

Chemical Analysis Report

WAS-SECT-2019-02-06-01

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-2019-02-04-38**

Customer: **WAS-SECT**

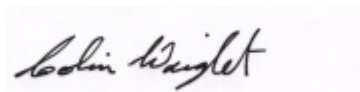
Project ID: **SMP**

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Certified by: Colin Wright, Program Administrator

Date Certified: 04-MAR-2019 14:13

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: Pine Hill Lake Middle

Collection Date/Time: 02/06/2019 10:10

Field ID: G1WA0054

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2060443	EPA 180.1 Rev. 2.0	Turbidity	5.4		NTU	P358463	
	EPA 300.0 Rev. 2.1	Chloride	5.2		mg Cl/L	P359271	
		Sulfate	0.35	I	mg SO4/L	P359274	
	SM 2120 B	Color (true)	38		PCU	P358455	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P359098	
	SM 2540 C-97	TDS	37		mg/L	P359065	
	SM 2540 D-97	TSS	2	I	mg/L	P358946	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P359102	
2060448	EPA 350.1 Rev. 2.0	Ammonia-N	0.20		mg N/L	P358907	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.75		mg N/L	P358697	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.040		mg N/L	P358758	
	EPA 365.1 Rev. 2.0	Total-P	0.029		mg P/L	P358618	
	SM 5310 B-00	Organic Carbon	4.6		mg C/L	P358672	
2060453	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P358538	

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: 02/06/2019 12:05

Field ID: G1WA0041

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2060444	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P358463	
	EPA 300.0 Rev. 2.1	Chloride	6.2		mg Cl/L	P359271	
		Sulfate	1.2		mg SO4/L	P359565	
	SM 2120 B	Color (true)	20		PCU	P358455	
	SM 2320 B-97	Total Alkalinity	25		mg CaCO3/L	P359098	
	SM 2540 C-97	TDS	44		mg/L	P359065	
	SM 2540 D-97	TSS	2	I	mg/L	P358946	
	SM 4500 F-C-97	Fluoride	0.045	I	mg F/L	P359102	
2060449	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P358910	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.33		mg N/L	P359235	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.016		mg N/L	P358936	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P358618	
	SM 5310 B-00	Organic Carbon	3.3		mg C/L	P358673	
2060454	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P358538	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low 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.

Sample Location: Lower Dianne Lake Middle

Collection Date/Time: 02/06/2019 11:05

Field ID: G1WA0040

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2060445	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P358463	
	EPA 300.0 Rev. 2.1	Chloride	6.7		mg Cl/L	P359271	
		Sulfate	1.0		mg SO4/L	P359274	
	SM 2120 B	Color (true)	22		PCU	P358455	
	SM 2320 B-97	Total Alkalinity	21		mg CaCO3/L	P359098	
	SM 2540 C-97	TDS	37		mg/L	P359065	
	SM 2540 D-97	TSS	2	I	mg/L	P358946	
	SM 4500 F-C-97	Fluoride	0.041	I	mg F/L	P359102	
2060450	EPA 350.1 Rev. 2.0	Ammonia-N	0.083		mg N/L	P358907	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37		mg N/L	P358761	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.094		mg N/L	P358936	
	EPA 365.1 Rev. 2.0	Total-P	0.027		mg P/L	P358618	
	SM 5310 B-00	Organic Carbon	3.3		mg C/L	P358673	
2060455	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P358538	

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 Tom John Middle

Collection Date/Time: 02/06/2019 13:00

Field ID: G1WA0043

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2060446	EPA 180.1 Rev. 2.0	Turbidity	0.50		NTU	P358463	
	EPA 300.0 Rev. 2.1	Chloride	7.1		mg Cl/L	P359271	
		Sulfate	0.33	I	mg SO4/L	P359274	
	SM 2120 B	Color (true)	27		PCU	P358455	
	SM 2320 B-97	Total Alkalinity	16		mg CaCO3/L	P359098	
	SM 2540 C-97	TDS	42		mg/L	P359065	
	SM 2540 D-97	TSS	2	U	mg/L	P358946	
	SM 4500 F-C-97	Fluoride	0.040	I	mg F/L	P359102	
2060451	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P358907	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.31		mg N/L	P358761	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P358937	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P358618	
	SM 5310 B-00	Organic Carbon	4.8		mg C/L	P358673	
2060456	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P358538	

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: 02/06/2019 09:25**

Field ID: G1WA0004

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2060447	EPA 180.1 Rev. 2.0	Turbidity	7.1	A	NTU	P358463	
	EPA 300.0 Rev. 2.1	Chloride	4.5		mg Cl/L	P359271	
		Sulfate	1.6		mg SO4/L	P359565	
		Color (true)	25	A	PCU	P358456	
	SM 2320 B-97	Total Alkalinity	27		mg CaCO3/L	P359098	
	SM 2540 C-97	TDS	43		mg/L	P359065	
	SM 2540 D-97	TSS	6	I	mg/L	P358946	
	SM 4500 F-C-97	Fluoride	0.037	I	mg F/L	P359102	
2060452	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P358907	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36		mg N/L	P358761	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P358937	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P358618	
	SM 5310 B-00	Organic Carbon	3.7		mg C/L	P358673	
2060457	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P358538	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low 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: P358463

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359271

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359274

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359565

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358907

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358910

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358697

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358761

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359235

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358758

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358936

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358937

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358618

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358538

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

Reference Method: SM 2120 B
Batch ID: P358455

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P358456

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P359098

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

Reference Method: SM 2540 C-97
Batch ID: P359065

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P358946

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P359102

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P358672

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

Reference Method: SM 5310 B-00
Batch ID: P358673

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: P359271

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	95.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359274

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	95.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359565

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358907

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358910

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358697

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358761

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359235

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358758

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	100		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358936

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	100		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358937

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: P358618

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: P358538

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.1		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P358455

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

Reference Method: SM 2120 B
Batch ID: P358456

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

Reference Method: SM 2320 B-97
Batch ID: P359098

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P359102

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.8		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P358672

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.8		P	85 - 115

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P358673

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359271

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2059842	Chloride	98.4		P	90 - 110
2060443	Chloride	95.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359274

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2059842	Sulfate	96.8		P	90 - 110
2060443	Sulfate	94.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359565

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062455	Sulfate	98.5		P	90 - 110
2062497	Sulfate	96.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358907

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2060327	Ammonia-N	99.6	94.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358910

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061150	Ammonia-N	100	97.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358697

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2060326	Kjeldahl Nitrogen	102	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358761

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2060450	Kjeldahl Nitrogen	109	107	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359235

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063009	Kjeldahl Nitrogen	99.3	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358758

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2060448	NO2NO3-N	99.0	99.4	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358936

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2060305	NO2NO3-N	99.3	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358937

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2060451	NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358618

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2060319	Total-P	103	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358538

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2060453	O-Phosphate-P	95.7	97.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P359102

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061033	Fluoride	96.4	97.7	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P358672

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2060210	Organic Carbon	97.7		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P358673

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2060449	Organic Carbon	95.7	93.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P358463

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060447	Turbidity	3.25	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359271

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2059842	Chloride	0.308	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359274

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2059842	Sulfate	0.422	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358907

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060327	Ammonia-N	4.38	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358910

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061150	Ammonia-N	2.38	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358697

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060326	Kjeldahl Nitrogen	2.36	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358761

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060450	Kjeldahl Nitrogen	1.25	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359235

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063009	Kjeldahl Nitrogen	0.758	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358758

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060448	NO2NO3-N	0.419	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358936

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060305	NO2NO3-N	1.47	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358937

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060451	NO2NO3-N	0.487	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358618

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060319	Total-P	3.08	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358538

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060453	O-Phosphate-P	2.07	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P358455

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060315	Color (true)	0.863	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P358456

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060447	Color (true)	1.57	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P359098

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061033	Total Alkalinity	0.912	Sample	P	0 - 1.6

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P359065

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060316	TDS	3.92	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P359102

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061033	Fluoride	0.986	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P358672

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060210	Organic Carbon	1.15	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P358673

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060449	Organic Carbon	1.57	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: SM 2120 B

Run ID: A89231

Included Lab Sample IDs: 2060443, 2060444, 2060445, 2060446, 2060447

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	105	P/P	90 - 115
Color (true)	102	102	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A89232

Included Lab Sample IDs: 2060443, 2060444, 2060445, 2060446, 2060447

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A89268

Included Lab Sample IDs: 2060453, 2060454, 2060455, 2060456, 2060457

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.9	98.1	P/P	90 - 110
O-Phosphate-P	98.7	97.9	P/P	90 - 110
O-Phosphate-P	99.4	98.4	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A89322

Included Lab Sample IDs: 2060448, 2060449, 2060450, 2060451, 2060452

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	92.5	91.8	P/P	90 - 110
Organic Carbon	92.9	92.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A89341

Included Lab Sample IDs: 2060448, 2060449, 2060450, 2060451, 2060452

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	99.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A89360

Included Lab Sample IDs: 2060448

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A89381

Included Lab Sample IDs: 2060448

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.2	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A89402

Included Lab Sample IDs: 2060450, 2060451, 2060452

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	98.9	P/P	90 - 110
Kjeldahl Nitrogen	99.9	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A89413

Included Lab Sample IDs: 2060448, 2060449, 2060450, 2060451, 2060452

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A89422

Included Lab Sample IDs: 2060449, 2060450, 2060451, 2060452

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	99.0	P/P	90 - 110
NO2NO3-N	99.0	99.5	P/P	90 - 110
NO2NO3-N	99.5	99.5	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A89482

Included Lab Sample IDs: 2060443, 2060444, 2060445, 2060446, 2060447

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

Reference Method: SM 4500 F-C-97

Run ID: A89482

Included Lab Sample IDs: 2060443, 2060444, 2060445, 2060446, 2060447

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A89517

Included Lab Sample IDs: 2060443, 2060444, 2060445, 2060446, 2060447

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	96.4	101	P/P	90 - 110
Chloride	96.6	96.4	P/P	90 - 110
Sulfate	96.0	101	P/P	90 - 110
Sulfate	96.2	96.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A89640

Included Lab Sample IDs: 2060449

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.2	100	P/P	90 - 110

Quality Assurance Report

Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A89674

Included Lab Sample IDs: 2060444, 2060447

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	101	102	P/P	90 - 110
Sulfate	102	103	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				3.25	
EPA 300.0 Rev. 2.1	Chloride	95.5	98.4	95.6	0.308	
	Sulfate	95.0	96.8	94.3	0.422	
	Sulfate	98.6	98.5	96.3		
EPA 350.1 Rev. 2.0	Ammonia-N	95.9	99.6	94.3		4.38
	Ammonia-N	96.1	100	97.1		2.38
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	102	105		2.36
	Kjeldahl Nitrogen	103	109	107		1.25
	Kjeldahl Nitrogen	105	99.3	100		0.758
EPA 353.2 Rev. 2.0	NO2NO3-N	100	99.0	99.4		0.419
	NO2NO3-N	100	99.3	101		1.47
	NO2NO3-N	102	103	102		0.487
EPA 365.1 Rev. 2.0	Total-P	105	103	100		3.08
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.1	95.7	97.7		2.07
SM 2120 B	Color (true)	103			0.863	
	Color (true)	105			1.57	
SM 2320 B-97	Total Alkalinity	102			0.912	
SM 2540 C-97	TDS				3.92	
SM 4500 F-C-97	Fluoride	96.8	96.4	97.7		0.986
SM 5310 B-00	Organic Carbon	96.8	97.7			1.15
	Organic Carbon	93.2	95.7	93.9		1.57

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2060443, 2060444, 2060445, 2060446, 2060447
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2060443, 2060444, 2060445, 2060446, 2060447
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2060443, 2060444, 2060445, 2060446, 2060447
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2060448, 2060449, 2060450, 2060451, 2060452
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2060448, 2060449, 2060450, 2060451, 2060452
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2060448, 2060449, 2060450, 2060451, 2060452
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2060448, 2060449, 2060450, 2060451, 2060452
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2060453, 2060454, 2060455, 2060456, 2060457
SM 2120 B / E31780	True Color measured at 450 nm	2060443, 2060444, 2060445, 2060446, 2060447
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2060443, 2060444, 2060445, 2060446, 2060447
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2060443, 2060444, 2060445, 2060446, 2060447
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2060443, 2060444, 2060445, 2060446, 2060447
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2060443, 2060444, 2060445, 2060446, 2060447
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2060448, 2060449, 2060450, 2060451, 2060452

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	02/06/2019			02/06/2019 17:47	Adrian Shelby	2060443, 2060444, 2060445, 2060446, 2060447
EPA 300.0 Rev. 2.1	02/06/2019			02/19/2019 20:31	Lipi Saha	2060443
	02/06/2019			02/20/2019 00:13	Lipi Saha	2060444
	02/06/2019			02/20/2019 00:30	Lipi Saha	2060445
	02/06/2019			02/20/2019 00:47	Lipi Saha	2060446
	02/06/2019			02/20/2019 01:04	Lipi Saha	2060447
	02/06/2019			02/25/2019 22:31	Lipi Saha	2060447
	02/06/2019			02/25/2019 23:15	Lipi Saha	2060444
EPA 350.1 Rev. 2.0	02/06/2019			02/13/2019 11:44	Ping Hua	2060448
	02/06/2019			02/13/2019 11:47	Ping Hua	2060450
	02/06/2019			02/13/2019 11:48	Ping Hua	2060451
	02/06/2019			02/13/2019 11:50	Ping Hua	2060452
	02/06/2019			02/13/2019 13:27	Ping Hua	2060449
EPA 351.2 Rev. 2.0	02/06/2019	02/11/2019 11:30	Adrian Shelby	02/12/2019 14:13	Joseph Suarez	2060448
	02/06/2019	02/12/2019 12:25	Adrian Shelby	02/13/2019 11:43	Joseph Suarez	2060450
	02/06/2019	02/12/2019 12:25	Adrian Shelby	02/13/2019 11:47	Joseph Suarez	2060451
	02/06/2019	02/12/2019 12:25	Adrian Shelby	02/13/2019 11:52	Joseph Suarez	2060452
	02/06/2019	02/19/2019 11:30	Adrian Shelby	02/22/2019 13:08	Joseph Suarez	2060449
EPA 353.2 Rev. 2.0	02/06/2019			02/12/2019 12:06	Beverly Y. Sanders	2060448
	02/06/2019			02/14/2019 10:20	Beverly Y. Sanders	2060450
	02/06/2019			02/14/2019 10:27	Beverly Y. Sanders	2060451
	02/06/2019			02/14/2019 10:33	Beverly Y. Sanders	2060452
	02/06/2019			02/14/2019 12:18	Beverly Y. Sanders	2060449
EPA 365.1 Rev. 2.0	02/06/2019	02/08/2019 15:00	Sima Feizi	02/11/2019 17:43	Rosalyn Ballman	2060448
	02/06/2019	02/08/2019 15:00	Sima Feizi	02/11/2019 17:44	Rosalyn Ballman	2060449
	02/06/2019	02/08/2019 15:00	Sima Feizi	02/11/2019 17:45	Rosalyn Ballman	2060450
	02/06/2019	02/08/2019 15:00	Sima Feizi	02/11/2019 17:46	Rosalyn Ballman	2060451
	02/06/2019	02/08/2019 15:00	Sima Feizi	02/11/2019 17:47	Rosalyn Ballman	2060452
EPA 365.1 Rev. 2.0 dissolved	02/06/2019			02/07/2019 15:17	Jhamieka S. Greenwood	2060453
	02/06/2019			02/07/2019 15:47	Jhamieka S. Greenwood	2060454
	02/06/2019			02/07/2019 15:48	Jhamieka S. Greenwood	2060455
	02/06/2019			02/07/2019 15:49	Jhamieka S. Greenwood	2060456
	02/06/2019			02/07/2019 15:54	Jhamieka S. Greenwood	2060457
SM 2120 B	02/06/2019			02/06/2019 17:06	Chelsea Hernandez	2060443
	02/06/2019			02/06/2019 17:07	Chelsea Hernandez	2060444
	02/06/2019			02/06/2019 17:08	Chelsea Hernandez	2060445
	02/06/2019			02/06/2019 17:09	Chelsea Hernandez	2060446
	02/06/2019			02/06/2019 17:13	Chelsea Hernandez	2060447
SM 2320 B-97	02/06/2019			02/14/2019 22:52	Dale L. Simmons	2060443

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	02/06/2019			02/14/2019 23:03	Dale L. Simmons	2060444
	02/06/2019			02/14/2019 23:15	Dale L. Simmons	2060445
	02/06/2019			02/14/2019 23:27	Dale L. Simmons	2060446
	02/06/2019			02/14/2019 23:39	Dale L. Simmons	2060447
SM 2540 C-97	02/06/2019			02/08/2019 15:25	Yijie Li	2060443, 2060444, 2060445, 2060446, 2060447
SM 2540 D-97	02/06/2019			02/08/2019 15:25	Yijie Li	2060443, 2060444, 2060445, 2060446, 2060447
SM 4500 F-C-97	02/06/2019			02/14/2019 22:52	Dale L. Simmons	2060443
	02/06/2019			02/14/2019 23:03	Dale L. Simmons	2060444
	02/06/2019			02/14/2019 23:15	Dale L. Simmons	2060445
	02/06/2019			02/14/2019 23:27	Dale L. Simmons	2060446
	02/06/2019			02/14/2019 23:39	Dale L. Simmons	2060447
SM 5310 B-00	02/06/2019			02/08/2019 23:16	Chelsea Hernandez	2060448
	02/06/2019			02/08/2019 23:53	Chelsea Hernandez	2060449
	02/06/2019			02/09/2019 01:08	Chelsea Hernandez	2060450
	02/06/2019			02/09/2019 01:20	Chelsea Hernandez	2060451
	02/06/2019			02/09/2019 01:33	Chelsea Hernandez	2060452