TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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TestAmerica Job ID: 580-77430-2
Client Project/Site: Portland Harbor Pre-Remedial Design
Revision: 1

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

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

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Job ID: 580-77430-2

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE
Client: AECOM
Project: Portland Harbor Pre-Remedial Design
Report Number: 580-77430-2

REVISED
Report revised to add login checklist 7/24/2018.

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
Seventeen samples were received on 5/21/2018 12:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 0.8º C, 1.2º C, 3.1º C, 3.2º C, 3.8º C and 4.5º 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-B395-BL1 (580-77430-1), PDI-SG-B397-BL1 (580-77430-2), PDI-SG-B412-BL1 (580-77430-3), PDI-SG-B402-BL1 (580-77430-4), PDI-SG-B416-BL1 (580-77430-5), PDI-SG-B413-BL1 (580-77430-6), PDI-SG-B411-BL1 (580-77430-7), PDI-SG-B407-BL1 (580-77430-8), PDI-SG-B406-BL1 (580-77430-9), PDI-SG-B403-BL1 (580-77430-10), PDI-SG-B372-BL1 (580-77430-11), PDI-SG-B373-BL1 (580-77430-12), PDI-SG-B217-BL1 (580-77430-13), PDI-SG-B215-BL1 (580-77430-14), PDI-SG-B211-BL1 (580-77430-15) and PDI-SG-B210-BL1 (580-77430-16) were analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 06/11/2018 and 06/15/2018 and analyzed on 06/13/2018, 06/14/2018, 06/18/2018 and 06/19/2018.

2,3,7,8-TCDD was detected in method blank MB 320-228471/1-A at a level exceeding the reporting limit. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. None of the samples reported with this method blank contained the target compound above the RL. Any samples containing the analyte above the RL was re-extracted and reanalyzed.

Several analytes were detected in method blank MB 320-228471/1-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 320-229364/1-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.

Job ID: 580-77430-2 (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 associated with the following samples run on instrument 11D2 exceeded this criteria: PDI-SG-B397-BL1 (580-77430-2), PDI-SG-B416-BL1 (580-77430-5), PDI-SG-B211-BL1 (580-77430-15), PDI-SG-B210-BL1 (580-77430-16) and (CCV 320-229340/2). 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.

The concentration of one or more analytes associated with the following sample exceeded the instrument calibration range: PDI-SG-B211-BL1 (580-77430-15). These analytes have been qualified; however, the peak did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range.

Due to the matrix, the initial volumes used for the following samples deviated from the standard procedure: PDI-SG-B395-BL1 (580-77430-1), PDI-SG-B397-BL1 (580-77430-2), PDI-SG-B412-BL1 (580-77430-3), PDI-SG-B402-BL1 (580-77430-4), PDI-SG-B416-BL1 (580-77430-5), PDI-SG-B413-BL1 (580-77430-6), PDI-SG-B411-BL1 (580-77430-7), PDI-SG-B407-BL1 (580-77430-8), PDI-SG-B406-BL1 (580-77430-9), PDI-SG-B403-BL1 (580-77430-10), PDI-SG-B372-BL1 (580-77430-11), PDI-SG-B373-BL1 (580-77430-12), PDI-SG-B217-BL1 (580-77430-13), PDI-SG-B215-BL1 (580-77430-14), PDI-SG-B211-BL1 (580-77430-15) and PDI-SG-B210-BL1 (580-77430-16). The reporting limits (RLs) have been adjusted proportionately. Samples are associated with preparation batch 320-228471.

The sample container cracked during temperature change from freezing to room temperature: PDI-SG-B407-BL1 (580-77430-8) and PDI-SG-B211-BL1 (580-77430-15). Samples were transferred to a new container. The samples are associated with preparation batch 320-228471.

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-SG-RB-VV-180520-1745 (580-77430-17) was analyzed for Dioxin/ Furan in accordance with 1613B. The sample was prepared on 06/07/2018 and analyzed on 06/11/2018.

Several analytes were detected in method blank MB 320-227727/1-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: 580-77430-2

Qualifiers

Dioxin

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
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.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
E	Result exceeded calibration range.

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-B395-BL1
Date Collected: 05/18/18 12:35
Date Received: 05/21/18 12:00

Lab Sample ID: 580-77430-1
Matrix: Solid
Percent Solids: 43.5

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	0.048	B	0.0056	0.00021	ug/Kg	☼	06/15/18 14:47	06/18/18 18:38	1
1,2,3,4,6,7,8-HpCDF	0.010	q B	0.0056	0.00018	ug/Kg	☼	06/15/18 14:47	06/18/18 18:38	1
1,2,3,4,7,8,9-HpCDF	0.0024	J B	0.0056	0.00014	ug/Kg	☼	06/15/18 14:47	06/18/18 18:38	1
1,2,3,4,7,8-HxCDD	0.00081	J B	0.0056	0.000045	ug/Kg	☼	06/15/18 14:47	06/18/18 18:38	1
1,2,3,4,7,8-HxCDF	0.0010	J B	0.0056	0.000059	ug/Kg	☼	06/15/18 14:47	06/18/18 18:38	1
1,2,3,6,7,8-HxCDD	0.0022	J	0.0056	0.000046	ug/Kg	☼	06/15/18 14:47	06/18/18 18:38	1
1,2,3,6,7,8-HxCDF	0.00062	J B	0.0056	0.000055	ug/Kg	☼	06/15/18 14:47	06/18/18 18:38	1
1,2,3,7,8,9-HxCDD	0.0018	J	0.0056	0.000041	ug/Kg	☼	06/15/18 14:47	06/18/18 18:38	1
1,2,3,7,8,9-HxCDF	0.0010	J B	0.0056	0.000037	ug/Kg	☼	06/15/18 14:47	06/18/18 18:38	1
1,2,3,7,8-PeCDD	0.00032	J q	0.0056	0.000050	ug/Kg	☼	06/15/18 14:47	06/18/18 18:38	1
1,2,3,7,8-PeCDF	0.00043	J B	0.0056	0.000043	ug/Kg	☼	06/15/18 14:47	06/18/18 18:38	1
2,3,4,6,7,8-HxCDF	0.00037	J	0.0056	0.000041	ug/Kg	☼	06/15/18 14:47	06/18/18 18:38	1
2,3,4,7,8-PeCDF	0.00029	J	0.0056	0.000048	ug/Kg	☼	06/15/18 14:47	06/18/18 18:38	1
2,3,7,8-TCDD	0.00027	J q B	0.0011	0.000039	ug/Kg	☼	06/15/18 14:47	06/18/18 18:38	1
2,3,7,8-TCDF	0.00052	J B	0.0011	0.000048	ug/Kg	☼	06/15/18 14:47	06/18/18 18:38	1
OCDD	0.41	B	0.011	0.00014	ug/Kg	☼	06/15/18 14:47	06/18/18 18:38	1
OCDF	0.031	B	0.011	0.000030	ug/Kg	☼	06/15/18 14:47	06/18/18 18:38	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*61*		*23 - 140*	*06/15/18 14:47*	*06/18/18 18:38*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*41*		*28 - 143*	*06/15/18 14:47*	*06/18/18 18:38*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*63*		*26 - 138*	*06/15/18 14:47*	*06/18/18 18:38*	*1*
13C-1,2,3,4,7,8-HxCDD	*60*		*32 - 141*	*06/15/18 14:47*	*06/18/18 18:38*	*1*
13C-1,2,3,4,7,8-HxCDF	*65*		*26 - 152*	*06/15/18 14:47*	*06/18/18 18:38*	*1*
13C-1,2,3,6,7,8-HxCDD	*54*		*28 - 130*	*06/15/18 14:47*	*06/18/18 18:38*	*1*
13C-1,2,3,6,7,8-HxCDF	*58*		*26 - 123*	*06/15/18 14:47*	*06/18/18 18:38*	*1*
13C-1,2,3,7,8,9-HxCDF	*66*		*29 - 147*	*06/15/18 14:47*	*06/18/18 18:38*	*1*
13C-1,2,3,7,8-PeCDD	*57*		*25 - 181*	*06/15/18 14:47*	*06/18/18 18:38*	*1*
13C-1,2,3,7,8-PeCDF	*59*		*24 - 185*	*06/15/18 14:47*	*06/18/18 18:38*	*1*
13C-2,3,4,6,7,8-HxCDF	*64*		*28 - 136*	*06/15/18 14:47*	*06/18/18 18:38*	*1*
13C-2,3,4,7,8-PeCDF	*59*		*21 - 178*	*06/15/18 14:47*	*06/18/18 18:38*	*1*
13C-2,3,7,8-TCDD	*59*		*25 - 164*	*06/15/18 14:47*	*06/18/18 18:38*	*1*
13C-2,3,7,8-TCDF	*70*		*24 - 169*	*06/15/18 14:47*	*06/18/18 18:38*	*1*
13C-OCDD	*59*		*17 - 157*	*06/15/18 14:47*	*06/18/18 18:38*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*114*		*35 - 197*	*06/15/18 14:47*	*06/18/18 18:38*	*1*

Client Sample ID: PDI-SG-B397-BL1
Date Collected: 05/18/18 14:10
Date Received: 05/21/18 12:00

Lab Sample ID: 580-77430-2
Matrix: Solid
Percent Solids: 41.5

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	0.049	B	0.0060	0.00021	ug/Kg	☼	06/15/18 14:47	06/18/18 19:26	1
1,2,3,4,6,7,8-HpCDF	0.012	q B	0.0060	0.00019	ug/Kg	☼	06/15/18 14:47	06/18/18 19:26	1
1,2,3,4,7,8,9-HpCDF	0.0024	J B	0.0060	0.00017	ug/Kg	☼	06/15/18 14:47	06/18/18 19:26	1
1,2,3,4,7,8-HxCDD	0.00074	J B	0.0060	0.000037	ug/Kg	☼	06/15/18 14:47	06/18/18 19:26	1
1,2,3,4,7,8-HxCDF	0.00096	J B	0.0060	0.000052	ug/Kg	☼	06/15/18 14:47	06/18/18 19:26	1
1,2,3,6,7,8-HxCDD	0.0021	J	0.0060	0.000036	ug/Kg	☼	06/15/18 14:47	06/18/18 19:26	1
1,2,3,6,7,8-HxCDF	0.00057	J B	0.0060	0.000048	ug/Kg	☼	06/15/18 14:47	06/18/18 19:26	1
1,2,3,7,8,9-HxCDD	0.0018	J	0.0060	0.000033	ug/Kg	☼	06/15/18 14:47	06/18/18 19:26	1
1,2,3,7,8,9-HxCDF	0.00092	J B	0.0060	0.000032	ug/Kg	☼	06/15/18 14:47	06/18/18 19:26	1
1,2,3,7,8-PeCDD	0.00036	J	0.0060	0.000061	ug/Kg	☼	06/15/18 14:47	06/18/18 19:26	1
1,2,3,7,8-PeCDF	0.00033	J q B	0.0060	0.000065	ug/Kg	☼	06/15/18 14:47	06/18/18 19:26	1
2,3,4,6,7,8-HxCDF	0.00033	J	0.0060	0.000036	ug/Kg	☼	06/15/18 14:47	06/18/18 19:26	1
2,3,4,7,8-PeCDF	0.00027	J	0.0060	0.000069	ug/Kg	☼	06/15/18 14:47	06/18/18 19:26	1
2,3,7,8-TCDD	0.00013	J B	0.0012	0.000032	ug/Kg	☼	06/15/18 14:47	06/18/18 19:26	1
2,3,7,8-TCDF	0.00060	J B	0.0012	0.000052	ug/Kg	☼	06/15/18 14:47	06/18/18 19:26	1
OCDD	0.42	B	0.012	0.00014	ug/Kg	☼	06/15/18 14:47	06/18/18 19:26	1
OCDF	0.047	B	0.012	0.000035	ug/Kg	☼	06/15/18 14:47	06/18/18 19:26	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*57*		*23 - 140*	*06/15/18 14:47*	*06/18/18 19:26*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*44*		*28 - 143*	*06/15/18 14:47*	*06/18/18 19:26*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*61*		*26 - 138*	*06/15/18 14:47*	*06/18/18 19:26*	*1*
13C-1,2,3,4,7,8-HxCDD	*58*		*32 - 141*	*06/15/18 14:47*	*06/18/18 19:26*	*1*
13C-1,2,3,4,7,8-HxCDF	*62*		*26 - 152*	*06/15/18 14:47*	*06/18/18 19:26*	*1*
13C-1,2,3,6,7,8-HxCDD	*50*		*28 - 130*	*06/15/18 14:47*	*06/18/18 19:26*	*1*
13C-1,2,3,6,7,8-HxCDF	*55*		*26 - 123*	*06/15/18 14:47*	*06/18/18 19:26*	*1*
13C-1,2,3,7,8,9-HxCDF	*64*		*29 - 147*	*06/15/18 14:47*	*06/18/18 19:26*	*1*
13C-1,2,3,7,8-PeCDD	*54*		*25 - 181*	*06/15/18 14:47*	*06/18/18 19:26*	*1*
13C-1,2,3,7,8-PeCDF	*58*		*24 - 185*	*06/15/18 14:47*	*06/18/18 19:26*	*1*
13C-2,3,4,6,7,8-HxCDF	*61*		*28 - 136*	*06/15/18 14:47*	*06/18/18 19:26*	*1*
13C-2,3,4,7,8-PeCDF	*59*		*21 - 178*	*06/15/18 14:47*	*06/18/18 19:26*	*1*
13C-2,3,7,8-TCDD	*59*		*25 - 164*	*06/15/18 14:47*	*06/18/18 19:26*	*1*
13C-2,3,7,8-TCDF	*72*		*24 - 169*	*06/15/18 14:47*	*06/18/18 19:26*	*1*
13C-OCDD	*56*		*17 - 157*	*06/15/18 14:47*	*06/18/18 19:26*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*115*		*35 - 197*	*06/15/18 14:47*	*06/18/18 19:26*	*1*

Client Sample ID: PDI-SG-B412-BL1
Date Collected: 05/18/18 10:10
Date Received: 05/21/18 12:00

Lab Sample ID: 580-77430-3
Matrix: Solid
Percent Solids: 58.4

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.024	B	0.0043	0.00046	ug/Kg	☼	06/11/18 16:02	06/13/18 14:33	1
1,2,3,4,6,7,8-HpCDF	0.0049		0.0043	0.00034	ug/Kg	☼	06/11/18 16:02	06/13/18 14:33	1
1,2,3,4,7,8,9-HpCDF	0.00095	J B	0.0043	0.00031	ug/Kg	☼	06/11/18 16:02	06/13/18 14:33	1
1,2,3,4,7,8-HxCDD	0.00047	J q B	0.0043	0.00020	ug/Kg	☼	06/11/18 16:02	06/13/18 14:33	1
1,2,3,4,7,8-HxCDF	0.00063	J B	0.0043	0.00021	ug/Kg	☼	06/11/18 16:02	06/13/18 14:33	1
1,2,3,6,7,8-HxCDD	0.0011	J q	0.0043	0.00015	ug/Kg	☼	06/11/18 16:02	06/13/18 14:33	1
1,2,3,6,7,8-HxCDF	ND		0.0043	0.00019	ug/Kg	☼	06/11/18 16:02	06/13/18 14:33	1
1,2,3,7,8,9-HxCDD	0.00092	J q	0.0043	0.00015	ug/Kg	☼	06/11/18 16:02	06/13/18 14:33	1
1,2,3,7,8,9-HxCDF	0.00040	J q B	0.0043	0.00011	ug/Kg	☼	06/11/18 16:02	06/13/18 14:33	1
1,2,3,7,8-PeCDD	ND		0.0043	0.00015	ug/Kg	☼	06/11/18 16:02	06/13/18 14:33	1
1,2,3,7,8-PeCDF	0.00027	J q	0.0043	0.00011	ug/Kg	☼	06/11/18 16:02	06/13/18 14:33	1
2,3,4,6,7,8-HxCDF	0.00021	J q B	0.0043	0.00012	ug/Kg	☼	06/11/18 16:02	06/13/18 14:33	1
2,3,4,7,8-PeCDF	ND		0.0043	0.00016	ug/Kg	☼	06/11/18 16:02	06/13/18 14:33	1
2,3,7,8-TCDD	0.00034	J q B	0.00086	0.00013	ug/Kg	☼	06/11/18 16:02	06/13/18 14:33	1
2,3,7,8-TCDF	0.00030	J B	0.00086	0.000081	ug/Kg	☼	06/11/18 16:02	06/13/18 14:33	1
OCDD	0.19	B	0.0086	0.0013	ug/Kg	☼	06/11/18 16:02	06/13/18 14:33	1
OCDF	0.015	B	0.0086	0.00035	ug/Kg	☼	06/11/18 16:02	06/13/18 14:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*46*		*23 - 140*	*06/11/18 16:02*	*06/13/18 14:33*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*34*		*28 - 143*	*06/11/18 16:02*	*06/13/18 14:33*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*51*		*26 - 138*	*06/11/18 16:02*	*06/13/18 14:33*	*1*
13C-1,2,3,4,7,8-HxCDD	*37*		*32 - 141*	*06/11/18 16:02*	*06/13/18 14:33*	*1*
13C-1,2,3,4,7,8-HxCDF	*39*		*26 - 152*	*06/11/18 16:02*	*06/13/18 14:33*	*1*
13C-1,2,3,6,7,8-HxCDD	*44*		*28 - 130*	*06/11/18 16:02*	*06/13/18 14:33*	*1*
13C-1,2,3,6,7,8-HxCDF	*43*		*26 - 123*	*06/11/18 16:02*	*06/13/18 14:33*	*1*
13C-1,2,3,7,8,9-HxCDF	*62*		*29 - 147*	*06/11/18 16:02*	*06/13/18 14:33*	*1*
13C-1,2,3,7,8-PeCDD	*71*		*25 - 181*	*06/11/18 16:02*	*06/13/18 14:33*	*1*
13C-1,2,3,7,8-PeCDF	*60*		*24 - 185*	*06/11/18 16:02*	*06/13/18 14:33*	*1*
13C-2,3,4,6,7,8-HxCDF	*58*		*28 - 136*	*06/11/18 16:02*	*06/13/18 14:33*	*1*
13C-2,3,4,7,8-PeCDF	*45*		*21 - 178*	*06/11/18 16:02*	*06/13/18 14:33*	*1*
13C-2,3,7,8-TCDD	*62*		*25 - 164*	*06/11/18 16:02*	*06/13/18 14:33*	*1*
13C-2,3,7,8-TCDF	*67*		*24 - 169*	*06/11/18 16:02*	*06/13/18 14:33*	*1*
13C-OCDD	*43*		*17 - 157*	*06/11/18 16:02*	*06/13/18 14:33*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*97*		*35 - 197*	*06/11/18 16:02*	*06/13/18 14:33*	*1*

Client Sample ID: PDI-SG-B402-BL1

Date Collected: 05/18/18 15:05
Date Received: 05/21/18 12:00

Lab Sample ID: 580-77430-4

Matrix: Solid
Percent Solids: 45.2

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	**0.043**	**B**	0.0054	0.00065	ug/Kg	☼	06/11/18 16:02	06/13/18 15:16	1
1,2,3,4,6,7,8-HpCDF	**0.0093**	**q**	0.0054	0.00050	ug/Kg	☼	06/11/18 16:02	06/13/18 15:16	1
1,2,3,4,7,8,9-HpCDF	**0.0012**	**J B**	0.0054	0.00054	ug/Kg	☼	06/11/18 16:02	06/13/18 15:16	1
1,2,3,4,7,8-HxCDD	**0.00092**	**J B**	0.0054	0.00025	ug/Kg	☼	06/11/18 16:02	06/13/18 15:16	1
1,2,3,4,7,8-HxCDF	**0.0012**	**J q B**	0.0054	0.00026	ug/Kg	☼	06/11/18 16:02	06/13/18 15:16	1
1,2,3,6,7,8-HxCDD	**0.0022**	**J**	0.0054	0.00021	ug/Kg	☼	06/11/18 16:02	06/13/18 15:16	1
1,2,3,6,7,8-HxCDF	**0.00063**	**J B**	0.0054	0.00023	ug/Kg	☼	06/11/18 16:02	06/13/18 15:16	1
1,2,3,7,8,9-HxCDD	**0.0026**	**J**	0.0054	0.00019	ug/Kg	☼	06/11/18 16:02	06/13/18 15:16	1
1,2,3,7,8,9-HxCDF	**0.00098**	**J B**	0.0054	0.00014	ug/Kg	☼	06/11/18 16:02	06/13/18 15:16	1
1,2,3,7,8-PeCDD	ND		0.0054	0.00016	ug/Kg	☼	06/11/18 16:02	06/13/18 15:16	1
1,2,3,7,8-PeCDF	ND		0.0054	0.00012	ug/Kg	☼	06/11/18 16:02	06/13/18 15:16	1
2,3,4,6,7,8-HxCDF	**0.00058**	**J B**	0.0054	0.00016	ug/Kg	☼	06/11/18 16:02	06/13/18 15:16	1
2,3,4,7,8-PeCDF	ND		0.0054	0.00017	ug/Kg	☼	06/11/18 16:02	06/13/18 15:16	1
2,3,7,8-TCDD	**0.00049**	**J q B**	0.0011	0.00015	ug/Kg	☼	06/11/18 16:02	06/13/18 15:16	1
2,3,7,8-TCDF	**0.00051**	**J q B**	0.0011	0.000096	ug/Kg	☼	06/11/18 16:02	06/13/18 15:16	1
OCDD	**0.33**	**B**	0.011	0.0018	ug/Kg	☼	06/11/18 16:02	06/13/18 15:16	1
OCDF	**0.032**	**B**	0.011	0.00043	ug/Kg	☼	06/11/18 16:02	06/13/18 15:16	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*53*		*23 - 140*	*06/11/18 16:02*	*06/13/18 15:16*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*42*		*28 - 143*	*06/11/18 16:02*	*06/13/18 15:16*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*55*		*26 - 138*	*06/11/18 16:02*	*06/13/18 15:16*	*1*
13C-1,2,3,4,7,8-HxCDD	*41*		*32 - 141*	*06/11/18 16:02*	*06/13/18 15:16*	*1*
13C-1,2,3,4,7,8-HxCDF	*46*		*26 - 152*	*06/11/18 16:02*	*06/13/18 15:16*	*1*
13C-1,2,3,6,7,8-HxCDD	*53*		*28 - 130*	*06/11/18 16:02*	*06/13/18 15:16*	*1*
13C-1,2,3,6,7,8-HxCDF	*51*		*26 - 123*	*06/11/18 16:02*	*06/13/18 15:16*	*1*
13C-1,2,3,7,8,9-HxCDF	*67*		*29 - 147*	*06/11/18 16:02*	*06/13/18 15:16*	*1*
13C-1,2,3,7,8-PeCDD	*74*		*25 - 181*	*06/11/18 16:02*	*06/13/18 15:16*	*1*
13C-1,2,3,7,8-PeCDF	*63*		*24 - 185*	*06/11/18 16:02*	*06/13/18 15:16*	*1*
13C-2,3,4,6,7,8-HxCDF	*62*		*28 - 136*	*06/11/18 16:02*	*06/13/18 15:16*	*1*
13C-2,3,4,7,8-PeCDF	*49*		*21 - 178*	*06/11/18 16:02*	*06/13/18 15:16*	*1*
13C-2,3,7,8-TCDD	*63*		*25 - 164*	*06/11/18 16:02*	*06/13/18 15:16*	*1*
13C-2,3,7,8-TCDF	*68*		*24 - 169*	*06/11/18 16:02*	*06/13/18 15:16*	*1*
13C-OCDD	*52*		*17 - 157*	*06/11/18 16:02*	*06/13/18 15:16*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*103*		*35 - 197*	*06/11/18 16:02*	*06/13/18 15:16*	*1*

Client Sample ID: PDI-SG-B416-BL1
Date Collected: 05/19/18 16:00
Date Received: 05/21/18 12:00

Lab Sample ID: 580-77430-5
Matrix: Solid
Percent Solids: 66.2

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.012	B	0.0038	0.000064	ug/Kg	☼	06/15/18 14:47	06/18/18 20:15	1
1,2,3,4,6,7,8-HpCDF	0.0024	J q B	0.0038	0.000077	ug/Kg	☼	06/15/18 14:47	06/18/18 20:15	1
1,2,3,4,7,8,9-HpCDF	0.0013	J B	0.0038	0.000075	ug/Kg	☼	06/15/18 14:47	06/18/18 20:15	1
1,2,3,4,7,8-HxCDD	0.00029	J B	0.0038	0.000022	ug/Kg	☼	06/15/18 14:47	06/18/18 20:15	1
1,2,3,4,7,8-HxCDF	0.00031	J B	0.0038	0.000024	ug/Kg	☼	06/15/18 14:47	06/18/18 20:15	1
1,2,3,6,7,8-HxCDD	0.00056	J q	0.0038	0.000022	ug/Kg	☼	06/15/18 14:47	06/18/18 20:15	1
1,2,3,6,7,8-HxCDF	0.00018	J B	0.0038	0.000023	ug/Kg	☼	06/15/18 14:47	06/18/18 20:15	1
1,2,3,7,8,9-HxCDD	0.00047	J	0.0038	0.000020	ug/Kg	☼	06/15/18 14:47	06/18/18 20:15	1
1,2,3,7,8,9-HxCDF	0.00070	J B	0.0038	0.000015	ug/Kg	☼	06/15/18 14:47	06/18/18 20:15	1
1,2,3,7,8-PeCDD	0.00012	J q	0.0038	0.000028	ug/Kg	☼	06/15/18 14:47	06/18/18 20:15	1
1,2,3,7,8-PeCDF	0.00017	J B	0.0038	0.000022	ug/Kg	☼	06/15/18 14:47	06/18/18 20:15	1
2,3,4,6,7,8-HxCDF	0.000074	J q	0.0038	0.000017	ug/Kg	☼	06/15/18 14:47	06/18/18 20:15	1
2,3,4,7,8-PeCDF	0.000099	J	0.0038	0.000023	ug/Kg	☼	06/15/18 14:47	06/18/18 20:15	1
2,3,7,8-TCDD	0.00015	J q B	0.00076	0.000025	ug/Kg	☼	06/15/18 14:47	06/18/18 20:15	1
2,3,7,8-TCDF	0.00026	J B	0.00076	0.000022	ug/Kg	☼	06/15/18 14:47	06/18/18 20:15	1
OCDD	0.11	B	0.0076	0.000057	ug/Kg	☼	06/15/18 14:47	06/18/18 20:15	1
OCDF	0.0075	J B	0.0076	0.000015	ug/Kg	☼	06/15/18 14:47	06/18/18 20:15	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*57*		*23 - 140*	*06/15/18 14:47*	*06/18/18 20:15*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*46*		*28 - 143*	*06/15/18 14:47*	*06/18/18 20:15*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*59*		*26 - 138*	*06/15/18 14:47*	*06/18/18 20:15*	*1*
13C-1,2,3,4,7,8-HxCDD	*58*		*32 - 141*	*06/15/18 14:47*	*06/18/18 20:15*	*1*
13C-1,2,3,4,7,8-HxCDF	*63*		*26 - 152*	*06/15/18 14:47*	*06/18/18 20:15*	*1*
13C-1,2,3,6,7,8-HxCDD	*52*		*28 - 130*	*06/15/18 14:47*	*06/18/18 20:15*	*1*
13C-1,2,3,6,7,8-HxCDF	*54*		*26 - 123*	*06/15/18 14:47*	*06/18/18 20:15*	*1*
13C-1,2,3,7,8,9-HxCDF	*63*		*29 - 147*	*06/15/18 14:47*	*06/18/18 20:15*	*1*
13C-1,2,3,7,8-PeCDD	*53*		*25 - 181*	*06/15/18 14:47*	*06/18/18 20:15*	*1*
13C-1,2,3,7,8-PeCDF	*54*		*24 - 185*	*06/15/18 14:47*	*06/18/18 20:15*	*1*
13C-2,3,4,6,7,8-HxCDF	*62*		*28 - 136*	*06/15/18 14:47*	*06/18/18 20:15*	*1*
13C-2,3,4,7,8-PeCDF	*56*		*21 - 178*	*06/15/18 14:47*	*06/18/18 20:15*	*1*
13C-2,3,7,8-TCDD	*56*		*25 - 164*	*06/15/18 14:47*	*06/18/18 20:15*	*1*
13C-2,3,7,8-TCDF	*68*		*24 - 169*	*06/15/18 14:47*	*06/18/18 20:15*	*1*
13C-OCDD	*54*		*17 - 157*	*06/15/18 14:47*	*06/18/18 20:15*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*114*		*35 - 197*	*06/15/18 14:47*	*06/18/18 20:15*	*1*

Client Sample ID: PDI-SG-B413-BL1
Date Collected: 05/19/18 14:15
Date Received: 05/21/18 12:00

Lab Sample ID: 580-77430-6
Matrix: Solid
Percent Solids: 36.6

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	0.055	B	0.0069	0.00083	ug/Kg	☼	06/11/18 16:02	06/13/18 16:41	1
1,2,3,4,6,7,8-HpCDF	0.012		0.0069	0.00060	ug/Kg	☼	06/11/18 16:02	06/13/18 16:41	1
1,2,3,4,7,8,9-HpCDF	0.0015	J B	0.0069	0.00060	ug/Kg	☼	06/11/18 16:02	06/13/18 16:41	1
1,2,3,4,7,8-HxCDD	0.0013	J B	0.0069	0.00025	ug/Kg	☼	06/11/18 16:02	06/13/18 16:41	1
1,2,3,4,7,8-HxCDF	ND		0.0069	0.00028	ug/Kg	☼	06/11/18 16:02	06/13/18 16:41	1
1,2,3,6,7,8-HxCDD	0.0025	J q	0.0069	0.00023	ug/Kg	☼	06/11/18 16:02	06/13/18 16:41	1
1,2,3,6,7,8-HxCDF	0.00078	J q B	0.0069	0.00025	ug/Kg	☼	06/11/18 16:02	06/13/18 16:41	1
1,2,3,7,8,9-HxCDD	0.0030	J	0.0069	0.00021	ug/Kg	☼	06/11/18 16:02	06/13/18 16:41	1
1,2,3,7,8,9-HxCDF	0.0013	J B	0.0069	0.00018	ug/Kg	☼	06/11/18 16:02	06/13/18 16:41	1
1,2,3,7,8-PeCDD	ND		0.0069	0.00019	ug/Kg	☼	06/11/18 16:02	06/13/18 16:41	1
1,2,3,7,8-PeCDF	0.00050	J	0.0069	0.00012	ug/Kg	☼	06/11/18 16:02	06/13/18 16:41	1
2,3,4,6,7,8-HxCDF	0.00050	J q B	0.0069	0.00018	ug/Kg	☼	06/11/18 16:02	06/13/18 16:41	1
2,3,4,7,8-PeCDF	ND		0.0069	0.00016	ug/Kg	☼	06/11/18 16:02	06/13/18 16:41	1
2,3,7,8-TCDD	0.00036	J q B	0.0014	0.00017	ug/Kg	☼	06/11/18 16:02	06/13/18 16:41	1
2,3,7,8-TCDF	0.00047	J B	0.0014	0.00012	ug/Kg	☼	06/11/18 16:02	06/13/18 16:41	1
OCDD	0.34	B	0.014	0.0016	ug/Kg	☼	06/11/18 16:02	06/13/18 16:41	1
OCDF	0.035	B	0.014	0.00045	ug/Kg	☼	06/11/18 16:02	06/13/18 16:41	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*57*		*23 - 140*	*06/11/18 16:02*	*06/13/18 16:41*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*47*		*28 - 143*	*06/11/18 16:02*	*06/13/18 16:41*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*61*		*26 - 138*	*06/11/18 16:02*	*06/13/18 16:41*	*1*
13C-1,2,3,4,7,8-HxCDD	*47*		*32 - 141*	*06/11/18 16:02*	*06/13/18 16:41*	*1*
13C-1,2,3,4,7,8-HxCDF	*53*		*26 - 152*	*06/11/18 16:02*	*06/13/18 16:41*	*1*
13C-1,2,3,6,7,8-HxCDD	*60*		*28 - 130*	*06/11/18 16:02*	*06/13/18 16:41*	*1*
13C-1,2,3,6,7,8-HxCDF	*57*		*26 - 123*	*06/11/18 16:02*	*06/13/18 16:41*	*1*
13C-1,2,3,7,8,9-HxCDF	*70*		*29 - 147*	*06/11/18 16:02*	*06/13/18 16:41*	*1*
13C-1,2,3,7,8-PeCDD	*82*		*25 - 181*	*06/11/18 16:02*	*06/13/18 16:41*	*1*
13C-1,2,3,7,8-PeCDF	*67*		*24 - 185*	*06/11/18 16:02*	*06/13/18 16:41*	*1*
13C-2,3,4,6,7,8-HxCDF	*67*		*28 - 136*	*06/11/18 16:02*	*06/13/18 16:41*	*1*
13C-2,3,4,7,8-PeCDF	*55*		*21 - 178*	*06/11/18 16:02*	*06/13/18 16:41*	*1*
13C-2,3,7,8-TCDD	*69*		*25 - 164*	*06/11/18 16:02*	*06/13/18 16:41*	*1*
13C-2,3,7,8-TCDF	*73*		*24 - 169*	*06/11/18 16:02*	*06/13/18 16:41*	*1*
13C-OCDD	*62*		*17 - 157*	*06/11/18 16:02*	*06/13/18 16:41*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*101*		*35 - 197*	*06/11/18 16:02*	*06/13/18 16:41*	*1*

Client Sample ID: PDI-SG-B411-BL1
Date Collected: 05/19/18 13:25
Date Received: 05/21/18 12:00

Lab Sample ID: 580-77430-7
Matrix: Solid
Percent Solids: 39.0

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	0.056	B	0.0064	0.00080	ug/Kg	☼	06/11/18 16:02	06/13/18 17:24	1
1,2,3,4,6,7,8-HpCDF	0.014		0.0064	0.00067	ug/Kg	☼	06/11/18 16:02	06/13/18 17:24	1
1,2,3,4,7,8,9-HpCDF	0.0016	J B	0.0064	0.00068	ug/Kg	☼	06/11/18 16:02	06/13/18 17:24	1
1,2,3,4,7,8-HxCDD	0.0010	J B	0.0064	0.00030	ug/Kg	☼	06/11/18 16:02	06/13/18 17:24	1
1,2,3,4,7,8-HxCDF	0.0016	J B	0.0064	0.00028	ug/Kg	☼	06/11/18 16:02	06/13/18 17:24	1
1,2,3,6,7,8-HxCDD	0.0039	J q	0.0064	0.00025	ug/Kg	☼	06/11/18 16:02	06/13/18 17:24	1
1,2,3,6,7,8-HxCDF	0.0010	J B	0.0064	0.00024	ug/Kg	☼	06/11/18 16:02	06/13/18 17:24	1
1,2,3,7,8,9-HxCDD	0.0027	J q	0.0064	0.00023	ug/Kg	☼	06/11/18 16:02	06/13/18 17:24	1
1,2,3,7,8,9-HxCDF	0.0015	J B	0.0064	0.00016	ug/Kg	☼	06/11/18 16:02	06/13/18 17:24	1
1,2,3,7,8-PeCDD	0.0016	J q B	0.0064	0.00019	ug/Kg	☼	06/11/18 16:02	06/13/18 17:24	1
1,2,3,7,8-PeCDF	0.00075	J	0.0064	0.00014	ug/Kg	☼	06/11/18 16:02	06/13/18 17:24	1
2,3,4,6,7,8-HxCDF	0.00073	J q B	0.0064	0.00017	ug/Kg	☼	06/11/18 16:02	06/13/18 17:24	1
2,3,4,7,8-PeCDF	ND		0.0064	0.00022	ug/Kg	☼	06/11/18 16:02	06/13/18 17:24	1
2,3,7,8-TCDD	0.00087	J q B	0.0013	0.00017	ug/Kg	☼	06/11/18 16:02	06/13/18 17:24	1
2,3,7,8-TCDF	0.00051	J q B	0.0013	0.00010	ug/Kg	☼	06/11/18 16:02	06/13/18 17:24	1
OCDD	0.35	B	0.013	0.0016	ug/Kg	☼	06/11/18 16:02	06/13/18 17:24	1
OCDF	0.040	B	0.013	0.00041	ug/Kg	☼	06/11/18 16:02	06/13/18 17:24	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*57*		*23 - 140*	*06/11/18 16:02*	*06/13/18 17:24*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*46*		*28 - 143*	*06/11/18 16:02*	*06/13/18 17:24*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*61*		*26 - 138*	*06/11/18 16:02*	*06/13/18 17:24*	*1*
13C-1,2,3,4,7,8-HxCDD	*46*		*32 - 141*	*06/11/18 16:02*	*06/13/18 17:24*	*1*
13C-1,2,3,4,7,8-HxCDF	*47*		*26 - 152*	*06/11/18 16:02*	*06/13/18 17:24*	*1*
13C-1,2,3,6,7,8-HxCDD	*54*		*28 - 130*	*06/11/18 16:02*	*06/13/18 17:24*	*1*
13C-1,2,3,6,7,8-HxCDF	*52*		*26 - 123*	*06/11/18 16:02*	*06/13/18 17:24*	*1*
13C-1,2,3,7,8,9-HxCDF	*70*		*29 - 147*	*06/11/18 16:02*	*06/13/18 17:24*	*1*
13C-1,2,3,7,8-PeCDD	*78*		*25 - 181*	*06/11/18 16:02*	*06/13/18 17:24*	*1*
13C-1,2,3,7,8-PeCDF	*65*		*24 - 185*	*06/11/18 16:02*	*06/13/18 17:24*	*1*
13C-2,3,4,6,7,8-HxCDF	*66*		*28 - 136*	*06/11/18 16:02*	*06/13/18 17:24*	*1*
13C-2,3,4,7,8-PeCDF	*47*		*21 - 178*	*06/11/18 16:02*	*06/13/18 17:24*	*1*
13C-2,3,7,8-TCDD	*67*		*25 - 164*	*06/11/18 16:02*	*06/13/18 17:24*	*1*
13C-2,3,7,8-TCDF	*70*		*24 - 169*	*06/11/18 16:02*	*06/13/18 17:24*	*1*
13C-OCDD	*62*		*17 - 157*	*06/11/18 16:02*	*06/13/18 17:24*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*96*		*35 - 197*	*06/11/18 16:02*	*06/13/18 17:24*	*1*

Client Sample ID: PDI-SG-B407-BL1
Date Collected: 05/19/18 11:56
Date Received: 05/21/18 12:00

Lab Sample ID: 580-77430-8
Matrix: Solid
Percent Solids: 39.9

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	0.066	B	0.0063	0.00092	ug/Kg	☼	06/11/18 16:02	06/13/18 18:07	1
1,2,3,4,6,7,8-HpCDF	0.017		0.0063	0.00064	ug/Kg	☼	06/11/18 16:02	06/13/18 18:07	1
1,2,3,4,7,8,9-HpCDF	0.0016	J B	0.0063	0.00065	ug/Kg	☼	06/11/18 16:02	06/13/18 18:07	1
1,2,3,4,7,8-HxCDD	0.0013	J B	0.0063	0.00026	ug/Kg	☼	06/11/18 16:02	06/13/18 18:07	1
1,2,3,4,7,8-HxCDF	0.0016	J B	0.0063	0.00026	ug/Kg	☼	06/11/18 16:02	06/13/18 18:07	1
1,2,3,6,7,8-HxCDD	0.0042	J	0.0063	0.00024	ug/Kg	☼	06/11/18 16:02	06/13/18 18:07	1
1,2,3,6,7,8-HxCDF	0.0010	J B	0.0063	0.00023	ug/Kg	☼	06/11/18 16:02	06/13/18 18:07	1
1,2,3,7,8,9-HxCDD	0.0038	J	0.0063	0.00021	ug/Kg	☼	06/11/18 16:02	06/13/18 18:07	1
1,2,3,7,8,9-HxCDF	0.00097	J B	0.0063	0.00016	ug/Kg	☼	06/11/18 16:02	06/13/18 18:07	1
1,2,3,7,8-PeCDD	0.00080	J B	0.0063	0.00014	ug/Kg	☼	06/11/18 16:02	06/13/18 18:07	1
1,2,3,7,8-PeCDF	0.00041	J	0.0063	0.00015	ug/Kg	☼	06/11/18 16:02	06/13/18 18:07	1
2,3,4,6,7,8-HxCDF	0.00072	J q B	0.0063	0.00017	ug/Kg	☼	06/11/18 16:02	06/13/18 18:07	1
2,3,4,7,8-PeCDF	0.00044	J q	0.0063	0.00022	ug/Kg	☼	06/11/18 16:02	06/13/18 18:07	1
2,3,7,8-TCDD	0.00079	J B	0.0013	0.00014	ug/Kg	☼	06/11/18 16:02	06/13/18 18:07	1
2,3,7,8-TCDF	0.00056	J q B	0.0013	0.000097	ug/Kg	☼	06/11/18 16:02	06/13/18 18:07	1
OCDD	0.45	B	0.013	0.0020	ug/Kg	☼	06/11/18 16:02	06/13/18 18:07	1
OCDF	0.048	B	0.013	0.00044	ug/Kg	☼	06/11/18 16:02	06/13/18 18:07	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*57*		*23 - 140*	*06/11/18 16:02*	*06/13/18 18:07*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*45*		*28 - 143*	*06/11/18 16:02*	*06/13/18 18:07*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*59*		*26 - 138*	*06/11/18 16:02*	*06/13/18 18:07*	*1*
13C-1,2,3,4,7,8-HxCDD	*43*		*32 - 141*	*06/11/18 16:02*	*06/13/18 18:07*	*1*
13C-1,2,3,4,7,8-HxCDF	*48*		*26 - 152*	*06/11/18 16:02*	*06/13/18 18:07*	*1*
13C-1,2,3,6,7,8-HxCDD	*54*		*28 - 130*	*06/11/18 16:02*	*06/13/18 18:07*	*1*
13C-1,2,3,6,7,8-HxCDF	*52*		*26 - 123*	*06/11/18 16:02*	*06/13/18 18:07*	*1*
13C-1,2,3,7,8,9-HxCDF	*66*		*29 - 147*	*06/11/18 16:02*	*06/13/18 18:07*	*1*
13C-1,2,3,7,8-PeCDD	*78*		*25 - 181*	*06/11/18 16:02*	*06/13/18 18:07*	*1*
13C-1,2,3,7,8-PeCDF	*64*		*24 - 185*	*06/11/18 16:02*	*06/13/18 18:07*	*1*
13C-2,3,4,6,7,8-HxCDF	*63*		*28 - 136*	*06/11/18 16:02*	*06/13/18 18:07*	*1*
13C-2,3,4,7,8-PeCDF	*49*		*21 - 178*	*06/11/18 16:02*	*06/13/18 18:07*	*1*
13C-2,3,7,8-TCDD	*63*		*25 - 164*	*06/11/18 16:02*	*06/13/18 18:07*	*1*
13C-2,3,7,8-TCDF	*70*		*24 - 169*	*06/11/18 16:02*	*06/13/18 18:07*	*1*
13C-OCDD	*61*		*17 - 157*	*06/11/18 16:02*	*06/13/18 18:07*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*103*		*35 - 197*	*06/11/18 16:02*	*06/13/18 18:07*	*1*

Client Sample ID: PDI-SG-B406-BL1
Date Collected: 05/19/18 11:05
Date Received: 05/21/18 12:00

Lab Sample ID: 580-77430-9
Matrix: Solid
Percent Solids: 43.5

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	0.096	B	0.0058	0.0016	ug/Kg	☼	06/11/18 16:02	06/13/18 18:50	1
1,2,3,4,6,7,8-HpCDF	0.018		0.0058	0.00069	ug/Kg	☼	06/11/18 16:02	06/13/18 18:50	1
1,2,3,4,7,8,9-HpCDF	0.0015	J B	0.0058	0.00063	ug/Kg	☼	06/11/18 16:02	06/13/18 18:50	1
1,2,3,4,7,8-HxCDD	0.00089	J q B	0.0058	0.00021	ug/Kg	☼	06/11/18 16:02	06/13/18 18:50	1
1,2,3,4,7,8-HxCDF	0.0020	J B	0.0058	0.00021	ug/Kg	☼	06/11/18 16:02	06/13/18 18:50	1
1,2,3,6,7,8-HxCDD	0.0031	J q	0.0058	0.00018	ug/Kg	☼	06/11/18 16:02	06/13/18 18:50	1
1,2,3,6,7,8-HxCDF	0.00083	J q B	0.0058	0.00019	ug/Kg	☼	06/11/18 16:02	06/13/18 18:50	1
1,2,3,7,8,9-HxCDD	0.0025	J q	0.0058	0.00017	ug/Kg	☼	06/11/18 16:02	06/13/18 18:50	1
1,2,3,7,8,9-HxCDF	0.00087	J B	0.0058	0.00012	ug/Kg	☼	06/11/18 16:02	06/13/18 18:50	1
1,2,3,7,8-PeCDD	0.00051	J q B	0.0058	0.00014	ug/Kg	☼	06/11/18 16:02	06/13/18 18:50	1
1,2,3,7,8-PeCDF	ND		0.0058	0.00011	ug/Kg	☼	06/11/18 16:02	06/13/18 18:50	1
2,3,4,6,7,8-HxCDF	0.00061	J B	0.0058	0.00014	ug/Kg	☼	06/11/18 16:02	06/13/18 18:50	1
2,3,4,7,8-PeCDF	0.00030	J	0.0058	0.00015	ug/Kg	☼	06/11/18 16:02	06/13/18 18:50	1
2,3,7,8-TCDD	0.00031	J q B	0.0012	0.00013	ug/Kg	☼	06/11/18 16:02	06/13/18 18:50	1
2,3,7,8-TCDF	0.00055	J q B	0.0012	0.000086	ug/Kg	☼	06/11/18 16:02	06/13/18 18:50	1
OCDD	0.71	B	0.012	0.0030	ug/Kg	☼	06/11/18 16:02	06/13/18 18:50	1
OCDF	0.073	B	0.012	0.00052	ug/Kg	☼	06/11/18 16:02	06/13/18 18:50	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*58*		*23 - 140*	*06/11/18 16:02*	*06/13/18 18:50*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*46*		*28 - 143*	*06/11/18 16:02*	*06/13/18 18:50*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*65*		*26 - 138*	*06/11/18 16:02*	*06/13/18 18:50*	*1*
13C-1,2,3,4,7,8-HxCDD	*46*		*32 - 141*	*06/11/18 16:02*	*06/13/18 18:50*	*1*
13C-1,2,3,4,7,8-HxCDF	*50*		*26 - 152*	*06/11/18 16:02*	*06/13/18 18:50*	*1*
13C-1,2,3,6,7,8-HxCDD	*59*		*28 - 130*	*06/11/18 16:02*	*06/13/18 18:50*	*1*
13C-1,2,3,6,7,8-HxCDF	*54*		*26 - 123*	*06/11/18 16:02*	*06/13/18 18:50*	*1*
13C-1,2,3,7,8,9-HxCDF	*73*		*29 - 147*	*06/11/18 16:02*	*06/13/18 18:50*	*1*
13C-1,2,3,7,8-PeCDD	*88*		*25 - 181*	*06/11/18 16:02*	*06/13/18 18:50*	*1*
13C-1,2,3,7,8-PeCDF	*73*		*24 - 185*	*06/11/18 16:02*	*06/13/18 18:50*	*1*
13C-2,3,4,6,7,8-HxCDF	*69*		*28 - 136*	*06/11/18 16:02*	*06/13/18 18:50*	*1*
13C-2,3,4,7,8-PeCDF	*59*		*21 - 178*	*06/11/18 16:02*	*06/13/18 18:50*	*1*
13C-2,3,7,8-TCDD	*72*		*25 - 164*	*06/11/18 16:02*	*06/13/18 18:50*	*1*
13C-2,3,7,8-TCDF	*76*		*24 - 169*	*06/11/18 16:02*	*06/13/18 18:50*	*1*
13C-OCDD	*63*		*17 - 157*	*06/11/18 16:02*	*06/13/18 18:50*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*102*		*35 - 197*	*06/11/18 16:02*	*06/13/18 18:50*	*1*

Client Sample ID: PDI-SG-B403-BL1

Date Collected: 05/19/18 10:07
Date Received: 05/21/18 12:00

Lab Sample ID: 580-77430-10

Matrix: Solid
Percent Solids: 46.9

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	0.051	B	0.0054	0.0014	ug/Kg	☼	06/11/18 16:02	06/14/18 01:22	1
1,2,3,4,6,7,8-HpCDF	0.012		0.0054	0.00044	ug/Kg	☼	06/11/18 16:02	06/14/18 01:22	1
1,2,3,4,7,8,9-HpCDF	0.0015	J B	0.0054	0.00041	ug/Kg	☼	06/11/18 16:02	06/14/18 01:22	1
1,2,3,4,7,8-HxCDD	0.00090	J B q	0.0054	0.00021	ug/Kg	☼	06/11/18 16:02	06/14/18 01:22	1
1,2,3,4,7,8-HxCDF	0.0014	J B	0.0054	0.00021	ug/Kg	☼	06/11/18 16:02	06/14/18 01:22	1
1,2,3,6,7,8-HxCDD	0.0024	J	0.0054	0.00018	ug/Kg	☼	06/11/18 16:02	06/14/18 01:22	1
1,2,3,6,7,8-HxCDF	0.00061	J B q	0.0054	0.00018	ug/Kg	☼	06/11/18 16:02	06/14/18 01:22	1
1,2,3,7,8,9-HxCDD	0.0028	J	0.0054	0.00017	ug/Kg	☼	06/11/18 16:02	06/14/18 01:22	1
1,2,3,7,8,9-HxCDF	0.00083	J B q	0.0054	0.00011	ug/Kg	☼	06/11/18 16:02	06/14/18 01:22	1
1,2,3,7,8-PeCDD	0.00043	J B q	0.0054	0.00015	ug/Kg	☼	06/11/18 16:02	06/14/18 01:22	1
1,2,3,7,8-PeCDF	0.00041	J q	0.0054	0.00011	ug/Kg	☼	06/11/18 16:02	06/14/18 01:22	1
2,3,4,6,7,8-HxCDF	0.00030	J B q	0.0054	0.00013	ug/Kg	☼	06/11/18 16:02	06/14/18 01:22	1
2,3,4,7,8-PeCDF	0.00030	J q	0.0054	0.00016	ug/Kg	☼	06/11/18 16:02	06/14/18 01:22	1
2,3,7,8-TCDD	0.00083	J B q	0.0011	0.00014	ug/Kg	☼	06/11/18 16:02	06/14/18 01:22	1
2,3,7,8-TCDF	0.00053	J B q	0.0011	0.000092	ug/Kg	☼	06/11/18 16:02	06/14/18 01:22	1
OCDD	0.34	B	0.011	0.0015	ug/Kg	☼	06/11/18 16:02	06/14/18 01:22	1
OCDF	0.032	B	0.011	0.00032	ug/Kg	☼	06/11/18 16:02	06/14/18 01:22	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*60*		*23 - 140*	*06/11/18 16:02*	*06/14/18 01:22*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*44*		*28 - 143*	*06/11/18 16:02*	*06/14/18 01:22*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*62*		*26 - 138*	*06/11/18 16:02*	*06/14/18 01:22*	*1*
13C-1,2,3,4,7,8-HxCDD	*41*		*32 - 141*	*06/11/18 16:02*	*06/14/18 01:22*	*1*
13C-1,2,3,4,7,8-HxCDF	*47*		*26 - 152*	*06/11/18 16:02*	*06/14/18 01:22*	*1*
13C-1,2,3,6,7,8-HxCDD	*55*		*28 - 130*	*06/11/18 16:02*	*06/14/18 01:22*	*1*
13C-1,2,3,6,7,8-HxCDF	*52*		*26 - 123*	*06/11/18 16:02*	*06/14/18 01:22*	*1*
13C-1,2,3,7,8,9-HxCDF	*70*		*29 - 147*	*06/11/18 16:02*	*06/14/18 01:22*	*1*
13C-1,2,3,7,8-PeCDD	*83*		*25 - 181*	*06/11/18 16:02*	*06/14/18 01:22*	*1*
13C-1,2,3,7,8-PeCDF	*66*		*24 - 185*	*06/11/18 16:02*	*06/14/18 01:22*	*1*
13C-2,3,4,6,7,8-HxCDF	*66*		*28 - 136*	*06/11/18 16:02*	*06/14/18 01:22*	*1*
13C-2,3,4,7,8-PeCDF	*50*		*21 - 178*	*06/11/18 16:02*	*06/14/18 01:22*	*1*
13C-2,3,7,8-TCDD	*69*		*25 - 164*	*06/11/18 16:02*	*06/14/18 01:22*	*1*
13C-2,3,7,8-TCDF	*74*		*24 - 169*	*06/11/18 16:02*	*06/14/18 01:22*	*1*
13C-OCDD	*65*		*17 - 157*	*06/11/18 16:02*	*06/14/18 01:22*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*99*		*35 - 197*	*06/11/18 16:02*	*06/14/18 01:22*	*1*

Client Sample ID: PDI-SG-B372-BL1
Date Collected: 05/20/18 10:30
Date Received: 05/21/18 12:00

Lab Sample ID: 580-77430-11
Matrix: Solid
Percent Solids: 45.9

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	0.049	B	0.0055	0.0012	ug/Kg	☼	06/11/18 16:02	06/14/18 02:05	1
1,2,3,4,6,7,8-HpCDF	0.010	q	0.0055	0.00050	ug/Kg	☼	06/11/18 16:02	06/14/18 02:05	1
1,2,3,4,7,8,9-HpCDF	0.0013	J B	0.0055	0.00051	ug/Kg	☼	06/11/18 16:02	06/14/18 02:05	1
1,2,3,4,7,8-HxCDD	0.00096	J B	0.0055	0.00025	ug/Kg	☼	06/11/18 16:02	06/14/18 02:05	1
1,2,3,4,7,8-HxCDF	0.00074	J B q	0.0055	0.00022	ug/Kg	☼	06/11/18 16:02	06/14/18 02:05	1
1,2,3,6,7,8-HxCDD	0.0025	J q	0.0055	0.00021	ug/Kg	☼	06/11/18 16:02	06/14/18 02:05	1
1,2,3,6,7,8-HxCDF	0.00060	J B q	0.0055	0.00019	ug/Kg	☼	06/11/18 16:02	06/14/18 02:05	1
1,2,3,7,8,9-HxCDD	0.0022	J q	0.0055	0.00020	ug/Kg	☼	06/11/18 16:02	06/14/18 02:05	1
1,2,3,7,8,9-HxCDF	0.00087	J B	0.0055	0.00013	ug/Kg	☼	06/11/18 16:02	06/14/18 02:05	1
1,2,3,7,8-PeCDD	0.00050	J B	0.0055	0.00016	ug/Kg	☼	06/11/18 16:02	06/14/18 02:05	1
1,2,3,7,8-PeCDF	0.00048	J	0.0055	0.00013	ug/Kg	☼	06/11/18 16:02	06/14/18 02:05	1
2,3,4,6,7,8-HxCDF	0.00037	J B	0.0055	0.00014	ug/Kg	☼	06/11/18 16:02	06/14/18 02:05	1
2,3,4,7,8-PeCDF	ND		0.0055	0.00019	ug/Kg	☼	06/11/18 16:02	06/14/18 02:05	1
2,3,7,8-TCDD	ND		0.0011	0.00017	ug/Kg	☼	06/11/18 16:02	06/14/18 02:05	1
2,3,7,8-TCDF	0.00050	J B	0.0011	0.00011	ug/Kg	☼	06/11/18 16:02	06/14/18 02:05	1
OCDD	0.37	B	0.011	0.0017	ug/Kg	☼	06/11/18 16:02	06/14/18 02:05	1
OCDF	0.037	B	0.011	0.00040	ug/Kg	☼	06/11/18 16:02	06/14/18 02:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*62*		*23 - 140*	*06/11/18 16:02*	*06/14/18 02:05*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*50*		*28 - 143*	*06/11/18 16:02*	*06/14/18 02:05*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*65*		*26 - 138*	*06/11/18 16:02*	*06/14/18 02:05*	*1*
13C-1,2,3,4,7,8-HxCDD	*50*		*32 - 141*	*06/11/18 16:02*	*06/14/18 02:05*	*1*
13C-1,2,3,4,7,8-HxCDF	*53*		*26 - 152*	*06/11/18 16:02*	*06/14/18 02:05*	*1*
13C-1,2,3,6,7,8-HxCDD	*56*		*28 - 130*	*06/11/18 16:02*	*06/14/18 02:05*	*1*
13C-1,2,3,6,7,8-HxCDF	*57*		*26 - 123*	*06/11/18 16:02*	*06/14/18 02:05*	*1*
13C-1,2,3,7,8,9-HxCDF	*71*		*29 - 147*	*06/11/18 16:02*	*06/14/18 02:05*	*1*
13C-1,2,3,7,8-PeCDD	*76*		*25 - 181*	*06/11/18 16:02*	*06/14/18 02:05*	*1*
13C-1,2,3,7,8-PeCDF	*63*		*24 - 185*	*06/11/18 16:02*	*06/14/18 02:05*	*1*
13C-2,3,4,6,7,8-HxCDF	*66*		*28 - 136*	*06/11/18 16:02*	*06/14/18 02:05*	*1*
13C-2,3,4,7,8-PeCDF	*50*		*21 - 178*	*06/11/18 16:02*	*06/14/18 02:05*	*1*
13C-2,3,7,8-TCDD	*64*		*25 - 164*	*06/11/18 16:02*	*06/14/18 02:05*	*1*
13C-2,3,7,8-TCDF	*68*		*24 - 169*	*06/11/18 16:02*	*06/14/18 02:05*	*1*
13C-OCDD	*67*		*17 - 157*	*06/11/18 16:02*	*06/14/18 02:05*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*101*		*35 - 197*	*06/11/18 16:02*	*06/14/18 02:05*	*1*

Client Sample ID: PDI-SG-B373-BL1
Date Collected: 05/20/18 11:45
Date Received: 05/21/18 12:00

Lab Sample ID: 580-77430-12
Matrix: Solid
Percent Solids: 49.0

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	0.092	B	0.0051	0.0021	ug/Kg	☼	06/11/18 16:02	06/14/18 02:48	1
1,2,3,4,6,7,8-HpCDF	0.018		0.0051	0.00075	ug/Kg	☼	06/11/18 16:02	06/14/18 02:48	1
1,2,3,4,7,8,9-HpCDF	0.0021	J B q	0.0051	0.00075	ug/Kg	☼	06/11/18 16:02	06/14/18 02:48	1
1,2,3,4,7,8-HxCDD	0.00082	J B q	0.0051	0.00025	ug/Kg	☼	06/11/18 16:02	06/14/18 02:48	1
1,2,3,4,7,8-HxCDF	0.0014	J B	0.0051	0.00023	ug/Kg	☼	06/11/18 16:02	06/14/18 02:48	1
1,2,3,6,7,8-HxCDD	0.0034	J	0.0051	0.00022	ug/Kg	☼	06/11/18 16:02	06/14/18 02:48	1
1,2,3,6,7,8-HxCDF	0.00090	J B	0.0051	0.00019	ug/Kg	☼	06/11/18 16:02	06/14/18 02:48	1
1,2,3,7,8,9-HxCDD	0.0031	J	0.0051	0.00020	ug/Kg	☼	06/11/18 16:02	06/14/18 02:48	1
1,2,3,7,8,9-HxCDF	0.00084	J B	0.0051	0.00013	ug/Kg	☼	06/11/18 16:02	06/14/18 02:48	1
1,2,3,7,8-PeCDD	0.00029	J B q	0.0051	0.00017	ug/Kg	☼	06/11/18 16:02	06/14/18 02:48	1
1,2,3,7,8-PeCDF	0.00036	J	0.0051	0.000098	ug/Kg	☼	06/11/18 16:02	06/14/18 02:48	1
2,3,4,6,7,8-HxCDF	0.00057	J B q	0.0051	0.00014	ug/Kg	☼	06/11/18 16:02	06/14/18 02:48	1
2,3,4,7,8-PeCDF	ND		0.0051	0.00014	ug/Kg	☼	06/11/18 16:02	06/14/18 02:48	1
2,3,7,8-TCDD	ND		0.0010	0.00011	ug/Kg	☼	06/11/18 16:02	06/14/18 02:48	1
2,3,7,8-TCDF	0.00047	J B q	0.0010	0.000086	ug/Kg	☼	06/11/18 16:02	06/14/18 02:48	1
OCDD	1.2	B	0.010	0.0062	ug/Kg	☼	06/11/18 16:02	06/14/18 02:48	1
OCDF	0.095	B	0.010	0.00051	ug/Kg	☼	06/11/18 16:02	06/14/18 02:48	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*57*		*23 - 140*	*06/11/18 16:02*	*06/14/18 02:48*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*47*		*28 - 143*	*06/11/18 16:02*	*06/14/18 02:48*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*61*		*26 - 138*	*06/11/18 16:02*	*06/14/18 02:48*	*1*
13C-1,2,3,4,7,8-HxCDD	*43*		*32 - 141*	*06/11/18 16:02*	*06/14/18 02:48*	*1*
13C-1,2,3,4,7,8-HxCDF	*48*		*26 - 152*	*06/11/18 16:02*	*06/14/18 02:48*	*1*
13C-1,2,3,6,7,8-HxCDD	*53*		*28 - 130*	*06/11/18 16:02*	*06/14/18 02:48*	*1*
13C-1,2,3,6,7,8-HxCDF	*54*		*26 - 123*	*06/11/18 16:02*	*06/14/18 02:48*	*1*
13C-1,2,3,7,8,9-HxCDF	*68*		*29 - 147*	*06/11/18 16:02*	*06/14/18 02:48*	*1*
13C-1,2,3,7,8-PeCDD	*75*		*25 - 181*	*06/11/18 16:02*	*06/14/18 02:48*	*1*
13C-1,2,3,7,8-PeCDF	*63*		*24 - 185*	*06/11/18 16:02*	*06/14/18 02:48*	*1*
13C-2,3,4,6,7,8-HxCDF	*66*		*28 - 136*	*06/11/18 16:02*	*06/14/18 02:48*	*1*
13C-2,3,4,7,8-PeCDF	*49*		*21 - 178*	*06/11/18 16:02*	*06/14/18 02:48*	*1*
13C-2,3,7,8-TCDD	*65*		*25 - 164*	*06/11/18 16:02*	*06/14/18 02:48*	*1*
13C-2,3,7,8-TCDF	*67*		*24 - 169*	*06/11/18 16:02*	*06/14/18 02:48*	*1*
13C-OCDD	*60*		*17 - 157*	*06/11/18 16:02*	*06/14/18 02:48*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*102*		*35 - 197*	*06/11/18 16:02*	*06/14/18 02:48*	*1*

Client Sample ID: PDI-SG-B217-BL1
Date Collected: 05/20/18 17:00
Date Received: 05/21/18 12:00

Lab Sample ID: 580-77430-13
Matrix: Solid
Percent Solids: 43.0

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	0.11	B	0.0057	0.0029	ug/Kg	☼	06/11/18 16:02	06/14/18 03:31	1
1,2,3,4,6,7,8-HpCDF	0.020		0.0057	0.00072	ug/Kg	☼	06/11/18 16:02	06/14/18 03:31	1
1,2,3,4,7,8,9-HpCDF	0.0016	J q B	0.0057	0.00071	ug/Kg	☼	06/11/18 16:02	06/14/18 03:31	1
1,2,3,4,7,8-HxCDD	0.0014	J B	0.0057	0.00036	ug/Kg	☼	06/11/18 16:02	06/14/18 03:31	1
1,2,3,4,7,8-HxCDF	0.0028	J B	0.0057	0.00025	ug/Kg	☼	06/11/18 16:02	06/14/18 03:31	1
1,2,3,6,7,8-HxCDD	0.0051	J	0.0057	0.00032	ug/Kg	☼	06/11/18 16:02	06/14/18 03:31	1
1,2,3,6,7,8-HxCDF	0.0012	J q B	0.0057	0.00022	ug/Kg	☼	06/11/18 16:02	06/14/18 03:31	1
1,2,3,7,8,9-HxCDD	0.0050	J	0.0057	0.00029	ug/Kg	☼	06/11/18 16:02	06/14/18 03:31	1
1,2,3,7,8,9-HxCDF	0.0015	J B	0.0057	0.00015	ug/Kg	☼	06/11/18 16:02	06/14/18 03:31	1
1,2,3,7,8-PeCDD	0.00048	J q B	0.0057	0.00016	ug/Kg	☼	06/11/18 16:02	06/14/18 03:31	1
1,2,3,7,8-PeCDF	0.00053	J q	0.0057	0.00011	ug/Kg	☼	06/11/18 16:02	06/14/18 03:31	1
2,3,4,6,7,8-HxCDF	0.00060	J q B	0.0057	0.00016	ug/Kg	☼	06/11/18 16:02	06/14/18 03:31	1
2,3,4,7,8-PeCDF	0.00060	J q	0.0057	0.00015	ug/Kg	☼	06/11/18 16:02	06/14/18 03:31	1
2,3,7,8-TCDD	0.00018	J q B	0.0011	0.00016	ug/Kg	☼	06/11/18 16:02	06/14/18 03:31	1
2,3,7,8-TCDF	0.0011	B	0.0011	0.00010	ug/Kg	☼	06/11/18 16:02	06/14/18 03:31	1
OCDD	0.84	B	0.011	0.0037	ug/Kg	☼	06/11/18 16:02	06/14/18 03:31	1
OCDF	0.054	B	0.011	0.00040	ug/Kg	☼	06/11/18 16:02	06/14/18 03:31	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*57*		*23 - 140*	*06/11/18 16:02*	*06/14/18 03:31*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*46*		*28 - 143*	*06/11/18 16:02*	*06/14/18 03:31*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*60*		*26 - 138*	*06/11/18 16:02*	*06/14/18 03:31*	*1*
13C-1,2,3,4,7,8-HxCDD	*43*		*32 - 141*	*06/11/18 16:02*	*06/14/18 03:31*	*1*
13C-1,2,3,4,7,8-HxCDF	*49*		*26 - 152*	*06/11/18 16:02*	*06/14/18 03:31*	*1*
13C-1,2,3,6,7,8-HxCDD	*55*		*28 - 130*	*06/11/18 16:02*	*06/14/18 03:31*	*1*
13C-1,2,3,6,7,8-HxCDF	*54*		*26 - 123*	*06/11/18 16:02*	*06/14/18 03:31*	*1*
13C-1,2,3,7,8,9-HxCDF	*67*		*29 - 147*	*06/11/18 16:02*	*06/14/18 03:31*	*1*
13C-1,2,3,7,8-PeCDD	*74*		*25 - 181*	*06/11/18 16:02*	*06/14/18 03:31*	*1*
13C-1,2,3,7,8-PeCDF	*61*		*24 - 185*	*06/11/18 16:02*	*06/14/18 03:31*	*1*
13C-2,3,4,6,7,8-HxCDF	*65*		*28 - 136*	*06/11/18 16:02*	*06/14/18 03:31*	*1*
13C-2,3,4,7,8-PeCDF	*49*		*21 - 178*	*06/11/18 16:02*	*06/14/18 03:31*	*1*
13C-2,3,7,8-TCDD	*64*		*25 - 164*	*06/11/18 16:02*	*06/14/18 03:31*	*1*
13C-2,3,7,8-TCDF	*67*		*24 - 169*	*06/11/18 16:02*	*06/14/18 03:31*	*1*
13C-OCDD	*58*		*17 - 157*	*06/11/18 16:02*	*06/14/18 03:31*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*97*		*35 - 197*	*06/11/18 16:02*	*06/14/18 03:31*	*1*

Client Sample ID: PDI-SG-B215-BL1

Date Collected: 05/20/18 16:00
Date Received: 05/21/18 12:00

Lab Sample ID: 580-77430-14

Matrix: Solid
Percent Solids: 48.9

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	0.055	B	0.0050	0.0018	ug/Kg	☼	06/11/18 16:02	06/14/18 04:13	1
1,2,3,4,6,7,8-HpCDF	0.011		0.0050	0.00049	ug/Kg	☼	06/11/18 16:02	06/14/18 04:13	1
1,2,3,4,7,8,9-HpCDF	0.0011	J B q	0.0050	0.00048	ug/Kg	☼	06/11/18 16:02	06/14/18 04:13	1
1,2,3,4,7,8-HxCDD	0.00088	J B q	0.0050	0.00031	ug/Kg	☼	06/11/18 16:02	06/14/18 04:13	1
1,2,3,4,7,8-HxCDF	0.0013	J B	0.0050	0.00019	ug/Kg	☼	06/11/18 16:02	06/14/18 04:13	1
1,2,3,6,7,8-HxCDD	0.0024	J	0.0050	0.00025	ug/Kg	☼	06/11/18 16:02	06/14/18 04:13	1
1,2,3,6,7,8-HxCDF	0.00058	J B	0.0050	0.00017	ug/Kg	☼	06/11/18 16:02	06/14/18 04:13	1
1,2,3,7,8,9-HxCDD	0.0019	J q	0.0050	0.00024	ug/Kg	☼	06/11/18 16:02	06/14/18 04:13	1
1,2,3,7,8,9-HxCDF	0.0010	J B	0.0050	0.00012	ug/Kg	☼	06/11/18 16:02	06/14/18 04:13	1
1,2,3,7,8-PeCDD	0.00050	J B q	0.0050	0.00015	ug/Kg	☼	06/11/18 16:02	06/14/18 04:13	1
1,2,3,7,8-PeCDF	0.00046	J q	0.0050	0.00011	ug/Kg	☼	06/11/18 16:02	06/14/18 04:13	1
2,3,4,6,7,8-HxCDF	0.00031	J B q	0.0050	0.00013	ug/Kg	☼	06/11/18 16:02	06/14/18 04:13	1
2,3,4,7,8-PeCDF	0.00041	J q	0.0050	0.00015	ug/Kg	☼	06/11/18 16:02	06/14/18 04:13	1
2,3,7,8-TCDD	ND		0.00099	0.00015	ug/Kg	☼	06/11/18 16:02	06/14/18 04:13	1
2,3,7,8-TCDF	0.00060	J B	0.00099	0.000075	ug/Kg	☼	06/11/18 16:02	06/14/18 04:13	1
OCDD	0.38	B	0.0099	0.0018	ug/Kg	☼	06/11/18 16:02	06/14/18 04:13	1
OCDF	0.034	B	0.0099	0.00043	ug/Kg	☼	06/11/18 16:02	06/14/18 04:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*53*		*23 - 140*	*06/11/18 16:02*	*06/14/18 04:13*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*44*		*28 - 143*	*06/11/18 16:02*	*06/14/18 04:13*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*57*		*26 - 138*	*06/11/18 16:02*	*06/14/18 04:13*	*1*
13C-1,2,3,4,7,8-HxCDD	*46*		*32 - 141*	*06/11/18 16:02*	*06/14/18 04:13*	*1*
13C-1,2,3,4,7,8-HxCDF	*51*		*26 - 152*	*06/11/18 16:02*	*06/14/18 04:13*	*1*
13C-1,2,3,6,7,8-HxCDD	*56*		*28 - 130*	*06/11/18 16:02*	*06/14/18 04:13*	*1*
13C-1,2,3,6,7,8-HxCDF	*53*		*26 - 123*	*06/11/18 16:02*	*06/14/18 04:13*	*1*
13C-1,2,3,7,8,9-HxCDF	*66*		*29 - 147*	*06/11/18 16:02*	*06/14/18 04:13*	*1*
13C-1,2,3,7,8-PeCDD	*72*		*25 - 181*	*06/11/18 16:02*	*06/14/18 04:13*	*1*
13C-1,2,3,7,8-PeCDF	*60*		*24 - 185*	*06/11/18 16:02*	*06/14/18 04:13*	*1*
13C-2,3,4,6,7,8-HxCDF	*63*		*28 - 136*	*06/11/18 16:02*	*06/14/18 04:13*	*1*
13C-2,3,4,7,8-PeCDF	*48*		*21 - 178*	*06/11/18 16:02*	*06/14/18 04:13*	*1*
13C-2,3,7,8-TCDD	*65*		*25 - 164*	*06/11/18 16:02*	*06/14/18 04:13*	*1*
13C-2,3,7,8-TCDF	*69*		*24 - 169*	*06/11/18 16:02*	*06/14/18 04:13*	*1*
13C-OCDD	*55*		*17 - 157*	*06/11/18 16:02*	*06/14/18 04:13*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*99*		*35 - 197*	*06/11/18 16:02*	*06/14/18 04:13*	*1*

Client Sample ID: PDI-SG-B211-BL1

Date Collected: 05/20/18 14:30
Date Received: 05/21/18 12:00

Lab Sample ID: 580-77430-15

Matrix: Solid
Percent Solids: 52.8

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	0.51	B	0.0047	0.0022	ug/Kg	☼	06/15/18 14:47	06/18/18 21:03	1
1,2,3,4,6,7,8-HpCDF	0.11	B	0.0047	0.0013	ug/Kg	☼	06/15/18 14:47	06/18/18 21:03	1
1,2,3,4,7,8,9-HpCDF	0.013	B	0.0047	0.0014	ug/Kg	☼	06/15/18 14:47	06/18/18 21:03	1
1,2,3,4,7,8-HxCDD	0.0028	J B	0.0047	0.00015	ug/Kg	☼	06/15/18 14:47	06/18/18 21:03	1
1,2,3,4,7,8-HxCDF	0.058	B	0.0047	0.00062	ug/Kg	☼	06/15/18 14:47	06/18/18 21:03	1
1,2,3,6,7,8-HxCDD	0.018		0.0047	0.00015	ug/Kg	☼	06/15/18 14:47	06/18/18 21:03	1
1,2,3,6,7,8-HxCDF	0.014	B	0.0047	0.00055	ug/Kg	☼	06/15/18 14:47	06/18/18 21:03	1
1,2,3,7,8,9-HxCDD	0.0063		0.0047	0.00013	ug/Kg	☼	06/15/18 14:47	06/18/18 21:03	1
1,2,3,7,8,9-HxCDF	0.0015	J B	0.0047	0.00038	ug/Kg	☼	06/15/18 14:47	06/18/18 21:03	1
1,2,3,7,8-PeCDD	0.0022	J	0.0047	0.00017	ug/Kg	☼	06/15/18 14:47	06/18/18 21:03	1
1,2,3,7,8-PeCDF	0.029	B	0.0047	0.00061	ug/Kg	☼	06/15/18 14:47	06/18/18 21:03	1
2,3,4,6,7,8-HxCDF	0.0030	J	0.0047	0.00041	ug/Kg	☼	06/15/18 14:47	06/18/18 21:03	1
2,3,4,7,8-PeCDF	0.012		0.0047	0.00065	ug/Kg	☼	06/15/18 14:47	06/18/18 21:03	1
2,3,7,8-TCDD	0.0018	B	0.00093	0.000054	ug/Kg	☼	06/15/18 14:47	06/18/18 21:03	1
OCDD	5.9	E B	0.0093	0.0013	ug/Kg	☼	06/15/18 14:47	06/18/18 21:03	1
OCDF	0.27	B	0.0093	0.000073	ug/Kg	☼	06/15/18 14:47	06/18/18 21:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*55*		*23 - 140*	*06/15/18 14:47*	*06/18/18 21:03*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*45*		*28 - 143*	*06/15/18 14:47*	*06/18/18 21:03*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*55*		*26 - 138*	*06/15/18 14:47*	*06/18/18 21:03*	*1*
13C-1,2,3,4,7,8-HxCDD	*63*		*32 - 141*	*06/15/18 14:47*	*06/18/18 21:03*	*1*
13C-1,2,3,4,7,8-HxCDF	*66*		*26 - 152*	*06/15/18 14:47*	*06/18/18 21:03*	*1*
13C-1,2,3,6,7,8-HxCDD	*55*		*28 - 130*	*06/15/18 14:47*	*06/18/18 21:03*	*1*
13C-1,2,3,6,7,8-HxCDF	*59*		*26 - 123*	*06/15/18 14:47*	*06/18/18 21:03*	*1*
13C-1,2,3,7,8,9-HxCDF	*66*		*29 - 147*	*06/15/18 14:47*	*06/18/18 21:03*	*1*
13C-1,2,3,7,8-PeCDD	*54*		*25 - 181*	*06/15/18 14:47*	*06/18/18 21:03*	*1*
13C-1,2,3,7,8-PeCDF	*58*		*24 - 185*	*06/15/18 14:47*	*06/18/18 21:03*	*1*
13C-2,3,4,6,7,8-HxCDF	*66*		*28 - 136*	*06/15/18 14:47*	*06/18/18 21:03*	*1*
13C-2,3,4,7,8-PeCDF	*60*		*21 - 178*	*06/15/18 14:47*	*06/18/18 21:03*	*1*
13C-2,3,7,8-TCDD	*59*		*25 - 164*	*06/15/18 14:47*	*06/18/18 21:03*	*1*
13C-OCDD	*57*		*17 - 157*	*06/15/18 14:47*	*06/18/18 21:03*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*120*		*35 - 197*	*06/15/18 14:47*	*06/18/18 21:03*	*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	0.015	B	0.00093	0.00029	ug/Kg	☼	06/15/18 14:47	06/19/18 09:29	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*64*		*24 - 169*	*06/15/18 14:47*	*06/19/18 09:29*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*103*		*35 - 197*	*06/15/18 14:47*	*06/19/18 09:29*	*1*

Client Sample ID: PDI-SG-B210-BL1

Date Collected: 05/20/18 11:00
Date Received: 05/21/18 12:00

Lab Sample ID: 580-77430-16

Matrix: Solid
Percent Solids: 68.0

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	0.029	B	0.0036	0.00012	ug/Kg	☼	06/15/18 14:47	06/18/18 21:51	1
1,2,3,4,6,7,8-HpCDF	0.0046	B	0.0036	0.000069	ug/Kg	☼	06/15/18 14:47	06/18/18 21:51	1
1,2,3,4,7,8,9-HpCDF	0.0015	J B	0.0036	0.000071	ug/Kg	☼	06/15/18 14:47	06/18/18 21:51	1
1,2,3,4,7,8-HxCDD	0.00035	J q B	0.0036	0.000031	ug/Kg	☼	06/15/18 14:47	06/18/18 21:51	1
1,2,3,4,7,8-HxCDF	0.00066	J B	0.0036	0.000043	ug/Kg	☼	06/15/18 14:47	06/18/18 21:51	1
1,2,3,6,7,8-HxCDD	0.0024	J	0.0036	0.000031	ug/Kg	☼	06/15/18 14:47	06/18/18 21:51	1
1,2,3,6,7,8-HxCDF	0.00040	J B	0.0036	0.000041	ug/Kg	☼	06/15/18 14:47	06/18/18 21:51	1
1,2,3,7,8,9-HxCDD	0.0011	J q	0.0036	0.000028	ug/Kg	☼	06/15/18 14:47	06/18/18 21:51	1
1,2,3,7,8,9-HxCDF	0.00060	J B	0.0036	0.000026	ug/Kg	☼	06/15/18 14:47	06/18/18 21:51	1
1,2,3,7,8-PeCDD	0.00018	J q	0.0036	0.000047	ug/Kg	☼	06/15/18 14:47	06/18/18 21:51	1
1,2,3,7,8-PeCDF	0.00033	J B	0.0036	0.000037	ug/Kg	☼	06/15/18 14:47	06/18/18 21:51	1
2,3,4,6,7,8-HxCDF	0.00017	J	0.0036	0.000029	ug/Kg	☼	06/15/18 14:47	06/18/18 21:51	1
2,3,4,7,8-PeCDF	0.00017	J	0.0036	0.000041	ug/Kg	☼	06/15/18 14:47	06/18/18 21:51	1
2,3,7,8-TCDD	0.00014	J q B	0.00072	0.000018	ug/Kg	☼	06/15/18 14:47	06/18/18 21:51	1
OCDD	0.29	B	0.0072	0.000090	ug/Kg	☼	06/15/18 14:47	06/18/18 21:51	1
OCDF	0.012	B	0.0072	0.000025	ug/Kg	☼	06/15/18 14:47	06/18/18 21:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*51*		*23 - 140*	*06/15/18 14:47*	*06/18/18 21:51*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*40*		*28 - 143*	*06/15/18 14:47*	*06/18/18 21:51*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*52*		*26 - 138*	*06/15/18 14:47*	*06/18/18 21:51*	*1*
13C-1,2,3,4,7,8-HxCDD	*56*		*32 - 141*	*06/15/18 14:47*	*06/18/18 21:51*	*1*
13C-1,2,3,4,7,8-HxCDF	*58*		*26 - 152*	*06/15/18 14:47*	*06/18/18 21:51*	*1*
13C-1,2,3,6,7,8-HxCDD	*48*		*28 - 130*	*06/15/18 14:47*	*06/18/18 21:51*	*1*
13C-1,2,3,6,7,8-HxCDF	*52*		*26 - 123*	*06/15/18 14:47*	*06/18/18 21:51*	*1*
13C-1,2,3,7,8,9-HxCDF	*61*		*29 - 147*	*06/15/18 14:47*	*06/18/18 21:51*	*1*
13C-1,2,3,7,8-PeCDD	*53*		*25 - 181*	*06/15/18 14:47*	*06/18/18 21:51*	*1*
13C-1,2,3,7,8-PeCDF	*54*		*24 - 185*	*06/15/18 14:47*	*06/18/18 21:51*	*1*
13C-2,3,4,6,7,8-HxCDF	*59*		*28 - 136*	*06/15/18 14:47*	*06/18/18 21:51*	*1*
13C-2,3,4,7,8-PeCDF	*57*		*21 - 178*	*06/15/18 14:47*	*06/18/18 21:51*	*1*
13C-2,3,7,8-TCDD	*57*		*25 - 164*	*06/15/18 14:47*	*06/18/18 21:51*	*1*
13C-OCDD	*46*		*17 - 157*	*06/15/18 14:47*	*06/18/18 21:51*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*116*		*35 - 197*	*06/15/18 14:47*	*06/18/18 21:51*	*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	0.00064	J B	0.00072	0.00012	ug/Kg	☼	06/15/18 14:47	06/19/18 10:07	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*67*		*24 - 169*	*06/15/18 14:47*	*06/19/18 10:07*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*107*		*35 - 197*	*06/15/18 14:47*	*06/19/18 10:07*	*1*

Client Sample ID: PDI-SG-RB-VV-180520-1745
Date Collected: 05/20/18 17:45
Date Received: 05/21/18 12:00

Lab Sample ID: 580-77430-17
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	**2.1**	**J B**	53	0.20	pg/L		06/07/18 08:17	06/11/18 18:58	1
1,2,3,4,6,7,8-HpCDF	**2.8**	**J q B**	53	0.24	pg/L		06/07/18 08:17	06/11/18 18:58	1
1,2,3,4,7,8,9-HpCDF	**1.9**	**J B**	53	0.30	pg/L		06/07/18 08:17	06/11/18 18:58	1
1,2,3,4,7,8-HxCDD	**2.7**	**J B**	53	0.35	pg/L		06/07/18 08:17	06/11/18 18:58	1
1,2,3,4,7,8-HxCDF	ND		53	0.59	pg/L		06/07/18 08:17	06/11/18 18:58	1
1,2,3,6,7,8-HxCDD	ND		53	0.34	pg/L		06/07/18 08:17	06/11/18 18:58	1
1,2,3,6,7,8-HxCDF	ND		53	0.62	pg/L		06/07/18 08:17	06/11/18 18:58	1
1,2,3,7,8,9-HxCDD	ND		53	0.33	pg/L		06/07/18 08:17	06/11/18 18:58	1
1,2,3,7,8,9-HxCDF	**3.4**	**J B**	53	0.30	pg/L		06/07/18 08:17	06/11/18 18:58	1
1,2,3,7,8-PeCDD	ND		53	0.42	pg/L		06/07/18 08:17	06/11/18 18:58	1
1,2,3,7,8-PeCDF	**0.94**	**J**	53	0.30	pg/L		06/07/18 08:17	06/11/18 18:58	1
2,3,4,6,7,8-HxCDF	ND		53	0.34	pg/L		06/07/18 08:17	06/11/18 18:58	1
2,3,4,7,8-PeCDF	ND		53	0.35	pg/L		06/07/18 08:17	06/11/18 18:58	1
2,3,7,8-TCDD	ND		11	0.25	pg/L		06/07/18 08:17	06/11/18 18:58	1
2,3,7,8-TCDF	**1.4**	**J B**	11	0.18	pg/L		06/07/18 08:17	06/11/18 18:58	1
OCDD	**11**	**J B**	110	0.34	pg/L		06/07/18 08:17	06/11/18 18:58	1
OCDF	**23**	**J B**	110	0.39	pg/L		06/07/18 08:17	06/11/18 18:58	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*58*		*23 - 140*	*06/07/18 08:17*	*06/11/18 18:58*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*67*		*28 - 143*	*06/07/18 08:17*	*06/11/18 18:58*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*66*		*26 - 138*	*06/07/18 08:17*	*06/11/18 18:58*	*1*
13C-1,2,3,4,7,8-HxCDD	*62*		*32 - 141*	*06/07/18 08:17*	*06/11/18 18:58*	*1*
13C-1,2,3,4,7,8-HxCDF	*62*		*26 - 152*	*06/07/18 08:17*	*06/11/18 18:58*	*1*
13C-1,2,3,6,7,8-HxCDD	*68*		*28 - 130*	*06/07/18 08:17*	*06/11/18 18:58*	*1*
13C-1,2,3,6,7,8-HxCDF	*65*		*26 - 123*	*06/07/18 08:17*	*06/11/18 18:58*	*1*
13C-1,2,3,7,8,9-HxCDF	*71*		*29 - 147*	*06/07/18 08:17*	*06/11/18 18:58*	*1*
13C-1,2,3,7,8-PeCDD	*66*		*25 - 181*	*06/07/18 08:17*	*06/11/18 18:58*	*1*
13C-1,2,3,7,8-PeCDF	*76*		*24 - 185*	*06/07/18 08:17*	*06/11/18 18:58*	*1*
13C-2,3,4,6,7,8-HxCDF	*69*		*28 - 136*	*06/07/18 08:17*	*06/11/18 18:58*	*1*
13C-2,3,4,7,8-PeCDF	*71*		*21 - 178*	*06/07/18 08:17*	*06/11/18 18:58*	*1*
13C-2,3,7,8-TCDD	*77*		*25 - 164*	*06/07/18 08:17*	*06/11/18 18:58*	*1*
13C-2,3,7,8-TCDF	*82*		*24 - 169*	*06/07/18 08:17*	*06/11/18 18:58*	*1*
13C-OCDD	*46*		*17 - 157*	*06/07/18 08:17*	*06/11/18 18:58*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*119*		*35 - 197*	*06/07/18 08:17*	*06/11/18 18:58*	*1*

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

Lab Sample ID: MB 320-227727/1-A
Matrix: Water
Analysis Batch: 228657

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 227727

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	3.66	J	50	0.22	pg/L		06/07/18 08:17	06/11/18 13:36	1
1,2,3,4,6,7,8-HpCDF	2.21	J q	50	0.24	pg/L		06/07/18 08:17	06/11/18 13:36	1
1,2,3,4,7,8,9-HpCDF	3.35	J	50	0.30	pg/L		06/07/18 08:17	06/11/18 13:36	1
1,2,3,4,7,8-HxCDD	1.61	J q	50	0.37	pg/L		06/07/18 08:17	06/11/18 13:36	1
1,2,3,4,7,8-HxCDF	ND		50	0.46	pg/L		06/07/18 08:17	06/11/18 13:36	1
1,2,3,6,7,8-HxCDD	0.920	J	50	0.35	pg/L		06/07/18 08:17	06/11/18 13:36	1
1,2,3,6,7,8-HxCDF	ND		50	0.48	pg/L		06/07/18 08:17	06/11/18 13:36	1
1,2,3,7,8,9-HxCDD	1.13	J q	50	0.34	pg/L		06/07/18 08:17	06/11/18 13:36	1
1,2,3,7,8,9-HxCDF	3.12	J	50	0.25	pg/L		06/07/18 08:17	06/11/18 13:36	1
1,2,3,7,8-PeCDD	ND		50	0.43	pg/L		06/07/18 08:17	06/11/18 13:36	1
1,2,3,7,8-PeCDF	ND		50	0.31	pg/L		06/07/18 08:17	06/11/18 13:36	1
2,3,4,6,7,8-HxCDF	0.889	J q	50	0.29	pg/L		06/07/18 08:17	06/11/18 13:36	1
2,3,4,7,8-PeCDF	ND		50	0.35	pg/L		06/07/18 08:17	06/11/18 13:36	1
2,3,7,8-TCDD	ND		10	0.29	pg/L		06/07/18 08:17	06/11/18 13:36	1
2,3,7,8-TCDF	0.976	J q	10	0.19	pg/L		06/07/18 08:17	06/11/18 13:36	1
OCDD	14.5	J	100	0.27	pg/L		06/07/18 08:17	06/11/18 13:36	1
OCDF	8.46	J	100	0.34	pg/L		06/07/18 08:17	06/11/18 13:36	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*65*		*23 - 140*	*06/07/18 08:17*	*06/11/18 13:36*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*73*		*28 - 143*	*06/07/18 08:17*	*06/11/18 13:36*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*67*		*26 - 138*	*06/07/18 08:17*	*06/11/18 13:36*	*1*
13C-1,2,3,4,7,8-HxCDD	*73*		*32 - 141*	*06/07/18 08:17*	*06/11/18 13:36*	*1*
13C-1,2,3,4,7,8-HxCDF	*70*		*26 - 152*	*06/07/18 08:17*	*06/11/18 13:36*	*1*
13C-1,2,3,6,7,8-HxCDD	*75*		*28 - 130*	*06/07/18 08:17*	*06/11/18 13:36*	*1*
13C-1,2,3,6,7,8-HxCDF	*72*		*26 - 123*	*06/07/18 08:17*	*06/11/18 13:36*	*1*
13C-1,2,3,7,8,9-HxCDF	*75*		*29 - 147*	*06/07/18 08:17*	*06/11/18 13:36*	*1*
13C-1,2,3,7,8-PeCDD	*71*		*25 - 181*	*06/07/18 08:17*	*06/11/18 13:36*	*1*
13C-1,2,3,7,8-PeCDF	*80*		*24 - 185*	*06/07/18 08:17*	*06/11/18 13:36*	*1*
13C-2,3,4,6,7,8-HxCDF	*73*		*28 - 136*	*06/07/18 08:17*	*06/11/18 13:36*	*1*
13C-2,3,4,7,8-PeCDF	*79*		*21 - 178*	*06/07/18 08:17*	*06/11/18 13:36*	*1*
13C-2,3,7,8-TCDD	*83*		*25 - 164*	*06/07/18 08:17*	*06/11/18 13:36*	*1*
13C-2,3,7,8-TCDF	*88*		*24 - 169*	*06/07/18 08:17*	*06/11/18 13:36*	*1*
13C-OCDD	*49*		*17 - 157*	*06/07/18 08:17*	*06/11/18 13:36*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*122*		*35 - 197*	*06/07/18 08:17*	*06/11/18 13:36*	*1*

Lab Sample ID: LCS 320-227727/2-A
Matrix: Water
Analysis Batch: 228657

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 227727

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,6,7,8-HpCDD	1000	1030		pg/L		103	70 - 140
1,2,3,4,6,7,8-HpCDF	1000	958		pg/L		96	82 - 122
1,2,3,4,7,8,9-HpCDF	1000	954		pg/L		95	78 - 138
1,2,3,4,7,8-HxCDD	1000	958		pg/L		96	70 - 164
1,2,3,4,7,8-HxCDF	1000	971		pg/L		97	72 - 134

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

Lab Sample ID: LCS 320-227727/2-A
Matrix: Water
Analysis Batch: 228657

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 227727

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,2,3,6,7,8-HxCDD			1000	940		pg/L		94	76 - 134		
1,2,3,6,7,8-HxCDF			1000	1000		pg/L		100	84 - 130		
1,2,3,7,8,9-HxCDD			1000	1050		pg/L		105	64 - 162		
1,2,3,7,8,9-HxCDF			1000	990		pg/L		99	78 - 130		
1,2,3,7,8-PeCDD			1000	1090		pg/L		109	70 - 142		
1,2,3,7,8-PeCDF			1000	963		pg/L		96	80 - 134		
2,3,4,6,7,8-HxCDF			1000	970		pg/L		97	70 - 156		
2,3,4,7,8-PeCDF			1000	963		pg/L		96	68 - 160		
2,3,7,8-TCDD			200	196		pg/L		98	67 - 158		
2,3,7,8-TCDF			200	181		pg/L		91	75 - 158		
OCDD			2000	2090		pg/L		105	78 - 144		
OCDF			2000	2120		pg/L		106	63 - 170		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-1,2,3,4,6,7,8-HpCDD	*61*		*26 - 166*
13C-1,2,3,4,6,7,8-HpCDF	*67*		*21 - 158*
13C-1,2,3,4,7,8,9-HpCDF	*67*		*20 - 186*
13C-1,2,3,4,7,8-HxCDD	*65*		*21 - 193*
13C-1,2,3,4,7,8-HxCDF	*65*		*19 - 202*
13C-1,2,3,6,7,8-HxCDD	*69*		*25 - 163*
13C-1,2,3,6,7,8-HxCDF	*66*		*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	*80*		*21 - 192*
13C-2,3,4,6,7,8-HxCDF	*69*		*22 - 176*
13C-2,3,4,7,8-PeCDF	*75*		*13 - 328*
13C-2,3,7,8-TCDD	*82*		*20 - 175*
13C-2,3,7,8-TCDF	*87*		*22 - 152*
13C-OCDD	*48*		*13 - 199*

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

Lab Sample ID: LCSD 320-227727/3-A
Matrix: Water
Analysis Batch: 228657

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 227727

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,6,7,8-HpCDD			1000	1060		pg/L		106	70 - 140	4	50
1,2,3,4,6,7,8-HpCDF			1000	965		pg/L		97	82 - 122	1	50
1,2,3,4,7,8,9-HpCDF			1000	961		pg/L		96	78 - 138	1	50
1,2,3,4,7,8-HxCDD			1000	965		pg/L		96	70 - 164	1	50
1,2,3,4,7,8-HxCDF			1000	984		pg/L		98	72 - 134	1	50
1,2,3,6,7,8-HxCDD			1000	960		pg/L		96	76 - 134	2	50
1,2,3,6,7,8-HxCDF			1000	1010		pg/L		101	84 - 130	1	50
1,2,3,7,8,9-HxCDD			1000	1080		pg/L		108	64 - 162	3	50
1,2,3,7,8,9-HxCDF			1000	982		pg/L		98	78 - 130	1	50
1,2,3,7,8-PeCDD			1000	1080		pg/L		108	70 - 142	0	50

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

Lab Sample ID: LCSD 320-227727/3-A
Matrix: Water
Analysis Batch: 228657

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 227727

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,7,8-PeCDF			1000	973		pg/L		97	80 - 134	1	50
2,3,4,6,7,8-HxCDF			1000	995		pg/L		100	70 - 156	3	50
2,3,4,7,8-PeCDF			1000	970		pg/L		97	68 - 160	1	50
2,3,7,8-TCDD			200	196		pg/L		98	67 - 158	0	50
2,3,7,8-TCDF			200	179		pg/L		89	75 - 158	1	50
OCDD			2000	2080		pg/L		104	78 - 144	1	50
OCDF			2000	2110		pg/L		105	63 - 170	1	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	*61*		*21 - 158*
13C-1,2,3,4,7,8,9-HpCDF	*60*		*20 - 186*
13C-1,2,3,4,7,8-HxCDD	*57*		*21 - 193*
13C-1,2,3,4,7,8-HxCDF	*56*		*19 - 202*
13C-1,2,3,6,7,8-HxCDD	*59*		*25 - 163*
13C-1,2,3,6,7,8-HxCDF	*58*		*21 - 159*
13C-1,2,3,7,8,9-HxCDF	*64*		*17 - 205*
13C-1,2,3,7,8-PeCDD	*61*		*21 - 227*
13C-1,2,3,7,8-PeCDF	*70*		*21 - 192*
13C-2,3,4,6,7,8-HxCDF	*61*		*22 - 176*
13C-2,3,4,7,8-PeCDF	*66*		*13 - 328*
13C-2,3,7,8-TCDD	*75*		*20 - 175*
13C-2,3,7,8-TCDF	*80*		*22 - 152*
13C-OCDD	*43*		*13 - 199*

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

Lab Sample ID: MB 320-228471/1-A
Matrix: Solid
Analysis Batch: 228992

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 228471

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.000376	J	0.0050	0.00010	ug/Kg		06/11/18 16:02	06/13/18 10:58	1
1,2,3,4,6,7,8-HpCDF	ND		0.0050	0.00013	ug/Kg		06/11/18 16:02	06/13/18 10:58	1
1,2,3,4,7,8,9-HpCDF	0.000764	J q	0.0050	0.00018	ug/Kg		06/11/18 16:02	06/13/18 10:58	1
1,2,3,4,7,8-HxCDD	0.000249	J q	0.0050	0.000096	ug/Kg		06/11/18 16:02	06/13/18 10:58	1
1,2,3,4,7,8-HxCDF	0.000319	J	0.0050	0.00010	ug/Kg		06/11/18 16:02	06/13/18 10:58	1
1,2,3,6,7,8-HxCDD	ND		0.0050	0.000094	ug/Kg		06/11/18 16:02	06/13/18 10:58	1
1,2,3,6,7,8-HxCDF	0.000241	J	0.0050	0.00010	ug/Kg		06/11/18 16:02	06/13/18 10:58	1
1,2,3,7,8,9-HxCDD	ND		0.0050	0.000081	ug/Kg		06/11/18 16:02	06/13/18 10:58	1
1,2,3,7,8,9-HxCDF	0.000882	J	0.0050	0.000089	ug/Kg		06/11/18 16:02	06/13/18 10:58	1
1,2,3,7,8-PeCDD	0.000174	J q	0.0050	0.00015	ug/Kg		06/11/18 16:02	06/13/18 10:58	1
1,2,3,7,8-PeCDF	ND		0.0050	0.000098	ug/Kg		06/11/18 16:02	06/13/18 10:58	1
2,3,4,6,7,8-HxCDF	0.000403	J	0.0050	0.000088	ug/Kg		06/11/18 16:02	06/13/18 10:58	1
2,3,4,7,8-PeCDF	ND		0.0050	0.00011	ug/Kg		06/11/18 16:02	06/13/18 10:58	1
2,3,7,8-TCDD	0.00120	q	0.0010	0.00013	ug/Kg		06/11/18 16:02	06/13/18 10:58	1
2,3,7,8-TCDF	0.000150	J q	0.0010	0.000092	ug/Kg		06/11/18 16:02	06/13/18 10:58	1

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

Lab Sample ID: MB 320-228471/1-A
Matrix: Solid
Analysis Batch: 228992

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 228471

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
OCDD	0.000733	J q	0.010	0.00021	ug/Kg		06/11/18 16:02	06/13/18 10:58	1
OCDF	0.000697	J	0.010	0.00023	ug/Kg		06/11/18 16:02	06/13/18 10:58	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*67*		*23 - 140*	*06/11/18 16:02*	*06/13/18 10:58*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*70*		*28 - 143*	*06/11/18 16:02*	*06/13/18 10:58*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*67*		*26 - 138*	*06/11/18 16:02*	*06/13/18 10:58*	*1*
13C-1,2,3,4,7,8-HxCDD	*72*		*32 - 141*	*06/11/18 16:02*	*06/13/18 10:58*	*1*
13C-1,2,3,4,7,8-HxCDF	*77*		*26 - 152*	*06/11/18 16:02*	*06/13/18 10:58*	*1*
13C-1,2,3,6,7,8-HxCDD	*81*		*28 - 130*	*06/11/18 16:02*	*06/13/18 10:58*	*1*
13C-1,2,3,6,7,8-HxCDF	*80*		*26 - 123*	*06/11/18 16:02*	*06/13/18 10:58*	*1*
13C-1,2,3,7,8,9-HxCDF	*77*		*29 - 147*	*06/11/18 16:02*	*06/13/18 10:58*	*1*
13C-1,2,3,7,8-PeCDD	*84*		*25 - 181*	*06/11/18 16:02*	*06/13/18 10:58*	*1*
13C-1,2,3,7,8-PeCDF	*72*		*24 - 185*	*06/11/18 16:02*	*06/13/18 10:58*	*1*
13C-2,3,4,6,7,8-HxCDF	*78*		*28 - 136*	*06/11/18 16:02*	*06/13/18 10:58*	*1*
13C-2,3,4,7,8-PeCDF	*68*		*21 - 178*	*06/11/18 16:02*	*06/13/18 10:58*	*1*
13C-2,3,7,8-TCDD	*73*		*25 - 164*	*06/11/18 16:02*	*06/13/18 10:58*	*1*
13C-2,3,7,8-TCDF	*72*		*24 - 169*	*06/11/18 16:02*	*06/13/18 10:58*	*1*
13C-OCDD	*71*		*17 - 157*	*06/11/18 16:02*	*06/13/18 10:58*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*96*		*35 - 197*	*06/11/18 16:02*	*06/13/18 10:58*	*1*

Lab Sample ID: LCS 320-228471/2-A
Matrix: Solid
Analysis Batch: 228992

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 228471

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.104		ug/Kg		104	70 - 140
1,2,3,4,6,7,8-HpCDF	0.100	0.109		ug/Kg		109	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.107		ug/Kg		107	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.107		ug/Kg		107	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.112		ug/Kg		112	72 - 134
1,2,3,6,7,8-HxCDD	0.100	0.0980		ug/Kg		98	76 - 134
1,2,3,6,7,8-HxCDF	0.100	0.113		ug/Kg		113	84 - 130
1,2,3,7,8,9-HxCDD	0.100	0.120		ug/Kg		120	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	0.0893		ug/Kg		89	70 - 142
1,2,3,7,8-PeCDF	0.100	0.113		ug/Kg		113	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	0.111		ug/Kg		111	68 - 160
2,3,7,8-TCDD	0.0200	0.0230		ug/Kg		115	67 - 158
2,3,7,8-TCDF	0.0200	0.0238		ug/Kg		119	75 - 158
OCDD	0.200	0.184		ug/Kg		92	78 - 144
OCDF	0.200	0.198		ug/Kg		99	63 - 170

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-1,2,3,4,6,7,8-HpCDD	*71*		*26 - 166*

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

Lab Sample ID: LCS 320-228471/2-A
Matrix: Solid
Analysis Batch: 228992

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 228471

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDF	64		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	70		20 - 186
13C-1,2,3,4,7,8-HxCDD	56		21 - 193
13C-1,2,3,4,7,8-HxCDF	62		19 - 202
13C-1,2,3,6,7,8-HxCDD	72		25 - 163
13C-1,2,3,6,7,8-HxCDF	67		21 - 159
13C-1,2,3,7,8,9-HxCDF	79		17 - 205
13C-1,2,3,7,8-PeCDD	87		21 - 227
13C-1,2,3,7,8-PeCDF	72		21 - 192
13C-2,3,4,6,7,8-HxCDF	78		22 - 176
13C-2,3,4,7,8-PeCDF	60		13 - 328
13C-2,3,7,8-TCDD	74		20 - 175
13C-2,3,7,8-TCDF	75		22 - 152
13C-OCDD	76		13 - 199

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

Lab Sample ID: LCSD 320-228471/3-A
Matrix: Solid
Analysis Batch: 228992

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 228471

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,6,7,8-HpCDD			0.100	0.107		ug/Kg		107	70 - 140	3	50
1,2,3,4,6,7,8-HpCDF			0.100	0.109		ug/Kg		109	82 - 122	0	50
1,2,3,4,7,8,9-HpCDF			0.100	0.109		ug/Kg		109	78 - 138	2	50
1,2,3,4,7,8-HxCDD			0.100	0.102		ug/Kg		102	70 - 164	5	50
1,2,3,4,7,8-HxCDF			0.100	0.113		ug/Kg		113	72 - 134	1	50
1,2,3,6,7,8-HxCDD			0.100	0.103		ug/Kg		103	76 - 134	5	50
1,2,3,6,7,8-HxCDF			0.100	0.110		ug/Kg		110	84 - 130	3	50
1,2,3,7,8,9-HxCDD			0.100	0.107		ug/Kg		107	64 - 162	11	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	0.0893		ug/Kg		89	70 - 142	0	50
1,2,3,7,8-PeCDF			0.100	0.111		ug/Kg		111	80 - 134	2	50
2,3,4,6,7,8-HxCDF			0.100	0.113		ug/Kg		113	70 - 156	0	50
2,3,4,7,8-PeCDF			0.100	0.116		ug/Kg		116	68 - 160	4	50
2,3,7,8-TCDD			0.0200	0.0227		ug/Kg		113	67 - 158	2	50
2,3,7,8-TCDF			0.0200	0.0226		ug/Kg		113	75 - 158	5	50
OCDD			0.200	0.186		ug/Kg		93	78 - 144	1	50
OCDF			0.200	0.196		ug/Kg		98	63 - 170	1	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	67		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	69		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	67		20 - 186
13C-1,2,3,4,7,8-HxCDD	70		21 - 193
13C-1,2,3,4,7,8-HxCDF	73		19 - 202
13C-1,2,3,6,7,8-HxCDD	77		25 - 163

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

Lab Sample ID: LCSD 320-228471/3-A
Matrix: Solid
Analysis Batch: 228992

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 228471

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,6,7,8-HxCDF	78		21 - 159
13C-1,2,3,7,8,9-HxCDF	79		17 - 205
13C-1,2,3,7,8-PeCDD	88		21 - 227
13C-1,2,3,7,8-PeCDF	74		21 - 192
13C-2,3,4,6,7,8-HxCDF	77		22 - 176
13C-2,3,4,7,8-PeCDF	67		13 - 328
13C-2,3,7,8-TCDD	75		20 - 175
13C-2,3,7,8-TCDF	75		22 - 152
13C-OCDD	73		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
37Cl4-2,3,7,8-TCDD	98		31 - 191

Lab Sample ID: MB 320-229364/1-A
Matrix: Solid
Analysis Batch: 229720

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 229364

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.000120	J	0.0050	0.000012	ug/Kg		06/15/18 14:47	06/18/18 16:12	1
1,2,3,4,6,7,8-HpCDF	0.000187	J	0.0050	0.000024	ug/Kg		06/15/18 14:47	06/18/18 16:12	1
1,2,3,4,7,8,9-HpCDF	0.00111	J	0.0050	0.000030	ug/Kg		06/15/18 14:47	06/18/18 16:12	1
1,2,3,4,7,8-HxCDD	0.000173	J	0.0050	0.000016	ug/Kg		06/15/18 14:47	06/18/18 16:12	1
1,2,3,4,7,8-HxCDF	0.000168	J	0.0050	0.000023	ug/Kg		06/15/18 14:47	06/18/18 16:12	1
1,2,3,6,7,8-HxCDD	ND		0.0050	0.000016	ug/Kg		06/15/18 14:47	06/18/18 16:12	1
1,2,3,6,7,8-HxCDF	0.0000450	J	0.0050	0.000022	ug/Kg		06/15/18 14:47	06/18/18 16:12	1
1,2,3,7,8,9-HxCDD	ND		0.0050	0.000015	ug/Kg		06/15/18 14:47	06/18/18 16:12	1
1,2,3,7,8,9-HxCDF	0.000755	J	0.0050	0.000016	ug/Kg		06/15/18 14:47	06/18/18 16:12	1
1,2,3,7,8-PeCDD	ND		0.0050	0.000021	ug/Kg		06/15/18 14:47	06/18/18 16:12	1
1,2,3,7,8-PeCDF	0.000124	J	0.0050	0.000019	ug/Kg		06/15/18 14:47	06/18/18 16:12	1
2,3,4,6,7,8-HxCDF	ND		0.0050	0.000017	ug/Kg		06/15/18 14:47	06/18/18 16:12	1
2,3,4,7,8-PeCDF	ND		0.0050	0.000022	ug/Kg		06/15/18 14:47	06/18/18 16:12	1
2,3,7,8-TCDD	0.0000855	J q	0.0010	0.000018	ug/Kg		06/15/18 14:47	06/18/18 16:12	1
2,3,7,8-TCDF	0.000161	J q	0.0010	0.000012	ug/Kg		06/15/18 14:47	06/18/18 16:12	1
OCDD	0.000421	J	0.010	0.000013	ug/Kg		06/15/18 14:47	06/18/18 16:12	1
OCDF	0.000498	J	0.010	0.000016	ug/Kg		06/15/18 14:47	06/18/18 16:12	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	68		23 - 140	06/15/18 14:47	06/18/18 16:12	1
13C-1,2,3,4,6,7,8-HpCDF	64		28 - 143	06/15/18 14:47	06/18/18 16:12	1
13C-1,2,3,4,7,8,9-HpCDF	68		26 - 138	06/15/18 14:47	06/18/18 16:12	1
13C-1,2,3,4,7,8-HxCDD	71		32 - 141	06/15/18 14:47	06/18/18 16:12	1
13C-1,2,3,4,7,8-HxCDF	76		26 - 152	06/15/18 14:47	06/18/18 16:12	1
13C-1,2,3,6,7,8-HxCDD	62		28 - 130	06/15/18 14:47	06/18/18 16:12	1
13C-1,2,3,6,7,8-HxCDF	68		26 - 123	06/15/18 14:47	06/18/18 16:12	1
13C-1,2,3,7,8,9-HxCDF	72		29 - 147	06/15/18 14:47	06/18/18 16:12	1
13C-1,2,3,7,8-PeCDD	62		25 - 181	06/15/18 14:47	06/18/18 16:12	1
13C-1,2,3,7,8-PeCDF	65		24 - 185	06/15/18 14:47	06/18/18 16:12	1
13C-2,3,4,6,7,8-HxCDF	74		28 - 136	06/15/18 14:47	06/18/18 16:12	1

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

Lab Sample ID: MB 320-229364/1-A
Matrix: Solid
Analysis Batch: 229720

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 229364

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,4,7,8-PeCDF	63		21 - 178	06/15/18 14:47	06/18/18 16:12	1
13C-2,3,7,8-TCDD	63		25 - 164	06/15/18 14:47	06/18/18 16:12	1
13C-2,3,7,8-TCDF	71		24 - 169	06/15/18 14:47	06/18/18 16:12	1
13C-OCDD	67		17 - 157	06/15/18 14:47	06/18/18 16:12	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	111		35 - 197	06/15/18 14:47	06/18/18 16:12	1

Lab Sample ID: LCS 320-229364/2-A
Matrix: Solid
Analysis Batch: 229720

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 229364

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.115		ug/Kg		115	70 - 140
1,2,3,4,6,7,8-HpCDF	0.100	0.116		ug/Kg		116	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.112		ug/Kg		112	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.117		ug/Kg		117	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.113		ug/Kg		113	72 - 134
1,2,3,6,7,8-HxCDD	0.100	0.116		ug/Kg		116	76 - 134
1,2,3,6,7,8-HxCDF	0.100	0.113		ug/Kg		113	84 - 130
1,2,3,7,8,9-HxCDD	0.100	0.128		ug/Kg		128	64 - 162
1,2,3,7,8,9-HxCDF	0.100	0.114		ug/Kg		114	78 - 130
1,2,3,7,8-PeCDD	0.100	0.117		ug/Kg		117	70 - 142
1,2,3,7,8-PeCDF	0.100	0.119		ug/Kg		119	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	0.118		ug/Kg		118	68 - 160
2,3,7,8-TCDD	0.0200	0.0234		ug/Kg		117	67 - 158
2,3,7,8-TCDF	0.0200	0.0230		ug/Kg		115	75 - 158
OCDD	0.200	0.236		ug/Kg		118	78 - 144
OCDF	0.200	0.223		ug/Kg		112	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	73		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	68		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	75		20 - 186
13C-1,2,3,4,7,8-HxCDD	69		21 - 193
13C-1,2,3,4,7,8-HxCDF	77		19 - 202
13C-1,2,3,6,7,8-HxCDD	63		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	64		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	66		13 - 328
13C-2,3,7,8-TCDD	65		20 - 175
13C-2,3,7,8-TCDF	73		22 - 152
13C-OCDD	72		13 - 199

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

Lab Sample ID: LCS 320-229364/2-A
Matrix: Solid
Analysis Batch: 229720

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 229364

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	*111*		*31 - 191*

Lab Sample ID: LCSD 320-229364/3-A
Matrix: Solid
Analysis Batch: 229720

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 229364

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	0.116		ug/Kg		116	70 - 140	0	50
1,2,3,4,6,7,8-HpCDF			0.100	0.116		ug/Kg		116	82 - 122	0	50
1,2,3,4,7,8,9-HpCDF			0.100	0.114		ug/Kg		114	78 - 138	1	50
1,2,3,4,7,8-HxCDD			0.100	0.115		ug/Kg		115	70 - 164	1	50
1,2,3,4,7,8-HxCDF			0.100	0.113		ug/Kg		113	72 - 134	0	50
1,2,3,6,7,8-HxCDD			0.100	0.115		ug/Kg		115	76 - 134	1	50
1,2,3,6,7,8-HxCDF			0.100	0.113		ug/Kg		113	84 - 130	0	50
1,2,3,7,8,9-HxCDD			0.100	0.124		ug/Kg		124	64 - 162	3	50
1,2,3,7,8,9-HxCDF			0.100	0.114		ug/Kg		114	78 - 130	0	50
1,2,3,7,8-PeCDD			0.100	0.112		ug/Kg		112	70 - 142	4	50
1,2,3,7,8-PeCDF			0.100	0.116		ug/Kg		116	80 - 134	2	50
2,3,4,6,7,8-HxCDF			0.100	0.114		ug/Kg		114	70 - 156	1	50
2,3,4,7,8-PeCDF			0.100	0.116		ug/Kg		116	68 - 160	2	50
2,3,7,8-TCDD			0.0200	0.0236		ug/Kg		118	67 - 158	1	50
2,3,7,8-TCDF			0.0200	0.0225		ug/Kg		113	75 - 158	2	50
OCDD			0.200	0.224		ug/Kg		112	78 - 144	5	50
OCDF			0.200	0.220		ug/Kg		110	63 - 170	1	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	*69*		*26 - 166*
13C-1,2,3,4,6,7,8-HpCDF	*67*		*21 - 158*
13C-1,2,3,4,7,8,9-HpCDF	*72*		*20 - 186*
13C-1,2,3,4,7,8-HxCDD	*70*		*21 - 193*
13C-1,2,3,4,7,8-HxCDF	*75*		*19 - 202*
13C-1,2,3,6,7,8-HxCDD	*59*		*25 - 163*
13C-1,2,3,6,7,8-HxCDF	*67*		*21 - 159*
13C-1,2,3,7,8,9-HxCDF	*72*		*17 - 205*
13C-1,2,3,7,8-PeCDD	*64*		*21 - 227*
13C-1,2,3,7,8-PeCDF	*66*		*21 - 192*
13C-2,3,4,6,7,8-HxCDF	*70*		*22 - 176*
13C-2,3,4,7,8-PeCDF	*66*		*13 - 328*
13C-2,3,7,8-TCDD	*65*		*20 - 175*
13C-2,3,7,8-TCDF	*74*		*22 - 152*
13C-OCDD	*71*		*13 - 199*

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

Lab Chronicle

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

TestAmerica Job ID: 580-77430-2

Client Sample ID: PDI-SG-B395-BL1
Lab Sample ID: 580-77430-1
Date Collected: 05/18/18 12:35
Matrix: Solid
Date Received: 05/21/18 12:00
Percent Solids: 43.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			229364	06/15/18 14:47	SR1	TAL SAC
Total/NA	Analysis	1613B		1	229720	06/18/18 18:38	SMA	TAL SAC

Client Sample ID: PDI-SG-B397-BL1
Lab Sample ID: 580-77430-2
Date Collected: 05/18/18 14:10
Matrix: Solid
Date Received: 05/21/18 12:00
Percent Solids: 41.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			229364	06/15/18 14:47	SR1	TAL SAC
Total/NA	Analysis	1613B		1	229720	06/18/18 19:26	SMA	TAL SAC

Client Sample ID: PDI-SG-B412-BL1
Lab Sample ID: 580-77430-3
Date Collected: 05/18/18 10:10
Matrix: Solid
Date Received: 05/21/18 12:00
Percent Solids: 58.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			228471	06/11/18 16:02	SR1	TAL SAC
Total/NA	Analysis	1613B		1	228992	06/13/18 14:33	ALM	TAL SAC

Client Sample ID: PDI-SG-B402-BL1
Lab Sample ID: 580-77430-4
Date Collected: 05/18/18 15:05
Matrix: Solid
Date Received: 05/21/18 12:00
Percent Solids: 45.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			228471	06/11/18 16:02	SR1	TAL SAC
Total/NA	Analysis	1613B		1	228992	06/13/18 15:16	ALM	TAL SAC

Client Sample ID: PDI-SG-B416-BL1
Lab Sample ID: 580-77430-5
Date Collected: 05/19/18 16:00
Matrix: Solid
Date Received: 05/21/18 12:00
Percent Solids: 66.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			229364	06/15/18 14:47	SR1	TAL SAC
Total/NA	Analysis	1613B		1	229720	06/18/18 20:15	SMA	TAL SAC

Client Sample ID: PDI-SG-B413-BL1
Lab Sample ID: 580-77430-6
Date Collected: 05/19/18 14:15
Matrix: Solid
Date Received: 05/21/18 12:00
Percent Solids: 36.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			228471	06/11/18 16:02	SR1	TAL SAC
Total/NA	Analysis	1613B		1	228992	06/13/18 16:41	ALM	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 580-77430-2

Client Sample ID: PDI-SG-B411-BL1
Lab Sample ID: 580-77430-7
Date Collected: 05/19/18 13:25
Matrix: Solid
Date Received: 05/21/18 12:00
Percent Solids: 39.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			228471	06/11/18 16:02	SR1	TAL SAC
Total/NA	Analysis	1613B		1	228992	06/13/18 17:24	ALM	TAL SAC

Client Sample ID: PDI-SG-B407-BL1
Lab Sample ID: 580-77430-8
Date Collected: 05/19/18 11:56
Matrix: Solid
Date Received: 05/21/18 12:00
Percent Solids: 39.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			228471	06/11/18 16:02	SR1	TAL SAC
Total/NA	Analysis	1613B		1	228992	06/13/18 18:07	ALM	TAL SAC

Client Sample ID: PDI-SG-B406-BL1
Lab Sample ID: 580-77430-9
Date Collected: 05/19/18 11:05
Matrix: Solid
Date Received: 05/21/18 12:00
Percent Solids: 43.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			228471	06/11/18 16:02	SR1	TAL SAC
Total/NA	Analysis	1613B		1	228992	06/13/18 18:50	ALM	TAL SAC

Client Sample ID: PDI-SG-B403-BL1
Lab Sample ID: 580-77430-10
Date Collected: 05/19/18 10:07
Matrix: Solid
Date Received: 05/21/18 12:00
Percent Solids: 46.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			228471	06/11/18 16:02	SR1	TAL SAC
Total/NA	Analysis	1613B		1	229087	06/14/18 01:22	AS	TAL SAC

Client Sample ID: PDI-SG-B372-BL1
Lab Sample ID: 580-77430-11
Date Collected: 05/20/18 10:30
Matrix: Solid
Date Received: 05/21/18 12:00
Percent Solids: 45.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			228471	06/11/18 16:02	SR1	TAL SAC
Total/NA	Analysis	1613B		1	229087	06/14/18 02:05	AS	TAL SAC

Client Sample ID: PDI-SG-B373-BL1
Lab Sample ID: 580-77430-12
Date Collected: 05/20/18 11:45
Matrix: Solid
Date Received: 05/21/18 12:00
Percent Solids: 49.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			228471	06/11/18 16:02	SR1	TAL SAC
Total/NA	Analysis	1613B		1	229087	06/14/18 02:48	AS	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 580-77430-2

Client Sample ID: PDI-SG-B217-BL1

Lab Sample ID: 580-77430-13
Date Collected: 05/20/18 17:00
Matrix: Solid
Date Received: 05/21/18 12:00
Percent Solids: 43.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			228471	06/11/18 16:02	SR1	TAL SAC
Total/NA	Analysis	1613B		1	229087	06/14/18 03:31	AS	TAL SAC

Client Sample ID: PDI-SG-B215-BL1

Lab Sample ID: 580-77430-14
Date Collected: 05/20/18 16:00
Matrix: Solid
Date Received: 05/21/18 12:00
Percent Solids: 48.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			228471	06/11/18 16:02	SR1	TAL SAC
Total/NA	Analysis	1613B		1	229087	06/14/18 04:13	AS	TAL SAC

Client Sample ID: PDI-SG-B211-BL1

Lab Sample ID: 580-77430-15
Date Collected: 05/20/18 14:30
Matrix: Solid
Date Received: 05/21/18 12:00
Percent Solids: 52.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		229364	06/15/18 14:47	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	229871	06/19/18 09:29	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			229364	06/15/18 14:47	SR1	TAL SAC
Total/NA	Analysis	1613B		1	229720	06/18/18 21:03	SMA	TAL SAC

Client Sample ID: PDI-SG-B210-BL1

Lab Sample ID: 580-77430-16
Date Collected: 05/20/18 11:00
Matrix: Solid
Date Received: 05/21/18 12:00
Percent Solids: 68.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		229364	06/15/18 14:47	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	229871	06/19/18 10:07	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			229364	06/15/18 14:47	SR1	TAL SAC
Total/NA	Analysis	1613B		1	229720	06/18/18 21:51	SMA	TAL SAC

Client Sample ID: PDI-SG-RB-VV-180520-1745

Lab Sample ID: 580-77430-17
Date Collected: 05/20/18 17:45
Matrix: Water
Date Received: 05/21/18 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			227727	06/07/18 08:17	A1A	TAL SAC
Total/NA	Analysis	1613B		1	228657	06/11/18 18:58	AS	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: AECOM
TestAmerica Job ID: 580-77430-2
Project/Site: Portland Harbor Pre-Remedial Design

Laboratory: TestAmerica Seattle

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-024	01-19-19
ANAB	DoD ELAP		L2236	01-19-19
ANAB	ISO/IEC 17025		L2236	01-19-19
California	State Program	9	2901	11-05-18
Montana (UST)	State Program	8	N/A	04-30-20
Oregon	NELAP	10	WA100007	11-05-18
US Fish & Wildlife	Federal		LE058448-0	07-31-18
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
ANAB	DoD ELAP		L2468	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	08-31-19
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	07-31-18 *
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	07-31-18 *
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

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Sample Summary

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

TestAmerica Job ID: 580-77430-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-77430-1	PDI-SG-B395-BL1	Solid	05/18/18 12:35	05/21/18 12:00
580-77430-2	PDI-SG-B397-BL1	Solid	05/18/18 14:10	05/21/18 12:00
580-77430-3	PDI-SG-B412-BL1	Solid	05/18/18 10:10	05/21/18 12:00
580-77430-4	PDI-SG-B402-BL1	Solid	05/18/18 15:05	05/21/18 12:00
580-77430-5	PDI-SG-B416-BL1	Solid	05/19/18 16:00	05/21/18 12:00
580-77430-6	PDI-SG-B413-BL1	Solid	05/19/18 14:15	05/21/18 12:00
580-77430-7	PDI-SG-B411-BL1	Solid	05/19/18 13:25	05/21/18 12:00
580-77430-8	PDI-SG-B407-BL1	Solid	05/19/18 11:56	05/21/18 12:00
580-77430-9	PDI-SG-B406-BL1	Solid	05/19/18 11:05	05/21/18 12:00
580-77430-10	PDI-SG-B403-BL1	Solid	05/19/18 10:07	05/21/18 12:00
580-77430-11	PDI-SG-B372-BL1	Solid	05/20/18 10:30	05/21/18 12:00
580-77430-12	PDI-SG-B373-BL1	Solid	05/20/18 11:45	05/21/18 12:00
580-77430-13	PDI-SG-B217-BL1	Solid	05/20/18 17:00	05/21/18 12:00
580-77430-14	PDI-SG-B215-BL1	Solid	05/20/18 16:00	05/21/18 12:00
580-77430-15	PDI-SG-B211-BL1	Solid	05/20/18 14:30	05/21/18 12:00
580-77430-16	PDI-SG-B210-BL1	Solid	05/20/18 11:00	05/21/18 12:00
580-77430-17	PDI-SG-RB-VV-180520-1745	Water	05/20/18 17:45	05/21/18 12:00

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** **Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ [x] 21 days [ ] Other _____	**Site Contact: Jennifer Ray / Michaela McCoog** **Laboratory Contact: Elaine-Walker**	**5/21/2018** COC No: 2 **Carrier: Courier** _1_ of _2_ page(s)

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

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 1668A	PCDD/Fs 1613B	TPH Diesel, Metals, Mercury NWTPH-Dx, 6020B, 7471A	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-B395-BL1	5/18/2018	1235	SS		MT	6		x	x	x	x	x	x						
PDI-SG-B397-BL1	5/18/2018	14:10	SS		ED	6		x	x	x	x	x	x						
PDI-SG-B412-BL1	5/18/2018	10:10	SS		MT	6		x	x	x	x	x	x						
PDI-SG-B402-BL1	5/18/2018	15:05	SS		ED	6		x	x	x	x	x	x						
PDI-SG-B416-BL1	5/19/2018	16:00	SS		ED	6		x	x	x	x	x	x						
PDI-SG-B413-BL1	5/19/2018	14:15	SS		ED	6		x	x	x	x	x	x						
PDI-SG-B411-BL1	5/19/2018	13:25	SS		ED	6		x	x	x	x	x	x						
PDI-SG-B407-BL1	5/19/2018	11:56	SS		ED	6		x	x	x	x	x	x						
PDI-SG-B406-BL1	5/19/2018	11:05	SS		MT	6		x	x	x	x	x	x						
PDI-SG-B403-BL1	5/19/2018	10:07	SS	MS/MSD	ED	12		x	x	x	x	x	x						
PDI-SG-B372-BL1	5/20/2018	1030	SS		ED	6		x	x	x	x	x	x						
PDI-SG-B373-BL1	5/20/2018	11:45	SS		ED	6		x	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

3.1, 0.8, 1.2, 3.2, 4.5, 3.8

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Michael McCoog	AECOM	5-21-18/1130	Jessica Myer	M.E.	5/21/18 1130
Jessica Myer	M.E.	5/21/18 1200		TAL	5/21/18 1200
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

SURFACE 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: Surface Sediment	**Project Contact: Amy Dahl / Chelsey Cook** **Tel: (206) 438-2261 / (206) 438-2010** **Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ [x] 21 days [ ] Other _____	**Site Contact: Jennifer Ray / Michaela McCoog** **Laboratory Contact: Elaine-Walker** **Carrier: Courier**

5/21/2018 COC No: 2 — 2 of 2 page(s)

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 1668A	PCDD/Fs 1613B	TPH Diesel, Metals, Mercury NWTPH-Dx, 6020B, 7471A	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-B217-BL1	5/20/2018	17:00	SS		AC	6		x	x	x	x	x	x						
PDI-SG-B215-BL1	5/20/2018	16:00	SS		AC	6		x	x	x	x	x	x						
PDI-SG-B211-BL1	5/20/2018	14:30	SS		AC	6		x	x	x	x	x	x						
PDI-SG-B210-BL1	5/20/2018	11:00	SS		AC	6		x	x	x	x	x	x						
PDI-SG-RB-VV-180520-1745	5/20/2018	17:45	W			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] Disposal By Lab [X] Archive For 12 Months

Special Instructions/QC Requirements & Comments:

Separate reports for each lab

	Company	Date/Time	Received by:	Company	Date/Time
Relinquished by: Michael Mayo	AECOM	5-21-18 1130		M.E.	5/21/18 1130
Relinquished by: Jessica Mayo	M.E.	5/21/18 1200		TAPER	5/21/18 1200
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

SURFACE SEDIMENT
CHAIN OF CUSTODY

TestAmerica-Seattle	Project Contact: Amy Dahl / Chelsey Cook	Site Contact: Jennifer Ray / Michaela McCoog	5/21/2018	COC No: 2
5755-8th-Street-East	Tel: (206) 438-2261 / (206) 438-2010	Laboratory Contact: Elaine-Walker	Carrier: Courier	1 of 2 page(s)
Tacoma, WA 98424-1317	Analysis Turnaround Time			
Ph: 253-922-2310 Fax: 253-922-5047	Calendar (C) or Work Days (W)			
Client Contact	[x] 21 days			
AECOM	[ ] Other			
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				

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 1668A	PCDD/Fs 1613B	TPH Diesel, Metals, Mercury, NWTPH-Dx, 6020B, 7471A	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-B395-BL1	5/18/2018	1235	SS		MT	6		x	x	x	x	x	x						
PDI-SG-B397-BL1	5/18/2018	14:10	SS		ED	6		x	x	x	x	x	x						
PDI-SG-B412-BL1	5/18/2018	10:10	SS		MT	6		x	x	x	x	x	x						
PDI-SG-B402-BL1	5/18/2018	15:05	SS		ED	6		x	x	x	x	x	x						
PDI-SG-B416-BL1	5/19/2018	16:00	SS		ED	6		x	x	x	x	x	x						
PDI-SG-B413-BL1	5/19/2018	14:15	SS		ED	6		x	x	x	x	x	x						
PDI-SG-B411-BL1	5/19/2018	13 25	SS		ED	6		x	x	x	x	x	x						
PDI-SG-B407-BL1	5/19/2018	11:56	SS		ED	6		x	x	x	x	x	x						
PDI-SG-B406-BL1	5/19/2018	11:05	SS		MT	6		x	x	x	x	x	x						
PDI-SG-B403-BL1	5/19/2018	10:07	SS	MS/MSD	ED	12		x	x	x	x	x	x						
PDI-SG-B372-BL1	5/20/2018	~~10:31~~ 1030	SS		ED	6		x	x	x	x	x	x						
PDI-SG-B373-BL1	5/20/2018	11:45	SS		ED	6		x	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] Disposal By Lab [X] Archive For 12 Months

Special Instructions/QC Requirements & Comments:

Separate reports for each lab

3.1, 0.8, 1.2, 3.2, 4.5, 3.8

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Michael McCoog	AECOM	5-21-18 1130	Jessica Mu	M.E.	5/21/18 1130
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Jessica Mu	M.E.	5/21/18 1200		TAPOR	5/21/18 1200
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	TAPOR	5/21/18 1700		SEA TR	5.22.18 0915

IDS = 2.5/2.4 w/c.s.

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** **Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ [x] 21 days [ ] Other _____	**Site Contact: Jennifer Ray / Michaela McCoog** **Laboratory Contact: Elaine-Walker**	**5/21/2018** COC No: 2 **Carrier: Courier** 2 of 2 page(s)

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

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 1668A	PCDD/Fs 1613B	TPH Diesel, Metals, Mercury, NWTPH-Dx, 6020B, 7471A	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-B217-BL1	5/20/2018	17:00	SS		AC	6		x	x	x	x	x	x						
PDI-SG-B215-BL1	5/20/2018	16:00	SS		AC	6		x	x	x	x	x	x						
PDI-SG-B211-BL1	5/20/2018	14:30	SS		AC	6		x	x	x	x	x	x						
PDI-SG-B210-BL1	5/20/2018	11:00	SS		AC	6		x	x	x	x	x	x						
PDI-SG-RB-VV-180520-1745	5/20/2018	17:45	W			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] Disposal By Lab [x] Archive For 12 Months

Special Instructions/QC Requirements & Comments:

Separate reports for each lab

Relinquished by: Michael McCoog	Company: AECOM	Date/Time: 5-21-18 1130	Received by:	Company: M.E.	Date/Time: 5/21/18 1130
Relinquished by: Jessica Mae	Company: M.E.	Date/Time: 5/21/18 1200	Received by:	Company: TAPER	Date/Time: 5/21/18 1200
Relinquished by:	Company: TAPER	Date/Time: 5/21/18 1700	Received by:	Company: SEA TM	Date/Time: 5.22.18 0915

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: 580-55530.1
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 #: 580-77430-2
Address: 880 Riverside Parkway,	Due Date Requested: 6/7/2018			
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	1613B/1613B_Sox_Sep_P Full List w/o Totals	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
PDI-SG-B395-BL1 (580-77430-1)	5/18/18	12:35 Pacific		Solid			X		2	
PDI-SG-B397-BL1 (580-77430-2)	5/18/18	14:10 Pacific		Solid			X		2	
PDI-SG-B412-BL1 (580-77430-3)	5/18/18	10:10 Pacific		Solid			X		2	
PDI-SG-B402-BL1 (580-77430-4)	5/18/18	15:05 Pacific		Solid			X		2	
PDI-SG-B416-BL1 (580-77430-5)	5/19/18	16:00 Pacific		Solid			X		2	
PDI-SG-B413-BL1 (580-77430-6)	5/19/18	14:15 Pacific		Solid			X		2	
PDI-SG-B411-BL1 (580-77430-7)	5/19/18	13:25 Pacific		Solid			X		2	
PDI-SG-B407-BL1 (580-77430-8)	5/19/18	11:56 Pacific		Solid			X		2	
PDI-SG-B406-BL1 (580-77430-9)	5/19/18	11:05 Pacific		Solid			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 compliance 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		5/22/18 1700	TAOR		23 May 18 900	TAW Sac
2		Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.: Seal	Cooler Temperature(s) °C and Other Remarks: 2.1 +/- 3.5°c 5.9 °c

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: 580-55530.2
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 #: 580-77430-2
Address: 880 Riverside Parkway, ,	Due Date Requested: 6/7/2018			
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	1613B/1613B_Sox_Sep_P Full List w/o Totals	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
PDI-SG-B403-BL1 (580-77430-10)	5/19/18	10:07 Pacific		Solid			X		2	
PDI-SG-B372-BL1 (580-77430-11)	5/20/18	10:30 Pacific		Solid			X		2	
PDI-SG-B373-BL1 (580-77430-12)	5/20/18	11:45 Pacific		Solid			X		2	
PDI-SG-B217-BL1 (580-77430-13)	5/20/18	17:00 Pacific		Solid			X		2	
PDI-SG-B215-BL1 (580-77430-14)	5/20/18	16:00 Pacific		Solid			X		2	
PDI-SG-B211-BL1 (580-77430-15)	5/20/18	14:30 Pacific		Solid			X		2	
PDI-SG-B210-BL1 (580-77430-16)	5/20/18	11:00 Pacific		Solid			X		2	
PDI-SG-RB-VV-180520-1745 (580-77430-17)	5/20/18	17:45 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:

	Relinquished by	Date/Time	Company	Received by:	Date/Time:	Company
	Relinquished by:	Date/Time: 5/22/18 1700	Company TAPOR	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

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Sample Receiving Notes

Job:_____

Tracking # 4423 0750 3524 SO KPO / 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: 1 of 3

Temp: Observed 3.5 °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: JL Date: 23 May 18 Time 900

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

F2B @ 1400
F2A @ 1415

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Sample Receiving Notes

Job: _____

Tracking # 4423 0750 3530 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: 2 of 3

Temp: Observed 2.1 °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: _____ Date: 23 MAY 18 Time 900

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

F2B

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Sample Receiving Notes

Job:_____

Tracking # 4423 0750 3540 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: 3 of 3

Temp: Observed 5.9°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: JL Date: 23 May 18 Time 900

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

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-77430-2

Login Number: 77430
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.	N/A	
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: 580-77430-2

Login Number: 77430
List Number: 4
Creator: Gooch, Mayce

List Source: TestAmerica Sacramento
List Creation: 05/23/18 01:46 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	3.5c, 2.1c 5.9c
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: 580-77430-2

Login Number: 77430
List Number: 5
Creator: Gooch, Mayce

List Source: TestAmerica Sacramento
List Creation: 05/23/18 02:02 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	3.5c 2.1c 5.9c
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: 580-77430-2

Login Number: 77430
List Number: 6
Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento
List Creation: 05/24/18 06:31 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.1,3.5,5.9
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").	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: 580-77430-2

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)
580-77430-1	PDI-SG-B395-BL1	61	41	63	60	65	54	58	66
580-77430-2	PDI-SG-B397-BL1	57	44	61	58	62	50	55	64
580-77430-3	PDI-SG-B412-BL1	46	34	51	37	39	44	43	62
580-77430-4	PDI-SG-B402-BL1	53	42	55	41	46	53	51	67
580-77430-5	PDI-SG-B416-BL1	57	46	59	58	63	52	54	63
580-77430-6	PDI-SG-B413-BL1	57	47	61	47	53	60	57	70
580-77430-7	PDI-SG-B411-BL1	57	46	61	46	47	54	52	70
580-77430-8	PDI-SG-B407-BL1	57	45	59	43	48	54	52	66
580-77430-9	PDI-SG-B406-BL1	58	46	65	46	50	59	54	73
580-77430-10	PDI-SG-B403-BL1	60	44	62	41	47	55	52	70
580-77430-11	PDI-SG-B372-BL1	62	50	65	50	53	56	57	71
580-77430-12	PDI-SG-B373-BL1	57	47	61	43	48	53	54	68
580-77430-13	PDI-SG-B217-BL1	57	46	60	43	49	55	54	67
580-77430-14	PDI-SG-B215-BL1	53	44	57	46	51	56	53	66
580-77430-15	PDI-SG-B211-BL1	55	45	55	63	66	55	59	66
580-77430-15 - RA	PDI-SG-B211-BL1								
580-77430-16	PDI-SG-B210-BL1	51	40	52	56	58	48	52	61
580-77430-16 - RA	PDI-SG-B210-BL1								
MB 320-228471/1-A	Method Blank	67	70	67	72	77	81	80	77
MB 320-229364/1-A	Method Blank	68	64	68	71	76	62	68	72

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PeCDD (25-181)	PeCDF (24-185)	13CHxCF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)	
580-77430-1	PDI-SG-B395-BL1	57	59	64	59	59	70	59	
580-77430-2	PDI-SG-B397-BL1	54	58	61	59	59	72	56	
580-77430-3	PDI-SG-B412-BL1	71	60	58	45	62	67	43	
580-77430-4	PDI-SG-B402-BL1	74	63	62	49	63	68	52	
580-77430-5	PDI-SG-B416-BL1	53	54	62	56	56	68	54	
580-77430-6	PDI-SG-B413-BL1	82	67	67	55	69	73	62	
580-77430-7	PDI-SG-B411-BL1	78	65	66	47	67	70	62	
580-77430-8	PDI-SG-B407-BL1	78	64	63	49	63	70	61	
580-77430-9	PDI-SG-B406-BL1	88	73	69	59	72	76	63	
580-77430-10	PDI-SG-B403-BL1	83	66	66	50	69	74	65	
580-77430-11	PDI-SG-B372-BL1	76	63	66	50	64	68	67	
580-77430-12	PDI-SG-B373-BL1	75	63	66	49	65	67	60	
580-77430-13	PDI-SG-B217-BL1	74	61	65	49	64	67	58	
580-77430-14	PDI-SG-B215-BL1	72	60	63	48	65	69	55	
580-77430-15	PDI-SG-B211-BL1	54	58	66	60	59		57	
580-77430-15 - RA	PDI-SG-B211-BL1						64		
580-77430-16	PDI-SG-B210-BL1	53	54	59	57	57		46	
580-77430-16 - RA	PDI-SG-B210-BL1						67		
MB 320-228471/1-A	Method Blank	84	72	78	68	73	72	71	
MB 320-229364/1-A	Method Blank	62	65	74	63	63	71	67	

Surrogate Legend

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

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

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

Matrix: 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 320-228471/2-A	Lab Control Sample	71	64	70	56	62	72	67	79
LCS 320-229364/2-A	Lab Control Sample	73	68	75	69	77	63	69	75
LCSD 320-228471/3-A	Lab Control Sample Dup	67	69	67	70	73	77	78	79
LCSD 320-229364/3-A	Lab Control Sample Dup	69	67	72	70	75	59	67	72

		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 320-228471/2-A	Lab Control Sample	87	72	78	60	74	75	76
LCS 320-229364/2-A	Lab Control Sample	64	66	74	66	65	73	72
LCSD 320-228471/3-A	Lab Control Sample Dup	88	74	77	67	75	75	73
LCSD 320-229364/3-A	Lab Control Sample Dup	64	66	70	66	65	74	71

Surrogate Legend

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

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)
580-77430-17	PDI-SG-RB-VV-180520-1745	58	67	66	62	62	68	65	71
MB 320-227727/1-A	Method Blank	65	73	67	73	70	75	72	75

Isotope Dilution Summary

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

TestAmerica Job ID: 580-77430-2

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

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

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	PeCDD (25-181)	PeCDF (24-185)	13CHxCF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)
580-77430-17	PDI-SG-RB-VV-180520-1745	66	76	69	71	77	82	46
MB 320-227727/1-A	Method Blank	71	80	73	79	83	88	49

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 320-227727/2-A	Lab Control Sample	61	67	67	65	65	69	66	71
LCSD 320-227727/3-A	Lab Control Sample Dup	52	61	60	57	56	59	58	64

		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 320-227727/2-A	Lab Control Sample	69	80	69	75	82	87	48
LCSD 320-227727/3-A	Lab Control Sample Dup	61	70	61	66	75	80	43

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