

Chemical Analysis Report

CEN-DIST-2022-05-10-01

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

Event Description: **Fox Lake**
Request ID: **RQ-2022-05-09-18**
Customer: **CEN-DIST**
Project ID: **SMP**

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Date Certified: 03-JUN-2022 10:51



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: Fox Lake near Center

Collection Date/Time: 05/09/2022 11:46

Field ID: G3CE0041

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2325527	DEP SOP: NU-094-1	Color (true)**	220		PCU	P413646	
	EPA 180.1 Rev. 2.0	Turbidity	4.5		NTU	P413650	
	EPA 300.0 Rev. 2.1	Chloride	210		mg Cl/L	P413939	
		Sulfate	27		mg SO4/L	P413943	
	SM 2320 B-2011	Total Alkalinity	36		mg CaCO3/L	P413855	
	SM 2540 C-2011	TDS	469		mg/L	P414018	
	SM 2540 D-2011	TSS	6	I	mg/L	P413890	
	SM 4500-F- C-2011	Fluoride	0.049	I	mg F/L	P413860	
2325528	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P413905	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P414146	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P414125	
	EPA 365.1 Rev. 2.0	Total-P	0.073		mg P/L	P413896	
	SM 5310 B-2011	Organic Carbon	25		mg C/L	P413882	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Matrix spike recovery data is unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P413646

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P413650

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P413939

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P413943

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P413905

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414146

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P414125

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P413896

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

Reference Method: SM 2320 B-2011
Batch ID: P413855

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-2011
Batch ID: P414018

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P413890

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P413860

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P413882

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: P413646

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.8		P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P413650

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	97.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P413939

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P413943

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P413905

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414146

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P414125

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	96.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P413896

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

Reference Method: SM 2320 B-2011
Batch ID: P413855

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.6		P	94 - 106

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500-F- C-2011
Batch ID: P413860

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P413882

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P413939

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2325467	Chloride	100		P	90 - 110
2325714	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P413943

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2325467	Sulfate	95.6		P	90 - 110
2325714	Sulfate	98.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414146

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2325443	Kjeldahl Nitrogen	99.3	97.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P414125

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2325442	NO2NO3-N	94.9	94.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P413896

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2325438	Total-P	103	105	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P413860

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2325326	Fluoride	100	100	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P413882

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2325468	Organic Carbon	95.3	95.5	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P413646

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2325440	Color (true)	0.345	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P413650

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2325440	Turbidity	1.64	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P413939

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2325467	Chloride	0.233	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P413943

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2325467	Sulfate	0.0521	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P413905

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2325443	Ammonia-N	3.91	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414146

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2325443	Kjeldahl Nitrogen	1.30	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P414125

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2325442	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P413896

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2325438	Total-P	1.88	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P413855

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2325326	Total Alkalinity	1.71	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2011
Batch ID: P414018

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2325521	TDS	0.0	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P413860

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2325326	Fluoride	0.0	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P413882

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2325468	Organic Carbon	0.179	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: A112036

Included Lab Sample IDs: 2325527

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	105	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A112037

Included Lab Sample IDs: 2325527

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

Reference Method: SM 2320 B-2011

Run ID: A112155

Included Lab Sample IDs: 2325527

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.8	95.2	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A112155

Included Lab Sample IDs: 2325527

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

Reference Method: SM 5310 B-2011

Run ID: A112167

Included Lab Sample IDs: 2325528

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.0	96.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A112183

Included Lab Sample IDs: 2325528

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.9	97.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A112198

Included Lab Sample IDs: 2325527

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	103	P/P	90 - 110
Sulfate	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A112260

Included Lab Sample IDs: 2325528

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A112270

Included Lab Sample IDs: 2325528

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.0	95.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A112419

Included Lab Sample IDs: 2325528

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	107	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)	98.8				0.345	
EPA 180.1 Rev. 2.0	Turbidity	97.8				1.64	
EPA 300.0 Rev. 2.1	Chloride	103	100	101		0.233	
	Sulfate	102	95.6	98.9		0.0521	
EPA 350.1 Rev. 2.0	Ammonia-N	95.8					3.91
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	99.3	97.5			1.30
EPA 353.2 Rev. 2.0	NO2NO3-N	96.5	94.9	94.9			0.0
EPA 365.1 Rev. 2.0	Total-P	99.5	103	105			1.88
SM 2320 B-2011	Total Alkalinity	99.6				1.71	
SM 2540 C-2011	TDS					0.0	
SM 4500-F- C-2011	Fluoride	100	100	100			0.0
SM 5310 B-2011	Organic Carbon	95.2	95.3	95.5			0.179

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2325527
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2325527
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2325527
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2325527
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2325528
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2325528
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2325528
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2325528
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2325527
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2325527
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2325527
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2325527
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2325528

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	05/10/2022			05/10/2022 16:48	Samantha L Bates	2325527
EPA 180.1 Rev. 2.0	05/10/2022			05/10/2022 14:19	Khloe J Berg	2325527
EPA 300.0 Rev. 2.1	05/10/2022			05/17/2022 09:28	Anna M. Plaviak	2325527
EPA 350.1 Rev. 2.0	05/10/2022			05/16/2022 15:31	Judith K. Clark	2325528
EPA 351.2 Rev. 2.0	05/10/2022	05/24/2022 09:04	Samantha L Bates	05/25/2022 11:02	Alexandra J Mattheus	2325528
EPA 353.2 Rev. 2.0	05/10/2022			05/19/2022 16:34	Nathaniel J Jones	2325528
EPA 365.1 Rev. 2.0	05/10/2022	05/17/2022 14:42	Simonne.V. Calhoun	05/18/2022 19:44	Sarah A Nixon	2325528
SM 2320 B-2011	05/10/2022			05/14/2022 19:27	Dale L. Simmons	2325527
SM 2540 C-2011	05/10/2022			05/13/2022 12:41	Ping Hua	2325527
SM 2540 D-2011	05/10/2022			05/13/2022 12:41	Ping Hua	2325527
SM 4500-F- C-2011	05/10/2022			05/14/2022 19:27	Dale L. Simmons	2325527
SM 5310 B-2011	05/10/2022			05/14/2022 06:51	Khloe J Berg	2325528