

Chemical Analysis Report

WAS-SECT-2019-08-14-01

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-2019-08-12-45**

Customer: **WAS-SECT**

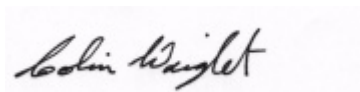
Project ID: **SMP**

Send Reports to:
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2600 Blair Stone Rd
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Attn: Curtis Musson

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Certified by: Colin Wright, Program Administrator

Date Certified: 03-SEP-2019 10:59

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: Lower Dianne Lake Middle

Collection Date/Time: 08/14/2019 11:15

Field ID: G1WA0040

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2111759	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P369128	
	EPA 300.0 Rev. 2.1	Chloride	7.3		mg Cl/L	P369495	
		Sulfate	0.53	I	mg SO4/L	P369498	
	SM 2120 B	Color (true)	10	A	PCU	P369150	
	SM 2320 B-97	Total Alkalinity	29		mg CaCO3/L	P369442	
	SM 2540 C-97	TDS	45		mg/L	P369726	
	SM 2540 D-97	TSS	2	I	mg/L	P369480	
	SM 4500 F-C-97	Fluoride	0.056	I	mg F/L	P369445	
2111764	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P369468	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.46		mg N/L	P369301	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P369325	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P369183	
	SM 5310 B-00	Organic Carbon	4.1		mg C/L	P369284	
2111769	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P369098	

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: 08/14/2019 10:30

Field ID: G1WA0041

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2111760	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P369128	
	EPA 300.0 Rev. 2.1	Chloride	6.9		mg Cl/L	P369495	
		Sulfate	0.55	I	mg SO4/L	P369498	
	SM 2120 B	Color (true)	6.8	A	PCU	P369149	
	SM 2320 B-97	Total Alkalinity	33		mg CaCO3/L	P369586	
	SM 2540 C-97	TDS	45		mg/L	P369726	
	SM 2540 D-97	TSS	2	I	mg/L	P369480	
	SM 4500 F-C-97	Fluoride	0.061	I	mg F/L	P369589	
2111765	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P369691	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P369301	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P369325	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P369183	
	SM 5310 B-00	Organic Carbon	4.0		mg C/L	P369284	
2111770	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P369098	

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: 08/14/2019 10:00

Field ID: G1WA0004

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2111761	EPA 180.1 Rev. 2.0	Turbidity	9.0		NTU	P369128	
	EPA 300.0 Rev. 2.1	Chloride	3.4		mg Cl/L	P369495	
		Sulfate	0.40	I	mg SO4/L	P369498	
	SM 2120 B	Color (true)	18		PCU	P369150	
	SM 2320 B-97	Total Alkalinity	31		mg CaCO3/L	P369586	
	SM 2540 C-97	TDS	54		mg/L	P369726	
	SM 2540 D-97	TSS	8	I	mg/L	P369480	
	SM 4500 F-C-97	Fluoride	0.048	I	mg F/L	P369589	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P369469	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.80		mg N/L	P369301	
2111766	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P369325	
	EPA 365.1 Rev. 2.0	Total-P	0.030		mg P/L	P369183	
	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P369284	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P369098	
	dissolved						

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: 08/14/2019 11:50

Field ID: G1WA0054

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2111762	EPA 180.1 Rev. 2.0	Turbidity	3.3		NTU	P369128	
	EPA 300.0 Rev. 2.1	Chloride	5.6		mg Cl/L	P369495	
		Sulfate	0.30	I	mg SO4/L	P369498	
	SM 2120 B	Color (true)	13	A	PCU	P369152	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P369586	
	SM 2540 C-97	TDS	28		mg/L	P369726	
	SM 2540 D-97	TSS	3	I	mg/L	P369480	
	SM 4500 F-C-97	Fluoride	0.043	I	mg F/L	P369589	
2111767	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P369469	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.68		mg N/L	P369364	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P369326	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P369183	
	SM 5310 B-00	Organic Carbon	5.8		mg C/L	P369284	
2111772	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P369099	

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: 08/14/2019 09:15

Field ID: G1WA0043

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2111763	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P369128	
	EPA 300.0 Rev. 2.1	Chloride	9.2		mg Cl/L	P369495	
		Sulfate	0.20	U	mg SO4/L	P369498	
	SM 2120 B	Color (true)	12		PCU	P369150	
	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P369586	
	SM 2540 C-97	TDS	42		mg/L	P369726	
	SM 2540 D-97	TSS	2	I	mg/L	P369480	
	SM 4500 F-C-97	Fluoride	0.049	I	mg F/L	P369589	
2111768	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P369469	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.55		mg N/L	P369364	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P369326	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P369183	
	SM 5310 B-00	Organic Carbon	5.2		mg C/L	P369284	
2111773	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P369098	

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: P369128

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369495

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369498

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369468

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369469

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369691

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369301

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369364

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369325

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369326

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369183

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369098

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369099

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

Reference Method: SM 2120 B
Batch ID: P369149

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P369150

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P369152

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P369442

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

Reference Method: SM 2320 B-97
Batch ID: P369586

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: P369726

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P369480

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P369445

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P369589

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P369284

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: P369495

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369498

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369468

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369469

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369691

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369301

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369364

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.4		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369325

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369326

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369183

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369098

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369099

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

Reference Method: SM 2120 B
Batch ID: P369149

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.7		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P369150

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P369152

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P369442

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 106

Reference Method: SM 2320 B-97
Batch ID: P369586

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P369445

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.9		P	92 - 103

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97

Batch ID: P369589

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.3		P	92 - 103

Reference Method: SM 5310 B-00

Batch ID: P369284

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.5		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369495

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111692	Chloride	100		P	90 - 110
2111762	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369498

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111692	Sulfate	103		P	90 - 110
2111762	Sulfate	107		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369468

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111705	Ammonia-N	98.2	99.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369469

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111808	Ammonia-N	96.7	97.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369691

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111409	Ammonia-N	99.0	98.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369301

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111704	Kjeldahl Nitrogen	103	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369364

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111838	Kjeldahl Nitrogen	100	97.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369325

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111764	NO2NO3-N	102	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369326

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111767	NO2NO3-N	102	101	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369183

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111707	Total-P	106	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369098

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111770	O-Phosphate-P	97.9	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369099

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111772	O-Phosphate-P	96.7	97.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P369445

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111620	Fluoride	96.3	96.9	P/P	89 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P369589

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111832	Fluoride	94.1	94.6	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P369284

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111766	Organic Carbon	104	103	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P369128

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111830	Turbidity	3.51	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369495

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111692	Chloride	0.452	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369498

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111692	Sulfate	0.170	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369468

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111705	Ammonia-N	1.39	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369469

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111808	Ammonia-N	0.711	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369691

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111409	Ammonia-N	0.139	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369301

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111704	Kjeldahl Nitrogen	2.28	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369364

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111838	Kjeldahl Nitrogen	1.87	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369325

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111764	NO2NO3-N	1.46	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369326

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111767	NO2NO3-N	0.494	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369183

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111707	Total-P	0.604	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369098

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111770	O-Phosphate-P	0.509	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369099

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111772	O-Phosphate-P	0.310	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P369149

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111760	Color (true)	7.69	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P369150

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111759	Color (true)	0.331	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P369152

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111762	Color (true)	4.48	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
 Batch ID: P369442

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111620	Total Alkalinity	0.0323	Sample	P	0 - 2.8

Reference Method: SM 2320 B-97
 Batch ID: P369586

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111832	Total Alkalinity	0.127	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
 Batch ID: P369726

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111698	TDS	4.89	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P369445

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111620	Fluoride	0.519	Spike	P	0 - 2.5

Reference Method: SM 4500 F-C-97
 Batch ID: P369589

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111832	Fluoride	0.477	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
 Batch ID: P369284

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111766	Organic Carbon	0.494	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 365.1 Rev. 2.0 dissolved

Run ID: A93535

Included Lab Sample IDs: 2111769, 2111770, 2111771, 2111772, 2111773

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	99.4	P/P	90 - 110
O-Phosphate-P	101	99.9	P/P	90 - 110
O-Phosphate-P	99.9	98.3	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A93540

Included Lab Sample IDs: 2111759, 2111760, 2111761, 2111762, 2111763

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

Reference Method: SM 2120 B

Run ID: A93551

Included Lab Sample IDs: 2111759, 2111760, 2111761, 2111762, 2111763

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	101	P/P	90 - 115
Color (true)	102	103	P/P	90 - 115
Color (true)	99.9	101	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A93599

Included Lab Sample IDs: 2111764, 2111765, 2111766, 2111767, 2111768

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.5	98.2	P/P	90 - 110
Total-P	98.8	98.5	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A93620

Included Lab Sample IDs: 2111764, 2111765, 2111766, 2111767, 2111768

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A93635

Included Lab Sample IDs: 2111764, 2111765, 2111766, 2111767, 2111768

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A93681

Included Lab Sample IDs: 2111764, 2111765, 2111766, 2111767, 2111768

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	99.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A93694
Included Lab Sample IDs: 2111759

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

Reference Method: SM 4500 F-C-97
Run ID: A93694
Included Lab Sample IDs: 2111759

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A93709
Included Lab Sample IDs: 2111764, 2111766, 2111767, 2111768

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	98.5	P/P	90 - 110
Ammonia-N	98.5	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A93717
Included Lab Sample IDs: 2111759, 2111760, 2111761, 2111762, 2111763

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	96.7	P/P	90 - 110
Chloride	96.7	96.5	P/P	90 - 110
Sulfate	101	101	P/P	90 - 110
Sulfate	105	101	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A93749
Included Lab Sample IDs: 2111760, 2111761, 2111762, 2111763

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.8	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A93749
Included Lab Sample IDs: 2111760, 2111761, 2111762, 2111763

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	97.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A93798
Included Lab Sample IDs: 2111765

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	102	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				3.51	
EPA 300.0 Rev. 2.1	Chloride	102	100	103	0.452	
	Sulfate	105	103	107	0.170	
EPA 350.1 Rev. 2.0	Ammonia-N	97.2	98.2	99.5		1.39
	Ammonia-N	95.2	96.7	97.5		0.711
	Ammonia-N	101	99.0	98.7		0.139
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	95.4	103	101		2.28
	Kjeldahl Nitrogen	95.4	100	97.8		1.87
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	101	102	104		1.46
	NO ₂ NO ₃ -N	104	102	101		0.494
EPA 365.1 Rev. 2.0	Total-P	102	106	105		0.604
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.8	97.9	98.4		0.509
	O-Phosphate-P	103	96.7	97.0		0.310
SM 2120 B	Color (true)	98.7			7.69	
	Color (true)	100			0.331	
	Color (true)	101			4.48	
SM 2320 B-97	Total Alkalinity	102			0.0323	
	Total Alkalinity	103			0.127	
SM 2540 C-97	TDS				4.89	
SM 4500 F-C-97	Fluoride	98.9	96.3	96.9		0.519
	Fluoride	95.3	94.1	94.6		0.477
SM 5310 B-00	Organic Carbon	99.5	104	103		0.494

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2111759, 2111760, 2111761, 2111762, 2111763
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2111759, 2111760, 2111761, 2111762, 2111763
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2111759, 2111760, 2111761, 2111762, 2111763
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2111764, 2111765, 2111766, 2111767, 2111768
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2111764, 2111765, 2111766, 2111767, 2111768
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2111764, 2111765, 2111766, 2111767, 2111768
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2111764, 2111765, 2111766, 2111767, 2111768
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2111769, 2111770, 2111771, 2111772, 2111773
SM 2120 B / E31780	True Color measured at 450 nm	2111759, 2111760, 2111761, 2111762, 2111763
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2111759, 2111760, 2111761, 2111762, 2111763
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2111759, 2111760, 2111761, 2111762, 2111763
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2111759, 2111760, 2111761, 2111762, 2111763
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2111759, 2111760, 2111761, 2111762, 2111763
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2111764, 2111765, 2111766, 2111767, 2111768

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	08/14/2019			08/15/2019 16:59	Rosalyn Ballman	2111759, 2111760, 2111761, 2111762, 2111763
EPA 300.0 Rev. 2.1	08/14/2019			08/21/2019 13:38	Jhamieka S. Greenwood	2111762
	08/14/2019			08/21/2019 15:39	Jhamieka S. Greenwood	2111759
	08/14/2019			08/21/2019 15:52	Jhamieka S. Greenwood	2111760
	08/14/2019			08/21/2019 16:04	Jhamieka S. Greenwood	2111761
	08/14/2019			08/21/2019 16:16	Jhamieka S. Greenwood	2111763
EPA 350.1 Rev. 2.0	08/14/2019			08/21/2019 14:12	Ping Hua	2111764
	08/14/2019			08/21/2019 14:29	Ping Hua	2111766
	08/14/2019			08/21/2019 14:30	Ping Hua	2111767
	08/14/2019			08/21/2019 14:32	Ping Hua	2111768
	08/14/2019			08/26/2019 11:22	Ping Hua	2111765
EPA 351.2 Rev. 2.0	08/14/2019	08/20/2019 12:45	Sima Feizi	08/21/2019 12:39	Joseph Suarez	2111764
	08/14/2019	08/20/2019 12:45	Sima Feizi	08/21/2019 12:40	Joseph Suarez	2111765
	08/14/2019	08/20/2019 12:45	Sima Feizi	08/21/2019 12:42	Joseph Suarez	2111766
	08/14/2019	08/20/2019 12:45	Sima Feizi	08/21/2019 12:46	Joseph Suarez	2111767
	08/14/2019	08/20/2019 12:45	Sima Feizi	08/21/2019 12:48	Joseph Suarez	2111768
EPA 353.2 Rev. 2.0	08/14/2019			08/20/2019 10:46	Beverly Y. Sanders	2111765
	08/14/2019			08/20/2019 10:47	Beverly Y. Sanders	2111766
	08/14/2019			08/20/2019 10:54	Beverly Y. Sanders	2111767
	08/14/2019			08/20/2019 11:00	Beverly Y. Sanders	2111768
	08/14/2019			08/20/2019 12:36	Beverly Y. Sanders	2111764
EPA 365.1 Rev. 2.0	08/14/2019	08/16/2019 13:30	Vijayalakshmi Reddy	08/19/2019 13:22	Lipi Saha	2111764
	08/14/2019	08/16/2019 13:30	Vijayalakshmi Reddy	08/19/2019 13:23	Lipi Saha	2111765, 2111766
	08/14/2019	08/16/2019 13:30	Vijayalakshmi Reddy	08/19/2019 13:31	Lipi Saha	2111767
	08/14/2019	08/16/2019 13:30	Vijayalakshmi Reddy	08/19/2019 13:32	Lipi Saha	2111768
EPA 365.1 Rev. 2.0 dissolved	08/14/2019			08/14/2019 17:40	Jhamieka S. Greenwood	2111770
	08/14/2019			08/14/2019 17:44	Jhamieka S. Greenwood	2111772
	08/14/2019			08/14/2019 18:24	Jhamieka S. Greenwood	2111771
	08/14/2019			08/14/2019 18:32	Jhamieka S. Greenwood	2111769
	08/14/2019			08/14/2019 18:33	Jhamieka S. Greenwood	2111773
SM 2120 B	08/14/2019			08/15/2019 15:59	Madeline Funaro	2111760
	08/14/2019			08/15/2019 16:10	Madeline Funaro	2111759
	08/14/2019			08/15/2019 16:11	Madeline Funaro	2111761
	08/14/2019			08/15/2019 16:12	Madeline Funaro	2111763
	08/14/2019			08/15/2019 16:34	Madeline Funaro	2111762
SM 2320 B-97	08/14/2019			08/21/2019 00:46	Dale L. Simmons	2111759
	08/14/2019			08/22/2019 20:31	Dale L. Simmons	2111760
	08/14/2019			08/22/2019 20:43	Dale L. Simmons	2111761
	08/14/2019			08/22/2019 20:54	Dale L. Simmons	2111762

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	08/14/2019			08/22/2019 21:06	Dale L. Simmons	2111763
SM 2540 C-97	08/14/2019			08/19/2019 15:20	Yijie Li	2111759, 2111760, 2111761, 2111762, 2111763
SM 2540 D-97	08/14/2019			08/19/2019 15:20	Yijie Li	2111759, 2111760, 2111761, 2111762, 2111763
SM 4500 F-C-97	08/14/2019			08/21/2019 00:46	Dale L. Simmons	2111759
	08/14/2019			08/22/2019 20:31	Dale L. Simmons	2111760
	08/14/2019			08/22/2019 20:43	Dale L. Simmons	2111761
	08/14/2019			08/22/2019 20:54	Dale L. Simmons	2111762
	08/14/2019			08/22/2019 21:06	Dale L. Simmons	2111763
SM 5310 B-00	08/14/2019			08/19/2019 13:45	Madeline Funaro	2111766
	08/14/2019			08/19/2019 14:34	Madeline Funaro	2111767
	08/14/2019			08/19/2019 17:20	Madeline Funaro	2111764
	08/14/2019			08/19/2019 17:37	Madeline Funaro	2111765
	08/14/2019			08/19/2019 17:49	Madeline Funaro	2111768