

Chemical Analysis Report

WAS-SECT-2019-04-10-01

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

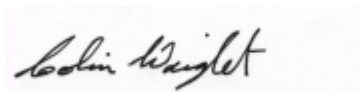
Event Description: **Tallahassee Lakes**
Request ID: **RQ-2019-03-04-69**
Customer: **WAS-SECT**
Project ID: **SMP**

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

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: Colin Wright, Program Administrator

Date Certified: 24-APR-2019 15:58

A handwritten signature in black ink, appearing to read "Colin Wright", is shown on a light-colored background.

Case Narrative

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

Results for the following analytical 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 by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

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

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

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

Precision is reported as relative percent difference unless otherwise noted.

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

QC Codes used in this report may include:

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

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

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

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

Sample Location: Lake Tom John Middle

Collection Date/Time: 04/10/2019 12:18

Field ID: G1WA0043

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2077173	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P361924	
	EPA 300.0 Rev. 2.1	Chloride	8.2		mg Cl/L	P362297	
		Sulfate	0.20	U	mg SO4/L	P362300	
	SM 2120 B	Color (true)	22		PCU	P361956	
	SM 2320 B-97	Total Alkalinity	18		mg CaCO3/L	P362274	
	SM 2540 C-97	TDS	39		mg/L	P362518	
	SM 2540 D-97	TSS	3	I	mg/L	P362235	
	SM 4500 F-C-97	Fluoride	0.044	I	mg F/L	P362277	
2077178	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P362403	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.46		mg N/L	P362422	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P362417	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P362247	
	SM 5310 B-00	Organic Carbon	5.8		mg C/L	P362199	
2077183	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P361933	

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: Pine Hill Lake Middle

Collection Date/Time: 04/10/2019 07:50

Field ID: G1WA0054

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2077174	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P361924	
	EPA 300.0 Rev. 2.1	Chloride	5.9		mg Cl/L	P362297	
		Sulfate	0.77		mg SO4/L	P362300	
	SM 2120 B	Color (true)	11		PCU	P361956	
	SM 2320 B-97	Total Alkalinity	12		mg CaCO3/L	P362274	
	SM 2540 C-97	TDS	30		mg/L	P362518	
	SM 2540 D-97	TSS	3	I	mg/L	P362235	
	SM 4500 F-C-97	Fluoride	0.039	I	mg F/L	P362277	
2077179	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P362403	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40		mg N/L	P362422	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P362417	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P362247	
	SM 5310 B-00	Organic Carbon	4.3		mg C/L	P362199	
2077184	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P361933	

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: Lower Dianne Lake Middle

Collection Date/Time: 04/10/2019 10:36

Field ID: G1WA0040

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2077175	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P361926	
	EPA 300.0 Rev. 2.1	Chloride	7.7		mg Cl/L	P362297	
		Sulfate	1.2		mg SO4/L	P362300	
	SM 2120 B	Color (true)	11		PCU	P361956	
	SM 2320 B-97	Total Alkalinity	22		mg CaCO3/L	P362274	
	SM 2540 C-97	TDS	39		mg/L	P362518	
	SM 2540 D-97	TSS	4	I	mg/L	P362235	
	SM 4500 F-C-97	Fluoride	0.050	I	mg F/L	P362277	
2077180	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P362403	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36		mg N/L	P362422	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P362417	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P362247	
	SM 5310 B-00	Organic Carbon	4.0		mg C/L	P362199	
2077185	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P361933	

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: Upper Dianne Lake Middle

Collection Date/Time: 04/10/2019 11:20

Field ID: G1WA0041

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2077176	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P361926	
	EPA 300.0 Rev. 2.1	Chloride	7.1		mg Cl/L	P362297	
		Sulfate	1.2		mg SO4/L	P362300	
	SM 2120 B	Color (true)	9.2		PCU	P361956	
	SM 2320 B-97	Total Alkalinity	27		mg CaCO3/L	P362274	
	SM 2540 C-97	TDS	45		mg/L	P362519	
	SM 2540 D-97	TSS	2	I	mg/L	P362236	
	SM 4500 F-C-97	Fluoride	0.054	I	mg F/L	P362277	
2077181	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P362403	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39		mg N/L	P362422	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P362417	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P362247	
	SM 5310 B-00	Organic Carbon	4.0		mg C/L	P362199	
2077186	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P361933	

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 Arrowhead at boat dock at Turtle Crk Ln near outlet
Collection Date/Time: 04/10/2019 09:14

Field ID: G1WA0004

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2077177	EPA 180.1 Rev. 2.0	Turbidity	7.3		NTU	P361926	
	EPA 300.0 Rev. 2.1	Chloride	4.9		mg Cl/L	P362297	
		Sulfate	1.4		mg SO4/L	P362300	
	SM 2120 B	Color (true)	14		PCU	P361956	
	SM 2320 B-97	Total Alkalinity	28		mg CaCO3/L	P362274	
	SM 2540 C-97	TDS	40		mg/L	P362519	
	SM 2540 D-97	TSS	7	I	mg/L	P362236	
	SM 4500 F-C-97	Fluoride	0.044	I	mg F/L	P362277	
2077182	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P362403	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.48		mg N/L	P362422	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P362417	
	EPA 365.1 Rev. 2.0	Total-P	0.038		mg P/L	P362248	
	SM 5310 B-00	Organic Carbon	5.2		mg C/L	P362199	
2077187	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P361933	

Ref. Method and Comment:

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: P361924

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P361926

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362297

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362300

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362403

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362422

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362417

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362247

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362248

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P361933

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

Reference Method: SM 2120 B
Batch ID: P361956

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P362274

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

Reference Method: SM 2540 C-97
Batch ID: P362518

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P362519

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P362235

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P362236

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P362277

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P362199

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: P362297

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362300

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362403

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362422

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.4		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362417

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362247

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362248

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P361933

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	105		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P361956

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	103		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P362274

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P362277

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.1		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P362199

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362297

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2077065	Chloride	98.6		P	90 - 110
2077229	Chloride	99.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362300

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2077065	Sulfate	102		P	90 - 110
2077229	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362403

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2077178	Ammonia-N	103	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362422

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2077069	Kjeldahl Nitrogen	113	112	F/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362417

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2077067	NO2NO3-N	99.5	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362247

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2077178	Total-P	93.4	92.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362248

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2077182	Total-P	98.6	98.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P361933

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2077072	O-Phosphate-P	94.5	95.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P362277

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2077321	Fluoride	99.0	99.5	P/P	89 - 106

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P362199

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2077178	Organic Carbon	98.5	98.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P361924

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077066	Turbidity	16.4	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P361926

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077209	Turbidity	9.77	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362297

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077229	Chloride	1.60	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362300

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077229	Sulfate	1.18	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362403

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077178	Ammonia-N	0.0484	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362422

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077069	Kjeldahl Nitrogen	0.332	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362417

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077067	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362247

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077178	Total-P	0.668	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362248

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077182	Total-P	0.256	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P361933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077072	O-Phosphate-P	0.948	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P361956

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077064	Color (true)	0.753	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P362274

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077321	Total Alkalinity	2.79	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P362518

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076979	TDS	5.48	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P362519

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077229	TDS	2.17	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P362277

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077321	Fluoride	0.487	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P362199

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077178	Organic Carbon	0.0783	Spike	P	0 - 20

Quality Assurance Report

Precision

* 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: A90588

Included Lab Sample IDs: 2077173, 2077174, 2077175, 2077176, 2077177

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.5	P/P	95 - 105
Turbidity	99.5	98.5	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A90589

Included Lab Sample IDs: 2077183, 2077184, 2077185, 2077186, 2077187

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.7	97.2	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A90600

Included Lab Sample IDs: 2077173, 2077174, 2077175, 2077176, 2077177

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	102	P/P	90 - 115

Reference Method: SM 5310 B-00

Run ID: A90738

Included Lab Sample IDs: 2077178, 2077179, 2077180, 2077181, 2077182

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	101	99.5	P/P	90 - 110
Organic Carbon	99.5	99.9	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A90759

Included Lab Sample IDs: 2077173, 2077174, 2077175, 2077176, 2077177

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	99.7	P/P	90 - 110
Total Alkalinity	99.7	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A90759

Included Lab Sample IDs: 2077173, 2077174, 2077175, 2077176, 2077177

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	99.5	P/P	90 - 110
Fluoride	98.5	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A90760

Included Lab Sample IDs: 2077173, 2077174, 2077175, 2077176, 2077177

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A90798

Included Lab Sample IDs: 2077178, 2077179, 2077180, 2077181, 2077182

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	103	101	P/P	90 - 110
Total-P	104	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A90813

Included Lab Sample IDs: 2077178, 2077179, 2077180, 2077181, 2077182

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A90815

Included Lab Sample IDs: 2077178, 2077179, 2077180, 2077181, 2077182

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A90881

Included Lab Sample IDs: 2077178, 2077179, 2077180, 2077181, 2077182

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.6	101	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	MS
EPA 180.1 Rev. 2.0	Turbidity				16.4	
	Turbidity				9.77	
EPA 300.0 Rev. 2.1	Chloride	101	99.0	98.6	1.60	
	Sulfate	102	100	102	1.18	
EPA 350.1 Rev. 2.0	Ammonia-N	99.9	103	103		0.0484
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.4	113	112		0.332
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	98.5	99.5	99.5		0.0
EPA 365.1 Rev. 2.0	Total-P	102	93.4	92.8		0.668
	Total-P	105	98.6	98.9		0.256
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	105	94.5	95.4		0.948
SM 2120 B	Color (true)	103			0.753	
SM 2320 B-97	Total Alkalinity	101			2.79	
SM 2540 C-97	TDS				5.48	
	TDS				2.17	
SM 4500 F-C-97	Fluoride	96.1	99.0	99.5		0.487
SM 5310 B-00	Organic Carbon	101	98.5	98.6		0.0783

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2077173, 2077174, 2077175, 2077176, 2077177
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2077173, 2077174, 2077175, 2077176, 2077177
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2077173, 2077174, 2077175, 2077176, 2077177
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2077178, 2077179, 2077180, 2077181, 2077182
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2077178, 2077179, 2077180, 2077181, 2077182
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2077178, 2077179, 2077180, 2077181, 2077182
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2077178, 2077179, 2077180, 2077181, 2077182
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2077183, 2077184, 2077185, 2077186, 2077187
SM 2120 B / E31780	True Color measured at 450 nm	2077173, 2077174, 2077175, 2077176, 2077177
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2077173, 2077174, 2077175, 2077176, 2077177
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2077173, 2077174, 2077175, 2077176, 2077177
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2077173, 2077174, 2077175, 2077176, 2077177
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2077173, 2077174, 2077175, 2077176, 2077177
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2077178, 2077179, 2077180, 2077181, 2077182

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	04/10/2019			04/10/2019 17:05	Adrian Shelby	2077173, 2077174, 2077175, 2077176, 2077177
EPA 300.0 Rev. 2.1	04/10/2019			04/16/2019 17:20	Lipi Saha	2077173
	04/10/2019			04/16/2019 17:32	Lipi Saha	2077174
	04/10/2019			04/16/2019 17:44	Lipi Saha	2077175
	04/10/2019			04/16/2019 17:56	Lipi Saha	2077176
	04/10/2019			04/16/2019 18:08	Lipi Saha	2077177
EPA 350.1 Rev. 2.0	04/10/2019			04/17/2019 11:52	Ping Hua	2077178
	04/10/2019			04/17/2019 11:56	Ping Hua	2077179
	04/10/2019			04/17/2019 11:58	Ping Hua	2077180
	04/10/2019			04/17/2019 11:59	Ping Hua	2077181
	04/10/2019			04/17/2019 12:01	Ping Hua	2077182
EPA 351.2 Rev. 2.0	04/10/2019	04/18/2019 12:15	Adrian Shelby	04/22/2019 10:57	Joseph Suarez	2077178
	04/10/2019	04/18/2019 12:15	Adrian Shelby	04/22/2019 10:59	Joseph Suarez	2077179
	04/10/2019	04/18/2019 12:15	Adrian Shelby	04/22/2019 11:00	Joseph Suarez	2077180
	04/10/2019	04/18/2019 12:15	Adrian Shelby	04/22/2019 11:02	Joseph Suarez	2077181
	04/10/2019	04/18/2019 12:15	Adrian Shelby	04/22/2019 11:03	Joseph Suarez	2077182
EPA 353.2 Rev. 2.0	04/10/2019			04/18/2019 10:55	Beverly Y. Sanders	2077178
	04/10/2019			04/18/2019 10:56	Beverly Y. Sanders	2077179
	04/10/2019			04/18/2019 10:57	Beverly Y. Sanders	2077180
	04/10/2019			04/18/2019 10:58	Beverly Y. Sanders	2077181
	04/10/2019			04/18/2019 10:59	Beverly Y. Sanders	2077182
EPA 365.1 Rev. 2.0	04/10/2019	04/16/2019 13:55	Sima Feizi	04/17/2019 20:31	Rosalyn Ballman	2077178
	04/10/2019	04/16/2019 13:55	Sima Feizi	04/17/2019 20:32	Rosalyn Ballman	2077179
	04/10/2019	04/16/2019 13:55	Sima Feizi	04/17/2019 20:33	Rosalyn Ballman	2077180
	04/10/2019	04/16/2019 13:55	Sima Feizi	04/17/2019 20:41	Rosalyn Ballman	2077181
	04/10/2019	04/16/2019 13:55	Sima Feizi	04/17/2019 20:43	Rosalyn Ballman	2077182
EPA 365.1 Rev. 2.0 dissolved	04/10/2019			04/10/2019 18:17	Jhamieka S. Greenwood	2077183
	04/10/2019			04/10/2019 18:18	Jhamieka S. Greenwood	2077184
	04/10/2019			04/10/2019 18:19	Jhamieka S. Greenwood	2077185
	04/10/2019			04/10/2019 18:20	Jhamieka S. Greenwood	2077186, 2077187
SM 2120 B	04/10/2019			04/10/2019 16:18	Mariam Hanna	2077173
	04/10/2019			04/10/2019 16:19	Mariam Hanna	2077174
	04/10/2019			04/10/2019 16:20	Mariam Hanna	2077175
	04/10/2019			04/10/2019 16:21	Mariam Hanna	2077176, 2077177
SM 2320 B-97	04/10/2019			04/16/2019 04:00	Samantha Davila	2077173
	04/10/2019			04/16/2019 04:58	Samantha Davila	2077174
	04/10/2019			04/16/2019 05:09	Samantha Davila	2077175
	04/10/2019			04/16/2019 05:21	Samantha Davila	2077176
	04/10/2019			04/16/2019 05:33	Samantha Davila	2077177

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2540 C-97	04/10/2019			04/11/2019 16:14	Yijie Li	2077173, 2077174, 2077175, 2077176, 2077177
SM 2540 D-97	04/10/2019			04/11/2019 16:14	Yijie Li	2077173, 2077174, 2077175, 2077176, 2077177
SM 4500 F-C-97	04/10/2019			04/16/2019 04:00	Samantha Davila	2077173
	04/10/2019			04/16/2019 04:58	Samantha Davila	2077174
	04/10/2019			04/16/2019 05:09	Samantha Davila	2077175
	04/10/2019			04/16/2019 05:21	Samantha Davila	2077176
	04/10/2019			04/16/2019 05:33	Samantha Davila	2077177
SM 5310 B-00	04/10/2019			04/15/2019 15:07	Julia Storbeck	2077178
	04/10/2019			04/15/2019 16:21	Julia Storbeck	2077179
	04/10/2019			04/15/2019 16:33	Julia Storbeck	2077180
	04/10/2019			04/15/2019 17:11	Julia Storbeck	2077181
	04/10/2019			04/15/2019 17:24	Julia Storbeck	2077182