

Chemical Analysis Report

TLH-ROC-2020-01-13-01

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

Event Description: **Run 6**
Request ID: **RQ-2020-01-13-56**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
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Certified by: Colin Wright, Program Administrator

Date Certified: 29-JAN-2020 13:56

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light gray rectangular 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: WILLIFORD SPRING

Collection Date/Time: 01/13/2020 11:00

Field ID: G3TLHR0009

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2148739	EPA 180.1 Rev. 2.0	Turbidity	0.15		NTU	P377123	
	EPA 300.0 Rev. 2.1	Chloride	2.7		mg Cl/L	P377244	
		Sulfate	1.3		mg SO4/L	P377245	
		Color (true)	2.9	I	PCU	P377116	
	SM 2320 B-2011	Total Alkalinity	68		mg CaCO3/L	P377365	
	SM 2540 C-2011	TDS	77		mg/L	P377413	
	SM 2540 D-2011	TSS	2	I	mg/L	P377204	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P377369	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P377228	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P377275	
2148745	EPA 353.2 Rev. 2.0	NO2NO3-N	0.077		mg N/L	P377218	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P377411	
	SM 5310 B-2011	Organic Carbon	0.52	I	mg C/L	P377259	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.013		mg P/L	P377107	

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-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: RATTLESNAKE LAKE CENTER

Collection Date/Time: 01/13/2020 11:35

Field ID: G3TLHR0013

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2148740	EPA 180.1 Rev. 2.0	Turbidity	3.0		NTU	P377123	
	EPA 300.0 Rev. 2.1	Chloride	1.7		mg Cl/L	P377244	
		Sulfate	0.82		mg SO4/L	P377245	
	SM 2120 B-2011	Color (true)	12		PCU	P377116	
	SM 2320 B-2011	Total Alkalinity	0.83	I	mg CaCO3/L	P377365	
	SM 2540 C-2011	TDS	15	U	mg/L	P377413	
	SM 2540 D-2011	TSS	3	I	mg/L	P377204	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P377369	
2148746	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P377228	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.31		mg N/L	P377275	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.026		mg N/L	P377218	
	EPA 365.1 Rev. 2.0	Total-P	0.006		mg P/L	P377411	
	SM 5310 B-2011	Organic Carbon	3.6		mg C/L	P377259	
2148752	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P377107	

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-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: MERIAL LAKE CENTER

Collection Date/Time: 01/13/2020 12:20

Field ID: G3TLHR0014

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2148741	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P377123	
	EPA 300.0 Rev. 2.1	Chloride	2.8		mg Cl/L	P377244	
		Sulfate	1.9		mg SO4/L	P377245	
	SM 2120 B-2011	Color (true)	3.8	I	PCU	P377116	
	SM 2320 B-2011	Total Alkalinity	0.71	I	mg CaCO3/L	P377365	
	SM 2540 C-2011	TDS	15	U	mg/L	P377413	
	SM 2540 D-2011	TSS	2	I	mg/L	P377204	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P377369	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P377228	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P377276	
2148747	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P377218	
	EPA 365.1 Rev. 2.0	Total-P	0.005	I	mg P/L	P377411	
	SM 5310 B-2011	Organic Carbon	2.9		mg C/L	P377259	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P377107	
	dissolved						

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-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: CRYSTAL LAKE CENTER

Collection Date/Time: 01/13/2020 12:55

Field ID: G3TLHR0012

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2148742	EPA 180.1 Rev. 2.0	Turbidity	0.40		NTU	P377123	
	EPA 300.0 Rev. 2.1	Chloride	2.5		mg Cl/L	P377244	
		Sulfate	3.6		mg SO4/L	P377245	
	SM 2120 B-2011	Color (true)	2.5	U	PCU	P377116	
	SM 2320 B-2011	Total Alkalinity	5.3		mg CaCO3/L	P377365	
	SM 2540 C-2011	TDS	15	I	mg/L	P377413	
	SM 2540 D-2011	TSS	2	U	mg/L	P377204	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P377369	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.037		mg N/L	P377226	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.18	I	mg N/L	P377276	
2148748	EPA 353.2 Rev. 2.0	NO2NO3-N	0.034		mg N/L	P377218	
	EPA 365.1 Rev. 2.0	Total-P	0.003	I	mg P/L	P377461	
	SM 5310 B-2011	Organic Carbon	1.8		mg C/L	P377259	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P377107	
	dissolved						

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-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: MAJOR LAKE CENTER

Collection Date/Time: 01/13/2020 13:30

Field ID: G3TLHR0011

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2148743	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P377123	
	EPA 300.0 Rev. 2.1	Chloride	2.3		mg Cl/L	P377244	
		Sulfate	1.5		mg SO4/L	P377245	
	SM 2120 B-2011	Color (true)	8.4		PCU	P377116	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P377366	
	SM 2540 C-2011	TDS	15	U	mg/L	P377413	
	SM 2540 D-2011	TSS	2	I	mg/L	P377204	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P377370	
2148749	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P377226	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	I	mg N/L	P377276	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.034		mg N/L	P377218	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P377461	
	SM 5310 B-2011	Organic Carbon	2.4		mg C/L	P377259	
2148755	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P377107	

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-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: DUNFORD LAKE

Collection Date/Time: 01/13/2020 14:00

Field ID: G3TLHR0010

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2148744	EPA 180.1 Rev. 2.0	Turbidity	0.45		NTU	P377123	
	EPA 300.0 Rev. 2.1	Chloride	2.2		mg Cl/L	P377244	
		Sulfate	0.76		mg SO4/L	P377245	
	SM 2120 B-2011	Color (true)	12		PCU	P377116	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P377366	
	SM 2540 C-2011	TDS	15	U	mg/L	P377413	
	SM 2540 D-2011	TSS	2	U	mg/L	P377204	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P377370	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P377226	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.27		mg N/L	P377276	
2148750	EPA 353.2 Rev. 2.0	NO2NO3-N	0.020		mg N/L	P377218	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P377461	
	SM 5310 B-2011	Organic Carbon	4.4		mg C/L	P377259	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P377107	
	dissolved						

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-2011: 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: P377123

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P377244

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P377245

Component	Result	Code	Units
Sulfate	0.20	U	mg SO ₄ /L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P377226

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P377228

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P377275

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P377276

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P377218

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P377411

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
Batch ID: P377461

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P377107

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

Reference Method: SM 2120 B-2011
Batch ID: P377116

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P377365

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

Reference Method: SM 2320 B-2011
Batch ID: P377366

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

Reference Method: SM 2540 C-2011
Batch ID: P377413

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P377204

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P377369

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P377370

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P377259

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: P377244

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P377245

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P377226

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P377228

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P377275

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	106		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P377276

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P377218

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P377411

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P377461

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P377107

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

Reference Method: SM 2120 B-2011
Batch ID: P377116

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.3		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P377365

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

Reference Method: SM 2320 B-2011
Batch ID: P377366

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P377369

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.0		P	92 - 103

Reference Method: SM 4500 F-C-2011
Batch ID: P377370

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.4		P	92 - 103

Reference Method: SM 5310 B-2011
Batch ID: P377259

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P377244

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2148651	Chloride	100		P	90 - 110
2148871	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P377245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2148651	Sulfate	99.8		P	90 - 110
2148871	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P377226

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2148748	Ammonia-N	95.8	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P377228

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2148618	Ammonia-N	99.7	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P377275

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2148745	Kjeldahl Nitrogen	106	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P377276

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2148747	Kjeldahl Nitrogen	104	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P377218

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2148679	NO2NO3-N	97.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P377411

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2148617	Total-P	106	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P377461

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2148748	Total-P	106	106	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P377107

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2148751	O-Phosphate-P	96.8	98.0	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P377369

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2149311	Fluoride	100	99.6	P/P	89 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P377370

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2149335	Fluoride	98.5	98.5	P/P	89 - 106

Reference Method: SM 5310 B-2011
Batch ID: P377259

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2148799	Organic Carbon	98.2	97.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P377123

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148769	Turbidity	0.367	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P377244

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148651	Chloride	0.279	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P377226

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148748	Ammonia-N	3.86	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P377228

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148618	Ammonia-N	4.06	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P377275

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148745	Kjeldahl Nitrogen	2.59	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P377276

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148747	Kjeldahl Nitrogen	2.83	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P377218

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148679	NO2NO3-N	0.239	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P377411

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148617	Total-P	4.42	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P377461

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148748	Total-P	0.378	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P377107

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148751	O-Phosphate-P	1.09	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P377116

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148771	Color (true)	1.70	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P377365

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2149311	Total Alkalinity	0.342	Sample	P	0 - 2.8

Reference Method: SM 2320 B-2011
Batch ID: P377366

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2149335	Total Alkalinity	0.767	Sample	P	0 - 2.8

Reference Method: SM 2540 C-2011
Batch ID: P377413

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148678	TDS	7.07	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P377369

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2149311	Fluoride	0.473	Spike	P	0 - 2.5

Reference Method: SM 4500 F-C-2011
Batch ID: P377370

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2149335	Fluoride	0.0	Spike	P	0 - 2.5

Quality Assurance Report Precision

Reference Method: SM 5310 B-2011
Batch ID: P377259

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148799	Organic Carbon	0.535	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A96853

Included Lab Sample IDs: 2148739, 2148740, 2148741, 2148742, 2148743, 2148744

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	100	P/P	90 - 110
Chloride	99.8	100	P/P	90 - 110
Sulfate	100	101	P/P	90 - 110
Sulfate	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A96878

Included Lab Sample IDs: 2148751, 2148752, 2148753, 2148754, 2148755, 2148756

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.8	98.7	P/P	90 - 110
O-Phosphate-P	98.7	98.1	P/P	90 - 110
O-Phosphate-P	98.9	97.8	P/P	90 - 110

Reference Method: SM 2120 B-2011

Run ID: A96880

Included Lab Sample IDs: 2148739, 2148740, 2148741, 2148742, 2148743, 2148744

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.7	100	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A96881

Included Lab Sample IDs: 2148739, 2148740, 2148741, 2148742, 2148743, 2148744

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	100	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A96895

Included Lab Sample IDs: 2148745, 2148746, 2148747, 2148748, 2148749, 2148750

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A96907

Included Lab Sample IDs: 2148745, 2148746, 2148747, 2148748, 2148749, 2148750

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

Reference Method: SM 5310 B-2011

Run ID: A96933

Included Lab Sample IDs: 2148745, 2148746, 2148747, 2148748, 2148749, 2148750

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-2011

Run ID: A96976

Included Lab Sample IDs: 2148739, 2148740, 2148741, 2148742, 2148743, 2148744

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

Reference Method: SM 4500 F-C-2011

Run ID: A96976

Included Lab Sample IDs: 2148739, 2148740, 2148741, 2148742, 2148743, 2148744

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	101	P/P	90 - 110
Fluoride	101	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A97004

Included Lab Sample IDs: 2148745, 2148746

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	103	P/P	90 - 110
Kjeldahl Nitrogen	98.0	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A97046

Included Lab Sample IDs: 2148747, 2148748, 2148749, 2148750

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A97094

Included Lab Sample IDs: 2148745, 2148746, 2148747, 2148748, 2148749, 2148750

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	109	110	P/P	90 - 110
Total-P	110	108	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				0.367	
EPA 300.0 Rev. 2.1	Chloride	99.8	100	100	0.279	
	Sulfate	99.7	99.8	100		
EPA 350.1 Rev. 2.0	Ammonia-N	99.2	95.8	102		3.86
	Ammonia-N	96.6	99.7	104		4.06
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	106	104		2.59
	Kjeldahl Nitrogen	107	104	107		2.83
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	97.0			0.239
EPA 365.1 Rev. 2.0	Total-P	104	106	99.0		4.42
	Total-P	105	106	106		0.378
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.0	96.8	98.0		1.09
SM 2120 B-2011	Color (true)	98.3			1.70	
SM 2320 B-2011	Total Alkalinity	103			0.342	
	Total Alkalinity	104			0.767	
SM 2540 C-2011	TDS				7.07	
SM 4500 F-C-2011	Fluoride	97.0	100	99.6		0.473
	Fluoride	99.4	98.5	98.5		0.0
SM 5310 B-2011	Organic Carbon	97.6	98.2	97.4		0.535

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2148739, 2148740, 2148741, 2148742, 2148743, 2148744
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2148739, 2148740, 2148741, 2148742, 2148743, 2148744
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2148739, 2148740, 2148741, 2148742, 2148743, 2148744
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2148745, 2148746, 2148747, 2148748, 2148749, 2148750
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2148745, 2148746, 2148747, 2148748, 2148749, 2148750
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2148745, 2148746, 2148747, 2148748, 2148749, 2148750
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2148745, 2148746, 2148747, 2148748, 2148749, 2148750
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2148751, 2148752, 2148753, 2148754, 2148755, 2148756
SM 2120 B-2011 / E31780	True Color measured at 450 nm (not valid for NPDES monitoring)	2148739, 2148740, 2148741, 2148742, 2148743, 2148744
SM 2320 B-2011 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2148739, 2148740, 2148741, 2148742, 2148743, 2148744
SM 2540 C-2011 / E31780	Total Dissolved Solids in aqueous matrices	2148739, 2148740, 2148741, 2148742, 2148743, 2148744
SM 2540 D-2011 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2148739, 2148740, 2148741, 2148742, 2148743, 2148744
SM 4500 F-C-2011 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2148739, 2148740, 2148741, 2148742, 2148743, 2148744
SM 5310 B-2011 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2148745, 2148746, 2148747, 2148748, 2148749, 2148750

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	01/13/2020			01/14/2020 16:34	Yen Ta	2148739, 2148740, 2148741, 2148742, 2148743, 2148744
EPA 300.0 Rev. 2.1	01/13/2020			01/15/2020 17:10	Lipi Saha	2148739
	01/13/2020			01/15/2020 17:46	Lipi Saha	2148740
	01/13/2020			01/15/2020 17:58	Lipi Saha	2148741
	01/13/2020			01/15/2020 18:10	Lipi Saha	2148742
	01/13/2020			01/15/2020 18:22	Lipi Saha	2148743
	01/13/2020			01/15/2020 18:34	Lipi Saha	2148744
EPA 350.1 Rev. 2.0	01/13/2020			01/15/2020 13:06	Ping Hua	2148748
	01/13/2020			01/15/2020 13:11	Ping Hua	2148749
	01/13/2020			01/15/2020 13:12	Ping Hua	2148750
	01/13/2020			01/15/2020 14:28	Ping Hua	2148745
	01/13/2020			01/15/2020 14:29	Ping Hua	2148746
	01/13/2020			01/15/2020 14:31	Ping Hua	2148747
EPA 351.2 Rev. 2.0	01/13/2020	01/16/2020 13:40	Jhamieka S. Greenwood	01/21/2020 12:39	Virginia P. Brown	2148745
	01/13/2020	01/16/2020 13:40	Jhamieka S. Greenwood	01/21/2020 13:33	Virginia P. Brown	2148746
	01/13/2020	01/16/2020 13:40	Jhamieka S. Greenwood	01/22/2020 12:37	Virginia P. Brown	2148747
	01/13/2020	01/16/2020 13:40	Jhamieka S. Greenwood	01/22/2020 12:42	Virginia P. Brown	2148748
	01/13/2020	01/16/2020 13:40	Jhamieka S. Greenwood	01/22/2020 12:44	Virginia P. Brown	2148749
	01/13/2020	01/16/2020 13:40	Jhamieka S. Greenwood	01/22/2020 12:45	Virginia P. Brown	2148750
EPA 353.2 Rev. 2.0	01/13/2020			01/15/2020 10:23	Beverly Y. Sanders	2148745
	01/13/2020			01/15/2020 10:24	Beverly Y. Sanders	2148746
	01/13/2020			01/15/2020 10:25	Beverly Y. Sanders	2148747
	01/13/2020			01/15/2020 10:26	Beverly Y. Sanders	2148748
	01/13/2020			01/15/2020 10:27	Beverly Y. Sanders	2148749
	01/13/2020			01/15/2020 10:29	Beverly Y. Sanders	2148750
EPA 365.1 Rev. 2.0	01/13/2020	01/21/2020 14:26	Yen Ta	01/23/2020 12:23	Benjamin T. Nordmann	2148745, 2148746
	01/13/2020	01/21/2020 14:26	Yen Ta	01/23/2020 12:24	Benjamin T. Nordmann	2148747
	01/13/2020	01/21/2020 14:26	Yen Ta	01/23/2020 12:35	Benjamin T. Nordmann	2148748
	01/13/2020	01/21/2020 14:26	Yen Ta	01/23/2020 12:36	Benjamin T. Nordmann	2148749
	01/13/2020	01/21/2020 14:26	Yen Ta	01/23/2020 12:37	Benjamin T. Nordmann	2148750
EPA 365.1 Rev. 2.0 dissolved	01/13/2020			01/14/2020 16:47	Julia Storbeck	2148751
	01/13/2020			01/14/2020 17:06	Julia Storbeck	2148752
	01/13/2020			01/14/2020 17:14	Julia Storbeck	2148753, 2148754
	01/13/2020			01/14/2020 17:15	Julia Storbeck	2148755
	01/13/2020			01/14/2020 17:16	Julia Storbeck	2148756
SM 2120 B-2011	01/13/2020			01/14/2020 17:02	Madeline Funaro	2148739
	01/13/2020			01/14/2020 17:03	Madeline Funaro	2148740
	01/13/2020			01/14/2020 17:04	Madeline Funaro	2148741
	01/13/2020			01/14/2020 17:05	Madeline Funaro	2148742, 2148743

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2120 B-2011	01/13/2020			01/14/2020 17:06	Madeline Funaro	2148744
SM 2320 B-2011	01/13/2020			01/16/2020 22:02	Dale L. Simmons	2148739
	01/13/2020			01/16/2020 22:47	Dale L. Simmons	2148740
	01/13/2020			01/16/2020 23:02	Dale L. Simmons	2148741
	01/13/2020			01/16/2020 23:17	Dale L. Simmons	2148742
	01/13/2020			01/17/2020 00:31	Dale L. Simmons	2148743
	01/13/2020			01/17/2020 00:46	Dale L. Simmons	2148744
	01/13/2020			01/14/2020 17:25	Yijie Li	2148739, 2148740, 2148741, 2148742, 2148743, 2148744
SM 2540 C-2011	01/13/2020					
SM 2540 D-2011	01/13/2020			01/14/2020 17:25	Yijie Li	2148739, 2148740, 2148741, 2148742, 2148743, 2148744
SM 4500 F-C-2011	01/13/2020			01/16/2020 22:02	Dale L. Simmons	2148739
	01/13/2020			01/16/2020 22:47	Dale L. Simmons	2148740
	01/13/2020			01/16/2020 23:02	Dale L. Simmons	2148741
	01/13/2020			01/16/2020 23:17	Dale L. Simmons	2148742
	01/13/2020			01/17/2020 00:31	Dale L. Simmons	2148743
	01/13/2020			01/17/2020 00:46	Dale L. Simmons	2148744
	01/13/2020			01/16/2020 01:05	Madeline Funaro	2148745
SM 5310 B-2011	01/13/2020			01/16/2020 01:17	Madeline Funaro	2148746
	01/13/2020			01/16/2020 01:29	Madeline Funaro	2148747
	01/13/2020			01/16/2020 01:41	Madeline Funaro	2148748
	01/13/2020			01/16/2020 01:54	Madeline Funaro	2148749
	01/13/2020			01/16/2020 02:08	Madeline Funaro	2148750
	01/13/2020					