TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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

TestAmerica Job ID: 580-77797-2
Client Project/Site: Portland Harbor Pre-Remedial Design

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

Attn: Karen Mixon

M. Elaine Walker

Authorized for release by:
6/25/2018 4:29:30 PM

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

Table of Contents

Job ID: 580-77797-2

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE
Client: AECOM
Project: Portland Harbor Pre-Remedial Design
Report Number: 580-77797-2

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

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

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

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

RECEIPT

Eleven samples were received on 5/30/2018 9:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were -0.1° C and 0.0° 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.

One of the containers for the following samples were received with broken bottoms: PDI-SG-S147 (580-77797-2) and PDI-SG-S084 (580-77797-3). The lab was able to take them and transfer after defrosting for a bit, into new containers. Some volume was lost but not much.

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-S204 (580-77797-1), PDI-SG-S147 (580-77797-2), PDI-SG-S084 (580-77797-3), PDI-SG-S090 (580-77797-4), PDI-SG-S010 (580-77797-5), PDI-SG-S255 (580-77797-6), PDI-SG-S097 (580-77797-7), PDI-SG-S115 (580-77797-8), PDI-SG-S078 (580-77797-9), PDI-SG-S135 (580-77797-10) and PDI-SG-S157 (580-77797-11) were analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 06/14/2018 and analyzed on 06/20/2018 and 06/21/2018.

Several analytes were detected in method blank MB 320-229025/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

The concentration of one or more analytes associated with the following sample exceeded the instrument calibration range: PDI-SG-S204 (580-77797-1). These analytes have been qualified; however, the peak(s) did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range.

Due to the matrix, the initial volumes used for the following samples deviated from the standard procedure: PDI-SG-S204 (580-77797-1), PDI-SG-S147 (580-77797-2), PDI-SG-S084 (580-77797-3), PDI-SG-S090 (580-77797-4), PDI-SG-S010 (580-77797-5), PDI-SG-S255

Job ID: 580-77797-2 (Continued)

Laboratory: TestAmerica Seattle (Continued)

(580-77797-6), PDI-SG-S097 (580-77797-7), PDI-SG-S115 (580-77797-8), PDI-SG-S078 (580-77797-9), PDI-SG-S135 (580-77797-10) and PDI-SG-S157 (580-77797-11). The reporting limits (RLs) have been adjusted proportionately. Samples are associated with preparation batch 320-229025.

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: 580-77797-2

Qualifiers

Dioxin

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

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-S204
Date Collected: 05/03/18 16:25
Date Received: 05/30/18 09:10

Lab Sample ID: 580-77797-1
Matrix: Solid
Percent Solids: 67.8

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	0.63	B	0.0036	0.0019	ug/Kg	☼	06/14/18 09:34	06/20/18 13:14	1
1,2,3,4,6,7,8-HpCDF	0.15	B	0.0036	0.0010	ug/Kg	☼	06/14/18 09:34	06/20/18 13:14	1
1,2,3,4,7,8,9-HpCDF	0.0069	B	0.0036	0.0019	ug/Kg	☼	06/14/18 09:34	06/20/18 13:14	1
1,2,3,4,7,8-HxCDD	0.0012	J B	0.0036	0.000084	ug/Kg	☼	06/14/18 09:34	06/20/18 13:14	1
1,2,3,4,7,8-HxCDF	0.0037	B	0.0036	0.00036	ug/Kg	☼	06/14/18 09:34	06/20/18 13:14	1
1,2,3,6,7,8-HxCDD	0.012	B	0.0036	0.000082	ug/Kg	☼	06/14/18 09:34	06/20/18 13:14	1
1,2,3,6,7,8-HxCDF	0.0013	J B	0.0036	0.00034	ug/Kg	☼	06/14/18 09:34	06/20/18 13:14	1
1,2,3,7,8,9-HxCDD	0.0032	J B	0.0036	0.000075	ug/Kg	☼	06/14/18 09:34	06/20/18 13:14	1
1,2,3,7,8,9-HxCDF	0.00079	J B	0.0036	0.00027	ug/Kg	☼	06/14/18 09:34	06/20/18 13:14	1
1,2,3,7,8-PeCDD	0.00057	J	0.0036	0.00010	ug/Kg	☼	06/14/18 09:34	06/20/18 13:14	1
1,2,3,7,8-PeCDF	0.00055	J B	0.0036	0.00011	ug/Kg	☼	06/14/18 09:34	06/20/18 13:14	1
2,3,4,6,7,8-HxCDF	0.00056	J B q	0.0036	0.00029	ug/Kg	☼	06/14/18 09:34	06/20/18 13:14	1
2,3,4,7,8-PeCDF	0.00073	J B	0.0036	0.00013	ug/Kg	☼	06/14/18 09:34	06/20/18 13:14	1
2,3,7,8-TCDD	0.00022	J B q	0.00073	0.000043	ug/Kg	☼	06/14/18 09:34	06/20/18 13:14	1
OCDD	10	E B	0.0073	0.0020	ug/Kg	☼	06/14/18 09:34	06/20/18 13:14	1
OCDF	0.85	B	0.0073	0.00017	ug/Kg	☼	06/14/18 09:34	06/20/18 13:14	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*55*		*23 - 140*	*06/14/18 09:34*	*06/20/18 13:14*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*46*		*28 - 143*	*06/14/18 09:34*	*06/20/18 13:14*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*38*		*26 - 138*	*06/14/18 09:34*	*06/20/18 13:14*	*1*
13C-1,2,3,4,7,8-HxCDD	*72*		*32 - 141*	*06/14/18 09:34*	*06/20/18 13:14*	*1*
13C-1,2,3,4,7,8-HxCDF	*78*		*26 - 152*	*06/14/18 09:34*	*06/20/18 13:14*	*1*
13C-1,2,3,6,7,8-HxCDD	*63*		*28 - 130*	*06/14/18 09:34*	*06/20/18 13:14*	*1*
13C-1,2,3,6,7,8-HxCDF	*70*		*26 - 123*	*06/14/18 09:34*	*06/20/18 13:14*	*1*
13C-1,2,3,7,8,9-HxCDF	*68*		*29 - 147*	*06/14/18 09:34*	*06/20/18 13:14*	*1*
13C-1,2,3,7,8-PeCDD	*73*		*25 - 181*	*06/14/18 09:34*	*06/20/18 13:14*	*1*
13C-1,2,3,7,8-PeCDF	*73*		*24 - 185*	*06/14/18 09:34*	*06/20/18 13:14*	*1*
13C-2,3,4,6,7,8-HxCDF	*72*		*28 - 136*	*06/14/18 09:34*	*06/20/18 13:14*	*1*
13C-2,3,4,7,8-PeCDF	*74*		*21 - 178*	*06/14/18 09:34*	*06/20/18 13:14*	*1*
13C-2,3,7,8-TCDD	*66*		*25 - 164*	*06/14/18 09:34*	*06/20/18 13:14*	*1*
13C-OCDD	*58*		*17 - 157*	*06/14/18 09:34*	*06/20/18 13:14*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*119*		*35 - 197*	*06/14/18 09:34*	*06/20/18 13:14*	*1*

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.00067	J B	0.00073	0.000086	ug/Kg	☼	06/14/18 09:34	06/21/18 03:39	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*75*		*24 - 169*	*06/14/18 09:34*	*06/21/18 03:39*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*112*		*35 - 197*	*06/14/18 09:34*	*06/21/18 03:39*	*1*

Client Sample ID: PDI-SG-S147
Date Collected: 05/04/18 17:19
Date Received: 05/30/18 09:10

Lab Sample ID: 580-77797-2
Matrix: Solid
Percent Solids: 55.2

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	0.20	B	0.0045	0.00054	ug/Kg	☼	06/14/18 09:34	06/20/18 14:03	1
1,2,3,4,6,7,8-HpCDF	0.040	B	0.0045	0.00038	ug/Kg	☼	06/14/18 09:34	06/20/18 14:03	1
1,2,3,4,7,8,9-HpCDF	0.0029	J B	0.0045	0.00047	ug/Kg	☼	06/14/18 09:34	06/20/18 14:03	1
1,2,3,4,7,8-HxCDD	0.0018	J B	0.0045	0.000070	ug/Kg	☼	06/14/18 09:34	06/20/18 14:03	1
1,2,3,4,7,8-HxCDF	0.0038	J B	0.0045	0.00015	ug/Kg	☼	06/14/18 09:34	06/20/18 14:03	1
1,2,3,6,7,8-HxCDD	0.0083	B	0.0045	0.000069	ug/Kg	☼	06/14/18 09:34	06/20/18 14:03	1
1,2,3,6,7,8-HxCDF	0.0016	J B	0.0045	0.00015	ug/Kg	☼	06/14/18 09:34	06/20/18 14:03	1
1,2,3,7,8,9-HxCDD	0.0038	J B	0.0045	0.000063	ug/Kg	☼	06/14/18 09:34	06/20/18 14:03	1
1,2,3,7,8,9-HxCDF	0.00058	J B q	0.0045	0.00011	ug/Kg	☼	06/14/18 09:34	06/20/18 14:03	1
1,2,3,7,8-PeCDD	0.0011	J	0.0045	0.000081	ug/Kg	☼	06/14/18 09:34	06/20/18 14:03	1
1,2,3,7,8-PeCDF	0.00075	J B	0.0045	0.00010	ug/Kg	☼	06/14/18 09:34	06/20/18 14:03	1
2,3,4,6,7,8-HxCDF	0.00078	J B	0.0045	0.00012	ug/Kg	☼	06/14/18 09:34	06/20/18 14:03	1
2,3,4,7,8-PeCDF	0.00087	J B	0.0045	0.00011	ug/Kg	☼	06/14/18 09:34	06/20/18 14:03	1
2,3,7,8-TCDD	0.00040	J B q	0.00089	0.000040	ug/Kg	☼	06/14/18 09:34	06/20/18 14:03	1
OCDD	1.6	B	0.0089	0.00033	ug/Kg	☼	06/14/18 09:34	06/20/18 14:03	1
OCDF	0.11	B	0.0089	0.000071	ug/Kg	☼	06/14/18 09:34	06/20/18 14:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*49*		*23 - 140*	*06/14/18 09:34*	*06/20/18 14:03*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*39*		*28 - 143*	*06/14/18 09:34*	*06/20/18 14:03*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*45*		*26 - 138*	*06/14/18 09:34*	*06/20/18 14:03*	*1*
13C-1,2,3,4,7,8-HxCDD	*65*		*32 - 141*	*06/14/18 09:34*	*06/20/18 14:03*	*1*
13C-1,2,3,4,7,8-HxCDF	*65*		*26 - 152*	*06/14/18 09:34*	*06/20/18 14:03*	*1*
13C-1,2,3,6,7,8-HxCDD	*55*		*28 - 130*	*06/14/18 09:34*	*06/20/18 14:03*	*1*
13C-1,2,3,6,7,8-HxCDF	*59*		*26 - 123*	*06/14/18 09:34*	*06/20/18 14:03*	*1*
13C-1,2,3,7,8,9-HxCDF	*62*		*29 - 147*	*06/14/18 09:34*	*06/20/18 14:03*	*1*
13C-1,2,3,7,8-PeCDD	*61*		*25 - 181*	*06/14/18 09:34*	*06/20/18 14:03*	*1*
13C-1,2,3,7,8-PeCDF	*60*		*24 - 185*	*06/14/18 09:34*	*06/20/18 14:03*	*1*
13C-2,3,4,6,7,8-HxCDF	*61*		*28 - 136*	*06/14/18 09:34*	*06/20/18 14:03*	*1*
13C-2,3,4,7,8-PeCDF	*63*		*21 - 178*	*06/14/18 09:34*	*06/20/18 14:03*	*1*
13C-2,3,7,8-TCDD	*56*		*25 - 164*	*06/14/18 09:34*	*06/20/18 14:03*	*1*
13C-OCDD	*54*		*17 - 157*	*06/14/18 09:34*	*06/20/18 14:03*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*108*		*35 - 197*	*06/14/18 09:34*	*06/20/18 14:03*	*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	0.00067	J B	0.00089	0.00011	ug/Kg	☼	06/14/18 09:34	06/21/18 04:17	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*64*		*24 - 169*	*06/14/18 09:34*	*06/21/18 04:17*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*100*		*35 - 197*	*06/14/18 09:34*	*06/21/18 04:17*	*1*

Client Sample ID: PDI-SG-S084
Date Collected: 05/08/18 13:40
Date Received: 05/30/18 09:10

Lab Sample ID: 580-77797-3
Matrix: Solid
Percent Solids: 81.2

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	0.0037	B	0.0031	0.000035	ug/Kg	☼	06/14/18 09:34	06/20/18 14:51	1
1,2,3,4,6,7,8-HpCDF	0.00050	J B	0.0031	0.000051	ug/Kg	☼	06/14/18 09:34	06/20/18 14:51	1
1,2,3,4,7,8,9-HpCDF	0.00063	J B	0.0031	0.000054	ug/Kg	☼	06/14/18 09:34	06/20/18 14:51	1
1,2,3,4,7,8-HxCDD	0.00010	J B q	0.0031	0.000015	ug/Kg	☼	06/14/18 09:34	06/20/18 14:51	1
1,2,3,4,7,8-HxCDF	0.00022	J B	0.0031	0.000027	ug/Kg	☼	06/14/18 09:34	06/20/18 14:51	1
1,2,3,6,7,8-HxCDD	0.00011	J B q	0.0031	0.000014	ug/Kg	☼	06/14/18 09:34	06/20/18 14:51	1
1,2,3,6,7,8-HxCDF	0.000069	J B q	0.0031	0.000026	ug/Kg	☼	06/14/18 09:34	06/20/18 14:51	1
1,2,3,7,8,9-HxCDD	0.00012	J B q	0.0031	0.000013	ug/Kg	☼	06/14/18 09:34	06/20/18 14:51	1
1,2,3,7,8,9-HxCDF	0.00055	J B	0.0031	0.000017	ug/Kg	☼	06/14/18 09:34	06/20/18 14:51	1
1,2,3,7,8-PeCDD	ND		0.0031	0.000023	ug/Kg	☼	06/14/18 09:34	06/20/18 14:51	1
1,2,3,7,8-PeCDF	0.00021	J B	0.0031	0.000013	ug/Kg	☼	06/14/18 09:34	06/20/18 14:51	1
2,3,4,6,7,8-HxCDF	0.000030	J B	0.0031	0.000018	ug/Kg	☼	06/14/18 09:34	06/20/18 14:51	1
2,3,4,7,8-PeCDF	0.000080	J B	0.0031	0.000014	ug/Kg	☼	06/14/18 09:34	06/20/18 14:51	1
2,3,7,8-TCDD	0.000080	J B q	0.00062	0.000015	ug/Kg	☼	06/14/18 09:34	06/20/18 14:51	1
2,3,7,8-TCDF	0.00020	J B	0.00062	0.000011	ug/Kg	☼	06/14/18 09:34	06/20/18 14:51	1
OCDD	0.031	B	0.0062	0.000033	ug/Kg	☼	06/14/18 09:34	06/20/18 14:51	1
OCDF	0.0015	J B	0.0062	0.000019	ug/Kg	☼	06/14/18 09:34	06/20/18 14:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*59*		*23 - 140*	*06/14/18 09:34*	*06/20/18 14:51*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*50*		*28 - 143*	*06/14/18 09:34*	*06/20/18 14:51*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*60*		*26 - 138*	*06/14/18 09:34*	*06/20/18 14:51*	*1*
13C-1,2,3,4,7,8-HxCDD	*67*		*32 - 141*	*06/14/18 09:34*	*06/20/18 14:51*	*1*
13C-1,2,3,4,7,8-HxCDF	*65*		*26 - 152*	*06/14/18 09:34*	*06/20/18 14:51*	*1*
13C-1,2,3,6,7,8-HxCDD	*58*		*28 - 130*	*06/14/18 09:34*	*06/20/18 14:51*	*1*
13C-1,2,3,6,7,8-HxCDF	*58*		*26 - 123*	*06/14/18 09:34*	*06/20/18 14:51*	*1*
13C-1,2,3,7,8,9-HxCDF	*66*		*29 - 147*	*06/14/18 09:34*	*06/20/18 14:51*	*1*
13C-1,2,3,7,8-PeCDD	*65*		*25 - 181*	*06/14/18 09:34*	*06/20/18 14:51*	*1*
13C-1,2,3,7,8-PeCDF	*63*		*24 - 185*	*06/14/18 09:34*	*06/20/18 14:51*	*1*
13C-2,3,4,6,7,8-HxCDF	*67*		*28 - 136*	*06/14/18 09:34*	*06/20/18 14:51*	*1*
13C-2,3,4,7,8-PeCDF	*64*		*21 - 178*	*06/14/18 09:34*	*06/20/18 14:51*	*1*
13C-2,3,7,8-TCDD	*59*		*25 - 164*	*06/14/18 09:34*	*06/20/18 14:51*	*1*
13C-2,3,7,8-TCDF	*70*		*24 - 169*	*06/14/18 09:34*	*06/20/18 14:51*	*1*
13C-OCDD	*63*		*17 - 157*	*06/14/18 09:34*	*06/20/18 14:51*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*112*		*35 - 197*	*06/14/18 09:34*	*06/20/18 14:51*	*1*

Client Sample ID: PDI-SG-S090
Date Collected: 05/09/18 14:34
Date Received: 05/30/18 09:10

Lab Sample ID: 580-77797-4
Matrix: Solid
Percent Solids: 73.1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.0028	J B	0.0035	0.000037	ug/Kg	☼	06/14/18 09:34	06/20/18 15:39	1
1,2,3,4,6,7,8-HpCDF	0.00061	J B q	0.0035	0.000043	ug/Kg	☼	06/14/18 09:34	06/20/18 15:39	1
1,2,3,4,7,8,9-HpCDF	0.00058	J B	0.0035	0.000045	ug/Kg	☼	06/14/18 09:34	06/20/18 15:39	1
1,2,3,4,7,8-HxCDD	0.00013	J B	0.0035	0.000017	ug/Kg	☼	06/14/18 09:34	06/20/18 15:39	1
1,2,3,4,7,8-HxCDF	0.00019	J B	0.0035	0.000021	ug/Kg	☼	06/14/18 09:34	06/20/18 15:39	1
1,2,3,6,7,8-HxCDD	0.00015	J B	0.0035	0.000017	ug/Kg	☼	06/14/18 09:34	06/20/18 15:39	1
1,2,3,6,7,8-HxCDF	0.000060	J B q	0.0035	0.000021	ug/Kg	☼	06/14/18 09:34	06/20/18 15:39	1
1,2,3,7,8,9-HxCDD	0.00015	J B	0.0035	0.000015	ug/Kg	☼	06/14/18 09:34	06/20/18 15:39	1
1,2,3,7,8,9-HxCDF	0.00040	J B	0.0035	0.000013	ug/Kg	☼	06/14/18 09:34	06/20/18 15:39	1
1,2,3,7,8-PeCDD	0.000027	J q	0.0035	0.000021	ug/Kg	☼	06/14/18 09:34	06/20/18 15:39	1
1,2,3,7,8-PeCDF	0.00014	J B	0.0035	0.000012	ug/Kg	☼	06/14/18 09:34	06/20/18 15:39	1
2,3,4,6,7,8-HxCDF	0.000035	J B q	0.0035	0.000015	ug/Kg	☼	06/14/18 09:34	06/20/18 15:39	1
2,3,4,7,8-PeCDF	0.000049	J B q	0.0035	0.000013	ug/Kg	☼	06/14/18 09:34	06/20/18 15:39	1
2,3,7,8-TCDD	0.000082	J B q	0.00069	0.000017	ug/Kg	☼	06/14/18 09:34	06/20/18 15:39	1
2,3,7,8-TCDF	0.00014	J B q	0.00069	0.000010	ug/Kg	☼	06/14/18 09:34	06/20/18 15:39	1
OCDD	0.024	B	0.0069	0.000025	ug/Kg	☼	06/14/18 09:34	06/20/18 15:39	1
OCDF	0.0016	J B	0.0069	0.000015	ug/Kg	☼	06/14/18 09:34	06/20/18 15:39	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*62*		*23 - 140*	*06/14/18 09:34*	*06/20/18 15:39*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*53*		*28 - 143*	*06/14/18 09:34*	*06/20/18 15:39*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*66*		*26 - 138*	*06/14/18 09:34*	*06/20/18 15:39*	*1*
13C-1,2,3,4,7,8-HxCDD	*66*		*32 - 141*	*06/14/18 09:34*	*06/20/18 15:39*	*1*
13C-1,2,3,4,7,8-HxCDF	*67*		*26 - 152*	*06/14/18 09:34*	*06/20/18 15:39*	*1*
13C-1,2,3,6,7,8-HxCDD	*58*		*28 - 130*	*06/14/18 09:34*	*06/20/18 15:39*	*1*
13C-1,2,3,6,7,8-HxCDF	*57*		*26 - 123*	*06/14/18 09:34*	*06/20/18 15:39*	*1*
13C-1,2,3,7,8,9-HxCDF	*68*		*29 - 147*	*06/14/18 09:34*	*06/20/18 15:39*	*1*
13C-1,2,3,7,8-PeCDD	*66*		*25 - 181*	*06/14/18 09:34*	*06/20/18 15:39*	*1*
13C-1,2,3,7,8-PeCDF	*65*		*24 - 185*	*06/14/18 09:34*	*06/20/18 15:39*	*1*
13C-2,3,4,6,7,8-HxCDF	*66*		*28 - 136*	*06/14/18 09:34*	*06/20/18 15:39*	*1*
13C-2,3,4,7,8-PeCDF	*67*		*21 - 178*	*06/14/18 09:34*	*06/20/18 15:39*	*1*
13C-2,3,7,8-TCDD	*63*		*25 - 164*	*06/14/18 09:34*	*06/20/18 15:39*	*1*
13C-2,3,7,8-TCDF	*74*		*24 - 169*	*06/14/18 09:34*	*06/20/18 15:39*	*1*
13C-OCDD	*62*		*17 - 157*	*06/14/18 09:34*	*06/20/18 15:39*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*109*		*35 - 197*	*06/14/18 09:34*	*06/20/18 15:39*	*1*

Client Sample ID: PDI-SG-S010
Date Collected: 05/09/18 17:30
Date Received: 05/30/18 09:10

Lab Sample ID: 580-77797-5
Matrix: Solid
Percent Solids: 74.9

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	0.014	B	0.0033	0.000072	ug/Kg	☼	06/14/18 09:34	06/20/18 16:28	1
1,2,3,4,6,7,8-HpCDF	0.0053	B	0.0033	0.000058	ug/Kg	☼	06/14/18 09:34	06/20/18 16:28	1
1,2,3,4,7,8,9-HpCDF	0.00084	J B q	0.0033	0.000065	ug/Kg	☼	06/14/18 09:34	06/20/18 16:28	1
1,2,3,4,7,8-HxCDD	0.00027	J B	0.0033	0.000022	ug/Kg	☼	06/14/18 09:34	06/20/18 16:28	1
1,2,3,4,7,8-HxCDF	0.0026	J B	0.0033	0.000045	ug/Kg	☼	06/14/18 09:34	06/20/18 16:28	1
1,2,3,6,7,8-HxCDD	0.00073	J B q	0.0033	0.000022	ug/Kg	☼	06/14/18 09:34	06/20/18 16:28	1
1,2,3,6,7,8-HxCDF	0.0012	J B	0.0033	0.000046	ug/Kg	☼	06/14/18 09:34	06/20/18 16:28	1
1,2,3,7,8,9-HxCDD	0.00057	J B	0.0033	0.000020	ug/Kg	☼	06/14/18 09:34	06/20/18 16:28	1
1,2,3,7,8,9-HxCDF	0.00041	J B	0.0033	0.000029	ug/Kg	☼	06/14/18 09:34	06/20/18 16:28	1
1,2,3,7,8-PeCDD	ND		0.0033	0.000066	ug/Kg	☼	06/14/18 09:34	06/20/18 16:28	1
1,2,3,7,8-PeCDF	0.0018	J B	0.0033	0.000086	ug/Kg	☼	06/14/18 09:34	06/20/18 16:28	1
2,3,4,6,7,8-HxCDF	0.0018	J B	0.0033	0.000033	ug/Kg	☼	06/14/18 09:34	06/20/18 16:28	1
2,3,4,7,8-PeCDF	0.0040	B	0.0033	0.000091	ug/Kg	☼	06/14/18 09:34	06/20/18 16:28	1
2,3,7,8-TCDD	0.000088	J B q	0.00066	0.000020	ug/Kg	☼	06/14/18 09:34	06/20/18 16:28	1
OCDD	0.12	B	0.0066	0.000044	ug/Kg	☼	06/14/18 09:34	06/20/18 16:28	1
OCDF	0.0061	J B	0.0066	0.000035	ug/Kg	☼	06/14/18 09:34	06/20/18 16:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*69*		*23 - 140*	*06/14/18 09:34*	*06/20/18 16:28*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*61*		*28 - 143*	*06/14/18 09:34*	*06/20/18 16:28*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*70*		*26 - 138*	*06/14/18 09:34*	*06/20/18 16:28*	*1*
13C-1,2,3,4,7,8-HxCDD	*72*		*32 - 141*	*06/14/18 09:34*	*06/20/18 16:28*	*1*
13C-1,2,3,4,7,8-HxCDF	*72*		*26 - 152*	*06/14/18 09:34*	*06/20/18 16:28*	*1*
13C-1,2,3,6,7,8-HxCDD	*58*		*28 - 130*	*06/14/18 09:34*	*06/20/18 16:28*	*1*
13C-1,2,3,6,7,8-HxCDF	*60*		*26 - 123*	*06/14/18 09:34*	*06/20/18 16:28*	*1*
13C-1,2,3,7,8,9-HxCDF	*71*		*29 - 147*	*06/14/18 09:34*	*06/20/18 16:28*	*1*
13C-1,2,3,7,8-PeCDD	*63*		*25 - 181*	*06/14/18 09:34*	*06/20/18 16:28*	*1*
13C-1,2,3,7,8-PeCDF	*62*		*24 - 185*	*06/14/18 09:34*	*06/20/18 16:28*	*1*
13C-2,3,4,6,7,8-HxCDF	*67*		*28 - 136*	*06/14/18 09:34*	*06/20/18 16:28*	*1*
13C-2,3,4,7,8-PeCDF	*65*		*21 - 178*	*06/14/18 09:34*	*06/20/18 16:28*	*1*
13C-2,3,7,8-TCDD	*61*		*25 - 164*	*06/14/18 09:34*	*06/20/18 16:28*	*1*
13C-OCDD	*75*		*17 - 157*	*06/14/18 09:34*	*06/20/18 16:28*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*110*		*35 - 197*	*06/14/18 09:34*	*06/20/18 16:28*	*1*

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0037	B	0.00066	0.000077	ug/Kg	☼	06/14/18 09:34	06/21/18 04:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*70*		*24 - 169*	*06/14/18 09:34*	*06/21/18 04:55*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*104*		*35 - 197*	*06/14/18 09:34*	*06/21/18 04:55*	*1*

Client Sample ID: PDI-SG-S255
Date Collected: 05/11/18 12:40
Date Received: 05/30/18 09:10

Lab Sample ID: 580-77797-6
Matrix: Solid
Percent Solids: 63.8

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.057	B	0.0040	0.00020	ug/Kg	☼	06/14/18 09:34	06/20/18 17:16	1
1,2,3,4,6,7,8-HpCDF	0.0099	B q	0.0040	0.00013	ug/Kg	☼	06/14/18 09:34	06/20/18 17:16	1
1,2,3,4,7,8,9-HpCDF	0.00090	J B	0.0040	0.00013	ug/Kg	☼	06/14/18 09:34	06/20/18 17:16	1
1,2,3,4,7,8-HxCDD	0.00064	J B	0.0040	0.000032	ug/Kg	☼	06/14/18 09:34	06/20/18 17:16	1
1,2,3,4,7,8-HxCDF	0.00076	J B	0.0040	0.000051	ug/Kg	☼	06/14/18 09:34	06/20/18 17:16	1
1,2,3,6,7,8-HxCDD	0.0025	J B	0.0040	0.000031	ug/Kg	☼	06/14/18 09:34	06/20/18 17:16	1
1,2,3,6,7,8-HxCDF	0.00049	J B	0.0040	0.000049	ug/Kg	☼	06/14/18 09:34	06/20/18 17:16	1
1,2,3,7,8,9-HxCDD	0.0018	J B	0.0040	0.000028	ug/Kg	☼	06/14/18 09:34	06/20/18 17:16	1
1,2,3,7,8,9-HxCDF	0.00047	J B	0.0040	0.000031	ug/Kg	☼	06/14/18 09:34	06/20/18 17:16	1
1,2,3,7,8-PeCDD	0.00034	J	0.0040	0.000039	ug/Kg	☼	06/14/18 09:34	06/20/18 17:16	1
1,2,3,7,8-PeCDF	0.00027	J B	0.0040	0.000047	ug/Kg	☼	06/14/18 09:34	06/20/18 17:16	1
2,3,4,6,7,8-HxCDF	0.00036	J B	0.0040	0.000035	ug/Kg	☼	06/14/18 09:34	06/20/18 17:16	1
2,3,4,7,8-PeCDF	0.00030	J B	0.0040	0.000051	ug/Kg	☼	06/14/18 09:34	06/20/18 17:16	1
2,3,7,8-TCDD	0.00020	J B q	0.00079	0.000016	ug/Kg	☼	06/14/18 09:34	06/20/18 17:16	1
2,3,7,8-TCDF	0.00058	J B	0.00079	0.000053	ug/Kg	☼	06/14/18 09:34	06/20/18 17:16	1
OCDD	0.41	B	0.0079	0.00011	ug/Kg	☼	06/14/18 09:34	06/20/18 17:16	1
OCDF	0.029	B	0.0079	0.000022	ug/Kg	☼	06/14/18 09:34	06/20/18 17:16	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*69*		*23 - 140*	*06/14/18 09:34*	*06/20/18 17:16*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*59*		*28 - 143*	*06/14/18 09:34*	*06/20/18 17:16*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*72*		*26 - 138*	*06/14/18 09:34*	*06/20/18 17:16*	*1*
13C-1,2,3,4,7,8-HxCDD	*68*		*32 - 141*	*06/14/18 09:34*	*06/20/18 17:16*	*1*
13C-1,2,3,4,7,8-HxCDF	*69*		*26 - 152*	*06/14/18 09:34*	*06/20/18 17:16*	*1*
13C-1,2,3,6,7,8-HxCDD	*59*		*28 - 130*	*06/14/18 09:34*	*06/20/18 17:16*	*1*
13C-1,2,3,6,7,8-HxCDF	*60*		*26 - 123*	*06/14/18 09:34*	*06/20/18 17:16*	*1*
13C-1,2,3,7,8,9-HxCDF	*71*		*29 - 147*	*06/14/18 09:34*	*06/20/18 17:16*	*1*
13C-1,2,3,7,8-PeCDD	*66*		*25 - 181*	*06/14/18 09:34*	*06/20/18 17:16*	*1*
13C-1,2,3,7,8-PeCDF	*65*		*24 - 185*	*06/14/18 09:34*	*06/20/18 17:16*	*1*
13C-2,3,4,6,7,8-HxCDF	*69*		*28 - 136*	*06/14/18 09:34*	*06/20/18 17:16*	*1*
13C-2,3,4,7,8-PeCDF	*66*		*21 - 178*	*06/14/18 09:34*	*06/20/18 17:16*	*1*
13C-2,3,7,8-TCDD	*63*		*25 - 164*	*06/14/18 09:34*	*06/20/18 17:16*	*1*
13C-2,3,7,8-TCDF	*75*		*24 - 169*	*06/14/18 09:34*	*06/20/18 17:16*	*1*
13C-OCDD	*74*		*17 - 157*	*06/14/18 09:34*	*06/20/18 17:16*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*110*		*35 - 197*	*06/14/18 09:34*	*06/20/18 17:16*	*1*

Client Sample ID: PDI-SG-S097
Date Collected: 05/13/18 11:45
Date Received: 05/30/18 09:10

Lab Sample ID: 580-77797-7
Matrix: Solid
Percent Solids: 61.9

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	0.095	B	0.0039	0.00036	ug/Kg	☼	06/14/18 09:34	06/20/18 18:05	1
1,2,3,4,6,7,8-HpCDF	0.024	B	0.0039	0.00029	ug/Kg	☼	06/14/18 09:34	06/20/18 18:05	1
1,2,3,4,7,8,9-HpCDF	0.0017	J B	0.0039	0.00030	ug/Kg	☼	06/14/18 09:34	06/20/18 18:05	1
1,2,3,4,7,8-HxCDD	0.00092	J B	0.0039	0.000040	ug/Kg	☼	06/14/18 09:34	06/20/18 18:05	1
1,2,3,4,7,8-HxCDF	0.0033	J B	0.0039	0.000098	ug/Kg	☼	06/14/18 09:34	06/20/18 18:05	1
1,2,3,6,7,8-HxCDD	0.0040	B	0.0039	0.000042	ug/Kg	☼	06/14/18 09:34	06/20/18 18:05	1
1,2,3,6,7,8-HxCDF	0.0014	J B	0.0039	0.000099	ug/Kg	☼	06/14/18 09:34	06/20/18 18:05	1
1,2,3,7,8,9-HxCDD	0.0023	J B	0.0039	0.000037	ug/Kg	☼	06/14/18 09:34	06/20/18 18:05	1
1,2,3,7,8,9-HxCDF	0.00047	J B	0.0039	0.000062	ug/Kg	☼	06/14/18 09:34	06/20/18 18:05	1
1,2,3,7,8-PeCDD	0.00046	J	0.0039	0.000073	ug/Kg	☼	06/14/18 09:34	06/20/18 18:05	1
1,2,3,7,8-PeCDF	0.00058	J B	0.0039	0.00011	ug/Kg	☼	06/14/18 09:34	06/20/18 18:05	1
2,3,4,6,7,8-HxCDF	0.0018	J B	0.0039	0.000071	ug/Kg	☼	06/14/18 09:34	06/20/18 18:05	1
2,3,4,7,8-PeCDF	0.0010	J B	0.0039	0.00012	ug/Kg	☼	06/14/18 09:34	06/20/18 18:05	1
2,3,7,8-TCDD	0.00019	J B q	0.00079	0.000035	ug/Kg	☼	06/14/18 09:34	06/20/18 18:05	1
OCDD	0.81	B	0.0079	0.00019	ug/Kg	☼	06/14/18 09:34	06/20/18 18:05	1
OCDF	0.056	B	0.0079	0.000046	ug/Kg	☼	06/14/18 09:34	06/20/18 18:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*51*		*23 - 140*	*06/14/18 09:34*	*06/20/18 18:05*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*40*		*28 - 143*	*06/14/18 09:34*	*06/20/18 18:05*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*50*		*26 - 138*	*06/14/18 09:34*	*06/20/18 18:05*	*1*
13C-1,2,3,4,7,8-HxCDD	*57*		*32 - 141*	*06/14/18 09:34*	*06/20/18 18:05*	*1*
13C-1,2,3,4,7,8-HxCDF	*57*		*26 - 152*	*06/14/18 09:34*	*06/20/18 18:05*	*1*
13C-1,2,3,6,7,8-HxCDD	*48*		*28 - 130*	*06/14/18 09:34*	*06/20/18 18:05*	*1*
13C-1,2,3,6,7,8-HxCDF	*50*		*26 - 123*	*06/14/18 09:34*	*06/20/18 18:05*	*1*
13C-1,2,3,7,8,9-HxCDF	*60*		*29 - 147*	*06/14/18 09:34*	*06/20/18 18:05*	*1*
13C-1,2,3,7,8-PeCDD	*54*		*25 - 181*	*06/14/18 09:34*	*06/20/18 18:05*	*1*
13C-1,2,3,7,8-PeCDF	*55*		*24 - 185*	*06/14/18 09:34*	*06/20/18 18:05*	*1*
13C-2,3,4,6,7,8-HxCDF	*57*		*28 - 136*	*06/14/18 09:34*	*06/20/18 18:05*	*1*
13C-2,3,4,7,8-PeCDF	*57*		*21 - 178*	*06/14/18 09:34*	*06/20/18 18:05*	*1*
13C-2,3,7,8-TCDD	*56*		*25 - 164*	*06/14/18 09:34*	*06/20/18 18:05*	*1*
13C-OCDD	*49*		*17 - 157*	*06/14/18 09:34*	*06/20/18 18:05*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*110*		*35 - 197*	*06/14/18 09:34*	*06/20/18 18:05*	*1*

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.00078	J B	0.00079	0.00020	ug/Kg	☼	06/14/18 09:34	06/21/18 11:09	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*63*		*24 - 169*	*06/14/18 09:34*	*06/21/18 11:09*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*98*		*35 - 197*	*06/14/18 09:34*	*06/21/18 11:09*	*1*

Client Sample ID: PDI-SG-S115
Date Collected: 05/12/18 12:21
Date Received: 05/30/18 09:10

Lab Sample ID: 580-77797-8
Matrix: Solid
Percent Solids: 71.9

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	0.019	B	0.0035	0.000083	ug/Kg	☼	06/14/18 09:34	06/20/18 18:53	1
1,2,3,4,6,7,8-HpCDF	0.0060	B	0.0035	0.000056	ug/Kg	☼	06/14/18 09:34	06/20/18 18:53	1
1,2,3,4,7,8,9-HpCDF	0.0012	J B	0.0035	0.000057	ug/Kg	☼	06/14/18 09:34	06/20/18 18:53	1
1,2,3,4,7,8-HxCDD	0.00026	J B q	0.0035	0.000022	ug/Kg	☼	06/14/18 09:34	06/20/18 18:53	1
1,2,3,4,7,8-HxCDF	0.0024	J B	0.0035	0.000030	ug/Kg	☼	06/14/18 09:34	06/20/18 18:53	1
1,2,3,6,7,8-HxCDD	0.00097	J B	0.0035	0.000023	ug/Kg	☼	06/14/18 09:34	06/20/18 18:53	1
1,2,3,6,7,8-HxCDF	0.00081	J B	0.0035	0.000030	ug/Kg	☼	06/14/18 09:34	06/20/18 18:53	1
1,2,3,7,8,9-HxCDD	0.00066	J B	0.0035	0.000020	ug/Kg	☼	06/14/18 09:34	06/20/18 18:53	1
1,2,3,7,8,9-HxCDF	0.00047	J B	0.0035	0.000019	ug/Kg	☼	06/14/18 09:34	06/20/18 18:53	1
1,2,3,7,8-PeCDD	0.00012	J q	0.0035	0.000040	ug/Kg	☼	06/14/18 09:34	06/20/18 18:53	1
1,2,3,7,8-PeCDF	0.0013	J B	0.0035	0.000036	ug/Kg	☼	06/14/18 09:34	06/20/18 18:53	1
2,3,4,6,7,8-HxCDF	0.00019	J B q	0.0035	0.000021	ug/Kg	☼	06/14/18 09:34	06/20/18 18:53	1
2,3,4,7,8-PeCDF	0.00056	J B	0.0035	0.000040	ug/Kg	☼	06/14/18 09:34	06/20/18 18:53	1
2,3,7,8-TCDD	0.000097	J B q	0.00070	0.000020	ug/Kg	☼	06/14/18 09:34	06/20/18 18:53	1
OCDD	0.18	B	0.0070	0.000055	ug/Kg	☼	06/14/18 09:34	06/20/18 18:53	1
OCDF	0.014	B	0.0070	0.000015	ug/Kg	☼	06/14/18 09:34	06/20/18 18:53	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*62*		*23 - 140*	*06/14/18 09:34*	*06/20/18 18:53*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*53*		*28 - 143*	*06/14/18 09:34*	*06/20/18 18:53*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*66*		*26 - 138*	*06/14/18 09:34*	*06/20/18 18:53*	*1*
13C-1,2,3,4,7,8-HxCDD	*61*		*32 - 141*	*06/14/18 09:34*	*06/20/18 18:53*	*1*
13C-1,2,3,4,7,8-HxCDF	*62*		*26 - 152*	*06/14/18 09:34*	*06/20/18 18:53*	*1*
13C-1,2,3,6,7,8-HxCDD	*52*		*28 - 130*	*06/14/18 09:34*	*06/20/18 18:53*	*1*
13C-1,2,3,6,7,8-HxCDF	*53*		*26 - 123*	*06/14/18 09:34*	*06/20/18 18:53*	*1*
13C-1,2,3,7,8,9-HxCDF	*64*		*29 - 147*	*06/14/18 09:34*	*06/20/18 18:53*	*1*
13C-1,2,3,7,8-PeCDD	*57*		*25 - 181*	*06/14/18 09:34*	*06/20/18 18:53*	*1*
13C-1,2,3,7,8-PeCDF	*59*		*24 - 185*	*06/14/18 09:34*	*06/20/18 18:53*	*1*
13C-2,3,4,6,7,8-HxCDF	*62*		*28 - 136*	*06/14/18 09:34*	*06/20/18 18:53*	*1*
13C-2,3,4,7,8-PeCDF	*61*		*21 - 178*	*06/14/18 09:34*	*06/20/18 18:53*	*1*
13C-2,3,7,8-TCDD	*60*		*25 - 164*	*06/14/18 09:34*	*06/20/18 18:53*	*1*
13C-OCDD	*62*		*17 - 157*	*06/14/18 09:34*	*06/20/18 18:53*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*113*		*35 - 197*	*06/14/18 09:34*	*06/20/18 18:53*	*1*

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.00077	B	0.00070	0.00015	ug/Kg	☼	06/14/18 09:34	06/21/18 11:47	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*68*		*24 - 169*	*06/14/18 09:34*	*06/21/18 11:47*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*106*		*35 - 197*	*06/14/18 09:34*	*06/21/18 11:47*	*1*

Client Sample ID: PDI-SG-S078
Date Collected: 05/12/18 15:50
Date Received: 05/30/18 09:10

Lab Sample ID: 580-77797-9
Matrix: Solid
Percent Solids: 60.4

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	0.035	B	0.0041	0.00014	ug/Kg	☼	06/14/18 09:34	06/20/18 19:41	1
1,2,3,4,6,7,8-HpCDF	0.0055	B q	0.0041	0.000085	ug/Kg	☼	06/14/18 09:34	06/20/18 19:41	1
1,2,3,4,7,8,9-HpCDF	0.0010	J B q	0.0041	0.00010	ug/Kg	☼	06/14/18 09:34	06/20/18 19:41	1
1,2,3,4,7,8-HxCDD	0.00042	J B	0.0041	0.000020	ug/Kg	☼	06/14/18 09:34	06/20/18 19:41	1
1,2,3,4,7,8-HxCDF	0.0017	J B	0.0041	0.000037	ug/Kg	☼	06/14/18 09:34	06/20/18 19:41	1
1,2,3,6,7,8-HxCDD	0.0014	J B	0.0041	0.000019	ug/Kg	☼	06/14/18 09:34	06/20/18 19:41	1
1,2,3,6,7,8-HxCDF	0.00058	J B	0.0041	0.000036	ug/Kg	☼	06/14/18 09:34	06/20/18 19:41	1
1,2,3,7,8,9-HxCDD	0.0010	J B	0.0041	0.000018	ug/Kg	☼	06/14/18 09:34	06/20/18 19:41	1
1,2,3,7,8,9-HxCDF	0.00053	J B	0.0041	0.000024	ug/Kg	☼	06/14/18 09:34	06/20/18 19:41	1
1,2,3,7,8-PeCDD	0.00020	J	0.0041	0.000042	ug/Kg	☼	06/14/18 09:34	06/20/18 19:41	1
1,2,3,7,8-PeCDF	0.00099	J B	0.0041	0.000038	ug/Kg	☼	06/14/18 09:34	06/20/18 19:41	1
2,3,4,6,7,8-HxCDF	0.00024	J B	0.0041	0.000027	ug/Kg	☼	06/14/18 09:34	06/20/18 19:41	1
2,3,4,7,8-PeCDF	0.00054	J B	0.0041	0.000042	ug/Kg	☼	06/14/18 09:34	06/20/18 19:41	1
2,3,7,8-TCDD	0.00019	J B q	0.00082	0.000028	ug/Kg	☼	06/14/18 09:34	06/20/18 19:41	1
OCDD	0.28	B	0.0082	0.000080	ug/Kg	☼	06/14/18 09:34	06/20/18 19:41	1
OCDF	0.013	B	0.0082	0.000028	ug/Kg	☼	06/14/18 09:34	06/20/18 19:41	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*57*		*23 - 140*	*06/14/18 09:34*	*06/20/18 19:41*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*44*		*28 - 143*	*06/14/18 09:34*	*06/20/18 19:41*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*50*		*26 - 138*	*06/14/18 09:34*	*06/20/18 19:41*	*1*
13C-1,2,3,4,7,8-HxCDD	*61*		*32 - 141*	*06/14/18 09:34*	*06/20/18 19:41*	*1*
13C-1,2,3,4,7,8-HxCDF	*64*		*26 - 152*	*06/14/18 09:34*	*06/20/18 19:41*	*1*
13C-1,2,3,6,7,8-HxCDD	*55*		*28 - 130*	*06/14/18 09:34*	*06/20/18 19:41*	*1*
13C-1,2,3,6,7,8-HxCDF	*55*		*26 - 123*	*06/14/18 09:34*	*06/20/18 19:41*	*1*
13C-1,2,3,7,8,9-HxCDF	*64*		*29 - 147*	*06/14/18 09:34*	*06/20/18 19:41*	*1*
13C-1,2,3,7,8-PeCDD	*61*		*25 - 181*	*06/14/18 09:34*	*06/20/18 19:41*	*1*
13C-1,2,3,7,8-PeCDF	*60*		*24 - 185*	*06/14/18 09:34*	*06/20/18 19:41*	*1*
13C-2,3,4,6,7,8-HxCDF	*63*		*28 - 136*	*06/14/18 09:34*	*06/20/18 19:41*	*1*
13C-2,3,4,7,8-PeCDF	*62*		*21 - 178*	*06/14/18 09:34*	*06/20/18 19:41*	*1*
13C-2,3,7,8-TCDD	*60*		*25 - 164*	*06/14/18 09:34*	*06/20/18 19:41*	*1*
13C-OCDD	*60*		*17 - 157*	*06/14/18 09:34*	*06/20/18 19:41*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*115*		*35 - 197*	*06/14/18 09:34*	*06/20/18 19:41*	*1*

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0011	B	0.00082	0.00019	ug/Kg	☼	06/14/18 09:34	06/21/18 12:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*71*		*24 - 169*	*06/14/18 09:34*	*06/21/18 12:25*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*109*		*35 - 197*	*06/14/18 09:34*	*06/21/18 12:25*	*1*

Client Sample ID: PDI-SG-S135
Date Collected: 05/14/18 10:15
Date Received: 05/30/18 09:10

Lab Sample ID: 580-77797-10
Matrix: Solid
Percent Solids: 67.7

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.070	B	0.0037	0.00026	ug/Kg	☼	06/14/18 09:34	06/20/18 20:30	1
1,2,3,4,6,7,8-HpCDF	0.039	B	0.0037	0.00014	ug/Kg	☼	06/14/18 09:34	06/20/18 20:30	1
1,2,3,4,7,8,9-HpCDF	0.011	B	0.0037	0.00017	ug/Kg	☼	06/14/18 09:34	06/20/18 20:30	1
1,2,3,4,7,8-HxCDD	0.00050	J B	0.0037	0.000027	ug/Kg	☼	06/14/18 09:34	06/20/18 20:30	1
1,2,3,4,7,8-HxCDF	0.060	B	0.0037	0.00020	ug/Kg	☼	06/14/18 09:34	06/20/18 20:30	1
1,2,3,6,7,8-HxCDD	0.0017	J B	0.0037	0.000027	ug/Kg	☼	06/14/18 09:34	06/20/18 20:30	1
1,2,3,6,7,8-HxCDF	0.0091	B	0.0037	0.00019	ug/Kg	☼	06/14/18 09:34	06/20/18 20:30	1
1,2,3,7,8,9-HxCDD	0.0014	J B	0.0037	0.000024	ug/Kg	☼	06/14/18 09:34	06/20/18 20:30	1
1,2,3,7,8,9-HxCDF	0.00071	J B	0.0037	0.00012	ug/Kg	☼	06/14/18 09:34	06/20/18 20:30	1
1,2,3,7,8-PeCDD	0.00033	J	0.0037	0.000073	ug/Kg	☼	06/14/18 09:34	06/20/18 20:30	1
1,2,3,7,8-PeCDF	0.011	B	0.0037	0.00018	ug/Kg	☼	06/14/18 09:34	06/20/18 20:30	1
2,3,4,6,7,8-HxCDF	0.0011	J B	0.0037	0.00014	ug/Kg	☼	06/14/18 09:34	06/20/18 20:30	1
2,3,4,7,8-PeCDF	0.0042	B	0.0037	0.00021	ug/Kg	☼	06/14/18 09:34	06/20/18 20:30	1
2,3,7,8-TCDD	0.00038	J B	0.00074	0.00019	ug/Kg	☼	06/14/18 09:34	06/20/18 20:30	1
OCDD	0.40	B	0.0074	0.00010	ug/Kg	☼	06/14/18 09:34	06/20/18 20:30	1
OCDF	0.046	B	0.0074	0.000020	ug/Kg	☼	06/14/18 09:34	06/20/18 20:30	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*69*		*23 - 140*	*06/14/18 09:34*	*06/20/18 20:30*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*61*		*28 - 143*	*06/14/18 09:34*	*06/20/18 20:30*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*69*		*26 - 138*	*06/14/18 09:34*	*06/20/18 20:30*	*1*
13C-1,2,3,4,7,8-HxCDD	*67*		*32 - 141*	*06/14/18 09:34*	*06/20/18 20:30*	*1*
13C-1,2,3,4,7,8-HxCDF	*68*		*26 - 152*	*06/14/18 09:34*	*06/20/18 20:30*	*1*
13C-1,2,3,6,7,8-HxCDD	*57*		*28 - 130*	*06/14/18 09:34*	*06/20/18 20:30*	*1*
13C-1,2,3,6,7,8-HxCDF	*58*		*26 - 123*	*06/14/18 09:34*	*06/20/18 20:30*	*1*
13C-1,2,3,7,8,9-HxCDF	*69*		*29 - 147*	*06/14/18 09:34*	*06/20/18 20:30*	*1*
13C-1,2,3,7,8-PeCDD	*62*		*25 - 181*	*06/14/18 09:34*	*06/20/18 20:30*	*1*
13C-1,2,3,7,8-PeCDF	*62*		*24 - 185*	*06/14/18 09:34*	*06/20/18 20:30*	*1*
13C-2,3,4,6,7,8-HxCDF	*67*		*28 - 136*	*06/14/18 09:34*	*06/20/18 20:30*	*1*
13C-2,3,4,7,8-PeCDF	*63*		*21 - 178*	*06/14/18 09:34*	*06/20/18 20:30*	*1*
13C-2,3,7,8-TCDD	*61*		*25 - 164*	*06/14/18 09:34*	*06/20/18 20:30*	*1*
13C-OCDD	*74*		*17 - 157*	*06/14/18 09:34*	*06/20/18 20:30*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*113*		*35 - 197*	*06/14/18 09:34*	*06/20/18 20:30*	*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	0.0098	B	0.00074	0.00019	ug/Kg	☼	06/14/18 09:34	06/21/18 13:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*72*		*24 - 169*	*06/14/18 09:34*	*06/21/18 13:03*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*106*		*35 - 197*	*06/14/18 09:34*	*06/21/18 13:03*	*1*

Client Sample ID: PDI-SG-S157
Date Collected: 05/14/18 15:45
Date Received: 05/30/18 09:10

Lab Sample ID: 580-77797-11
Matrix: Solid
Percent Solids: 59.9

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	0.11	B	0.0041	0.00054	ug/Kg	☼	06/14/18 09:34	06/20/18 21:18	1
1,2,3,4,6,7,8-HpCDF	0.028	B	0.0041	0.00032	ug/Kg	☼	06/14/18 09:34	06/20/18 21:18	1
1,2,3,4,7,8,9-HpCDF	0.0035	J B	0.0041	0.00036	ug/Kg	☼	06/14/18 09:34	06/20/18 21:18	1
1,2,3,4,7,8-HxCDD	0.00095	J B	0.0041	0.000038	ug/Kg	☼	06/14/18 09:34	06/20/18 21:18	1
1,2,3,4,7,8-HxCDF	0.015	B	0.0041	0.000092	ug/Kg	☼	06/14/18 09:34	06/20/18 21:18	1
1,2,3,6,7,8-HxCDD	0.0042	B	0.0041	0.000037	ug/Kg	☼	06/14/18 09:34	06/20/18 21:18	1
1,2,3,6,7,8-HxCDF	0.0047	B	0.0041	0.000092	ug/Kg	☼	06/14/18 09:34	06/20/18 21:18	1
1,2,3,7,8,9-HxCDD	0.0025	J B	0.0041	0.000034	ug/Kg	☼	06/14/18 09:34	06/20/18 21:18	1
1,2,3,7,8,9-HxCDF	0.00084	J B	0.0041	0.000057	ug/Kg	☼	06/14/18 09:34	06/20/18 21:18	1
1,2,3,7,8-PeCDD	0.00051	J	0.0041	0.000045	ug/Kg	☼	06/14/18 09:34	06/20/18 21:18	1
1,2,3,7,8-PeCDF	0.015	B	0.0041	0.00016	ug/Kg	☼	06/14/18 09:34	06/20/18 21:18	1
2,3,4,6,7,8-HxCDF	0.0011	J B	0.0041	0.000065	ug/Kg	☼	06/14/18 09:34	06/20/18 21:18	1
2,3,4,7,8-PeCDF	0.0061	B	0.0041	0.00018	ug/Kg	☼	06/14/18 09:34	06/20/18 21:18	1
2,3,7,8-TCDD	0.00050	J B	0.00082	0.000022	ug/Kg	☼	06/14/18 09:34	06/20/18 21:18	1
OCDD	1.6	B	0.0082	0.00034	ug/Kg	☼	06/14/18 09:34	06/20/18 21:18	1
OCDF	0.075	B	0.0082	0.000027	ug/Kg	☼	06/14/18 09:34	06/20/18 21:18	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*65*		*23 - 140*	*06/14/18 09:34*	*06/20/18 21:18*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*52*		*28 - 143*	*06/14/18 09:34*	*06/20/18 21:18*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*61*		*26 - 138*	*06/14/18 09:34*	*06/20/18 21:18*	*1*
13C-1,2,3,4,7,8-HxCDD	*68*		*32 - 141*	*06/14/18 09:34*	*06/20/18 21:18*	*1*
13C-1,2,3,4,7,8-HxCDF	*68*		*26 - 152*	*06/14/18 09:34*	*06/20/18 21:18*	*1*
13C-1,2,3,6,7,8-HxCDD	*59*		*28 - 130*	*06/14/18 09:34*	*06/20/18 21:18*	*1*
13C-1,2,3,6,7,8-HxCDF	*58*		*26 - 123*	*06/14/18 09:34*	*06/20/18 21:18*	*1*
13C-1,2,3,7,8,9-HxCDF	*71*		*29 - 147*	*06/14/18 09:34*	*06/20/18 21:18*	*1*
13C-1,2,3,7,8-PeCDD	*66*		*25 - 181*	*06/14/18 09:34*	*06/20/18 21:18*	*1*
13C-1,2,3,7,8-PeCDF	*65*		*24 - 185*	*06/14/18 09:34*	*06/20/18 21:18*	*1*
13C-2,3,4,6,7,8-HxCDF	*67*		*28 - 136*	*06/14/18 09:34*	*06/20/18 21:18*	*1*
13C-2,3,4,7,8-PeCDF	*67*		*21 - 178*	*06/14/18 09:34*	*06/20/18 21:18*	*1*
13C-2,3,7,8-TCDD	*64*		*25 - 164*	*06/14/18 09:34*	*06/20/18 21:18*	*1*
13C-OCDD	*68*		*17 - 157*	*06/14/18 09:34*	*06/20/18 21:18*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*117*		*35 - 197*	*06/14/18 09:34*	*06/20/18 21:18*	*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	0.0097	B	0.00082	0.00022	ug/Kg	☼	06/14/18 09:34	06/21/18 13:40	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*71*		*24 - 169*	*06/14/18 09:34*	*06/21/18 13:40*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*104*		*35 - 197*	*06/14/18 09:34*	*06/21/18 13:40*	*1*

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

Lab Sample ID: MB 320-229025/1-A
Matrix: Solid
Analysis Batch: 229940

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 229025

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.0000946	J q	0.0050	0.000015	ug/Kg		06/14/18 09:34	06/20/18 01:27	1
1,2,3,4,6,7,8-HpCDF	0.000140	J	0.0050	0.000018	ug/Kg		06/14/18 09:34	06/20/18 01:27	1
1,2,3,4,7,8,9-HpCDF	0.000579	J	0.0050	0.000021	ug/Kg		06/14/18 09:34	06/20/18 01:27	1
1,2,3,4,7,8-HxCDD	0.000140	J	0.0050	0.000018	ug/Kg		06/14/18 09:34	06/20/18 01:27	1
1,2,3,4,7,8-HxCDF	0.000102	J	0.0050	0.000026	ug/Kg		06/14/18 09:34	06/20/18 01:27	1
1,2,3,6,7,8-HxCDD	0.0000407	J	0.0050	0.000018	ug/Kg		06/14/18 09:34	06/20/18 01:27	1
1,2,3,6,7,8-HxCDF	0.0000470	J q	0.0050	0.000024	ug/Kg		06/14/18 09:34	06/20/18 01:27	1
1,2,3,7,8,9-HxCDD	0.0000275	J q	0.0050	0.000016	ug/Kg		06/14/18 09:34	06/20/18 01:27	1
1,2,3,7,8,9-HxCDF	0.000599	J	0.0050	0.000017	ug/Kg		06/14/18 09:34	06/20/18 01:27	1
1,2,3,7,8-PeCDD	ND		0.0050	0.000025	ug/Kg		06/14/18 09:34	06/20/18 01:27	1
1,2,3,7,8-PeCDF	0.0000769	J q	0.0050	0.000019	ug/Kg		06/14/18 09:34	06/20/18 01:27	1
2,3,4,6,7,8-HxCDF	0.0000312	J q	0.0050	0.000018	ug/Kg		06/14/18 09:34	06/20/18 01:27	1
2,3,4,7,8-PeCDF	0.0000360	J q	0.0050	0.000021	ug/Kg		06/14/18 09:34	06/20/18 01:27	1
2,3,7,8-TCDD	0.0000987	J q	0.0010	0.000023	ug/Kg		06/14/18 09:34	06/20/18 01:27	1
2,3,7,8-TCDF	0.000152	J	0.0010	0.000017	ug/Kg		06/14/18 09:34	06/20/18 01:27	1
OCDD	0.000338	J q	0.010	0.000016	ug/Kg		06/14/18 09:34	06/20/18 01:27	1
OCDF	0.000280	J q	0.010	0.000024	ug/Kg		06/14/18 09:34	06/20/18 01:27	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*64*		*23 - 140*	*06/14/18 09:34*	*06/20/18 01:27*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*61*		*28 - 143*	*06/14/18 09:34*	*06/20/18 01:27*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*64*		*26 - 138*	*06/14/18 09:34*	*06/20/18 01:27*	*1*
13C-1,2,3,4,7,8-HxCDD	*72*		*32 - 141*	*06/14/18 09:34*	*06/20/18 01:27*	*1*
13C-1,2,3,4,7,8-HxCDF	*72*		*26 - 152*	*06/14/18 09:34*	*06/20/18 01:27*	*1*
13C-1,2,3,6,7,8-HxCDD	*64*		*28 - 130*	*06/14/18 09:34*	*06/20/18 01:27*	*1*
13C-1,2,3,6,7,8-HxCDF	*65*		*26 - 123*	*06/14/18 09:34*	*06/20/18 01:27*	*1*
13C-1,2,3,7,8,9-HxCDF	*71*		*29 - 147*	*06/14/18 09:34*	*06/20/18 01:27*	*1*
13C-1,2,3,7,8-PeCDD	*71*		*25 - 181*	*06/14/18 09:34*	*06/20/18 01:27*	*1*
13C-1,2,3,7,8-PeCDF	*70*		*24 - 185*	*06/14/18 09:34*	*06/20/18 01:27*	*1*
13C-2,3,4,6,7,8-HxCDF	*71*		*28 - 136*	*06/14/18 09:34*	*06/20/18 01:27*	*1*
13C-2,3,4,7,8-PeCDF	*68*		*21 - 178*	*06/14/18 09:34*	*06/20/18 01:27*	*1*
13C-2,3,7,8-TCDD	*65*		*25 - 164*	*06/14/18 09:34*	*06/20/18 01:27*	*1*
13C-2,3,7,8-TCDF	*73*		*24 - 169*	*06/14/18 09:34*	*06/20/18 01:27*	*1*
13C-OCDD	*67*		*17 - 157*	*06/14/18 09:34*	*06/20/18 01:27*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*109*		*35 - 197*	*06/14/18 09:34*	*06/20/18 01:27*	*1*

Lab Sample ID: LCS 320-229025/2-A
Matrix: Solid
Analysis Batch: 229940

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 229025

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.101		ug/Kg		101	70 - 140
1,2,3,4,6,7,8-HpCDF	0.100	0.104		ug/Kg		104	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.102		ug/Kg		102	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.0995		ug/Kg		99	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.100		ug/Kg		100	72 - 134

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

Lab Sample ID: LCS 320-229025/2-A
Matrix: Solid
Analysis Batch: 229940

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 229025

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,2,3,6,7,8-HxCDD			0.100	0.0999		ug/Kg		100	76 - 134		
1,2,3,6,7,8-HxCDF			0.100	0.102		ug/Kg		102	84 - 130		
1,2,3,7,8,9-HxCDD			0.100	0.105		ug/Kg		105	64 - 162		
1,2,3,7,8,9-HxCDF			0.100	0.100		ug/Kg		100	78 - 130		
1,2,3,7,8-PeCDD			0.100	0.0981		ug/Kg		98	70 - 142		
1,2,3,7,8-PeCDF			0.100	0.101		ug/Kg		101	80 - 134		
2,3,4,6,7,8-HxCDF			0.100	0.0996		ug/Kg		100	70 - 156		
2,3,4,7,8-PeCDF			0.100	0.102		ug/Kg		102	68 - 160		
2,3,7,8-TCDD			0.0200	0.0202		ug/Kg		101	67 - 158		
2,3,7,8-TCDF			0.0200	0.0198		ug/Kg		99	75 - 158		
OCDD			0.200	0.189		ug/Kg		94	78 - 144		
OCDF			0.200	0.176		ug/Kg		88	63 - 170		

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

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
37Cl4-2,3,7,8-TCDD	*104*		*31 - 191*

Lab Sample ID: LCSD 320-229025/3-A
Matrix: Solid
Analysis Batch: 229940

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 229025

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	0.103		ug/Kg		103	70 - 140	2	50
1,2,3,4,6,7,8-HpCDF			0.100	0.108		ug/Kg		108	82 - 122	4	50
1,2,3,4,7,8,9-HpCDF			0.100	0.103		ug/Kg		103	78 - 138	1	50
1,2,3,4,7,8-HxCDD			0.100	0.103		ug/Kg		103	70 - 164	3	50
1,2,3,4,7,8-HxCDF			0.100	0.102		ug/Kg		102	72 - 134	2	50
1,2,3,6,7,8-HxCDD			0.100	0.102		ug/Kg		102	76 - 134	3	50
1,2,3,6,7,8-HxCDF			0.100	0.104		ug/Kg		104	84 - 130	2	50
1,2,3,7,8,9-HxCDD			0.100	0.111		ug/Kg		111	64 - 162	5	50
1,2,3,7,8,9-HxCDF			0.100	0.103		ug/Kg		103	78 - 130	3	50
1,2,3,7,8-PeCDD			0.100	0.101		ug/Kg		101	70 - 142	2	50

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

Lab Sample ID: LCSD 320-229025/3-A
Matrix: Solid
Analysis Batch: 229940

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 229025

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,7,8-PeCDF			0.100	0.106		ug/Kg		106	80 - 134	5	50
2,3,4,6,7,8-HxCDF			0.100	0.104		ug/Kg		104	70 - 156	4	50
2,3,4,7,8-PeCDF			0.100	0.108		ug/Kg		108	68 - 160	6	50
2,3,7,8-TCDD			0.0200	0.0209		ug/Kg		105	67 - 158	4	50
2,3,7,8-TCDF			0.0200	0.0200		ug/Kg		100	75 - 158	1	50
OCDD			0.200	0.198		ug/Kg		99	78 - 144	5	50
OCDF			0.200	0.183		ug/Kg		92	63 - 170	4	50

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C-1,2,3,4,6,7,8-HpCDD	*71*		*26 - 166*
13C-1,2,3,4,6,7,8-HpCDF	*65*		*21 - 158*
13C-1,2,3,4,7,8,9-HpCDF	*70*		*20 - 186*
13C-1,2,3,4,7,8-HxCDD	*74*		*21 - 193*
13C-1,2,3,4,7,8-HxCDF	*74*		*19 - 202*
13C-1,2,3,6,7,8-HxCDD	*63*		*25 - 163*
13C-1,2,3,6,7,8-HxCDF	*67*		*21 - 159*
13C-1,2,3,7,8,9-HxCDF	*73*		*17 - 205*
13C-1,2,3,7,8-PeCDD	*71*		*21 - 227*
13C-1,2,3,7,8-PeCDF	*69*		*21 - 192*
13C-2,3,4,6,7,8-HxCDF	*72*		*22 - 176*
13C-2,3,4,7,8-PeCDF	*67*		*13 - 328*
13C-2,3,7,8-TCDD	*65*		*20 - 175*
13C-2,3,7,8-TCDF	*73*		*22 - 152*
13C-OCDD	*76*		*13 - 199*

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

Lab Chronicle

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

TestAmerica Job ID: 580-77797-2

Client Sample ID: PDI-SG-S204
Date Collected: 05/03/18 16:25
Date Received: 05/30/18 09:10

Lab Sample ID: 580-77797-1
Matrix: Solid
Percent Solids: 67.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		229025	06/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	230331	06/21/18 03:39	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			229025	06/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	229941	06/20/18 13:14	ALM	TAL SAC

Client Sample ID: PDI-SG-S147
Date Collected: 05/04/18 17:19
Date Received: 05/30/18 09:10

Lab Sample ID: 580-77797-2
Matrix: Solid
Percent Solids: 55.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		229025	06/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	230331	06/21/18 04:17	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			229025	06/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	229941	06/20/18 14:03	ALM	TAL SAC

Client Sample ID: PDI-SG-S084
Date Collected: 05/08/18 13:40
Date Received: 05/30/18 09:10

Lab Sample ID: 580-77797-3
Matrix: Solid
Percent Solids: 81.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			229025	06/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	229941	06/20/18 14:51	ALM	TAL SAC

Client Sample ID: PDI-SG-S090
Date Collected: 05/09/18 14:34
Date Received: 05/30/18 09:10

Lab Sample ID: 580-77797-4
Matrix: Solid
Percent Solids: 73.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			229025	06/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	229941	06/20/18 15:39	ALM	TAL SAC

Client Sample ID: PDI-SG-S010
Date Collected: 05/09/18 17:30
Date Received: 05/30/18 09:10

Lab Sample ID: 580-77797-5
Matrix: Solid
Percent Solids: 74.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		229025	06/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	230331	06/21/18 04:55	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			229025	06/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	229941	06/20/18 16:28	ALM	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 580-77797-2

Client Sample ID: PDI-SG-S255
Date Collected: 05/11/18 12:40
Date Received: 05/30/18 09:10

Lab Sample ID: 580-77797-6
Matrix: Solid
Percent Solids: 63.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			229025	06/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	229941	06/20/18 17:16	ALM	TAL SAC

Client Sample ID: PDI-SG-S097
Date Collected: 05/13/18 11:45
Date Received: 05/30/18 09:10

Lab Sample ID: 580-77797-7
Matrix: Solid
Percent Solids: 61.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		229025	06/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	230338	06/21/18 11:09	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			229025	06/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	229941	06/20/18 18:05	ALM	TAL SAC

Client Sample ID: PDI-SG-S115
Date Collected: 05/12/18 12:21
Date Received: 05/30/18 09:10

Lab Sample ID: 580-77797-8
Matrix: Solid
Percent Solids: 71.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		229025	06/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	230338	06/21/18 11:47	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			229025	06/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	229941	06/20/18 18:53	ALM	TAL SAC

Client Sample ID: PDI-SG-S078
Date Collected: 05/12/18 15:50
Date Received: 05/30/18 09:10

Lab Sample ID: 580-77797-9
Matrix: Solid
Percent Solids: 60.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		229025	06/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	230338	06/21/18 12:25	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			229025	06/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	229941	06/20/18 19:41	ALM	TAL SAC

Client Sample ID: PDI-SG-S135
Date Collected: 05/14/18 10:15
Date Received: 05/30/18 09:10

Lab Sample ID: 580-77797-10
Matrix: Solid
Percent Solids: 67.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		229025	06/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	230338	06/21/18 13:03	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			229025	06/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	229941	06/20/18 20:30	ALM	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 580-77797-2

Client Sample ID: PDI-SG-S157
Date Collected: 05/14/18 15:45
Date Received: 05/30/18 09:10

Lab Sample ID: 580-77797-11
Matrix: Solid
Percent Solids: 59.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		229025	06/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	230338	06/21/18 13:40	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			229025	06/14/18 09:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	229941	06/20/18 21:18	ALM	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: 580-77797-2
Project/Site: Portland Harbor Pre-Remedial Design

Laboratory: TestAmerica Seattle

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

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

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-020	01-20-21
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	08-31-18
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

Sample Summary

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

TestAmerica Job ID: 580-77797-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-77797-1	PDI-SG-S204	Solid	05/03/18 16:25	05/30/18 09:10
580-77797-2	PDI-SG-S147	Solid	05/04/18 17:19	05/30/18 09:10
580-77797-3	PDI-SG-S084	Solid	05/08/18 13:40	05/30/18 09:10
580-77797-4	PDI-SG-S090	Solid	05/09/18 14:34	05/30/18 09:10
580-77797-5	PDI-SG-S010	Solid	05/09/18 17:30	05/30/18 09:10
580-77797-6	PDI-SG-S255	Solid	05/11/18 12:40	05/30/18 09:10
580-77797-7	PDI-SG-S097	Solid	05/13/18 11:45	05/30/18 09:10
580-77797-8	PDI-SG-S115	Solid	05/12/18 12:21	05/30/18 09:10
580-77797-9	PDI-SG-S078	Solid	05/12/18 15:50	05/30/18 09:10
580-77797-10	PDI-SG-S135	Solid	05/14/18 10:15	05/30/18 09:10
580-77797-11	PDI-SG-S157	Solid	05/14/18 15:45	05/30/18 09:10

Loc: 580
77797

580-77797 Chain of Custody

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)	Site Contact: Jennifer Ray / Michaela McCoog Laboratory Contact: Elaine-Walker	5/25/2018 COC No: 3 Carrier: courier __1__ of __1__ pages
Client Contact AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1+(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Surface Sediment - SMA	☐ 21 days ☐ Other _____		

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Hold -20 C	PCB Congeners 1668A	PCDD/Fs 1613B	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060	Sample Specific Notes:
PDI-SG-S204	5/3/2018	16:25	SS			5	x	H	H	H	H	Frozen 5/3/18 08:00
PDI-SG-S147	5/4/2018	17:19	SS			5	x	H	H	H	H	Frozen 5/4/18 18:30
PDI-SG-S084	5/8/2018	13:40	SS			5	x	H	H	H	H	Frozen 5/8/18 18:20
PDI-SG-S090	5/9/2018	14:45	SS			5	x	H	H	H	H	Frozen 5/9/18 18:50
PDI-SG-S010	5/9/2018	17:30	SS			5	x	H	H	H	H	Frozen 5/9/18 18:50
PDI-SG-S255	5/11/2018	12:40	SS			5	x	H	H	H	H	Frozen 5/14/18 10:45
PDI-SG-S097	5/13/2018	11:45	SS			5	x	H	H	H	H	Frozen 5/13/18 18:45
PDI-SG-S115	5/12/2018	12:21	SS			5	x	H	H	H	H	Frozen 5/12/18 17:15
PDI-SG-S078	5/12/2018	15:50	SS			5	x	H	H	H	H	Frozen 5/12/18 17:15
~~PDI-SG-S155~~	~~5/14/2018~~	~~11:15~~	~~SS~~			~~5~~	x	H	H	H	H	Frozen 5/15/18 11:15
PDI-SG-S135	5/14/2018	10:15	SS			5	x	H	H	H	H	Frozen 5/15/18 11:15
PDI-SG-S157	5/14/2018	15:45	SS			5	x	H	H	H	H	Frozen 5/15/18 11:15

Analyze per AECOM 6/4/18 SW

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:
Please hold in freezer pending approval of analyses marked H.
Separate reports for each lab when analyzed

2.7, 2.3

	Company:	Date/Time:		Company:	Date/Time:
Relinquished by: Michael McCoog	AECOM	5-25-18	Received by:	M.E	5-25-18 1200
Relinquished by:	M.E	5-25-18 1240	Received by:	TABOR	5/25/18 1240
Relinquished by:	TA-Tac	5/29/18 1700	Received by: B. Hall	SEA TM	5/30/18 0910

IR4 = 0.0 / 0.2 w/c.s.
IR4 = -0.1 / 0.1 w/c.s.

TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Phone (253) 922-2310 Fax (253) 922-5047

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: 580-56129.1
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 #: 580-77797-2
Address: 880 Riverside Parkway, ,	Due Date Requested: 6/25/2018			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605	PO #:			
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	WO #:			
Email:	Project #: 58012120			
Project Name: Portland Harbor Pre-Remedial Design	SSOW#:			
Site:				

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1613B/HRMS_Sox_P (MOD) Full List w/o Totals	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
PDI-SG-S204 (580-77797-1)	5/3/18	16:25 Pacific		Solid			X	2	
* PDI-SG-S147 (580-77797-2)	5/4/18	17:19 Pacific		Solid			X	2	
* PDI-SG-S084 (580-77797-3)	5/8/18	13:40 Pacific		Solid			X	2	
PDI-SG-S090 (580-77797-4)	5/9/18	14:34 Pacific		Solid			X	2	
PDI-SG-S010 (580-77797-5)	5/9/18	17:30 Pacific		Solid			X	2	
PDI-SG-S255 (580-77797-6)	5/11/18	12:40 Pacific		Solid			X	2	
PDI-SG-S097 (580-77797-7)	5/13/18	11:45 Pacific		Solid			X	2	
PDI-SG-S115 (580-77797-8)	5/12/18	12:21 Pacific		Solid			X	2	
PDI-SG-S078 (580-77797-9)	5/12/18	15:50 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 complicance to TestAmerica Laboratories, Inc.

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

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

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Tam Sam	6/11/18			6/12/18 920	TAS
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 0.6c

* Received 1/2 container broken.

Ver: 09/20/2016

TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Phone (253) 922-2310 Fax (253) 922-5047

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: 580-56129.2
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 #: 580-77797-2
Address: 880 Riverside Parkway, ,	Due Date Requested: 6/25/2018			
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	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1613B/HRMS_Sox_P (MOD) Full List w/o Totals	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
PDI-SG-S135 (580-77797-10)	5/14/18	10:15 Pacific		Solid			X	2	
PDI-SG-S157 (580-77797-11)	5/14/18	15:45 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. 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
Tom Blanchard	6/11/18	TA-Sea		6/12/18 920	TA Sea
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:
		0.6

Ver: 09/20/2016

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-77797-2

Login Number: 77797
List Number: 1
Creator: Gall, Brandon A

List Source: TestAmerica Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Received project as a subcontract.
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	No Name on COC
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: 580-77797-2

Login Number: 77797
List Number: 3
Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

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	506468
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	
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.	False	2-B & 3-C Were received broken.
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	

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-77797-2

Login Number: 77797
List Number: 4
Creator: Gooch, Mayce

List Source: TestAmerica Sacramento
List Creation: 06/12/18 01:03 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	506468
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.6c
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.	False	Received broken. Transferred to new containers with minimal or no sample loss.
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: 580-77797-2

Login Number: 77797
List Number: 5
Creator: Gooch, Mayce

List Source: TestAmerica Sacramento
List Creation: 06/12/18 01:11 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	506468
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.6c
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.	False	Received broken. Transferred to new containers with minimal or no sample loss.
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

580-77797 Field Sheet

Job: _____

Tracking # 4463 1732 5152 SO / PO / FO / UPS / Other _____

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

Notes:

2-B Received w/
3-C
Broken Bottles
Replaced into lab
JDH

Therm. ID: AK-2 / AK-3 / AK-5 / AK-6 / HACCP / Other ____

Ice 1 Wet X Gel ____ Other ____

Cooler Custody Seal: 506468

Sample Custody Seal: —

Cooler ID: —

Temp: Observed 0.6c

From: Temp Blank ☒ Sample ☐

NCM Filed: Yes ☐ No ☐

	Yes	No	NA
Perchlorate has headspace?	☐	☐	☒
Alkalinity has no 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: JH Date: 6/4/18 Time 920

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

F2D in High Res

Isotope Dilution Summary

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

TestAmerica Job ID: 580-77797-2

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)
580-77797-1	PDI-SG-S204	55	46	38	72	78	63	70	68
580-77797-1 - RA	PDI-SG-S204								
580-77797-2	PDI-SG-S147	49	39	45	65	65	55	59	62
580-77797-2 - RA	PDI-SG-S147								
580-77797-3	PDI-SG-S084	59	50	60	67	65	58	58	66
580-77797-4	PDI-SG-S090	62	53	66	66	67	58	57	68
580-77797-5	PDI-SG-S010	69	61	70	72	72	58	60	71
580-77797-5 - RA	PDI-SG-S010								
580-77797-6	PDI-SG-S255	69	59	72	68	69	59	60	71
580-77797-7	PDI-SG-S097	51	40	50	57	57	48	50	60
580-77797-7 - RA	PDI-SG-S097								
580-77797-8	PDI-SG-S115	62	53	66	61	62	52	53	64
580-77797-8 - RA	PDI-SG-S115								
580-77797-9	PDI-SG-S078	57	44	50	61	64	55	55	64
580-77797-9 - RA	PDI-SG-S078								
580-77797-10	PDI-SG-S135	69	61	69	67	68	57	58	69
580-77797-10 - RA	PDI-SG-S135								
580-77797-11	PDI-SG-S157	65	52	61	68	68	59	58	71
580-77797-11 - RA	PDI-SG-S157								
MB 320-229025/1-A	Method Blank	64	61	64	72	72	64	65	71

		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)	
580-77797-1	PDI-SG-S204	73	73	72	74	66		58	
580-77797-1 - RA	PDI-SG-S204						75		
580-77797-2	PDI-SG-S147	61	60	61	63	56		54	
580-77797-2 - RA	PDI-SG-S147						64		
580-77797-3	PDI-SG-S084	65	63	67	64	59	70	63	
580-77797-4	PDI-SG-S090	66	65	66	67	63	74	62	
580-77797-5	PDI-SG-S010	63	62	67	65	61		75	
580-77797-5 - RA	PDI-SG-S010						70		
580-77797-6	PDI-SG-S255	66	65	69	66	63	75	74	
580-77797-7	PDI-SG-S097	54	55	57	57	56		49	
580-77797-7 - RA	PDI-SG-S097						63		
580-77797-8	PDI-SG-S115	57	59	62	61	60		62	
580-77797-8 - RA	PDI-SG-S115						68		
580-77797-9	PDI-SG-S078	61	60	63	62	60		60	
580-77797-9 - RA	PDI-SG-S078						71		
580-77797-10	PDI-SG-S135	62	62	67	63	61		74	
580-77797-10 - RA	PDI-SG-S135						72		
580-77797-11	PDI-SG-S157	66	65	67	67	64		68	
580-77797-11 - RA	PDI-SG-S157						71		
MB 320-229025/1-A	Method Blank	71	70	71	68	65	73	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 320-229025/2-A	Lab Control Sample	63	59	61	67	67	60	60	67
LCSD 320-229025/3-A	Lab Control Sample Dup	71	65	70	74	74	63	67	73

		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 320-229025/2-A	Lab Control Sample	64	63	66	63	60	64	68	
LCSD 320-229025/3-A	Lab Control Sample Dup	71	69	72	67	65	73	76	

Surrogate Legend

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