

Chemical Analysis Report

CEN-DIST-2021-02-24-02

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

Event Description: **Lake Emerald / Lake Giles**
Request ID: **RQ-2021-02-22-32**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Colin Wright, Program Administrator

Date Certified: 17-MAR-2021 08:54



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 Emerald @ Center

Collection Date/Time: 02/23/2021 11:35

Field ID: G4CE0204

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2226983	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P394183	
	EPA 300.0 Rev. 2.1	Chloride	17		mg Cl/L	P394316	
		Sulfate	10		mg SO4/L	P394317	
	SM 2120 B-2011	Color (true)	22	A	PCU	P394177	
	SM 2320 B-2011	Total Alkalinity	47		mg CaCO3/L	P394513	
	SM 2540 C-2011	TDS	115		mg/L	P394603	
	SM 2540 D-2011	TSS	2	I	mg/L	P394530	
	SM 4500 F-C-2011	Fluoride	0.12		mg F/L	P394516	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P394303	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.57		mg N/L	P394208	
2226984	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P394197	
	EPA 365.1 Rev. 2.0	Total-P	0.030		mg P/L	P394245	
	SM 5310 B-2011	Organic Carbon	7.3		mg C/L	P394725	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	I	mg P/L	P394180	
	dissolved						

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

SM 4500 F-C-2011: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P394183

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394316

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394317

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394303

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P394208

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P394197

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P394245

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P394180

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

Reference Method: SM 2120 B-2011
Batch ID: P394177

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P394513

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

Reference Method: SM 2540 C-2011
Batch ID: P394603

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P394530

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P394516

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P394725

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: P394316

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394317

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: P394303

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P394208

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P394197

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: P394245

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: P394180

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.4		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P394177

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.2		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P394513

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	93.6		P	93 - 104

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P394516

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.1		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P394725

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394316

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2226811	Chloride	101		P	90 - 110
2227153	Chloride	99.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394317

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2226811	Sulfate	99.0		P	90 - 110
2227153	Sulfate	96.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394303

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2226973	Ammonia-N	96.8	97.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P394197

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2226812	NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P394245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2226812	Total-P	102	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P394180

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2226950	O-Phosphate-P	97.9	97.9	P/P	90 - 110

Reference Method: SM 5310 B-2011
Batch ID: P394725

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2226984	Organic Carbon	94.5	93.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P394183

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226810	Turbidity	2.68	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P394316

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226811	Chloride	0.662	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P394317

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226811	Sulfate	0.590	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P394303

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226973	Ammonia-N	0.752	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P394208

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226948	Kjeldahl Nitrogen	8.45	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P394197

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226812	NO2NO3-N	0.487	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P394245

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226812	Total-P	3.23	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P394180

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226950	O-Phosphate-P	0.0	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B-2011
Batch ID: P394177

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226983	Color (true)	0.166	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P394513

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2227604	Total Alkalinity	0.101	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P394603

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226437	TDS	3.51	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P394516

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2227604	Fluoride	0.0	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P394725

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226984	Organic Carbon	0.998	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: A103737

Included Lab Sample IDs: 2226983

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.6	99.6	P/P	90 - 110
Sulfate	98.9	98.8	P/P	90 - 110

Reference Method: SM 2120 B-2011

Run ID: A103748

Included Lab Sample IDs: 2226983

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.3	99.5	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A103749

Included Lab Sample IDs: 2226985

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.1	98.5	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A103750

Included Lab Sample IDs: 2226983

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A103760

Included Lab Sample IDs: 2226984

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A103798

Included Lab Sample IDs: 2226984

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	92.9	97.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A103810

Included Lab Sample IDs: 2226984

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.9	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A103826

Included Lab Sample IDs: 2226984

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-2011

Run ID: A103902

Included Lab Sample IDs: 2226983

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	94.2	91.5	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A103902

Included Lab Sample IDs: 2226983

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	101	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A103983

Included Lab Sample IDs: 2226984

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.8	95.2	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				2.68	
EPA 300.0 Rev. 2.1	Chloride	101	101	99.8	0.662	
	Sulfate	99.7	99.0	96.6	0.590	
EPA 350.1 Rev. 2.0	Ammonia-N	97.6	96.8	97.8		0.752
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101				8.45
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	103	102	103		0.487
EPA 365.1 Rev. 2.0	Total-P	105	102	105		3.23
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.4	97.9	97.9		0.0
SM 2120 B-2011	Color (true)	98.2			0.166	
SM 2320 B-2011	Total Alkalinity	93.6			0.101	
SM 2540 C-2011	TDS				3.51	
SM 4500 F-C-2011	Fluoride	97.1				0.0
SM 5310 B-2011	Organic Carbon	94.8	94.5	93.2		0.998

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2226983
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2226983
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2226983
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2226984
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2226984
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2226984
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2226984
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2226985
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2226983
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2226983
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2226983
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2226983
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2226983
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2226984

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	02/24/2021			02/24/2021 15:17	Yen Ta	2226983
EPA 300.0 Rev. 2.1	02/24/2021			02/26/2021 15:09	Lipi Saha	2226983
EPA 350.1 Rev. 2.0	02/24/2021			02/28/2021 12:33	Ping Hua	2226984
EPA 351.2 Rev. 2.0	02/24/2021	02/25/2021 12:00	Yen Ta	02/26/2021 13:46	Virginia P. Brown	2226984
EPA 353.2 Rev. 2.0	02/24/2021			02/25/2021 09:46	Beverly Y. Sanders	2226984
EPA 365.1 Rev. 2.0	02/24/2021	02/26/2021 11:49	Shengyu Wang	03/01/2021 14:29	Shengyu Wang	2226984
EPA 365.1 Rev. 2.0 dissolved	02/24/2021			02/24/2021 15:37	Samantha Davila	2226985
SM 2120 B-2011	02/24/2021			02/24/2021 16:02	Benjamin T. Nordmann	2226983
SM 2320 B-2011	02/24/2021			03/04/2021 01:29	Dale L. Simmons	2226983
SM 2540 C-2011	02/24/2021			02/26/2021 14:36	Yijie Li	2226983
SM 2540 D-2011	02/24/2021			02/26/2021 14:36	Yijie Li	2226983
SM 4500 F-C-2011	02/24/2021			03/04/2021 01:29	Dale L. Simmons	2226983
SM 5310 B-2011	02/24/2021			03/09/2021 22:35	Madeline Gruver	2226984