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): L2150263

Final Package Review by: _____

Date Reviewed: 17-Sep-18

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

SVOC DATA PACKAGE

SECTION 1: PROJECT NARRATIVE

ALSE Project Information

Project ID: AECOM100

Contact: Whitney Davis
Submission ID(s): L2150263

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
L2150263-1	PDI-SC-S108-8.8TO9.8	Sediment	16-Aug-18	21-Aug-18	30-Aug-18	13-Sep-18
WG2856797-4	Duplicate	QC	n/a	n/a	30-Aug-18	13-Sep-18
L2150263-2	PDI-SC-S108-6.7TO8.8	Sediment	16-Aug-18	21-Aug-18	30-Aug-18	13-Sep-18
L2150263-3	PDI-SC-S108-4.7TO6.7	Sediment	16-Aug-18	21-Aug-18	30-Aug-18	13-Sep-18
L2150263-4	PDI-SC-S108-3TO4.7	Sediment	16-Aug-18	21-Aug-18	30-Aug-18	13-Sep-18
L2150263-5	PDI-SC-S108-1.9TO3	Sediment	16-Aug-18	21-Aug-18	30-Aug-18	13-Sep-18
L2150263-6	PDI-SC-S108-0TO1.9	Sediment	16-Aug-18	21-Aug-18	30-Aug-18	13-Sep-18
L2150263-7	PDI-SC-S232-4TO6.2	Sediment	16-Aug-18	21-Aug-18	30-Aug-18	14-Sep-18
L2150263-8	PDI-SC-S232-2TO4	Sediment	16-Aug-18	21-Aug-18	30-Aug-18	14-Sep-18
L2150263-9	PDI-SC-S232-0TO2	Sediment	16-Aug-18	21-Aug-18	30-Aug-18	14-Sep-18
L2150263-11	PDI-SC-S157-0TO2	Sediment	17-Aug-18	21-Aug-18	30-Aug-18	14-Sep-18
L2150263-12	PDI-SC-S157-3.7TO6	Sediment	17-Aug-18	21-Aug-18	30-Aug-18	14-Sep-18
L2150263-13	PDI-SC-S157-14TO15.9	Sediment	17-Aug-18	21-Aug-18	30-Aug-18	14-Sep-18
L2150263-14	PDI-SC-S157-8TO10	Sediment	17-Aug-18	21-Aug-18	30-Aug-18	14-Sep-18
L2150263-15	PDI-SC-S157-2TO3.7	Sediment	17-Aug-18	21-Aug-18	30-Aug-18	14-Sep-18
L2150263-16	PDI-SC-S157-10TO12.4	Sediment	17-Aug-18	21-Aug-18	30-Aug-18	14-Sep-18
WG2856797-1	Method Blank	QC	n/a	n/a	30-Aug-18	13-Sep-18
WG2856797-2	Laboratory Control Sample	QC	n/a	n/a	30-Aug-18	13-Sep-18

*** REVISED DATA PACKAGE ***

This data package supersedes all prior packages for the above-noted samples and test. The package has been revised as follows:

The extraction date was incorrectly recorded for the sample with ALS ID L2150263-4 through L2150264-16.
This has now been corrected.

*** ORIGINAL COMMENTS and NOTES ***

a) Sample Integrity:

The samples were received in good condition at 3.8 degrees C.

b) Instrumental Analysis:

All results have been reported on a dry weight basis.

Six calibration points have been included.

For H6-18-CCV-0106, the post-run continuing calibration verification (CCV) for the analytical sequence 6-180913B, the recovery of 13C12-4,4'-DDT was marginally above the method control limit. The reported values for this standard may be slightly elevated. Native target data are not expected to be biased as a result.

The replication between the sample and laboratory duplicate does not meet typical control limits for all targets. The sample may not be homogeneous.

The recovery of the labelled extraction standard 13C12-4,4'-DDE is below the method control limit for selected samples. The results for the native target 4,4'-DDE are not expected to be biased. However, since 2,4'-DDE can be better recovered than 4,4'-DDE, the results for this target may be elevated in cases where the 13C12-4,4'-DDE recovery is below 40%. This includes the laboratory control sample, where the recovery of 2,4'-DDE is marginally above the method control limit.

I certify that this data package is in compliance with the terms and condition of the contract , both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package (hardcopy and/or electronic version) has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Steve Kennedy, Technical Supervisor

21-Dec-18
Date of revision

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

SVOC DATA PACKAGE

SECTION 1: PROJECT NARRATIVE

ALSE Project Information

Project ID: AECOM100

Contact: Whitney Davis

Submission ID(s): L2150263

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
L2150263-10	PDI-RB-SS-180817	Water	17-Aug-18	21-Aug-18	23-Aug-18	17-Sep-18
WG2857431-1	Method Blank	QC	n/a	n/a	23-Aug-18	17-Sep-18
WG2857431-2	Laboratory Control Sample	QC	n/a	n/a	23-Aug-18	17-Sep-18

Comments and Notes:
a) Sample Integrity:

The samples were received in good condition at 3.8 degrees C.

b) Instrumental Analysis:

Six calibration points have been included

The recovery of 2,4'-DDE was marginally above the method control limit for the laboratory control sample (LCS). However, this target has not been detected in the sample.

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Steve Kennedy, Technical Supervisor

18-Sep-18
Date

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

SVOC DATA PACKAGE

SECTION 1: PROJECT NARRATIVE

ALSE Project Information

Project ID: AECOM100

Contact: Whitney Davis

Submission ID(s): L2150263

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
L2150263-17	PDI-SC-S157-6TO8	Sediment	17-Aug-18	21-Aug-18	31-Aug-18	14-Sep-18
WG2859059-4	PDI-SC-S157-6TO8 Duplicate	QC	n/a	n/a	31-Aug-18	14-Sep-18
L2150263-19	PDI-SC-S263-0TO2	Sediment	16-Aug-18	21-Aug-18	31-Aug-18	14-Sep-18
L2150263-20	PDI-SC-S263-2TO3.8	Sediment	16-Aug-18	21-Aug-18	31-Aug-18	14-Sep-18
L2150263-21	PDI-SC-S263-3.8TO5.9	Sediment	16-Aug-18	21-Aug-18	31-Aug-18	14-Sep-18
L2150263-22	PDI-SC-S108-6.7TO8.8D	Sediment	16-Aug-18	21-Aug-18	31-Aug-18	17-Sep-18
WG2859059-1	Method Blank	QC	n/a	n/a	31-Aug-18	14-Sep-18
WG2859059-2	Laboratory Control Sample	QC	n/a	n/a	31-Aug-18	14-Sep-18

Comments and Notes:
a) Sample Integrity:

The samples were received in good condition at 3.8 degrees C.

The 14 day hold time was exceeded by one day for samples L2150263-19 to -22. No impact to data quality is expected.

b) Instrumental Analysis:

All results have been reported on a dry weight basis.

Six calibration points have been included.

The results for the sample PDI-SC-S108-6.7TO8.8D have been reported from a re-analysis of the extract in order to preclude the possibility of carryover from a prior higher level extract.

The sample with the ALS ID L2150263-17, was inadvertently entered in the runlist as L2150263-7.
The continuing validation verifications (CCVs) H6-18-CCV-1008 and -1010, were inadvertently entered in the runlist as CCV-0108 and -0110.
The correct ID has been used in the reports. However, the incorrect ID appears on the instrument outputs.

The replication between the sample and laboratory duplicate does not meet typical control limits. There are cases where a low target level has been detected in one replicate but not the other.

I certify that this data package is in compliance with the terms and condition of the contract , both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package (hardcopy and/or electronic version) has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Steve Kennedy, Technical Supervisor

18-Sep-18
Date

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

SVOC DATA PACKAGE

SECTION 1: PROJECT NARRATIVE

ALSE Project Information

Project ID: AECOM100

Contact: Whitney Davis

Submission ID(s): L2150263

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
L2150263-18	PDI-SC-S157-12.4TO14	Sediment	17-Aug-18	21-Aug-18	06-Sep-18	17-Sep-18
WG2868044-1	Method Blank	QC	n/a	n/a	06-Sep-18	17-Sep-18
WG2868044-2	Laboratory Control Sample	QC	n/a	n/a	06-Sep-18	17-Sep-18

Comments and Notes:
a) Sample Integrity:

The samples were received in good condition at 3.8 degrees C.

Sample L2150263-18 was originally extracted in ALS prep batch WG2859059 on August 31st and archived in the freezer.
The sample went dry during laboratory processing and was re-extracted in ALS prep batch WG2868044 on September 6th.

b) Instrumental Analysis:

All results have been reported on a dry weight basis.

Six calibration points have been included.

No criteria failures or exceedences.

I certify that this data package is in compliance with the terms and condition of the contract , both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package (hardcopy and/or electronic version) has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Steve Kennedy, Technical Supervisor

18-Sep-18
Date

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

SVOC DATA PACKAGE

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	**Client Name:**	AECOM United States
ALS Project ID:	AECOM100	**Client Address:**	1111 Third Avenue
ALS WO#:	L2150263		Suite 1600
Date of Report	19-Sep-18		Seattle, WA 98101, USA
Date of Sample Receipt	21-Aug-18	**Client Contact:**	Amy Dahl
		Client Project ID:	60566335

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

Certified by:

Steve Kennedy
Technical Supervisor

ALS Life sciences

Sample Analysis summary Report

Sample Name	PDI-SC-S108-8.8TO9.8	Duplicate of PDI-SC-S108-8.8TO9.8	PDI-SC-S108-6.7TO8.8	PDI-SC-S108-4.7TO6.7	PDI-SC-S108-3TO4.7	PDI-SC-S108-1.9TO3
ALS Sample ID	L2150263-1	WG2856797-4	L2150263-2	L2150263-3	L2150263-4	L2150263-5
Sample Size	7.13	7.16	6.85	4.94	4.18	4.46
Sample size units	g	g	g	g	g	g
Percent Solid	70.9%	71.4%	67.9%	49.2%	40.8%	43.7%
Sample Matrix	Sediment	QC	Sediment	Sediment	Sediment	Sediment
Sampling Date	16-Aug-18	n/a	16-Aug-18	16-Aug-18	16-Aug-18	16-Aug-18
Extraction Date	30-Aug-18	30-Aug-18	30-Aug-18	30-Aug-18	30-Aug-18	30-Aug-18
Target Analytes	**ng/g**	**ng/g**	**ng/g**	**ng/g**	**ng/g**	**ng/g**
2,4'-DDE	<0.030	0.0480	<0.18	1.08	0.466	0.687
4,4'-DDE	0.135	0.189	<0.24	4.13	5.46	4.54
2,4'-DDD	0.311	0.610	<0.71	19.7	10.3	4.95
4,4'-DDD	0.606	1.18	1.39	36.0	31.8	13.5
2,4'-DDT	<0.051	0.273	<0.14	<2.1	<0.74	1.67
4,4'-DDT	0.426	0.710	1.34	9.23	13.9	27.5
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
4,4'-DDE, 13C12-	63	84	9	8	91	9
4,4'-DDD, 13C12-	57	70	19	22	73	26
4,4'-DDT, 13C12-	49	65	10	11	57	12

ALS Life sciences

Sample Analysis summary Report

Sample Name	PDI-SC-S108-0TO1.9	PDI-SC-S232-4TO6.2	PDI-SC-S232-2TO4	PDI-SC-S232-0TO2	PDI-SC-S157-0TO2	PDI-SC-S157-3.7TO6
ALS Sample ID	L2150263-6	L2150263-7	L2150263-8	L2150263-9	L2150263-11	L2150263-12
Sample Size	6.08	6.57	5.82	5.63	4.80	7.50
Sample size units	g	g	g	g	g	g
Percent Solid	59.7%	65.3%	57.4%	55.7%	47.3%	74.0%
Sample Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Sampling Date	16-Aug-18	16-Aug-18	16-Aug-18	16-Aug-18	17-Aug-18	17-Aug-18
Extraction Date	30-Aug-18	30-Aug-18	30-Aug-18	30-Aug-18	30-Aug-18	30-Aug-18
Target Analytes	**ng/g**	**ng/g**	**ng/g**	**ng/g**	**ng/g**	**ng/g**
2,4'-DDE	0.254	0.211	0.472	1.25	<0.24	<0.0040
4,4'-DDE	2.14	2.18	7.56	15.7	2.33	0.0219
2,4'-DDD	1.58	2.20	1.97	2.66	1.67	0.0494
4,4'-DDD	4.80	7.80	6.47	9.60	2.61	0.0904
2,4'-DDT	1.74	<0.15	<0.047	<0.058	<0.12	0.0332
4,4'-DDT	71.8	0.204	0.408	<0.41	<0.31	2.07
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
4,4'-DDE, 13C12-	15	81	93	20	12	93
4,4'-DDD, 13C12-	38	66	71	37	20	84
4,4'-DDT, 13C12-	21	58	56	22	12	80

ALS Life sciences

Sample Analysis summary Report

Sample Name	PDI-SC-S157-14TO15.9	PDI-SC-S157-8TO10	PDI-SC-S157-2TO3.7	PDI-SC-S157-10TO12.4
ALS Sample ID	L2150263-13	L2150263-14	L2150263-15	L2150263-16
Sample Size	7.61	7.54	7.04	7.34
Sample size units	g	g	g	g
Percent Solid	74.3%	75.3%	68.8%	72.6%
Sample Matrix	Sediment	Sediment	Sediment	Sediment
Sampling Date	17-Aug-18	17-Aug-18	17-Aug-18	17-Aug-18
Extraction Date	30-Aug-18	30-Aug-18	30-Aug-18	30-Aug-18
Target Analytes	**ng/g**	**ng/g**	**ng/g**	**ng/g**
2,4'-DDE	<0.014	<0.092	0.191	<0.14
4,4'-DDE	<0.018	<0.12	0.882	<0.18
2,4'-DDD	<0.015	<0.096	2.05	<0.15
4,4'-DDD	<0.035	<0.12	2.59	<0.091
2,4'-DDT	<0.021	<0.064	<0.064	<0.090
4,4'-DDT	<0.035	<0.16	0.662	<0.25
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**
4,4'-DDE, 13C12-	79	33	14	8
4,4'-DDD, 13C12-	68	64	23	16
4,4'-DDT, 13C12-	62	41	15	9

ALS Life sciences

Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG2856797-1	WG2856797-2
Sample Size	10.17	5.00
Sample size units	g	n/a
Percent Solid	99.9%	50.7%
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	30-Aug-18	30-Aug-18
Target Analytes	**ng/g**	**% Rec**
2,4'-DDE	0.0165	123
4,4'-DDE	<0.028	96
2,4'-DDD	0.0783	112
4,4'-DDD	0.118	106
2,4'-DDT	<0.025	89
4,4'-DDT	0.157	116
Extraction Standards	**% Rec**	**% Rec**
4,4'-DDE, 13C12-	49	16
4,4'-DDD, 13C12-	70	31
4,4'-DDT, 13C12-	49	17

ALS Life sciences

Continuing Calibration Summary Report

Sample Name	CVS	CCV	CCV	CVS	CCV	CCV
ALS Sample ID	H6-18-RS1-077	H6-18-CCV-0922	H6-18-CCV-0924	H6-18-RS1-075	H6-18-CCV-0104	H6-18-CCV-0106
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		100	100		101	105
4,4'-DDE	94	100	103	96	101	105
2,4'-DDD		100	101		97	100
4,4'-DDD	94	101	102	97	98	104
2,4'-DDT		100	103		101	100
4,4'-DDT	91	97	100	94	100	105
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
4,4'-DDE, 13C12-	100	102	110	101	103	110
4,4'-DDD, 13C12-	101	101	103	109	113	124
4,4'-DDT, 13C12-	103	104	96	118	120	134

ALS Life sciences

Sample Analysis summary Report

Sample Name	**PDI-RB-SS-180817**
ALS Sample ID	L2150263-10
Sample Size	1.00
Sample size units	L
Percent Solid	n/a
Sample Matrix	Water
Sampling Date	17-Aug-18
Extraction Date	23-Aug-18

Target Analytes	**ng/L**
2,4'-DDE	<0.060
4,4'-DDE	<0.079
2,4'-DDD	<0.10
4,4'-DDD	<0.082
2,4'-DDT	<0.077
4,4'-DDT	<0.31
Extraction Standards	**% Rec**
4,4'-DDE, 13C12-	62
4,4'-DDD, 13C12-	82
4,4'-DDT, 13C12-	92

ALS Life sciences

Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG2857431-1	WG2857431-2
Sample Size	1.00	1.00
Sample size units	L	L
Percent Solid	n/a	n/a
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	23-Aug-18	23-Aug-18
Target Analytes	**ng/L**	**% Rec**
2,4'-DDE	<0.044	121
4,4'-DDE	<0.059	100
2,4'-DDD	<0.077	101
4,4'-DDD	<0.067	101
2,4'-DDT	<0.064	90
4,4'-DDT	<0.28	101
Extraction Standards	**% Rec**	**% Rec**
4,4'-DDE, 13C12-	76	57
4,4'-DDD, 13C12-	90	90
4,4'-DDT, 13C12-	104	90

ALS Life sciences

Continuing Calibration Summary Report

Sample Name	CVS	CCV	CCV
ALS Sample ID	H6-18-RS1-079	H6-18-CCV-01013	H6-18-CCV-1015
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		101	102
4,4'-DDE	95	100	103
2,4'-DDD		99	102
4,4'-DDD	96	98	103
2,4'-DDT		101	99
4,4'-DDT	94	100	100
Extraction Standards	**% Rec**	**% Rec**	**% Rec**
4,4'-DDE, 13C12-	98	94	102
4,4'-DDD, 13C12-	105	102	105
4,4'-DDT, 13C12-	123	117	114

ALS Life sciences

Sample Analysis summary Report

Sample Name	PDI-SC-S157-6TO8	PDI-SC-S157-6TO8 Duplicate	PDI-SC-S263-0TO2	PDI-SC-S263-2TO3.8	PDI-SC-S263-3.8TO5.9	PDI-SC-S108-6.7TO8.8D
ALS Sample ID	L2150263-17	WG2859059-4	L2150263-19	L2150263-20	L2150263-21	L2150263-22
Sample Size	7.26	7.22	6.93	6.70	6.36	6.86
Sample size units	g	g	g	g	g	g
Percent Solid	70.8%	71.0%	68.0%	65.6%	63.5%	67.9%
Sample Matrix	Sediment	QC	Sediment	Sediment	Sediment	Sediment
Sampling Date	17-Aug-18	n/a	16-Aug-18	16-Aug-18	16-Aug-18	16-Aug-18
Extraction Date	31-Aug-18	31-Aug-18	31-Aug-18	31-Aug-18	31-Aug-18	31-Aug-18
Target Analytes	**ng/g**	**ng/g**	**ng/g**	**ng/g**	**ng/g**	**ng/g**
2,4'-DDE	<0.012	<0.0078	0.0233	0.0467	0.0929	<0.021
4,4'-DDE	0.0434	<0.018	0.518	1.36	2.40	0.151
2,4'-DDD	<0.018	0.0387	0.108	0.240	0.656	0.408
4,4'-DDD	<0.085	0.0479	0.344	1.01	2.02	0.818
2,4'-DDT	<0.027	<0.020	<0.054	<0.027	<0.095	<0.031
4,4'-DDT	0.0835	<0.033	0.193	0.151	0.286	0.204
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
4,4'-DDE, 13C12-	88	91	93	91	101	62
4,4'-DDD, 13C12-	71	72	68	67	77	91
4,4'-DDT, 13C12-	65	66	53	55	58	94

ALS Life sciences

Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG2859059-1	WG2859059-2
Sample Size	6.89	1.00
Sample size units	g	g
Percent Solid	100.0%	49.7%
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	31-Aug-18	31-Aug-18
Target Analytes	**ng/g**	**% Rec**
2,4'-DDE	<0.0059	96
4,4'-DDE	<0.011	91
2,4'-DDD	<0.0095	106
4,4'-DDD	<0.032	95
2,4'-DDT	<0.015	100
4,4'-DDT	0.0399	91
Extraction Standards	**% Rec**	**% Rec**
4,4'-DDE, 13C12-	85	86
4,4'-DDD, 13C12-	73	70
4,4'-DDT, 13C12-	66	67

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Continuing Calibration Summary Report

Sample Name	CVS	CCV	CCV	CVS	CCV	CCV
ALS Sample ID	H6-18-RS1-078	H6-18-CCV-01008	H6-18-CCV-01010	H6-18-RS1-079	H6-18-CCV-01013	H6-18-CCV-1015
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		101	103		101	102
4,4'-DDE	95	101	103	95	100	103
2,4'-DDD		100	104		99	102
4,4'-DDD	98	99	107	96	98	103
2,4'-DDT		101	104		101	99
4,4'-DDT	94	100	105	94	100	100
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
4,4'-DDE, 13C12-	104	102	105	98	94	102
4,4'-DDD, 13C12-	104	106	103	105	102	105
4,4'-DDT, 13C12-	110	110	97	123	117	114

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Sample Analysis summary Report

Sample Name	PDI-SC-S157-12.4TO14
ALS Sample ID	L2150263-18
Sample Size	7.60
Sample size units	g
Percent Solid	75.6%
Sample Matrix	Sediment
Sampling Date	17-Aug-18
Extraction Date	6-Sep-18

Target Analytes	ng/g
2,4'-DDE	<0.015
4,4'-DDE	<0.019
2,4'-DDD	<0.023
4,4'-DDD	<0.029
2,4'-DDT	<0.023
4,4'-DDT	<0.040
Extraction Standards	**% Rec**
4,4'-DDE, 13C12-	79
4,4'-DDD, 13C12-	82
4,4'-DDT, 13C12-	95

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Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG2868044-1	WG2868044-2
Sample Size	7.60	1.00
Sample size units	g	g
Percent Solid	100.0%	49.7%
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	6-Sep-18	6-Sep-18
Target Analytes	**ng/g**	**% Rec**
2,4'-DDE	<0.021	99
4,4'-DDE	<0.028	90
2,4'-DDD	<0.037	102
4,4'-DDD	<0.040	93
2,4'-DDT	<0.038	95
4,4'-DDT	<0.066	95
Extraction Standards	**% Rec**	**% Rec**
4,4'-DDE, 13C12-	85	79
4,4'-DDD, 13C12-	85	82
4,4'-DDT, 13C12-	91	88

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Continuing Calibration Summary Report

Sample Name	CVS	CCV	CCV
ALS Sample ID	H6-18-RS1-079	H6-18-CCV-01013	H6-18-CCV-1015
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		101	102
4,4'-DDE	95	100	103
2,4'-DDD		99	102
4,4'-DDD	96	98	103
2,4'-DDT		101	99
4,4'-DDT	94	100	100
Extraction Standards	**% Rec**	**% Rec**	**% Rec**
4,4'-DDE, 13C12-	98	94	102
4,4'-DDD, 13C12-	105	102	105
4,4'-DDT, 13C12-	123	117	114

Sample Analysis Report

Sample Name	**PDI-SC-S108-8.8TO9.8**	Sampling Date	16-Aug-18		
ALS Sample ID	L2150263-1	Extraction Date	30-Aug-18		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	7.13	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Solid	70.9%		--e-signature--
Sample Matrix	Sediment	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913B14
Run Date	13-Sep-18 21:51
Final Volume	1000 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	<0.030	0.030	U		1.4
4,4'-DDE	11.38	0.135	0.041	J		1.4
2,4'-DDD	11.55	0.311	0.036	J,B		1.4
4,4'-DDD	12.06	0.606	0.051	M,J,B		1.4
2,4'-DDT	NotFnd	<0.051	0.051	U		1.4
4,4'-DDT	12.56	0.426	0.093	M,J,B		1.4

Extraction Standards	**ng**			
4,4'-DDE, 13C12-	125	11.37	63	21-125
4,4'-DDD, 13C12-	125	12.06	57	5-150
4,4'-DDT, 13C12-	125	12.55	49	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

Sample Analysis Report

Sample Name	**Duplicate of PDI-SC-S108-8.8TO9.8**	Sampling Date	n/a		
ALS Sample ID	WG2856797-4	Extraction Date	30-Aug-18		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	7.16	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Solid	71.4%		--e-signature--
Sample Matrix	QC	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913B15
Run Date	13-Sep-18 22:11
Final Volume	1000 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	10.84	0.0480	0.017	J,B		1.4
4,4'-DDE	11.37	0.189	0.023	J		1.4
2,4'-DDD	11.55	0.610	0.020	J,B		1.4
4,4'-DDD	12.06	1.18	0.030	J,B		1.4
2,4'-DDT	12.11	0.273	0.029	J		1.4
4,4'-DDT	12.55	0.710	0.051	J,B		1.4

Extraction Standards	**ng**			
4,4'-DDE, 13C12-	125	11.37	84	21-125
4,4'-DDD, 13C12-	125	12.05	70	5-150
4,4'-DDT, 13C12-	125	12.55	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.
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

Sample Analysis Report

Sample Name	**PDI-SC-S108-6.7TO8.8**	Sampling Date	16-Aug-18		
ALS Sample ID	L2150263-2	Extraction Date	30-Aug-18		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	6.85	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Solid	67.9%		--e-signature--
Sample Matrix	Sediment	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913B16
Run Date	13-Sep-18 22:31
Final Volume	1000 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	<0.18	0.18	U		1.5
4,4'-DDE		NotFnd	<0.24	0.24	U		1.5
2,4'-DDD		11.55	<0.71	0.21	J,R	0.71	1.5
4,4'-DDD		12.06	1.39	0.14	M,J		1.5
2,4'-DDT		NotFnd	<0.14	0.14	U		1.5
4,4'-DDT		12.56	1.34	0.39	J,B		1.5
Extraction Standards	**ng**						
4,4'-DDE, 13C12-	125	11.37	9	21-125			
4,4'-DDD, 13C12-	125	12.05	19	5-150			
4,4'-DDT, 13C12-	125	12.55	10	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

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Sample Analysis Report

Sample Name	**PDI-SC-S108-4.7TO6.7**	Sampling Date	16-Aug-18		
ALS Sample ID	L2150263-3	Extraction Date	30-Aug-18		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	4.94	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Solid	49.2%		--e-signature--
Sample Matrix	Sediment	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913B17
Run Date	13-Sep-18 22:51
Final Volume	1000 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		10.85	1.08	0.21	M,J		2.0
4,4'-DDE		11.38	4.13	0.28			2.0
2,4'-DDD		11.55	19.7	0.31			2.0
4,4'-DDD		12.06	36.0	0.14			2.0
2,4'-DDT		12.10	<2.1	0.14	R	2.1	2.0
4,4'-DDT		12.56	9.23	0.42			2.0
Extraction Standards	**ng**						
4,4'-DDE, 13C12-	125	11.37	8	21-125			
4,4'-DDD, 13C12-	125	12.05	22	5-150			
4,4'-DDT, 13C12-	125	12.55	11	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

Sample Analysis Report

Sample Name	**PDI-SC-S108-3TO4.7**	Sampling Date	16-Aug-18		
ALS Sample ID	L2150263-4	Extraction Date	8/30/2018		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	4.18	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Solid	40.8%		--e-signature--
Sample Matrix	Sediment	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913B18
Run Date	13-Sep-18 23:11
Final Volume	1000 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		10.84	0.466	0.019	J		2.4
4,4'-DDE		11.38	5.46	0.025			2.4
2,4'-DDD		11.55	10.3	0.022			2.4
4,4'-DDD		12.06	31.8	0.034			2.4
2,4'-DDT		12.11	<0.74	0.033	J,R	0.74	2.4
4,4'-DDT		12.56	13.9	0.067			2.4
Extraction Standards	**ng**						
4,4'-DDE, 13C12-	125	11.37	91	21-125			
4,4'-DDD, 13C12-	125	12.05	73	5-150			
4,4'-DDT, 13C12-	125	12.55	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.
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

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Sample Analysis Report

Sample Name	**PDI-SC-S108-1.9TO3**	Sampling Date	16-Aug-18		
ALS Sample ID	L2150263-5	Extraction Date	8/30/2018		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	4.46	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Solid	43.7%		--e-signature--
Sample Matrix	Sediment	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913B19
Run Date	13-Sep-18 23:32
Final Volume	1000 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		10.85	0.687	0.19	J		2.2
4,4'-DDE		11.38	4.54	0.26			2.2
2,4'-DDD		11.55	4.95	0.22			2.2
4,4'-DDD		12.06	13.5	0.097			2.2
2,4'-DDT		12.12	1.67	0.097	J		2.2
4,4'-DDT		12.56	27.5	0.33			2.2
Extraction Standards	**ng**						
4,4'-DDE, 13C12-	125	11.37	9	21-125			
4,4'-DDD, 13C12-	125	12.05	26	5-150			
4,4'-DDT, 13C12-	125	12.55	12	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.
U	Indicates that this compound was not detected above the EDL.
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

Sample Analysis Report

Sample Name	**PDI-SC-S108-0TO1.9**	Sampling Date	16-Aug-18		
ALS Sample ID	L2150263-6	Extraction Date	8/30/2018		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	6.08	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Solid	59.7%		--e-signature--
Sample Matrix	Sediment	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913B20
Run Date	13-Sep-18 23:52
Final Volume	1000 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	10.86	0.254	0.077	J		1.6
4,4'-DDE	11.38	2.14	0.10			1.6
2,4'-DDD	11.56	1.58	0.082	J		1.6
4,4'-DDD	12.07	4.80	0.041			1.6
2,4'-DDT	12.12	1.74	0.040			1.6
4,4'-DDT	12.57	71.8	0.11			1.6

Extraction Standards	**ng**			
4,4'-DDE, 13C12-	125	11.38	15	21-125
4,4'-DDD, 13C12-	125	12.06	38	5-150
4,4'-DDT, 13C12-	125	12.56	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.
U	Indicates that this compound was not detected above the EDL.
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

Sample Analysis Report

Sample Name	**PDI-SC-S232-4TO6.2**	Sampling Date	16-Aug-18		
ALS Sample ID	L2150263-7	Extraction Date	8/30/2018		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	6.57	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Solid	65.3%		--e-signature--
Sample Matrix	Sediment	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913B21
Run Date	14-Sep-18 00:12
Final Volume	1000 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		10.84	0.211	0.020	J		1.5
4,4'-DDE		11.37	2.18	0.027			1.5
2,4'-DDD		11.54	2.20	0.023			1.5
4,4'-DDD		12.05	7.80	0.032	M		1.5
2,4'-DDT		12.10	<0.15	0.032	M,J,R	0.15	1.5
4,4'-DDT		12.55	0.204	0.059	J,B		1.5
Extraction Standards	**ng**						
4,4'-DDE, 13C12-	125	11.36	81	21-125			
4,4'-DDD, 13C12-	125	12.05	66	5-150			
4,4'-DDT, 13C12-	125	12.55	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.
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

Sample Analysis Report

Sample Name	**PDI-SC-S232-2TO4**	Sampling Date	16-Aug-18		
ALS Sample ID	L2150263-8	Extraction Date	8/30/2018		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	5.82	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Solid	57.4%		--e-signature--
Sample Matrix	Sediment	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913B22
Run Date	14-Sep-18 00:32
Final Volume	1000 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	10.85	0.472	0.025	J		1.7
4,4'-DDE	11.38	7.56	0.034			1.7
2,4'-DDD	11.55	1.97	0.030			1.7
4,4'-DDD	12.06	6.47	0.048			1.7
2,4'-DDT	NotFnd	<0.047	0.047	U		1.7
4,4'-DDT	12.56	0.408	0.093	J,B		1.7

Extraction Standards	**ng**			
4,4'-DDE, 13C12-	125	11.37	93	21-125
4,4'-DDD, 13C12-	125	12.06	71	5-150
4,4'-DDT, 13C12-	125	12.56	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.
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

Sample Analysis Report

Sample Name	**PDI-SC-S232-0TO2**	Sampling Date	16-Aug-18		
ALS Sample ID	L2150263-9	Extraction Date	8/30/2018		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	5.63	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Solid	55.7%		--e-signature--
Sample Matrix	Sediment	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913B23
Run Date	14-Sep-18 00:52
Final Volume	1000 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	10.85	1.25	0.084	J		1.8
4,4'-DDE	11.38	15.7	0.11			1.8
2,4'-DDD	11.55	2.66	0.093			1.8
4,4'-DDD	12.07	9.60	0.059	M		1.8
2,4'-DDT	NotFnd	<0.058	0.058	U		1.8
4,4'-DDT	12.56	<0.41	0.16	J,R	0.41	1.8

Extraction Standards	**ng**			
4,4'-DDE, 13C12-	125	11.38	20	21-125
4,4'-DDD, 13C12-	125	12.06	37	5-150
4,4'-DDT, 13C12-	125	12.56	22	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

Sample Analysis Report

Sample Name	**PDI-RB-SS-180817**	Sampling Date	17-Aug-18		
ALS Sample ID	L2150263-10	Extraction Date	23-Aug-18		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	1.00	L	*R. Bakhtiari*
Analysis Type	Sample	Percent Solid	n/a		--e-signature--
Sample Matrix	Water	Split Ratio	1		18-Sep-2018

Run Information	**Run 1**
Filename	6-180917A23
Run Date	17-Sep-18 19:29
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	ng/L
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes		**Ret. Time**	**Conc. ng/L**	**EDL ng/L**	**Flags**	**EMPC ng/L**	**LQL**
2,4'-DDE		NotFnd	<0.060	0.060	U		2.0
4,4'-DDE		NotFnd	<0.079	0.079	U		2.0
2,4'-DDD		NotFnd	<0.10	0.10	U		2.0
4,4'-DDD		12.05	<0.082	0.080	M,J,R	0.082	2.0
2,4'-DDT		NotFnd	<0.077	0.077	U		2.0
4,4'-DDT		12.55	<0.31	0.13	M,J,R	0.31	2.0
Extraction Standards	**ng**						
4,4'-DDE, 13C12-	125	11.37	62	21-125			
4,4'-DDD, 13C12-	125	12.05	82	5-150			
4,4'-DDT, 13C12-	125	12.55	92	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

Sample Analysis Report

Sample Name	**PDI-SC-S157-0TO2**	Sampling Date	17-Aug-18		
ALS Sample ID	L2150263-11	Extraction Date	8/30/2018		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	4.80	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Solid	47.3%		--e-signature--
Sample Matrix	Sediment	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913B24
Run Date	14-Sep-18 01:12
Final Volume	1000 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	10.84	<0.24	0.16	M,J,R	0.24	2.1
4,4'-DDE	11.37	2.33	0.21	M		2.1
2,4'-DDD	11.55	1.67	0.17	J		2.1
4,4'-DDD	12.06	2.61	0.12			2.1
2,4'-DDT	NotFnd	<0.12	0.12	U		2.1
4,4'-DDT	NotFnd	<0.31	0.31	U		2.1

Extraction Standards	**ng**			
4,4'-DDE, 13C12-	125	11.37	12	21-125
4,4'-DDD, 13C12-	125	12.05	20	5-150
4,4'-DDT, 13C12-	125	12.55	12	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

Sample Analysis Report

Sample Name	**PDI-SC-S157-3.7TO6**	Sampling Date	17-Aug-18		
ALS Sample ID	L2150263-12	Extraction Date	8/30/2018		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	7.50	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Solid	74.0%		--e-signature--
Sample Matrix	Sediment	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913B25
Run Date	14-Sep-18 01:32
Final Volume	1000 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	<0.0040	0.0040	U		1.3
4,4'-DDE		11.38	0.0219	0.0054	J		1.3
2,4'-DDD		11.55	0.0494	0.0054	J,B		1.3
4,4'-DDD		12.06	0.0904	0.0074	J,B		1.3
2,4'-DDT		12.11	0.0332	0.0074	J		1.3
4,4'-DDT		12.56	2.07	0.012			1.3
Extraction Standards	**ng**						
4,4'-DDE, 13C12-	125	11.37	93	21-125			
4,4'-DDD, 13C12-	125	12.05	84	5-150			
4,4'-DDT, 13C12-	125	12.55	80	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.
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

Sample Analysis Report

Sample Name	**PDI-SC-S157-14TO15.9**	Sampling Date	17-Aug-18		
ALS Sample ID	L2150263-13	Extraction Date	8/30/2018		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	7.61	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Solid	74.3%		--e-signature--
Sample Matrix	Sediment	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913B26
Run Date	14-Sep-18 01:53
Final Volume	1000 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	<0.014	0.014	U		13
4,4'-DDE	NotFnd	<0.018	0.018	U		13
2,4'-DDD	NotFnd	<0.015	0.015	U		13
4,4'-DDD	12.06	<0.035	0.021	J,R	0.035	13
2,4'-DDT	NotFnd	<0.021	0.021	U		13
4,4'-DDT	NotFnd	<0.035	0.035	U		13

Extraction Standards	**ng**			
4,4'-DDE, 13C12-	125	11.37	79	21-125
4,4'-DDD, 13C12-	125	12.05	68	5-150
4,4'-DDT, 13C12-	125	12.55	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.
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

Sample Analysis Report

Sample Name	**PDI-SC-S157-8TO10**	Sampling Date	17-Aug-18		
ALS Sample ID	L2150263-14	Extraction Date	8/30/2018		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	7.54	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Solid	75.3%		--e-signature--
Sample Matrix	Sediment	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913B27
Run Date	14-Sep-18 02:13
Final Volume	1000 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	<0.092	0.092	U		1.3
4,4'-DDE	NotFnd	<0.12	0.12	U		1.3
2,4'-DDD	NotFnd	<0.096	0.096	U		1.3
4,4'-DDD	12.06	<0.12	0.064	J,R	0.12	1.3
2,4'-DDT	NotFnd	<0.064	0.064	U		1.3
4,4'-DDT	NotFnd	<0.16	0.16	U		1.3

Extraction Standards	**ng**			
4,4'-DDE, 13C12-	125	11.37	33	21-125
4,4'-DDD, 13C12-	125	12.06	64	5-150
4,4'-DDT, 13C12-	125	12.55	41	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.
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

Sample Analysis Report

Sample Name	**PDI-SC-S157-2TO3.7**	Sampling Date	17-Aug-18		
ALS Sample ID	L2150263-15	Extraction Date	8/30/2018		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	7.04	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Solid	68.8%		--e-signature--
Sample Matrix	Sediment	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913B28
Run Date	14-Sep-18 02:33
Final Volume	1000 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	10.84	0.191	0.077	J		14
4,4'-DDE	11.37	0.882	0.10	J		14
2,4'-DDD	11.55	2.05	0.083	J		14
4,4'-DDD	12.06	2.59	0.064	J		14
2,4'-DDT	NotFnd	<0.064	0.064	U		14
4,4'-DDT	12.56	0.662	0.16	J,B		14

Extraction Standards	**ng**			
4,4'-DDE, 13C12-	125	11.37	14	21-125
4,4'-DDD, 13C12-	125	12.05	23	5-150
4,4'-DDT, 13C12-	125	12.55	15	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.
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

Sample Analysis Report

Sample Name	**PDI-SC-S157-10TO12.4**	Sampling Date	17-Aug-18		
ALS Sample ID	L2150263-16	Extraction Date	8/30/2018		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	7.34	g	*Ella Gdyczynski*
Analysis Type	Sample	Percent Solid	72.6%		--e-signature--
Sample Matrix	Sediment	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913B29
Run Date	14-Sep-18 02:53
Final Volume	1000 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	<0.14	0.14	U		5.5
4,4'-DDE	NotFnd	<0.18	0.18	U		5.5
2,4'-DDD	NotFnd	<0.15	0.15	U		5.5
4,4'-DDD	NotFnd	<0.091	0.091	U		5.5
2,4'-DDT	NotFnd	<0.090	0.090	U		5.5
4,4'-DDT	NotFnd	<0.25	0.25	U		5.5

Extraction Standards	**ng**			
4,4'-DDE, 13C12-	125	11.38	8	21-125
4,4'-DDD, 13C12-	125	12.06	16	5-150
4,4'-DDT, 13C12-	125	12.56	9	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.
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

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Sample Analysis Report

Sample Name	**PDI-SC-S157-6TO8**	Sampling Date	17-Aug-18		
ALS Sample ID	L2150263-17	Extraction Date	31-Aug-18		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	7.26	g	*R. Bakhtiari*
Analysis Type	Sample	Percent Solid	70.8%		--e-signature--
Sample Matrix	Sediment	Split Ratio	1		18-Sep-2018

Run Information	**Run 1**
Filename	6-180914A17
Run Date	14-Sep-18 19:40
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes		**Ret. Time**	**Conc. ng/g**	**EDL ng/g**	**Flags**	**EMPC ng/g**	**LQL**
2,4'-DDE		10.84	<0.012	0.011	M,J,R	0.012	1.4
4,4'-DDE		11.38	0.0434	0.014	M,J		1.4
2,4'-DDD		NotFnd	<0.018	0.018	U		1.4
4,4'-DDD		12.06	<0.085	0.028	M,J,R	0.085	1.4
2,4'-DDT		NotFnd	<0.027	0.027	U		1.4
4,4'-DDT		12.56	0.0835	0.042	M,J,B		1.4
Extraction Standards	**ng**						
4,4'-DDE, 13C12-	125	11.37	88	21-125			
4,4'-DDD, 13C12-	125	12.05	71	5-150			
4,4'-DDT, 13C12-	125	12.55	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.
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

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Sample Analysis Report

Sample Name	**PDI-SC-S157-6TO8 Duplicate**	Sampling Date	n/a		
ALS Sample ID	WG2859059-4	Extraction Date	31-Aug-18		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	7.22	g	*R. Bakhtiari*
Analysis Type	Sample	Percent Solid	71.0%		--e-signature--
Sample Matrix	QC	Split Ratio	1		18-Sep-2018

Run Information	**Run 1**
Filename	6-180914A18
Run Date	14-Sep-18 20:01
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	**Ret. Time**	**Conc. ng/g**	**EDL ng/g**	**Flags**	**EMPC ng/g**	**LQL**
2,4'-DDE	NotFnd	<0.0078	0.0078	U		1.4
4,4'-DDE	11.38	<0.018	0.010	M,J,R	0.018	1.4
2,4'-DDD	11.56	0.0387	0.013	M,J		1.4
4,4'-DDD	12.06	0.0479	0.021	M,J		1.4
2,4'-DDT	NotFnd	<0.020	0.020	U		1.4
4,4'-DDT	NotFnd	<0.033	0.033	U		1.4

Extraction Standards	**ng**			
4,4'-DDE, 13C12-	125	11.37	91	21-125
4,4'-DDD, 13C12-	125	12.06	72	5-150
4,4'-DDT, 13C12-	125	12.55	66	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

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Sample Analysis Report

Sample Name	**PDI-SC-S157-12.4TO14**	Sampling Date	17-Aug-18		
ALS Sample ID	L2150263-18	Extraction Date	6-Sep-18		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	7.6	g	*R. Bakhtiari*
Analysis Type	Sample	Percent Solid	75.6%		--e-signature--
Sample Matrix	Sediment	Split Ratio	1		18-Sep-2018

Run Information	**Run 1**
Filename	6-180917A24
Run Date	17-Sep-18 19:50
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes		**Ret. Time**	**Conc. ng/g**	**EDL ng/g**	**Flags**	**EMPC ng/g**	**LQL**
2,4'-DDE		NotFnd	<0.015	0.015	U		1.3
4,4'-DDE		NotFnd	<0.019	0.019	U		1.3
2,4'-DDD		NotFnd	<0.023	0.023	U		1.3
4,4'-DDD		12.06	<0.029	0.025	J,R	0.029	1.3
2,4'-DDT		NotFnd	<0.023	0.023	U		1.3
4,4'-DDT		NotFnd	<0.040	0.040	U		1.3
Extraction Standards	**ng**						
4,4'-DDE, 13C12-	125	11.37	79	21-125			
4,4'-DDD, 13C12-	125	12.06	82	5-150			
4,4'-DDT, 13C12-	125	12.56	95	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.
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

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Sample Analysis Report

Sample Name	**PDI-SC-S263-0TO2**	Sampling Date	16-Aug-18		
ALS Sample ID	L2150263-19	Extraction Date	31-Aug-18		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	6.93	g	*R. Bakhtiari*
Analysis Type	Sample	Percent Solid	68.0%		--e-signature--
Sample Matrix	Sediment	Split Ratio	1		18-Sep-2018

Run Information	**Run 1**
Filename	6-180914A19
Run Date	14-Sep-18 20:21
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes		**Ret. Time**	**Conc. ng/g**	**EDL ng/g**	**Flags**	**EMPC ng/g**	**LQL**
2,4'-DDE		10.85	0.0233	0.0078	M,J		1.4
4,4'-DDE		11.38	0.518	0.010	J		1.4
2,4'-DDD		11.55	0.108	0.012	M,J		1.4
4,4'-DDD		12.06	0.344	0.021	M,J		1.4
2,4'-DDT		12.12	<0.054	0.021	M,J,R	0.054	1.4
4,4'-DDT		12.56	0.193	0.037	J,B		1.4
Extraction Standards	**ng**						
4,4'-DDE, 13C12-	125	11.37	93	21-125			
4,4'-DDD, 13C12-	125	12.05	68	5-150			
4,4'-DDT, 13C12-	125	12.55	53	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

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Sample Analysis Report

Sample Name	**PDI-SC-S263-2TO3.8**	Sampling Date	16-Aug-18		
ALS Sample ID	L2150263-20	Extraction Date	31-Aug-18		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	6.70	g	*R. Bakhtiari*
Analysis Type	Sample	Percent Solid	65.6%		--e-signature--
Sample Matrix	Sediment	Split Ratio	1		18-Sep-2018

Run Information	**Run 1**
Filename	6-180914A20
Run Date	14-Sep-18 20:41
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes		**Ret. Time**	**Conc. ng/g**	**EDL ng/g**	**Flags**	**EMPC ng/g**	**LQL**
2,4'-DDE		10.85	0.0467	0.0098	M,J		1.5
4,4'-DDE		11.37	1.36	0.013	J		1.5
2,4'-DDD		11.54	0.240	0.017	J		1.5
4,4'-DDD		12.06	1.01	0.027	M,J		1.5
2,4'-DDT		NotFnd	<0.027	0.027	U		1.5
4,4'-DDT		12.55	0.151	0.046	M,J,B		1.5
Extraction Standards	**ng**						
4,4'-DDE, 13C12-	125	11.37	91	21-125			
4,4'-DDD, 13C12-	125	12.05	67	5-150			
4,4'-DDT, 13C12-	125	12.55	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.
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

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Sample Analysis Report

Sample Name	**PDI-SC-S263-3.8TO5.9**	Sampling Date	16-Aug-18		
ALS Sample ID	L2150263-21	Extraction Date	31-Aug-18		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	6.36	g	*R. Bakhtiari*
Analysis Type	Sample	Percent Solid	63.5%		--e-signature--
Sample Matrix	Sediment	Split Ratio	1		18-Sep-2018

Run Information	**Run 1**
Filename	6-180914A21
Run Date	14-Sep-18 21:01
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes		**Ret. Time**	**Conc. ng/g**	**EDL ng/g**	**Flags**	**EMPC ng/g**	**LQL**
2,4'-DDE		10.85	0.0929	0.0071	M,J		1.6
4,4'-DDE		11.38	2.40	0.0092			1.6
2,4'-DDD		11.55	0.656	0.013	M,J		1.6
4,4'-DDD		12.06	2.02	0.022	M		1.6
2,4'-DDT		12.12	<0.095	0.021	M,J,R	0.095	1.6
4,4'-DDT		12.56	0.286	0.040	J,B		1.6
Extraction Standards	**ng**						
4,4'-DDE, 13C12-	125	11.37	101	21-125			
4,4'-DDD, 13C12-	125	12.05	77	5-150			
4,4'-DDT, 13C12-	125	12.55	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.
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

Sample Analysis Report

Sample Name	**PDI-SC-S108-6.7TO8.8D**	Sampling Date	16-Aug-18		
ALS Sample ID	L2150263-22	Extraction Date	31-Aug-18		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	6.86	g	*R. Bakhtiari*
Analysis Type	Sample	Percent Solid	67.9%		--e-signature--
Sample Matrix	Sediment	Split Ratio	1		18-Sep-2018

Run Information	**Run 1**
Filename	6-180917A25
Run Date	17-Sep-18 20:10
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	**Ret. Time**	**Conc. ng/g**	**EDL ng/g**	**Flags**	**EMPC ng/g**	**LQL**
2,4'-DDE	NotFnd	<0.021	0.021	U		1.5
4,4'-DDE	11.38	0.151	0.027	M,J		1.5
2,4'-DDD	11.55	0.408	0.042	M,J		1.5
4,4'-DDD	12.06	0.818	0.033	M,J		1.5
2,4'-DDT	NotFnd	<0.031	0.031	U		1.5
4,4'-DDT	12.56	0.204	0.054	J,B		1.5

Extraction Standards	**ng**			
4,4'-DDE, 13C12-	125	11.37	62	21-125
4,4'-DDD, 13C12-	125	12.05	91	5-150
4,4'-DDT, 13C12-	125	12.55	94	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

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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-Oxychlordane	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				
24'-DDE	35	75-125	50-120	
44'-DDE	20	75-125	50-120	
24'-DDD	35	75-125	42-120	
44'-DDD	20	75-125	42-120	
24'-DDT	35	75-125	50-120	
44'-DDT	20	75-125	50-120	
Extraction Standards				
13C12-44'-DDE	35	70-130	21-125	21-125
13C12-44'-DDD	35	70-130	13-200	5-150
13C12-44'-DDT	35	70-130	13-200	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 that 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 CalibrationVerification:

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 that 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 that 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 =

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

  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 =

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

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 it's metabolites are the only targets.
- Where the DDT breakdown fails but endrin breakdown passes and where endrin and/or it's 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 ^{13}C labelled standard
- within +/- 0.008 RRT units of the RRT in the most recent CS4 analysis for targets with their own ^{2}H 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 Abuncance 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.

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

Where,
$A1_t + A$: 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.

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

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

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.

% Recovery = (Amount in sample)/(Amount added to sample) X 100 Equ. 9.4

c) Estimated Detection Limit

$$EDL = \frac{2.5 \times H_x \times Q_{es}}{H_{es} \times W \times RFF_{av}} \qquad \text{Equ. 9.5}$$

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

RRF_{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)

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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	6-180913A10	13-Sep-2018 03:34
CS-2	6-180913A09	13-Sep-2018 03:14
CS-3	6-180913A08	13-Sep-2018 02:54
CS-4	6-180913A07	13-Sep-2018 02:34
CS-5	6-180913A06	13-Sep-2018 02:14
CS-6	6-180913A05	13-Sep-2018 01:54

Approved: *Ella Gdyczynski*
--e-signature--
13-Sep-2018

Relative Response Factors

Target Analytes	CS-1	CS-2	CS-3	CS-4	CS-5	CS-6	Mean	% RSD
2,4'-DDE	1.196	1.228	1.115	1.239	1.264	1.203	1.208	4%
4,4'-DDE	0.876	0.882	0.813	0.879	0.904	0.850	0.867	4%
2,4'-DDD	1.065	0.994	0.933	0.959	1.003	0.918	0.979	5%
4,4'-DDD	1.036	0.902	0.840	0.864	0.920	0.862	0.904	8%
2,4'-DDT	1.023	0.997	0.918	0.966	0.948	0.917	0.962	4%
4,4'-DDT	0.973	0.821	0.765	0.802	0.794	0.771	0.821	9%
Extraction Standards								
4,4'-DDE, 13C12-	0.456	0.415	0.449	0.412	0.403	0.398	0.422	6%
4,4'-DDD, 13C12-	0.264	0.242	0.257	0.265	0.254	0.309	0.265	9%
4,4'-DDT, 13C12-	0.177	0.160	0.165	0.169	0.167	0.194	0.172	7%

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS1-077**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*Ella Gdyczynski*
6-180913A10	HRMS-6	HP5MSUSR163634H	13-Sep-2018 03:34		--e-signature--
					13-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.84	1.65	2.00	2.84E+04	1.196
4,4'-DDE	11.37	1.53	2.00	2.08E+04	0.876
2,4'-DDD	11.54	1.66	2.00	1.46E+04	1.065
4,4'-DDD	12.05	1.57	2.00	1.43E+04	1.036
2,4'-DDT	12.11	1.58	2.00	9.41E+03	1.023
4,4'-DDT	12.55	1.62	2.00	8.94E+03	0.973
Extraction Standards					
4,4'-DDE, 13C12-	11.36	1.45	250.00	2.97E+06	0.456
4,4'-DDD, 13C12-	12.05	1.51	250.00	1.72E+06	0.264
4,4'-DDT, 13C12-	12.55	1.54	250.00	1.15E+06	0.177
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.49	0.80	100.00	2.60E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS2-077**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*Ella Gdyczynski*
6-180913A09	HRMS-6	HP5MSUSR163634H	13-Sep-2018 03:14		--e-signature--
					13-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.84	1.47	7.50	1.09E+05	1.228
4,4'-DDE	11.37	1.51	7.50	7.84E+04	0.882
2,4'-DDD	11.54	1.66	7.50	5.14E+04	0.994
4,4'-DDD	12.05	1.58	7.50	4.67E+04	0.902
2,4'-DDT	12.11	1.45	7.50	3.42E+04	0.997
4,4'-DDT	12.55	1.66	7.50	2.82E+04	0.821
Extraction Standards					
4,4'-DDE, 13C12-	11.36	1.48	250.00	2.96E+06	0.415
4,4'-DDD, 13C12-	12.05	1.51	250.00	1.73E+06	0.242
4,4'-DDT, 13C12-	12.55	1.52	250.00	1.14E+06	0.160
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.49	0.78	100.00	2.86E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS3-077**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*Ella Gdyczynski*
6-180913A08	HRMS-6	HP5MSUSR163634H	13-Sep-2018 02:54		--e-signature--
					13-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.84	1.49	20.00	2.24E+05	1.115
4,4'-DDE	11.37	1.52	20.00	1.63E+05	0.813
2,4'-DDD	11.55	1.57	20.00	1.07E+05	0.933
4,4'-DDD	12.06	1.62	20.00	9.66E+04	0.840
2,4'-DDT	12.11	1.50	20.00	6.79E+04	0.918
4,4'-DDT	12.56	1.52	20.00	5.66E+04	0.765
Extraction Standards					
4,4'-DDE, 13C12-	11.37	1.44	250.00	2.51E+06	0.449
4,4'-DDD, 13C12-	12.05	1.49	250.00	1.44E+06	0.257
4,4'-DDT, 13C12-	12.55	1.51	250.00	9.25E+05	0.165
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.5	0.80	100.00	2.24E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS4-077**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*Ella Gdyczynski*
6-180913A07	HRMS-6	HP5MSUSR163634H	13-Sep-2018 02:34		--e-signature--
					13-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.85	1.49	50.00	1.03E+06	1.239
4,4'-DDE	11.38	1.51	50.00	7.32E+05	0.879
2,4'-DDD	11.55	1.55	50.00	5.14E+05	0.959
4,4'-DDD	12.06	1.57	50.00	4.63E+05	0.864
2,4'-DDT	12.12	1.57	50.00	3.29E+05	0.966
4,4'-DDT	12.56	1.58	50.00	2.73E+05	0.802
Extraction Standards					
4,4'-DDE, 13C12-	11.37	1.49	250.00	4.16E+06	0.412
4,4'-DDD, 13C12-	12.05	1.53	250.00	2.68E+06	0.265
4,4'-DDT, 13C12-	12.55	1.49	250.00	1.70E+06	0.169
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.5	0.77	100.00	4.04E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS5-077**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*Ella Gdyczynski*
6-180913A06	HRMS-6	HP5MSUSR163634H	13-Sep-2018 02:14		--e-signature--
					13-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.85	1.48	150.00	1.97E+06	1.264
4,4'-DDE	11.38	1.48	150.00	1.41E+06	0.904
2,4'-DDD	11.56	1.57	150.00	9.86E+05	1.003
4,4'-DDD	12.07	1.55	150.00	9.05E+05	0.920
2,4'-DDT	12.12	1.55	150.00	6.13E+05	0.948
4,4'-DDT	12.57	1.55	150.00	5.14E+05	0.794
Extraction Standards					
4,4'-DDE, 13C12-	11.38	1.48	250.00	2.60E+06	0.403
4,4'-DDD, 13C12-	12.06	1.51	250.00	1.64E+06	0.254
4,4'-DDT, 13C12-	12.56	1.52	250.00	1.08E+06	0.167
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.52	0.78	100.00	2.58E+06	

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Calibration Report

ALS Sample ID **H6-18-CS6-077**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*Ella Gdyczynski*
6-180913A05	HRMS-6	HP5MSUSR163634H	13-Sep-2018 01:54		--e-signature--
					13-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.84	1.48	400.00	1.13E+07	1.203
4,4'-DDE	11.37	1.49	400.00	8.02E+06	0.850
2,4'-DDD	11.55	1.52	400.00	6.71E+06	0.918
4,4'-DDD	12.06	1.53	400.00	6.30E+06	0.862
2,4'-DDT	12.12	1.52	400.00	4.21E+06	0.917
4,4'-DDT	12.56	1.55	400.00	3.54E+06	0.771
Extraction Standards					
4,4'-DDE, 13C12-	11.37	1.46	250.00	5.90E+06	0.398
4,4'-DDD, 13C12-	12.05	1.52	250.00	4.57E+06	0.309
4,4'-DDT, 13C12-	12.55	1.51	250.00	2.87E+06	0.194
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.5	0.79	100.00	5.92E+06	

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Calibration Summary Report

Calibration Level	Filename	Run Date
CS-1	6-180913B08	13-Sep-2018 19:50
CS-2	6-180913B07	13-Sep-2018 19:29
CS-3	6-180913B06	13-Sep-2018 19:09
CS-4	6-180913B05	13-Sep-2018 18:49
CS-5	6-180913B04	13-Sep-2018 18:29
CS-6	6-180913B03	13-Sep-2018 18:08

Approved: *Ella Gdyczynski*
--e-signature--
14-Sep-2018

Relative Response Factors

Target Analytes	CS-1	CS-2	CS-3	CS-4	CS-5	CS-6	Mean	% RSD
2,4'-DDE	1.173	1.181	1.072	1.160	1.236	1.181	1.167	5%
4,4'-DDE	0.865	0.915	0.820	0.876	0.907	0.858	0.874	4%
2,4'-DDD	0.964	0.980	0.828	0.868	0.982	0.904	0.921	7%
4,4'-DDD	0.979	0.914	0.806	0.871	0.916	0.854	0.890	7%
2,4'-DDT	0.926	0.922	0.820	0.833	0.973	0.911	0.898	7%
4,4'-DDT	0.944	0.831	0.684	0.761	0.816	0.777	0.802	11%
Extraction Standards								
4,4'-DDE, 13C12-	0.383	0.370	0.378	0.362	0.365	0.372	0.372	2%
4,4'-DDD, 13C12-	0.286	0.265	0.267	0.275	0.273	0.313	0.280	6%
4,4'-DDT, 13C12-	0.192	0.184	0.179	0.183	0.177	0.199	0.186	4%

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Calibration Report

ALS Sample ID **H6-18-CS1-077**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*Ella Gdyczynski*
6-180913B08	HRMS-6	HP5MSUSR163634H	13-Sep-2018 19:50		--e-signature--
					14-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.85	1.65	2.00	4.52E+04	1.173
4,4'-DDE	11.38	1.34	2.00	3.33E+04	0.865
2,4'-DDD	11.55	1.61	2.00	2.77E+04	0.964
4,4'-DDD	12.06	1.66	2.00	2.81E+04	0.979
2,4'-DDT	12.12	1.65	2.00	1.78E+04	0.926
4,4'-DDT	12.56	1.52	2.00	1.82E+04	0.944
Extraction Standards					
4,4'-DDE, 13C12-	11.37	1.49	250.00	4.81E+06	0.383
4,4'-DDD, 13C12-	12.05	1.53	250.00	3.59E+06	0.286
4,4'-DDT, 13C12-	12.55	1.52	250.00	2.41E+06	0.192
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.5	0.78	100.00	5.02E+06	

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Calibration Report

ALS Sample ID **H6-18-CS2-077**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*Ella Gdyczynski*
6-180913B07	HRMS-6	HP5MSUSR163634H	13-Sep-2018 19:29		--e-signature--
					14-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.84	1.45	7.50	1.68E+05	1.181
4,4'-DDE	11.37	1.50	7.50	1.30E+05	0.915
2,4'-DDD	11.54	1.57	7.50	1.00E+05	0.980
4,4'-DDD	12.05	1.50	7.50	9.35E+04	0.914
2,4'-DDT	12.11	1.53	7.50	6.52E+04	0.922
4,4'-DDT	12.55	1.57	7.50	5.88E+04	0.831
Extraction Standards					
4,4'-DDE, 13C12-	11.36	1.46	250.00	4.75E+06	0.370
4,4'-DDD, 13C12-	12.05	1.50	250.00	3.41E+06	0.265
4,4'-DDT, 13C12-	12.55	1.50	250.00	2.36E+06	0.184
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.49	0.77	100.00	5.14E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS3-077**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*Ella Gdyczynski*
6-180913B06	HRMS-6	HP5MSUSR163634H	13-Sep-2018 19:09		--e-signature--
					14-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.84	1.48	20.00	3.79E+05	1.072
4,4'-DDE	11.37	1.54	20.00	2.90E+05	0.820
2,4'-DDD	11.55	1.48	20.00	2.07E+05	0.828
4,4'-DDD	12.06	1.48	20.00	2.01E+05	0.806
2,4'-DDT	12.11	1.47	20.00	1.38E+05	0.820
4,4'-DDT	12.56	1.48	20.00	1.15E+05	0.684
Extraction Standards					
4,4'-DDE, 13C12-	11.37	1.46	250.00	4.42E+06	0.378
4,4'-DDD, 13C12-	12.05	1.51	250.00	3.12E+06	0.267
4,4'-DDT, 13C12-	12.55	1.52	250.00	2.10E+06	0.179
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.5	0.76	100.00	4.68E+06	

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Calibration Report

ALS Sample ID **H6-18-CS4-077**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*Ella Gdyczynski*
6-180913B05	HRMS-6	HP5MSUSR163634H	13-Sep-2018 18:49		--e-signature--
					14-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.85	1.48	50.00	1.83E+06	1.160
4,4'-DDE	11.38	1.50	50.00	1.38E+06	0.876
2,4'-DDD	11.56	1.54	50.00	1.04E+06	0.868
4,4'-DDD	12.07	1.52	50.00	1.04E+06	0.871
2,4'-DDT	12.12	1.55	50.00	6.61E+05	0.833
4,4'-DDT	12.57	1.54	50.00	6.04E+05	0.761
Extraction Standards					
4,4'-DDE, 13C12-	11.38	1.46	250.00	7.88E+06	0.362
4,4'-DDD, 13C12-	12.06	1.50	250.00	5.99E+06	0.275
4,4'-DDT, 13C12-	12.56	1.50	250.00	3.97E+06	0.183
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.52	0.76	100.00	8.70E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS5-077**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*Ella Gdyczynski*
6-180913B04	HRMS-6	HP5MSUSR163634H	13-Sep-2018 18:29		--e-signature--
					14-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.85	1.48	150.00	3.33E+06	1.236
4,4'-DDE	11.38	1.50	150.00	2.44E+06	0.907
2,4'-DDD	11.55	1.54	150.00	1.97E+06	0.982
4,4'-DDD	12.06	1.52	150.00	1.84E+06	0.916
2,4'-DDT	12.12	1.54	150.00	1.27E+06	0.973
4,4'-DDT	12.56	1.54	150.00	1.06E+06	0.816
Extraction Standards					
4,4'-DDE, 13C12-	11.37	1.49	250.00	4.49E+06	0.365
4,4'-DDD, 13C12-	12.06	1.54	250.00	3.35E+06	0.273
4,4'-DDT, 13C12-	12.56	1.50	250.00	2.18E+06	0.177
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.5	0.78	100.00	4.91E+06	

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Calibration Report

ALS Sample ID **H6-18-CS6-077**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*Ella Gdyczynski*
6-180913B03	HRMS-6	HP5MSUSR163634H	13-Sep-2018 18:08		--e-signature--
					14-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.86	1.48	400.00	1.84E+07	1.181
4,4'-DDE	11.39	1.50	400.00	1.34E+07	0.858
2,4'-DDD	11.56	1.53	400.00	1.19E+07	0.904
4,4'-DDD	12.07	1.52	400.00	1.12E+07	0.854
2,4'-DDT	12.13	1.55	400.00	7.62E+06	0.911
4,4'-DDT	12.57	1.52	400.00	6.49E+06	0.777
Extraction Standards					
4,4'-DDE, 13C12-	11.38	1.46	250.00	9.74E+06	0.372
4,4'-DDD, 13C12-	12.06	1.50	250.00	8.20E+06	0.313
4,4'-DDT, 13C12-	12.56	1.51	250.00	5.22E+06	0.199
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.52	0.77	100.00	1.05E+07	

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Calibration Summary Report

Calibration Level	Filename	Run Date
CS-1	6-180914A08	14-Sep-2018 16:37
CS-2	6-180914A07	14-Sep-2018 16:17
CS-3	6-180914A06	14-Sep-2018 15:57
CS-4	6-180914A05	14-Sep-2018 15:36
CS-5	6-180914A04	14-Sep-2018 15:16
CS-6	6-180914A03	14-Sep-2018 14:56

Approved: *R. Bakhtiari*
--e-signature--
18-Sep-2018

Relative Response Factors

Target Analytes	CS-1	CS-2	CS-3	CS-4	CS-5	CS-6	Mean	% RSD
2,4'-DDE	1.072	1.193	1.059	1.166	1.228	1.220	1.156	6%
4,4'-DDE	0.867	0.961	0.837	0.894	0.927	0.896	0.897	5%
2,4'-DDD	0.929	0.983	0.905	0.974	1.002	1.005	0.966	4%
4,4'-DDD	0.945	1.010	0.874	0.922	0.956	0.935	0.940	5%
2,4'-DDT	0.899	0.980	0.908	0.973	0.968	1.036	0.961	5%
4,4'-DDT	0.859	0.892	0.789	0.839	0.856	0.855	0.848	4%
Extraction Standards								
4,4'-DDE, 13C12-	0.478	0.458	0.459	0.444	0.437	0.443	0.453	3%
4,4'-DDD, 13C12-	0.352	0.348	0.325	0.313	0.344	0.331	0.336	4%
4,4'-DDT, 13C12-	0.271	0.257	0.244	0.224	0.250	0.227	0.246	7%

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS1-078**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*R. Bakhtiari*
6-180914A08	HRMS-6	HP5MSUSR280851H	14-Sep-2018 16:37		--e-signature--
					18-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.84	1.47	2.00	1.05E+05	1.072
4,4'-DDE	11.37	1.50	2.00	8.47E+04	0.867
2,4'-DDD	11.54	1.53	2.00	6.68E+04	0.929
4,4'-DDD	12.06	1.62	2.00	6.80E+04	0.945
2,4'-DDT	12.11	1.50	2.00	4.98E+04	0.899
4,4'-DDT	12.55	1.66	2.00	4.76E+04	0.859
Extraction Standards					
4,4'-DDE, 13C12-	11.37	1.48	250.00	1.22E+07	0.478
4,4'-DDD, 13C12-	12.05	1.51	250.00	9.00E+06	0.352
4,4'-DDT, 13C12-	12.55	1.52	250.00	6.92E+06	0.271
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.5	0.78	100.00	1.02E+07	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS2-078**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*R. Bakhtiari*
6-180914A07	HRMS-6	HP5MSUSR280851H	14-Sep-2018 16:17		--e-signature--
					18-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.85	1.50	7.50	3.90E+05	1.193
4,4'-DDE	11.38	1.51	7.50	3.14E+05	0.961
2,4'-DDD	11.55	1.63	7.50	2.44E+05	0.983
4,4'-DDD	12.06	1.56	7.50	2.50E+05	1.010
2,4'-DDT	12.12	1.55	7.50	1.80E+05	0.980
4,4'-DDT	12.56	1.59	7.50	1.64E+05	0.892
Extraction Standards					
4,4'-DDE, 13C12-	11.37	1.48	250.00	1.09E+07	0.458
4,4'-DDD, 13C12-	12.05	1.56	250.00	8.26E+06	0.348
4,4'-DDT, 13C12-	12.55	1.52	250.00	6.12E+06	0.257
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.5	0.80	100.00	9.51E+06	

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Calibration Report

ALS Sample ID **H6-18-CS3-078**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*R. Bakhtiari*
6-180914A06	HRMS-6	HP5MSUSR280851H	14-Sep-2018 15:57		--e-signature--
					18-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.85	1.49	20.00	7.74E+05	1.059
4,4'-DDE	11.38	1.52	20.00	6.12E+05	0.837
2,4'-DDD	11.55	1.56	20.00	4.68E+05	0.905
4,4'-DDD	12.07	1.52	20.00	4.52E+05	0.874
2,4'-DDT	12.12	1.53	20.00	3.52E+05	0.908
4,4'-DDT	12.56	1.54	20.00	3.06E+05	0.789
Extraction Standards					
4,4'-DDE, 13C12-	11.38	1.48	250.00	9.14E+06	0.459
4,4'-DDD, 13C12-	12.06	1.51	250.00	6.46E+06	0.325
4,4'-DDT, 13C12-	12.56	1.51	250.00	4.85E+06	0.244
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.52	0.79	100.00	7.97E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS4-078**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*R. Bakhtiari*
6-180914A05	HRMS-6	HP5MSUSR280851H	14-Sep-2018 15:36		--e-signature--
					18-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.86	1.49	50.00	1.48E+06	1.166
4,4'-DDE	11.39	1.49	50.00	1.13E+06	0.894
2,4'-DDD	11.56	1.60	50.00	8.72E+05	0.974
4,4'-DDD	12.07	1.55	50.00	8.25E+05	0.922
2,4'-DDT	12.13	1.57	50.00	6.22E+05	0.973
4,4'-DDT	12.57	1.56	50.00	5.37E+05	0.839
Extraction Standards					
4,4'-DDE, 13C12-	11.38	1.49	250.00	6.34E+06	0.444
4,4'-DDD, 13C12-	12.06	1.56	250.00	4.47E+06	0.313
4,4'-DDT, 13C12-	12.56	1.54	250.00	3.20E+06	0.224
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.52	0.78	100.00	5.71E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS5-078**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*R. Bakhtiari*
6-180914A04	HRMS-6	HP5MSUSR280851H	14-Sep-2018 15:16		--e-signature--
					18-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.85	1.49	150.00	9.45E+06	1.228
4,4'-DDE	11.38	1.51	150.00	7.13E+06	0.927
2,4'-DDD	11.55	1.55	150.00	6.07E+06	1.002
4,4'-DDD	12.06	1.56	150.00	5.79E+06	0.956
2,4'-DDT	12.12	1.55	150.00	4.26E+06	0.968
4,4'-DDT	12.56	1.56	150.00	3.77E+06	0.856
Extraction Standards					
4,4'-DDE, 13C12-	11.37	1.48	250.00	1.28E+07	0.437
4,4'-DDD, 13C12-	12.06	1.52	250.00	1.01E+07	0.344
4,4'-DDT, 13C12-	12.56	1.52	250.00	7.33E+06	0.250
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.5	0.78	100.00	1.17E+07	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS6-078**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*R. Bakhtiari*
6-180914A03	HRMS-6	HP5MSUSR280851H	14-Sep-2018 14:56		--e-signature--
					18-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.85	1.50	400.00	1.36E+07	1.220
4,4'-DDE	11.38	1.50	400.00	9.95E+06	0.896
2,4'-DDD	11.55	1.55	400.00	8.35E+06	1.005
4,4'-DDD	12.06	1.56	400.00	7.77E+06	0.935
2,4'-DDT	12.12	1.56	400.00	5.89E+06	1.036
4,4'-DDT	12.56	1.55	400.00	4.86E+06	0.855
Extraction Standards					
4,4'-DDE, 13C12-	11.37	1.47	250.00	6.94E+06	0.443
4,4'-DDD, 13C12-	12.06	1.51	250.00	5.19E+06	0.331
4,4'-DDT, 13C12-	12.56	1.54	250.00	3.55E+06	0.227
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.5	0.79	100.00	6.27E+06	

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Calibration Summary Report

Calibration Level	Filename	Run Date
CS-1	6-180917A04	17-Sep-2018 11:53
CS-2	6-180917A03	17-Sep-2018 11:37
CS-3	6-180917A08	17-Sep-2018 13:15
CS-4	6-180917A07	17-Sep-2018 12:55
CS-5	6-180917A06	17-Sep-2018 12:34
CS-6	6-180917A05	17-Sep-2018 12:17

Approved: *R. Bakhtiari*
--e-signature--
18-Sep-2018

Relative Response Factors

Target Analytes	CS-1	CS-2	CS-3	CS-4	CS-5	CS-6	Mean	% RSD
2,4'-DDE	1.235	1.290	1.164	1.299	1.338	1.329	1.276	5%
4,4'-DDE	0.910	1.023	0.894	0.976	1.003	0.974	0.963	5%
2,4'-DDD	0.988	1.082	0.982	1.045	1.080	1.058	1.039	4%
4,4'-DDD	1.019	1.073	0.940	0.976	1.011	0.986	1.001	5%
2,4'-DDT	1.048	1.066	0.928	1.083	1.105	1.069	1.050	6%
4,4'-DDT	0.931	0.952	0.828	0.875	0.907	0.888	0.897	5%
Extraction Standards								
4,4'-DDE, 13C12-	0.499	0.506	0.574	0.530	0.544	0.543	0.533	5%
4,4'-DDD, 13C12-	0.424	0.408	0.480	0.449	0.466	0.486	0.452	7%
4,4'-DDT, 13C12-	0.224	0.201	0.317	0.275	0.274	0.272	0.261	16%

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS1-079**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*R. Bakhtiari*
6-180917A04	HRMS-6	HP5MSUSR280851H	17-Sep-2018 11:53		--e-signature--
					18-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.85	1.52	2.00	4.18E+04	1.235
4,4'-DDE	11.38	1.61	2.00	3.08E+04	0.910
2,4'-DDD	11.55	1.46	2.00	2.84E+04	0.988
4,4'-DDD	12.07	1.43	2.00	2.93E+04	1.019
2,4'-DDT	12.12	1.38	2.00	1.59E+04	1.048
4,4'-DDT	12.57	1.24	2.00	1.42E+04	0.931
Extraction Standards					
4,4'-DDE, 13C12-	11.38	1.53	250.00	4.23E+06	0.499
4,4'-DDD, 13C12-	12.06	1.55	250.00	3.59E+06	0.424
4,4'-DDT, 13C12-	12.56	1.57	250.00	1.90E+06	0.224
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.52	0.78	100.00	3.39E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS2-079**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*R. Bakhtiari*
6-180917A03	HRMS-6	HP5MSUSR280851H	17-Sep-2018 11:37		--e-signature--
					18-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.86	1.54	7.50	1.80E+05	1.290
4,4'-DDE	11.39	1.53	7.50	1.43E+05	1.023
2,4'-DDD	11.56	1.58	7.50	1.22E+05	1.082
4,4'-DDD	12.07	1.47	7.50	1.21E+05	1.073
2,4'-DDT	12.13	1.41	7.50	5.92E+04	1.066
4,4'-DDT	12.57	1.35	7.50	5.28E+04	0.952
Extraction Standards					
4,4'-DDE, 13C12-	11.38	1.53	250.00	4.65E+06	0.506
4,4'-DDD, 13C12-	12.06	1.57	250.00	3.75E+06	0.408
4,4'-DDT, 13C12-	12.56	1.53	250.00	1.85E+06	0.201
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.52	0.80	100.00	3.68E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS3-079**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*R. Bakhtiari*
6-180917A08	HRMS-6	HP5MSUSR280851H	17-Sep-2018 13:15		--e-signature--
					18-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.84	1.53	20.00	5.03E+05	1.164
4,4'-DDE	11.37	1.58	20.00	3.87E+05	0.894
2,4'-DDD	11.54	1.58	20.00	3.56E+05	0.982
4,4'-DDD	12.06	1.64	20.00	3.40E+05	0.940
2,4'-DDT	12.11	1.41	20.00	2.21E+05	0.928
4,4'-DDT	12.55	1.56	20.00	1.98E+05	0.828
Extraction Standards					
4,4'-DDE, 13C12-	11.37	1.52	250.00	5.41E+06	0.574
4,4'-DDD, 13C12-	12.05	1.55	250.00	4.53E+06	0.480
4,4'-DDT, 13C12-	12.55	1.56	250.00	2.98E+06	0.317
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.5	0.77	100.00	3.77E+06	

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Calibration Report

ALS Sample ID **H6-18-CS4-079**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*R. Bakhtiari*
6-180917A07	HRMS-6	HP5MSUSR280851H	17-Sep-2018 12:55		--e-signature--
					18-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.85	1.53	50.00	1.37E+06	1.299
4,4'-DDE	11.38	1.55	50.00	1.03E+06	0.976
2,4'-DDD	11.55	1.58	50.00	9.35E+05	1.045
4,4'-DDD	12.07	1.57	50.00	8.74E+05	0.976
2,4'-DDT	12.12	1.53	50.00	5.94E+05	1.083
4,4'-DDT	12.56	1.59	50.00	4.80E+05	0.875
Extraction Standards					
4,4'-DDE, 13C12-	11.38	1.51	250.00	5.29E+06	0.530
4,4'-DDD, 13C12-	12.06	1.54	250.00	4.48E+06	0.449
4,4'-DDT, 13C12-	12.56	1.59	250.00	2.74E+06	0.275
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.5	0.78	100.00	3.99E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS5-079**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*R. Bakhtiari*
6-180917A06	HRMS-6	HP5MSUSR280851H	17-Sep-2018 12:34		--e-signature--
					18-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.85	1.53	150.00	4.21E+06	1.338
4,4'-DDE	11.38	1.51	150.00	3.15E+06	1.003
2,4'-DDD	11.55	1.56	150.00	2.91E+06	1.080
4,4'-DDD	12.06	1.57	150.00	2.73E+06	1.011
2,4'-DDT	12.12	1.55	150.00	1.75E+06	1.105
4,4'-DDT	12.56	1.57	150.00	1.44E+06	0.907
Extraction Standards					
4,4'-DDE, 13C12-	11.37	1.51	250.00	5.24E+06	0.544
4,4'-DDD, 13C12-	12.06	1.51	250.00	4.49E+06	0.466
4,4'-DDT, 13C12-	12.55	1.53	250.00	2.64E+06	0.274
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.5	0.83	100.00	3.86E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS6-079**
Analysis Method EPA 1699 (mod)
Analysis Type Calibration

Filename	Inst #	Column	Run Date	Approved:	*R. Bakhtiari*
6-180917A05	HRMS-6	HP5MSUSR280851H	17-Sep-2018 12:17		--e-signature--
					18-Sep-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng/mL	Response	RRF
2,4'-DDE	10.85	1.51	400.00	1.25E+07	1.329
4,4'-DDE	11.38	1.52	400.00	9.15E+06	0.974
2,4'-DDD	11.55	1.58	400.00	8.88E+06	1.058
4,4'-DDD	12.06	1.59	400.00	8.28E+06	0.986
2,4'-DDT	12.12	1.61	400.00	5.03E+06	1.069
4,4'-DDT	12.56	1.57	400.00	4.18E+06	0.888
Extraction Standards					
4,4'-DDE, 13C12-	11.37	1.52	250.00	5.87E+06	0.543
4,4'-DDD, 13C12-	12.05	1.56	250.00	5.25E+06	0.486
4,4'-DDT, 13C12-	12.55	1.54	250.00	2.94E+06	0.272
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.5	0.79	100.00	4.32E+06	

Second Source Calibration Verification Report

Sample Name	**CCV**	Sampling Date	n/a		
ALS Sample ID	H6-18-RS1-077	Extraction Date	n/a		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a	*Ella Gdyczynski*
Analysis Type	CCV	Percent Solid	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913A11
Run Date	13-Sep-18 03:54
Final Volume	1000 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	**ng/mL**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,4'-DDE	0				
4,4'-DDE	150	11.37	94	75-125	M
2,4'-DDD	0				
4,4'-DDD	150	12.06	94	75-125	
2,4'-DDT	0				
4,4'-DDT	150	12.56	91	75-125	
Extraction Standards	**ng/mL**				
4,4'-DDE, 13C12-	250	11.37	100	70-130	
4,4'-DDD, 13C12-	250	12.05	101	70-130	
4,4'-DDT, 13C12-	250	12.55	103	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-0922	Extraction Date	n/a		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a	*Ella Gdyczynski*
Analysis Type	CCV	Percent Solid	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913A12
Run Date	13-Sep-18 04:16
Final Volume	1000 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	**ng/mL**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,4'-DDE	50	10.85	100	75-125	
4,4'-DDE	50	11.38	100	75-125	
2,4'-DDD	50	11.55	100	75-125	
4,4'-DDD	50	12.06	101	75-125	
2,4'-DDT	50	12.12	100	75-125	
4,4'-DDT	50	12.56	97	75-125	
Extraction Standards	**ng/mL**				
4,4'-DDE, 13C12-	250	11.37	102	70-130	
4,4'-DDD, 13C12-	250	12.05	101	70-130	
4,4'-DDT, 13C12-	250	12.55	104	70-130	

Continuing Calibration Report

Sample Name	**CCV**	Sampling Date	n/a		
ALS Sample ID	H6-18-CCV-0924	Extraction Date	n/a		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a	*Ella Gdyczynski*
Analysis Type	CCV	Percent Solid	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913A39
Run Date	13-Sep-18 13:29
Final Volume	1000 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	**ng/mL**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,4'-DDE	50	10.84	100	75-125	
4,4'-DDE	50	11.37	103	75-125	
2,4'-DDD	50	11.54	101	75-125	
4,4'-DDD	50	12.06	102	75-125	
2,4'-DDT	50	12.11	103	75-125	
4,4'-DDT	50	12.56	100	75-125	
Extraction Standards	**ng/mL**				
4,4'-DDE, 13C12-	250	11.37	110	70-130	
4,4'-DDD, 13C12-	250	12.05	103	70-130	
4,4'-DDT, 13C12-	250	12.55	96	70-130	

Second Source Calibration Verification Report

Sample Name	**CCV**	Sampling Date	n/a		
ALS Sample ID	H6-18-RS1-075	Extraction Date	n/a		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a	*Ella Gdyczynski*
Analysis Type	CCV	Percent Solid	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913B09
Run Date	13-Sep-18 20:10
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	**ng/mL**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,4'-DDE	0				
4,4'-DDE	150	11.37	96	75-125	
2,4'-DDD	0				
4,4'-DDD	150	12.05	97	75-125	
2,4'-DDT	0				
4,4'-DDT	150	12.55	94	75-125	
Extraction Standards	**ng/mL**				
4,4'-DDE, 13C12-	250	11.36	101	70-130	
4,4'-DDD, 13C12-	250	12.05	109	70-130	
4,4'-DDT, 13C12-	250	12.55	118	70-130	

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Continuing Calibration Report

Sample Name	**CCV**	Sampling Date	n/a		
ALS Sample ID	H6-18-CCV-0104	Extraction Date	n/a		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a	*Ella Gdyczynski*
Analysis Type	CCV	Percent Solid	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913B10
Run Date	13-Sep-18 20:32
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	**ng/mL**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,4'-DDE	50	10.84	101	75-125	
4,4'-DDE	50	11.37	101	75-125	
2,4'-DDD	50	11.54	97	75-125	
4,4'-DDD	50	12.05	98	75-125	
2,4'-DDT	50	12.11	101	75-125	
4,4'-DDT	50	12.55	100	75-125	
Extraction Standards	**ng/mL**				
4,4'-DDE, 13C12-	250	11.36	103	70-130	
4,4'-DDD, 13C12-	250	12.05	113	70-130	
4,4'-DDT, 13C12-	250	12.55	120	70-130	

ALS Life sciences

Continuing Calibration Report

Sample Name	**CCV**	Sampling Date	n/a		
ALS Sample ID	H6-18-CCV-0106	Extraction Date	n/a		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a	*Ella Gdyczynski*
Analysis Type	CCV	Percent Solid	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913B31
Run Date	00-Jan-00 00:00
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	**ng/mL**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,4'-DDE	50	10.84	105	75-125	
4,4'-DDE	50	11.38	105	75-125	
2,4'-DDD	50	11.55	100	75-125	
4,4'-DDD	50	12.06	104	75-125	
2,4'-DDT	50	12.12	100	75-125	
4,4'-DDT	50	12.56	105	75-125	
Extraction Standards	**ng/mL**				
4,4'-DDE, 13C12-	250	11.37	110	70-130	
4,4'-DDD, 13C12-	250	12.05	124	70-130	
4,4'-DDT, 13C12-	250	12.55	134	70-130	

ALS Life sciences

Second Source Calibration Verification Report

Sample Name	**CVS**	Sampling Date	n/a		
ALS Sample ID	H6-18-RS1-079	Extraction Date	n/a		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a	*R. Bakhtiari*
Analysis Type	CCV	Percent Solid	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	1		18-Sep-2018

Run Information	**Run 1**
Filename	6-180917A09
Run Date	17-Sep-18 13:35
Final Volume	1000 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	**ng/mL**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,4'-DDE	0				
4,4'-DDE	150	11.38	95	75-125	
2,4'-DDD	0				
4,4'-DDD	150	12.06	96	75-125	
2,4'-DDT	0				
4,4'-DDT	150	12.56	94	75-125	
Extraction Standards	**ng/mL**				
4,4'-DDE, 13C12-	250	11.37	98	70-130	
4,4'-DDD, 13C12-	250	12.06	105	70-130	
4,4'-DDT, 13C12-	250	12.56	123	70-130	

Continuing Calibration Report

Sample Name	**CCV**	Sampling Date	n/a		
ALS Sample ID	H6-18-CCV-01013	Extraction Date	n/a		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a	*R. Bakhtiari*
Analysis Type	CCV	Percent Solid	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	1		18-Sep-2018

Run Information	**Run 1**
Filename	6-180917A12
Run Date	17-Sep-18 15:32
Final Volume	1000 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	**ng/mL**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,4'-DDE	50	10.86	101	75-125	
4,4'-DDE	50	11.39	100	75-125	
2,4'-DDD	50	11.56	99	75-125	
4,4'-DDD	50	12.07	98	75-125	
2,4'-DDT	50	12.13	101	75-125	
4,4'-DDT	50	12.57	100	75-125	
Extraction Standards	**ng/mL**				
4,4'-DDE, 13C12-	250	11.38	94	70-130	
4,4'-DDD, 13C12-	250	12.06	102	70-130	
4,4'-DDT, 13C12-	250	12.56	117	70-130	

Continuing Calibration Report

Sample Name	**CCV**	Sampling Date	n/a		
ALS Sample ID	H6-18-CCV-1015	Extraction Date	n/a		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a	*R. Bakhtiari*
Analysis Type	CCV	Percent Solid	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	1		18-Sep-2018

Run Information	**Run 1**
Filename	6-180917A29
Run Date	17-Sep-18 21:31
Final Volume	1000 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	**ng/mL**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,4'-DDE	50	10.84	102	75-125	
4,4'-DDE	50	11.37	103	75-125	
2,4'-DDD	50	11.55	102	75-125	
4,4'-DDD	50	12.06	103	75-125	
2,4'-DDT	50	12.11	99	75-125	
4,4'-DDT	50	12.56	100	75-125	
Extraction Standards	**ng/mL**				
4,4'-DDE, 13C12-	250	11.37	102	70-130	
4,4'-DDD, 13C12-	250	12.05	105	70-130	
4,4'-DDT, 13C12-	250	12.55	114	70-130	

Second Source Calibration Verification Report

Sample Name	**CVS**	Sampling Date	n/a		
ALS Sample ID	H6-18-RS1-078	Extraction Date	n/a		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a	*R. Bakhtiari*
Analysis Type	CCV	Percent Solid	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	1		18-Sep-2018

Run Information	**Run 1**
Filename	6-180914A09
Run Date	14-Sep-18 16:58
Final Volume	1000 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	**ng/mL**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,4'-DDE	0				
4,4'-DDE	150	11.38	95	75-125	
2,4'-DDD	0				
4,4'-DDD	150	12.07	98	75-125	
2,4'-DDT	0				
4,4'-DDT	150	12.57	94	75-125	
Extraction Standards	**ng/mL**				
4,4'-DDE, 13C12-	250	11.38	104	70-130	
4,4'-DDD, 13C12-	250	12.06	104	70-130	
4,4'-DDT, 13C12-	250	12.56	110	70-130	

Continuing Calibration Report

Sample Name	**CCV**	Sampling Date	n/a		
ALS Sample ID	H6-18-CCV-01008	Extraction Date	n/a		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a	*R. Bakhtiari*
Analysis Type	CCV	Percent Solid	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	1		18-Sep-2018

Run Information	**Run 1**
Filename	6-180914A10
Run Date	14-Sep-18 17:20
Final Volume	1000 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	**ng/mL**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,4'-DDE	50	10.86	101	75-125	
4,4'-DDE	50	11.39	101	75-125	
2,4'-DDD	50	11.56	100	75-125	
4,4'-DDD	50	12.07	99	75-125	
2,4'-DDT	50	12.13	101	75-125	
4,4'-DDT	50	12.57	100	75-125	
Extraction Standards	**ng/mL**				
4,4'-DDE, 13C12-	250	11.38	102	70-130	
4,4'-DDD, 13C12-	250	12.06	106	70-130	
4,4'-DDT, 13C12-	250	12.56	110	70-130	

Continuing Calibration Report

Sample Name	**CCV**	Sampling Date	n/a		
ALS Sample ID	H6-18-CCV-01010	Extraction Date	n/a		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a	*R. Bakhtiari*
Analysis Type	CCV	Percent Solid	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	1		18-Sep-2018

Run Information	**Run 1**
Filename	6-180914A24
Run Date	14-Sep-18 22:02
Final Volume	1000 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	**ng/mL**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,4'-DDE	50	10.85	103	75-125	
4,4'-DDE	50	11.38	103	75-125	
2,4'-DDD	50	11.56	104	75-125	
4,4'-DDD	50	12.07	107	75-125	
2,4'-DDT	50	12.12	104	75-125	
4,4'-DDT	50	12.57	105	75-125	
Extraction Standards	**ng/mL**				
4,4'-DDE, 13C12-	250	11.38	105	70-130	
4,4'-DDD, 13C12-	250	12.06	103	70-130	
4,4'-DDT, 13C12-	250	12.56	97	70-130	

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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		
ALS Sample ID	WG2856797-1	Extraction Date	30-Aug-18		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	10.17	g	*Ella Gdyczynski*
Analysis Type	Blank	Percent Solid	100%		--e-signature--
Sample Matrix	QC	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913A37
Run Date	13-Sep-18 12:48
Final Volume	1000 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		10.86	0.0165	0.0059	M,J		0.98
4,4'-DDE		11.39	<0.028	0.0083	M,J,R	0.028	0.98
2,4'-DDD		11.56	0.0783	0.0071	J		0.98
4,4'-DDD		12.07	0.118	0.0077	M,J		0.98
2,4'-DDT		12.13	<0.025	0.0073	M,J,R	0.025	0.98
4,4'-DDT		12.57	0.157	0.017	J		0.98
Extraction Standards	**ng**						
4,4'-DDE, 13C12-	125	11.38	49	21-125			
4,4'-DDD, 13C12-	125	12.06	70	5-150			
4,4'-DDT, 13C12-	125	12.56	49	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

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a		
ALS Sample ID	WG2856797-2	Extraction Date	30-Aug-18		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	5	n/a	*Ella Gdyczynski*
Analysis Type	LCS	Percent Solid	50.7%		--e-signature--
Sample Matrix	QC	Split Ratio	1		14-Sep-2018

Run Information	**Run 1**
Filename	6-180913A38
Run Date	13-Sep-18 13:08
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	**ng**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,4'-DDE	25	10.84	123	50-120	
4,4'-DDE	25	11.37	96	50-120	
2,4'-DDD	25	11.54	112	42-120	
4,4'-DDD	25	12.05	106	42-120	
2,4'-DDT	25	12.11	89	50-120	
4,4'-DDT	25	12.55	116	50-120	
Extraction Standards	**ng**				
4,4'-DDE, 13C12-	125	11.36	16	21-125	
4,4'-DDD, 13C12-	125	12.05	31	13-200	
4,4'-DDT, 13C12-	125	12.55	17	13-200	

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a		
ALS Sample ID	WG2857431-1	Extraction Date	23-Aug-18		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	1	L	*R. Bakhtiari*
Analysis Type	Blank	Percent Solid	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	1		18-Sep-2018

Run Information	**Run 1**
Filename	6-180917A22
Run Date	17-Sep-18 19:09
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	ng/L
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes		**Ret. Time**	**Conc. ng/L**	**EDL ng/L**	**Flags**	**EMPC ng/L**	**LQL**
2,4'-DDE		NotFnd	<0.044	0.044	U		2.0
4,4'-DDE		NotFnd	<0.059	0.059	U		2.0
2,4'-DDD		NotFnd	<0.077	0.077	U		2.0
4,4'-DDD		NotFnd	<0.067	0.067	U		2.0
2,4'-DDT		NotFnd	<0.064	0.064	U		2.0
4,4'-DDT		12.55	<0.28	0.11	M,J,R	0.28	2.0
Extraction Standards	**ng**						
4,4'-DDE, 13C12-	125	11.37	76	21-125			
4,4'-DDD, 13C12-	125	12.05	90	5-150			
4,4'-DDT, 13C12-	125	12.55	104	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

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a		
ALS Sample ID	WG2857431-2	Extraction Date	23-Aug-18		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	1	L	*R. Bakhtiari*
Analysis Type	LCS	Percent Solid	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	1		18-Sep-2018

Run Information	**Run 1**
Filename	6-180917A18
Run Date	17-Sep-18 17:47
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR280851H

		Ret.		Limits	
Target Analytes	**ng**	**Time**	**% Rec**		**Flags**
2,4'-DDE	25	10.86	121	50-120	
4,4'-DDE	25	11.39	100	50-120	
2,4'-DDD	25	11.56	101	42-120	
4,4'-DDD	25	12.07	101	42-120	
2,4'-DDT	25	12.13	90	50-120	
4,4'-DDT	25	12.57	101	50-120	
Extraction Standards	**ng**				
4,4'-DDE, 13C12-	125	11.38	57	21-125	
4,4'-DDD, 13C12-	125	12.06	90	13-200	
4,4'-DDT, 13C12-	125	12.56	90	13-200	

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a		
ALS Sample ID	WG2859059-1	Extraction Date	31-Aug-18		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	6.89	g	*R. Bakhtiari*
Analysis Type	Blank	Percent Solid	100.0%		--e-signature--
Sample Matrix	QC	Split Ratio	1		18-Sep-2018

Run Information	**Run 1**
Filename	6-180914A16
Run Date	14-Sep-18 19:20
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes		**Ret. Time**	**Conc. ng/g**	**EDL ng/g**	**Flags**	**EMPC ng/g**	**LQL**
2,4'-DDE		10.85	<0.0059	0.0051	M,J,R	0.0059	1.5
4,4'-DDE		11.38	<0.011	0.0065	M,J,R	0.011	1.5
2,4'-DDD		NotFnd	<0.0095	0.0095	U		1.5
4,4'-DDD		12.06	<0.032	0.015	M,J,R	0.032	1.5
2,4'-DDT		NotFnd	<0.015	0.015	U		1.5
4,4'-DDT		12.56	0.0399	0.022	M,J		1.5
Extraction Standards	**ng**						
4,4'-DDE, 13C12-	125	11.37	85	21-125			
4,4'-DDD, 13C12-	125	12.05	73	5-150			
4,4'-DDT, 13C12-	125	12.55	66	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

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a		
ALS Sample ID	WG2859059-2	Extraction Date	31-Aug-18		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	1	g	*R. Bakhtiari*
Analysis Type	LCS	Percent Solid	49.7%		--e-signature--
Sample Matrix	QC	Split Ratio	1		18-Sep-2018

Run Information	**Run 1**
Filename	6-180914A13
Run Date	14-Sep-18 18:19
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	**ng**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,4'-DDE	25	10.86	96	50-120	
4,4'-DDE	25	11.39	91	50-120	
2,4'-DDD	25	11.56	106	42-120	
4,4'-DDD	25	12.07	95	42-120	
2,4'-DDT	25	12.12	100	50-120	
4,4'-DDT	25	12.57	91	50-120	M
Extraction Standards	**ng**				
4,4'-DDE, 13C12-	125	11.38	86	21-125	
4,4'-DDD, 13C12-	125	12.06	70	13-200	
4,4'-DDT, 13C12-	125	12.56	67	13-200	

M	Indicates that a peak has been manually integrated.

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Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a		
ALS Sample ID	WG2868044-1	Extraction Date	6-Sep-18		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	7.6	g	*R. Bakhtiari*
Analysis Type	Blank	Percent Solid	100.0%		--e-signature--
Sample Matrix	QC	Split Ratio	1		18-Sep-2018

Run Information	**Run 1**
Filename	6-180917A21
Run Date	17-Sep-18 18:53
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	**Ret. Time**	**Conc. ng/g**	**EDL ng/g**	**Flags**	**EMPC ng/g**	**LQL**
2,4'-DDE	NotFnd	<0.021	0.021	U		1.3
4,4'-DDE	NotFnd	<0.028	0.028	U		1.3
2,4'-DDD	NotFnd	<0.037	0.037	U		1.3
4,4'-DDD	NotFnd	<0.040	0.040	U		1.3
2,4'-DDT	NotFnd	<0.038	0.038	U		1.3
4,4'-DDT	NotFnd	<0.066	0.066	U		1.3

Extraction Standards	**ng**			
4,4'-DDE, 13C12-	125	11.37	85	21-125
4,4'-DDD, 13C12-	125	12.05	85	5-150
4,4'-DDT, 13C12-	125	12.55	91	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.
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

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a		
ALS Sample ID	WG2868044-2	Extraction Date	6-Sep-18		Approved:
Analysis Method	EPA 1699 (mod)	Sample Size	1	g	*R. Bakhtiari*
Analysis Type	LCS	Percent Solid	49.7%		--e-signature--
Sample Matrix	QC	Split Ratio	1		18-Sep-2018

Run Information	**Run 1**
Filename	6-180917A17
Run Date	17-Sep-18 17:27
Final Volume	1000 uL
Dilution Factor	5
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR280851H

Target Analytes	**ng**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,4'-DDE	25	10.85	99	50-120	
4,4'-DDE	25	11.38	90	50-120	
2,4'-DDD	25	11.56	102	42-120	
4,4'-DDD	25	12.07	93	42-120	
2,4'-DDT	25	12.12	95	50-120	
4,4'-DDT	25	12.56	95	50-120	
Extraction Standards	**ng**				
4,4'-DDE, 13C12-	125	11.38	79	21-125	
4,4'-DDD, 13C12-	125	12.06	82	13-200	
4,4'-DDT, 13C12-	125	12.56	88	13-200	

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SVOC DATA PACKAGE

SECTION 6: INTERNAL RECORDS

Including:

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

Extraction Workup Sheet

Batch ID:	WG2856797	Analysis:	Sediments - OCP

BU-TM-1110 Overall HR Prep

Analyst:	Radhika Menon	Date:	30-Aug-2018

SUBSAMPLING

Sample I.D.	Client I.D.	Subsample Size (g)
WG2856797-1	Method Blank	10.17
WG2856797-2	Laboratory Control Sample	10.12
WG2856797-3	Extraction and Injection STD.	—
L2148686-78	PDI-SC-S053-2TO4	10.32
L2148686-79	PDI-SC-S053-4TO6	10.02
L2148686-80	PDI-SC-S053-6TO8	10.06
L2148686-81	PDI-SC-S053-8TO10	10.04
L2148686-82	PDI-SC-S053-10TO12.4	10.01
L2150263-1	PDI-SC-S108-8.8TO9.8	10.06
WG2856797-4	Duplicate(L2150263-1)	10.03
L2150263-2	PDI-SC-S108-6.7TO8.8	10.08
L2150263-3	PDI-SC-S108-4.7TO6.7	10.04
L2150263-4	PDI-SC-S108-3TO4.7	10.25
L2150263-5	PDI-SC-S108-1.9TO3	10.22
L2150263-6	PDI-SC-S108-0TO1.9	10.19
L2150263-7	PDI-SC-S232-4TO6.2	10.05
L2150263-8	PDI-SC-S232-2TO4	10.15
L2150263-9	PDI-SC-S232-0TO2	10.11
L2150263-11	PDI-SC-S157-0TO2	10.14
L2150263-12	PDI-SC-S157-3.7TO6	10.14
L2150263-13	PDI-SC-S157-14TO15.9	10.08
L2150263-14	PDI-SC-S157-8TO10	10.01
L2150263-15	PDI-SC-S157-2TO3.7	10.23
L2150263-16	PDI-SC-S157-10TO12.4	10.10
	See Special submission instructions	

BATCH TRACKING

	Date/Time/Initials
Subsampling:	RM 11:30AM 30 Aug 18
Balance ID	3955
Client Labels Checked:	RM 11:30AM 30-Aug-2018
Samples Spiked	RM 3:00pm 30-Aug-2018
Soxhlet start time:	RM 3:30pm 30-Aug-2018
Soxhlet reflux properly:	RM
Soxhlet end time:	RM 8:00AM 31-Aug-2018
Rotovap + temp check:	JAZ 04 SEP 2018
Sili Column:	JAZ 04 Sep 2018
Mini Acid	NA 5-Sep-2018 11:00am
	✓
	✓
	✓
	✓
Robo-Vialing:	NA 5-Sep-2018 2:00 pm
Update to LIMS:	NA 5-Sep-18 4:00 pm

Batch ID:	WG2856797

DX Extraction Standard:

Sample I.D.	Volume (ul)	(Checkmark) Spiked
WG2856797-1	20	✓
WG2856797-2	20	✓
WG2856797-3	20	✓
L2148686-78	20	✓
L2148686-79	20	✓
L2148686-80	20	✓
L2148686-81	20	✓
L2148686-82	20	✓
L2150263-1	20	✓
WG2856797-4	20	✓
L2150263-2	20	✓
L2150263-3	20	✓
L2150263-4	20	✓
L2150263-5	20	✓
L2150263-6	20	✓
L2150263-7	20	✓
L2150263-8	20	✓
L2150263-9	20	✓
L2150263-11	20	✓
L2150263-12	20	✓
L2150263-13	20	✓
L2150263-14	20	✓
L2150263-15	20	✓
L2150263-16	20	✓
	20	

Syringe ID	137
Standard:	HROCP_DDX-ES#1-0016
Spike Date:	30-Aug-2018

Spike Witnessing

	Chemist's Initials / Witness's Initials
Chemist:	RM
Witness:	NB
Correct Syringe Obtained:	NB
Correct Standard Obtained:	NB
Correct Technique Followed:	NB

Batch ID:	WG2856797

DX Native Standard:

Sample I.D.	Volume (ul)	(Checkmark) Spiked
WG2856797-2	20	✓
WG2856797-3	20	✓
	20	
	20	

Syringe ID	202
Standard:	HROCP-NS#2- 001A
Date & Initials:	30-Aug-2018 RM

DX Injection Standard:

Sample I.D.	Volume (ul)	(Checkmark) Spiked
WG2856797-1	20	✓
WG2856797-2	20	✓
WG2856797-3	20	✓
L2148686-78	20	✓
L2148686-79	20	✓
L2148686-80	20	✓
L2148686-81	20	✓
L2148686-82	20	✓
L2150263-1	20	✓
WG2856797-4	20	✓
L2150263-2	20	✓
L2150263-3	20	✓
L2150263-4	20	✓
L2150263-5	20	✓
L2150263-6	20	✓
L2150263-7	20	✓
L2150263-8	20	✓
L2150263-9	20	✓
L2150263-11	20	✓
L2150263-12	20	✓
L2150263-13	20	✓
L2150263-14	20	✓
L2150263-15	20	✓
L2150263-16	20	✓
	20	✓

Syringe ID	218
Standard:	HROCP-IS#1-015 A
Date & Initials:	5-Sep-2018 NA

	Chemist's Initials
Correct Syringe Obtained:	NA
Correct Standard Obtained:	NA
Correct Technique Followed:	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 ctube.
☐ 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 5mL
-Spike IS standard and mix thoroughly
-Remove 1ml from C-tube and transfer to a robovial and submit FV=1000ul
- Transfer remaining 4ml to a supelco vial and archive

Reagent Lot Numbers:

Reagent	Lot#	Manufacturer
Acetone	103258	
Hexane	183283	
DCM	103443	
Toluene	103253	
Nonane	ORG-WAKONON- /	
1:1 DCM:HEX	ORG-DH2- 508	
Sodium Sulphate	ORG-SSU- 1915	
Acid Silica	ORG-ASI- 7860	
Neutral Silica	ORG-NSI- 1747	
Alumina	ORG-ALU- /	
Chromacarb	ORG-CC- /	
Corn Oil	ORG-CO- /	

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					

0

Batch ID:	WG2857431	Analysis:	OCP (HR) - water

BU-TP-2115 Taste and Odour in Water Prep

Analyst:	Marco Michelli	Date:	23-Aug-2018

****** EXTRACT HOLD TIME 5 DAYS ******

SUBSAMPLING

Sample I.D.	Client I.D.	Subsample Size (mL)
WG2857431-1	Method Blank	1000
WG2857431-2	Laboratory Control Sample	1000
WG2857431-3	Extraction and Injection STD.	—
L2150263-10	PDI-RB-SS-180817	1000

BATCH TRACKING

	Date/Time/Initials
Bottle Volume Marked	MM 23-Aug-2018
Client Labels Checked:	MM
Samples spiked:	MM 23-Aug-2018
Liquid/Liquid Extraction:	MM 23-Aug-2018
Rotovap Reduction:	AP 24-Aug-18
Rotovap Temp Verified:	AP 24-Aug-18
N-Evap Reduction:	AP 24-Aug-18
N-Evap Temp Verified:	AP 24-Aug-18
Sili-column:	24-Aug-18 AP
Mini Acid column:	MM 27-Aug-2018
Robovial:	MM 27-Aug-2018
LIMS updated:	MM

Batch ID:	WG2857431

OCP Extraction Standard:

Sample I.D.	Volume (µL)	(Checkmark) Spiked
WG2857431-1	20	✓
WG2857431-2	20	✓
WG2857431-3	20	✓
L2150263-10	20	✓

Syringe ID: 137

Standard: HROCP-ES#1 -042C

Spike Date: 23-Aug-18

Spike Witnessing

Chemist: MM (Chemist's Initials)

Witness: JP (Witness's Initials)

Correct Syringe Obtained: JP (Witness's Initials)

Correct Standard Obtained: JP (Witness's Initials)

Correct Technique Followed: JP (Witness's Initials)

OCP Native Standard:

Sample I.D.	Volume (µL)	(Checkmark) Spiked
WG2857431-2	20	✓
WG2857431-3	20	✓

Syringe ID: 202

Standard: HROCP-NS#2-001A

Date & Initials: 23-Aug-18 MM

Batch ID:	WG2857431

OCP Injection Standard:

Sample I.D.	Volume (µL)	(Checkmark) Spiked
WG2857431-1	20	✓
WG2857431-2	20	✓
WG2857431-3	20	✓
L2150263-10	20	✓

Syringe ID: 196

Standard: HROCP-IS#1- 014A

Date & Initials: 27-Aug-2018 MM

	Witness's Initials
Correct Syringe Obtained:	MM
Correct Standard Obtained:	MM
Correct Technique Followed:	MM

Reagents:

Reagent Lot Numbers:

Reagent	Lot#	Manufacturer
Acetone	182575	
Hexane	183263	
DCM	183502	
Toluene	183253	
Nonane	ORG-WAKONON- —	
1:1 DCM:HEX	ORG-DH2- 508	
Sodium Sulphate	ORG-SSU- 1908	
Acid Silica	ORG-ASI- 744	
Neutral Silica	ORG-NSI- 1743	
Alumina	ORG-ALU- —	
2% Deactivated Silica	ORG-2%DAS- 217,213	
Chromacarb	ORG-CC- —	

Batch ID:	WG2857431

Procedure:

Extraction:
***Note: this batchsheet is a guideline only. See Test Prodecure 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:

Samples can be processed at 50 degrees

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:	WG2859059	Analysis:	Sediments - OCP

BU-TM-1110 Overall HR Prep

Analyst:	Radhika Menon	Date:	31-Aug-2018

SUBSAMPLING

Sample I.D.	Client I.D.	Subsample Size (g)
WG2859059-1	Method Blank	10.00
WG2859059-2	Laboratory Control Sample	10.01
WG2859059-3	Extraction and Injection STD.	—
L2150263-17	PDI-SC-S157-6TO8	10.26
WG2859059-4	Duplicate(L2150263-17)	10.17
L2150263-18	PDI-SC-S157-12.4TO14	10.05
L2150263-19	PDI-SC-S263-0TO2	10.19
L2150263-20	PDI-SC-S263-2TO3.8	10.21
L2150263-21	PDI-SC-S263-3.8TO5.9	10.01
L2150263-22	PDI-SC-S108-6.7TO8.8D	10.10
	See Special submission instructions	

BATCH TRACKING

	Date/Time/Initials
Subsampling:	RM 31-Aug-2018 11:15 AM
Balance ID	3955 11:15 AM 31-Aug-18
Client Labels Checked:	RM 11:15 AM 31-Aug-2018
Samples Spiked	RM
Soxhlet start time:	31-Aug-2018 5:00pm
Soxhlet reflux properly:	MM
Soxhlet end time:	1-Sep-2018 11:00am
	—
Rotovap + temp check:	AP 6-Sep-18
	—
Sili Column:	AP 6-Sep-18
Mini Acid	JMZ 07/09/2018
Robo-Vialing:	JMZ 07/09/2018
Update to LIMS:	JMZ 07/09/2018

* see comments MM 1-Sep-2018

Batch ID:	WG2859059

DX Extraction Standard:

Sample I.D.	Volume (ul)	(Checkmark) Spiked
WG2859059-1	20	✓
WG2859059-2	20	✓
WG2859059-3	20	✓
L2150263-17	20	✓
WG2859059-4	20	✓
L2150263-18	20	✓
L2150263-19	20	✓
L2150263-20	20	✓
L2150263-21	20	✓
L2150263-22	20	✓
	20	
	20	
	20	
	20	
	20	
	20	
	20	
	20	
	20	
	20	
	20	
	20	
	20	
	20	
	20	
	20	

Syringe ID	137
Standard:	HROCP_DDX-ES#1-0010
Spike Date:	31-Aug-2018

MM 31-Aug-2018

Spike Witnessing

	Chemist's Initials
Chemist:	RM
	Witness's Initials
Witness:	NB
	Witness's Initials
Correct Syringe Obtained:	NB
	Witness's Initials
Correct Standard Obtained:	NB
	Witness's Initials
Correct Technique Followed:	NB

Batch ID:	WG2859059

DX Native Standard:

Sample I.D.	Volume (ul)	(Checkmark) Spiked
WG2859059-2	20	✓
WG2859059-3	20	✓
	20	
	20	

Syringe ID: 202
Standard: HROCP-NS#2- 002A
Date & Initials: 31-Aug-2018 RM

DX Injection Standard:

Sample I.D.	Volume (ul)	(Checkmark) Spiked
WG2859059-1	20	✓
WG2859059-2	20	✓
WG2859059-3	20	✓
L2150263-17	20	✓
WG2859059-4	20	✓
~~L2150263-18~~	~~20~~	
L2150263-19	20	✓
L2150263-20	20	✓
L2150263-21	20	✓
L2150263-22	20	✓
	20	
	20	
	20	
	20	
	20	
	20	
	20	
	20	
	20	
	20	
	20	
	20	
	20	
	20	
	20	

Syringe ID: 260 rinsed 20x
Standard: HROCP-IS#1- 015A
Date & Initials: 07/09/2018

	Chemist's Initials
Correct Syringe Obtained:	JAL
Correct Standard Obtained:	JAL
Correct Technique Followed:	JAL

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 ctube.
☐ 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 5mL
-Spike IS standard and mix thoroughly
-Remove 1ml from C-tube and transfer to a robovial and submit FV=1000ul
- Transfer remaining 4ml to a supelco vial and archive

Reagent Lot Numbers:

Reagent	Lot#	Manufacturer
Acetone	1882576	
Hexane	183263	
DCM		
Toluene	103253	
Nonane	ORG-WAKONON- 040	
1:1 DCM:HEX	ORG-DH2- 510	
Sodium Sulphate	ORG-SSU- 1927	
Acid Silica	ORG-ASI- 2865	
Neutral Silica	ORG-NSI- 1747	
Alumina	ORG-ALU-	
Chromacarb	ORG-CC-	
Corn Oil	ORG-CO-	

deactivated silica ~~ORG-DAS-16~~ 226, 227

Comments:

L2150263-18 → wet dry on burners. No sample left. Will be re-extracted w/ next AECOM batch. FM 5-Sep-2018

L2150263-17 - Sample is discoloured - got Marker in it from column. 6-Sep-18 JHP.

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:	WG2868044	Analysis:	Sediments - OCP

BU-TM-1110 Overall HR Prep

Analyst:	Mario Michetti	Date:	6-Sep-2018

SUBSAMPLING

Sample I.D.	Client I.D.	Subsample Size (g)
WG2868044-1	Method Blank	10.27
WG2868044-2	Laboratory Control Sample	10.28
WG2868044-3	Extraction and Injection STD.	—
L2150263-18	PDI-SC-S157-12.4TO14	10.05
L2159262-1	NIST 1944	1.64
	See Special submission instructions	

BATCH TRACKING

	Date/Time/Initials
Subsampling:	MM 6-Sep-2018
Balance ID	3955
Client Labels Checked:	MM
Samples Spiked	MM 6-Sep-2018
Soxhlet start time:	6-Sep-2018 4:45 pm
Soxhlet reflux properly:	MM
Soxhlet end time:	07-Sep-18 8:45 AM
	—
Rotovap + temp check:	AP 7-Sep-18
	—
Sili Column:	AP 7-Sep-18
Mini Acid	NA 10-Sep-2018 10:00am
	/
	/
	/
	/
Robo-Vialing:	NA 10-Sep-18 2:00 pm
Update to LIMS:	NA 10-Sep-18 3:00 pm

Batch ID:	WG2868044

DX Extraction Standard:

Sample I.D.	Volume (ul)	(Checkmark) Spiked
WG2868044-1	20	✓
WG2868044-2	20	✓
WG2868044-3	20	✓
L2150263-18	20	✓
L2159262-1	20	✓
	20	
	20	
	20	
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	20	
	20	
	20	
	20	

Syringe ID	137
Standard:	HROCP_DDX-ES#1-001C
Spike Date:	6-Sep-18

Spike Witnessing

	Chemist's Initials / Witness's Initials
Chemist:	MM
Witness:	JP
Correct Syringe Obtained:	JP
Correct Standard Obtained:	JP
Correct Technique Followed:	JP

Batch ID:	WG2868044

DX Native Standard:

Sample I.D.	Volume (ul)	(Checkmark) Spiked
WG2868044-2	20	✓
WG2868044-3	20	✓
	20	
	20	

Syringe ID	202
Standard:	HROCP-NS#2-002A
Date & Initials:	6-Sep-2018 MM

DX Injection Standard:

Sample I.D.	Volume (ul)	(Checkmark) Spiked
WG2868044-1	20	✓
WG2868044-2	20	✓
WG2868044-3	20	✓
L2150263-18	20	✓
L2159262-1	20	✓
	20	
	20	
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	20	
	20	
	20	

Syringe ID	218
Standard:	HROCP-IS#1-015A
Date & Initials:	10-Sep-2018 NA

	Chemist's Initials
Correct Syringe Obtained:	NA
Correct Standard Obtained:	NA
Correct Technique Followed:	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 ctube.
☐ 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 5mL
-Spike IS standard and mix thoroughly
-Remove 1ml from C-tube and transfer to a robovial and submit FV=1000ul
- Transfer remaining 4ml to a supelco vial and archive

Reagent Lot Numbers:

Reagent	Lot#	Manufacturer
Acetone	103258	
Hexane	183283	
DCM	103443	
Toluene	163253	
Nonane	ORG-WAKONON- /	
1:1 DCM:HEX	ORG-DH2- /	
Sodium Sulphate	ORG-SSU- 1927	
Acid Silica	ORG-ASI- 7865	
Neutral Silica	ORG-NSI- 1748	
Alumina	ORG-ALU- ~~404~~	
Chromacarb	ORG-CC- —	
Corn Oil	ORG-CO- —	

Deactivated Silica ORG-DAS-2226, 2227

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					

ALS Life sciences

Sample Calculation Report

Approved: *Ella Gdyczynski* --e-signature-- 14-Sep-2018

CS3 RRF Check

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

							Calculated Value	Value from TargetLynx
RRF	**=**	**289751.30** / **4418189.10**	**x**	**250.00** / **20**		**=**	**0.820**	**0.820**

Calculation of 4,4'-DDE amount in L2150263-1

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

ng/g	**=**	**2189.9** / **326197.5**	**x**	**125** / **0.87**	*****	**7.13**	**=**	**0.135**	**0.135**

Calculation of 13C12-4,4'-DDE Recovery in L2150263-1

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

% Recovery	**=**	**326197.5** / **555409.2**	**x**	**50** / **0.37**	*****	**100** / **125**	**=**	**63**	**63 %**

ALS Life sciences

Sample Calculation Report

Approved: *R. Bakhtiari* --e-signature-- 18-Sep-2018

CS3 RRF Check

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

							Calculated Value	Value from TargetLynx
RRF	**=**	**386523.50** / **5406115.50**	**x**	**250.00** / **20**		**=**	**0.89**	**0.89**

Calculation of 4,4'-DDE amount in WG2857431-2

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

ng/g	**=**	**316698.8** / **1641703.5**	**x**	**125** / **0.96** * **1.00**		**=**	**25.0**	**25.0**

Calculation of 13C12-4,4'-DDE Recovery in L2150263-10

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

% Recovery	**=**	**1745946.6** / **2122489.8**	**x**	**50** * **100** / **0.53** * **125**		**=**	**62**	**62 %**

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Sample Calculation Report

Approved: *R. Bakhtiari* --e-signature-- 18-Sep-2018

CS3 RRF Check

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

							Calculated Value	Value from TargetLynx
RRF	=	**611773.60** / **9139673.00**	x	**250.00** / **20**		=	**0.84**	**0.84**

Calculation of 4,4'-DDE amount in L2150263-17

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

ng/g	=	**1426.8** / **630955.9**	x	**125** / **0.90**	*	**7.26**	=	**0.0434**	**0.0434**

Calculation of 13C12-4,4'-DDE Recovery in L2150263-17

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

% Recovery	=	**630955.9** / **632108**	x	**50** / **0.45**	*	**100** / **125**	=	**88**	**88 %**

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Sample Calculation Report

Approved: *R. Bakhtiari* --e-signature-- 18-Sep-2018

CS3 RRF Check

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

							Calculated Value	Value from TargetLynx
RRF	=	**386523.50** / **5406115.50**	x	**250.00** / **20**	=		**0.89**	**0.89**

Calculation of 4,4'-DDE amount in WG2868044-2

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

%	=	**97996** / **562942.8**	x	**125** / **0.96 * 1.00**	=		**22.6**	**22.6**

Calculation of 13C12-4,4'-DDE Recovery in L2150263-18

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

% Recovery	=	**962099.4** / **918226.1**	x	**50 * 100** / **0.53 * 125**	=		**79**	**79 %**

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

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:

L2150263

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	Site Contact: Jennifer Ray	Date: 8/16/18	COC No: 1
AECOM	Tel: (206) 438-2261 / (206) 438-2010	Laboratory Contact: Whitney Davis	Carrier: FedEx	1 of 2 pages
1111 3rd Ave Suite 1600	Analysis Turnaround Time			
Seattle, WA 98101	Calendar (C) or Work Days (W) W			
Phone: (206) 438-2700 Fax: 1+(866) 495-5288	☒ 21 days			
Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling	☐ Other			
Portland, OR				
Project #: 60566335 Study: Subsurface Sediment				
Sample Type:				

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	Pesticides, DDx only	WQ-Past											Sample Specific Notes:
PDI-SC-S108 - 8.8 to 9.8	8/16/18	1840	SC		ED	1		x												1
PDI-SC-S108 - 6.7 to 8.8		1835	SC		ED	1		x												2
PDI-SC-S108 - 4.7 to 6.7		1830	SC		ED	1		x												3
PDI-SC-S108 - 3 to 4.7		1825	SC		ED	1		x												4
PDI-SC-S108 - 1.9 to 3		1820	SC		ED	1		x												5
PDI-SC-S108 - 0 to 1.9		1815	SC		ED	1		x												6
PDI-SC-S232 - 4 to 6.2		1520	SC		ED	1		x												7
PDI-SC-S232 - 2 to 4		1515	SC		ED	1		x												8
PDI-SC-S232 - 0 to 2	↓	1510	SC		ED	1		x												9
PDI-HLB-SS-18[redacted]0817	8/17/18	0745	SC		ED	2		x												10
- to			SC		ED	2		x												
- to			SC		ED	2		x												
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Col								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 ☒ sposal By Lab ☒ rchive For 12 Months

Special Instructions/QC Requirements & Comments:

3.8°C

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	AECOM	8/20/18 1520	FedEx		
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
			AARON BURTON	ALS	21-Aug-2018 18.00
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

SUBSURFACE SEDIMENT
CHAIN OF CUSTODY

ALS-Burlington 1435 Norjohn Court Unit 1 Burlington, Ontario Canada L7L 0E6 **Ph: 1-905-331-3111 Fax: 0**			
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** **Analysis Turnaround Time** Calendar (C) or Work Days (W) W [x] 21 days [ ] Other	**Site Contact: Jennifer Ray** **Laboratory Contact: Whitney Davis**	**Date: 8/20/18** **Carrier: FedEx**

COC No: 1
2 of 2 pages

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-SI57- 0 to 2	8/17/18	1010	SC		ED	1		x												11
PDI-SC-SI57- 3.7 to 6		1020	SC		ED	1		x												12
PDI-SC-SI57 - 14 to 15.9		1050	SC		ED	1		x												13
PDI-SC-SI57 - 8 to 10		1030	SC		ED	1		x												14
PDI-SC-SI57 - 2 to 3.7		1015	SC		ED	1		x												15
PDI-SC-SI57 - 10 to 12.4		1035	SC		ED	1		x												16
PDI-SC-SI57 - 6 to 8		1025	SC		ED	1		x												17
PDI-SC-SI57 - 12.4 to 14		1040	SC		ED	1		x												18
PDI-SC-SI63 - 0 to 2	8/16/18	1610	SC		ED	1		x												19
PDI-SC-SI63 2 to 3.8	8/16/18	1615	SC		ED	1		x												20
PDI-SC-SI63 3.8 to 5.9	8/16/18	1620	SC		ED	1		x												21
PDI-SC-SI08- 6.7 to 8.8D	8/16/18	1835	SC		ED	1		x												22
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Col								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* [X] *sposal By Lab* [X] *rchive For 12 Months*

Special Instructions/QC Requirements & Comments:

3.8°C

Relinquished by:	Company: AECOM	Date/Time: 8/20/18/1520	Received by: FEDEX	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by: AARON BURTON	Company: ALS	Date/Time: ~~21-Aug-2018~~ 18:00
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:


ORIGIN ID:PDXA (971) 373-1622
JENNIFER RAY
1115 SE CARUTHERS ST
PORTLAND, OR 97214
UNITED STATES US
SHIP DATE: 20AUG18
ACTWGT: 60.00 LB
CAD: 0006994758/SSFE1904
DIMS: 24x20x20 IN
BILL THIRD PARTY
TO WHITNEY DAVIS
ALS ENVIRONMENTAL
299 CAYUGA RD
C/O FEDERAL EXPRESS DEPT
BUFFALO NY 14225
(905) 340-0821
REF:
INV:
PO:
DEPT:
FedEx
Express
TRK# 0201 7823 9359 0430
TUE - 21 AUG 10:30A
PRIORITY OVERNIGHT
XX BUFA
14225
NY-US BUF

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
[redacted]								
21-Aug-2018 18:00	AECOM	21 x jars of sediment 2 x 1L amber bottles	3.8°C	Good FedEx 7823 9359 0430		22-Aug-2018 15:25	L2150263	-1-22

*Temperatures were recorded using:

☑ Oakton infraPro' dedicated I.R. gun (serial #97800270)

☐ Other (specify): .....