

Chemical Analysis Report

NW-DIST-2022-11-30-01

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

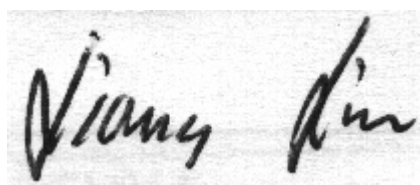
Event Description: **Holmes Run**
Request ID: **RQ-2022-11-21-06**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government Street
Suite 208
Pensacola, FL 32502-5794
Attn: Myranda K Butler

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 13-DEC-2022 18:02

A handwritten signature in black ink, appearing to read "Liang Lin", is shown 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, Nutrients 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: Sikes Creek Upstream of Bonifay Gritney Rd. Collection Date/Time: 11/28/2022 12:01

Field ID: G3NW0159

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2371808	EPA 300.0 Rev. 2.1	Chloride	3.6		mg Cl/L	P423297	
		Sulfate	1.1		mg SO4/L	P423301	
	SM 2320 B-2011	Total Alkalinity	49		mg CaCO3/L	P423194	
	SM 2540 C-2015	TDS	65		mg/L	P423366	
	SM 2540 D-2015	TSS	2	U	mg/L	P423165	
	SM 4500-F- C-2011	Fluoride	0.025	U	mg F/L	P423196	
2371809	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P423316	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29		mg N/L	P423022	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P423079	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P423029	
	SM 5310 B-2011	Organic Carbon	6.9		mg C/L	P423116	
2371813	EPA 8270E	Aldrin	0.68	U	ng/L	P422986	
		Alpha-BHC	0.10	U	ng/L	P422986	
		Alpha-Chlordane	0.21	U	ng/L	P422986	
		PCB-1016	2.1	U	ng/L	P422986	
		Beta-BHC	0.10	U	ng/L	P422986	
		PCB-1221	2.1	U	ng/L	P422986	
		Beta-Cyfluthrin	1.3	U	ng/L	P422986	
		PCB-1232	2.1	U	ng/L	P422986	
		Bifenthrin	0.52	U	ng/L	P422986	
		PCB-1242	2.1	U	ng/L	P422986	
		Carbophenothion	0.94	U	ng/L	P422986	
		PCB-1248	2.1	U	ng/L	P422986	
		Chlorothalonil	1.3	U	ng/L	P422986	
		PCB-1254	2.1	U	ng/L	P422986	
		Cis-Nonachlor	0.21	U	ng/L	P422986	
		PCB-1260	2.1	U	ng/L	P422986	
		Cypermethrin	1.6	U	ng/L	P422986	
		Dacthal	0.16	U	ng/L	P422986	
		DDD-p,p'	0.26	U	ng/L	P422986	
		DDE-p,p'	0.21	U	ng/L	P422986	
		DDT-p,p'	0.26	U	ng/L	P422986	
		Delta-BHC	0.42	U	ng/L	P422986	
		Deltamethrin	1.3	U	ng/L	P422986	
		Dichlobenil	0.26	U	ng/L	P422986	
		Dicofol	1.3	UJ	ng/L	P422986	LCS, RPD
		Dieldrin	0.42	U	ng/L	P422986	
		Endosulfan I	0.42	U	ng/L	P422986	
		Endosulfan II	0.42	U	ng/L	P422986	RPD
		Endosulfan Sulfate	0.31	U	ng/L	P422986	
		Endrin	0.42	U	ng/L	P422986	
		Endrin Aldehyde	0.79	U	ng/L	P422986	MS
		Endrin Ketone	0.42	U	ng/L	P422986	
		Esfenvalerate	0.79	U	ng/L	P422986	

Field ID: G3NW0159

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2371813	EPA 8270E	Ethalfuralin	0.16	U	ng/L	P422986	RPD
		Fenpropathrin	0.26	U	ng/L	P422986	
		Gamma-BHC	0.13	U	ng/L	P422986	
		Gamma-Chlordane	0.21	U	ng/L	P422986	
		Heptachlor	0.21	U	ng/L	P422986	
		Heptachlor Epoxide	0.26	U	ng/L	P422986	
		Hexachlorobenzene**	1.0	U	ng/L	P422986	
		Kepone	5.2	U	ng/L	P422986	
		Lambda-Cyhalothrin	0.79	U	ng/L	P422986	
		Methoprene	0.79	U	ng/L	P422986	
		Methoxychlor	0.31	U	ng/L	P422986	
		MGK-264	1.4		ng/L	P422986	
		Mirex	0.37	U	ng/L	P422986	
		Oxychlordane	0.31	U	ng/L	P422986	
		Permethrin	1.7	U	ng/L	P422986	
		Phenothrin	0.94	U	ng/L	P422986	
		Piperonyl Butoxide	0.16	U	ng/L	P422986	
		Prallethrin	2.1	U	ng/L	P422986	
		Tau-Fluvalinate	0.26	U	ng/L	P422986	
		Tetramethrin	0.79	U	ng/L	P422986	
		Trans-Nonachlor	0.21	U	ng/L	P422986	
		Triclosan Methyl	0.16	U	ng/L	P422986	
		Trifluralin	0.21	U	ng/L	P422986	
	EPA 8276	Chlordane	2.1	U	ng/L	P422986	
		Toxaphene	16	U	ng/L	P422986	
2371816	EPA 200.7 Rev. 4.4	Calcium	21.9		mg/L	P422962	
		Iron	270		ug/L	P422962	
		Magnesium	1.32		mg/L	P422962	
		Potassium	0.67	I	mg/L	P422962	
		Sodium	2.0	I	mg/L	P422962	
		Strontium	24.0		ug/L	P422962	
		Tin	3.0	U	ug/L	P422962	
		Titanium	1.2	I	ug/L	P422962	
		Vanadium	2.0	U	ug/L	P422962	
		Zinc	5.0	U	ug/L	P422962	
	EPA 200.8 Rev. 5.4	Aluminum	37		ug/L	P422962	
		Antimony	0.050	U	ug/L	P422962	
		Arsenic	0.24		ug/L	P422962	
		Barium	18.2		ug/L	P422962	
		Beryllium	0.010	U	ug/L	P422962	
		Boron	9.2		ug/L	P422962	
		Cadmium	0.020	U	ug/L	P422962	
		Chromium	0.40	U	ug/L	P422962	
		Cobalt	0.138		ug/L	P422962	
		Copper	0.40	U	ug/L	P422962	

Field ID: G3NW0159

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2371816	EPA 200.8 Rev. 5.4	Lead	0.20	U	ug/L	P422962	
		Manganese	36.3		ug/L	P422962	
		Molybdenum	0.15	U	ug/L	P422962	
		Nickel	0.50	U	ug/L	P422962	
		Selenium	0.20	U	ug/L	P422962	
		Silver	0.010	U	ug/L	P422962	
		Thallium	0.10	U	ug/L	P422962	
	SM 2340 B-2011	Hardness	60.0		mg/L	P422962	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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 are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for copper are unavailable for one of two spiked samples 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: P422962

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Strontium	2.0	U	ug/L
Tin	3.0	U	ug/L
Titanium	0.75	U	ug/L
Vanadium	2.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P422962

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Barium	0.20	U	ug/L
Beryllium	0.010	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Cobalt	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Manganese	0.10	U	ug/L
Molybdenum	0.15	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 300.0 Rev. 2.1
Batch ID: P423297

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423301

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P423316

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P423022

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P423079

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P423029

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: EPA 8270E

Batch ID: P422986

Component	Result	Code	Units
Aldrin	0.65	U	ng/L
Aldrin	0.65	U	ng/L
Alpha-BHC	0.10	U	ng/L
Alpha-BHC	0.10	U	ng/L
Alpha-Chlordane	0.20	U	ng/L
Alpha-Chlordane	0.20	U	ng/L
Beta-BHC	0.10	U	ng/L
Beta-BHC	0.10	U	ng/L
Beta-Cyfluthrin	1.2	U	ng/L
Beta-Cyfluthrin	1.2	U	ng/L
Bifenthrin	0.50	U	ng/L
Bifenthrin	0.50	U	ng/L
Carbophenothion	0.90	U	ng/L
Carbophenothion	0.90	U	ng/L
Chlorothalonil	1.2	U	ng/L
Chlorothalonil	1.2	U	ng/L
Cis-Nonachlor	0.20	U	ng/L
Cis-Nonachlor	0.20	U	ng/L
Cypermethrin	1.5	U	ng/L
Cypermethrin	1.5	U	ng/L
Dacthal	0.15	U	ng/L
Dacthal	0.15	U	ng/L
DDD-p,p'	0.25	U	ng/L
DDD-p,p'	0.25	U	ng/L
DDE-p,p'	0.20	U	ng/L
DDE-p,p'	0.20	U	ng/L
DDT-p,p'	0.25	U	ng/L
DDT-p,p'	0.25	U	ng/L
Delta-BHC	0.40	U	ng/L
Delta-BHC	0.40	U	ng/L
Deltamethrin	1.2	U	ng/L
Deltamethrin	1.2	U	ng/L
Dichlobenil	0.25	U	ng/L
Dichlobenil	0.25	U	ng/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8270E

Batch ID: P422986

Component	Result	Code	Units
Dicofol	1.2	U	ng/L
Dicofol	1.2	U	ng/L
Dieldrin	0.40	U	ng/L
Dieldrin	0.40	U	ng/L
Endosulfan I	0.40	U	ng/L
Endosulfan I	0.40	U	ng/L
Endosulfan II	0.40	U	ng/L
Endosulfan II	0.40	U	ng/L
Endosulfan Sulfate	0.30	U	ng/L
Endosulfan Sulfate	0.30	U	ng/L
Endrin	0.40	U	ng/L
Endrin	0.40	U	ng/L
Endrin Aldehyde	0.75	U	ng/L
Endrin Aldehyde	0.75	U	ng/L
Endrin Ketone	0.40	U	ng/L
Endrin Ketone	0.40	U	ng/L
Esfenvalerate	0.75	U	ng/L
Esfenvalerate	0.75	U	ng/L
Ethalfuralin	0.15	U	ng/L
Ethalfuralin	0.15	U	ng/L
Fenpropathrin	0.25	U	ng/L
Fenpropathrin	0.25	U	ng/L
Gamma-BHC	0.12	U	ng/L
Gamma-BHC	0.12	U	ng/L
Gamma-Chlordane	0.20	U	ng/L
Gamma-Chlordane	0.20	U	ng/L
Heptachlor	0.20	U	ng/L
Heptachlor	0.20	U	ng/L
Heptachlor Epoxide	0.25	U	ng/L
Heptachlor Epoxide	0.25	U	ng/L
Hexachlorobenzene	1.0	U	ng/L
Hexachlorobenzene	1.0	U	ng/L
Kepone	5.0	U	ng/L
Kepone	5.0	U	ng/L
Lambda-Cyhalothrin	0.75	U	ng/L
Lambda-Cyhalothrin	0.75	U	ng/L
Methoprene	0.75	U	ng/L
Methoprene	0.75	U	ng/L
Methoxychlor	0.30	U	ng/L
Methoxychlor	0.30	U	ng/L
MGK-264	0.20	U	ng/L
MGK-264	0.20	U	ng/L
Mirex	0.35	U	ng/L
Mirex	0.35	U	ng/L
Oxychlordane	0.30	U	ng/L
Oxychlordane	0.30	U	ng/L
PCB-1016	2.0	U	ng/L
PCB-1016	2.0	U	ng/L
PCB-1221	2.0	U	ng/L
PCB-1221	2.0	U	ng/L
PCB-1232	2.0	U	ng/L
PCB-1232	2.0	U	ng/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 8270E

Batch ID: P422986

Component	Result	Code	Units
PCB-1242	2.0	U	ng/L
PCB-1242	2.0	U	ng/L
PCB-1248	2.0	U	ng/L
PCB-1248	2.0	U	ng/L
PCB-1254	2.0	U	ng/L
PCB-1254	2.0	U	ng/L
PCB-1260	2.0	U	ng/L
PCB-1260	2.0	U	ng/L
Permethrin	1.6	U	ng/L
Permethrin	1.6	U	ng/L
Phenothrin	0.90	U	ng/L
Phenothrin	0.90	U	ng/L
Piperonyl Butoxide	0.15	U	ng/L
Piperonyl Butoxide	0.15	U	ng/L
Prallethrin	2.0	U	ng/L
Prallethrin	2.0	U	ng/L
Tau-Fluvalinate	0.25	U	ng/L
Tau-Fluvalinate	0.25	U	ng/L
Tetramethrin	0.75	U	ng/L
Tetramethrin	0.75	U	ng/L
Trans-Nonachlor	0.20	U	ng/L
Trans-Nonachlor	0.20	U	ng/L
Triclosan Methyl	0.15	U	ng/L
Triclosan Methyl	0.15	U	ng/L
Trifluralin	0.20	U	ng/L
Trifluralin	0.20	U	ng/L

Reference Method: EPA 8276

Batch ID: P422986

Component	Result	Code	Units
Chlordane	2.0	U	ng/L
Chlordane	2.0	U	ng/L
Toxaphene	15	U	ng/L
Toxaphene	15	U	ng/L

Reference Method: SM 2320 B-2011

Batch ID: P423194

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-2015

Batch ID: P423366

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015

Batch ID: P423165

Component	Result	Code	Units
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Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-2015
Batch ID: P423165

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P423196

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P423116

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P422962

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	109		P	85 - 115
Iron	112		P	85 - 115
Magnesium	110		P	85 - 115
Potassium	108		P	85 - 115
Sodium	111		P	85 - 115
Strontium	107		P	85 - 115
Tin	107		P	85 - 115
Titanium	107		P	85 - 115
Vanadium	105		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P422962

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	96.3		P	85 - 115
Antimony	102		P	85 - 115
Arsenic	96.6		P	85 - 115
Barium	99.0		P	85 - 115
Beryllium	95.8		P	85 - 115
Boron	100		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	95.9		P	85 - 115
Cobalt	94.3		P	85 - 115
Copper	97.3		P	85 - 115
Lead	91.8		P	85 - 115
Manganese	95.6		P	85 - 115
Molybdenum	95.6		P	85 - 115
Nickel	97.1		P	85 - 115
Selenium	96.4		P	85 - 115
Silver	98.1		P	85 - 115
Thallium	94.4		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P423297

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P423301

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P423316

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.0		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P423022

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	106		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P423079

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	103		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P423029

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	107		P	90 - 110

Reference Method: EPA 8270E
 Batch ID: P422986

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aldrin	51.7		P	10 - 92.0
Alpha-BHC	91.0		P	75 - 107
Alpha-Chlordane	97.0		P	50 - 108
Beta-BHC	61.4		P	36 - 138
Beta-Cyfluthrin	27.1		P	20 - 161
Bifenthrin	20.7		P	10 - 119
Carbophenothion	46.7		P	19 - 94.0
Chlorothalonil	95.5		P	26 - 186
Cis-Nonachlor	70.9		P	42 - 119
Cypermethrin	29.0		P	22 - 150
Dacthal	96.3		P	72 - 119
DDD-p,p'	62.5		P	45 - 107
DDE-p,p'	71.9		P	48 - 106
DDT-p,p'	62.3		P	48 - 110
Delta-BHC	116		P	54 - 140
Deltamethrin	27.2		P	22 - 189
Dichlobenil	53.3		P	36 - 117
Dicofol	39.9		F	46 - 155
Dieldrin	79.1		P	54 - 110
Endosulfan I	84.0		P	59 - 105
Endosulfan II	85.2		P	51 - 118
Endosulfan Sulfate	85.9		P	57 - 121
Endrin	87.5		P	10 - 120
Endrin Aldehyde	74.6		P	34 - 118
Endrin Ketone	115		P	69 - 177
Esfenvalerate	29.3		P	23 - 168
Ethalfuralin	57.7		P	49 - 99.0
Fenpropathrin	40.3		P	34 - 117
Gamma-BHC	90.2		P	72 - 117
Gamma-Chlordane	66.4		P	43 - 106
Heptachlor	56.4		P	41 - 98.0
Heptachlor Epoxide	78.5		P	57 - 106
Hexachlorobenzene	74.5		P	36 - 99.0
Kepone	45.7		P	16 - 215

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8270E

Batch ID: P422986

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Lambda-Cyhalothrin	26.7		P	21 - 177
Methoprene	22.7		P	10 - 119
Methoxychlor	71.2		P	60 - 112
MGK-264	76.2		P	26 - 122
Mirex	46.6		P	10 - 169
Oxychlordane	66.1		P	43 - 105
PCB-1016	57.3		P	48 - 112
PCB-1260	67.8		P	44 - 118
Permethrin	28.0		P	24 - 148
Phenothrin	13.7		P	10 - 106
Piperonyl Butoxide	80.7		P	10 - 139
Prallethrin	57.4		P	17 - 109
Tau-Fluvalinate	22.4		P	13 - 131
Tetramethrin	37.2		P	10 - 132
Trans-Nonachlor	66.5		P	44 - 106
Triclosan Methyl	74.5		P	59 - 109
Trifluralin	51.8		P	44 - 101

Reference Method: EPA 8276

Batch ID: P422986

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlordane	69.7		P	53 - 126
Toxaphene	75.4		P	56 - 211

Reference Method: SM 2320 B-2011

Batch ID: P423194

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	95.9		P	94 - 106

Reference Method: SM 2540 C-2015

Batch ID: P423366

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	95.4		P	90 - 110

Reference Method: SM 2540 D-2015

Batch ID: P423165

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	88.1		P	85 - 106

Reference Method: SM 4500-F- C-2011

Batch ID: P423196

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	96 - 104

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P423116

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.3		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P422962

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2371117	Calcium	103		P	80 - 120
2371117	Iron	109	105	P/P	80 - 120
2371117	Magnesium	104		P	80 - 120
2371117	Potassium	106	100	P/P	80 - 120
2371117	Sodium	109	101	P/P	80 - 120
2371117	Strontium	104	99.9	P/P	80 - 120
2371117	Tin	107	103	P/P	80 - 120
2371117	Titanium	103	101	P/P	80 - 120
2371117	Vanadium	103	101	P/P	80 - 120
2371117	Zinc	97.3	95.5	P/P	80 - 120
2371789	Iron	108		P	80 - 120
2371789	Magnesium	110		P	80 - 120
2371789	Potassium	103		P	80 - 120
2371789	Sodium	111		P	80 - 120
2371789	Strontium	103		P	80 - 120
2371789	Tin	106		P	80 - 120
2371789	Titanium	106		P	80 - 120
2371789	Vanadium	103		P	80 - 120
2371789	Zinc	100		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P422962

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2371117	Aluminum	95.7	92.4	P/P	80 - 120
2371117	Antimony	106	103	P/P	80 - 120
2371117	Arsenic	100	96.7	P/P	80 - 120
2371117	Barium	101	99.1	P/P	80 - 120
2371117	Beryllium	92.6	94.4	P/P	80 - 120
2371117	Boron	100	98.1	P/P	80 - 120
2371117	Cadmium	106	103	P/P	80 - 120
2371117	Chromium	101	99.9	P/P	80 - 120
2371117	Cobalt	94.7	92.7	P/P	80 - 120
2371117	Lead	91.6	91.1	P/P	80 - 120
2371117	Manganese	98.1	98.2	P/P	80 - 120
2371117	Molybdenum	101	97.8	P/P	80 - 120
2371117	Nickel	97.8	96.1	P/P	80 - 120
2371117	Selenium	99.1	96.5	P/P	80 - 120
2371117	Silver	98.4	96.4	P/P	80 - 120
2371117	Thallium	100	98.4	P/P	80 - 120
2371789	Aluminum	93.6		P	80 - 120
2371789	Antimony	103		P	80 - 120
2371789	Arsenic	100		P	80 - 120
2371789	Barium	98.2		P	80 - 120
2371789	Beryllium	93.7		P	80 - 120
2371789	Boron	102		P	80 - 120
2371789	Cadmium	103		P	80 - 120
2371789	Chromium	98.3		P	80 - 120
2371789	Cobalt	100		P	80 - 120
2371789	Copper	89.6		P	80 - 120
2371789	Lead	97.1		P	80 - 120
2371789	Manganese	96.4		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P422962

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2371789	Molybdenum	100		P	80 - 120
2371789	Nickel	90.7		P	80 - 120
2371789	Selenium	98.3		P	80 - 120
2371789	Silver	95.7		P	80 - 120
2371789	Thallium	99.2		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423297

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2372052	Chloride	101		P	90 - 110
2372062	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423301

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2372052	Sulfate	98.9		P	90 - 110
2372062	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P423316

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2371797	Ammonia-N	104	110	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P423022

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2371734	Kjeldahl Nitrogen	94.1	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P423079

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2372453	NO2NO3-N	104	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P423029

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2371787	Total-P	106	106	P/P	90 - 110

Reference Method: EPA 8270E
Batch ID: P422986

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2371953	PCB-1016	69.4	69.1	P/P	46 - 111
2371953	PCB-1260	64.9	63.8	P/P	45 - 114
2371962	Aldrin	38.7	45.0	P/P	20 - 82.0
2371962	Alpha-BHC	75.4	76.6	P/P	71 - 109

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8270E

Batch ID: P422986

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2371962	Alpha-Chlordane	84.7	99.2	P/P	42 - 106
2371962	Beta-BHC	97.1	91.9	P/P	69 - 180
2371962	Beta-Cyfluthrin	51.6	44.3	P/P	18 - 175
2371962	Bifenthrin	31.6	27.9	P/P	21 - 128
2371962	Carbophenothion	60.6	55.5	P/P	10 - 126
2371962	Chlorothalonil	128	139	P/P	10 - 300
2371962	Cis-Nonachlor	60.9	72.7	P/P	34 - 106
2371962	Cypermethrin	56.4	50.7	P/P	22 - 158
2371962	Dacthal	86.7	88.9	P/P	54 - 116
2371962	DDD-p,p'	62.8	62.9	P/P	34 - 107
2371962	DDE-p,p'	57.6	66.1	P/P	33 - 110
2371962	DDT-p,p'	55.9	55.3	P/P	50 - 122
2371962	Delta-BHC	114	140	P/P	77 - 193
2371962	Deltamethrin	122	90.6	P/P	10 - 195
2371962	Dichlobenil	62.4	58.3	P/P	25 - 113
2371962	Dicofol	56.6	40.9	P/P	38 - 247
2371962	Dieldrin	63.4	72.6	P/P	45 - 118
2371962	Endosulfan I	63.8	72.0	P/P	51 - 106
2371962	Endosulfan II	59.3	81.3	P/P	37 - 122
2371962	Endosulfan Sulfate	98.7	130	P/P	43 - 132
2371962	Endrin	66.7	79.6	P/P	29 - 101
2371962	Endrin Aldehyde	90.1	120	P/F	19 - 110
2371962	Endrin Ketone	91.5	127	P/P	60 - 140
2371962	Esfenvalerate	63.6	50.4	P/P	26 - 199
2371962	Ethalfuralin	56.2	54.7	P/P	45 - 99.0
2371962	Fenpropathrin	53.2	52.5	P/P	35 - 120
2371962	Gamma-BHC	79.1	95.4	P/P	63 - 128
2371962	Gamma-Chlordane	58.3	64.5	P/P	40 - 104
2371962	Heptachlor	51.1	54.0	P/P	36 - 97.0
2371962	Heptachlor Epoxide	68.2	72.1	P/P	49 - 184
2371962	Hexachlorobenzene	55.2	58.9	P/P	39 - 96.0
2371962	Kepone	83.1	117	P/P	10 - 217
2371962	Lambda-Cyhalothrin	50.4	44.4	P/P	21 - 193
2371962	Methoprene	40.3	34.5	P/P	20 - 106
2371962	Methoxychlor	102	98.8	P/P	53 - 118
2371962	MGK-264	84.2	87.5	P/P	40 - 118
2371962	Mirex	36.0	44.3	P/P	26 - 92.0
2371962	Oxychlordane	55.6	56.8	P/P	44 - 99.0
2371962	Permethrin	47.2	42.0	P/P	33 - 182
2371962	Phenothrin	30.0	23.0	P/P	10 - 129
2371962	Piperonyl Butoxide	89.1	93.0	P/P	10 - 211
2371962	Prallethrin	79.8	75.9	P/P	24 - 113
2371962	Tau-Fluvalinate	50.4	41.5	P/P	14 - 149
2371962	Tetramethrin	67.6	52.5	P/P	17 - 151
2371962	Trans-Nonachlor	60.4	66.8	P/P	42 - 102
2371962	Triclosan Methyl	72.0	74.8	P/P	48 - 108
2371962	Trifluralin	50.9	50.4	P/P	47 - 96.0

Reference Method: EPA 8276

Batch ID: P422986

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 8276

Batch ID: P422986

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2371953	Chlordane	66.9	69.1	P/P	53 - 126
2371953	Toxaphene	82.4	82.6	P/P	56 - 211

Reference Method: SM 4500-F- C-2011

Batch ID: P423196

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2371786	Fluoride	101	99.5	P/P	94 - 104

Reference Method: SM 5310 B-2011

Batch ID: P423116

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2371809	Organic Carbon	98.1	98.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P422962

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2371117	Calcium	5.48	Spike	P	0 - 20
2371117	Iron	3.22	Spike	P	0 - 20
2371117	Magnesium	3.75	Spike	P	0 - 20
2371117	Potassium	4.13	Spike	P	0 - 20
2371117	Sodium	4.14	Spike	P	0 - 20
2371117	Strontium	4.14	Spike	P	0 - 20
2371117	Tin	4.23	Spike	P	0 - 20
2371117	Titanium	1.38	Spike	P	0 - 20
2371117	Vanadium	1.41	Spike	P	0 - 20
2371117	Zinc	1.39	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P422962

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2371117	Aluminum	3.46	Spike	P	0 - 20
2371117	Antimony	2.14	Spike	P	0 - 20
2371117	Arsenic	3.77	Spike	P	0 - 20
2371117	Barium	1.42	Spike	P	0 - 20
2371117	Beryllium	1.91	Spike	P	0 - 20
2371117	Boron	1.83	Spike	P	0 - 20
2371117	Cadmium	2.43	Spike	P	0 - 20
2371117	Chromium	1.15	Spike	P	0 - 20
2371117	Cobalt	2.17	Spike	P	0 - 20
2371117	Copper	0.947	Spike	P	0 - 20
2371117	Lead	0.496	Spike	P	0 - 20
2371117	Manganese	0.0534	Spike	P	0 - 20
2371117	Molybdenum	2.52	Spike	P	0 - 20
2371117	Nickel	1.80	Spike	P	0 - 20
2371117	Selenium	2.60	Spike	P	0 - 20
2371117	Silver	2.05	Spike	P	0 - 20
2371117	Thallium	2.04	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423297

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2372052	Chloride	0.277	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423301

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2372052	Sulfate	0.501	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P423316

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2371797	Ammonia-N	2.93	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P423022

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2371734	Kjeldahl Nitrogen	9.44	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P423079

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2372453	NO2NO3-N	0.426	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P423029

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2371787	Total-P	0.459	Spike	P	0 - 20

Reference Method: EPA 8270E

Batch ID: P422986

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2371953	PCB-1016	0.424	Spike	P	0 - 32
2371953	PCB-1260	1.82	Spike	P	0 - 31
2371962	Aldrin	14.9	Spike	P	0 - 41
2371962	Alpha-BHC	1.58	Spike	P	0 - 25
2371962	Alpha-Chlordane	15.8	Spike	P	0 - 33
2371962	Beta-BHC	5.44	Spike	P	0 - 36
2371962	Beta-Cyfluthrin	15.1	Spike	P	0 - 42
2371962	Bifenthrin	12.4	Spike	P	0 - 53
2371962	Carbophenothion	8.72	Spike	P	0 - 30
2371962	Chlorothalonil	8.81	Spike	P	0 - 71
2371962	Cis-Nonachlor	17.7	Spike	P	0 - 29
2371962	Cypermethrin	10.6	Spike	P	0 - 40
2371962	Dacthal	2.51	Spike	P	0 - 26
2371962	DDD-p,p'	0.147	Spike	P	0 - 39
2371962	DDE-p,p'	13.6	Spike	P	0 - 33
2371962	DDT-p,p'	0.989	Spike	P	0 - 40
2371962	Delta-BHC	20.7	Spike	P	0 - 37
2371962	Deltamethrin	29.7	Spike	P	0 - 100
2371962	Dichlobenil	6.83	Spike	P	0 - 40
2371962	Dicofol	32.4	Spike	F	0 - 31
2371962	Dieldrin	13.4	Spike	P	0 - 27
2371962	Endosulfan I	12.1	Spike	P	0 - 23
2371962	Endosulfan II	31.2	Spike	F	0 - 28

Quality Assurance Report Precision

Reference Method: EPA 8270E

Batch ID: P422986

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2371962	Endosulfan Sulfate	27.2	Spike	P	0 - 38
2371962	Endrin	17.7	Spike	P	0 - 63
2371962	Endrin Aldehyde	28.3	Spike	P	0 - 60
2371962	Endrin Ketone	32.4	Spike	P	0 - 37
2371962	Esfenvalerate	23.0	Spike	P	0 - 52
2371962	Ethalfuralin	2.67	Spike	P	0 - 23
2371962	Fenpropathrin	1.44	Spike	P	0 - 32
2371962	Gamma-BHC	18.7	Spike	F	0 - 17
2371962	Gamma-Chlordane	9.99	Spike	P	0 - 40
2371962	Heptachlor	5.67	Spike	P	0 - 29
2371962	Heptachlor Epoxide	5.57	Spike	P	0 - 25
2371962	Hexachlorobenzene	6.57	Spike	P	0 - 36
2371962	Kepone	34.1	Spike	P	0 - 93
2371962	Lambda-Cyhalothrin	12.7	Spike	P	0 - 55
2371962	Methoprene	15.5	Spike	P	0 - 53
2371962	Methoxychlor	2.95	Spike	P	0 - 29
2371962	MGK-264	3.26	Spike	P	0 - 35
2371962	Mirex	20.8	Spike	P	0 - 46
2371962	Oxychlordane	2.16	Spike	P	0 - 29
2371962	Permethrin	11.7	Spike	P	0 - 44
2371962	Phenothrin	26.4	Spike	P	0 - 56
2371962	Piperonyl Butoxide	4.23	Spike	P	0 - 100
2371962	Prallethrin	5.01	Spike	P	0 - 42
2371962	Tau-Fluvalinate	19.3	Spike	P	0 - 54
2371962	Tetramethrin	25.1	Spike	P	0 - 51
2371962	Trans-Nonachlor	10.1	Spike	P	0 - 37
2371962	Triclosan Methyl	3.86	Spike	P	0 - 31
2371962	Trifluralin	1.09	Spike	P	0 - 30

Reference Method: EPA 8276

Batch ID: P422986

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2371953	Chlordane	3.32	Spike	P	0 - 25
2371953	Toxaphene	0.296	Spike	P	0 - 26

Reference Method: SM 2320 B-2011

Batch ID: P423194

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2371786	Total Alkalinity	0.111	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2015

Batch ID: P423366

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2371534	TDS	5.56	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500-F- C-2011
Batch ID: P423196

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2371786	Fluoride	0.953	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P423116

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2371809	Organic Carbon	0.564	Spike	P	0 - 20

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

Quality Assurance Report Surrogates

Lab Sample ID: 2371813

Field Sample ID: G3NW0159

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8270E	Decachlorobiphenyl	84.2	P	29 - 130
EPA 8270E	Decachlorobiphenyl	68.4	P	30 - 118
EPA 8270E	Tetrachloro-m-xylene	63.0	P	29 - 104
EPA 8270E	Tetrachloro-m-xylene	62.9	P	30 - 97.0
EPA 8276	Decachlorobiphenyl	64.8	P	30 - 101
EPA 8276	PCNB	74.9	P	48 - 121

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A116245

Included Lab Sample IDs: 2371816

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	105	101	P/P	90 - 110
Iron	107	101	P/P	90 - 110
Magnesium	106	101	P/P	90 - 110
Potassium	105	98.8	P/P	90 - 110
Sodium	104	98.9	P/P	90 - 110
Strontium	103	104	P/P	90 - 110
Tin	104	104	P/P	90 - 110
Titanium	102	102	P/P	90 - 110
Vanadium	99.7	99.6	P/P	90 - 110
Zinc	103	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A116257

Included Lab Sample IDs: 2371809

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A116260

Included Lab Sample IDs: 2371809

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	99.0	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A116268

Included Lab Sample IDs: 2371809

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.0	96.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A116269

Included Lab Sample IDs: 2371816

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	95.9	96.7	P/P	90 - 110
Antimony	101	102	P/P	90 - 110
Arsenic	97.9	98.6	P/P	90 - 110
Barium	96.6	96.4	P/P	90 - 110
Beryllium	97.3	98.4	P/P	90 - 110
Boron	96.1	94.7	P/P	90 - 110
Cadmium	102	102	P/P	90 - 110
Chromium	95.2	94.7	P/P	90 - 110
Manganese	96.2	96.8	P/P	90 - 110
Molybdenum	95.2	95.9	P/P	90 - 110
Selenium	101	103	P/P	90 - 110
Silver	95.4	94.4	P/P	90 - 110
Thallium	97.9	96.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A116272

Included Lab Sample IDs: 2371808

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	104	104	P/P	90 - 110
Sulfate	104	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A116281

Included Lab Sample IDs: 2371809

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	103	P/P	90 - 110

Reference Method: EPA 8276

Run ID: A116296

Included Lab Sample IDs: 2371813

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chlordane	98.9		P	80 - 120
Toxaphene	110		P	80 - 120

Reference Method: SM 2320 B-2011

Run ID: A116298

Included Lab Sample IDs: 2371808

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.7	95.0	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A116298

Included Lab Sample IDs: 2371808

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	102	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A116317

Included Lab Sample IDs: 2371816

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	92.8	92.6	P/P	90 - 110
Nickel	90.6	91.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A116336

Included Lab Sample IDs: 2371809

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.6	99.1	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A116345

Included Lab Sample IDs: 2371816

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cobalt	96.4	96.4	P/P	90 - 110
Lead	94.0	94.3	P/P	90 - 110

Reference Method: EPA 8270E

Run ID: A116349

Included Lab Sample IDs: 2371813

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
PCB-1016	98.4		P	80 - 120
PCB-1260	109		P	80 - 120

Reference Method: EPA 8270E

Run ID: A116372

Included Lab Sample IDs: 2371813

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aldrin	99.1		P	80 - 120
Alpha-BHC	105		P	80 - 120
Alpha-Chlordane	118		P	80 - 120
Beta-BHC	103		P	80 - 120
Beta-Cyfluthrin	94.7		P	80 - 120
Bifenthrin	105		P	80 - 120
Carbophenothion	109		P	80 - 120
Chlorothalonil	106		P	80 - 120
Cis-Nonachlor	105		P	80 - 120
Cypermethrin	103		P	80 - 120
Dacthal	112		P	80 - 120
DDD-p,p'	101		P	80 - 120
DDE-p,p'	107		P	80 - 120
Delta-BHC	109		P	80 - 120
Deltamethrin	102		P	80 - 120
Dichlobenil	95.8		P	80 - 120
Dicofol	103		P	80 - 120
Dieldrin	105		P	80 - 120
Endosulfan I	96.2		P	80 - 120
Endosulfan II	108		P	80 - 120
Endosulfan Sulfate	117		P	80 - 120
Endrin	102		P	80 - 120
Endrin Aldehyde	116		P	80 - 120
Endrin Ketone	116		P	80 - 120
Esfenvalerate	105		P	80 - 120
Ethalfuralin	90.6		P	80 - 120
Fenpropathrin	101		P	80 - 120
Gamma-BHC	103		P	80 - 120
Gamma-Chlordane	98.9		P	80 - 120
Heptachlor	95.5		P	80 - 120
Heptachlor Epoxide	103		P	80 - 120
Hexachlorobenzene	102		P	80 - 120
Kepone	95.9		P	80 - 120
Lambda-Cyhalothrin	104		P	80 - 120
Methoprene	101		P	80 - 120

Quality Assurance Report Calibration Verification

Reference Method: EPA 8270E
Run ID: A116372
Included Lab Sample IDs: 2371813

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Methoxychlor	106		P	80 - 120
Mirex	100		P	80 - 120
Oxychlordane	98.9		P	80 - 120
Permethrin	99.0		P	80 - 120
Phenothrin	103		P	80 - 120
Piperonyl Butoxide	103		P	80 - 120
Prallethrin	115		P	80 - 120
Tau-Fluvalinate	107		P	80 - 120
Tetramethrin	99.8		P	80 - 120
Trans-Nonachlor	103		P	80 - 120
Triclosan Methyl	98.5		P	80 - 120
Trifluralin	86.8		P	80 - 120

Reference Method: EPA 8270E
Run ID: A116376
Included Lab Sample IDs: 2371813

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
DDT-p,p'	100		P	80 - 120
MGK-264	98.9		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			LCS	Precision SMP	MS
EPA 200.7 Rev. 4.4	Calcium	109	103					5.48
	Iron	112	109	105	108			3.22
	Magnesium	110	104	110				3.75
	Potassium	108	106	100	103			4.13
	Sodium	111	109	101	111			4.14
	Strontium	107	104	99.9	103			4.14
	Tin	107	107	103	106			4.23
	Titanium	107	103	101	106			1.38
	Vanadium	105	103	101	103			1.41
	Zinc	104	97.3	95.5	100			1.39
EPA 200.8 Rev. 5.4	Aluminum	96.3	95.7	92.4	93.6			3.46
	Antimony	102	106	103	103			2.14
	Arsenic	96.6	100	96.7	100			3.77
	Barium	99.0	101	99.1	98.2			1.42
	Beryllium	95.8	92.6	94.4	93.7			1.91
	Boron	100	100	98.1	102			1.83
	Cadmium	103	106	103	103			2.43
	Chromium	95.9	101	99.9	98.3			1.15
	Cobalt	94.3	100	94.7	92.7			2.17
	Copper	97.3	89.6					0.947
	Lead	91.8	97.1	91.6	91.1			0.496
	Manganese	95.6	96.4	98.1	98.2			0.0534
	Molybdenum	95.6	101	97.8	100			2.52
	Nickel	97.1	97.8	96.1	90.7			1.80
	Selenium	96.4	99.1	96.5	98.3			2.60
	Silver	98.1	98.4	96.4	95.7			2.05
	Thallium	94.4	100	98.4	99.2			2.04
EPA 300.0 Rev. 2.1	Chloride	102	101	101			0.277	
	Sulfate	102	98.9	102			0.501	
EPA 350.1 Rev. 2.0	Ammonia-N	97.0	104	110				2.93
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	94.1	108				9.44
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	103	104	103				0.426
EPA 365.1 Rev. 2.0	Total-P	107	106	106				0.459
EPA 8270E	Aldrin	51.7	38.7	45.0				14.9
	Alpha-BHC	91.0	75.4	76.6				1.58
	Alpha-Chlordane	97.0	84.7	99.2				15.8
	Beta-BHC	61.4	97.1	91.9				5.44
	Beta-Cyfluthrin	27.1	51.6	44.3				15.1
	Bifenthrin	20.7	31.6	27.9				12.4
	Carbophenothion	46.7	60.6	55.5				8.72
	Chlorothalonil	95.5	128	139				8.81
	Cis-Nonachlor	70.9	60.9	72.7				17.7
	Cypermethrin	29.0	56.4	50.7				10.6
	Dacthal	96.3	86.7	88.9				2.51
	DDD-p,p'	62.5	62.8	62.9				0.147
	DDE-p,p'	71.9	57.6	66.1				13.6
	DDT-p,p'	62.3	55.9	55.3				0.989
	Delta-BHC	116	114	140				20.7
	Deltamethrin	27.2	122	90.6				29.7
	Dichlobenil	53.3	62.4	58.3				6.83
	Dicofol	39.9	56.6	40.9				32.4
	Dieldrin	79.1	63.4	72.6				13.4
	Endosulfan I	84.0	63.8	72.0				12.1
	Endosulfan II	85.2	59.3	81.3				31.2

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	SMP
EPA 8270E	Endosulfan Sulfate	85.9	98.7	130		27.2
	Endrin	87.5	66.7	79.6		17.7
	Endrin Aldehyde	74.6	90.1	120		28.3
	Endrin Ketone	115	91.5	127		32.4
	Esfenvalerate	29.3	63.6	50.4		23.0
	Ethalfuralin	57.7	56.2	54.7		2.67
	Fenpropathrin	40.3	53.2	52.5		1.44
	Gamma-BHC	90.2	79.1	95.4		18.7
	Gamma-Chlordane	66.4	58.3	64.5		9.99
	Heptachlor	56.4	51.1	54.0		5.67
	Heptachlor Epoxide	78.5	68.2	72.1		5.57
	Hexachlorobenzene	74.5	55.2	58.9		6.57
	Kepone	45.7	83.1	117		34.1
	Lambda-Cyhalothrin	26.7	50.4	44.4		12.7
	Methoprene	22.7	40.3	34.5		15.5
	Methoxychlor	71.2	102	98.8		2.95
	MGK-264	76.2	84.2	87.5		3.26
	Mirex	46.6	36.0	44.3		20.8
	Oxychlordane	66.1	55.6	56.8		2.16
	PCB-1016	57.3	69.4	69.1		0.424
	PCB-1260	67.8	64.9	63.8		1.82
	Permethrin	28.0	47.2	42.0		11.7
	Phenothrin	13.7	30.0	23.0		26.4
	Piperonyl Butoxide	80.7	89.1	93.0		4.23
	Prallethrin	57.4	79.8	75.9		5.01
	Tau-Fluvalinate	22.4	50.4	41.5		19.3
	Tetramethrin	37.2	67.6	52.5		25.1
	Trans-Nonachlor	66.5	60.4	66.8		10.1
	Triclosan Methyl	74.5	72.0	74.8		3.86
	Trifluralin	51.8	50.9	50.4		1.09
EPA 8276	Chlordane	69.7	66.9	69.1		3.32
	Toxaphene	75.4	82.4	82.6		0.296
SM 2320 B-2011	Total Alkalinity	95.9			0.111	
SM 2540 C-2015	TDS	95.4			5.56	
SM 2540 D-2015	TSS	88.1				
SM 4500-F- C-2011	Fluoride	100	101	99.5		0.953
SM 5310 B-2011	Organic Carbon	96.3	98.1	98.9		0.564

Reference Method Descriptions

Method	Description	Associated Samples
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2371816
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2371816
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2371808
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2371808
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2371809
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2371809
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2371809
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2371809
EPA 8270E	Organochlorine pesticides, pyrethroids and tracers in water matrices by GC/MS/MS	2371813
EPA 8270E	PCBs in water matrices by GC/MS/MS	2371813

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 8276	Organochlorine pesticides in water matrices by GC/MS with Negative Chemical Ionization	2371813
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2371808
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2371816
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2371808
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2371808
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2371808
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2371809

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	11/30/2022	12/01/2022 11:10	Megan Whitefoot	12/02/2022 22:53	McKinley C Carter	2371816
EPA 200.8 Rev. 5.4	11/30/2022	12/01/2022 11:10	Megan Whitefoot	12/05/2022 20:27	Emily M Philpot	2371816
	11/30/2022	12/01/2022 11:10	Megan Whitefoot	12/07/2022 20:52	Megan Whitefoot	2371816
	11/30/2022	12/01/2022 11:10	Megan Whitefoot	12/08/2022 21:45	Emily M Philpot	2371816
EPA 300.0 Rev. 2.1	11/30/2022			12/08/2022 03:50	Anna M. Plaviak	2371808
EPA 350.1 Rev. 2.0	11/30/2022			12/08/2022 14:28	Ping Hua	2371809
EPA 351.2 Rev. 2.0	11/30/2022	12/02/2022 13:20	Simonne.V. Calhoun	12/06/2022 11:31	Samantha L Bates	2371809
EPA 353.2 Rev. 2.0	11/30/2022			12/05/2022 09:41	Beverly Y. Sanders	2371809
EPA 365.1 Rev. 2.0	11/30/2022	12/02/2022 09:51	Adam P Silver	12/05/2022 12:55	Simonne.V. Calhoun	2371809
EPA 8270E	11/30/2022	12/02/2022 09:30	Rasheda Ghaffari	12/06/2022 22:42	Vandana T. Nagar	2371813
	11/30/2022	12/02/2022 09:30	Rasheda Ghaffari	12/08/2022 00:05	Michael Poppell	2371813
	11/30/2022	12/02/2022 09:30	Rasheda Ghaffari	12/11/2022 02:22	Michael Poppell	2371813
EPA 8276	11/30/2022	12/02/2022 09:30	Rasheda Ghaffari	12/06/2022 14:48	Lipi Saha	2371813
SM 2320 B-2011	11/30/2022			12/06/2022 00:05	Dale L. Simmons	2371808
SM 2340 B-2011	11/30/2022			12/02/2022 22:53	McKinley C Carter	2371816
SM 2540 C-2015	11/30/2022			12/01/2022 15:43	Yijie Li	2371808
SM 2540 D-2015	11/30/2022			12/01/2022 15:43	Yijie Li	2371808
SM 4500-F- C-2011	11/30/2022			12/06/2022 00:05	Dale L. Simmons	2371808
SM 5310 B-2011	11/30/2022			12/05/2022 14:17	Khloe J Berg	2371809