

Chemical Analysis Report

CEN-DIST-2022-11-15-02

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

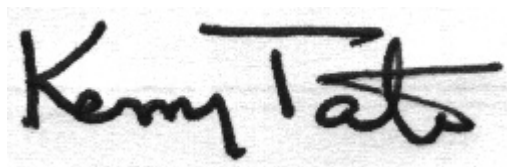
Event Description: **Lakes: Terrace, Lucerne, Giles, Emerald, Olive**
Request ID: **RQ-2022-10-24-22**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Orlando, FL 32803-3767
Attn: Matthew Bearden

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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 07-DEC-2022 09:24

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 end of the name.

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 Olive @ Center

Collection Date/Time: 11/14/2022 10:22

Field ID: G4CE0223

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2369390	DEP SOP: NU-094-1	Color (true)	22	A	PCU	P422346	
	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P422351	
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P422829	
		Sulfate	7.0		mg SO4/L	P422833	
	SM 2320 B-2011	Total Alkalinity	65		mg CaCO3/L	P422640	
	SM 2540 C-2015	TDS	108		mg/L	P422852	
	SM 2540 D-2015	TSS	4	I	mg/L	P422705	
	SM 4500-F- C-2011	Fluoride	0.056	I	mg F/L	P422644	
2369391	EPA 350.1 Rev. 2.0	Ammonia-N	0.093		mg N/L	P422987	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.73		mg N/L	P422452	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.030		mg N/L	P422491	
	EPA 365.1 Rev. 2.0	Total-P	0.076		mg P/L	P422441	
	SM 5310 B-2011	Organic Carbon	5.6		mg C/L	P422752	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P422346

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P422351

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422829

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422833

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P422987

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P422452

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P422491

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P422441

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

Reference Method: SM 2320 B-2011
Batch ID: P422640

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-2015
Batch ID: P422852

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P422705

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P422644

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P422752

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P422346

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.7		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P422351

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422829

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422833

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P422987

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P422452

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.6		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P422491

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P422441

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

Reference Method: SM 2320 B-2011
Batch ID: P422640

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	96.8		P	94 - 106

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2540 C-2015
Batch ID: P422852

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	99.3		P	90 - 110

Reference Method: SM 2540 D-2015
Batch ID: P422705

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	91.5		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P422644

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.9		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P422752

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.7		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422829

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2369118	Chloride	97.0		P	90 - 110
2369236	Chloride	98.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422833

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2369118	Sulfate	94.4		P	90 - 110
2369236	Sulfate	95.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P422987

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2371628	Ammonia-N	100	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P422452

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2369237	Kjeldahl Nitrogen	103	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P422491

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2369391	NO2NO3-N	103	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P422441

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2369341	Total-P	104	104	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P422644

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2369236	Fluoride	102	101	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P422752

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2369219	Organic Carbon	95.3	95.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P422346

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2369390	Color (true)	0.0134	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P422351

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2369210	Turbidity	9.02	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422829

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2369118	Chloride	0.152	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422833

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2369118	Sulfate	0.0331	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P422987

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2371628	Ammonia-N	0.641	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P422452

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2369237	Kjeldahl Nitrogen	3.81	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P422491

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2369391	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P422441

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2369341	Total-P	0.0241	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P422640

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2369236	Total Alkalinity	0.521	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2015
Batch ID: P422852

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2369236	TDS	6.84	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P422644

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2369236	Fluoride	0.490	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P422752

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2369219	Organic Carbon	0.472	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: DEP SOP: NU-094-1
Run ID: A115938
Included Lab Sample IDs: 2369390

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	95.8	97.6	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A115942
Included Lab Sample IDs: 2369390

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.0	98.0	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A115990
Included Lab Sample IDs: 2369391

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A116022
Included Lab Sample IDs: 2369391

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A116026
Included Lab Sample IDs: 2369391

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	102	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A116057
Included Lab Sample IDs: 2369390

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	94.8	98.1	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A116057
Included Lab Sample IDs: 2369390

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A116108
Included Lab Sample IDs: 2369390

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.2	102	P/P	90 - 110
Sulfate	98.8	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-2011

Run ID: A116127

Included Lab Sample IDs: 2369391

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.8	98.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A116209

Included Lab Sample IDs: 2369391

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.5	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	
DEP SOP: NU-094-1	Color (true)	98.7				0.0134	
EPA 180.1 Rev. 2.0	Turbidity	99.4				9.02	
EPA 300.0 Rev. 2.1	Chloride	99.5	97.0	98.4		0.152	
	Sulfate	98.7	94.4	95.8		0.0331	
EPA 350.1 Rev. 2.0	Ammonia-N	98.4	100	101			0.641
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.6	103	108			3.81
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	103	103			0.0
EPA 365.1 Rev. 2.0	Total-P	103	104	104			0.0241
SM 2320 B-2011	Total Alkalinity	96.8				0.521	
SM 2540 C-2015	TDS	99.3				6.84	
SM 2540 D-2015	TSS	91.5					
SM 4500-F- C-2011	Fluoride	99.9	102	101			0.490
SM 5310 B-2011	Organic Carbon	96.7	95.3	95.9			0.472

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2369390
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2369390
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2369390
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2369390
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2369391
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2369391
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2369391
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2369391
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2369390
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2369390
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2369390
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2369390
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2369391

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	11/15/2022			11/15/2022 14:55	Chandler E Cox	2369390
EPA 180.1 Rev. 2.0	11/15/2022			11/15/2022 14:16	Anna M. Plaviak	2369390
EPA 300.0 Rev. 2.1	11/15/2022			11/23/2022 02:43	James L Waggeberby	2369390
EPA 350.1 Rev. 2.0	11/15/2022			12/01/2022 10:44	Ping Hua	2369391
EPA 351.2 Rev. 2.0	11/15/2022	11/17/2022 10:30	Samantha L Bates	11/18/2022 08:49	Samantha L Bates	2369391
EPA 353.2 Rev. 2.0	11/15/2022			11/17/2022 09:00	Beverly Y. Sanders	2369391
EPA 365.1 Rev. 2.0	11/15/2022	11/17/2022 13:57	Adam P Silver	11/18/2022 09:50	James L Waggeberby	2369391
SM 2320 B-2011	11/15/2022			11/19/2022 17:26	Dale L. Simmons	2369390
SM 2540 C-2015	11/15/2022			11/18/2022 16:39	Yijie Li	2369390
SM 2540 D-2015	11/15/2022			11/18/2022 16:39	Yijie Li	2369390
SM 4500-F- C-2011	11/15/2022			11/19/2022 17:26	Dale L. Simmons	2369390
SM 5310 B-2011	11/15/2022			11/22/2022 00:55	Khloe J Berg	2369391