

Chemical Analysis Report

SO-DIST-2021-04-16-01

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **2021 SMP: Lemon Bay**
Request ID: **RQ-2021-04-12-62**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Chris Hormuth

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 28-APR-2021 12:48

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Metals and Pesticides.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: GOTTFRIED CREEK @ DEER CREEK MOBILE HOME **Collection Date/Time: 04/15/2021 10:15**

Field ID: G2SD0028

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2240233	EPA 8270E	Aldrin	0.86	U	ng/L	P396789	
		Dieldrin	0.46	U	ng/L	P396789	
		Alpha-BHC	2.3	U	ng/L	P396789	
		Kepone**	6.3	U	ng/L	P396789	
		Alpha-Chlordane	1.1	U	ng/L	P396789	
		Beta-BHC	9.1	U	ng/L	P396789	
		Beta-Cyfluthrin**	17	U	ng/L	P396789	
		Bifenthrin**	4.6	U	ng/L	P396789	
		Delta-BHC	9.1	U	ng/L	P396789	
		Gamma-BHC	9.1	U	ng/L	P396789	
		Carbophenothion	11	U	ng/L	P396789	
		Chlorothalonil	2.3	U	ng/L	P396789	
		Cis-Nonachlor**	1.1	U	ng/L	P396789	
		Cypermethrin	23	U	ng/L	P396789	
		Dacthal**	1.1	U	ng/L	P396789	
		DDD-p,p'	5.7	U	ng/L	P396789	
		DDE-p,p'	5.7	U	ng/L	P396789	
		DDT-p,p'	6.8	U	ng/L	P396789	
		Deltamethrin**	23	U	ng/L	P396789	RPD
		Dicofol	34	U	ng/L	P396789	
		Endosulfan I	4.6	U	ng/L	P396789	
		Endosulfan II	4.6	U	ng/L	P396789	
		Endosulfan Sulfate	2.3	U	ng/L	P396789	
		Endrin	2.3	U	ng/L	P396789	
		Endrin Aldehyde	2.3	U	ng/L	P396789	
		Endrin Ketone	2.3	U	ng/L	P396789	
		Ethalfuralin**	3.4	U	ng/L	P396789	
		Gamma-Chlordane	1.1	U	ng/L	P396789	
		Dichlobenil**	2.3	U	ng/L	P396789	
		Esfenvalerate**	23	U	ng/L	P396789	
		Fenpropathrin**	11	U	ng/L	P396789	
		Heptachlor	1.7	U	ng/L	P396789	
		Heptachlor Epoxide	2.3	U	ng/L	P396789	
		Hexachlorobenzene	2.3	U	ng/L	P396789	
		Lambda-Cyhalothrin**	17	U	ng/L	P396789	
		Methoxychlor	4.6	U	ng/L	P396789	
		Mirex	2.3	U	ng/L	P396789	
		MGK-264**	3.4	U	ng/L	P396789	
		Permethrin	11	U	ng/L	P396789	
		Phenothrin**	34	U	ng/L	P396789	
		Piperonyl Butoxide**	1.7	U	ng/L	P396789	MS
		Prallethrin**	29	UJ	ng/L	P396789	RPD
		Tau-Fluvalinate**	4.0	U	ng/L	P396789	

Field ID: G2SD0028

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2240233	EPA 8270E	Tetramethrin**	9.1	U	ng/L	P396789	
		Trans-Nonachlor**	1.1	U	ng/L	P396789	
		Triclosan Methyl**	1.1	U	ng/L	P396789	
		Trifluralin	2.9	U	ng/L	P396789	
2240234	EPA 200.7 Rev. 4.4	Calcium	431		mg/L	P396741	
		Chromium	9.9	I	ug/L	P396741	
		Iron	120	U	ug/L	P396741	
		Magnesium	1.24E+03		mg/L	P396741	
	EPA 200.8 Rev. 5.4	Manganese	6.6	I	ug/L	P396741	
		Zinc	20	U	ug/L	P396741	
		Aluminum	42	I	ug/L	P396741	
		Antimony	0.20	U	ug/L	P396741	
		Arsenic	2.28		ug/L	P396741	
		Beryllium	0.040	U	ug/L	P396741	
		Cadmium	0.080	U	ug/L	P396741	
		Copper	2.0	I	ug/L	P396741	
		Lead	0.80	U	ug/L	P396741	
		Nickel	2.0	U	ug/L	P396741	
		Selenium	0.80	U	ug/L	P396741	
		Silver	0.040	U	ug/L	P396741	
		Thallium	0.40	U	ug/L	P396741	
	SM 2340B	Hardness	6.16E+03		mg/L	P396741	

Ref. Method and Comment:

EPA 8270E: Refer to the Lab Analysis Report for an explanation of QC Codes.

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium and magnesium are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P396741

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Chromium	1.0	U	ug/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Manganese	1.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P396741

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Beryllium	0.010	U	ug/L
Cadmium	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 8270E
Batch ID: P396789

Component	Result	Code	Units
Aldrin	0.75	U	ng/L
Alpha-BHC	2.0	U	ng/L
Alpha-Chlordane	1.0	U	ng/L
Beta-BHC	8.0	U	ng/L
Beta-Cyfluthrin	15	U	ng/L
Bifenthrin	4.0	U	ng/L
Carbophenothion	10	U	ng/L
Chlorothalonil	2.0	U	ng/L
Cis-Nonachlor	1.0	U	ng/L
Cypermethrin	20	U	ng/L
Dacthal	1.0	U	ng/L
DDD-p,p'	5.0	U	ng/L
DDE-p,p'	5.0	U	ng/L
DDT-p,p'	6.0	U	ng/L
Delta-BHC	8.0	U	ng/L
Deltamethrin	20	U	ng/L
Dichlobenil	2.0	U	ng/L
Dicofol	30	U	ng/L
Dieldrin	0.40	U	ng/L
Endosulfan I	4.0	U	ng/L
Endosulfan II	4.0	U	ng/L
Endosulfan Sulfate	2.0	U	ng/L
Endrin	2.0	U	ng/L
Endrin Aldehyde	2.0	U	ng/L
Endrin Ketone	2.0	U	ng/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8270E

Batch ID: P396789

Component	Result	Code	Units
Esfenvalerate	20	U	ng/L
Ethalfuralin	3.0	U	ng/L
Fenpropathrin	10	U	ng/L
Gamma-BHC	8.0	U	ng/L
Gamma-Chlordane	1.0	U	ng/L
Heptachlor	1.5	U	ng/L
Heptachlor Epoxide	2.0	U	ng/L
Hexachlorobenzene	2.0	U	ng/L
Kepone	5.5	U	ng/L
Lambda-Cyhalothrin	15	U	ng/L
Methoxychlor	4.0	U	ng/L
MGK-264	3.0	U	ng/L
Mirex	2.0	U	ng/L
Permethrin	10	U	ng/L
Phenothrin	30	U	ng/L
Piperonyl Butoxide	1.5	U	ng/L
Prallethrin	25	U	ng/L
Tau-Fluvalinate	3.5	U	ng/L
Tetramethrin	8.0	U	ng/L
Trans-Nonachlor	1.0	U	ng/L
Triclosan Methyl	1.0	U	ng/L
Trifluralin	2.5	U	ng/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P396741

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	107		P	85 - 115
Chromium	94.0		P	85 - 115
Iron	104		P	85 - 115
Magnesium	102		P	85 - 115
Manganese	100		P	85 - 115
Zinc	99.6		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P396741

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	96.3		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	97.4		P	85 - 115
Beryllium	93.6		P	85 - 115
Cadmium	99.1		P	85 - 115
Copper	97.2		P	85 - 115
Lead	99.5		P	85 - 115
Nickel	97.4		P	85 - 115
Selenium	97.7		P	85 - 115
Silver	99.4		P	85 - 115
Thallium	106		P	85 - 115

Reference Method: EPA 8270E

Batch ID: P396789

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aldrin	29.2	26.9	P/P	20 - 110
Alpha-BHC	87.2	82.3	P/P	58 - 130
Alpha-Chlordane	82.9	82.4	P/P	61 - 105
Beta-BHC	103	104	P/P	53 - 164
Beta-Cyfluthrin	109	108	P/P	40 - 140
Bifenthrin	83.3	83.5	P/P	44 - 122
Carbophenothion	54.3	59.4	P/P	20 - 161
Chlorothalonil	163	135	P/P	20 - 201
Cis-Nonachlor	85.8	87.0	P/P	60 - 110
Cypermethrin	101	91.2	P/P	43 - 131
Dacthal	91.4	89.9	P/P	76 - 108
DDD-p,p'	92.5	94.8	P/P	68 - 118
DDE-p,p'	76.8	79.2	P/P	56 - 107
DDT-p,p'	79.7	76.2	P/P	55 - 122
Delta-BHC	136	132	P/P	60 - 181
Deltamethrin	101	93.8	P/P	51 - 139
Dichlobenil	62.0	66.6	P/P	20 - 106
Dicofol	89.8	98.2	P/P	56 - 130
Dieldrin	71.3	72.5	P/P	58 - 112
Endosulfan I	92.8	89.3	P/P	68 - 115
Endosulfan II	114	104	P/P	69 - 133
Endosulfan Sulfate	108	101	P/P	65 - 126
Endrin	78.8	86.4	P/P	66 - 118
Endrin Aldehyde	118	117	P/P	60 - 132
Endrin Ketone	93.1	90.9	P/P	68 - 121

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8270E

Batch ID: P396789

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Esfenvalerate	89.7	80.8	P/P	42 - 116
Ethalfuralin	74.0	73.2	P/P	50 - 118
Fenpropathrin	93.7	97.6	P/P	55 - 132
Gamma-BHC	98.6	94.1	P/P	65 - 147
Gamma-Chlordane	77.0	77.7	P/P	56 - 103
Heptachlor	67.2	65.4	P/P	47 - 95.0
Heptachlor Epoxide	85.4	83.9	P/P	67 - 107
Hexachlorobenzene	66.8	66.6	P/P	45 - 99.0
Kepone	123	106	P/P	28 - 128
Lambda-Cyhalothrin	96.1	93.5	P/P	41 - 135
Methoxychlor	86.7	87.1	P/P	61 - 138
MGK-264	33.4	43.8	P/P	20 - 109
Mirex	60.6	63.2	P/P	36 - 92.0
Permethrin	83.6	81.5	P/P	45 - 111
Phenothrin	41.8	45.8	P/P	22 - 88.0
Piperonyl Butoxide	118	115	P/P	67 - 120
Prallethrin	39.4	55.2	P/P	28 - 92.0
Tau-Fluvalinate	108	105	P/P	38 - 145
Tetramethrin	104	91.6	P/P	29 - 150
Trans-Nonachlor	74.0	77.6	P/P	54 - 105
Triclosan Methyl	95.1	95.3	P/P	76 - 115
Trifluralin	74.7	73.3	P/P	53 - 111

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P396741

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2240234	Chromium	90.7	86.1	P/P	70 - 130
2240234	Iron	103	99.0	P/P	70 - 130
2240234	Manganese	97.7	92.7	P/P	70 - 130
2240234	Zinc	95.5	89.9	P/P	70 - 130
2240426	Chromium	89.9		P	70 - 130
2240426	Iron	102		P	70 - 130
2240426	Manganese	97.2		P	70 - 130
2240426	Zinc	93.5		P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P396741

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2240234	Aluminum	128	127	P/P	70 - 130
2240234	Antimony	103	102	P/P	70 - 130
2240234	Arsenic	107	105	P/P	70 - 130
2240234	Beryllium	106	105	P/P	70 - 130
2240234	Cadmium	93.0	92.7	P/P	70 - 130
2240234	Copper	113	112	P/P	70 - 130
2240234	Lead	109	108	P/P	70 - 130
2240234	Nickel	117	118	P/P	70 - 130
2240234	Selenium	96.5	92.2	P/P	70 - 130
2240234	Silver	90.3	89.0	P/P	70 - 130
2240234	Thallium	114	114	P/P	70 - 130
2240426	Aluminum	101		P	70 - 130
2240426	Antimony	104		P	70 - 130
2240426	Arsenic	109		P	70 - 130
2240426	Beryllium	108		P	70 - 130
2240426	Cadmium	93.3		P	70 - 130
2240426	Copper	117		P	70 - 130
2240426	Lead	110		P	70 - 130
2240426	Nickel	122		P	70 - 130
2240426	Selenium	98.7		P	70 - 130
2240426	Silver	91.2		P	70 - 130
2240426	Thallium	115		P	70 - 130

Reference Method: EPA 8270E

Batch ID: P396789

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2240233	Aldrin	52.8	49.8	P/P	22 - 127
2240233	Dieldrin	73.6	70.8	P/P	52 - 123
2240233	Kepone	106	95.5	P/P	18 - 138
2240512	Alpha-BHC	77.5	84.9	P/P	53 - 147
2240512	Alpha-Chlordane	73.8	80.4	P/P	56 - 107
2240512	Beta-BHC	92.1	102	P/P	43 - 182
2240512	Beta-Cyfluthrin	102	114	P/P	42 - 157
2240512	Bifenthrin	82.4	82.3	P/P	52 - 124
2240512	Carbophenothion	69.3	80.9	P/P	40 - 172
2240512	Chlorothalonil	176	206	P/P	10 - 265
2240512	Cis-Nonachlor	76.1	84.7	P/P	55 - 112
2240512	Cypermethrin	91.8	99.0	P/P	46 - 144

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8270E

Batch ID: P396789

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2240512	Dacthal	84.7	93.0	P/P	72 - 110
2240512	DDD-p,p'	81.1	89.5	P/P	58 - 123
2240512	DDE-p,p'	70.4	73.5	P/P	52 - 106
2240512	DDT-p,p'	69.2	74.9	P/P	50 - 127
2240512	Delta-BHC	117	132	P/P	56 - 222
2240512	Deltamethrin	76.5	104	P/P	47 - 152
2240512	Dichlobenil	55.8	47.9	P/P	22 - 99.0
2240512	Dicofol	85.0	86.5	P/P	38 - 145
2240512	Endosulfan I	88.5	96.3	P/P	64 - 124
2240512	Endosulfan II	92.1	98.4	P/P	52 - 159
2240512	Endosulfan Sulfate	99.6	120	P/P	62 - 136
2240512	Endrin	83.3	85.4	P/P	57 - 126
2240512	Endrin Aldehyde	105	119	P/P	41 - 128
2240512	Endrin Ketone	85.9	92.3	P/P	67 - 129
2240512	Esfenvalerate	72.2	94.1	P/P	50 - 120
2240512	Ethalfuralin	69.4	72.8	P/P	41 - 125
2240512	Fenpropathrin	98.9	98.9	P/P	40 - 202
2240512	Gamma-BHC	91.2	102	P/P	58 - 180
2240512	Gamma-Chlordane	70.7	76.3	P/P	54 - 103
2240512	Heptachlor	62.5	68.0	P/P	46 - 94.0
2240512	Heptachlor Epoxide	79.2	87.5	P/P	62 - 111
2240512	Hexachlorobenzene	54.9	65.0	P/P	42 - 95.0
2240512	Lambda-Cyhalothrin	88.6	104	P/P	37 - 162
2240512	Methoxychlor	81.1	85.3	P/P	52 - 143
2240512	MGK-264	52.9	47.0	P/P	37 - 102
2240512	Mirex	59.1	62.5	P/P	43 - 91.0
2240512	Permethrin	78.8	83.3	P/P	48 - 113
2240512	Phenothrin	55.4	55.0	P/P	30 - 104
2240512	Piperonyl Butoxide	110	134	P/F	67 - 127
2240512	Prallethrin	51.8	53.5	P/P	28 - 102
2240512	Tau-Fluvalinate	103	117	P/P	46 - 174
2240512	Tetramethrin	99.9	120	P/P	28 - 176
2240512	Trans-Nonachlor	64.8	72.4	P/P	51 - 103
2240512	Triclosan Methyl	84.6	93.0	P/P	67 - 116
2240512	Trifluralin	68.7	74.6	P/P	47 - 118

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P396741

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2240234	Calcium	3.21	Spike	P	0 - 20
2240234	Chromium	4.62	Spike	P	0 - 20
2240234	Iron	4.34	Spike	P	0 - 20
2240234	Magnesium	5.10	Spike	P	0 - 20
2240234	Manganese	5.05	Spike	P	0 - 20
2240234	Zinc	6.04	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P396741

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2240234	Aluminum	1.31	Spike	P	0 - 20
2240234	Antimony	1.25	Spike	P	0 - 20
2240234	Arsenic	1.47	Spike	P	0 - 20
2240234	Beryllium	0.501	Spike	P	0 - 20
2240234	Cadmium	0.342	Spike	P	0 - 20
2240234	Copper	0.767	Spike	P	0 - 20
2240234	Lead	1.28	Spike	P	0 - 20
2240234	Nickel	0.435	Spike	P	0 - 20
2240234	Selenium	4.62	Spike	P	0 - 20
2240234	Silver	1.39	Spike	P	0 - 20
2240234	Thallium	0.250	Spike	P	0 - 20

Reference Method: EPA 8270E

Batch ID: P396789

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2240233	Aldrin	5.82	Spike	P	0 - 30
2240233	Dieldrin	3.94	Spike	P	0 - 30
2240233	Kepone	9.96	Spike	P	0 - 30
2240512	Alpha-BHC	9.07	Spike	P	0 - 30
2240512	Alpha-Chlordane	8.60	Spike	P	0 - 30
2240512	Beta-BHC	10.2	Spike	P	0 - 30
2240512	Beta-Cyfluthrin	11.5	Spike	P	0 - 30
2240512	Bifenthrin	0.111	Spike	P	0 - 30
2240512	Carbophenothion	15.4	Spike	P	0 - 30
2240512	Chlorothalonil	15.3	Spike	P	0 - 30
2240512	Cis-Nonachlor	10.8	Spike	P	0 - 30
2240512	Cypermethrin	7.52	Spike	P	0 - 30
2240512	Dacthal	9.27	Spike	P	0 - 30
2240512	DDD-p,p'	9.83	Spike	P	0 - 30
2240512	DDE-p,p'	4.34	Spike	P	0 - 30
2240512	DDT-p,p'	7.86	Spike	P	0 - 30
2240512	Delta-BHC	11.3	Spike	P	0 - 30
2240512	Deltamethrin	30.0	Spike	F	0 - 30
2240512	Dichlobenil	15.3	Spike	P	0 - 30
2240512	Dicofol	1.78	Spike	P	0 - 30
2240512	Endosulfan I	8.38	Spike	P	0 - 30
2240512	Endosulfan II	6.59	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8270E
Batch ID: P396789

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2240512	Endosulfan Sulfate	18.6	Spike	P	0 - 30
2240512	Endrin	2.54	Spike	P	0 - 30
2240512	Endrin Aldehyde	12.9	Spike	P	0 - 30
2240512	Endrin Ketone	7.22	Spike	P	0 - 30
2240512	Esfenvalerate	26.3	Spike	P	0 - 30
2240512	Ethalfuralin	4.84	Spike	P	0 - 30
2240512	Fenpropathrin	0.0278	Spike	P	0 - 30
2240512	Gamma-BHC	10.8	Spike	P	0 - 30
2240512	Gamma-Chlordane	7.60	Spike	P	0 - 30
2240512	Heptachlor	8.45	Spike	P	0 - 30
2240512	Heptachlor Epoxide	9.97	Spike	P	0 - 30
2240512	Hexachlorobenzene	16.8	Spike	P	0 - 30
2240512	Lambda-Cyhalothrin	15.7	Spike	P	0 - 30
2240512	Methoxychlor	5.05	Spike	P	0 - 30
2240512	MGK-264	11.9	Spike	P	0 - 30
2240512	Mirex	5.55	Spike	P	0 - 30
2240512	Permethrin	5.55	Spike	P	0 - 30
2240512	Phenothrin	0.799	Spike	P	0 - 30
2240512	Piperonyl Butoxide	20.2	Spike	P	0 - 30
2240512	Prallethrin	3.22	Spike	P	0 - 30
2240512	Tau-Fluvalinate	12.0	Spike	P	0 - 30
2240512	Tetramethrin	18.5	Spike	P	0 - 30
2240512	Trans-Nonachlor	11.0	Spike	P	0 - 30
2240512	Triclosan Methyl	9.48	Spike	P	0 - 30
2240512	Trifluralin	8.17	Spike	P	0 - 30
LFB	Aldrin	8.19	LCS	P	0 - 30
LFB	Alpha-BHC	5.77	LCS	P	0 - 30
LFB	Alpha-Chlordane	0.614	LCS	P	0 - 30
LFB	Beta-BHC	0.978	LCS	P	0 - 30
LFB	Beta-Cyfluthrin	1.00	LCS	P	0 - 30
LFB	Bifenthrin	0.240	LCS	P	0 - 30
LFB	Carbophenothion	8.89	LCS	P	0 - 30
LFB	Chlorothalonil	18.8	LCS	P	0 - 30
LFB	Cis-Nonachlor	1.39	LCS	P	0 - 30
LFB	Cypermethrin	10.1	LCS	P	0 - 30
LFB	Dacthal	1.57	LCS	P	0 - 30
LFB	DDD-p,p'	2.41	LCS	P	0 - 30
LFB	DDE-p,p'	3.02	LCS	P	0 - 30
LFB	DDT-p,p'	4.44	LCS	P	0 - 30
LFB	Delta-BHC	2.82	LCS	P	0 - 30
LFB	Deltamethrin	6.95	LCS	P	0 - 30
LFB	Dichlobenil	7.25	LCS	P	0 - 30
LFB	Dicofol	8.94	LCS	P	0 - 30
LFB	Dieldrin	1.65	LCS	P	0 - 30
LFB	Endosulfan I	3.79	LCS	P	0 - 30
LFB	Endosulfan II	9.43	LCS	P	0 - 30
LFB	Endosulfan Sulfate	6.67	LCS	P	0 - 30
LFB	Endrin	9.24	LCS	P	0 - 30
LFB	Endrin Aldehyde	1.49	LCS	P	0 - 30
LFB	Endrin Ketone	2.39	LCS	P	0 - 30
LFB	Esfenvalerate	10.5	LCS	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8270E
 Batch ID: P396789

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
LFB	Ethalfuralin	1.19	LCS	P	0 - 30
LFB	Fenpropathrin	4.08	LCS	P	0 - 30
LFB	Gamma-BHC	4.69	LCS	P	0 - 30
LFB	Gamma-Chlordane	0.961	LCS	P	0 - 30
LFB	Heptachlor	2.72	LCS	P	0 - 30
LFB	Heptachlor Epoxide	1.84	LCS	P	0 - 30
LFB	Hexachlorobenzene	0.323	LCS	P	0 - 30
LFB	Kepone	14.7	LCS	P	0 - 30
LFB	Lambda-Cyhalothrin	2.70	LCS	P	0 - 30
LFB	Methoxychlor	0.474	LCS	P	0 - 30
LFB	MGK-264	26.9	LCS	P	0 - 30
LFB	Mirex	4.26	LCS	P	0 - 30
LFB	Permethrin	2.55	LCS	P	0 - 30
LFB	Phenothrin	9.27	LCS	P	0 - 30
LFB	Piperonyl Butoxide	2.66	LCS	P	0 - 30
LFB	Prallethrin	33.3	LCS	F	0 - 30
LFB	Tau-Fluvalinate	2.96	LCS	P	0 - 30
LFB	Tetramethrin	12.5	LCS	P	0 - 30
LFB	Trans-Nonachlor	4.73	LCS	P	0 - 30
LFB	Triclosan Methyl	0.228	LCS	P	0 - 30
LFB	Trifluralin	1.96	LCS	P	0 - 30

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Surrogates

Lab Sample ID: 2240233

Field Sample ID: G2SD0028

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8270E	Decachlorobiphenyl	73.0	P	40 - 123
EPA 8270E	Decachlorobiphenyl	70.1	P	47 - 111
EPA 8270E	Tetrachloro-m-xylene	40.6	P	31 - 100
EPA 8270E	Tetrachloro-m-xylene	41.9	P	33 - 102

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A104833

Included Lab Sample IDs: 2240234

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	103	P/P	90 - 110
Chromium	97.8	95.7	P/P	90 - 110
Iron	101	100	P/P	90 - 110
Magnesium	98.7	99.2	P/P	90 - 110
Manganese	101	100	P/P	90 - 110
Zinc	101	99.4	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A104836

Included Lab Sample IDs: 2240234

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	103	106	P/P	90 - 110
Antimony	103	104	P/P	90 - 110
Arsenic	101	102	P/P	90 - 110
Beryllium	105	107	P/P	90 - 110
Cadmium	99.2	98.4	P/P	90 - 110
Copper	103	105	P/P	90 - 110
Lead	101	101	P/P	90 - 110
Nickel	106	108	P/P	90 - 110
Selenium	102	99.9	P/P	90 - 110
Silver	100	99.5	P/P	90 - 110
Thallium	102	103	P/P	90 - 110

Reference Method: EPA 8270E

Run ID: A104902

Included Lab Sample IDs: 2240233

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Alpha-BHC	102		P	80 - 120
Alpha-Chlordane	98.7		P	80 - 120
Beta-BHC	92.8		P	80 - 120
Beta-Cyfluthrin	104		P	80 - 120
Bifenthrin	96.7		P	80 - 120
Carbophenothion	104		P	80 - 120
Chlorothalonil	114		P	80 - 120
Cis-Nonachlor	97.6		P	80 - 120
Cypermethrin	93.4		P	80 - 120
Dacthal	97.7		P	80 - 120
DDD-p,p'	100		P	80 - 120
DDE-p,p'	101		P	80 - 120
DDT-p,p'	99.1		P	80 - 120
Delta-BHC	110		P	80 - 120
Deltamethrin	88.3		P	80 - 120
Dichlobenil	93.4		P	80 - 120
Dicofol	95.8		P	80 - 120
Endosulfan I	100		P	80 - 120
Endosulfan II	102		P	80 - 120
Endosulfan Sulfate	104		P	80 - 120
Endrin	101		P	80 - 120
Endrin Aldehyde	104		P	80 - 120

Quality Assurance Report Calibration Verification

Reference Method: EPA 8270E
Run ID: A104902
Included Lab Sample IDs: 2240233

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Endrin Ketone	94.9		P	80 - 120
Esfenvalerate	92.2		P	80 - 120
Ethalfuralin	98.7		P	80 - 120
Fenpropathrin	109		P	80 - 120
Gamma-BHC	101		P	80 - 120
Gamma-Chlordane	97.4		P	80 - 120
Heptachlor	96.9		P	80 - 120
Heptachlor Epoxide	98.4		P	80 - 120
Hexachlorobenzene	104		P	80 - 120
Lambda-Cyhalothrin	94.8		P	80 - 120
Methoxychlor	99.8		P	80 - 120
MGK-264	94.9		P	80 - 120
Mirex	97.5		P	80 - 120
Permethrin	88.2		P	80 - 120
Phenothrin	88.9		P	80 - 120
Piperonyl Butoxide	97.0		P	80 - 120
Prallethrin	91.5		P	80 - 120
Tau-Fluvalinate	97.6		P	80 - 120
Tetramethrin	99.8		P	80 - 120
Trans-Nonachlor	98.3		P	80 - 120
Triclosan Methyl	99.5		P	80 - 120
Trifluralin	96.7		P	80 - 120

Reference Method: EPA 8270E
Run ID: A104970
Included Lab Sample IDs: 2240233

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aldrin	101		P	80 - 120
Dieldrin	94.7		P	80 - 120
Kepone	101		P	80 - 120

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
EPA 200.7 Rev. 4.4	Calcium	107						3.21
	Chromium	94.0		90.7	86.1	89.9		4.62
	Iron	104		103	99.0	102		4.34
	Magnesium	102						5.10
	Manganese	100		97.7	92.7	97.2		5.05
	Zinc	99.6		95.5	89.9	93.5		6.04
EPA 200.8 Rev. 5.4	Aluminum	96.3		101	128	127		1.31
	Antimony	101		103	102	104		1.25
	Arsenic	97.4		107	105	109		1.47
	Beryllium	93.6		106	105	108		0.501
	Cadmium	99.1		93.0	92.7	93.3		0.342
	Copper	97.2		113	112	117		0.767
	Lead	99.5		109	108	110		1.28
	Nickel	97.4		117	118	122		0.435
	Selenium	97.7		96.5	92.2	98.7		4.62
	Silver	99.4		90.3	89.0	91.2		1.39
	Thallium	106		114	114	115		0.250
EPA 8270E	Aldrin	26.9	29.2	52.8	49.8	8.19		5.82
	Alpha-BHC	82.3	87.2	77.5	84.9	5.77		9.07
	Alpha-Chlordane	82.4	82.9	73.8	80.4	0.614		8.60
	Beta-BHC	104	103	92.1	102	0.978		10.2
	Beta-Cyfluthrin	109	108	102	114	1.00		11.5
	Bifenthrin	83.3	83.5	82.4	82.3	0.240		0.111
	Carbophenothion	54.3	59.4	69.3	80.9	8.89		15.4
	Chlorothalonil	135	163	176	206	18.8		15.3
	Cis-Nonachlor	87.0	85.8	76.1	84.7	1.39		10.8
	Cypermethrin	91.2	101	91.8	99.0	10.1		7.52
	Dacthal	89.9	91.4	84.7	93.0	1.57		9.27
	DDD-p,p'	94.8	92.5	81.1	89.5	2.41		9.83
	DDE-p,p'	79.2	76.8	70.4	73.5	3.02		4.34
	DDT-p,p'	76.2	79.7	69.2	74.9	4.44		7.86
	Delta-BHC	136	132	117	132	2.82		11.3
	Deltamethrin	93.8	101	76.5	104	6.95		30.0
	Dichlobenil	66.6	62.0	55.8	47.9	7.25		15.3
	Dicofol	98.2	89.8	85.0	86.5	8.94		1.78
	Dieldrin	71.3	72.5	73.6	70.8	1.65		3.94
	Endosulfan I	89.3	92.8	88.5	96.3	3.79		8.38
	Endosulfan II	104	114	92.1	98.4	9.43		6.59
	Endosulfan Sulfate	101	108	99.6	120	6.67		18.6
	Endrin	86.4	78.8	83.3	85.4	9.24		2.54
	Endrin Aldehyde	117	118	105	119	1.49		12.9
	Endrin Ketone	90.9	93.1	85.9	92.3	2.39		7.22
	Esfenvalerate	80.8	89.7	72.2	94.1	10.5		26.3
	Ethalfuralin	73.2	74.0	69.4	72.8	1.19		4.84
	Fenpropathrin	97.6	93.7	98.9	98.9	4.08		0.0278
	Gamma-BHC	98.6	94.1	91.2	102	4.69		10.8
	Gamma-Chlordane	77.7	77.0	70.7	76.3	0.961		7.60
	Heptachlor	65.4	67.2	62.5	68.0	2.72		8.45
	Heptachlor Epoxide	83.9	85.4	79.2	87.5	1.84		9.97
	Hexachlorobenzene	66.6	66.8	54.9	65.0	0.323		16.8
	Kepone	123	106	106	95.5	14.7		9.96
	Lambda-Cyhalothrin	93.5	96.1	88.6	104	2.70		15.7
	Methoxychlor	87.1	86.7	81.1	85.3	0.474		5.05
	MGK-264	43.8	33.4	52.9	47.0	26.9		11.9

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery		Precision	
						LCS SMP	MS
EPA 8270E	Mirex	63.2	60.6	59.1	62.5	4.26	5.55
	Permethrin	81.5	83.6	78.8	83.3	2.55	5.55
	Phenothrin	45.8	41.8	55.4	55.0	9.27	0.799
	Piperonyl Butoxide	115	118	110	134	2.66	20.2
	Prallethrin	55.2	39.4	51.8	53.5	33.3	3.22
	Tau-Fluvalinate	105	108	103	117	2.96	12.0
	Tetramethrin	91.6	104	99.9	120	12.5	18.5
	Trans-Nonachlor	77.6	74.0	64.8	72.4	4.73	11.0
	Triclosan Methyl	95.3	95.1	84.6	93.0	0.228	9.48
	Trifluralin	74.7	73.3	68.7	74.6	1.96	8.17

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2240234
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2240234
EPA 8270E	Dieldrin (ultra low level) in water matrices by GC/MS/MS	2240233
EPA 8270E	Organochlorine pesticides, pyrethroids and tracers in water matrices by GC/MS-SIM	2240233
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2240234

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 200.7 Rev. 4.4	04/16/2021	04/18/2021 11:30	Alexander Thompson	04/19/2021 14:58	Betina Topolski	2240234
	04/16/2021	04/18/2021 11:30	Alexander Thompson	04/19/2021 16:35	Betina Topolski	2240234
EPA 200.8 Rev. 5.4	04/16/2021	04/18/2021 11:30	Alexander Thompson	04/19/2021 18:22	Alexander Thompson	2240234
EPA 8270E	04/16/2021	04/20/2021 08:00	Fe-Val Siddell	04/21/2021 20:13	Arthur Maknenko	2240233
	04/16/2021	04/20/2021 08:00	Fe-Val Siddell	04/25/2021 15:59	Michael Poppell	2240233
SM 2340B	04/16/2021			04/19/2021 16:35	Betina Topolski	2240234