

Data Validation Report

Project: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling
 Portland Harbor Superfund Site
 Surface Water – January 2019

Laboratory: TestAmerica Laboratories, Incorporated, Seattle, WA

Laboratory Group: 580-83566-1

Analyses: Ethylbenzene, Methylchlorophenoxypropionic Acid (MCPP), Metals, Total Hardness by calculation, Total Suspended Solids (TSS), and Total Dissolved Solids (TDS)

Validation Level: Stage 4

AECOM Project
 Number: 60566335, Task #2.12

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SUMMARY

The data quality review of 10 surface water samples, 1 rinsate blank, and 3 trip blanks collected between January 25 and January 27, 2019, has been completed. Samples were analyzed for ethylbenzene by United States Environmental Protection Agency (EPA) Method 8260C, MCPP by EPA Method 8151A, metals by EPA Methods 6010C (dissolved calcium and magnesium) and 6020B (total and dissolved arsenic, chromium, copper, and zinc), total hardness by Standard Method (SM) 2340B, TSS by SM 2540D, and TDS by SM 2540C 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 *Standard Methods for the Examination of Water and Wastewater*. 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 580-83566-1:

Sample ID	Laboratory ID
PDI-RB-PP-190127 (rinsate blank)	580-83566-1
PDI-WS-T06-1901	580-83566-2
PDI-WS-T06E-1901	580-83566-3
PDI-WS-T06N-1901	580-83566-4
PDI-WS-T06W-1901	580-83566-5
PDI-WS-T07-1901	580-83566-6
PDI-WS-T07E-1901	580-83566-7
PDI-WS-T07N-1901	580-83566-8
PDI-WS-T07W-1901	580-83566-9
PDI-WS-T07W-1901-D (Field duplicate of PDI-WS-T07W-1901)	580-83566-10
Trip Blank 07	580-83566-11
Trip Blank 06	580-83566-12
PDI-WS-T07-1901-D (Field duplicate of PDI-WS-T07-1901)	580-83566-13
Trip Blank	580-83566-14



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Data validation is based on method performance criteria and QC criteria documented in the final *Quality Assurance Project Plan (QAPP)*, dated December 19, 2018. 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 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. No discrepancies related to sample identification were noted by TA.

The sample IDs for two of the trip blanks, Trip Blank and Trip Blank 07, had to be changed in EQUIS to PDI-TB-190125-00 and PDI-TB-190125-07, respectively due previous trip blanks with the same IDs.

ORGANIC ANALYSES

Samples were analyzed for ethylbenzene and MCPP by the methods identified in the introduction of this report.

1. Holding Times – Acceptable
2. Initial and Continuing Calibration Verifications/Instrument Performance Checks – Acceptable
3. Blanks – Acceptable

General – One rinsate blank was reported with this laboratory group. Ethylbenzene and MCPP were not detected in this rinsate blank.

4. Surrogates – Acceptable except as noted below:

MCPP by EPA 8151A – The percent recovery for the surrogate 2,4-dichlorophenylacetic acid (1%) was below the control limits of 44-145% in PDI-RB-PP-190127. The result for MCPP in PDI-RB-PP-190127 was qualified as estimated and flagged 'UJ' based on this low surrogate recovery.

5. Internal Standards – Acceptable
6. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) – Acceptable
7. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable except as noted below:

Ethylbenzene by EPA 8260C – An MS/MSD was performed using PDI-WS-T06N-1901. Results were acceptable.

MCPP by EPA 8151A – An MS/MSD was performed using PDI-WS-T06-1901. The relative percent difference (RPD, 65%) for the MS/MSD pair exceeded the control limit of 35%. The percent recoveries in the MS and MSD were acceptable; therefore, data were not qualified based on the elevated RPD.

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8. Field Duplicate – Acceptable

General – Field duplicates were submitted for PDI-WS-T07-1901 and PDI-WS-T07W-1901 and identified as PDI-WS-T07-1901-D and PDI-WS-T07W-1901-D, respectively. Results were comparable.

9. Calculation Checks – Acceptable

General – A calculation check was performed for sample results on one sample per calibration. The review confirmed the final results were correct as reported.

10. Reporting Limits and Chromatographic Review – Acceptable

General – Chromatograms/spectra were reviewed to confirm target analytes were properly identified. The review confirmed target analytes were properly identified and reported by the laboratory.

METALS ANALYSES

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

1. Holding Times – Acceptable

2. ICP-MS Instrument Performance Check & Tuning (where applicable) – Acceptable

3. Initial and Continuing Calibrations – Acceptable

4. Blanks – Acceptable except as noted below:

General – One rinsate blank was reported with this laboratory group. Dissolved zinc (4.8 ug/L) was detected in this rinsate blank at a concentration between the method detection limit (MDL) and the reporting limit. Dissolved zinc was detected between the MDLs and reporting limits, qualified as not detected, and flagged 'U' at the reporting limits in PDI-WS-T06-1901, PDI-WS-T07-1901, and PDI-WS-T07-1901-D based on this rinsate blank result.

5. Internal Standards – Acceptable

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

7. Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Post Digestion Spike (PDS, where applicable) – Acceptable

General – MS/MSDs and PDS' were performed using PDI-WS-T06-1901. Results were acceptable.

8. Laboratory Duplicate – Acceptable except as noted below:

Calcium and Magnesium by Method 6010C – A laboratory duplicate was performed using PDI-WS-T06-1901. Results were comparable.



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Metals by Method 6020B – A laboratory duplicate was performed using the dissolved metals fraction of PDI-WS-T06-1901. Results were comparable.

A laboratory duplicate was performed using the total metals fraction of PDI-WS-T06-1901. The RPDs for arsenic (34%) and zinc (21%) exceeded the control limit of 20%. The sample concentrations of arsenic and zinc were less than five times the reporting limits; therefore, data were not qualified based on the elevated laboratory duplicate RPDs.

9. Serial Dilution – Acceptable

General – Serial dilutions were performed using PDI-WS-T06-1901. Results were comparable.

10. Field Duplicate – Acceptable

General – A field duplicate was submitted for PDI-WS-T07-1901 and identified as PDI-WS-T07-1901-D. Results were comparable.

11. ICP Interference Check Samples – Acceptable

12. Calculation Checks – Acceptable

General – A calculation check was performed for sample results on one sample per calibration. The review confirmed the final results were correct as reported.

13. Reporting Limits – Acceptable

General – Analyte concentrations detected between the MDLs and the reporting limits are reported by the laboratory with 'J' flags. One or more results were flagged 'J' by the laboratory. 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.

CONVENTIONAL ANALYSES

Samples were analyzed for TSS and TDS by the methods identified in the introduction to this report.

1. Holding Times – Acceptable

2. Blanks – Acceptable

3. Laboratory Control Sample (LCS) – Acceptable

4. Laboratory Duplicate – Acceptable

TDS by Method 2540C – Laboratory duplicates were performed using PDI-WS-T06-1901 and PDI-WS-T07-1901-D. Results were comparable.

TSS by Method 2540D – A laboratory duplicate was performed using PDI-WS-T06-1901. Results were comparable.



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5. Field Duplicate – Acceptable

General – A field duplicate was submitted for PDI-WS-T07-1901 and identified as PDI-WS-T07-1901-D. Results were comparable.

6. Calculation Checks – Acceptable

A calculation check was performed for sample results on one sample for TDS and TSS. The review confirmed the final results were correct as reported.

7. Reporting Limits – Acceptable

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 580-83566-1 is 100%.

Table 1
QA/QC Data Summary Review
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Sample ID	Laboratory ID	Method	Analyte	Fraction	Laboratory Result	Units	Final Result	Reason Code
PDI-RB-PP-190127	580-83566-1	SW8151A	MCPP	T	1.2 U	ug/L	1.2 UJ	s
PDI-WS-T06-1901	580-83566-2	SW6020B	Zinc	D	5.0 J	ug/L	7.0 U	be
PDI-WS-T07-1901	580-83566-6	SW6020B	Zinc	D	4.2 J	ug/L	7.0 U	be
PDI-WS-T07-1901-D	580-83566-13	SW6020B	Zinc	D	3.0 J	ug/L	7.0 U	be

be - equipment blank contamination

D - dissolved fraction

J - estimated value

s - surrogate recoveries

T - total fraction

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

ug/L - microgram per liter

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