2,3,6,7,8-HxCDF	51		26 - 123	09/07/18 12:27	09/15/18 04:38	1
13C-1,2,3,7,8,9-HxCDF	52		29 - 147	09/07/18 12:27	09/15/18 04:38	1
13C-1,2,3,7,8-PeCDD	54		25 - 181	09/07/18 12:27	09/15/18 04:38	1
13C-1,2,3,7,8-PeCDF	60		24 - 185	09/07/18 12:27	09/15/18 04:38	1
13C-2,3,4,6,7,8-HxCDF	56		28 - 136	09/07/18 12:27	09/15/18 04:38	1
13C-2,3,4,7,8-PeCDF	62		21 - 178	09/07/18 12:27	09/15/18 04:38	1
13C-2,3,7,8-TCDD	63		25 - 164	09/07/18 12:27	09/15/18 04:38	1
13C-OCDD	36		17 - 157	09/07/18 12:27	09/15/18 04:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	67		35 - 197	09/07/18 12:27	09/15/18 04:38	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	0.0019	B	0.00066	0.000081	ug/Kg	☼	09/07/18 12:27	09/18/18 02:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	65		24 - 169	09/07/18 12:27	09/18/18 02:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	76		35 - 197	09/07/18 12:27	09/18/18 02:20	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S157-3.7to6

Lab Sample ID: 580-79672-40

Date Collected: 08/17/18 10:20

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 72.8

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	0.0025	J q	0.0034	0.00041	ug/Kg	✱	09/07/18 12:27	09/15/18 05:21	1
1,2,3,4,6,7,8-HpCDF	0.00045	J B	0.0034	0.00016	ug/Kg	✱	09/07/18 12:27	09/15/18 05:21	1
1,2,3,4,7,8,9-HpCDF	0.00045	J q B	0.0034	0.00015	ug/Kg	✱	09/07/18 12:27	09/15/18 05:21	1
1,2,3,4,7,8-HxCDD	ND		0.0034	0.00018	ug/Kg	✱	09/07/18 12:27	09/15/18 05:21	1
1,2,3,4,7,8-HxCDF	ND		0.0034	0.00011	ug/Kg	✱	09/07/18 12:27	09/15/18 05:21	1
1,2,3,6,7,8-HxCDD	ND		0.0034	0.00018	ug/Kg	✱	09/07/18 12:27	09/15/18 05:21	1
1,2,3,6,7,8-HxCDF	ND		0.0034	0.000093	ug/Kg	✱	09/07/18 12:27	09/15/18 05:21	1
1,2,3,7,8,9-HxCDD	0.00047	J q	0.0034	0.00016	ug/Kg	✱	09/07/18 12:27	09/15/18 05:21	1
1,2,3,7,8,9-HxCDF	0.0016	J B	0.0034	0.000072	ug/Kg	✱	09/07/18 12:27	09/15/18 05:21	1
1,2,3,7,8-PeCDD	ND		0.0034	0.00012	ug/Kg	✱	09/07/18 12:27	09/15/18 05:21	1
1,2,3,7,8-PeCDF	0.00030	J B	0.0034	0.000081	ug/Kg	✱	09/07/18 12:27	09/15/18 05:21	1
2,3,4,6,7,8-HxCDF	ND		0.0034	0.000068	ug/Kg	✱	09/07/18 12:27	09/15/18 05:21	1
2,3,4,7,8-PeCDF	ND		0.0034	0.000075	ug/Kg	✱	09/07/18 12:27	09/15/18 05:21	1
2,3,7,8-TCDD	ND		0.00068	0.00010	ug/Kg	✱	09/07/18 12:27	09/15/18 05:21	1
2,3,7,8-TCDF	0.000093	J q B	0.00068	0.000037	ug/Kg	✱	09/07/18 12:27	09/15/18 05:21	1
OCDD	0.048	B	0.0068	0.00075	ug/Kg	✱	09/07/18 12:27	09/15/18 05:21	1
OCDF	0.00090	J	0.0068	0.00036	ug/Kg	✱	09/07/18 12:27	09/15/18 05:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	23		23 - 140	09/07/18 12:27	09/15/18 05:21	1
13C-1,2,3,4,6,7,8-HpCDF	18	*	28 - 143	09/07/18 12:27	09/15/18 05:21	1
13C-1,2,3,4,7,8,9-HpCDF	26		26 - 138	09/07/18 12:27	09/15/18 05:21	1
13C-1,2,3,4,7,8-HxCDD	32		32 - 141	09/07/18 12:27	09/15/18 05:21	1
13C-1,2,3,4,7,8-HxCDF	30		26 - 152	09/07/18 12:27	09/15/18 05:21	1
13C-1,2,3,6,7,8-HxCDD	29		28 - 130	09/07/18 12:27	09/15/18 05:21	1
13C-1,2,3,6,7,8-HxCDF	31		26 - 123	09/07/18 12:27	09/15/18 05:21	1
13C-1,2,3,7,8,9-HxCDF	35		29 - 147	09/07/18 12:27	09/15/18 05:21	1
13C-1,2,3,7,8-PeCDD	39		25 - 181	09/07/18 12:27	09/15/18 05:21	1
13C-1,2,3,7,8-PeCDF	43		24 - 185	09/07/18 12:27	09/15/18 05:21	1
13C-2,3,4,6,7,8-HxCDF	35		28 - 136	09/07/18 12:27	09/15/18 05:21	1
13C-2,3,4,7,8-PeCDF	50		21 - 178	09/07/18 12:27	09/15/18 05:21	1
13C-2,3,7,8-TCDD	50		25 - 164	09/07/18 12:27	09/15/18 05:21	1
13C-2,3,7,8-TCDF	58		24 - 169	09/07/18 12:27	09/15/18 05:21	1
13C-OCDD	16	*	17 - 157	09/07/18 12:27	09/15/18 05:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	67		35 - 197	09/07/18 12:27	09/15/18 05:21	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S157-6to8

Lab Sample ID: 580-79672-41

Date Collected: 08/17/18 10:25

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 70.9

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	0.0018	J	0.0035	0.00027	ug/Kg	✱	09/07/18 12:27	09/15/18 06:04	1
1,2,3,4,6,7,8-HpCDF	0.00023	J q B	0.0035	0.00017	ug/Kg	✱	09/07/18 12:27	09/15/18 06:04	1
1,2,3,4,7,8,9-HpCDF	0.00068	J B	0.0035	0.00018	ug/Kg	✱	09/07/18 12:27	09/15/18 06:04	1
1,2,3,4,7,8-HxCDD	ND		0.0035	0.00013	ug/Kg	✱	09/07/18 12:27	09/15/18 06:04	1
1,2,3,4,7,8-HxCDF	ND		0.0035	0.000086	ug/Kg	✱	09/07/18 12:27	09/15/18 06:04	1
1,2,3,6,7,8-HxCDD	ND		0.0035	0.00013	ug/Kg	✱	09/07/18 12:27	09/15/18 06:04	1
1,2,3,6,7,8-HxCDF	0.00015	J q	0.0035	0.000079	ug/Kg	✱	09/07/18 12:27	09/15/18 06:04	1
1,2,3,7,8,9-HxCDD	0.00031	J q	0.0035	0.00012	ug/Kg	✱	09/07/18 12:27	09/15/18 06:04	1
1,2,3,7,8,9-HxCDF	0.0017	J B	0.0035	0.000063	ug/Kg	✱	09/07/18 12:27	09/15/18 06:04	1
1,2,3,7,8-PeCDD	ND		0.0035	0.00012	ug/Kg	✱	09/07/18 12:27	09/15/18 06:04	1
1,2,3,7,8-PeCDF	0.00020	J q B	0.0035	0.000080	ug/Kg	✱	09/07/18 12:27	09/15/18 06:04	1
2,3,4,6,7,8-HxCDF	ND		0.0035	0.000057	ug/Kg	✱	09/07/18 12:27	09/15/18 06:04	1
2,3,4,7,8-PeCDF	ND		0.0035	0.000074	ug/Kg	✱	09/07/18 12:27	09/15/18 06:04	1
2,3,7,8-TCDD	ND		0.00070	0.00010	ug/Kg	✱	09/07/18 12:27	09/15/18 06:04	1
2,3,7,8-TCDF	0.00022	J B	0.00070	0.000054	ug/Kg	✱	09/07/18 12:27	09/15/18 06:04	1
OCDD	0.018	B	0.0070	0.00042	ug/Kg	✱	09/07/18 12:27	09/15/18 06:04	1
OCDF	ND		0.0070	0.00024	ug/Kg	✱	09/07/18 12:27	09/15/18 06:04	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	27		23 - 140	09/07/18 12:27	09/15/18 06:04	1
13C-1,2,3,4,6,7,8-HpCDF	20	*	28 - 143	09/07/18 12:27	09/15/18 06:04	1
13C-1,2,3,4,7,8,9-HpCDF	27		26 - 138	09/07/18 12:27	09/15/18 06:04	1
13C-1,2,3,4,7,8-HxCDD	36		32 - 141	09/07/18 12:27	09/15/18 06:04	1
13C-1,2,3,4,7,8-HxCDF	35		26 - 152	09/07/18 12:27	09/15/18 06:04	1
13C-1,2,3,6,7,8-HxCDD	33		28 - 130	09/07/18 12:27	09/15/18 06:04	1
13C-1,2,3,6,7,8-HxCDF	35		26 - 123	09/07/18 12:27	09/15/18 06:04	1
13C-1,2,3,7,8,9-HxCDF	37		29 - 147	09/07/18 12:27	09/15/18 06:04	1
13C-1,2,3,7,8-PeCDD	39		25 - 181	09/07/18 12:27	09/15/18 06:04	1
13C-1,2,3,7,8-PeCDF	43		24 - 185	09/07/18 12:27	09/15/18 06:04	1
13C-2,3,4,6,7,8-HxCDF	39		28 - 136	09/07/18 12:27	09/15/18 06:04	1
13C-2,3,4,7,8-PeCDF	50		21 - 178	09/07/18 12:27	09/15/18 06:04	1
13C-2,3,7,8-TCDD	51		25 - 164	09/07/18 12:27	09/15/18 06:04	1
13C-2,3,7,8-TCDF	55		24 - 169	09/07/18 12:27	09/15/18 06:04	1
13C-OCDD	19		17 - 157	09/07/18 12:27	09/15/18 06:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	66		35 - 197	09/07/18 12:27	09/15/18 06:04	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S157-8to10

Lab Sample ID: 580-79672-42

Date Collected: 08/17/18 10:30

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 73.2

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	0.0014	J q	0.0034	0.00019	ug/Kg	☼	09/07/18 12:27	09/15/18 06:46	1
1,2,3,4,6,7,8-HpCDF	0.00033	J B	0.0034	0.00011	ug/Kg	☼	09/07/18 12:27	09/15/18 06:46	1
1,2,3,4,7,8,9-HpCDF	0.00045	J B	0.0034	0.00013	ug/Kg	☼	09/07/18 12:27	09/15/18 06:46	1
1,2,3,4,7,8-HxCDD	ND		0.0034	0.00015	ug/Kg	☼	09/07/18 12:27	09/15/18 06:46	1
1,2,3,4,7,8-HxCDF	ND		0.0034	0.000072	ug/Kg	☼	09/07/18 12:27	09/15/18 06:46	1
1,2,3,6,7,8-HxCDD	ND		0.0034	0.00014	ug/Kg	☼	09/07/18 12:27	09/15/18 06:46	1
1,2,3,6,7,8-HxCDF	ND		0.0034	0.000069	ug/Kg	☼	09/07/18 12:27	09/15/18 06:46	1
1,2,3,7,8,9-HxCDD	0.00036	J q	0.0034	0.00013	ug/Kg	☼	09/07/18 12:27	09/15/18 06:46	1
1,2,3,7,8,9-HxCDF	0.0012	J B	0.0034	0.000058	ug/Kg	☼	09/07/18 12:27	09/15/18 06:46	1
1,2,3,7,8-PeCDD	ND		0.0034	0.00013	ug/Kg	☼	09/07/18 12:27	09/15/18 06:46	1
1,2,3,7,8-PeCDF	ND		0.0034	0.000076	ug/Kg	☼	09/07/18 12:27	09/15/18 06:46	1
2,3,4,6,7,8-HxCDF	ND		0.0034	0.000053	ug/Kg	☼	09/07/18 12:27	09/15/18 06:46	1
2,3,4,7,8-PeCDF	ND		0.0034	0.000074	ug/Kg	☼	09/07/18 12:27	09/15/18 06:46	1
2,3,7,8-TCDD	ND		0.00068	0.000097	ug/Kg	☼	09/07/18 12:27	09/15/18 06:46	1
2,3,7,8-TCDF	0.00016	J B	0.00068	0.000066	ug/Kg	☼	09/07/18 12:27	09/15/18 06:46	1
OCDD	0.014	q B	0.0068	0.00033	ug/Kg	☼	09/07/18 12:27	09/15/18 06:46	1
OCDF	ND		0.0068	0.00026	ug/Kg	☼	09/07/18 12:27	09/15/18 06:46	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	33		23 - 140	09/07/18 12:27	09/15/18 06:46	1
13C-1,2,3,4,6,7,8-HpCDF	27	*	28 - 143	09/07/18 12:27	09/15/18 06:46	1
13C-1,2,3,4,7,8,9-HpCDF	33		26 - 138	09/07/18 12:27	09/15/18 06:46	1
13C-1,2,3,4,7,8-HxCDD	44		32 - 141	09/07/18 12:27	09/15/18 06:46	1
13C-1,2,3,4,7,8-HxCDF	43		26 - 152	09/07/18 12:27	09/15/18 06:46	1
13C-1,2,3,6,7,8-HxCDD	44		28 - 130	09/07/18 12:27	09/15/18 06:46	1
13C-1,2,3,6,7,8-HxCDF	44		26 - 123	09/07/18 12:27	09/15/18 06:46	1
13C-1,2,3,7,8,9-HxCDF	42		29 - 147	09/07/18 12:27	09/15/18 06:46	1
13C-1,2,3,7,8-PeCDD	46		25 - 181	09/07/18 12:27	09/15/18 06:46	1
13C-1,2,3,7,8-PeCDF	50		24 - 185	09/07/18 12:27	09/15/18 06:46	1
13C-2,3,4,6,7,8-HxCDF	46		28 - 136	09/07/18 12:27	09/15/18 06:46	1
13C-2,3,4,7,8-PeCDF	53		21 - 178	09/07/18 12:27	09/15/18 06:46	1
13C-2,3,7,8-TCDD	59		25 - 164	09/07/18 12:27	09/15/18 06:46	1
13C-2,3,7,8-TCDF	56		24 - 169	09/07/18 12:27	09/15/18 06:46	1
13C-OCDD	26		17 - 157	09/07/18 12:27	09/15/18 06:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	67		35 - 197	09/07/18 12:27	09/15/18 06:46	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S157-10to12.4

Lab Sample ID: 580-79672-43

Date Collected: 08/17/18 10:35

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 75.3

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.0014	J	0.0033	0.00016	ug/Kg	☼	09/07/18 12:27	09/15/18 07:29	1
1,2,3,4,6,7,8-HpCDF	ND		0.0033	0.000058	ug/Kg	☼	09/07/18 12:27	09/15/18 07:29	1
1,2,3,4,7,8,9-HpCDF	0.00031	J B	0.0033	0.000069	ug/Kg	☼	09/07/18 12:27	09/15/18 07:29	1
1,2,3,4,7,8-HxCDD	ND		0.0033	0.00012	ug/Kg	☼	09/07/18 12:27	09/15/18 07:29	1
1,2,3,4,7,8-HxCDF	ND		0.0033	0.000064	ug/Kg	☼	09/07/18 12:27	09/15/18 07:29	1
1,2,3,6,7,8-HxCDD	ND		0.0033	0.00012	ug/Kg	☼	09/07/18 12:27	09/15/18 07:29	1
1,2,3,6,7,8-HxCDF	ND		0.0033	0.000061	ug/Kg	☼	09/07/18 12:27	09/15/18 07:29	1
1,2,3,7,8,9-HxCDD	ND		0.0033	0.00011	ug/Kg	☼	09/07/18 12:27	09/15/18 07:29	1
1,2,3,7,8,9-HxCDF	0.00075	J q B	0.0033	0.000050	ug/Kg	☼	09/07/18 12:27	09/15/18 07:29	1
1,2,3,7,8-PeCDD	ND		0.0033	0.000091	ug/Kg	☼	09/07/18 12:27	09/15/18 07:29	1
1,2,3,7,8-PeCDF	0.00016	J q B	0.0033	0.000062	ug/Kg	☼	09/07/18 12:27	09/15/18 07:29	1
2,3,4,6,7,8-HxCDF	ND		0.0033	0.000047	ug/Kg	☼	09/07/18 12:27	09/15/18 07:29	1
2,3,4,7,8-PeCDF	ND		0.0033	0.000068	ug/Kg	☼	09/07/18 12:27	09/15/18 07:29	1
2,3,7,8-TCDD	ND		0.00067	0.000080	ug/Kg	☼	09/07/18 12:27	09/15/18 07:29	1
2,3,7,8-TCDF	ND		0.00067	0.000046	ug/Kg	☼	09/07/18 12:27	09/15/18 07:29	1
OCDD	0.013	B	0.0067	0.00026	ug/Kg	☼	09/07/18 12:27	09/15/18 07:29	1
OCDF	ND		0.0067	0.00016	ug/Kg	☼	09/07/18 12:27	09/15/18 07:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	39		23 - 140	09/07/18 12:27	09/15/18 07:29	1
13C-1,2,3,4,6,7,8-HpCDF	33		28 - 143	09/07/18 12:27	09/15/18 07:29	1
13C-1,2,3,4,7,8,9-HpCDF	39		26 - 138	09/07/18 12:27	09/15/18 07:29	1
13C-1,2,3,4,7,8-HxCDD	48		32 - 141	09/07/18 12:27	09/15/18 07:29	1
13C-1,2,3,4,7,8-HxCDF	46		26 - 152	09/07/18 12:27	09/15/18 07:29	1
13C-1,2,3,6,7,8-HxCDD	43		28 - 130	09/07/18 12:27	09/15/18 07:29	1
13C-1,2,3,6,7,8-HxCDF	45		26 - 123	09/07/18 12:27	09/15/18 07:29	1
13C-1,2,3,7,8,9-HxCDF	47		29 - 147	09/07/18 12:27	09/15/18 07:29	1
13C-1,2,3,7,8-PeCDD	47		25 - 181	09/07/18 12:27	09/15/18 07:29	1
13C-1,2,3,7,8-PeCDF	50		24 - 185	09/07/18 12:27	09/15/18 07:29	1
13C-2,3,4,6,7,8-HxCDF	49		28 - 136	09/07/18 12:27	09/15/18 07:29	1
13C-2,3,4,7,8-PeCDF	52		21 - 178	09/07/18 12:27	09/15/18 07:29	1
13C-2,3,7,8-TCDD	55		25 - 164	09/07/18 12:27	09/15/18 07:29	1
13C-2,3,7,8-TCDF	52		24 - 169	09/07/18 12:27	09/15/18 07:29	1
13C-OCDD	36		17 - 157	09/07/18 12:27	09/15/18 07:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	65		35 - 197	09/07/18 12:27	09/15/18 07:29	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S157-12.4to14

Lab Sample ID: 580-79672-44

Date Collected: 08/17/18 10:40

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 73.6

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	0.0013	J q	0.0034	0.00027	ug/Kg	☼	09/07/18 12:27	09/15/18 08:12	1
1,2,3,4,6,7,8-HpCDF	ND		0.0034	0.00017	ug/Kg	☼	09/07/18 12:27	09/15/18 08:12	1
1,2,3,4,7,8,9-HpCDF	0.00027	J q B	0.0034	0.00021	ug/Kg	☼	09/07/18 12:27	09/15/18 08:12	1
1,2,3,4,7,8-HxCDD	ND		0.0034	0.00016	ug/Kg	☼	09/07/18 12:27	09/15/18 08:12	1
1,2,3,4,7,8-HxCDF	ND		0.0034	0.000065	ug/Kg	☼	09/07/18 12:27	09/15/18 08:12	1
1,2,3,6,7,8-HxCDD	ND		0.0034	0.00016	ug/Kg	☼	09/07/18 12:27	09/15/18 08:12	1
1,2,3,6,7,8-HxCDF	ND		0.0034	0.000061	ug/Kg	☼	09/07/18 12:27	09/15/18 08:12	1
1,2,3,7,8,9-HxCDD	ND		0.0034	0.00014	ug/Kg	☼	09/07/18 12:27	09/15/18 08:12	1
1,2,3,7,8,9-HxCDF	0.00088	J B	0.0034	0.000051	ug/Kg	☼	09/07/18 12:27	09/15/18 08:12	1
1,2,3,7,8-PeCDD	ND		0.0034	0.000098	ug/Kg	☼	09/07/18 12:27	09/15/18 08:12	1
1,2,3,7,8-PeCDF	0.00015	J B	0.0034	0.000060	ug/Kg	☼	09/07/18 12:27	09/15/18 08:12	1
2,3,4,6,7,8-HxCDF	ND		0.0034	0.000048	ug/Kg	☼	09/07/18 12:27	09/15/18 08:12	1
2,3,4,7,8-PeCDF	ND		0.0034	0.000062	ug/Kg	☼	09/07/18 12:27	09/15/18 08:12	1
2,3,7,8-TCDD	ND		0.00068	0.000085	ug/Kg	☼	09/07/18 12:27	09/15/18 08:12	1
2,3,7,8-TCDF	0.00017	J B	0.00068	0.000046	ug/Kg	☼	09/07/18 12:27	09/15/18 08:12	1
OCDD	0.012	B	0.0068	0.00030	ug/Kg	☼	09/07/18 12:27	09/15/18 08:12	1
OCDF	ND		0.0068	0.00026	ug/Kg	☼	09/07/18 12:27	09/15/18 08:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	28		23 - 140	09/07/18 12:27	09/15/18 08:12	1
13C-1,2,3,4,6,7,8-HpCDF	24	*	28 - 143	09/07/18 12:27	09/15/18 08:12	1
13C-1,2,3,4,7,8,9-HpCDF	28		26 - 138	09/07/18 12:27	09/15/18 08:12	1
13C-1,2,3,4,7,8-HxCDD	38		32 - 141	09/07/18 12:27	09/15/18 08:12	1
13C-1,2,3,4,7,8-HxCDF	39		26 - 152	09/07/18 12:27	09/15/18 08:12	1
13C-1,2,3,6,7,8-HxCDD	38		28 - 130	09/07/18 12:27	09/15/18 08:12	1
13C-1,2,3,6,7,8-HxCDF	39		26 - 123	09/07/18 12:27	09/15/18 08:12	1
13C-1,2,3,7,8,9-HxCDF	40		29 - 147	09/07/18 12:27	09/15/18 08:12	1
13C-1,2,3,7,8-PeCDD	43		25 - 181	09/07/18 12:27	09/15/18 08:12	1
13C-1,2,3,7,8-PeCDF	49		24 - 185	09/07/18 12:27	09/15/18 08:12	1
13C-2,3,4,6,7,8-HxCDF	44		28 - 136	09/07/18 12:27	09/15/18 08:12	1
13C-2,3,4,7,8-PeCDF	53		21 - 178	09/07/18 12:27	09/15/18 08:12	1
13C-2,3,7,8-TCDD	59		25 - 164	09/07/18 12:27	09/15/18 08:12	1
13C-2,3,7,8-TCDF	58		24 - 169	09/07/18 12:27	09/15/18 08:12	1
13C-OCDD	20		17 - 157	09/07/18 12:27	09/15/18 08:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	67		35 - 197	09/07/18 12:27	09/15/18 08:12	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S157-14to15.9

Lab Sample ID: 580-79672-45

Date Collected: 08/17/18 10:50

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 74.5

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	0.0012	J q	0.0033	0.00024	ug/Kg	☼	09/07/18 12:27	09/15/18 08:55	1
1,2,3,4,6,7,8-HpCDF	ND		0.0033	0.00011	ug/Kg	☼	09/07/18 12:27	09/15/18 08:55	1
1,2,3,4,7,8,9-HpCDF	ND		0.0033	0.00012	ug/Kg	☼	09/07/18 12:27	09/15/18 08:55	1
1,2,3,4,7,8-HxCDD	ND		0.0033	0.00011	ug/Kg	☼	09/07/18 12:27	09/15/18 08:55	1
1,2,3,4,7,8-HxCDF	ND		0.0033	0.000045	ug/Kg	☼	09/07/18 12:27	09/15/18 08:55	1
1,2,3,6,7,8-HxCDD	ND		0.0033	0.00011	ug/Kg	☼	09/07/18 12:27	09/15/18 08:55	1
1,2,3,6,7,8-HxCDF	0.00010	J q	0.0033	0.000044	ug/Kg	☼	09/07/18 12:27	09/15/18 08:55	1
1,2,3,7,8,9-HxCDD	0.00025	J q	0.0033	0.00010	ug/Kg	☼	09/07/18 12:27	09/15/18 08:55	1
1,2,3,7,8,9-HxCDF	0.00043	J q B	0.0033	0.000034	ug/Kg	☼	09/07/18 12:27	09/15/18 08:55	1
1,2,3,7,8-PeCDD	ND		0.0033	0.000077	ug/Kg	☼	09/07/18 12:27	09/15/18 08:55	1
1,2,3,7,8-PeCDF	ND		0.0033	0.000061	ug/Kg	☼	09/07/18 12:27	09/15/18 08:55	1
2,3,4,6,7,8-HxCDF	ND		0.0033	0.000034	ug/Kg	☼	09/07/18 12:27	09/15/18 08:55	1
2,3,4,7,8-PeCDF	ND		0.0033	0.000060	ug/Kg	☼	09/07/18 12:27	09/15/18 08:55	1
2,3,7,8-TCDD	ND		0.00067	0.000080	ug/Kg	☼	09/07/18 12:27	09/15/18 08:55	1
2,3,7,8-TCDF	ND		0.00067	0.000038	ug/Kg	☼	09/07/18 12:27	09/15/18 08:55	1
OCDD	0.014	B	0.0067	0.00024	ug/Kg	☼	09/07/18 12:27	09/15/18 08:55	1
OCDF	ND		0.0067	0.00021	ug/Kg	☼	09/07/18 12:27	09/15/18 08:55	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	33		23 - 140	09/07/18 12:27	09/15/18 08:55	1
13C-1,2,3,4,6,7,8-HpCDF	27	*	28 - 143	09/07/18 12:27	09/15/18 08:55	1
13C-1,2,3,4,7,8,9-HpCDF	36		26 - 138	09/07/18 12:27	09/15/18 08:55	1
13C-1,2,3,4,7,8-HxCDD	47		32 - 141	09/07/18 12:27	09/15/18 08:55	1
13C-1,2,3,4,7,8-HxCDF	44		26 - 152	09/07/18 12:27	09/15/18 08:55	1
13C-1,2,3,6,7,8-HxCDD	41		28 - 130	09/07/18 12:27	09/15/18 08:55	1
13C-1,2,3,6,7,8-HxCDF	44		26 - 123	09/07/18 12:27	09/15/18 08:55	1
13C-1,2,3,7,8,9-HxCDF	46		29 - 147	09/07/18 12:27	09/15/18 08:55	1
13C-1,2,3,7,8-PeCDD	51		25 - 181	09/07/18 12:27	09/15/18 08:55	1
13C-1,2,3,7,8-PeCDF	57		24 - 185	09/07/18 12:27	09/15/18 08:55	1
13C-2,3,4,6,7,8-HxCDF	47		28 - 136	09/07/18 12:27	09/15/18 08:55	1
13C-2,3,4,7,8-PeCDF	60		21 - 178	09/07/18 12:27	09/15/18 08:55	1
13C-2,3,7,8-TCDD	61		25 - 164	09/07/18 12:27	09/15/18 08:55	1
13C-2,3,7,8-TCDF	60		24 - 169	09/07/18 12:27	09/15/18 08:55	1
13C-OCDD	26		17 - 157	09/07/18 12:27	09/15/18 08:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	66		35 - 197	09/07/18 12:27	09/15/18 08:55	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-RB-SS-180816-1110

Lab Sample ID: 580-79672-46

Date Collected: 08/16/18 11:10

Matrix: Water

Date Received: 08/17/18 15:30

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	5.6	J B	51	0.19	pg/L		08/28/18 08:43	09/01/18 09:54	1
1,2,3,4,6,7,8-HpCDF	1.2	J q B	51	0.31	pg/L		08/28/18 08:43	09/01/18 09:54	1
1,2,3,4,7,8,9-HpCDF	0.92	J q B	51	0.35	pg/L		08/28/18 08:43	09/01/18 09:54	1
1,2,3,4,7,8-HxCDD	1.4	J B	51	0.23	pg/L		08/28/18 08:43	09/01/18 09:54	1
1,2,3,4,7,8-HxCDF	ND		51	0.24	pg/L		08/28/18 08:43	09/01/18 09:54	1
1,2,3,6,7,8-HxCDD	0.30	J q B	51	0.21	pg/L		08/28/18 08:43	09/01/18 09:54	1
1,2,3,6,7,8-HxCDF	ND		51	0.23	pg/L		08/28/18 08:43	09/01/18 09:54	1
1,2,3,7,8,9-HxCDD	ND		51	0.20	pg/L		08/28/18 08:43	09/01/18 09:54	1
1,2,3,7,8,9-HxCDF	1.9	J B	51	0.14	pg/L		08/28/18 08:43	09/01/18 09:54	1
1,2,3,7,8-PeCDD	ND		51	0.22	pg/L		08/28/18 08:43	09/01/18 09:54	1
1,2,3,7,8-PeCDF	ND		51	0.18	pg/L		08/28/18 08:43	09/01/18 09:54	1
2,3,4,6,7,8-HxCDF	0.33	J	51	0.24	pg/L		08/28/18 08:43	09/01/18 09:54	1
2,3,4,7,8-PeCDF	ND		51	0.18	pg/L		08/28/18 08:43	09/01/18 09:54	1
2,3,7,8-TCDD	2.1	J q	10	0.16	pg/L		08/28/18 08:43	09/01/18 09:54	1
2,3,7,8-TCDF	0.81	J B	10	0.091	pg/L		08/28/18 08:43	09/01/18 09:54	1
OCDD	110	B	100	0.25	pg/L		08/28/18 08:43	09/01/18 09:54	1
OCDF	6.1	J B	100	0.15	pg/L		08/28/18 08:43	09/01/18 09:54	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	92		23 - 140	08/28/18 08:43	09/01/18 09:54	1
13C-1,2,3,4,6,7,8-HpCDF	83		28 - 143	08/28/18 08:43	09/01/18 09:54	1
13C-1,2,3,4,7,8,9-HpCDF	84		26 - 138	08/28/18 08:43	09/01/18 09:54	1
13C-1,2,3,4,7,8-HxCDD	72		32 - 141	08/28/18 08:43	09/01/18 09:54	1
13C-1,2,3,4,7,8-HxCDF	72		26 - 152	08/28/18 08:43	09/01/18 09:54	1
13C-1,2,3,6,7,8-HxCDD	77		28 - 130	08/28/18 08:43	09/01/18 09:54	1
13C-1,2,3,6,7,8-HxCDF	77		26 - 123	08/28/18 08:43	09/01/18 09:54	1
13C-1,2,3,7,8,9-HxCDF	75		29 - 147	08/28/18 08:43	09/01/18 09:54	1
13C-1,2,3,7,8-PeCDD	73		25 - 181	08/28/18 08:43	09/01/18 09:54	1
13C-1,2,3,7,8-PeCDF	67		24 - 185	08/28/18 08:43	09/01/18 09:54	1
13C-2,3,4,6,7,8-HxCDF	72		28 - 136	08/28/18 08:43	09/01/18 09:54	1
13C-2,3,4,7,8-PeCDF	68		21 - 178	08/28/18 08:43	09/01/18 09:54	1
13C-2,3,7,8-TCDD	80		25 - 164	08/28/18 08:43	09/01/18 09:54	1
13C-2,3,7,8-TCDF	71		24 - 169	08/28/18 08:43	09/01/18 09:54	1
13C-OCDD	86		17 - 157	08/28/18 08:43	09/01/18 09:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	114		35 - 197	08/28/18 08:43	09/01/18 09:54	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-RB-SS-180817

Lab Sample ID: 580-79672-47

Date Collected: 08/17/18 07:45

Matrix: Water

Date Received: 08/17/18 15:30

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	1.2	J B	50	0.11	pg/L		08/31/18 08:09	09/11/18 17:47	1
1,2,3,4,6,7,8-HpCDF	1.4	J B	50	0.15	pg/L		08/31/18 08:09	09/11/18 17:47	1
1,2,3,4,7,8,9-HpCDF	3.2	J B	50	0.19	pg/L		08/31/18 08:09	09/11/18 17:47	1
1,2,3,4,7,8-HxCDD	1.2	J B q	50	0.13	pg/L		08/31/18 08:09	09/11/18 17:47	1
1,2,3,4,7,8-HxCDF	0.90	J B	50	0.23	pg/L		08/31/18 08:09	09/11/18 17:47	1
1,2,3,6,7,8-HxCDD	0.41	J B q	50	0.13	pg/L		08/31/18 08:09	09/11/18 17:47	1
1,2,3,6,7,8-HxCDF	0.64	J B q	50	0.23	pg/L		08/31/18 08:09	09/11/18 17:47	1
1,2,3,7,8,9-HxCDD	0.42	J B q	50	0.12	pg/L		08/31/18 08:09	09/11/18 17:47	1
1,2,3,7,8,9-HxCDF	9.4	J B	50	0.17	pg/L		08/31/18 08:09	09/11/18 17:47	1
1,2,3,7,8-PeCDD	ND		50	0.20	pg/L		08/31/18 08:09	09/11/18 17:47	1
1,2,3,7,8-PeCDF	1.5	J B	50	0.21	pg/L		08/31/18 08:09	09/11/18 17:47	1
2,3,4,6,7,8-HxCDF	0.26	J q	50	0.18	pg/L		08/31/18 08:09	09/11/18 17:47	1
2,3,4,7,8-PeCDF	ND		50	0.22	pg/L		08/31/18 08:09	09/11/18 17:47	1
2,3,7,8-TCDD	1.5	J q	10	0.19	pg/L		08/31/18 08:09	09/11/18 17:47	1
2,3,7,8-TCDF	0.28	J B	10	0.093	pg/L		08/31/18 08:09	09/11/18 17:47	1
OCDD	9.6	J B	100	0.15	pg/L		08/31/18 08:09	09/11/18 17:47	1
OCDF	2.4	J B	100	0.15	pg/L		08/31/18 08:09	09/11/18 17:47	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	83		23 - 140	08/31/18 08:09	09/11/18 17:47	1
13C-1,2,3,4,6,7,8-HpCDF	74		28 - 143	08/31/18 08:09	09/11/18 17:47	1
13C-1,2,3,4,7,8,9-HpCDF	76		26 - 138	08/31/18 08:09	09/11/18 17:47	1
13C-1,2,3,4,7,8-HxCDD	71		32 - 141	08/31/18 08:09	09/11/18 17:47	1
13C-1,2,3,4,7,8-HxCDF	73		26 - 152	08/31/18 08:09	09/11/18 17:47	1
13C-1,2,3,6,7,8-HxCDD	72		28 - 130	08/31/18 08:09	09/11/18 17:47	1
13C-1,2,3,6,7,8-HxCDF	75		26 - 123	08/31/18 08:09	09/11/18 17:47	1
13C-1,2,3,7,8,9-HxCDF	71		29 - 147	08/31/18 08:09	09/11/18 17:47	1
13C-1,2,3,7,8-PeCDD	65		25 - 181	08/31/18 08:09	09/11/18 17:47	1
13C-1,2,3,7,8-PeCDF	63		24 - 185	08/31/18 08:09	09/11/18 17:47	1
13C-2,3,4,6,7,8-HxCDF	74		28 - 136	08/31/18 08:09	09/11/18 17:47	1
13C-2,3,4,7,8-PeCDF	64		21 - 178	08/31/18 08:09	09/11/18 17:47	1
13C-2,3,7,8-TCDD	72		25 - 164	08/31/18 08:09	09/11/18 17:47	1
13C-2,3,7,8-TCDF	66		24 - 169	08/31/18 08:09	09/11/18 17:47	1
13C-OCDD	76		17 - 157	08/31/18 08:09	09/11/18 17:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	120		35 - 197	08/31/18 08:09	09/11/18 17:47	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S053-0to2

Lab Sample ID: 580-79672-48

Date Collected: 08/16/18 13:00

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 53.0

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	0.069		0.0047	0.00052	ug/Kg	☼	09/07/18 12:27	09/18/18 16:17	1
1,2,3,4,6,7,8-HpCDF	0.014	B	0.0047	0.00023	ug/Kg	☼	09/07/18 12:27	09/18/18 16:17	1
1,2,3,4,7,8,9-HpCDF	0.0017	J B	0.0047	0.00028	ug/Kg	☼	09/07/18 12:27	09/18/18 16:17	1
1,2,3,4,7,8-HxCDD	0.00079	J B	0.0047	0.000050	ug/Kg	☼	09/07/18 12:27	09/18/18 16:17	1
1,2,3,4,7,8-HxCDF	0.0044	J	0.0047	0.000075	ug/Kg	☼	09/07/18 12:27	09/18/18 16:17	1
1,2,3,6,7,8-HxCDD	0.0028	J	0.0047	0.000049	ug/Kg	☼	09/07/18 12:27	09/18/18 16:17	1
1,2,3,6,7,8-HxCDF	0.0015	J	0.0047	0.000069	ug/Kg	☼	09/07/18 12:27	09/18/18 16:17	1
1,2,3,7,8,9-HxCDD	0.0018	J	0.0047	0.000045	ug/Kg	☼	09/07/18 12:27	09/18/18 16:17	1
1,2,3,7,8,9-HxCDF	0.00092	J B	0.0047	0.000053	ug/Kg	☼	09/07/18 12:27	09/18/18 16:17	1
1,2,3,7,8-PeCDD	0.00040	J	0.0047	0.000043	ug/Kg	☼	09/07/18 12:27	09/18/18 16:17	1
1,2,3,7,8-PeCDF	0.0022	J B	0.0047	0.000081	ug/Kg	☼	09/07/18 12:27	09/18/18 16:17	1
2,3,4,6,7,8-HxCDF	0.00050	J	0.0047	0.000057	ug/Kg	☼	09/07/18 12:27	09/18/18 16:17	1
2,3,4,7,8-PeCDF	0.0010	J	0.0047	0.000089	ug/Kg	☼	09/07/18 12:27	09/18/18 16:17	1
2,3,7,8-TCDD	0.00015	J q	0.00095	0.000040	ug/Kg	☼	09/07/18 12:27	09/18/18 16:17	1
OCDD	0.67	B	0.0095	0.00044	ug/Kg	☼	09/07/18 12:27	09/18/18 16:17	1
OCDF	0.053		0.0095	0.000056	ug/Kg	☼	09/07/18 12:27	09/18/18 16:17	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	54		23 - 140	09/07/18 12:27	09/18/18 16:17	1
13C-1,2,3,4,6,7,8-HpCDF	45		28 - 143	09/07/18 12:27	09/18/18 16:17	1
13C-1,2,3,4,7,8,9-HpCDF	49		26 - 138	09/07/18 12:27	09/18/18 16:17	1
13C-1,2,3,4,7,8-HxCDD	52		32 - 141	09/07/18 12:27	09/18/18 16:17	1
13C-1,2,3,4,7,8-HxCDF	54		26 - 152	09/07/18 12:27	09/18/18 16:17	1
13C-1,2,3,6,7,8-HxCDD	54		28 - 130	09/07/18 12:27	09/18/18 16:17	1
13C-1,2,3,6,7,8-HxCDF	56		26 - 123	09/07/18 12:27	09/18/18 16:17	1
13C-1,2,3,7,8,9-HxCDF	55		29 - 147	09/07/18 12:27	09/18/18 16:17	1
13C-1,2,3,7,8-PeCDD	54		25 - 181	09/07/18 12:27	09/18/18 16:17	1
13C-1,2,3,7,8-PeCDF	50		24 - 185	09/07/18 12:27	09/18/18 16:17	1
13C-2,3,4,6,7,8-HxCDF	55		28 - 136	09/07/18 12:27	09/18/18 16:17	1
13C-2,3,4,7,8-PeCDF	50		21 - 178	09/07/18 12:27	09/18/18 16:17	1
13C-2,3,7,8-TCDD	55		25 - 164	09/07/18 12:27	09/18/18 16:17	1
13C-OCDD	45		17 - 157	09/07/18 12:27	09/18/18 16:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	75		35 - 197	09/07/18 12:27	09/18/18 16:17	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0025	B	0.00095	0.00012	ug/Kg	☼	09/07/18 12:27	09/19/18 17:33	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	56		24 - 169	09/07/18 12:27	09/19/18 17:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	71		35 - 197	09/07/18 12:27	09/19/18 17:33	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S053-2to4

Lab Sample ID: 580-79672-49

Date Collected: 08/16/18 13:05

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 57.8

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	0.24		0.0044	0.0014	ug/Kg	☼	09/07/18 12:27	09/18/18 17:03	1
1,2,3,4,6,7,8-HpCDF	0.081	B	0.0044	0.00082	ug/Kg	☼	09/07/18 12:27	09/18/18 17:03	1
1,2,3,4,7,8,9-HpCDF	0.015	B	0.0044	0.0013	ug/Kg	☼	09/07/18 12:27	09/18/18 17:03	1
1,2,3,4,7,8-HxCDD	0.0019	J B	0.0044	0.00015	ug/Kg	☼	09/07/18 12:27	09/18/18 17:03	1
1,2,3,4,7,8-HxCDF	0.083		0.0044	0.00050	ug/Kg	☼	09/07/18 12:27	09/18/18 17:03	1
1,2,3,6,7,8-HxCDD	0.0095		0.0044	0.00015	ug/Kg	☼	09/07/18 12:27	09/18/18 17:03	1
1,2,3,6,7,8-HxCDF	0.028		0.0044	0.00045	ug/Kg	☼	09/07/18 12:27	09/18/18 17:03	1
1,2,3,7,8,9-HxCDD	0.0041	J	0.0044	0.00014	ug/Kg	☼	09/07/18 12:27	09/18/18 17:03	1
1,2,3,7,8,9-HxCDF	0.0025	J B	0.0044	0.00036	ug/Kg	☼	09/07/18 12:27	09/18/18 17:03	1
1,2,3,7,8-PeCDD	0.0011	J	0.0044	0.000098	ug/Kg	☼	09/07/18 12:27	09/18/18 17:03	1
1,2,3,7,8-PeCDF	0.047	B	0.0044	0.00062	ug/Kg	☼	09/07/18 12:27	09/18/18 17:03	1
2,3,4,6,7,8-HxCDF	0.0041	J	0.0044	0.00040	ug/Kg	☼	09/07/18 12:27	09/18/18 17:03	1
2,3,4,7,8-PeCDF	0.014		0.0044	0.00062	ug/Kg	☼	09/07/18 12:27	09/18/18 17:03	1
2,3,7,8-TCDD	0.00059	J q	0.00087	0.000049	ug/Kg	☼	09/07/18 12:27	09/18/18 17:03	1
OCDD	3.6	E B	0.0087	0.0014	ug/Kg	☼	09/07/18 12:27	09/18/18 17:03	1
OCDF	0.26		0.0087	0.00012	ug/Kg	☼	09/07/18 12:27	09/18/18 17:03	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	41		23 - 140	09/07/18 12:27	09/18/18 17:03	1
13C-1,2,3,4,6,7,8-HpCDF	35		28 - 143	09/07/18 12:27	09/18/18 17:03	1
13C-1,2,3,4,7,8,9-HpCDF	32		26 - 138	09/07/18 12:27	09/18/18 17:03	1
13C-1,2,3,4,7,8-HxCDD	44		32 - 141	09/07/18 12:27	09/18/18 17:03	1
13C-1,2,3,4,7,8-HxCDF	47		26 - 152	09/07/18 12:27	09/18/18 17:03	1
13C-1,2,3,6,7,8-HxCDD	45		28 - 130	09/07/18 12:27	09/18/18 17:03	1
13C-1,2,3,6,7,8-HxCDF	49		26 - 123	09/07/18 12:27	09/18/18 17:03	1
13C-1,2,3,7,8,9-HxCDF	46		29 - 147	09/07/18 12:27	09/18/18 17:03	1
13C-1,2,3,7,8-PeCDD	49		25 - 181	09/07/18 12:27	09/18/18 17:03	1
13C-1,2,3,7,8-PeCDF	47		24 - 185	09/07/18 12:27	09/18/18 17:03	1
13C-2,3,4,6,7,8-HxCDF	45		28 - 136	09/07/18 12:27	09/18/18 17:03	1
13C-2,3,4,7,8-PeCDF	47		21 - 178	09/07/18 12:27	09/18/18 17:03	1
13C-2,3,7,8-TCDD	51		25 - 164	09/07/18 12:27	09/18/18 17:03	1
13C-OCDD	35		17 - 157	09/07/18 12:27	09/18/18 17:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	77		35 - 197	09/07/18 12:27	09/18/18 17:03	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	0.019	B	0.00087	0.00024	ug/Kg	☼	09/07/18 12:27	09/19/18 18:11	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	52		24 - 169	09/07/18 12:27	09/19/18 18:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	70		35 - 197	09/07/18 12:27	09/19/18 18:11	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S053-4to6

Lab Sample ID: 580-79672-50

Date Collected: 08/16/18 13:10

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 62.6

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	0.14		0.0039	0.00051	ug/Kg	☼	09/07/18 12:27	09/18/18 17:49	1
1,2,3,4,6,7,8-HpCDF	0.12	B	0.0039	0.00048	ug/Kg	☼	09/07/18 12:27	09/18/18 17:49	1
1,2,3,4,7,8,9-HpCDF	0.0047	B	0.0039	0.00081	ug/Kg	☼	09/07/18 12:27	09/18/18 17:49	1
1,2,3,4,7,8-HxCDD	0.00098	J B	0.0039	0.00010	ug/Kg	☼	09/07/18 12:27	09/18/18 17:49	1
1,2,3,4,7,8-HxCDF	0.021		0.0039	0.00050	ug/Kg	☼	09/07/18 12:27	09/18/18 17:49	1
1,2,3,6,7,8-HxCDD	0.0061		0.0039	0.000095	ug/Kg	☼	09/07/18 12:27	09/18/18 17:49	1
1,2,3,6,7,8-HxCDF	0.0096		0.0039	0.00044	ug/Kg	☼	09/07/18 12:27	09/18/18 17:49	1
1,2,3,7,8,9-HxCDD	0.0028	J	0.0039	0.000091	ug/Kg	☼	09/07/18 12:27	09/18/18 17:49	1
1,2,3,7,8,9-HxCDF	0.0011	J B	0.0039	0.00036	ug/Kg	☼	09/07/18 12:27	09/18/18 17:49	1
1,2,3,7,8-PeCDD	0.00093	J	0.0039	0.000081	ug/Kg	☼	09/07/18 12:27	09/18/18 17:49	1
1,2,3,7,8-PeCDF	0.0081	B	0.0039	0.00030	ug/Kg	☼	09/07/18 12:27	09/18/18 17:49	1
2,3,4,6,7,8-HxCDF	0.0024	J	0.0039	0.00037	ug/Kg	☼	09/07/18 12:27	09/18/18 17:49	1
2,3,4,7,8-PeCDF	0.0039		0.0039	0.00028	ug/Kg	☼	09/07/18 12:27	09/18/18 17:49	1
2,3,7,8-TCDD	0.00039	J	0.00078	0.000034	ug/Kg	☼	09/07/18 12:27	09/18/18 17:49	1
OCDD	1.8	B	0.0078	0.00053	ug/Kg	☼	09/07/18 12:27	09/18/18 17:49	1
OCDF	0.14		0.0078	0.000078	ug/Kg	☼	09/07/18 12:27	09/18/18 17:49	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	41		23 - 140	09/07/18 12:27	09/18/18 17:49	1
13C-1,2,3,4,6,7,8-HpCDF	34		28 - 143	09/07/18 12:27	09/18/18 17:49	1
13C-1,2,3,4,7,8,9-HpCDF	27		26 - 138	09/07/18 12:27	09/18/18 17:49	1
13C-1,2,3,4,7,8-HxCDD	42		32 - 141	09/07/18 12:27	09/18/18 17:49	1
13C-1,2,3,4,7,8-HxCDF	50		26 - 152	09/07/18 12:27	09/18/18 17:49	1
13C-1,2,3,6,7,8-HxCDD	44		28 - 130	09/07/18 12:27	09/18/18 17:49	1
13C-1,2,3,6,7,8-HxCDF	52		26 - 123	09/07/18 12:27	09/18/18 17:49	1
13C-1,2,3,7,8,9-HxCDF	47		29 - 147	09/07/18 12:27	09/18/18 17:49	1
13C-1,2,3,7,8-PeCDD	54		25 - 181	09/07/18 12:27	09/18/18 17:49	1
13C-1,2,3,7,8-PeCDF	48		24 - 185	09/07/18 12:27	09/18/18 17:49	1
13C-2,3,4,6,7,8-HxCDF	48		28 - 136	09/07/18 12:27	09/18/18 17:49	1
13C-2,3,4,7,8-PeCDF	47		21 - 178	09/07/18 12:27	09/18/18 17:49	1
13C-2,3,7,8-TCDD	55		25 - 164	09/07/18 12:27	09/18/18 17:49	1
13C-OCDD	35		17 - 157	09/07/18 12:27	09/18/18 17:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	84		35 - 197	09/07/18 12:27	09/18/18 17:49	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0047	B	0.00078	0.00043	ug/Kg	☼	09/07/18 12:27	09/19/18 18:49	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	57		24 - 169	09/07/18 12:27	09/19/18 18:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	70		35 - 197	09/07/18 12:27	09/19/18 18:49	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S053-6to8

Date Collected: 08/16/18 13:15

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79672-51

Matrix: Solid

Percent Solids: 65.6

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.0032	J	0.0038	0.000073	ug/Kg	☼	09/07/18 12:27	09/18/18 18:35	1
1,2,3,4,6,7,8-HpCDF	0.0029	J B	0.0038	0.000070	ug/Kg	☼	09/07/18 12:27	09/18/18 18:35	1
1,2,3,4,7,8,9-HpCDF	0.00057	J B	0.0038	0.00011	ug/Kg	☼	09/07/18 12:27	09/18/18 18:35	1
1,2,3,4,7,8-HxCDD	0.00012	J q B	0.0038	0.000042	ug/Kg	☼	09/07/18 12:27	09/18/18 18:35	1
1,2,3,4,7,8-HxCDF	0.00030	J q	0.0038	0.000064	ug/Kg	☼	09/07/18 12:27	09/18/18 18:35	1
1,2,3,6,7,8-HxCDD	0.00018	J	0.0038	0.000045	ug/Kg	☼	09/07/18 12:27	09/18/18 18:35	1
1,2,3,6,7,8-HxCDF	0.00029	J	0.0038	0.000060	ug/Kg	☼	09/07/18 12:27	09/18/18 18:35	1
1,2,3,7,8,9-HxCDD	0.00025	J	0.0038	0.000040	ug/Kg	☼	09/07/18 12:27	09/18/18 18:35	1
1,2,3,7,8,9-HxCDF	0.0011	J B	0.0038	0.000043	ug/Kg	☼	09/07/18 12:27	09/18/18 18:35	1
1,2,3,7,8-PeCDD	0.000050	J	0.0038	0.000032	ug/Kg	☼	09/07/18 12:27	09/18/18 18:35	1
1,2,3,7,8-PeCDF	0.00031	J B	0.0038	0.000044	ug/Kg	☼	09/07/18 12:27	09/18/18 18:35	1
2,3,4,6,7,8-HxCDF	ND		0.0038	0.000050	ug/Kg	☼	09/07/18 12:27	09/18/18 18:35	1
2,3,4,7,8-PeCDF	0.00014	J	0.0038	0.000040	ug/Kg	☼	09/07/18 12:27	09/18/18 18:35	1
2,3,7,8-TCDD	ND		0.00076	0.000029	ug/Kg	☼	09/07/18 12:27	09/18/18 18:35	1
2,3,7,8-TCDF	0.00035	J B	0.00076	0.000020	ug/Kg	☼	09/07/18 12:27	09/18/18 18:35	1
OCDD	0.036	B	0.0076	0.00012	ug/Kg	☼	09/07/18 12:27	09/18/18 18:35	1
OCDF	0.0026	J	0.0076	0.00010	ug/Kg	☼	09/07/18 12:27	09/18/18 18:35	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	22	*	23 - 140	09/07/18 12:27	09/18/18 18:35	1
13C-1,2,3,4,6,7,8-HpCDF	18	*	28 - 143	09/07/18 12:27	09/18/18 18:35	1
13C-1,2,3,4,7,8,9-HpCDF	16	*	26 - 138	09/07/18 12:27	09/18/18 18:35	1
13C-1,2,3,4,7,8-HxCDD	31	*	32 - 141	09/07/18 12:27	09/18/18 18:35	1
13C-1,2,3,4,7,8-HxCDF	31		26 - 152	09/07/18 12:27	09/18/18 18:35	1
13C-1,2,3,6,7,8-HxCDD	28		28 - 130	09/07/18 12:27	09/18/18 18:35	1
13C-1,2,3,6,7,8-HxCDF	32		26 - 123	09/07/18 12:27	09/18/18 18:35	1
13C-1,2,3,7,8,9-HxCDF	33		29 - 147	09/07/18 12:27	09/18/18 18:35	1
13C-1,2,3,7,8-PeCDD	36		25 - 181	09/07/18 12:27	09/18/18 18:35	1
13C-1,2,3,7,8-PeCDF	36		24 - 185	09/07/18 12:27	09/18/18 18:35	1
13C-2,3,4,6,7,8-HxCDF	31		28 - 136	09/07/18 12:27	09/18/18 18:35	1
13C-2,3,4,7,8-PeCDF	41		21 - 178	09/07/18 12:27	09/18/18 18:35	1
13C-2,3,7,8-TCDD	45		25 - 164	09/07/18 12:27	09/18/18 18:35	1
13C-2,3,7,8-TCDF	48		24 - 169	09/07/18 12:27	09/18/18 18:35	1
13C-OCDD	16	*	17 - 157	09/07/18 12:27	09/18/18 18:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	75		35 - 197	09/07/18 12:27	09/18/18 18:35	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S053-8to10

Date Collected: 08/16/18 13:20

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79672-52

Matrix: Solid

Percent Solids: 69.0

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	0.0020	J	0.0036	0.000023	ug/Kg	✱	09/07/18 12:27	09/17/18 16:31	1
1,2,3,4,6,7,8-HpCDF	0.00014	J q B	0.0036	0.000015	ug/Kg	✱	09/07/18 12:27	09/17/18 16:31	1
1,2,3,4,7,8,9-HpCDF	0.00029	J B	0.0036	0.000017	ug/Kg	✱	09/07/18 12:27	09/17/18 16:31	1
1,2,3,4,7,8-HxCDD	0.00015	J B	0.0036	0.000022	ug/Kg	✱	09/07/18 12:27	09/17/18 16:31	1
1,2,3,4,7,8-HxCDF	0.000080	J	0.0036	0.000023	ug/Kg	✱	09/07/18 12:27	09/17/18 16:31	1
1,2,3,6,7,8-HxCDD	0.00014	J	0.0036	0.000023	ug/Kg	✱	09/07/18 12:27	09/17/18 16:31	1
1,2,3,6,7,8-HxCDF	0.000059	J	0.0036	0.000022	ug/Kg	✱	09/07/18 12:27	09/17/18 16:31	1
1,2,3,7,8,9-HxCDD	0.00031	J	0.0036	0.000021	ug/Kg	✱	09/07/18 12:27	09/17/18 16:31	1
1,2,3,7,8,9-HxCDF	0.00085	J B	0.0036	0.000016	ug/Kg	✱	09/07/18 12:27	09/17/18 16:31	1
1,2,3,7,8-PeCDD	ND		0.0036	0.000024	ug/Kg	✱	09/07/18 12:27	09/17/18 16:31	1
1,2,3,7,8-PeCDF	0.00016	J B	0.0036	0.000016	ug/Kg	✱	09/07/18 12:27	09/17/18 16:31	1
2,3,4,6,7,8-HxCDF	0.000039	J q	0.0036	0.000017	ug/Kg	✱	09/07/18 12:27	09/17/18 16:31	1
2,3,4,7,8-PeCDF	0.000091	J	0.0036	0.000018	ug/Kg	✱	09/07/18 12:27	09/17/18 16:31	1
2,3,7,8-TCDD	ND		0.00072	0.000025	ug/Kg	✱	09/07/18 12:27	09/17/18 16:31	1
2,3,7,8-TCDF	0.00023	J B	0.00072	0.000012	ug/Kg	✱	09/07/18 12:27	09/17/18 16:31	1
OCDD	0.019	B	0.0072	0.000025	ug/Kg	✱	09/07/18 12:27	09/17/18 16:31	1
OCDF	0.00037	J	0.0072	0.000024	ug/Kg	✱	09/07/18 12:27	09/17/18 16:31	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	50		23 - 140	09/07/18 12:27	09/17/18 16:31	1
13C-1,2,3,4,6,7,8-HpCDF	45		28 - 143	09/07/18 12:27	09/17/18 16:31	1
13C-1,2,3,4,7,8,9-HpCDF	47		26 - 138	09/07/18 12:27	09/17/18 16:31	1
13C-1,2,3,4,7,8-HxCDD	52		32 - 141	09/07/18 12:27	09/17/18 16:31	1
13C-1,2,3,4,7,8-HxCDF	52		26 - 152	09/07/18 12:27	09/17/18 16:31	1
13C-1,2,3,6,7,8-HxCDD	51		28 - 130	09/07/18 12:27	09/17/18 16:31	1
13C-1,2,3,6,7,8-HxCDF	55		26 - 123	09/07/18 12:27	09/17/18 16:31	1
13C-1,2,3,7,8,9-HxCDF	53		29 - 147	09/07/18 12:27	09/17/18 16:31	1
13C-1,2,3,7,8-PeCDD	49		25 - 181	09/07/18 12:27	09/17/18 16:31	1
13C-1,2,3,7,8-PeCDF	47		24 - 185	09/07/18 12:27	09/17/18 16:31	1
13C-2,3,4,6,7,8-HxCDF	54		28 - 136	09/07/18 12:27	09/17/18 16:31	1
13C-2,3,4,7,8-PeCDF	47		21 - 178	09/07/18 12:27	09/17/18 16:31	1
13C-2,3,7,8-TCDD	53		25 - 164	09/07/18 12:27	09/17/18 16:31	1
13C-2,3,7,8-TCDF	49		24 - 169	09/07/18 12:27	09/17/18 16:31	1
13C-OCDD	42		17 - 157	09/07/18 12:27	09/17/18 16:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	73		35 - 197	09/07/18 12:27	09/17/18 16:31	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S053-10to12.4

Lab Sample ID: 580-79672-53

Date Collected: 08/16/18 15:25

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 66.4

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	0.0035	J	0.0037	0.00050	ug/Kg	☼	09/07/18 12:27	09/17/18 17:17	1
1,2,3,4,6,7,8-HpCDF	0.0016	J B	0.0037	0.00058	ug/Kg	☼	09/07/18 12:27	09/17/18 17:17	1
1,2,3,4,7,8,9-HpCDF	0.0012	J q B	0.0037	0.00061	ug/Kg	☼	09/07/18 12:27	09/17/18 17:17	1
1,2,3,4,7,8-HxCDD	ND		0.0037	0.00038	ug/Kg	☼	09/07/18 12:27	09/17/18 17:17	1
1,2,3,4,7,8-HxCDF	ND		0.0037	0.00037	ug/Kg	☼	09/07/18 12:27	09/17/18 17:17	1
1,2,3,6,7,8-HxCDD	ND		0.0037	0.00038	ug/Kg	☼	09/07/18 12:27	09/17/18 17:17	1
1,2,3,6,7,8-HxCDF	ND		0.0037	0.00033	ug/Kg	☼	09/07/18 12:27	09/17/18 17:17	1
1,2,3,7,8,9-HxCDD	ND		0.0037	0.00035	ug/Kg	☼	09/07/18 12:27	09/17/18 17:17	1
1,2,3,7,8,9-HxCDF	0.0017	J B	0.0037	0.00022	ug/Kg	☼	09/07/18 12:27	09/17/18 17:17	1
1,2,3,7,8-PeCDD	ND		0.0037	0.00058	ug/Kg	☼	09/07/18 12:27	09/17/18 17:17	1
1,2,3,7,8-PeCDF	ND		0.0037	0.00042	ug/Kg	☼	09/07/18 12:27	09/17/18 17:17	1
2,3,4,6,7,8-HxCDF	ND		0.0037	0.00025	ug/Kg	☼	09/07/18 12:27	09/17/18 17:17	1
2,3,4,7,8-PeCDF	ND		0.0037	0.00041	ug/Kg	☼	09/07/18 12:27	09/17/18 17:17	1
2,3,7,8-TCDD	ND		0.00074	0.00049	ug/Kg	☼	09/07/18 12:27	09/17/18 17:17	1
2,3,7,8-TCDF	ND		0.00074	0.00022	ug/Kg	☼	09/07/18 12:27	09/17/18 17:17	1
OCDD	0.050	B	0.0074	0.0012	ug/Kg	☼	09/07/18 12:27	09/17/18 17:17	1
OCDF	0.0038	J	0.0074	0.0014	ug/Kg	☼	09/07/18 12:27	09/17/18 17:17	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	25		23 - 140	09/07/18 12:27	09/17/18 17:17	1
13C-1,2,3,4,6,7,8-HpCDF	20	*	28 - 143	09/07/18 12:27	09/17/18 17:17	1
13C-1,2,3,4,7,8,9-HpCDF	26		26 - 138	09/07/18 12:27	09/17/18 17:17	1
13C-1,2,3,4,7,8-HxCDD	31	*	32 - 141	09/07/18 12:27	09/17/18 17:17	1
13C-1,2,3,4,7,8-HxCDF	32		26 - 152	09/07/18 12:27	09/17/18 17:17	1
13C-1,2,3,6,7,8-HxCDD	34		28 - 130	09/07/18 12:27	09/17/18 17:17	1
13C-1,2,3,6,7,8-HxCDF	35		26 - 123	09/07/18 12:27	09/17/18 17:17	1
13C-1,2,3,7,8,9-HxCDF	39		29 - 147	09/07/18 12:27	09/17/18 17:17	1
13C-1,2,3,7,8-PeCDD	37		25 - 181	09/07/18 12:27	09/17/18 17:17	1
13C-1,2,3,7,8-PeCDF	37		24 - 185	09/07/18 12:27	09/17/18 17:17	1
13C-2,3,4,6,7,8-HxCDF	37		28 - 136	09/07/18 12:27	09/17/18 17:17	1
13C-2,3,4,7,8-PeCDF	42		21 - 178	09/07/18 12:27	09/17/18 17:17	1
13C-2,3,7,8-TCDD	49		25 - 164	09/07/18 12:27	09/17/18 17:17	1
13C-2,3,7,8-TCDF	52		24 - 169	09/07/18 12:27	09/17/18 17:17	1
13C-OCDD	16	*	17 - 157	09/07/18 12:27	09/17/18 17:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	74		35 - 197	09/07/18 12:27	09/17/18 17:17	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S113(A)-2.2to4.6D

Lab Sample ID: 580-79672-54

Date Collected: 08/15/18 15:30

Matrix: Solid

Date Received: 08/17/18 15:30

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	0.017		0.0032	0.000072	ug/Kg	☼	09/07/18 12:27	09/18/18 19:21	1
1,2,3,4,6,7,8-HpCDF	0.0036	B	0.0032	0.000032	ug/Kg	☼	09/07/18 12:27	09/18/18 19:21	1
1,2,3,4,7,8,9-HpCDF	0.0011	J B	0.0032	0.000034	ug/Kg	☼	09/07/18 12:27	09/18/18 19:21	1
1,2,3,4,7,8-HxCDD	0.00018	J B	0.0032	0.000019	ug/Kg	☼	09/07/18 12:27	09/18/18 19:21	1
1,2,3,4,7,8-HxCDF	0.0041		0.0032	0.000035	ug/Kg	☼	09/07/18 12:27	09/18/18 19:21	1
1,2,3,6,7,8-HxCDD	0.00047	J	0.0032	0.000019	ug/Kg	☼	09/07/18 12:27	09/18/18 19:21	1
1,2,3,6,7,8-HxCDF	0.0011	J	0.0032	0.000031	ug/Kg	☼	09/07/18 12:27	09/18/18 19:21	1
1,2,3,7,8,9-HxCDD	0.00039	J	0.0032	0.000017	ug/Kg	☼	09/07/18 12:27	09/18/18 19:21	1
1,2,3,7,8,9-HxCDF	0.00082	J B	0.0032	0.000038	ug/Kg	☼	09/07/18 12:27	09/18/18 19:21	1
1,2,3,7,8-PeCDD	0.00010	J q	0.0032	0.000018	ug/Kg	☼	09/07/18 12:27	09/18/18 19:21	1
1,2,3,7,8-PeCDF	0.0024	J B	0.0032	0.000030	ug/Kg	☼	09/07/18 12:27	09/18/18 19:21	1
2,3,4,6,7,8-HxCDF	0.00020	J	0.0032	0.000030	ug/Kg	☼	09/07/18 12:27	09/18/18 19:21	1
2,3,4,7,8-PeCDF	0.0010	J	0.0032	0.000024	ug/Kg	☼	09/07/18 12:27	09/18/18 19:21	1
2,3,7,8-TCDD	ND		0.00064	0.000061	ug/Kg	☼	09/07/18 12:27	09/18/18 19:21	1
OCDD	0.19	B	0.0064	0.000066	ug/Kg	☼	09/07/18 12:27	09/18/18 19:21	1
OCDF	0.011		0.0064	0.000036	ug/Kg	☼	09/07/18 12:27	09/18/18 19:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	48		23 - 140	09/07/18 12:27	09/18/18 19:21	1
13C-1,2,3,4,6,7,8-HpCDF	44		28 - 143	09/07/18 12:27	09/18/18 19:21	1
13C-1,2,3,4,7,8,9-HpCDF	57		26 - 138	09/07/18 12:27	09/18/18 19:21	1
13C-1,2,3,4,7,8-HxCDD	60		32 - 141	09/07/18 12:27	09/18/18 19:21	1
13C-1,2,3,4,7,8-HxCDF	64		26 - 152	09/07/18 12:27	09/18/18 19:21	1
13C-1,2,3,6,7,8-HxCDD	55		28 - 130	09/07/18 12:27	09/18/18 19:21	1
13C-1,2,3,6,7,8-HxCDF	62		26 - 123	09/07/18 12:27	09/18/18 19:21	1
13C-1,2,3,7,8,9-HxCDF	42		29 - 147	09/07/18 12:27	09/18/18 19:21	1
13C-1,2,3,7,8-PeCDD	79		25 - 181	09/07/18 12:27	09/18/18 19:21	1
13C-1,2,3,7,8-PeCDF	57		24 - 185	09/07/18 12:27	09/18/18 19:21	1
13C-2,3,4,6,7,8-HxCDF	57		28 - 136	09/07/18 12:27	09/18/18 19:21	1
13C-2,3,4,7,8-PeCDF	82		21 - 178	09/07/18 12:27	09/18/18 19:21	1
13C-2,3,7,8-TCDD	81		25 - 164	09/07/18 12:27	09/18/18 19:21	1
13C-OCDD	46		17 - 157	09/07/18 12:27	09/18/18 19:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	105		35 - 197	09/07/18 12:27	09/18/18 19:21	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0024	B	0.00064	0.000082	ug/Kg	☼	09/07/18 12:27	09/19/18 19:27	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	113		24 - 169	09/07/18 12:27	09/19/18 19:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	112		35 - 197	09/07/18 12:27	09/19/18 19:27	1

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79672-2

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

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 Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
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
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	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
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	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
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 Added	LCS Result	LCS 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

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79672-2

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
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	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	53		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	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-1,2,3,7,8,9-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

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl/4-2,3,7,8-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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
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

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79672-2

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
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

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
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
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

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

Lab Sample ID: MB 320-243331/1-A

Matrix: Water

Analysis Batch: 245063

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 243331

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	1.40	J	50	0.12	pg/L		08/31/18 08:09	09/11/18 13:58	1
1,2,3,4,6,7,8-HpCDF	1.25	J q	50	0.12	pg/L		08/31/18 08:09	09/11/18 13:58	1
1,2,3,4,7,8,9-HpCDF	3.49	J	50	0.16	pg/L		08/31/18 08:09	09/11/18 13:58	1
1,2,3,4,7,8-HxCDD	1.68	J	50	0.14	pg/L		08/31/18 08:09	09/11/18 13:58	1
1,2,3,4,7,8-HxCDF	0.670	J	50	0.29	pg/L		08/31/18 08:09	09/11/18 13:58	1
1,2,3,6,7,8-HxCDD	0.715	J	50	0.14	pg/L		08/31/18 08:09	09/11/18 13:58	1
1,2,3,6,7,8-HxCDF	0.824	J q	50	0.27	pg/L		08/31/18 08:09	09/11/18 13:58	1
1,2,3,7,8,9-HxCDD	0.574	J q	50	0.13	pg/L		08/31/18 08:09	09/11/18 13:58	1
1,2,3,7,8,9-HxCDF	10.5	J	50	0.21	pg/L		08/31/18 08:09	09/11/18 13:58	1
1,2,3,7,8-PeCDD	0.328	J q	50	0.21	pg/L		08/31/18 08:09	09/11/18 13:58	1
1,2,3,7,8-PeCDF	1.93	J	50	0.21	pg/L		08/31/18 08:09	09/11/18 13:58	1
2,3,4,6,7,8-HxCDF	ND		50	0.21	pg/L		08/31/18 08:09	09/11/18 13:58	1
2,3,4,7,8-PeCDF	0.270	J	50	0.22	pg/L		08/31/18 08:09	09/11/18 13:58	1
2,3,7,8-TCDD	ND		10	0.27	pg/L		08/31/18 08:09	09/11/18 13:58	1
2,3,7,8-TCDF	0.477	J	10	0.13	pg/L		08/31/18 08:09	09/11/18 13:58	1

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79672-2

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

Lab Sample ID: MB 320-243331/1-A

Matrix: Water

Analysis Batch: 245063

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 243331

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
OCDD	6.47	J	100	0.14	pg/L		08/31/18 08:09	09/11/18 13:58	1
OCDF	1.86	J q	100	0.25	pg/L		08/31/18 08:09	09/11/18 13:58	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	89		23 - 140	08/31/18 08:09	09/11/18 13:58	1
13C-1,2,3,4,6,7,8-HpCDF	82		28 - 143	08/31/18 08:09	09/11/18 13:58	1
13C-1,2,3,4,7,8,9-HpCDF	84		26 - 138	08/31/18 08:09	09/11/18 13:58	1
13C-1,2,3,4,7,8-HxCDD	82		32 - 141	08/31/18 08:09	09/11/18 13:58	1
13C-1,2,3,4,7,8-HxCDF	86		26 - 152	08/31/18 08:09	09/11/18 13:58	1
13C-1,2,3,6,7,8-HxCDD	84		28 - 130	08/31/18 08:09	09/11/18 13:58	1
13C-1,2,3,6,7,8-HxCDF	89		26 - 123	08/31/18 08:09	09/11/18 13:58	1
13C-1,2,3,7,8,9-HxCDF	83		29 - 147	08/31/18 08:09	09/11/18 13:58	1
13C-1,2,3,7,8-PeCDD	79		25 - 181	08/31/18 08:09	09/11/18 13:58	1
13C-1,2,3,7,8-PeCDF	75		24 - 185	08/31/18 08:09	09/11/18 13:58	1
13C-2,3,4,6,7,8-HxCDF	89		28 - 136	08/31/18 08:09	09/11/18 13:58	1
13C-2,3,4,7,8-PeCDF	77		21 - 178	08/31/18 08:09	09/11/18 13:58	1
13C-2,3,7,8-TCDD	83		25 - 164	08/31/18 08:09	09/11/18 13:58	1
13C-2,3,7,8-TCDF	77		24 - 169	08/31/18 08:09	09/11/18 13:58	1
13C-OCDD	76		17 - 157	08/31/18 08:09	09/11/18 13:58	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	124		35 - 197	08/31/18 08:09	09/11/18 13:58	1

Lab Sample ID: LCS 320-243331/2-A

Matrix: Water

Analysis Batch: 245063

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 243331

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	1000	958		pg/L		96	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	1040		pg/L		104	78 - 138
1,2,3,4,7,8-HxCDD	1000	1040		pg/L		104	70 - 164
1,2,3,4,7,8-HxCDF	1000	1040		pg/L		104	72 - 134
1,2,3,6,7,8-HxCDD	1000	1050		pg/L		105	76 - 134
1,2,3,6,7,8-HxCDF	1000	1050		pg/L		105	84 - 130
1,2,3,7,8,9-HxCDD	1000	1050		pg/L		105	64 - 162
1,2,3,7,8,9-HxCDF	1000	1060		pg/L		106	78 - 130
1,2,3,7,8-PeCDD	1000	991		pg/L		99	70 - 142
1,2,3,7,8-PeCDF	1000	1030		pg/L		103	80 - 134
2,3,4,6,7,8-HxCDF	1000	1040		pg/L		104	70 - 156
2,3,4,7,8-PeCDF	1000	1020		pg/L		102	68 - 160
2,3,7,8-TCDD	200	180		pg/L		90	67 - 158
2,3,7,8-TCDF	200	209		pg/L		105	75 - 158
OCDD	2000	1970		pg/L		99	78 - 144
OCDF	2000	2200		pg/L		110	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	92		26 - 166

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79672-2

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

Lab Sample ID: LCS 320-243331/2-A

Matrix: Water

Analysis Batch: 245063

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 243331

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDF	83		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	85		20 - 186
13C-1,2,3,4,7,8-HxCDD	79		21 - 193
13C-1,2,3,4,7,8-HxCDF	85		19 - 202
13C-1,2,3,6,7,8-HxCDD	83		25 - 163
13C-1,2,3,6,7,8-HxCDF	89		21 - 159
13C-1,2,3,7,8,9-HxCDF	82		17 - 205
13C-1,2,3,7,8-PeCDD	74		21 - 227
13C-1,2,3,7,8-PeCDF	71		21 - 192
13C-2,3,4,6,7,8-HxCDF	86		22 - 176
13C-2,3,4,7,8-PeCDF	72		13 - 328
13C-2,3,7,8-TCDD	78		20 - 175
13C-2,3,7,8-TCDF	72		22 - 152
13C-OCDD	80		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	122		31 - 191

Lab Sample ID: LCSD 320-243331/3-A

Matrix: Water

Analysis Batch: 245063

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 243331

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,6,7,8-HpCDD	1000	959		pg/L		96	70 - 140	0	50
1,2,3,4,6,7,8-HpCDF	1000	1020		pg/L		102	82 - 122	0	50
1,2,3,4,7,8,9-HpCDF	1000	1040		pg/L		104	78 - 138	0	50
1,2,3,4,7,8-HxCDD	1000	1070		pg/L		107	70 - 164	3	50
1,2,3,4,7,8-HxCDF	1000	1050		pg/L		105	72 - 134	1	50
1,2,3,6,7,8-HxCDD	1000	1010		pg/L		101	76 - 134	5	50
1,2,3,6,7,8-HxCDF	1000	1060		pg/L		106	84 - 130	0	50
1,2,3,7,8,9-HxCDD	1000	1060		pg/L		106	64 - 162	0	50
1,2,3,7,8,9-HxCDF	1000	1050		pg/L		105	78 - 130	1	50
1,2,3,7,8-PeCDD	1000	994		pg/L		99	70 - 142	0	50
1,2,3,7,8-PeCDF	1000	1050		pg/L		105	80 - 134	2	50
2,3,4,6,7,8-HxCDF	1000	1050		pg/L		105	70 - 156	1	50
2,3,4,7,8-PeCDF	1000	1030		pg/L		103	68 - 160	0	50
2,3,7,8-TCDD	200	183		pg/L		91	67 - 158	2	50
2,3,7,8-TCDF	200	209		pg/L		105	75 - 158	0	50
OCDD	2000	1930		pg/L		97	78 - 144	2	50
OCDF	2000	2150		pg/L		108	63 - 170	2	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	89		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	82		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	83		20 - 186
13C-1,2,3,4,7,8-HxCDD	76		21 - 193
13C-1,2,3,4,7,8-HxCDF	81		19 - 202
13C-1,2,3,6,7,8-HxCDD	82		25 - 163

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79672-2

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

Lab Sample ID: LCSD 320-243331/3-A

Matrix: Water

Analysis Batch: 245063

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 243331

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,6,7,8-HxCDF	82		21 - 159
13C-1,2,3,7,8,9-HxCDF	80		17 - 205
13C-1,2,3,7,8-PeCDD	76		21 - 227
13C-1,2,3,7,8-PeCDF	72		21 - 192
13C-2,3,4,6,7,8-HxCDF	82		22 - 176
13C-2,3,4,7,8-PeCDF	74		13 - 328
13C-2,3,7,8-TCDD	79		20 - 175
13C-2,3,7,8-TCDF	73		22 - 152
13C-OCDD	81		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
37Cl4-2,3,7,8-TCDD	117		31 - 191

Lab Sample ID: MB 320-243983/1-A

Matrix: Solid

Analysis Batch: 244812

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 243983

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.000181	J	0.0050	0.000014	ug/Kg		09/05/18 15:15	09/10/18 23:20	1
1,2,3,4,6,7,8-HpCDF	0.000199	J q	0.0050	0.000018	ug/Kg		09/05/18 15:15	09/10/18 23:20	1
1,2,3,4,7,8,9-HpCDF	0.000196	J q	0.0050	0.000021	ug/Kg		09/05/18 15:15	09/10/18 23:20	1
1,2,3,4,7,8-HxCDD	0.000160	J	0.0050	0.000021	ug/Kg		09/05/18 15:15	09/10/18 23:20	1
1,2,3,4,7,8-HxCDF	ND		0.0050	0.000025	ug/Kg		09/05/18 15:15	09/10/18 23:20	1
1,2,3,6,7,8-HxCDD	ND		0.0050	0.000020	ug/Kg		09/05/18 15:15	09/10/18 23:20	1
1,2,3,6,7,8-HxCDF	ND		0.0050	0.000023	ug/Kg		09/05/18 15:15	09/10/18 23:20	1
1,2,3,7,8,9-HxCDD	0.000112	J	0.0050	0.000019	ug/Kg		09/05/18 15:15	09/10/18 23:20	1
1,2,3,7,8,9-HxCDF	0.000111	J	0.0050	0.000017	ug/Kg		09/05/18 15:15	09/10/18 23:20	1
1,2,3,7,8-PeCDD	ND		0.0050	0.000029	ug/Kg		09/05/18 15:15	09/10/18 23:20	1
1,2,3,7,8-PeCDF	ND		0.0050	0.000026	ug/Kg		09/05/18 15:15	09/10/18 23:20	1
2,3,4,6,7,8-HxCDF	ND		0.0050	0.000018	ug/Kg		09/05/18 15:15	09/10/18 23:20	1
2,3,4,7,8-PeCDF	ND		0.0050	0.000029	ug/Kg		09/05/18 15:15	09/10/18 23:20	1
2,3,7,8-TCDD	ND		0.0010	0.000032	ug/Kg		09/05/18 15:15	09/10/18 23:20	1
2,3,7,8-TCDF	0.000130	J	0.0010	0.000019	ug/Kg		09/05/18 15:15	09/10/18 23:20	1
OCDD	0.000517	J	0.010	0.000017	ug/Kg		09/05/18 15:15	09/10/18 23:20	1
OCDF	0.000113	J q	0.010	0.000025	ug/Kg		09/05/18 15:15	09/10/18 23:20	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	87		23 - 140	09/05/18 15:15	09/10/18 23:20	1
13C-1,2,3,4,6,7,8-HpCDF	79		28 - 143	09/05/18 15:15	09/10/18 23:20	1
13C-1,2,3,4,7,8,9-HpCDF	84		26 - 138	09/05/18 15:15	09/10/18 23:20	1
13C-1,2,3,4,7,8-HxCDD	71		32 - 141	09/05/18 15:15	09/10/18 23:20	1
13C-1,2,3,4,7,8-HxCDF	75		26 - 152	09/05/18 15:15	09/10/18 23:20	1
13C-1,2,3,6,7,8-HxCDD	75		28 - 130	09/05/18 15:15	09/10/18 23:20	1
13C-1,2,3,6,7,8-HxCDF	78		26 - 123	09/05/18 15:15	09/10/18 23:20	1
13C-1,2,3,7,8,9-HxCDF	78		29 - 147	09/05/18 15:15	09/10/18 23:20	1
13C-1,2,3,7,8-PeCDD	71		25 - 181	09/05/18 15:15	09/10/18 23:20	1
13C-1,2,3,7,8-PeCDF	69		24 - 185	09/05/18 15:15	09/10/18 23:20	1
13C-2,3,4,6,7,8-HxCDF	79		28 - 136	09/05/18 15:15	09/10/18 23:20	1

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79672-2

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

Lab Sample ID: MB 320-243983/1-A

Matrix: Solid

Analysis Batch: 244812

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 243983

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,4,7,8-PeCDF	67		21 - 178	09/05/18 15:15	09/10/18 23:20	1
13C-2,3,7,8-TCDD	75		25 - 164	09/05/18 15:15	09/10/18 23:20	1
13C-2,3,7,8-TCDF	72		24 - 169	09/05/18 15:15	09/10/18 23:20	1
13C-OCDD	79		17 - 157	09/05/18 15:15	09/10/18 23:20	1
Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	124		35 - 197	09/05/18 15:15	09/10/18 23:20	1

Lab Sample ID: LCS 320-243983/2-A

Matrix: Solid

Analysis Batch: 244812

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 243983

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.0972		ug/Kg		97	70 - 140
1,2,3,4,6,7,8-HpCDF	0.100	0.104		ug/Kg		104	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.106		ug/Kg		106	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.108		ug/Kg		108	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.105		ug/Kg		105	72 - 134
1,2,3,6,7,8-HxCDD	0.100	0.102		ug/Kg		102	76 - 134
1,2,3,6,7,8-HxCDF	0.100	0.106		ug/Kg		106	84 - 130
1,2,3,7,8,9-HxCDD	0.100	0.110		ug/Kg		110	64 - 162
1,2,3,7,8,9-HxCDF	0.100	0.106		ug/Kg		106	78 - 130
1,2,3,7,8-PeCDD	0.100	0.100		ug/Kg		100	70 - 142
1,2,3,7,8-PeCDF	0.100	0.104		ug/Kg		104	80 - 134
2,3,4,6,7,8-HxCDF	0.100	0.107		ug/Kg		107	70 - 156
2,3,4,7,8-PeCDF	0.100	0.104		ug/Kg		104	68 - 160
2,3,7,8-TCDD	0.0200	0.0186		ug/Kg		93	67 - 158
2,3,7,8-TCDF	0.0200	0.0209		ug/Kg		104	75 - 158
OCDD	0.200	0.196		ug/Kg		98	78 - 144
OCDF	0.200	0.222		ug/Kg		111	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	84		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	75		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	79		20 - 186
13C-1,2,3,4,7,8-HxCDD	66		21 - 193
13C-1,2,3,4,7,8-HxCDF	73		19 - 202
13C-1,2,3,6,7,8-HxCDD	72		25 - 163
13C-1,2,3,6,7,8-HxCDF	74		21 - 159
13C-1,2,3,7,8,9-HxCDF	75		17 - 205
13C-1,2,3,7,8-PeCDD	67		21 - 227
13C-1,2,3,7,8-PeCDF	66		21 - 192
13C-2,3,4,6,7,8-HxCDF	74		22 - 176
13C-2,3,4,7,8-PeCDF	64		13 - 328
13C-2,3,7,8-TCDD	71		20 - 175
13C-2,3,7,8-TCDF	68		22 - 152
13C-OCDD	76		13 - 199

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79672-2

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

Lab Sample ID: LCS 320-243983/2-A
Matrix: Solid
Analysis Batch: 244812

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 243983

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	121		31 - 191

Lab Sample ID: LCSD 320-243983/3-A
Matrix: Solid
Analysis Batch: 244812

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 243983

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,6,7,8-HpCDD	0.100	0.0997		ug/Kg		100	70 - 140	3	50
1,2,3,4,6,7,8-HpCDF	0.100	0.111		ug/Kg		111	82 - 122	6	50
1,2,3,4,7,8,9-HpCDF	0.100	0.111		ug/Kg		111	78 - 138	4	50
1,2,3,4,7,8-HxCDD	0.100	0.110		ug/Kg		110	70 - 164	1	50
1,2,3,4,7,8-HxCDF	0.100	0.110		ug/Kg		110	72 - 134	5	50
1,2,3,6,7,8-HxCDD	0.100	0.109		ug/Kg		109	76 - 134	6	50
1,2,3,6,7,8-HxCDF	0.100	0.113		ug/Kg		113	84 - 130	6	50
1,2,3,7,8,9-HxCDD	0.100	0.119		ug/Kg		119	64 - 162	8	50
1,2,3,7,8,9-HxCDF	0.100	0.112		ug/Kg		112	78 - 130	5	50
1,2,3,7,8-PeCDD	0.100	0.105		ug/Kg		105	70 - 142	4	50
1,2,3,7,8-PeCDF	0.100	0.109		ug/Kg		109	80 - 134	5	50
2,3,4,6,7,8-HxCDF	0.100	0.111		ug/Kg		111	70 - 156	4	50
2,3,4,7,8-PeCDF	0.100	0.110		ug/Kg		110	68 - 160	5	50
2,3,7,8-TCDD	0.0200	0.0193		ug/Kg		97	67 - 158	4	50
2,3,7,8-TCDF	0.0200	0.0218		ug/Kg		109	75 - 158	4	50
OCDD	0.200	0.204		ug/Kg		102	78 - 144	4	50
OCDF	0.200	0.233		ug/Kg		117	63 - 170	5	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	85		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	74		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	82		20 - 186
13C-1,2,3,4,7,8-HxCDD	66		21 - 193
13C-1,2,3,4,7,8-HxCDF	70		19 - 202
13C-1,2,3,6,7,8-HxCDD	71		25 - 163
13C-1,2,3,6,7,8-HxCDF	74		21 - 159
13C-1,2,3,7,8,9-HxCDF	76		17 - 205
13C-1,2,3,7,8-PeCDD	67		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	62		13 - 328
13C-2,3,7,8-TCDD	73		20 - 175
13C-2,3,7,8-TCDF	68		22 - 152
13C-OCDD	77		13 - 199

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

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79672-2

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

Lab Sample ID: MB 320-244175/1-A

Matrix: Solid

Analysis Batch: 245750

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 244175

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.000222	J q	0.0050	0.000033	ug/Kg		09/06/18 12:09	09/14/18 14:33	1
1,2,3,4,6,7,8-HpCDF	0.000224	J q	0.0050	0.000041	ug/Kg		09/06/18 12:09	09/14/18 14:33	1
1,2,3,4,7,8,9-HpCDF	0.000839	J	0.0050	0.000050	ug/Kg		09/06/18 12:09	09/14/18 14:33	1
1,2,3,4,7,8-HxCDD	0.000180	J q	0.0050	0.000055	ug/Kg		09/06/18 12:09	09/14/18 14:33	1
1,2,3,4,7,8-HxCDF	0.000140	J	0.0050	0.000038	ug/Kg		09/06/18 12:09	09/14/18 14:33	1
1,2,3,6,7,8-HxCDD	ND		0.0050	0.00014	ug/Kg		09/06/18 12:09	09/14/18 14:33	1
1,2,3,6,7,8-HxCDF	0.0000706	J	0.0050	0.000035	ug/Kg		09/06/18 12:09	09/14/18 14:33	1
1,2,3,7,8,9-HxCDD	ND		0.0050	0.000051	ug/Kg		09/06/18 12:09	09/14/18 14:33	1
1,2,3,7,8,9-HxCDF	0.00108	J	0.0050	0.000027	ug/Kg		09/06/18 12:09	09/14/18 14:33	1
1,2,3,7,8-PeCDD	ND		0.0050	0.000033	ug/Kg		09/06/18 12:09	09/14/18 14:33	1
1,2,3,7,8-PeCDF	0.000130	J	0.0050	0.000029	ug/Kg		09/06/18 12:09	09/14/18 14:33	1
2,3,4,6,7,8-HxCDF	0.0000417	J	0.0050	0.000029	ug/Kg		09/06/18 12:09	09/14/18 14:33	1
2,3,4,7,8-PeCDF	0.0000472	J q	0.0050	0.000031	ug/Kg		09/06/18 12:09	09/14/18 14:33	1
2,3,7,8-TCDD	ND		0.0010	0.000038	ug/Kg		09/06/18 12:09	09/14/18 14:33	1
2,3,7,8-TCDF	0.0000503	J q	0.0010	0.000021	ug/Kg		09/06/18 12:09	09/14/18 14:33	1
OCDD	0.00179	J	0.010	0.000027	ug/Kg		09/06/18 12:09	09/14/18 14:33	1
OCDF	0.000490	J q	0.010	0.000033	ug/Kg		09/06/18 12:09	09/14/18 14:33	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	59		23 - 140	09/06/18 12:09	09/14/18 14:33	1
13C-1,2,3,4,6,7,8-HpCDF	52		28 - 143	09/06/18 12:09	09/14/18 14:33	1
13C-1,2,3,4,7,8,9-HpCDF	54		26 - 138	09/06/18 12:09	09/14/18 14:33	1
13C-1,2,3,4,7,8-HxCDD	55		32 - 141	09/06/18 12:09	09/14/18 14:33	1
13C-1,2,3,4,7,8-HxCDF	55		26 - 152	09/06/18 12:09	09/14/18 14:33	1
13C-1,2,3,6,7,8-HxCDD	56		28 - 130	09/06/18 12:09	09/14/18 14:33	1
13C-1,2,3,6,7,8-HxCDF	59		26 - 123	09/06/18 12:09	09/14/18 14:33	1
13C-1,2,3,7,8,9-HxCDF	54		29 - 147	09/06/18 12:09	09/14/18 14:33	1
13C-1,2,3,7,8-PeCDD	49		25 - 181	09/06/18 12:09	09/14/18 14:33	1
13C-1,2,3,7,8-PeCDF	47		24 - 185	09/06/18 12:09	09/14/18 14:33	1
13C-2,3,4,6,7,8-HxCDF	57		28 - 136	09/06/18 12:09	09/14/18 14:33	1
13C-2,3,4,7,8-PeCDF	47		21 - 178	09/06/18 12:09	09/14/18 14:33	1
13C-2,3,7,8-TCDD	54		25 - 164	09/06/18 12:09	09/14/18 14:33	1
13C-2,3,7,8-TCDF	47		24 - 169	09/06/18 12:09	09/14/18 14:33	1
13C-OCDD	53		17 - 157	09/06/18 12:09	09/14/18 14:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	112		35 - 197	09/06/18 12:09	09/14/18 14:33	1

Lab Sample ID: LCS 320-244175/2-A

Matrix: Solid

Analysis Batch: 245750

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 244175

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.0966		ug/Kg		97	70 - 140
1,2,3,4,6,7,8-HpCDF	0.100	0.104		ug/Kg		104	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.105		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	0.106		ug/Kg		106	72 - 134

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79672-2

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

Lab Sample ID: LCS 320-244175/2-A

Matrix: Solid

Analysis Batch: 245750

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 244175

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%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	0.106		ug/Kg		106	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	0.108		ug/Kg		108	78 - 130
1,2,3,7,8-PeCDD	0.100	0.0997		ug/Kg		100	70 - 142
1,2,3,7,8-PeCDF	0.100	0.104		ug/Kg		104	80 - 134
2,3,4,6,7,8-HxCDF	0.100	0.107		ug/Kg		107	70 - 156
2,3,4,7,8-PeCDF	0.100	0.103		ug/Kg		103	68 - 160
2,3,7,8-TCDD	0.0200	0.0178		ug/Kg		89	67 - 158
2,3,7,8-TCDF	0.0200	0.0208		ug/Kg		104	75 - 158
OCDD	0.200	0.194		ug/Kg		97	78 - 144
OCDF	0.200	0.216		ug/Kg		108	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	75		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	68		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	68		20 - 186
13C-1,2,3,4,7,8-HxCDD	68		21 - 193
13C-1,2,3,4,7,8-HxCDF	72		19 - 202
13C-1,2,3,6,7,8-HxCDD	70		25 - 163
13C-1,2,3,6,7,8-HxCDF	75		21 - 159
13C-1,2,3,7,8,9-HxCDF	68		17 - 205
13C-1,2,3,7,8-PeCDD	62		21 - 227
13C-1,2,3,7,8-PeCDF	59		21 - 192
13C-2,3,4,6,7,8-HxCDF	73		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	59		22 - 152
13C-OCDD	68		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	112		31 - 191

Lab Sample ID: LCSD 320-244175/3-A

Matrix: Solid

Analysis Batch: 245750

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 244175

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
1,2,3,4,6,7,8-HpCDD	0.100	0.0959		ug/Kg		96	70 - 140	1	50
1,2,3,4,6,7,8-HpCDF	0.100	0.102		ug/Kg		102	82 - 122	2	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	0.103		ug/Kg		103	70 - 164	2	50
1,2,3,4,7,8-HxCDF	0.100	0.105		ug/Kg		105	72 - 134	1	50
1,2,3,6,7,8-HxCDD	0.100	0.105		ug/Kg		105	76 - 134	2	50
1,2,3,6,7,8-HxCDF	0.100	0.103		ug/Kg		103	84 - 130	3	50
1,2,3,7,8,9-HxCDD	0.100	0.104		ug/Kg		104	64 - 162	1	50
1,2,3,7,8,9-HxCDF	0.100	0.107		ug/Kg		107	78 - 130	1	50
1,2,3,7,8-PeCDD	0.100	0.0987		ug/Kg		99	70 - 142	1	50

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79672-2

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

Lab Sample ID: LCSD 320-244175/3-A

Matrix: Solid

Analysis Batch: 245750

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 244175

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,7,8-PeCDF	0.100	0.103		ug/Kg		103	80 - 134	0	50
2,3,4,6,7,8-HxCDF	0.100	0.104		ug/Kg		104	70 - 156	2	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	0.0178		ug/Kg		89	67 - 158	0	50
2,3,7,8-TCDF	0.0200	0.0208		ug/Kg		104	75 - 158	0	50
OCDD	0.200	0.194		ug/Kg		97	78 - 144	0	50
OCDF	0.200	0.215		ug/Kg		107	63 - 170	1	50

LCSD		LCSD	Limits
Isotope Dilution	%Recovery	Qualifier	
13C-1,2,3,4,6,7,8-HpCDD	69		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	61		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	62		20 - 186
13C-1,2,3,4,7,8-HxCDD	62		21 - 193
13C-1,2,3,4,7,8-HxCDF	65		19 - 202
13C-1,2,3,6,7,8-HxCDD	63		25 - 163
13C-1,2,3,6,7,8-HxCDF	67		21 - 159
13C-1,2,3,7,8,9-HxCDF	63		17 - 205
13C-1,2,3,7,8-PeCDD	57		21 - 227
13C-1,2,3,7,8-PeCDF	54		21 - 192
13C-2,3,4,6,7,8-HxCDF	66		22 - 176
13C-2,3,4,7,8-PeCDF	53		13 - 328
13C-2,3,7,8-TCDD	62		20 - 175
13C-2,3,7,8-TCDF	54		22 - 152
13C-OCDD	62		13 - 199

LCSD		LCSD	Limits
Surrogate	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	112		31 - 191

Lab Sample ID: MB 320-244236/1-A

Matrix: Solid

Analysis Batch: 245549

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 244236

MB		MB	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Analyte	Result	Qualifier							
1,2,3,4,6,7,8-HpCDD	0.000121	J	0.0050	0.000018	ug/Kg		09/06/18 16:52	09/14/18 02:22	1
1,2,3,4,6,7,8-HpCDF	0.0000962	J q	0.0050	0.000018	ug/Kg		09/06/18 16:52	09/14/18 02:22	1
1,2,3,4,7,8,9-HpCDF	0.000207	J	0.0050	0.000023	ug/Kg		09/06/18 16:52	09/14/18 02:22	1
1,2,3,4,7,8-HxCDD	0.000182	J	0.0050	0.000025	ug/Kg		09/06/18 16:52	09/14/18 02:22	1
1,2,3,4,7,8-HxCDF	0.0000588	J	0.0050	0.000029	ug/Kg		09/06/18 16:52	09/14/18 02:22	1
1,2,3,6,7,8-HxCDD	0.0000324	J q	0.0050	0.000026	ug/Kg		09/06/18 16:52	09/14/18 02:22	1
1,2,3,6,7,8-HxCDF	ND		0.0050	0.000027	ug/Kg		09/06/18 16:52	09/14/18 02:22	1
1,2,3,7,8,9-HxCDD	ND		0.0050	0.000023	ug/Kg		09/06/18 16:52	09/14/18 02:22	1
1,2,3,7,8,9-HxCDF	0.000351	J	0.0050	0.000020	ug/Kg		09/06/18 16:52	09/14/18 02:22	1
1,2,3,7,8-PeCDD	ND		0.0050	0.000023	ug/Kg		09/06/18 16:52	09/14/18 02:22	1
1,2,3,7,8-PeCDF	0.000106	J	0.0050	0.000022	ug/Kg		09/06/18 16:52	09/14/18 02:22	1
2,3,4,6,7,8-HxCDF	0.0000315	J q	0.0050	0.000021	ug/Kg		09/06/18 16:52	09/14/18 02:22	1
2,3,4,7,8-PeCDF	0.000135	J	0.0050	0.000024	ug/Kg		09/06/18 16:52	09/14/18 02:22	1
2,3,7,8-TCDD	ND		0.0010	0.000023	ug/Kg		09/06/18 16:52	09/14/18 02:22	1
2,3,7,8-TCDF	0.000627	J	0.0010	0.000014	ug/Kg		09/06/18 16:52	09/14/18 02:22	1

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79672-2

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

Lab Sample ID: MB 320-244236/1-A

Matrix: Solid

Analysis Batch: 245549

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 244236

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
OCDD	0.000964	J	0.010	0.000019	ug/Kg		09/06/18 16:52	09/14/18 02:22	1
OCDF	0.000256	J q	0.010	0.000022	ug/Kg		09/06/18 16:52	09/14/18 02:22	1
Isotope Dilution	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	83		23 - 140				09/06/18 16:52	09/14/18 02:22	1
13C-1,2,3,4,6,7,8-HpCDF	76		28 - 143				09/06/18 16:52	09/14/18 02:22	1
13C-1,2,3,4,7,8,9-HpCDF	75		26 - 138				09/06/18 16:52	09/14/18 02:22	1
13C-1,2,3,4,7,8-HxCDD	71		32 - 141				09/06/18 16:52	09/14/18 02:22	1
13C-1,2,3,4,7,8-HxCDF	69		26 - 152				09/06/18 16:52	09/14/18 02:22	1
13C-1,2,3,6,7,8-HxCDD	71		28 - 130				09/06/18 16:52	09/14/18 02:22	1
13C-1,2,3,6,7,8-HxCDF	73		26 - 123				09/06/18 16:52	09/14/18 02:22	1
13C-1,2,3,7,8,9-HxCDF	69		29 - 147				09/06/18 16:52	09/14/18 02:22	1
13C-1,2,3,7,8-PeCDD	66		25 - 181				09/06/18 16:52	09/14/18 02:22	1
13C-1,2,3,7,8-PeCDF	62		24 - 185				09/06/18 16:52	09/14/18 02:22	1
13C-2,3,4,6,7,8-HxCDF	72		28 - 136				09/06/18 16:52	09/14/18 02:22	1
13C-2,3,4,7,8-PeCDF	61		21 - 178				09/06/18 16:52	09/14/18 02:22	1
13C-2,3,7,8-TCDD	70		25 - 164				09/06/18 16:52	09/14/18 02:22	1
13C-2,3,7,8-TCDF	63		24 - 169				09/06/18 16:52	09/14/18 02:22	1
13C-OCDD	76		17 - 157				09/06/18 16:52	09/14/18 02:22	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	76		35 - 197				09/06/18 16:52	09/14/18 02:22	1

Lab Sample ID: LCS 320-244236/2-A

Matrix: Solid

Analysis Batch: 245549

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 244236

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.100		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	0.108		ug/Kg		108	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	0.110		ug/Kg		110	76 - 134
1,2,3,6,7,8-HxCDF	0.100	0.112		ug/Kg		112	84 - 130
1,2,3,7,8,9-HxCDD	0.100	0.109		ug/Kg		109	64 - 162
1,2,3,7,8,9-HxCDF	0.100	0.112		ug/Kg		112	78 - 130
1,2,3,7,8-PeCDD	0.100	0.106		ug/Kg		106	70 - 142
1,2,3,7,8-PeCDF	0.100	0.110		ug/Kg		110	80 - 134
2,3,4,6,7,8-HxCDF	0.100	0.113		ug/Kg		113	70 - 156
2,3,4,7,8-PeCDF	0.100	0.110		ug/Kg		110	68 - 160
2,3,7,8-TCDD	0.0200	0.0191		ug/Kg		95	67 - 158
2,3,7,8-TCDF	0.0200	0.0225		ug/Kg		113	75 - 158
OCDD	0.200	0.205		ug/Kg		103	78 - 144
OCDF	0.200	0.225		ug/Kg		113	63 - 170
Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits				
13C-1,2,3,4,6,7,8-HpCDD	80		26 - 166				

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79672-2

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

Lab Sample ID: LCS 320-244236/2-A

Matrix: Solid

Analysis Batch: 245549

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 244236

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDF	70		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	72		20 - 186
13C-1,2,3,4,7,8-HxCDD	66		21 - 193
13C-1,2,3,4,7,8-HxCDF	69		19 - 202
13C-1,2,3,6,7,8-HxCDD	69		25 - 163
13C-1,2,3,6,7,8-HxCDF	71		21 - 159
13C-1,2,3,7,8,9-HxCDF	65		17 - 205
13C-1,2,3,7,8-PeCDD	63		21 - 227
13C-1,2,3,7,8-PeCDF	59		21 - 192
13C-2,3,4,6,7,8-HxCDF	67		22 - 176
13C-2,3,4,7,8-PeCDF	60		13 - 328
13C-2,3,7,8-TCDD	67		20 - 175
13C-2,3,7,8-TCDF	60		22 - 152
13C-OCDD	73		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	80		31 - 191

Lab Sample ID: LCSD 320-244236/3-A

Matrix: Solid

Analysis Batch: 245549

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 244236

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,6,7,8-HpCDD	0.100	0.0998		ug/Kg		100	70 - 140	1	50
1,2,3,4,6,7,8-HpCDF	0.100	0.106		ug/Kg		106	82 - 122	2	50
1,2,3,4,7,8,9-HpCDF	0.100	0.107		ug/Kg		107	78 - 138	2	50
1,2,3,4,7,8-HxCDD	0.100	0.109		ug/Kg		109	70 - 164	1	50
1,2,3,4,7,8-HxCDF	0.100	0.108		ug/Kg		108	72 - 134	3	50
1,2,3,6,7,8-HxCDD	0.100	0.110		ug/Kg		110	76 - 134	0	50
1,2,3,6,7,8-HxCDF	0.100	0.110		ug/Kg		110	84 - 130	2	50
1,2,3,7,8,9-HxCDD	0.100	0.111		ug/Kg		111	64 - 162	1	50
1,2,3,7,8,9-HxCDF	0.100	0.108		ug/Kg		108	78 - 130	3	50
1,2,3,7,8-PeCDD	0.100	0.103		ug/Kg		103	70 - 142	3	50
1,2,3,7,8-PeCDF	0.100	0.109		ug/Kg		109	80 - 134	1	50
2,3,4,6,7,8-HxCDF	0.100	0.108		ug/Kg		108	70 - 156	4	50
2,3,4,7,8-PeCDF	0.100	0.109		ug/Kg		109	68 - 160	1	50
2,3,7,8-TCDD	0.0200	0.0188		ug/Kg		94	67 - 158	1	50
2,3,7,8-TCDF	0.0200	0.0218		ug/Kg		109	75 - 158	3	50
OCDD	0.200	0.202		ug/Kg		101	78 - 144	2	50
OCDF	0.200	0.224		ug/Kg		112	63 - 170	1	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	83		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	74		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	77		20 - 186
13C-1,2,3,4,7,8-HxCDD	68		21 - 193
13C-1,2,3,4,7,8-HxCDF	72		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: 580-79672-2

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

Lab Sample ID: LCSD 320-244236/3-A

Matrix: Solid

Analysis Batch: 245549

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 244236

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,6,7,8-HxCDF	72		21 - 159
13C-1,2,3,7,8,9-HxCDF	69		17 - 205
13C-1,2,3,7,8-PeCDD	68		21 - 227
13C-1,2,3,7,8-PeCDF	62		21 - 192
13C-2,3,4,6,7,8-HxCDF	71		22 - 176
13C-2,3,4,7,8-PeCDF	62		13 - 328
13C-2,3,7,8-TCDD	70		20 - 175
13C-2,3,7,8-TCDF	62		22 - 152
13C-OCDD	79		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
37Cl4-2,3,7,8-TCDD	79		31 - 191

Lab Sample ID: MB 320-244409/1-A

Matrix: Solid

Analysis Batch: 245905

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 244409

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	ND		0.0050	0.000092	ug/Kg		09/07/18 12:27	09/15/18 01:04	1
1,2,3,4,6,7,8-HpCDF	0.0000979	J q	0.0050	0.000055	ug/Kg		09/07/18 12:27	09/15/18 01:04	1
1,2,3,4,7,8,9-HpCDF	0.000428	J q	0.0050	0.000079	ug/Kg		09/07/18 12:27	09/15/18 01:04	1
1,2,3,4,7,8-HxCDD	0.000184	J q	0.0050	0.000075	ug/Kg		09/07/18 12:27	09/15/18 01:04	1
1,2,3,4,7,8-HxCDF	ND		0.0050	0.000077	ug/Kg		09/07/18 12:27	09/15/18 01:04	1
1,2,3,6,7,8-HxCDD	ND		0.0050	0.000065	ug/Kg		09/07/18 12:27	09/15/18 01:04	1
1,2,3,6,7,8-HxCDF	ND		0.0050	0.000069	ug/Kg		09/07/18 12:27	09/15/18 01:04	1
1,2,3,7,8,9-HxCDD	ND		0.0050	0.000062	ug/Kg		09/07/18 12:27	09/15/18 01:04	1
1,2,3,7,8,9-HxCDF	0.000898	J q	0.0050	0.000067	ug/Kg		09/07/18 12:27	09/15/18 01:04	1
1,2,3,7,8-PeCDD	ND		0.0050	0.00011	ug/Kg		09/07/18 12:27	09/15/18 01:04	1
1,2,3,7,8-PeCDF	0.000146	J q	0.0050	0.00010	ug/Kg		09/07/18 12:27	09/15/18 01:04	1
2,3,4,6,7,8-HxCDF	ND		0.0050	0.000058	ug/Kg		09/07/18 12:27	09/15/18 01:04	1
2,3,4,7,8-PeCDF	ND		0.0050	0.00011	ug/Kg		09/07/18 12:27	09/15/18 01:04	1
2,3,7,8-TCDD	ND		0.0010	0.00010	ug/Kg		09/07/18 12:27	09/15/18 01:04	1
2,3,7,8-TCDF	0.000404	J	0.0010	0.000062	ug/Kg		09/07/18 12:27	09/15/18 01:04	1
OCDD	0.000262	J q	0.010	0.00010	ug/Kg		09/07/18 12:27	09/15/18 01:04	1
OCDF	ND		0.010	0.00016	ug/Kg		09/07/18 12:27	09/15/18 01:04	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	64		23 - 140	09/07/18 12:27	09/15/18 01:04	1
13C-1,2,3,4,6,7,8-HpCDF	61		28 - 143	09/07/18 12:27	09/15/18 01:04	1
13C-1,2,3,4,7,8,9-HpCDF	61		26 - 138	09/07/18 12:27	09/15/18 01:04	1
13C-1,2,3,4,7,8-HxCDD	62		32 - 141	09/07/18 12:27	09/15/18 01:04	1
13C-1,2,3,4,7,8-HxCDF	65		26 - 152	09/07/18 12:27	09/15/18 01:04	1
13C-1,2,3,6,7,8-HxCDD	61		28 - 130	09/07/18 12:27	09/15/18 01:04	1
13C-1,2,3,6,7,8-HxCDF	67		26 - 123	09/07/18 12:27	09/15/18 01:04	1
13C-1,2,3,7,8,9-HxCDF	61		29 - 147	09/07/18 12:27	09/15/18 01:04	1
13C-1,2,3,7,8-PeCDD	56		25 - 181	09/07/18 12:27	09/15/18 01:04	1
13C-1,2,3,7,8-PeCDF	61		24 - 185	09/07/18 12:27	09/15/18 01:04	1
13C-2,3,4,6,7,8-HxCDF	69		28 - 136	09/07/18 12:27	09/15/18 01:04	1

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79672-2

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

Lab Sample ID: MB 320-244409/1-A

Matrix: Solid

Analysis Batch: 245905

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 244409

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,4,7,8-PeCDF	58		21 - 178	09/07/18 12:27	09/15/18 01:04	1
13C-2,3,7,8-TCDD	61		25 - 164	09/07/18 12:27	09/15/18 01:04	1
13C-2,3,7,8-TCDF	61		24 - 169	09/07/18 12:27	09/15/18 01:04	1
13C-OCDD	67		17 - 157	09/07/18 12:27	09/15/18 01:04	1
Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	63		35 - 197	09/07/18 12:27	09/15/18 01:04	1

Lab Sample ID: LCS 320-244409/2-A

Matrix: Solid

Analysis Batch: 245905

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 244409

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.0956		ug/Kg		96	70 - 140
1,2,3,4,6,7,8-HpCDF	0.100	0.0972		ug/Kg		97	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.0993		ug/Kg		99	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.103		ug/Kg		103	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.103		ug/Kg		103	72 - 134
1,2,3,6,7,8-HxCDD	0.100	0.106		ug/Kg		106	76 - 134
1,2,3,6,7,8-HxCDF	0.100	0.104		ug/Kg		104	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	0.104		ug/Kg		104	78 - 130
1,2,3,7,8-PeCDD	0.100	0.107		ug/Kg		107	70 - 142
1,2,3,7,8-PeCDF	0.100	0.103		ug/Kg		103	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	0.101		ug/Kg		101	68 - 160
2,3,7,8-TCDD	0.0200	0.0198		ug/Kg		99	67 - 158
2,3,7,8-TCDF	0.0200	0.0185		ug/Kg		93	75 - 158
OCDD	0.200	0.211		ug/Kg		106	78 - 144
OCDF	0.200	0.185		ug/Kg		92	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	66		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	62		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	61		20 - 186
13C-1,2,3,4,7,8-HxCDD	67		21 - 193
13C-1,2,3,4,7,8-HxCDF	69		19 - 202
13C-1,2,3,6,7,8-HxCDD	65		25 - 163
13C-1,2,3,6,7,8-HxCDF	69		21 - 159
13C-1,2,3,7,8,9-HxCDF	60		17 - 205
13C-1,2,3,7,8-PeCDD	60		21 - 227
13C-1,2,3,7,8-PeCDF	64		21 - 192
13C-2,3,4,6,7,8-HxCDF	66		22 - 176
13C-2,3,4,7,8-PeCDF	64		13 - 328
13C-2,3,7,8-TCDD	64		20 - 175
13C-2,3,7,8-TCDF	61		22 - 152
13C-OCDD	69		13 - 199

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79672-2

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

Lab Sample ID: LCS 320-244409/2-A
Matrix: Solid
Analysis Batch: 245905

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 244409

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	68		31 - 191

Lab Sample ID: LCSD 320-244409/3-A
Matrix: Solid
Analysis Batch: 245905

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 244409

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,6,7,8-HpCDD	0.100	0.0935		ug/Kg		94	70 - 140	2	50
1,2,3,4,6,7,8-HpCDF	0.100	0.0987		ug/Kg		99	82 - 122	2	50
1,2,3,4,7,8,9-HpCDF	0.100	0.0949		ug/Kg		95	78 - 138	4	50
1,2,3,4,7,8-HxCDD	0.100	0.108		ug/Kg		108	70 - 164	5	50
1,2,3,4,7,8-HxCDF	0.100	0.103		ug/Kg		103	72 - 134	0	50
1,2,3,6,7,8-HxCDD	0.100	0.106		ug/Kg		106	76 - 134	0	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	3	50
1,2,3,7,8,9-HxCDF	0.100	0.106		ug/Kg		106	78 - 130	2	50
1,2,3,7,8-PeCDD	0.100	0.109		ug/Kg		109	70 - 142	2	50
1,2,3,7,8-PeCDF	0.100	0.100		ug/Kg		100	80 - 134	3	50
2,3,4,6,7,8-HxCDF	0.100	0.106		ug/Kg		106	70 - 156	0	50
2,3,4,7,8-PeCDF	0.100	0.101		ug/Kg		101	68 - 160	0	50
2,3,7,8-TCDD	0.0200	0.0195		ug/Kg		97	67 - 158	2	50
2,3,7,8-TCDF	0.0200	0.0179		ug/Kg		90	75 - 158	3	50
OCDD	0.200	0.222		ug/Kg		111	78 - 144	5	50
OCDF	0.200	0.198		ug/Kg		99	63 - 170	7	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	68		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	60		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	61		20 - 186
13C-1,2,3,4,7,8-HxCDD	65		21 - 193
13C-1,2,3,4,7,8-HxCDF	66		19 - 202
13C-1,2,3,6,7,8-HxCDD	64		25 - 163
13C-1,2,3,6,7,8-HxCDF	67		21 - 159
13C-1,2,3,7,8,9-HxCDF	59		17 - 205
13C-1,2,3,7,8-PeCDD	57		21 - 227
13C-1,2,3,7,8-PeCDF	63		21 - 192
13C-2,3,4,6,7,8-HxCDF	66		22 - 176
13C-2,3,4,7,8-PeCDF	61		13 - 328
13C-2,3,7,8-TCDD	62		20 - 175
13C-2,3,7,8-TCDF	57		22 - 152
13C-OCDD	65		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
37Cl4-2,3,7,8-TCDD	65		31 - 191

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79672-2

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

Lab Sample ID: MB 320-244438/1-A

Matrix: Solid

Analysis Batch: 245786

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 244438

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.0000787	J	0.0050	0.0000079	ug/Kg		09/07/18 14:03	09/17/18 01:16	1
1,2,3,4,6,7,8-HpCDF	0.0000671	J q	0.0050	0.0000090	ug/Kg		09/07/18 14:03	09/17/18 01:16	1
1,2,3,4,7,8,9-HpCDF	0.000153	J	0.0050	0.000011	ug/Kg		09/07/18 14:03	09/17/18 01:16	1
1,2,3,4,7,8-HxCDD	0.000159	J	0.0050	0.0000079	ug/Kg		09/07/18 14:03	09/17/18 01:16	1
1,2,3,4,7,8-HxCDF	0.0000390	J	0.0050	0.0000081	ug/Kg		09/07/18 14:03	09/17/18 01:16	1
1,2,3,6,7,8-HxCDD	ND		0.0050	0.0000072	ug/Kg		09/07/18 14:03	09/17/18 01:16	1
1,2,3,6,7,8-HxCDF	0.0000345	J	0.0050	0.0000078	ug/Kg		09/07/18 14:03	09/17/18 01:16	1
1,2,3,7,8,9-HxCDD	0.0000332	J	0.0050	0.0000069	ug/Kg		09/07/18 14:03	09/17/18 01:16	1
1,2,3,7,8,9-HxCDF	0.000393	J	0.0050	0.0000059	ug/Kg		09/07/18 14:03	09/17/18 01:16	1
1,2,3,7,8-PeCDD	ND		0.0050	0.000011	ug/Kg		09/07/18 14:03	09/17/18 01:16	1
1,2,3,7,8-PeCDF	0.0000707	J	0.0050	0.0000096	ug/Kg		09/07/18 14:03	09/17/18 01:16	1
2,3,4,6,7,8-HxCDF	ND		0.0050	0.0000061	ug/Kg		09/07/18 14:03	09/17/18 01:16	1
2,3,4,7,8-PeCDF	0.0000399	J	0.0050	0.000011	ug/Kg		09/07/18 14:03	09/17/18 01:16	1
2,3,7,8-TCDD	ND		0.0010	0.000011	ug/Kg		09/07/18 14:03	09/17/18 01:16	1
2,3,7,8-TCDF	0.000244	J	0.0010	0.0000062	ug/Kg		09/07/18 14:03	09/17/18 01:16	1
OCDD	0.000473	J	0.010	0.0000090	ug/Kg		09/07/18 14:03	09/17/18 01:16	1
OCDF	0.000134	J	0.010	0.0000088	ug/Kg		09/07/18 14:03	09/17/18 01:16	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	104		23 - 140	09/07/18 14:03	09/17/18 01:16	1
13C-1,2,3,4,6,7,8-HpCDF	92		28 - 143	09/07/18 14:03	09/17/18 01:16	1
13C-1,2,3,4,7,8,9-HpCDF	96		26 - 138	09/07/18 14:03	09/17/18 01:16	1
13C-1,2,3,4,7,8-HxCDD	81		32 - 141	09/07/18 14:03	09/17/18 01:16	1
13C-1,2,3,4,7,8-HxCDF	90		26 - 152	09/07/18 14:03	09/17/18 01:16	1
13C-1,2,3,6,7,8-HxCDD	88		28 - 130	09/07/18 14:03	09/17/18 01:16	1
13C-1,2,3,6,7,8-HxCDF	93		26 - 123	09/07/18 14:03	09/17/18 01:16	1
13C-1,2,3,7,8,9-HxCDF	92		29 - 147	09/07/18 14:03	09/17/18 01:16	1
13C-1,2,3,7,8-PeCDD	81		25 - 181	09/07/18 14:03	09/17/18 01:16	1
13C-1,2,3,7,8-PeCDF	80		24 - 185	09/07/18 14:03	09/17/18 01:16	1
13C-2,3,4,6,7,8-HxCDF	95		28 - 136	09/07/18 14:03	09/17/18 01:16	1
13C-2,3,4,7,8-PeCDF	73		21 - 178	09/07/18 14:03	09/17/18 01:16	1
13C-2,3,7,8-TCDD	90		25 - 164	09/07/18 14:03	09/17/18 01:16	1
13C-2,3,7,8-TCDF	82		24 - 169	09/07/18 14:03	09/17/18 01:16	1
13C-OCDD	89		17 - 157	09/07/18 14:03	09/17/18 01:16	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	78		35 - 197	09/07/18 14:03	09/17/18 01:16	1

Lab Sample ID: LCS 320-244438/2-A

Matrix: Solid

Analysis Batch: 245786

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 244438

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.0918		ug/Kg		92	70 - 140
1,2,3,4,6,7,8-HpCDF	0.100	0.0984		ug/Kg		98	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.0987		ug/Kg		99	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.101		ug/Kg		101	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.100		ug/Kg		100	72 - 134

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79672-2

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

Lab Sample ID: LCS 320-244438/2-A

Matrix: Solid

Analysis Batch: 245786

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 244438

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,6,7,8-HxCDD	0.100	0.101		ug/Kg		101	76 - 134
1,2,3,6,7,8-HxCDF	0.100	0.102		ug/Kg		102	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	0.0996		ug/Kg		100	78 - 130
1,2,3,7,8-PeCDD	0.100	0.0964		ug/Kg		96	70 - 142
1,2,3,7,8-PeCDF	0.100	0.0991		ug/Kg		99	80 - 134
2,3,4,6,7,8-HxCDF	0.100	0.101		ug/Kg		101	70 - 156
2,3,4,7,8-PeCDF	0.100	0.0994		ug/Kg		99	68 - 160
2,3,7,8-TCDD	0.0200	0.0177		ug/Kg		89	67 - 158
2,3,7,8-TCDF	0.0200	0.0204		ug/Kg		102	75 - 158
OCDD	0.200	0.183		ug/Kg		92	78 - 144
OCDF	0.200	0.204		ug/Kg		102	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	106		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	90		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	98		20 - 186
13C-1,2,3,4,7,8-HxCDD	86		21 - 193
13C-1,2,3,4,7,8-HxCDF	94		19 - 202
13C-1,2,3,6,7,8-HxCDD	89		25 - 163
13C-1,2,3,6,7,8-HxCDF	96		21 - 159
13C-1,2,3,7,8,9-HxCDF	95		17 - 205
13C-1,2,3,7,8-PeCDD	85		21 - 227
13C-1,2,3,7,8-PeCDF	83		21 - 192
13C-2,3,4,6,7,8-HxCDF	96		22 - 176
13C-2,3,4,7,8-PeCDF	78		13 - 328
13C-2,3,7,8-TCDD	93		20 - 175
13C-2,3,7,8-TCDF	85		22 - 152
13C-OCDD	92		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	79		31 - 191

Lab Sample ID: LCSD 320-244438/3-A

Matrix: Solid

Analysis Batch: 246108

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 244438

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
1,2,3,4,6,7,8-HpCDD	0.100	0.0945		ug/Kg		95	70 - 140	3	50
1,2,3,4,6,7,8-HpCDF	0.100	0.103		ug/Kg		103	82 - 122	5	50
1,2,3,4,7,8,9-HpCDF	0.100	0.104		ug/Kg		104	78 - 138	5	50
1,2,3,4,7,8-HxCDD	0.100	0.108		ug/Kg		108	70 - 164	7	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	0.0992		ug/Kg		99	76 - 134	1	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	0.159		ug/Kg		159	64 - 162	39	50
1,2,3,7,8,9-HxCDF	0.100	0.104		ug/Kg		104	78 - 130	5	50
1,2,3,7,8-PeCDD	0.100	0.0987		ug/Kg		99	70 - 142	2	50

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79672-2

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

Lab Sample ID: LCSD 320-244438/3-A

Matrix: Solid

Analysis Batch: 246108

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 244438

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,7,8-PeCDF	0.100	0.103		ug/Kg		103	80 - 134	4	50
2,3,4,6,7,8-HxCDF	0.100	0.106		ug/Kg		106	70 - 156	4	50
2,3,4,7,8-PeCDF	0.100	0.101		ug/Kg		101	68 - 160	2	50
2,3,7,8-TCDD	0.0200	0.0178		ug/Kg		89	67 - 158	1	50
2,3,7,8-TCDF	0.0200	0.0206		ug/Kg		103	75 - 158	1	50
OCDD	0.200	0.196		ug/Kg		98	78 - 144	7	50
OCDF	0.200	0.211		ug/Kg		105	63 - 170	3	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	95		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	66		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	88		20 - 186
13C-1,2,3,4,7,8-HxCDD	50		21 - 193
13C-1,2,3,4,7,8-HxCDF	57		19 - 202
13C-1,2,3,6,7,8-HxCDD	66		25 - 163
13C-1,2,3,6,7,8-HxCDF	68		21 - 159
13C-1,2,3,7,8,9-HxCDF	88		17 - 205
13C-1,2,3,7,8-PeCDD	86		21 - 227
13C-1,2,3,7,8-PeCDF	79		21 - 192
13C-2,3,4,6,7,8-HxCDF	82		22 - 176
13C-2,3,4,7,8-PeCDF	51		13 - 328
13C-2,3,7,8-TCDD	84		20 - 175
13C-2,3,7,8-TCDF	76		22 - 152
13C-OCDD	86		13 - 199

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

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S113(A)-0to2.2

Date Collected: 08/15/18 15:25

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79672-1

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			244438	09/07/18 14:03	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245786	09/17/18 03:34	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244438	09/07/18 14:03	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246104	09/17/18 19:07	ALM	TAL SAC

Client Sample ID: PDI-SC-S113(A)-2.2to4.6

Date Collected: 08/15/18 15:30

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79672-2

Matrix: Solid

Percent Solids: 78.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244438	09/07/18 14:03	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245786	09/17/18 04:20	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244438	09/07/18 14:03	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246104	09/17/18 19:45	ALM	TAL SAC

Client Sample ID: PDI-SC-S113(B)-3.6to5.6

Date Collected: 08/15/18 16:45

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79672-3

Matrix: Solid

Percent Solids: 48.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244438	09/07/18 14:03	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245786	09/17/18 05:06	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244438	09/07/18 14:03	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246104	09/17/18 20:23	ALM	TAL SAC

Client Sample ID: PDI-SC-S113(B)-5.6to7.4

Date Collected: 08/15/18 16:50

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79672-4

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			244438	09/07/18 14:03	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245786	09/17/18 05:52	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244438	09/07/18 14:03	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246133	09/18/18 02:58	AS	TAL SAC

Client Sample ID: PDI-SC-S113(B)-7.4to10

Date Collected: 08/15/18 16:55

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79672-5

Matrix: Solid

Percent Solids: 77.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244438	09/07/18 14:03	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245786	09/17/18 06:38	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244438	09/07/18 14:03	SR1	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S113(B)-7.4to10

Date Collected: 08/15/18 16:55

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79672-5

Matrix: Solid

Percent Solids: 77.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1613B	RA	1	246133	09/18/18 03:36	AS	TAL SAC

Client Sample ID: PDI-SC-S113(B)-10to12

Date Collected: 08/15/18 17:00

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79672-6

Matrix: Solid

Percent Solids: 82.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244438	09/07/18 14:03	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245786	09/17/18 07:24	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244438	09/07/18 14:03	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246133	09/18/18 04:14	AS	TAL SAC

Client Sample ID: PDI-SC-S113(B)-12to13.8

Date Collected: 08/15/18 17:05

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79672-7

Matrix: Solid

Percent Solids: 79.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244438	09/07/18 14:03	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245786	09/17/18 08:10	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244438	09/07/18 14:03	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246133	09/18/18 04:52	AS	TAL SAC

Client Sample ID: PDI-SC-S109-0to2

Date Collected: 08/15/18 18:00

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79672-8

Matrix: Solid

Percent Solids: 75.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243983	09/05/18 15:15	SR1	TAL SAC
Total/NA	Analysis	1613B		20	245548	09/13/18 19:37	ALM	TAL SAC

Client Sample ID: PDI-SC-S109-2to4

Date Collected: 08/15/18 18:05

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79672-9

Matrix: Solid

Percent Solids: 84.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		243983	09/05/18 15:15	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	245551	09/13/18 06:03	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			243983	09/05/18 15:15	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245303	09/12/18 16:02	ALM	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S109-4to6

Lab Sample ID: 580-79672-10

Date Collected: 08/15/18 18:10

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 84.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243983	09/05/18 15:15	SR1	TAL SAC
Total/NA	Analysis	1613B		20	245548	09/13/18 20:23	ALM	TAL SAC

Client Sample ID: PDI-SC-S109-6to8

Lab Sample ID: 580-79672-11

Date Collected: 08/15/18 18:15

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 85.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245549	09/14/18 07:43	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	245740	09/14/18 16:13	ALM	TAL SAC

Client Sample ID: PDI-SC-S109-8to10

Lab Sample ID: 580-79672-12

Date Collected: 08/15/18 18:20

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 72.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245549	09/14/18 08:29	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	245740	09/14/18 16:51	ALM	TAL SAC

Client Sample ID: PDI-SC-S109-10to11.3

Lab Sample ID: 580-79672-13

Date Collected: 08/15/18 18:25

Matrix: Solid

Date Received: 08/17/18 15:30

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			244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B		20	245751	09/15/18 02:48	AS	TAL SAC

Client Sample ID: PDI-SC-S131-0to2

Lab Sample ID: 580-79672-14

Date Collected: 08/16/18 08:50

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 46.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245549	09/14/18 10:01	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	245740	09/14/18 17:29	ALM	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S131-2to4

Lab Sample ID: 580-79672-15

Date Collected: 08/16/18 08:55

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 50.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245750	09/14/18 16:51	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246075	09/15/18 04:45	AS	TAL SAC

Client Sample ID: PDI-SC-S131-4to6

Lab Sample ID: 580-79672-16

Date Collected: 08/16/18 09:00

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 51.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245750	09/14/18 17:36	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246075	09/15/18 05:23	AS	TAL SAC

Client Sample ID: PDI-SC-S131-6to8

Lab Sample ID: 580-79672-17

Date Collected: 08/16/18 09:05

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 52.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245750	09/14/18 18:22	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	DL		244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B	DL	20	246108	09/17/18 18:57	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246075	09/15/18 06:01	AS	TAL SAC

Client Sample ID: PDI-SC-S256-0to2

Lab Sample ID: 580-79672-18

Date Collected: 08/16/18 10:25

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 59.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245750	09/14/18 19:08	ALM	TAL SAC

Client Sample ID: PDI-SC-S256-2to4

Lab Sample ID: 580-79672-19

Date Collected: 08/16/18 10:30

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 59.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245750	09/14/18 19:54	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244175	09/06/18 12:09	SR1	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S256-2to4

Lab Sample ID: 580-79672-19

Date Collected: 08/16/18 10:30

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 59.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1613B	RA	1	246075	09/15/18 02:13	AS	TAL SAC

Client Sample ID: PDI-SC-S256-2to4D

Lab Sample ID: 580-79672-20

Date Collected: 08/16/18 10:30

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 61.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245750	09/14/18 20:40	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246075	09/15/18 02:51	AS	TAL SAC

Client Sample ID: PDI-SC-S256-4to6

Lab Sample ID: 580-79672-21

Date Collected: 08/16/18 10:35

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 63.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245750	09/14/18 21:26	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246075	09/15/18 03:29	AS	TAL SAC

Client Sample ID: PDI-SC-S256-6to8.7

Lab Sample ID: 580-79672-22

Date Collected: 08/16/18 10:40

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 62.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245750	09/14/18 22:12	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246075	09/15/18 04:07	AS	TAL SAC

Client Sample ID: PDI-SC-S256-8.7to9.7

Lab Sample ID: 580-79672-23

Date Collected: 08/16/18 10:45

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 62.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245751	09/15/18 03:34	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246104	09/17/18 14:04	ALM	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S256-9.7to10.7

Lab Sample ID: 580-79672-24

Date Collected: 08/16/18 10:50

Matrix: Solid

Date Received: 08/17/18 15:30

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			244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245751	09/15/18 04:20	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246104	09/17/18 14:42	ALM	TAL SAC

Client Sample ID: PDI-SC-S232-0to2

Lab Sample ID: 580-79672-25

Date Collected: 08/16/18 15:10

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 58.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245751	09/15/18 05:06	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246104	09/17/18 15:20	ALM	TAL SAC

Client Sample ID: PDI-SC-S232-2to4

Lab Sample ID: 580-79672-26

Date Collected: 08/16/18 15:15

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 55.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245751	09/15/18 05:52	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246104	09/17/18 15:58	ALM	TAL SAC

Client Sample ID: PDI-SC-S232-4to6.2

Lab Sample ID: 580-79672-27

Date Collected: 08/16/18 15:20

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 65.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245751	09/15/18 06:38	AS	TAL SAC

Client Sample ID: PDI-SC-S263-0to2

Lab Sample ID: 580-79672-28

Date Collected: 08/16/18 16:10

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 73.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245751	09/15/18 07:24	AS	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S263-2to3.8

Lab Sample ID: 580-79672-29

Date Collected: 08/16/18 16:15

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 67.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245751	09/15/18 08:10	AS	TAL SAC

Client Sample ID: PDI-SC-S263-3.8to5.9

Lab Sample ID: 580-79672-30

Date Collected: 08/16/18 16:20

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 66.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245751	09/15/18 08:56	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244175	09/06/18 12:09	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246104	09/17/18 16:36	ALM	TAL SAC

Client Sample ID: PDI-SC-S108-0to1.9

Lab Sample ID: 580-79672-31

Date Collected: 08/16/18 18:15

Matrix: Solid

Date Received: 08/17/18 15:30

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			244236	09/06/18 16:52	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245548	09/13/18 21:09	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244236	09/06/18 16:52	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	245740	09/14/18 13:42	ALM	TAL SAC

Client Sample ID: PDI-SC-S108-1.9to3

Lab Sample ID: 580-79672-32

Date Collected: 08/16/18 18:20

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 44.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244236	09/06/18 16:52	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245548	09/13/18 21:55	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244236	09/06/18 16:52	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	245740	09/14/18 14:20	ALM	TAL SAC

Client Sample ID: PDI-SC-S108-3to4.7

Lab Sample ID: 580-79672-33

Date Collected: 08/16/18 18:25

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 42.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244236	09/06/18 16:52	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245549	09/14/18 04:40	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244236	09/06/18 16:52	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	245740	09/14/18 14:58	ALM	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S108-4.7to6.7

Lab Sample ID: 580-79672-34

Date Collected: 08/16/18 18:30

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 49.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244236	09/06/18 16:52	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245549	09/14/18 05:25	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244236	09/06/18 16:52	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	245740	09/14/18 15:36	ALM	TAL SAC

Client Sample ID: PDI-SC-S108-6.7to8.8

Lab Sample ID: 580-79672-35

Date Collected: 08/16/18 18:35

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 68.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244236	09/06/18 16:52	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245549	09/14/18 06:11	AS	TAL SAC

Client Sample ID: PDI-SC-S108-6.7to8.8D

Lab Sample ID: 580-79672-36

Date Collected: 08/16/18 18:35

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 70.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244236	09/06/18 16:52	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245549	09/14/18 06:57	AS	TAL SAC

Client Sample ID: PDI-SC-S108-8.8to9.8

Lab Sample ID: 580-79672-37

Date Collected: 08/16/18 18:40

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 70.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244409	09/07/18 12:27	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245905	09/15/18 03:12	SMA	TAL SAC

Client Sample ID: PDI-SC-S157-0to2

Lab Sample ID: 580-79672-38

Date Collected: 08/17/18 10:10

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 49.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		244409	09/07/18 12:27	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246133	09/18/18 01:42	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			244409	09/07/18 12:27	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245905	09/15/18 03:55	SMA	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S157-2to3.7

Lab Sample ID: 580-79672-39

Date Collected: 08/17/18 10:15

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 74.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		244409	09/07/18 12:27	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246133	09/18/18 02:20	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			244409	09/07/18 12:27	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245905	09/15/18 04:38	SMA	TAL SAC

Client Sample ID: PDI-SC-S157-3.7to6

Lab Sample ID: 580-79672-40

Date Collected: 08/17/18 10:20

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 72.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244409	09/07/18 12:27	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245905	09/15/18 05:21	SMA	TAL SAC

Client Sample ID: PDI-SC-S157-6to8

Lab Sample ID: 580-79672-41

Date Collected: 08/17/18 10:25

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 70.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244409	09/07/18 12:27	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245905	09/15/18 06:04	SMA	TAL SAC

Client Sample ID: PDI-SC-S157-8to10

Lab Sample ID: 580-79672-42

Date Collected: 08/17/18 10:30

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 73.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244409	09/07/18 12:27	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245905	09/15/18 06:46	SMA	TAL SAC

Client Sample ID: PDI-SC-S157-10to12.4

Lab Sample ID: 580-79672-43

Date Collected: 08/17/18 10:35

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 75.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244409	09/07/18 12:27	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245905	09/15/18 07:29	SMA	TAL SAC

Client Sample ID: PDI-SC-S157-12.4to14

Lab Sample ID: 580-79672-44

Date Collected: 08/17/18 10:40

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 73.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244409	09/07/18 12:27	SR1	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79672-2

Client Sample ID: PDI-SC-S157-12.4to14

Lab Sample ID: 580-79672-44

Date Collected: 08/17/18 10:40

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 73.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1613B		1	245905	09/15/18 08:12	SMA	TAL SAC

Client Sample ID: PDI-SC-S157-14to15.9

Lab Sample ID: 580-79672-45

Date Collected: 08/17/18 10:50

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 74.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244409	09/07/18 12:27	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245905	09/15/18 08:55	SMA	TAL SAC

Client Sample ID: PDI-RB-SS-180816-1110

Lab Sample ID: 580-79672-46

Date Collected: 08/16/18 11:10

Matrix: Water

Date Received: 08/17/18 15:30

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 09:54	AS	TAL SAC

Client Sample ID: PDI-RB-SS-180817

Lab Sample ID: 580-79672-47

Date Collected: 08/17/18 07:45

Matrix: Water

Date Received: 08/17/18 15:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			243331	08/31/18 08:09	ITH	TAL SAC
Total/NA	Analysis	1613B		1	245063	09/11/18 17:47	SMA	TAL SAC

Client Sample ID: PDI-SC-S053-0to2

Lab Sample ID: 580-79672-48

Date Collected: 08/16/18 13:00

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 53.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244409	09/07/18 12:27	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246212	09/18/18 16:17	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244409	09/07/18 12:27	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246679	09/19/18 17:33	ALM	TAL SAC

Client Sample ID: PDI-SC-S053-2to4

Lab Sample ID: 580-79672-49

Date Collected: 08/16/18 13:05

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 57.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244409	09/07/18 12:27	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246212	09/18/18 17:03	AS	TAL SAC

TestAmerica Seattle

Lab Chronicle

Client: AECOM

TestAmerica Job ID: 580-79672-2

Project/Site: Portland Harbor Pre-Remedial Design

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		244409	09/07/18 12:27	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246679	09/19/18 18:11	ALM	TAL SAC

Client Sample ID: PDI-SC-S053-4to6

Lab Sample ID: 580-79672-50

Date Collected: 08/16/18 13:10

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 62.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244409	09/07/18 12:27	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246212	09/18/18 17:49	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244409	09/07/18 12:27	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246679	09/19/18 18:49	ALM	TAL SAC

Client Sample ID: PDI-SC-S053-6to8

Lab Sample ID: 580-79672-51

Date Collected: 08/16/18 13:15

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 65.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244409	09/07/18 12:27	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246212	09/18/18 18:35	AS	TAL SAC

Client Sample ID: PDI-SC-S053-8to10

Lab Sample ID: 580-79672-52

Date Collected: 08/16/18 13:20

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 69.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244409	09/07/18 12:27	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246108	09/17/18 16:31	AS	TAL SAC

Client Sample ID: PDI-SC-S053-10to12.4

Lab Sample ID: 580-79672-53

Date Collected: 08/16/18 15:25

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 66.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244409	09/07/18 12:27	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246108	09/17/18 17:17	AS	TAL SAC

Client Sample ID: PDI-SC-S113(A)-2.2to4.6D

Lab Sample ID: 580-79672-54

Date Collected: 08/15/18 15:30

Matrix: Solid

Date Received: 08/17/18 15:30

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			244409	09/07/18 12:27	SR1	TAL SAC
Total/NA	Analysis	1613B		1	246212	09/18/18 19:21	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244409	09/07/18 12:27	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246679	09/19/18 19:27	ALM	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79672-2

Laboratory References:

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

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Accreditation/Certification Summary

Client: AECOM

TestAmerica Job ID: 580-79672-2

Project/Site: Portland Harbor Pre-Remedial Design

Laboratory: TestAmerica Seattle

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-024	01-19-19
ANAB	DoD ELAP		L2236	01-19-19
ANAB	ISO/IEC 17025		L2236	01-19-19
California	State Program	9	2901	11-05-18
Montana (UST)	State Program	8	N/A	04-30-20
Nevada	State Program	9	WA000502019-1	07-31-19
Oregon	NELAP	10	WA100007	11-05-18
US Fish & Wildlife	Federal		LE058448-0	07-31-19
USDA	Federal		P330-14-00126	02-10-20
Washington	State Program	10	C553	02-17-19

Laboratory: TestAmerica Sacramento

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

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

TestAmerica Seattle

Sample Summary

Client: AECOM

TestAmerica Job ID: 580-79672-2

Project/Site: Portland Harbor Pre-Remedial Design

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-79672-1	PDI-SC-S113(A)-0to2.2	Solid	08/15/18 15:25	08/17/18 15:30
580-79672-2	PDI-SC-S113(A)-2.2to4.6	Solid	08/15/18 15:30	08/17/18 15:30
580-79672-3	PDI-SC-S113(B)-3.6to5.6	Solid	08/15/18 16:45	08/17/18 15:30
580-79672-4	PDI-SC-S113(B)-5.6to7.4	Solid	08/15/18 16:50	08/17/18 15:30
580-79672-5	PDI-SC-S113(B)-7.4to10	Solid	08/15/18 16:55	08/17/18 15:30
580-79672-6	PDI-SC-S113(B)-10to12	Solid	08/15/18 17:00	08/17/18 15:30
580-79672-7	PDI-SC-S113(B)-12to13.8	Solid	08/15/18 17:05	08/17/18 15:30
580-79672-8	PDI-SC-S109-0to2	Solid	08/15/18 18:00	08/17/18 15:30
580-79672-9	PDI-SC-S109-2to4	Solid	08/15/18 18:05	08/17/18 15:30
580-79672-10	PDI-SC-S109-4to6	Solid	08/15/18 18:10	08/17/18 15:30
580-79672-11	PDI-SC-S109-6to8	Solid	08/15/18 18:15	08/17/18 15:30
580-79672-12	PDI-SC-S109-8to10	Solid	08/15/18 18:20	08/17/18 15:30
580-79672-13	PDI-SC-S109-10to11.3	Solid	08/15/18 18:25	08/17/18 15:30
580-79672-14	PDI-SC-S131-0to2	Solid	08/16/18 08:50	08/17/18 15:30
580-79672-15	PDI-SC-S131-2to4	Solid	08/16/18 08:55	08/17/18 15:30
580-79672-16	PDI-SC-S131-4to6	Solid	08/16/18 09:00	08/17/18 15:30
580-79672-17	PDI-SC-S131-6to8	Solid	08/16/18 09:05	08/17/18 15:30
580-79672-18	PDI-SC-S256-0to2	Solid	08/16/18 10:25	08/17/18 15:30
580-79672-19	PDI-SC-S256-2to4	Solid	08/16/18 10:30	08/17/18 15:30
580-79672-20	PDI-SC-S256-2to4D	Solid	08/16/18 10:30	08/17/18 15:30
580-79672-21	PDI-SC-S256-4to6	Solid	08/16/18 10:35	08/17/18 15:30
580-79672-22	PDI-SC-S256-6to8.7	Solid	08/16/18 10:40	08/17/18 15:30
580-79672-23	PDI-SC-S256-8.7to9.7	Solid	08/16/18 10:45	08/17/18 15:30
580-79672-24	PDI-SC-S256-9.7to10.7	Solid	08/16/18 10:50	08/17/18 15:30
580-79672-25	PDI-SC-S232-0to2	Solid	08/16/18 15:10	08/17/18 15:30
580-79672-26	PDI-SC-S232-2to4	Solid	08/16/18 15:15	08/17/18 15:30
580-79672-27	PDI-SC-S232-4to6.2	Solid	08/16/18 15:20	08/17/18 15:30
580-79672-28	PDI-SC-S263-0to2	Solid	08/16/18 16:10	08/17/18 15:30
580-79672-29	PDI-SC-S263-2to3.8	Solid	08/16/18 16:15	08/17/18 15:30
580-79672-30	PDI-SC-S263-3.8to5.9	Solid	08/16/18 16:20	08/17/18 15:30
580-79672-31	PDI-SC-S108-0to1.9	Solid	08/16/18 18:15	08/17/18 15:30
580-79672-32	PDI-SC-S108-1.9to3	Solid	08/16/18 18:20	08/17/18 15:30
580-79672-33	PDI-SC-S108-3to4.7	Solid	08/16/18 18:25	08/17/18 15:30
580-79672-34	PDI-SC-S108-4.7to6.7	Solid	08/16/18 18:30	08/17/18 15:30
580-79672-35	PDI-SC-S108-6.7to8.8	Solid	08/16/18 18:35	08/17/18 15:30
580-79672-36	PDI-SC-S108-6.7to8.8D	Solid	08/16/18 18:35	08/17/18 15:30
580-79672-37	PDI-SC-S108-8.8to9.8	Solid	08/16/18 18:40	08/17/18 15:30
580-79672-38	PDI-SC-S157-0to2	Solid	08/17/18 10:10	08/17/18 15:30
580-79672-39	PDI-SC-S157-2to3.7	Solid	08/17/18 10:15	08/17/18 15:30
580-79672-40	PDI-SC-S157-3.7to6	Solid	08/17/18 10:20	08/17/18 15:30
580-79672-41	PDI-SC-S157-6to8	Solid	08/17/18 10:25	08/17/18 15:30
580-79672-42	PDI-SC-S157-8to10	Solid	08/17/18 10:30	08/17/18 15:30
580-79672-43	PDI-SC-S157-10to12.4	Solid	08/17/18 10:35	08/17/18 15:30
580-79672-44	PDI-SC-S157-12.4to14	Solid	08/17/18 10:40	08/17/18 15:30
580-79672-45	PDI-SC-S157-14to15.9	Solid	08/17/18 10:50	08/17/18 15:30
580-79672-46	PDI-RB-SS-180816-1110	Water	08/16/18 11:10	08/17/18 15:30
580-79672-47	PDI-RB-SS-180817	Water	08/17/18 07:45	08/17/18 15:30
580-79672-48	PDI-SC-S053-0to2	Solid	08/16/18 13:00	08/17/18 15:30
580-79672-49	PDI-SC-S053-2to4	Solid	08/16/18 13:05	08/17/18 15:30
580-79672-50	PDI-SC-S053-4to6	Solid	08/16/18 13:10	08/17/18 15:30
580-79672-51	PDI-SC-S053-6to8	Solid	08/16/18 13:15	08/17/18 15:30
580-79672-52	PDI-SC-S053-8to10	Solid	08/16/18 13:20	08/17/18 15:30
580-79672-53	PDI-SC-S053-10to12.4	Solid	08/16/18 15:25	08/17/18 15:30

TestAmerica Seattle

Sample Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79672-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-79672-54	PDI-SC-S113(A)-2.2to4.6D	Solid	08/15/18 15:30	08/17/18 15:30

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

Client Contact
 AECOM
 1111 3rd Ave Suite 1600
 Seattle, WA 98101
 Phone: (206) 438-2700 Fax: 1-(866) 495-5288
 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling
 Portland, OR
 Project #: 60566335 Study: Subsurface Sediment
 Sample Type:

SUBSURFACE SEDIMENT CHAIN OF CUSTODY

Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010	Site Contact: Jennifer Ray Laboratory Contact: Elaine-Walker	Date: 8/17/18 Carrier: Courier	COC No: 1 of 5 pages
Analysis Turnaround Time Calendar (C) or Work Days (W) W		 580-79672 Chain of Custody	
☒ 21 days ☐ Other _____			

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction				PCDD/Fs 1613B	Archive	Grain size ASTM D7928/D6913	PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 9060, 1603	Afterberg Limits ASTM D4318	Sample Specific Notes:
							Ag	AG	WMG	AG						
PDI-SC-S113(A) - 0 to 2.2	8/15/2018	15:25	SC		ED	4					X	X	X			
PDI-SC-S113(A) - 2.2 to 4.6	8/15/2018	15:30	SC		ED	4					X	X	X			
PDI-SC-S113(B) - 3.6 to 5.6	8/15/2018	16:45	SC		ED	4					X	X	X			
PDI-SC-S113(B) - 5.6 to 7.4	8/15/2018	16:50	SC		ED	4					X	X	X			
PDI-SC-S113(B) - 7.4 to 10	8/15/2018	16:55	SC		ED	4					X	X	X			
PDI-SC-S113(B) - 10 to 12	8/15/2018	17:00	SC		ED	4					X	X	X			
PDI-SC-S113(B) - 12 to 13.8	8/15/2018	17:05	SC		ED	4					X	X	X			
PDI-SC-S109 - 0 to 2	8/15/2018	18:00	SC		ED	4					X	X	X			
PDI-SC-S109 - 2 to 4	8/15/2018	18:05	SC		ED	4					X	X	X			
PDI-SC-S109 - 4 to 6	8/15/2018	18:10	SC		ED	4					X	X	X			
PDI-SC-S109 - 6 to 8	8/15/2018	18:15	SC		ED	4					X	X	X			
PDI-SC-S109 - 8 to 10	8/15/2018	18:20	SC		ED	4					X	X	X			

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

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

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

Relinquished by: <i>[Signature]</i>	Company: AECOM	Date/Time: 8/17/18 1500	Received by: <i>[Signature]</i>	Company: M.E.	Date/Time: 8/17/18 1500
Relinquished by: <i>[Signature]</i>	Company: M.E.	Date/Time: 8/17/18 1530	Received by: <i>[Signature]</i>	Company: <i>[Signature]</i>	Date/Time: 8/17/18 1530
Relinquished by: <i>[Signature]</i>	Company: <i>[Signature]</i>	Date/Time: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Company: <i>[Signature]</i>	Date/Time: <i>[Signature]</i>

1.9, 3.6, 4.0, 1.7, 1.3, 2.5, 3.1, 4.7

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

Client Contact		Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010		Site Contact: Jennifer Ray		Date: 8/17/18		COC No: 1	
AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1-(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Subsurface Sediment		Analysis Turnaround Time Calendar (C) or Work Days (W) W 21 days ☒ 21 days ☐ Other		Laboratory Contact: Elaine Walker		Carrier: Courier		2 of 5 pages	
Sample Type:		Sample Date		Sample Time		Matrix		QC Sample	
Sample Identification		Sample Date		Sample Time		Matrix		QC Sample	
PDI-SC-S109 - 10 to 11.3		8/15/2018		18:25		SC		ED	
PDI-SC-S131 - 0 to 2		8/16/2018		8:50		SC		ED	
PDI-SC-S131 - 2 to 4		8/16/2018		8:55		SC		ED	
PDI-SC-S131 - 4 to 6		8/16/2018		9:00		SC		ED	
PDI-SC-S131 - 6 to 8		8/16/2018		9:05		SC		ED	
PDI-SC-S256 - 0 to 2		8/16/2018		10:25		SC		ED	
PDI-SC-S256 - 2 to 4		8/16/2018		10:30		SC		ED	
PDI-SC-S256 - 2 to 4D		8/16/2018		10:30		SC		ED	
PDI-SC-S256 - 4 to 6		8/16/2018		10:35		SC		ED	
PDI-SC-S256 - 6 to 8		8/16/2018		10:40		SC		ED	
PDI-SC-S256 - 8.7 to 9.7		8/16/2018		10:45		SC		ED	
PDI-SC-S256 - 9.7 to 10.7		8/16/2018		10:50		SC		ED	

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		Sample Disposal ☐ Return To Client ☒ Dispose By Lab ☒ Archive For 12 Months	
Relinquished by:	Company: AECOM	Received by:	Company: M-E
Relinquished by:	Company: M.E.	Received by:	Company: M-E
Relinquished by:	Company: M-E	Received by:	Company: M-E

SUBSURFACE SEDIMENT CHAIN OF CUSTODY

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

Client Contact

AECOM
1111 3rd Ave Suite 1600
Seattle, WA 98101

Phone: (206) 438-2700 Fax: 1+(866) 495-5288
Project Name: Portland Harbor Pre-Remedial Design
Investigation and Baseline Sampling

Portland, OR

Project #: 60566335 Study: Subsurface Sediment

Sample Type:

Project Contact: Amy Dahl / Chelsey Cook

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

Analysis Turnaround Time

Calendar (C) or Work Days (W) W

☒ 21 days

☐ Other _____

Site Contact: Jennifer Ray

Laboratory Contact: Elaine-Walker

Date: 8/17/18

Carrier: Courier

COC No. 1
3 of 9 pages 5

Sample Specific Notes:

Sample Identification

Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.
PDI-SC-S232	- 0 to 2	SC	ED	ED	5
PDI-SC-S232	- 2 to 4	SC	MS/MSD	ED	6
PDI-SC-S232	- 4 to 6.2	SC	ED	ED	4
PDI-SC-S263	- 0 to 2	SC	ED	ED	5
PDI-SC-S263	- 2 to 3.8	SC	ED	ED	4
PDI-SC-S263	- 3.8 to 5.9	SC	ED	ED	4
PDI-SC-S108	- 0 to 1.9	SC	ED	ED	4
PDI-SC-S108	- 1.9 to 3	SC	ED	ED	4
PDI-SC-S108	- 3 to 4.7	SC	ED	ED	4
PDI-SC-S108	- 4.7 to 6.7	SC	ED	ED	4
PDI-SC-S108	- 6.7 to 8.8	SC	ED	ED	4
PDI-SC-S108	- 6.7 to 8.8D	SC	ED	ED	3

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)

Sample Disposal

☐ Return To Client

☒ Spinal By Lab

☒ Archive For 12 Months

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

Relinquished by:	Company: AECOM	Date/Time: 8/17/18 1500	Received by:	Company: M.E.	Date/Time: 8/17/18 1500
Relinquished by:	Company: M.E.	Date/Time: 8/17/18 1530	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

SUBSURFACE SEDIMENT

CHAIN OF CUSTODY

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047		Client Contact AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1-(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Subsurface Sediment Sample Type:		Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010 Analysis Turnaround Time Calendar (C) or Work Days (W) <u>W</u> 21 days ☒ 21 days ☐ Other		Site Contact: Jennifer Ray Laboratory Contact: Elaine-Walker Date: 8/17/18 Carrier: Courier		COC No: 1 of 5 pages											
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCDD/Fs 1613B	Archive	Grain size ASTM D7928/D6913	PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 9060, 1603	Afterberg Limits ASTM D4318	WQ-PCBA	WQ-PAHs	WQ-D/F	WQ-TOC	Sample Specific Notes:		
PDI-SC-S108 - 8.8 to 9.8	8/16/2018	18:40	SC		ED	4		X	X	X	X								
PDI-SC-S157 - 0 to 2	8/17/2018	10:10	SC		ED	5		X	X	X	X	X							
PDI-SC-S157 - 2 to 3.7	8/17/2018	10:15	SC		ED	4		X	X	X	X								
PDI-SC-S157 - 3.7 to 6	8/17/2018	10:20	SC		ED	4		X	X	X	X								
PDI-SC-S157 - 6 to 8	8/17/2018	10:25	SC		ED	6		X	X	X	X								
PDI-SC-S157 - 8 to 10	8/17/2018	10:30	SC		ED	4		X	X	X	X								
PDI-SC-S157 - 10 to 12.4	8/17/2018	10:35	SC		ED	4		X	X	X	X								
PDI-SC-S157 - 12.4 to 14	8/17/2018	10:40	SC		ED	4		X	X	X	X								
PDI-SC-S157 - 14 to 15.9	8/17/2018	10:45	SC		ED	4		X	X	X	X								
PDI-RB-SS-180816-1110	8/16/2018	11:10	W		ED								X	X	X	X			
PDI-RB-SS-180817	8/17/2018	7:45	W		ED								X	X	X	X			
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Col Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)																			
Special Instructions/QC Requirements & Comments: Separate reports for each lab																			
Relinquished by: <i>[Signature]</i> Company: AECOM		Date/Time: 8/17/18 1500		Received by: <i>[Signature]</i> Company: M.E.		Date/Time: 8/17/18 1500		Relinquished by: <i>[Signature]</i> Company: M.E.		Date/Time: 8/17/18 1500		Received by: <i>[Signature]</i> Company: M.E.		Date/Time: 8/17/18 1500		Relinquished by: <i>[Signature]</i> Company: M.E.		Date/Time: 8/17/18 1500	

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047		SUBSURFACE SEDIMENT CHAIN OF CUSTODY														
Client Contact		Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010		Site Contact: Jennifer Ray		Date: 8/17/18		COC No: 1		of 5 pages 5						
AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101		Analysis Turnaround Time Calendar (C) or Work Days (W) W		Laboratory Contact: Elaine-Walker		Carrier: Courier										
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:		☒ 21 days ☐ Other _____														
Sample Identification		Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCDD/Fs 1613B	Archive	Grain size ASTM D7208/D6913	PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 9060, 1603	Afterberg Limits ASTM D4318	Barcode: 580-79672 Chain of Custody		Sample Specific Notes:
PDI-SC-S113(A) - 0 to 2.2	8/15/2018	15:25	SC		ED	4		x	x	x	x					
PDI-SC-S113(A) - 2.2 to 4.6	8/15/2018	15:30	SC		ED	4		x	x	x	x					
PDI-SC-S113(B) - 3.6 to 5.6	8/15/2018	16:45	SC		ED	4		x	x	x	x					FROZEN ↓ MS/MSD DRK 8/17/18
PDI-SC-S113(B) - 5.6 to 7.4	8/15/2018	16:50	SC		ED	4		x	x	x	x					
PDI-SC-S113(B) - 7.4 to 10	8/15/2018	16:55	SC		ED	4		x	x	x	x					
PDI-SC-S113(B) - 10 to 12	8/15/2018	17:00	SC		ED	4		x	x	x	x					
PDI-SC-S113(B) - 12 to 13.8	8/15/2018	17:05	SC		ED	4		x	x	x	x					
PDI-SC-S109 - 0 to 2	8/15/2018	18:00	SC		ED	4		x	x	x	x					
PDI-SC-S109 - 2 to 4	8/15/2018	18:05	SC		ED	4		x	x	x	x					
PDI-SC-S109 - 4 to 6	8/15/2018	18:10	SC		ED	16		x	x	x	x					
PDI-SC-S109 - 6 to 8	8/15/2018	18:15	SC		ED	4		x	x	x	x					
PDI-SC-S109 - 8 to 10	8/15/2018	18:20	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 Col								AG	AG	WMG	WMG	AG				
Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid																
Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)																
Sample Disposal								☐ Return To Client ☒ Spinal By Lab ☐ Archive For 12 Months								
Special Instructions/QC Requirements & Comments: Separate reports for each lab																
Relinquished by: [Signature]		Company: AECOM		Date/Time: 8/17/18 1500		Received by: [Signature]		Company: M.E.		Date/Time: 8/17/18 1500						
Relinquished by: [Signature]		Company: M.E.		Date/Time: 8/17/18 1530		Received by: [Signature]		Company: TAPOL		Date/Time: 8/17/18 1530						
Relinquished by: [Signature]		Company: TAPOL		Date/Time: 8/17/18 1750		Received by: B. Lee		Company: SEA TA		Date/Time: 8.18.18 0950						

IR5 = 1.6/1.6 w/c.s.
IR5 = 1.2/1.2 w/c.s.

IR5 = 5.9/5.9, 3.4/3.4, 3.1/3.1
IR4 = 3.3/3.2 w/c.s.
9/28/2018

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: 8/17/18 Carrier: Courier		COC No: 1 2 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 Sample Type:		Analysis Turnaround Time Calendar (C) or Work Days (W) W ☒ 21 days ☐ Other _____		Fraction		PCDD/Fs 1613B		Aroclor		Grain Size ASTM D7928/D6913		PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 9060, 160.3		Afterberg Limits ASTM D4318		Sample Specific Notes:			
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCDD/Fs 1613B	Aroclor	Grain Size ASTM D7928/D6913	PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 9060, 160.3	Afterberg Limits ASTM D4318							
PDI-SC-S109 - 10 to 11.3	8/15/2018	18:25	SC		ED	4		x	x	x	x								
PDI-SC-S131 - 0 to 2	8/16/2018	8:50	SC		ED	4		x	x	x	x								
PDI-SC-S131 - 2 to 4	8/16/2018	8:55	SC		ED	5		x	x	x	x	x							
PDI-SC-S131 - 4 to 6	8/16/2018	9:00	SC		ED	4		x	x	x	x								
PDI-SC-S131 - 6 to 8	8/16/2018	9:05	SC		ED	4		x	x	x	x								
PDI-SC-S256 - 0 to 2	8/16/2018	10:25	SC		ED	4		x	x	x	x								
PDI-SC-S256 - 2 to 4	8/16/2018	10:30	SC		ED	4		x	x	x	x								
PDI-SC-S256 - 2 to 4D	8/16/2018	10:30	SC		ED	3		x	x		x								
PDI-SC-S256 - 4 to 6	8/16/2018	10:35	SC		ED	4		x	x	x	x								
PDI-SC-S256 - 6 to 8.2	8/16/2018	10:40	SC		ED	4		x	x	x	x								
PDI-SC-S256 - 8.7 to 9.7	8/16/2018	10:45	SC		ED	4		x	x	x	x								
PDI-SC-S256 - 9.7 to 10.7	8/16/2018	10:50	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 Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered) K2 8/22/18							Sample Disposal ☐ Return To Client ☒ Spinal By Lab ☒ Archive For 12 Months												
Special Instructions/QC Requirements & Comments: Separate reports for each lab																			
Relinquished by:	Company: AECOM	Date/Time: 8/17/18 500	Received by:					Company: M-E	Date/Time: 8/17/18 1500										
Relinquished by:	Company: M.E.	Date/Time: 8/17/18 1530	Received by:					Company: TAPOR	Date/Time: 8/21/18 1530										
Relinquished by:	Company: TAPOR	Date/Time: 8/20/18 1700	Received by:					Company: SRATA	Date/Time: 8.21.18 1000										

IRB = 1.1/1.1 W/C S.

[illegible]

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047		SUBSURFACE SEDIMENT CHAIN OF CUSTODY														COC No. 1 7 of 10 pages 5										
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: 8/17/18 Carrier: Courier																				
		Analysis Turnaround Time Calendar (C) or Work Days (W) W																								
☒ 21 days ☐ Other _____																										
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCDD/Fs 1613B	Aroclor	Grain size ASTM D7928/D6913	PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 9060, 160.3	Atterberg Limits ASTM D4318	WQ-PCBA	WQ-PAHs	WQ-D/F	WQ-TOC	Sample Specific Notes:									
PDI-SC-S108 - 8.8 to 9.8	8/16/2018	18:40	SC		ED	4		x	x	x	x															
PDI-SC-S157 - 0 to 2	8/17/2018	10:10	SC		ED	5		x	x	x	x	x														
PDI-SC-S157 - 2 to 3.7	8/17/2018	10:15	SC		ED	4		x	x	x	x															
PDI-SC-S157 - 3.7 to 6	8/17/2018	10:18	SC		ED	4		x	x	x	x															
PDI-SC-S157 - 6 to 8	8/17/2018	10:25	SC	MS/MSD	ED	6		x	x	x	x															
PDI-SC-S157 - 8 to 10	8/17/2018	10:30	SC		ED	4		x	x	x	x															
PDI-SC-S157 - 10 to 12.4	8/17/2018	10:35	SC		ED	4		x	x	x	x															
PDI-SC-S157 - 12.4 to 14	8/17/2018	10:40	SC		ED	4		x	x	x	x															
PDI-SC-S157 - 14 to 15.9	8/17/2018	10:50	SC		ED	4		x	x	x	x															
PDI-RB-SS-180816-1110	8/16/2018	11:10	W		ED								x	x	x	x										
PDI-RB-SS-180817	8/17/2018	7:45	W		ED								x	x	x	x										
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Coll Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)							Sample Disposal ☐ Return To Client ☒ Disposal By Lab ☒ Archive For 12 Months																			
Special Instructions/QC Requirements & Comments: Separate reports for each lab																										
Relinquished by:	Company: AECOM	Date/Time: 8/17/18 1500	Received by:				Company: M-E	Date/Time: 8/17/18 1500																		
Relinquished by:	Company: M.E.	Date/Time: 8/17/18 1530	Received by:				Company: TAPOR	Date/Time: 8/17/18 1530																		
Relinquished by:	Company: TAPOR	Date/Time: 8/17/18 1600	Received by:				Company: SEA TA	Date/Time: 8/21/18 1000																		

THE LEADER IN ENVIRONMENTAL TESTING

[illegible]

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-79672-2

Login Number: 79672

List Source: TestAmerica Seattle

List Number: 1

Creator: O'Connell, Jason I

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

Isotope Dilution Summary

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

TestAmerica Job ID: 580-79672-2

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)							HxCF (29-147)
		HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	HxCDD (32-141)	HxCDF (26-152)	HxDD (28-130)	HxDF (26-123)	
580-79672-1	PDI-SC-S113(A)-0to2.2	96	84	82	91	94	92	100	96
580-79672-1 - RA	PDI-SC-S113(A)-0to2.2								
580-79672-2	PDI-SC-S113(A)-2.2to4.6	83	84	99	84	90	82	95	70
580-79672-2 - RA	PDI-SC-S113(A)-2.2to4.6								
580-79672-3	PDI-SC-S113(B)-3.6to5.6	82	79	65	87	99	92	109	93
580-79672-3 - RA	PDI-SC-S113(B)-3.6to5.6								
580-79672-4	PDI-SC-S113(B)-5.6to7.4	86	78	71	94	99	93	110	95
580-79672-4 - RA	PDI-SC-S113(B)-5.6to7.4								
580-79672-5	PDI-SC-S113(B)-7.4to10	90	75	79	93	98	93	108	99
580-79672-5 - RA	PDI-SC-S113(B)-7.4to10								
580-79672-6	PDI-SC-S113(B)-10to12	94	83	86	97	104	96	112	104
580-79672-6 - RA	PDI-SC-S113(B)-10to12								
580-79672-7	PDI-SC-S113(B)-12to13.8	90	88	84	84	104	91	110	96
580-79672-7 - RA	PDI-SC-S113(B)-12to13.8								
580-79672-8	PDI-SC-S109-0to2	65	54	62	52	54	59	59	59
580-79672-9	PDI-SC-S109-2to4	74	65	76	69	72	66	72	75
580-79672-9 - RA	PDI-SC-S109-2to4								
580-79672-10	PDI-SC-S109-4to6	68	56	65	56	57	57	61	65
580-79672-11	PDI-SC-S109-6to8	58	49	55	48	49	50	49	53
580-79672-11 - RA	PDI-SC-S109-6to8								
580-79672-12	PDI-SC-S109-8to10	59	53	53	55	57	57	60	58
580-79672-12 - RA	PDI-SC-S109-8to10								
580-79672-13	PDI-SC-S109-10to11.3	5 *	6 *	3 q *	17 *	24 *	17 *	26	26 *
580-79672-14	PDI-SC-S131-0to2	47	37	43	44	46	45	47	47
580-79672-14 - RA	PDI-SC-S131-0to2								
580-79672-15	PDI-SC-S131-2to4	44	37	32	48	50	49	52	50
580-79672-15 - RA	PDI-SC-S131-2to4								
580-79672-16	PDI-SC-S131-4to6	42	35	31	47	47	45	48	47
580-79672-16 - RA	PDI-SC-S131-4to6								
580-79672-17	PDI-SC-S131-6to8		42	33	52	55	53	58	53
580-79672-17 - RA	PDI-SC-S131-6to8								
580-79672-17 - DL	PDI-SC-S131-6to8	54							
580-79672-18	PDI-SC-S256-0to2	53	45	49	55	58	56	59	58
580-79672-19	PDI-SC-S256-2to4	52	44	44	54	55	54	56	55
580-79672-19 - RA	PDI-SC-S256-2to4								
580-79672-20	PDI-SC-S256-2to4D	53	46	43	59	61	59	63	60
580-79672-20 - RA	PDI-SC-S256-2to4D								
580-79672-21	PDI-SC-S256-4to6	53	45	42	58	62	60	67	58
580-79672-21 - RA	PDI-SC-S256-4to6								
580-79672-22	PDI-SC-S256-6to8.7	43	36	27	53	57	51	58	50
580-79672-22 - RA	PDI-SC-S256-6to8.7								
580-79672-23	PDI-SC-S256-8.7to9.7	48	40	39	50	51	51	55	52
580-79672-23 - RA	PDI-SC-S256-8.7to9.7								
580-79672-24	PDI-SC-S256-9.7to10.7	42	35	27	48	49	48	52	48
580-79672-24 - RA	PDI-SC-S256-9.7to10.7								
580-79672-25	PDI-SC-S232-0to2	38	32	26	44	47	44	50	45
580-79672-25 - RA	PDI-SC-S232-0to2								
580-79672-26	PDI-SC-S232-2to4	45	37	37	49	52	50	54	51
580-79672-26 - RA	PDI-SC-S232-2to4								

TestAmerica Seattle

Isotope Dilution Summary

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

TestAmerica Job ID: 580-79672-2

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

Matrix: Solid

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	HxCDD (32-141)	HxCDF (26-152)	HxDD (28-130)	HxDF (26-123)	HxCF (29-147)
Lab Sample ID	Client Sample ID								
580-79672-27	PDI-SC-S232-4to6.2	39	32	36	43	43	42	44	44
580-79672-28	PDI-SC-S263-0to2	51	44	34	53	54	53	56	54
580-79672-29	PDI-SC-S263-2to3.8	41	34	36	41	43	41	44	43
580-79672-30	PDI-SC-S263-3.8to5.9	50	42	43	51	50	49	52	51
580-79672-30 - RA	PDI-SC-S263-3.8to5.9								
580-79672-31	PDI-SC-S108-0to1.9	43	37	39	52	53	50	55	49
580-79672-31 - RA	PDI-SC-S108-0to1.9								
580-79672-32	PDI-SC-S108-1.9to3	71	62	47	67	69	69	71	66
580-79672-32 - RA	PDI-SC-S108-1.9to3								
580-79672-33	PDI-SC-S108-3to4.7	70	59	48	61	62	63	65	59
580-79672-33 - RA	PDI-SC-S108-3to4.7								
580-79672-34	PDI-SC-S108-4.7to6.7	61	55	55	64	69	61	69	58
580-79672-34 - RA	PDI-SC-S108-4.7to6.7								
580-79672-35	PDI-SC-S108-6.7to8.8	64	56	60	57	59	59	60	58
580-79672-36	PDI-SC-S108-6.7to8.8D	55	45	52	49	51	52	52	51
580-79672-37	PDI-SC-S108-8.8to9.8	39	31 q	39	51	47	46	49	48
580-79672-38	PDI-SC-S157-0to2	41	32	38	47	49	46	48	48
580-79672-38 - RA	PDI-SC-S157-0to2								
580-79672-39	PDI-SC-S157-2to3.7	42	33	42	53	51	51	51	52
580-79672-39 - RA	PDI-SC-S157-2to3.7								
580-79672-40	PDI-SC-S157-3.7to6	23	18 *	26	32	30	29	31	35
580-79672-41	PDI-SC-S157-6to8	27	20 *	27	36	35	33	35	37
580-79672-42	PDI-SC-S157-8to10	33	27 *	33	44	43	44	44	42
580-79672-43	PDI-SC-S157-10to12.4	39	33	39	48	46	43	45	47
580-79672-44	PDI-SC-S157-12.4to14	28	24 *	28	38	39	38	39	40
580-79672-45	PDI-SC-S157-14to15.9	33	27 *	36	47	44	41	44	46
580-79672-48	PDI-SC-S053-0to2	54	45	49	52	54	54	56	55
580-79672-48 - RA	PDI-SC-S053-0to2								
580-79672-49	PDI-SC-S053-2to4	41	35	32	44	47	45	49	46
580-79672-49 - RA	PDI-SC-S053-2to4								
580-79672-50	PDI-SC-S053-4to6	41	34	27	42	50	44	52	47
580-79672-50 - RA	PDI-SC-S053-4to6								
580-79672-51	PDI-SC-S053-6to8	22 *	18 *	16 *	31 *	31	28	32	33
580-79672-52	PDI-SC-S053-8to10	50	45	47	52	52	51	55	53
580-79672-53	PDI-SC-S053-10to12.4	25	20 *	26	31 *	32	34	35	39
580-79672-54	PDI-SC-S113(A)-2.2to4.6D	48	44	57	60	64	55	62	42
580-79672-54 - RA	PDI-SC-S113(A)-2.2to4.6D								
MB 320-243983/1-A	Method Blank	87	79	84	71	75	75	78	78
MB 320-244175/1-A	Method Blank	59	52	54	55	55	56	59	54
MB 320-244236/1-A	Method Blank	83	76	75	71	69	71	73	69
MB 320-244409/1-A	Method Blank	64	61	61	62	65	61	67	61
MB 320-244438/1-A	Method Blank	104	92	96	81	90	88	93	92
		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)	
Lab Sample ID	Client Sample ID								
580-79672-1	PDI-SC-S113(A)-0to2.2	87	83	88	80	94		82	
580-79672-1 - RA	PDI-SC-S113(A)-0to2.2						90		
580-79672-2	PDI-SC-S113(A)-2.2to4.6	154	78	65	128	129		105	
580-79672-2 - RA	PDI-SC-S113(A)-2.2to4.6						165		

TestAmerica Seattle

Isotope Dilution Summary

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

TestAmerica Job ID: 580-79672-2

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)	13CH _x CF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)
580-79672-3	PDI-SC-S113(B)-3.6to5.6	94	85	93	77	97		72
580-79672-3 - RA	PDI-SC-S113(B)-3.6to5.6						80	
580-79672-4	PDI-SC-S113(B)-5.6to7.4	89	86	93	79	94		77
580-79672-4 - RA	PDI-SC-S113(B)-5.6to7.4						93	
580-79672-5	PDI-SC-S113(B)-7.4to10	87	85	95	78	93		87
580-79672-5 - RA	PDI-SC-S113(B)-7.4to10						99	
580-79672-6	PDI-SC-S113(B)-10to12	86	85	96	81	96		89
580-79672-6 - RA	PDI-SC-S113(B)-10to12						97	
580-79672-7	PDI-SC-S113(B)-12to13.8	95	70	101	65	97		86
580-79672-7 - RA	PDI-SC-S113(B)-12to13.8						97	
580-79672-8	PDI-SC-S109-0to2	59	58	58	57	64	63	59
580-79672-9	PDI-SC-S109-2to4	63	68	74	68	67		78
580-79672-9 - RA	PDI-SC-S109-2to4						63	
580-79672-10	PDI-SC-S109-4to6	61	60	67	58	68	66	59
580-79672-11	PDI-SC-S109-6to8	49	47	51	48	54		47
580-79672-11 - RA	PDI-SC-S109-6to8						52	
580-79672-12	PDI-SC-S109-8to10	53	51	54	49	59		48
580-79672-12 - RA	PDI-SC-S109-8to10						56	
580-79672-13	PDI-SC-S109-10to11.3	44	43	13 *	34	55	52	2 q *
580-79672-14	PDI-SC-S131-0to2	41	42	48	43	52		40
580-79672-14 - RA	PDI-SC-S131-0to2						51	
580-79672-15	PDI-SC-S131-2to4	47	45	51	47	54		36
580-79672-15 - RA	PDI-SC-S131-2to4						48	
580-79672-16	PDI-SC-S131-4to6	45	44	48	46	50		35
580-79672-16 - RA	PDI-SC-S131-4to6						48	
580-79672-17	PDI-SC-S131-6to8	53	50	55	52	55		35
580-79672-17 - RA	PDI-SC-S131-6to8						54	
580-79672-17 - DL	PDI-SC-S131-6to8							51
580-79672-18	PDI-SC-S256-0to2	54	53	59	53	61	56	44
580-79672-19	PDI-SC-S256-2to4	51	49	56	50	56		45
580-79672-19 - RA	PDI-SC-S256-2to4						49	
580-79672-20	PDI-SC-S256-2to4D	56	54	62	56	63		45
580-79672-20 - RA	PDI-SC-S256-2to4D						58	
580-79672-21	PDI-SC-S256-4to6	56	53	62	53	61		47
580-79672-21 - RA	PDI-SC-S256-4to6						54	
580-79672-22	PDI-SC-S256-6to8.7	53	51	54	52	55		36
580-79672-22 - RA	PDI-SC-S256-6to8.7						56	
580-79672-23	PDI-SC-S256-8.7to9.7	52	49	53	50	55		42
580-79672-23 - RA	PDI-SC-S256-8.7to9.7						55	
580-79672-24	PDI-SC-S256-9.7to10.7	48	46	50	47	51		35
580-79672-24 - RA	PDI-SC-S256-9.7to10.7						55	
580-79672-25	PDI-SC-S232-0to2	46	45	46	46	51		33
580-79672-25 - RA	PDI-SC-S232-0to2						53	
580-79672-26	PDI-SC-S232-2to4	50	48	52	50	55		38
580-79672-26 - RA	PDI-SC-S232-2to4						58	
580-79672-27	PDI-SC-S232-4to6.2	43	41	44	43	49	48	32
580-79672-28	PDI-SC-S263-0to2	50	49	55	50	57	52	44
580-79672-29	PDI-SC-S263-2to3.8	40	40	44	41	49	47	35
580-79672-30	PDI-SC-S263-3.8to5.9	48	47	52	49	54		43

TestAmerica Seattle

Isotope Dilution Summary

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

TestAmerica Job ID: 580-79672-2

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)
580-79672-30 - RA	PDI-SC-S263-3.8to5.9						59	
580-79672-31	PDI-SC-S108-0to1.9	50	47	51	49	54		36
580-79672-31 - RA	PDI-SC-S108-0to1.9						57	
580-79672-32	PDI-SC-S108-1.9to3	65	62	69	61	67		65
580-79672-32 - RA	PDI-SC-S108-1.9to3						63	
580-79672-33	PDI-SC-S108-3to4.7	59	56	62	56	61		62
580-79672-33 - RA	PDI-SC-S108-3to4.7						59	
580-79672-34	PDI-SC-S108-4.7to6.7	66	59	63	61	59		57
580-79672-34 - RA	PDI-SC-S108-4.7to6.7						71	
580-79672-35	PDI-SC-S108-6.7to8.8	55	52	58	53	60	54	55
580-79672-36	PDI-SC-S108-6.7to8.8D	51	48	52	50	57	54	43
580-79672-37	PDI-SC-S108-8.8to9.8	49	55	51	59	58	61	33
580-79672-38	PDI-SC-S157-0to2	48	53	49	56	57		34
580-79672-38 - RA	PDI-SC-S157-0to2						58	
580-79672-39	PDI-SC-S157-2to3.7	54	60	56	62	63		36
580-79672-39 - RA	PDI-SC-S157-2to3.7						65	
580-79672-40	PDI-SC-S157-3.7to6	39	43	35	50	50	58	16 *
580-79672-41	PDI-SC-S157-6to8	39	43	39	50	51	55	19
580-79672-42	PDI-SC-S157-8to10	46	50	46	53	59	56	26
580-79672-43	PDI-SC-S157-10to12.4	47	50	49	52	55	52	36
580-79672-44	PDI-SC-S157-12.4to14	43	49	44	53	59	58	20
580-79672-45	PDI-SC-S157-14to15.9	51	57	47	60	61	60	26
580-79672-48	PDI-SC-S053-0to2	54	50	55	50	55		45
580-79672-48 - RA	PDI-SC-S053-0to2						56	
580-79672-49	PDI-SC-S053-2to4	49	47	45	47	51		35
580-79672-49 - RA	PDI-SC-S053-2to4						52	
580-79672-50	PDI-SC-S053-4to6	54	48	48	47	55		35
580-79672-50 - RA	PDI-SC-S053-4to6						57	
580-79672-51	PDI-SC-S053-6to8	36	36	31	41	45	48	16 *
580-79672-52	PDI-SC-S053-8to10	49	47	54	47	53	49	42
580-79672-53	PDI-SC-S053-10to12.4	37	37	37	42	49	52	16 *
580-79672-54	PDI-SC-S113(A)-2.2to4.6D	79	57	57	82	81		46
580-79672-54 - RA	PDI-SC-S113(A)-2.2to4.6D						113	
MB 320-243983/1-A	Method Blank	71	69	79	67	75	72	79
MB 320-244175/1-A	Method Blank	49	47	57	47	54	47	53
MB 320-244236/1-A	Method Blank	66	62	72	61	70	63	76
MB 320-244409/1-A	Method Blank	56	61	69	58	61	61	67
MB 320-244438/1-A	Method Blank	81	80	95	73	90	82	89

Surrogate Legend

HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
 HxCDD = 13C-1,2,3,4,7,8-HxCDD
 HxCDF = 13C-1,2,3,4,7,8-HxCDF
 HxDD = 13C-1,2,3,6,7,8-HxCDD
 HxDF = 13C-1,2,3,6,7,8-HxCDF
 HxCF = 13C-1,2,3,7,8,9-HxCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD

TestAmerica Seattle

Isotope Dilution Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79672-2

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDD (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	HxCDD (21-193)	HxCDF (19-202)	HxDD (25-163)	HxDF (21-159)	HxCF (17-205)
LCS 320-243983/2-A	Lab Control Sample	84	75	79	66	73	72	74	75
LCS 320-244175/2-A	Lab Control Sample	75	68	68	68	72	70	75	68
LCS 320-244236/2-A	Lab Control Sample	80	70	72	66	69	69	71	65
LCS 320-244409/2-A	Lab Control Sample	66	62	61	67	69	65	69	60
LCS 320-244438/2-A	Lab Control Sample	106	90	98	86	94	89	96	95
LCSD 320-243983/3-A	Lab Control Sample Dup	85	74	82	66	70	71	74	76
LCSD 320-244175/3-A	Lab Control Sample Dup	69	61	62	62	65	63	67	63
LCSD 320-244236/3-A	Lab Control Sample Dup	83	74	77	68	72	71	72	69
LCSD 320-244409/3-A	Lab Control Sample Dup	68	60	61	65	66	64	67	59
LCSD 320-244438/3-A	Lab Control Sample Dup	95	66	88	50	57	66	68	88

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	PeCDD (21-227)	PeCDF (21-192)	13CHxCF (22-176)	PeCF (13-328)	TCDD (20-175)	TCDF (22-152)	OCDD (13-199)
LCS 320-243983/2-A	Lab Control Sample	67	66	74	64	71	68	76
LCS 320-244175/2-A	Lab Control Sample	62	59	73	58	66	59	68
LCS 320-244236/2-A	Lab Control Sample	63	59	67	60	67	60	73
LCS 320-244409/2-A	Lab Control Sample	60	64	66	64	64	61	69
LCS 320-244438/2-A	Lab Control Sample	85	83	96	78	93	85	92
LCSD 320-243983/3-A	Lab Control Sample Dup	67	66	77	62	73	68	77
LCSD 320-244175/3-A	Lab Control Sample Dup	57	54	66	53	62	54	62
LCSD 320-244236/3-A	Lab Control Sample Dup	68	62	71	62	70	62	79
LCSD 320-244409/3-A	Lab Control Sample Dup	57	63	66	61	62	57	65
LCSD 320-244438/3-A	Lab Control Sample Dup	86	79	82	51	84	76	86

Surrogate Legend

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

TestAmerica Seattle

Isotope Dilution Summary

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

TestAmerica Job ID: 580-79672-2

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

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	HxCDD (32-141)	HxCDF (26-152)	HxDD (28-130)	HxDF (26-123)	HxCF (29-147)
580-79672-46	PDI-RB-SS-180816-1110	92	83	84	72	72	77	77	75
580-79672-47	PDI-RB-SS-180817	83	74	76	71	73	72	75	71
MB 320-242488/1-A	Method Blank	75	67	70	58	57	62	62	65
MB 320-243331/1-A	Method Blank	89	82	84	82	86	84	89	83

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PeCDD (25-181)	PeCDF (24-185)	13CHxCF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)
580-79672-46	PDI-RB-SS-180816-1110	73	67	72	68	80	71	86
580-79672-47	PDI-RB-SS-180817	65	63	74	64	72	66	76
MB 320-242488/1-A	Method Blank	63	58	61	56	70	62	69
MB 320-243331/1-A	Method Blank	79	75	89	77	83	77	76

Surrogate Legend

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

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

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDD (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	HxCDD (21-193)	HxCDF (19-202)	HxDD (25-163)	HxDF (21-159)	HxCF (17-205)
LCS 320-242488/2-A	Lab Control Sample	53	49	51	42	43	45	47	46
LCS 320-243331/2-A	Lab Control Sample	92	83	85	79	85	83	89	82
LCSD 320-242488/3-A	Lab Control Sample Dup	85	78	80	67	68	71	72	71
LCSD 320-243331/3-A	Lab Control Sample Dup	89	82	83	76	81	82	82	80

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PeCDD (21-227)	PeCDF (21-192)	13CHxCF (22-176)	PeCF (13-328)	TCDD (20-175)	TCDF (22-152)	OCDD (13-199)
LCS 320-242488/2-A	Lab Control Sample	47	44	46	45	56	53	48
LCS 320-243331/2-A	Lab Control Sample	74	71	86	72	78	72	80
LCSD 320-242488/3-A	Lab Control Sample Dup	69	63	70	64	74	65	78
LCSD 320-243331/3-A	Lab Control Sample Dup	76	72	82	74	79	73	81

Surrogate Legend

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

TestAmerica Seattle

Isotope Dilution Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79672-2

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

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