

Data Validation Report

Project:	Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland Harbor Superfund Site Surface Sediment – Stratified Random	
Laboratory:	TestAmerica Laboratories, Incorporated, Seattle, WA	
Laboratory Group:	580-78433-1	
Analyses:	Petroleum Hydrocarbons, Metals, Total Organic Carbon (TOC), Total Solids, and Grain Size	
Validation Level:	Stage 2A	
AECOM Project Number:	60566335, Task #2.12	
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Reviewed by:	Karen Mixon/AECOM	File Name: 580-78433-1 DVR

SUMMARY

The data quality review of one surface sediment sample collected on June 1, 2018, has been completed. The sample was analyzed for total petroleum hydrocarbons (TPHs, diesel-range and motor oil-range) by Washington State Department of Ecology (Ecology) Method NWTPH-Dx, metals by United States Environmental Protection Agency (EPA) Method 6020B (arsenic, cadmium, copper, lead, and zinc), mercury by EPA Method 7471A, TOC by EPA Method 9060, total solids by American Society for Testing and Materials (ASTM) Method D-2216, moisture content at 70 degrees centigrade (°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)*, Ecology's *Analytical Methods for Petroleum Hydrocarbons*, June 1997, 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 sample is associated with laboratory group 580-78433-1:

Sample ID	Laboratory ID
PDI-SG-B194-BL1	580-78433-1

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 this sample set are included in Table 1.

SAMPLE RECEIPT

Upon receipt by TA, the sample jar information was compared to the chain-of-custody (COC) and the cooler temperature was 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 -2.1°C. Data were not qualified based on the cooler temperature. The sample in this laboratory group was frozen on June 1, 2018 after collection until it was shipped to TA on June 27, 2018.

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ORGANIC ANALYSES

Samples were analyzed for TPHs by method NWTPH-Dx.

1. Holding Times – Acceptable

2. Blanks – Acceptable

One rinsate blank was collected June 3, 2018, was reported with laboratory group 580-77770 (laboratory ID 580-77770-13), and is applicable to the samples reported in this laboratory group. TPHs were not detected in this rinsate blank.

3. Surrogates – Acceptable

4. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) – Acceptable

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

An MS/MSD was not performed using a sample from this laboratory group. Accuracy and precision were assessed using the LCS/LCSD.

6. Laboratory Duplicate – Acceptable

A laboratory duplicate was performed using PDI-SG-B194-BL1. Results were comparable.

7. Reporting Limits – Acceptable

Analyte concentrations detected between the method detection limit (MDL) and the reporting limit are reported by the laboratory with a 'J' flag. Laboratory 'J'-flagged results are considered estimated results. As the result is between the MDL and the reporting limit, there is a greater level of uncertainty associated with the numerical result.

METALS ANALYSES

Samples were analyzed for metals by the methods identified in the introduction to this report.

1. Holding Times – Acceptable except as noted below:

Mercury by Method 7471A – The 28-day holding time indicated for mercury in the QAPP was exceeded for PDI-SG-B194-BL1 by 3 days due to delayed shipment to the laboratory. The result for mercury in PDI-SG-B194-BL1 was qualified as estimated and flagged 'J' based on this holding time exceedance.

2. Blanks – Acceptable

General – One rinsate blank was collected June 3, 2018, was reported with laboratory group 580-77770 (laboratory ID 580-77770-13), and is applicable to the samples reported in this laboratory group. Lead (0.00030 mg/L) and zinc (0.0053 mg/L) were detected in 580-77770-13 at concentrations below the reporting limits but above the MDLs. Data were not qualified based on rinsate blank detections.

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

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4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Post-Digestion Spike (PDS, where applicable) – Acceptable except as noted below:

Metals by Method 6020B – An MS/MSD and PDS were not performed using a sample from this laboratory group. Accuracy and precision were assessed using the LCS/LCSD.

Mercury by Method 7471A – An MS/MSD was performed using PDI-SG-B194-BL1. The percent recoveries for mercury in the MS (78%) and MSD (73%) were below the control limits of 80-120%. The result for mercury in PDI-SG-B194-BL1 was previously qualified and flagged based on the holding time exceedance and no further qualification was necessary based on the MS/MSD results.

5. Laboratory Duplicate – Acceptable except as noted below:

Metals by Method 6020B – A laboratory duplicate was not performed using a sample from this laboratory group. Precision was assessed using the LCS/LCSD.

Mercury by Method 7471A – A laboratory duplicate was performed using PDI-SG-B194-BL1. The relative percent difference (RPD) for mercury (39%) exceeded the control limit of 20%. The result for mercury in PDI-SG-B194-BL1 was previously qualified based on the holding time exceedance. No further qualification was necessary based on the elevated laboratory duplicate RPD.

6. Serial Dilution – Acceptable

Metals by Method 6020B – A serial dilution was not performed using a sample from this laboratory group. Precision was assessed using the LCS/LCSD.

7. Reporting Limits – Acceptable

General – One or more results in multiple samples were reported at concentrations between the reporting limits and the MDLs and were flagged 'J' by the laboratory. As described above, laboratory 'J'-flagged results are considered estimated results.

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:

Total Solids by ASTM Method D-2216 – The 7-day holding time indicated for total solids in the QAPP was exceeded for the samples in this laboratory group as the samples were temporarily held in freezer storage before shipping to TA. Total solids were analyzed within the time that other analyses were performed for samples in this laboratory group. No data qualifiers were assigned based on the holding time exceedance.

Moisture Content at 70°C – The 7-day holding time indicated for total solids in the QAPP was exceeded for the samples in this laboratory group as the samples were temporarily held in freezer storage before shipping to TA. Total solids were analyzed within the time that other analyses were performed for samples in this laboratory group. No data qualifiers were assigned based on the holding time exceedance.

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

TOC by Method 9060 – TOC (198 mg/kg) was detected in the method blank associated with analytical batch 278318 at a concentration below the reporting limit but above the MDL. TOC was detected in PDI-SG-B194-BL1 at a concentration below the reporting limit and less than ten times the method blank detection; therefore, the result for TOC in PDI-SG-B194-BL1 was qualified as not detected and flagged 'U' at the reporting limit.

One rinsate blank was collected June 3, 2018, was reported with laboratory group 580-77770 (laboratory ID 580-77770-13), and is applicable to the samples reported in this laboratory group. TOC (0.50 mg/L) was detected in 580-77770-13 at a concentration below the reporting limit but above the MDL. 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 and precision were assessed using the LCS/LCSD.

5. Laboratory Replicate – Acceptable

TOC by Method 9060 – A laboratory duplicate was not performed using a sample from this laboratory group. Precision was assessed using the LCS/LCSD.

Moisture Content at 70°C – A laboratory duplicate was not performed using a sample from this laboratory group. Precision was not assessed.

Total Solids by ASTM D-2216 – A laboratory duplicate was performed using PDI-SG-B194-BL1. Results were comparable.

6. Reporting Limits – Acceptable

TOC by Method 9060 – TOC was detected at a concentration between the reporting limit and the MDL and flagged 'J' by the laboratory in PDI-SG-B194-BL1, but this result was qualified as not detected based on the associated method blank.

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

The laboratory performed duplicate analysis at a rate of 1 per 20 samples per their internal requirements. A laboratory duplicate was not performed using a sample from this laboratory group.



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OVERALL ASSESSMENT OF DATA

The data reported in this laboratory group, as qualified, is considered usable for meeting project objectives. The completeness for laboratory group 580-78433-1 is 100%.

Table 1
QA/QC Data Summary Review
Portland Harbor
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Sample ID	Laboratory ID	Method	Analyte	Laboratory Result	Units	Final Result	Reason Code
PDI-SG-B194-BL1	580-78433-1	SW7471A	Mercury	0.024 J	mg/kg	0.024 J	h
PDI-SG-B194-BL1	580-78433-1	SW9060	Total Organic Carbon	1,500 J	mg/kg	2,000 U	bl

bl - laboratory blank contamination

h - holding time

J - estimated value

mg/kg - milligram per kilogram

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

Note: Line items where the laboratory result contains a "J" and the final result contains a "U" with a data validation reason code "bl" indicate that the final result is reported as not detected ("U" flag) at the reporting limit.