Chemical Analysis Report

CEN-DIST-2018-08-31-02

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

Event Description: **Reedy Creek**
Request ID: **RQ-2018-08-27-32**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
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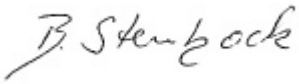
Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 20-SEP-2018 17:39



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: REEDY CREEK @ 200M UPSTREAM OF CONFLUENCE W/DEAD RIVER (3170A)

Collection Date/Time: 08/30/2018 10:50

Field ID: G4CE0145

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2021492	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P351100	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P351466	
		Sulfate	1.2		mg SO4/L	P351468	
	SM 2120 B	Color (true)	490		PCU	P351037	
	SM 2320 B-97	Total Alkalinity	27		mg CaCO3/L	P351369	
	SM 2540 C-97	TDS	158		mg/L	P351409	
	SM 2540 D-97	TSS	2	I	mg/L	P351379	
	SM 4500 F-C-97	Fluoride	0.088	I	mg F/L	P351373	
2021493	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P351281	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P351111	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.053		mg N/L	P351311	
	EPA 365.1 Rev. 2.0	Total-P	0.072		mg P/L	P351080	
	SM 5310 B-00	Organic Carbon	37		mg C/L	P351134	
2021494	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.049		mg P/L	P351041	

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: P351100

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P351466

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P351468

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351281

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351111

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351311

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351080

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351041

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

Reference Method: SM 2120 B
Batch ID: P351037

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P351369

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

Reference Method: SM 2540 C-97
Batch ID: P351409

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P351379

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P351373

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P351134

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: P351466

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	95.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P351468

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	93.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351281

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351111

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	93.4		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351311

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351080

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351041

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

Reference Method: SM 2120 B
Batch ID: P351037

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.9		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P351369

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P351373

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P351134

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P351466

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2021293	Chloride	93.3		P	90 - 110
2021471	Chloride	90.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P351468

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2021293	Sulfate	93.9		P	90 - 110
2021471	Sulfate	91.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351281

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2021408	Ammonia-N	99.3	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351111

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2021472	Kjeldahl Nitrogen	95.4	98.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351311

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2021569	NO2NO3-N	100	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351080

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2021418	Total-P	95.7	96.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351041

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2021473	O-Phosphate-P	95.4	96.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P351373

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2021242	Fluoride	100	99.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P351134

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2021405	Organic Carbon	103		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P351100

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2021404	Turbidity	1.06	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P351466

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2021293	Chloride	1.11	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P351468

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2021293	Sulfate	1.85	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351281

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2021408	Ammonia-N	0.268	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351111

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2021472	Kjeldahl Nitrogen	1.61	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351311

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2021569	NO2NO3-N	2.96	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351080

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2021418	Total-P	0.866	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351041

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2021473	O-Phosphate-P	0.627	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P351037

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2021407	Color (true)	0.574	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P351369

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2021242	Total Alkalinity	0.607	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P351409

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2021294	TDS	3.08	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P351373

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2021242	Fluoride	0.979	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P351134

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2021405	Organic Carbon	0.479	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: SM 2120 B
Run ID: A86248
Included Lab Sample IDs: 2021492

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	101	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A86249
Included Lab Sample IDs: 2021494

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A86278
Included Lab Sample IDs: 2021493

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A86283
Included Lab Sample IDs: 2021492

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

Reference Method: SM 5310 B-00
Run ID: A86299
Included Lab Sample IDs: 2021493

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.6	95.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A86315
Included Lab Sample IDs: 2021493

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	93.5	95.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A86348
Included Lab Sample IDs: 2021493

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A86354
Included Lab Sample IDs: 2021493

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A86387
Included Lab Sample IDs: 2021492

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

Reference Method: SM 4500 F-C-97
Run ID: A86387
Included Lab Sample IDs: 2021492

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A86418
Included Lab Sample IDs: 2021492

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.3	96.2	P/P	90 - 110
Sulfate	96.1	95.0	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					1.06	
EPA 300.0 Rev. 2.1	Chloride	95.1	93.3	90.8		1.11	
	Sulfate	93.6	93.9	91.2		1.85	
EPA 350.1 Rev. 2.0	Ammonia-N	102	99.3	99.0			0.268
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	93.4	95.4	98.1			1.61
EPA 353.2 Rev. 2.0	NO2NO3-N	100	100	103			2.96
EPA 365.1 Rev. 2.0	Total-P	97.8	95.7	96.7			0.866
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.8	95.4	96.0			0.627
SM 2120 B	Color (true)	98.9				0.574	
SM 2320 B-97	Total Alkalinity	103				0.607	
SM 2540 C-97	TDS					3.08	
SM 4500 F-C-97	Fluoride	101	100	99.1			0.979
SM 5310 B-00	Organic Carbon	95.0	103				0.479

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2021492
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2021492
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2021492
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2021493
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2021493
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2021493
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2021493
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2021494
SM 2120 B / E31780	True Color measured at 450 nm	2021492
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2021492
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2021492
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2021492
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2021492
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2021493

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	08/31/2018			08/31/2018 14:53	Megan Treadwell	2021492
EPA 300.0 Rev. 2.1	08/31/2018			09/11/2018 00:30	Lipi Saha	2021492
EPA 350.1 Rev. 2.0	08/31/2018			09/06/2018 12:12	Ping Hua	2021493
EPA 351.2 Rev. 2.0	08/31/2018	09/05/2018 15:00	Adrian Shelby	09/06/2018 12:06	Joseph Suarez	2021493
EPA 353.2 Rev. 2.0	08/31/2018			09/07/2018 14:41	Lauren Bottorf	2021493
EPA 365.1 Rev. 2.0	08/31/2018	09/04/2018 14:44	Sima Feizi	09/05/2018 08:58	Beverly Y. Sanders	2021493
EPA 365.1 Rev. 2.0 dissolved	08/31/2018			08/31/2018 16:10	Anthony C. Onicha	2021494
SM 2120 B	08/31/2018			08/31/2018 17:00	Julia Storbeck	2021492
SM 2320 B-97	08/31/2018			09/07/2018 10:08	Dale L. Simmons	2021492
SM 2540 C-97	08/31/2018			09/05/2018 14:02	Yijie Li	2021492
SM 2540 D-97	08/31/2018			09/05/2018 14:02	Yijie Li	2021492
SM 4500 F-C-97	08/31/2018			09/07/2018 10:08	Dale L. Simmons	2021492
SM 5310 B-00	08/31/2018			09/05/2018 12:22	Megan Treadwell	2021493