

Data Validation Report

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

Laboratory: ALS Environmental, Burlington, Ontario, Canada

Laboratory Group: L2141042

Analyses/Method: Chlorinated Pesticides and Total Solids

Validation Level: Stage 2/(Stage 4 PDI-SC-S062 4TO6)

AECOM Project

Number: 60566335 Task #2.12

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Completed on: December 14, 2018

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File Name: L2141042 DVR

SUMMARY

The data quality review of 37 subsurface sediment samples, two field duplicates, and three rinsate blanks collected between July 31 and August 2, 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 L2141042:

Sample ID	Laboratory ID
PDI-SC-S062-0TO2	L2141042-1
PDI-SC-S062-2TO4	L2141042-2
PDI-SC-S062-4TO6	L2141042-3
PDI-SC-S062-6TO7.7	L2141042-4
PDI-SC-S023-0TO2	L2141042-5
PDI-SC-S023-2TO3.9	L2141042-6
PDI-SC-S023-3.9TO5.3	L2141042-7
PDI-SC-S023-5.3TO7.2	L2141042-8
PDI-SC-S023-7.2TO8.8	L2141042-9
PDI-SC-S031-0TO2	L2141042-10
PDI-SC-S031-2TO4	L2141042-11
PDI-SC-S031-4TO5.5	L2141042-12
PDI-SC-S031-5.5TO7	L2141042-13
PDI-SC-S031-7TO9.2	L2141042-14
PDI-SC-S038-0TO2	L2141042-15
PDI-SC-S038-2TO3.4	L2141042-16
PDI-SC-S038-3.4TO5.4	L2141042-17
PDI-SC-S038-5.4TO7.2	L2141042-18



Data Validation Report
Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling
Subsurface Sediment – Deep Core Stations
ALS Lab Group: L2141042

Sample ID	Laboratory ID
PDI-SC-S085-0TO2	L2141042-19
PDI-SC-S085-2TO4	L2141042-20
PDI-SC-S085-4TO6.4	L2141042-21
PDI-SC-S085-4TO6.4D (Duplicate of PDI-SC-S085-4TO6.4)	L2141042-22
PDI-SC-S144-0TO2	L2141042-23
PDI-SC-S144-2TO4	L2141042-24
PDI-SC-S086-0TO2	L2141042-28
PDI-SC-S086-0TO2D (Duplicate of PDI-SC-S086-0TO2)	L2141042-29
PDI-SC-S086-2TO3.3	L2141042-30
PDI-SC-S218-0TO2	L2141042-31
PDI-SC-S218-2TO4.5	L2141042-32
PDI-SC-S218-4.5TO6	L2141042-33
PDI-SC-S218-6TO8	L2141042-34
PDI-SC-S218-8TO9.6	L2141042-35
PDI-RB-SS-180731 (rinsate blank)	L2141042-36
PDI-RB-SS-180801 (rinsate blank)	L2141042-37
PDI-RB-SS-180802 (rinsate blank)	L2141042-38
PDI-SC-S144-4TO6	L2141042-39
PDI-SC-S144-6TO8	L2141042-40
PDI-SC-S144-8TO10	L2141042-41
PDI-SC-S144-10TO12.1	L2141042-42

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 *USEPA National Functional Guidelines for High Resolution Superfund Methods Data Review*, April 2016, 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 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. Samples PDI-SC-S083-1.6TO3.5, PDI-SC-S083-3.5TO5, and PDI-SC-S083-5TO6.6 were listed on the COC but were not received by the laboratory. Analyses were canceled for these samples. Samples PDI-SC-S144-4TO6, PDI-SC-S144-6TO8, PDI-SC-S144-8TO10, and PDI-SC-S144-10TO12.1 were submitted to the laboratory but were not listed on the COC. At the request of AECOM, these samples were logged-in for analysis.

ORGANIC ANALYSIS

Samples were analyzed for chlorinated pesticides by EPA Method 1699.

Data Validation Report
Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling
Subsurface Sediment – Deep Core Stations
ALS Lab Group: L2141042

1. Holding Times – Acceptable
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
8/19/18 10:56	4,4'-DDT-13C12	57%
8/19/18 14:37	4,4'-DDD-13C12	59%
	4,4'-DDT-13C12	44%
8/25/18 08:10	2,4'-DDT	126%
	4,4'-DDD-13C12	133%
	4,4'-DDT-13C12	154%
8/27/18 09:28	4,4'-DDE-13C12	54%
	4,4'-DDT-13C12	47%

The results for 2,4'-DDD and 4,4'-DDD in PDI-SC-S038-0TO2, PDI-SC-S038-2TO3.4, PDI-SC-S038-3.4TO5.4, PDI-SC-S038-5.4TO7.2, PDI-SC-S085-0TO2, PDI-SC-S085-2TO4, PDI-SC-S085-4TO6.4, PDI-SC-S085-4TO6.4D, PDI-SC-S144-0TO2, PDI-SC-S144-2TO4, PDI-SC-S086-0TO2, PDI-SC-S086-0TO2D, PDI-SC-S086-2TO3.3, PDI-SC-S218-4.5TO6, PDI-SC-S218-6TO8, PDI-SC-S218-8TO9.6, PDI-SC-S144-4TO6, PDI-SC-S144-6TO8, and PDI-SC-S144-8TO10 were qualified as estimated and flagged 'J' or 'UJ' based on the associated continuing calibration (CCV) results.

The results for 2,4'-DDT and 4,4'-DDT in PDI-SC-S062-0TO2, PDI-SC-S062-2TO4, PDI-SC-S062-4TO6, PDI-SC-S062-6TO7.7, PDI-SC-S023-0TO2, PDI-SC-S023-2TO3.9, PDI-SC-S023-3.9TO5.3, PDI-SC-S023-5.3TO7.2, PDI-SC-S023-7.2TO8.8, PDI-SC-S031-0TO2, PDI-SC-S031-2TO4, PDI-SC-S031-4TO5.5, PDI-SC-S031-5.5TO7, PDI-SC-S031-7TO9.2, PDI-SC-S038-0TO2, PDI-SC-S038-2TO3.4, PDI-SC-S038-3.4TO5.4, PDI-SC-S038-5.4TO7.2, PDI-SC-S085-0TO2, PDI-SC-S085-2TO4, PDI-SC-S085-4TO6.4, PDI-SC-S085-4TO6.4D, PDI-SC-S144-0TO2, PDI-SC-S144-2TO4, PDI-SC-S086-0TO2, PDI-SC-S086-0TO2D, PDI-SC-S086-2TO3.3, PDI-SC-S218-4.5TO6, PDI-SC-S218-6TO8, PDI-SC-S218-8TO9.6, PDI-SC-S144-4TO6, PDI-SC-S144-6TO8, and PDI-SC-S144-8TO10 were qualified as estimated and flagged 'J' or 'UJ' based on the associated CCV results.

3. Blanks – Acceptable except as noted below:

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

Batch	Analyte	Result
WG2844898	4,4'-DDE	0.00758 ng/g
	2,4'-DDT	0.0062 ng/g
	4,4'-DDT	0.020 ng/g
WG2845019	2,4'-DDE	0.0040 ng/g
	4,4'-DDE	0.0070 ng/g



Data Validation Report
Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling
Subsurface Sediment – Deep Core Stations
ALS Lab Group: L2141042

Batch	Analyte	Result
WG2842582	2,4'-DDE	0.0579 ng/L
	4,4'-DDE	0.0880 ng/L
	2,4'-DDD	0.042 ng/L
	4,4'-DDD	0.047 ng/L
	2,4'-DDT	0.104 ng/L
	4,4'-DDT	0.459 ng/L
WG2845144	2,4'-DDE	0.00663 ng/g
	4,4'-DDE	0.0125 ng/g
	2,4'-DDD	0.0115 ng/g
	4,4'-DDD	0.0153 ng/g
	2,4'-DDT	0.019 ng/g
	4,4'-DDT	0.0870 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.

- 2,4'-DDE in PDI-RB-SS-180801 and PDI-RB-SS-180802.
- 4,4'-DDE in PDI-RB-SS-180731, PDI-RB-SS-180801, and PDI-RB-SS-180802.
- 4,4'-DDD in PDI-RB-SS-180731, PDI-RB-SS-180801, PDI-RB-SS-180802, and PDI-SC-S144-10TO12.1.
- 2,4'-DDT in PDI-RB-SS-180731, PDI-RB-SS-180801, and PDI-RB-SS-180802.
- 4,4'-DDT in PDI-RB-SS-180731, PDI-RB-SS-180801, and PDI-RB-SS-180802.

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'-DDD in PDI-RB-SS-180731 and PDI-RB-SS-180801.

Data Validation Report
Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling
Subsurface Sediment – Deep Core Stations
ALS Lab Group: L2141042

- 4,4'-DDE in PDI-SC-S031-7TO9.2, PDI-SC-S038-2TO3.4, PDI-SC-S038-3.4TO5.4, PDI-SC-S038-5.4TO7.2, PDI-SC-S085-4TO6.4, PDI-SC-S144-8TO10, and PDI-SC-S144-10TO12.1.
- 4,4'-DDT in PDI-SC-S144-10TO12.1.

The following results were qualified as estimated based on CCV results as described in Section 2; therefore, no further qualification based on method blank results was required.

- 2,4'-DDT in PDI-SC-S023-7.2TO8.8, PDI-SC-S031-4TO5.5, PDI-SC-S031-5.5TO7, PDI-SC-S031-7TO9.2, PDI-SC-S038-2TO3.4, PDI-SC-S038-3.4TO5.4, and PDI-SC-S038-5.4TO7.2.
- 4,4'-DDD in PDI-SC-S144-8TO10.
- 4,4'-DDT in PDI-SC-S023-7.2TO8.8, PDI-SC-S031-4TO5.5, PDI-SC-S031-5.5TO7, PDI-SC-S031-7TO9.2, PDI-SC-S038-0TO2, PDI-SC-S038-2TO3.4, PDI-SC-S038-3.4TO5.4, and PDI-SC-S038-5.4TO7.2.

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

Blank Identification	Analyte	Result (ng/L)
PDI-RB-SS-180731	2,4-DDD	0.047
PDI-RB-SS-180801	2,4'-DDD	0.044

Sediment data were not qualified based on rinse blank detections.

4. Labeled compounds – Acceptable
5. Internal Standards – Acceptable
6. Laboratory Control Sample (LCS) – Acceptable
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 laboratory and field duplicate results.

8. Laboratory Duplicate – Acceptable

Laboratory duplicates were performed using PDI-SC-S062-0TO2 and PDI-SC-S085-4TO6.4. Results greater than five times the reporting limits (RLs) were evaluated. Results were comparable.

9. Field Duplicate – Acceptable except as noted below:

Data Validation Report
Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling
Subsurface Sediment – Deep Core Stations
ALS Lab Group: L2141042

Field duplicates were submitted for PDI-SC-S085-4TO6.4 and PDI-SC-S086-0TO2 and identified as PDI-SC-S085-4TO6.4D and PDI-SC-S086-0TO2D, respectively. Results greater than five times the RLs were evaluated. Results were comparable with the following exceptions.

The RPD for 4,4'-DDD was greater than 50% for the PDI-SC-S086-0TO2/PDI-SC-S086-0TO2-D field duplicate pair. The result for 4,4'-DDD was flagged for CCV outliers as described in Section 2; therefore, no further qualification was necessary.

10. Calculation Checks – Acceptable

Sample PDI-SC-S062-4TO6 required a stage 4 validation. A calculation check was performed on PDI-SC-S062-4TO6. 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-S062-4TO6 to confirm target analytes were properly identified. In the chromatogram, the ion peak for 2,4'-DDT 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, 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 for PDI-SC-S062-4TO6 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 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). 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.

CONVENTIONAL ANALYSIS

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



Data Validation Report
Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling
Subsurface Sediment – Deep Core Stations
ALS Lab Group: L2141042

1. Holding Times – Acceptable except as noted below:

The sediment samples exceeded the 7-day holding time 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 -S062-0TO2 and PDI-SC-S085-4TO6.4. Results were comparable.

3. Field Duplicate – Acceptable

Field duplicates were submitted for PDI-SC-S085-4TO6.4 and PDI-SC-S086-0TO2 and identified as PDI-SC-S085-4TO6.4D and PDI-SC-S086-0TO2D, respectively. Results were comparable.

4. Calculation Checks – Acceptable

A calculation check was performed on PDI-SC-S062-4TO6. 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 L2141042 is 100%.

Table 1
QA/QC Data Summary Review
Portland Harbor
Subsurface Sediment
ALS Burlington Laboratory Group: L2141042

Sample ID	Laboratory ID	Method	Analyte	Laboratory Result	Units	Final Result	Reason Code
PDI-SC-S062-0TO2	L2141042-01	E1699M	2,4-DDT	0.0972 J	ng/g	0.0972 J	c
PDI-SC-S062-0TO2	L2141042-01	E1699M	4,4'-DDT	0.265 J	ng/g	0.265 J	c
PDI-SC-S062-2TO4	L2141042-02	E1699M	2,4-DDT	0.119 M,J	ng/g	0.119 J	c
PDI-SC-S062-2TO4	L2141042-02	E1699M	4,4'-DDT	0.378 J	ng/g	0.378 J	c
PDI-SC-S062-4TO6	L2141042-03	E1699M	2,4-DDT	0.104 M,J	ng/g	0.104 J	c
PDI-SC-S062-4TO6	L2141042-03	E1699M	4,4'-DDT	0.284 J	ng/g	0.284 J	c
PDI-SC-S062-6TO7.7	L2141042-04	E1699M	2,4-DDT	0.227 M,J	ng/g	0.227 J	c
PDI-SC-S062-6TO7.7	L2141042-04	E1699M	4,4'-DDT	39.6	ng/g	39.6 J	c
PDI-SC-S023-0TO2	L2141042-05	E1699M	2,4-DDT	0.137 J	ng/g	0.137 J	c
PDI-SC-S023-0TO2	L2141042-05	E1699M	4,4'-DDT	0.574	ng/g	0.574 J	c
PDI-SC-S023-2TO3.9	L2141042-06	E1699M	2,4-DDT	0.198 J	ng/g	0.198 J	c
PDI-SC-S023-2TO3.9	L2141042-06	E1699M	4,4'-DDT	0.832	ng/g	0.832 J	c
PDI-SC-S023-3.9TO5.3	L2141042-07	E1699M	2,4-DDT	0.0420 J,R	ng/g	0.0420 JN	c,k
PDI-SC-S023-3.9TO5.3	L2141042-07	E1699M	4,4'-DDT	0.114 J	ng/g	0.114 J	c
PDI-SC-S023-5.3TO7.2	L2141042-08	E1699M	2,4-DDT	0.118 M,J	ng/g	0.118 J	c
PDI-SC-S023-5.3TO7.2	L2141042-08	E1699M	4,4'-DDT	0.278 J	ng/g	0.278 J	c
PDI-SC-S023-7.2TO8.8	L2141042-09	E1699M	2,4-DDT	0.0212 M,J	ng/g	0.0212 J	c
PDI-SC-S023-7.2TO8.8	L2141042-09	E1699M	4,4'-DDT	0.0534 J	ng/g	0.0534 J	c
PDI-SC-S031-0TO2	L2141042-10	E1699M	2,4-DDT	0.815	ng/g	0.815 J	c
PDI-SC-S031-0TO2	L2141042-10	E1699M	4,4'-DDT	2.27	ng/g	2.27 J	c
PDI-SC-S031-2TO4	L2141042-11	E1699M	2,4-DDT	0.232 J	ng/g	0.232 J	c
PDI-SC-S031-2TO4	L2141042-11	E1699M	4,4'-DDT	0.692	ng/g	0.692 J	c
PDI-SC-S031-4TO5.5	L2141042-12	E1699M	2,4-DDT	0.0210 J,R	ng/g	0.0210 JN	c,k
PDI-SC-S031-4TO5.5	L2141042-12	E1699M	4,4'-DDT	0.0825 M,J	ng/g	0.0825 J	c
PDI-SC-S031-5.5TO7	L2141042-13	E1699M	2,4-DDT	0.0201 J	ng/g	0.0201 J	c
PDI-SC-S031-5.5TO7	L2141042-13	E1699M	4,4'-DDT	0.0467 J	ng/g	0.0467 J	c
PDI-SC-S031-7TO9.2	L2141042-14	E1699M	2,4-DDD	0.0110 J,R	ng/g	0.0110 JN	k
PDI-SC-S031-7TO9.2	L2141042-14	E1699M	2,4-DDT	0.0142 J	ng/g	0.0142 J	c
PDI-SC-S031-7TO9.2	L2141042-14	E1699M	4,4'-DDE	0.0276 J,B	ng/g	0.0276 J	bl
PDI-SC-S031-7TO9.2	L2141042-14	E1699M	4,4'-DDT	0.0354 J	ng/g	0.0354 J	c
PDI-SC-S038-0TO2	L2141042-15	E1699M	2,4-DDD	0.731	ng/g	0.731 J	c
PDI-SC-S038-0TO2	L2141042-15	E1699M	2,4-DDT	0.0450 M,J,R	ng/g	0.0450 JN	c,k
PDI-SC-S038-0TO2	L2141042-15	E1699M	4,4'-DDD	1.40 M	ng/g	1.40 J	c
PDI-SC-S038-0TO2	L2141042-15	E1699M	4,4'-DDT	0.0942 M,J	ng/g	0.0942 J	c
PDI-SC-S038-2TO3.4	L2141042-16	E1699M	2,4-DDD	0.0236 M,J	ng/g	0.0236 J	c
PDI-SC-S038-2TO3.4	L2141042-16	E1699M	2,4-DDT	0.0150 M,J,R	ng/g	0.0150 JN	c,k
PDI-SC-S038-2TO3.4	L2141042-16	E1699M	4,4'-DDD	0.0214 M,J	ng/g	0.0214 J	c
PDI-SC-S038-2TO3.4	L2141042-16	E1699M	4,4'-DDE	0.0178 M,J,B	ng/g	0.0178 J	bl
PDI-SC-S038-2TO3.4	L2141042-16	E1699M	4,4'-DDT	0.0374 M,J	ng/g	0.0374 J	c
PDI-SC-S038-3.4TO5.4	L2141042-17	E1699M	2,4-DDD	0.0120 M,J,R	ng/g	0.0120 JN	c,k
PDI-SC-S038-3.4TO5.4	L2141042-17	E1699M	2,4-DDT	0.0280 J,R	ng/g	0.0280 JN	c,k
PDI-SC-S038-3.4TO5.4	L2141042-17	E1699M	4,4'-DDD	0.0170 J	ng/g	0.0170 J	c
PDI-SC-S038-3.4TO5.4	L2141042-17	E1699M	4,4'-DDE	0.0186 M,J,B	ng/g	0.0186 J	bl
PDI-SC-S038-3.4TO5.4	L2141042-17	E1699M	4,4'-DDT	0.0589 M,J	ng/g	0.0589 J	c
PDI-SC-S038-5.4TO7.2	L2141042-18	E1699M	2,4-DDD	0.0071 U	ng/g	0.0071 UJ	c
PDI-SC-S038-5.4TO7.2	L2141042-18	E1699M	2,4-DDT	0.0290 M,J,R	ng/g	0.0290 JN	c,k
PDI-SC-S038-5.4TO7.2	L2141042-18	E1699M	4,4'-DDD	0.0068 U	ng/g	0.0068 UJ	c
PDI-SC-S038-5.4TO7.2	L2141042-18	E1699M	4,4'-DDE	0.0233 M,J,B	ng/g	0.0233 J	bl
PDI-SC-S038-5.4TO7.2	L2141042-18	E1699M	4,4'-DDT	0.0469 J	ng/g	0.0469 J	c
PDI-SC-S085-0TO2	L2141042-19	E1699M	2,4-DDD	7.28	ng/g	7.28 J	c
PDI-SC-S085-0TO2	L2141042-19	E1699M	2,4-DDT	0.240 J,R	ng/g	0.240 JN	c,k
PDI-SC-S085-0TO2	L2141042-19	E1699M	4,4'-DDD	8.52	ng/g	8.52 J	c
PDI-SC-S085-0TO2	L2141042-19	E1699M	4,4'-DDT	7.31	ng/g	7.31 J	c
PDI-SC-S085-2TO4	L2141042-20	E1699M	2,4-DDD	0.028 U	ng/g	0.028 UJ	c
PDI-SC-S085-2TO4	L2141042-20	E1699M	2,4-DDE	0.018 M,J,R	ng/g	0.018 JN	k
PDI-SC-S085-2TO4	L2141042-20	E1699M	2,4-DDT	0.054 U	ng/g	0.054 UJ	c
PDI-SC-S085-2TO4	L2141042-20	E1699M	4,4'-DDD	0.049 U	ng/g	0.049 UJ	c
PDI-SC-S085-2TO4	L2141042-20	E1699M	4,4'-DDT	0.21 M,J,R	ng/g	0.21 JN	c,k

Table 1
QA/QC Data Summary Review
Portland Harbor
Subsurface Sediment
ALS Burlington Laboratory Group: L2141042

Sample ID	Laboratory ID	Method	Analyte	Laboratory Result	Units	Final Result	Reason Code
PDI-SC-S085-4TO6.4	L2141042-21	E1699M	2,4-DDD	0.026 U	ng/g	0.026 UJ	c
PDI-SC-S085-4TO6.4	L2141042-21	E1699M	2,4-DDT	0.031 U	ng/g	0.031 UJ	c
PDI-SC-S085-4TO6.4	L2141042-21	E1699M	4,4'-DDD	0.035 U	ng/g	0.035 UJ	c
PDI-SC-S085-4TO6.4	L2141042-21	E1699M	4,4'-DDE	0.0302 M,J	ng/g	0.0302 J	bl
PDI-SC-S085-4TO6.4	L2141042-21	E1699M	4,4'-DDT	0.082 U	ng/g	0.082 UJ	c
PDI-SC-S085-4TO6.4D	L2141042-22	E1699M	2,4-DDD	0.027 U	ng/g	0.027 UJ	c
PDI-SC-S085-4TO6.4D	L2141042-22	E1699M	2,4-DDT	0.030 U	ng/g	0.030 UJ	c
PDI-SC-S085-4TO6.4D	L2141042-22	E1699M	4,4'-DDD	0.033 U	ng/g	0.033 UJ	c
PDI-SC-S085-4TO6.4D	L2141042-22	E1699M	4,4'-DDT	0.078 U	ng/g	0.078 UJ	c
PDI-SC-S144-0TO2	L2141042-23	E1699M	2,4-DDD	0.395 J	ng/g	0.395 J	c
PDI-SC-S144-0TO2	L2141042-23	E1699M	2,4-DDT	0.037 U	ng/g	0.037 UJ	c
PDI-SC-S144-0TO2	L2141042-23	E1699M	4,4'-DDD	1.39 J	ng/g	1.39 J	c
PDI-SC-S144-0TO2	L2141042-23	E1699M	4,4'-DDT	0.392 J	ng/g	0.392 J	c
PDI-SC-S144-2TO4	L2141042-24	E1699M	2,4-DDD	1.31 J	ng/g	1.31 J	c
PDI-SC-S144-2TO4	L2141042-24	E1699M	2,4-DDT	0.264 J	ng/g	0.264 J	c
PDI-SC-S144-2TO4	L2141042-24	E1699M	4,4'-DDD	3.46	ng/g	3.46 J	c
PDI-SC-S144-2TO4	L2141042-24	E1699M	4,4'-DDT	1.10 J	ng/g	1.10 J	c
PDI-SC-S086-0TO2	L2141042-28	E1699M	2,4-DDD	8.52	ng/g	8.52 J	c
PDI-SC-S086-0TO2	L2141042-28	E1699M	2,4-DDT	0.070 U	ng/g	0.070 UJ	c
PDI-SC-S086-0TO2	L2141042-28	E1699M	4,4'-DDD	21.8	ng/g	21.8 J	c
PDI-SC-S086-0TO2	L2141042-28	E1699M	4,4'-DDT	0.14 U	ng/g	0.14 UJ	c
PDI-SC-S086-0TO2D	L2141042-29	E1699M	2,4-DDD	5.65 M	ng/g	5.65 J	c
PDI-SC-S086-0TO2D	L2141042-29	E1699M	2,4-DDT	0.034 U	ng/g	0.034 UJ	c
PDI-SC-S086-0TO2D	L2141042-29	E1699M	4,4'-DDD	11.6 M	ng/g	11.6 J	c
PDI-SC-S086-0TO2D	L2141042-29	E1699M	4,4'-DDT	0.062 U	ng/g	0.062 UJ	c
PDI-SC-S086-2TO3.3	L2141042-30	E1699M	2,4-DDD	1.84 M	ng/g	1.84 J	c
PDI-SC-S086-2TO3.3	L2141042-30	E1699M	2,4-DDT	0.043 U	ng/g	0.043 UJ	c
PDI-SC-S086-2TO3.3	L2141042-30	E1699M	4,4'-DDD	5.07 M	ng/g	5.07 J	c
PDI-SC-S086-2TO3.3	L2141042-30	E1699M	4,4'-DDT	0.081 U	ng/g	0.081 UJ	c
PDI-SC-S218-4.5TO6	L2141042-33	E1699M	2,4-DDD	0.0922 M,J	ng/g	0.0922 J	c
PDI-SC-S218-4.5TO6	L2141042-33	E1699M	2,4-DDT	0.019 U	ng/g	0.019 UJ	c
PDI-SC-S218-4.5TO6	L2141042-33	E1699M	4,4'-DDD	0.261 M,J	ng/g	0.261 J	c
PDI-SC-S218-4.5TO6	L2141042-33	E1699M	4,4'-DDT	0.0718 J	ng/g	0.0718 J	c
PDI-SC-S218-6TO8	L2141042-34	E1699M	2,4-DDD	0.043 J,R	ng/g	0.043 JN	c,k
PDI-SC-S218-6TO8	L2141042-34	E1699M	2,4-DDE	0.022 M,J,R	ng/g	0.022 JN	k
PDI-SC-S218-6TO8	L2141042-34	E1699M	2,4-DDT	0.028 U	ng/g	0.028 UJ	c
PDI-SC-S218-6TO8	L2141042-34	E1699M	4,4'-DDD	0.140 M,J,R	ng/g	0.140 JN	c,k
PDI-SC-S218-6TO8	L2141042-34	E1699M	4,4'-DDT	0.059 U	ng/g	0.059 UJ	c
PDI-SC-S218-8TO9.6	L2141042-35	E1699M	2,4-DDD	0.047 J,R	ng/g	0.047 JN	c,k
PDI-SC-S218-8TO9.6	L2141042-35	E1699M	2,4-DDE	0.032 J,R	ng/g	0.032 JN	k
PDI-SC-S218-8TO9.6	L2141042-35	E1699M	2,4-DDT	0.026 U	ng/g	0.026 UJ	c
PDI-SC-S218-8TO9.6	L2141042-35	E1699M	4,4'-DDD	0.142 M,J	ng/g	0.142 J	c
PDI-SC-S218-8TO9.6	L2141042-35	E1699M	4,4'-DDT	0.060 U	ng/g	0.060 UJ	c
PDI-RB-SS-180731	L2141042-36	E1699M	2,4-DDD	0.0468 J	ng/L	0.0468 J	bl
PDI-RB-SS-180731	L2141042-36	E1699M	2,4-DDT	0.070 J,R	ng/L	0.070 U	bl
PDI-RB-SS-180731	L2141042-36	E1699M	4,4'-DDD	0.046 J,R	ng/L	0.046 U	bl
PDI-RB-SS-180731	L2141042-36	E1699M	4,4'-DDE	0.0489 J,B	ng/L	0.0489 U	bl
PDI-RB-SS-180731	L2141042-36	E1699M	4,4'-DDT	0.330 J,B	ng/L	0.330 U	bl
PDI-RB-SS-180801	L2141042-37	E1699M	2,4-DDD	0.044 J,R	ng/L	0.044 JN	bl,k
PDI-RB-SS-180801	L2141042-37	E1699M	2,4-DDE	0.0318 M,J,B	ng/L	0.0318 U	bl
PDI-RB-SS-180801	L2141042-37	E1699M	2,4-DDT	0.0838 M,J,B	ng/L	0.0838 U	bl
PDI-RB-SS-180801	L2141042-37	E1699M	4,4'-DDD	0.037 J,R	ng/L	0.037 U	bl
PDI-RB-SS-180801	L2141042-37	E1699M	4,4'-DDE	0.052 M,J,R	ng/L	0.052 U	bl
PDI-RB-SS-180801	L2141042-37	E1699M	4,4'-DDT	0.369 M,J,B	ng/L	0.369 U	bl
PDI-RB-SS-180802	L2141042-38	E1699M	2,4-DDE	0.0348 M,J,B	ng/L	0.0348 U	bl
PDI-RB-SS-180802	L2141042-38	E1699M	2,4-DDT	0.0998 J,B	ng/L	0.0998 U	bl
PDI-RB-SS-180802	L2141042-38	E1699M	4,4'-DDD	0.031 J,R	ng/L	0.031 U	bl
PDI-RB-SS-180802	L2141042-38	E1699M	4,4'-DDE	0.039 M,J,R	ng/L	0.039 U	bl
PDI-RB-SS-180802	L2141042-38	E1699M	4,4'-DDT	0.374 J,B	ng/L	0.374 U	bl

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Sample ID	Laboratory ID	Method	Analyte	Laboratory Result	Units	Final Result	Reason Code
PDI-SC-S144-4TO6	L2141042-39	E1699M	2,4-DDD	9.54 M	ng/g	9.54 J	c
PDI-SC-S144-4TO6	L2141042-39	E1699M	2,4-DDT	0.337 M,J	ng/g	0.337 J	c
PDI-SC-S144-4TO6	L2141042-39	E1699M	4,4'-DDD	22.5 M	ng/g	22.5 J	c
PDI-SC-S144-4TO6	L2141042-39	E1699M	4,4'-DDT	3.17	ng/g	3.17 J	c
PDI-SC-S144-6TO8	L2141042-40	E1699M	2,4-DDD	6.88	ng/g	6.88 J	c
PDI-SC-S144-6TO8	L2141042-40	E1699M	2,4-DDT	14.3	ng/g	14.3 J	c
PDI-SC-S144-6TO8	L2141042-40	E1699M	4,4'-DDD	19.9	ng/g	19.9 J	c
PDI-SC-S144-6TO8	L2141042-40	E1699M	4,4'-DDT	483	ng/g	483 J	c
PDI-SC-S144-8TO10	L2141042-41	E1699M	2,4-DDD	0.020 U	ng/g	0.020 UJ	c
PDI-SC-S144-8TO10	L2141042-41	E1699M	2,4-DDE	0.012 M,J,R	ng/g	0.012 JN	k
PDI-SC-S144-8TO10	L2141042-41	E1699M	2,4-DDT	0.038 U	ng/g	0.038 UJ	c
PDI-SC-S144-8TO10	L2141042-41	E1699M	4,4'-DDD	0.044 M,J,R	ng/g	0.044 JN	c,k
PDI-SC-S144-8TO10	L2141042-41	E1699M	4,4'-DDE	0.0435 M,J,B	ng/g	0.0435 J	bl
PDI-SC-S144-8TO10	L2141042-41	E1699M	4,4'-DDT	0.180 M,J,R	ng/g	0.180 JN	c,k
PDI-SC-S144-10TO12.1	L2141042-42	E1699M	4,4'-DDD	0.015 J,R	ng/g	0.015 U	bl
PDI-SC-S144-10TO12.1	L2141042-42	E1699M	4,4'-DDE	0.0138 J,B	ng/g	0.0138 J	bl
PDI-SC-S144-10TO12.1	L2141042-42	E1699M	4,4'-DDT	0.0878 J,B	ng/g	0.0878 J	bl

Notes:

- B - detected in blank at >10% of sample concentration
- bl - laboratory blank contamination
- c - calibration issue
- J - estimated value
- JN - tentatively identified analyte
- k - Estimated Maximum Possible Concentration (EMPC)
- M - manual integration by laboratory
- ng/g - nanogram per gram
- ng/L - nanogram per liter
- R - Ion abundance outside acceptance criterion
- 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 this sample result.