

Data Validation Report

Project: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling
 Portland Harbor Superfund Site
 Surface Sediment – Downtown/Upriver

Laboratory: TestAmerica Laboratories, Incorporated, Seattle, WA

Laboratory Groups: 580-79946-1 and 580-79946-5

Analyses: Petroleum Hydrocarbons, Metals, Total Organic Carbon (TOC), Tributyltin, Polycyclic Aromatic Hydrocarbons (PAHs), bis(2-Ethylhexyl)phthalate, Total Solids, and Grain Size

Validation Level: Stage 2A

AECOM Project

Number: 60566335, Task #2.12

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File Name: 580-79946-1_5 DVR

SUMMARY

The data quality review of one surface sediment sample collected on August 28, 2018, has been completed. This 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) and EPA Method 7471A (mercury); TOC by EPA Method 9060; tributyltin by Krone et al.; PAHs by EPA Method 8270D modified by selected ion monitoring (SIM); bis(2-ethylhexyl) phthalate by EPA Method 8270D; 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)*, Ecology's *Analytical Methods for Petroleum Hydrocarbons*, June 1997, Annual Book of ASTM Standards, ASTM, Philadelphia, Pennsylvania, and Krone CA et al., *A Method for Analysis of Butyltin Species and Measurement of Butyltins in Sediment and English Sole Livers from Puget Sound*, Marine Environmental Research, 1989. 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 groups 580-79946-1 and 580-79946-5:

| Sample ID | Laboratory ID |
|-------------|---------------|
| PDI-SG-B478 | 580-79946-1 |

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 within the EPA-



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recommended limits of greater than 0°C and less than or equal to 6°C. The sample was frozen on 9/6/18. The rush grain size results were reported in laboratory group 580-79946-5 on 9/14/18. The sample was authorized for the on hold analyses on 9/17/18. The frozen sample was used for analysis.

ORGANIC ANALYSES

The sample was analyzed for TPHs, tributyltin, PAHs, and bis(2-ethylhexyl)phthalate 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.

bis(2-Ethylhexyl)phthalate by EPA Method 8270D – bis(2-Ethylhexyl)phthalate was detected in the method blank associated with prep batch 284408 (5.71 ug/kg) at a concentration between the method detection limit (MDL) and reporting limit. bis(2-Ethylhexyl)phthalate was not detected in PDI-SG-B478; therefore, data were not qualified based on this method blank result.

PAHs by EPA Method 8270D-SIM – Fluoranthene (0.386 ug/kg) was detected in the method blank associated with prep batch 286035 at a concentration between the MDL and reporting limit. Fluoranthene was detected in PDI-SG-B478 at a concentration significantly greater than the method blank result; therefore, data were not qualified based on this method blank result.

3. Surrogates – Acceptable except as noted below:

bis(2-Ethylhexyl)phthalate by EPA Method 8270D – The surrogate recovery for terphenyl-d14 in the method blank associated with prep batch 284408 (129%) exceeded the control limits of 58-120%. Data were not qualified based on the surrogate recoveries in QC samples (method blank).

4. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) – Acceptable
5. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

General – MS/MSDs were not performed using the sample from this laboratory group. Accuracy was assessed using the LCS. Precision was assessed using the LCS/LCSD, where applicable.

6. Laboratory Duplicate

TPHs by Method NWTPH-Dx – A laboratory duplicate was not performed using a sample from this laboratory group. Precision was assessed using the LCS/LCSD.

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7. Reporting Limits – Acceptable except as noted below:

General – Analyte concentrations detected between the MDLs and the reporting limits are reported by the laboratory with 'J' flags. Laboratory 'J'-flagged results are considered estimated results. As the results are between the MDLs and the reporting limits, there is a greater level of uncertainty associated with the numerical results.

PAHs by EPA Method 8270D-SIM – The reporting limits for the sample in this laboratory group were raised because of the dilution that was required prior to analysis due to the nature of the sample matrix. The elevated reporting limits did not exceed the cleanup level for carcinogenic PAHs (12 ug/kg).

bis(2-Ethylhexyl)phthalate by EPA Method 8270D – The reporting limit for the sample in this laboratory group was raised because of the dilution that was required prior to analysis due to the nature of the sample matrix. The reporting limit for the result reported as not detected in PDI-SG-B478 exceeded the cleanup level (135 ug/kg), but the MDL did not.

8. Other Items of Note:

bis(2-Ethylhexyl)phthalate by EPA Method 8270D – The laboratory noted that the percent difference (%D) for the surrogate terphenyl-d14 in the continuing calibration verification (CCV) associated with analytical batch 284567 was outside the control limits of $\pm 20\%$ (high). As the surrogate recovery in the associated sample was acceptable, data were not qualified based on this high surrogate %D.

TPHs by Method NWTPH-Dx – The laboratory indicated that the diesel-range hydrocarbon elution pattern was later than the typical diesel pattern in PDI-SG-B478.

METALS ANALYSES

The sample was analyzed for metals by the methods identified in the introduction to this report.

1. Holding Times – Acceptable

2. Blanks – Acceptable

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

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Post-Digestion Spike (PDS, where applicable)

General – MS/MSDs were not performed using the sample from this laboratory group. Accuracy and precision were assessed using the LCS/LCSDs.

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5. Laboratory Duplicate

General – Laboratory duplicates were not performed using the sample from this laboratory group. Precision was assessed using the LCS/LCSDs.

6. Serial Dilution

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

7. Reporting Limits – Acceptable

General – One or more results 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

The sample was 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 and Moisture Content at 70°C – The 7-day holding time indicated for total solids in the QAPP was exceeded for PDI-SG-B478 by 2-20 days. No data qualifiers were assigned based on this holding time exceedance.

2. Blanks – Acceptable

TOC by 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. 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) – Acceptable

TOC by Method 9060 – An MS/MSD was performed using PDI-SG-B478. Results were acceptable.

5. Laboratory Replicate – Acceptable

TOC by Method 9060 – A laboratory duplicate and triplicate were performed using PDI-SG-B478. Results were comparable.

Total Solids by ASTM Method D-2216 – A laboratory duplicate was performed using PDI-SG-B478. Results were comparable.

6. Reporting Limits – Acceptable



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GRAIN SIZE ANALYSES

The sample was 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

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.

OVERALL ASSESSMENT OF DATA

The data reported in this laboratory group, as qualified, is considered usable for meeting project objectives. The completeness for laboratory groups 580-79946-1 and 580-79946-5 is 100%.

Table 1
QA/QC Data Summary Review
Portland Harbor
Surface Sediment - Downtown/Upriver
TestAmerica Laboratory Groups: 580-79946-1 and 580-79946-5

| Sample ID | Laboratory ID | Method | Analyte | Laboratory Result | Units | Final Result | Reason Code |
|---|---------------|--------|---------|-------------------|-------|--------------|-------------|
| No data qualifiers were assigned to results reported in 580-79946-1 or 580-79946-5 based on this data validation. | | | | | | | |