Chemical Analysis Report

CEN-DIST-2016-08-12-03

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

Event Description: **Lake Lily+LVI**
Request ID: **RQ-2016-08-08-45**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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3319 Maguire Blvd., Suite 232
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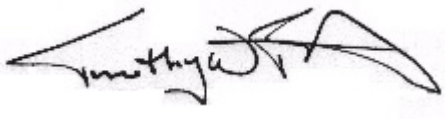
Certified by: Timothy Fitzpatrick, Program Administrator

Date Certified: 30-AUG-2016 11:01



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 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: Oklawaha river 5.5 miles DS OF sr 42 bridge **Collection Date/Time: 08/11/2016 11:45**

Field ID: G1CE0034 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1823404	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P309677	
	EPA 300.0 Rev. 2.1	Chloride	36		mg Cl/L	P310309	
		Sulfate	9.3		mg SO4/L	P310312	
	SM 2120 B	Color (true)	43	A	PCU	P309679	
	SM 2320 B-97	Total Alkalinity	126		mg CaCO3/L	P309875	
	SM 2540 C-97	TDS	272	A	mg/L	P310210	
	SM 2540 D-97	TSS	3	I	mg/L	P310203	
	SM 4500 F-C-97	Fluoride	0.22		mg F/L	P309877	
1823405	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P309748	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P309863	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P309820	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P309805	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P310262	
1823406	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P309673	

Ref. Method and Comment:
SM 2540 D-97: 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: P309677

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310309

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310312

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P309748

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309863

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309820

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309805

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309673

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

Reference Method: SM 2120 B
Batch ID: P309679

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P309875

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

Reference Method: SM 2540 C-97
Batch ID: P310210

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P310203

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P309877

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P310262

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: P310309

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310312

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P309748

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309863

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: P309820

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309805

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309673

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

Reference Method: SM 2320 B-97
Batch ID: P309875

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P309877

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.7		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P310262

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.7		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310309

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823232	Chloride	98.7		P	90 - 110
1823236	Chloride	98.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310312

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823232	Sulfate	100		P	90 - 110
1823236	Sulfate	99.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P309748

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823278	Ammonia-N	99.5	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309863

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823314	Kjeldahl Nitrogen	98.0	96.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309820

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823278	NO2NO3-N	99.4	97.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309805

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823241	Total-P	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309673

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823406	O-Phosphate-P	96.2	96.9	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P309877

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823213	Fluoride	96.5	97.7	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P310262

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823238	Organic Carbon	99.2	103	P/P	85 - 115
1823238	Organic Carbon	99.4		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P309677

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823380	Turbidity	0.685	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310309

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823232	Chloride	0.0867	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310312

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823232	Sulfate	0.713	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P309748

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823278	Ammonia-N	1.99	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309863

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823314	Kjeldahl Nitrogen	1.33	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309820

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823278	NO2NO3-N	1.90	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309805

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823241	Total-P	0.119	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309673

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823406	O-Phosphate-P	0.725	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P309679

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823404	Color (true)	0.896	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P309875

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823213	Total Alkalinity	0.292	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P310210

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823404	TDS	1.47	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P309877

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823213	Fluoride	0.968	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P310262

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823238	Organic Carbon	0.0736	Spike	P	0 - 20

Quality Assurance Report
Precision

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A71103
Included Lab Sample IDs: 1823406

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.5	101	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A71107
Included Lab Sample IDs: 1823404

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.0	P/P	95 - 105

Reference Method: SM 2120 B
Run ID: A71108
Included Lab Sample IDs: 1823404

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	99.3	P/P	90 - 115

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A71129
Included Lab Sample IDs: 1823405

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A71156
Included Lab Sample IDs: 1823405

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	99.5	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A71178
Included Lab Sample IDs: 1823404

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A71178
Included Lab Sample IDs: 1823404

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	100	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A71200
Included Lab Sample IDs: 1823405

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.8	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A71235
Included Lab Sample IDs: 1823405

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	96.8	96.5	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A71280
Included Lab Sample IDs: 1823404

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	100	P/P	90 - 110
Sulfate	99.9	97.4	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A71302
Included Lab Sample IDs: 1823405

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	93.8	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						0.685	
EPA 300.0 Rev. 2.1	Chloride	100	98.7	98.1			0.0867	
	Sulfate	101	100	99.6			0.713	
EPA 350.1 Rev. 2.0	Ammonia-N	97.0	99.5	102				1.99
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	98.0	96.0				1.33
EPA 353.2 Rev. 2.0	NO2NO3-N	103	99.4	97.4				1.90
EPA 365.1 Rev. 2.0	Total-P	103	101	101				0.119
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.4	96.2	96.9				0.725
SM 2120 B	Color (true)						0.896	
SM 2320 B-97	Total Alkalinity	103					0.292	
SM 2540 C-97	TDS						1.47	
SM 4500 F-C-97	Fluoride	97.7	96.5	97.7				0.968
SM 5310 B-00	Organic Carbon	99.7	99.2	99.4	103			0.0736

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1823404
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1823404
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1823404
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1823405
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1823405
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1823405
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1823405
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1823406
SM 2120 B / E31780	True Color measured at 450 nm	1823404
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1823404
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1823404
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1823404
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1823404
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1823405

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	08/12/2016			08/12/2016 15:06	Sima Feizi	1823404
EPA 300.0 Rev. 2.1	08/12/2016			08/24/2016	Ping Hua	1823404
EPA 350.1 Rev. 2.0	08/12/2016			08/15/2016	Julie Michelle Frank	1823405
EPA 351.2 Rev. 2.0	08/12/2016	08/17/2016	Sofia Elnemr	08/18/2016	Christopher Armour	1823405
EPA 353.2 Rev. 2.0	08/12/2016			08/16/2016	Beverly Y. Sanders	1823405
EPA 365.1 Rev. 2.0	08/12/2016	08/16/2016	Vijayalakshmi Reddy	08/19/2016	Lipi Saha	1823405
EPA 365.1 Rev. 2.0 dissolved	08/12/2016			08/12/2016 14:01	Julia Storbeck	1823406
SM 2120 B	08/12/2016			08/12/2016 16:33	Rochelle Y Jackson	1823404
SM 2320 B-97	08/12/2016			08/16/2016	Dale L. Simmons	1823404
SM 2540 C-97	08/12/2016			08/17/2016	Yijie Li	1823404
SM 2540 D-97	08/12/2016			08/17/2016	Yijie Li	1823404
SM 4500 F-C-97	08/12/2016			08/16/2016	Dale L. Simmons	1823404
SM 5310 B-00	08/12/2016			08/24/2016	Sofia Elnemr	1823405