Chemical Analysis Report

SW-DIST-2018-03-30-01

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

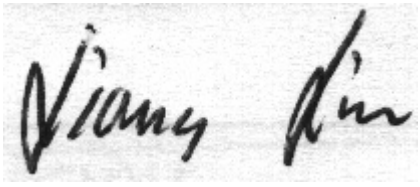
Event Description: **Kit A North Lakes**
Request ID: **RQ-2018-03-19-04**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Judy Ashton

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 23-APR-2018 16:55



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 group are included in this report: Nutrients.

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: LAKE WASTENA **Collection Date/Time: 03/29/2018 11:00**

Field ID: G1SW0020 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1979515	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P342516	
	EPA 300.0 Rev. 2.1	Chloride	23		mg Cl/L	P342607	
		Sulfate	6.6		mg SO4/L	P342608	
	SM 2120 B	Color (true)	33		PCU	P342519	
	SM 2320 B-97	Total Alkalinity	24		mg CaCO3/L	P343027	RPD
	SM 2540 C-97	TDS	91		mg/L	P343012	
	SM 2540 D-97	TSS	2	I	mg/L	P342959	
	SM 4500 F-C-97	Fluoride	0.064	I	mg F/L	P343815	
1979518	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P343072	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P342669	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P342849	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P342652	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P343083	
1979521	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P342540	

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: LITTLE LAKE WILSON SOUTH **Collection Date/Time: 03/29/2018 10:20**

Field ID: G1SW0009 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1979516	EPA 180.1 Rev. 2.0	Turbidity	4.6		NTU	P342516	
	EPA 300.0 Rev. 2.1	Chloride	54		mg Cl/L	P342607	
		Sulfate	2.3		mg SO4/L	P342608	
	SM 2120 B	Color (true)	51		PCU	P342519	
	SM 2320 B-97	Total Alkalinity	63	AJ	mg CaCO3/L	P343027	RPD
	SM 2540 C-97	TDS	183		mg/L	P343012	
	SM 2540 D-97	TSS	5	I	mg/L	P342959	
	SM 4500 F-C-97	Fluoride	0.069	I	mg F/L	P343648	
1979519	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P343072	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P342669	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P342849	
	EPA 365.1 Rev. 2.0	Total-P	0.048		mg P/L	P342652	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P343083	
1979522	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P342541	

Ref. Method and Comment:
SM 2320 B-97: Refer to the narrative for an explanation of QC Codes.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: LITTLE LAKE WILSON CENTER **Collection Date/Time: 03/29/2018 09:55**

Field ID: G1SW0006 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1979517	EPA 180.1 Rev. 2.0	Turbidity	4.3		NTU	P342516	
	EPA 300.0 Rev. 2.1	Chloride	55	A	mg Cl/L	P342688	

Field ID: G1SW0006 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1979517	EPA 300.0 Rev. 2.1	Sulfate	2.4	A	mg SO4/L	P342689	
	SM 2120 B	Color (true)	51		PCU	P342519	
	SM 2320 B-97	Total Alkalinity	63		mg CaCO3/L	P343027	RPD
	SM 2540 C-97	TDS	171		mg/L	P343012	
	SM 2540 D-97	TSS	5	I	mg/L	P342959	
	SM 4500 F-C-97	Fluoride	0.073	I	mg F/L	P343815	
1979520	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P343072	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P342669	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P342850	
	EPA 365.1 Rev. 2.0	Total-P	0.048		mg P/L	P342652	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P343083	
1979523	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P342541	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P342516

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342607

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342608

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342688

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342689

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343072

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342669

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342849

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342850

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342652

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342540

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342541

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

Reference Method: SM 2120 B
Batch ID: P342519

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P343027

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P343012

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P342959

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P343648

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P343815

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P343083

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: P342607

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342608

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342688

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342689

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342689

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343072

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342669

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.7		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342849

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	107		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342850

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	107		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342652

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342540

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342541

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

Reference Method: SM 2320 B-97
Batch ID: P343027

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.6		P	98 - 107

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P343648

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.1		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P343815

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.8		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P343083

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.9		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342607

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979372	Chloride	96.1	95.4	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342608

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979372	Sulfate	95.3	93.9	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342689

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979517	Sulfate	97.4		P	90 - 110
1979575	Sulfate	93.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343072

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979419	Ammonia-N	94.4	94.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342669

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979573	Kjeldahl Nitrogen	98.7	98.0	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342849

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979380	NO2NO3-N	108	109	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342850

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979520	NO2NO3-N	107	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342652

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979518	Total-P	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342540

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979376	O-Phosphate-P	96.7	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342541

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979522	O-Phosphate-P	98.4	99.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P343648

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979516	Fluoride	97.2	97.8	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P343815

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1984367	Fluoride	95.0	95.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P343083

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979380	Organic Carbon	95.0	96.4	P/P	85 - 115

Quality Assurance Report
Precision

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P342516

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979418	Turbidity	7.97	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342607

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979372	Chloride	0.472	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342608

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979372	Sulfate	0.887	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342688

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979517	Chloride	0.433	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342689

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979517	Sulfate	0.338	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343072

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979419	Ammonia-N	0.0393	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342669

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979573	Kjeldahl Nitrogen	0.399	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342849

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979380	NO2NO3-N	1.39	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342850

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979520	NO2NO3-N	0.930	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342652

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979518	Total-P	0.440	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342540

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979376	O-Phosphate-P	0.824	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342541

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979522	O-Phosphate-P	1.01	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P342519

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979379	Color (true)	0.439	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P343027

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979516	Total Alkalinity	4.27	Sample	F	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P343012

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979397	TDS	7.52	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P343648

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979516	Fluoride	0.477	Spike	P	0 - 3.5

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P343815

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1984367	Fluoride	0.480	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P343083

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979380	Organic Carbon	1.05	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
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A82962
Included Lab Sample IDs: 1979515, 1979516, 1979517

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.5	P/P	95 - 105

Reference Method: SM 2120 B
Run ID: A82963
Included Lab Sample IDs: 1979515, 1979516, 1979517

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.6	96.8	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A82970
Included Lab Sample IDs: 1979521, 1979522, 1979523

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	99.5	P/P	90 - 110
O-Phosphate-P	99.4	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A83001
Included Lab Sample IDs: 1979515, 1979516, 1979517

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	96.0	102	P/P	90 - 110
Chloride	98.4	97.1	P/P	90 - 110
Sulfate	95.0	103	P/P	90 - 110
Sulfate	97.1	97.5	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A83043
Included Lab Sample IDs: 1979518, 1979519, 1979520

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A83052
Included Lab Sample IDs: 1979518, 1979519, 1979520

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A83062
Included Lab Sample IDs: 1979518, 1979519, 1979520

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

Reference Method: SM 2320 B-97
Run ID: A83116
Included Lab Sample IDs: 1979515, 1979516, 1979517

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	98.1	P/P	90 - 110
Total Alkalinity	97.3	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A83131
Included Lab Sample IDs: 1979518, 1979519, 1979520

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.4	98.6	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A83136
Included Lab Sample IDs: 1979518, 1979519, 1979520

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.1	96.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A83315
Included Lab Sample IDs: 1979516

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A83371
Included Lab Sample IDs: 1979515, 1979517

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A83371
Included Lab Sample IDs: 1979515, 1979517

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	98.5	P/P	90 - 110
Fluoride	98.5	100	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		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					7.97	
EPA 300.0 Rev. 2.1	Chloride	99.5	96.1	95.4			0.472
	Chloride	97.5				0.433	
	Sulfate	99.4	95.3	93.9			0.887
	Sulfate	96.5	97.4	93.0		0.338	
EPA 350.1 Rev. 2.0	Ammonia-N	96.0	94.4	94.4			0.0393
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.7	98.7	98.0			0.399
EPA 353.2 Rev. 2.0	NO2NO3-N	107	108	109			1.39
	NO2NO3-N	107	107	108			0.930
EPA 365.1 Rev. 2.0	Total-P	98.8	102	102			0.440
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.6	96.7	97.5			0.824
	O-Phosphate-P	102	98.4	99.4			1.01
SM 2120 B	Color (true)					0.439	
SM 2320 B-97	Total Alkalinity	98.6				4.27	
SM 2540 C-97	TDS					7.52	
SM 4500 F-C-97	Fluoride	98.1	97.2	97.8			0.477
	Fluoride	94.8	95.0	95.6			0.480
SM 5310 B-00	Organic Carbon	95.9	95.0	96.4			1.05

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1979515, 1979516, 1979517
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1979515, 1979516, 1979517
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1979515, 1979516, 1979517
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1979518, 1979519, 1979520
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1979518, 1979519, 1979520
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1979518, 1979519, 1979520
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1979518, 1979519, 1979520
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1979521, 1979522, 1979523
SM 2120 B / E31780	True Color measured at 450 nm	1979515, 1979516, 1979517

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1979515, 1979516, 1979517
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1979515, 1979516, 1979517
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1979515, 1979516, 1979517
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1979515, 1979516, 1979517
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1979518, 1979519, 1979520

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	03/30/2018			03/30/2018 15:46	Tanya Welborn	1979515, 1979516, 1979517
EPA 300.0 Rev. 2.1	03/30/2018			04/02/2018 20:52	Lipi Saha	1979515
	03/30/2018			04/02/2018 21:04	Lipi Saha	1979516
	03/30/2018			04/03/2018 17:19	Lipi Saha	1979517
EPA 350.1 Rev. 2.0	03/30/2018			04/09/2018 14:12	Ping Hua	1979518
	03/30/2018			04/09/2018 14:14	Ping Hua	1979519
	03/30/2018			04/09/2018 14:15	Ping Hua	1979520
EPA 351.2 Rev. 2.0	03/30/2018	04/03/2018 09:50	Adrian Shelby	04/04/2018 15:09	Joseph Suarez	1979518
	03/30/2018	04/03/2018 09:50	Adrian Shelby	04/04/2018 15:10	Joseph Suarez	1979519
	03/30/2018	04/03/2018 09:50	Adrian Shelby	04/04/2018 15:12	Joseph Suarez	1979520
EPA 353.2 Rev. 2.0	03/30/2018			04/05/2018 13:58	Lauren Bottorf	1979518
	03/30/2018			04/05/2018 13:59	Lauren Bottorf	1979519
	03/30/2018			04/05/2018 14:06	Lauren Bottorf	1979520
EPA 365.1 Rev. 2.0	03/30/2018	04/03/2018 13:07	Sima Feizi	04/04/2018 13:24	Beverly Y. Sanders	1979518
	03/30/2018	04/03/2018 13:07	Sima Feizi	04/04/2018 13:25	Beverly Y. Sanders	1979519
	03/30/2018	04/03/2018 13:07	Sima Feizi	04/04/2018 13:26	Beverly Y. Sanders	1979520
EPA 365.1 Rev. 2.0 dissolved	03/30/2018			03/30/2018 15:56	Megan Treadwell	1979522
	03/30/2018			03/30/2018 16:45	Megan Treadwell	1979521
	03/30/2018			03/30/2018 16:46	Megan Treadwell	1979523
SM 2120 B	03/30/2018			03/30/2018 14:57	Tanya Welborn	1979515
	03/30/2018			03/30/2018 14:58	Tanya Welborn	1979516
	03/30/2018			03/30/2018 14:59	Tanya Welborn	1979517
SM 2320 B-97	03/30/2018			04/07/2018 05:19	Dale L. Simmons	1979516
	03/30/2018			04/07/2018 09:17	Dale L. Simmons	1979515
	03/30/2018			04/07/2018 09:31	Dale L. Simmons	1979517
SM 2540 C-97	03/30/2018			04/04/2018 15:34	Yijie Li	1979515, 1979516, 1979517
SM 2540 D-97	03/30/2018			04/04/2018 15:34	Yijie Li	1979515, 1979516, 1979517
SM 4500 F-C-97	03/30/2018			04/17/2018 18:36	Dale L. Simmons	1979516
	03/30/2018			04/19/2018 21:36	Dale L. Simmons	1979515
	03/30/2018			04/19/2018 22:05	Dale L. Simmons	1979517
SM 5310 B-00	03/30/2018			04/07/2018 02:56	Julia Storbeck	1979518
	03/30/2018			04/07/2018 03:09	Julia Storbeck	1979519
	03/30/2018			04/07/2018 03:23	Julia Storbeck	1979520