TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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

TestAmerica Job ID: 580-77301-2
Client Project/Site: Portland Harbor Pre-Remedial Design

For:
AECOM
1111 Third Ave
Suite 1600
Seattle, Washington 98101

Attn: Karen Mixon

M. Elaine Walker

Authorized for release by:
6/8/2018 5:40:22 PM

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

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

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

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Job ID: 580-77301-2

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE
Client: AECOM
Project: Portland Harbor Pre-Remedial Design
Report Number: 580-77301-2

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

Eleven samples were received on 5/15/2018 1:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.3º C, 2.1º C and 2.7º C.

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

This report contains results of Dioxins / Furans by Method 1613B, performed by TestAmerica Sacramento.

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

DIOXIN/ FURAN

Samples PDI-SG-S158 (580-77301-1), PDI-SG-S161 (580-77301-2), PDI-SG-S250 (580-77301-3), PDI-SG-S249 (580-77301-4), PDI-SG-S248 (580-77301-5), PDI-SG-S247 (580-77301-6), PDI-SG-S246 (580-77301-7), PDI-SG-S252 (580-77301-8), PDI-SG-S244 (580-77301-9) and PDI-SG-S227 (580-77301-10) were analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 06/05/2018 and analyzed on 06/07/2018.

Several analytes were detected in method blank MB 320-227351/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD and 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 3D5 exceeded this criteria: PDI-SG-S158 (580-77301-1), PDI-SG-S161 (580-77301-2), PDI-SG-S250 (580-77301-3), PDI-SG-S249 (580-77301-4), PDI-SG-S248 (580-77301-5), PDI-SG-S247 (580-77301-6), PDI-SG-S246 (580-77301-7), (CCV 320-227860/26), (LCS 320-227351/2-A), (LCSD 320-227351/3-A) and (MB 320-227351/1-A). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD and 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 3D5 exceeded this criteria: PDI-SG-S252 (580-77301-8), PDI-SG-S244 (580-77301-9), PDI-SG-S227 (580-77301-10),

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Laboratory: TestAmerica Seattle (Continued)

(CCV 320-227861/39) and (WDM 320-227861/40). 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.

Due to the matrix, the initial volumes used for the following samples deviated from the standard procedure: PDI-SG-S158 (580-77301-1), PDI-SG-S161 (580-77301-2), PDI-SG-S250 (580-77301-3), PDI-SG-S249 (580-77301-4), PDI-SG-S248 (580-77301-5), PDI-SG-S247 (580-77301-6), PDI-SG-S246 (580-77301-7), PDI-SG-S252 (580-77301-8), PDI-SG-S244 (580-77301-9) and PDI-SG-S227 (580-77301-10). The reporting limits (RLs) have been adjusted proportionately. Samples are associated with preparation batch 320-227351.

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

DIOXIN/ FURAN - Rinse Blank

Sample PDI-RB-VV-180514 (580-77301-11) was analyzed for Dioxin/ Furan in accordance with 1613B. The sample was prepared on 05/23/2018 and analyzed on 05/25/2018.

Several analytes were detected in method blank MB 320-224916/1-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: 580-77301-2

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.
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.
¤	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 ID: PDI-SG-S158
Date Collected: 05/14/18 13:15
Date Received: 05/15/18 13:15

Lab Sample ID: 580-77301-1
Matrix: Solid
Percent Solids: 57.3

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	0.10	B	0.0044	0.0019	ug/Kg	☼	06/05/18 15:02	06/07/18 12:43	1
1,2,3,4,6,7,8-HpCDF	0.022	B	0.0044	0.00047	ug/Kg	☼	06/05/18 15:02	06/07/18 12:43	1
1,2,3,4,7,8,9-HpCDF	0.0026	J B	0.0044	0.00057	ug/Kg	☼	06/05/18 15:02	06/07/18 12:43	1
1,2,3,4,7,8-HxCDD	0.00097	J	0.0044	0.00010	ug/Kg	☼	06/05/18 15:02	06/07/18 12:43	1
1,2,3,4,7,8-HxCDF	0.0079		0.0044	0.00034	ug/Kg	☼	06/05/18 15:02	06/07/18 12:43	1
1,2,3,6,7,8-HxCDD	0.0043	J	0.0044	0.000098	ug/Kg	☼	06/05/18 15:02	06/07/18 12:43	1
1,2,3,6,7,8-HxCDF	0.0032	J	0.0044	0.00032	ug/Kg	☼	06/05/18 15:02	06/07/18 12:43	1
1,2,3,7,8,9-HxCDD	0.0028	J B	0.0044	0.000089	ug/Kg	☼	06/05/18 15:02	06/07/18 12:43	1
1,2,3,7,8,9-HxCDF	0.00086	J B	0.0044	0.00015	ug/Kg	☼	06/05/18 15:02	06/07/18 12:43	1
1,2,3,7,8-PeCDD	0.00056	J	0.0044	0.000090	ug/Kg	☼	06/05/18 15:02	06/07/18 12:43	1
1,2,3,7,8-PeCDF	0.0039	J B	0.0044	0.00014	ug/Kg	☼	06/05/18 15:02	06/07/18 12:43	1
2,3,4,6,7,8-HxCDF	0.00079	J B	0.0044	0.00018	ug/Kg	☼	06/05/18 15:02	06/07/18 12:43	1
2,3,4,7,8-PeCDF	0.0017	J	0.0044	0.00016	ug/Kg	☼	06/05/18 15:02	06/07/18 12:43	1
2,3,7,8-TCDD	0.00064	J	0.00087	0.000062	ug/Kg	☼	06/05/18 15:02	06/07/18 12:43	1
OCDD	1.3	B	0.0087	0.00092	ug/Kg	☼	06/05/18 15:02	06/07/18 12:43	1
OCDF	0.060	B	0.0087	0.00011	ug/Kg	☼	06/05/18 15:02	06/07/18 12:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*56*		*23 - 140*	*06/05/18 15:02*	*06/07/18 12:43*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*51*		*28 - 143*	*06/05/18 15:02*	*06/07/18 12:43*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*56*		*26 - 138*	*06/05/18 15:02*	*06/07/18 12:43*	*1*
13C-1,2,3,4,7,8-HxCDD	*63*		*32 - 141*	*06/05/18 15:02*	*06/07/18 12:43*	*1*
13C-1,2,3,4,7,8-HxCDF	*62*		*26 - 152*	*06/05/18 15:02*	*06/07/18 12:43*	*1*
13C-1,2,3,6,7,8-HxCDD	*61*		*28 - 130*	*06/05/18 15:02*	*06/07/18 12:43*	*1*
13C-1,2,3,6,7,8-HxCDF	*59*		*26 - 123*	*06/05/18 15:02*	*06/07/18 12:43*	*1*
13C-1,2,3,7,8,9-HxCDF	*70*		*29 - 147*	*06/05/18 15:02*	*06/07/18 12:43*	*1*
13C-1,2,3,7,8-PeCDD	*68*		*25 - 181*	*06/05/18 15:02*	*06/07/18 12:43*	*1*
13C-1,2,3,7,8-PeCDF	*69*		*24 - 185*	*06/05/18 15:02*	*06/07/18 12:43*	*1*
13C-2,3,4,6,7,8-HxCDF	*69*		*28 - 136*	*06/05/18 15:02*	*06/07/18 12:43*	*1*
13C-2,3,4,7,8-PeCDF	*66*		*21 - 178*	*06/05/18 15:02*	*06/07/18 12:43*	*1*
13C-2,3,7,8-TCDD	*66*		*25 - 164*	*06/05/18 15:02*	*06/07/18 12:43*	*1*
13C-OCDD	*59*		*17 - 157*	*06/05/18 15:02*	*06/07/18 12:43*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*117*		*35 - 197*	*06/05/18 15:02*	*06/07/18 12:43*	*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	0.0029		0.00087	0.000090	ug/Kg	☼	06/05/18 15:02	06/07/18 21:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*75*		*24 - 169*	*06/05/18 15:02*	*06/07/18 21:12*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*109*		*35 - 197*	*06/05/18 15:02*	*06/07/18 21:12*	*1*

Client Sample ID: PDI-SG-S161
Date Collected: 05/14/18 16:30
Date Received: 05/15/18 13:15

Lab Sample ID: 580-77301-2
Matrix: Solid
Percent Solids: 41.4

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.10	B	0.0060	0.0015	ug/Kg	☼	06/05/18 15:02	06/07/18 13:32	1
1,2,3,4,6,7,8-HpCDF	0.015	B	0.0060	0.00034	ug/Kg	☼	06/05/18 15:02	06/07/18 13:32	1
1,2,3,4,7,8,9-HpCDF	0.0013	J B	0.0060	0.00044	ug/Kg	☼	06/05/18 15:02	06/07/18 13:32	1
1,2,3,4,7,8-HxCDD	0.00098	J	0.0060	0.00015	ug/Kg	☼	06/05/18 15:02	06/07/18 13:32	1
1,2,3,4,7,8-HxCDF	0.0026	J	0.0060	0.00021	ug/Kg	☼	06/05/18 15:02	06/07/18 13:32	1
1,2,3,6,7,8-HxCDD	0.0034	J	0.0060	0.00014	ug/Kg	☼	06/05/18 15:02	06/07/18 13:32	1
1,2,3,6,7,8-HxCDF	0.0012	J	0.0060	0.00021	ug/Kg	☼	06/05/18 15:02	06/07/18 13:32	1
1,2,3,7,8,9-HxCDD	0.0028	J B	0.0060	0.00013	ug/Kg	☼	06/05/18 15:02	06/07/18 13:32	1
1,2,3,7,8,9-HxCDF	0.00098	J B	0.0060	0.00011	ug/Kg	☼	06/05/18 15:02	06/07/18 13:32	1
1,2,3,7,8-PeCDD	0.00052	J	0.0060	0.000098	ug/Kg	☼	06/05/18 15:02	06/07/18 13:32	1
1,2,3,7,8-PeCDF	0.0013	J B	0.0060	0.000099	ug/Kg	☼	06/05/18 15:02	06/07/18 13:32	1
2,3,4,6,7,8-HxCDF	0.00047	J B	0.0060	0.00012	ug/Kg	☼	06/05/18 15:02	06/07/18 13:32	1
2,3,4,7,8-PeCDF	0.00076	J	0.0060	0.00012	ug/Kg	☼	06/05/18 15:02	06/07/18 13:32	1
2,3,7,8-TCDD	0.00053	J	0.0012	0.000086	ug/Kg	☼	06/05/18 15:02	06/07/18 13:32	1
OCDD	0.82	B	0.012	0.00077	ug/Kg	☼	06/05/18 15:02	06/07/18 13:32	1
OCDF	0.044	B	0.012	0.00011	ug/Kg	☼	06/05/18 15:02	06/07/18 13:32	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*54*		*23 - 140*	*06/05/18 15:02*	*06/07/18 13:32*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*51*		*28 - 143*	*06/05/18 15:02*	*06/07/18 13:32*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*53*		*26 - 138*	*06/05/18 15:02*	*06/07/18 13:32*	*1*
13C-1,2,3,4,7,8-HxCDD	*56*		*32 - 141*	*06/05/18 15:02*	*06/07/18 13:32*	*1*
13C-1,2,3,4,7,8-HxCDF	*56*		*26 - 152*	*06/05/18 15:02*	*06/07/18 13:32*	*1*
13C-1,2,3,6,7,8-HxCDD	*55*		*28 - 130*	*06/05/18 15:02*	*06/07/18 13:32*	*1*
13C-1,2,3,6,7,8-HxCDF	*54*		*26 - 123*	*06/05/18 15:02*	*06/07/18 13:32*	*1*
13C-1,2,3,7,8,9-HxCDF	*63*		*29 - 147*	*06/05/18 15:02*	*06/07/18 13:32*	*1*
13C-1,2,3,7,8-PeCDD	*61*		*25 - 181*	*06/05/18 15:02*	*06/07/18 13:32*	*1*
13C-1,2,3,7,8-PeCDF	*62*		*24 - 185*	*06/05/18 15:02*	*06/07/18 13:32*	*1*
13C-2,3,4,6,7,8-HxCDF	*61*		*28 - 136*	*06/05/18 15:02*	*06/07/18 13:32*	*1*
13C-2,3,4,7,8-PeCDF	*57*		*21 - 178*	*06/05/18 15:02*	*06/07/18 13:32*	*1*
13C-2,3,7,8-TCDD	*59*		*25 - 164*	*06/05/18 15:02*	*06/07/18 13:32*	*1*
13C-OCDD	*57*		*17 - 157*	*06/05/18 15:02*	*06/07/18 13:32*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*111*		*35 - 197*	*06/05/18 15:02*	*06/07/18 13:32*	*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		0.0012	0.000094	ug/Kg	☼	06/05/18 15:02	06/07/18 21:50	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*68*		*24 - 169*	*06/05/18 15:02*	*06/07/18 21:50*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*108*		*35 - 197*	*06/05/18 15:02*	*06/07/18 21:50*	*1*

Client Sample ID: PDI-SG-S250
Date Collected: 05/14/18 10:40
Date Received: 05/15/18 13:15

Lab Sample ID: 580-77301-3
Matrix: Solid
Percent Solids: 38.5

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.14	B	0.0065	0.0017	ug/Kg	☼	06/05/18 15:02	06/07/18 14:20	1
1,2,3,4,6,7,8-HpCDF	0.025	B	0.0065	0.00066	ug/Kg	☼	06/05/18 15:02	06/07/18 14:20	1
1,2,3,4,7,8,9-HpCDF	0.0017	J B	0.0065	0.00087	ug/Kg	☼	06/05/18 15:02	06/07/18 14:20	1
1,2,3,4,7,8-HxCDD	0.00088	J	0.0065	0.00015	ug/Kg	☼	06/05/18 15:02	06/07/18 14:20	1
1,2,3,4,7,8-HxCDF	0.0011	J	0.0065	0.00031	ug/Kg	☼	06/05/18 15:02	06/07/18 14:20	1
1,2,3,6,7,8-HxCDD	0.0030	J	0.0065	0.00013	ug/Kg	☼	06/05/18 15:02	06/07/18 14:20	1
1,2,3,6,7,8-HxCDF	0.00095	J	0.0065	0.00032	ug/Kg	☼	06/05/18 15:02	06/07/18 14:20	1
1,2,3,7,8,9-HxCDD	0.0023	J B	0.0065	0.00013	ug/Kg	☼	06/05/18 15:02	06/07/18 14:20	1
1,2,3,7,8,9-HxCDF	0.0010	J B	0.0065	0.00016	ug/Kg	☼	06/05/18 15:02	06/07/18 14:20	1
1,2,3,7,8-PeCDD	0.00056	J	0.0065	0.00011	ug/Kg	☼	06/05/18 15:02	06/07/18 14:20	1
1,2,3,7,8-PeCDF	ND		0.0065	0.000097	ug/Kg	☼	06/05/18 15:02	06/07/18 14:20	1
2,3,4,6,7,8-HxCDF	0.00041	J B	0.0065	0.00019	ug/Kg	☼	06/05/18 15:02	06/07/18 14:20	1
2,3,4,7,8-PeCDF	0.00026	J q	0.0065	0.00011	ug/Kg	☼	06/05/18 15:02	06/07/18 14:20	1
2,3,7,8-TCDD	0.00029	J q	0.0013	0.000086	ug/Kg	☼	06/05/18 15:02	06/07/18 14:20	1
2,3,7,8-TCDF	0.00050	J	0.0013	0.000092	ug/Kg	☼	06/05/18 15:02	06/07/18 14:20	1
OCDD	1.3	B	0.013	0.0011	ug/Kg	☼	06/05/18 15:02	06/07/18 14:20	1
OCDF	0.21	B	0.013	0.00017	ug/Kg	☼	06/05/18 15:02	06/07/18 14:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*64*		*23 - 140*	*06/05/18 15:02*	*06/07/18 14:20*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*61*		*28 - 143*	*06/05/18 15:02*	*06/07/18 14:20*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*65*		*26 - 138*	*06/05/18 15:02*	*06/07/18 14:20*	*1*
13C-1,2,3,4,7,8-HxCDD	*69*		*32 - 141*	*06/05/18 15:02*	*06/07/18 14:20*	*1*
13C-1,2,3,4,7,8-HxCDF	*69*		*26 - 152*	*06/05/18 15:02*	*06/07/18 14:20*	*1*
13C-1,2,3,6,7,8-HxCDD	*69*		*28 - 130*	*06/05/18 15:02*	*06/07/18 14:20*	*1*
13C-1,2,3,6,7,8-HxCDF	*68*		*26 - 123*	*06/05/18 15:02*	*06/07/18 14:20*	*1*
13C-1,2,3,7,8,9-HxCDF	*76*		*29 - 147*	*06/05/18 15:02*	*06/07/18 14:20*	*1*
13C-1,2,3,7,8-PeCDD	*73*		*25 - 181*	*06/05/18 15:02*	*06/07/18 14:20*	*1*
13C-1,2,3,7,8-PeCDF	*74*		*24 - 185*	*06/05/18 15:02*	*06/07/18 14:20*	*1*
13C-2,3,4,6,7,8-HxCDF	*74*		*28 - 136*	*06/05/18 15:02*	*06/07/18 14:20*	*1*
13C-2,3,4,7,8-PeCDF	*70*		*21 - 178*	*06/05/18 15:02*	*06/07/18 14:20*	*1*
13C-2,3,7,8-TCDD	*71*		*25 - 164*	*06/05/18 15:02*	*06/07/18 14:20*	*1*
13C-2,3,7,8-TCDF	*76*		*24 - 169*	*06/05/18 15:02*	*06/07/18 14:20*	*1*
13C-OCDD	*70*		*17 - 157*	*06/05/18 15:02*	*06/07/18 14:20*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*119*		*35 - 197*	*06/05/18 15:02*	*06/07/18 14:20*	*1*

Client Sample ID: PDI-SG-S249
Date Collected: 05/14/18 12:00
Date Received: 05/15/18 13:15

Lab Sample ID: 580-77301-4
Matrix: Solid
Percent Solids: 60.1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.28	B G	0.0042	0.0042	ug/Kg	☼	06/05/18 15:02	06/07/18 15:08	1
1,2,3,4,6,7,8-HpCDF	0.030	B	0.0041	0.00058	ug/Kg	☼	06/05/18 15:02	06/07/18 15:08	1
1,2,3,4,7,8,9-HpCDF	0.0017	J B	0.0041	0.00077	ug/Kg	☼	06/05/18 15:02	06/07/18 15:08	1
1,2,3,4,7,8-HxCDD	0.00097	J q	0.0041	0.00019	ug/Kg	☼	06/05/18 15:02	06/07/18 15:08	1
1,2,3,4,7,8-HxCDF	0.0024	J	0.0041	0.00035	ug/Kg	☼	06/05/18 15:02	06/07/18 15:08	1
1,2,3,6,7,8-HxCDD	0.0052		0.0041	0.00017	ug/Kg	☼	06/05/18 15:02	06/07/18 15:08	1
1,2,3,6,7,8-HxCDF	0.00098	J	0.0041	0.00036	ug/Kg	☼	06/05/18 15:02	06/07/18 15:08	1
1,2,3,7,8,9-HxCDD	0.0029	J B	0.0041	0.00016	ug/Kg	☼	06/05/18 15:02	06/07/18 15:08	1
1,2,3,7,8,9-HxCDF	0.00048	J B	0.0041	0.00018	ug/Kg	☼	06/05/18 15:02	06/07/18 15:08	1
1,2,3,7,8-PeCDD	0.00039	J q	0.0041	0.000087	ug/Kg	☼	06/05/18 15:02	06/07/18 15:08	1
1,2,3,7,8-PeCDF	0.00039	J B q	0.0041	0.00011	ug/Kg	☼	06/05/18 15:02	06/07/18 15:08	1
2,3,4,6,7,8-HxCDF	0.00048	J B q	0.0041	0.00021	ug/Kg	☼	06/05/18 15:02	06/07/18 15:08	1
2,3,4,7,8-PeCDF	0.00072	J	0.0041	0.00013	ug/Kg	☼	06/05/18 15:02	06/07/18 15:08	1
2,3,7,8-TCDD	0.00027	J q	0.00082	0.000056	ug/Kg	☼	06/05/18 15:02	06/07/18 15:08	1
OCDD	2.6	B	0.0082	0.0016	ug/Kg	☼	06/05/18 15:02	06/07/18 15:08	1
OCDF	0.15	B	0.0082	0.00011	ug/Kg	☼	06/05/18 15:02	06/07/18 15:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*57*		*23 - 140*	*06/05/18 15:02*	*06/07/18 15:08*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*53*		*28 - 143*	*06/05/18 15:02*	*06/07/18 15:08*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*56*		*26 - 138*	*06/05/18 15:02*	*06/07/18 15:08*	*1*
13C-1,2,3,4,7,8-HxCDD	*64*		*32 - 141*	*06/05/18 15:02*	*06/07/18 15:08*	*1*
13C-1,2,3,4,7,8-HxCDF	*64*		*26 - 152*	*06/05/18 15:02*	*06/07/18 15:08*	*1*
13C-1,2,3,6,7,8-HxCDD	*60*		*28 - 130*	*06/05/18 15:02*	*06/07/18 15:08*	*1*
13C-1,2,3,6,7,8-HxCDF	*58*		*26 - 123*	*06/05/18 15:02*	*06/07/18 15:08*	*1*
13C-1,2,3,7,8,9-HxCDF	*66*		*29 - 147*	*06/05/18 15:02*	*06/07/18 15:08*	*1*
13C-1,2,3,7,8-PeCDD	*62*		*25 - 181*	*06/05/18 15:02*	*06/07/18 15:08*	*1*
13C-1,2,3,7,8-PeCDF	*64*		*24 - 185*	*06/05/18 15:02*	*06/07/18 15:08*	*1*
13C-2,3,4,6,7,8-HxCDF	*65*		*28 - 136*	*06/05/18 15:02*	*06/07/18 15:08*	*1*
13C-2,3,4,7,8-PeCDF	*64*		*21 - 178*	*06/05/18 15:02*	*06/07/18 15:08*	*1*
13C-2,3,7,8-TCDD	*62*		*25 - 164*	*06/05/18 15:02*	*06/07/18 15:08*	*1*
13C-OCDD	*61*		*17 - 157*	*06/05/18 15:02*	*06/07/18 15:08*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*114*		*35 - 197*	*06/05/18 15:02*	*06/07/18 15:08*	*1*

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.00056	J	0.00082	0.000086	ug/Kg	☼	06/05/18 15:02	06/07/18 22:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*70*		*24 - 169*	*06/05/18 15:02*	*06/07/18 22:28*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*106*		*35 - 197*	*06/05/18 15:02*	*06/07/18 22:28*	*1*

Client Sample ID: PDI-SG-S248
Date Collected: 05/14/18 12:50
Date Received: 05/15/18 13:15

Lab Sample ID: 580-77301-5
Matrix: Solid
Percent Solids: 40.9

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	0.092	B	0.0061	0.0013	ug/Kg	☼	06/05/18 15:02	06/07/18 15:57	1
1,2,3,4,6,7,8-HpCDF	0.014	B	0.0061	0.00035	ug/Kg	☼	06/05/18 15:02	06/07/18 15:57	1
1,2,3,4,7,8,9-HpCDF	0.0010	J B	0.0061	0.00038	ug/Kg	☼	06/05/18 15:02	06/07/18 15:57	1
1,2,3,4,7,8-HxCDD	0.00096	J	0.0061	0.00016	ug/Kg	☼	06/05/18 15:02	06/07/18 15:57	1
1,2,3,4,7,8-HxCDF	0.0013	J	0.0061	0.00023	ug/Kg	☼	06/05/18 15:02	06/07/18 15:57	1
1,2,3,6,7,8-HxCDD	0.0034	J	0.0061	0.00014	ug/Kg	☼	06/05/18 15:02	06/07/18 15:57	1
1,2,3,6,7,8-HxCDF	0.00055	J q	0.0061	0.00021	ug/Kg	☼	06/05/18 15:02	06/07/18 15:57	1
1,2,3,7,8,9-HxCDD	0.0029	J B	0.0061	0.00013	ug/Kg	☼	06/05/18 15:02	06/07/18 15:57	1
1,2,3,7,8,9-HxCDF	0.0013	J B	0.0061	0.000091	ug/Kg	☼	06/05/18 15:02	06/07/18 15:57	1
1,2,3,7,8-PeCDD	0.00052	J q	0.0061	0.000098	ug/Kg	☼	06/05/18 15:02	06/07/18 15:57	1
1,2,3,7,8-PeCDF	0.00045	J B	0.0061	0.000072	ug/Kg	☼	06/05/18 15:02	06/07/18 15:57	1
2,3,4,6,7,8-HxCDF	0.00039	J B q	0.0061	0.00011	ug/Kg	☼	06/05/18 15:02	06/07/18 15:57	1
2,3,4,7,8-PeCDF	0.00044	J	0.0061	0.000089	ug/Kg	☼	06/05/18 15:02	06/07/18 15:57	1
2,3,7,8-TCDD	0.0016		0.0012	0.000071	ug/Kg	☼	06/05/18 15:02	06/07/18 15:57	1
2,3,7,8-TCDF	0.00057	J	0.0012	0.000055	ug/Kg	☼	06/05/18 15:02	06/07/18 15:57	1
OCDD	0.71	B	0.012	0.00064	ug/Kg	☼	06/05/18 15:02	06/07/18 15:57	1
OCDF	0.041	B	0.012	0.00014	ug/Kg	☼	06/05/18 15:02	06/07/18 15:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*54*		*23 - 140*	*06/05/18 15:02*	*06/07/18 15:57*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*46*		*28 - 143*	*06/05/18 15:02*	*06/07/18 15:57*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*58*		*26 - 138*	*06/05/18 15:02*	*06/07/18 15:57*	*1*
13C-1,2,3,4,7,8-HxCDD	*49*		*32 - 141*	*06/05/18 15:02*	*06/07/18 15:57*	*1*
13C-1,2,3,4,7,8-HxCDF	*49*		*26 - 152*	*06/05/18 15:02*	*06/07/18 15:57*	*1*
13C-1,2,3,6,7,8-HxCDD	*49*		*28 - 130*	*06/05/18 15:02*	*06/07/18 15:57*	*1*
13C-1,2,3,6,7,8-HxCDF	*48*		*26 - 123*	*06/05/18 15:02*	*06/07/18 15:57*	*1*
13C-1,2,3,7,8,9-HxCDF	*64*		*29 - 147*	*06/05/18 15:02*	*06/07/18 15:57*	*1*
13C-1,2,3,7,8-PeCDD	*59*		*25 - 181*	*06/05/18 15:02*	*06/07/18 15:57*	*1*
13C-1,2,3,7,8-PeCDF	*61*		*24 - 185*	*06/05/18 15:02*	*06/07/18 15:57*	*1*
13C-2,3,4,6,7,8-HxCDF	*61*		*28 - 136*	*06/05/18 15:02*	*06/07/18 15:57*	*1*
13C-2,3,4,7,8-PeCDF	*54*		*21 - 178*	*06/05/18 15:02*	*06/07/18 15:57*	*1*
13C-2,3,7,8-TCDD	*62*		*25 - 164*	*06/05/18 15:02*	*06/07/18 15:57*	*1*
13C-2,3,7,8-TCDF	*70*		*24 - 169*	*06/05/18 15:02*	*06/07/18 15:57*	*1*
13C-OCDD	*56*		*17 - 157*	*06/05/18 15:02*	*06/07/18 15:57*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*111*		*35 - 197*	*06/05/18 15:02*	*06/07/18 15:57*	*1*

Client Sample ID: PDI-SG-S247
Date Collected: 05/14/18 14:10
Date Received: 05/15/18 13:15

Lab Sample ID: 580-77301-6
Matrix: Solid
Percent Solids: 42.9

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	0.072	B	0.0058	0.0011	ug/Kg	☼	06/05/18 15:02	06/07/18 16:45	1
1,2,3,4,6,7,8-HpCDF	0.014	B	0.0058	0.00041	ug/Kg	☼	06/05/18 15:02	06/07/18 16:45	1
1,2,3,4,7,8,9-HpCDF	0.0013	J B	0.0058	0.00051	ug/Kg	☼	06/05/18 15:02	06/07/18 16:45	1
1,2,3,4,7,8-HxCDD	0.0010	J	0.0058	0.00013	ug/Kg	☼	06/05/18 15:02	06/07/18 16:45	1
1,2,3,4,7,8-HxCDF	0.0014	J	0.0058	0.00031	ug/Kg	☼	06/05/18 15:02	06/07/18 16:45	1
1,2,3,6,7,8-HxCDD	0.0028	J	0.0058	0.00012	ug/Kg	☼	06/05/18 15:02	06/07/18 16:45	1
1,2,3,6,7,8-HxCDF	ND		0.0058	0.00033	ug/Kg	☼	06/05/18 15:02	06/07/18 16:45	1
1,2,3,7,8,9-HxCDD	0.0021	J B	0.0058	0.00011	ug/Kg	☼	06/05/18 15:02	06/07/18 16:45	1
1,2,3,7,8,9-HxCDF	0.0011	J B	0.0058	0.00016	ug/Kg	☼	06/05/18 15:02	06/07/18 16:45	1
1,2,3,7,8-PeCDD	0.00045	J	0.0058	0.00011	ug/Kg	☼	06/05/18 15:02	06/07/18 16:45	1
1,2,3,7,8-PeCDF	0.00042	J B q	0.0058	0.00011	ug/Kg	☼	06/05/18 15:02	06/07/18 16:45	1
2,3,4,6,7,8-HxCDF	0.00040	J B q	0.0058	0.00019	ug/Kg	☼	06/05/18 15:02	06/07/18 16:45	1
2,3,4,7,8-PeCDF	0.00043	J q	0.0058	0.00012	ug/Kg	☼	06/05/18 15:02	06/07/18 16:45	1
2,3,7,8-TCDD	0.00041	J q	0.0012	0.000094	ug/Kg	☼	06/05/18 15:02	06/07/18 16:45	1
2,3,7,8-TCDF	0.00063	J	0.0012	0.000064	ug/Kg	☼	06/05/18 15:02	06/07/18 16:45	1
OCDD	0.70	B	0.012	0.00067	ug/Kg	☼	06/05/18 15:02	06/07/18 16:45	1
OCDF	0.052	B	0.012	0.00013	ug/Kg	☼	06/05/18 15:02	06/07/18 16:45	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*54*		*23 - 140*	*06/05/18 15:02*	*06/07/18 16:45*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*50*		*28 - 143*	*06/05/18 15:02*	*06/07/18 16:45*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*57*		*26 - 138*	*06/05/18 15:02*	*06/07/18 16:45*	*1*
13C-1,2,3,4,7,8-HxCDD	*59*		*32 - 141*	*06/05/18 15:02*	*06/07/18 16:45*	*1*
13C-1,2,3,4,7,8-HxCDF	*60*		*26 - 152*	*06/05/18 15:02*	*06/07/18 16:45*	*1*
13C-1,2,3,6,7,8-HxCDD	*57*		*28 - 130*	*06/05/18 15:02*	*06/07/18 16:45*	*1*
13C-1,2,3,6,7,8-HxCDF	*55*		*26 - 123*	*06/05/18 15:02*	*06/07/18 16:45*	*1*
13C-1,2,3,7,8,9-HxCDF	*64*		*29 - 147*	*06/05/18 15:02*	*06/07/18 16:45*	*1*
13C-1,2,3,7,8-PeCDD	*59*		*25 - 181*	*06/05/18 15:02*	*06/07/18 16:45*	*1*
13C-1,2,3,7,8-PeCDF	*60*		*24 - 185*	*06/05/18 15:02*	*06/07/18 16:45*	*1*
13C-2,3,4,6,7,8-HxCDF	*61*		*28 - 136*	*06/05/18 15:02*	*06/07/18 16:45*	*1*
13C-2,3,4,7,8-PeCDF	*61*		*21 - 178*	*06/05/18 15:02*	*06/07/18 16:45*	*1*
13C-2,3,7,8-TCDD	*62*		*25 - 164*	*06/05/18 15:02*	*06/07/18 16:45*	*1*
13C-2,3,7,8-TCDF	*68*		*24 - 169*	*06/05/18 15:02*	*06/07/18 16:45*	*1*
13C-OCDD	*56*		*17 - 157*	*06/05/18 15:02*	*06/07/18 16:45*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*114*		*35 - 197*	*06/05/18 15:02*	*06/07/18 16:45*	*1*

Client Sample ID: PDI-SG-S246
Date Collected: 05/14/18 15:15
Date Received: 05/15/18 13:15

Lab Sample ID: 580-77301-7
Matrix: Solid
Percent Solids: 37.3

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	0.079	B	0.0066	0.0012	ug/Kg	☼	06/05/18 15:02	06/07/18 17:34	1
1,2,3,4,6,7,8-HpCDF	0.014	B q	0.0066	0.00041	ug/Kg	☼	06/05/18 15:02	06/07/18 17:34	1
1,2,3,4,7,8,9-HpCDF	0.0012	J B	0.0066	0.00051	ug/Kg	☼	06/05/18 15:02	06/07/18 17:34	1
1,2,3,4,7,8-HxCDD	0.0012	J	0.0066	0.00015	ug/Kg	☼	06/05/18 15:02	06/07/18 17:34	1
1,2,3,4,7,8-HxCDF	0.0013	J q	0.0066	0.00021	ug/Kg	☼	06/05/18 15:02	06/07/18 17:34	1
1,2,3,6,7,8-HxCDD	0.0032	J	0.0066	0.00014	ug/Kg	☼	06/05/18 15:02	06/07/18 17:34	1
1,2,3,6,7,8-HxCDF	0.00080	J	0.0066	0.00021	ug/Kg	☼	06/05/18 15:02	06/07/18 17:34	1
1,2,3,7,8,9-HxCDD	0.0025	J B	0.0066	0.00013	ug/Kg	☼	06/05/18 15:02	06/07/18 17:34	1
1,2,3,7,8,9-HxCDF	0.0014	J B	0.0066	0.00011	ug/Kg	☼	06/05/18 15:02	06/07/18 17:34	1
1,2,3,7,8-PeCDD	0.00070	J	0.0066	0.00012	ug/Kg	☼	06/05/18 15:02	06/07/18 17:34	1
1,2,3,7,8-PeCDF	0.00072	J B	0.0066	0.000095	ug/Kg	☼	06/05/18 15:02	06/07/18 17:34	1
2,3,4,6,7,8-HxCDF	0.00042	J B q	0.0066	0.00012	ug/Kg	☼	06/05/18 15:02	06/07/18 17:34	1
2,3,4,7,8-PeCDF	0.00057	J q	0.0066	0.00010	ug/Kg	☼	06/05/18 15:02	06/07/18 17:34	1
2,3,7,8-TCDD	0.00074	J	0.0013	0.000095	ug/Kg	☼	06/05/18 15:02	06/07/18 17:34	1
2,3,7,8-TCDF	0.00066	J q	0.0013	0.000070	ug/Kg	☼	06/05/18 15:02	06/07/18 17:34	1
OCDD	0.64	B	0.013	0.00045	ug/Kg	☼	06/05/18 15:02	06/07/18 17:34	1
OCDF	0.044	B	0.013	0.00014	ug/Kg	☼	06/05/18 15:02	06/07/18 17:34	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*55*		*23 - 140*	*06/05/18 15:02*	*06/07/18 17:34*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*51*		*28 - 143*	*06/05/18 15:02*	*06/07/18 17:34*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*57*		*26 - 138*	*06/05/18 15:02*	*06/07/18 17:34*	*1*
13C-1,2,3,4,7,8-HxCDD	*58*		*32 - 141*	*06/05/18 15:02*	*06/07/18 17:34*	*1*
13C-1,2,3,4,7,8-HxCDF	*58*		*26 - 152*	*06/05/18 15:02*	*06/07/18 17:34*	*1*
13C-1,2,3,6,7,8-HxCDD	*57*		*28 - 130*	*06/05/18 15:02*	*06/07/18 17:34*	*1*
13C-1,2,3,6,7,8-HxCDF	*55*		*26 - 123*	*06/05/18 15:02*	*06/07/18 17:34*	*1*
13C-1,2,3,7,8,9-HxCDF	*62*		*29 - 147*	*06/05/18 15:02*	*06/07/18 17:34*	*1*
13C-1,2,3,7,8-PeCDD	*62*		*25 - 181*	*06/05/18 15:02*	*06/07/18 17:34*	*1*
13C-1,2,3,7,8-PeCDF	*60*		*24 - 185*	*06/05/18 15:02*	*06/07/18 17:34*	*1*
13C-2,3,4,6,7,8-HxCDF	*61*		*28 - 136*	*06/05/18 15:02*	*06/07/18 17:34*	*1*
13C-2,3,4,7,8-PeCDF	*61*		*21 - 178*	*06/05/18 15:02*	*06/07/18 17:34*	*1*
13C-2,3,7,8-TCDD	*62*		*25 - 164*	*06/05/18 15:02*	*06/07/18 17:34*	*1*
13C-2,3,7,8-TCDF	*69*		*24 - 169*	*06/05/18 15:02*	*06/07/18 17:34*	*1*
13C-OCDD	*55*		*17 - 157*	*06/05/18 15:02*	*06/07/18 17:34*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*115*		*35 - 197*	*06/05/18 15:02*	*06/07/18 17:34*	*1*

Client Sample ID: PDI-SG-S252
Date Collected: 05/14/18 09:45
Date Received: 05/15/18 13:15

Lab Sample ID: 580-77301-8
Matrix: Solid
Percent Solids: 61.3

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	0.047	B	0.0040	0.00036	ug/Kg	☼	06/05/18 15:02	06/07/18 22:11	1
1,2,3,4,6,7,8-HpCDF	0.0073	B	0.0040	0.00015	ug/Kg	☼	06/05/18 15:02	06/07/18 22:11	1
1,2,3,4,7,8,9-HpCDF	0.00062	J B	0.0040	0.00021	ug/Kg	☼	06/05/18 15:02	06/07/18 22:11	1
1,2,3,4,7,8-HxCDD	0.00051	J	0.0040	0.00011	ug/Kg	☼	06/05/18 15:02	06/07/18 22:11	1
1,2,3,4,7,8-HxCDF	0.00064	J q	0.0040	0.00017	ug/Kg	☼	06/05/18 15:02	06/07/18 22:11	1
1,2,3,6,7,8-HxCDD	0.0040		0.0040	0.00011	ug/Kg	☼	06/05/18 15:02	06/07/18 22:11	1
1,2,3,6,7,8-HxCDF	0.00055	J	0.0040	0.00018	ug/Kg	☼	06/05/18 15:02	06/07/18 22:11	1
1,2,3,7,8,9-HxCDD	0.0021	J B	0.0040	0.000099	ug/Kg	☼	06/05/18 15:02	06/07/18 22:11	1
1,2,3,7,8,9-HxCDF	0.00074	J B	0.0040	0.000072	ug/Kg	☼	06/05/18 15:02	06/07/18 22:11	1
1,2,3,7,8-PeCDD	0.00058	J	0.0040	0.000080	ug/Kg	☼	06/05/18 15:02	06/07/18 22:11	1
1,2,3,7,8-PeCDF	0.00044	J B	0.0040	0.000061	ug/Kg	☼	06/05/18 15:02	06/07/18 22:11	1
2,3,4,6,7,8-HxCDF	0.00030	J B	0.0040	0.000096	ug/Kg	☼	06/05/18 15:02	06/07/18 22:11	1
2,3,4,7,8-PeCDF	0.00042	J	0.0040	0.000071	ug/Kg	☼	06/05/18 15:02	06/07/18 22:11	1
2,3,7,8-TCDD	0.00046	J	0.00081	0.000048	ug/Kg	☼	06/05/18 15:02	06/07/18 22:11	1
OCDD	0.44	B	0.0081	0.00029	ug/Kg	☼	06/05/18 15:02	06/07/18 22:11	1
OCDF	0.019	B	0.0081	0.000064	ug/Kg	☼	06/05/18 15:02	06/07/18 22:11	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*46*		*23 - 140*	*06/05/18 15:02*	*06/07/18 22:11*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*41*		*28 - 143*	*06/05/18 15:02*	*06/07/18 22:11*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*43*		*26 - 138*	*06/05/18 15:02*	*06/07/18 22:11*	*1*
13C-1,2,3,4,7,8-HxCDD	*52*		*32 - 141*	*06/05/18 15:02*	*06/07/18 22:11*	*1*
13C-1,2,3,4,7,8-HxCDF	*51*		*26 - 152*	*06/05/18 15:02*	*06/07/18 22:11*	*1*
13C-1,2,3,6,7,8-HxCDD	*46*		*28 - 130*	*06/05/18 15:02*	*06/07/18 22:11*	*1*
13C-1,2,3,6,7,8-HxCDF	*46*		*26 - 123*	*06/05/18 15:02*	*06/07/18 22:11*	*1*
13C-1,2,3,7,8,9-HxCDF	*60*		*29 - 147*	*06/05/18 15:02*	*06/07/18 22:11*	*1*
13C-1,2,3,7,8-PeCDD	*56*		*25 - 181*	*06/05/18 15:02*	*06/07/18 22:11*	*1*
13C-1,2,3,7,8-PeCDF	*58*		*24 - 185*	*06/05/18 15:02*	*06/07/18 22:11*	*1*
13C-2,3,4,6,7,8-HxCDF	*55*		*28 - 136*	*06/05/18 15:02*	*06/07/18 22:11*	*1*
13C-2,3,4,7,8-PeCDF	*55*		*21 - 178*	*06/05/18 15:02*	*06/07/18 22:11*	*1*
13C-2,3,7,8-TCDD	*60*		*25 - 164*	*06/05/18 15:02*	*06/07/18 22:11*	*1*
13C-OCDD	*48*		*17 - 157*	*06/05/18 15:02*	*06/07/18 22:11*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*115*		*35 - 197*	*06/05/18 15:02*	*06/07/18 22:11*	*1*

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0013		0.00081	0.000092	ug/Kg	☼	06/05/18 15:02	06/07/18 23:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*73*		*24 - 169*	*06/05/18 15:02*	*06/07/18 23:06*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*115*		*35 - 197*	*06/05/18 15:02*	*06/07/18 23:06*	*1*

Client Sample ID: PDI-SG-S244
Date Collected: 05/14/18 15:50
Date Received: 05/15/18 13:15

Lab Sample ID: 580-77301-9
Matrix: Solid
Percent Solids: 39.5

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	0.090	B	0.0062	0.00091	ug/Kg	☼	06/05/18 15:02	06/07/18 22:59	1
1,2,3,4,6,7,8-HpCDF	0.013	q B	0.0062	0.00025	ug/Kg	☼	06/05/18 15:02	06/07/18 22:59	1
1,2,3,4,7,8,9-HpCDF	0.00090	J B	0.0062	0.00031	ug/Kg	☼	06/05/18 15:02	06/07/18 22:59	1
1,2,3,4,7,8-HxCDD	0.0011	J	0.0062	0.00011	ug/Kg	☼	06/05/18 15:02	06/07/18 22:59	1
1,2,3,4,7,8-HxCDF	0.0015	J	0.0062	0.00020	ug/Kg	☼	06/05/18 15:02	06/07/18 22:59	1
1,2,3,6,7,8-HxCDD	0.0029	J	0.0062	0.00010	ug/Kg	☼	06/05/18 15:02	06/07/18 22:59	1
1,2,3,6,7,8-HxCDF	0.00079	J	0.0062	0.00021	ug/Kg	☼	06/05/18 15:02	06/07/18 22:59	1
1,2,3,7,8,9-HxCDD	0.0022	J q B	0.0062	0.000095	ug/Kg	☼	06/05/18 15:02	06/07/18 22:59	1
1,2,3,7,8,9-HxCDF	0.0012	J B	0.0062	0.000097	ug/Kg	☼	06/05/18 15:02	06/07/18 22:59	1
1,2,3,7,8-PeCDD	0.00049	J q	0.0062	0.000085	ug/Kg	☼	06/05/18 15:02	06/07/18 22:59	1
1,2,3,7,8-PeCDF	0.00045	J B	0.0062	0.000089	ug/Kg	☼	06/05/18 15:02	06/07/18 22:59	1
2,3,4,6,7,8-HxCDF	0.00050	J B	0.0062	0.00012	ug/Kg	☼	06/05/18 15:02	06/07/18 22:59	1
2,3,4,7,8-PeCDF	0.00063	J	0.0062	0.000097	ug/Kg	☼	06/05/18 15:02	06/07/18 22:59	1
2,3,7,8-TCDD	0.00039	J q	0.0012	0.000069	ug/Kg	☼	06/05/18 15:02	06/07/18 22:59	1
2,3,7,8-TCDF	0.00092	J	0.0012	0.000061	ug/Kg	☼	06/05/18 15:02	06/07/18 22:59	1
OCDD	0.69	B	0.012	0.00048	ug/Kg	☼	06/05/18 15:02	06/07/18 22:59	1
OCDF	0.041	B	0.012	0.00012	ug/Kg	☼	06/05/18 15:02	06/07/18 22:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*57*		*23 - 140*	*06/05/18 15:02*	*06/07/18 22:59*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*53*		*28 - 143*	*06/05/18 15:02*	*06/07/18 22:59*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*59*		*26 - 138*	*06/05/18 15:02*	*06/07/18 22:59*	*1*
13C-1,2,3,4,7,8-HxCDD	*57*		*32 - 141*	*06/05/18 15:02*	*06/07/18 22:59*	*1*
13C-1,2,3,4,7,8-HxCDF	*59*		*26 - 152*	*06/05/18 15:02*	*06/07/18 22:59*	*1*
13C-1,2,3,6,7,8-HxCDD	*57*		*28 - 130*	*06/05/18 15:02*	*06/07/18 22:59*	*1*
13C-1,2,3,6,7,8-HxCDF	*54*		*26 - 123*	*06/05/18 15:02*	*06/07/18 22:59*	*1*
13C-1,2,3,7,8,9-HxCDF	*66*		*29 - 147*	*06/05/18 15:02*	*06/07/18 22:59*	*1*
13C-1,2,3,7,8-PeCDD	*62*		*25 - 181*	*06/05/18 15:02*	*06/07/18 22:59*	*1*
13C-1,2,3,7,8-PeCDF	*61*		*24 - 185*	*06/05/18 15:02*	*06/07/18 22:59*	*1*
13C-2,3,4,6,7,8-HxCDF	*62*		*28 - 136*	*06/05/18 15:02*	*06/07/18 22:59*	*1*
13C-2,3,4,7,8-PeCDF	*61*		*21 - 178*	*06/05/18 15:02*	*06/07/18 22:59*	*1*
13C-2,3,7,8-TCDD	*62*		*25 - 164*	*06/05/18 15:02*	*06/07/18 22:59*	*1*
13C-2,3,7,8-TCDF	*72*		*24 - 169*	*06/05/18 15:02*	*06/07/18 22:59*	*1*
13C-OCDD	*60*		*17 - 157*	*06/05/18 15:02*	*06/07/18 22:59*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*113*		*35 - 197*	*06/05/18 15:02*	*06/07/18 22:59*	*1*

Client Sample ID: PDI-SG-S227
Date Collected: 05/14/18 16:50
Date Received: 05/15/18 13:15

Lab Sample ID: 580-77301-10
Matrix: Solid
Percent Solids: 40.4

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	0.086	B	0.0063	0.0010	ug/Kg	☼	06/05/18 15:02	06/07/18 23:47	1
1,2,3,4,6,7,8-HpCDF	0.013	B	0.0063	0.00033	ug/Kg	☼	06/05/18 15:02	06/07/18 23:47	1
1,2,3,4,7,8,9-HpCDF	0.0011	J B	0.0063	0.00036	ug/Kg	☼	06/05/18 15:02	06/07/18 23:47	1
1,2,3,4,7,8-HxCDD	0.0011	J	0.0063	0.00014	ug/Kg	☼	06/05/18 15:02	06/07/18 23:47	1
1,2,3,4,7,8-HxCDF	0.0014	J	0.0063	0.00023	ug/Kg	☼	06/05/18 15:02	06/07/18 23:47	1
1,2,3,6,7,8-HxCDD	0.0030	J	0.0063	0.00013	ug/Kg	☼	06/05/18 15:02	06/07/18 23:47	1
1,2,3,6,7,8-HxCDF	0.00070	J	0.0063	0.00024	ug/Kg	☼	06/05/18 15:02	06/07/18 23:47	1
1,2,3,7,8,9-HxCDD	0.0025	J B	0.0063	0.00012	ug/Kg	☼	06/05/18 15:02	06/07/18 23:47	1
1,2,3,7,8,9-HxCDF	0.00095	J B	0.0063	0.00011	ug/Kg	☼	06/05/18 15:02	06/07/18 23:47	1
1,2,3,7,8-PeCDD	0.00056	J	0.0063	0.000089	ug/Kg	☼	06/05/18 15:02	06/07/18 23:47	1
1,2,3,7,8-PeCDF	0.00054	J B	0.0063	0.00012	ug/Kg	☼	06/05/18 15:02	06/07/18 23:47	1
2,3,4,6,7,8-HxCDF	0.00040	J q B	0.0063	0.00014	ug/Kg	☼	06/05/18 15:02	06/07/18 23:47	1
2,3,4,7,8-PeCDF	0.00053	J	0.0063	0.00013	ug/Kg	☼	06/05/18 15:02	06/07/18 23:47	1
2,3,7,8-TCDD	0.00043	J q	0.0013	0.000071	ug/Kg	☼	06/05/18 15:02	06/07/18 23:47	1
2,3,7,8-TCDF	0.00077	J q	0.0013	0.000037	ug/Kg	☼	06/05/18 15:02	06/07/18 23:47	1
OCDD	0.78	B	0.013	0.00054	ug/Kg	☼	06/05/18 15:02	06/07/18 23:47	1
OCDF	0.044	B	0.013	0.00012	ug/Kg	☼	06/05/18 15:02	06/07/18 23:47	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*50*		*23 - 140*	*06/05/18 15:02*	*06/07/18 23:47*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*44*		*28 - 143*	*06/05/18 15:02*	*06/07/18 23:47*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*54*		*26 - 138*	*06/05/18 15:02*	*06/07/18 23:47*	*1*
13C-1,2,3,4,7,8-HxCDD	*47*		*32 - 141*	*06/05/18 15:02*	*06/07/18 23:47*	*1*
13C-1,2,3,4,7,8-HxCDF	*50*		*26 - 152*	*06/05/18 15:02*	*06/07/18 23:47*	*1*
13C-1,2,3,6,7,8-HxCDD	*46*		*28 - 130*	*06/05/18 15:02*	*06/07/18 23:47*	*1*
13C-1,2,3,6,7,8-HxCDF	*45*		*26 - 123*	*06/05/18 15:02*	*06/07/18 23:47*	*1*
13C-1,2,3,7,8,9-HxCDF	*58*		*29 - 147*	*06/05/18 15:02*	*06/07/18 23:47*	*1*
13C-1,2,3,7,8-PeCDD	*52*		*25 - 181*	*06/05/18 15:02*	*06/07/18 23:47*	*1*
13C-1,2,3,7,8-PeCDF	*53*		*24 - 185*	*06/05/18 15:02*	*06/07/18 23:47*	*1*
13C-2,3,4,6,7,8-HxCDF	*52*		*28 - 136*	*06/05/18 15:02*	*06/07/18 23:47*	*1*
13C-2,3,4,7,8-PeCDF	*52*		*21 - 178*	*06/05/18 15:02*	*06/07/18 23:47*	*1*
13C-2,3,7,8-TCDD	*56*		*25 - 164*	*06/05/18 15:02*	*06/07/18 23:47*	*1*
13C-2,3,7,8-TCDF	*65*		*24 - 169*	*06/05/18 15:02*	*06/07/18 23:47*	*1*
13C-OCDD	*49*		*17 - 157*	*06/05/18 15:02*	*06/07/18 23:47*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*110*		*35 - 197*	*06/05/18 15:02*	*06/07/18 23:47*	*1*

Client Sample ID: PDI-RB-VV-180514

Date Collected: 05/14/18 17:30
Date Received: 05/15/18 13:15

Lab Sample ID: 580-77301-11

Matrix: Water

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	**3.2**	**J B**	51	0.13	pg/L		05/23/18 07:27	05/25/18 02:59	1
1,2,3,4,6,7,8-HpCDF	**0.71**	**J q B**	51	0.12	pg/L		05/23/18 07:27	05/25/18 02:59	1
1,2,3,4,7,8,9-HpCDF	ND		51	0.15	pg/L		05/23/18 07:27	05/25/18 02:59	1
1,2,3,4,7,8-HxCDD	**1.7**	**J B**	51	0.18	pg/L		05/23/18 07:27	05/25/18 02:59	1
1,2,3,4,7,8-HxCDF	ND		51	0.21	pg/L		05/23/18 07:27	05/25/18 02:59	1
1,2,3,6,7,8-HxCDD	**0.42**	**J**	51	0.16	pg/L		05/23/18 07:27	05/25/18 02:59	1
1,2,3,6,7,8-HxCDF	**0.38**	**J**	51	0.18	pg/L		05/23/18 07:27	05/25/18 02:59	1
1,2,3,7,8,9-HxCDD	**0.69**	**J B**	51	0.16	pg/L		05/23/18 07:27	05/25/18 02:59	1
1,2,3,7,8,9-HxCDF	**1.0**	**J B**	51	0.11	pg/L		05/23/18 07:27	05/25/18 02:59	1
1,2,3,7,8-PeCDD	**0.56**	**J q**	51	0.30	pg/L		05/23/18 07:27	05/25/18 02:59	1
1,2,3,7,8-PeCDF	**0.48**	**J q**	51	0.17	pg/L		05/23/18 07:27	05/25/18 02:59	1
2,3,4,6,7,8-HxCDF	**0.35**	**J**	51	0.12	pg/L		05/23/18 07:27	05/25/18 02:59	1
2,3,4,7,8-PeCDF	**0.48**	**J**	51	0.19	pg/L		05/23/18 07:27	05/25/18 02:59	1
2,3,7,8-TCDD	ND		10	0.21	pg/L		05/23/18 07:27	05/25/18 02:59	1
2,3,7,8-TCDF	**0.85**	**J B**	10	0.10	pg/L		05/23/18 07:27	05/25/18 02:59	1
OCDD	**16**	**J B**	100	0.21	pg/L		05/23/18 07:27	05/25/18 02:59	1
OCDF	**2.4**	**J B**	100	0.18	pg/L		05/23/18 07:27	05/25/18 02:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*50*		*23 - 140*	*05/23/18 07:27*	*05/25/18 02:59*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*55*		*28 - 143*	*05/23/18 07:27*	*05/25/18 02:59*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*54*		*26 - 138*	*05/23/18 07:27*	*05/25/18 02:59*	*1*
13C-1,2,3,4,7,8-HxCDD	*59*		*32 - 141*	*05/23/18 07:27*	*05/25/18 02:59*	*1*
13C-1,2,3,4,7,8-HxCDF	*57*		*26 - 152*	*05/23/18 07:27*	*05/25/18 02:59*	*1*
13C-1,2,3,6,7,8-HxCDD	*58*		*28 - 130*	*05/23/18 07:27*	*05/25/18 02:59*	*1*
13C-1,2,3,6,7,8-HxCDF	*57*		*26 - 123*	*05/23/18 07:27*	*05/25/18 02:59*	*1*
13C-1,2,3,7,8,9-HxCDF	*61*		*29 - 147*	*05/23/18 07:27*	*05/25/18 02:59*	*1*
13C-1,2,3,7,8-PeCDD	*59*		*25 - 181*	*05/23/18 07:27*	*05/25/18 02:59*	*1*
13C-1,2,3,7,8-PeCDF	*67*		*24 - 185*	*05/23/18 07:27*	*05/25/18 02:59*	*1*
13C-2,3,4,6,7,8-HxCDF	*58*		*28 - 136*	*05/23/18 07:27*	*05/25/18 02:59*	*1*
13C-2,3,4,7,8-PeCDF	*65*		*21 - 178*	*05/23/18 07:27*	*05/25/18 02:59*	*1*
13C-2,3,7,8-TCDD	*63*		*25 - 164*	*05/23/18 07:27*	*05/25/18 02:59*	*1*
13C-2,3,7,8-TCDF	*71*		*24 - 169*	*05/23/18 07:27*	*05/25/18 02:59*	*1*
13C-OCDD	*42*		*17 - 157*	*05/23/18 07:27*	*05/25/18 02:59*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*110*		*35 - 197*	*05/23/18 07:27*	*05/25/18 02:59*	*1*

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

Lab Sample ID: MB 320-224916/1-A
Matrix: Water
Analysis Batch: 225469

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 224916

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	1.62	J	50	0.19	pg/L		05/23/18 07:27	05/24/18 21:37	1
1,2,3,4,6,7,8-HpCDF	0.692	J q	50	0.14	pg/L		05/23/18 07:27	05/24/18 21:37	1
1,2,3,4,7,8,9-HpCDF	0.480	J	50	0.18	pg/L		05/23/18 07:27	05/24/18 21:37	1
1,2,3,4,7,8-HxCDD	1.91	J	50	0.26	pg/L		05/23/18 07:27	05/24/18 21:37	1
1,2,3,4,7,8-HxCDF	ND		50	0.44	pg/L		05/23/18 07:27	05/24/18 21:37	1
1,2,3,6,7,8-HxCDD	ND		50	0.25	pg/L		05/23/18 07:27	05/24/18 21:37	1
1,2,3,6,7,8-HxCDF	ND		50	0.39	pg/L		05/23/18 07:27	05/24/18 21:37	1
1,2,3,7,8,9-HxCDD	0.516	J	50	0.24	pg/L		05/23/18 07:27	05/24/18 21:37	1
1,2,3,7,8,9-HxCDF	0.758	J	50	0.22	pg/L		05/23/18 07:27	05/24/18 21:37	1
1,2,3,7,8-PeCDD	ND		50	0.46	pg/L		05/23/18 07:27	05/24/18 21:37	1
1,2,3,7,8-PeCDF	ND		50	0.26	pg/L		05/23/18 07:27	05/24/18 21:37	1
2,3,4,6,7,8-HxCDF	ND		50	0.25	pg/L		05/23/18 07:27	05/24/18 21:37	1
2,3,4,7,8-PeCDF	ND		50	0.28	pg/L		05/23/18 07:27	05/24/18 21:37	1
2,3,7,8-TCDD	ND		10	0.31	pg/L		05/23/18 07:27	05/24/18 21:37	1
2,3,7,8-TCDF	0.629	J	10	0.18	pg/L		05/23/18 07:27	05/24/18 21:37	1
OCDD	5.48	J	100	0.25	pg/L		05/23/18 07:27	05/24/18 21:37	1
OCDF	1.51	J q	100	0.36	pg/L		05/23/18 07:27	05/24/18 21:37	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*54*		*23 - 140*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*59*		*28 - 143*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*59*		*26 - 138*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-1,2,3,4,7,8-HxCDD	*62*		*32 - 141*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-1,2,3,4,7,8-HxCDF	*58*		*26 - 152*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-1,2,3,6,7,8-HxCDD	*61*		*28 - 130*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-1,2,3,6,7,8-HxCDF	*57*		*26 - 123*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-1,2,3,7,8,9-HxCDF	*61*		*29 - 147*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-1,2,3,7,8-PeCDD	*62*		*25 - 181*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-1,2,3,7,8-PeCDF	*70*		*24 - 185*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-2,3,4,6,7,8-HxCDF	*60*		*28 - 136*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-2,3,4,7,8-PeCDF	*72*		*21 - 178*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-2,3,7,8-TCDD	*69*		*25 - 164*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-2,3,7,8-TCDF	*79*		*24 - 169*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-OCDD	*48*		*17 - 157*	*05/23/18 07:27*	*05/24/18 21:37*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*116*		*35 - 197*	*05/23/18 07:27*	*05/24/18 21:37*	*1*

Lab Sample ID: LCS 320-224916/2-A
Matrix: Water
Analysis Batch: 225469

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 224916

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,6,7,8-HpCDD	1000	1120		pg/L		112	70 - 140
1,2,3,4,6,7,8-HpCDF	1000	998		pg/L		100	82 - 122
1,2,3,4,7,8,9-HpCDF	1000	972		pg/L		97	78 - 138
1,2,3,4,7,8-HxCDD	1000	1010		pg/L		101	70 - 164
1,2,3,4,7,8-HxCDF	1000	1010		pg/L		101	72 - 134

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

Lab Sample ID: LCS 320-224916/2-A
Matrix: Water
Analysis Batch: 225469

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 224916

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,2,3,6,7,8-HxCDD			1000	951		pg/L		95	76 - 134		
1,2,3,6,7,8-HxCDF			1000	1020		pg/L		102	84 - 130		
1,2,3,7,8,9-HxCDD			1000	1080		pg/L		108	64 - 162		
1,2,3,7,8,9-HxCDF			1000	1010		pg/L		101	78 - 130		
1,2,3,7,8-PeCDD			1000	1100		pg/L		110	70 - 142		
1,2,3,7,8-PeCDF			1000	983		pg/L		98	80 - 134		
2,3,4,6,7,8-HxCDF			1000	1000		pg/L		100	70 - 156		
2,3,4,7,8-PeCDF			1000	988		pg/L		99	68 - 160		
2,3,7,8-TCDD			200	213		pg/L		107	67 - 158		
2,3,7,8-TCDF			200	189		pg/L		94	75 - 158		
OCDD			2000	2060		pg/L		103	78 - 144		
OCDF			2000	2000		pg/L		100	63 - 170		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-1,2,3,4,6,7,8-HpCDD	*57*		*26 - 166*
13C-1,2,3,4,6,7,8-HpCDF	*60*		*21 - 158*
13C-1,2,3,4,7,8,9-HpCDF	*64*		*20 - 186*
13C-1,2,3,4,7,8-HxCDD	*62*		*21 - 193*
13C-1,2,3,4,7,8-HxCDF	*60*		*19 - 202*
13C-1,2,3,6,7,8-HxCDD	*62*		*25 - 163*
13C-1,2,3,6,7,8-HxCDF	*60*		*21 - 159*
13C-1,2,3,7,8,9-HxCDF	*67*		*17 - 205*
13C-1,2,3,7,8-PeCDD	*65*		*21 - 227*
13C-1,2,3,7,8-PeCDF	*73*		*21 - 192*
13C-2,3,4,6,7,8-HxCDF	*65*		*22 - 176*
13C-2,3,4,7,8-PeCDF	*69*		*13 - 328*
13C-2,3,7,8-TCDD	*69*		*20 - 175*
13C-2,3,7,8-TCDF	*79*		*22 - 152*
13C-OCDD	*52*		*13 - 199*

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
37Cl4-2,3,7,8-TCDD	*108*		*31 - 191*

Lab Sample ID: LCSD 320-224916/3-A
Matrix: Water
Analysis Batch: 225469

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 224916

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,6,7,8-HpCDD			1000	895		pg/L		89	70 - 140	22	50
1,2,3,4,6,7,8-HpCDF			1000	816		pg/L		82	82 - 122	20	50
1,2,3,4,7,8,9-HpCDF			1000	798		pg/L		80	78 - 138	20	50
1,2,3,4,7,8-HxCDD			1000	820		pg/L		82	70 - 164	20	50
1,2,3,4,7,8-HxCDF			1000	856		pg/L		86	72 - 134	17	50
1,2,3,6,7,8-HxCDD			1000	788		pg/L		79	76 - 134	19	50
1,2,3,6,7,8-HxCDF			1000	868		pg/L		87	84 - 130	16	50
1,2,3,7,8,9-HxCDD			1000	959		pg/L		96	64 - 162	12	50
1,2,3,7,8,9-HxCDF			1000	875		pg/L		87	78 - 130	15	50
1,2,3,7,8-PeCDD			1000	964		pg/L		96	70 - 142	13	50

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

Lab Sample ID: LCSD 320-224916/3-A
Matrix: Water
Analysis Batch: 225469

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 224916

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,7,8-PeCDF			1000	873		pg/L		87	80 - 134	12	50
2,3,4,6,7,8-HxCDF			1000	882		pg/L		88	70 - 156	13	50
2,3,4,7,8-PeCDF			1000	898		pg/L		90	68 - 160	10	50
2,3,7,8-TCDD			200	199		pg/L		100	67 - 158	7	50
2,3,7,8-TCDF			200	178		pg/L		89	75 - 158	6	50
OCDD			2000	1630		pg/L		81	78 - 144	23	50
OCDF			2000	1570		pg/L		78	63 - 170	24	50

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C-1,2,3,4,6,7,8-HpCDD	*52*		*26 - 166*
13C-1,2,3,4,6,7,8-HpCDF	*54*		*21 - 158*
13C-1,2,3,4,7,8,9-HpCDF	*54*		*20 - 186*
13C-1,2,3,4,7,8-HxCDD	*53*		*21 - 193*
13C-1,2,3,4,7,8-HxCDF	*52*		*19 - 202*
13C-1,2,3,6,7,8-HxCDD	*56*		*25 - 163*
13C-1,2,3,6,7,8-HxCDF	*54*		*21 - 159*
13C-1,2,3,7,8,9-HxCDF	*60*		*17 - 205*
13C-1,2,3,7,8-PeCDD	*61*		*21 - 227*
13C-1,2,3,7,8-PeCDF	*69*		*21 - 192*
13C-2,3,4,6,7,8-HxCDF	*60*		*22 - 176*
13C-2,3,4,7,8-PeCDF	*61*		*13 - 328*
13C-2,3,7,8-TCDD	*66*		*20 - 175*
13C-2,3,7,8-TCDF	*76*		*22 - 152*
13C-OCDD	*46*		*13 - 199*

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
37Cl4-2,3,7,8-TCDD	*115*		*31 - 191*

Lab Sample ID: MB 320-227351/1-A
Matrix: Solid
Analysis Batch: 227860

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 227351

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.000414	J	0.0050	0.000041	ug/Kg		06/05/18 15:02	06/07/18 10:18	1
1,2,3,4,6,7,8-HpCDF	0.000308	J	0.0050	0.000040	ug/Kg		06/05/18 15:02	06/07/18 10:18	1
1,2,3,4,7,8,9-HpCDF	0.000396	J q	0.0050	0.000055	ug/Kg		06/05/18 15:02	06/07/18 10:18	1
1,2,3,4,7,8-HxCDD	ND		0.0050	0.000057	ug/Kg		06/05/18 15:02	06/07/18 10:18	1
1,2,3,4,7,8-HxCDF	ND		0.0050	0.00012	ug/Kg		06/05/18 15:02	06/07/18 10:18	1
1,2,3,6,7,8-HxCDD	ND		0.0050	0.000052	ug/Kg		06/05/18 15:02	06/07/18 10:18	1
1,2,3,6,7,8-HxCDF	ND		0.0050	0.00012	ug/Kg		06/05/18 15:02	06/07/18 10:18	1
1,2,3,7,8,9-HxCDD	0.000273	J	0.0050	0.000049	ug/Kg		06/05/18 15:02	06/07/18 10:18	1
1,2,3,7,8,9-HxCDF	0.000760	J	0.0050	0.000061	ug/Kg		06/05/18 15:02	06/07/18 10:18	1
1,2,3,7,8-PeCDD	ND		0.0050	0.000053	ug/Kg		06/05/18 15:02	06/07/18 10:18	1
1,2,3,7,8-PeCDF	0.000142	J q	0.0050	0.000043	ug/Kg		06/05/18 15:02	06/07/18 10:18	1
2,3,4,6,7,8-HxCDF	0.0000923	J q	0.0050	0.000069	ug/Kg		06/05/18 15:02	06/07/18 10:18	1
2,3,4,7,8-PeCDF	ND		0.0050	0.000049	ug/Kg		06/05/18 15:02	06/07/18 10:18	1
2,3,7,8-TCDD	ND		0.0010	0.000061	ug/Kg		06/05/18 15:02	06/07/18 10:18	1
2,3,7,8-TCDF	ND		0.0010	0.000035	ug/Kg		06/05/18 15:02	06/07/18 10:18	1

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

Lab Sample ID: MB 320-227351/1-A
Matrix: Solid
Analysis Batch: 227860

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 227351

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
OCDD	0.00105	J	0.010	0.000040	ug/Kg		06/05/18 15:02	06/07/18 10:18	1
OCDF	0.000357	J	0.010	0.000067	ug/Kg		06/05/18 15:02	06/07/18 10:18	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*62*		*23 - 140*	*06/05/18 15:02*	*06/07/18 10:18*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*60*		*28 - 143*	*06/05/18 15:02*	*06/07/18 10:18*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*63*		*26 - 138*	*06/05/18 15:02*	*06/07/18 10:18*	*1*
13C-1,2,3,4,7,8-HxCDD	*67*		*32 - 141*	*06/05/18 15:02*	*06/07/18 10:18*	*1*
13C-1,2,3,4,7,8-HxCDF	*67*		*26 - 152*	*06/05/18 15:02*	*06/07/18 10:18*	*1*
13C-1,2,3,6,7,8-HxCDD	*65*		*28 - 130*	*06/05/18 15:02*	*06/07/18 10:18*	*1*
13C-1,2,3,6,7,8-HxCDF	*65*		*26 - 123*	*06/05/18 15:02*	*06/07/18 10:18*	*1*
13C-1,2,3,7,8,9-HxCDF	*74*		*29 - 147*	*06/05/18 15:02*	*06/07/18 10:18*	*1*
13C-1,2,3,7,8-PeCDD	*70*		*25 - 181*	*06/05/18 15:02*	*06/07/18 10:18*	*1*
13C-1,2,3,7,8-PeCDF	*69*		*24 - 185*	*06/05/18 15:02*	*06/07/18 10:18*	*1*
13C-2,3,4,6,7,8-HxCDF	*72*		*28 - 136*	*06/05/18 15:02*	*06/07/18 10:18*	*1*
13C-2,3,4,7,8-PeCDF	*65*		*21 - 178*	*06/05/18 15:02*	*06/07/18 10:18*	*1*
13C-2,3,7,8-TCDD	*67*		*25 - 164*	*06/05/18 15:02*	*06/07/18 10:18*	*1*
13C-2,3,7,8-TCDF	*73*		*24 - 169*	*06/05/18 15:02*	*06/07/18 10:18*	*1*
13C-OCDD	*68*		*17 - 157*	*06/05/18 15:02*	*06/07/18 10:18*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*113*		*35 - 197*	*06/05/18 15:02*	*06/07/18 10:18*	*1*

Lab Sample ID: LCS 320-227351/2-A
Matrix: Solid
Analysis Batch: 227860

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 227351

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.101		ug/Kg		101	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	0.0997		ug/Kg		100	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	0.0988		ug/Kg		99	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	0.0978		ug/Kg		98	84 - 130
1,2,3,7,8,9-HxCDD	0.100	0.103		ug/Kg		103	64 - 162
1,2,3,7,8,9-HxCDF	0.100	0.0985		ug/Kg		99	78 - 130
1,2,3,7,8-PeCDD	0.100	0.101		ug/Kg		101	70 - 142
1,2,3,7,8-PeCDF	0.100	0.104		ug/Kg		104	80 - 134
2,3,4,6,7,8-HxCDF	0.100	0.0984		ug/Kg		98	70 - 156
2,3,4,7,8-PeCDF	0.100	0.105		ug/Kg		105	68 - 160
2,3,7,8-TCDD	0.0200	0.0204		ug/Kg		102	67 - 158
2,3,7,8-TCDF	0.0200	0.0197		ug/Kg		99	75 - 158
OCDD	0.200	0.191		ug/Kg		96	78 - 144
OCDF	0.200	0.180		ug/Kg		90	63 - 170

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-1,2,3,4,6,7,8-HpCDD	*64*		*26 - 166*

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

Lab Sample ID: LCS 320-227351/2-A
Matrix: Solid
Analysis Batch: 227860

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 227351

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDF	62		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	63		20 - 186
13C-1,2,3,4,7,8-HxCDD	71		21 - 193
13C-1,2,3,4,7,8-HxCDF	73		19 - 202
13C-1,2,3,6,7,8-HxCDD	69		25 - 163
13C-1,2,3,6,7,8-HxCDF	69		21 - 159
13C-1,2,3,7,8,9-HxCDF	75		17 - 205
13C-1,2,3,7,8-PeCDD	71		21 - 227
13C-1,2,3,7,8-PeCDF	72		21 - 192
13C-2,3,4,6,7,8-HxCDF	72		22 - 176
13C-2,3,4,7,8-PeCDF	72		13 - 328
13C-2,3,7,8-TCDD	68		20 - 175
13C-2,3,7,8-TCDF	74		22 - 152
13C-OCDD	68		13 - 199

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

Lab Sample ID: LCSD 320-227351/3-A
Matrix: Solid
Analysis Batch: 227860

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 227351

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	0.0994		ug/Kg		99	70 - 140	2	50
1,2,3,4,6,7,8-HpCDF			0.100	0.103		ug/Kg		103	82 - 122	1	50
1,2,3,4,7,8,9-HpCDF			0.100	0.0987		ug/Kg		99	78 - 138	1	50
1,2,3,4,7,8-HxCDD			0.100	0.104		ug/Kg		104	70 - 164	1	50
1,2,3,4,7,8-HxCDF			0.100	0.0995		ug/Kg		100	72 - 134	1	50
1,2,3,6,7,8-HxCDD			0.100	0.100		ug/Kg		100	76 - 134	1	50
1,2,3,6,7,8-HxCDF			0.100	0.0981		ug/Kg		98	84 - 130	0	50
1,2,3,7,8,9-HxCDD			0.100	0.105		ug/Kg		105	64 - 162	2	50
1,2,3,7,8,9-HxCDF			0.100	0.0992		ug/Kg		99	78 - 130	1	50
1,2,3,7,8-PeCDD			0.100	0.102		ug/Kg		102	70 - 142	2	50
1,2,3,7,8-PeCDF			0.100	0.102		ug/Kg		102	80 - 134	2	50
2,3,4,6,7,8-HxCDF			0.100	0.0956		ug/Kg		96	70 - 156	3	50
2,3,4,7,8-PeCDF			0.100	0.105		ug/Kg		105	68 - 160	0	50
2,3,7,8-TCDD			0.0200	0.0205		ug/Kg		103	67 - 158	0	50
2,3,7,8-TCDF			0.0200	0.0197		ug/Kg		99	75 - 158	0	50
OCDD			0.200	0.189		ug/Kg		94	78 - 144	1	50
OCDF			0.200	0.181		ug/Kg		91	63 - 170	0	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	58		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	56		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	56		20 - 186
13C-1,2,3,4,7,8-HxCDD	61		21 - 193
13C-1,2,3,4,7,8-HxCDF	63		19 - 202
13C-1,2,3,6,7,8-HxCDD	60		25 - 163

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

Lab Sample ID: LCSD 320-227351/3-A
Matrix: Solid
Analysis Batch: 227860

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 227351

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,6,7,8-HxCDF	61		21 - 159
13C-1,2,3,7,8,9-HxCDF	67		17 - 205
13C-1,2,3,7,8-PeCDD	64		21 - 227
13C-1,2,3,7,8-PeCDF	65		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	67		22 - 152
13C-OCDD	61		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
37Cl4-2,3,7,8-TCDD	102		31 - 191

Lab Chronicle

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

TestAmerica Job ID: 580-77301-2

Client Sample ID: PDI-SG-S158
Date Collected: 05/14/18 13:15
Date Received: 05/15/18 13:15

Lab Sample ID: 580-77301-1
Matrix: Solid
Percent Solids: 57.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			227351	06/05/18 15:02	SR1	TAL SAC
Total/NA	Analysis	1613B		1	227860	06/07/18 12:43	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		227351	06/05/18 15:02	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	227952	06/07/18 21:12	KSS	TAL SAC

Client Sample ID: PDI-SG-S161
Date Collected: 05/14/18 16:30
Date Received: 05/15/18 13:15

Lab Sample ID: 580-77301-2
Matrix: Solid
Percent Solids: 41.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			227351	06/05/18 15:02	SR1	TAL SAC
Total/NA	Analysis	1613B		1	227860	06/07/18 13:32	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		227351	06/05/18 15:02	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	227952	06/07/18 21:50	KSS	TAL SAC

Client Sample ID: PDI-SG-S250
Date Collected: 05/14/18 10:40
Date Received: 05/15/18 13:15

Lab Sample ID: 580-77301-3
Matrix: Solid
Percent Solids: 38.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			227351	06/05/18 15:02	SR1	TAL SAC
Total/NA	Analysis	1613B		1	227860	06/07/18 14:20	AS	TAL SAC

Client Sample ID: PDI-SG-S249
Date Collected: 05/14/18 12:00
Date Received: 05/15/18 13:15

Lab Sample ID: 580-77301-4
Matrix: Solid
Percent Solids: 60.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			227351	06/05/18 15:02	SR1	TAL SAC
Total/NA	Analysis	1613B		1	227860	06/07/18 15:08	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		227351	06/05/18 15:02	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	227952	06/07/18 22:28	KSS	TAL SAC

Client Sample ID: PDI-SG-S248
Date Collected: 05/14/18 12:50
Date Received: 05/15/18 13:15

Lab Sample ID: 580-77301-5
Matrix: Solid
Percent Solids: 40.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			227351	06/05/18 15:02	SR1	TAL SAC
Total/NA	Analysis	1613B		1	227860	06/07/18 15:57	AS	TAL SAC

Client Sample ID: PDI-SG-S247
Lab Sample ID: 580-77301-6
Date Collected: 05/14/18 14:10
Matrix: Solid
Date Received: 05/15/18 13:15
Percent Solids: 42.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			227351	06/05/18 15:02	SR1	TAL SAC
Total/NA	Analysis	1613B		1	227860	06/07/18 16:45	AS	TAL SAC

Client Sample ID: PDI-SG-S246
Lab Sample ID: 580-77301-7
Date Collected: 05/14/18 15:15
Matrix: Solid
Date Received: 05/15/18 13:15
Percent Solids: 37.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			227351	06/05/18 15:02	SR1	TAL SAC
Total/NA	Analysis	1613B		1	227860	06/07/18 17:34	AS	TAL SAC

Client Sample ID: PDI-SG-S252
Lab Sample ID: 580-77301-8
Date Collected: 05/14/18 09:45
Matrix: Solid
Date Received: 05/15/18 13:15
Percent Solids: 61.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			227351	06/05/18 15:02	SR1	TAL SAC
Total/NA	Analysis	1613B		1	227861	06/07/18 22:11	SMA	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		227351	06/05/18 15:02	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	227952	06/07/18 23:06	KSS	TAL SAC

Client Sample ID: PDI-SG-S244
Lab Sample ID: 580-77301-9
Date Collected: 05/14/18 15:50
Matrix: Solid
Date Received: 05/15/18 13:15
Percent Solids: 39.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			227351	06/05/18 15:02	SR1	TAL SAC
Total/NA	Analysis	1613B		1	227861	06/07/18 22:59	SMA	TAL SAC

Client Sample ID: PDI-SG-S227
Lab Sample ID: 580-77301-10
Date Collected: 05/14/18 16:50
Matrix: Solid
Date Received: 05/15/18 13:15
Percent Solids: 40.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			227351	06/05/18 15:02	SR1	TAL SAC
Total/NA	Analysis	1613B		1	227861	06/07/18 23:47	SMA	TAL SAC

Client Sample ID: PDI-RB-VV-180514
Lab Sample ID: 580-77301-11
Date Collected: 05/14/18 17:30
Matrix: Water
Date Received: 05/15/18 13:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			224916	05/23/18 07:27	A1A	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 580-77301-2

Client Sample ID: PDI-RB-VV-180514
Date Collected: 05/14/18 17:30
Date Received: 05/15/18 13:15

Lab Sample ID: 580-77301-11
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1613B		1	225469	05/25/18 02:59	SMA	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: AECOM
TestAmerica Job ID: 580-77301-2
Project/Site: Portland Harbor Pre-Remedial Design

Laboratory: TestAmerica Seattle

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-024	01-19-19
ANAB	DoD ELAP		L2236	01-19-19
ANAB	ISO/IEC 17025		L2236	01-19-19
California	State Program	9	2901	11-05-18
Montana (UST)	State Program	8	N/A	04-30-20
Oregon	NELAP	10	WA100007	11-05-18
US Fish & Wildlife	Federal		LE058448-0	10-31-18
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
Arizona	State Program	9	AZ0708	08-11-18
Arkansas DEQ	State Program	6	88-0691	06-17-19
California	State Program	9	2897	01-31-19
Colorado	State Program	8	CA00044	08-31-18
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-18
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
L-A-B	DoD ELAP		L2468	01-20-21
Louisiana	NELAP	6	30612	06-30-18
Maine	State Program	1	CA0004	04-14-20
Michigan	State Program	5	9947	01-31-20
Nevada	State Program	9	CA00044	07-31-18
New Hampshire	NELAP	1	2997	04-18-19
New Jersey	NELAP	2	CA005	06-30-18
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	07-31-18
USDA	Federal		P330-11-00436	01-17-21
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-19
Vermont	State Program	1	VT-4040	04-30-19
Virginia	NELAP	3	460278	03-14-19
Washington	State Program	10	C581	05-05-19
West Virginia (DW)	State Program	3	9930C	12-31-18
Wyoming	State Program	8	8TMS-L	01-28-19

Sample Summary

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

TestAmerica Job ID: 580-77301-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-77301-1	PDI-SG-S158	Solid	05/14/18 13:15	05/15/18 13:15
580-77301-2	PDI-SG-S161	Solid	05/14/18 16:30	05/15/18 13:15
580-77301-3	PDI-SG-S250	Solid	05/14/18 10:40	05/15/18 13:15
580-77301-4	PDI-SG-S249	Solid	05/14/18 12:00	05/15/18 13:15
580-77301-5	PDI-SG-S248	Solid	05/14/18 12:50	05/15/18 13:15
580-77301-6	PDI-SG-S247	Solid	05/14/18 14:10	05/15/18 13:15
580-77301-7	PDI-SG-S246	Solid	05/14/18 15:15	05/15/18 13:15
580-77301-8	PDI-SG-S252	Solid	05/14/18 09:45	05/15/18 13:15
580-77301-9	PDI-SG-S244	Solid	05/14/18 15:50	05/15/18 13:15
580-77301-10	PDI-SG-S227	Solid	05/14/18 16:50	05/15/18 13:15
580-77301-11	PDI-RB-VV-180514	Water	05/14/18 17:30	05/15/18 13:15

SURFACE SEDIMENT
CHAIN OF CUSTODY

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 **Ph: 253-922-2310 Fax: 253-922-5047**	**Project Contact: Amy Dahl / Chelsey Cook** **Tel: (206) 438-2261 / (206) 438-2010**	**Site Contact: Jennifer Ray** **Laboratory Contact: Elaine-Walker**	**5/15/2018** COC No: 1 **Carrier: Courier** ___1___ of ___1___ pages

Client Contact

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

Analysis Turnaround Time

Calendar (C) or Work Days (W) _____

[x] 21 days

[ ] Other _____

580-77301 Chain of Custody

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 1668A	PCDD/Fs 1613B	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060	Archive Archive -20 C	WQ - PCB Congeners 1668A	WQ - PCDD/Fs 1613B	WQ - TPH Diesel NWTPH-Dx	WQ - Metals, Mercury 6020B, 7470	WQ - Total Organic Carbon SM5310B	Sample Specific Notes:
PDI-SG-S158	5/14/2018	13:15	SS		LS	5		X	X	X	X	X						
PDI-SG-S161	5/14/2018	16:30	SS		LS	5		X	X	X	X	X						
PDI-SG-S250	5/14/2018	10:40	SS		AM	5		X	X	X	X	X						
PDI-SG-S249	5/14/2018	12:00	SS		AM	5		X	X	X	X	X						
PDI-SG-S248	5/14/2018	12:50	SS		AM	5		X	X	X	X	X						
PDI-SG-S247	5/14/2018	14:10	SS		AM	5		X	X	X	X	X						
PDI-SG-S246	5/14/2018	15:15	SS		AM	5		X	X	X	X	X						
PDI-SG-S252	5/14/2018	9:45	SS		AM	5		X	X	X	X	X						
PDI-SG-S244	5/14/2018	15:50	SS		AM	5		X	X	X	X	X						
PDI-SG-S227	5/14/2018	16:50	SS		AM	5		X	X	X	X	X						
PDI-RB-VV-180514	5/14/2018	17:30	W		MT	8							X	X	X	X	X	

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

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

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

Sample Disposal

[ ] Return To Client [X] isposal By Lab [X] rchive For 12 Months

Special Instructions/QC Requirements & Comments:

Separate reports for each lab

SMA Study samples - Log in seperately from SS Study samples

1.3, 2.7, 2.1

Relinquished by:	Company: AECOM	Date/Time: 5/15/18 1240	Received by:	Company: M.E.	Date/Time: 5/15/18 1240
Relinquished by:	Company: M.E.	Date/Time: 5/15/18 1315	Received by:	Company: TARGOR	Date/Time: 5/15/18 1315
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Walker, Elaine M	Carrier Tracking No(s):	COC No: 580-55384.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: elaine.walker@testamericainc.com	State of Origin: Oregon	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 580-77301-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 6/1/2018			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Portland Harbor Pre-Remedial Design	Project #: 58012120			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1613B/HRMS_Sox_P Full List w/o Totals	AutoOP/ PH Frozen Archive Container billed @ $0.	1613B/1613B_Sox_Sep_P Full List w/o Totals	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
PDI-SG-S158 (580-77301-1)	5/14/18	13:15 Pacific		Solid			X	X		2	
PDI-SG-S161 (580-77301-2)	5/14/18	16:30 Pacific		Solid			X	X		2	
PDI-SG-S250 (580-77301-3)	5/14/18	10:40 Pacific		Solid			X	X		2	
PDI-SG-S249 (580-77301-4)	5/14/18	12:00 Pacific		Solid			X	X		2	
PDI-SG-S248 (580-77301-5)	5/14/18	12:50 Pacific		Solid			X	X		2	
PDI-SG-S247 (580-77301-6)	5/14/18	14:10 Pacific		Solid			X	X		2	
PDI-SG-S246 (580-77301-7)	5/14/18	15:15 Pacific		Solid			X	X		2	
PDI-SG-S252 (580-77301-8)	5/14/18	09:45 Pacific		Solid			X	X		2	
PDI-SG-S244 (580-77301-9)	5/14/18	15:50 Pacific		Solid			X	X		2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	5/15/18 1700	TAPOR	Gabriela Iliev	05/16/18 9:10	TA-SAC
2	[signature]					
3						

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Walker, Elaine M	Carrier Tracking No(s):	COC No: 580-55384.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: elaine.walker@testamericainc.com	State of Origin: Oregon	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 580-77301-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 6/1/2018			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Portland Harbor Pre-Remedial Design	Project #: 58012120			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1613B/HRMS_Sox_P Full List w/o Totals	AutoOP/ PH Frozen Archive Container billed @ $0.	1613B/1613B_Sox_Sep_P Full List w/o Totals	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
PDI-SG-S227 (580-77301-10)	5/14/18	16:50 Pacific		Solid			X	X		2	
PDI-RB-VV-180514 (580-77301-11)	5/14/18	17:30 Pacific		Water					X	2	

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

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

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

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	5/15/18 1700	TAOR	Gabriela Plier	05-16-18 09:10	TA SAC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-77301-2

Login Number: 77301
List Number: 1
Creator: O'Connell, Jason I

List Source: TestAmerica Seattle

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

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-77301-2

Login Number: 77301
List Number: 2
Creator: Gooch, Mayce

List Source: TestAmerica Sacramento
List Creation: 05/16/18 05:15 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.5c, 5.8c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-77301-2

Login Number: 77301
List Number: 3
Creator: Gooch, Mayce

List Source: TestAmerica Sacramento
List Creation: 05/16/18 05:41 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.5c, 5.8c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-77301-2

Login Number: 77301
List Number: 4
Creator: Gooch, Mayce

List Source: TestAmerica Sacramento
List Creation: 05/16/18 06:01 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.5c, 5.8c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

580-77301 Field Sheet

Job:_____

Tracking # 442307503070 SO / PO / FO

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

Notes:_____

Therm. ID: **AK-2 / AK-3 / AK-4 / AK-5 / HACCP / Other**_____

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: seal

Sample Custody Seal: —

Cooler ID: —

Temp: Observed 2.2 °C

From: Temp Blank ☐ Sample ☒

NCM Filed: Yes ☐ No ☐

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

Initials: GLD Date: 05/16/18 Time 9:10

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

WISD

Isotope Dilution Summary

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

TestAmerica Job ID: 580-77301-2

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

Matrix: Solid **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	HxCDD (32-141)	HxCDF (26-152)	HxDD (28-130)	HxDF (26-123)	HxCF (29-147)
580-77301-1	PDI-SG-S158	56	51	56	63	62	61	59	70
580-77301-1 - RA	PDI-SG-S158								
580-77301-2	PDI-SG-S161	54	51	53	56	56	55	54	63
580-77301-2 - RA	PDI-SG-S161								
580-77301-3	PDI-SG-S250	64	61	65	69	69	69	68	76
580-77301-4	PDI-SG-S249	57	53	56	64	64	60	58	66
580-77301-4 - RA	PDI-SG-S249								
580-77301-5	PDI-SG-S248	54	46	58	49	49	49	48	64
580-77301-6	PDI-SG-S247	54	50	57	59	60	57	55	64
580-77301-7	PDI-SG-S246	55	51	57	58	58	57	55	62
580-77301-8	PDI-SG-S252	46	41	43	52	51	46	46	60
580-77301-8 - RA	PDI-SG-S252								
580-77301-9	PDI-SG-S244	57	53	59	57	59	57	54	66
580-77301-10	PDI-SG-S227	50	44	54	47	50	46	45	58
MB 320-227351/1-A	Method Blank	62	60	63	67	67	65	65	74

		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)
580-77301-1	PDI-SG-S158	68	69	69	66	66		59
580-77301-1 - RA	PDI-SG-S158						75	
580-77301-2	PDI-SG-S161	61	62	61	57	59		57
580-77301-2 - RA	PDI-SG-S161						68	
580-77301-3	PDI-SG-S250	73	74	74	70	71	76	70
580-77301-4	PDI-SG-S249	62	64	65	64	62		61
580-77301-4 - RA	PDI-SG-S249						70	
580-77301-5	PDI-SG-S248	59	61	61	54	62	70	56
580-77301-6	PDI-SG-S247	59	60	61	61	62	68	56
580-77301-7	PDI-SG-S246	62	60	61	61	62	69	55
580-77301-8	PDI-SG-S252	56	58	55	55	60		48
580-77301-8 - RA	PDI-SG-S252						73	
580-77301-9	PDI-SG-S244	62	61	62	61	62	72	60
580-77301-10	PDI-SG-S227	52	53	52	52	56	65	49
MB 320-227351/1-A	Method Blank	70	69	72	65	67	73	68

Surrogate Legend

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

OCDD = 13C-OCDD

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

Matrix: Solid **Prep Type: Total/NA**

		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 320-227351/2-A	Lab Control Sample	64	62	63	71	73	69	69	75
LCSD 320-227351/3-A	Lab Control Sample Dup	58	56	56	61	63	60	61	67

		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 320-227351/2-A	Lab Control Sample	71	72	72	72	68	74	68	
LCSD 320-227351/3-A	Lab Control Sample Dup	64	65	66	61	62	67	61	

Surrogate Legend

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

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

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	HxCDD (32-141)	HxCDF (26-152)	HxDD (28-130)	HxDF (26-123)	HxCF (29-147)
580-77301-11	PDI-RB-VV-180514	50	55	54	59	57	58	57	61
MB 320-224916/1-A	Method Blank	54	59	59	62	58	61	57	61

		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)	
580-77301-11	PDI-RB-VV-180514	59	67	58	65	63	71	42	
MB 320-224916/1-A	Method Blank	62	70	60	72	69	79	48	

Surrogate Legend

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

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

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

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDD (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	HxCDD (21-193)	HxCDF (19-202)	HxDD (25-163)	HxDF (21-159)	HxCF (17-205)
LCS 320-224916/2-A	Lab Control Sample	57	60	64	62	60	62	60	67
LCSD 320-224916/3-A	Lab Control Sample Dup	52	54	54	53	52	56	54	60

		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 320-224916/2-A	Lab Control Sample	65	73	65	69	69	79	52	
LCSD 320-224916/3-A	Lab Control Sample Dup	61	69	60	61	66	76	46	

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