

Chemical Analysis Report

CEN-DIST-2021-03-31-04

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

Event Description: **Prairie Lake**
Request ID: **RQ-2021-03-29-16**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 19-APR-2021 11:51

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line extending from the top of the "T".

Case Narrative

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

Results for the following analytical group are included in this report: Nutrients.

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

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

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

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

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

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

Precision is reported as relative percent difference unless otherwise noted.

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

QC Codes used in this report may include:

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

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

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

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

Sample Location: Lake Asher @ Center of Lake

Collection Date/Time: 03/30/2021 11:07

Field ID: G2CE0130

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2235201	EPA 180.1 Rev. 2.0	Turbidity	4.7		NTU	P395747	
	EPA 300.0 Rev. 2.1	Chloride	32		mg Cl/L	P395937	
		Sulfate	9.2		mg SO4/L	P395941	
	SM 2120 B-2011	Color (true)	37		PCU	P395759	
	SM 2320 B-2011	Total Alkalinity	40		mg CaCO3/L	P395836	
	SM 2540 C-2011	TDS	118		mg/L	P396196	
	SM 2540 D-2011	TSS	4	I	mg/L	P396188	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P395839	
2235202	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P396128	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.98		mg N/L	P395954	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P395864	
	EPA 365.1 Rev. 2.0	Total-P	0.047		mg P/L	P395889	
	SM 5310 B-2011	Organic Carbon	10		mg C/L	P395933	
2235203	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P395744	

Ref. Method and Comment:

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: P395747

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395937

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395941

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P396128

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P395954

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P395864

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P395889

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P395744

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

Reference Method: SM 2120 B-2011
Batch ID: P395759

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P395836

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

Reference Method: SM 2540 C-2011
Batch ID: P396196

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P396188

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P395839

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P395933

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: P395937

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395941

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P396128

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P395954

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: P395864

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P395889

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P395744

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

Reference Method: SM 2120 B-2011
Batch ID: P395759

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

Reference Method: SM 2320 B-2011
Batch ID: P395836

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	93 - 104

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P395839

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.4		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P395933

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.9		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395937

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2234995	Chloride	104		P	90 - 110
2235206	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395941

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2234995	Sulfate	103		P	90 - 110
2235206	Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P396128

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2235202	Ammonia-N	96.6	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P395954

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2234902	Kjeldahl Nitrogen	102	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P395864

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2235046	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P395889

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2235202	Total-P	103	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P395744

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2235047	O-Phosphate-P	102	101	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P395839

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2235233	Fluoride	98.3	99.8	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P395933

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2234901	Organic Carbon	95.4	96.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P395747

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234870	Turbidity	5.22	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395937

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234995	Chloride	0.458	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395941

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234995	Sulfate	0.000808	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P396128

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2235202	Ammonia-N	1.09	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P395954

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234902	Kjeldahl Nitrogen	2.73	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P395864

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2235046	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P395889

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2235202	Total-P	0.611	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P395744

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2235047	O-Phosphate-P	0.560	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B-2011
Batch ID: P395759

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234983	Color (true)	0.734	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P395836

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2235233	Total Alkalinity	2.91	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P396196

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234983	TDS	3.50	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P395839

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2235233	Fluoride	0.946	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P395933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234901	Organic Carbon	0.865	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: A104389

Included Lab Sample IDs: 2235201

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	100	P/P	90 - 110
Sulfate	99.2	99.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A104397

Included Lab Sample IDs: 2235203

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.6	98.1	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A104398

Included Lab Sample IDs: 2235201

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	102	P/P	95 - 105

Reference Method: SM 2120 B-2011

Run ID: A104399

Included Lab Sample IDs: 2235201

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

Reference Method: SM 2320 B-2011

Run ID: A104438

Included Lab Sample IDs: 2235201

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.6	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A104438

Included Lab Sample IDs: 2235201

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A104447

Included Lab Sample IDs: 2235202

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

Reference Method: SM 5310 B-2011

Run ID: A104475

Included Lab Sample IDs: 2235202

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.0	96.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A104493

Included Lab Sample IDs: 2235202

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A104529

Included Lab Sample IDs: 2235202

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.4	105	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A104561

Included Lab Sample IDs: 2235202

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.8	97.4	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		LCS	Precision	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					5.22	
EPA 300.0 Rev. 2.1	Chloride	104	104	103		0.458	
	Sulfate	103	103	103		0.0008	
EPA 350.1 Rev. 2.0	Ammonia-N	98.2	96.6	97.8			1.09
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	95.4	106	102			2.73
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	103	102	102			0.0
EPA 365.1 Rev. 2.0	Total-P	105	103	104			0.611
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	102	101			0.560
SM 2120 B-2011	Color (true)	100				0.734	
SM 2320 B-2011	Total Alkalinity	101				2.91	
SM 2540 C-2011	TDS					3.50	
SM 4500 F-C-2011	Fluoride	97.4	98.3	99.8			0.946
SM 5310 B-2011	Organic Carbon	96.9	95.4	96.6			0.865

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2235201
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2235201
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2235201
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2235202
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2235202
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2235202
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2235202
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2235203
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2235201
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2235201
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2235201
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2235201
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2235201
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2235202

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	03/31/2021			03/31/2021 16:06	Yen Ta	2235201
EPA 300.0 Rev. 2.1	03/31/2021			04/03/2021 03:52	Lipi Saha	2235201
EPA 350.1 Rev. 2.0	03/31/2021			04/07/2021 17:51	Ping Hua	2235202
EPA 351.2 Rev. 2.0	03/31/2021	04/05/2021 12:44	Benjamin T. Nordmann	04/06/2021 16:57	Virginia P. Brown	2235202
EPA 353.2 Rev. 2.0	03/31/2021			04/02/2021 09:50	Beverly Y. Sanders	2235202
EPA 365.1 Rev. 2.0	03/31/2021	04/02/2021 13:22	Yen Ta	04/05/2021 14:33	Shengyu Ding	2235202
EPA 365.1 Rev. 2.0 dissolved	03/31/2021			03/31/2021 14:56	Patrick M. Roche	2235203
SM 2120 B-2011	03/31/2021			03/31/2021 16:47	Benjamin T. Nordmann	2235201
SM 2320 B-2011	03/31/2021			04/02/2021 01:38	Dale L. Simmons	2235201
SM 2540 C-2011	03/31/2021			04/02/2021 15:25	Yijie Li	2235201
SM 2540 D-2011	03/31/2021			04/02/2021 15:25	Yijie Li	2235201
SM 4500 F-C-2011	03/31/2021			04/02/2021 01:38	Dale L. Simmons	2235201
SM 5310 B-2011	03/31/2021			04/03/2021 06:15	Madeline Gruver	2235202