Chemical Analysis Report

CEN-DIST-2018-06-19-01

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

Event Description: **Lake Park + LVI**
Request ID: **RQ-2018-06-11-48**
Customer: **CEN-DIST**
Project ID: **SMP**

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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: Lake Park @ Center **Collection Date/Time: 06/18/2018 11:15**

Field ID: G2CE0009 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2001578	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P347144	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P347397	
		Sulfate	11		mg SO4/L	P347400	
	SM 2120 B	Color (true)	20		PCU	P347136	
	SM 2320 B-97	Total Alkalinity	64		mg CaCO3/L	P347810	
	SM 2540 C-97	TDS	109	A	mg/L	P347484	
	SM 2540 D-97	TSS	3	IA	mg/L	P347505	
	SM 4500 F-C-97	Fluoride	0.065	I	mg F/L	P347377	
2001579	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P347350	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.70		mg N/L	P347668	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P347311	
	EPA 365.1 Rev. 2.0	Total-P	0.029		mg P/L	P347258	
	SM 5310 B-00	Organic Carbon	7.1		mg C/L	P347526	
2001580	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P347130	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P347144

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347397

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347400

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347350

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347668

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347311

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347258

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347130

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

Reference Method: SM 2120 B
Batch ID: P347136

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P347810

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

Reference Method: SM 2540 C-97
Batch ID: P347484

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P347505

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P347377

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P347526

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: P347397

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347400

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347350

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: P347668

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: P347311

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347258

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347130

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.9		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P347810

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P347377

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.4		P	91 - 105

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P347526

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.7		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347397

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2001225	Chloride	103		P	90 - 110
2001516	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347400

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2001516	Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347350

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2001521	Ammonia-N	97.5	98.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347668

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2001579	Kjeldahl Nitrogen	100	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347311

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2001524	NO2NO3-N	99.0	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347258

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2001697	Total-P	97.6	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347130

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2001580	O-Phosphate-P	96.6	97.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P347377

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2001980	Fluoride	94.2	94.2	P/P	91 - 105

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P347144

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001520	Turbidity	0.766	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347397

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001225	Chloride	0.403	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347400

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001225	Sulfate	1.01	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347350

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001521	Ammonia-N	0.936	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347668

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001579	Kjeldahl Nitrogen	2.47	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347311

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001524	NO2NO3-N	0.302	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347258

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001697	Total-P	3.44	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347130

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001580	O-Phosphate-P	0.516	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P347136

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001520	Color (true)	0.956	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P347810

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001980	Total Alkalinity	0.416	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P347484

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001578	TDS	3.67	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P347377

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001980	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P347526

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000125	Organic Carbon	0.857	Spike	P	0 - 20

* 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: A84681
Included Lab Sample IDs: 2001580

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	102	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A84682
Included Lab Sample IDs: 2001578

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.6	100	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A84684
Included Lab Sample IDs: 2001578

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A84742
Included Lab Sample IDs: 2001578

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 353.2 Rev. 2.0
Run ID: A84747
Included Lab Sample IDs: 2001579

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: A84777
Included Lab Sample IDs: 2001579

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

Reference Method: SM 4500 F-C-97
Run ID: A84785
Included Lab Sample IDs: 2001578

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A84829
Included Lab Sample IDs: 2001579

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A84844
Included Lab Sample IDs: 2001579

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.4	95.6	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A84959
Included Lab Sample IDs: 2001578

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A85028
Included Lab Sample IDs: 2001579

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.8	102	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					0.766	
EPA 300.0 Rev. 2.1	Chloride	101	103	103		0.403	
	Sulfate	102	103			1.01	
EPA 350.1 Rev. 2.0	Ammonia-N	103	97.5	98.9			0.936
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	100	104			2.47
EPA 353.2 Rev. 2.0	NO2NO3-N	101	99.0	98.5			0.302
EPA 365.1 Rev. 2.0	Total-P	99.0	97.6	101			3.44
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.9	96.6	97.1			0.516
SM 2120 B	Color (true)					0.956	
SM 2320 B-97	Total Alkalinity	104				0.416	
SM 2540 C-97	TDS					3.67	
SM 4500 F-C-97	Fluoride	97.4	94.2	94.2			0.0
SM 5310 B-00	Organic Carbon	94.7					0.857

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2001578
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2001578
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2001578
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2001579
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2001579
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2001579
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2001579
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2001580
SM 2120 B / E31780	True Color measured at 450 nm	2001578
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2001578
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2001578
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2001578
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2001578
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2001579

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	06/19/2018			06/19/2018 16:44	William L. Brown IV	2001578
EPA 300.0 Rev. 2.1	06/19/2018			06/23/2018 01:46	Lipi Saha	2001578
EPA 350.1 Rev. 2.0	06/19/2018			06/22/2018 11:17	Ping Hua	2001579
EPA 351.2 Rev. 2.0	06/19/2018	06/28/2018 10:50	Adrian Shelby	07/05/2018 10:53	Tanya Welborn	2001579
EPA 353.2 Rev. 2.0	06/19/2018			06/21/2018 11:33	Beverly Y. Sanders	2001579
EPA 365.1 Rev. 2.0	06/19/2018	06/21/2018 12:42	Sima Feizi	06/26/2018 11:05	Beverly Y. Sanders	2001579
EPA 365.1 Rev. 2.0 dissolved	06/19/2018			06/19/2018 14:24	Megan Treadwell	2001580
SM 2120 B	06/19/2018			06/19/2018 15:39	Tanya Welborn	2001578
SM 2320 B-97	06/19/2018			07/01/2018 08:13	Dale L. Simmons	2001578
SM 2540 C-97	06/19/2018			06/20/2018 15:01	Yijie Li	2001578
SM 2540 D-97	06/19/2018			06/20/2018 15:01	Yijie Li	2001578
SM 4500 F-C-97	06/19/2018			06/22/2018 00:20	Lauren Bottorf	2001578
SM 5310 B-00	06/19/2018			06/25/2018 22:41	Megan Treadwell	2001579