

Chemical Analysis Report

CEN-DIST-2021-01-21-02

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

Event Description: **Lake Florence**
Request ID: **RQ-2021-01-18-50**
Customer: **CEN-DIST**
Project ID: **SMP**

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

Date Certified: 11-FEB-2021 09:21

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: Florence Lake @ Center

Collection Date/Time: 01/20/2021 10:50

Field ID: G3CE0012

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2220445	EPA 180.1 Rev. 2.0	Turbidity	6.0		NTU	P392715	
	EPA 300.0 Rev. 2.1	Chloride	300		mg Cl/L	P392954	
		Sulfate	61		mg SO4/L	P392956	
	SM 2120 B-2011	Color (true)	170		PCU	P392710	
	SM 2320 B-2011	Total Alkalinity	76		mg CaCO3/L	P392864	
	SM 2540 C-2011	TDS	712		mg/L	P393019	
	SM 2540 D-2011	TSS	11		mg/L	P392979	
	SM 4500 F-C-2011	Fluoride	0.14		mg F/L	P392868	
2220446	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P393453	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.9		mg N/L	P393126	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.088		mg N/L	P392815	
	EPA 365.1 Rev. 2.0	Total-P	0.050		mg P/L	P393210	
	SM 5310 B-2011	Organic Carbon	28		mg C/L	P392985	
2220447	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P392704	

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: P392715

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392954

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392956

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393453

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393126

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392815

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P393210

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392704

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

Reference Method: SM 2120 B-2011
Batch ID: P392710

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P392864

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

Reference Method: SM 2540 C-2011
Batch ID: P393019

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P392979

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P392868

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P392985

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: P392954

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392956

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393453

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393126

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: P392815

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	96.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P393210

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392704

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

Reference Method: SM 2120 B-2011
Batch ID: P392710

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.5		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P392864

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	96.6		P	93 - 104

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P392868

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P392985

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392954

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220450	Chloride	93.1		P	90 - 110
2220520	Chloride	96.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392956

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220450	Sulfate	93.6		P	90 - 110
2220520	Sulfate	96.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393453

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220485	Ammonia-N	98.0	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393126

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220380	Kjeldahl Nitrogen	105	109	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392815

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220373	NO2NO3-N	97.5	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P393210

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220362	Total-P	105	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392704

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220486	O-Phosphate-P	101	101	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P392868

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220663	Fluoride	100	100	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P392985

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220380	Organic Carbon	100	99.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P392715

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220312	Turbidity	0.341	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392954

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220450	Chloride	0.232	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392956

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220450	Sulfate	0.315	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393453

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220485	Ammonia-N	1.74	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393126

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220380	Kjeldahl Nitrogen	3.48	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392815

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220373	NO2NO3-N	0.489	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P393210

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220362	Total-P	1.77	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392704

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220486	O-Phosphate-P	0.0	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B-2011
 Batch ID: P392710

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220321	Color (true)	1.31	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
 Batch ID: P392864

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220663	Total Alkalinity	2.25	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
 Batch ID: P393019

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220423	TDS	1.90	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
 Batch ID: P392868

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220663	Fluoride	0.0	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
 Batch ID: P392985

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220380	Organic Carbon	0.680	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A103162

Included Lab Sample IDs: 2220447

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.2	98.1	P/P	90 - 110

Reference Method: SM 2120 B-2011

Run ID: A103163

Included Lab Sample IDs: 2220445

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A103165

Included Lab Sample IDs: 2220445

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A103210

Included Lab Sample IDs: 2220446

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

Reference Method: SM 2320 B-2011

Run ID: A103225

Included Lab Sample IDs: 2220445

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	92.8	96.9	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A103225

Included Lab Sample IDs: 2220445

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A103226

Included Lab Sample IDs: 2220445

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.5	98.0	P/P	90 - 110
Sulfate	97.7	97.0	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A103265

Included Lab Sample IDs: 2220446

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.6	98.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A103347

Included Lab Sample IDs: 2220446

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A103391

Included Lab Sample IDs: 2220446

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	98.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A103454

Included Lab Sample IDs: 2220446

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	100	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					0.341	
EPA 300.0 Rev. 2.1	Chloride	98.0	93.1	96.8		0.232	
	Sulfate	97.7	93.6	96.8		0.315	
EPA 350.1 Rev. 2.0	Ammonia-N	99.4	98.0	100			1.74
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	105	109			3.48
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	96.0	97.5	97.0			0.489
EPA 365.1 Rev. 2.0	Total-P	101	105	103			1.77
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.5	101	101			0.0
SM 2120 B-2011	Color (true)	99.5				1.31	
SM 2320 B-2011	Total Alkalinity	96.6				2.25	
SM 2540 C-2011	TDS					1.90	
SM 4500 F-C-2011	Fluoride	100	100	100			0.0
SM 5310 B-2011	Organic Carbon	99.2	100	99.2			0.680

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2220445
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2220445
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2220445
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2220446
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2220446
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2220446
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2220446
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2220447
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2220445
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2220445
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2220445
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2220445
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2220445
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2220446

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	01/21/2021			01/21/2021 15:02	Yen Ta	2220445
EPA 300.0 Rev. 2.1	01/21/2021			01/26/2021 16:07	Lipi Saha	2220445
EPA 350.1 Rev. 2.0	01/21/2021			02/05/2021 16:51	Ping Hua	2220446
EPA 351.2 Rev. 2.0	01/21/2021	01/29/2021 12:30	Yen Ta	02/01/2021 15:49	Julia Storbeck	2220446
EPA 353.2 Rev. 2.0	01/21/2021			01/25/2021 10:29	Beverly Y. Sanders	2220446
EPA 365.1 Rev. 2.0	01/21/2021	02/02/2021 13:00	Lipi Saha	02/03/2021 13:04	Shengyu Wang	2220446
EPA 365.1 Rev. 2.0 dissolved	01/21/2021			01/21/2021 15:00	Blanca Fach	2220447
SM 2120 B-2011	01/21/2021			01/21/2021 16:29	Benjamin T. Nordmann	2220445
SM 2320 B-2011	01/21/2021			01/23/2021 06:04	Dale L. Simmons	2220445
SM 2540 C-2011	01/21/2021			01/22/2021 15:16	Yijie Li	2220445
SM 2540 D-2011	01/21/2021			01/22/2021 15:16	Yijie Li	2220445
SM 4500 F-C-2011	01/21/2021			01/23/2021 06:04	Dale L. Simmons	2220445
SM 5310 B-2011	01/21/2021			01/26/2021 03:20	Madeline Gruver	2220446