Chemical Analysis Report

CEN-DIST-2019-11-15-01

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

Event Description: **3 Forks / Sawgrass Lk Drain**
Request ID: **RQ-2019-11-11-50**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
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B. Steinbock

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: SJR upstream of Lake Helen Blazes **Collection Date/Time: 11/14/2019 10:24**

Field ID: G3CE0018 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2136561	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P374352	
	EPA 300.0 Rev. 2.1	Chloride	77		mg Cl/L	P374401	
		Sulfate	22		mg SO4/L	P374404	
	SM 2120 B	Color (true)	230		PCU	P374314	
	SM 2320 B-97	Total Alkalinity	97		mg CaCO3/L	P374661	
	SM 2540 C-97	TDS	351		mg/L	P374862	
	SM 2540 D-97	TSS	5	I	mg/L	P374854	
	SM 4500 F-C-97	Fluoride	0.17		mg F/L	P374663	
2136562	EPA 350.1 Rev. 2.0	Ammonia-N	0.13		mg N/L	P374676	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P374618	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.14		mg N/L	P374476	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P374586	
	SM 5310 B-00	Organic Carbon	35		mg C/L	P374429	
2136563	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.066		mg P/L	P374379	

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: P374352

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374401

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374404

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374676

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374618

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374476

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374586

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374379

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

Reference Method: SM 2120 B
Batch ID: P374314

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P374661

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

Reference Method: SM 2540 C-97
Batch ID: P374862

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P374854

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P374663

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P374429

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: P374401

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374404

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374676

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.3		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374618

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: P374476

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: P374586

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: P374379

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.8		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P374314

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P374661

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P374663

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P374429

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	105		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374401

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136471	Chloride	99.8		P	90 - 110
2136626	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374404

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136471	Sulfate	100		P	90 - 110
2136626	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374676

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136430	Ammonia-N	103	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374618

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136474	Kjeldahl Nitrogen	102	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374476

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136478	NO2NO3-N	98.5	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374586

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136455	Total-P	102	99.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374379

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136479	O-Phosphate-P	95.2	96.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P374663

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136533	Fluoride	97.9	98.8	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P374429

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136574	Organic Carbon	102		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P374352

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136533	Turbidity	7.44	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374401

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136471	Chloride	0.0552	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374404

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136471	Sulfate	0.271	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374676

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136430	Ammonia-N	0.981	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374618

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136474	Kjeldahl Nitrogen	1.24	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374476

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136478	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374586

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136455	Total-P	2.55	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374379

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136479	O-Phosphate-P	1.06	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P374314

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136533	Color (true)	4.05	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P374661

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136533	Total Alkalinity	0.443	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P374862

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136477	TDS	4.18	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P374663

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136533	Fluoride	0.473	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P374429

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136574	Organic Carbon	0.137	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A95765
Included Lab Sample IDs: 2136561

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

Reference Method: SM 2120 B
Run ID: A95771
Included Lab Sample IDs: 2136561

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A95786
Included Lab Sample IDs: 2136561

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	98.0	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A95799
Included Lab Sample IDs: 2136563

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.4	98.1	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A95823
Included Lab Sample IDs: 2136562

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	106	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A95835
Included Lab Sample IDs: 2136562

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	101	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A95901
Included Lab Sample IDs: 2136561

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.8	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A95901
Included Lab Sample IDs: 2136561

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	98.5	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A95904
Included Lab Sample IDs: 2136562

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.1	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A95908
Included Lab Sample IDs: 2136562

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A95943
Included Lab Sample IDs: 2136562

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.7	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					7.44	
EPA 300.0 Rev. 2.1	Chloride	98.9	99.8	102		0.0552	
	Sulfate	98.7	100	101		0.271	
EPA 350.1 Rev. 2.0	Ammonia-N	97.3	103	104			0.981
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	102	101			1.24
EPA 353.2 Rev. 2.0	NO2NO3-N	101	98.5	98.5			0.0
EPA 365.1 Rev. 2.0	Total-P	103	102	99.7			2.55
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.8	95.2	96.6			1.06
SM 2120 B	Color (true)	101				4.05	
SM 2320 B-97	Total Alkalinity	101				0.443	
SM 2540 C-97	TDS					4.18	
SM 4500 F-C-97	Fluoride	95.9	97.9	98.8			0.473
SM 5310 B-00	Organic Carbon	105	102				0.137

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2136561
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2136561
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2136561
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2136562
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2136562
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2136562
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2136562
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2136563
SM 2120 B / E31780	True Color measured at 450 nm	2136561
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2136561
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2136561
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2136561
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2136561
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2136562

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	11/15/2019			11/15/2019 17:09	Samantha Davila	2136561
EPA 300.0 Rev. 2.1	11/15/2019			11/19/2019 06:28	Lipi Saha	2136561
EPA 350.1 Rev. 2.0	11/15/2019			11/21/2019 12:14	Ping Hua	2136562
EPA 351.2 Rev. 2.0	11/15/2019	11/21/2019 12:36	Sima Feizi	11/22/2019 14:40	Jhamieka S. Greenwood	2136562
EPA 353.2 Rev. 2.0	11/15/2019			11/19/2019 11:06	Beverly Y. Sanders	2136562
EPA 365.1 Rev. 2.0	11/15/2019	11/21/2019 13:00	Yen Ta	11/22/2019 15:38	Benjamin T. Nordmann	2136562
EPA 365.1 Rev. 2.0 dissolved	11/15/2019			11/15/2019 15:09	Ping Hua	2136563
SM 2120 B	11/15/2019			11/15/2019 18:04	Madeline Funaro	2136561
SM 2320 B-97	11/15/2019			11/20/2019 21:27	Dale L. Simmons	2136561
SM 2540 C-97	11/15/2019			11/19/2019 15:21	Yijie Li	2136561
SM 2540 D-97	11/15/2019			11/19/2019 15:21	Yijie Li	2136561
SM 4500 F-C-97	11/15/2019			11/20/2019 21:27	Dale L. Simmons	2136561
SM 5310 B-00	11/15/2019			11/18/2019 23:50	Lauren Lees	2136562