Chemical Analysis Report

CEN-DIST-2022-07-29-03

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

Event Description: **Lakes: Ivanhoe, Lotta, Crooked, Ingram**
Request ID: **RQ-2022-07-25-13**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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3319 Maguire Blvd., Suite 232
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Certified by: Colin Wright, Program Administrator

Date Certified: 22-AUG-2022 09:35

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 Ivanhoe @ Center of W Lobe **Collection Date/Time: 07/28/2022 10:18**

Field ID: G2CE0262 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2344733	DEP SOP: NU-094-1	Color (true)	9.4		PCU	P417426	
	EPA 180.1 Rev. 2.0	Turbidity	0.80	I	NTU	P417430	
	EPA 300.0 Rev. 2.1	Chloride	24		mg Cl/L	P417689	
		Sulfate	20		mg SO4/L	P417690	
	SM 2320 B-2011	Total Alkalinity	32	A	mg CaCO3/L	P417548	
	SM 2540 C-2011	TDS	104		mg/L	P417811	
	SM 2540 D-2011	TSS	2	I	mg/L	P417804	
	SM 4500-F- C-2011	Fluoride	0.064	I	mg F/L	P417551	
2344734	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P417760	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36		mg N/L	P417571	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P417645	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P417600	
	SM 5310 B-2011	Organic Carbon	3.3		mg C/L	P417699	

Quality Assurance Report
Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P417426

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P417430

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417689

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417690

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417760

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P417571

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P417645

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P417600

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

Reference Method: SM 2320 B-2011
Batch ID: P417548

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: P417811

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P417804

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P417551

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P417699

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: P417426

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P417430

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	97.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417689

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	94.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417690

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417760

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P417571

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P417645

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P417600

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

Reference Method: SM 2320 B-2011
Batch ID: P417548

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.6		P	94 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500-F- C-2011
Batch ID: P417551

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P417699

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.3		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417689

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2344726	Chloride	91.1		P	90 - 110
2344737	Chloride	92.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417690

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2344726	Sulfate	93.2		P	90 - 110
2344737	Sulfate	94.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417760

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2344563	Ammonia-N	97.4	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P417571

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2344738	Kjeldahl Nitrogen	93.1	97.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P417645

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2344734	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P417600

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2344738	Total-P	103	101	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P417551

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2344733	Fluoride	97.2	97.2	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P417699

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2344856	Organic Carbon	99.1	98.7	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P417426

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2344608	Color (true)	1.56	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P417430

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2344526	Turbidity	7.68	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417689

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2344726	Chloride	0.820	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417690

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2344726	Sulfate	0.735	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417760

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2344563	Ammonia-N	3.17	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P417571

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2344738	Kjeldahl Nitrogen	4.08	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P417645

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2344734	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P417600

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2344738	Total-P	1.18	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2320 B-2011
Batch ID: P417548

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2344733	Total Alkalinity	0.601	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2011
Batch ID: P417811

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2344524	TDS	5.26	Sample	P	0 - 10

Reference Method: SM 2540 D-2011
Batch ID: P417804

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2344524	TSS	3.92	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P417551

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2344733	Fluoride	0.0	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P417699

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2344856	Organic Carbon	0.224	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: A113805
Included Lab Sample IDs: 2344733

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	101	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A113809
Included Lab Sample IDs: 2344733

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

Reference Method: SM 2320 B-2011
Run ID: A113869
Included Lab Sample IDs: 2344733

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.5	97.0	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A113869
Included Lab Sample IDs: 2344733

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: A113902
Included Lab Sample IDs: 2344733

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	92.9	94.4	P/P	90 - 110
Sulfate	95.0	95.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A113906
Included Lab Sample IDs: 2344734

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A113911
Included Lab Sample IDs: 2344734

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

Reference Method: SM 5310 B-2011
Run ID: A113927
Included Lab Sample IDs: 2344734

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.8	101	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A113960
Included Lab Sample IDs: 2344734

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.5	98.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A113990
Included Lab Sample IDs: 2344734

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	91.8	96.0	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	SMP	MS
DEP SOP: NU-094-1	Color (true)	102				1.56	
EPA 180.1 Rev. 2.0	Turbidity	97.1				7.68	
EPA 300.0 Rev. 2.1	Chloride	94.0	91.1	92.3		0.820	
	Sulfate	97.0	93.2	94.2		0.735	
EPA 350.1 Rev. 2.0	Ammonia-N	103	97.4	102			3.17
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	93.1	97.2			4.08
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	100	100			0.0
EPA 365.1 Rev. 2.0	Total-P	101	103	101			1.18
SM 2320 B-2011	Total Alkalinity	98.6				0.601	
SM 2540 C-2011	TDS					5.26	
SM 2540 D-2011	TSS					3.92	
SM 4500-F- C-2011	Fluoride	101	97.2	97.2			0.0
SM 5310 B-2011	Organic Carbon	98.3	99.1	98.7			0.224

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2344733
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2344733
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2344733
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2344733
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2344734
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2344734
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2344734
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2344734
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2344733
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2344733
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2344733
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2344733
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2344734

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	07/29/2022			07/29/2022 15:02	Anna M. Plaviak	2344733
EPA 180.1 Rev. 2.0	07/29/2022			07/29/2022 14:06	Khloe J Berg	2344733
EPA 300.0 Rev. 2.1	07/29/2022			08/04/2022 14:26	Anna M. Plaviak	2344733
EPA 350.1 Rev. 2.0	07/29/2022			08/08/2022 13:33	Judith K. Clark	2344734
EPA 351.2 Rev. 2.0	07/29/2022	08/04/2022 15:38	Samantha L Bates	08/09/2022 15:20	Samantha L Bates	2344734
EPA 353.2 Rev. 2.0	07/29/2022			08/04/2022 11:02	Beverly Y. Sanders	2344734
EPA 365.1 Rev. 2.0	07/29/2022	08/03/2022 17:35	Adam P Silver	08/04/2022 14:53	James L Waggerby	2344734
SM 2320 B-2011	07/29/2022			08/02/2022 23:40	Dale L. Simmons	2344733
SM 2540 C-2011	07/29/2022			08/02/2022 15:05	Yijie Li	2344733
SM 2540 D-2011	07/29/2022			08/02/2022 15:05	Yijie Li	2344733
SM 4500-F- C-2011	07/29/2022			08/02/2022 23:30	Dale L. Simmons	2344733
SM 5310 B-2011	07/29/2022			08/04/2022 09:06	Khloe J Berg	2344734