

# Data Validation Report

Project: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling  
 Portland Harbor Superfund Site  
 Surface Water – August 2018

Laboratory: TestAmerica Laboratories, Incorporated, Seattle, WA

Laboratory Group: 580-79792-1

Analyses: Ethylbenzene, Methylchlorophenoxypropionic Acid (MCP), Metals, Total Hardness by calculation, Total Organic Carbon (TOC), Dissolved Organic Carbon (DOC), Total Suspended Solids (TSS), and Total Dissolved Solids (TDS)

Validation Level: Stage 4

AECOM Project  
 Number: 60566335, Task #2.12

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Reviewed by: Amy Dahl/AECOM File Name: 580-79792-1 DVR

## SUMMARY

The data quality review of 4 surface water samples, 1 rinsate blank, and 1 trip blank collected on August 20 and 21, 2018, has been completed. Samples were analyzed for ethylbenzene by United States Environmental Protection Agency (EPA) Method 8260C, MCP 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 SM 2340B, TOC and DOC by Standard Method (SM) 5310B, 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 580-79729-1:

Sample ID	Laboratory ID
PDI-WS-T05-1808	580-79792-1
PDI-RB-PP-1820	580-79792-2
PDI-WS-T05W-1808	580-79792-3
PDI-WS-T05NAV-1808	580-79792-4
PDI-WS-T05E-1808	580-79792-5
TRIP BLANK-T05	580-79792-6

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.



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**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-recommended limits of greater than 0°C and less than or equal to 6°C. PDI-WS-T05NAV-1808 was submitted with the incorrect sample ID nomenclature and was updated in the database to PDI-WS-T05N-1808. This data validation report refers to the sample as identified on the COC and in the laboratory report.

**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 – Acceptable
3. Blanks – Acceptable except as noted below:

General – One rinsate blank was reported with this laboratory group. Ethylbenzene (0.85 ug/L) was detected in the rinsate blank at a concentration between the method detection limit (MDL) and the reporting limit. Ethylbenzene was not detected in the associated samples; therefore, data were not qualified based on the rinsate blank detection.

4. Surrogates – Acceptable
5. Internal Standards – Acceptable
6. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) – Acceptable
7. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

General – MS/MSDs were not performed using samples from this laboratory group. Precision and accuracy were assessed using the LCS/LCSD results.

8. Calculation Checks – Acceptable

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

9. 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.

Ethylbenzene by EPA 8260C – 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.

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## **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 – Laboratory method blanks and continuing calibration blanks were analyzed in association with the samples, as appropriate. Zinc (6.49 ug/L) was detected in the continuing calibration blank analyzed on August 29, 2018, at 21:47 at a concentration between the MDL and the reporting limit. The associated samples contained zinc at a concentration between the reporting limits and MDLs; therefore, the results for dissolved zinc in PDI-WS-T05-1808 and PDI-RB-PP-1820 were qualified as not detected and flagged 'U' at the reporting limit.

One rinsate blank was reported with this laboratory group. Total chromium (0.18 ug/L) and dissolved zinc (2.9 ug/L) were detected in this rinsate blank at concentrations between the MDLs and the reporting limits and dissolved chromium (0.76 ug/L) was detected in this rinsate blank at a concentration greater than the reporting limit. Dissolved zinc was already qualified as not detected and flagged 'U' at the reporting limit in both samples based on the continuing calibration blank detection and no further qualification was necessary based on the rinsate blank result. Total chromium was detected at a concentration greater than the reporting limit and greater than ten times the rinsate blank result; therefore, data were not qualified based on the rinsate blank result. Dissolved chromium was detected at a concentration greater than the reporting limit but less than ten times the rinsate blank result; therefore, the result for dissolved chromium in PDI-WS-T05-1808 was qualified as estimated and flagged 'J' based on the 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

Calcium and Magnesium by Method 6010C – An MS/MSD and PDS were performed using PDI-RB-PP-1820. Results were acceptable.

Metals by Method 6020B – MS/MSDs and PDS' were performed using the total metals fraction of PDI-WS-T05-1808 and the dissolved metals fraction of PDI-RB-PP-1820. Results were acceptable.

8. Laboratory Duplicate – Acceptable except as noted below:

Calcium and Magnesium by Method 6010C – A laboratory duplicate was performed using PDI-RB-PP-1820. Results were comparable.

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Metals by Method 6020B – A laboratory duplicate was performed using the dissolved metals fraction of PDI-RB-PP-1820. Results were comparable.

A laboratory duplicate was performed using the total metals fraction of PDI-WS-T05-1808. The relative percent difference (RPD) for chromium (170%) and zinc (30%) exceeded the control limit of 20%. The sample concentration of zinc was less than five times the reporting limit; therefore, data were not qualified based on the elevated lab duplicate RPD. The result for chromium in PDI-WS-T05-1808 was qualified as estimated and flagged 'J' based on the elevated laboratory duplicate RPD.

9. Serial Dilution – Acceptable

Calcium and Magnesium by Method 6010C – A serial dilution was performed using PDI-RB-PP-1820. Results were comparable.

Metals by Method 6020B – Serial dilutions were performed using the total metals fraction of PDI-WS-T05-1808 and the dissolved metals fraction of PDI-RB-PP-1820. Results were comparable.

10. ICP Interference Check Samples – Acceptable

11. 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.

12. Reporting Limits – Acceptable

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

## CONVENTIONAL ANALYSES

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

1. Holding Times – Acceptable
2. Initial and Continuing Calibrations – Acceptable where applicable
3. Blanks – Acceptable except as noted below:

General – One rinsate blank was reported with this laboratory group. TOC (0.72 mg/L) and DOC (0.73 mg/L) were detected at concentrations between the MDLs and the reporting limits. TOC and DOC were detected in PDI-WS-T05-1808 at concentrations greater than the reporting limits but less than ten times the rinsate blank results; therefore, the results were qualified as estimated and flagged 'J' based on the rinsate blank results.

4. Laboratory Control Sample (LCS) – Acceptable



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5. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable where applicable  
  
DOC by Method 5310B – An MS/MSD was performed using PDI-WS-T05-1808. Results were acceptable.
6. Laboratory Duplicate – Acceptable  
  
DOC by Method 5310B – A laboratory duplicate was performed using PDI-WS-T05-1808. Results were comparable.  
  
TDS by Method 2540C – A laboratory duplicate was performed using PDI-WS-T05-1808. Results were comparable.
7. Calculation Checks – Acceptable  
  
A calculation check was performed for sample results on one sample per calibration for TOC and DOC one sample for TDS and TSS. The review confirmed the final results were correct as reported.
8. Reporting Limits – Acceptable  
  
General – One or more results in multiple samples were reported at concentrations between the reporting limit and the MDL and flagged 'J' by the laboratory. As described above, laboratory 'J'-flagged results are considered estimated results.

**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 580-79792-1 is 100%.

**Table 1**  
**QA/QC Data Summary Review**  
**Portland Harbor**  
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**TestAmerica Laboratory Group: 580-79792-1**

Sample ID	Laboratory ID	Method	Analyte	Fraction	Laboratory Result	Units	Final Result	Reason Code
PDI-WS-T05-1808	580-79792-1	SM5310B	Total Organic Carbon	T	1.7	mg/L	1.7 J	be
PDI-WS-T05-1808	580-79792-1	SM5310B	Dissolved Organic Carbon	D	1.8	mg/L	1.8 J	be
PDI-WS-T05-1808	580-79792-1	SW6020B	Chromium	T	5.2	ug/L	5.2 J	ld
PDI-WS-T05-1808	580-79792-1	SW6020B	Chromium	D	1.7	ug/L	1.7 J	be
PDI-WS-T05-1808	580-79792-1	SW6020B	Zinc	D	5.1 J	ug/L	7.0 U	bl
PDI-RB-PP-1820	580-79792-2	SW6020B	Zinc	D	2.9 J	ug/L	7.0 U	bl

be - equipment blank contamination

bl - laboratory blank contamination

D - dissolved fraction

J - estimated value

ld - laboratory duplicate relative percent difference

mg/L - milligram per liter

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 "bl" indicate that the final result is reported as not detected ("U" flag) at the reporting limit.