

Chemical Analysis Report

TLH-ROC-2018-02-01-01

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

Event Description: **A-b/t/m**
Request ID: **RQ-2018-01-08-21**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
Attn: Michael Eckles

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 01-MAR-2018 15:22

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: 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 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: SUGAR CREEK @ SUWANNEE RIVER

Collection Date/Time: 02/01/2018 11:55

Field ID: G1TLHR0047

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1963824	EPA 180.1 Rev. 2.0	Turbidity	3.7		NTU	P339174	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P339697	
	SM 2120 B	Color (true)	97	A	PCU	P339255	
	SM 2320 B-97	Total Alkalinity	42	A	mg CaCO3/L	P339515	
	SM 2540 C-97	TDS	117		mg/L	P339637	
	SM 2540 D-97	TSS	3	I	mg/L	P339535	
	SM 4500 F-C-97	Fluoride	0.43		mg F/L	P340532	
1963826	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P339372	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.52		mg N/L	P339225	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.45		mg N/L	P339333	
	EPA 365.1 Rev. 2.0	Total-P	0.59		mg P/L	P339340	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P339521	
1963828	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.49		mg P/L	P339201	
1963836	EPA 8321B	2,4-D	0.0020	U	ug/L	P339135	
		Sucralose**	0.036	I	ug/L	P339296	
		Bentazon	8.0E-04	U	ug/L	P339135	MS
		MCP	0.0020	U	ug/L	P339135	MS
		Triclopyr**	0.0040	U	ug/L	P339135	
		Imidacloprid	0.0066	I	ug/L	P339135	MS
		Diuron	0.074		ug/L	P339135	
		Primidone**	0.0040	U	ug/L	P339135	
		Linuron	0.0040	U	ug/L	P339135	
		Acetaminophen**	0.0080	U	ug/L	P339135	
		Fenuron	0.013	I	ug/L	P339135	
		Carbamazepine**	4.0E-04	U	ug/L	P339135	
		Fluridone**	4.0E-04	U	ug/L	P339135	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: BETHEL CREEK @ MILL CREEK RD

Collection Date/Time: 02/01/2018 13:00

Field ID: G1TLHR0062

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1963825	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P339174	
	EPA 300.0 Rev. 2.1	Chloride	4.5		mg Cl/L	P339697	
	SM 2120 B	Color (true)	490		PCU	P339255	
	SM 2320 B-97	Total Alkalinity	62		mg CaCO3/L	P339515	
	SM 2540 C-97	TDS	147		mg/L	P339637	
	SM 2540 D-97	TSS	2	U	mg/L	P339535	
	SM 4500 F-C-97	Fluoride	0.066	I	mg F/L	P340472	
1963827	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P339372	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.81		mg N/L	P339225	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.036		mg N/L	P339333	
	EPA 365.1 Rev. 2.0	Total-P	0.029		mg P/L	P339340	

Field ID: G1TLHR0062

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1963827	SM 5310 B-00	Organic Carbon	36		mg C/L	P339521	
1963829	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.013		mg P/L	P339201	
1963837	EPA 8321B	2,4-D	0.0020	U	ug/L	P339218	
		Sucralose**	0.028	I	ug/L	P339296	
		Bentazon	8.0E-04	U	ug/L	P339218	
		MCP	0.0020	U	ug/L	P339218	
		Triclopyr**	0.0040	U	ug/L	P339218	
		Imidacloprid	0.0020	U	ug/L	P339218	
		Diuron	0.0020	U	ug/L	P339218	
		Primidone**	0.0040	U	ug/L	P339218	
		Linuron	0.0040	U	ug/L	P339218	
		Acetaminophen**	0.0080	U	ug/L	P339218	
		Fenuron	0.0080	U	ug/L	P339218	
		Carbamazepine**	4.0E-04	U	ug/L	P339218	
		Fluridone**	8.0E-04	U	ug/L	P339218	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 8321B: MS accuracy for 2,4-D could not be assessed due to high concentration of parameter in the spiked sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P339174

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P339697

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P339372

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P339225

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

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P339333

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P339340

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339201

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: EPA 8321B
Batch ID: P339135

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
Acetaminophen	0.0080	U	ug/L
Bentazon	8.0E-04	U	ug/L
Carbamazepine	4.0E-04	U	ug/L
Diuron	0.0020	U	ug/L
Fenuron	0.0080	U	ug/L
Fluridone	4.0E-04	U	ug/L
Imidacloprid	0.0020	U	ug/L
Linuron	0.0040	U	ug/L
MCP	0.0020	U	ug/L
Primidone	0.0040	U	ug/L
Triclopyr	0.0040	U	ug/L

Reference Method: EPA 8321B
Batch ID: P339218

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
Acetaminophen	0.0080	U	ug/L
Bentazon	8.0E-04	U	ug/L
Carbamazepine	4.0E-04	U	ug/L
Diuron	0.0020	U	ug/L
Fenuron	0.0080	U	ug/L
Fluridone	8.0E-04	U	ug/L
Imidacloprid	0.0020	U	ug/L
Linuron	0.0040	U	ug/L
MCP	0.0020	U	ug/L
Primidone	0.0040	U	ug/L
Triclopyr	0.0040	U	ug/L

Reference Method: EPA 8321B
Batch ID: P339296

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P339255

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: SM 2120 B
 Batch ID: P339255

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
 Batch ID: P339515

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

Reference Method: SM 2540 C-97
 Batch ID: P339637

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
 Batch ID: P339535

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
 Batch ID: P340472

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
 Batch ID: P340532

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
 Batch ID: P339521

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P339697

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	95.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P339372

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P339372

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P339225

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	100		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P339333

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

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P339340

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P339201

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.7		P	90 - 110

Reference Method: EPA 8321B
 Batch ID: P339135

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	68.1		P	40 - 150
Acetaminophen	96.9		P	30 - 150
Bentazon	82.7		P	30 - 150
Carbamazepine	95.0		P	40 - 150
Diuron	79.2		P	40 - 150
Fenuron	102		P	40 - 150
Fluridone	84.6		P	40 - 150
Imidacloprid	98.6		P	40 - 160
Linuron	89.4		P	40 - 150
MCP	68.2		P	40 - 150
Primidone	107		P	40 - 150
Triclopyr	67.6		P	40 - 150

Reference Method: EPA 8321B
 Batch ID: P339218

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	71.2		P	40 - 150
Acetaminophen	109		P	30 - 150
Bentazon	84.2		P	30 - 150
Carbamazepine	94.0		P	40 - 150
Diuron	86.8		P	40 - 150

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P339218

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fenuron	115		P	40 - 150
Fluridone	86.2		P	40 - 150
Imidacloprid	95.2		P	40 - 160
Linuron	89.5		P	40 - 150
MCPP	81.1		P	40 - 150
Primidone	107		P	40 - 150
Triclopyr	73.8		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P339296

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	105		P	40 - 150

Reference Method: SM 2320 B-97
Batch ID: P339515

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	96.0		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P340472

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.8		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P340532

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.3		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P339521

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P339697

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963717	Chloride	96.2		P	90 - 110
1963747	Chloride	95.8		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339372

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963757	Ammonia-N	100	96.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339225

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963724	Kjeldahl Nitrogen	95.6	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P339333

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963752	NO2NO3-N	104	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P339340

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963757	Total-P	98.2	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339201

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963758	O-Phosphate-P	97.5	97.3	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P339135

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963382	2,4-D	50.4	52.5	P/P	40 - 150
1963382	Acetaminophen	109	107	P/P	30 - 150
1963382	Bentazon	29.7	30.0	F/F	30 - 150
1963382	Carbamazepine	86.3	83.9	P/P	40 - 150
1963382	Diuron	65.6	68.2	P/P	40 - 150
1963382	Fenuron	80.7	81.7	P/P	40 - 150
1963382	Fluridone	68.0	66.6	P/P	40 - 150
1963382	Imidacloprid	161	148	F/P	40 - 160
1963382	Linuron	78.2	77.6	P/P	40 - 150
1963382	MCPP	39.1	38.2	F/F	40 - 150
1963382	Primidone	109	104	P/P	40 - 150
1963382	Triclopyr	45.9	45.0	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P339218

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963931	Acetaminophen	134	126	P/P	30 - 150
1963931	Bentazon	68.5	57.0	P/P	30 - 150
1963931	Carbamazepine	93.4	90.7	P/P	40 - 150
1963931	Diuron	84.6	77.4	P/P	40 - 150
1963931	Fenuron	98.1	88.2	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P339218

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963931	Fluridone	71.6	66.0	P/P	40 - 150
1963931	Imidacloprid	149	153	P/P	40 - 160
1963931	Linuron	85.7	87.7	P/P	40 - 150
1963931	MCP	64.2	59.4	P/P	40 - 150
1963931	Primidone	127	113	P/P	40 - 150
1963931	Triclopyr	64.7	52.8	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P339296

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963387	Sucralose	116	112	P/P	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P340472

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1964092	Fluoride	98.7	102	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P340532

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1968135	Fluoride	95.1	95.7	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P339521

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963629	Organic Carbon	94.2	95.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P339174

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963750	Turbidity	0.873	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P339697

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963717	Chloride	0.995	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339372

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963757	Ammonia-N	2.90	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339225

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963724	Kjeldahl Nitrogen	2.39	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P339333

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963752	NO2NO3-N	0.952	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P339340

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963757	Total-P	3.88	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339201

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963758	O-Phosphate-P	0.194	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P339135

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963382	2,4-D	3.75	Spike	P	0 - 30
1963382	Acetaminophen	1.85	Spike	P	0 - 30
1963382	Bentazon	0.771	Spike	P	0 - 30
1963382	Carbamazepine	2.69	Spike	P	0 - 30
1963382	Diuron	3.84	Spike	P	0 - 30
1963382	Fenuron	1.13	Spike	P	0 - 30
1963382	Fluridone	2.17	Spike	P	0 - 30
1963382	Imidacloprid	7.68	Spike	P	0 - 30
1963382	Linuron	0.693	Spike	P	0 - 30
1963382	MCP	2.30	Spike	P	0 - 30
1963382	Primidone	4.59	Spike	P	0 - 30
1963382	Triclopyr	2.13	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P339218

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963931	2,4-D	21.5	Spike	P	0 - 30
1963931	Acetaminophen	5.63	Spike	P	0 - 30
1963931	Bentazon	8.15	Spike	P	0 - 30
1963931	Carbamazepine	2.87	Spike	P	0 - 30
1963931	Diuron	8.34	Spike	P	0 - 30
1963931	Fenuron	10.6	Spike	P	0 - 30
1963931	Fluridone	2.79	Spike	P	0 - 30
1963931	Imidacloprid	2.65	Spike	P	0 - 30
1963931	Linuron	2.27	Spike	P	0 - 30
1963931	MCP	7.72	Spike	P	0 - 30
1963931	Primidone	11.2	Spike	P	0 - 30
1963931	Triclopyr	20.2	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P339296

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963387	Sucralose	3.87	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P339255

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963824	Color (true)	0.578	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P339515

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963824	Total Alkalinity	0.431	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P339637

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963751	TDS	7.59	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P340472

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1964092	Fluoride	2.39	Spike	P	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P340532

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1968135	Fluoride	0.514	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P339521

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963629	Organic Carbon	0.970	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Surrogates

Lab Sample ID: 1963836
Field Sample ID: G1TLHR0047

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	64.6	P	30 - 160
EPA 8321B	Acetaminophen-d4	108	P	30 - 160
EPA 8321B	Carbamazepine-d10	93.4	P	30 - 160
EPA 8321B	Diuron-d6	84.8	P	30 - 160
EPA 8321B	Primidone-d5	109	P	30 - 160
EPA 8321B	Sucralose-d6	120	P	40 - 160

Lab Sample ID: 1963837
Field Sample ID: G1TLHR0062

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	68.3	P	30 - 160
EPA 8321B	Acetaminophen-d4	129	P	30 - 160
EPA 8321B	Carbamazepine-d10	109	P	30 - 160
EPA 8321B	Diuron-d6	91.4	P	30 - 160
EPA 8321B	Primidone-d5	95.9	P	30 - 160
EPA 8321B	Sucralose-d6	143	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A81797
Included Lab Sample IDs: 1963824, 1963825

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	100	P/P	95 - 105

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A81805

Included Lab Sample IDs: 1963828, 1963829

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.6	100	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A81826

Included Lab Sample IDs: 1963824, 1963825

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	109	P/P	85 - 115
Color (true)	105	109	P/P	85 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A81855

Included Lab Sample IDs: 1963826, 1963827

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A81857

Included Lab Sample IDs: 1963826, 1963827

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.7	93.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A81866

Included Lab Sample IDs: 1963826

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.4	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A81869

Included Lab Sample IDs: 1963827

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A81871

Included Lab Sample IDs: 1963826, 1963827

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.7	101	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A81913

Included Lab Sample IDs: 1963824, 1963825

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	95.6	97.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A81913

Included Lab Sample IDs: 1963824, 1963825

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.5	94.9	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A81915

Included Lab Sample IDs: 1963826, 1963827

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.3	94.1	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A81928

Included Lab Sample IDs: 1963836, 1963837

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	101	109	P/P	60 - 150

Reference Method: EPA 8321B

Run ID: A81930

Included Lab Sample IDs: 1963836

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	95.4	93.4	P/P	50 - 150
Acetaminophen	116	126	P/P	60 - 150
Bentazon	129	130	P/P	50 - 150
Carbamazepine	115	116	P/P	60 - 150
Diuron	116	121	P/P	60 - 150
Fenuron	108	111	P/P	60 - 150
Fluridone	114	115	P/P	60 - 160
Imidacloprid	106	113	P/P	60 - 150
Linuron	133	128	P/P	60 - 150
MCPP	97.8	100	P/P	50 - 150
Primidone	120	97.2	P/P	60 - 150
Triclopyr	100	97.4	P/P	50 - 150

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A81969

Included Lab Sample IDs: 1963824, 1963825

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.8	99.3	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A82192

Included Lab Sample IDs: 1963837

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	81.1	95.4	P/P	50 - 150
Acetaminophen	131	106	P/P	60 - 150
Bentazon	115	108	P/P	50 - 150
Carbamazepine	123	110	P/P	60 - 150
Diuron	123	117	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
 Run ID: A82192
 Included Lab Sample IDs: 1963837

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fenuron	122	114	P/P	60 - 150
Fluridone	109	105	P/P	60 - 160
Imidacloprid	112	99.9	P/P	60 - 150
Linuron	129	129	P/P	60 - 150
MCPP	102	97.4	P/P	50 - 150
Primidone	105	108	P/P	60 - 150
Triclopyr	92.8	90.8	P/P	50 - 150

Reference Method: SM 4500 F-C-97
 Run ID: A82245
 Included Lab Sample IDs: 1963825

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.1	98.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
 Run ID: A82266
 Included Lab Sample IDs: 1963824

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	96.7	P/P	90 - 110

* 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 180.1 Rev. 2.0	Turbidity				0.873	
EPA 300.0 Rev. 2.1	Chloride	95.7	96.2 95.8		0.995	
EPA 350.1 Rev. 2.0	Ammonia-N	99.1	100 96.3			2.90
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	95.6 98.2			2.39
EPA 353.2 Rev. 2.0	NO2NO3-N	104	104 106			0.952
EPA 365.1 Rev. 2.0	Total-P	100	98.2 102			3.88
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.7	97.5 97.3			0.194
EPA 8321B	2,4-D	68.1	52.5 50.4			3.75
	2,4-D	71.2				21.5
	Acetaminophen	96.9	109 107			1.85
	Acetaminophen	109	134 126			5.63
	Bentazon	82.7	30.0 29.7			0.771
	Bentazon	84.2	68.5 57.0			8.15
	Carbamazepine	95.0	86.3 83.9			2.69
	Carbamazepine	94.0	93.4 90.7			2.87
	Diuron	79.2	65.6 68.2			3.84
	Diuron	86.8	84.6 77.4			8.34
	Fenuron	102	80.7 81.7			1.13
	Fenuron	115	98.1 88.2			10.6

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision LCS	SMP	MS
EPA 8321B	Fluridone	84.6	68.0	66.6			2.17
	Fluridone	86.2	71.6	66.0			2.79
	Imidacloprid	98.6	161	148			7.68
	Imidacloprid	95.2	149	153			2.65
	Linuron	89.4	78.2	77.6			0.693
	Linuron	89.5	85.7	87.7			2.27
	MCPP	68.2	38.2	39.1			2.30
	MCPP	81.1	64.2	59.4			7.72
	Primidone	107	109	104			4.59
	Primidone	107	127	113			11.2
	Sucralose	105	116	112			3.87
	Triclopyr	67.6	45.0	45.9			2.13
	Triclopyr	73.8	64.7	52.8			20.2
SM 2120 B	Color (true)					0.578	
SM 2320 B-97	Total Alkalinity	96.0				0.431	
SM 2540 C-97	TDS					7.59	
SM 4500 F-C-97	Fluoride	95.8	98.7	102			2.39
	Fluoride	96.3	95.1	95.7			0.514
SM 5310 B-00	Organic Carbon	94.0	94.2	95.6			0.970

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1963824, 1963825
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1963824, 1963825
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1963826, 1963827
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1963826, 1963827
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1963826, 1963827
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1963826, 1963827
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1963828, 1963829
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	1963836, 1963837
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1963836, 1963837
SM 2120 B / E31780	True Color measured at 450 nm	1963824, 1963825
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1963824, 1963825
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1963824, 1963825
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1963824, 1963825
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1963824, 1963825
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1963826, 1963827

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	02/01/2018			02/01/2018 16:00	DeAsia Armster	1963824, 1963825
EPA 300.0 Rev. 2.1	02/01/2018			02/09/2018	Julia Storbeck	1963824, 1963825
EPA 350.1 Rev. 2.0	02/01/2018			02/05/2018	Ping Hua	1963826, 1963827
EPA 351.2 Rev. 2.0	02/01/2018	02/02/2018	Adrian Shelby	02/05/2018	Joseph Suarez	1963826, 1963827
EPA 353.2 Rev. 2.0	02/01/2018			02/05/2018	Lauren Bottorf	1963826, 1963827
EPA 365.1 Rev. 2.0	02/01/2018	02/05/2018	Sima Feizi	02/06/2018	Beverly Y. Sanders	1963826, 1963827
EPA 365.1 Rev. 2.0 dissolved	02/01/2018			02/01/2018 16:22	Megan Treadwell	1963828
	02/01/2018			02/01/2018 16:23	Megan Treadwell	1963829
EPA 8321B	02/01/2018	02/01/2018	Hoor Shaik	02/04/2018	Julie Michelle Frank	1963836
	02/01/2018	02/01/2018	Hoor Shaik	02/05/2018	Julie Michelle Frank	1963836
	02/01/2018	02/06/2018	Juyoung Kim	02/07/2018	Juyoung Kim	1963836, 1963837
	02/01/2018	02/07/2018	Hoor Shaik	02/09/2018	Julie Michelle Frank	1963837
SM 2120 B	02/01/2018			02/02/2018 15:46	Tanya Welborn	1963824
	02/01/2018			02/02/2018 16:17	Tanya Welborn	1963825
SM 2320 B-97	02/01/2018			02/08/2018	Lauren Bottorf	1963824, 1963825
SM 2540 C-97	02/01/2018			02/02/2018	DeAsia Armster	1963824, 1963825
SM 2540 D-97	02/01/2018			02/02/2018	DeAsia Armster	1963824, 1963825
SM 4500 F-C-97	02/01/2018			02/22/2018	Dale L. Simmons	1963825
	02/01/2018			02/24/2018	Dale L. Simmons	1963824
SM 5310 B-00	02/01/2018			02/07/2018	Megan Treadwell	1963826, 1963827