

# Data Validation Report

Project: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling  
 Portland Harbor Superfund Site  
 Subsurface Sediment – Deep/Nearshore Core Stations

Laboratory: ALS Environmental, Burlington, Ontario, Canada

Laboratory Group: L2138374

Analyses/Method: Chlorinated Pesticides and Total Solids

Validation Level: Stage 4

AECOM Project

Number: 60566335 Task #2.12

Prepared by: Jennifer B. Garner/AECOM

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Reviewed by: George Kisluk/AECOM

File Name: L2138374 DVR

## SUMMARY

The data quality review of 33 subsurface sediment samples, two field duplicates, and two rinsate blanks collected between July 20 and July 27, 2018, has been completed. Samples were analyzed for chlorinated pesticides by EPA Method 1699-modified (GC/HRMS) and/or total solids by American Society for Testing and Materials (ASTM) Method D-2974 at ALS Environmental (ALS) located in Burlington, Ontario, Canada. The analyses were performed in general accordance with the methods specified in *Method 1699: Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS*, December 2007 (modified by ALS SOP BU-TM-1103 v07 OCP), and *Annual Book of ASTM Standards*, American Society for Testing & Materials (ASTM), Philadelphia, Pennsylvania, as applicable. 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 L2138374:

Sample ID	Laboratory ID
PDI-SC-S163-0TO2	L2138374-1
PDI-SC-S163-2TO4	L2138374-2
PDI-SC-S163-4TO6	L2138374-3
PDI-SC-S163-6TO8	L2138374-4
PDI-SC-S163-8TO10	L2138374-5
PDI-SC-S163-10TO12.7	L2138374-6
PDI-SC-S163-12.7TO13	L2138374-7
PDI-SC-S251-0TO2.5	L2138374-8
PDI-SC-S034-0TO1.8	L2138374-9
PDI-SC-S034-1.8TO4	L2138374-10
PDI-SC-S034-4TO5.2	L2138374-11
PDI-SC-S014-0TO2	L2138374-12
PDI-SC-S014-2TO4	L2138374-13
PDI-SC-S014-4TO6	L2138374-14
PDI-SC-S002-0TO2	L2138374-15
PDI-SC-S002-2TO4	L2138374-16
PDI-SC-S002-4TO6.5	L2138374-17



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Sample ID	Laboratory ID
PDI-SC-S030-0TO2	L2138374-18
PDI-SC-S030-2TO4	L2138374-19
PDI-SC-S030-2TO4D (Duplicate of PDI-SC-S030-2TO4)	L2138374-20
PDI-SC-S030-4TO5.3	L2138374-21
PDI-SC-S185-0TO2	L2138374-22
PDI-SC-S185-2TO4	L2138374-23
PDI-SC-S185-4TO5.5	L2138374-24
PDI-SC-S055-0TO2	L2138374-25
PDI-SC-S055-2TO4	L2138374-26
PDI-SC-S055-4TO6	L2138374-27
PDI-SC-S055-6TO8	L2138374-28
PDI-SC-S024-0TO2	L2138374-29
PDI-SC-S024-2TO4	L2138374-30
PDI-SC-S024-4TO6	L2138374-31
PDI-SC-S028-0TO2	L2138374-32
PDI-SC-S028-2TO3.2	L2138374-33
PDI-SC-S028-3.2TO5.7	L2138374-34
PDI-SC-S028-3.2TO5.7D (Duplicate of PDI-SC-S028-3.2TO5.7)	L2138374-35
PDI-RB-SS-180726 (Rinsate Blank)	L2138374-36
PDI-RB-SS-180727 (Rinsate Blank)	L2138374-37

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 High Resolution Superfund Methods Data Review*, April 2016, *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 ALS, 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. At AECOM's request, the sample identifications for PDI-SC-S163-12.7TO13 and PDI-SC-S002-4TO6.5 were revised from the originally submitted sample identifications of PDI-SC-S163-13TO13 and PDI-SC-S002-4TO6, respectively, to appropriately indicate the depth range for each sample.

## ORGANIC ANALYSIS

Samples were analyzed for chlorinated pesticides by EPA Method 1699.

1. Holding Times – Acceptable
2. Initial and Continuing Calibration Verifications – Acceptable except as noted below:

The percent recoveries for one or more labeled compounds were outside the control limits of 70-130%, respectively, in the following continuing calibration verifications (CCVs):

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Analysis Date and Time	Analyte	% Recovery
August 17, 2018 at 4:33	13C12-4,4'-DDT	135%
August 18, 2018 at 5:07	13C12-4,4'-DDD	131%
	13C12-4,4'-DDT	133%

The results for 2,4'-DDT and 4,4'-DDT in PDI-RB-SS-180726 and PDI-RB-SS-180727 were qualified as estimated and flagged 'J' based on the August 17, 2018 CCV.

The CCV analyzed on August 18, 2018, and identified in the table above was a second-source calibration standard analyzed immediately after instrument calibration. As such, the second-source calibration standard was not directly associated with sample analysis, but was associated with the subsequent associated CCV. As the % recoveries in the CCV were acceptable, no data were qualified based on this second-source calibration verification standard.

3. Blanks – Acceptable except as noted below:

The following analytes were detected in the method blanks at concentrations between the EDLs and reporting limits.

Extraction Date	Analyte	Result
8/3/2018 (sediments)	2,4'-DDE	0.0131 ng/g
	4,4'-DDE	0.0305 ng/g
	2,4'-DDD	0.017 ng/g
	4,4'-DDD	0.0398 ng/g
	2,4'-DDT	0.0524 ng/g
	4,4'-DDT	0.360 ng/g
8/8/2018 (sediments)	2,4'-DDE	0.00956 ng/g
	4,4'-DDE	0.0279 ng/g
	2,4'-DDD	0.0188 ng/g
	4,4'-DDD	0.0223 ng/g
	2,4'-DDT	0.0654 ng/g
	4,4'-DDT	0.261 ng/g
8/1/2018 (rinsate blanks)	2,4'-DDE	0.0460 ng/L
	4,4'-DDE	0.0905 ng/L
	2,4'-DDD	0.039 ng/L
	4,4'-DDD	0.0877 ng/L
	2,4'-DDT	0.062 ng/L
	4,4'-DDT	0.381 ng/L

The National Functional Guideline (NFG) guidance stipulates that a conservative approach should be taken with regard to qualification of analytes based on blank contamination and the reporting of false negative results should be avoided; therefore, in order to avoid the reporting of false negative results, professional judgment was used to qualify the data in the following manner. As allowed in the NFG, a blank action limit (BAL) was determined as 5 times the blank result:

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- When the sample results were less than ( $<$ ) the blank result, the sample result was qualified as not detected (U) at the sample result.
- When the sample result was greater than or equal to ( $\geq$ ) the blank result and less than or equal to ( $\leq$ ) the BAL, the sample result was qualified as estimated and potentially biased high (J).
- When the sample result was greater than ( $>$ ) the BAL, the sample result was not qualified.

The following results were reported at concentrations less than the blank concentration; therefore, these results were qualified as not detected and flagged 'U' at the sample results.

- 2,4'-DDE in PDI-SC-S163-12.7TO13, PDI-SC-S014-4TO6, PDI-RB-SS-180726, and PDI-RB-SS-180727.
- 4,4'-DDE in PDI-SC-S014-4TO6, PDI-SC-S002-2TO4, PDI-SC-S002-4TO6.5, PDI-RB-SS-180726 and PDI-RB-SS-180727.
- 2,4'-DDD in PDI-SC-S034-4TO5.2, PDI-SC-S014-4TO6, PDI-SC-S002-0TO2, and PDI-SC-S002-4TO6.5.
- 4,4'-DDD in PDI-SC-S014-4TO6, PDI-SC-S002-0TO2, PDI-SC-S002-4TO6.5, PDI-RB-SS-180726, and PDI-RB-SS-180727.
- 2,4'-DDT in PDI-SC-S251-0TO2.5, PDI-SC-S034-4TO5.2, PDI-SC-S014-4TO6, PDI-SC-S002-2TO4, PDI-SC-S002-4TO6.5, PDI-SC-S028-0TO2, PDI-RB-SS-180726, and PDI-RB-SS-180727.
- 4,4'-DDT in PDI-SC-S163-2TO4, PDI-SC-S163-4TO6, PDI-SC-S163-6TO8, PDI-SC-S163-8TO10, PDI-SC-S163-12.7TO13, PDI-SC-S251-0TO2.5, PDI-SC-S034-4TO5.2, PDI-SC-S014-2TO4, PDI-SC-S014-4TO6, PDI-SC-S002-0TO2, PDI-SC-S002-2TO4, PDI-SC-S002-4TO6.5, PDI-SC-S028-0TO2, PDI-SC-S028-3.2TO5.7D, PDI-RB-SS-180726, and PDI-RB-SS-180727.

The following results were reported at concentrations greater than the blank concentration but less than the BAL; therefore, these results were qualified as estimated and flagged 'J' at the sample results.

- 2,4'-DDE in PDI-SC-S251-0TO2.5, PDI-SC-S034-4TO5.2, PDI-SC-S014-2TO4, PDI-SC-S002-0TO2, PDI-SC-S002-4TO6.5, PDI-SC-S185-0TO2, and PDI-SC-S028-0TO2.
- 4,4'-DDE in PDI-SC-S163-12.7TO13, PDI-SC-S034-4TO5.2, PDI-SC-S014-2TO4, and PDI-SC-S002-0TO2.
- 2,4'-DDD in PDI-SC-S028-2TO3.2.
- 4,4'-DDD in PDI-SC-S034-4TO5.2, and PDI-SC-S014-0TO2.
- 2,4'-DDT in PDI-SC-S163-0TO2, PDI-SC-S163-2TO4, PDI-SC-S163-4TO6, PDI-SC-S163-6TO8, PDI-SC-S163-8TO10, PDI-SC-S163-12.7TO13, PDI-SC-S014-0TO2, PDI-SC-S002-0TO2, PDI-SC-S030-0TO2, PDI-SC-S185-0TO2, PDI-SC-S185-2TO4, PDI-SC-S185-4TO5.5, PDI-SC-S055-0TO2, PDI-SC-S055-2TO4, PDI-SC-S055-

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4TO6, PDI-SC-S055-6TO8, PDI-SC-S024-0TO2, PDI-SC-S024-2TO4, PDI-SC-S024-4TO6, PDI-SC-S028-2TO3.2, PDI-SC-S028-3.2TO5.7, and PDI-SC-S028-3.2-5.7D.

- 4,4-DDT in PDI-SC-S163-0TO2, PDI-SC-S163-10TO12.7, PDI-SC-S034-1.8TO4, PDI-SC-S014-0TO2, PDI-SC-S185-0TO2, PDI-SC-S185-2TO4, PDI-SC-S185-4TO5.5, PDI-SC-S055-0TO2, PDI-SC-S055-2TO4, PDI-SC-S055-4TO6, PDI-SC-S055-6TO8, PDI-SC-S024-0TO2, PDI-SC-S024-2TO4, PDI-SC-S024-4TO6, PDI-SC-S028-2TO3.2, and PDI-SC-S028-3.2TO5.7.

Two rinsate blanks were submitted with this laboratory group. No analytes were detected in the rinsate blanks, after laboratory method blank actions were applied.

- Labeled compounds – Acceptable except as noted below:

The percent recoveries for the labeled compound 13C12-4,4'-DDE were outside the control limits of 21-125% in the samples noted below.

Sample Identification	13C12-4,4'-DDE Recovery
PDI-SC-S014-0TO2	8%
PDI-SC-S030-2TO4	14%
PDI-SC-S030-2TO4D	12%
PDI-SC-S185-2TO4	20%
PDI-SC-S185-4TO5.5	17%
PDI-SC-S024-2TO4	12%
PDI-SC-S024-4TO6	6%
PDI-SC-S028-3.2TO5.7	18%
LCS (Batch WG2839698)	13%

LCS – laboratory control sample

Data were not qualified based on labeled compound exceedances in QC samples (laboratory control sample) sample. The results for 2,4'-DDE and 4,4'-DDE in the samples noted above were qualified as estimated and flagged 'J' based on the labeled compound recoveries.

- Internal Standards – Acceptable
- Laboratory Control Sample (LCS) – Acceptable except as noted below:

The percent recovery for 2,4'-DDE (131%) exceeded the control limits of 50-120% in the LCS extracted on August 3, 2018. The results for 2,4'-DDE in PDI-SC-S163-0TO2, PDI-SC-S163-2TO4, PDI-SC-S163-4TO6, PDI-SC-S163-6TO8, PDI-SC-S163-8TO10, PDI-SC-S163-10TO12.7, PDI-SC-S034-0TO1.8, and PDI-SC-S034-1.8TO4 were qualified as estimated and flagged 'J' based on the elevated LCS recoveries.

- Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSDs were not performed in association with this analysis for the sediment samples or for the rinsate blanks. Accuracy was assessed using the associated LCS results. Precision was assessed using the laboratory and/or field duplicate results, where applicable.

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8. Laboratory Duplicate – Acceptable except as noted below:

A laboratory duplicate was performed using PDI-SC-S163-0TO2. Results greater than five times the reporting limits (RLs) were evaluated. The relative percent differences (RPDs) for 2,4'-DDT (86%) and 4,4'-DDT (114%) exceeded the control limit of  $\pm 25\%$ . The results for 2,4'-DDT and 4,4'-DDT in PDI-SC-S163-0TO2 were qualified as estimated based on the associated method blank; therefore, no further qualifications based on the elevated laboratory duplicate RPDs were required.

A laboratory duplicate was performed using PDI-SC-S002-0TO2. Results were comparable for all detections greater than five times the RLs.

9. Field Duplicate – Acceptable

Field duplicates were submitted for PDI-SC-S030-2TO4 and PDI-SC-S028-3.2TO5.7 and identified as PDI-SC-S030-2TO4D and PDI-SC-S028-3.2TO5.7D, respectively. Results greater than five times the RL were evaluated. Results were comparable.

10. Calculation Checks – Acceptable

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

11. Reporting Limits and Chromatographic Review – Acceptable except as noted below:

Chromatograms/spectra were reviewed to confirm target analytes were properly identified. In some cases, the ion peak for 2,4'-DDT in the chromatograms was minimal due to the presence of the 4,4'-DDD ion peak coeluting with the lower level peak. Per the laboratory, "the chromatograms from TargetLynx (the instrument quantification software) show multiple peaks in the same chromatogram if the masses and time ranges are the same. The chromatograms are scaled to the height of the largest peak. Since 2,4'-DDT is at a much lower level than 4,4'-DDD in several cases, its scaling is diminished. Additional graphic resolution is captured in the PDF, which can be zoomed-in to view (sometimes limited) peak detail. The peak areas are tabulated in the quantification report". Detections were also confirmed during the data review based on peak responses, signal to noise ratio, retention times, and ion ratios, provided in the quantification report. No data validation actions were taken on this issue.

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

One or more results were flagged 'J' by the laboratory to indicate the reported concentrations were above the estimated detection limits (EDLs) but below the RLs. Laboratory 'J'-flagged results are considered estimated. As the result is between the EDL and the reporting limit, there is a greater level of uncertainty associated with the numerical result.

The reporting limits for one or more pesticides reported as not detected in multiple samples were elevated due to the moisture content and/or dilution due to matrix interference. AECOM uses 30% solids (from the NFG pesticide guidance) as a benchmark to evaluate the percent solids content and professional judgment is used to determine the necessity to qualify data. Qualification on this basis was not required. The reporting limits do not exceed the cleanup level.



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Analytes with an ion abundance ratio outside the control limits of 1.56 +/- 25% were flagged 'R' by the laboratory indicating an 'EMPC' (estimated maximum possible concentration). These results were qualified as tentatively identified and flagged 'JN' based on this laboratory flag as identified in Table 1, unless qualified as not detected and flagged 'U' as described above.

**CONVENTIONAL ANALYSIS**

Sediment samples were analyzed for total solids by ASTM 2974.

1. Holding Times – Acceptable except as noted below:

The sediment samples were analyzed for total solids outside the 7-day holding time as indicated in the QAPP. No data qualifiers were assigned based on the holding time exceedance.

2. Laboratory Duplicate – Acceptable

Laboratory duplicates were performed using PDI-SC-S163-0TO2 and PDI-SC-S002-2TO4. Results were comparable.

3. Field Duplicate – Acceptable

Field duplicates were submitted for PDI-SC-S030-2TO4 and PDI-SC-S028-3.2TO5.7 and identified as PDI-SC-S030-2TO4D and PDI-SC-S028-3.2TO5.7D, respectively. Results were comparable.

4. Calculation Checks – Acceptable

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

5. Reporting Limits – Acceptable

**OVERALL ASSESSMENT OF DATA**

The data reported in this laboratory group is considered usable for meeting project objectives. The completeness for laboratory group L2138374 is 100%.

**Table 1**  
**QA/QC Data Summary Review**  
**Portland Harbor**  
**Subsurface Sediment**  
**ALS Burlington Laboratory Group: L2138374**

Sample ID	Laboratory ID	Method	Analyte	Laboratory Result	Units	Final Result	Reason Code
PDI-SC-S163-0TO2	L2138374-1	E1699M	2,4'-DDE	0.663 J	ng/g	0.663 J	l
PDI-SC-S163-0TO2	L2138374-1	E1699M	2,4'-DDT	0.206 J,B	ng/g	0.206 J	bl
PDI-SC-S163-0TO2	L2138374-1	E1699M	4,4'-DDT	1.10 M,J,B	ng/g	1.10 J	bl
PDI-SC-S163-2TO4	L2138374-2	E1699M	2,4'-DDE	1.02 J	ng/g	1.02 J	l
PDI-SC-S163-2TO4	L2138374-2	E1699M	2,4'-DDT	0.0911 M,J,B	ng/g	0.0911 J	bl
PDI-SC-S163-2TO4	L2138374-2	E1699M	4,4'-DDT	0.247 M,J,B	ng/g	0.247 U	bl
PDI-SC-S163-4TO6	L2138374-3	E1699M	2,4'-DDE	0.747 J	ng/g	0.747 J	l
PDI-SC-S163-4TO6	L2138374-3	E1699M	2,4'-DDT	0.0989 M,J,B	ng/g	0.0989 J	bl
PDI-SC-S163-4TO6	L2138374-3	E1699M	4,4'-DDT	0.223 M,J,B	ng/g	0.223 U	bl
PDI-SC-S163-6TO8	L2138374-4	E1699M	2,4'-DDE	1.05 J	ng/g	1.05 J	l
PDI-SC-S163-6TO8	L2138374-4	E1699M	2,4'-DDT	0.085 M,J,R	ng/g	0.085 JN	bl,k
PDI-SC-S163-6TO8	L2138374-4	E1699M	4,4'-DDT	0.278 J,B	ng/g	0.278 U	bl
PDI-SC-S163-8TO10	L2138374-5	E1699M	2,4'-DDE	0.732 J	ng/g	0.732 J	l
PDI-SC-S163-8TO10	L2138374-5	E1699M	2,4'-DDT	0.062 M,J,R	ng/g	0.062 JN	bl,k
PDI-SC-S163-8TO10	L2138374-5	E1699M	4,4'-DDT	0.161 J,B	ng/g	0.161 U	bl
PDI-SC-S163-10TO12.7	L2138374-6	E1699M	2,4'-DDE	6.18	ng/g	6.18 J	l
PDI-SC-S163-10TO12.7	L2138374-6	E1699M	4,4'-DDT	0.865 J,B	ng/g	0.865 J	bl
PDI-SC-S163-12.7TO13	L2138374-7	E1699M	2,4'-DDE	0.0109 M,J,B	ng/g	0.0109 U	bl
PDI-SC-S163-12.7TO13	L2138374-7	E1699M	4,4'-DDE	0.0384 J,B	ng/g	0.0384 J	bl
PDI-SC-S163-12.7TO13	L2138374-7	E1699M	2,4'-DDT	0.0908 M,J,B	ng/g	0.0908 J	bl
PDI-SC-S163-12.7TO13	L2138374-7	E1699M	4,4'-DDT	0.167 J,B	ng/g	0.167 U	bl
PDI-SC-S251-0TO2.5	L2138374-8	E1699M	2,4'-DDE	0.0515 M,J,B	ng/g	0.0515 J	bl
PDI-SC-S251-0TO2.5	L2138374-8	E1699M	2,4'-DDT	0.0392 M,J,B	ng/g	0.0392 U	bl
PDI-SC-S251-0TO2.5	L2138374-8	E1699M	4,4'-DDT	0.124 M,J,B	ng/g	0.124 U	bl
PDI-SC-S034-0TO1.8	L2138374-9	E1699M	2,4'-DDE	0.859 J	ng/g	0.859 J	l
PDI-SC-S034-1.8TO4	L2138374-10	E1699M	2,4'-DDE	0.108 M,J,B	ng/g	0.108 J	l
PDI-SC-S034-1.8TO4	L2138374-10	E1699M	4,4'-DDT	0.448 J,B	ng/g	0.448 J	bl
PDI-SC-S034-4TO5.2	L2138374-11	E1699M	2,4'-DDE	0.0232 J,B	ng/g	0.0232 J	bl
PDI-SC-S034-4TO5.2	L2138374-11	E1699M	4,4'-DDE	0.0560 M,J,B	ng/g	0.0560 J	bl
PDI-SC-S034-4TO5.2	L2138374-11	E1699M	2,4'-DDD	0.028 M,J,R	ng/g	0.028 U	bl
PDI-SC-S034-4TO5.2	L2138374-11	E1699M	4,4'-DDD	0.108 M,J,B	ng/g	0.108 J	bl
PDI-SC-S034-4TO5.2	L2138374-11	E1699M	2,4'-DDT	0.040 M,J,R	ng/g	0.040 U	bl
PDI-SC-S034-4TO5.2	L2138374-11	E1699M	4,4'-DDT	0.0956 M,J,B	ng/g	0.0956 U	bl
PDI-SC-S014-0TO2	L2138374-12	E1699M	2,4'-DDE	0.130 M,J,B	ng/g	0.130 J	lc
PDI-SC-S014-0TO2	L2138374-12	E1699M	4,4'-DDE	0.20 M,J,R	ng/g	0.20 JN	lc,k
PDI-SC-S014-0TO2	L2138374-12	E1699M	4,4'-DDD	0.044 M,J,R	ng/g	0.044 JN	bl,k
PDI-SC-S014-0TO2	L2138374-12	E1699M	2,4'-DDT	0.095 M,J,R	ng/g	0.095 JN	bl,k
PDI-SC-S014-0TO2	L2138374-12	E1699M	4,4'-DDT	0.40 M,J,R	ng/g	0.40 JN	bl,k
PDI-SC-S014-2TO4	L2138374-13	E1699M	2,4'-DDE	0.0392 M,J,B	ng/g	0.0392 J	bl
PDI-SC-S014-2TO4	L2138374-13	E1699M	4,4'-DDE	0.0811 M,J,B	ng/g	0.0811 J	bl
PDI-SC-S014-2TO4	L2138374-13	E1699M	4,4'-DDT	0.150 M,J,B	ng/g	0.150 U	bl
PDI-SC-S014-4TO6	L2138374-14	E1699M	2,4'-DDE	0.0086 M,J,R	ng/g	0.0086 U	bl
PDI-SC-S014-4TO6	L2138374-14	E1699M	4,4'-DDE	0.0167 M,J,B	ng/g	0.0167 U	bl
PDI-SC-S014-4TO6	L2138374-14	E1699M	2,4'-DDD	0.0097 M,J,R	ng/g	0.0097 U	bl
PDI-SC-S014-4TO6	L2138374-14	E1699M	4,4'-DDD	0.010 M,J,R	ng/g	0.010 U	bl
PDI-SC-S014-4TO6	L2138374-14	E1699M	2,4'-DDT	0.0244 J,B	ng/g	0.0244 U	bl
PDI-SC-S014-4TO6	L2138374-14	E1699M	4,4'-DDT	0.0821 J,B	ng/g	0.0821 U	bl
PDI-SC-S002-0TO2	L2138374-15	E1699M	2,4'-DDE	0.0189 M,J,B	ng/g	0.0189 J	bl
PDI-SC-S002-0TO2	L2138374-15	E1699M	4,4'-DDE	0.0347 M,J,B	ng/g	0.0347 U	bl
PDI-SC-S002-0TO2	L2138374-15	E1699M	2,4'-DDD	0.014 M,J,R	ng/g	0.014 U	bl
PDI-SC-S002-0TO2	L2138374-15	E1699M	4,4'-DDD	0.019 M,J,R	ng/g	0.019 U	bl
PDI-SC-S002-0TO2	L2138374-15	E1699M	2,4'-DDT	0.0546 M,J,B	ng/g	0.0546 J	bl
PDI-SC-S002-0TO2	L2138374-15	E1699M	4,4'-DDT	0.155 J,B	ng/g	0.155 U	bl
PDI-SC-S002-2TO4	L2138374-16	E1699M	4,4'-DDE	0.0133 M,J,B	ng/g	0.0133 U	bl
PDI-SC-S002-2TO4	L2138374-16	E1699M	2,4'-DDT	0.0202 M,J,B	ng/g	0.0202 U	bl
PDI-SC-S002-2TO4	L2138374-16	E1699M	4,4'-DDT	0.0632 J,B	ng/g	0.0632 U	bl
PDI-SC-S002-4TO6.5	L2138374-17	E1699M	2,4'-DDE	0.0102 M,J,B	ng/g	0.0102 J	bl
PDI-SC-S002-4TO6.5	L2138374-17	E1699M	4,4'-DDE	0.0203 M,J,B	ng/g	0.0203 U	bl
PDI-SC-S002-4TO6.5	L2138374-17	E1699M	2,4'-DDD	0.010 J,R	ng/g	0.010 U	bl
PDI-SC-S002-4TO6.5	L2138374-17	E1699M	4,4'-DDD	0.00986 M,J,B	ng/g	0.00986 U	bl
PDI-SC-S002-4TO6.5	L2138374-17	E1699M	2,4'-DDT	0.0258 M,J,B	ng/g	0.0258 U	bl
PDI-SC-S002-4TO6.5	L2138374-17	E1699M	4,4'-DDT	0.0814 J,B	ng/g	0.0814 U	bl
PDI-SC-S030-0TO2	L2138374-18	E1699M	2,4'-DDT	0.268 J,B	ng/g	0.268 J	bl
PDI-SC-S030-2TO4	L2138374-19	E1699M	2,4'-DDE	1.50 J	ng/g	1.50 J	lc
PDI-SC-S030-2TO4	L2138374-19	E1699M	4,4'-DDE	14.1	ng/g	14.1 J	lc
PDI-SC-S030-2TO4D	L2138374-20	E1699M	2,4'-DDE	1.67 J	ng/g	1.67 J	lc
PDI-SC-S030-2TO4D	L2138374-20	E1699M	4,4'-DDE	15.0	ng/g	15.0 J	lc
PDI-SC-S030-4TO5.3	L2138374-21	E1699M	2,4'-DDT	0.34 J,R	ng/g	0.34 JN	k
PDI-SC-S185-0TO2	L2138374-22	E1699M	2,4'-DDE	0.0365 J,B	ng/g	0.0365 J	bl
PDI-SC-S185-0TO2	L2138374-22	E1699M	2,4'-DDT	0.111 M,J,B	ng/g	0.111 J	bl
PDI-SC-S185-0TO2	L2138374-22	E1699M	4,4'-DDT	0.605 J,B	ng/g	0.605 J	bl
PDI-SC-S185-2TO4	L2138374-23	E1699M	2,4'-DDE	0.0582 M,J,B	ng/g	0.0582 J	lc
PDI-SC-S185-2TO4	L2138374-23	E1699M	4,4'-DDE	0.213 J,B	ng/g	0.213 J	lc
PDI-SC-S185-2TO4	L2138374-23	E1699M	2,4'-DDT	0.092 J,R	ng/g	0.092 JN	bl,k
PDI-SC-S185-2TO4	L2138374-23	E1699M	4,4'-DDT	0.284 M,J,B	ng/g	0.284 J	bl



**Table 1**  
**QA/QC Data Summary Review**  
**Portland Harbor**  
**Subsurface Sediment**  
**ALS Burlington Laboratory Group: L2138374**

Sample ID	Laboratory ID	Method	Analyte	Laboratory Result	Units	Final Result	Reason Code
PDI-SC-S185-4TO5.5	L2138374-24	E1699M	2,4'-DDE	0.0867 J,B	ng/g	0.0867 J	lc
PDI-SC-S185-4TO5.5	L2138374-24	E1699M	4,4'-DDE	0.228 M,J,B	ng/g	0.228 J	lc
PDI-SC-S185-4TO5.5	L2138374-24	E1699M	2,4'-DDT	0.0775 M,J,B	ng/g	0.0775 J	bl
PDI-SC-S185-4TO5.5	L2138374-24	E1699M	4,4'-DDT	0.262 M,J,B	ng/g	0.262 J	bl
PDI-SC-S055-0TO2	L2138374-25	E1699M	2,4'-DDT	0.159 J,B	ng/g	0.159 J	bl
PDI-SC-S055-0TO2	L2138374-25	E1699M	4,4'-DDT	0.506 J,B	ng/g	0.506 J	bl
PDI-SC-S055-2TO4	L2138374-26	E1699M	2,4'-DDT	0.336 J,B	ng/g	0.336 J	bl
PDI-SC-S055-2TO4	L2138374-26	E1699M	4,4'-DDT	0.790 J,B	ng/g	0.790 J	bl
PDI-SC-S055-4TO6	L2138374-27	E1699M	2,4'-DDT	0.270 J,B	ng/g	0.270 J	bl
PDI-SC-S055-4TO6	L2138374-27	E1699M	4,4'-DDT	1.79 B	ng/g	1.79 J	bl
PDI-SC-S055-6TO8	L2138374-28	E1699M	2,4'-DDT	0.159 M,J,B	ng/g	0.159 J	bl
PDI-SC-S055-6TO8	L2138374-28	E1699M	4,4'-DDT	0.324 M,J,B	ng/g	0.324 J	bl
PDI-SC-S024-0TO2	L2138374-29	E1699M	2,4'-DDT	0.156 M,J,B	ng/g	0.156 J	bl
PDI-SC-S024-0TO2	L2138374-29	E1699M	4,4'-DDT	0.480 J,B	ng/g	0.480 J	bl
PDI-SC-S024-2TO4	L2138374-30	E1699M	2,4'-DDE	0.139 J	ng/g	0.139 J	lc
PDI-SC-S024-2TO4	L2138374-30	E1699M	4,4'-DDE	1.48	ng/g	1.48 J	lc
PDI-SC-S024-2TO4	L2138374-30	E1699M	2,4'-DDT	0.210 M,J,B	ng/g	0.210 J	bl
PDI-SC-S024-2TO4	L2138374-30	E1699M	4,4'-DDT	0.460 J,B	ng/g	0.460 J	bl
PDI-SC-S024-4TO6	L2138374-31	E1699M	2,4'-DDE	0.11 M,J,R	ng/g	0.11 JN	lc,k
PDI-SC-S024-4TO6	L2138374-31	E1699M	4,4'-DDE	0.922 J	ng/g	0.922 J	lc
PDI-SC-S024-4TO6	L2138374-31	E1699M	2,4'-DDT	0.245 M,J,B	ng/g	0.245 J	bl
PDI-SC-S024-4TO6	L2138374-31	E1699M	4,4'-DDT	0.506 J,B	ng/g	0.506 J	bl
PDI-SC-S028-0TO2	L2138374-32	E1699M	2,4'-DDE	0.0457 J,B	ng/g	0.0457 J	bl
PDI-SC-S028-0TO2	L2138374-32	E1699M	2,4'-DDT	0.0610 M,J,B	ng/g	0.0610 U	bl
PDI-SC-S028-0TO2	L2138374-32	E1699M	4,4'-DDT	0.248 M,J,B	ng/g	0.248 U	bl
PDI-SC-S028-2TO3.2	L2138374-33	E1699M	2,4'-DDD	0.0757 J,B	ng/g	0.0757 J	bl
PDI-SC-S028-2TO3.2	L2138374-33	E1699M	2,4'-DDT	0.131 J,B	ng/g	0.131 J	bl
PDI-SC-S028-2TO3.2	L2138374-33	E1699M	4,4'-DDT	0.317 J,B	ng/g	0.317 J	bl
PDI-SC-S028-3.2TO5.7	L2138374-34	E1699M	2,4'-DDE	0.149 J	ng/g	0.149 J	lc
PDI-SC-S028-3.2TO5.7	L2138374-34	E1699M	4,4'-DDE	0.945 J	ng/g	0.945 J	lc
PDI-SC-S028-3.2TO5.7	L2138374-34	E1699M	2,4'-DDT	0.115 J,B	ng/g	0.115 J	bl
PDI-SC-S028-3.2TO5.7	L2138374-34	E1699M	4,4'-DDT	0.411 J,B	ng/g	0.411 J	bl
PDI-SC-S028-3.2TO5.7D	L2138374-35	E1699M	2,4'-DDT	0.0774 J,B	ng/g	0.0774 J	bl
PDI-SC-S028-3.2TO5.7D	L2138374-35	E1699M	4,4'-DDT	0.213 J,B	ng/g	0.213 U	bl
PDI-RB-SS-180726	L2138374-36	E1699M	2,4'-DDE	0.0246 M,J,B	ng/L	0.0246 U	bl
PDI-RB-SS-180726	L2138374-36	E1699M	4,4'-DDE	0.0444 M,J,B	ng/L	0.0444 U	bl
PDI-RB-SS-180726	L2138374-36	E1699M	4,4'-DDD	0.0464 J,B	ng/L	0.0464 U	bl
PDI-RB-SS-180726	L2138374-36	E1699M	2,4'-DDT	0.019 M,J,R	ng/L	0.019 UJ	bl,c
PDI-RB-SS-180726	L2138374-36	E1699M	4,4'-DDT	0.199 M,J,B	ng/L	0.199 UJ	bl,c
PDI-RB-SS-180727	L2138374-37	E1699M	2,4'-DDE	0.0393 M,J,B	ng/L	0.0393 U	bl
PDI-RB-SS-180727	L2138374-37	E1699M	4,4'-DDE	0.046 M,J,R	ng/L	0.046 U	bl
PDI-RB-SS-180727	L2138374-37	E1699M	4,4'-DDD	0.039 M,J,R	ng/L	0.039 U	bl
PDI-RB-SS-180727	L2138374-37	E1699M	2,4'-DDT	0.034 M,J,R	ng/L	0.034 UJ	bl,c
PDI-RB-SS-180727	L2138374-37	E1699M	4,4'-DDT	0.23 J,R	ng/L	0.23 UJ	bl,c

**Notes:**

- B - target analyte detected in the blank at greater than 10% of the sample concentration
  - bl - laboratory blank contamination
  - c - calibration issue
  - J - estimated value
  - JN - tentatively identified analyte
  - k - Estimated Maximum Possible Concentration (EMPC)
  - I - LCS or OPR recoveries
  - lc - labeled compound recovery
  - LCS - laboratory control sample
  - M - manual integration by laboratory
  - ng/g - nanogram per gram
  - ng/L - nanogram per liter
  - OPR - ongoing precision and recovery
  - R - Ion abundance outside acceptance criterion
  - U - Compound was analyzed for, but not detected above the value shown.
  - UJ - reported quantitation limit is approximate
- 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 sample result.