Chemical Analysis Report

CEN-DIST-2017-07-12-01

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

Event Description: **Little Lk Weir + LVI**
Request ID: **RQ-2017-07-10-60**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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3319 Maguire Blvd., Suite 232
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 01-AUG-2017 11:07

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: LITTLE LK WEIR CENTER **Collection Date/Time: 07/11/2017 11:59**

Field ID: G1CE0014 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1912682	EPA 180.1 Rev. 2.0	Turbidity	4.4		NTU	P328386	
	EPA 300.0 Rev. 2.1	Chloride	57		mg Cl/L	P328503	
		Sulfate	12		mg SO4/L	P328505	
	SM 2120 B	Color (true)	13		PCU	P328366	
	SM 2320 B-97	Total Alkalinity	24	A	mg CaCO3/L	P328661	
	SM 2540 C-97	TDS	147		mg/L	P328642	
	SM 2540 D-97	TSS	6	I	mg/L	P328733	
	SM 4500 F-C-97	Fluoride	0.19		mg F/L	P328819	
1912683	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P328587	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P328562	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P328765	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P328695	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P328860	
1912684	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P328379	

Ref. Method and Comment:
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: P328386

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328503

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328505

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P328587

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328562

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: P328765

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P328695

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P328379

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

Reference Method: SM 2120 B
Batch ID: P328366

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P328661

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

Reference Method: SM 2540 C-97
Batch ID: P328642

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P328733

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P328819

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P328860

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: P328503

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328505

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	95.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P328587

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	105		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328562

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P328765

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: P328695

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P328379

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

Reference Method: SM 2320 B-97
Batch ID: P328661

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P328819

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.9		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P328860

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: P328503

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1912707	Chloride	100		P	90 - 110
1912715	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328505

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1912707	Sulfate	97.0		P	90 - 110
1912715	Sulfate	98.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P328587

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1912640	Ammonia-N	104	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328562

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1912639	Kjeldahl Nitrogen	101	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P328765

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1912683	NO2NO3-N	104	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P328695

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1912683	Total-P	94.2	95.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P328379

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1912643	O-Phosphate-P	98.5	98.3	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P328819

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1912682	Fluoride	104	99.1	P/P	91 - 105

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P328386

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912678	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328503

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912707	Chloride	2.53	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328505

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912707	Sulfate	3.25	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P328587

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912640	Ammonia-N	0.488	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328562

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912639	Kjeldahl Nitrogen	0.0707	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P328765

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912683	NO2NO3-N	0.484	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P328695

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912683	Total-P	0.958	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P328379

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912643	O-Phosphate-P	0.203	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P328366

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912707	Color (true)	0.390	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P328661

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912682	Total Alkalinity	0.253	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P328642

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912701	TDS	1.85	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P328733

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912701	TSS	8.89	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P328819

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912682	Fluoride	2.98	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P328860

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912638	Organic Carbon	0.416	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: SM 2120 B
Run ID: A77661
Included Lab Sample IDs: 1912682

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.6	103	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A77662
Included Lab Sample IDs: 1912684

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.3	98.1	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A77668
Included Lab Sample IDs: 1912682

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	99.5	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A77695
Included Lab Sample IDs: 1912682

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	105	105	P/P	90 - 110
Sulfate	104	105	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A77748
Included Lab Sample IDs: 1912683

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

Reference Method: SM 2320 B-97
Run ID: A77776
Included Lab Sample IDs: 1912682

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A77782
Included Lab Sample IDs: 1912683

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	99.2	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A77806
Included Lab Sample IDs: 1912683

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A77827
Included Lab Sample IDs: 1912683

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

Reference Method: SM 4500 F-C-97
Run ID: A77832
Included Lab Sample IDs: 1912682

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

Reference Method: SM 5310 B-00
Run ID: A77848
Included Lab Sample IDs: 1912683

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.0	98.9	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					0.0	
EPA 300.0 Rev. 2.1	Chloride	96.5	100	100		2.53	
	Sulfate	95.3	97.0	98.5		3.25	
EPA 350.1 Rev. 2.0	Ammonia-N	105	104	103			0.488
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	101	101			0.0707
EPA 353.2 Rev. 2.0	NO2NO3-N	102	104	103			0.484
EPA 365.1 Rev. 2.0	Total-P	96.7	94.2	95.1			0.958
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.5	98.5	98.3			0.203
SM 2120 B	Color (true)					0.390	
SM 2320 B-97	Total Alkalinity	102				0.253	
SM 2540 C-97	TDS					1.85	
SM 2540 D-97	TSS					8.89	
SM 4500 F-C-97	Fluoride	98.9	104	99.1			2.98
SM 5310 B-00	Organic Carbon	95.4					0.416

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1912682
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1912682
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1912682
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1912683
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1912683
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1912683
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1912683
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1912684
SM 2120 B / E31780	True Color measured at 450 nm	1912682
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1912682
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1912682
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1912682
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1912682
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1912683

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	07/12/2017			07/12/2017 17:13	DeAsia Armster	1912682
EPA 300.0 Rev. 2.1	07/12/2017			07/13/2017	Julia Storbeck	1912682
EPA 350.1 Rev. 2.0	07/12/2017			07/14/2017	Sofia Elnemr	1912683
EPA 351.2 Rev. 2.0	07/12/2017	07/17/2017	Adrian Shelby	07/18/2017	Joseph Suarez	1912683
EPA 353.2 Rev. 2.0	07/12/2017			07/19/2017	Beverly Y. Sanders	1912683
EPA 365.1 Rev. 2.0	07/12/2017	07/18/2017	Vijayalakshmi Reddy	07/20/2017	Lipi Saha	1912683
EPA 365.1 Rev. 2.0 dissolved	07/12/2017			07/12/2017 14:51	Lipi Saha	1912684
SM 2120 B	07/12/2017			07/12/2017 14:50	Tanya Welborn	1912682
SM 2320 B-97	07/12/2017			07/15/2017	Dale L. Simmons	1912682
SM 2540 C-97	07/12/2017			07/13/2017	Yijie Li	1912682
SM 2540 D-97	07/12/2017			07/13/2017	Yijie Li	1912682
SM 4500 F-C-97	07/12/2017			07/20/2017	Dale L. Simmons	1912682
SM 5310 B-00	07/12/2017			07/19/2017	Sofia Elnemr	1912683