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Data Validation Report

Project:	Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland Harbor Superfund Site Subsurface Sediment – Deep Core Stations	
Laboratory:	TestAmerica Laboratories, Incorporated, Tacoma, WA	
Laboratory Group:	580-79389-1	
Analyses/Method:	Polycyclic Aromatic Hydrocarbons (PAHs), Polychlorinated Biphenyls (PCBs), Total Organic Carbon (TOC), Total Solids, and Grain Size	
Validation Level:	Stage 2A, Stage 4 on PDI-SC-S254-2to4	
AECOM Project Number:	60566335, Task #2.12	
Prepared by:	Lynn Sandsor/AECOM	Completed on: December 28, 2018
Reviewed by:	Stacy Louie/AECOM	File Name: 580-79389-1 DVR

SUMMARY

The data quality review of 22 subsurface sediment samples, one field duplicate sample, and one field blank sample collected on August 3rd and August 6th, 2018 has been completed. Samples were analyzed for polycyclic aromatic hydrocarbons (PAHs) by U.S. Environmental Protection Agency (EPA) Method 8270D modified by selected ion monitoring (SIM), polychlorinated biphenyls (PCBs) by EPA Method 8082A, total organic carbon (TOC) by EPA Method 9060, total solids by American Society for Testing and Materials (ASTM) Method D-2216, moisture content at 70 degrees Celsius (°C), and grain size by ASTM Method D7928/D6913 by TestAmerica Laboratories, Incorporated (TA) located in Tacoma, Washington. Rinsate Blanks were analyzed for PAHs by EPA Method 8270D modified by SIM, PCBs by EPA Method 8082A, and TOC by Standard Method 5310B. The analyses were performed in general accordance with the methods specified in EPA's *Test Methods for Evaluating Solid Waste (SW-846)* and Annual Book of ASTM Standards, ASTM, Philadelphia, Pennsylvania. The laboratory provided level 2 and level 4 data packages containing sample results, and associated quality assurance (QA) and quality control (QC) data, preparation logs, and raw instrument outputs (where applicable). The following samples are associated with laboratory group 580-79389-1:

Sample ID	Laboratory ID
PDI-SC-S203-0to2	580-79389-1
PDI-SC-S203-4to6	580-79389-2
PDI-SC-S203-12to13.8	580-79389-3
PDI-SC-S203-2to4	580-79389-4
PDI-SC-S203-8to10	580-79389-5
PDI-SC-S203-10to12	580-79389-6
PDI-SC-S257-0to2	580-79389-7
PDI-SC-S257-2to4	580-79389-8
PDI-SC-S257-4to6	580-79389-9
PDI-SC-S257-6to8	580-79389-10
PDI-SC-S257-6to8D	580-79389-11
PDI-SC-S257-8to10	580-79389-12

Sample ID	Laboratory ID
PDI-SC-S257-10to12	580-79389-13
PDI-SC-S257-12to14.2	580-79389-14
PDI-SC-S203-6to8	580-79389-15
PDI-SC-S254-10to12	580-79389-16
PDI-SC-S254-0.3to2	580-79389-17
PDI-SC-S254-14to15.4	580-79389-18
PDI-SC-S254-2to4	580-79389-19
PDI-SC-S254-8to10	580-79389-20
PDI-SC-S254-4to6	580-79389-21
PDI-SC-S254-6to8	580-79389-22
PDI-SC-S254-12to14	580-79389-23
PDI-RB-SS-180806-1100	580-79389-24

Data validation is based on method performance criteria and QC criteria documented in the *Quality Assurance Project Plan (QAPP),* dated March 23, 2018, as amended. If data qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA documents *USEPA National Functional Guidelines for Organic Superfund Methods Data Review*, January 2017, and *USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review,* January 2017. Data qualifiers assigned to results reported in this sample set are included in Table 1.

SAMPLE RECEIPT

Upon receipt by TA, the sample jar information was compared to the associated chain-of-custody (COC) and the cooler temperatures were recorded. The coolers were received at temperatures within the EPA-recommended limits of greater than 0°C and less than or equal to 6°C.

ORGANIC ANALYSES

Samples were analyzed for PAHs and PCBs by the methods identified in the introduction to this report.

1. Holding Times – Acceptable.

2. Initial and Continuing Calibration Verifications – Acceptable except as noted by the laboratory below:

   PCBs by Method 8082A – The percent differences (%D) for the following analytes were cited in the case narrative as being outside the control limits of ±20% in the continuing calibration verifications (CCVs) associated with the analytical batches listed below:

Analytical Batch	Analyte	%D
281357	PCB-1242	high
	PCB-1232 (2C)	high
	PCB-1248 (2C)	high
	PCB-1242 (2C)	high
	PCB-1221 (2C)	high
	PCB-1254 (2C)	high
281358	PCB-1242	high
	PCB-1248	high
	PCB-1221	high
	TCMX (ss)(2C)	high
	PCB-1232	high
	PCB-1254	high
	PCB-1260	high
	PCB-1016	high
	TCMX (ss)	high
281924	PCB-1248	high
	PCB-1221	high
	PCB-1254	high

high = narrative did not note 1C or 2C
ss = surrogate spike

For all samples associated with the above CCVs, the analytes were not detected; therefore, data were not qualified based on the high CCV %Ds.

In the laboratory case narrative, the percent differences (%D) for the following analytes were outside (low) the control limits of ±20% in the continuing calibration verifications (CCVs) associated with the analytical batches listed below:

Analytical Batch	Analyte	%D
281783	PCB-1254	low

Results associated with the low CCV recoveries listed above were not detected; however, the results are not qualified due to the low CCV recovery because that low CCV recovery was on the confirmation column, not the primary column.

The laboratory narrative only noted if the average %D for initial calibration check samples (ICVs) and CCVs did not meet the ±20% criteria. As part of this review, all CCV results were reviewed and the individual peaks were assessed using the ±20% criteria. Non-detect results associated with high CCV recoveries are not qualified. As a result of the extended review of individual CCV peaks, the following sample results were qualified:

Sample ID	Analyte	Final Result	Reason Code
PDI-SC-S203-0to2	PCB-1260	3100J µg/kg	c
PDI-SC-S203-4to6	PCB-1260	170J µg/kg	c
PDI-SC-S203-2to4	PCB-1221 PCB-1254	ND UJ µg/kg ND UJ µg/kg	c c
PDI-SC-S203-8to10	PCB-1221 PCB-1254	ND UJ µg/kg ND UJ µg/kg	c c
PDI-SC-S203-10to12	PCB-1221 PCB-1254	ND UJ µg/kg ND UJ µg/kg	c c
PDI-SC-S257-2to4	PCB-1260	40J µg/kg	c
PDI-SC-S257-4to6	PCB-1260	220J µg/kg	c
PDI-SC-S257-6to8	PCB-1248 PCB-1260	13J µg/kg 18J µg/kg	c c
PDI-SC-S257-6to8D	PCB-1248 PCB-1260	5.5J µg/kg 6.2J µg/kg	c c
PDI-SC-S257-8to10	PCB-1260	11J µg/kg	c
PDI-SC-S257-10to12	PCB-1260	5.1J µg/kg	c
PDI-SC-S257-12to14.2	PCB-1260	9.3J µg/kg	c
PDI-SC-S203-6to8	PCB-1260	3.1J µg/kg	c
PDI-SC-S254-10to12	PCB-1260	41J µg/kg	c
PDI-SC-S254-0.3to2	PCB-1260	160J µg/kg	c
PDI-SC-S254-14to15.4	PCB-1260	8.5J µg/kg	c
PDI-SC-S254-2to4	PCB-1260	78J µg/kg	c
PDI-SC-S254-8to10	PCB-1260	55J µg/kg	c
PDI-SC-S254-4to6	PCB-1260	58J µg/kg	c
PDI-SC-S254-6to8	PCB-1260	11J µg/kg	c
PDI-SC-S254-12to14	PCB-1221	ND UJ µg/kg	c

Sample ID	Analyte	Final Result	Reason Code
	PCB-1254	ND UJ µg/kg	c
	PCB-1260	19 J µg/kg	c

µg/kg = micrograms per kilogram
c = continuing calibration
J = estimated concentration
ND = not detected
PCB = polychlorinated biphenyl
UJ = material analyzed for but not detected and sample quantitation limit estimated

3. Blanks – Acceptable except as noted below:

PAHs by Method 8270D-SIM – The following analytes were detected at concentrations between the method detection limits (MDLs) and the reporting limits (RLs):

Extraction Date	Analyte	Result
8/8/2018	2-Methylnaphthalene	0.161 J µg/kg
	Anthracene	0.147 J µg/kg
	Benzo[a]anthracene	0.325 J µg/kg
	Benzo[b]fluoranthene	0.129 J µg/kg
	Benzo[k]fluoranthene	0.195 J µg/kg
	Phenanthrene	0.298 J µg/kg
8/9/2018	2-Methylnaphthalene	0.201 J µg/kg
	Benzo[a]anthracene	0.156 J µg/kg
	Naphthalene	0.239 J µg/kg
	Indeno[1,2,3-cd]pyrene	0.302 J µg/kg
	Dibenzo(a,h)anthracene	0.202 J µg/kg
	Benzo(g,h,i)perylene	0.189 J µg/kg

J = reported concentrations were above the MDLs but below the reporting limit
µg/kg = micrograms per kilogram

All compounds detected in the method blanks were detected in one or more of the associated project samples. For samples that were diluted prior to analysis (5X and 10X), sample results that were flagged by the laboratory as “JB” (detected in associated blank and reported at a concentration less than the RL but greater than the MDL) were flagged as estimated “J” with a qualifier of “bl” due to potential high bias due to method blank contamination. For the one sample that was not diluted, only results that were flagged by the laboratory as “JB” were flagged as estimated “J” with a qualifier of “bl” due to potential high bias due to method blank contamination. All other results for that sample were >2X the concentration reported in the associated method blank, therefore these results were not qualified. The following results were qualified:

Sample ID	Analyte	Final Result	Reason Code
PDI-SC-S203-12to13.8	2-Methylnaphthalene Benzo[a]anthracene Naphthalene	0.59 J 1.5 J 1.2 J	bl bl bl
PDI-SC-S203-8to10	2-Methylnaphthalene Anthracene Benzo[k]fluoranthene	0.96 J 0.87 J 0.95 J	bl bl bl
PDI-SC-S203-10to12	2-Methylnaphthalene Anthracene Benzo[k]fluoranthene	0.92 J 0.43 J 0.82 J	bl bl bl
PDI-SC-S257-0to2	Dibenzo(a,h)anthracene	8.8 J	bl
PDI-SC-S257-6to8	Dibenzo(a,h)anthracene	11 J	bl
PDI-SC-S257-12to14.2	Dibenzo(a,h)anthracene	14 J	bl
PDI-SC-S203-6to8	2-Methylnaphthalene Benzo[a]anthracene Benzo[g,h,i]perylene Indeno[1,2,3-cd]pyrene Naphthalene	1.1 J 3.1 J 1.8 J 2.4 J 2.1 J	bl bl bl bl bl
PDI-SC-S254-6to8	Dibenzo(a,h)anthracene	15 J	bl
PDI-SC-S254-12to14	Dibenzo(a,h)anthracene	13 J	bl

4. Surrogates – Acceptable except as noted below:

PCBs by EPA Method 8082A – The percent recoveries for decachlorobiphenyl and tetrachloro-m-xylene in the following samples were outside of the control limits of 54–142% and 58–122%, respectively:

Sample	Surrogate	% Recovery
PDI-SC-S203-0to2	Decachlorobiphenyl	154
PDI-SC-S203-4to6	Tetrachloro-m-xylene	44
PDI-SC-S203-12to13.8	Tetrachloro-m-xylene	51
PDI-SC-S203-2to4	Decachlorobiphenyl Tetrachloro-m-xylene	196 132
PDI-SC-S257-0to2	Tetrachloro-m-xylene	53
PDI-SC-S257-2to4	Tetrachloro-m-xylene	41
PDI-SC-S257-4to6	Tetrachloro-m-xylene	43
PDI-SC-S257-6to8	Tetrachloro-m-xylene	50
PDI-SC-S257-6to8D	Tetrachloro-m-xylene	49
PDI-SC-S257-8to10	Tetrachloro-m-xylene	42
PDI-SC-S257-10to12	Tetrachloro-m-xylene	37
PDI-SC-S257-12to14.2	Tetrachloro-m-xylene	36
PDI-SC-S203-6to8	Tetrachloro-m-xylene	49
PDI-SC-S254-10to12	Tetrachloro-m-xylene	36
PDI-SC-S254-0.3to2	Tetrachloro-m-xylene	49
PDI-SC-S254-14to15.4	Tetrachloro-m-xylene	40
PDI-SC-S254-2to4	Tetrachloro-m-xylene	50
PDI-SC-S254-8to10	Tetrachloro-m-xylene	44
PDI-SC-S254-4to6	Tetrachloro-m-xylene	50
PDI-SC-S254-6to8	Tetrachloro-m-xylene	52
PDI-SC-S254-12to14	Decachlorobiphenyl Tetrachloro-m-xylene	53 53

Only those results where both surrogate spike recoveries did not meet the control limits are qualified. The result for PCB-1260 in sample PDI-SC-S203-2to4 is qualified as estimated and flagged 'J' based on the surrogate spike recoveries. The PCB results in sample PDI-SC-S254-12to14 were qualified as estimated and flagged "J" or "UJ" based on the surrogate spike recoveries.

5. Laboratory Control Sample – Acceptable except as noted below:

PAHs by Method 8270D-SIM – For Batch 281134, no laboratory control sample duplicate (LCSD) was reported and no matrix spike/matrix spike duplicate (MS/MSD) was performed, so precision data is not available. The LCS results are acceptable.

PCBs by EPA Method 8082A – For two of the three sample batches (281230 and 281382), no LCSD was reported, and no MS/MSD was performed, so precision data is not available. The LCS results are acceptable for batches 281230 and 281382. A laboratory control sample (LCS)/LCSD was analyzed only with batch 281399, containing the field blank.

6. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable except as noted below:

PAHs by Method 8270D-SIM – An MS/MSD was performed on a sample PDI-SC-S203-12to13.8. All relative percent differences (RPDs) were outside of control limits:

Analyte	RPD	RPD Control Limits
2-Methylnaphthalene	17	12
Acenaphthylene	15	12
Acenaphthene	15	12
Anthracene	17	12
Benzo[a]anthracene	20	14
Chrysene	20	10
Fluoranthene	17	13
Benzo[b]fluoranthene	18	10
Fluorene	16	13
Benzo[k]fluoranthene	21	15
Benzo[a]pyrene	21	12
Naphthalene	20	12
Indeno[1,2,3-cd]pyrene	22	15
Phenanthrene	18	11
Dibenz(a,h)anthracene	19	13
Pyrene	18	12
Benzo[g,h,i]perylene	22	14

RPDs = relative percent differences

All detected results for PDI-SC-S203-12to13.8 are qualified as estimated (J) due to poor MS/MSD precision.

PCBs by EPA Method 8082A – An MS/MSD was not performed on a sample from this laboratory group. In addition, an LCSD was not performed. Therefore, precision for the analytical batch could not be assessed and accuracy was assessed using the LCS.

7. Field Duplicate – A field duplicate was collected at PDI-SC-S257-6to8. Acceptable except as noted below:

   PAHs by Method 8270D-SIM – All field duplicate RPDs met the project criteria of 50% with the exception of acenaphthylene (62%). The acenaphthylene results in the normal sample and the field duplicate sample are qualified "J" as estimated concentrations.

   PCBs by EPA Method 8082A – The RPDs did not meet the project criteria of 50% for both compounds detected in the field duplicate sample (PCB-1248 with an RPD of 81% and PCB-1260 with an RPD of 97.5%). These results in the normal sample and the field duplicate sample are qualified "J" as estimated concentrations.

8. Reporting Limits and Chromatographic Review – Acceptable except as noted below:

   General – One or more results were flagged 'J' by the laboratory to indicate the reported concentrations were above the MDLs but below the reporting limits. Laboratory 'J'-flagged results are considered estimated. As the result is between the MDL and the reporting limit, there is a greater level of uncertainty associated with the numerical result.

   PAHs by Method 8270D-SIM – All samples except two (PDI-SC-S203-8to10 and PDI-RB-SS-180806-1100) required dilution prior to analysis due to the nature of the sample matrix.

   PCBs by EPA Method 8082A – Chromatograms were reviewed to confirm target analytes were properly identified. The review confirmed target analytes were properly identified and reported by the laboratory.

   The following samples required a copper clean-up to reduce matrix interferences caused by sulfur: PDI-SC-S203-4to6, PDI-SC-S203-12to13.8, PDI-SC-S257-0to2, PDI-SC-S257-2to4, PDI-SC-S257-4to6, PDI-SC-S257-6to8, PDI-SC-S257-6to8D,PDI-SC-S257-8to10, PDI-SC-S257-10to12, PDI-SC-S257-12to14.2, PDI-SC-S203-6to8, PDI-SC-S254-10to12, PDI-SC-S254-0.3to2, PDI-SC-S254-14to15.4, PDI-SC-S254-2to4, PDI-SC-S254-8to10 PDI-SC-S254-4to6, and PDI-SC-S254-6to8.

9. Calculation Checks - Acceptable:

   A calculation check was performed for PDI-SC-S254-2to4. The review confirmed the final results as reported.

10. Other Items of Note:

    PCBs by EPA Method 8082A – the RPD between the primary column and the secondary column did not meet the criteria of 40%. In accordance with the laboratory's SOP, the lower result was reported. The following sample results are qualified as estimated concentrations and flagged "J" due to poor column agreement:

Sample ID	Analyte	1C/2C RPD	Final Result
PDI-SC-S257-6to8	PCB-1248	67.2	13 J
PDI-SC-S257-6to8D	PCB-1248	70.9	5.5 J
	PCB-1260	47.4	6.2 J
PDI-SC-S257-10to12	PCB-1260	69.0	5.1 J
PDI-SC-S257-12to14.2	PCB-1260	58.1	9.3 J
PDI-SC-S254-6to8	PCB-1260	47.6	11 J

ID = identification
RPD = relative percent difference

The following samples appear to contain PCBs; however, due to weathering or other environmental processes, the PCBs in the sample do not closely match any of the laboratory's Aroclor standards used for instrument calibration: PDI-SC-S203-8to10, PDI-SC-S257-0to2, PDI-SC-S257-6to8, PDI-SC-S257-6to8D, PDI-SC-S257-8to10, PDI-SC-S257-10to12, PDI-SC-S257-12to14.2, PDI-SC-S203-6to8, PDI-SC-S254-10to12, PDI-SC-S254-0.3to2, PDI-SC-S254-14to15.4, PDI-SC-S254-2to4, PDI-SC-S254-8to10, PDI-SC-S254-4to6, PDI-SC-S254-6to8, and PDI-SC-S254-12to14. The PCBs have been identified but not reported as a mixture of Aroclors. Due to the poor match with the Aroclor standard(s), there is increased qualitative and quantitative uncertainty associated with this result. Detected results for these samples are qualified as estimated and flagged "J" based on this identification issue.

CONVENTIONAL ANALYSES

Samples were analyzed for TOC and total solids by the methods identified in the introduction to this report.

1. Holding Times – Acceptable except as noted below:

   Moisture Content at 70°C – The 7-day holding time indicated for total solids in the QAPP was exceeded for all samples in the laboratory group by 2 to 20 days due to an oversight by the laboratory. No data qualifiers were assigned based on the holding time exceedance.

2. Blanks – Acceptable except as noted below:

   TOC by Method 9060 – TOC was reported in the field blank (sample PDI-RB-SS-180806-1100) at a concentration of 0.21 mg/L. No data qualifiers were assigned based on the field blank contamination.

3. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) – Acceptable except as noted below:

   TOC by Method SM 5310B – For Batch 281287, no LCSD was reported and no MS/MSD was performed, so precision data is not available. The LCS result is acceptable.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable except as noted below:

   TOC by Method 9060 – For Batch 281802, the MSD recovery of 66% and the MS/MSD RPD of 36% did not meet project limits. The TOC result for PDI-SC-S203-0to2 is qualified "J" as an estimated concentration.

5. Field Duplicate – A field duplicate was collected at PDI-SC-S257-6to8. All RPDs were acceptable.

6. Laboratory Replicates – Acceptable.

7. Reporting Limits – Acceptable.

8. Calculation Checks – Acceptable:

   A calculation check was performed for PDI-SC-S254-2to4. The review confirmed the final results as reported.

GRAIN SIZE ANALYSES

Samples were analyzed for grain size by the methods identified in the introduction to this report. The data were reviewed to confirm that the required grain size fractions identified in the QAPP were reported for each sample.

1. Laboratory Duplicate – Acceptable

   The laboratory performed duplicate analysis at a rate of 1 per 20 samples per their internal requirements. A laboratory duplicate was performed on PDI-SC-S203-2to4. Results were comparable.

OVERALL ASSESSMENT OF DATA

The data reported in this laboratory group is considered usable for meeting project objectives. The completeness for laboratory group 580-79389-1 is 100%.

Table 1
QA/QC Data Summary Review
Portland Harbor
Subsurface Sediment - Deep Core Stations
TestAmerica Laboratory Group: 580-79389-1

Sample ID	Laboratory ID	Method	Analyte	Laboratory Result	Units	Final Result	Reason Code
PDI-SC-S203-0TO2	580-79389-1	9060	Total Organic Carbon	35000	mg/kg	35000 J	m,md
PDI-SC-S203-0TO2	580-79389-1	SW8082A	Aroclor 1260	3100	µg/kg	3100 J	c
PDI-SC-S203-4TO6	580-79389-2	SW8082A	Aroclor 1260	170	µg/kg	170 J	c
PDI-SC-S203-12TO13.8	580-79389-3	SW8270D	Pyrene	2.2 J	µg/kg	2.2 J	md
PDI-SC-S203-12TO13.8	580-79389-3	SW8270D	Benzo(b)fluoranthene	2.7 J	µg/kg	2.7 J	md
PDI-SC-S203-12TO13.8	580-79389-3	SW8270D	Fluoranthene	1.7 J	µg/kg	1.7 J	md
PDI-SC-S203-12TO13.8	580-79389-3	SW8270D	Benzo(k)fluoranthene	0.74 J	µg/kg	0.74 J	md
PDI-SC-S203-12TO13.8	580-79389-3	SW8270D	Benz(a)anthracene	1.5 J	µg/kg	1.5 J	md,bl
PDI-SC-S203-12TO13.8	580-79389-3	SW8270D	Phenanthrene	2.1 J	µg/kg	2.1 J	md
PDI-SC-S203-12TO13.8	580-79389-3	SW8270D	Naphthalene	1.2 J	µg/kg	1.2 J	md,bl
PDI-SC-S203-12TO13.8	580-79389-3	SW8270D	2-Methylnaphthalene	0.59 J	µg/kg	0.59 J	md,bl
PDI-SC-S203-2TO4	580-79389-4	SW8082A	Aroclor 1260	4900	µg/kg	4900 J	s
PDI-SC-S203-2TO4	580-79389-4	SW8082A	Aroclor 1254	380 U	µg/kg	380 UJ	c
PDI-SC-S203-2TO4	580-79389-4	SW8082A	Aroclor 1221	380 U	µg/kg	380 UJ	c
PDI-SC-S203-8TO10	580-79389-5	SW8270D	Benzo(k)fluoranthene	0.95 J	µg/kg	0.95 J	bl
PDI-SC-S203-8TO10	580-79389-5	SW8270D	2-Methylnaphthalene	0.96 J	µg/kg	0.96 J	bl
PDI-SC-S203-8TO10	580-79389-5	SW8082A	Aroclor 1260	2.9	µg/kg	2.9 J	q
PDI-SC-S203-8TO10	580-79389-5	SW8082A	Aroclor 1254	2.9 U	µg/kg	2.9 UJ	c
PDI-SC-S203-8TO10	580-79389-5	SW8082A	Aroclor 1221	2.9 U	µg/kg	2.9 UJ	c
PDI-SC-S203-8TO10	580-79389-5	SW8270D	Anthracene	0.87 J	µg/kg	0.87 J	bl
PDI-SC-S203-10TO12	580-79389-6	SW8082A	Aroclor 1254	2.9 U	µg/kg	2.9 UJ	c
PDI-SC-S203-10TO12	580-79389-6	SW8082A	Aroclor 1221	2.9 U	µg/kg	2.9 UJ	c
PDI-SC-S203-10TO12	580-79389-6	SW8270D	Anthracene	0.43 J	µg/kg	0.43 J	bl
PDI-SC-S203-10TO12	580-79389-6	SW8270D	Benzo(k)fluoranthene	0.82 J	µg/kg	0.82 J	bl
PDI-SC-S203-10TO12	580-79389-6	SW8270D	2-Methylnaphthalene	0.92 J	µg/kg	0.92 J	bl
PDI-SC-S257-0TO2	580-79389-7	SW8270D	Dibenz(a,h)anthracene	8.8 J	µg/kg	8.8 J	bl
PDI-SC-S257-0TO2	580-79389-7	SW8082A	Aroclor 1254	19	µg/kg	19 J	q

Table 1
QA/QC Data Summary Review
Portland Harbor
Subsurface Sediment - Deep Core Stations
TestAmerica Laboratory Group: 580-79389-1

Sample ID	Laboratory ID	Method	Analyte	Laboratory Result	Units	Final Result	Reason Code
PDI-SC-S257-2TO4	580-79389-8	SW8082A	Aroclor 1260	40	µg/kg	40 J	c
PDI-SC-S257-4TO6	580-79389-9	SW8082A	Aroclor 1260	220	µg/kg	220 J	c
PDI-SC-S257-6TO8	580-79389-10	SW8082A	Aroclor 1260	18	µg/kg	18 J	fd,c,q
PDI-SC-S257-6TO8	580-79389-10	SW8082A	Aroclor 1248	13	µg/kg	13 J	fd,r,c,q
PDI-SC-S257-6TO8	580-79389-10	SW8270D	Acenaphthylene	19	µg/kg	19 J	fd
PDI-SC-S257-6TO8	580-79389-10	SW8270D	Dibenz(a,h)anthracene	11 J	µg/kg	11 J	bl
PDI-SC-S257-6TO8D	580-79389-11	SW8082A	Aroclor 1260	6.2	µg/kg	6.2 J	fd,r,c,q
PDI-SC-S257-6TO8D	580-79389-11	SW8082A	Aroclor 1248	5.5	µg/kg	5.5 J	fd,r,c,q
PDI-SC-S257-6TO8D	580-79389-11	SW8270D	Acenaphthylene	36	µg/kg	36 J	fd
PDI-SC-S257-8TO10	580-79389-12	SW8082A	Aroclor 1260	11	µg/kg	11 J	c,q
PDI-SC-S257-10TO12	580-79389-13	SW8082A	Aroclor 1260	5.1	µg/kg	5.1 J	r,c,q
PDI-SC-S257-12TO14.2	580-79389-14	SW8082A	Aroclor 1260	9.3	µg/kg	9.3 J	r,c,q
PDI-SC-S257-12TO14.2	580-79389-14	SW8270D	Dibenz(a,h)anthracene	14 J	µg/kg	14 J	bl
PDI-SC-S203-6TO8	580-79389-15	SW8082A	Aroclor 1260	3.1	µg/kg	3.1 J	c,q
PDI-SC-S203-6TO8	580-79389-15	SW8270D	Benzo(g,h,i)perylene	1.8 J	µg/kg	1.8 J	bl
PDI-SC-S203-6TO8	580-79389-15	SW8270D	Indeno(1,2,3-cd)pyrene	2.4 J	µg/kg	2.4 J	bl
PDI-SC-S203-6TO8	580-79389-15	SW8270D	Benz(a)anthracene	3.1 J	µg/kg	3.1 J	bl
PDI-SC-S203-6TO8	580-79389-15	SW8270D	Naphthalene	2.1 J	µg/kg	2.1 J	bl
PDI-SC-S203-6TO8	580-79389-15	SW8270D	2-Methylnaphthalene	1.1 J	µg/kg	1.1 J	bl
PDI-SC-S254-10TO12	580-79389-16	SW8082A	Aroclor 1260	41	µg/kg	41 J	c,q
PDI-SC-S254-0.3TO2	580-79389-17	SW8082A	Aroclor 1260	160	µg/kg	160 J	c,q
PDI-SC-S254-14TO15.4	580-79389-18	SW8082A	Aroclor 1260	8.5	µg/kg	8.5 J	c,q
PDI-SC-S254-2TO4	580-79389-19	SW8082A	Aroclor 1260	78	µg/kg	78 J	c,q
PDI-SC-S254-8TO10	580-79389-20	SW8082A	Aroclor 1260	55	µg/kg	55 J	c,q
PDI-SC-S254-4TO6	580-79389-21	SW8082A	Aroclor 1260	58	µg/kg	58 J	c,q
PDI-SC-S254-6TO8	580-79389-22	SW8082A	Aroclor 1260	11	µg/kg	11 J	r,c,q
PDI-SC-S254-6TO8	580-79389-22	SW8270D	Dibenz(a,h)anthracene	15 J	µg/kg	15 J	bl

Table 1
QA/QC Data Summary Review
Portland Harbor
Subsurface Sediment - Deep Core Stations
TestAmerica Laboratory Group: 580-79389-1

Sample ID	Laboratory ID	Method	Analyte	Laboratory Result	Units	Final Result	Reason Code
PDI-SC-S254-12TO14	580-79389-23	SW8082A	Aroclor 1260	19	µg/kg	19 J	s,c,q
PDI-SC-S254-12TO14	580-79389-23	SW8082A	Aroclor 1254	3.3 U	µg/kg	3.3 UJ	s,c
PDI-SC-S254-12TO14	580-79389-23	SW8082A	Aroclor 1221	3.3 U	µg/kg	3.3 UJ	s,c
PDI-SC-S254-12TO14	580-79389-23	SW8082A	Aroclor 1232	3.3 U	µg/kg	3.3 UJ	s
PDI-SC-S254-12TO14	580-79389-23	SW8082A	Aroclor 1248	3.3 U	µg/kg	3.3 UJ	s
PDI-SC-S254-12TO14	580-79389-23	SW8082A	Aroclor 1016	3.3 U	µg/kg	3.3 UJ	s
PDI-SC-S254-12TO14	580-79389-23	SW8082A	Aroclor 1242	3.3 U	µg/kg	3.3 UJ	s
PDI-SC-S254-12TO14	580-79389-23	SW8270D	Dibenz(a,h)anthracene	13 J	µg/kg	13 J	bl

µg/kg = micrograms per kilogram
bl = blank contamination
c = calibration issue
fd = field duplicate relative percent difference
J = estimated concentration
ID = identification
m = matrix spike recovery
md = matrix spike/matrix spike duplicate relative percent difference
q = quantitation issue
r = dual column relative percent difference
s = surrogate spike recovery
U = not detected
UJ = estimated reporting limit