

Chemical Analysis Report

CEN-DIST-2018-05-23-03

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

Event Description: **Lorraine / Lady / silver**
Request ID: **RQ-2018-05-21-28**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Mike Linger

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 12-JUN-2018 16:55

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: Lade Lake @ Center of North Lobe (1342A)

Collection Date/Time: 05/22/2018 10:10

Field ID: G4CE0139

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994929	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P345832	
	EPA 300.0 Rev. 2.1	Chloride	9.7		mg Cl/L	P346221	
		Sulfate	7.4		mg SO4/L	P346225	
	SM 2120 B	Color (true)	15		PCU	P345849	
	SM 2320 B-97	Total Alkalinity	1.4	I	mg CaCO3/L	P346084	
	SM 2540 C-97	TDS	44		mg/L	P346320	
	SM 2540 D-97	TSS	3	I	mg/L	P346366	
	SM 4500 F-C-97	Fluoride	0.052	I	mg F/L	P346088	
1994930	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P346261	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.77		mg N/L	P346035	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.010		mg N/L	P345903	
	EPA 365.1 Rev. 2.0	Total-P	0.010		mg P/L	P345895	
	SM 5310 B-00	Organic Carbon	6.3		mg C/L	P346313	
1994931	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P345827	

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: Lake Lorraine @ NE Corner of Lake (2829A)

Collection Date/Time: 05/22/2018 10:55

Field ID: G1CE0061

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994926	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P345832	
	EPA 300.0 Rev. 2.1	Chloride	17	A	mg Cl/L	P346221	
		Sulfate	1.2	A	mg SO4/L	P346225	
	SM 2120 B	Color (true)	81		PCU	P345849	
	SM 2320 B-97	Total Alkalinity	48		mg CaCO3/L	P346083	
	SM 2540 C-97	TDS	126	A	mg/L	P346320	
	SM 2540 D-97	TSS	3	IA	mg/L	P346366	
	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P346087	
1994927	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P346261	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P346035	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P345903	
	EPA 365.1 Rev. 2.0	Total-P	0.006		mg P/L	P345895	
	SM 5310 B-00	Organic Carbon	21		mg C/L	P346313	
1994928	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P345826	
1994944	EPA 8321B	2,4-D	1.4		ug/L	P345505	
		Bentazon	8.0E-04	U	ug/L	P345505	
		MCP	0.0020	U	ug/L	P345505	
		Triclopyr**	0.0040	U	ug/L	P345505	MS
		Imidacloprid	0.0020	U	ug/L	P345505	
		Diuron	0.0020	U	ug/L	P345505	
		Pyraclostrobin**	0.0020	U	ug/L	P345505	
		Primidone**	0.0040	U	ug/L	P345505	
		Linuron	0.0040	U	ug/L	P345505	

Field ID: G1CE0061

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994944	EPA 8321B	Acetaminophen**	0.0080	U	ug/L	P345505	
		Fenuron	0.016	U	ug/L	P345505	
		Imazapyr**	0.038		ug/L	P345505	
		Carbamazepine**	4.0E-04	U	ug/L	P345505	
		Fluridone**	0.17		ug/L	P345505	
		Hydrocodone**	8.0E-04	U	ug/L	P345505	
		Sucralose**	0.10	U	ug/L	P345837	

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: Silver Lake @ Center (2925A)

Collection Date/Time: 05/22/2018 11:44

Field ID: G1CE0007

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994945	EPA 8321B	2,4-D	0.019		ug/L	P345505	
		Bentazon	8.0E-04	U	ug/L	P345505	
		MCP	0.0020	U	ug/L	P345505	
		Triclopyr**	0.0040	U	ug/L	P345505	MS
		Imidacloprid	0.0038	I	ug/L	P345505	
		Diuron	0.0020	U	ug/L	P345505	
		Pyraclostrobin**	0.0020	U	ug/L	P345505	
		Primidone**	0.0040	U	ug/L	P345505	
		Linuron	0.0040	U	ug/L	P345505	
		Acetaminophen**	0.0080	U	ug/L	P345505	
		Fenuron	0.016	U	ug/L	P345505	
		Imazapyr**	0.0040	U	ug/L	P345505	
		Carbamazepine**	4.0E-04	U	ug/L	P345505	
		Fluridone**	4.0E-04	U	ug/L	P345505	
		Hydrocodone**	8.0E-04	U	ug/L	P345505	
		Sucralose**	0.20	I	ug/L	P345837	

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P345832

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P346221

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346225

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346261

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346035

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345903

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345895

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345826

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345827

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

Reference Method: EPA 8321B
Batch ID: P345505

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	0.016	U	ug/L
Fluridone	4.0E-04	U	ug/L
Hydrocodone	8.0E-04	U	ug/L
Imazapyr	0.0040	U	ug/L
Imidacloprid	0.0020	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B
Batch ID: P345505

Component	Result	Code	Units
Linuron	0.0040	U	ug/L
MCPP	0.0020	U	ug/L
Primidone	0.0040	U	ug/L
Pyraclostrobin	0.0020	U	ug/L
Triclopyr	0.0040	U	ug/L

Reference Method: EPA 8321B
Batch ID: P345837

Component	Result	Code	Units
Sucralose	0.10	U	ug/L

Reference Method: SM 2120 B
Batch ID: P345849

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P346083

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Reference Method: SM 2320 B-97
Batch ID: P346084

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Reference Method: SM 2540 C-97
Batch ID: P346320

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P346366

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P346087

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P346088

Component	Result	Code	Units
-----------	--------	------	-------

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P346088

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P346313

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: P346221

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346225

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346261

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346035

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345903

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345895

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345826

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
-----------	---------	---------	-----------	----------------

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P345826

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P345827

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.0		P	90 - 110

Reference Method: EPA 8321B
 Batch ID: P345505

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	65.0		P	40 - 150
Acetaminophen	102		P	30 - 150
Bentazon	81.7		P	30 - 150
Carbamazepine	87.4		P	40 - 150
Diuron	68.7		P	40 - 150
Fenuron	102		P	40 - 150
Fluridone	83.6		P	40 - 150
Hydrocodone	99.5		P	40 - 150
Imazapyr	88.5		P	40 - 150
Imidacloprid	93.1		P	40 - 160
Linuron	72.9		P	40 - 150
MCPP	88.5		P	40 - 150
Primidone	90.3		P	40 - 150
Pyraclostrobin	82.1		P	40 - 150
Triclopyr	85.3		P	40 - 150

Reference Method: EPA 8321B
 Batch ID: P345837

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	97.3		P	40 - 150

Reference Method: SM 2320 B-97
 Batch ID: P346083

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 107

Reference Method: SM 2320 B-97
 Batch ID: P346084

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Reference Method: SM 4500 F-C-97
 Batch ID: P346087

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.0		P	91 - 105

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P346088

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.0		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P346313

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.7		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346221

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994926	Chloride	97.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346225

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994926	Sulfate	99.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346261

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994894	Ammonia-N	101	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346035

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994930	Kjeldahl Nitrogen	91.9	93.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345903

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994927	NO2NO3-N	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345895

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1995101	Total-P	101	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345826

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
---------------	-----------	---------	---------	-----------	----------------

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345826

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994830	O-Phosphate-P	95.7	95.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345827

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994931	O-Phosphate-P	95.2	95.4	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P345505

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994050	2,4-D	122	149	P/P	40 - 150
1994050	Acetaminophen	87.5	87.6	P/P	30 - 150
1994050	Bentazon	49.3	45.1	P/P	30 - 150
1994050	Carbamazepine	51.5	58.3	P/P	40 - 150
1994050	Diuron	57.4	55.0	P/P	40 - 150
1994050	Fenuron	53.2	52.8	P/P	40 - 150
1994050	Fluridone	67.4	66.9	P/P	40 - 150
1994050	Hydrocodone	76.2	74.3	P/P	40 - 150
1994050	Imazapyr	69.7	95.3	P/P	40 - 150
1994050	Imidacloprid	122	118	P/P	40 - 160
1994050	Linuron	60.8	65.4	P/P	40 - 150
1994050	MCP	134	130	P/P	40 - 150
1994050	Primidone	69.0	65.5	P/P	40 - 150
1994050	Pyraclostrobin	73.3	89.4	P/P	40 - 150
1994050	Triclopyr	187	171	F/F	40 - 150

Reference Method: EPA 8321B
Batch ID: P345837

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994753	Sucralose	121	108	P/P	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P346087

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994835	Fluoride	101	101	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P346088

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1995098	Fluoride	96.2	96.2	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P346313

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994884	Organic Carbon	95.1	95.5	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P345832

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994891	Turbidity	4.65	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346221

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994926	Chloride	1.51	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346225

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994926	Sulfate	2.69	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346261

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994894	Ammonia-N	0.819	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346035

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994930	Kjeldahl Nitrogen	0.922	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345903

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994927	NO2NO3-N	0.971	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345895

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1995101	Total-P	3.31	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345826

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994830	O-Phosphate-P	0.629	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P345827

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994931	O-Phosphate-P	0.210	Spike	P	0 - 20

Reference Method: EPA 8321B
 Batch ID: P345505

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994050	2,4-D	12.1	Spike	P	0 - 30
1994050	Acetaminophen	0.153	Spike	P	0 - 30
1994050	Bentazon	8.90	Spike	P	0 - 30
1994050	Carbamazepine	12.4	Spike	P	0 - 30
1994050	Diuron	4.31	Spike	P	0 - 30
1994050	Fenuron	0.887	Spike	P	0 - 30
1994050	Fluridone	0.658	Spike	P	0 - 30
1994050	Hydrocodone	2.55	Spike	P	0 - 30
1994050	Imazapyr	5.75	Spike	P	0 - 30
1994050	Imidacloprid	3.32	Spike	P	0 - 30
1994050	Linuron	7.36	Spike	P	0 - 30
1994050	MCP	3.40	Spike	P	0 - 30
1994050	Primidone	5.24	Spike	P	0 - 30
1994050	Pyraclostrobin	19.7	Spike	P	0 - 30
1994050	Triclopyr	8.55	Spike	P	0 - 30

Reference Method: EPA 8321B
 Batch ID: P345837

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994753	Sucralose	9.03	Spike	P	0 - 30

Reference Method: SM 2120 B
 Batch ID: P345849

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994891	Color (true)	0.231	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P346083

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994835	Total Alkalinity	0.226	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
 Batch ID: P346084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1995098	Total Alkalinity	0.448	Sample	P	0 - 1.6

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P346320

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994926	TDS	3.95	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P346087

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994835	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
Batch ID: P346088

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1995098	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P346313

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994884	Organic Carbon	0.350	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: 1994944
Field Sample ID: G1CE0061

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	132	P	30 - 160
EPA 8321B	Acetaminophen-d4	88.7	P	30 - 160
EPA 8321B	Carbamazepine-d10	69.2	P	30 - 160
EPA 8321B	Diuron-d6	49.1	P	30 - 160
EPA 8321B	Primidone-d5	77.2	P	30 - 160
EPA 8321B	Sucralose-d6	101	P	40 - 160

Lab Sample ID: 1994945
Field Sample ID: G1CE0007

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	99.3	P	30 - 160
EPA 8321B	Acetaminophen-d4	85.2	P	30 - 160
EPA 8321B	Carbamazepine-d10	79.3	P	30 - 160
EPA 8321B	Diuron-d6	56.8	P	30 - 160
EPA 8321B	Primidone-d5	81.0	P	30 - 160
EPA 8321B	Sucralose-d6	111	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A84113

Included Lab Sample IDs: 1994928, 1994931

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.5	P/P	90 - 110
O-Phosphate-P	99.5	99.2	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A84114

Included Lab Sample IDs: 1994926, 1994929

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	100	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A84124

Included Lab Sample IDs: 1994926, 1994929

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	101	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A84142

Included Lab Sample IDs: 1994927, 1994930

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

Reference Method: SM 2320 B-97

Run ID: A84181

Included Lab Sample IDs: 1994926, 1994929

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.6	P/P	90 - 110
Total Alkalinity	99.6	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A84181

Included Lab Sample IDs: 1994926, 1994929

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	96.7	98.1	P/P	90 - 110
Fluoride	98.1	97.6	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A84186

Included Lab Sample IDs: 1994944, 1994945

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	113	99.2	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A84201

Included Lab Sample IDs: 1994927, 1994930

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.5	P/P	90 - 110
Total-P	99.5	99.0	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A84230

Included Lab Sample IDs: 1994926, 1994929

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	102	P/P	90 - 110
Sulfate	101	99.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A84277

Included Lab Sample IDs: 1994927, 1994930

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.2	91.8	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A84278

Included Lab Sample IDs: 1994944

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	106	99.2	P/P	50 - 150

Reference Method: EPA 8321B

Run ID: A84279

Included Lab Sample IDs: 1994944, 1994945

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	93.6	85.6	P/P	50 - 150
Acetaminophen	123	120	P/P	60 - 150
Bentazon	99.5	94.8	P/P	50 - 150
Carbamazepine	118	120	P/P	60 - 150
Diuron	119	132	P/P	60 - 150
Fenuron	116	112	P/P	60 - 150
Fluridone	123	123	P/P	60 - 160
Hydrocodone	114	119	P/P	60 - 150
Imazapyr	99.1	94.8	P/P	50 - 150
Imidacloprid	97.5	105	P/P	60 - 150
Linuron	117	118	P/P	60 - 150
MCPP	82.2	85.1	P/P	50 - 150
Primidone	111	102	P/P	60 - 150
Pyraclostrobin	105	116	P/P	60 - 150
Triclopyr	95.8	97.6	P/P	50 - 160

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A84301

Included Lab Sample IDs: 1994927, 1994930

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
-----------	---------	---------	------------	----------------

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A84301
Included Lab Sample IDs: 1994927, 1994930

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

Reference Method: SM 5310 B-00
Run ID: A84324
Included Lab Sample IDs: 1994927, 1994930

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.6	96.6	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					4.65	
EPA 300.0 Rev. 2.1	Chloride	102		97.9		1.51	
	Sulfate	100		99.2		2.69	
EPA 350.1 Rev. 2.0	Ammonia-N	102	101	100			0.819
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	91.9	93.3			0.922
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	102	104			0.971
EPA 365.1 Rev. 2.0	Total-P	103	101	105			3.31
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	95.7	95.1			0.629
	O-Phosphate-P	98.0	95.2	95.4			0.210
EPA 8321B	2,4-D	65.0	122	149			12.1
	Acetaminophen	102	87.5	87.6			0.153
	Bentazon	81.7	49.3	45.1			8.90
	Carbamazepine	87.4	51.5	58.3			12.4
	Diuron	68.7	57.4	55.0			4.31
	Fenuron	102	53.2	52.8			0.887
	Fluridone	83.6	67.4	66.9			0.658
	Hydrocodone	99.5	76.2	74.3			2.55
	Imazapyr	88.5	69.7	95.3			5.75
	Imidacloprid	93.1	122	118			3.32
	Linuron	72.9	60.8	65.4			7.36
	MCPP	88.5	134	130			3.40
	Primidone	90.3	69.0	65.5			5.24
	Pyraclostrobin	82.1	73.3	89.4			19.7
	Sucralose	97.3	121	108			9.03
	Triclopyr	85.3	187	171			8.55
SM 2120 B	Color (true)					0.231	
SM 2320 B-97	Total Alkalinity	104				0.226	
	Total Alkalinity	103				0.448	
SM 2540 C-97	TDS					3.95	
SM 4500 F-C-97	Fluoride	94.0	101	101			0.0
	Fluoride	95.0	96.2	96.2			0.0
SM 5310 B-00	Organic Carbon	95.7	95.1	95.5			0.350

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1994926, 1994929
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1994926, 1994929
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1994926, 1994929
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1994927, 1994930
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1994927, 1994930
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1994927, 1994930
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1994927, 1994930
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1994928, 1994931
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	1994944, 1994945
SM 2120 B / E31780	True Color measured at 450 nm	1994926, 1994929
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1994926, 1994929
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1994926, 1994929
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	1994926, 1994929
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1994926, 1994929
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1994927, 1994930

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	05/23/2018			05/23/2018 17:13	William L. Brown IV	1994926, 1994929
EPA 300.0 Rev. 2.1	05/23/2018			06/01/2018 02:15	Lipi Saha	1994926
	05/23/2018			06/01/2018 02:39	Lipi Saha	1994929
EPA 350.1 Rev. 2.0	05/23/2018			06/01/2018 12:39	Ping Hua	1994927
	05/23/2018			06/01/2018 12:41	Ping Hua	1994930
EPA 351.2 Rev. 2.0	05/23/2018	05/29/2018 16:00	Adrian Shelby	05/31/2018 15:33	Joseph Suarez	1994927
	05/23/2018	05/29/2018 16:00	Adrian Shelby	05/31/2018 15:34	Joseph Suarez	1994930
EPA 353.2 Rev. 2.0	05/23/2018			05/24/2018 14:02	Lauren Bottorf	1994927
	05/23/2018			05/24/2018 14:08	Lauren Bottorf	1994930
EPA 365.1 Rev. 2.0	05/23/2018	05/24/2018 13:10	Sima Feizi	05/29/2018 12:41	Lipi Saha	1994927
	05/23/2018	05/24/2018 13:10	Sima Feizi	05/29/2018 12:49	Lipi Saha	1994930
EPA 365.1 Rev. 2.0 dissolved	05/23/2018			05/23/2018 16:08	Megan Treadwell	1994931
	05/23/2018			05/23/2018 16:37	Megan Treadwell	1994928
EPA 8321B	05/23/2018	05/23/2018 14:00	Hoor Shaik	05/24/2018 03:18	Juyoung Kim	1994944
	05/23/2018	05/23/2018 14:00	Hoor Shaik	05/24/2018 03:52	Juyoung Kim	1994945
	05/23/2018	05/23/2018 14:00	Hoor Shaik	05/24/2018 20:02	Juyoung Kim	1994944
	05/23/2018	05/23/2018 14:00	Hoor Shaik	05/24/2018 20:36	Juyoung Kim	1994945
	05/23/2018	05/23/2018 14:00	Hoor Shaik	06/01/2018 15:13	Juyoung Kim	1994944
	05/23/2018	05/25/2018 14:00	Juyoung Kim	05/26/2018 01:46	Juyoung Kim	1994944
	05/23/2018	05/25/2018 14:00	Juyoung Kim	05/26/2018 02:05	Juyoung Kim	1994945
SM 2120 B	05/23/2018			05/23/2018 16:20	Tanya Welborn	1994926
	05/23/2018			05/23/2018 16:21	Tanya Welborn	1994929
SM 2320 B-97	05/23/2018			05/25/2018 21:16	Dale L. Simmons	1994926
	05/23/2018			05/25/2018 23:25	Dale L. Simmons	1994929
SM 2540 C-97	05/23/2018			05/25/2018 16:24	Yijie Li	1994926, 1994929
SM 2540 D-97	05/23/2018			05/25/2018 16:24	Yijie Li	1994926, 1994929
SM 4500 F-C-97	05/23/2018			05/25/2018 21:16	Dale L. Simmons	1994926
	05/23/2018			05/25/2018 23:25	Dale L. Simmons	1994929
SM 5310 B-00	05/23/2018			06/02/2018 06:01	Megan Treadwell	1994927
	05/23/2018			06/02/2018 06:16	Megan Treadwell	1994930