

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: 580-80213-8

Client Project/Site: Portland Harbor Pre-Remedial Design

For:

AECOM
1111 Third Ave
Suite 1600
Seattle, Washington 98101

Attn: Amy Dahl

M. Elaine Walker

Authorized for release by:
10/8/2018 5:44:18 PM

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

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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: 580-80213-8

Job ID: 580-80213-8

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE

Client: AECOM

Project: Portland Harbor Pre-Remedial Design

Report Number: 580-80213-8

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

Three samples were received on 9/10/2018 12:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.3° C.

This report contains results for the Rinse Blank sample only.

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.

PCB CONGENERS

Sample PDI-RB-VV-090718 (580-80213-3) was analyzed for PCB Congeners in accordance with 1668A. The sample was prepared on 09/27/2018 and analyzed on 10/05/2018.

Several analytes were detected in method blank MB 140-24007/6-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

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

Definitions/Glossary

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

TestAmerica Job ID: 580-80213-8

Qualifiers

Dioxin

Qualifier	Qualifier Description
C93	The compound co-eluted with PCB-93
B	Compound was found in the blank and sample.
C90	The compound co-eluted with PCB-90
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.
C98	The compound co-eluted with PCB-98
C	The compound co-eluted with other compounds
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

TestAmerica Seattle

Definitions/Glossary

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

TestAmerica Job ID: 580-80213-8

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 Results

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

TestAmerica Job ID: 580-80213-8

Client Sample ID: PDI-RB-VV-090718

Lab Sample ID: 580-80213-3

Date Collected: 09/07/18 14:50

Matrix: Water

Date Received: 09/10/18 12:40

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1	ND		0.039	0.00017	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-2	ND		0.039	0.00020	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-3	0.0015	J B	0.039	0.00022	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-4	ND		0.058	0.0070	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-5	ND		0.039	0.0056	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-6	ND		0.039	0.0049	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-7	ND		0.039	0.0050	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-8	ND		0.058	0.0045	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-9	ND		0.039	0.0051	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-10	ND		0.039	0.0055	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-11	0.012	J B q	0.058	0.0048	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-12	ND	C	0.077	0.0050	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-13	ND	C12	0.077	0.0050	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-14	ND		0.039	0.0042	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-15	ND		0.039	0.0051	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-16	ND		0.039	0.00067	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-17	ND		0.039	0.00060	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-18	0.0044	J C B	0.077	0.00053	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-19	ND		0.039	0.00073	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-20	0.0025	J C B q	0.077	0.00059	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-21	0.0024	J C B q	0.077	0.00058	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-22	ND		0.039	0.00061	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-23	ND		0.039	0.00060	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-24	ND		0.039	0.00050	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-25	ND		0.039	0.00055	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-26	ND	C	0.077	0.00058	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-27	ND		0.039	0.00044	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-28	0.0025	J B C20 q	0.077	0.00059	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-29	ND	C26	0.077	0.00058	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-30	0.0044	J C18 B	0.077	0.00053	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-31	0.0031	J B	0.039	0.00058	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-32	ND		0.039	0.00042	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-33	0.0024	J B C21 q	0.077	0.00058	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-34	ND		0.039	0.00062	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-35	ND		0.039	0.00061	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-36	ND		0.039	0.00058	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-37	ND		0.039	0.00060	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-38	ND		0.039	0.00063	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-39	ND		0.039	0.00056	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-40	ND	C	0.12	0.0010	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-41	ND	C40	0.12	0.0010	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-42	ND		0.039	0.0010	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-43	ND	C	0.077	0.00098	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-44	0.0062	J C B q	0.12	0.00092	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-45	ND	C	0.077	0.0011	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-46	ND		0.039	0.0013	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-47	0.0062	J B C44 q	0.12	0.00092	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-48	ND		0.039	0.0010	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-49	ND	C	0.077	0.00085	ng/L		09/27/18 12:38	10/05/18 16:11	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-80213-8

Client Sample ID: PDI-RB-VV-090718

Lab Sample ID: 580-80213-3

Date Collected: 09/07/18 14:50

Matrix: Water

Date Received: 09/10/18 12:40

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-50	ND	C	0.077	0.0010	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-51	ND	C45	0.077	0.0011	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-52	0.0029	J q	0.039	0.0010	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-53	ND	C50	0.077	0.0010	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-54	ND		0.039	0.00017	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-55	ND		0.039	0.00076	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-56	ND		0.039	0.00076	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-57	ND		0.039	0.00077	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-58	ND		0.039	0.00078	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-59	ND	C	0.12	0.00074	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-60	ND		0.039	0.00077	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-61	0.0018	J C B q	0.15	0.00072	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-62	ND	C59	0.12	0.00074	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-63	ND		0.039	0.00070	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-64	ND		0.039	0.00070	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-65	0.0062	J B C44 q	0.12	0.00092	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-66	ND		0.039	0.00072	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-67	ND		0.039	0.00067	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-68	ND		0.039	0.00068	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-69	ND	C49	0.077	0.00085	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-70	0.0018	J C61 B q	0.15	0.00072	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-71	ND	C40	0.12	0.0010	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-72	ND		0.039	0.00075	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-73	ND	C43	0.077	0.00098	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-74	0.0018	J C61 B q	0.15	0.00072	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-75	ND	C59	0.12	0.00074	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-76	0.0018	J C61 B q	0.15	0.00072	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-77	ND		0.039	0.00075	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-78	ND		0.039	0.00078	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-79	ND		0.039	0.00067	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-80	ND		0.039	0.00066	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-81	ND		0.039	0.00069	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-82	ND		0.039	0.00036	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-83	ND	C	0.077	0.00033	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-84	ND		0.039	0.00037	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-85	ND	C	0.12	0.00027	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-86	0.0028	J C B q	0.23	0.00027	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-87	0.0028	J B C86 q	0.23	0.00027	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-88	ND	C	0.077	0.00033	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-89	ND		0.039	0.00035	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-90	0.0026	J C B q	0.12	0.00027	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-91	ND	C88	0.077	0.00033	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-92	ND		0.039	0.00031	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-93	ND	C	0.077	0.00031	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-94	ND		0.039	0.00035	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-95	ND		0.039	0.00034	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-96	ND		0.039	0.00027	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-97	0.0028	J B C86 q	0.23	0.00027	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-98	ND	C	0.077	0.00030	ng/L		09/27/18 12:38	10/05/18 16:11	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-80213-8

Client Sample ID: PDI-RB-VV-090718

Lab Sample ID: 580-80213-3

Date Collected: 09/07/18 14:50

Matrix: Water

Date Received: 09/10/18 12:40

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-99	ND	C83	0.077	0.00033	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-100	ND	C93	0.077	0.00031	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-101	0.0026	J B C90 q	0.12	0.00027	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-102	ND	C98	0.077	0.00030	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-103	ND		0.039	0.00031	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-104	ND		0.039	0.00024	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-105	ND		0.039	0.00048	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-106	ND		0.039	0.00049	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-107	ND		0.039	0.00052	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-108	ND	C	0.077	0.00050	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-109	0.0028	J B C86 q	0.23	0.00027	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-110	0.0017	J C B q	0.077	0.00023	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-111	ND		0.039	0.00022	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-112	ND		0.039	0.00023	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-113	0.0026	J B C90 q	0.12	0.00027	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-114	ND		0.039	0.00047	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-115	0.0017	J B C110 q	0.077	0.00023	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-116	ND	C85	0.12	0.00027	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-117	ND	C85	0.12	0.00027	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-118	0.0012	J B q	0.039	0.00045	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-119	0.0028	J B C86 q	0.23	0.00027	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-120	ND		0.039	0.00022	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-121	ND		0.039	0.00023	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-122	ND		0.039	0.00056	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-123	ND		0.039	0.00046	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-124	ND	C108	0.077	0.00050	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-125	0.0028	J B C86 q	0.23	0.00027	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-126	ND		0.039	0.00050	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-127	ND		0.039	0.00048	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-128	ND	C	0.077	0.00044	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-129	0.0042	J C B q	0.15	0.00045	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-130	ND		0.039	0.00060	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-131	ND		0.039	0.00062	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-132	ND		0.039	0.00058	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-133	ND		0.039	0.00056	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-134	ND	C	0.077	0.00059	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-135	ND	C	0.077	0.00017	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-136	ND		0.039	0.00012	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-137	ND		0.039	0.00051	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-138	0.0042	J B C129 q	0.15	0.00045	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-139	ND	C	0.077	0.00050	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-140	ND	C139	0.077	0.00050	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-141	ND		0.039	0.00053	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-142	ND		0.039	0.00056	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-143	ND	C134	0.077	0.00059	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-144	ND		0.039	0.00015	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-145	ND		0.039	0.00012	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-146	ND		0.039	0.00050	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-147	0.0020	J C B q	0.077	0.00057	ng/L		09/27/18 12:38	10/05/18 16:11	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-80213-8

Client Sample ID: PDI-RB-VV-090718

Lab Sample ID: 580-80213-3

Date Collected: 09/07/18 14:50

Matrix: Water

Date Received: 09/10/18 12:40

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-148	ND		0.039	0.00016	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-149	0.0020	J B C147 q	0.077	0.00057	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-150	ND		0.039	0.00011	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-151	ND	C135	0.077	0.00017	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-152	ND		0.039	0.00012	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-153	ND	C	0.077	0.00039	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-154	ND		0.039	0.00013	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-155	ND		0.039	0.00011	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-156	ND	C	0.077	0.00048	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-157	ND	C156	0.077	0.00048	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-158	ND		0.039	0.00035	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-159	ND		0.039	0.00037	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-160	0.0042	J B C129 q	0.15	0.00045	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-161	ND		0.039	0.00037	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-162	ND		0.039	0.00037	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-163	0.0042	J B C129 q	0.15	0.00045	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-164	ND		0.039	0.00039	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-165	ND		0.039	0.00042	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-166	ND	C128	0.077	0.00044	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-167	ND		0.039	0.00029	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-168	ND	C153	0.077	0.00039	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-169	ND		0.039	0.00028	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-170	ND		0.039	0.00081	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-171	ND	C	0.077	0.00077	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-172	ND		0.039	0.00076	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-173	ND	C171	0.077	0.00077	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-174	ND		0.039	0.00071	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-175	ND		0.039	0.00069	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-176	ND		0.039	0.00052	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-177	ND		0.039	0.00073	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-178	ND		0.039	0.00075	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-179	ND		0.039	0.00055	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-180	ND	C	0.077	0.00058	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-181	ND		0.039	0.00069	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-182	ND		0.039	0.00066	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-183	0.0019	J C B q	0.077	0.00068	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-184	ND		0.039	0.00056	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-185	0.0019	J B C183 q	0.077	0.00068	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-186	ND		0.039	0.00055	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-187	ND		0.039	0.00064	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-188	ND		0.039	0.00048	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-189	ND		0.039	0.00028	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-190	ND		0.039	0.00050	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-191	ND		0.039	0.00052	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-192	ND		0.039	0.00058	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-193	ND	C180	0.077	0.00058	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-194	ND		0.039	0.00025	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-195	ND		0.039	0.00028	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-196	ND		0.039	0.00021	ng/L		09/27/18 12:38	10/05/18 16:11	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-80213-8

Client Sample ID: PDI-RB-VV-090718

Lab Sample ID: 580-80213-3

Date Collected: 09/07/18 14:50

Matrix: Water

Date Received: 09/10/18 12:40

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-197	ND		0.039	0.00016	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-198	ND	C	0.077	0.00021	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-199	ND	C198	0.077	0.00021	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-200	ND		0.039	0.00014	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-201	ND		0.039	0.00015	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-202	ND		0.039	0.00016	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-203	ND		0.039	0.00019	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-204	ND		0.039	0.00016	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-205	ND		0.039	0.00021	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-206	ND		0.039	0.0022	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-207	ND		0.039	0.0016	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-208	ND		0.039	0.0017	ng/L		09/27/18 12:38	10/05/18 16:11	1
PCB-209	0.0010	J B q	0.039	0.00013	ng/L		09/27/18 12:38	10/05/18 16:11	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
PCB-1L	59		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-3L	57		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-4L	78		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-15L	78		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-19L	85		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-37L	81		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-54L	103		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-77L	80		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-81L	79		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-104L	73		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-105L	80		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-114L	78		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-118L	79		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-123L	79		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-126L	79		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-155L	84		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-156L	76	C	30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-157L	76	C156	30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-167L	77		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-169L	82		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-170L	78		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-188L	81		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-189L	67		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-202L	99		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-205L	67		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-206L	84		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-208L	82		30 - 140				09/27/18 12:38	10/05/18 16:11	1
PCB-209L	85		30 - 140				09/27/18 12:38	10/05/18 16:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
PCB-28L	89		40 - 125				09/27/18 12:38	10/05/18 16:11	1
PCB-111L	88		40 - 125				09/27/18 12:38	10/05/18 16:11	1
PCB-178L	101		40 - 125				09/27/18 12:38	10/05/18 16:11	1

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-80213-8

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

Lab Sample ID: MB 140-24007/6-A
Matrix: Water
Analysis Batch: 24201

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 24007

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1	ND		0.040	0.00016	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-2	ND		0.040	0.00018	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-3	0.00181	J	0.040	0.00019	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-4	ND		0.060	0.0025	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-5	ND		0.040	0.0020	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-6	ND		0.040	0.0017	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-7	ND		0.040	0.0018	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-8	0.00271	J	0.060	0.0016	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-9	ND		0.040	0.0018	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-10	ND		0.040	0.0019	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-11	0.0114	J q	0.060	0.0017	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-12	ND	C	0.080	0.0017	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-13	ND	C12	0.080	0.0017	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-14	ND		0.040	0.0015	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-15	ND	q	0.040	0.0018	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-16	0.00165	J	0.040	0.00017	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-17	0.00145	J q	0.040	0.00016	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-18	0.00358	J C	0.080	0.00014	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-19	ND		0.040	0.00019	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-20	0.00362	J C	0.080	0.00016	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-21	0.00189	J q C	0.080	0.00016	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-22	0.000667	J q	0.040	0.00016	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-23	ND		0.040	0.00016	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-24	ND		0.040	0.00013	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-25	ND		0.040	0.00015	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-26	ND	C	0.080	0.00016	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-27	ND		0.040	0.00011	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-28	0.00362	J C20	0.080	0.00016	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-29	ND	C26	0.080	0.00016	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-30	0.00358	J C18	0.080	0.00014	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-31	0.00227	J	0.040	0.00016	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-32	0.000825	J	0.040	0.00011	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-33	0.00189	J q C21	0.080	0.00016	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-34	ND		0.040	0.00017	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-35	ND		0.040	0.00016	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-36	ND		0.040	0.00016	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-37	0.00125	J	0.040	0.00016	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-38	ND		0.040	0.00017	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-39	ND		0.040	0.00015	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-40	ND	C	0.12	0.0013	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-41	ND	C40	0.12	0.0013	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-42	ND		0.040	0.0013	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-43	ND	C	0.080	0.0012	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-44	0.0117	J C	0.12	0.0012	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-45	ND	C	0.080	0.0014	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-46	ND		0.040	0.0017	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-47	0.0117	J C44	0.12	0.0012	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-48	ND		0.040	0.0013	ng/L		09/27/18 12:38	10/05/18 02:40	1

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-80213-8

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

Lab Sample ID: MB 140-24007/6-A
Matrix: Water
Analysis Batch: 24201

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 24007

Analyte	MB	MB	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
PCB-49	ND	C	0.080	0.0011	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-50	ND	C	0.080	0.0013	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-51	ND	C45	0.080	0.0014	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-52	ND		0.040	0.0013	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-53	ND	C50	0.080	0.0013	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-54	ND		0.040	0.000058	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-55	ND		0.040	0.00096	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-56	0.00200	J	0.040	0.00096	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-57	ND		0.040	0.00097	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-58	ND		0.040	0.00099	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-59	ND	C	0.12	0.00093	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-60	ND		0.040	0.00098	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-61	0.00430	J C	0.16	0.00092	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-62	ND	C59	0.12	0.00093	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-63	ND		0.040	0.00089	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-64	ND		0.040	0.00088	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-65	0.0117	J C44	0.12	0.0012	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-66	ND		0.040	0.00091	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-67	ND		0.040	0.00084	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-68	ND		0.040	0.00086	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-69	ND	C49	0.080	0.0011	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-70	0.00430	J C61	0.16	0.00092	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-71	ND	C40	0.12	0.0013	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-72	ND		0.040	0.00096	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-73	ND	C43	0.080	0.0012	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-74	0.00430	J C61	0.16	0.00092	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-75	ND	C59	0.12	0.00093	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-76	0.00430	J C61	0.16	0.00092	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-77	ND		0.040	0.00089	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-78	ND		0.040	0.00099	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-79	ND		0.040	0.00086	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-80	ND		0.040	0.00084	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-81	ND		0.040	0.00094	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-82	ND		0.040	0.00019	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-83	0.00201	J q C	0.080	0.00018	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-84	ND		0.040	0.00019	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-85	0.00172	J q C	0.12	0.00014	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-86	0.00374	J C	0.24	0.00014	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-87	0.00374	J C86	0.24	0.00014	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-88	0.000819	J q C	0.080	0.00017	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-89	ND		0.040	0.00019	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-90	0.00382	J q C	0.12	0.00015	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-91	0.000819	J q C88	0.080	0.00017	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-92	0.00173	J q	0.040	0.00017	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-93	ND	C	0.080	0.00017	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-94	ND		0.040	0.00019	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-95	0.00205	J q	0.040	0.00018	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-96	ND		0.040	0.00014	ng/L		09/27/18 12:38	10/05/18 02:40	1

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-80213-8

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

Lab Sample ID: MB 140-24007/6-A
Matrix: Water
Analysis Batch: 24201

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 24007

Analyte	MB	MB	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
PCB-97	0.00374	J C86	0.24	0.00014	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-98	ND	C	0.080	0.00016	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-99	0.00201	J q C83	0.080	0.00018	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-100	ND	C93	0.080	0.00017	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-101	0.00382	J q C90	0.12	0.00015	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-102	ND	C98	0.080	0.00016	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-103	ND		0.040	0.00017	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-104	ND		0.040	0.00013	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-105	0.00333	J	0.040	0.00023	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-106	ND		0.040	0.00024	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-107	ND		0.040	0.00026	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-108	ND	C	0.080	0.00025	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-109	0.00374	J C86	0.24	0.00014	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-110	0.00455	J q C	0.080	0.00012	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-111	ND		0.040	0.00012	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-112	ND		0.040	0.00012	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-113	0.00382	J q C90	0.12	0.00015	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-114	0.000541	J	0.040	0.00022	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-115	0.00455	J q C110	0.080	0.00012	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-116	0.00172	J q C85	0.12	0.00014	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-117	0.00172	J q C85	0.12	0.00014	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-118	0.00706	J	0.040	0.00023	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-119	0.00374	J C86	0.24	0.00014	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-120	ND		0.040	0.00012	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-121	ND		0.040	0.00012	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-122	ND		0.040	0.00028	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-123	ND		0.040	0.00025	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-124	ND	C108	0.080	0.00025	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-125	0.00374	J C86	0.24	0.00014	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-126	0.000852	J	0.040	0.00025	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-127	ND		0.040	0.00024	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-128	0.00218	J q C	0.080	0.00044	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-129	0.0106	J q C	0.16	0.00045	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-130	ND		0.040	0.00060	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-131	ND		0.040	0.00062	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-132	ND		0.040	0.00058	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-133	ND		0.040	0.00057	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-134	ND	C	0.080	0.00059	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-135	ND	C	0.080	0.00069	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-136	ND		0.040	0.000050	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-137	ND		0.040	0.00051	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-138	0.0106	J q C129	0.16	0.00045	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-139	ND	C	0.080	0.00050	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-140	ND	C139	0.080	0.00050	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-141	0.000915	J q	0.040	0.00053	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-142	ND		0.040	0.00056	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-143	ND	C134	0.080	0.00059	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-144	0.000742	J q	0.040	0.000063	ng/L		09/27/18 12:38	10/05/18 02:40	1

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-80213-8

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

Lab Sample ID: MB 140-24007/6-A
Matrix: Water
Analysis Batch: 24201

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 24007

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-145	ND		0.040	0.000047	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-146	0.00110	J q	0.040	0.00050	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-147	0.00335	J C	0.080	0.00057	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-148	ND		0.040	0.000067	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-149	0.00335	J C147	0.080	0.00057	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-150	ND		0.040	0.000045	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-151	ND	C135	0.080	0.000069	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-152	ND		0.040	0.000049	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-153	0.00708	J C	0.080	0.00040	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-154	ND		0.040	0.000054	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-155	ND		0.040	0.000045	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-156	0.00430	J q C	0.080	0.00048	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-157	0.00430	J q C156	0.080	0.00048	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-158	0.00192	J	0.040	0.00036	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-159	ND		0.040	0.00038	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-160	0.0106	J q C129	0.16	0.00045	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-161	ND		0.040	0.00037	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-162	ND		0.040	0.00037	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-163	0.0106	J q C129	0.16	0.00045	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-164	0.000760	J q	0.040	0.00040	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-165	ND		0.040	0.00043	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-166	0.00218	J q C128	0.080	0.00044	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-167	ND		0.040	0.00030	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-168	0.00708	J C153	0.080	0.00040	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-169	ND		0.040	0.00028	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-170	0.00753	J	0.040	0.00024	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-171	0.00188	J C	0.080	0.00026	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-172	0.000807	J q	0.040	0.00026	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-173	0.00188	J C171	0.080	0.00026	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-174	0.00365	J q	0.040	0.00024	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-175	ND		0.040	0.00023	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-176	ND		0.040	0.00018	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-177	0.00202	J q	0.040	0.00025	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-178	0.000525	J q	0.040	0.00025	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-179	0.000616	J q	0.040	0.00019	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-180	0.0158	J C	0.080	0.00019	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-181	ND		0.040	0.00023	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-182	ND		0.040	0.00022	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-183	0.00497	J C	0.080	0.00023	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-184	ND		0.040	0.00019	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-185	0.00497	J C183	0.080	0.00023	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-186	ND		0.040	0.00018	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-187	0.00352	J q	0.040	0.00022	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-188	ND		0.040	0.00018	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-189	0.000827	J q	0.040	0.000093	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-190	0.00144	J q	0.040	0.00017	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-191	0.000554	J q	0.040	0.00017	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-192	ND		0.040	0.00020	ng/L		09/27/18 12:38	10/05/18 02:40	1

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-80213-8

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

Lab Sample ID: MB 140-24007/6-A
Matrix: Water
Analysis Batch: 24201

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 24007

Analyte	MB	MB	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
PCB-193	0.0158	J C180	0.080	0.00019	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-194	0.00386	J	0.040	0.000093	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-195	0.00125	J q	0.040	0.00010	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-196	0.00193	J q	0.040	0.000019	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-197	ND		0.040	0.000014	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-198	0.00331	J q C	0.080	0.000019	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-199	0.00331	J q C198	0.080	0.000019	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-200	ND		0.040	0.000013	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-201	ND		0.040	0.000013	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-202	ND		0.040	0.000015	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-203	0.000936	J q	0.040	0.000017	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-204	ND		0.040	0.000014	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-205	ND		0.040	0.000078	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-206	ND		0.040	0.0015	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-207	ND		0.040	0.0011	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-208	ND		0.040	0.0012	ng/L		09/27/18 12:38	10/05/18 02:40	1
PCB-209	0.00341	J q	0.040	0.000019	ng/L		09/27/18 12:38	10/05/18 02:40	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
PCB-1L	62		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-3L	61		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-4L	74		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-15L	74		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-19L	83		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-37L	84		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-54L	84		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-77L	83		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-81L	80		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-104L	60		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-105L	87		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-114L	83		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-118L	81		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-123L	80		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-126L	86		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-155L	63		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-156L	81	C	30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-157L	81	C156	30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-167L	82		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-169L	88		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-170L	81		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-188L	70		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-189L	73		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-202L	93		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-205L	73		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-206L	88		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-208L	85		30 - 140	09/27/18 12:38	10/05/18 02:40	1
PCB-209L	86		30 - 140	09/27/18 12:38	10/05/18 02:40	1

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-80213-8

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

Lab Sample ID: MB 140-24007/6-A
Matrix: Water
Analysis Batch: 24201

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 24007

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
PCB-28L	95		40 - 125	09/27/18 12:38	10/05/18 02:40	1
PCB-111L	93		40 - 125	09/27/18 12:38	10/05/18 02:40	1
PCB-178L	104		40 - 125	09/27/18 12:38	10/05/18 02:40	1

Lab Sample ID: LCS 140-24007/7-A
Matrix: Water
Analysis Batch: 24180

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 24007

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-3	1.00	0.824		ng/L		82	50 - 150
PCB-4	1.00	0.998		ng/L		100	50 - 150
PCB-15	1.00	1.01		ng/L		101	50 - 150
PCB-19	1.00	1.14		ng/L		114	50 - 150
PCB-37	1.00	0.954		ng/L		95	50 - 150
PCB-54	1.00	1.02		ng/L		102	50 - 150
PCB-77	1.00	0.934		ng/L		93	50 - 150
PCB-81	1.00	0.879		ng/L		88	50 - 150
PCB-104	1.00	1.17		ng/L		117	50 - 150
PCB-105	1.00	0.926		ng/L		93	50 - 150
PCB-114	1.00	1.05		ng/L		105	50 - 150
PCB-118	1.00	1.05		ng/L		105	50 - 150
PCB-123	1.00	1.11		ng/L		111	50 - 150
PCB-126	1.00	1.02		ng/L		102	50 - 150
PCB-155	1.00	1.14		ng/L		114	50 - 150
PCB-156	2.00	2.07	C	ng/L		104	50 - 150
PCB-157	2.00	2.07	C156	ng/L		104	50 - 150
PCB-167	1.00	1.01		ng/L		101	50 - 150
PCB-169	1.00	0.921		ng/L		92	50 - 150
PCB-188	1.00	1.09		ng/L		109	50 - 150
PCB-189	1.00	1.00		ng/L		100	50 - 150
PCB-202	1.00	0.968		ng/L		97	50 - 150
PCB-205	1.00	1.15		ng/L		115	50 - 150
PCB-206	1.00	0.963		ng/L		96	50 - 150
PCB-208	1.00	1.03		ng/L		103	50 - 150
PCB-209	1.00	1.06		ng/L		106	50 - 150

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
PCB-1L	62		30 - 140
PCB-3L	58		30 - 140
PCB-4L	79		30 - 140
PCB-15L	77		30 - 140
PCB-19L	85		30 - 140
PCB-37L	83		30 - 140
PCB-54L	86		30 - 140
PCB-77L	93		30 - 140
PCB-81L	91		30 - 140
PCB-104L	65		30 - 140

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-80213-8

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

Lab Sample ID: LCS 140-24007/7-A
Matrix: Water
Analysis Batch: 24180

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 24007

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
PCB-105L	91		30 - 140
PCB-114L	88		30 - 140
PCB-118L	85		30 - 140
PCB-123L	87		30 - 140
PCB-126L	85		30 - 140
PCB-155L	71		30 - 140
PCB-156L	90	C	30 - 140
PCB-157L	90	C156	30 - 140
PCB-167L	90		30 - 140
PCB-169L	100		30 - 140
PCB-170L	88		30 - 140
PCB-188L	79		30 - 140
PCB-189L	79		30 - 140
PCB-202L	100		30 - 140
PCB-205L	74		30 - 140
PCB-206L	86		30 - 140
PCB-208L	88		30 - 140
PCB-209L	80		30 - 140

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
PCB-28L	93		40 - 125
PCB-111L	93		40 - 125
PCB-178L	100		40 - 125

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Lab Chronicle

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

TestAmerica Job ID: 580-80213-8

Client Sample ID: PDI-RB-VV-090718

Lab Sample ID: 580-80213-3

Date Collected: 09/07/18 14:50

Matrix: Water

Date Received: 09/10/18 12:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sepf			24007	09/27/18 12:38	SMA	TAL KNX
Total/NA	Analysis	1668A		1	24208	10/05/18 16:11	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: 580-80213-8

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: 580-80213-8

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-80213-3	PDI-RB-VV-090718	Water	09/07/18 14:50	09/10/18 12:40

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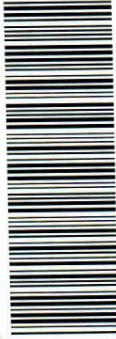
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580-80213 Chain of Custody

**SURFACE SEDIMENT
CHAIN OF CUSTODY**

TestAmerica-Seattle
5755-8th-Street-East
Tacoma, WA 98424-1317
Ph: 253-922-2310 Fax: 253-922-5047

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 Sediment
Sample Type: D/U

Project Contact: Amy Dahl / Chelsey Cook
Tel: (206) 438-2261 / (206) 438-2010
Analysis Turnaround Time
Calendar (C) or Work Days (W)
21 days (water)
Other ASAP (63 only)

Site Contact: Jennifer Ray
Laboratory Contact: Elaine-Walker
Carrier: Courier
COC No: 1 of 1 pages

Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 168A	PCDD/Fs 1613B	TPH Diesel, Metals, Mercury NWTPH-Dx, 6020B, 7471A	Crain size ASTM D7928/D6913	Total organic carbon, Total solids 9060 (104C & 70C)	Archive Archive -20 C	PAHs, BEHP, Tributyltin, 8270-SIM, 8270-LT, Kron/Unger	WQ - PCB Congeners 168A	WQ - PCDD/Fs 1613B	WQ - TPH Diesel NWTPH-Dx	WQ - Metals, Mercury 6020B, 7470	WQ - Total Organic Carbon SMS10B	WQ - PAHs 8270-SIM	WQ - Pesticides 1669M	WQ - BEHP EPA 8270D-LL	WQ - Tributyltin Kron/Unger			
9/7/2018	12:08	SS		MSH	7		H	H	H	x	H	H	H												
9/7/2018	9:58	SS		MSH	7		H	H	H	x	H	H	H												
9/7/2018	14:50	W		JH	14									x	x	x	x	x	x	x	x				

Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Column
Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid
Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)

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

Relinquished by: <i>[Signature]</i>	Company: AECOM	Date/Time: 9/10/18 1204	Received by: <i>[Signature]</i>	Company: M.E.	Date/Time: 9/10/18 1204
Relinquished by: <i>[Signature]</i>	Company: M.E.	Date/Time: 9/10/18 1240	Received by: <i>[Signature]</i>	Company: M.E.	Date/Time: 9/10/18 1204
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

63

Return To Client Archive For 12 Months

Disposal By Lab





580-80213 Chain of Custody

TestAmerica-Seattle		SURFACE SEDIMENT CHAIN OF CUSTODY										9/10/2018		COC No. 1												
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				Carrier: Courier				1 of 1 pages												
Client Contact		Analysis Turnaround Time																								
AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1+(866) 495-5288		Calendar (C) or Work Days (W)																								
Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling		<input checked="" type="checkbox"/> 21 days (water)																								
Portland, OR		<input checked="" type="checkbox"/> Other ASAP (GS only)																								
Project #: 60566335 Study: Surface Water Sediment																										
Sample Type: D/U																										
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, Metal, Mercury NWT/PH-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	WQ - PCB Congeners 1668A	WQ - PCDD/Fs 1613B	WQ - TPH Diesel NWT/PH-Dx	WQ - Metals, Mercury 6020B, 7470	WQ - Total Organic Carbon SM4310B	WQ - PAHs 8270-SIM	WQ - Pesticides 1669M	WQ - BEHP EPA 8270B-1-L	WQ - Tributyltin Kron/Unger	Sample Specific Notes:		
PDI-SG-B431	9/7/2018	12:08	SS		MSH	7		H	H	H	x	H	H	H												
PDI-SG-B479	9/7/2018	9:58	SS		MSH	7		H	H	H	x	H	H	H												
PDI-RB-VV-090718	9/7/2018	14:50	W		JH	14									x	x	x	x	x	x		x	x			
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Column																										
Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid																										
Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)																										
Special Instructions/QC Requirements & Comments:		Analyze samples for grain size ASAP, Hold (H) remaining analyses pending further instruction.										Sample Disposal														
Separate reports for each lab.												<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input checked="" type="checkbox"/> Archive For 12 Months														
Relinquished by: [Signature]		Company: AECOM				Date/Time: 9/10/18 1204				Received by: [Signature]				Company: M.E.				Date/Time: 9/10/18 1204								
Relinquished by: [Signature]		Company: M.E.				Date/Time: 9/10/18 1240				Received by: Tom Blum				Company: T.A. Sen				Date/Time: 9/11/18 0950								
Relinquished by: [Signature]		Company: TAYOR				Date/Time: 9/10/18 1700				Received by:				Company:				Date/Time:								

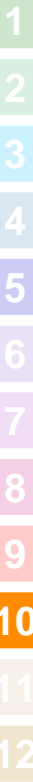
RS 1.6/1.6

Chain of Custody Record



580-80213 Chain of Custody

Client Information (Sub Contract Lab) Client Contact: Walker, Elaine M Shipping/Receiving: elaine.walker@testamericainc.com Company: TestAmerica Laboratories, Inc.		Lab Pk#: 253.1 State of Origin: Oregon Page 1 of 1
Address: 5815 Middlebrook Pike, City: Knoxville State, Zip: TN, 37921 Phone: 865-291-3000 (Tel) 865-584-4315 (Fax) Email:		Job #: 580-80213-3 Preservation Codes: 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 X - EDTA Y - EDA Z - other (specify)
Due Date Requested: 9/27/2018 TAT Requested (days): PO #: W/O #: Project #: 58012120 SOW #:		Analysis Requested: Total Number of Containers:
Sample ID (Lab ID): PDL-SG-B431 (580-80213-1) PDI-SG-B479 (580-80213-2)	Sample Date: 9/7/18 Sample Time: 12:08 Pacific 09:58 Pacific	Matrix (Wet, Solid, Ovensol, A-As) Sample Type (C=Comp, G=grab) Preservation Code: Solid Solid
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/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.		
Possible Hazard Identification Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2		
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		
Relinquished by: [Signature] Date/Time: 9/14/18 1400 Company: TAPORA Company	Relinquished by: [Signature] Date/Time: 9/14/18 1000 Company: TA-Kay Company	Relinquished by: [Signature] Date/Time: 9/14/18 1000 Company: TA-Kay Company
Custody Seals Intact: _____ Custody Seal No.: _____ Cooler Temperature(s) °C and Other Remarks:		



TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

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

Sample Receiving Associate: [Signature] Date: 9/1/18



TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Are the shipping containers intact?	/			<input type="checkbox"/> Containers, Broken	
2. Were ambient air containers received intact?			/	<input type="checkbox"/> Checked in lab	
3. The coolers/containers custody seal if present, is it intact?	/			<input type="checkbox"/> Yes <input type="checkbox"/> NA	
4. Is the cooler temperature within limits? (> freezing temp. of water to 6°C, VOST: 10°C) Thermometer ID : <u>5608</u> Correction factor: <u>+0.1°C</u>	/	/		<input type="checkbox"/> Cooler Out of Temp, Client Contacted, Proceed/Cancel <input type="checkbox"/> Cooler Out of Temp, Same Day Receipt	
5. Were all of the sample containers received intact?	/			<input type="checkbox"/> Containers, Broken	
6. Were samples received in appropriate containers?	/			<input type="checkbox"/> Containers, Improper; Client Contacted; Proceed/Cancel	
7. Do sample container labels match COC? (IDs, Dates, Times)	/			<input type="checkbox"/> COC & Samples Do Not Match <input type="checkbox"/> COC Incorrect/Incomplete <input type="checkbox"/> COC Not Received	
8. Were all of the samples listed on the COC received?	/			<input type="checkbox"/> Sample Received, Not on COC <input type="checkbox"/> Sample on COC, Not Received	
9. Is the date/time of sample collection noted?	/			<input type="checkbox"/> COC; No Date/Time; Client Contacted	Labeling Verified by: _____ Date: _____
10. Was the sampler identified on the COC?	/		/	<input type="checkbox"/> Sampler Not Listed on COC	
11. Is the client and project name/# identified?	/			<input type="checkbox"/> COC Incorrect/Incomplete	
12. Are tests/parameters listed for each sample?	/			<input type="checkbox"/> COC No tests on COC	pH test strip lot number: _____
13. Is the matrix of the samples noted?	/			<input type="checkbox"/> COC Incorrect/Incomplete	
14. Was COC relinquished? (Signed/Dated/Timed)	/			<input type="checkbox"/> COC Incorrect/Incomplete	Box 16A: pH Preservation Box 18A: Residual Chlorine
15. Were samples received within holding time?	/			<input type="checkbox"/> Holding Time - Receipt	Preservative: _____
16. Were samples received with correct chemical preservative (excluding Encore)?			/	<input type="checkbox"/> pH Adjusted, pH Included (See box 16A) <input type="checkbox"/> Incorrect Preservative	Lot Number: _____ Exp Date: _____ Analyst: _____
17. Were VOA samples received without headspace?	/			<input type="checkbox"/> Headspace (VOA only) <input type="checkbox"/> Residual Chlorine	Date: _____ Time: _____
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number: <u>7194 2020/04</u>	/				
19. For 1613B water samples is pH<9?			/	<input type="checkbox"/> If no, lab will adjust	
20. For rad samples was sample activity info. Provided?			/	<input type="checkbox"/> Project missing info	
Project #: _____				PM Instructions: _____	

[Signature]



Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-80213-8

Login Number: 80213

List Source: TestAmerica Seattle

List Number: 1

Creator: Antonson, Angeline D

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: 580-80213-8

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

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PCB1L	PCB3L	PCB4L	PCB15L	PCB19L	PCB37L	PCB54L	PCB77L
		(30-140)	(30-140)	(30-140)	(30-140)	(30-140)	(30-140)	(30-140)	(30-140)
580-80213-3	PDI-RB-VV-090718	59	57	78	78	85	81	103	80
LCS 140-24007/7-A	Lab Control Sample	62	58	79	77	85	83	86	93
MB 140-24007/6-A	Method Blank	62	61	74	74	83	84	84	83

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PCB81L	PCB104L	PCB105L	P114L	PCB118L	PCB123L	PCB126L	PCB155L
		(30-140)	(30-140)	(30-140)	(30-140)	(30-140)	(30-140)	(30-140)	(30-140)
580-80213-3	PDI-RB-VV-090718	79	73	80	78	79	79	79	84
LCS 140-24007/7-A	Lab Control Sample	91	65	91	88	85	87	85	71
MB 140-24007/6-A	Method Blank	80	60	87	83	81	80	86	63

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PCB156L	PCB157L	PCB167L	PCB169L	PCB170L	PCB188L	PCB189L	PCB202L
		(30-140)	(30-140)	(30-140)	(30-140)	(30-140)	(30-140)	(30-140)	(30-140)
580-80213-3	PDI-RB-VV-090718	76 C	76 C156	77	82	78	81	67	99
LCS 140-24007/7-A	Lab Control Sample	90 C	90 C156	90	100	88	79	79	100
MB 140-24007/6-A	Method Blank	81 C	81 C156	82	88	81	70	73	93

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PCB205L	PCB206L	PCB208L	PCB209L
		(30-140)	(30-140)	(30-140)	(30-140)
580-80213-3	PDI-RB-VV-090718	67	84	82	85
LCS 140-24007/7-A	Lab Control Sample	74	86	88	80
MB 140-24007/6-A	Method Blank	73	88	85	86

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

TestAmerica Seattle

Isotope Dilution Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-80213-8

PCB208L = PCB-208L

PCB209L = PCB-209L

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