

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, Seattle, WA

Laboratory Group: 580-80981-1

Analyses/Method: Polycyclic Aromatic Hydrocarbons (PAHs), Polychlorinated Biphenyls (PCBs),
 Total Organic Carbon (TOC), Total Solids, and Grain Size

Validation Level: Stage 2

AECOM Project

Number: 60566335, Task #2.12

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File Name: 580-80981-1 DVR

SUMMARY

The data quality review of 2 subsurface sediment samples collected on August 1, 2018, has been completed. Samples were analyzed for PAHs by EPA Method 8270D modified by selected ion monitoring (SIM), PCBs by EPA Method 8082A, 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. 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*, American Society for Testing & Materials (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 580-80981-1:

Sample ID	Laboratory ID
PDI-SC-S088-0to2	580-80981-1
PDI-SC-S088-2to3.3	580-80981-2

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 cooler was received at a temperature below the EPA-recommended limits of greater than 0°C and less than or equal to 6°C at -3.3°C. Data were not qualified based on the low cooler temperature as the samples were shipped frozen. All samples in this laboratory group were frozen at the field warehouse after sample collection until they were shipped to TA on 10/10/18. TA froze the samples upon receipt to extend holding times until they were thawed for analysis.

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ORGANIC ANALYSES

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

1. Holding Times – Acceptable
2. Blanks – Acceptable except as noted below:

General – A rinsate blank was not submitted with this laboratory group. Associated rinsate blanks are reported under separate cover. Target compounds may have been detected in the rinsate blanks associated with these samples. Sediment data were not qualified based on rinsate blank results.

3. Surrogates – Acceptable except as noted below:

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

Sample	DCB % Recovery	TMX % Recovery
PDI-SC-S088-0to2	898%	ok
PDI-SC-S088-2to3.3	1,364%	ok
MS (PDI-SC-S088-2to3.3)	1,568%	54%
MSD (PDI-SC-S088-2to3.3)	1,708%	56%

ok – acceptable

Data were not qualified based on surrogate recoveries in QC samples (MS and MSD). As one of the surrogate recoveries was acceptable for both PDI-SC-S088-0to2 and PDI-SC-S088-2to3.3, data were not qualified based on these surrogate recoveries.

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

PAHs by Method 8270D-SIM – The percent recovery for anthracene (71%) in the LCS associated with prep batch 286335 was below the control limits of 73-125%. The results for anthracene in PDI-SC-S088-0to2 and PDI-SC-S088-2to3.3 were qualified as estimated and flagged 'J' based on the LCS recovery.

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

PAHs by Method 8270D-SIM – An MS/MSD was not performed using a sample from this laboratory group. Accuracy was assessed using the LCS. Precision was not assessed using a sample from this laboratory group.

PCBs by EPA Method 8082A – An MS/MSD was performed using PDI-SC-S088-2to3.3. The percent recoveries for PCB-1016 in the MS (60%) and MSD (63%) were below the control limits of 64-120%. The result for PCB-1016 in PDI-SC-S088-2to3.3 was qualified as estimated and flagged 'UJ' based on the MS/MSD results.

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6. Reporting Limits and Chromatographic Review – Acceptable

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

7. Other Items of Note:

PCBs by EPA Method 8082A – The laboratory noted that both samples in this laboratory group required a copper clean-up to reduce matrix interferences caused by sulfur.

The percent differences (%D) for one or more peaks for the following analytes were outside the control limits of $\pm 20\%$ in the continuing calibration verifications (CCVs) associated with the analytical batches listed below:

Analytical Batch	Analyte	Column 1 %D	Column 2 %D
286719	PCB-1232	high/low	low
	PCB-1248	high/low	ok
	PCB-1242	high/low	ok
	PCB-1221	low	low
	PCB-1254	ok	low
	PCB-1016	high/low	high/low
	PCB-1260	high	ok
286910	PCB-1232	low	low
	PCB-1248	low	low
	PCB-1242	high	low
	PCB-1221	low	low
	PCB-1254	ok	low
	PCB-1016	high/low	high/low
	PCB-1260	high	ok

ok - acceptable

The samples associated with analytical batch 286719 were QC samples and data were not qualified based on CCV %Ds in QC samples. The analytes associated with analytical batch 286910 were either not detected in the associated samples or reported from the passing column; therefore, data were not qualified based on the CCV %Ds with the following exceptions. The results for PCB-1232, PCB-1248, PCB-1221 and PCB-1260 in PDI-SC-S088-2to3.3 and PCB-1232, PCB-1248, PCB-1221, and PCB-1016 in PDI-SC-S088-0to2 were qualified as estimated and flagged 'J' or 'UJ' based on the CCV %Ds. The result for PCB-1016 in PDI-SC-S088-2to3.3 was qualified as estimated and flagged 'J' based on the MS/MSD results and is not qualified based on the CCV %D.

CONVENTIONAL ANALYSES

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

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1. Holding Times – Acceptable except as noted below:

Total Solids by ASTM Method D-2216/Moisture Content at 70°C – The 7-day holding time indicated for total solids in the QAPP was exceeded for both samples in this laboratory group by 65 days. No data qualifiers were assigned based on these holding time exceedances.

2. Blanks – Acceptable where applicable, except as noted below:

TOC by EPA Method 9060 – A rinsate blank was not submitted with this laboratory group. Associated rinsate blanks are reported under separate cover. Target compounds may have been detected in the rinsate blanks associated with these samples. Sediment data were not qualified based on rinsate blank results.

3. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) - Acceptable

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

TOC by Method 9060 – An MS/MSD was not performed using a sample from this laboratory group. Accuracy was assessed using the LCS. Precision was not assessed using a sample from this laboratory group.

5. Laboratory Replicate – Acceptable

Moisture Content at 70°C – A laboratory duplicate was performed using PDI-SC-S088-0to2. Results were comparable.

6. Reporting Limits – Acceptable

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. As indicated under sample receipt, the sample volume used for grain size analysis was frozen until shipped to TA. No data qualifiers were assigned to grain size results based on sample condition.

1. Laboratory Duplicate – Acceptable except as noted below:

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-S088-0to2. The result for the clay fraction for sample PDI-SC-S088-0to2 was assigned an 'L' qualifier to indicate that the grain size fraction was greater than 5 percent of the total combined fractions and the RPD for duplicate analysis on the sample fraction was greater than 20%.

OVERALL ASSESSMENT OF DATA

The data reported in this laboratory group is considered usable for meeting project objectives. The completeness for laboratory group 580-80981-1 is 100%.

Table 1
QA/QC Data Summary Review
Portland Harbor
Subsurface Sediment - Deep Core Stations
TestAmerica Laboratory Group: 580-80981-1

Sample ID	Laboratory ID	Method	Analyte	Laboratory Result	Units	Final Result	Reason Code
PDI-SC-S088-0TO2	580-80981-1	D7928/D6913	Clay	21.2	%	21.2 L	ld
PDI-SC-S088-0TO2	580-80981-1	SW8082A	Aroclor 1221	3.8 U	ug/kg	3.8 UJ	c
PDI-SC-S088-0TO2	580-80981-1	SW8082A	Aroclor 1232	3.8 U	ug/kg	3.8 UJ	c
PDI-SC-S088-0TO2	580-80981-1	SW8082A	Aroclor 1248	3.8 U	ug/kg	3.8 UJ	c
PDI-SC-S088-0TO2	580-80981-1	SW8082A	Aroclor 1016	3.8 U	ug/kg	3.8 UJ	c
PDI-SC-S088-0TO2	580-80981-1	SW8270DSIM	Anthracene	9,000	ug/kg	9000 J	l
PDI-SC-S088-2TO3.3	580-80981-2	SW8082A	Aroclor 1260	24	ug/kg	24 J	c
PDI-SC-S088-2TO3.3	580-80981-2	SW8082A	Aroclor 1221	3.2 U	ug/kg	3.2 UJ	c
PDI-SC-S088-2TO3.3	580-80981-2	SW8082A	Aroclor 1232	3.2 U	ug/kg	3.2 UJ	c
PDI-SC-S088-2TO3.3	580-80981-2	SW8082A	Aroclor 1248	3.2 U	ug/kg	3.2 UJ	c
PDI-SC-S088-2TO3.3	580-80981-2	SW8082A	Aroclor 1016	3.2 U	ug/kg	3.2 UJ	m
PDI-SC-S088-2TO3.3	580-80981-2	SW8270DSIM	Anthracene	680	ug/kg	680 J	l

Notes:

% - percent

c - calibration issue

J - estimated value

l - laboratory control sample

L - the grain size fraction was greater than 5 percent of the total combined fractions and the RPD for duplicate analysis on the sample fraction was greater than 20%

ld - laboratory duplicate RPD

m - matrix spike recovery

U - compound was analyzed for, but not detected above the value shown.

ug/kg - microgram per kilogram

RPD - relative percent difference