Chemical Analysis Report

SW-DIST-2020-09-23-03

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

Event Description: **Lake Isabell**
Request ID: **RQ-2020-09-21-59**
Customer: **SW-DIST**
Project ID: **SMP**

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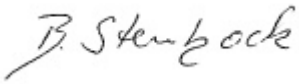
Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 08-OCT-2020 18:55



Case Narrative

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

Results for the following analytical groups are included in this report: Metals and Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

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

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

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

Precision is reported as relative percent difference unless otherwise noted.

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

QC Codes used in this report may include:

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

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

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

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

Sample Location: Lake Isabell Center **Collection Date/Time: 09/22/2020 12:20**

Field ID: G4SW0095 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2197784	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P387753	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P388092	
		Sulfate	20		mg SO4/L	P388096	
	SM 2120 B-2011	Color (true)	65		PCU	P387764	
	SM 2320 B-2011	Total Alkalinity	11		mg CaCO3/L	P387829	
	SM 2540 C-2011	TDS	98		mg/L	P388197	
	SM 2540 D-2011	TSS	2	I	mg/L	P388200	
	SM 4500 F-C-2011	Fluoride	0.091	I	mg F/L	P387832	
2197785	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P387888	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.92	J	mg N/L	P387923	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P387911	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P387967	MS
	SM 5310 B-2011	Organic Carbon	12		mg C/L	P387982	
2197786	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P387761	
2197788	EPA 200.7 Rev. 4.4	Barium	10.0		ug/L	P387926	
		Calcium	6.99		mg/L	P387926	
		Iron	40	I	ug/L	P387926	
		Magnesium	6.81		mg/L	P387926	
		Potassium	8.5		mg/L	P387926	
		Sodium	5.7		mg/L	P387926	
		Zinc	5.0	U	ug/L	P387926	
	EPA 200.8 Rev. 5.4	Aluminum	24		ug/L	P387926	
		Antimony	0.060	I	ug/L	P387926	
		Arsenic	0.70		ug/L	P387926	
		Boron**	39.3		ug/L	P387926	
		Cadmium	0.020	U	ug/L	P387926	
		Chromium	0.40	U	ug/L	P387926	
		Copper	0.40	U	ug/L	P387926	
		Lead	0.20	U	ug/L	P387926	
		Nickel	0.50	U	ug/L	P387926	
		Selenium	0.20	U	ug/L	P387926	
		Silver	0.010	U	ug/L	P387926	
		Thallium	0.10	U	ug/L	P387926	
	SM 2340B	Hardness	45.5		mg/L	P387926	

Ref. Method and Comment:
EPA 351.2 Rev. 2.0: Refer to the Lab Analysis Report for an explanation of QC Codes.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P387753

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P387926

Component	Result	Code	Units
Barium	1.0	U	ug/L
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P387926

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388092

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388096

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387888

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387923

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387911

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P387967

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387761

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

Reference Method: SM 2120 B-2011
Batch ID: P387764

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P387829

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

Reference Method: SM 2540 C-2011
Batch ID: P388197

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P388200

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P387832

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: P387982

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P387926

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	99.3		P	85 - 115
Calcium	107		P	85 - 115
Iron	106		P	85 - 115
Magnesium	105		P	85 - 115
Potassium	104		P	85 - 115
Sodium	102		P	85 - 115
Zinc	94.7		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P387926

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	98.4		P	80 - 120
Antimony	102		P	80 - 120
Arsenic	100		P	80 - 120
Boron	96.2		P	80 - 120
Cadmium	96.8		P	80 - 120
Chromium	99.7		P	80 - 120
Copper	99.0		P	80 - 120
Lead	97.4		P	80 - 120
Nickel	99.2		P	80 - 120
Selenium	99.6		P	80 - 120
Silver	96.7		P	80 - 120
Thallium	97.9		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388092

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388096

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387888

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.3		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387923

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387911

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P387967

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	109		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387761

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

Reference Method: SM 2120 B-2011
Batch ID: P387764

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

Reference Method: SM 2320 B-2011
Batch ID: P387829

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.8		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P387832

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.1		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P387982

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	102		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P387926

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2197555	Barium	103	103	P/P	80 - 120
2197555	Calcium	110	103	P/P	80 - 120
2197555	Iron	111	108	P/P	80 - 120
2197555	Magnesium	109	106	P/P	80 - 120
2197555	Potassium	108	105	P/P	80 - 120
2197555	Sodium	113	107	P/P	80 - 120
2197555	Zinc	96.0	95.9	P/P	80 - 120
2197741	Barium	103		P	80 - 120
2197741	Calcium	105		P	80 - 120
2197741	Iron	113		P	80 - 120
2197741	Magnesium	111		P	80 - 120
2197741	Potassium	111		P	80 - 120
2197741	Sodium	119		P	80 - 120
2197741	Zinc	94.2		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P387926

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2197555	Aluminum	98.1	97.4	P/P	80 - 120
2197555	Antimony	101	101	P/P	80 - 120
2197555	Arsenic	99.3	98.9	P/P	80 - 120
2197555	Boron	95.7	95.2	P/P	80 - 120
2197555	Cadmium	96.9	96.6	P/P	80 - 120
2197555	Chromium	99.1	98.9	P/P	80 - 120
2197555	Copper	98.3	98.1	P/P	80 - 120
2197555	Lead	97.8	96.9	P/P	80 - 120
2197555	Nickel	97.8	97.7	P/P	80 - 120
2197555	Selenium	99.4	97.9	P/P	80 - 120
2197555	Silver	97.3	97.0	P/P	80 - 120
2197555	Thallium	98.5	99.4	P/P	80 - 120
2197741	Aluminum	93.9		P	80 - 120
2197741	Antimony	101		P	80 - 120
2197741	Arsenic	96.7		P	80 - 120
2197741	Boron	94.3		P	80 - 120
2197741	Cadmium	96.2		P	80 - 120
2197741	Chromium	96.3		P	80 - 120
2197741	Copper	95.4		P	80 - 120
2197741	Lead	94.1		P	80 - 120
2197741	Nickel	95.0		P	80 - 120
2197741	Selenium	95.8		P	80 - 120
2197741	Silver	94.8		P	80 - 120
2197741	Thallium	95.2		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388092

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2197720	Chloride	103		P	90 - 110
2197931	Chloride	103		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388096

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2197720	Sulfate	98.9		P	90 - 110
2197931	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387888

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2197738	Ammonia-N	97.8	97.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387923

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2197785	Kjeldahl Nitrogen	88.0	97.4	F/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2197552	NO2NO3-N	99.5	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P387967

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2197709	Total-P	113	111	F/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387761

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2197719	O-Phosphate-P	99.8	98.3	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P387832

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2197720	Fluoride	95.2	95.8	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P387982

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2197863	Organic Carbon	100	99.5	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P387753

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197686	Turbidity	6.87	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P387926

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197555	Barium	0.228	Spike	P	0 - 20
2197555	Calcium	4.51	Spike	P	0 - 20
2197555	Iron	1.97	Spike	P	0 - 20
2197555	Magnesium	1.97	Spike	P	0 - 20
2197555	Potassium	3.66	Spike	P	0 - 20
2197555	Sodium	4.15	Spike	P	0 - 20
2197555	Zinc	0.132	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P387926

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197555	Aluminum	0.688	Spike	P	0 - 20
2197555	Antimony	0.0840	Spike	P	0 - 20
2197555	Arsenic	0.402	Spike	P	0 - 20
2197555	Boron	0.479	Spike	P	0 - 20
2197555	Cadmium	0.379	Spike	P	0 - 20
2197555	Chromium	0.187	Spike	P	0 - 20
2197555	Copper	0.189	Spike	P	0 - 20
2197555	Lead	0.953	Spike	P	0 - 20
2197555	Nickel	0.111	Spike	P	0 - 20
2197555	Selenium	1.57	Spike	P	0 - 20
2197555	Silver	0.312	Spike	P	0 - 20
2197555	Thallium	0.952	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197720	Chloride	0.719	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388096

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197720	Sulfate	0.320	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387888

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197738	Ammonia-N	0.603	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387923

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197785	Kjeldahl Nitrogen	5.55	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197552	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P387967

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197709	Total-P	1.46	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387761

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197719	O-Phosphate-P	1.16	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P387764

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197717	Color (true)	1.42	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P387829

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197720	Total Alkalinity	0.385	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P388197

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197862	TDS	2.11	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 2540 D-2011
Batch ID: P388200

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197862	TSS	2.41	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P387832

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197720	Fluoride	0.467	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P387982

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197863	Organic Carbon	0.401	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A101160
Included Lab Sample IDs: 2197784

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A101162
Included Lab Sample IDs: 2197786

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

Reference Method: SM 2120 B-2011
Run ID: A101163
Included Lab Sample IDs: 2197784

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.4	99.7	P/P	90 - 115

Reference Method: SM 2320 B-2011
Run ID: A101193
Included Lab Sample IDs: 2197784

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

Reference Method: SM 4500 F-C-2011
Run ID: A101193
Included Lab Sample IDs: 2197784

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: A101210
Included Lab Sample IDs: 2197785

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.0	95.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A101223
Included Lab Sample IDs: 2197785

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.0	97.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A101254
Included Lab Sample IDs: 2197785

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	94.8	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-2011
Run ID: A101262
Included Lab Sample IDs: 2197785

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A101267
Included Lab Sample IDs: 2197788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	103	102	P/P	90 - 110
Calcium	104	104	P/P	90 - 110
Iron	107	107	P/P	90 - 110
Magnesium	104	104	P/P	90 - 110
Potassium	104	104	P/P	90 - 110
Sodium	108	108	P/P	90 - 110
Zinc	96.6	95.9	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A101281
Included Lab Sample IDs: 2197784

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	106	107	P/P	90 - 110
Sulfate	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A101317
Included Lab Sample IDs: 2197785

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	95.0	93.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A101347
Included Lab Sample IDs: 2197788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	97.2	99.9	P/P	90 - 110
Antimony	103	106	P/P	90 - 110
Arsenic	96.2	97.9	P/P	90 - 110
Boron	99.1	102	P/P	90 - 110
Cadmium	96.0	97.7	P/P	90 - 110
Chromium	97.1	97.0	P/P	90 - 110
Copper	94.6	98.2	P/P	90 - 110
Lead	96.8	97.0	P/P	90 - 110
Nickel	95.2	98.5	P/P	90 - 110
Selenium	98.6	98.6	P/P	90 - 110
Silver	96.8	98.0	P/P	90 - 110
Thallium	93.7	92.0	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						6.87	
EPA 200.7 Rev. 4.4	Barium	99.3	103	103	103			0.228
	Calcium	107	110	103	105			4.51
	Iron	106	111	108	113			1.97
	Magnesium	105	109	106	111			1.97
	Potassium	104	108	105	111			3.66
	Sodium	102	113	107	119			4.15
	Zinc	94.7	96.0	95.9	94.2			0.132
EPA 200.8 Rev. 5.4	Aluminum	98.4	98.1	97.4	93.9			0.688
	Antimony	102	101	101	101			0.0840
	Arsenic	100	99.3	98.9	96.7			0.402
	Boron	96.2	95.7	95.2	94.3			0.479
	Cadmium	96.8	96.9	96.6	96.2			0.379
	Chromium	99.7	99.1	98.9	96.3			0.187
	Copper	99.0	98.3	98.1	95.4			0.189
	Lead	97.4	97.8	96.9	94.1			0.953
	Nickel	99.2	97.8	97.7	95.0			0.111
	Selenium	99.6	99.4	97.9	95.8			1.57
	Silver	96.7	97.3	97.0	94.8			0.312
	Thallium	97.9	98.5	99.4	95.2			0.952
EPA 300.0 Rev. 2.1	Chloride	105	103	103			0.719	
	Sulfate	103	98.9	100			0.320	
EPA 350.1 Rev. 2.0	Ammonia-N	97.3	97.8	97.1				0.603
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	88.0	97.4				5.55
EPA 353.2 Rev. 2.0	NO2NO3-N	98.0	99.5	99.5				0.0
EPA 365.1 Rev. 2.0	Total-P	109	113	111				1.46
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	99.8	98.3				1.16
SM 2120 B-2011	Color (true)	98.7					1.42	
SM 2320 B-2011	Total Alkalinity	98.8					0.385	
SM 2540 C-2011	TDS						2.11	
SM 2540 D-2011	TSS						2.41	
SM 4500 F-C-2011	Fluoride	98.1	95.2	95.8				0.467
SM 5310 B-2011	Organic Carbon	102	100	99.5				0.401

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2197784
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2197788
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2197788
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2197784
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2197784
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2197785
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2197785
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2197785
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2197785
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2197786
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2197784
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2197784
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2197788

Reference Method Descriptions

Method	Description	Associated Samples
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2197784
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2197784
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2197784
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2197785

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	09/23/2020			09/23/2020 15:04	Yen Ta	2197784
EPA 200.7 Rev. 4.4	09/23/2020	09/28/2020 14:35	Elliott D. Healy	09/29/2020 16:49	Betina Topolski	2197788
EPA 200.8 Rev. 5.4	09/23/2020	09/28/2020 14:35	Elliott D. Healy	10/03/2020 18:21	Alexander Thompson	2197788
EPA 300.0 Rev. 2.1	09/23/2020			09/30/2020 20:28	Lipi Saha	2197784
EPA 350.1 Rev. 2.0	09/23/2020			09/26/2020 14:36	Ping Hua	2197785
EPA 351.2 Rev. 2.0	09/23/2020	09/28/2020 01:45	Elliott Rodriguez	09/29/2020 11:42	Elliott Rodriguez	2197785
EPA 353.2 Rev. 2.0	09/23/2020			09/28/2020 09:15	Beverly Y. Sanders	2197785
EPA 365.1 Rev. 2.0	09/23/2020	09/29/2020 12:36	Yen Ta	10/01/2020 14:20	Lipi Saha	2197785
EPA 365.1 Rev. 2.0 dissolved	09/23/2020			09/23/2020 16:08	Virginia P. Brown	2197786
SM 2120 B-2011	09/23/2020			09/23/2020 16:55	Benjamin T. Nordmann	2197784
SM 2320 B-2011	09/23/2020			09/24/2020 21:58	Dale L. Simmons	2197784
SM 2340B	09/23/2020			09/29/2020 16:49	Betina Topolski	2197788
SM 2540 C-2011	09/23/2020			09/28/2020 15:25	Yijie Li	2197784
SM 2540 D-2011	09/23/2020			09/28/2020 15:25	Yijie Li	2197784
SM 4500 F-C-2011	09/23/2020			09/24/2020 21:58	Dale L. Simmons	2197784
SM 5310 B-2011	09/23/2020			09/29/2020 04:06	David Boose	2197785