



1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6

SVOC DATA PACKAGE

Client Project Information

Project ID: 60566335
Project Description: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling
Contact: Amy Dahl

ALSE Project Information

Project ID: AECOM100

Contact: Whitney Davis
Submission ID(s): L2142228

Final Package Review by:

A handwritten signature in black ink, appearing to read 'Wendy', is written over a horizontal line.

Date Reviewed: 29-Aug-18

SVOC DATA PACKAGE

SECTION 1: PROJECT NARRATIVE

ALSE Project Information

Project ID: AECOM100
Contact: Whitney Davis
Submission ID(s): L2142228

Client Project Information

Project ID: 60566335
Project Description: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling
Contact: Amy Dahl

Analytical Method: 2,4'- and 4,4'-DDE, DDD and DDT by EPA 1699 (modified)

ALS Sample ID	Client Sample Descriptions	Matrix	Date Sampled	Date Received	Date Extracted	Date Analyzed	Temperature (°C) on receipt
L2142228-1	PDI-SC-S203-0TO2	Sediment	03-Aug-18	08-Aug-18	14-Aug-18	26-Aug-18	10.6
WG2845070-4	PDI-SC-S203-0TO2 Duplicate	QC	n/a	n/a	14-Aug-18	26-Aug-18	n/a
L2142228-2	PDI-SC-S203-4TO6	Sediment	03-Aug-18	08-Aug-18	14-Aug-18	26-Aug-18	9.4
L2142228-3	PDI-SC-S203-12TO13.8	Sediment	03-Aug-18	08-Aug-18	14-Aug-18	28-Aug-18	9.7
L2142228-4	PDI-SC-S203-2TO4	Sediment	03-Aug-18	08-Aug-18	14-Aug-18	26-Aug-18	10.6
L2142228-25	PDI-SC-S172-4TO6	Sediment	02-Aug-18	08-Aug-18	14-Aug-18	26-Aug-18	13.2
L2142228-26	PDI-SC-S172-6TO8.1	Sediment	02-Aug-18	08-Aug-18	14-Aug-18	26-Aug-18	12.6
L2142228-27	PDI-SC-S178-8.7TO10.7	Sediment	02-Aug-18	08-Aug-18	14-Aug-18	28-Aug-18	10.2
L2142228-28	PDI-SC-S178-10.7TO12.7	Sediment	02-Aug-18	08-Aug-18	14-Aug-18	26-Aug-18	11.6
L2142228-29	PDI-SC-S178-12.7TO14	Sediment	02-Aug-18	08-Aug-18	14-Aug-18	26-Aug-18	12.6
L2142228-38	PDI-SC-S178-0TO2	Sediment	02-Aug-18	08-Aug-18	14-Aug-18	26-Aug-18	15.2
L2142228-39	PDI-SC-S178-2TO3.7	Sediment	02-Aug-18	08-Aug-18	14-Aug-18	26-Aug-18	14.0
L2142228-40	PDI-SC-S178-3.7TO4.7	Sediment	02-Aug-18	08-Aug-18	14-Aug-18	28-Aug-18	14.6
L2142228-41	PDI-SC-S178-4.7TO6.7	Sediment	02-Aug-18	08-Aug-18	14-Aug-18	26-Aug-18	13.4
L2142228-42	PDI-SC-S178-6.7TO8.7	Sediment	02-Aug-18	08-Aug-18	14-Aug-18	26-Aug-18	9.8
L2142228-43	PDI-SC-S172-0TO2	Sediment	02-Aug-18	08-Aug-18	14-Aug-18	26-Aug-18	11.8
L2142228-44	PDI-SC-S172-2TO4	Sediment	02-Aug-18	08-Aug-18	14-Aug-18	26-Aug-18	10.2
L2142228-45	PDI-SC-S172-2TO4D	Sediment	02-Aug-18	08-Aug-18	14-Aug-18	26-Aug-18	10.8
L2142228-50	PDI-SC-S032-4TO6	Sediment	01-Aug-18	08-Aug-18	14-Aug-18	28-Aug-18	13.6
L2142228-51	PDI-SC-S032-2TO4	Sediment	01-Aug-18	08-Aug-18	14-Aug-18	26-Aug-18	14.2
L2142228-52	PDI-SC-S032-0TO2	Sediment	01-Aug-18	08-Aug-18	14-Aug-18	26-Aug-18	13.2
WG2845070-1	Method Blank	QC	n/a	n/a	14-Aug-18	26-Aug-18	n/a
WG2845070-2	Laboratory Control Sample	QC	n/a	n/a	14-Aug-18	26-Aug-18	n/a

Comments and Notes:

a) Sample Integrity:

All samples were received in good condition. Due to delays during shipping, individual temperatures were measured. See the table above. Temperatures are above the recommended storage and transportation limits. However, the brief exposure to above-recommended temperatures is not expected to have a negative impact on data quality.

b) Instrumental Analysis:

All results have been reported on a dry weight basis

The samples have been analyzed with an instrument method where conditions are optimized for acquisition of the selected targets only.

The highest available calibration level has not been analyzed as it was expected to saturate the instrument detector. Six calibration levels have been included.

For the samples PDI-SC-S203-12TO13.8, PDI-SC-S178-8.7TO10.7, PDI-SC-S178-3.7TO4.7 and PDI-SC-S032-4TO6, the results have been reported from a re-analysis of the extracts in order to preclude the possibility of carryover from a prior higher level extract.

For the sample PDI-SC-S032-0TO2 and the laboratory duplicate WG2845070-4, the recoveries of 4,4'-DDE, 13C12- were below the method control limit. As a result, the detection limits may be elevated. Reported native target data are not expected to be biased.

For H6-18-CCV-0837, the post-run continuing calibration verification (CCV) for the analytical sequence 6-180827B55, the recovery of the labelled standard 13C12-4,4'-DDD was marginally above the method control limit. The reported recoveries of this standard may be slightly elevated. Native target data are not expected to be biased as a result.

There were low target levels detected in the method blank that match the pattern of our native fortification solution. The samples do not appear to have the same pattern of contamination. Nevertheless, the possibility that low level results are elevated cannot be eliminated. As a result, positive results that are within a factor of ten of the blank have been qualified with a 'B' as potentially elevated

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Steve Kennedy, Technical Supervisor

29-Aug-18
Date

SVOC DATA PACKAGE

SECTION 1: PROJECT NARRATIVE

ALSE Project Information

Project ID: AECOM100

Contact: Whitney Davis

Submission ID(s): L2142228

Client Project Information

Project ID: 60566335

Project Description: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling

Contact: Amy Dahl

Analytical Method: 2,4'- and 4,4'-DDE, DDD and DDT by EPA 1699 (modified)

ALS Sample ID	Client Sample Descriptions	Matrix	Date Sampled	Date Received	Date Extracted	Date Analyzed	Temperature (°C) on receipt
L2142228-5	PDI-SC-S203-8TO10	Sediment	03-Aug-18	08-Aug-18	16-Aug-18	28-Aug-18	9.2
WG2845093-4	PDI-SC-S203-8TO10 Duplicate	QC	n/a	n/a	16-Aug-18	28-Aug-18	n/a
L2142228-6	PDI-SC-S203-10TO12	Sediment	03-Aug-18	08-Aug-18	16-Aug-18	28-Aug-18	10.4
L2142228-7	PDI-SC-S257-0TO2	Sediment	06-Aug-18	08-Aug-18	16-Aug-18	28-Aug-18	12.5
L2142228-8	PDI-SC-S257-2TO4	Sediment	06-Aug-18	08-Aug-18	16-Aug-18	28-Aug-18	9.0
L2142228-9	PDI-SC-S257-4TO6	Sediment	06-Aug-18	08-Aug-18	16-Aug-18	28-Aug-18	16.0
L2142228-10	PDI-SC-S257-6TO8	Sediment	06-Aug-18	08-Aug-18	16-Aug-18	28-Aug-18	15.2
L2142228-11	PDI-SC-S257-6TO8D	Sediment	06-Aug-18	08-Aug-18	16-Aug-18	28-Aug-18	15.4
L2142228-12	PDI-SC-S257-8TO10	Sediment	06-Aug-18	08-Aug-18	16-Aug-18	28-Aug-18	10.8
L2142228-13	PDI-SC-S257-10TO12	Sediment	06-Aug-18	08-Aug-18	16-Aug-18	28-Aug-18	11.2
L2142228-14	PDI-SC-S257-12TO14.2	Sediment	06-Aug-18	08-Aug-18	16-Aug-18	28-Aug-18	13.0
L2142228-15	PDI-SC-S203-6TO8	Sediment	03-Aug-18	08-Aug-18	16-Aug-18	28-Aug-18	10.4
L2142228-16	PDI-SC-S254-10TO12	Sediment	06-Aug-18	08-Aug-18	16-Aug-18	28-Aug-18	13.6
L2142228-17	PDI-SC-S254-0.3TO2	Sediment	06-Aug-18	08-Aug-18	16-Aug-18	28-Aug-18	13.4
L2142228-18	PDI-SC-S254-14TO15.4	Sediment	06-Aug-18	08-Aug-18	16-Aug-18	28-Aug-18	15.4
L2142228-19	PDI-SC-S254-2TO4	Sediment	06-Aug-18	08-Aug-18	16-Aug-18	28-Aug-18	16.2
L2142228-20	PDI-SC-S254-8TO10	Sediment	06-Aug-18	08-Aug-18	16-Aug-18	28-Aug-18	16.0
WG2845093-1	Method Blank	QC	n/a	n/a	16-Aug-18	28-Aug-18	n/a
WG2845093-2	Laboratory Control Sample	QC	n/a	n/a	16-Aug-18	27-Aug-18	n/a

Comments and Notes:

a) Sample Integrity:

All samples were received in good condition. Due to delays during shipping, individual temperatures were measured. See the table above. Temperatures are above the recommended storage and transportation limits. However, the brief exposure to above-recommended temperatures is not expected to have a negative impact on data quality.

b) Instrumental Analysis:

All results have been reported on a dry weight basis

The samples have been analyzed with an instrument method where conditions are optimized for acquisition of the selected targets only.

The highest available calibration level has not been analyzed as it was expected to saturate the instrument detector.

Six calibration levels have been included.

For H6-18-CCV-0837, the post-run continuing calibration verification (CCV) for the analytical sequence 6-180827B55, the recovery of the labelled standard 13C12-4,4'-DDD was marginally above the method control limit. The reported recoveries of this standard may be slightly elevated. Native target data are not expected to be biased as a result.

Sample and duplicate replication criteria outside method limits for the low level detected targets. The sample may not be homogeneous.

For the sample PDI-SC-S254-2TO4, a 3uL injection volume was inadvertently used. Sample data are not expected to be biased as a result.

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Steve Kennedy, Technical Supervisor

29-Aug-18

Date

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SECTION 1: PROJECT NARRATIVE

ALSE Project Information

Project ID: AECOM100

Contact: Whitney Davis

Submission ID(s): L2142228

Client Project Information

Project ID: 60566335

Project Description: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling

Contact: Amy Dahl

Analytical Method: 2,4'- and 4,4'-DDE, DDD and DDT by EPA 1699 (modified)

ALS Sample ID	Client Sample Descriptions	Matrix	Date Sampled	Date Received	Date Extracted	Date Analyzed	Temperature (°C) on receipt
L2142228-21	PDI-SC-S254-4TO6	Sediment	06-Aug-18	08-Aug-18	20-Aug-18	28-Aug-18	17.2
L2142228-22	PDI-SC-S254-6TO8	Sediment	06-Aug-18	08-Aug-18	20-Aug-18	28-Aug-18	11.6
L2142228-23	PDI-SC-S254-12TO14	Sediment	06-Aug-18	08-Aug-18	20-Aug-18	28-Aug-18	9.8
L2142228-24	PDI-SC-S228-0TO2.3	Sediment	06-Aug-18	08-Aug-18	20-Aug-18	28-Aug-18	12.0
WG2845105-1	Method Blank	QC	n/a	n/a	20-Aug-18	28-Aug-18	n/a
WG2845105-2	Laboratory Control Sample	QC	n/a	n/a	20-Aug-18	28-Aug-18	n/a

Comments and Notes:
a) Sample Integrity:

All samples were received in good condition. Due to delays during shipping, individual temperatures were measured. See the table above. Temperatures are above the recommended storage and transportation limits. However, the brief exposure to above-recommended temperatures is not expected to have a negative impact on data quality.

b) Instrumental Analysis:

All results have been reported on a dry weight basis

The samples have been analyzed with an instrument method where conditions are optimized for acquisition of the selected targets only.

The highest available calibration level has not been analyzed as it was expected to saturate the instrument detector. Six calibration levels have been included.

For H6-18-CCV-0837, the post-run continuing calibration verification (CCV) for the analytical sequence 6-180827B, the recovery of the labelled standard 13C12-4,4'-DDD was marginally above the method control limit. The reported recoveries of this standard may be slightly elevated. Native target data are not expected to be biased as a result.

For the samples PDI-SC-S254-4TO6 and PDI-SC-S254-6TO8, an injection volume of 3uL was inadvertently used. No negative impact to data quality is expected.

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ALSE Project Information

Project ID: AECOM100

Contact: Whitney Davis

Submission ID(s): L2142228

Client Project Information

Project ID: 60566335

Project Description: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling

Contact: Amy Dahl

Analytical Method: 2,4'- and 4,4'-DDE, DDD and DDT by EPA 1699 (modified)

ALS Sample ID	Client Sample Descriptions	Matrix	Date Sampled	Date Received	Date Extracted	Date Analyzed	Temperature (°C) on receipt
L2142228-30	PDI-SC-S083-0TO1.6	Sediment	01-Aug-18	08-Aug-18	13-Aug-18	28-Aug-18	10.4
L2142228-31	PDI-SC-S083-1.6TO3.5	Sediment	01-Aug-18	08-Aug-18	13-Aug-18	28-Aug-18	16.8
L2142228-32	PDI-SC-S083-3.5TO5	Sediment	01-Aug-18	08-Aug-18	13-Aug-18	28-Aug-18	15.0
L2142228-33	PDI-SC-S083-5TO6.6	Sediment	01-Aug-18	08-Aug-18	13-Aug-18	28-Aug-18	17.0
L2142228-46	PDI-SC-S032-12TO14	Sediment	01-Aug-18	08-Aug-18	13-Aug-18	26-Aug-18	14.2
L2142228-47	PDI-SC-S032-10TO12	Sediment	01-Aug-18	08-Aug-18	13-Aug-18	26-Aug-18	12.6
L2142228-48	PDI-SC-S032-8TO10	Sediment	01-Aug-18	08-Aug-18	13-Aug-18	26-Aug-18	14.2
L2142228-49	PDI-SC-S032-6TO8	Sediment	01-Aug-18	08-Aug-18	13-Aug-18	26-Aug-18	13.2
WG2845019-1	Method Blank	QC	n/a	n/a	13-Aug-18	25-Aug-18	n/a
WG2845019-2	Laboratory Control Sample	QC	n/a	n/a	13-Aug-18	25-Aug-18	n/a

Comments and Notes:
a) Sample Integrity:

All samples were received in good condition. Due to delays during shipping, individual temperatures were measured. See the table above. Temperatures are above the recommended storage and transportation limits. However, the brief exposure to above-recommended temperatures is not expected to have a negative impact on data quality.

b) Instrumental Analysis:

All results have been reported on a dry weight basis

The samples have been analyzed with an instrument method where conditions are optimized for acquisition of the selected targets only.

The highest available calibration level has not been analyzed as it was expected to saturate the instrument detector. Six calibration levels have been included.

For H6-18-CCV-0825, the recovery of the native target 2,4'-DDT was marginally above the method control limit. As a result, the method blank and laboratory control sample (LCS) have been quantified using the average RRFs of these two CCVs in order to remove any potential bias.

For H6-18-CCV-0837, the post-run continuing calibration verification (CCV) for the analytical sequence 6-180827B55, the recovery of the labelled standard 13C12-4,4'-DDD was marginally above the method control limit. The reported recoveries of this standard may be slightly elevated. Native target data are not expected to be biased as a result.

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Steve Kennedy, Technical Supervisor

 29-Aug-18
 Date



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SECTION 1: PROJECT NARRATIVE

ALSE Project Information

Project ID: AECOM100

Contact: Whitney Davis

Submission ID(s): L2142228

Client Project Information

Project ID: 60566335

Project Description: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling

Contact: Amy Dahl

Analytical Method: 2,4'- and 4,4'-DDE, DDD and DDT by EPA 1699 (modified)

ALS Sample ID	Client Sample Descriptions	Matrix	Date Sampled	Date Received	Date Extracted	Date Analyzed	Temperature (°C) on receipt
L2142228-53	PDI-RB-SS-180802-1645	Water	02-Aug-18	08-Aug-18	09-Aug-18	26-Aug-18	9.0
L2142228-54	PDI-RB-SS-180806-1100	Water	06-Aug-18	08-Aug-18	09-Aug-18	26-Aug-18	7.8
WG2844600-1	Method Blank	QC	n/a	n/a	09-Aug-18	27-Aug-18	n/a
WG2844600-2	Laboratory Control Sample	QC	n/a	n/a	09-Aug-18	25-Aug-18	n/a

Comments and Notes:

a) Sample Integrity:

All samples were received in good condition. Due to delays during shipping, individual temperatures were measured. See the table above. Temperatures are above the recommended storage and transportation limits. However, the brief exposure to above-recommended temperatures is not expected to have a negative impact on data quality.

b) Instrumental Analysis:

The samples have been analyzed with an instrument method where conditions are optimized for acquisition of the selected targets only.

The highest available calibration level has not been analyzed as it was expected to saturate the instrument detector. Six calibration levels have been included.

For the continuing calibration verification H6-18-CCV-0831, the pre-run CCV for the analytical sequence 6-180827B, the recoveries of two labelled extraction standards were below the method control limits. As a result, the reported recoveries of these standards may be biased low. Native target data are not expected to be biased except as otherwise noted.

For the sample PDI-RB-SS-180802-1645, the recovery of 13C-4,4'-DDE is below the method control limit. As a result, the detection limits may be elevated. The result for 4,4'-DDE is not expected to be biased.

For the Laboratory Control Sample (LCS), the recovery of 13C-4,4'-DDE is below the method control limit. 4,4'-DDE is not biased as a result. However, the recovery of 2,4'-DDE is marginally above the method control limit. The low level reported value for the sample PDI-RB-SS-180802-1645 may be elevated.

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Steve Kennedy, Technical Supervisor

29-Aug-18
Date

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SECTION 2: DATA SUMMARY REPORT



1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact: Whitney Davis
ALS Project ID: AECOM100
ALS WO#: L2142228
Date of Report: 29-Aug-18
Date of Sample Receipt: 8-Aug-18

Client Name: AECOM United States
Client Address: 1111 Third Avenue
Suite 1600
Seattle, WA 98101, USA
Client Contact: Amy Dahl
Client Project ID: 60566335

COMMENTS: 2,4'- and 4,4'-DDE, DDD and DDT by EPA 1699 (modified)

Certified by:

A handwritten signature in black ink, appearing to read "Steve Kennedy".

Steve Kennedy
Technical Supervisor

Results in this certificate relate only to the samples as submitted to the laboratory.

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Sample Analysis summary Report

Sample Name	PDI-SC-S203-0TO2	PDI-SC-S203-0TO2 Duplicate	PDI-SC-S203-4TO6	PDI-SC-S203-12TO13.8	PDI-SC-S203-2TO4	PDI-SC-S172-4TO6
ALS Sample ID	L2142228-1	WG2845070-4	L2142228-2	L2142228-3	L2142228-4	L2142228-25
Sample Size	4.33	4.40	7.13	7.35	5.48	6.94
Sample size units	g	g	g	g	g	g
Percent Solid	42.9%	43.7%	70.0%	70.7%	52.9%	67.3%
Sample Matrix	Sediment	QC	Sediment	Sediment	Sediment	Sediment
Sampling Date	3-Aug-18	n/a	3-Aug-18	3-Aug-18	3-Aug-18	2-Aug-18
Extraction Date	14-Aug-18	14-Aug-18	14-Aug-18	14-Aug-18	14-Aug-18	14-Aug-18
Target Analytes	ng / g	ng / g	ng / g	ng / g	ng / g	ng / g
2,4'-DDE	1.25	1.78	0.147	<0.017	2.93	0.275
4,4'-DDE	8.99	12.8	1.47	0.0402	24.8	2.72
2,4'-DDD	1.60	1.99	0.677	<0.014	6.02	3.87
4,4'-DDD	3.87	5.35	1.73	0.0490	16.3	10.9
2,4'-DDT	0.597	0.466	<0.069	<0.013	1.27	0.225
4,4'-DDT	1.50	1.44	<0.16	<0.051	5.25	4.26
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	35	17	75	60	28	70
4,4'-DDD, 13C12-	52	30	62	65	40	57
4,4'-DDT, 13C12-	38	19	60	60	30	55

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Sample Analysis summary Report

Sample Name	PDI-SC-S172-6TO8.1	PDI-SC-S178-8.7TO10.7	PDI-SC-S178-10.7TO12.7	PDI-SC-S178-12.7TO14	PDI-SC-S178-0TO2	PDI-SC-S178-2TO3.7
ALS Sample ID	L2142228-26	L2142228-27	L2142228-28	L2142228-29	L2142228-38	L2142228-39
Sample Size	7.15	6.47	6.87	6.91	5.03	5.20
Sample size units	g	g	g	g	g	g
Percent Solid	69.7%	63.2%	67.6%	67.6%	49.6%	50.1%
Sample Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Sampling Date	2-Aug-18	2-Aug-18	2-Aug-18	2-Aug-18	2-Aug-18	2-Aug-18
Extraction Date	14-Aug-18	14-Aug-18	14-Aug-18	14-Aug-18	14-Aug-18	14-Aug-18
Target Analytes	ng / g	ng / g	ng / g	ng / g	ng / g	ng / g
2,4'-DDE	0.336	<0.013	<0.027	<0.038	1.01	1.86
4,4'-DDE	1.37	<0.016	<0.031	<0.056	11.4	9.56
2,4'-DDD	1.32	<0.018	<0.043	<0.050	1.70	4.57
4,4'-DDD	2.65	<0.022	<0.043	<0.042	3.61	10.7
2,4'-DDT	0.256	<0.023	<0.048	<0.046	2.41	7.21
4,4'-DDT	0.890	<0.055	<0.080	0.195	7.77	64.1
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	54	64	57	42	59	54
4,4'-DDD, 13C12-	43	64	57	54	57	80
4,4'-DDT, 13C12-	39	57	52	44	54	82

ALS Life sciences

Sample Analysis summary Report

Sample Name	PDI-SC-S178- 3.7TO4.7	PDI-SC-S178- 4.7TO6.7	PDI-SC-S178- 6.7TO8.7	PDI-SC-S172-0TO2	PDI-SC-S172-2TO4	PDI-SC-S172- 2TO4D
ALS Sample ID	L2142228-40	L2142228-41	L2142228-42	L2142228-43	L2142228-44	L2142228-45
Sample Size	5.89	6.49	6.74	4.37	5.40	5.35
Sample size units	g	g	g	g	g	g
Percent Solid	57.7%	63.1%	66.9%	42.3%	53.8%	51.5%
Sample Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Sampling Date	2-Aug-18	2-Aug-18	2-Aug-18	2-Aug-18	2-Aug-18	2-Aug-18
Extraction Date	14-Aug-18	14-Aug-18	14-Aug-18	14-Aug-18	14-Aug-18	14-Aug-18
Target Analytes	ng / g	ng / g	ng / g	ng / g	ng / g	ng / g
2,4'-DDE	0.416	<0.021	<0.035	0.286	0.574	0.603
4,4'-DDE	4.40	0.210	0.0779	4.60	9.94	10.3
2,4'-DDD	1.15	<0.063	<0.052	2.68	3.28	3.76
4,4'-DDD	2.71	0.131	<0.043	4.71	9.80	10.1
2,4'-DDT	0.263	<0.025	<0.047	0.224	3.28	3.03
4,4'-DDT	0.944	<0.041	0.193	0.595	11.3	9.71
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	57	72	36	71	80	63
4,4'-DDD, 13C12-	53	63	51	60	68	53
4,4'-DDT, 13C12-	43	62	40	58	63	52

ALS Life sciences

Sample Analysis summary Report

Sample Name PDI-SC-S032-4TO6 PDI-SC-S032-2TO4 PDI-SC-S032-0TO2

ALS Sample ID L2142228-50 L2142228-51 L2142228-52

Sample Size	6.79	8.01	7.90
Sample size units	g	g	g
Percent Solid	65.4%	79.8%	77.6%
Sample Matrix	Sediment	Sediment	Sediment
Sampling Date	1-Aug-18	1-Aug-18	1-Aug-18
Extraction Date	14-Aug-18	14-Aug-18	14-Aug-18

Target Analytes	ng / g	ng / g	ng / g
2,4'-DDE	0.0186	0.150	<0.24
4,4'-DDE	0.0912	0.873	<1.0
2,4'-DDD	<0.012	0.239	<0.35
4,4'-DDD	0.0559	0.466	0.575
2,4'-DDT	<0.016	<0.11	<0.089
4,4'-DDT	0.0571	0.290	<0.35
Extraction Standards	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	76	28	4
4,4'-DDD, 13C12-	69	36	17
4,4'-DDT, 13C12-	64	27	8

ALS Life sciences

Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG2845070-1	WG2845070-2
Sample Size	6.20	1.00
Sample size units	g	n/a
Percent Solid	100.0%	50.2%
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	14-Aug-18	14-Aug-18
Target Analytes	ng / g	% Rec
2,4'-DDE	0.200	118
4,4'-DDE	0.171	98
2,4'-DDD	0.387	103
4,4'-DDD	0.318	96
2,4'-DDT	0.253	91
4,4'-DDT	0.262	98
Extraction Standards	% Rec	% Rec
4,4'-DDE, 13C12-	51	22
4,4'-DDD, 13C12-	50	39
4,4'-DDT, 13C12-	44	28

ALS Life sciences

Continuing Calibration Summary Report

Sample Name	CCV	CCV	CCV	CCV	CCV	CCV
ALS Sample ID	H6-18-RS1-063	H6-18-CCV-0827	H6-18-CCV-0825	H6-18-CCV-0835	H6-18-CCV-0837	H6-18-CCV-0839
Sample Size	1	1	1	1	1	1
Sample size units	n/a	n/a	n/a	n/a	n/a	n/a
Percent Solid	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	QC	QC	QC	QC	QC	QC
Sampling Date	n/a	n/a	n/a	n/a	n/a	n/a
Extraction Date	n/a	n/a	n/a	n/a	n/a	n/a
Target Analytes	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
2,4'-DDE		98	97	102	105	107
4,4'-DDE	93	100	100	104	108	110
2,4'-DDD		99	92	106	104	113
4,4'-DDD	94	100	103	103	110	110
2,4'-DDT		102	89	111	106	115
4,4'-DDT	93	104	97	104	110	108
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	103	100	105	110	122	116
4,4'-DDD, 13C12-	106	92	110	94	135	104
4,4'-DDT, 13C12-	108	90	119	75	126	90

ALS Life sciences		
Continuing Calibration Summary Report		
Sample Name	CCV	
ALS Sample ID	H6-18-RS1-064	
Sample Size	1	
Sample size units	n/a	
Percent Solid	n/a	
Sample Matrix	QC	
Sampling Date	n/a	
Extraction Date	n/a	
Target Analytes	% Rec	
2,4'-DDE		
4,4'-DDE	93	
2,4'-DDD		
4,4'-DDD	95	
2,4'-DDT		
4,4'-DDT	95	
Extraction Standards	% Rec	
4,4'-DDE, 13C12-	102	
4,4'-DDD, 13C12-	105	
4,4'-DDT, 13C12-	111	

ALS Life sciences

Sample Analysis summary Report

Sample Name	PDI-SC-S203-8TO10	PDI-SC-S203-8TO10 Duplicate	PDI-SC-S203-10TO12	PDI-SC-S257-0TO2	PDI-SC-S257-2TO4	PDI-SC-S257-4TO6
ALS Sample ID	L2142228-5	WG2845093-4	L2142228-6	L2142228-7	L2142228-8	L2142228-9
Sample Size	6.56	6.48	6.67	5.57	6.13	5.60
Sample size units	g	g	g	g	g	g
Percent Solid	64.5%	64.0%	66.5%	54.1%	59.6%	55.7%
Sample Matrix	Sediment	QC	Sediment	Sediment	Sediment	Sediment
Sampling Date	3-Aug-18	n/a	3-Aug-18	6-Aug-18	6-Aug-18	6-Aug-18
Extraction Date	16-Aug-18	16-Aug-18	16-Aug-18	16-Aug-18	16-Aug-18	16-Aug-18
Target Analytes	ng / g	ng / g	ng / g	ng / g	ng / g	ng / g
2,4'-DDE	0.0506	0.0145	<0.022	0.0706	0.265	0.595
4,4'-DDE	0.102	0.0372	0.0401	1.53	4.57	9.60
2,4'-DDD	0.111	0.0275	0.0425	0.209	0.866	2.28
4,4'-DDD	0.105	0.0446	<0.021	0.670	3.19	6.31
2,4'-DDT	<0.14	<0.021	<0.022	0.0822	0.0940	<0.15
4,4'-DDT	0.369	0.0980	0.141	0.275	0.255	0.462
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	70	73	70	78	78	81
4,4'-DDD, 13C12-	60	66	61	68	66	69
4,4'-DDT, 13C12-	52	58	56	61	56	59

ALS Life sciences

Sample Analysis summary Report

Sample Name	PDI-SC-S257-6TO8	PDI-SC-S257-6TO8D	PDI-SC-S257-8TO10	PDI-SC-S257-10TO12	PDI-SC-S257-12TO14.2	PDI-SC-S203-6TO8
ALS Sample ID	L2142228-10	L2142228-11	L2142228-12	L2142228-13	L2142228-14	L2142228-15
Sample Size	5.78	5.63	6.09	6.38	5.77	6.72
Sample size units	g	g	g	g	g	g
Percent Solid	57.5%	55.9%	59.1%	62.9%	56.0%	67.0%
Sample Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Sampling Date	6-Aug-18	6-Aug-18	6-Aug-18	6-Aug-18	6-Aug-18	3-Aug-18
Extraction Date	16-Aug-18	16-Aug-18	16-Aug-18	16-Aug-18	16-Aug-18	16-Aug-18
Target Analytes	ng / g	ng / g	ng / g	ng / g	ng / g	ng / g
2,4'-DDE	0.282	0.318	0.461	0.160	0.393	<0.013
4,4'-DDE	4.43	5.09	5.84	2.57	5.22	0.0717
2,4'-DDD	0.854	1.08	1.48	0.800	1.34	<0.037
4,4'-DDD	3.30	4.04	4.94	2.70	4.14	0.0759
2,4'-DDT	<0.064	0.127	0.0958	<0.044	0.0711	<0.024
4,4'-DDT	<0.21	0.351	0.246	0.124	0.270	0.103
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	76	76	78	77	84	66
4,4'-DDD, 13C12-	66	69	61	59	65	71
4,4'-DDT, 13C12-	58	59	47	48	54	64

ALS Life sciences

Sample Analysis summary Report

Sample Name	PDI-SC-S254-10TO12	PDI-SC-S254-0.3TO2	PDI-SC-S254-14TO15.4	PDI-SC-S254-2TO4	PDI-SC-S254-8TO10
ALS Sample ID	L2142228-16	L2142228-17	L2142228-18	L2142228-19	L2142228-20
Sample Size	5.80	5.61	6.24	5.54	5.84
Sample size units	g	g	g	g	g
Percent Solid	56.9%	54.9%	61.7%	54.2%	57.6%
Sample Matrix	Sediment	Sediment	Sediment	Sediment	Sediment
Sampling Date	6-Aug-18	6-Aug-18	6-Aug-18	6-Aug-18	6-Aug-18
Extraction Date	16-Aug-18	16-Aug-18	16-Aug-18	16-Aug-18	16-Aug-18
Target Analytes	ng / g	ng / g	ng / g	ng / g	ng / g
2,4'-DDE	0.486	0.546	0.341	0.483	0.494
4,4'-DDE	6.70	9.19	4.46	6.98	7.42
2,4'-DDD	1.05	1.63	1.64	1.66	1.46
4,4'-DDD	3.92	6.01	5.47	6.49	4.22
2,4'-DDT	<0.076	0.128	0.0736	<0.12	0.0875
4,4'-DDT	0.269	<0.26	0.158	1.16	0.274
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	79	83	74	58	82
4,4'-DDD, 13C12-	64	57	54	58	60
4,4'-DDT, 13C12-	54	43	42	42	44

ALS Life sciences		
Quality Control Summary Report		
Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG2845093-1	WG2845093-2
Sample Size	6.02	1.00
Sample size units	g	n/a
Percent Solid	100.0%	51.0%
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	16-Aug-18	16-Aug-18
Target Analytes	ng / g	% Rec
2,4'-DDE	0.00646	116
4,4'-DDE	0.0146	99
2,4'-DDD	<0.0072	111
4,4'-DDD	0.0108	99
2,4'-DDT	0.0110	105
4,4'-DDT	0.0349	98
Extraction Standards	% Rec	% Rec
4,4'-DDE, 13C12-	54	63
4,4'-DDD, 13C12-	65	65
4,4'-DDT, 13C12-	57	60

ALS Life sciences

Continuing Calibration Summary Report

Sample Name	CCV	CCV	CCV	CCV
ALS Sample ID	H6-18-RS1-064	H6-18-CCV-0833	H6-18-CCV-0835	H6-18-CCV-0837
Sample Size	1	1	1	1
Sample size units	n/a	n/a	n/a	n/a
Percent Solid	n/a	n/a	n/a	n/a
Sample Matrix	QC	QC	QC	QC
Sampling Date	n/a	n/a	n/a	n/a
Extraction Date	n/a	n/a	n/a	n/a
Target Analytes	% Rec	% Rec	% Rec	% Rec
2,4'-DDE		100	102	105
4,4'-DDE	93	100	104	108
2,4'-DDD		100	106	104
4,4'-DDD	95	100	103	110
2,4'-DDT		101	111	106
4,4'-DDT	95	101	104	110
Extraction Standards	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	102	103	110	122
4,4'-DDD, 13C12-	105	105	94	135
4,4'-DDT, 13C12-	111	106	75	126

ALS Life sciences

Sample Analysis summary Report

Sample Name	PDI-SC-S254-4TO6	PDI-SC-S254-6TO8	PDI-SC-S254-12TO14	PDI-SC-S228-0TO2.3
ALS Sample ID	L2142228-21	L2142228-22	L2142228-23	L2142228-24
Sample Size	5.82	5.62	6.17	8.32
Sample size units	g	g	g	g
Percent Solid	57.4%	54.3%	61.4%	81.0%
Sample Matrix	Sediment	Sediment	Sediment	Sediment
Sampling Date	6-Aug-18	6-Aug-18	6-Aug-18	6-Aug-18
Extraction Date	20-Aug-18	20-Aug-18	20-Aug-18	20-Aug-18
Target Analytes	ng / g	ng / g	ng / g	ng / g
2,4'-DDE	0.390	0.240	0.495	0.0446
4,4'-DDE	6.72	4.42	6.67	0.399
2,4'-DDD	1.29	0.688	2.25	0.334
4,4'-DDD	4.75	2.42	7.55	0.845
2,4'-DDT	<0.065	<0.074	0.174	0.148
4,4'-DDT	0.263	0.233	<0.29	0.561
Extraction Standards	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	75	83	82	81
4,4'-DDD, 13C12-	51	57	54	58
4,4'-DDT, 13C12-	39	44	43	48

ALS Life sciences

Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG2845105-1	WG2845105-2
Sample Size	6.48	1.00
Sample size units	g	n/a
Percent Solid	100.0%	49.5%
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	20-Aug-18	20-Aug-18
Target Analytes	ng / g	% Rec
2,4'-DDE	<0.0023	115
4,4'-DDE	0.00637	108
2,4'-DDD	0.00562	123
4,4'-DDD	0.00774	105
2,4'-DDT	<0.0084	119
4,4'-DDT	0.0237	108
Extraction Standards	% Rec	% Rec
4,4'-DDE, 13C12-	79	81
4,4'-DDD, 13C12-	82	74
4,4'-DDT, 13C12-	75	70

ALS Life sciences			
Continuing Calibration Summary Report			
Sample Name	CCV	CCV	CCV
ALS Sample ID	H6-18-RS1-064	H6-18-CCV-0837	H6-18-CCV-0839
Sample Size	1	1	1
Sample size units	n/a	n/a	n/a
Percent Solid	n/a	n/a	n/a
Sample Matrix	QC	QC	QC
Sampling Date	n/a	n/a	n/a
Extraction Date	n/a	n/a	n/a
Target Analytes	% Rec	% Rec	% Rec
2,4'-DDE		105	107
4,4'-DDE	93	108	110
2,4'-DDD		104	113
4,4'-DDD	95	110	110
2,4'-DDT		106	115
4,4'-DDT	95	110	108
Extraction Standards	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	102	122	116
4,4'-DDD, 13C12-	105	135	104
4,4'-DDT, 13C12-	111	126	90

ALS Life sciences

Sample Analysis summary Report

Sample Name	PDI-SC-S083-0TO1.6	PDI-SC-S083-1.6TO3.5	PDI-SC-S083-3.5TO5	PDI-SC-S083-5TO6.6	PDI-SC-S032-12TO14	PDI-SC-S032-10TO12
ALS Sample ID	L2142228-30	L2142228-31	L2142228-32	L2142228-33	L2142228-46	L2142228-47
Sample Size	3.86	8.23	7.90	7.78	7.11	7.03
Sample size units	g	g	g	g	g	g
Percent Solid	38.5%	80.8%	78.8%	75.7%	69.7%	69.7%
Sample Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Sampling Date	1-Aug-18	1-Aug-18	1-Aug-18	1-Aug-18	1-Aug-18	1-Aug-18
Extraction Date	13-Aug-18	13-Aug-18	13-Aug-18	13-Aug-18	13-Aug-18	13-Aug-18
Target Analytes	ng / g	ng / g	ng / g	ng / g	ng / g	ng / g
2,4'-DDE	0.310	0.120	0.103	0.132	<0.019	<0.015
4,4'-DDE	3.62	0.368	0.398	0.604	0.0362	0.0303
2,4'-DDD	12.4	1.63	4.76	5.03	<0.013	<0.016
4,4'-DDD	19.5	4.12	12.8	12.2	<0.027	<0.019
2,4'-DDT	0.318	0.0386	<0.055	<0.067	<0.017	<0.021
4,4'-DDT	1.04	0.0942	0.179	0.200	<0.052	<0.082
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	63	87	81	80	68	69
4,4'-DDD, 13C12-	38	79	75	74	58	56
4,4'-DDT, 13C12-	35	72	65	61	54	52

ALS Life sciences

Sample Analysis summary Report

Sample Name	PDI-SC-S032- 8TO10 PDI-SC-S032-6TO8	
ALS Sample ID	L2142228-48	L2142228-49
Sample Size	7.21	6.77
Sample size units	g	g
Percent Solid	71.4%	66.8%
Sample Matrix	Sediment	Sediment
Sampling Date	1-Aug-18	1-Aug-18
Extraction Date	13-Aug-18	13-Aug-18
Target Analytes	ng / g	ng / g
2,4'-DDE	<0.010	0.00632
4,4'-DDE	0.0394	0.0385
2,4'-DDD	<0.012	<0.010
4,4'-DDD	<0.026	0.0192
2,4'-DDT	<0.012	<0.0031
4,4'-DDT	0.0603	<0.011
Extraction Standards	% Rec	% Rec
4,4'-DDE, 13C12-	70	77
4,4'-DDD, 13C12-	57	62
4,4'-DDT, 13C12-	54	52

ALS Life sciences

Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG2845019-1	WG2845019-2
Sample Size	6.98	1.00
Sample size units	g	n/a
Percent Solid	100.0%	51.4%
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	13-Aug-18	13-Aug-18
Target Analytes	ng / g	% Rec
2,4'-DDE	<0.0040	103
4,4'-DDE	<0.0070	97
2,4'-DDD	<0.0038	99
4,4'-DDD	<0.0059	94
2,4'-DDT	<0.0053	90
4,4'-DDT	<0.012	94
Extraction Standards	% Rec	% Rec
4,4'-DDE, 13C12-	79	74
4,4'-DDD, 13C12-	83	67
4,4'-DDT, 13C12-	86	67

ALS Life sciences

Continuing Calibration Summary Report

Sample Name	CCV	CCV	CCV	CCV	CCV	CCV
ALS Sample ID	H6-18-RS1-064	H6-18-CCV-0823	H6-18-CCV-0825	H6-18-CCV-0827	H6-18-CCV-0829	H6-18-CCV-0835
Sample Size	1	1	1	1	1	1
Sample size units	n/a	n/a	n/a	n/a	n/a	n/a
Percent Solid	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	QC	QC	QC	QC	QC	QC
Sampling Date	n/a	n/a	n/a	n/a	n/a	n/a
Extraction Date	n/a	n/a	n/a	n/a	n/a	n/a
Target Analytes	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
2,4'-DDE		98	102	93	102	102
4,4'-DDE	93	99	101	100	100	104
2,4'-DDD		98	112	89	105	106
4,4'-DDD	95	100	99	100	100	103
2,4'-DDT		103	126	90	109	111
4,4'-DDT	95	101	103	100	100	104
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	102	100	113	107	98	110
4,4'-DDD, 13C12-	105	112	133	108	85	94
4,4'-DDT, 13C12-	111	122	154	111	79	75

ALS Life sciences			
Continuing Calibration Summary Report			
Sample Name	CCV	CCV	CCV
ALS Sample ID	H6-18-RS1-063	H6-18-RS1-062	H6-18-CCV-0837
Sample Size	1	1	1
Sample size units	n/a	n/a	n/a
Percent Solid	n/a	n/a	n/a
Sample Matrix	QC	QC	QC
Sampling Date	n/a	n/a	n/a
Extraction Date	n/a	n/a	n/a
Target Analytes	% Rec	% Rec	% Rec
2,4'-DDE			105
4,4'-DDE	93	94	108
2,4'-DDD			104
4,4'-DDD	94	93	110
2,4'-DDT			106
4,4'-DDT	93	97	110
Extraction Standards	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	103	101	122
4,4'-DDD, 13C12-	106	113	135
4,4'-DDT, 13C12-	108	116	126

ALS Life sciences

Sample Analysis summary Report

Sample Name	PDI-RB-SS-180802- PDI-RB-SS-180806- 1645 1100	
ALS Sample ID	L2142228-53	L2142228-54
Sample Size	0.99	0.95
Sample size units	L	L
Percent Solid	n/a	n/a
Sample Matrix	Water	Water
Sampling Date	2-Aug-18	6-Aug-18
Extraction Date	9-Aug-18	9-Aug-18
Target Analytes	ng /L	ng /L
2,4'-DDE	0.0796	<0.034
4,4'-DDE	0.185	0.116
2,4'-DDD	<0.078	<0.050
4,4'-DDD	<0.068	<0.066
2,4'-DDT	<0.11	<0.075
4,4'-DDT	<0.27	0.243
Extraction Standards	% Rec	% Rec
4,4'-DDE, 13C12-	16	28
4,4'-DDD, 13C12-	37	49
4,4'-DDT, 13C12-	21	33

ALS Life sciences

Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG2844600-1	WG2844600-2
Sample Size	1.00	1.00
Sample size units	L	n/a
Percent Solid	n/a	n/a
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	9-Aug-18	9-Aug-18
Target Analytes	ng / L	% Rec
2,4'-DDE	<0.077	146
4,4'-DDE	0.165	97
2,4'-DDD	<0.074	107
4,4'-DDD	<0.064	94
2,4'-DDT	0.100	94
4,4'-DDT	0.250	102
Extraction Standards	% Rec	% Rec
4,4'-DDE, 13C12-	38	19
4,4'-DDD, 13C12-	47	43
4,4'-DDT, 13C12-	34	25

ALS Life sciences

Continuing Calibration Summary Report

Sample Name	CCV	CCV	CCV	CCV	CCV
ALS Sample ID	H6-18-RS1-063	H6-18-CCV-0823	H6-18-CCV-0827	H6-18-CCV-0831	H6-18-CCV-0832
Sample Size	1	1	1	1	1
Sample size units	n/a	n/a	n/a	n/a	n/a
Percent Solid	n/a	n/a	n/a	n/a	n/a
Sample Matrix	QC	QC	QC	QC	QC
Sampling Date	n/a	n/a	n/a	n/a	n/a
Extraction Date	n/a	n/a	n/a	n/a	n/a
Target Analytes	% Rec	% Rec	% Rec	% Rec	% Rec
2,4'-DDE		98	98	103	108
4,4'-DDE	93	100	100	100	103
2,4'-DDD		97	99	110	112
4,4'-DDD	94	99	100	103	102
2,4'-DDT		99	102	115	112
4,4'-DDT	93	98	104	100	101
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	103	105	100	86	95
4,4'-DDD, 13C12-	106	105	92	54	86
4,4'-DDT, 13C12-	108	106	90	47	76

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S203-0T02	Sampling Date	3-Aug-18	Approved: <i>R. Bakhtiari</i> --e-signature-- 29-Aug-2018
ALS Sample ID	L2142228-1	Extraction Date	14-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	4.33 g	
Analysis Type	Sample	Percent Solid	42.9%	
Sample Matrix	Sediment	Split Ratio	1	

Run Information	Run 1
Filename	6-180825A34
Run Date	26-Aug-18 03:34
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.89	1.25	0.045	J,B		2.4
4,4'-DDE	11.42	8.99	0.051			2.4
2,4'-DDD	11.59	1.60	0.065	M,J,B		2.4
4,4'-DDD	12.10	3.87	0.042	M		2.4
2,4'-DDT	12.15	0.597	0.047	J,B		2.4
4,4'-DDT	12.59	1.50	0.096	M,J,B		2.4
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.42	35	21-125		
4,4'-DDD, 13C12-	125	12.09	52	5-150		
4,4'-DDT, 13C12-	125	12.59	38	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S203-0TO2 Duplicate
ALS Sample ID WG2845070-4
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix QC

Sampling Date n/a
Extraction Date 14-Aug-18
Sample Size 4.40 g
Percent Solid 43.7%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 29-Aug-2018

Run Information **Run 1**
Filename 6-180825A35
Run Date 26-Aug-18 03:54
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	1.78	0.095	J,B		2.3
4,4'-DDE	11.41	12.8	0.11			2.3
2,4'-DDD	11.58	1.99	0.14	M,J,B		2.3
4,4'-DDD	12.09	5.35	0.080	M		2.3
2,4'-DDT	12.14	0.466	0.088	M,J,B		2.3
4,4'-DDT	12.58	1.44	0.21	M,J,B		2.3
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	17	21-125		
4,4'-DDD, 13C12-	125	12.08	30	5-150		
4,4'-DDT, 13C12-	125	12.58	19	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.

B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S203-4TO6
ALS Sample ID L2142228-2
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 3-Aug-18
Extraction Date 14-Aug-18
Sample Size 7.13 g
Percent Solid 70.0%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 29-Aug-2018

Run Information **Run 1**
Filename 6-180825A36
Run Date 26-Aug-18 04:14
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.89	0.147	0.017	J,B		1.4
4,4'-DDE	11.42	1.47	0.019	B		1.4
2,4'-DDD	11.59	0.677	0.022	M,J,B		1.4
4,4'-DDD	12.10	1.73	0.025	M,B		1.4
2,4'-DDT	12.15	<0.069	0.028	M,J,R	0.069	1.4
4,4'-DDT	12.59	<0.16	0.046	M,J,R	0.16	1.4
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	75	21-125		
4,4'-DDD, 13C12-	125	12.09	62	5-150		
4,4'-DDT, 13C12-	125	12.59	60	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S203-12T013.8
ALS Sample ID L2142228-3
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 3-Aug-18
Extraction Date 14-Aug-18
Sample Size 7.35 g
Percent Solid 70.7%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 29-Aug-2018

Run Information **Run 1**
Filename 6-180827B62
Run Date 28-Aug-18 14:57
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.89	<0.017	0.0081	M,J,R	0.017	1.4
4,4'-DDE	11.42	0.0402	0.0097	M,J,B		1.4
2,4'-DDD	NotFnd	<0.014	0.014	U		1.4
4,4'-DDD	12.10	0.0490	0.013	M,J,B		1.4
2,4'-DDT	NotFnd	<0.013	0.013	U		1.4
4,4'-DDT	12.59	<0.051	0.022	J,R	0.051	1.4
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.42	60	21-125		
4,4'-DDD, 13C12-	125	12.09	65	5-150		
4,4'-DDT, 13C12-	125	12.59	60	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the EDL.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S203-2TO4
ALS Sample ID L2142228-4
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 3-Aug-18
Extraction Date 14-Aug-18
Sample Size 5.48 g
Percent Solid 52.9%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 29-Aug-2018

Run Information **Run 1**
Filename 6-180825A38
Run Date 26-Aug-18 04:54
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.89	2.93	0.045			1.9
4,4'-DDE	11.42	24.8	0.051	M		1.9
2,4'-DDD	11.59	6.02	0.066			1.9
4,4'-DDD	12.10	16.3	0.048			1.9
2,4'-DDT	12.16	1.27	0.053	J,B		1.9
4,4'-DDT	12.60	5.25	0.10	M		1.9
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.42	28	21-125		
4,4'-DDD, 13C12-	125	12.09	40	5-150		
4,4'-DDT, 13C12-	125	12.59	30	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.

B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S203-8TO10
ALS Sample ID L2142228-5
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 3-Aug-18
Extraction Date 16-Aug-18
Sample Size 6.56 g
Percent Solid 64.5%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 28-Aug-2018

Run Information **Run 1**
Filename 6-180827B19
Run Date 28-Aug-18 00:31
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.0506	0.015	J,B		1.6
4,4'-DDE	11.41	0.102	0.017	M,J,B		1.6
2,4'-DDD	11.58	0.111	0.023	M,J		1.6
4,4'-DDD	12.09	0.105	0.029	J,B		1.6
2,4'-DDT	12.15	<0.14	0.030	J,R	0.14	1.6
4,4'-DDT	12.58	0.369	0.052	M,J		1.6
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	70	21-125		
4,4'-DDD, 13C12-	125	12.08	60	5-150		
4,4'-DDT, 13C12-	125	12.58	52	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S203-8TO10 Duplicate
ALS Sample ID WG2845093-4
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix QC

Sampling Date n/a
Extraction Date 16-Aug-18
Sample Size 6.48 g
Percent Solid 64.0%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 28-Aug-2018

Run Information **Run 1**
Filename 6-180827B20
Run Date 28-Aug-18 00:51
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes		Ret.	Conc.	EDL	EMPC	LQL
		Time	ng / g	ng / g	Flags	
2,4'-DDE		10.89	0.0145	0.0091	M,J,B	1.6
4,4'-DDE		11.42	0.0372	0.011	J,B	1.6
2,4'-DDD		11.59	0.0275	0.015	M,J	1.6
4,4'-DDD		12.09	0.0446	0.020	M,J,B	1.6
2,4'-DDT		NotFnd	<0.021	0.021	U	1.6
4,4'-DDT		12.59	0.0980	0.034	M,J,B	1.6
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	73	21-125		
4,4'-DDD, 13C12-	125	12.09	66	5-150		
4,4'-DDT, 13C12-	125	12.58	58	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
 LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
 M Indicates that a peak has been manually integrated.
 U Indicates that this compound was not detected above the EDL.

 J indicates that a target analyte was detected below the calibrated range.

 B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

 EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S203-10T012	Sampling Date	3-Aug-18	g	Approved: <i>R. Bakhtiari</i> --e-signature-- 28-Aug-2018
ALS Sample ID	L2142228-6	Extraction Date	16-Aug-18		
Analysis Method	EPA 1699 (mod)	Sample Size	6.67		
Analysis Type	Sample	Percent Solid	66.5%		
Sample Matrix	Sediment	Split Ratio	1		

Run Information	Run 1
Filename	6-180827B21
Run Date	28-Aug-18 01:11
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret.	Conc.	EDL	EMPC		LQL
	Time	ng / g	ng / g	Flags	ng / g	
2,4'-DDE	10.89	<0.022	0.010	M,J,R	0.022	1.5
4,4'-DDE	11.42	0.0401	0.012	M,J,B		1.5
2,4'-DDD	11.59	0.0425	0.018	J		1.5
4,4'-DDD	NotFnd	<0.021	0.021	U		1.5
2,4'-DDT	NotFnd	<0.022	0.022	U		1.5
4,4'-DDT	12.59	0.141	0.038	M,J,B		1.5
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.42	70	21-125		
4,4'-DDD, 13C12-	125	12.09	61	5-150		
4,4'-DDT, 13C12-	125	12.59	56	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S257-0T02	Sampling Date	6-Aug-18	Approved: R. Bakhtiari --e-signature-- 28-Aug-2018
ALS Sample ID	L2142228-7	Extraction Date	16-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	5.57 g	
Analysis Type	Sample	Percent Solid	54.1%	
Sample Matrix	Sediment	Split Ratio	1	

Run Information	Run 1
Filename	6-180827B22
Run Date	28-Aug-18 01:31
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.89	0.0706	0.011	J		1.8
4,4'-DDE	11.42	1.53	0.014	M,J		1.8
2,4'-DDD	11.59	0.209	0.019	J		1.8
4,4'-DDD	12.10	0.670	0.024	M,J		1.8
2,4'-DDT	12.15	0.0822	0.025	M,J,B		1.8
4,4'-DDT	12.60	0.275	0.044	J,B		1.8
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.42	78	21-125		
4,4'-DDD, 13C12-	125	12.09	68	5-150		
4,4'-DDT, 13C12-	125	12.59	61	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S257-2TO4
ALS Sample ID L2142228-8
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 6-Aug-18
Extraction Date 16-Aug-18
Sample Size 6.13 g
Percent Solid 59.6%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 28-Aug-2018

Run Information **Run 1**
Filename 6-180827B23
Run Date 28-Aug-18 01:52
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.90	0.265	0.0092	J		1.7
4,4'-DDE	11.43	4.57	0.011	M		1.7
2,4'-DDD	11.60	0.866	0.017	J		1.7
4,4'-DDD	12.10	3.19	0.023	M		1.7
2,4'-DDT	12.16	0.0940	0.024	M,J,B		1.7
4,4'-DDT	12.60	0.255	0.045	J,B		1.7
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.42	78	21-125		
4,4'-DDD, 13C12-	125	12.10	66	5-150		
4,4'-DDT, 13C12-	125	12.59	56	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.

B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S257-4TO6	Sampling Date	6-Aug-18	g	Approved: <i>R. Bakhtiari</i> --e-signature-- 28-Aug-2018
ALS Sample ID	L2142228-9	Extraction Date	16-Aug-18		
Analysis Method	EPA 1699 (mod)	Sample Size	5.60		
Analysis Type	Sample	Percent Solid	55.7%		
Sample Matrix	Sediment	Split Ratio	1		

Run Information	Run 1
Filename	6-180827B24
Run Date	28-Aug-18 02:12
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.89	0.595	0.011	J		1.8
4,4'-DDE	11.42	9.60	0.014	M		1.8
2,4'-DDD	11.59	2.28	0.018			1.8
4,4'-DDD	12.10	6.31	0.023	M		1.8
2,4'-DDT	12.15	<0.15	0.024	M,J,R	0.15	1.8
4,4'-DDT	12.59	0.462	0.046	M,J		1.8
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	81	21-125		
4,4'-DDD, 13C12-	125	12.09	69	5-150		
4,4'-DDT, 13C12-	125	12.59	59	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S257-6TO8	Sampling Date	6-Aug-18	g	Approved: <i>R. Bakhtiari</i> --e-signature-- 28-Aug-2018
ALS Sample ID	L2142228-10	Extraction Date	16-Aug-18		
Analysis Method	EPA 1699 (mod)	Sample Size	5.78		
Analysis Type	Sample	Percent Solid	57.5%		
Sample Matrix	Sediment	Split Ratio	1		

Run Information	Run 1
Filename	6-180827B25
Run Date	28-Aug-18 02:32
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.282	0.010	J		1.8
4,4'-DDE	11.41	4.43	0.012	M		1.8
2,4'-DDD	11.58	0.854	0.017	J		1.8
4,4'-DDD	12.09	3.30	0.021	M		1.8
2,4'-DDT	12.15	<0.064	0.022	M,J,R	0.064	1.8
4,4'-DDT	12.58	<0.21	0.038	J,R	0.21	1.8
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	76	21-125		
4,4'-DDD, 13C12-	125	12.08	66	5-150		
4,4'-DDT, 13C12-	125	12.58	58	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S257-6TO8D	Sampling Date	6-Aug-18	Approved: R. Bakhtiari --e-signature-- 28-Aug-2018
ALS Sample ID	L2142228-11	Extraction Date	16-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	5.63 g	
Analysis Type	Sample	Percent Solid	55.9%	
Sample Matrix	Sediment	Split Ratio	1	

Run Information	Run 1
Filename	6-180827B26
Run Date	28-Aug-18 02:52
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.318	0.011	M,J		1.8
4,4'-DDE	11.41	5.09	0.014			1.8
2,4'-DDD	11.58	1.08	0.022	J		1.8
4,4'-DDD	12.09	4.04	0.025			1.8
2,4'-DDT	12.14	0.127	0.026	J		1.8
4,4'-DDT	12.58	0.351	0.053	J		1.8
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	76	21-125		
4,4'-DDD, 13C12-	125	12.08	69	5-150		
4,4'-DDT, 13C12-	125	12.58	59	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S257-8TO10

ALS Sample ID L2142228-12
 Analysis Method EPA 1699 (mod)
 Analysis Type Sample
 Sample Matrix Sediment

Sampling Date 6-Aug-18

Extraction Date 16-Aug-18

Sample Size 6.09 g

Percent Solid 59.1%

Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 28-Aug-2018

Run Information

Run 1

Filename 6-180827B27
 Run Date 28-Aug-18 03:12
 Final Volume 1020 uL
 Dilution Factor 5
 Analysis Units ng/g
 Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.89	0.461	0.0075	J		1.7
4,4'-DDE	11.42	5.84	0.0089	M		1.7
2,4'-DDD	11.59	1.48	0.014	M,J		1.7
4,4'-DDD	12.10	4.94	0.020	M		1.7
2,4'-DDT	12.15	0.0958	0.021	M,J,B		1.7
4,4'-DDT	12.59	0.246	0.045	M,J,B		1.7
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	78	21-125		
4,4'-DDD, 13C12-	125	12.09	61	5-150		
4,4'-DDT, 13C12-	125	12.59	47	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.

LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.

M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.

B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S257-10T012	Sampling Date	6-Aug-18	Approved: <i>R. Bakhtiari</i> --e-signature-- 28-Aug-2018
ALS Sample ID	L2142228-13	Extraction Date	16-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	6.38 g	
Analysis Type	Sample	Percent Solid	62.9%	
Sample Matrix	Sediment	Split Ratio	1	

Run Information	Run 1
Filename	6-180827B28
Run Date	28-Aug-18 03:32
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.160	0.0088	J		1.6
4,4'-DDE	11.41	2.57	0.011			1.6
2,4'-DDD	11.58	0.800	0.014	J		1.6
4,4'-DDD	12.09	2.70	0.019	M		1.6
2,4'-DDT	12.14	<0.044	0.020	M,J,R	0.044	1.6
4,4'-DDT	12.58	0.124	0.042	M,J,B		1.6
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	77	21-125		
4,4'-DDD, 13C12-	125	12.08	59	5-150		
4,4'-DDT, 13C12-	125	12.58	48	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S257-12T014.2
ALS Sample ID L2142228-14
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 6-Aug-18
Extraction Date 16-Aug-18
Sample Size 5.77 g
Percent Solid 56.0%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 28-Aug-2018

Run Information

Run 1

Filename 6-180827B29
Run Date 28-Aug-18 03:52
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.89	0.393	0.0086	J		1.8
4,4'-DDE	11.42	5.22	0.010	M		1.8
2,4'-DDD	11.59	1.34	0.016	J		1.8
4,4'-DDD	12.10	4.14	0.021	M		1.8
2,4'-DDT	12.15	0.0711	0.022	M,J,B		1.8
4,4'-DDT	12.59	0.270	0.045	J,B		1.8
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	84	21-125		
4,4'-DDD, 13C12-	125	12.09	65	5-150		
4,4'-DDT, 13C12-	125	12.59	54	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.

B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S203-6TO8
ALS Sample ID L2142228-15
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 3-Aug-18
Extraction Date 16-Aug-18
Sample Size 6.72 g
Percent Solid 67.0%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 28-Aug-2018

Run Information **Run 1**
Filename 6-180827B53
Run Date 28-Aug-18 11:56
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes		Ret.	Conc.	EDL	EMPC	LQL
		Time	ng / g	ng / g		
2,4'-DDE		NotFnd	<0.013	0.013	U	1.5
4,4'-DDE		11.42	0.0717	0.015	M,J,B	1.5
2,4'-DDD		11.59	<0.037	0.022	M,J,R 0.037	1.5
4,4'-DDD		12.09	0.0759	0.023	M,J,B	1.5
2,4'-DDT		NotFnd	<0.024	0.024	U	1.5
4,4'-DDT		12.59	0.103	0.039	M,J,B	1.5
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	66	21-125		
4,4'-DDD, 13C12-	125	12.08	71	5-150		
4,4'-DDT, 13C12-	125	12.58	64	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the EDL.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S254-10T012

ALS Sample ID L2142228-16
 Analysis Method EPA 1699 (mod)
 Analysis Type Sample
 Sample Matrix Sediment

Sampling Date 6-Aug-18

Extraction Date 16-Aug-18
 Sample Size 5.80 g
 Percent Solid 56.9%
 Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 28-Aug-2018

Run Information

Run 1

Filename 6-180827B31
 Run Date 28-Aug-18 04:32
 Final Volume 1020 uL
 Dilution Factor 5
 Analysis Units ng/g
 Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.89	0.486	0.011	J		1.8
4,4'-DDE	11.42	6.70	0.013	M		1.8
2,4'-DDD	11.59	1.05	0.016	J		1.8
4,4'-DDD	12.10	3.92	0.022			1.8
2,4'-DDT	12.15	<0.076	0.023	J,R	0.076	1.8
4,4'-DDT	12.59	0.269	0.046	J,B		1.8
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	79	21-125		
4,4'-DDD, 13C12-	125	12.09	64	5-150		
4,4'-DDT, 13C12-	125	12.58	54	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
 LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
 M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.
 R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
 B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S254-0.3TO2
ALS Sample ID L2142228-17
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 6-Aug-18
Extraction Date 16-Aug-18
Sample Size 5.61 g
Percent Solid 54.9%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 28-Aug-2018

Run Information **Run 1**
Filename 6-180827B32
Run Date 28-Aug-18 04:53
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.89	0.546	0.0098	J		1.8
4,4'-DDE	11.42	9.19	0.012	M		1.8
2,4'-DDD	11.59	1.63	0.017	M,J		1.8
4,4'-DDD	12.10	6.01	0.026	M		1.8
2,4'-DDT	12.15	0.128	0.028	M,J		1.8
4,4'-DDT	12.59	<0.26	0.061	M,J,R	0.26	1.8
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	83	21-125		
4,4'-DDD, 13C12-	125	12.09	57	5-150		
4,4'-DDT, 13C12-	125	12.59	43	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S254-14T015.4
ALS Sample ID L2142228-18
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 6-Aug-18
Extraction Date 16-Aug-18
Sample Size 6.24 g
Percent Solid 61.7%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 28-Aug-2018

Run Information **Run 1**
Filename 6-180827B33
Run Date 28-Aug-18 05:13
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.89	0.341	0.0097	J		1.6
4,4'-DDE	11.42	4.46	0.012	M		1.6
2,4'-DDD	11.59	1.64	0.017	J		1.6
4,4'-DDD	12.09	5.47	0.026	M		1.6
2,4'-DDT	12.15	0.0736	0.027	M,J,B		1.6
4,4'-DDT	12.59	0.158	0.055	M,J,B		1.6
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	74	21-125		
4,4'-DDD, 13C12-	125	12.09	54	5-150		
4,4'-DDT, 13C12-	125	12.58	42	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.

B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S254-2TO4
ALS Sample ID L2142228-19
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 6-Aug-18
Extraction Date 16-Aug-18
Sample Size 5.54 g
Percent Solid 54.2%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 28-Aug-2018

Run Information

Run 1

Filename 6-180827B34
Run Date 28-Aug-18 05:33
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes		Ret.	Conc.	EDL	EMPC	
		Time	ng / g	ng / g	Flags	ng / g LQL
2,4'-DDE		10.88	0.483	0.0075	J	1.8
4,4'-DDE		11.42	6.98	0.0090		1.8
2,4'-DDD		11.59	1.66	0.014	J	1.8
4,4'-DDD		12.09	6.49	0.017	M	1.8
2,4'-DDT		12.15	<0.12	0.017	M,J,R	0.12 1.8
4,4'-DDT		12.59	1.16	0.034	J	1.8
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	58	21-125		
4,4'-DDD, 13C12-	125	12.09	58	5-150		
4,4'-DDT, 13C12-	125	12.58	42	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S254-8TO10
ALS Sample ID L2142228-20
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 6-Aug-18
Extraction Date 16-Aug-18
Sample Size 5.84 g
Percent Solid 57.6%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 28-Aug-2018

Run Information **Run 1**
Filename 6-180827B35
Run Date 28-Aug-18 05:53
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes		Ret.	Conc.	EDL	EMPC	LQL
		Time	ng / g	ng / g	Flags	
2,4'-DDE		10.89	0.494	0.0084	J	1.7
4,4'-DDE		11.42	7.42	0.010	M	1.7
2,4'-DDD		11.59	1.46	0.013	M,J	1.7
4,4'-DDD		12.10	4.22	0.019	M	1.7
2,4'-DDT		12.14	0.0875	0.020	M,J,B	1.7
4,4'-DDT		12.59	0.274	0.043	M,J,B	1.7
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.42	82	21-125		
4,4'-DDD, 13C12-	125	12.09	60	5-150		
4,4'-DDT, 13C12-	125	12.59	44	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.

B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S254-4TO6	Sampling Date	6-Aug-18	Approved: R. Bakhtiari --e-signature-- 29-Aug-2018
ALS Sample ID	L2142228-21	Extraction Date	20-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	5.82 g	
Analysis Type	Sample	Percent Solid	57.4%	
Sample Matrix	Sediment	Split Ratio	1	

Run Information	Run 1
Filename	6-180827B63
Run Date	28-Aug-18 15:18
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.390	0.0036	J		1.8
4,4'-DDE	11.42	6.72	0.0042	M		1.8
2,4'-DDD	11.59	1.29	0.0066	J		1.8
4,4'-DDD	12.09	4.75	0.012	M		1.8
2,4'-DDT	12.15	<0.065	0.012	M,J,R	0.065	1.8
4,4'-DDT	12.59	0.263	0.023	J		1.8
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	75	21-125		
4,4'-DDD, 13C12-	125	12.09	51	5-150		
4,4'-DDT, 13C12-	125	12.58	39	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name

ALS Sample ID

Analysis Method

Analysis Type

Sample Matrix

PDI-SC-S254-6TO8

L2142228-22

EPA 1699 (mod)

Sample

Sediment

Sampling Date

Extraction Date

Sample Size

Percent Solid

Split Ratio

6-Aug-18

20-Aug-18

5.62

54.3%

1

g

Approved:

R. Bakhtiari

--e-signature--

29-Aug-2018

Run Information

Run 1

Filename

Run Date

Final Volume

Dilution Factor

Analysis Units

Instrument - Column

6-180827B64

28-Aug-18 15:38

1020 uL

5

ng/g

HRMS-6 HP5MSUSR163634H

Target Analytes

Ret. Time

Conc. ng / g

EDL ng / g

Flags

EMPC ng / g

LQL

2,4'-DDE

10.89

0.240

0.0062

M,J

1.8

4,4'-DDE

11.42

4.42

0.0074

M

1.8

2,4'-DDD

11.59

0.688

0.012

J

1.8

4,4'-DDD

12.09

2.42

0.021

M

1.8

2,4'-DDT

12.15

<0.074

0.022

M,J,R

0.074

1.8

4,4'-DDT

12.59

0.233

0.043

M,J,B

1.8

Extraction Standards

ng

4,4'-DDE, 13C12-

125

11.41

83

21-125

4,4'-DDD, 13C12-

125

12.09

57

5-150

4,4'-DDT, 13C12-

125

12.58

44

5-120

EDL

LQL

M

J

R

B

EMPC

Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.

Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.

Indicates that a peak has been manually integrated.

indicates that a target analyte was detected below the calibrated range.

Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S254-12TO14	Sampling Date	6-Aug-18	Approved: R. Bakhtiari --e-signature-- 29-Aug-2018
ALS Sample ID	L2142228-23	Extraction Date	20-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	6.17 g	
Analysis Type	Sample	Percent Solid	61.4%	
Sample Matrix	Sediment	Split Ratio	1	

Run Information	Run 1
Filename	6-180827B65
Run Date	28-Aug-18 15:58
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.495	0.013	J		1.7
4,4'-DDE	11.41	6.67	0.015	M		1.7
2,4'-DDD	11.58	2.25	0.021			1.7
4,4'-DDD	12.09	7.55	0.034	M		1.7
2,4'-DDT	12.14	0.174	0.036	M,J		1.7
4,4'-DDT	12.58	<0.29	0.069	J,R	0.29	1.7
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	82	21-125		
4,4'-DDD, 13C12-	125	12.08	54	5-150		
4,4'-DDT, 13C12-	125	12.58	43	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S228-0TO2.3	Sampling Date	6-Aug-18	Approved: R. Bakhtiari --e-signature-- 29-Aug-2018
ALS Sample ID	L2142228-24	Extraction Date	20-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	8.32 g	
Analysis Type	Sample	Percent Solid	81.0%	
Sample Matrix	Sediment	Split Ratio	1	

Run Information	Run 1
Filename	6-180827B66
Run Date	28-Aug-18 16:18
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.0446	0.0066	M,J		1.2
4,4'-DDE	11.42	0.399	0.0079	M,J		1.2
2,4'-DDD	11.59	0.334	0.011	J		1.2
4,4'-DDD	12.09	0.845	0.018	J		1.2
2,4'-DDT	12.15	0.148	0.019	M,J		1.2
4,4'-DDT	12.59	0.561	0.034	M,J		1.2
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	81	21-125		
4,4'-DDD, 13C12-	125	12.09	58	5-150		
4,4'-DDT, 13C12-	125	12.58	48	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S172-4TO6	Sampling Date	2-Aug-18	Approved: <i>R. Bakhtiari</i> --e-signature-- 29-Aug-2018
ALS Sample ID	L2142228-25	Extraction Date	14-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	6.94 g	
Analysis Type	Sample	Percent Solid	67.3%	
Sample Matrix	Sediment	Split Ratio	1	

Run Information	Run 1
Filename	6-180825A39
Run Date	26-Aug-18 05:14
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.89	0.275	0.017	M,J,B		1.5
4,4'-DDE	11.42	2.72	0.019	M		1.5
2,4'-DDD	11.59	3.87	0.025	M,B		1.5
4,4'-DDD	12.09	10.9	0.031	M		1.5
2,4'-DDT	12.15	0.225	0.035	M,J,B		1.5
4,4'-DDT	12.59	4.26	0.059	M		1.5
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	70	21-125		
4,4'-DDD, 13C12-	125	12.09	57	5-150		
4,4'-DDT, 13C12-	125	12.58	55	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S172-6TO8.1	Sampling Date	2-Aug-18	Approved: <i>R. Bakhtiari</i> --e-signature-- 29-Aug-2018
ALS Sample ID	L2142228-26	Extraction Date	14-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	7.15 g	
Analysis Type	Sample	Percent Solid	69.7%	
Sample Matrix	Sediment	Split Ratio	1	

Run Information	Run 1
Filename	6-180825A40
Run Date	26-Aug-18 05:34
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret.	Conc.	EDL	EMPC	LQL
	Time	ng / g	ng / g	Flags	
2,4'-DDE	10.89	0.336	0.026	M,J,B	1.4
4,4'-DDE	11.43	1.37	0.030	M,J,B	1.4
2,4'-DDD	11.59	1.32	0.040	M,J,B	1.4
4,4'-DDD	12.10	2.65	0.056	M,B	1.4
2,4'-DDT	12.16	0.256	0.062	M,J,B	1.4
4,4'-DDT	12.60	0.890	0.094	M,J,B	1.4
Extraction Standards	ng				
4,4'-DDE, 13C12-	125	11.42	54	21-125	
4,4'-DDD, 13C12-	125	12.09	43	5-150	
4,4'-DDT, 13C12-	125	12.59	39	5-120	

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S178-8.7TO10.7
ALS Sample ID L2142228-27
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 2-Aug-18
Extraction Date 14-Aug-18
Sample Size 6.47 g
Percent Solid 63.2%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 29-Aug-2018

Run Information

Run 1

Filename 6-180827B52
Run Date 28-Aug-18 11:35
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	NotFnd	<0.013	0.013	U		1.6
4,4'-DDE	NotFnd	<0.016	0.016	U		1.6
2,4'-DDD	NotFnd	<0.018	0.018	U		1.6
4,4'-DDD	NotFnd	<0.022	0.022	U		1.6
2,4'-DDT	NotFnd	<0.023	0.023	U		1.6
4,4'-DDT	12.59	<0.055	0.036	M,J,R	0.055	1.6
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	64	21-125		
4,4'-DDD, 13C12-	125	12.09	64	5-150		
4,4'-DDT, 13C12-	125	12.58	57	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the EDL.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S178-10.7TO12.7
ALS Sample ID L2142228-28
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 2-Aug-18
Extraction Date 14-Aug-18
Sample Size 6.87 g
Percent Solid 67.6%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 29-Aug-2018

Run Information **Run 1**
Filename 6-180825A42
Run Date 26-Aug-18 06:14
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	NotFnd	<0.027	0.027	U		1.5
4,4'-DDE	11.42	<0.031	0.031	M,U	0.021	1.5
2,4'-DDD	NotFnd	<0.043	0.043	U		1.5
4,4'-DDD	NotFnd	<0.043	0.043	U		1.5
2,4'-DDT	NotFnd	<0.048	0.048	U		1.5
4,4'-DDT	NotFnd	<0.080	0.080	U		1.5
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	57	21-125		
4,4'-DDD, 13C12-	125	12.09	57	5-150		
4,4'-DDT, 13C12-	125	12.59	52	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the EDL.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S178-12.7TO14
ALS Sample ID L2142228-29
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 2-Aug-18
Extraction Date 14-Aug-18
Sample Size 6.91 g
Percent Solid 67.6%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 29-Aug-2018

Run Information

Run 1

Filename 6-180825A43
Run Date 26-Aug-18 06:35
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	NotFnd	<0.038	0.038	U		1.5
4,4'-DDE	11.42	<0.056	0.043	M,J,R	0.056	1.5
2,4'-DDD	NotFnd	<0.050	0.050	U		1.5
4,4'-DDD	NotFnd	<0.042	0.042	U		1.5
2,4'-DDT	NotFnd	<0.046	0.046	U		1.5
4,4'-DDT	12.59	0.195	0.086	M,J,B		1.5
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	42	21-125		
4,4'-DDD, 13C12-	125	12.09	54	5-150		
4,4'-DDT, 13C12-	125	12.58	44	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the EDL.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S083-0TO1.6	Sampling Date	1-Aug-18	Approved: R. Bakhtiari --e-signature-- 28-Aug-2018
ALS Sample ID	L2142228-30	Extraction Date	13-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	3.86 g	
Analysis Type	Sample	Percent Solid	38.5%	
Sample Matrix	Sediment	Split Ratio	1	

Run Information	Run 1
Filename	6-180827B46
Run Date	28-Aug-18 09:34
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.90	0.310	0.020	J		2.6
4,4'-DDE	11.42	3.62	0.024	M		2.6
2,4'-DDD	11.59	12.4	0.033	M		2.6
4,4'-DDD	12.10	19.5	0.057	M		2.6
2,4'-DDT	12.15	0.318	0.060	J		2.6
4,4'-DDT	12.59	1.04	0.11	M,J		2.6
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.42	63	21-125		
4,4'-DDD, 13C12-	125	12.09	38	5-150		
4,4'-DDT, 13C12-	125	12.58	35	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S083-1.6TO3.5	Sampling Date	1-Aug-18	g	Approved: <i>R. Bakhtiari</i> --e-signature-- 28-Aug-2018
ALS Sample ID	L2142228-31	Extraction Date	13-Aug-18		
Analysis Method	EPA 1699 (mod)	Sample Size	8.23		
Analysis Type	Sample	Percent Solid	80.8%		
Sample Matrix	Sediment	Split Ratio	1		

Run Information	Run 1
Filename	6-180827B47
Run Date	28-Aug-18 09:55
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.89	0.120	0.0061	M,J	1.2	
4,4'-DDE	11.42	0.368	0.0073	M,J	1.2	
2,4'-DDD	11.59	1.63	0.011		1.2	
4,4'-DDD	12.09	4.12	0.014	M	1.2	
2,4'-DDT	12.15	0.0386	0.015	M,J	1.2	
4,4'-DDT	12.59	0.0942	0.025	M,J	1.2	
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	87	21-125		
4,4'-DDD, 13C12-	125	12.09	79	5-150		
4,4'-DDT, 13C12-	125	12.58	72	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S083-3.5T05
ALS Sample ID L2142228-32
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 1-Aug-18
Extraction Date 13-Aug-18
Sample Size 7.90 g
Percent Solid 78.8%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 28-Aug-2018

Run Information **Run 1**
Filename 6-180827B48
Run Date 28-Aug-18 10:15
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.89	0.103	0.0057	M,J	1.3	
4,4'-DDE	11.43	0.398	0.0068	M,J	1.3	
2,4'-DDD	11.60	4.76	0.0090		1.3	
4,4'-DDD	12.10	12.8	0.012	M	1.3	
2,4'-DDT	12.16	<0.055	0.012	M,J,R	0.055	1.3
4,4'-DDT	12.60	0.179	0.020	J	1.3	
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.42	81	21-125		
4,4'-DDD, 13C12-	125	12.09	75	5-150		
4,4'-DDT, 13C12-	125	12.59	65	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S083-5TO6.6
ALS Sample ID L2142228-33
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 1-Aug-18
Extraction Date 13-Aug-18
Sample Size 7.78 g
Percent Solid 75.7%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 28-Aug-2018

Run Information **Run 1**
Filename 6-180827B49
Run Date 28-Aug-18 10:35
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.132	0.0089	J		1.3
4,4'-DDE	11.42	0.604	0.011	M,J		1.3
2,4'-DDD	11.59	5.03	0.015	M		1.3
4,4'-DDD	12.09	12.2	0.019	M		1.3
2,4'-DDT	12.15	<0.067	0.020	M,J,R	0.067	1.3
4,4'-DDT	12.58	0.200	0.034	M,J		1.3
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	80	21-125		
4,4'-DDD, 13C12-	125	12.08	74	5-150		
4,4'-DDT, 13C12-	125	12.58	61	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S178-0TO2	Sampling Date	2-Aug-18	Approved: <i>R. Bakhtiari</i> --e-signature-- 29-Aug-2018
ALS Sample ID	L2142228-38	Extraction Date	14-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	5.03 g	
Analysis Type	Sample	Percent Solid	49.6%	
Sample Matrix	Sediment	Split Ratio	1	

Run Information	Run 1
Filename	6-180825A44
Run Date	26-Aug-18 06:55
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.89	1.01	0.025	J,B		2.0
4,4'-DDE	11.42	11.4	0.029			2.0
2,4'-DDD	11.59	1.70	0.033	M,J,B		2.0
4,4'-DDD	12.09	3.61	0.036	M		2.0
2,4'-DDT	12.15	2.41	0.040	M,B		2.0
4,4'-DDT	12.59	7.77	0.067	M		2.0
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	59	21-125		
4,4'-DDD, 13C12-	125	12.09	57	5-150		
4,4'-DDT, 13C12-	125	12.58	54	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S178-2TO3.7
ALS Sample ID L2142228-39
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 2-Aug-18
Extraction Date 14-Aug-18
Sample Size 5.20 g
Percent Solid 50.1%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 29-Aug-2018

Run Information **Run 1**
Filename 6-180825A45
Run Date 26-Aug-18 07:15
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret.	Conc.	EDL	EMPC	LQL
	Time	ng / g	ng / g	Flags	
2,4'-DDE	10.89	1.86	0.015	J,B	2.0
4,4'-DDE	11.42	9.56	0.017	M	2.0
2,4'-DDD	11.59	4.57	0.024	M	2.0
4,4'-DDD	12.10	10.7	0.017	M	2.0
2,4'-DDT	12.16	7.21	0.019	M	2.0
4,4'-DDT	12.60	64.1	0.026	M	2.0
Extraction Standards	ng				
4,4'-DDE, 13C12-	125	11.42	54	21-125	
4,4'-DDD, 13C12-	125	12.09	80	5-150	
4,4'-DDT, 13C12-	125	12.59	82	5-120	

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.

B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S178-3.7TO4.7	Sampling Date	2-Aug-18	Approved: R. Bakhtiari --e-signature-- 29-Aug-2018
ALS Sample ID	L2142228-40	Extraction Date	14-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	5.89 g	
Analysis Type	Sample	Percent Solid	57.7%	
Sample Matrix	Sediment	Split Ratio	1	

Run Information	Run 1
Filename	6-180827B43
Run Date	28-Aug-18 08:34
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.416	0.016	J,B		1.7
4,4'-DDE	11.41	4.40	0.019	M		1.7
2,4'-DDD	11.58	1.15	0.025	J,B		1.7
4,4'-DDD	12.09	2.71	0.029	B		1.7
2,4'-DDT	12.14	0.263	0.031	J,B		1.7
4,4'-DDT	12.58	0.944	0.063	J,B		1.7
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	57	21-125		
4,4'-DDD, 13C12-	125	12.08	53	5-150		
4,4'-DDT, 13C12-	125	12.57	43	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S178-4.7TO6.7
ALS Sample ID L2142228-41
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 2-Aug-18
Extraction Date 14-Aug-18
Sample Size 6.49 g
Percent Solid 63.1%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 29-Aug-2018

Run Information **Run 1**
Filename 6-180825A47
Run Date 26-Aug-18 07:55
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.89	<0.021	0.016	M,J,R	0.021	1.6
4,4'-DDE	11.42	0.210	0.018	M,J,B		1.6
2,4'-DDD	11.59	<0.063	0.020	M,J,R	0.063	1.6
4,4'-DDD	12.10	0.131	0.023	M,J,B		1.6
2,4'-DDT	NotFnd	<0.025	0.025	U		1.6
4,4'-DDT	NotFnd	<0.041	0.041	U		1.6
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	72	21-125		
4,4'-DDD, 13C12-	125	12.09	63	5-150		
4,4'-DDT, 13C12-	125	12.59	62	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
 LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
 M Indicates that a peak has been manually integrated.
 U Indicates that this compound was not detected above the EDL.

 J indicates that a target analyte was detected below the calibrated range.
 R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
 B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

 EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S178-6.7TO8.7

ALS Sample ID L2142228-42
 Analysis Method EPA 1699 (mod)
 Analysis Type Sample
 Sample Matrix Sediment

Sampling Date 2-Aug-18

Extraction Date 14-Aug-18

Sample Size 6.74 g

Percent Solid 66.9%

Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 29-Aug-2018

Run Information

Run 1

Filename 6-180825A48
 Run Date 26-Aug-18 08:15
 Final Volume 1020 uL
 Dilution Factor 5
 Analysis Units ng/g
 Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret.	Conc.	EDL	EMPC	LQL
	Time	ng / g	ng / g	Flags	
2,4'-DDE	NotFnd	<0.035	0.035	U	1.5
4,4'-DDE	11.42	0.0779	0.040	M,J,B	1.5
2,4'-DDD	NotFnd	<0.052	0.052	U	1.5
4,4'-DDD	NotFnd	<0.043	0.043	U	1.5
2,4'-DDT	NotFnd	<0.047	0.047	U	1.5
4,4'-DDT	12.60	0.193	0.082	M,J,B	1.5
Extraction Standards	ng				
4,4'-DDE, 13C12-	125	11.42	36	21-125	
4,4'-DDD, 13C12-	125	12.10	51	5-150	
4,4'-DDT, 13C12-	125	12.59	40	5-120	

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.

LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.

M Indicates that a peak has been manually integrated.

U Indicates that this compound was not detected above the EDL.

J indicates that a target analyte was detected below the calibrated range.

B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S172-0T02	Sampling Date	2-Aug-18	Approved: <i>R. Bakhtiari</i> --e-signature-- 29-Aug-2018
ALS Sample ID	L2142228-43	Extraction Date	14-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	4.37 g	
Analysis Type	Sample	Percent Solid	42.3%	
Sample Matrix	Sediment	Split Ratio	1	

Run Information	Run 1
Filename	6-180825A49
Run Date	26-Aug-18 08:35
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.89	0.286	0.019	J,B		2.3
4,4'-DDE	11.42	4.60	0.022	M		2.3
2,4'-DDD	11.59	2.68	0.032	B		2.3
4,4'-DDD	12.10	4.71	0.037			2.3
2,4'-DDT	12.15	0.224	0.041	M,J,B		2.3
4,4'-DDT	12.59	0.595	0.064	M,J,B		2.3
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.42	71	21-125		
4,4'-DDD, 13C12-	125	12.09	60	5-150		
4,4'-DDT, 13C12-	125	12.59	58	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S172-2TO4	Sampling Date	2-Aug-18	Approved: <i>R. Bakhtiari</i> --e-signature-- 29-Aug-2018
ALS Sample ID	L2142228-44	Extraction Date	14-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	5.40 g	
Analysis Type	Sample	Percent Solid	53.8%	
Sample Matrix	Sediment	Split Ratio	1	

Run Information	Run 1
Filename	6-180825A50
Run Date	26-Aug-18 08:55
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.89	0.574	0.015	J,B		1.9
4,4'-DDE	11.42	9.94	0.018	M		1.9
2,4'-DDD	11.59	3.28	0.022	B		1.9
4,4'-DDD	12.10	9.80	0.027	M		1.9
2,4'-DDT	12.16	3.28	0.030	M		1.9
4,4'-DDT	12.60	11.3	0.047	M		1.9
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.42	80	21-125		
4,4'-DDD, 13C12-	125	12.09	68	5-150		
4,4'-DDT, 13C12-	125	12.59	63	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S172-2TO4D
ALS Sample ID L2142228-45
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 2-Aug-18
Extraction Date 14-Aug-18
Sample Size 5.35 g
Percent Solid 51.5%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 29-Aug-2018

Run Information **Run 1**
Filename 6-180825A51
Run Date 26-Aug-18 09:15
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.603	0.012	M,J,B		1.9
4,4'-DDE	11.41	10.3	0.014	M		1.9
2,4'-DDD	11.58	3.76	0.019	B		1.9
4,4'-DDD	12.09	10.1	0.023			1.9
2,4'-DDT	12.15	3.03	0.026	M		1.9
4,4'-DDT	12.59	9.71	0.038	M		1.9
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	63	21-125		
4,4'-DDD, 13C12-	125	12.08	53	5-150		
4,4'-DDT, 13C12-	125	12.58	52	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.

B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S032-12T014	Sampling Date	1-Aug-18	g	Approved: <i>R. Bakhtiari</i> --e-signature-- 28-Aug-2018
ALS Sample ID	L2142228-46	Extraction Date	13-Aug-18		
Analysis Method	EPA 1699 (mod)	Sample Size	7.11		
Analysis Type	Sample	Percent Solid	69.7%		
Sample Matrix	Sediment	Split Ratio	1		

Run Information	Run 1
Filename	6-180826A05
Run Date	26-Aug-18 13:45
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret.	Conc.	EDL	EMPC		LQL
	Time	ng / g	ng / g	Flags	ng / g	
2,4'-DDE	10.88	<0.019	0.0089	M,J,R	0.019	1.4
4,4'-DDE	11.41	0.0362	0.010	J		1.4
2,4'-DDD	NotFnd	<0.013	0.013	U		1.4
4,4'-DDD	12.09	<0.027	0.016	M,J,R	0.027	1.4
2,4'-DDT	NotFnd	<0.017	0.017	U		1.4
4,4'-DDT	12.58	<0.052	0.030	M,J,R	0.052	1.4
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	68	21-125		
4,4'-DDD, 13C12-	125	12.08	58	5-150		
4,4'-DDT, 13C12-	125	12.57	54	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S032-10T012
ALS Sample ID L2142228-47
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 1-Aug-18
Extraction Date 13-Aug-18
Sample Size 7.03 g
Percent Solid 69.7%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 28-Aug-2018

Run Information **Run 1**
Filename 6-180826A06
Run Date 26-Aug-18 14:06
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	<0.015	0.0099	M,J,R	0.015	1.5
4,4'-DDE	11.41	0.0303	0.011	M,J		1.5
2,4'-DDD	NotFnd	<0.016	0.016	U		1.5
4,4'-DDD	NotFnd	<0.019	0.019	U		1.5
2,4'-DDT	NotFnd	<0.021	0.021	U		1.5
4,4'-DDT	12.58	<0.082	0.035	M,J,R	0.082	1.5
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	69	21-125		
4,4'-DDD, 13C12-	125	12.08	56	5-150		
4,4'-DDT, 13C12-	125	12.58	52	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the EDL.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S032-8TO10
ALS Sample ID L2142228-48
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 1-Aug-18
Extraction Date 13-Aug-18
Sample Size 7.21 g
Percent Solid 71.4%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 28-Aug-2018

Run Information **Run 1**
Filename 6-180826A07
Run Date 26-Aug-18 14:26
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	<0.010	0.0073	M,J,R	0.010	1.4
4,4'-DDE	11.41	0.0394	0.0083	M,J		1.4
2,4'-DDD	11.58	<0.012	0.0096	M,J,R	0.012	1.4
4,4'-DDD	12.09	<0.026	0.011	M,J,R	0.026	1.4
2,4'-DDT	NotFnd	<0.012	0.012	U		1.4
4,4'-DDT	12.58	0.0603	0.020	M,J		1.4
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	70	21-125		
4,4'-DDD, 13C12-	125	12.08	57	5-150		
4,4'-DDT, 13C12-	125	12.58	54	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the EDL.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S032-6TO8
ALS Sample ID L2142228-49
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 1-Aug-18
Extraction Date 13-Aug-18
Sample Size 6.77 g
Percent Solid 66.8%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 28-Aug-2018

Run Information

Run 1

Filename 6-180826A08
Run Date 26-Aug-18 14:46
Final Volume 1020 uL
Dilution Factor 1
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes		Ret.	Conc.	EDL	EMPC	LQL
		Time	ng / g	ng / g Flags		
2,4'-DDE		10.88	0.00632	0.0013	J	0.30
4,4'-DDE		11.41	0.0385	0.0015	J	0.30
2,4'-DDD		11.58	<0.010	0.0021	M,J,R 0.010	0.30
4,4'-DDD		12.09	0.0192	0.0028	J	0.30
2,4'-DDT		NotFnd	<0.0031	0.0031	U	0.30
4,4'-DDT		12.59	<0.011	0.0052	J,R 0.011	0.30
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	77	21-125		
4,4'-DDD, 13C12-	125	12.08	62	5-150		
4,4'-DDT, 13C12-	125	12.58	52	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the EDL.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S032-4T06	Sampling Date	1-Aug-18	g	Approved: <i>R. Bakhtiari</i> --e-signature-- 29-Aug-2018
ALS Sample ID	L2142228-50	Extraction Date	14-Aug-18		
Analysis Method	EPA 1699 (mod)	Sample Size	6.79		
Analysis Type	Sample	Percent Solid	65.4%		
Sample Matrix	Sediment	Split Ratio	1		

Run Information	Run 1
Filename	6-180827B51
Run Date	28-Aug-18 11:15
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret.	Conc.	EDL	EMPC	LQL
	Time	ng / g	ng / g	Flags	
2,4'-DDE	10.88	0.0186	0.0071	M,J,B	1.5
4,4'-DDE	11.42	0.0912	0.0085	M,J,B	1.5
2,4'-DDD	NotFnd	<0.012	0.012	U	1.5
4,4'-DDD	12.09	0.0559	0.015	M,J,B	1.5
2,4'-DDT	NotFnd	<0.016	0.016	U	1.5
4,4'-DDT	12.59	0.0571	0.027	M,J,B	1.5
Extraction Standards	ng				
4,4'-DDE, 13C12-	125	11.41	76	21-125	
4,4'-DDD, 13C12-	125	12.09	69	5-150	
4,4'-DDT, 13C12-	125	12.58	64	5-120	

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S032-2TO4	Sampling Date	1-Aug-18	g	Approved: <i>R. Bakhtiari</i> --e-signature-- 29-Aug-2018
ALS Sample ID	L2142228-51	Extraction Date	14-Aug-18		
Analysis Method	EPA 1699 (mod)	Sample Size	8.01		
Analysis Type	Sample	Percent Solid	79.8%		
Sample Matrix	Sediment	Split Ratio	1		

Run Information	Run 1
Filename	6-180825A53
Run Date	26-Aug-18 09:55
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.89	0.150	0.033	M,J,B		1.3
4,4'-DDE	11.42	0.873	0.038	M,J,B		1.3
2,4'-DDD	11.59	0.239	0.042	M,J,B		1.3
4,4'-DDD	12.10	0.466	0.033	M,J,B		1.3
2,4'-DDT	12.15	<0.11	0.037	M,J,R	0.11	1.3
4,4'-DDT	12.59	0.290	0.078	M,J,B		1.3
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	28	21-125		
4,4'-DDD, 13C12-	125	12.09	36	5-150		
4,4'-DDT, 13C12-	125	12.59	27	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S032-0T02
ALS Sample ID L2142228-52
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 1-Aug-18
Extraction Date 14-Aug-18
Sample Size 7.90 g
Percent Solid 77.6%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 29-Aug-2018

Run Information **Run 1**
Filename 6-180825A54
Run Date 26-Aug-18 10:16
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret.	Conc.	EDL	EMPC		LQL
	Time	ng / g	ng / g	Flags	ng / g	
2,4'-DDE	NotFnd	<0.24	0.24	U		1.3
4,4'-DDE	11.42	<1.0	0.27	M,J,R	1.0	1.3
2,4'-DDD	NotFnd	<0.35	0.35	U		1.3
4,4'-DDD	12.10	0.575	0.081	M,J,B		1.3
2,4'-DDT	NotFnd	<0.089	0.089	U		1.3
4,4'-DDT	NotFnd	<0.35	0.35	U		1.3
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	4	21-125		
4,4'-DDD, 13C12-	125	12.09	17	5-150		
4,4'-DDT, 13C12-	125	12.58	8	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
 LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
 M Indicates that a peak has been manually integrated.
 U Indicates that this compound was not detected above the EDL.

 J indicates that a target analyte was detected below the calibrated range.
 R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
 B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

 EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-RB-SS-180802-1645
ALS Sample ID L2142228-53
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Water

Sampling Date 2-Aug-18
Extraction Date 9-Aug-18
Sample Size 0.99 L
Percent Solid n/a
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 28-Aug-2018

Run Information **Run 1**
Filename 6-180825A25
Run Date 26-Aug-18 00:33
Final Volume 1020 uL
Dilution Factor 1
Analysis Units ng/L
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / L	EDL ng / L	Flags	EMPC ng / L	LQL
2,4'-DDE	10.89	0.0796	0.051	M,J		2.1
4,4'-DDE	11.42	0.185	0.059	M,J,B		2.1
2,4'-DDD	11.59	<0.078	0.068	M,J,R	0.078	2.1
4,4'-DDD	12.10	<0.068	0.032	M,J,R	0.068	2.1
2,4'-DDT	12.15	<0.11	0.035	M,J,R	0.11	2.1
4,4'-DDT	12.59	<0.27	0.10	M,J,R	0.27	2.1
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	16	21-125		
4,4'-DDD, 13C12-	125	12.09	37	5-150		
4,4'-DDT, 13C12-	125	12.58	21	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-RB-SS-180806-1100

ALS Sample ID L2142228-54
 Analysis Method EPA 1699 (mod)
 Analysis Type Sample
 Sample Matrix Water

Sampling Date 6-Aug-18

Extraction Date 9-Aug-18

Sample Size 0.95 L

Percent Solid n/a

Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 28-Aug-2018

Run Information

Run 1

Filename 6-180825A26
 Run Date 26-Aug-18 00:53
 Final Volume 1020 uL
 Dilution Factor 1
 Analysis Units ng/L
 Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes		Ret.	Conc.	EDL	EMPC	
		Time	ng / L	ng / L	Flags	ng / L LQL
2,4'-DDE		NotFnd	<0.034	0.034	U	2.1
4,4'-DDE		11.42	0.116	0.039	M,J,B	2.1
2,4'-DDD		11.59	<0.050	0.050	M,U	0.042 2.1
4,4'-DDD		12.10	<0.066	0.031	M,J,R	0.066 2.1
2,4'-DDT		12.16	<0.075	0.034	M,J,R	0.075 2.1
4,4'-DDT		12.60	0.243	0.072	M,J,B	2.1
Extraction Standards		ng				
4,4'-DDE, 13C12-	125	11.42	28	21-125		
4,4'-DDD, 13C12-	125	12.09	49	5-150		
4,4'-DDT, 13C12-	125	12.59	33	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
 LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
 M Indicates that a peak has been manually integrated.
 U Indicates that this compound was not detected above the EDL.

J indicates that a target analyte was detected below the calibrated range.
 R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
 B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

SVOC DATA PACKAGE

SECTION 3: METHOD SUMMARY

OC Pesticide METHOD SUMMARY
Method EPA 1699

Introduction:

This summary is to provide ALSE Burlington OC pesticide method details in order to provide persons reviewing or validating this data package sufficient information to re-construct the sample calculation, data verification and review. It incorporates the analysis of organochlorine pesticides via EPA method 1699. Deviations from this reference method are documented in ALS Standard Operating Procedures (available upon request) and in this Method Summary.

Any deviations to what is listed herein or in the ALS Standard Operating Procedures would be listed in the project narrative.

To avoid the confusion and conflicting nomenclature within the performance based methods, we have defined the labeled standards in terms relating to the time of addition to the sample or extract. Therefore;

- Laboratory Surrogate (when provided/requested by the client) are added prior to sample extraction
- The Field or Sampling Standards (where used) are added prior to field sampling
- The Extraction Standards are added prior to extraction
- The GPC Recovery Standard is added (when used) prior to Gel Permeation Chromatographic cleanup
- The Clean-up Standards (where used) are added prior to extract clean-up
- The Injection Standards are added prior to extract injection.

Additional method information, such as Instrumental Descriptors, is documented in ALS Standard Operating Procedures and available upon request.

Calibration Standard Levels:

Seven levels of standard are available for calibration as listed in Table 1. These targets give a wide range of responses on the analytical instruments, thus it is expected that for any given target, either the lowest standard level(s) or the highest standard level(s) may be excluded due to poor response, poor linearity, or detector saturation. With seven levels of standard, it is expected that at least 5 points can be used for calibration for each target.

Table 1: Calibration Standards (conc in ng/mL)

		CS1	CS2	CS3	CS4	CS5	CS6	CS7
Natives	Hexachlorobutadiene	2	7.5	20	50	150	400	1200
	1,2,4,5-Tetrachlorobenzene	2	7.5	20	50	150	400	1200
	1,2,3,4-Tetrachlorobenzene	2	7.5	20	50	150	400	1200
	Pentachlorobenzene	2	7.5	20	50	150	400	1200
	Hexachlorobenzene	2	7.5	20	50	150	400	1200
	3,4,5,6-Tetrachloroveratrole	2	7.5	20	50	150	400	1200
	Pentachloroanisole	2	7.5	20	50	150	400	1200
	alpha-BHC	2	7.5	20	50	150	400	1200
	beta-BHC	2	7.5	20	50	150	400	1200
	gamma-BHC	2	7.5	20	50	150	400	1200
	delta-BHC	2	7.5	20	50	150	400	1200
	Pentachloronitrobenzene	2	7.5	20	50	150	400	1200
	Heptachlor	2	7.5	20	50	150	400	1200
	Aldrin	2	7.5	20	50	150	400	1200
	4,4'-DDNU	2	7.5	20	50	150	400	1200
	Dacthal	2	7.5	20	50	150	400	1200
	Chlorpyrifos	10	37.5	100	250	750	2000	6000
	Octachlorostyrene	2	7.5	20	50	150	400	1200
	Heptachlor Epoxide B	2	7.5	20	50	150	400	1200
	Heptachlor Epoxide A	2	7.5	20	50	150	400	1200
	Oxychlordane	2	7.5	20	50	150	400	1200
	4,4'-DDMU	2	7.5	20	50	150	400	1200
	trans-Chlordane	2	7.5	20	50	150	400	1200
	cis-Chlordane	2	7.5	20	50	150	400	1200
	trans-Nonachlor	2	7.5	20	50	150	400	1200
	Dieldrin	2	7.5	20	50	150	400	1200
	Endrin	2	7.5	20	50	150	400	1200
	cis-Nonachlor	2	7.5	20	50	150	400	1200
	Endosulfan I	2	7.5	20	50	150	400	1200
	Endosulfan II	2	7.5	20	50	150	400	1200
	Endosulfan Sulfate	2	7.5	20	50	150	400	1200
	24'-DDE	2	7.5	20	50	150	400	1200
	44'-DDE	2	7.5	20	50	150	400	1200
	24'-DDD	2	7.5	20	50	150	400	1200
	44'-DDD	2	7.5	20	50	150	400	1200
	24'-DDT	2	7.5	20	50	150	400	1200
	44'-DDT	2	7.5	20	50	150	400	1200
	Endrin Aldehyde	2	7.5	20	50	150	400	1200
	Endrin Ketone	2	7.5	20	50	150	400	1200
	Methoxychlor	2	7.5	20	50	150	400	1200
	Dicofol	20	75	200	500	1500	4000	12000
	Mirex	2	7.5	20	50	150	400	1200
	Parlar-26	2	7.5	20	50	150	400	1200
	Parlar-50	2	7.5	20	50	150	400	1200
	Parlar-62	2	7.5	20	50	150	400	1200

Laboratory Surrogate	1,3-Dibromobenzene	20	20	20	20	20	20	20
	Endrin Ketone	2	7.5	20	50	150	400	1200
Field Surrogate	1,3,5-Tribromobenzene	20	20	20	20	20	20	20
	1,2,4,5-Tetrabromobenzene	20	20	20	20	20	20	20
	delta-BHC	2	7.5	20	50	150	400	1200
GPC Recovery Standard	13C12-PCB-133	100	100	100	100	100	100	100
Extraction Standard	13C6-Pentachlorobenzene	250	250	250	250	250	250	250
	13C6-Hexachlorobenzene	250	250	250	250	250	250	250
	13C6-alpha-BHC	250	250	250	250	250	250	250
	d6-gamma-BHC	250	250	250	250	250	250	250
	13C10-Heptachlor	250	250	250	250	250	250	250
	13C10-Oxychlorane	250	250	250	250	250	250	250
	13C10-trans-Nonachlor	250	250	250	250	250	250	250
	13C12-Dieldrin	250	250	250	250	250	250	250
	13C12-Endrin	250	250	250	250	250	250	250
	13C9-Endosulfan-II	250	250	250	250	250	250	250
	13C12-44'-DDE	250	250	250	250	250	250	250
	13C12-44'-DDD	250	250	250	250	250	250	250
	13C12-44'-DDT	250	250	250	250	250	250	250
	d6-Methoxychlor	250	250	250	250	250	250	250
	13C10-Mirex	250	250	250	250	250	250	250
Injection Standard	13C12-PCB-9	100	100	100	100	100	100	100
	13C12-PCB-52	100	100	100	100	100	100	100
	13C12-PCB-101	100	100	100	100	100	100	100

Calibration and Quality Control Limits

The calibration and QC Sample control limits are presented in Table 2 below. For the lowest standard used for initial calibration, and for each calibration verification CS3, the signal to noise ratio for each ion for both labelled and non-labelled analytes must be greater than or equal to 10:1

		Calibration		Samples and QC Samples	
		Initial Cal. %RSD	Cal. Ver. %Exp	LCS % Rec	Samples % Rec
Natives	Hexachlorobutadiene	35	70-130	5-200	
	1,2,4,5-Tetrachlorobenzene	35	70-130	5-200	
	1,2,3,4-Tetrachlorobenzene	35	70-130	5-200	
	Pentachlorobenzene	20	70-130	5-200	
	Hexachlorobenzene	20	75-125	10-150	
	3,4,5,6-Tetrachloroveratrole	35	70-130	20-200	
	Pentachloroanisole	35	70-130	20-200	
	alpha-BHC	20	75-125	50-120	
	beta-BHC	35	75-125	50-120	
	gamma-BHC	20	75-125	50-120	
	delta-BHC	35	75-125	50-120	
	Pentachloronitrobenzene	35	70-130	20-200	
	Heptachlor	20	75-125	50-120	
	Aldrin	35	75-125	50-120	
	4,4'-DDNU	35	75-125	20-160	
	Dacthal	35	50-150	20-200	
	Chlorpyrifos	35	75-125	19-163	
	Octachlorostyrene	35	70-130	50-175	
	Heptachlor Epoxide B	35	70-130	20-200	
	Heptachlor Epoxide A	35	75-125	50-120	
	Oxychlordan	20	75-125	50-120	
	4,4'-DDMU	35	75-125	20-160	
	trans-Chlordane	35	75-125	50-120	
	cis-Chlordane	35	75-125	50-120	
	trans-Nonachlor	20	75-125	50-120	
	Dieldrin	20	75-125	50-120	
	Endrin	20	75-125	50-120	
	cis-Nonachlor	35	75-125	50-120	
	Endosulfan I	35	75-125	50-120	
	Endosulfan II	20	75-125	5-200	
	Endosulfan Sulfate	35	75-125	50-200	
	24'-DDE	35	75-125	24-123	
	44'-DDE	20	75-125	50-120	
	24'-DDD	35	75-125	50-120	
	44'-DDD	20	75-125	42-120	
	24'-DDT	35	75-125	50-120	
	44'-DDT	20	75-125	50-120	
	Endrin Aldehyde	35	70-130	20-200	
	Endrin Ketone	35	75-125	50-134	
	Methoxychlor	20	75-125	50-120	
	Dicofol	35	50-150	20-200	
	Mirex	20	75-125	50-120	
	Parlar-26	35	70-130	20-200	
	Parlar-50	35	70-130	20-200	
	Parlar-62	35	70-130	20-200	

Laboratory Surrogate	1,3-Dibromobenzene	35	50-150	50-150	40-120
	Endrin Ketone	35	50-150	50-150	40-150
Field Surrogate	1,3,5-Tribromobenzene	35	50-150	50-150	60-120
	1,2,4,5-Tetrabromobenzene	35	50-150	50-150	60-120
	delta-BHC	35	50-150	50-150	60-120
GPC Recovery Standard	13C12-PCB-133	35	50-150	50-150	50-120
Extraction Standard	13C6-Pentachlorobenzene	35	70-130	5-120	5-120
	13C6-Hexachlorobenzene	35	70-130	5-120	5-120
	13C6-alpha-BHC	35	70-130	13-138	16-129
	d6-gamma-BHC	35	70-130	5-124	11-120
	13C10-Heptachlor	35	70-130	5-128	5-120
	13C10-Oxychlorane	35	70-130	5-144	23-135
	13C10-trans-Nonachlor	35	70-130	17-154	36-139
	13C12-Dieldrin	35	70-130	19-161	40-151
	13C12-Endrin	35	70-130	20-157	35-155
	13C9-Endosulfan-II	35	70-130	5-144	15-148
	13C12-44'-DDE	35	70-130	26-169	47-160
	13C12-44'-DDD	35	70-130	13-200	5-150
	13C12-44'-DDT	35	70-130	13-200	5-120
	d6-Methoxychlor	35	70-130	8-200	5-120
	13C10-Mirex	35	70-130	5-138	5-120

Additional Continuing Calibration Details:

After initial calibration is established, a CS4 standard is injected as a Continuing Calibration Verification (CCV) at the beginning of every 12 hour shift in which samples are analyzed. If the following performance criteria are met, analysis of samples may proceed:

- Ion abundance ratios are within their respective theoretical limits (see Table 3)
- All targets have a s/n ratio of at least 10:1
- The RT of each analyte is within 15 seconds of that in the initial calibration
- Endin and DDT breakdown is less than 20% (see Section 5.2.4.2)
- The %Diff is within the CCV limits (see Table 2)

If these performance criteria are not met, GC maintenance is performed or the system is adjusted and a new CCV is injected, or a new initial calibration is run.

Mid-run Calibration Verification:

While the EPA 1699 does not require a post-run calibration verification standard to be run, it is recognized that responses and/or relative responses of some targets may change significantly during HRMS analysis due to sample related contamination of GC or MS components. This problem is compounded by chemical dissimilarities between some targets and their quantification reference standards in the case of internal standard quantification. Enhanced quantification and a measure of confidence in sample results obtained during an analytical shift can be attained by injecting a CS4 calibration verification (VER) standard in the middle of, and at the end of a 12-hour run, and quantifying samples against the average of bracketing calibration standards where improved results would be achieved.

a) Mid-Run VER:

If this analysis meets the performance criteria for a pre-run CCV, then all of the samples preceding the mid-run VER can be quantified vs. the initial calibration, and analysis can proceed. If the mid-run VER does not meet pre-run CCV criteria, the preceding samples can be quantified vs. bracketing calibration runs (using the pre-run CCV and mid-run VER as a two-point calibration) and analysis can proceed, provided that the following criteria are met:

- Ion abundance ratios are within their respective theoretical limits (see Table 1) or within 15% of the ratios in the pre-run CCV
- All targets have a s/n ratio of at least 10:1
- The RT of each analyte is within 15 seconds of that in the initial calibration
- Endin and DDT breakdown is less than 20%
- The %RPD of the mid-run VER vs. the pre-run CCV meets the CCV %Diff limits (See Table 2)

If the mid-run VER does not meet the above criteria either, analysis cannot continue without corrective action (samples analyzed after the mid-run VER in an automated sequence must be re-analyzed). The samples preceding the failing mid-run VER may be flagged and reported, but must be assessed for impact on data quality:

- If a failing native target is present in any of the preceding samples above the Method Detection Limit (or above the client's lower required Detection Limit, if known), that sample must be re-analyzed for that target.
- If a failing native target's Estimated Detection Limit is above the Method Detection Limit (or above the client's lower required Detection Limit, if known) due to deterioration of system performance, that sample must be re-analyzed for that target.

a) Post-Run VER:

If this analysis meets the performance criteria for a pre-run CCV, then all of the samples preceding the post-run VER can be quantified vs. the initial calibration. If the post-run VER does not meet pre-run CCV criteria, the preceding samples can be quantified vs. bracketing calibration runs (using the post-run VER and mid-run VER as a two-point calibration) provided that the following criteria are met:

- Ion abundance ratios are within their respective theoretical limits (see Table 1) or within 15% of the ratios in the mid-run CCV
- All targets have a s/n ratio of at least 10:1
- The RT of each analyte is within 15 seconds of that in the initial calibration
- Endin and DDT breakdown is less than 20%
- The %RPD of the post-run VER vs. the mid-run VER meets the CCV %Diff limits (See Table 2)

If the post-run VER does not meet the above criteria either, the samples preceding the failing post-run VER may be flagged and reported, but must be assessed for impact on data quality:

- If a failing native target is present in any of the preceding samples above the Method Detection Limit (or above the client's lower required Detection Limit, if known), that sample must be re-analyzed for that target.
- If a failing native target's Estimated Detection Limit is above the Method Detection Limit (or above the client's lower required Detection Limit, if known) due to deterioration of system performance, that sample must be re-analyzed for that target.

Reporting Limits:

Unless indicated in the otherwise, native target data is reported down to 2.5:1 signal to noise for each isomer grouping for each extract injection. This is consistent to SW846 8290 defined protocols (i.e. EDL or Estimated Detection Limit) and is commonly applied throughout the industry to any and all performance based HRMS methods.

Method Blank:

The method blank levels must be below the response to the lowest calibration standard used for initial calibration.

MS/MSD (where required):

The % relative difference between the MS and MSD spike recoveries should be less than or equal to 20%.

Instrument/Run Performance Criteria:

a) Chromatographic Performance

For the DB-5 column, 44'-DDT and 24'-DDT (or the labelled analogues) must be uniquely resolved to a valley height of less than 60% of the shorter of the two peaks.

b) DDT and Endrin Breakdown

A custom standard (HROCP-GC_BD#1) is injected to measure the breakdown of endrin and DDT during the run. This standard must be injected at the beginning and end of each 12 hour shift, and it is also recommended that it be injected along with the mid-run CCV where used. This standard contains 13C12-4,4'-DDT, 13C12-endrin, and native endrin, endrin aldehyde and endrin ketone.

- For measurement of DDT breakdown, measure the concentration for 13C12-44'-DDE, 13C12-44'-DDD and 13C12-44'-DDT (the labelled DDT is part of the standard, and the labelled DDE and DDD are breakdown products). Calculate breakdown using the following formula:

13C12-44'-DDT % Breakdown =

$$\frac{(\text{concentration of 13C12-44'-DDD} + \text{concentration of 13C12-44'-DDE})}{\text{concentration of 13C12-44'-DDT}} \times 100\%$$

labelled DDT = part of standard; labelled DDE and DDD = breakdown products

- Additionally, measurement of endrin breakdown can be performed. For measurement of endrin breakdown, measure the concentration of endrin, endrin aldehyde, and endrin ketone (these natives are quantified by isotope dilution vs. the 13C12-endrin). Calculate breakdown using the following formula:

Endrin % Breakdown =

$$\frac{(\text{concentration of endrin aldehyde} + \text{concentration of endrin ketone})}{\text{concentration of endrin}} \times 100\%$$

If the breakdown of endrin and/or DDT exceeds 20% in a standard, the targets are decomposing on the inlet or column, and remedial action must be taken (inlet maintenance and trimming of the analytical column) before any valid sample data can be produced. If the breakdown of DDT or endrin in a sample exceeds 20% and there is that native in the sample above the MDL, that sample will have to be reanalyzed for that target (further cleanup or dilution of that sample is recommended before reanalysis).

Breakdown exceedences can be ignored under the following circumstances:

- Where the endrin breakdown fails but DDT breakdown passes and where DDT and/or its metabolites are the only targets.
- Where the DDT breakdown fails but endrin breakdown passes and where endrin and/or its metabolites are the only targets.
- For the determination of other pesticide targets (i.e. non-DDT and non-Endrin and metabolite targets) which have a corresponding labelled extraction/internal standard of exactly the same isomer.

c) Mass Resolution:

At the beginning of and just following the end of each 12 hour run sequence, the instrument must be checked to demonstrate a resolution of 10,000 for each quantification window.

The maximum time between scans within a descriptor is 1 second.

Lock mass deviations to the average response must be less than or equal 20%.

Laboratory Duplicates:

The % relative difference between duplicates should be less than or equal to 25% but only where the response is greater than the low calibration standard.

Analyte Identification Criteria:

Ion Ratio Criteria

For all compounds, a pair of ions with a specific isotopic ratio are being monitored. To have a confirmed positive response to a native or labelled OCP, that ratio must be within the theoretical limits in Table 1, or within 15% of the observed values on the most recent CS4 analysis.

Signal to Noise Criteria

The signal to noise ratio for each quantification and confirmation ion for labelled and non-labelled analytes must be greater than or equal to 10:1 for the initial calibration CS1 and for each calibration verification CS4. For positive identification of a native target in a sample, both ions must have a s/n ratio exceeding 2.5:1.

Matched RT on Peak Maxima

The retention time (RT) of the peak maxima for each pair of quantification ions must be no more than 2 seconds (i.e. 2 scans) difference.

Expected Retention Time (RT)

The peak must be at the expected RT

- within -1/+3 seconds of the labelled standard for natives with their own ¹³C labelled standard
- within +/- 0.008 RRT units of the RRT in the most recent CS4 analysis for targets with their own ²H labelled standard
- within +/- 0.010 RRT units of the RRT in the most recent CS4 analysis for targets without their own labelled standard

As per EPA 1699 Sections 16.5-16.6, it is possible that not all of the positive ID criteria are met. If a pesticide is deemed to be present in this case by the experienced spectroscopist, the result may be flagged as "this result is unconfirmed and must not be used for permitting or regulatory compliance purposes". If the ion abundance ratio criteria are not met, the result must also include an "R" flag.

Table 3: Monitored Masses, Ion Abundance Ratios, and Quantitation/RT References

Entry	Native Standard	Quantification Method	Quantification vs. Entry #:	Quantitation Ion	Confirmation Ion	Theoretical Ion Abundance ratio	Ion Abundance Ratio Tolerance
1	24'-DDE	rel_int	7	246.0003	247.9974	1.56	0.25
2	44'-DDE	rel_int	7	246.0003	247.9974	1.56	0.25
3	24'-DDD	rel_int	8	235.0082	237.0053	1.56	0.25
4	44'-DDD	rel_int	8	235.0082	237.0053	1.56	0.25
5	24'-DDT	rel_int	9	235.0082	237.0053	1.56	0.25
6	44'-DDT	rel_int	9	235.0082	237.0053	1.56	0.25
Extraction Standard							
7	13C12-44'-DDE	rel_int	10	258.0405	260.0376	1.56	0.25
8	13C12-44'-DDD	rel_int	10	247.0483	249.0454	1.56	0.25
9	13C12-44'-DDT	rel_int	10	247.0483	249.0454	1.56	0.25
Injection Standard							
10	13C12-PCB-52	abs_int	-	301.9625	303.9597	0.77	0.15

Data Calculations:

a) Analyte Concentrations:

The relative response factor of each target relative to the standard against which it is to be calculated is determined using the area responses of both quantification ions via equation 9.1.

In cases where a native target is calculated against an exact labelled analogue, the quantification will be considered to be by isotope dilution. In other cases, the quantification will be considered to be by internal standard.

$$\text{RRF} = \frac{(A1_t + A2_t) C_s}{(A1_s + A2_s) C_t} \quad \text{Equ. 9.1}$$

Where,

$A1_t + A2_t$ = The areas of the two quantification ions for the target analyte

$A1_s + A2_s$ = The areas of the two quantification ions for the labelled compound against which the target analyte will be calculated.

C_t = The concentration in the calibration standard of the target analyte.

C_s = The concentration in the calibration standard of the labelled compound against which the target will be calculated.

For all analytes to be quantified and from the initial calibration series of standard injections, a table of RRFs is prepared. The relative standard deviation (%RSD, or the coefficient of variance) is checked to confirm that appropriate method criteria has been met as listed in Table 3. The average of the five or six levels of for each analyte, RRF_{av} is applied for quantification of samples according to Equations 9.2 and 9.3 below.

$$\text{Amount in sample (ng)} = \frac{(A1_n + A2_n) Q_l}{(A1_l + A2_l) (\text{RRF}_{av})} \quad \text{Equ. 9.2}$$

$$\text{Concentration in sample (ng/g or ng/L)} = \frac{(A1_n + A2_n) Q_l}{(A1_l + A2_l) (\text{RRF}_{av}) (W_s)} \quad \text{Equ. 9.3}$$

Where,

Q_l = The amount (pg) of labelled compound added to the sample

W_s = The weight (g) or volume (l) of sample

b) Extraction, Clean-up, and Sampling Standard Recovery Calculation:

The extraction, clean-up, and sampling standard recoveries are determined by Equation 9.4 below.

$$\% \text{ Recovery} = \frac{(\text{Amount in sample})}{(\text{Amount added to sample})} \times 100 \quad \text{Equ. 9.4}$$

c) Estimated Detection Limit

$$\text{EDL} = \frac{2.5 \times H_x \times Q_{\text{es}}}{H_{\text{es}} \times W \times \text{RFF}_{\text{av}}} \quad \text{Equ. 9.5}$$

Where,

EDL = estimated detection limit for native targets

H_x = sum of the height of the noise level for each quantification ions for the unlabeled target

H_{es} = Sum of the heights of responses of both quantification ions for the labelled extraction standard.

W = weight of volume of sample

RFF_{av} = average relative response factor

Q_{es} = Amount of extraction standard added

Chromatogram Annotation Codes

All manually integrated peaks are expanded and reprinted with the following annotations:

* Analyst Initials	AA
* Date	YYMMDD
* integration code	CC

The Syntax is:

Example:

AAYYMMDDCC

SK111220MB

Code	Mnemonic	Description
MB	Manual Baseline	The peak was manually integrated because the initial baseline was determined incorrectly by the software
MS	Manual Split	The peak was manually integrated because the peak was incorrectly or not split by the software
MJ/MC	Manual Join/Manual Combine	The peak was manually integrated because the peak was split by the software and the peak should be integrated as a single peak
MA	Manual Add	The peak was manually integrated because the signal:noise ratio was judged to be >2.5
MD	Manual Delete	The peak was excluded because the signal:noise ratio was judged to be <2.5
MX	Manual Exclude	The peak was excluded due to an interference
MT	Manual Time	The peak retention time was manually chosen

The following explanatory annotation codes may appear on the chromatograms of peaks that have been reviewed:

Code	Mnemonic	Description
+	Detected Peak	A peak was detected at this mass and retention time that was above 2.5:1 signal to noise
<	Below Detection Limit	The signal at this mass and retention time was below 2.5:1 signal to noise
EMPC	Estimated Maximum Possible Concentration	The signal at this mass and retention time is an interference such that the target compound could not be confirmed
X-RT	Not Detected due to Retention Time non-conformance	The signal at this retention time could not be used to positively identify the target compound because of retention time non-conformance (apex of quantification and confirmation ions do not maximize within the same two seconds, or the retention time of the peak does not fall within the expected range with respect to its labeled analogue)
X-LOC	Not Detected due to interference from a higher level of chlorination	The signal at this retention time is attributable to a fragment from a co-eluting compound at a higher level of chlorination, and cannot be used to positively identify the target. The result is expressed as an Estimated Maximum Possible Concentration (EMPC)
X-DPE	Not Detected due to diphenyl ether interference	The signal at this retention time is attributable to interference from a chlorinated diphenyl ether, and cannot be used to positively identify the target. The result is expressed as an Estimated Maximum Possible Concentration (EMPC)
X-IF	Not Detected due to interference	The signal at this retention time is attributable to a co-eluting interference, and cannot be used to positively identify the target. The result is expressed as an Estimated Maximum Possible Concentration (EMPC)

SVOC DATA PACKAGE

SECTION 4: CALIBRATION DATA

Including:

for Multi-Point Calibration(s)

- Multi-Point Calibration Tables
- Individual Quantitation Reports

for Continuing Calibration(s)

- Individual Quantitation Reports

ALS Life sciences

Calibration Summary Report

Calibration Level	Filename	Run Date
CS-1	6-180827B09	27-Aug-2018 21:10
CS-2	6-180827B08	27-Aug-2018 20:50
CS-3	6-180827B07	27-Aug-2018 20:30
CS-4	6-180827B05	27-Aug-2018 19:49
CS-5	6-180827B04	27-Aug-2018 19:29
CS-6	6-180827B03	27-Aug-2018 19:13

Approved: *R. Bakhtiari*
 --e-signature--
 28-Aug-2018

Target Analytes	Relative Response Factors						Mean	% RSD
	CS-1	CS-2	CS-3	CS-4	CS-5	CS-6		
2,4'-DDE	1.384	1.482	1.298	1.475	1.498	1.508	1.441	6%
4,4'-DDE	1.212	1.293	1.145	1.207	1.208	1.165	1.205	4%
2,4'-DDD	1.276	1.329	1.176	1.323	1.322	1.303	1.288	5%
4,4'-DDD	1.300	1.367	1.249	1.315	1.303	1.274	1.301	3%
2,4'-DDT	1.248	1.350	1.123	1.269	1.237	1.202	1.238	6%
4,4'-DDT	1.186	1.217	1.056	1.136	1.123	1.107	1.138	5%
Extraction Standards								
4,4'-DDE, 13C12-	0.940	0.905	0.952	0.892	0.949	0.969	0.935	3%
4,4'-DDD, 13C12-	0.738	0.728	0.751	0.690	0.784	0.839	0.755	7%
4,4'-DDT, 13C12-	0.486	0.478	0.503	0.448	0.531	0.564	0.502	8%

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS1-064**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180827B09
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date 27-Aug-2018 21:10

Approved: *R. Bakhtiari*
 --e-signature--
 28-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.89	1.60	2.00	1.38E+05	1.384
4,4'-DDE	11.43	1.61	2.00	1.20E+05	1.212
2,4'-DDD	11.6	1.61	2.00	9.96E+04	1.276
4,4'-DDD	12.1	1.68	2.00	1.01E+05	1.300
2,4'-DDT	12.16	1.66	2.00	6.41E+04	1.248
4,4'-DDT	12.6	1.60	2.00	6.09E+04	1.186

Extraction Standards

4,4'-DDE, 13C12-	11.42	1.54	250.00	1.24E+07	0.940
4,4'-DDD, 13C12-	12.1	1.58	250.00	9.75E+06	0.738
4,4'-DDT, 13C12-	12.59	1.59	250.00	6.42E+06	0.486

Labeled Injection Standards

13C12-PCB-52 (IS)	9.55	0.80	100.00	5.28E+06	
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ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS2-064**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180827B08
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date 27-Aug-2018 20:50

Approved: *R. Bakhtiari*
 --e-signature--
 28-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.89	1.57	7.50	5.52E+05	1.482
4,4'-DDE	11.42	1.60	7.50	4.82E+05	1.293
2,4'-DDD	11.59	1.63	7.50	3.98E+05	1.329
4,4'-DDD	12.1	1.64	7.50	4.09E+05	1.367
2,4'-DDT	12.15	1.64	7.50	2.66E+05	1.350
4,4'-DDT	12.59	1.63	7.50	2.40E+05	1.217

Extraction Standards

4,4'-DDE, 13C12-	11.41	1.54	250.00	1.24E+07	0.905
4,4'-DDD, 13C12-	12.09	1.57	250.00	9.99E+06	0.728
4,4'-DDT, 13C12-	12.59	1.59	250.00	6.56E+06	0.478

Labeled Injection Standards

13C12-PCB-52 (IS)	9.55	0.79	100.00	5.49E+06	
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ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS3-064**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180827B07
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date 27-Aug-2018 20:30

Approved: *R. Bakhtiari*
 --e-signature--
 28-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.88	1.56	20.00	1.23E+06	1.298
4,4'-DDE	11.41	1.58	20.00	1.08E+06	1.145
2,4'-DDD	11.58	1.61	20.00	8.77E+05	1.176
4,4'-DDD	12.09	1.61	20.00	9.31E+05	1.249
2,4'-DDT	12.14	1.64	20.00	5.61E+05	1.123
4,4'-DDT	12.58	1.64	20.00	5.27E+05	1.056
Extraction Standards					
4,4'-DDE, 13C12-	11.4	1.54	250.00	1.18E+07	0.952
4,4'-DDD, 13C12-	12.08	1.59	250.00	9.32E+06	0.751
4,4'-DDT, 13C12-	12.58	1.58	250.00	6.24E+06	0.503
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.54	0.79	100.00	4.96E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS4-064**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180827B05
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date 27-Aug-2018 19:49

Approved: *R. Bakhtiari*
 --e-signature--
 28-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.88	1.56	50.00	3.68E+06	1.475
4,4'-DDE	11.41	1.58	50.00	3.01E+06	1.207
2,4'-DDD	11.58	1.61	50.00	2.55E+06	1.323
4,4'-DDD	12.09	1.62	50.00	2.54E+06	1.315
2,4'-DDT	12.14	1.61	50.00	1.59E+06	1.269
4,4'-DDT	12.58	1.63	50.00	1.43E+06	1.136
Extraction Standards					
4,4'-DDE, 13C12-	11.4	1.53	250.00	1.25E+07	0.892
4,4'-DDD, 13C12-	12.08	1.57	250.00	9.65E+06	0.690
4,4'-DDT, 13C12-	12.58	1.56	250.00	6.27E+06	0.448
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.54	0.79	100.00	5.60E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS5-064**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180827B04
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date 27-Aug-2018 19:29

Approved: *R. Bakhtiari*
 --e-signature--
 28-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.89	1.58	150.00	1.11E+07	1.498
4,4'-DDE	11.42	1.59	150.00	8.94E+06	1.208
2,4'-DDD	11.59	1.63	150.00	8.08E+06	1.322
4,4'-DDD	12.09	1.61	150.00	7.96E+06	1.303
2,4'-DDT	12.15	1.61	150.00	5.12E+06	1.237
4,4'-DDT	12.59	1.61	150.00	4.65E+06	1.123
Extraction Standards					
4,4'-DDE, 13C12-	11.41	1.54	250.00	1.23E+07	0.949
4,4'-DDD, 13C12-	12.09	1.58	250.00	1.02E+07	0.784
4,4'-DDT, 13C12-	12.59	1.59	250.00	6.90E+06	0.531
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.55	0.79	100.00	5.20E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS6-064**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180827B03
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date 27-Aug-2018 19:13

Approved: *R. Bakhtiari*
 --e-signature--
 28-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.88	1.56	400.00	3.11E+07	1.508
4,4'-DDE	11.42	1.57	400.00	2.40E+07	1.165
2,4'-DDD	11.59	1.63	400.00	2.32E+07	1.303
4,4'-DDD	12.09	1.63	400.00	2.27E+07	1.274
2,4'-DDT	12.15	1.61	400.00	1.44E+07	1.202
4,4'-DDT	12.59	1.63	400.00	1.33E+07	1.107
Extraction Standards					
4,4'-DDE, 13C12-	11.41	1.54	250.00	1.29E+07	0.969
4,4'-DDD, 13C12-	12.09	1.58	250.00	1.11E+07	0.839
4,4'-DDT, 13C12-	12.58	1.58	250.00	7.49E+06	0.564
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.54	0.78	100.00	5.32E+06	

ALS Life sciences

Average Bracket Calibration Summary Report

Calibration Level	Filename	Run Date
CS-1	6-180824B18	24-Aug-2018 23:12
CS-2	6-180824B45	25-Aug-2018 08:10

Approved:	<i>R. Bakhtiari</i>
	--e-signature--
	28-Aug-2018

Target Analytes	Relative Response Factors		Mean	% RPD
	CS-1	CS-2		
2,4'-DDE	1.353	1.406	1.380	4%
4,4'-DDE	1.136	1.156	1.146	2%
2,4'-DDD	1.238	1.415	1.327	13%
4,4'-DDD	1.223	1.221	1.222	0%
2,4'-DDT	1.226	1.499	1.363	20%
4,4'-DDT	1.074	1.104	1.089	3%
Extraction Standards				
4,4'-DDE, 13C12-	1.002	1.127	1.065	12%
4,4'-DDD, 13C12-	0.582	0.691	0.637	17%
4,4'-DDT, 13C12-	0.282	0.358	0.320	24%

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CCV-0823**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180824B18
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date 24-Aug-2018 23:12

Approved: *R. Bakhtiari*
 --e-signature--
 28-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.89	1.56	50.00	2.94E+06	1.353
4,4'-DDE	11.42	1.56	50.00	2.47E+06	1.136
2,4'-DDD	11.59	1.58	50.00	1.56E+06	1.238
4,4'-DDD	12.1	1.63	50.00	1.54E+06	1.223
2,4'-DDT	12.15	1.52	50.00	7.51E+05	1.226
4,4'-DDT	12.59	1.61	50.00	6.59E+05	1.074

Extraction Standards

4,4'-DDE, 13C12-	11.41	1.53	250.00	1.09E+07	1.002
4,4'-DDD, 13C12-	12.09	1.56	250.00	6.31E+06	0.582
4,4'-DDT, 13C12-	12.58	1.61	250.00	3.06E+06	0.282

Labeled Injection Standards

13C12-PCB-52 (IS)	9.55	0.80	100.00	4.34E+06	
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ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CCV-0825**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180824B45
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date
 25-Aug-2018 08:10

Approved: *R. Bakhtiari*
 --e-signature--
 28-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.92	1.56	50.00	2.57E+06	1.406
4,4'-DDE	11.45	1.56	50.00	2.11E+06	1.156
2,4'-DDD	11.62	1.60	50.00	1.59E+06	1.415
4,4'-DDD	12.12	1.60	50.00	1.37E+06	1.221
2,4'-DDT	12.18	1.57	50.00	8.69E+05	1.499
4,4'-DDT	12.62	1.63	50.00	6.40E+05	1.104
Extraction Standards					
4,4'-DDE, 13C12-	11.44	1.55	250.00	9.14E+06	1.127
4,4'-DDD, 13C12-	12.12	1.58	250.00	5.61E+06	0.691
4,4'-DDT, 13C12-	12.61	1.60	250.00	2.90E+06	0.358
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.57	0.79	100.00	3.24E+06	

ALS Life sciences

Calibration Summary Report

Calibration Level	Filename	Run Date
CS-1	6-180825A05	25-Aug-2018 17:52
CS-2	6-180825A04	25-Aug-2018 17:32
CS-3	6-180825A09	25-Aug-2018 19:12
CS-4	6-180825A08	25-Aug-2018 18:52
CS-5	6-180825A07	25-Aug-2018 18:32
CS-6	6-180825A06	25-Aug-2018 18:12

Approved: *R. Bakhtiari*
 --e-signature--
 28-Aug-2018

Target Analytes	Relative Response Factors						Mean	% RSD
	CS-1	CS-2	CS-3	CS-4	CS-5	CS-6		
2,4'-DDE	1.236	1.364	1.222	1.326	1.460	1.475	1.347	8%
4,4'-DDE	1.184	1.254	1.116	1.165	1.197	1.157	1.179	4%
2,4'-DDD	1.117	1.211	1.095	1.168	1.196	1.213	1.167	4%
4,4'-DDD	1.268	1.324	1.178	1.255	1.268	1.188	1.247	4%
2,4'-DDT	1.068	1.237	1.059	1.130	1.154	1.136	1.131	6%
4,4'-DDT	1.095	1.198	1.030	1.103	1.111	1.060	1.100	5%
Extraction Standards								
4,4'-DDE, 13C12-	1.193	1.197	1.205	1.233	1.203	1.248	1.213	2%
4,4'-DDD, 13C12-	0.915	0.904	0.945	0.990	1.044	1.121	0.987	8%
4,4'-DDT, 13C12-	0.576	0.560	0.603	0.635	0.674	0.753	0.634	11%

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS1-063**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180825A05
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date 25-Aug-2018 17:52

Approved: *R. Bakhtiari*
 --e-signature--
 28-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.89	1.58	2.00	1.32E+05	1.236
4,4'-DDE	11.42	1.56	2.00	1.26E+05	1.184
2,4'-DDD	11.59	1.65	2.00	9.14E+04	1.117
4,4'-DDD	12.1	1.56	2.00	1.04E+05	1.268
2,4'-DDT	12.15	1.59	2.00	5.50E+04	1.068
4,4'-DDT	12.59	1.64	2.00	5.64E+04	1.095

Extraction Standards

4,4'-DDE, 13C12-	11.42	1.55	250.00	1.33E+07	1.193
4,4'-DDD, 13C12-	12.09	1.60	250.00	1.02E+07	0.915
4,4'-DDT, 13C12-	12.59	1.58	250.00	6.44E+06	0.576

Labeled Injection Standards

13C12-PCB-52 (IS)	9.55	0.80	100.00	4.47E+06	
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ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS2-063**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180825A04
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date
 25-Aug-2018 17:32

Approved: *R. Bakhtiari*
 --e-signature--
 28-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.89	1.55	7.50	5.81E+05	1.364
4,4'-DDE	11.43	1.54	7.50	5.34E+05	1.254
2,4'-DDD	11.6	1.61	7.50	3.90E+05	1.211
4,4'-DDD	12.1	1.58	7.50	4.26E+05	1.324
2,4'-DDT	12.16	1.59	7.50	2.47E+05	1.237
4,4'-DDT	12.6	1.58	7.50	2.39E+05	1.198
Extraction Standards					
4,4'-DDE, 13C12-	11.42	1.54	250.00	1.42E+07	1.197
4,4'-DDD, 13C12-	12.1	1.57	250.00	1.07E+07	0.904
4,4'-DDT, 13C12-	12.59	1.59	250.00	6.64E+06	0.560
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.55	0.80	100.00	4.74E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS3-063**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180825A09
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date 25-Aug-2018 19:12

Approved: *R. Bakhtiari*
 --e-signature--
 28-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.88	1.55	20.00	1.25E+06	1.222
4,4'-DDE	11.41	1.56	20.00	1.14E+06	1.116
2,4'-DDD	11.58	1.61	20.00	8.80E+05	1.095
4,4'-DDD	12.09	1.63	20.00	9.47E+05	1.178
2,4'-DDT	12.15	1.59	20.00	5.43E+05	1.059
4,4'-DDT	12.59	1.61	20.00	5.28E+05	1.030

Extraction Standards

4,4'-DDE, 13C12-	11.41	1.55	250.00	1.28E+07	1.205
4,4'-DDD, 13C12-	12.08	1.59	250.00	1.01E+07	0.945
4,4'-DDT, 13C12-	12.58	1.56	250.00	6.41E+06	0.603

Labeled Injection Standards

13C12-PCB-52 (IS)	9.54	0.80	100.00	4.25E+06	
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ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS4-063**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180825A08
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date
 25-Aug-2018 18:52

Approved: *R. Bakhtiari*
 --e-signature--
 28-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.88	1.56	50.00	3.58E+06	1.326
4,4'-DDE	11.42	1.55	50.00	3.14E+06	1.165
2,4'-DDD	11.58	1.59	50.00	2.53E+06	1.168
4,4'-DDD	12.09	1.61	50.00	2.72E+06	1.255
2,4'-DDT	12.15	1.61	50.00	1.57E+06	1.130
4,4'-DDT	12.59	1.60	50.00	1.53E+06	1.103
Extraction Standards					
4,4'-DDE, 13C12-	11.41	1.53	250.00	1.35E+07	1.233
4,4'-DDD, 13C12-	12.08	1.58	250.00	1.08E+07	0.990
4,4'-DDT, 13C12-	12.58	1.58	250.00	6.95E+06	0.635
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.54	0.81	100.00	4.38E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS5-063**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180825A07
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date
 25-Aug-2018 18:32

Approved: *R. Bakhtiari*
 --e-signature--
 28-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.89	1.56	150.00	1.41E+07	1.460
4,4'-DDE	11.43	1.56	150.00	1.15E+07	1.197
2,4'-DDD	11.6	1.61	150.00	1.00E+07	1.196
4,4'-DDD	12.1	1.61	150.00	1.06E+07	1.268
2,4'-DDT	12.16	1.59	150.00	6.24E+06	1.154
4,4'-DDT	12.6	1.59	150.00	6.01E+06	1.111
Extraction Standards					
4,4'-DDE, 13C12-	11.42	1.55	250.00	1.61E+07	1.203
4,4'-DDD, 13C12-	12.1	1.59	250.00	1.40E+07	1.044
4,4'-DDT, 13C12-	12.59	1.59	250.00	9.02E+06	0.674
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.55	0.79	100.00	5.35E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS6-063**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180825A06
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date 25-Aug-2018 18:12

Approved: *R. Bakhtiari*
 --e-signature--
 28-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.89	1.55	400.00	3.63E+07	1.475
4,4'-DDE	11.42	1.56	400.00	2.85E+07	1.157
2,4'-DDD	11.59	1.60	400.00	2.68E+07	1.213
4,4'-DDD	12.1	1.61	400.00	2.63E+07	1.188
2,4'-DDT	12.15	1.61	400.00	1.69E+07	1.136
4,4'-DDT	12.59	1.61	400.00	1.57E+07	1.060
Extraction Standards					
4,4'-DDE, 13C12-	11.41	1.55	250.00	1.54E+07	1.248
4,4'-DDD, 13C12-	12.09	1.57	250.00	1.38E+07	1.121
4,4'-DDT, 13C12-	12.58	1.60	250.00	9.28E+06	0.753
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.54	0.80	100.00	4.94E+06	

ALS Life sciences

Calibration Summary Report

Calibration Level	Filename	Run Date
CS-1	6-180824B16	24-Aug-2018 22:30
CS-2	6-180824B15	24-Aug-2018 22:10
CS-3	6-180824B14	24-Aug-2018 21:50
CS-4	6-180824B13	24-Aug-2018 21:29
CS-5	6-180824B12	24-Aug-2018 21:09
CS-6	6-180824B11	24-Aug-2018 20:51

Approved: *R. Bakhtiari*
 --e-signature--
 28-Aug-2018

Target Analytes	Relative Response Factors						Mean	% RSD
	CS-1	CS-2	CS-3	CS-4	CS-5	CS-6		
2,4'-DDE	1.324	1.418	1.275	1.367	1.444	1.442	1.378	5%
4,4'-DDE	1.160	1.212	1.063	1.145	1.150	1.123	1.142	4%
2,4'-DDD	1.271	1.295	1.186	1.280	1.299	1.262	1.266	3%
4,4'-DDD	1.211	1.312	1.146	1.239	1.254	1.209	1.229	4%
2,4'-DDT	1.168	1.223	1.138	1.192	1.210	1.186	1.186	3%
4,4'-DDT	1.038	1.109	1.057	1.060	1.052	1.085	1.067	2%
Extraction Standards								
4,4'-DDE, 13C12-	1.023	0.974	0.995	0.995	0.997	1.011	0.999	2%
4,4'-DDD, 13C12-	0.550	0.509	0.499	0.492	0.517	0.550	0.520	5%
4,4'-DDT, 13C12-	0.256	0.241	0.229	0.220	0.224	0.221	0.232	6%

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS1-062**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180824B16
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date 24-Aug-2018 22:30

Approved: *R. Bakhtiari*
 --e-signature--
 28-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.89	1.51	2.00	1.22E+05	1.324
4,4'-DDE	11.42	1.58	2.00	1.07E+05	1.160
2,4'-DDD	11.59	1.47	2.00	6.31E+04	1.271
4,4'-DDD	12.09	1.57	2.00	6.01E+04	1.211
2,4'-DDT	12.15	1.56	2.00	2.70E+04	1.168
4,4'-DDT	12.59	1.49	2.00	2.40E+04	1.038

Extraction Standards

4,4'-DDE, 13C12-	11.41	1.54	250.00	1.15E+07	1.023
4,4'-DDD, 13C12-	12.09	1.55	250.00	6.21E+06	0.550
4,4'-DDT, 13C12-	12.58	1.55	250.00	2.89E+06	0.256

Labeled Injection Standards

13C12-PCB-52 (IS)	9.54	0.79	100.00	4.51E+06	
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ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS2-062**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180824B15
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date 24-Aug-2018 22:10

Approved: *R. Bakhtiari*
 --e-signature--
 28-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.89	1.55	7.50	4.92E+05	1.418
4,4'-DDE	11.42	1.55	7.50	4.20E+05	1.212
2,4'-DDD	11.59	1.58	7.50	2.34E+05	1.295
4,4'-DDD	12.1	1.57	7.50	2.37E+05	1.312
2,4'-DDT	12.15	1.52	7.50	1.05E+05	1.223
4,4'-DDT	12.59	1.52	7.50	9.52E+04	1.109
Extraction Standards					
4,4'-DDE, 13C12-	11.42	1.55	250.00	1.16E+07	0.974
4,4'-DDD, 13C12-	12.09	1.58	250.00	6.03E+06	0.509
4,4'-DDT, 13C12-	12.59	1.58	250.00	2.86E+06	0.241
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.55	0.79	100.00	4.74E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS3-062**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180824B14
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date 24-Aug-2018 21:50

Approved: *R. Bakhtiari*
 --e-signature--
 28-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.88	1.56	20.00	1.14E+06	1.275
4,4'-DDE	11.42	1.55	20.00	9.53E+05	1.063
2,4'-DDD	11.59	1.61	20.00	5.33E+05	1.186
4,4'-DDD	12.09	1.61	20.00	5.15E+05	1.146
2,4'-DDT	12.15	1.64	20.00	2.35E+05	1.138
4,4'-DDT	12.59	1.60	20.00	2.18E+05	1.057
Extraction Standards					
4,4'-DDE, 13C12-	11.41	1.53	250.00	1.12E+07	0.995
4,4'-DDD, 13C12-	12.09	1.56	250.00	5.62E+06	0.499
4,4'-DDT, 13C12-	12.58	1.57	250.00	2.58E+06	0.229
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.54	0.79	100.00	4.50E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS4-062**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180824B13
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date 24-Aug-2018 21:29

Approved: *R. Bakhtiari*
 --e-signature--
 28-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.89	1.55	50.00	2.90E+06	1.367
4,4'-DDE	11.42	1.55	50.00	2.43E+06	1.145
2,4'-DDD	11.59	1.59	50.00	1.34E+06	1.280
4,4'-DDD	12.1	1.60	50.00	1.30E+06	1.239
2,4'-DDT	12.16	1.58	50.00	5.59E+05	1.192
4,4'-DDT	12.6	1.57	50.00	4.97E+05	1.060
Extraction Standards					
4,4'-DDE, 13C12-	11.42	1.54	250.00	1.06E+07	0.995
4,4'-DDD, 13C12-	12.09	1.58	250.00	5.25E+06	0.492
4,4'-DDT, 13C12-	12.59	1.58	250.00	2.35E+06	0.220
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.55	0.79	100.00	4.27E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS5-062**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180824B12
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date
 24-Aug-2018 21:09

Approved: *R. Bakhtiari*
 --e-signature--
 28-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.89	1.56	150.00	1.04E+07	1.444
4,4'-DDE	11.42	1.55	150.00	8.32E+06	1.150
2,4'-DDD	11.59	1.61	150.00	4.87E+06	1.299
4,4'-DDD	12.1	1.61	150.00	4.70E+06	1.254
2,4'-DDT	12.16	1.56	150.00	1.97E+06	1.210
4,4'-DDT	12.59	1.60	150.00	1.71E+06	1.052
Extraction Standards					
4,4'-DDE, 13C12-	11.42	1.54	250.00	1.21E+07	0.997
4,4'-DDD, 13C12-	12.09	1.57	250.00	6.25E+06	0.517
4,4'-DDT, 13C12-	12.59	1.56	250.00	2.71E+06	0.224
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.55	0.78	100.00	4.84E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS6-062**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180824B11
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date 24-Aug-2018 20:51

Approved: *R. Bakhtiari*
 --e-signature--
 28-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.89	1.55	400.00	2.90E+07	1.442
4,4'-DDE	11.42	1.56	400.00	2.26E+07	1.123
2,4'-DDD	11.59	1.60	400.00	1.38E+07	1.262
4,4'-DDD	12.1	1.59	400.00	1.32E+07	1.209
2,4'-DDT	12.16	1.60	400.00	5.21E+06	1.186
4,4'-DDT	12.6	1.61	400.00	4.76E+06	1.085
Extraction Standards					
4,4'-DDE, 13C12-	11.42	1.53	250.00	1.26E+07	1.011
4,4'-DDD, 13C12-	12.09	1.57	250.00	6.83E+06	0.550
4,4'-DDT, 13C12-	12.59	1.60	250.00	2.74E+06	0.221
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.55	0.80	100.00	4.97E+06	

ALS Life sciences

Second Source Calibration Verification Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-RS1-064	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 28-Aug-2018

Run Information	Run 1
Filename	6-180827B10
Run Date	27-Aug-18 21:30
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng / mL	Ret.	Limits		Flags
		Time	% Rec		
2,4'-DDE	0				
4,4'-DDE	150	11.42	93	75-125	
2,4'-DDD	0				
4,4'-DDD	150	12.09	95	75-125	M
2,4'-DDT	0				
4,4'-DDT	150	12.59	95	75-125	
Extraction Standards	ng / mL				
4,4'-DDE, 13C12-	250	11.41	102	70-130	
4,4'-DDD, 13C12-	250	12.09	105	70-130	
4,4'-DDT, 13C12-	250	12.58	111	70-130	

M Indicates that a peak has been manually integrated.

ALS Life sciences

Continuing Calibration Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-CCV-0833	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 28-Aug-2018

Run Information	Run 1
Filename	6-180827B11
Run Date	27-Aug-18 21:52
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng / mL	Ret.		Limits	
		Time	% Rec	Flags	
2,4'-DDE	50	10.88	100	75-125	
4,4'-DDE	50	11.41	100	75-125	
2,4'-DDD	50	11.58	100	75-125	
4,4'-DDD	50	12.09	100	75-125	
2,4'-DDT	50	12.15	101	75-125	
4,4'-DDT	50	12.59	101	75-125	
Extraction Standards	ng / mL				
4,4'-DDE, 13C12-	250	11.41	103	70-130	
4,4'-DDD, 13C12-	250	12.08	105	70-130	
4,4'-DDT, 13C12-	250	12.58	106	70-130	

ALS Life sciences

Continuing Calibration Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-CCV-0835	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 28-Aug-2018

Run Information	Run 1
Filename	6-180827B37
Run Date	28-Aug-18 06:33
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng / mL	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	50	10.89	102	75-125
4,4'-DDE	50	11.43	104	75-125
2,4'-DDD	50	11.59	106	75-125
4,4'-DDD	50	12.10	103	75-125
2,4'-DDT	50	12.16	111	75-125
4,4'-DDT	50	12.60	104	75-125
Extraction Standards	ng / mL			
4,4'-DDE, 13C12-	250	11.42	110	70-130
4,4'-DDD, 13C12-	250	12.10	94	70-130
4,4'-DDT, 13C12-	250	12.59	75	70-130

ALS Life sciences

Continuing Calibration Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-CCV-0837	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 28-Aug-2018

Run Information	Run 1
Filename	6-180827B55
Run Date	28-Aug-18 12:36
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng / mL	Ret.		Limits	
		Time	% Rec	Flags	
2,4'-DDE	50	10.88	105	75-125	
4,4'-DDE	50	11.41	108	75-125	
2,4'-DDD	50	11.58	104	75-125	
4,4'-DDD	50	12.09	110	75-125	
2,4'-DDT	50	12.15	106	75-125	
4,4'-DDT	50	12.59	110	75-125	
Extraction Standards	ng / mL				
4,4'-DDE, 13C12-	250	11.41	122	70-130	
4,4'-DDD, 13C12-	250	12.08	135	70-130	
4,4'-DDT, 13C12-	250	12.58	126	70-130	

ALS Life sciences

Second Source Calibration Verification Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-RS1-062	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 28-Aug-2018

Run Information	Run 1
Filename	6-180824B17
Run Date	24-Aug-18 22:50
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng / mL	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	0			
4,4'-DDE	150	11.42	94	75-125
2,4'-DDD	0			
4,4'-DDD	150	12.10	93	75-125
2,4'-DDT	0			
4,4'-DDT	150	12.59	97	75-125
Extraction Standards	ng / mL			
4,4'-DDE, 13C12-	250	11.41	101	70-130
4,4'-DDD, 13C12-	250	12.09	113	70-130
4,4'-DDT, 13C12-	250	12.59	116	70-130

ALS Life sciences

Second Source Calibration Verification Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-RS1-063	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 28-Aug-2018

Run Information	Run 1
Filename	6-180825A10
Run Date	25-Aug-18 19:32
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng / mL	Ret.	Limits		Flags
		Time	% Rec		
2,4'-DDE	0				
4,4'-DDE	150	11.42	93	75-125	
2,4'-DDD	0				
4,4'-DDD	150	12.10	94	75-125	M
2,4'-DDT	0				
4,4'-DDT	150	12.60	93	75-125	
Extraction Standards	ng / mL				
4,4'-DDE, 13C12-	250	11.42	103	70-130	
4,4'-DDD, 13C12-	250	12.09	106	70-130	
4,4'-DDT, 13C12-	250	12.59	108	70-130	

M Indicates that a peak has been manually integrated.

ALS Life sciences

Continuing Calibration Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-CCV-0823	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 28-Aug-2018

Run Information	Run 1
Filename	6-180824B18
Run Date	24-Aug-18 23:12
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng / mL	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	50	10.89	98	75-125
4,4'-DDE	50	11.42	99	75-125
2,4'-DDD	50	11.59	98	75-125
4,4'-DDD	50	12.10	100	75-125
2,4'-DDT	50	12.15	103	75-125
4,4'-DDT	50	12.59	101	75-125
Extraction Standards	ng / mL			
4,4'-DDE, 13C12-	250	11.41	100	70-130
4,4'-DDD, 13C12-	250	12.09	112	70-130
4,4'-DDT, 13C12-	250	12.58	122	70-130

ALS Life sciences

Continuing Calibration Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-CCV-0825	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 28-Aug-2018

Run Information	Run 1
Filename	6-180824B45
Run Date	25-Aug-18 08:10
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng / mL	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	50	10.92	102	75-125
4,4'-DDE	50	11.45	101	75-125
2,4'-DDD	50	11.62	112	75-125
4,4'-DDD	50	12.12	99	75-125
2,4'-DDT	50	12.18	126	75-125
4,4'-DDT	50	12.62	103	75-125
Extraction Standards	ng / mL			
4,4'-DDE, 13C12-	250	11.44	113	70-130
4,4'-DDD, 13C12-	250	12.12	133	70-130
4,4'-DDT, 13C12-	250	12.61	154	70-130

ALS Life sciences

Continuing Calibration Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-CCV-0827	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 28-Aug-2018

Run Information	Run 1
Filename	6-180826A01
Run Date	26-Aug-18 12:29
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng / mL	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	50	10.89	93	75-125
4,4'-DDE	50	11.42	100	75-125
2,4'-DDD	50	11.59	89	75-125
4,4'-DDD	50	12.10	100	75-125
2,4'-DDT	50	12.15	90	75-125
4,4'-DDT	50	12.59	100	75-125
Extraction Standards	ng / mL			
4,4'-DDE, 13C12-	250	11.42	107	70-130
4,4'-DDD, 13C12-	250	12.09	108	70-130
4,4'-DDT, 13C12-	250	12.59	111	70-130

ALS Life sciences

Continuing Calibration Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-CCV-0829	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 28-Aug-2018

Run Information	Run 1
Filename	6-180826A12
Run Date	26-Aug-18 16:06
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng / mL	Ret.		Limits	
		Time	% Rec	Flags	
2,4'-DDE	50	10.88	102	75-125	
4,4'-DDE	50	11.41	100	75-125	
2,4'-DDD	50	11.58	105	75-125	
4,4'-DDD	50	12.09	100	75-125	
2,4'-DDT	50	12.15	109	75-125	
4,4'-DDT	50	12.59	100	75-125	
Extraction Standards	ng / mL				
4,4'-DDE, 13C12-	250	11.41	98	70-130	
4,4'-DDD, 13C12-	250	12.09	85	70-130	
4,4'-DDT, 13C12-	250	12.58	79	70-130	

ALS Life sciences

Continuing Calibration Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-CCV-0839	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 29-Aug-2018

Run Information	Run 1
Filename	6-180827B77
Run Date	28-Aug-18 16:59
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng / mL	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	50	10.89	107	75-125
4,4'-DDE	50	11.42	110	75-125
2,4'-DDD	50	11.59	113	75-125
4,4'-DDD	50	12.10	110	75-125
2,4'-DDT	50	12.16	115	75-125
4,4'-DDT	50	12.60	108	75-125
Extraction Standards	ng / mL			
4,4'-DDE, 13C12-	250	11.42	116	70-130
4,4'-DDD, 13C12-	250	12.09	104	70-130
4,4'-DDT, 13C12-	250	12.59	90	70-130

ALS Life sciences

Continuing Calibration Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-CCV-0831	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 28-Aug-2018

Run Information	Run 1
Filename	6-180827A03
Run Date	27-Aug-18 09:28
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng / mL	Ret.		Limits	
		Time	% Rec	Flags	
2,4'-DDE	50	10.88	103	75-125	
4,4'-DDE	50	11.41	100	75-125	
2,4'-DDD	50	11.58	110	75-125	
4,4'-DDD	50	12.09	103	75-125	
2,4'-DDT	50	12.15	115	75-125	
4,4'-DDT	50	12.59	100	75-125	
Extraction Standards	ng / mL				
4,4'-DDE, 13C12-	250	11.41	86	70-130	
4,4'-DDD, 13C12-	250	12.08	54	70-130	
4,4'-DDT, 13C12-	250	12.58	47	70-130	

ALS Life sciences

Continuing Calibration Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-CCV-0832	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 28-Aug-2018

Run Information	Run 1
Filename	6-180827A21
Run Date	27-Aug-18 15:31
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng / mL	Ret.		Limits	
		Time	% Rec	Flags	
2,4'-DDE	50	10.88	108	75-125	
4,4'-DDE	50	11.41	103	75-125	
2,4'-DDD	50	11.58	112	75-125	
4,4'-DDD	50	12.09	102	75-125	
2,4'-DDT	50	12.15	112	75-125	
4,4'-DDT	50	12.59	101	75-125	
Extraction Standards	ng / mL				
4,4'-DDE, 13C12-	250	11.41	95	70-130	
4,4'-DDD, 13C12-	250	12.08	86	70-130	
4,4'-DDT, 13C12-	250	12.58	76	70-130	

SVOC DATA PACKAGE

SECTION 5: QC SAMPLE DATA

Including:

- Laboratory Method Blank Analysis Reports
- Laboratory Control Sample Analysis Reports
- Matrix Spike Analysis Reports
- Other QC Sample Analysis Reports (where applicable)

ALS Life sciences

Laboratory Method Blank Analysis Report

Sample Name	Method Blank	Sampling Date	n/a	Approved: R. Bakhtiari --e-signature-- 28-Aug-2018
ALS Sample ID	WG2845093-1	Extraction Date	16-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	6.02 g	
Analysis Type	Blank	Percent Solid	100.0%	
Sample Matrix	QC	Split Ratio	1	

Run Information	Run 1
Filename	6-180827B18
Run Date	28-Aug-18 00:11
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.89	0.00646	0.0021	M,J		0.34
4,4'-DDE	11.42	0.0146	0.0026	M,J		0.34
2,4'-DDD	11.59	<0.0072	0.0036	M,J,R	0.0072	0.34
4,4'-DDD	12.10	0.0108	0.0032	J		0.34
2,4'-DDT	12.16	0.0110	0.0034	J		0.34
4,4'-DDT	12.60	0.0349	0.0057	M,J		0.34
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.42	54	21-125		
4,4'-DDD, 13C12-	125	12.09	65	5-150		
4,4'-DDT, 13C12-	125	12.59	57	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Laboratory Control Sample Analysis Report

Sample Name	Laboratory Control Sample	Sampling Date	n/a	Approved: R. Bakhtiari --e-signature-- 28-Aug-2018
ALS Sample ID	WG2845093-2	Extraction Date	16-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	1 n/a	
Analysis Type	LCS	Percent Solid	51.0%	
Sample Matrix	QC	Split Ratio	1	

Run Information	Run 1
Filename	6-180827B15
Run Date	27-Aug-18 23:10
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

		Ret.		Limits	
Target Analytes	ng	Time	% Rec	Flags	
2,4'-DDE	25	10.89	116	50-120	
4,4'-DDE	25	11.42	99	50-120	
2,4'-DDD	25	11.59	111	42-120	
4,4'-DDD	25	12.10	99	42-120	
2,4'-DDT	25	12.15	105	50-120	
4,4'-DDT	25	12.59	98	50-120	
Extraction Standards	ng				
4,4'-DDE, 13C12-	125	11.41	63	21-125	
4,4'-DDD, 13C12-	125	12.09	65	13-200	
4,4'-DDT, 13C12-	125	12.59	60	13-200	

ALS Life sciences

Laboratory Method Blank Analysis Report

Sample Name	Method Blank	Sampling Date	n/a	Approved: R. Bakhtiari --e-signature-- 28-Aug-2018
ALS Sample ID	WG2845019-1	Extraction Date	13-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	6.98 g	
Analysis Type	Blank	Percent Solid	100.0%	
Sample Matrix	QC	Split Ratio	1	

Run Information	Run 1
Filename	6-180824B24
Run Date	25-Aug-18 01:10
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.90	<0.0040	0.0029	M,J,R	0.0040	0.29
4,4'-DDE	11.43	<0.0070	0.0035	M,J,R	0.0070	0.29
2,4'-DDD	NotFnd	<0.0038	0.0038	U		0.29
4,4'-DDD	NotFnd	<0.0059	0.0059	U		0.29
2,4'-DDT	NotFnd	<0.0053	0.0053	U		0.29
4,4'-DDT	NotFnd	<0.012	0.012	U		0.29
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.43	79	21-125		
4,4'-DDD, 13C12-	125	12.10	83	5-150		
4,4'-DDT, 13C12-	125	12.60	86	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Laboratory Control Sample Analysis Report

Sample Name	Laboratory Control Sample	Sampling Date	n/a	Approved: R. Bakhtiari --e-signature-- 28-Aug-2018
ALS Sample ID	WG2845019-2	Extraction Date	13-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	1 n/a	
Analysis Type	LCS	Percent Solid	51.4%	
Sample Matrix	QC	Split Ratio	1	

Run Information	Run 1
Filename	6-180824B21
Run Date	25-Aug-18 00:10
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	25	10.90	103	50-120
4,4'-DDE	25	11.43	97	50-120
2,4'-DDD	25	11.60	99	42-120
4,4'-DDD	25	12.10	94	42-120
2,4'-DDT	25	12.16	90	50-120
4,4'-DDT	25	12.60	94	50-120
Extraction Standards	ng			
4,4'-DDE, 13C12-	125	11.42	74	21-125
4,4'-DDD, 13C12-	125	12.10	67	13-200
4,4'-DDT, 13C12-	125	12.59	67	13-200

ALS Life sciences

Laboratory Method Blank Analysis Report

Sample Name	Method Blank	Sampling Date	n/a	Approved: R. Bakhtiari --e-signature-- 29-Aug-2018
ALS Sample ID	WG2845070-1	Extraction Date	14-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	6.20 g	
Analysis Type	Blank	Percent Solid	100.0%	
Sample Matrix	QC	Split Ratio	1	

Run Information	Run 1
Filename	6-180825A33
Run Date	26-Aug-18 03:14
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.89	0.200	0.0026	M,J		0.33
4,4'-DDE	11.42	0.171	0.0030	J		0.33
2,4'-DDD	11.59	0.387	0.0039			0.33
4,4'-DDD	12.09	0.318	0.0043	M,J		0.33
2,4'-DDT	12.15	0.253	0.0048	M,J		0.33
4,4'-DDT	12.59	0.262	0.0079	M,J		0.33
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	51	21-125		
4,4'-DDD, 13C12-	125	12.09	50	5-150		
4,4'-DDT, 13C12-	125	12.58	44	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Laboratory Control Sample Analysis Report

Sample Name	Laboratory Control Sample	Sampling Date	n/a	Approved: R. Bakhtiari --e-signature-- 29-Aug-2018
ALS Sample ID	WG2845070-2	Extraction Date	14-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	1 n/a	
Analysis Type	LCS	Percent Solid	50.2%	
Sample Matrix	QC	Split Ratio	1	

Run Information	Run 1
Filename	6-180825A30
Run Date	26-Aug-18 02:13
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	25	10.89	118	50-120
4,4'-DDE	25	11.42	98	50-120
2,4'-DDD	25	11.59	103	42-120
4,4'-DDD	25	12.10	96	42-120
2,4'-DDT	25	12.16	91	50-120
4,4'-DDT	25	12.59	98	50-120
Extraction Standards	ng			
4,4'-DDE, 13C12-	125	11.42	22	21-125
4,4'-DDD, 13C12-	125	12.09	39	13-200
4,4'-DDT, 13C12-	125	12.59	28	13-200

ALS Life sciences

Laboratory Method Blank Analysis Report

Sample Name	Method Blank	Sampling Date	n/a	
ALS Sample ID	WG2845105-1	Extraction Date	20-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	6.48	g
Analysis Type	Blank	Percent Solid	100.0%	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 29-Aug-2018

Run Information	Run 1
Filename	6-180827B61
Run Date	28-Aug-18 14:37
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng/g	EDL ng/g	Flags	EMPC ng/g	LQL
2,4'-DDE	10.88	<0.0023	0.00079	M,J,R	0.0023	0.32
4,4'-DDE	11.41	0.00637	0.00095	J		0.32
2,4'-DDD	11.58	0.00562	0.0015	M,J		0.32
4,4'-DDD	12.09	0.00774	0.0015	M,J		0.32
2,4'-DDT	12.14	<0.0084	0.0016	M,J,R	0.0084	0.32
4,4'-DDT	12.58	0.0237	0.0028	M,J		0.32
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	79	21-125		
4,4'-DDD, 13C12-	125	12.08	82	5-150		
4,4'-DDT, 13C12-	125	12.58	75	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Laboratory Control Sample Analysis Report

Sample Name	Laboratory Control Sample	Sampling Date	n/a	
ALS Sample ID	WG2845105-2	Extraction Date	20-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	LCS	Percent Solid	49.5%	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 29-Aug-2018

Run Information	Run 1
Filename	6-180827B58
Run Date	28-Aug-18 13:36
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng	Ret.		Limits	
		Time	% Rec	Flags	
2,4'-DDE	25	10.89	115	50-120	
4,4'-DDE	25	11.42	108	50-120	
2,4'-DDD	25	11.59	123	42-120	
4,4'-DDD	25	12.09	105	42-120	
2,4'-DDT	25	12.15	119	50-120	
4,4'-DDT	25	12.59	108	50-120	
Extraction Standards	ng				
4,4'-DDE, 13C12-	125	11.41	81	21-125	
4,4'-DDD, 13C12-	125	12.09	74	13-200	
4,4'-DDT, 13C12-	125	12.58	70	13-200	

ALS Life sciences

Laboratory Method Blank Analysis Report

Sample Name	Method Blank	Sampling Date	n/a	
ALS Sample ID	WG2844600-1	Extraction Date	9-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	1	L
Analysis Type	Blank	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 28-Aug-2018

Run Information	Run 1
Filename	6-180827A07
Run Date	27-Aug-18 10:48
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	ng/L
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / L	EDL ng / L	Flags	EMPC ng / L	LQL
2,4'-DDE	10.88	<0.077	0.023	M,J,R	0.077	2.0
4,4'-DDE	11.42	0.165	0.026	M,J		2.0
2,4'-DDD	11.59	<0.074	0.032	M,J,R	0.074	2.0
4,4'-DDD	12.09	<0.064	0.028	M,J,R	0.064	2.0
2,4'-DDT	12.15	0.100	0.031	M,J		2.0
4,4'-DDT	12.59	0.250	0.061	M,J		2.0
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	38	21-125		
4,4'-DDD, 13C12-	125	12.08	47	5-150		
4,4'-DDT, 13C12-	125	12.58	34	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Laboratory Control Sample Analysis Report

Sample Name	Laboratory Control Sample	Sampling Date	n/a	
ALS Sample ID	WG2844600-2	Extraction Date	9-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	LCS	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 28-Aug-2018

Run Information	Run 1
Filename	6-180825A16
Run Date	25-Aug-18 21:32
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

		Ret.		Limits	
Target Analytes	ng	Time	% Rec	Flags	
2,4'-DDE	25	10.88	146	50-120	
4,4'-DDE	25	11.41	97	50-120	
2,4'-DDD	25	11.58	107	42-120	
4,4'-DDD	25	12.09	94	42-120	
2,4'-DDT	25	12.14	94	50-120	
4,4'-DDT	25	12.58	102	50-120	
Extraction Standards	ng				
4,4'-DDE, 13C12-	125	11.40	19	21-125	
4,4'-DDD, 13C12-	125	12.08	43	13-200	
4,4'-DDT, 13C12-	125	12.58	25	13-200	

SVOC DATA PACKAGE

SECTION 6: INTERNAL RECORDS

Including:

- Prep Logs
- Independent calculation checks
- Others as listed below:

Extraction Workup Sheet

Batch ID: WG2845070

Analysis: Sediments - OCP

BU-TM-1110 Overall HR Prep

Analyst: Mario Miletto

Date: 14-Aug-2018

SUBSAMPLING

Sample I.D.	Client I.D.	Subsample Size (g)
WG2845070-1	Method Blank	10.37
WG2845070-2	Laboratory Control Sample	10.32
WG2845070-3	Extraction and Injection STD.	—
L2142228-1	PDI-SC-S203-0TO2	10.09
WG2845070-4	Duplicate(L2142228-1)	10.08
L2142228-2	PDI-SC-S203-4TO6	10.19
L2142228-3	PDI-SC-S203-12TO13.8	10.40
L2142228-4	PDI-SC-S203-2TO4	10.37
L2142228-25	PDI-SC-S172-4TO6	10.31
L2142228-26	PDI-SC-S172-6TO8.1	10.25
L2142228-27	PDI-SC-S178-8.7TO10.7	10.24
L2142228-28	PDI-SC-S178-10.7TO12.7	10.16
L2142228-29	PDI-SC-S178-12.7TO14	10.22
L2142228-38	PDI-SC-S178-0TO2	10.14
L2142228-39	PDI-SC-S178-2TO3.7	10.38
L2142228-40	PDI-SC-S178-3.7TO4.7	10.20
L2142228-41	PDI-SC-S178-4.7TO6.7	10.29
L2142228-42	PDI-SC-S178-6.7TO8.7	10.07
L2142228-43	PDI-SC-S172-0TO2	10.33
L2142228-44	PDI-SC-S172-2TO4	10.04
L2142228-45	PDI-SC-S172-2TO4D	10.38
L2142228-50	PDI-SC-S032-4TO6	10.38
L2142228-51	PDI-SC-S032-2TO4	10.04
L2142228-52	PDI-SC-S032-0TO2	10.18

BATCH TRACKING

	Date/Time/Initials
Subsampling:	MM 14-Aug-2018 12:55pm
Balance ID	3955
Client Labels Checked:	MM
Samples Spiked	MM
Soxhlet start time:	14-Aug-2018 8:00am
Soxhlet reflux properly:	MM
Soxhlet end time:	RM 15-Aug-2018 3:00AM
Rotovap + temp check:	15-Aug-18 AP/
Sili Column:	15-Aug-18 AP/
Mini Acid	21-Aug-18 1:30pm NA
	/
	/
Robo-Vialing:	21-Aug-18 3:30pm NA
Update to LIMS:	21-Aug-18 4:20pm NA

Batch ID: WG2845070

DX Extraction Standard:

(Checkmark)

Sample I.D.	Volume (ul)	Spiked
WG2845070-1	20	✓
WG2845070-2	20	✓
WG2845070-3	20	✓
L2142228-1	20	✓
WG2845070-4	20	✓
L2142228-2	20	✓
L2142228-3	20	✓
L2142228-4	20	✓
L2142228-25	20	✓
L2142228-26	20	✓
L2142228-27	20	✓
L2142228-28	20	✓
L2142228-29	20	✓
L2142228-38	20	✓
L2142228-39	20	✓
L2142228-40	20	✓
L2142228-41	20	✓
L2142228-42	20	✓
L2142228-43	20	✓
L2142228-44	20	✓
L2142228-45	20	✓
L2142228-50	20	✓
L2142228-51	20	✓
L2142228-52	20	✓
	20	

Syringe ID

137

Standard:

HROCP-ES#1- 02AE

Spike Date:

14-Aug-2018

Spike Witnessing

Chemist's Initials

Chemist:

AK

Witness's Initials

Witness:

RM

Witness's Initials

Correct Syringe Obtained:

RM

Witness's Initials

Correct Standard Obtained:

RM

Witness's Initials

Correct Technique Followed:

RM

Batch ID: WG2845070

DX Native Standard:

(Checkmark)

Sample I.D.	Volume (ul)	Spiked
WG2845070-2	20	✓
WG2845070-3	20	✓
	20	
	20	

Syringe ID

202

Standard:

HROCP-NS#2- 001A

Date &
Initials:

14-Aug-2018 MM

DX Injection Standard:

(Checkmark)

Sample I.D.	Volume (ul)	Spiked
WG2845070-1	20	✓
WG2845070-2	20	✓
WG2845070-3	20	✓
L2142228-1	20	✓
WG2845070-4	20	✓
L2142228-2	20	✓
L2142228-3	20	✓
L2142228-4	20	✓
L2142228-25	20	✓
L2142228-26	20	✓
L2142228-27	20	✓
L2142228-28	20	✓
L2142228-29	20	✓
L2142228-38	20	✓
L2142228-39	20	✓
L2142228-40	20	✓
L2142228-41	20	✓
L2142228-42	20	✓
L2142228-43	20	✓
L2142228-44	20	✓
L2142228-45	20	✓
L2142228-50	20	✓
L2142228-51	20	✓
L2142228-52	20	✓
	20	

Syringe ID

196

Standard:

HROCP-IS#1- 015E

Date &
Initials:

21-Aug-18 NA

Correct Syringe Obtained:

Chemist's Initials

NA

Correct Standard Obtained:

Chemist's Initials

NA

Correct Technique Followed:

Chemist's Initials

NA

Procedure:

This batchsheet is a guideline only. Please see test procedure for complete set of instructions.

SubSampling

- ☐
- ☐ Subsample 10g weight wet (5g dry weight)
- ☐ Spike the samples with Extraction/Native Standards.
- ☐ Soxhlet extract in DCM for 16 hours.
- ☐ Rotovap down to ~4ml. Transfer with hexane rinses to tube.
- ☐ Reduce gently to 1mL

Sili Column (Column does not contain carbon)

- Load sample with 3x1mL hexane rinses
 - F1 = 25 mL of Hexane
 - F2 = 50mL of 1:1 DCM:Hexane
- Reduce sili-column F2 to 1mL.

Mini Acid Silica Column

- Load sample with 3x1mL hexane rinses
 - Elute with 15 ml of DCM

Robo-vial

- Reduce to 1mL
- Vortex well and transfer to robo-vial without rinses.
- Spike with Injection standard. Mark level and submit. **FV=1020uL**

Reagent Lot Numbers:

Reagent	Lot#	Manufacturer
Acetone	182575	
Hexane	102920	
DCM	103443	
Toluene	103253	
Nonane	ORG-WAKONON-	
1:1 DCM:HEX	ORG-DH2- 206,207	
Sodium Sulphate	ORG-SSU- 1999	
Acid Silica	ORG-ASI- 7819	
Neutral Silica	ORG-NSI- 1739	
Alumina	ORG-ALU-	
Chromacarb	ORG-CC-	
Corn Oil	ORG-CO-	

Comments:

Samples can be processed at 50 degrees
International Soils
Return Samples to freezer after subsampling

WG:		Prep Analyst:			
Analysis:		Date:			
	Very Good	Meets Method Req	Some Outliers	Very Poor	Comments / Was spl/batch sent for rework? Why?
MB					
LCS					
DUP					
ES rec					

Extraction Workup Sheet

Batch ID: WG2845093

Analysis: Sediments - OCP

BU-TM-1110 Overall HR Prep

Analyst: Radhika Menon

Date: 16-Aug-2018

SUBSAMPLING

Sample I.D.	Client I.D.	Subsample Size (g)
WG2845093-1	Method Blank	20.12
WG2845093-2	Laboratory Control Sample	20.09
WG2845093-3	Extraction and Injection STD.	—
L2142228-5	PDI-SC-S203-8TO10	10.17
WG2845093-4	Duplicate(L2142228-5)	10.12
L2142228-6	PDI-SC-S203-10TO12	10.03
L2142228-7	PDI-SC-S257-0TO2	10.29
L2142228-8	PDI-SC-S257-2TO4	10.28
L2142228-9	PDI-SC-S257-4TO6	10.04
L2142228-10	PDI-SC-S257-6TO8	10.05
L2142228-11	PDI-SC-S257-6TO8D	10.07
L2142228-12	PDI-SC-S257-8TO10	10.30
L2142228-13	PDI-SC-S257-10TO12	10.14
L2142228-14	PDI-SC-S257-12TO14.2	10.30
L2142228-15	PDI-SC-S203-6TO8	10.03
L2142228-16	PDI-SC-S254-10TO12	10.20
L2142228-17	PDI-SC-S254-0.3TO2	10.21
L2142228-18	PDI-SC-S254-14TO15.4	10.10
L2142228-19	PDI-SC-S254-2TO4	10.23
L2142228-20	PDI-SC-S254-8TO10	10.14

BATCH TRACKING

	Date/Time/Initials
Subsampling:	RM 11:30 AM 16-Aug-2018
Balance ID	3955
Client Labels Checked:	RM 11:30 AM 16-Aug-2018
Samples Spiked	RM 3:45 PM 16-Aug-2018
Soxhlet start time:	RM 4:30 PM 16-Aug-2018
Soxhlet reflux properly:	RM 10:30 PM 16-Aug-2018
Soxhlet end time:	JP 9:00 AM 17-Aug-18
Rotovap + temp check:	17-Aug-18 APC 2:00 PM
Sili Column:	17-Aug-18 APC 2:00 PM
Mini Acid	21-Aug-2018 9:00 AM
Robo-Vialing:	8/2 24.2.2018 2:12 PM
Update to LIMS:	206

Batch ID: WG2845093

DX Extraction Standard:

(Checkmark)

Sample I.D.	Volume (ul)	Spiked
WG2845093-1	20	✓
WG2845093-2	20	✓
WG2845093-3	20	✓
L2142228-5	20	✓
WG2845093-4	20	✓
L2142228-6	20	✓
L2142228-7	20	✓
L2142228-8	20	✓
L2142228-9	20	✓
L2142228-10	20	✓
L2142228-11	20	✓
L2142228-12	20	✓
L2142228-13	20	✓
L2142228-14	20	✓
L2142228-15	20	✓
L2142228-16	20	✓
L2142228-17	20	✓
L2142228-18	20	✓
L2142228-19	20	✓
L2142228-20	20	✓
	20	
	20	
	20	
	20	
	20	
	20	

Syringe ID

137

Standard:

HROCP-ES#1- 024D✓

Spike Date:

16 Aug 2018

Spike Witnessing

Chemist's Initials
Chemist: AM

Witness's Initials
Witness: GW

Correct Syringe Obtained: GW

Correct Standard Obtained: GW

Correct Technique Followed: GW

Batch ID: WG2845093

Syringe ID

202

Standard:

HROCP-NS#2- 001A ✓

Date &
Initials:

16 Aug 2018 RM

DX Native Standard:

(Checkmark)

Sample I.D.	Volume (ul)	Spiked
WG2845093-2	20	✓
WG2845093-3	20	✓
	20	
	20	

DX Injection Standard:

(Checkmark)

Sample I.D.	Volume (ul)	Spiked
WG2845093-1	20	✓
WG2845093-2	20	✓
WG2845093-3	20	✓
L2142228-5	20	✓
WG2845093-4	20	✓
L2142228-6	20	✓
L2142228-7	20	✓
L2142228-8	20	✓
L2142228-9	20	✓
L2142228-10	20	✓
L2142228-11	20	✓
L2142228-12	20	✓
L2142228-13	20	✓
L2142228-14	20	✓
L2142228-15	20	✓
L2142228-16	20	✓
L2142228-17	20	✓
L2142228-18	20	✓
L2142228-19	20	✓
L2142228-20	20	✓
	20	
	20	
	20	
	20	
	20	

Syringe ID

196

Standard:

HROCP-IS#1-ASF

Date &
Initials:

*-0ISE
21-AUG-2018 SA

Correct Syringe Obtained:

Chemist's Initials

Correct Standard Obtained:

Chemist's Initials

Correct Technique Followed:

Chemist's Initials

Procedure:

This batchsheet is a guideline only. Please see test procedure for complete set of instructions.

SubSampling

- ☐
- ☐ Subsample 10g weight wet (5g dry weight)
- ☐ Spike the samples with Extraction/Native Standards.
- ☐ Soxhlet extract in DCM for 16 hours.
- ☐ Rotovap down to ~4ml. Transfer with hexane rinses to tube.
- ☐ Reduce gently to 1mL

Sili Column (Column does not contain carbon)

- Load sample with 3x1mL hexane rinses
 - **F1** = 25 mL of Hexane
 - **F2** = 50mL of 1:1 DCM:Hexane
- Reduce sili-column F2 to 1mL.

Mini Acid Silica Column

- Load sample with 3x1mL hexane rinses
 - Elute with 15 ml of DCM

Robo-vial

- Reduce to 1mL
- Vortex well and transfer to robo-vial without rinses.
- Spike with Injection standard. Mark level and submit. **FV=1020uL**

Reagent Lot Numbers:

Reagent	Lot#	Manufacturer
Acetone	142575	
Hexane	102920	
DCM	103502	
Toluene	103253	
Nonane	ORG-WAKONON- —	
1:1 DCM:HEX	ORG-DH2- 2508 4-28-15	
Sodium Sulphate	ORG-SSU-1963	
Acid Silica	ORG-ASI- 7835	
Neutral Silica	ORG-NSI- 1742	
Alumina	ORG-ALU- —	
Chromacarb	ORG-CC- —	
Corn Oil	ORG-CO- —	

Activated Silica ORG-DAS370 - 506,308

Comments:

WG:						Prep Analyst:					
Analysis:						Date:					
	Very Good	Meets Method Req	Some Outliers	Very Poor	Comments / Was spl/batch sent for rework? Why?						
MB											
LCS											
DUP											
ES rec											

Extraction Workup Sheet

Batch ID: WG2845105

Analysis: Sediments - OCP

BU-TM-1110 Overall HR Prep

Analyst: Poothika Menon

Date: 20-Aug-2018

SUBSAMPLING		
Sample I.D.	Client I.D.	Subsample Size (g)
WG2845105-1	Method Blank	10.13
WG2845105-2	Laboratory Control Sample	10.18
WG2845105-3	Extraction and Injection STD.	—
L2142228-21	PDI-SC-S254-4TO6	10.13
L2142228-22	PDI-SC-S254-6TO8	10.36
L2142228-23	PDI-SC-S254-12TO14	10.05
L2142228-24	PDI-SC-S228-0TO2.3	10.27
L2144849-1	PDI-SC-S222-5TO7.2D	10.01
WG2845105-4	Duplicate(L2144849-1)	10.05
L2144849-2	PDI-SC-S222-7.2TO9.2	10.17
L2144849-3	PDI-SC-S222-9.2TO11.2	10.27
L2144849-4	PDI-SC-S222-11.2TO13.2	10.22
L2144849-5	PDI-SC-S222-13.2TO15.2	10.08
L2144849-6	PDI-SC-S248-0TO2	10.15
L2144849-7	PDI-SC-S248-2TO4	10.10
L2144849-8	PDI-SC-S248-4TO6.2	10.21
L2144849-48	PDI-SC-S226-6TO8	10.07
L2144849-49	PDI-SC-S226-10TO12	10.12
L2144849-50	PDI-SC-S226-8TO10	10.02
L2144849-51	PDI-SC-S226-0TO2	10.26
L2144849-52	PDI-SC-S226-2TO4	10.20
L2144849-53	PDI-SC-S226-12TO14	10.22
L2144849-54	PDI-SC-S226-4TO6	10.26
L2144849-55	PDI-SC-S226-14TO15.8	10.22

BATCH TRACKING

	Date/Time/Initials
Subsampling:	RM 20-Aug-2018 1:00pm
Balance ID	3955
Client Labels Checked:	RM 20-Aug-2018 1:00pm
Samples Spiked	RM 20-Aug-2018 3:30pm
Soxhlet start time:	RM 20-Aug-2018 4:00pm
Soxhlet reflux properly:	RM 20-Aug-2018 4:00pm
Soxhlet end time:	RM 21-Aug-2018 9:00am
	—
Rotovap + temp check:	AP 21-Aug-18
	—
Sili Column:	AP 21-Aug-18
Mini Acid	MM 22-Aug-2018
	—
	—
	—
Robo-Vialing:	MM
Update to LIMS:	MM

Batch ID: WG2845105

DX Extraction Standard:

(Checkmark)

Sample I.D.	Volume (ul)	Spiked
WG2845105-1	20	✓
WG2845105-2	20	✓
WG2845105-3	20	✓
L2142228-21	20	✓
L2142228-22	20	✓
L2142228-23	20	✓
L2142228-24	20	✓
L2144849-1	20	✓
WG2845105-4	20	✓
L2144849-2	20	✓
L2144849-3	20	✓
L2144849-4	20	✓
L2144849-5	20	✓
L2144849-6	20	✓
L2144849-7	20	✓
L2144849-8	20	✓
L2144849-48	20	✓
L2144849-49	20	✓
L2144849-50	20	✓
L2144849-51	20	✓
L2144849-52	20	✓
L2144849-53	20	✓
L2144849-54	20	✓
L2144849-55	20	✓
	20	

Syringe ID

137

Standard:

HROCP-ES#1- 024D

Spike Date:

20 Aug 2018

Spike Witnessing

Chemist's Initials

Chemist:

RM

Witness's Initials

Witness:

EW

Witness's Initials

Correct Syringe Obtained:

EW

Witness's Initials

Correct Standard Obtained:

EW

Witness's Initials

Correct Technique Followed:

EW

Batch ID: WG2845105

DX Native Standard:

(Checkmark)

Sample I.D.	Volume (ul)	Spiked
WG2845105-2	20	✓
WG2845105-3	20	✓
	20	
	20	

Syringe ID

202

Standard:

HROCP-NS#2- 001A

Date &
Initials:

20 Aug 2018

RM

DX Injection Standard:

(Checkmark)

Sample I.D.	Volume (ul)	Spiked
WG2845105-1	20	✓
WG2845105-2	20	✓
WG2845105-3	20	✓
L2142228-21	20	✓
L2142228-22	20	✓
L2142228-23	20	✓
L2142228-24	20	✓
L2144849-1	20	✓
WG2845105-4	20	✓
L2144849-2	20	✓
L2144849-3	20	✓
L2144849-4	20	✓
L2144849-5	20	✓
L2144849-6	20	✓
L2144849-7	20	✓
L2144849-8	20	✓
L2144849-48	20	✓
L2144849-49	20	✓
L2144849-50	20	✓
L2144849-51	20	✓
L2144849-52	20	✓
L2144849-53	20	✓
L2144849-54	20	✓
L2144849-55	20	✓
	20	

Syringe ID

196

Standard:

HROCP-IS#1- 015E

Date &
Initials:

22-Aug-2018

MM

Correct Syringe Obtained:

Chemist's Initials

MM

Correct Standard Obtained:

Chemist's Initials

MM

Correct Technique Followed:

Chemist's Initials

MM

Procedure:

This batchsheet is a guideline only. Please see test procedure for complete set of instructions.

SubSampling☐☐

Subsample 10g weight wet (5g dry weight)

☐

Spike the samples with Extraction/Native Standards.

☐

Soxhlet extract in DCM for 16 hours.

☐

Rotovap down to ~4mL. Transfer with hexane rinses to tube.

☐

Reduce gently to 1mL

Sili Column (Column does not contain carbon)

- Load sample with 3x1mL hexane rinses

- **F1** = 25 mL of Hexane

- **F2** = 50mL of 1:1 DCM:Hexane

- Reduce sili-column F2 to 1mL.

Mini Acid Silica Column

- Load sample with 3x1mL hexane rinses

- Elute with 15 ml of DCM

Robo-vial

- Reduce to 1mL

- Vortex well and transfer to robo-vial without rinses.

- Spike with Injection standard. Mark level and submit. **FV=1020uL**

Reagent Lot Numbers:

Reagent	Lot#	Manufacturer
Acetone	103158	
Hexane	102920	
DCM	103443	
Toluene	103253	
Nonane	ORG-WAKONON-040	
1:1 DCM:HEX	ORG-DH2-308	
Sodium Sulphate	ORG-SSU-1967	
Acid Silica	ORG-ASI-7837	
Neutral Silica	ORG-NSI-1742	
Alumina	ORG-ALU-398	
Chromacarb	ORG-CC- —	
Corn Oil	ORG-CO- —	

Deactivated Silica ORG-DH2-21,212

Comments:

Transfer L214228-22 into new flask 21-Aug-18 JLP
 L21449-21-9 samples contained water - rotovaped, transferred
 into large C-tubes split sample from water into smaller C-tube.
 21-Aug-18 JLP

WG:					Prep Analyst:				
Analysis:					Date:				
	Very Good	Meets Method Req	Some Outliers	Very Poor	Comments / Was spl/batch sent for rework? Why?				
MB									
LCS									
DUP									
ES rec									

Extraction Workup Sheet

Batch ID:	WG2845019
BU-TM-1110 Overall HR Prep	
Analyst:	Radhika Meron

Analysis:	Sediments - OCP
Date:	13-Aug-2018

SUBSAMPLING		
Sample I.D.	Client I.D.	Subsample Size (g)
WG2845019-1	Method Blank	10.03
WG2845019-2	Laboratory Control Sample	10.20
WG2845019-3	Extraction and Injection STD.	—
L2141042-21	PDI-SC-S085-4TO6.4	10.12
WG2845019-4	Duplicate(L2141042-21)	10.04
L2141042-22	PDI-SC-S085-4TO6.4D	10.14
L2141042-23	PDI-SC-S144-0TO2	10.08
L2141042-24	PDI-SC-S144-2TO4	10.17
L2141042-28 *	PDI-SC-S086-0TO2	10.00
L2141042-29 *	PDI-SC-S086-0TO2D	10.05
L2141042-30 *	PDI-SC-S086-2TO3.3	10.04
L2141042-31	PDI-SC-S218-0TO2	10.14
L2141042-32	PDI-SC-S218-2TO4.5	10.07
L2141042-33	PDI-SC-S218-4.5TO6	10.06
L2141042-34	PDI-SC-S218-6TO8	10.29
L2141042-35	PDI-SC-S218-8TO9.6	10.00
L2142228-30 *	PDI-SC-S083-0TO1.6	10.02
L2142228-31 *	PDI-SC-S083-1.6TO3.5	10.18
L2142228-32 *	PDI-SC-S083-3.5TO5	10.03
L2142228-33 *	PDI-SC-S083-5TO6.6	10.28
L2142228-46	PDI-SC-S032-12TO14	10.20
L2142228-47	PDI-SC-S032-10TO12	10.09
L2142228-48	PDI-SC-S032-8TO10	10.09
L2142228-49	PDI-SC-S032-6TO8	10.13

BATCH TRACKING

	Date/Time/Initials
Subsampling:	RM 12:00pm 13-Aug-2018
Balance ID	3955
Client Labels Checked:	RM 12:00pm 13-Aug-2018
Samples Spiked	RM 13-Aug-18 4:00pm / 4:30pm
Soxhlet start time:	RM 13-Aug-2018 4:30pm
Soxhlet reflux properly:	RM 13-Aug-2018 4:30pm
Soxhlet end time:	RM 14-Aug-2018 8:30AM
Rotovap + temp check:	AP 14-Aug-18
Sili Column:	AP 14-Aug-18
Mini Acid	15-Aug-2018 DA
Robo-Vialing:	15-Aug-2018 DA
Update to LIMS:	15-Aug-2018 DA

Batch ID: WG2845019

DX Extraction Standard:

(Checkmark)

Sample I.D.	Volume (ul)	Spiked
WG2845019-1	20	✓
WG2845019-2	20	✓
WG2845019-3	20	✓
L2141042-21	20	✓
WG2845019-4	20	✓
L2141042-22	20	✓
L2141042-23	20	✓
L2141042-24	20	✓
L2141042-28	20	✓
L2141042-29	20	✓
L2141042-30	20	✓
L2141042-31	20	✓
L2141042-32	20	✓
L2141042-33	20	✓
L2141042-34	20	✓
L2141042-35	20	✓
L2142228-30	20	✓
L2142228-31	20	✓
L2142228-32	20	✓
L2142228-33	20	✓
L2142228-46	20	✓
L2142228-47	20	✓
L2142228-48	20	✓
L2142228-49	20	✓
	20	

Syringe ID

137

Standard:

HROCP-ES#1-024F

Spike Date:

13 - Aug - 2018

Spike Witnessing

Chemist's Initials

Chemist:

Witness's Initials

Witness:

BM

Witness's Initials

Correct Syringe Obtained:

RM

Witness's Initials

Correct Standard Obtained:

BM

Witness's Initials

Correct Technique Followed:

BM

Batch ID: WG2845019

Syringe ID 202

DX Native Standard:

(Checkmark)

Sample I.D.	Volume (ul)	Spiked
WG2845019-2	20	✓
WG2845019-3	20	✓
	20	
	20	

Standard:

HROCP-NS#2-001A

Date & Initials:

13-Aug-2018

DX Injection Standard:

(Checkmark)

Sample I.D.	Volume (ul)	Spiked
WG2845019-1	20	✓
WG2845019-2	20	✓
WG2845019-3	20	✓
L2141042-21	20	✓
WG2845019-4	20	✓
L2141042-22	20	✓
L2141042-23	20	✓
L2141042-24	20	✓
L2141042-28	20	✓
L2141042-29	20	✓
L2141042-30	20	✓
L2141042-31	20	✓
L2141042-32	20	✓
L2141042-33	20	✓
L2141042-34	20	✓
L2141042-35	20	✓
L2142228-30	20	✓
L2142228-31	20	✓
L2142228-32	20	✓
L2142228-33	20	✓
L2142228-46	20	✓
L2142228-47	20	✓
L2142228-48	20	✓
L2142228-49	20	✓
	20	✓

Syringe ID

196

Standard:

HROCP-IS#1-015F

Date & Initials:

15-Aug-2018

Correct Syringe Obtained:

Chemist's Initials

DA

Correct Standard Obtained:

Chemist's Initials

DA

Correct Technique Followed:

Chemist's Initials

DA

Procedure:

This batchsheet is a guideline only. Please see test procedure for complete set of instructions.

SubSampling

- ☐
- ☐ Subsample 10g weight wet (5g dry weight)
- ☐ Spike the samples with Extraction/Native Standards.
- ☐ Soxhlet extract in DCM for 16 hours.
- ☐ Rotovap down to ~4mL. Transfer with hexane rinses to tube.
- ☐ Reduce gently to 1mL

Sili Column (Column does not contain carbon)

- Load sample with 3x1mL hexane rinses
 - F1 = 25 mL of Hexane
 - F2 = 50mL of 1:1 DCM:Hexane
- Reduce sili-column F2 to 1mL.

Mini Acid Silica Column

- Load sample with 3x1mL hexane rinses
 - Elute with 15 ml of DCM

Robo-vial

- Reduce to 1mL
- Vortex well and transfer to robo-vial without rinses.
- Spike with Injection standard. Mark level and submit. **FV=1020uL**

Reagent Lot Numbers:

Reagent	Lot#	Manufacturer
Acetone	182575	
Hexane	183263	
DCM	103443	
Toluene	103253	
Nonane	ORG-WAKONON- —	
1:1 DCM:HEX	ORG-DH2- 205, 206	
Sodium Sulphate	ORG-SSU- 1999	
Acid Silica	ORG-ASI- 7817	
Neutral Silica	ORG-NSI- 1738	
Alumina	ORG-ALU- —	
Chromacarb	ORG-CC- —	
Corn Oil	ORG-CO- —	

Comments:

• Samples with a star next to them (located on first page) have colour to them even after being put through mini acid column (D'A 15-Aug-2018)

WG:			Prep Analyst:		
Analysis:			Date:		
	Very Good	Meets Method Req	Some Outliers	Very Poor	Comments / Was spl/batch sent for rework? Why?
MB					
LCS					
DUP					
ES rec					

0

	Date/Time/Initials
Bottle Volume Marked	MM
Client Labels Checked:	MM
Samples spiked:	MM
Liquid/Liquid Extraction:	MM
Rotovap Reduction:	17-Aug-18 AP
Rotovap Temp Verified:	17-Aug-18 AP
N-Evap Reduction:	21-Aug-18 @ 7:00pm
N-Evap Temp Verified:	21-Aug-18 @ 7:00pm
Robo-Vialing	21-Aug-18 @ 12:00pm
Updated to LIMS:	21-Aug-18 @ 12:00pm

Batch ID:

WG2844600

Procedure:

Extraction:

***Note: this batchsheet is a guideline only. See Test Procedure for complete set of instructions.**

- Sample Size = 1L (Mark bottle so that exact volume can be determined.)
- Standards added to 1mL Acetone, and then added to sep funnel with 2 acetone rinses, then swirled.
- Extracted with 3x 100mL DCM, then dried over sodium sulphate.
- Reduce to ~5mL (Don't go below 5mL in volume on the roto-vap)
- Transfer to a c-tube (calibrated at 1ml level) with 3x2mL DCM.
- Blow down to exactly 1mL.

-Sili Column - Load sample with 3x1mL hexane rinses

- F1 = 25 mL of Hexane
- F2 = 50mL of 1:1 DCM:Hexane

-reduce F2 to 1ml**Mini Acid Silica Column**

- Load sample with 3x1mL hexane rinses
- Elute with 15 ml of DCM
- Reduce to 1ml, vortex and transfer to robovial (without rinses) Mark level.
- Spike injection standard and submit FV=1020ul

Approval of Deviation from Standard Method

☐ Procedure does not deviate from Standard Method.

(Batch Writer): _____

☐ Procedure does deviate from Standard Method.

Approved (Supervisor/Manager): _____

Comments:

**** Protect samples from light as much as possible. ****

**** Samples must submit to instruments within 5 days of extraction ****

L2142228-54 went below ~5mL on roto - bulked with DCM & proceeded as normal. 17 Aug 18 AP-

WG:			Prep Analyst:		
Analysis:			Date:		
	Very Good	Meets Method Req	Some Outliers	Very Poor	Comments / Was spl/batch sent for rework? Why?
MB					
LCS					
DUP					
ES rec					

ALS Life sciences

Sample Calculation Report

CS3 RRF Check

Approved:

R. Bakhtiari
--e-signature--
28-Aug-2018

$$\text{RRF} = \frac{\text{Response of 4,4'-DDE}}{\text{Response of 13C12-4,4'DDE}} \times \frac{\text{Concentration of 13C2-4,4'DDE}}{\text{Concentration of DDE}}$$

Calculated
Value

Value from
TargetLynx

$$\text{RRF} = \frac{1082220.20}{11812630.50} \times \frac{250.00}{20} = 1.15 \quad 1.15$$

Calculation of 4,4'-DDE amount in L2142228-5

$$\text{ng} = \frac{\text{Response of 4,4'-DDE}}{\text{Response of 13C12-4,4'DDE}} \times \frac{\text{ng of 13C12-4,4'-DDE spiked}}{\text{Mean RRF} \times \text{Sample Size}}$$

$$\text{ng/g} = \frac{3310.8}{514554} \times \frac{125}{1.21 \times 6.56} = 0.102 \quad 0.102$$

Calculation of 13C12-4,4'-DDE Recovery in L2142228-5

$$\% \text{ Recovery} = \frac{\text{Response of 13C12-4,4'-DDE}}{\text{Response of 13C12-PCB-52}} \times \frac{\text{ng of 13C12-PCB-52} \times 100}{\text{Mean RRF} \times \text{Amount Spiked}}$$

$$\% \text{ Recovery} = \frac{514554}{314354.2} \times \frac{50 \times 100}{0.93 \times 125} = 70 \quad 70 \%$$

ALS Life sciences

Sample Calculation Report

CS3 RRF Check

Approved: *R. Bakhtiari*
--e-signature--
28-Aug-2018

$$\text{RRF} = \frac{\text{Response of 4,4'-DDE}}{\text{Response of 13C12-4,4'DDE}} \times \frac{\text{Concentration of 13C2-4,4'DDE}}{\text{Concentration of DDE}}$$

$$\text{RRF} = \frac{1082220.20}{11812630.50} \times \frac{250.00}{20} = 1.15 \quad \text{Value from TargetLynx } 1.15$$

Calculation of 4,4'-DDE amount in L2142228-30

$$\text{ng} = \frac{\text{Response of 4,4'-DDE}}{\text{Response of 13C12-4,4'DDE}} \times \frac{\text{ng of 13C12-4,4'-DDE spiked}}{\text{Mean RRF} \times \text{Sample Size}}$$

$$\text{ng/g} = \frac{117712.1}{873982} \times \frac{125}{1.21 \times 3.86} = 3.62 \quad \text{3.62}$$

Calculation of 13C12-4,4'-DDE Recovery in L2142228-30

$$\% \text{ Recovery} = \frac{\text{Response of 13C12-4,4'-DDE}}{\text{Response of 13C12-PCB-52}} \times \frac{\text{ng of 13C12-PCB-52}}{\text{Mean RRF} \times \text{Amount Spiked}} \times 100$$

$$\% \text{ Recovery} = \frac{873982}{591297} \times \frac{50}{0.93 \times 125} \times 100 = 63 \quad \text{63 \%}$$

ALS Life sciences

Sample Calculation Report

CS3 RRF Check

$$\text{RRF} = \frac{\text{Response of 4,4'-DDE}}{\text{Response of 13C12-4,4'DDE}} \times \frac{\text{Concentration of 13C2-4,4'DDE}}{\text{Concentration of DDE}}$$

$$\text{RRF} = \frac{1144064.50}{12817205.00} \times \frac{250.00}{20}$$

Approved: *R. Bakhtiari*
--e-signature--
29-Aug-2018

Calculated Value Value from TargetLyn x

$$= 1.12 \quad \text{1.12}$$

Calculation of 4,4'-DDE amount in L2142228-1

$$\text{ng} = \frac{\text{Response of 4,4'-DDE}}{\text{Response of 13C12-4,4'DDE}} \times \frac{\text{ng of 13C12-4,4'-DDE spiked}}{\text{Mean RRF} \times \text{Sample Size}}$$

$$\text{ng/g} = \frac{139811.6}{381357.9} \times \frac{125}{1.18 \times 4.33} = 8.99 \quad \text{8.99}$$

Calculation of 13C12-4,4'-DDE Recovery in L2142228-1

$$\% \text{ Recovery} = \frac{\text{Response of 13C12-4,4'-DDE}}{\text{Response of 13C12-PCB-52}} \times \frac{\text{ng of 13C12-PCB-52} \times 100}{\text{Mean RRF} \times \text{Amount Spiked}}$$

$$\% \text{ Recovery} = \frac{381357.9}{363699.1} \times \frac{50 \times 100}{1.21 \times 125} = 35 \quad \text{35 \%}$$

ALS Life sciences

Sample Calculation Report

CS3 RRF Check

Approved: *R. Bakhtiari*
--e-signature--
29-Aug-2018

$$\text{RRF} = \frac{\text{Response of 4,4'-DDE}}{\text{Response of 13C12-4,4'DDE}} \times \frac{\text{Concentration of 13C2-4,4'DDE}}{\text{Concentration of DDE}}$$

Calculated Value Value from TargetLynx

$$\text{RRF} = \frac{1082220.20}{11812630.50} \times \frac{250.00}{20} = 1.15 \quad 1.15$$

Calculation of 4,4'-DDE amount in L2142228-21

$$\text{ng} = \frac{\text{Response of 4,4'-DDE}}{\text{Response of 13C12-4,4'DDE}} \times \frac{\text{ng of 13C12-4,4'-DDE spiked}}{\text{Mean RRF} \times \text{Sample Size}}$$

$$\text{ng/g} = \frac{694356.8}{1843515.7} \times \frac{125}{1.21 \times 5.82} = 6.72 \quad 6.72$$

Calculation of 13C12-4,4'-DDE Recovery in L2142228-21

$$\% \text{ Recovery} = \frac{\text{Response of 13C12-4,4'-DDE}}{\text{Response of 13C12-PCB-52}} \times \frac{\text{ng of 13C12-PCB-52} \times 100}{\text{Mean RRF} \times \text{Amount Spiked}}$$

$$\% \text{ Recovery} = \frac{1843515.7}{1045262.8} \times \frac{50 \times 100}{0.93 \times 125} = 75 \quad 75 \%$$

ALS Life sciences

Sample Calculation Report

CS3 RRF Check

Approved: *R. Bakhtiari*
--e-signature--
28-Aug-2018

$$\text{RRF} = \frac{\text{Response of 4,4'-DDE}}{\text{Response of 13C12-4,4'DDE}} \times \frac{\text{Concentration of 13C2-4,4'DDE}}{\text{Concentration of DDE}}$$

Calculated Value Value from TargetLynx

$$\text{RRF} = \frac{1144064.50}{12817205.00} \times \frac{250.00}{20} = 1.12 \quad 1.12$$

Calculation of 4,4'-DDE amount in L2142228-53

$$\text{ng} = \frac{\text{Response of 4,4'-DDE}}{\text{Response of 13C12-4,4'DDE}} \times \frac{\text{ng of 13C12-4,4'-DDE spiked}}{\text{Mean RRF} \times \text{Sample Size}}$$

$$\text{ng/g} = \frac{2241.3}{1296343.8} \times \frac{125}{1.18 \times 0.99} = 0.185 \quad 0.185$$

Calculation of 13C12-4,4'-DDE Recovery in L2142228-53

$$\% \text{ Recovery} = \frac{\text{Response of 13C12-4,4'-DDE}}{\text{Response of 13C12-PCB-52}} \times \frac{\text{ng of 13C12-PCB-52} \times 100}{\text{Mean RRF} \times \text{Amount Spiked}}$$

$$\% \text{ Recovery} = \frac{1296343.8}{2618886.6} \times \frac{50 \times 100}{1.21 \times 125} = 16 \quad 16 \%$$

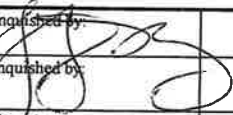
SVOC DATA PACKAGE

SECTION 7: SHIPPING/RECEIVING DOCUMENTS

Including:

- Airbills
- Chain-of-Custody Records
- Sample Log-in Sheet(s) - where applicable
- Others as listed below:

[illegible]

ALS-Burlington 1435 Norjohn Court Unit 1 Burlington, Ontario Canada L7L 0E6 Ph: 1-905-331-3111 Fax: 0		SUBSURFACE SEDIMENT CHAIN OF CUSTODY																			
Client Contact AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1+(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Subsurface Sediment Sample Type:		Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010				Site Contact: Jennifer Ray Laboratory Contact: Whitney Davis				Date: 8/6/18 Carrier: FedEx				COC No: 1 3 of 5 pages							
Analysis Turnaround Time Calendar (C) or Work Days (W) W ☒ 21 days ☐ Other _____																					
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	Pesticides, DDx only													Sample Specific Notes:
PDI -SC- 5172- 4406	8/1/2018	1800	SC		ED	1		x													25
PDI -SC- 5172- 6408.1	8/1/2018	1805	SC		ED	1		x													26
PDI -SC- 5172- 8.7 to 10.7	8/2/2018	1620	SC		ED	1		x													27
PDI -SC- 5172- 10.7 to 12.7	8/2/2018	1625	SC		ED	1		x													28
PDI -SC- 5172- 12.7 to 14	8/2/2018	1630	SC		ED	1		x													29
PDI -SC- 5083- 0 to 1.6	8/1/2018	1730	SC		ED	1		x													30
PDI -SC- 5083- 1.6 to 3.5	8/1/2018	1735	SC		ED	1		x													31
PDI -SC- 5083- 3.5 to 5	8/1/2018	1740	SC		ED	1		x													32
PDI -SC- 5083- 5 to 6.6	8/1/2018	1745	SC		ED	1		x													33
PDI -SC																					
PDI -SC																					
PDI -SC																					
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Coll Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)								Sample Disposal ☐ Return To Client ☒ Spinal By Lab ☒ Archive For 12 Months													
Special Instructions/QC Requirements & Comments:																					
Relinquished by:		Company:		Date/Time:		Received by:		Company:		Date/Time:		Relinquished by:		Company:		Date/Time:		Relinquished by:		Company:	
		AECOM		8/6/18 1515		FEDEx		ALC		8-Aug-2018 14:10											
						Aaron Burtan															

ALS-Burlington 1435 Norjohn Court Unit 1 Burlington, Ontario Canada L7L 0E6 Ph: 1-905-331-3111 Fax: 0						SUBSURFACE SEDIMENT CHAIN OF CUSTODY																	
Client Contact		Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010					Site Contact: Jennifer Ray					Date: 8/6/18					COC No: 1						
AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1-(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling		Analysis Turnaround Time Calendar (C) or Work Days (W) W					Laboratory Contact: Whitney Davis					Carrier: FedEx					4 of 5 pages						
Portland, OR Project #: 60566335 Study: Subsurface Sediment		☒ 21 days ☐ Other _____																					
Sample Type:																							
Sample Identification		Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	Pesticides, DDx only											Sample Specific Notes:			
PDI-SC-S221 - 0 to 2		8/3/2018	10:15	SC		ED	1		X									34					
PDI-SC-S221 - 2 to 4		8/3/2018	10:20	SC		ED	1		X									35					
PDI-SC-S221 - 4 to 6		8/3/2018	10:25	SC		ED	1		X									36					
PDI-SC-S221 - 6 to 8.1		8/3/2018	10:30	SC		ED	1		X									37					
PDI-SC-S178 - 0 to 2		8/2/2018	1555	SC		ED	1		X									38					
PDI-SC-S178 - 2 to 3.7		8/2/2018	1600	SC		ED	1		X									39					
PDI-SC-S178 - 3.7 to 4.7		8/2/2018	1605	SC		ED	1		X									40					
PDI-SC-S178 - 4.7 to 6.7		8/2/2018	1610	SC		ED	1		X									41					
PDI-SC-S178 - 6.7 to 8.7		8/2/2018	1615	SC		ED	1		X									42					
PDI-SC-S172 0 to 2		8/2/2018	1750	SC		ED	1		X									43					
PDI-SC-S172 2 to 4		8/2/2018	1755	SC		ED	1		X									44					
PDI-SC-S172 2 to 4D		8/2/2018	1755	SC		ED	1		X									45					
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Cola								AG	AG	WMG	WMG	AG											
Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid																							
Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)								Sample Disposal ☐ Return To Client ☒ Disposal By Lab ☒ Archive For 12 Months															
Special Instructions/QC Requirements & Comments: L2142228-34-37 put on hold as per AECOM request 10-Aug-18																							
Relinquished by: [Signature]		Company: AECOM		Date/Time: 8/6/18/1575		Received by:				Company:				Date/Time:									
Relinquished by:		Company:		Date/Time:		Received by: Aaron Burton				Company: ALS				Date/Time: 9-Aug-2018 14:10									
Relinquished by:		Company:		Date/Time:		Received by:				Company:				Date/Time:									

[illegible]

Whitney Davis

From: Dahl, Amy <amy.dahl@aecom.com>
Sent: Thursday, August 09, 2018 4:13 PM
To: Claire Kocharakkal; Cook, Chelsey
Cc: ALSBU FILE
Subject: RE: Job Reference #60566335 L2142228 Sample Receipt Temperatures

Hi Claire,

Please proceed with analysis.

Thank you,

PRIVILEGED AND CONFIDENTIAL / JOINT DEFENSE COMMUNICATION / ATTORNEY CLIENT WORK PRODUCT

Amy Dahl, PhD
Chemist, Environment, Pacific Northwest
D +1-206-438-2261
amy.dahl@aecom.com

AECOM
1111 Third Avenue, Suite 1600
Seattle, WA 98101, United States
T +1-206-438-2700
aecom.com

From: Claire Kocharakkal [mailto:claire.kocharakkal@ALSGlobal.com]
Sent: Thursday, August 09, 2018 10:52 AM
To: Dahl, Amy; Cook, Chelsey
Cc: ALSBU FILE
Subject: RE: Job Reference #60566335 L2142228 Sample Receipt Temperatures

Hello again Amy and Chelsey,

Note some samples are **above temperature** for the method.

Please let me know how you would like us to proceed.

Thank you,

Claire Kocharakkal
Account Manager, Environmental
Burlington, Ontario, Canada



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Burlington, ON Canada, L7L 0E6

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From: Claire Kocharakkal
Sent: Thursday, August 09, 2018 11:30 AM
To: amy.dahl@aecom.com; Chelsey.cook@aecom.com
Cc: ALSBU FILE <ALSBUFFILE@alsglobal.com>
Subject: Job Reference #60566335 L2142228 Sample Receipt Temperatures

Hello Amy and Chelsey,

We received your shipment of 54 samples yesterday. Please see the attached spreadsheet with the temperature on receipt for each sample.

Please feel free to contact us if you have any questions.

Regards,

Claire Kocharakkal
Account Manager, Environmental
Burlington, Ontario, Canada



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F +1 905 331 4567

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Whitney Davis

From: Dahl, Amy <amy.dahl@aecom.com>
Sent: Thursday, August 09, 2018 7:34 PM
To: Whitney Davis; Claire Kocharakkal
Cc: Ray, Jennifer
Subject: FW: L2142228 SRC [Job #] 60566335
Attachments: L2142228_SRC.PDF

Hi Whitney, I reviewed this sample confirmation and need the following changes:

- The sample date for L2142228-15 PDI-SC-S203-6TO8 should be 8/3/18 not 8/6/18 as shown on the COC.
- Need to hold all the S221 samples (-34 through -37); do not analyze until further notice

Thank you,

Amy Dahl, PhD
Chemist, Environment, Pacific Northwest
D +1-206-438-2261
amy.dahl@aecom.com

AECOM
1111 Third Avenue, Suite 1600
Seattle, WA 98101, United States
T +1-206-438-2700
aecom.com

-----Original Message-----

From: Whitney.Davis@ALSGlobal.com [mailto:Whitney.Davis@ALSGlobal.com]
Sent: Thursday, August 09, 2018 8:26 AM
To: Dahl, Amy; Cook, Chelsey
Subject: L2142228 SRC [Job #] 60566335

The following email is intended as a confirmation that the lab has successfully received and entered information pertaining to your analysis into our system. THIS IS NOT a report of analysis performed.

Please contact your account manager if you have any further questions related to this email.

Thank you for using ALS Environmental for your testing needs.

Sample Receiving Log

Date/Time Received	Client ID	Number/Description of Containers	Temp. on Receipt*	Condition of Samples, Courier & Tracking Information	Receiver's Initials	Date/Time Login Completed	Submission ID	Sample ID Range
8-Aug-2018 14:10	Aecom	75 jars of sediment 4 x 1L amber bottles	See table	Transit delay FedEx 7821 7618 5822	MS	9-Aug-2018 9:30	L2142228	-1-54

*Temperatures were recorded using: ☒ 'Oakton infraPro' dedicated I.R. gun (serial #97800270)

☐ Other (specify): _____

BU-FM-0261c v02 Sample Receiving Log

Date Issued: 21-Aug-2017

Page: 1035