

# Data Validation Report

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

Laboratory: ALS Environmental, Burlington, Ontario, Canada

Laboratory Group: L2142228

Analyses/Method: Chlorinated Pesticides and Total Solids

Validation Level: Stage 2/(Stage 4 – PDI-SC-S254-2TO4)

AECOM Project

Number: 60566335 Task #2.12

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File Name: L2142228 DVR

## SUMMARY

The data quality review of 50 subsurface sediment samples, two field duplicates, and two rinsate blanks collected between August 3 and August 6, 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. 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 L2142228:

Sample ID	Laboratory ID
PDI-SC-S203-0TO2	L2142228-01
PDI-SC-S203-4TO6	L2142228-02
PDI-SC-S203-12TO13.8	L2142228-03
PDI-SC-S203-2TO4	L2142228-04
PDI-SC-S203-8TO10	L2142228-05
PDI-SC-S203-10TO12	L2142228-06
PDI-SC-S257-0TO2	L2142228-07
PDI-SC-S257-2TO4	L2142228-08
PDI-SC-S257-4TO6	L2142228-09
PDI-SC-S257-6TO8	L2142228-10
PDI-SC-S257-6TO8D (Duplicate of PDI-SC-S257-6TO8)	L2142228-11
PDI-SC-S257-8TO10	L2142228-12
PDI-SC-S257-10TO12	L2142228-13
PDI-SC-S257-12TO14.2	L2142228-14
PDI-SC-S203-6TO8	L2142228-15
PDI-SC-S254-10TO12	L2142228-16
PDI-SC-S254-0.3TO2	L2142228-17



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<b>Sample ID</b>	<b>Laboratory ID</b>
PDI-SC-S254-14TO15.4	L2142228-18
PDI-SC-S254-2TO4	L2142228-19
PDI-SC-S254-8TO10	L2142228-20
PDI-SC-S254-4TO6	L2142228-21
PDI-SC-S254-6TO8	L2142228-22
PDI-SC-S254-12TO14	L2142228-23
PDI-SC-S228-0TO2.3	L2142228-24
PDI-SC-S172-4TO6	L2142228-25
PDI-SC-S172-6TO8.1	L2142228-26
PDI-SC-S178-8.7TO10.7	L2142228-27
PDI-SC-S178-10.7TO12.7	L2142228-28
PDI-SC-S178-12.7TO14	L2142228-29
PDI-SC-S083-0TO1.6	L2142228-30
PDI-SC-S083-1.6TO3.5	L2142228-31
PDI-SC-S083-3.5TO5	L2142228-32
PDI-SC-S083-5TO6.6	L2142228-33
PDI-SC-S221-0TO2	L2142228-34
PDI-SC-S221-2TO4	L2142228-35
PDI-SC-S221-4TO6	L2142228-36
PDI-SC-S221-6TO8.1	L2142228-37
PDI-SC-S178-0TO2	L2142228-38
PDI-SC-S178-2TO3.7	L2142228-39
PDI-SC-S178-3.7TO4.7	L2142228-40
PDI-SC-S178-4.7TO6.7	L2142228-41
PDI-SC-S178-6.7TO8.7	L2142228-42
PDI-SC-S172-0TO2	L2142228-43
PDI-SC-S172-2TO4	L2142228-44
PDI-SC-S172-2TO4D (Duplicate of PDI-SC-S172-2TO4)	L2142228-45
PDI-SC-S032-12TO14	L2142228-46
PDI-SC-S032-10TO12	L2142228-47
PDI-SC-S032-8TO10	L2142228-48
PDI-SC-S032-6TO8	L2142228-49
PDI-SC-S032-4TO6	L2142228-50
PDI-SC-S032-2TO4	L2142228-51
PDI-SC-S032-0TO2	L2142228-52
PDI-RB-SS-180802-1645 (rinsate blank)	L2142228-53
PDI-RB-SS-180806-1100 (rinsate blank)	L2142228-54

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



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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 greater than the EPA-recommended limits of greater than 0°C and less than or equal to 6°C. Sample temperatures ranged from 7.8°C to 17.2°C. Data were not qualified based on sample temperatures.

Per AECOM request, the sample date on PDI-SC-S203-6TO8, was corrected to August 3, 2018. The samples were received on August 8, 2018 and analyzed upon receipt with the exception of PDI-SC-S221-0TO2, PDI-SC-S221-2TO4, PDI-SC-S221-4TO6, and PDI-SC-S221-6TO8.1. These samples were placed on frozen hold and authorized for analysis on October 9, 2018.

**ORGANIC ANALYSES**

Samples were analyzed for chlorinated pesticides by EPA Method 1699.

1. Holding Times – Acceptable

Samples PDI-SC-S221-0TO2, PDI-SC-S221-2TO4, PDI-SC-S221-4TO6, and PDI-SC-S221-6TO8.1 were extracted 67 days past the method-recommended holding time of 14 days. As described above, the samples were frozen in archive until extraction; therefore, the samples were not extracted outside the holding time.

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

The percent recoveries for the following analytes and labeled compounds were outside the control limits of 75-125% and 70-130%, respectively.

Analysis Date and Time	Analyte	% Recovery
8/25/18 at 03:02	2,4'-DDT	126%
	4,4'-DDD-13C12	133%
	4,4'-DDT-13C12	154%
8/27/18 09:28	4,4'-DDD-13C12	54%
	4,4'-DDT-13C12	47%
8/28/18 12:36	4,4'-DDT-13C12	135%

Only quality control samples were associated with the continuing calibration verifications (CCVs) analyzed on August 25, and August 27, 2018; therefore, sample data were not qualified based on these CCV results.

The results for 2,4'-DDD and 4,4'-DDD in PDI-SC-S203-6TO8, PDI-SC-S178-8.7TO10.7, PDI-SC-S083-0TO1.6, PDI-SC-S083-1.6TO3.5, PDI-SC-S083-3.5TO5, PDI-SC-S083-5TO6.6, PDI-SC-S178-3.7TO4.7, and PDI-SC-S032-4TO6 were qualified as estimated and flagged 'J' or 'UJ' based on the associated CCV results.

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3. Blanks – Acceptable except as noted below:

The following analytes were detected in the method blanks.

Extraction Date	Analyte	Result
August 9, 2018	2,4'-DDE	0.077 ng/L
	4,4'-DDE	0.165 ng/L
	2,4'-DDD	0.074 ng/L
August 13, 2018	2,4'-DDE	0.0040 ng/g
	4,4'-DDE	0.0070 ng/g
August 14, 2018	2,4'-DDE	0.200 ng/g
	4,4'-DDE	0.171 ng/g
	2,4'-DDD	0.387 ng/g
	4,4'-DDD	0.318 ng/g
	2,4'-DDT	0.253 ng/g
	4,4'-DDT	0.262 ng/g
August 16, 2018	2,4'-DDE	0.00646 ng/g
	4,4'-DDE	0.0146 ng/g
	2,4'-DDD	0.0072 ng/g
	4,4'-DDD	0.0108 ng/g
	2,4'-DDT	0.0110 ng/g
	4,4'-DDT	0.0349 ng/g
August 20, 2018	2,4'-DDE	0.0023 ng/g
	4,4'-DDE	0.00637 ng/g
	2,4'-DDD	0.00562 ng/g
	4,4'-DDD	0.00774 ng/g
	2,4'-DDT	0.0084 ng/g
	4,4'-DDT	0.0237 ng/g

The NFG guidance stipulates that a conservative approach should be taken with regards 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:

- When the sample results were < the blank result, the sample result was qualified as not detected (U) at the sample result or reported detection limit (RDL).
- When the sample result was  $\geq$  the blank result and  $\leq$  the BAL, the sample result was qualified as estimated and potentially biased high (J).
- When the sample result was > the BAL, 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.

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- 2,4'-DDE in PDI-SC-S203-4TO6, PDI-SC-S203-12TO13.8, PDI-SC-S178-4.7TO6.7, PDI-SC-S032-4TO6, and PDI-SC-S032-2TO4.
- 4,4'-DDE in PDI-SC-S203-12TO13.8, PDI-SC-S178-12.7TO14, PDI-SC-S178-6.7TO8.7, PDI-SC-S032-4TO6, and PDI-RB-SS-180806-1100.
- 2,4'-DDD in PDI-SC-S178-4.7TO6.7 and PDI-SC-S032-2TO4.
- 4,4'-DDD in PDI-SC-S203-12TO13.8, PDI-SC-S178-4.7TO6.7, and PDI-SC-S032-4TO6.
- 2,4'-DDT in PDI-SC-S203-4TO6, PDI-SC-S172-4TO6, PDI-SC-S172-0TO2, PDI-SC-S032-2TO4, and PDI-RB-SS-180806-1100 .
- 4,4'-DDT in PDI-SC-S203-4TO6, PDI-SC-S203-12TO13.8, PDI-SC-S178-8.7TO10.7, PDI-SC-S178-12.7TO14, PDI-SC-S178-6.7TO8.7, PDI-SC-S032-4TO6, and PDI-RB-SS-180806-1100.

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-S203-10TO12, PDI-SC-S172-4TO6, PDI-SC-S172-6TO8.1, PDI-SC-S178-3.7TO4.7, PDI-SC-S172-0TO2, PDI-SC-S172-2TO4, PDI-SC-S172-2TO4D, PDI-SC-S032-12TO14, PDI-SC-S032-10TO12, PDI-SC-S032-8TO10, PDI-SC-S032-6TO8, and PDI-RB-SS-180802-1645.
- 4,4'-DDE in PDI-SC-S203-10TO12, PDI-SC-S203-6TO8, PDI-SC-S178-4.7TO6.7, PDI-SC-S032-10TO12, and PDI-RB-SS-180802-1645.
- 2,4'-DDD in PDI-SC-S203-0TO2, PDI-SC-S203-4TO6, PDI-SC-S172-6TO8.1, PDI-SC-S178-0TO2, and PDI-RB-SS-180802-1645.
- 4,4'-DDD in PDI-SC-S032-2TO4, PDI-SC-S032-0TO2, PDI-RB-SS-180802-1645, and PDI-RB-SS-180806-1100.
- 2,4'-DDT in PDI-SC-S203-0TO2, PDI-SC-S203-2TO4, PDI-SC-S257-10TO12, PDI-SC-S172-6TO8.1, PDI-SC-S178-3.7TO4.7, and PDI-RB-SS-180802-1645.
- 4,4'-DDT in PDI-SC-S203-10TO12, PDI-SC-S257-10TO12, PDI-SC-S203-6TO8, PDI-SC-S254-14TO15.4, PDI-SC-S172-6TO8.1, PDI-SC-S178-3.7TO4.7, PDI-SC-S172-0TO2, PDI-SC-S032-2TO4, and PDI-RB-SS-180802-1645.

The result for 2,4'-DDD in PDI-SC-S178-3.7TO4.7 was qualified as estimated based on CCV results as described in Section 2; therefore, no further qualification was necessary based method blank results.

Two rinsate blanks were submitted with this laboratory group. The following analytes were detected in the rinsate blanks after laboratory method blank actions were applied.

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Blank Identification	Analyte	Result (ng/L)
RB-SS-180802-1645	2,4-DDE	0.0796
	4,4'-DDE	0.185
	2,4'-DDD	0.078
	4,4'-DDD	0.068
	2,4'-DDT	0.11
	4,4'-DDT	0.27
RB-SS-180806-1100	4,4'-DDD	0.066

Sediment data were not qualified based on rinsate blank detections.

4. Labeled compounds – Acceptable except as noted below:

The percent recoveries for the following labeled compounds were outside the control limits.

Sample Identification	Labeled Compound	Percent Recovery	Control Limit
PDI-SC-S032-0TO2	4,4'-DDE-13C12	4%	21-125%
PDI-SS-S203-0TO2 (Laboratory Duplicate)	4,4'-DDE-13C12	17%	21-125%
PDI-RB-SS-180802-1645	4,4'-DDE-13C12	16%	21-125%
Laboratory Control Sample (Batch WG2844600)	4,4'-DDE-13C12	19%	21-125%
PDI-SC-S221-2TO4	4,4'-DDE-13C12	137%	21-125%
PDI-SC-S221-4TO6	4,4'-DDE-13C12	140%	21-125%
Method Blank (Batch WG2899461)	4,4'-DDE-13C12	133%	21-125%
	4,4'-DDT-13C12	150%	5-120%
PDI-SS-S221-0TO2 (Laboratory Duplicate)	4,4'-DDE-13C12	134%	21-125%

Data were not qualified based on labeled compound recoveries in the QC (method blank, laboratory control sample, and laboratory duplicates) samples. The results for 2,4'-DDE and 4,4'-DDE in PDI-RB-SS-180802-1645 were qualified as estimated based on method blank results as described in Section 3; therefore, no further qualification based on label compound results was required. The results for 2,4'-DDE and 4,4'-DDE in PDI-SC-S032-0TO2, PDI-SC-S221-2TO4, and PDI-SC-S221-4TO6 were qualified as estimated and flagged 'J' or 'UJ' based on these labeled compound recoveries.

5. Internal Standards – Acceptable
6. Laboratory Control Sample (LCS) – Acceptable except as noted below:

The percent recovery for 2,4'-DDE (146%) exceeded the control limits of 50-120% in the LCS extracted on August 9, 2018. The result for 2,4'-DDE in PDI-RB-SS-180802-1645 was qualified as estimated based on method blank contamination as described in Section 3; therefore, no further qualification for this LCS result was required. 2,4'-DDE was not detected in PDI-RB-SS-180806-1100; therefore, data were not qualified based on this elevated LCS recovery.

The percent recovery for 2,4'-DDD (123%) exceeded the control limits of 42-120% in the LCS extracted on August 20, 2018. The results for 2,4'-DDD in PDI-SC-S254-4TO6, PDI-SC-

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S254-6TO8, PDI-SC-S254-12TO14, and PDI-SC-S228-0TO2.3 were qualified as estimated and flagged 'J' based on this LCS recovery.

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

An MS/MSD was not performed in association with the rinsate blanks. Accuracy was assessed using the LCS results. Precision was not assessed.

An MS/MSD was not performed in association with the sediment samples. Accuracy was assessed using the LCS results. Precision was assessed using the laboratory and field duplicate results.

8. Laboratory Duplicate – Acceptable except as noted below:

Laboratory duplicates were performed using PDI-SC-S203-0TO2, PDI-SC-S203-8TO10, and PDI-SC-S221-0TO2. Results greater than five times the reporting limits (RLs) were evaluated. Results were comparable with the following exception.

The relative percent difference (RPD) for 4,4'-DDE (35%) in PDI-SC-S203-0TO2 exceeded the control limit of  $\pm 25\%$ . The result for 4,4'-DDE in PDI-SC-S203-0TO2 was qualified as estimated and flagged 'J' based on this elevated duplicate result.

9. Field Duplicate – Acceptable

Field duplicates were submitted for PDI-SC-S257-6TO8 and PDI-SC-S172-2TO4 and identified as PDI-SC-S257-6TO8D and PDI-SC-S172-2TO4D, respectively. Results greater than five times the RLs were evaluated. Results were comparable.

10. Calculation Checks – Acceptable

A stage 4 validation was required for PDI-SC-S254-2TO4. A calculation check was performed on PDI-SC-S254-2TO4. 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 for PDI-SC-S254-2TO4 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 reporting limits. 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. The reporting limits do not exceeded the cleanup level.

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).



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Results that were not flagged 'U' based on method blank results were qualified as tentatively identified and flagged 'JN' based on this laboratory flag as identified in Table 1.

12. Other Items:

The laboratory noted that 3uL of sample was inadvertently injected in to the instrument for samples PDI-SC-S254-2TO4, PDI-SC-S254-4TO6, and PDI-SC-S254-6TO8. Data were not qualified based on injection amount.

Samples PDI-SC-S203-12TO13.8, PDI-SC-S178-8.7TO10.7, PDI-SC-S178-3.7TO4.7, and PDI-SC-S032-4TO6 were re-analyzed due to potential instrument carryover. Results from the re-analysis were reported.

**CONVENTIONAL ANALYSIS**

Sediment samples were analyzed for total solids by ASTM D-2974.

1. Holding Times – Acceptable except as noted below:

The sediment samples exceeded 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-S203-0TO2, PDI-SC-S203-8TO10, and PDI-SC-S221-0TO2. Results were comparable.

3. Field Duplicate – Acceptable

Field duplicates were submitted for PDI-SC-S257-6TO8 and PDI-SC-S172-2TO4 and identified as PDI-SC-S257-6TO8D and PDI-SC-S172-2TO4D, respectively. Results were comparable.

4. Calculation Checks – Acceptable

A calculation check was performed on PDI-SC-S254-2TO4. 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 L2142228 is 100%.



**Table 1**  
**QA/QC Data Summary Review**  
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Sample ID	Laboratory ID	Method	Analyte	Laboratory Result	Units	Final Result	Reason Code
PDI-SC-S203-0TO2	L2142228-1	E1699M	2,4-DDD	1.60 M,J,B	ng/g	1.60 J	bl
PDI-SC-S203-0TO2	L2142228-1	E1699M	2,4-DDT	0.597 J,B	ng/g	0.597 J	bl
PDI-SC-S203-0TO2	L2142228-1	E1699M	4,4'-DDE	8.99	ng/g	8.99 J	ld
PDI-SC-S203-4TO6	L2142228-2	E1699M	2,4-DDD	0.677 M,J,B	ng/g	0.677 J	bl
PDI-SC-S203-4TO6	L2142228-2	E1699M	2,4-DDE	0.147 J,B	ng/g	0.147 U	bl
PDI-SC-S203-4TO6	L2142228-2	E1699M	2,4-DDT	0.069 M,J,R	ng/g	0.069 U	bl
PDI-SC-S203-4TO6	L2142228-2	E1699M	4,4'-DDT	0.16 M,J,R	ng/g	0.16 U	bl
PDI-SC-S203-12TO13.8	L2142228-3	E1699M	2,4-DDE	0.017 M,J,R	ng/g	0.017 U	bl
PDI-SC-S203-12TO13.8	L2142228-3	E1699M	4,4'-DDD	0.0490 M,J,B	ng/g	0.0490 U	bl
PDI-SC-S203-12TO13.8	L2142228-3	E1699M	4,4'-DDE	0.0402 M,J,B	ng/g	0.0402 U	bl
PDI-SC-S203-12TO13.8	L2142228-3	E1699M	4,4'-DDT	0.051 J,R	ng/g	0.051 U	bl
PDI-SC-S203-2TO4	L2142228-4	E1699M	2,4-DDT	1.27 J,B	ng/g	1.27 J	bl
PDI-SC-S203-8TO10	L2142228-5	E1699M	2,4-DDT	0.14 J,R	ng/g	0.14 JN	k
PDI-SC-S203-10TO12	L2142228-6	E1699M	2,4-DDE	0.022 M,J,R	ng/g	0.022 JN	bl,k
PDI-SC-S203-10TO12	L2142228-6	E1699M	4,4'-DDE	0.0401 M,J,B	ng/g	0.0401 J	bl
PDI-SC-S203-10TO12	L2142228-6	E1699M	4,4'-DDT	0.141 M,J,B	ng/g	0.141 J	bl
PDI-SC-S257-4TO6	L2142228-9	E1699M	2,4-DDT	0.15 M,J,R	ng/g	0.15 JN	k
PDI-SC-S257-6TO8	L2142228-10	E1699M	2,4-DDT	0.064 M,J,R	ng/g	0.064 JN	k
PDI-SC-S257-6TO8	L2142228-10	E1699M	4,4'-DDT	0.21 J,R	ng/g	0.21 JN	k
PDI-SC-S257-10TO12	L2142228-13	E1699M	2,4-DDT	0.044 M,J,R	ng/g	0.044 JN	bl,k
PDI-SC-S257-10TO12	L2142228-13	E1699M	4,4'-DDT	0.124 M,J,B	ng/g	0.124 J	bl
PDI-SC-S203-6TO8	L2142228-15	E1699M	2,4-DDD	0.037 M,J,R	ng/g	0.037 JN	c,k
PDI-SC-S203-6TO8	L2142228-15	E1699M	4,4'-DDD	0.0759 M,J,B	ng/g	0.0759 J	c
PDI-SC-S203-6TO8	L2142228-15	E1699M	4,4'-DDE	0.0717 M,J,B	ng/g	0.0717 J	bl
PDI-SC-S203-6TO8	L2142228-15	E1699M	4,4'-DDT	0.103 M,J,B	ng/g	0.103 J	bl
PDI-SC-S254-10TO12	L2142228-16	E1699M	2,4-DDT	0.076 J,R	ng/g	0.076 JN	k
PDI-SC-S254-0.3TO2	L2142228-17	E1699M	4,4'-DDT	0.26 M,J,R	ng/g	0.26 JN	k
PDI-SC-S254-14TO15.4	L2142228-18	E1699M	4,4'-DDT	0.158 M,J,B	ng/g	0.158 J	bl
PDI-SC-S254-2TO4	L2142228-19	E1699M	2,4-DDT	0.12 M,J,R	ng/g	0.12 JN	k
PDI-SC-S254-4TO6	L2142228-21	E1699M	2,4-DDD	1.29 J	ng/g	1.29 J	l
PDI-SC-S254-4TO6	L2142228-21	E1699M	2,4-DDT	0.065 M,J,R	ng/g	0.065 JN	k
PDI-SC-S254-6TO8	L2142228-22	E1699M	2,4-DDD	0.688 J	ng/g	0.688 J	l
PDI-SC-S254-6TO8	L2142228-22	E1699M	2,4-DDT	0.074 M,J,R	ng/g	0.074 JN	k
PDI-SC-S254-12TO14	L2142228-23	E1699M	2,4-DDD	2.25	ng/g	2.25 J	l
PDI-SC-S254-12TO14	L2142228-23	E1699M	4,4'-DDT	0.29 J,R	ng/g	0.29 JN	k
PDI-SC-S228-0TO2.3	L2142228-24	E1699M	2,4-DDD	0.334 J	ng/g	0.334 J	l
PDI-SC-S172-4TO6	L2142228-25	E1699M	2,4-DDE	0.275 M,J,B	ng/g	0.275 J	bl
PDI-SC-S172-4TO6	L2142228-25	E1699M	2,4-DDT	0.225 M,J,B	ng/g	0.225 U	bl
PDI-SC-S172-6TO8.1	L2142228-26	E1699M	2,4-DDD	1.32 M,J,B	ng/g	1.32 J	bl
PDI-SC-S172-6TO8.1	L2142228-26	E1699M	2,4-DDE	0.336 M,J,B	ng/g	0.336 J	bl
PDI-SC-S172-6TO8.1	L2142228-26	E1699M	2,4-DDT	0.256 M,J,B	ng/g	0.256 J	bl
PDI-SC-S172-6TO8.1	L2142228-26	E1699M	4,4'-DDT	0.890 M,J,B	ng/g	0.890 J	bl
PDI-SC-S178-8.7TO10.7	L2142228-27	E1699M	2,4-DDD	0.018 U	ng/g	0.018 UJ	c
PDI-SC-S178-8.7TO10.7	L2142228-27	E1699M	4,4'-DDD	0.022 U	ng/g	0.022 UJ	c
PDI-SC-S178-8.7TO10.7	L2142228-27	E1699M	4,4'-DDT	0.055 M,J,R	ng/g	0.055 U	bl
PDI-SC-S178-12.7TO14	L2142228-29	E1699M	4,4'-DDE	0.056 M,J,R	ng/g	0.056 U	bl
PDI-SC-S178-12.7TO14	L2142228-29	E1699M	4,4'-DDT	0.195 M,J,B	ng/g	0.195 U	bl
PDI-SC-S083-0TO1.6	L2142228-30	E1699M	2,4-DDD	12.4 M	ng/g	12.4 J	c
PDI-SC-S083-0TO1.6	L2142228-30	E1699M	4,4'-DDD	19.5 M	ng/g	19.5 J	c
PDI-SC-S083-1.6TO3.5	L2142228-31	E1699M	2,4-DDD	1.63	ng/g	1.63 J	c
PDI-SC-S083-1.6TO3.5	L2142228-31	E1699M	4,4'-DDD	4.12 M	ng/g	4.12 J	c
PDI-SC-S083-3.5TO5	L2142228-32	E1699M	2,4-DDD	4.76	ng/g	4.76 J	c
PDI-SC-S083-3.5TO5	L2142228-32	E1699M	2,4-DDT	0.055 M,J,R	ng/g	0.055 JN	k
PDI-SC-S083-3.5TO5	L2142228-32	E1699M	4,4'-DDD	12.8 M	ng/g	12.8 J	c
PDI-SC-S083-5TO6.6	L2142228-33	E1699M	2,4-DDD	5.03 M	ng/g	5.03 J	c
PDI-SC-S083-5TO6.6	L2142228-33	E1699M	2,4-DDT	0.067 M,J,R	ng/g	0.067 JN	k

**Table 1**  
**QA/QC Data Summary Review**  
**Portland Harbor**  
**Subsurface Sediment**  
**ALS Burlington Laboratory Group: L2142228**

Sample ID	Laboratory ID	Method	Analyte	Laboratory Result	Units	Final Result	Reason Code
PDI-SC-S083-5TO6.6	L2142228-33	E1699M	4,4'-DDD	12.2 M	ng/g	12.2 J	c
PDI-SC-S221-2TO4	L2142228-35	E1699M	2,4-DDE	0.700 J	ng/g	0.700 J	lc
PDI-SC-S221-2TO4	L2142228-35	E1699M	4,4'-DDE	14.5	ng/g	14.5 J	lc
PDI-SC-S221-4TO6	L2142228-36	E1699M	2,4-DDE	0.422 J	ng/g	0.422 J	lc
PDI-SC-S221-4TO6	L2142228-36	E1699M	4,4'-DDE	9.43	ng/g	9.43 J	lc
PDI-SC-S178-0TO2	L2142228-38	E1699M	2,4-DDD	1.70 M,J,B	ng/g	1.70 J	bl
PDI-SC-S178-3.7TO4.7	L2142228-40	E1699M	2,4-DDD	1.15 J,B	ng/g	1.15 J	c
PDI-SC-S178-3.7TO4.7	L2142228-40	E1699M	2,4-DDE	0.416 J,B	ng/g	0.416 J	bl
PDI-SC-S178-3.7TO4.7	L2142228-40	E1699M	2,4-DDT	0.263 J,B	ng/g	0.263 J	bl
PDI-SC-S178-3.7TO4.7	L2142228-40	E1699M	4,4'-DDD	2.71 B	ng/g	2.71 J	c
PDI-SC-S178-3.7TO4.7	L2142228-40	E1699M	4,4'-DDT	0.944 J,B	ng/g	0.944 J	bl
PDI-SC-S178-4.7TO6.7	L2142228-41	E1699M	2,4-DDD	0.063 M,J,R	ng/g	0.063 U	bl
PDI-SC-S178-4.7TO6.7	L2142228-41	E1699M	2,4-DDE	0.021 M,J,R	ng/g	0.021 U	bl
PDI-SC-S178-4.7TO6.7	L2142228-41	E1699M	4,4'-DDD	0.131 M,J,B	ng/g	0.131 U	bl
PDI-SC-S178-4.7TO6.7	L2142228-41	E1699M	4,4'-DDE	0.210 M,J,B	ng/g	0.210 J	bl
PDI-SC-S178-6.7TO8.7	L2142228-42	E1699M	4,4'-DDE	0.0779 M,J,B	ng/g	0.0779 U	bl
PDI-SC-S178-6.7TO8.7	L2142228-42	E1699M	4,4'-DDT	0.193 M,J,B	ng/g	0.193 U	bl
PDI-SC-S172-0TO2	L2142228-43	E1699M	2,4-DDE	0.286 J,B	ng/g	0.286 J	bl
PDI-SC-S172-0TO2	L2142228-43	E1699M	2,4-DDT	0.224 M,J,B	ng/g	0.224 U	bl
PDI-SC-S172-0TO2	L2142228-43	E1699M	4,4'-DDT	0.595 M,J,B	ng/g	0.595 J	bl
PDI-SC-S172-2TO4	L2142228-44	E1699M	2,4-DDE	0.574 J,B	ng/g	0.574 J	bl
PDI-SC-S172-2TO4D	L2142228-45	E1699M	2,4-DDE	0.603 M,J,B	ng/g	0.603 J	bl
PDI-SC-S032-12TO14	L2142228-46	E1699M	2,4-DDE	0.019 M,J,R	ng/g	0.019 JN	bl,k
PDI-SC-S032-12TO14	L2142228-46	E1699M	4,4'-DDD	0.027 M,J,R	ng/g	0.027 JN	k
PDI-SC-S032-12TO14	L2142228-46	E1699M	4,4'-DDT	0.052 M,J,R	ng/g	0.052 JN	k
PDI-SC-S032-10TO12	L2142228-47	E1699M	2,4-DDE	0.015 M,J,R	ng/g	0.015 JN	bl,k
PDI-SC-S032-10TO12	L2142228-47	E1699M	4,4'-DDE	0.0303 M,J	ng/g	0.0303 J	bl
PDI-SC-S032-10TO12	L2142228-47	E1699M	4,4'-DDT	0.082 M,J,R	ng/g	0.082 JN	k
PDI-SC-S032-8TO10	L2142228-48	E1699M	2,4-DDD	0.012 M,J,R	ng/g	0.012 JN	k
PDI-SC-S032-8TO10	L2142228-48	E1699M	2,4-DDE	0.010 M,J,R	ng/g	0.010 JN	bl,k
PDI-SC-S032-8TO10	L2142228-48	E1699M	4,4'-DDD	0.026 M,J,R	ng/g	0.026 JN	k
PDI-SC-S032-6TO8	L2142228-49	E1699M	2,4-DDD	0.010 M,J,R	ng/g	0.010 JN	k
PDI-SC-S032-6TO8	L2142228-49	E1699M	2,4-DDE	0.00632 J	ng/g	0.00632 J	bl
PDI-SC-S032-6TO8	L2142228-49	E1699M	4,4'-DDT	0.011 J,R	ng/g	0.011 JN	k
PDI-SC-S032-4TO6	L2142228-50	E1699M	2,4-DDE	0.0186 M,J,B	ng/g	0.0186 U	bl
PDI-SC-S032-4TO6	L2142228-50	E1699M	2,4-DDD	0.012 U	ng/g	0.012 UJ	c
PDI-SC-S032-4TO6	L2142228-50	E1699M	4,4'-DDD	0.0559 M,J,B	ng/g	0.0559 UJ	bl,c
PDI-SC-S032-4TO6	L2142228-50	E1699M	4,4'-DDE	0.0912 M,J,B	ng/g	0.0912 U	bl
PDI-SC-S032-4TO6	L2142228-50	E1699M	4,4'-DDT	0.0571 M,J,B	ng/g	0.0571 U	bl
PDI-SC-S032-2TO4	L2142228-51	E1699M	2,4-DDE	0.150 M,J,B	ng/g	0.150 U	bl
PDI-SC-S032-2TO4	L2142228-51	E1699M	2,4-DDT	0.11 M,J,R	ng/g	0.11 U	bl
PDI-SC-S032-2TO4	L2142228-51	E1699M	2,4-DDD	0.239	ng/g	0.239 U	bl
PDI-SC-S032-2TO4	L2142228-51	E1699M	4,4'-DDD	0.466 M,J,B	ng/g	0.466 J	bl
PDI-SC-S032-2TO4	L2142228-51	E1699M	4,4'-DDT	0.290 M,J,B	ng/g	0.290 J	bl
PDI-SC-S032-0TO2	L2142228-52	E1699M	2,4-DDE	0.24 U	ng/g	0.24 UJ	lc
PDI-SC-S032-0TO2	L2142228-52	E1699M	4,4'-DDD	0.575 M,J,B	ng/g	0.575 J	bl
PDI-SC-S032-0TO2	L2142228-52	E1699M	4,4'-DDE	1.0 M,J,R	ng/g	1.0 JN	lc,k
PDI-RB-SS-180802-1645	L2142228-53	E1699M	2,4-DDD	0.078 M,J,R	ng/L	0.078 JN	bl,k
PDI-RB-SS-180802-1645	L2142228-53	E1699M	2,4-DDE	0.0796 M,J	ng/L	0.0796 J	bl
PDI-RB-SS-180802-1645	L2142228-53	E1699M	2,4-DDT	0.11 M,J,R	ng/L	0.11 JN	bl,k
PDI-RB-SS-180802-1645	L2142228-53	E1699M	4,4'-DDD	0.068 M,J,R	ng/L	0.068 JN	bl,k
PDI-RB-SS-180802-1645	L2142228-53	E1699M	4,4'-DDE	0.185 M,J,B	ng/L	0.185 J	bl
PDI-RB-SS-180802-1645	L2142228-53	E1699M	4,4'-DDT	0.27 M,J,R	ng/L	0.27 JN	bl,k

**Table 1**  
**QA/QC Data Summary Review**  
**Portland Harbor**  
**Subsurface Sediment**  
**ALS Burlington Laboratory Group: L2142228**

Sample ID	Laboratory ID	Method	Analyte	Laboratory Result	Units	Final Result	Reason Code
PDI-RB-SS-180806-1100	L2142228-54	E1699M	2,4-DDT	0.075 M,J,R	ng/L	0.075 U	bl
PDI-RB-SS-180806-1100	L2142228-54	E1699M	4,4'-DDD	0.066 M,J,R	ng/L	0.066 JN	bl,k
PDI-RB-SS-180806-1100	L2142228-54	E1699M	4,4'-DDE	0.116 M,J,B	ng/L	0.116 U	bl
PDI-RB-SS-180806-1100	L2142228-54	E1699M	4,4'-DDT	0.243 M,J,B	ng/L	0.243 U	bl

**Notes:**

- B - detected in blank at >10% of sample concentration
- bl - laboratory blank contamination
- c - calibration issue
- fd - field duplicate RPD
- J - estimated value
- JN - tentatively identified analyte
- k - Estimated Maximum Possible Concentration (EMPC)
- I - LCS recovery
- Ic - labeled compound recovery
- Id - laboratory duplicate RPD
- M - manual integration by laboratory
- ng/g - nanogram per gram
- ng/L - nanogram per liter
- R - Ion abundance outside acceptance criterion
- RPD - relative percent difference
- 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 sample result.