

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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TestAmerica Job ID: 580-79670-2

Client Project/Site: Portland Harbor Pre-Remedial Design

For:

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Authorized for release by:
9/11/2018 5:53:21 PM

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

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Case Narrative

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

TestAmerica Job ID: 580-79670-2

Job ID: 580-79670-2

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE

Client: AECOM

Project: Portland Harbor Pre-Remedial Design

Report Number: 580-79670-2

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

One sample was received on 8/17/2018 3:30 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.7° C.

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

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

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

DIOXIN/ FURAN

Sample PDI-SG-B307-BL1 (580-79670-1) was analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 09/04/2018 and analyzed on 09/08/2018.

Several analytes were detected in method blank MB 320-243668/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD and 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 10D5 exceeded this criteria: PDI-SG-B307-BL1 (580-79670-1), (CCV 320-244552/42), (CCV 320-244513/27), (LCS 320-243668/2-A), (LCSD 320-243668/3-A) and (MB 320-243668/1-A). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

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: 580-79670-2

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.

Glossary

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

Client Sample Results

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

TestAmerica Job ID: 580-79670-2

Client Sample ID: PDI-SG-B307-BL1

Date Collected: 08/16/18 16:06

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79670-1

Matrix: Solid

Percent Solids: 61.6

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.054	B	0.0041	0.00022	ug/Kg	☼	09/04/18 09:00	09/08/18 16:26	1
1,2,3,4,6,7,8-HpCDF	0.010	B q	0.0041	0.00014	ug/Kg	☼	09/04/18 09:00	09/08/18 16:26	1
1,2,3,4,7,8,9-HpCDF	0.0011	J B	0.0041	0.00023	ug/Kg	☼	09/04/18 09:00	09/08/18 16:26	1
1,2,3,4,7,8-HxCDD	0.00059	J B	0.0041	0.000045	ug/Kg	☼	09/04/18 09:00	09/08/18 16:26	1
1,2,3,4,7,8-HxCDF	0.0013	J B	0.0041	0.000085	ug/Kg	☼	09/04/18 09:00	09/08/18 16:26	1
1,2,3,6,7,8-HxCDD	0.0021	J	0.0041	0.000043	ug/Kg	☼	09/04/18 09:00	09/08/18 16:26	1
1,2,3,6,7,8-HxCDF	0.00065	J B	0.0041	0.000082	ug/Kg	☼	09/04/18 09:00	09/08/18 16:26	1
1,2,3,7,8,9-HxCDD	0.0015	J B	0.0041	0.000041	ug/Kg	☼	09/04/18 09:00	09/08/18 16:26	1
1,2,3,7,8,9-HxCDF	0.0019	J B	0.0041	0.000060	ug/Kg	☼	09/04/18 09:00	09/08/18 16:26	1
1,2,3,7,8-PeCDD	0.00031	J	0.0041	0.000051	ug/Kg	☼	09/04/18 09:00	09/08/18 16:26	1
1,2,3,7,8-PeCDF	0.00051	J B	0.0041	0.000066	ug/Kg	☼	09/04/18 09:00	09/08/18 16:26	1
2,3,4,6,7,8-HxCDF	0.00036	J	0.0041	0.000065	ug/Kg	☼	09/04/18 09:00	09/08/18 16:26	1
2,3,4,7,8-PeCDF	0.00038	J	0.0041	0.000072	ug/Kg	☼	09/04/18 09:00	09/08/18 16:26	1
2,3,7,8-TCDD	0.00016	J q	0.00081	0.000031	ug/Kg	☼	09/04/18 09:00	09/08/18 16:26	1
2,3,7,8-TCDF	0.00078	J B	0.00081	0.000031	ug/Kg	☼	09/04/18 09:00	09/08/18 16:26	1
OCDD	0.55	B	0.0081	0.00014	ug/Kg	☼	09/04/18 09:00	09/08/18 16:26	1
OCDF	0.052	B	0.0081	0.000057	ug/Kg	☼	09/04/18 09:00	09/08/18 16:26	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	65		23 - 140	09/04/18 09:00	09/08/18 16:26	1
13C-1,2,3,4,6,7,8-HpCDF	58		28 - 143	09/04/18 09:00	09/08/18 16:26	1
13C-1,2,3,4,7,8,9-HpCDF	48		26 - 138	09/04/18 09:00	09/08/18 16:26	1
13C-1,2,3,4,7,8-HxCDD	56		32 - 141	09/04/18 09:00	09/08/18 16:26	1
13C-1,2,3,4,7,8-HxCDF	61		26 - 152	09/04/18 09:00	09/08/18 16:26	1
13C-1,2,3,6,7,8-HxCDD	63		28 - 130	09/04/18 09:00	09/08/18 16:26	1
13C-1,2,3,6,7,8-HxCDF	62		26 - 123	09/04/18 09:00	09/08/18 16:26	1
13C-1,2,3,7,8,9-HxCDF	64		29 - 147	09/04/18 09:00	09/08/18 16:26	1
13C-1,2,3,7,8-PeCDD	54		25 - 181	09/04/18 09:00	09/08/18 16:26	1
13C-1,2,3,7,8-PeCDF	55		24 - 185	09/04/18 09:00	09/08/18 16:26	1
13C-2,3,4,6,7,8-HxCDF	64		28 - 136	09/04/18 09:00	09/08/18 16:26	1
13C-2,3,4,7,8-PeCDF	54		21 - 178	09/04/18 09:00	09/08/18 16:26	1
13C-2,3,7,8-TCDD	62		25 - 164	09/04/18 09:00	09/08/18 16:26	1
13C-2,3,7,8-TCDF	59		24 - 169	09/04/18 09:00	09/08/18 16:26	1
13C-OCDD	57		17 - 157	09/04/18 09:00	09/08/18 16:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	126		35 - 197	09/04/18 09:00	09/08/18 16:26	1

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79670-2

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

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

Matrix: Solid

Analysis Batch: 244513

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 243668

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

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	88		23 - 140	09/04/18 09:00	09/08/18 00:37	1
13C-1,2,3,4,6,7,8-HpCDF	83		28 - 143	09/04/18 09:00	09/08/18 00:37	1
13C-1,2,3,4,7,8,9-HpCDF	86		26 - 138	09/04/18 09:00	09/08/18 00:37	1
13C-1,2,3,4,7,8-HxCDD	68		32 - 141	09/04/18 09:00	09/08/18 00:37	1
13C-1,2,3,4,7,8-HxCDF	76		26 - 152	09/04/18 09:00	09/08/18 00:37	1
13C-1,2,3,6,7,8-HxCDD	71		28 - 130	09/04/18 09:00	09/08/18 00:37	1
13C-1,2,3,6,7,8-HxCDF	78		26 - 123	09/04/18 09:00	09/08/18 00:37	1
13C-1,2,3,7,8,9-HxCDF	76		29 - 147	09/04/18 09:00	09/08/18 00:37	1
13C-1,2,3,7,8-PeCDD	64		25 - 181	09/04/18 09:00	09/08/18 00:37	1
13C-1,2,3,7,8-PeCDF	65		24 - 185	09/04/18 09:00	09/08/18 00:37	1
13C-2,3,4,6,7,8-HxCDF	77		28 - 136	09/04/18 09:00	09/08/18 00:37	1
13C-2,3,4,7,8-PeCDF	63		21 - 178	09/04/18 09:00	09/08/18 00:37	1
13C-2,3,7,8-TCDD	73		25 - 164	09/04/18 09:00	09/08/18 00:37	1
13C-2,3,7,8-TCDF	69		24 - 169	09/04/18 09:00	09/08/18 00:37	1
13C-OCDD	80		17 - 157	09/04/18 09:00	09/08/18 00:37	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	123		35 - 197	09/04/18 09:00	09/08/18 00:37	1

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

Matrix: Solid

Analysis Batch: 244513

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 243668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.0998		ug/Kg		100	70 - 140
1,2,3,4,6,7,8-HpCDF	0.100	0.108		ug/Kg		108	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.109		ug/Kg		109	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.109		ug/Kg		109	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.110		ug/Kg		110	72 - 134

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79670-2

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

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

Matrix: Solid

Analysis Batch: 244513

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 243668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,6,7,8-HxCDD	0.100	0.109		ug/Kg		109	76 - 134
1,2,3,6,7,8-HxCDF	0.100	0.109		ug/Kg		109	84 - 130
1,2,3,7,8,9-HxCDD	0.100	0.116		ug/Kg		116	64 - 162
1,2,3,7,8,9-HxCDF	0.100	0.110		ug/Kg		110	78 - 130
1,2,3,7,8-PeCDD	0.100	0.102		ug/Kg		102	70 - 142
1,2,3,7,8-PeCDF	0.100	0.108		ug/Kg		108	80 - 134
2,3,4,6,7,8-HxCDF	0.100	0.111		ug/Kg		111	70 - 156
2,3,4,7,8-PeCDF	0.100	0.108		ug/Kg		108	68 - 160
2,3,7,8-TCDD	0.0200	0.0191		ug/Kg		96	67 - 158
2,3,7,8-TCDF	0.0200	0.0214		ug/Kg		107	75 - 158
OCDD	0.200	0.201		ug/Kg		100	78 - 144
OCDF	0.200	0.229		ug/Kg		114	63 - 170

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

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

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

Matrix: Solid

Analysis Batch: 244513

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 243668

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
1,2,3,4,6,7,8-HpCDD	0.100	0.0967		ug/Kg		97	70 - 140	3	50
1,2,3,4,6,7,8-HpCDF	0.100	0.102		ug/Kg		102	82 - 122	6	50
1,2,3,4,7,8,9-HpCDF	0.100	0.105		ug/Kg		105	78 - 138	4	50
1,2,3,4,7,8-HxCDD	0.100	0.104		ug/Kg		104	70 - 164	5	50
1,2,3,4,7,8-HxCDF	0.100	0.105		ug/Kg		105	72 - 134	4	50
1,2,3,6,7,8-HxCDD	0.100	0.104		ug/Kg		104	76 - 134	5	50
1,2,3,6,7,8-HxCDF	0.100	0.105		ug/Kg		105	84 - 130	3	50
1,2,3,7,8,9-HxCDD	0.100	0.117		ug/Kg		117	64 - 162	0	50
1,2,3,7,8,9-HxCDF	0.100	0.107		ug/Kg		107	78 - 130	3	50
1,2,3,7,8-PeCDD	0.100	0.0992		ug/Kg		99	70 - 142	3	50

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79670-2

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

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

Matrix: Solid

Analysis Batch: 244513

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 243668

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,7,8-PeCDF	0.100	0.105		ug/Kg		105	80 - 134	3	50
2,3,4,6,7,8-HxCDF	0.100	0.107		ug/Kg		107	70 - 156	4	50
2,3,4,7,8-PeCDF	0.100	0.104		ug/Kg		104	68 - 160	4	50
2,3,7,8-TCDD	0.0200	0.0183		ug/Kg		91	67 - 158	4	50
2,3,7,8-TCDF	0.0200	0.0208		ug/Kg		104	75 - 158	3	50
OCDD	0.200	0.196		ug/Kg		98	78 - 144	2	50
OCDF	0.200	0.223		ug/Kg		112	63 - 170	2	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	88		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	81		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	88		20 - 186
13C-1,2,3,4,7,8-HxCDD	65		21 - 193
13C-1,2,3,4,7,8-HxCDF	70		19 - 202
13C-1,2,3,6,7,8-HxCDD	70		25 - 163
13C-1,2,3,6,7,8-HxCDF	71		21 - 159
13C-1,2,3,7,8,9-HxCDF	77		17 - 205
13C-1,2,3,7,8-PeCDD	67		21 - 227
13C-1,2,3,7,8-PeCDF	67		21 - 192
13C-2,3,4,6,7,8-HxCDF	76		22 - 176
13C-2,3,4,7,8-PeCDF	63		13 - 328
13C-2,3,7,8-TCDD	74		20 - 175
13C-2,3,7,8-TCDF	71		22 - 152
13C-OCDD	80		13 - 199

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

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79670-2

Client Sample ID: PDI-SG-B307-BL1

Date Collected: 08/16/18 16:06

Date Received: 08/17/18 15:30

Lab Sample ID: 580-79670-1

Matrix: Solid

Percent Solids: 61.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			243668	09/04/18 09:00	SR1	TAL SAC
Total/NA	Analysis	1613B		1	244552	09/08/18 16:26	AS	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

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

TestAmerica Job ID: 580-79670-2

Laboratory: TestAmerica Seattle

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

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

Laboratory: TestAmerica Sacramento

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

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

TestAmerica Seattle

Sample Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79670-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-79670-1	PDI-SG-B307-BL1	Solid	08/16/18 16:06	08/17/18 15:30

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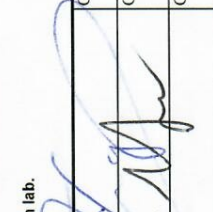
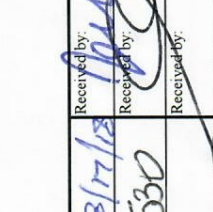
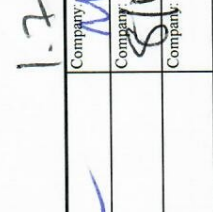
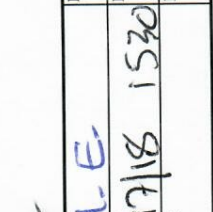
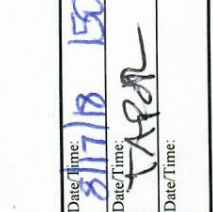
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SURFACE SEDIMENT CHAIN OF CUSTODY										
TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047			Client Contact AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1+(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Surface Sediment Sample Type: SRS			Project Contact: Amy Dahl / Chelsea Cook Tel: (206) 438-2261 / (206) 438-2010 Analysis Turnaround Time Calendar (C) or Work Days (W) ☒ 21 days ☐ Other			Site Contact: Jennifer Ray Laboratory Contact: Elaine-Walker Date: 8/17/18 Carrier: Courier COC No: 1 of 1 COCs	
 580-79670 Chain of Custody										
Sample Identification PDI-SG-B307-BL1			Sample Date 8/16/18	Sample Time 16:06	Matrix SS	QC Sample MM	Sampler's Initials MM	Total No. of Cont. 7	Fraction PCB Congeners 168A PCB Diols 1613B TPH Diesel, Metals, Mercury NWTPH-DX Grain size ASTM D7928/D6913 Total organic carbon, Total solids 9060 (104C & 70C) Archive Archive -20 C PAHs, BEHP, Tributyltin, 8270-SIM, 8270- L.L. Kron/Inger	Sample Specific Notes:
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 ☒ Archive For 12 Months							
Special Instructions/QC Requirements & Comments: Separate reports for each lab.										
Relinquished by:  Company: AECOM Date/Time: 8/17/18 1530	Received by:  Company: M.E. Date/Time: 8/17/18 1530	Relinquished by:  Company: M.E. Date/Time: 8/17/18 1530	Received by:  Company: M.E. Date/Time: 8/17/18 1530	Relinquished by:  Company: M.E. Date/Time: 8/17/18 1530	Received by:  Company: M.E. Date/Time: 8/17/18 1530	Relinquished by:  Company: M.E. Date/Time: 8/17/18 1530	Received by:  Company: M.E. Date/Time: 8/17/18 1530	Relinquished by:  Company: M.E. Date/Time: 8/17/18 1530	Received by:  Company: M.E. Date/Time: 8/17/18 1530	

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Ver: 09/20/2016

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-79670-2

Login Number: 79670

List Source: TestAmerica Seattle

List Number: 1

Creator: O'Connell, Jason I

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

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-79670-2

Login Number: 79670

List Number: 2

Creator: Gooch, Mayce

List Source: TestAmerica Sacramento

List Creation: 08/22/18 08:58 AM

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	5.2c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sacramento Sample Receiving Notes



Job: 580-79670 Field Sheet

Tracking # 442 3 0750 9620

SO / PO / FO / 2-Day / Ground / UPS / Courier / GSO /
OnTrac / Goldstreak / USPS / 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: Sample # D3
was received in a
large jar w/ broken
sample jar inside.
MG 8/21/18

#C1 sample was
received w/ cracked
lid. MG 8/21/18

D31 MG 8/21/18
NOT NEEDED!
MG 8/22/18

Therm. ID: AK-2 / AK-3 / AK-5 / AK-6 / HACCP / Other
(+0.7°C)

Ice ☒ Wet ☒ Gel ☐ Other ☐

Cooler Custody Seal: Seal

Sample Custody Seal: —

Cooler ID: 2 of 2

Temp: Observed 5.0 Corrected 5.7

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: GL Date: 8/21/18

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

F81A@910

Isotope Dilution Summary

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

TestAmerica Job ID: 580-79670-2

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)
580-79670-1	PDI-SG-B307-BL1	65	58	48	56	61	63	62	64
MB 320-243668/1-A	Method Blank	88	83	86	68	76	71	78	76

		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)	
580-79670-1	PDI-SG-B307-BL1	54	55	64	54	62	59	57	
MB 320-243668/1-A	Method Blank	64	65	77	63	73	69	80	

Surrogate Legend

HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HxDD = 13C-1,2,3,6,7,8-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 320-243668/2-A	Lab Control Sample	88	82	87	66	74	71	75	77
LCSD 320-243668/3-A	Lab Control Sample Dup	88	81	88	65	70	70	71	77

		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 320-243668/2-A	Lab Control Sample	66	66	77	63	72	70	80	
LCSD 320-243668/3-A	Lab Control Sample Dup	67	67	76	63	74	71	80	

Surrogate Legend

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

TestAmerica Seattle

Isotope Dilution Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79670-2

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

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