Chemical Analysis Report

CEN-DIST-2020-10-29-03

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

Event Description: **Lake Lotta/Lake Jane**
Request ID: **RQ-2020-10-19-30**
Customer: **CEN-DIST**
Project ID: **SMP**

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Date Certified: 20-NOV-2020 09:25

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 Lotta at Center of Southern Lobe **Collection Date/Time: 10/28/2020 11:38**

Field ID: G2CE0093 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2205375	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P389499	
	EPA 300.0 Rev. 2.1	Chloride	10		mg Cl/L	P389956	
		Sulfate	7.1		mg SO4/L	P389958	
	SM 2120 B-2011	Color (true)	86		PCU	P389514	
	SM 2320 B-2011	Total Alkalinity	53		mg CaCO3/L	P389621	
	SM 2540 C-2011	TDS	114		mg/L	P389962	
	SM 2540 D-2011	TSS	2	I	mg/L	P389682	
	SM 4500 F-C-2011	Fluoride	0.11		mg F/L	P389625	
2205376	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P389587	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.76		mg N/L	P389763	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P389536	
	EPA 365.1 Rev. 2.0	Total-P	0.076		mg P/L	P389637	
	SM 5310 B-2011	Organic Carbon	12		mg C/L	P389654	
2205377	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.026		mg P/L	P389512	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
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: P389499

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389956

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389958

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389587

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389763

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389536

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389637

Component	Result	Code	Units
Total-P	0.005	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P389512

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

Reference Method: SM 2120 B-2011
Batch ID: P389514

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P389621

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

Reference Method: SM 2540 C-2011
Batch ID: P389962

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P389682

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P389625

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P389654

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: P389956

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389958

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389587

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389763

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: P389536

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389637

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: P389512

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.2		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P389514

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	103		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P389621

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.2		P	93 - 104

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P389625

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	103		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P389654

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	102		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389956

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205350	Chloride	99.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389958

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205350	Sulfate	96.0		P	90 - 110
2206213	Sulfate	99.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389587

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205353	Ammonia-N	99.1	97.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389763

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205394	Kjeldahl Nitrogen	105	110	P/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389536

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205352	NO2NO3-N	97.5	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389637

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205376	Total-P	104	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P389512

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205337	O-Phosphate-P	94.8	95.2	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P389625

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205351	Fluoride	104	106	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P389654

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205353	Organic Carbon	101	102	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P389499

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205370	Turbidity	0.327	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389956

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205350	Chloride	0.739	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389958

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205350	Sulfate	0.680	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389587

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205353	Ammonia-N	1.22	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389763

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205394	Kjeldahl Nitrogen	3.17	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389536

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205352	NO2NO3-N	0.275	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389637

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205376	Total-P	1.97	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P389512

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205337	O-Phosphate-P	0.421	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B-2011
Batch ID: P389514

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205249	Color (true)	2.18	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P389621

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205351	Total Alkalinity	1.11	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P389962

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205350	TDS	1.46	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P389625

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205351	Fluoride	0.953	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P389654

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205353	Organic Carbon	0.947	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A101865
Included Lab Sample IDs: 2205375

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	100	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A101866
Included Lab Sample IDs: 2205377

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

Reference Method: SM 2120 B-2011
Run ID: A101867
Included Lab Sample IDs: 2205375

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	103	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A101878
Included Lab Sample IDs: 2205376

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A101893
Included Lab Sample IDs: 2205376

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.6	99.2	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A101910
Included Lab Sample IDs: 2205375

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	95.4	97.4	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A101910
Included Lab Sample IDs: 2205375

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	104	103	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A101919
Included Lab Sample IDs: 2205376

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A101955
Included Lab Sample IDs: 2205376

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A102026
Included Lab Sample IDs: 2205376

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	99.1	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A102065
Included Lab Sample IDs: 2205375

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	99.8	P/P	90 - 110
Sulfate	102	101	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
EPA 180.1 Rev. 2.0	Turbidity					0.327	
EPA 300.0 Rev. 2.1	Chloride	100	99.1			0.739	
	Sulfate	101	96.0	99.1		0.680	
EPA 350.1 Rev. 2.0	Ammonia-N	99.2	99.1	97.6			1.22
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	105	110			3.17
EPA 353.2 Rev. 2.0	NO2NO3-N	100	97.5	98.0			0.275
EPA 365.1 Rev. 2.0	Total-P	105	104	107			1.97
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.2	94.8	95.2			0.421
SM 2120 B-2011	Color (true)	103				2.18	
SM 2320 B-2011	Total Alkalinity	98.2				1.11	
SM 2540 C-2011	TDS					1.46	
SM 4500 F-C-2011	Fluoride	103	104	106			0.953
SM 5310 B-2011	Organic Carbon	102	101	102			0.947

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2205375
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2205375
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2205375
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2205376
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2205376
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2205376
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2205376
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2205377
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2205375
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2205375
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2205375
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2205375
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2205375
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2205376

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	10/29/2020			10/29/2020 16:10	Yen Ta	2205375
EPA 300.0 Rev. 2.1	10/29/2020			11/10/2020 03:38	Lipi Saha	2205375
EPA 350.1 Rev. 2.0	10/29/2020			11/01/2020 10:58	Ping Hua	2205376
EPA 351.2 Rev. 2.0	10/29/2020	11/04/2020 14:53	David Boose	11/05/2020 16:44	Elliott Rodriguez	2205376
EPA 353.2 Rev. 2.0	10/29/2020			10/30/2020 11:11	Beverly Y. Sanders	2205376
EPA 365.1 Rev. 2.0	10/29/2020	11/02/2020 10:01	Yen Ta	11/04/2020 13:09	Benjamin T. Nordmann	2205376
EPA 365.1 Rev. 2.0 dissolved	10/29/2020			10/29/2020 16:40	Samantha Davila	2205377
SM 2120 B-2011	10/29/2020			10/29/2020 15:48	Benjamin T. Nordmann	2205375
SM 2320 B-2011	10/29/2020			10/31/2020 10:19	Samantha Davila	2205375
SM 2540 C-2011	10/29/2020			10/30/2020 19:12	Madeline Gruver	2205375
SM 2540 D-2011	10/29/2020			10/30/2020 19:59	Madeline Gruver	2205375
SM 4500 F-C-2011	10/29/2020			10/31/2020 10:19	Samantha Davila	2205375
SM 5310 B-2011	10/29/2020			11/02/2020 18:05	Touraj Touran	2205376