Chemical Analysis Report

CEN-DIST-2021-02-18-01

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

Event Description: **Johns Lake Outlet/Lake Jane/Lake Lotta**
Request ID: **RQ-2021-02-15-09**
Customer: **CEN-DIST**
Project ID: **SMP**

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

Date Certified: 12-MAR-2021 08:42

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: Johns Lake @ Conservation area dock **Collection Date/Time: 02/17/2021 11:20**

Field ID: G1CE0111 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2225862	EPA 180.1 Rev. 2.0	Turbidity	3.4		NTU	P393982	
	EPA 300.0 Rev. 2.1	Chloride	31		mg Cl/L	P394134	
		Sulfate	8.4		mg SO4/L	P394135	
	SM 2120 B-2011	Color (true)	150		PCU	P393979	
	SM 2320 B-2011	Total Alkalinity	42		mg CaCO3/L	P394363	
	SM 2540 C-2011	TDS	150		mg/L	P394349	
	SM 2540 D-2011	TSS	3	I	mg/L	P394341	
	SM 4500 F-C-2011	Fluoride	0.10		mg F/L	P394150	
2225863	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P394295	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P394019	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.013		mg N/L	P393993	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P394057	
	SM 5310 B-2011	Organic Carbon	16		mg C/L	P394587	
2225864	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.072		mg P/L	P393967	

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: P393982

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394134

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394135

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394295

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P394019

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P393993

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P394057

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P393967

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

Reference Method: SM 2120 B-2011
Batch ID: P393979

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P394363

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

Reference Method: SM 2540 C-2011
Batch ID: P394349

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P394341

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P394150

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P394587

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: P394134

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394135

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394295

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P394019

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P393993

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: P394057

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P393967

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.6		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P393979

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.4		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P394363

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	94.8		P	93 - 104

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P394150

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.9		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P394587

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.4		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394134

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2225832	Chloride	99.2		P	90 - 110
2226014	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394135

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2225832	Sulfate	95.5		P	90 - 110
2226014	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394295

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2225838	Ammonia-N	98.0	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P394019

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2225840	Kjeldahl Nitrogen	103	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P393993

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2225863	NO2NO3-N	101	99.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P394057

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2225812	Total-P	105	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P393967

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2225842	O-Phosphate-P	96.4	96.3	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P394150

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2225834	Fluoride	98.3	98.8	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P394587

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2225926	Organic Carbon	95.0	96.0	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P393982

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2225835	Turbidity	3.66	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394134

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2225832	Chloride	0.408	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394135

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2225832	Sulfate	0.352	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394295

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2225838	Ammonia-N	0.192	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P394019

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2225840	Kjeldahl Nitrogen	3.09	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P393993

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2225863	NO2NO3-N	0.939	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P394057

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2225812	Total-P	0.967	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P393967

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2225842	O-Phosphate-P	0.0783	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B-2011
Batch ID: P393979

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2225925	Color (true)	0.877	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P394363

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2225834	Total Alkalinity	0.115	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P394349

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2225836	TDS	8.74	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P394150

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2225834	Fluoride	0.472	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P394587

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2225926	Organic Carbon	0.810	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: A103659
Included Lab Sample IDs: 2225864

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.3	98.4	P/P	90 - 110

Reference Method: SM 2120 B-2011
Run ID: A103664
Included Lab Sample IDs: 2225862

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: A103665
Included Lab Sample IDs: 2225862

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	102	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A103685
Included Lab Sample IDs: 2225863

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A103709
Included Lab Sample IDs: 2225863

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A103718
Included Lab Sample IDs: 2225863

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	96.1	97.5	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A103737
Included Lab Sample IDs: 2225862

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	100	P/P	90 - 110
Sulfate	99.3	99.5	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A103741
Included Lab Sample IDs: 2225862

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A103808
Included Lab Sample IDs: 2225863

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.9	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A103841
Included Lab Sample IDs: 2225862

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	92.1	94.1	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A103922
Included Lab Sample IDs: 2225863

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.4	97.0	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
EPA 180.1 Rev. 2.0	Turbidity					3.66	
EPA 300.0 Rev. 2.1	Chloride	102	99.2	100		0.408	
	Sulfate	101	95.5	101		0.352	
EPA 350.1 Rev. 2.0	Ammonia-N	98.6	98.0	97.8			0.192
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	103	106			3.09
EPA 353.2 Rev. 2.0	NO2NO3-N	102	101	99.6			0.939
EPA 365.1 Rev. 2.0	Total-P	107	105	106			0.967
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.6	96.4	96.3			0.0783
SM 2120 B-2011	Color (true)	99.4				0.877	
SM 2320 B-2011	Total Alkalinity	94.8				0.115	
SM 2540 C-2011	TDS					8.74	
SM 4500 F-C-2011	Fluoride	97.9	98.3	98.8			0.472
SM 5310 B-2011	Organic Carbon	95.4	95.0	96.0			0.810

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2225862
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2225862
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2225862
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2225863
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2225863
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2225863
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2225863
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2225864
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2225862
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2225862
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2225862
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2225862
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2225862
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2225863

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	02/18/2021			02/18/2021 16:18	Yen Ta	2225862
EPA 300.0 Rev. 2.1	02/18/2021			02/22/2021 22:20	Lipi Saha	2225862
EPA 350.1 Rev. 2.0	02/18/2021			02/27/2021 09:58	Ping Hua	2225863
EPA 351.2 Rev. 2.0	02/18/2021	02/19/2021 12:31	Yen Ta	02/22/2021 12:49	Virginia P. Brown	2225863
EPA 353.2 Rev. 2.0	02/18/2021			02/19/2021 09:58	Beverly Y. Sanders	2225863
EPA 365.1 Rev. 2.0	02/18/2021	02/22/2021 12:30	Yen Ta	02/23/2021 11:00	Shengyu Wang	2225863
EPA 365.1 Rev. 2.0 dissolved	02/18/2021			02/18/2021 15:33	Virginia P. Brown	2225864
SM 2120 B-2011	02/18/2021			02/18/2021 16:37	Benjamin T. Nordmann	2225862
SM 2320 B-2011	02/18/2021			02/27/2021 02:52	Dale L. Simmons	2225862
SM 2540 C-2011	02/18/2021			02/22/2021 14:12	Yijie Li	2225862
SM 2540 D-2011	02/18/2021			02/22/2021 14:12	Yijie Li	2225862
SM 4500 F-C-2011	02/18/2021			02/20/2021 01:24	Dale L. Simmons	2225862
SM 5310 B-2011	02/18/2021			03/05/2021 10:24	Madeline Gruver	2225863