TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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Tacoma, WA 98424
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TestAmerica Job ID: 580-79946-3
Client Project/Site: Portland Harbor Pre-Remedial Design

For:
AECOM
1111 Third Ave
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Seattle, Washington 98101

Attn: Amy Dahl

M. Elaine Walker

Authorized for release by:
10/4/2018 5:00:23 PM

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Job ID: 580-79946-3

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE
Client: AECOM
Project: Portland Harbor Pre-Remedial Design
Report Number: 580-79946-3

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 8/29/2018 1:10 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.3º C.

The following sample was activated for all on hold analysis by the client on 9/18/18: PDI-SG-B478 (580-79946-1).

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

This report contains results for PCB Congeners by Method 1668A, performed at TestAmerica Knoxville.

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.

POLYCHLORINATED BIPHENYLS CONGENERS (PCBS)

Sample PDI-SG-B478 (580-79946-1) was analyzed for polychlorinated biphenyls congeners (PCBs) in accordance with EPA Method 1668A. The sample was prepared on 09/26/2018 and analyzed on 10/02/2018.

Several analytes were detected in method blank MB 140-23946/5-B at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

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

Qualifiers

Dioxin

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
C93	The compound co-eluted with PCB-93
C90	The compound co-eluted with PCB-90
C98	The compound co-eluted with PCB-98
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.
C	The compound co-eluted with other compounds
B	Compound was found in the blank and sample.
C86	The compound co-eluted with PCB-86
C110	The compound co-eluted with PCB-110
C85	The compound co-eluted with PCB-85
C108	The compound co-eluted with PCB-108
C12	The compound co-eluted with PCB-12
C129	The compound co-eluted with PCB-129
C139	The compound co-eluted with PCB-139
C134	The compound co-eluted with PCB-134
C147	The compound co-eluted with PCB-147
C135	The compound co-eluted with PCB-135
C156	The compound co-eluted with PCB-156
C128	The compound co-eluted with PCB-128
C153	The compound co-eluted with PCB-153
C171	The compound co-eluted with PCB-171
C183	The compound co-eluted with PCB-183
C180	The compound co-eluted with PCB-180
C198	The compound co-eluted with PCB-198
C20	The compound co-eluted with PCB-20
C26	The compound co-eluted with PCB-26
C18	The compound co-eluted with PCB-18
C21	The compound co-eluted with PCB-21
C40	The compound co-eluted with PCB-40
C44	The compound co-eluted with PCB-44
C45	The compound co-eluted with PCB-45
C50	The compound co-eluted with PCB-50
C59	The compound co-eluted with PCB-59
C49	The compound co-eluted with PCB-49
C61	The compound co-eluted with PCB-61
C43	The compound co-eluted with PCB-43
C88	The compound co-eluted with PCB-88
C83	The compound co-eluted with PCB-83

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

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
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-B478
Date Collected: 08/28/18 16:20
Date Received: 08/29/18 13:10

Lab Sample ID: 580-79946-1
Matrix: Solid
Percent Solids: 63.5

Method: 1668A - Chlorinated Biphenyl Congeners (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1	0.0010	J	0.0096	0.000094	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-2	0.0018	J q	0.0096	0.00010	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-3	0.00069	J q	0.0096	0.00011	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-4	0.0051	J q	0.019	0.00072	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-5	ND		0.0096	0.00062	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-6	0.0068	J	0.0096	0.00054	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-7	0.0011	J q	0.0096	0.00056	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-8	0.014	J	0.019	0.00050	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-9	0.0014	J	0.0096	0.00057	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-10	ND		0.0096	0.00061	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-11	0.015	J B	0.019	0.00053	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-12	0.0034	J C	0.019	0.00055	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-13	0.0034	J C12	0.019	0.00055	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-14	ND		0.0096	0.00047	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-15	0.0090	J	0.0096	0.00061	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-16	0.0089	J	0.0096	0.00014	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-17	0.010	q	0.0096	0.00012	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-18	0.024	C	0.019	0.00011	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-19	0.0024	J q	0.0096	0.00015	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-20	0.044	C B	0.019	0.00024	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-21	0.015	J C	0.019	0.00024	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-22	0.012		0.0096	0.00025	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-23	ND		0.0096	0.00025	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-24	ND		0.0096	0.00010	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-25	0.0061	J	0.0096	0.00023	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-26	0.0069	J C	0.019	0.00024	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-27	0.0021	J	0.0096	0.000091	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-28	0.044	B C20	0.019	0.00024	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-29	0.0069	J C26	0.019	0.00024	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-30	0.024	C18	0.019	0.00011	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-31	0.033		0.019	0.00024	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-32	0.0067	J q	0.0096	0.000087	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-33	0.015	J C21	0.019	0.00024	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-34	0.00060	J	0.0096	0.00026	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-35	0.0010	J	0.0096	0.00025	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-36	ND		0.0096	0.00024	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-37	0.0089	J q	0.0096	0.00025	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-38	ND		0.0096	0.00026	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-39	ND		0.0096	0.00023	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-40	0.022	J C B	0.029	0.00068	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-41	0.022	J B C40	0.029	0.00068	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-42	0.010		0.0096	0.00068	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-43	0.0012	J C	0.019	0.00063	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-44	0.050	C B	0.029	0.00060	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-45	0.0088	J C B	0.019	0.00071	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-46	ND		0.0096	0.00086	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-47	0.050	B C44	0.029	0.00060	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-48	0.0052	J q	0.0096	0.00067	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-49	0.032	C	0.019	0.00055	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1

Client Sample ID: PDI-SG-B478
Date Collected: 08/28/18 16:20
Date Received: 08/29/18 13:10

Lab Sample ID: 580-79946-1
Matrix: Solid
Percent Solids: 63.5

Method: 1668A - Chlorinated Biphenyl Congeners (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-50	0.0050	J C	0.019	0.00066	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-51	0.0088	J C45 B	0.019	0.00071	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-52	0.050	B	0.0096	0.00067	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-53	0.0050	J C50	0.019	0.00066	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-54	ND		0.0096	0.000016	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-55	ND		0.0096	0.00049	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-56	0.017		0.0096	0.00049	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-57	ND		0.0096	0.00050	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-58	ND		0.0096	0.00051	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-59	0.0039	J C	0.029	0.00048	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-60	0.0076	J B q	0.0096	0.00050	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-61	0.070	C B	0.039	0.00047	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-62	0.0039	J C59	0.029	0.00048	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-63	0.0017	J	0.0096	0.00046	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-64	0.017	B	0.0096	0.00045	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-65	0.050	B C44	0.029	0.00060	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-66	0.041	B	0.0096	0.00047	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-67	0.0011	J q	0.0096	0.00043	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-68	0.0022	J B	0.0096	0.00044	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-69	0.032	C49	0.019	0.00055	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-70	0.070	C61 B	0.039	0.00047	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-71	0.022	J B C40	0.029	0.00068	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-72	0.0012	J	0.0096	0.00049	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-73	0.0012	J C43	0.019	0.00063	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-74	0.070	C61 B	0.039	0.00047	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-75	0.0039	J C59	0.029	0.00048	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-76	0.070	C61 B	0.039	0.00047	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-77	0.0041	J B	0.0096	0.00047	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-78	ND		0.0096	0.00051	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-79	ND		0.0096	0.00044	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-80	ND		0.0096	0.00043	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-81	ND		0.0096	0.00046	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-82	0.0066	J q	0.0096	0.00014	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-83	0.055	C	0.019	0.00013	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-84	0.018		0.0096	0.00014	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-85	0.014	J C	0.029	0.00010	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-86	0.043	J C B	0.058	0.00010	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-87	0.043	J B C86	0.058	0.00010	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-88	0.014	J C	0.019	0.00012	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-89	ND		0.0096	0.00014	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-90	0.072	C	0.029	0.00010	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-91	0.014	J C88	0.019	0.00012	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-92	0.015		0.0096	0.00012	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-93	ND	C	0.019	0.00012	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-94	ND		0.0096	0.00014	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-95	0.056	B	0.0096	0.00013	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-96	ND		0.0096	0.00010	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-97	0.043	J B C86	0.058	0.00010	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-98	0.0016	J C q	0.019	0.00012	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1

Client Sample ID: PDI-SG-B478
Date Collected: 08/28/18 16:20
Date Received: 08/29/18 13:10

Lab Sample ID: 580-79946-1
Matrix: Solid
Percent Solids: 63.5

Method: 1668A - Chlorinated Biphenyl Congeners (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-99	**0.055**	**C83**	0.019	0.00013	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-100	ND	C93	0.019	0.00012	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-101	**0.072**	**C90**	0.029	0.00010	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-102	**0.0016**	**J C98 q**	0.019	0.00012	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-103	**0.0021**	**J**	0.0096	0.00012	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-104	ND		0.0096	0.000091	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-105	**0.021**		0.0096	0.00045	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-106	ND		0.0096	0.00046	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-107	**0.0069**	**J**	0.0096	0.00050	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-108	**0.0023**	**J C**	0.019	0.00048	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-109	**0.043**	**J B C86**	0.058	0.00010	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-110	**0.081**	**C B**	0.019	0.000087	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-111	ND		0.0096	0.000084	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-112	ND		0.0096	0.000089	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-113	**0.072**	**C90**	0.029	0.00010	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-114	ND		0.0096	0.00045	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-115	**0.081**	**B C110**	0.019	0.000087	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-116	**0.014**	**J C85**	0.029	0.00010	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-117	**0.014**	**J C85**	0.029	0.00010	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-118	**0.060**	**B**	0.0096	0.00043	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-119	**0.043**	**J B C86**	0.058	0.00010	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-120	**0.00093**	**J q**	0.0096	0.000085	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-121	ND		0.0096	0.000088	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-122	ND		0.0096	0.00053	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-123	**0.0013**	**J q**	0.0096	0.00044	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-124	**0.0023**	**J C108**	0.019	0.00048	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-125	**0.043**	**J B C86**	0.058	0.00010	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-126	ND		0.0096	0.00049	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-127	ND		0.0096	0.00046	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-128	**0.015**	**J C**	0.019	0.00047	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-129	**0.092**	**C**	0.039	0.00048	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-130	**0.0065**	**J**	0.0096	0.00064	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-131	ND		0.0096	0.00066	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-132	**0.025**		0.0096	0.00062	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-133	ND		0.0096	0.00060	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-134	**0.0038**	**J C q**	0.019	0.00063	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-135	**0.027**	**C**	0.019	0.000038	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-136	**0.0090**	**J**	0.0096	0.000028	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-137	**0.0037**	**J q**	0.0096	0.00054	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-138	**0.092**	**C129**	0.039	0.00048	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-139	**0.0016**	**J C q**	0.019	0.00054	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-140	**0.0016**	**J C139 q**	0.019	0.00054	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-141	**0.014**		0.0096	0.00056	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-142	ND		0.0096	0.00060	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-143	**0.0038**	**J C134 q**	0.019	0.00063	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-144	**0.0022**	**J q**	0.0096	0.000035	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-145	ND		0.0096	0.000026	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-146	**0.017**		0.0096	0.00053	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-147	**0.077**	**C B**	0.019	0.00061	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1

Client Sample ID: PDI-SG-B478
Date Collected: 08/28/18 16:20
Date Received: 08/29/18 13:10

Lab Sample ID: 580-79946-1
Matrix: Solid
Percent Solids: 63.5

Method: 1668A - Chlorinated Biphenyl Congeners (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-148	0.00046	J	0.0096	0.000037	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-149	0.077	B C147	0.019	0.00061	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-150	0.00033	J	0.0096	0.000025	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-151	0.027	C135	0.019	0.000038	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-152	ND		0.0096	0.000027	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-153	0.081	C	0.019	0.00042	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-154	0.0016	J q	0.0096	0.000030	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-155	ND		0.0096	0.000025	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-156	0.0096	J C B	0.019	0.00050	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-157	0.0096	J C156 B	0.019	0.00050	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-158	0.0070	J q	0.0096	0.00038	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-159	ND		0.0096	0.00040	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-160	0.092	C129	0.039	0.00048	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-161	ND		0.0096	0.00040	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-162	ND		0.0096	0.00039	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-163	0.092	C129	0.039	0.00048	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-164	0.0061	J	0.0096	0.00042	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-165	ND		0.0096	0.00045	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-166	0.015	J C128	0.019	0.00047	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-167	0.0033	J	0.0096	0.00032	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-168	0.081	C153	0.019	0.00042	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-169	ND		0.0096	0.00030	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-170	0.020		0.0096	0.00013	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-171	0.0048	J C q	0.019	0.00013	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-172	0.0034	J	0.0096	0.00013	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-173	0.0048	J C171 q	0.019	0.00013	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-174	0.020	q	0.0096	0.00012	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-175	0.00057	J q	0.0096	0.00012	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-176	0.0022	J q	0.0096	0.000090	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-177	0.012		0.0096	0.00013	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-178	0.0045	J q	0.0096	0.00013	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-179	0.010		0.0096	0.000095	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-180	0.040	C	0.019	0.000099	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-181	0.00058	J	0.0096	0.00012	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-182	ND		0.0096	0.00011	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-183	0.013	J C	0.019	0.00012	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-184	ND		0.0096	0.000097	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-185	0.013	J C183	0.019	0.00012	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-186	ND		0.0096	0.000094	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-187	0.031		0.0096	0.00011	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-188	ND		0.0096	0.000085	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-189	ND		0.0096	0.00060	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-190	0.0042	J B	0.0096	0.000086	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-191	0.00066	J q	0.0096	0.000089	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-192	ND		0.0096	0.00010	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-193	0.040	C180	0.019	0.000099	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-194	0.011		0.0096	0.00024	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-195	0.0037	J q	0.0096	0.00027	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-196	0.0030	J q	0.0096	0.000044	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1

Client Sample ID: PDI-SG-B478
Date Collected: 08/28/18 16:20
Date Received: 08/29/18 13:10

Lab Sample ID: 580-79946-1
Matrix: Solid
Percent Solids: 63.5

Method: 1668A - Chlorinated Biphenyl Congeners (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-197	**0.00030**	**J q**	0.0096	0.000034	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-198	**0.012**	**J C B**	0.019	0.000045	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-199	**0.012**	**J C198 B**	0.019	0.000045	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-200	**0.0013**	**J**	0.0096	0.000030	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-201	**0.0019**	**J**	0.0096	0.000031	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-202	**0.0032**	**J**	0.0096	0.000035	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-203	**0.0080**	**J**	0.0096	0.000040	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-204	ND		0.0096	0.000034	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-205	ND		0.0096	0.00021	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-206	**0.0071**	**J**	0.0096	0.00062	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-207	ND		0.0096	0.00046	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-208	**0.0024**	**J**	0.0096	0.00048	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1
PCB-209	**0.0095**	**J**	0.0096	0.0000093	ng/g	☼	09/26/18 07:20	10/02/18 17:14	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
PCB-1L	*78*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-3L	*83*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-4L	*77*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-15L	*72*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-19L	*93*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-37L	*88*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-54L	*91*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-77L	*92*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-81L	*92*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-104L	*81*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-105L	*91*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-114L	*88*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-118L	*90*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-123L	*91*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-126L	*87*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-155L	*85*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-156L	*92*	*C*	*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-157L	*92*	*C156*	*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-167L	*91*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-169L	*95*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-170L	*93*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-188L	*96*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-189L	*93*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-202L	*105*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-205L	*78*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-206L	*81*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-208L	*81*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-209L	*73*		*30 - 140*	*09/26/18 07:20*	*10/02/18 17:14*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
PCB-28L	*95*		*40 - 125*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-111L	*92*		*40 - 125*	*09/26/18 07:20*	*10/02/18 17:14*	*1*
PCB-178L	*102*		*40 - 125*	*09/26/18 07:20*	*10/02/18 17:14*	*1*

Method: 1668A - Chlorinated Biphenyl Congeners (HRGC/HRMS)

Lab Sample ID: MB 140-23946/5-B
Matrix: Solid
Analysis Batch: 24085

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 23946

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1	ND		0.010	0.000078	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-2	ND		0.010	0.000089	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-3	ND		0.010	0.000096	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-4	ND		0.020	0.0049	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-5	ND		0.010	0.0040	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-6	ND		0.010	0.0035	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-7	ND		0.010	0.0036	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-8	ND		0.020	0.0032	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-9	ND		0.010	0.0037	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-10	ND		0.010	0.0039	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-11	0.00366	J q	0.020	0.0034	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-12	ND	C	0.020	0.0035	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-13	ND	C12	0.020	0.0035	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-14	ND		0.010	0.0030	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-15	ND		0.010	0.0037	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-16	ND		0.010	0.00097	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-17	ND		0.010	0.00087	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-18	ND	C	0.020	0.00077	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-19	ND		0.010	0.0011	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-20	0.00582	J C	0.020	0.00068	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-21	ND	C	0.020	0.00067	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-22	ND		0.010	0.00070	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-23	ND		0.010	0.00069	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-24	ND		0.010	0.00073	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-25	ND		0.010	0.00063	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-26	ND	C	0.020	0.00067	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-27	ND		0.010	0.00064	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-28	0.00582	J C20	0.020	0.00068	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-29	ND	C26	0.020	0.00067	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-30	ND	C18	0.020	0.00077	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-31	ND		0.020	0.00067	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-32	ND		0.010	0.00061	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-33	ND	C21	0.020	0.00067	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-34	ND		0.010	0.00072	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-35	ND		0.010	0.00070	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-36	ND		0.010	0.00067	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-37	ND		0.010	0.00070	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-38	ND		0.010	0.00073	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-39	ND		0.010	0.00065	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-40	0.00232	J C	0.030	0.00044	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-41	0.00232	J C40	0.030	0.00044	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-42	ND		0.010	0.00044	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-43	ND	C	0.020	0.00041	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-44	0.00750	J C	0.030	0.00039	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-45	0.00248	J C	0.020	0.00046	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-46	ND		0.010	0.00056	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-47	0.00750	J C44	0.030	0.00039	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-48	ND		0.010	0.00044	ng/g		09/26/18 07:20	10/01/18 12:29	1

Method: 1668A - Chlorinated Biphenyl Congeners (HRGC/HRMS) (Continued)

Lab Sample ID: MB 140-23946/5-B
Matrix: Solid
Analysis Batch: 24085

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 23946

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-49	ND	C	0.020	0.00036	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-50	ND	C	0.020	0.00043	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-51	0.00248	J C45	0.020	0.00046	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-52	0.00262	J q	0.010	0.00044	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-53	ND	C50	0.020	0.00043	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-54	ND		0.010	0.000046	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-55	ND		0.010	0.00032	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-56	ND		0.010	0.00032	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-57	ND		0.010	0.00033	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-58	ND		0.010	0.00033	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-59	ND	C	0.030	0.00031	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-60	0.000849	J q	0.010	0.00033	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-61	0.00522	J C	0.040	0.00031	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-62	ND	C59	0.030	0.00031	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-63	ND		0.010	0.00030	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-64	0.00103	J q	0.010	0.00029	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-65	0.00750	J C44	0.030	0.00039	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-66	0.00257	J	0.010	0.00031	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-67	ND		0.010	0.00028	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-68	0.00179	J	0.010	0.00029	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-69	ND	C49	0.020	0.00036	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-70	0.00522	J C61	0.040	0.00031	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-71	0.00232	J C40	0.030	0.00044	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-72	ND		0.010	0.00032	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-73	ND	C43	0.020	0.00041	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-74	0.00522	J C61	0.040	0.00031	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-75	ND	C59	0.030	0.00031	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-76	0.00522	J C61	0.040	0.00031	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-77	0.000868	J q	0.010	0.00031	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-78	ND		0.010	0.00033	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-79	ND		0.010	0.00029	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-80	ND		0.010	0.00028	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-81	ND		0.010	0.00030	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-82	ND		0.010	0.00016	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-83	ND	C	0.020	0.00015	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-84	ND		0.010	0.00016	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-85	ND	C	0.030	0.00012	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-86	0.00273	J C	0.060	0.00012	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-87	0.00273	J C86	0.060	0.00012	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-88	ND	C	0.020	0.00015	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-89	ND		0.010	0.00016	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-90	ND	C	0.030	0.00012	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-91	ND	C88	0.020	0.00015	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-92	ND		0.010	0.00014	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-93	ND	C	0.020	0.00014	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-94	ND		0.010	0.00016	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-95	0.00214	J	0.010	0.00015	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-96	ND		0.010	0.00012	ng/g		09/26/18 07:20	10/01/18 12:29	1

Method: 1668A - Chlorinated Biphenyl Congeners (HRGC/HRMS) (Continued)

Lab Sample ID: MB 140-23946/5-B
Matrix: Solid
Analysis Batch: 24085

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 23946

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-97	0.00273	J C86	0.060	0.00012	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-98	ND	C	0.020	0.00014	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-99	ND	C83	0.020	0.00015	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-100	ND	C93	0.020	0.00014	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-101	ND	C90	0.030	0.00012	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-102	ND	C98	0.020	0.00014	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-103	ND		0.010	0.00014	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-104	ND		0.010	0.00011	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-105	ND		0.010	0.00020	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-106	ND		0.010	0.00022	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-107	ND		0.010	0.00024	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-108	ND	C	0.020	0.00023	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-109	0.00273	J C86	0.060	0.00012	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-110	0.00264	J q C	0.020	0.00010	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-111	ND		0.010	0.000099	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-112	ND		0.010	0.00010	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-113	ND	C90	0.030	0.00012	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-114	ND		0.010	0.00021	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-115	0.00264	J q C110	0.020	0.00010	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-116	ND	C85	0.030	0.00012	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-117	ND	C85	0.030	0.00012	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-118	0.00230	J q	0.010	0.00022	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-119	0.00273	J C86	0.060	0.00012	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-120	ND		0.010	0.00010	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-121	ND		0.010	0.00010	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-122	ND		0.010	0.00026	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-123	ND		0.010	0.00023	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-124	ND	C108	0.020	0.00023	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-125	0.00273	J C86	0.060	0.00012	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-126	0.00115	J	0.010	0.00023	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-127	ND		0.010	0.00022	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-128	ND	C	0.020	0.00051	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-129	ND	C	0.040	0.00053	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-130	ND		0.010	0.00070	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-131	ND		0.010	0.00073	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-132	ND		0.010	0.00068	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-133	ND		0.010	0.00066	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-134	ND	C	0.020	0.00069	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-135	ND	C	0.020	0.000057	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-136	ND		0.010	0.000041	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-137	ND		0.010	0.00060	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-138	ND	C129	0.040	0.00053	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-139	ND	C	0.020	0.00059	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-140	ND	C139	0.020	0.00059	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-141	ND		0.010	0.00062	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-142	ND		0.010	0.00066	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-143	ND	C134	0.020	0.00069	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-144	ND		0.010	0.000052	ng/g		09/26/18 07:20	10/01/18 12:29	1

Method: 1668A - Chlorinated Biphenyl Congeners (HRGC/HRMS) (Continued)

Lab Sample ID: MB 140-23946/5-B
Matrix: Solid
Analysis Batch: 24085

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 23946

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-145	ND		0.010	0.000039	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-146	ND		0.010	0.00058	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-147	0.00120	J q C	0.020	0.00067	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-148	ND		0.010	0.000055	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-149	0.00120	J q C147	0.020	0.00067	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-150	ND		0.010	0.000037	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-151	ND	C135	0.020	0.000057	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-152	ND		0.010	0.000040	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-153	ND	C	0.020	0.00046	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-154	ND		0.010	0.000044	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-155	ND		0.010	0.000037	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-156	0.00184	J q C	0.020	0.00054	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-157	0.00184	J q C156	0.020	0.00054	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-158	ND		0.010	0.00042	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-159	ND		0.010	0.00044	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-160	ND	C129	0.040	0.00053	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-161	ND		0.010	0.00044	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-162	ND		0.010	0.00043	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-163	ND	C129	0.040	0.00053	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-164	ND		0.010	0.00046	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-165	ND		0.010	0.00050	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-166	ND	C128	0.020	0.00051	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-167	ND		0.010	0.00036	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-168	ND	C153	0.020	0.00046	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-169	0.00124	J q	0.010	0.00033	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-170	ND		0.010	0.00012	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-171	ND	C	0.020	0.00013	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-172	ND		0.010	0.00012	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-173	ND	C171	0.020	0.00013	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-174	ND		0.010	0.00012	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-175	ND		0.010	0.00011	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-176	ND		0.010	0.000086	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-177	ND		0.010	0.00012	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-178	ND		0.010	0.00012	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-179	ND		0.010	0.000091	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-180	ND	C	0.020	0.000095	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-181	ND		0.010	0.00011	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-182	ND		0.010	0.00011	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-183	ND	C	0.020	0.00011	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-184	ND		0.010	0.000093	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-185	ND	C183	0.020	0.00011	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-186	ND		0.010	0.000090	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-187	ND		0.010	0.00011	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-188	ND		0.010	0.000082	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-189	0.00114	J	0.010	0.00016	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-190	0.00109	J	0.010	0.000082	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-191	ND		0.010	0.000085	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-192	ND		0.010	0.000095	ng/g		09/26/18 07:20	10/01/18 12:29	1

Method: 1668A - Chlorinated Biphenyl Congeners (HRGC/HRMS) (Continued)

Lab Sample ID: MB 140-23946/5-B
Matrix: Solid
Analysis Batch: 24085

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 23946

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-193	ND	C180	0.020	0.000095	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-194	ND		0.010	0.00029	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-195	ND		0.010	0.00031	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-196	ND		0.010	0.000068	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-197	ND		0.010	0.000052	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-198	0.00147	J q C	0.020	0.000069	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-199	0.00147	J q C198	0.020	0.000069	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-200	ND		0.010	0.000046	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-201	ND		0.010	0.000048	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-202	ND		0.010	0.000053	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-203	ND		0.010	0.000062	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-204	ND		0.010	0.000052	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-205	ND		0.010	0.00024	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-206	ND		0.010	0.0018	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-207	ND		0.010	0.0013	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-208	ND		0.010	0.0014	ng/g		09/26/18 07:20	10/01/18 12:29	1
PCB-209	ND		0.010	0.00017	ng/g		09/26/18 07:20	10/01/18 12:29	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
PCB-1L	*60*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-3L	*61*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-4L	*76*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-15L	*79*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-19L	*86*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-37L	*79*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-54L	*80*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-77L	*85*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-81L	*85*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-104L	*79*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-105L	*89*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-114L	*80*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-118L	*80*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-123L	*78*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-126L	*86*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-155L	*91*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-156L	*90*	*C*	*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-157L	*90*	*C156*	*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-167L	*89*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-169L	*97*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-170L	*92*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-188L	*90*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-189L	*76*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-202L	*107*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-205L	*77*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-206L	*98*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-208L	*97*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*
PCB-209L	*102*		*30 - 140*	*09/26/18 07:20*	*10/01/18 12:29*	*1*

Method: 1668A - Chlorinated Biphenyl Congeners (HRGC/HRMS) (Continued)

Lab Sample ID: MB 140-23946/5-B
Matrix: Solid
Analysis Batch: 24085

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 23946

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
PCB-28L	96		40 - 125	09/26/18 07:20	10/01/18 12:29	1
PCB-111L	95		40 - 125	09/26/18 07:20	10/01/18 12:29	1
PCB-178L	96		40 - 125	09/26/18 07:20	10/01/18 12:29	1

Lab Sample ID: LCS 140-23946/6-B
Matrix: Solid
Analysis Batch: 24085

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 23946

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-1	0.500	0.384		ng/g		77	50 - 150
PCB-3	0.500	0.400		ng/g		80	50 - 150
PCB-4	0.500	0.461		ng/g		92	50 - 150
PCB-15	0.500	0.446		ng/g		89	50 - 150
PCB-19	0.500	0.539		ng/g		108	50 - 150
PCB-37	0.500	0.465		ng/g		93	50 - 150
PCB-54	0.500	0.498		ng/g		100	50 - 150
PCB-77	0.500	0.446		ng/g		89	50 - 150
PCB-81	0.500	0.428		ng/g		86	50 - 150
PCB-104	0.500	0.501		ng/g		100	50 - 150
PCB-105	0.500	0.477		ng/g		95	50 - 150
PCB-114	0.500	0.526		ng/g		105	50 - 150
PCB-118	0.500	0.490		ng/g		98	50 - 150
PCB-123	0.500	0.535		ng/g		107	50 - 150
PCB-126	0.500	0.517		ng/g		103	50 - 150
PCB-155	0.500	0.516		ng/g		103	50 - 150
PCB-156	1.00	1.01	C	ng/g		101	50 - 150
PCB-157	1.00	1.01	C156	ng/g		101	50 - 150
PCB-167	0.500	0.501		ng/g		100	50 - 150
PCB-169	0.500	0.446		ng/g		89	50 - 150
PCB-188	0.500	0.493		ng/g		99	50 - 150
PCB-189	0.500	0.492		ng/g		98	50 - 150
PCB-202	0.500	0.458		ng/g		92	50 - 150
PCB-205	0.500	0.548		ng/g		110	50 - 150
PCB-206	0.500	0.496		ng/g		99	50 - 150
PCB-208	0.500	0.479		ng/g		96	50 - 150
PCB-209	0.500	0.525		ng/g		105	50 - 150

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
PCB-1L	60		30 - 140
PCB-3L	60		30 - 140
PCB-4L	74		30 - 140
PCB-15L	80		30 - 140
PCB-19L	83		30 - 140
PCB-37L	84		30 - 140
PCB-54L	83		30 - 140
PCB-77L	87		30 - 140
PCB-81L	86		30 - 140
PCB-104L	74		30 - 140

Method: 1668A - Chlorinated Biphenyl Congeners (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 140-23946/6-B
Matrix: Solid
Analysis Batch: 24085

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 23946

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
PCB-105L	87		30 - 140
PCB-114L	83		30 - 140
PCB-118L	83		30 - 140
PCB-123L	82		30 - 140
PCB-126L	84		30 - 140
PCB-155L	85		30 - 140
PCB-156L	88	C	30 - 140
PCB-157L	88	C156	30 - 140
PCB-167L	87		30 - 140
PCB-169L	93		30 - 140
PCB-170L	87		30 - 140
PCB-188L	87		30 - 140
PCB-189L	73		30 - 140
PCB-202L	101		30 - 140
PCB-205L	75		30 - 140
PCB-206L	89		30 - 140
PCB-208L	90		30 - 140
PCB-209L	93		30 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
PCB-28L	90		40 - 125
PCB-111L	88		40 - 125
PCB-178L	93		40 - 125

Lab Chronicle

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

TestAmerica Job ID: 580-79946-3

Client Sample ID: PDI-SG-B478
Date Collected: 08/28/18 16:20
Date Received: 08/29/18 13:10

Lab Sample ID: 580-79946-1
Matrix: Solid
Percent Solids: 63.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			23946	09/26/18 07:20	BRS	TAL KNX
Total/NA	Cleanup	Split			23996	09/27/18 09:45	EBS	TAL KNX
Total/NA	Analysis	1668A		1	24114	10/02/18 17:14	JMN	TAL KNX

Laboratory References:

TAL KNX = TestAmerica Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

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

TestAmerica Job ID: 580-79946-3

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 Knoxville

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
	AFCEE		N/A	
ANAB	DoD ELAP		L2311	02-13-19
Arkansas DEQ	State Program	6	88-0688	06-16-19
California	State Program	9	2423	06-30-19
Colorado	State Program	8	TN00009	02-28-19
Connecticut	State Program	1	PH-0223	09-30-19
Florida	NELAP	4	E87177	06-30-19
Georgia	State Program	4	906	04-13-20
Hawaii	State Program	9	N/A	04-13-19
Kansas	NELAP	7	E-10349	10-31-18
Kentucky (DW)	State Program	4	90101	12-31-18
Louisiana	NELAP	6	83979	06-30-19
Louisiana (DW)	NELAP	6	LA160005	12-31-18
Maryland	State Program	3	277	03-31-19
Michigan	State Program	5	9933	04-13-20
Nevada	State Program	9	TN00009	07-31-19
New Jersey	NELAP	2	TN001	06-30-19
New York	NELAP	2	10781	03-31-19
North Carolina (DW)	State Program	4	21705	07-31-19
North Carolina (WW/SW)	State Program	4	64	12-31-18
Ohio VAP	State Program	5	CL0059	08-28-20
Oklahoma	State Program	6	9415	08-31-19
Oregon	NELAP	10	TNI0189	01-01-19
Pennsylvania	NELAP	3	68-00576	12-31-18
Tennessee	State Program	4	2014	04-13-20
Texas	NELAP	6	T104704380-16-9	08-31-19
US Fish & Wildlife	Federal		LE-058448-0	07-31-19
USDA	Federal		P330-16-00262	08-20-19
Utah	NELAP	8	TN00009	07-31-18 *
Virginia	NELAP	3	460176	09-14-19
Washington	State Program	10	C593	01-19-19
West Virginia (DW)	State Program	3	9955C	12-31-18
West Virginia DEP	State Program	3	345	04-30-19
Wisconsin	State Program	5	998044300	08-31-19

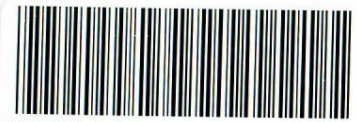
* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Sample Summary

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

TestAmerica Job ID: 580-79946-3

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-79946-1	PDI-SG-B478	Solid	08/28/18 16:20	08/29/18 13:10


580-79946 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**	**Site Contact: Jennifer Ray** **Laboratory Contact: Elaine-Walker**	**8/29/2018** COC No: 2 **Carrier: Courier** ___1___ of ___1___ COCs
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 Water Sample Type: D/U	**Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ ☐ 21 days ☒ Other _ASAP_____		

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 1668A	PCDD/Fs 1613B	TPH Diesel, Metals, Mercury NWTPH-Dx, 6020B, 7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060 (104C & 70C)	Archive Archive -20 C	PAHs, BEHP, Tributyltin, 8270-SIM, 8270-LL, Kron/Unger	Sample Specific Notes:
PDI-SG-B478	8/28/2018	16:20	SS		MT	7		H	H	H	x	H	H	H	

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 ☒ Disposal By Lab ☒ Archive For **12** Months

Special Instructions/QC Requirements & Comments:
Analyze samples for grain size ASAP, Hold (H) remaining analyses pending further instruction.
Separate reports for each lab.

2.3

Relinquished by:	Company: AECOM	Date/Time: 8/29/18 1230	Received by:	Company: M.E.	Date/Time: 8/29/18 1230
Relinquished by:	Company: M.E.	Date/Time: 8/29/18 1310	Received by:	Company: YAPOR	Date/Time: 8/29/18 1310
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

580-79946 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**	**Site Contact: Jennifer Ray** **Laboratory Contact: Elaine-Walker**	**8/29/2018** **Carrier: Courier**	COC No: 2 1 of 1 COCs

Client Contact	Analysis Turnaround Time
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 Water** Sample Type: **D/U**	Calendar (C) or Work Days (W) _____ ☐ 21 days ☒ Other _ASAP_____

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 1668A	PCDD/Fs 1613B	TPH Diesel, Metals, Mercury, NWTPH-Dx, 6020B, 7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060 (104C & 70C)	Archive Archive -20 C	PAHs, BEHP, Tributyltin, 8270-SIM, 8270-LL, Kron/Unger	Sample Specific Notes:
PDI-SG-B478	8/28/2018	16:20	SS		MT	7		H	H	H	x	H	H	H	

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 ☒ Disposal By Lab ☒ Archive For **12** Months

Special Instructions/QC Requirements & Comments:

Analyze samples for grain size ASAP, Hold (H) remaining analyses pending further instruction.

Separate reports for each lab.

2.5

Relinquished by:	Company: AECOM	Date/Time: 8/29/18 1230	Received by:	Company: M.E.	Date/Time: 8/29/18 1230
Relinquished by:	Company: M.E.	Date/Time: 8/29/18 1310	Received by:	Company: TAPOR	Date/Time: 8/29/18 1310
Relinquished by:	Company: TAPOR	Date/Time: 8/29/18 1700	Received by: B. Fell	Company: SCM TA	Date/Time: 8.30.18 0930

IR4 = 3.5/3.4 u/C.S.

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: 580-59077.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: elaine.walker@testamericainc.com	State of Origin: Oregon	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 580-79946-3
Address: 5815 Middlebrook Pike, ,	Due Date Requested: 9/18/2018			
City: Knoxville	TAT Requested (days):			
State, Zip: TN, 37921				
Phone: 865-291-3000(Tel) 865-584-4315(Fax)	PO #:			
Email:	WO #:			
Project Name: Portland Harbor Pre-Remedial Design	Project #: 58012120			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1668A/1668_P_Sox (MOD) 209 PCBs plus Totals (Hold)	Screen_1668/Screen_PCB_P_S (Hold)	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
PDI-SG-B478 (580-79946-1)	8/28/18	16:20 Pacific		Solid			X	X	1	

CUSTODY SEALS INTACT
RECEIVED AT RT 0.6/CT 0.7°C
BKD 9-11-18
1 COOLER FEDEX#442307251D623 PD

580-79946 Chain of Custody

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

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

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

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1		9/10/18 1330	DAPOR		9-11-18 10:00	TAKNX
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 09/20/2016

Loc: 580
79946

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST **Log In Number:**

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓		✓	☐ **Containers, Broken**
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?	✓			☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SC68 Correction factor: -0.1 C	✓			☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	✓			☐ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?			✓	☐ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			✓	☐ If no, lab will adjust
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info

Comments/Actions Taken

Labeling Verified by: **Date:**

pH test strip lot number:

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: _____ PM Instructions: _____

Sample Receiving Associate: _____ Date: 9-12-15

QA026R30.doc, 080916

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-79946-3

Login Number: 79946
List Number: 1
Creator: O'Connell, Jason I

List Source: TestAmerica Seattle

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

Isotope Dilution Summary

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

TestAmerica Job ID: 580-79946-3

Method: 1668A - Chlorinated Biphenyl Congeners (HRGC/HRMS)

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PCB1L	PCB3L	PCB4L	PCB15L	PCB19L	PCB37L	PCB54L	PCB77L
Lab Sample ID	Client Sample ID	(30-140)	(30-140)	(30-140)	(30-140)	(30-140)	(30-140)	(30-140)	(30-140)
580-79946-1	PDI-SG-B478	78	83	77	72	93	88	91	92
LCS 140-23946/6-B	Lab Control Sample	60	60	74	80	83	84	83	87
MB 140-23946/5-B	Method Blank	60	61	76	79	86	79	80	85

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PCB81L	PCB104L	PCB105L	P114L	PCB118L	PCB123L	PCB126L	PCB155L
Lab Sample ID	Client Sample ID	(30-140)	(30-140)	(30-140)	(30-140)	(30-140)	(30-140)	(30-140)	(30-140)
580-79946-1	PDI-SG-B478	92	81	91	88	90	91	87	85
LCS 140-23946/6-B	Lab Control Sample	86	74	87	83	83	82	84	85
MB 140-23946/5-B	Method Blank	85	79	89	80	80	78	86	91

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PCB156L	PCB157L	PCB167L	PCB169L	PCB170L	PCB188L	PCB189L	PCB202L
Lab Sample ID	Client Sample ID	(30-140)	(30-140)	(30-140)	(30-140)	(30-140)	(30-140)	(30-140)	(30-140)
580-79946-1	PDI-SG-B478	92 C	92 C156	91	95	93	96	93	105
LCS 140-23946/6-B	Lab Control Sample	88 C	88 C156	87	93	87	87	73	101
MB 140-23946/5-B	Method Blank	90 C	90 C156	89	97	92	90	76	107

		Percent Isotope Dilution Recovery (Acceptance Limits)			
		PCB205L	PCB206L	PCB208L	PCB209L
Lab Sample ID	Client Sample ID	(30-140)	(30-140)	(30-140)	(30-140)
580-79946-1	PDI-SG-B478	78	81	81	73
LCS 140-23946/6-B	Lab Control Sample	75	89	90	93
MB 140-23946/5-B	Method Blank	77	98	97	102

Surrogate Legend

PCB1L = PCB-1L
PCB3L = PCB-3L
PCB4L = PCB-4L
PCB15L = PCB-15L
PCB19L = PCB-19L
PCB37L = PCB-37L
PCB54L = PCB-54L
PCB77L = PCB-77L
PCB81L = PCB-81L
PCB104L = PCB-104L
PCB105L = PCB-105L
P114L = PCB-114L
PCB118L = PCB-118L
PCB123L = PCB-123L
PCB126L = PCB-126L
PCB155L = PCB-155L
PCB156L = PCB-156L
PCB157L = PCB-157L
PCB167L = PCB-167L
PCB169L = PCB-169L
PCB170L = PCB-170L
PCB188L = PCB-188L
PCB189L = PCB-189L
PCB202L = PCB-202L
PCB205L = PCB-205L
PCB206L = PCB-206L

Isotope Dilution Summary

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

TestAmerica Job ID: 580-79946-3

PCB208L = PCB-208L
PCB209L = PCB-209L