

Chemical Analysis Report

CEN-DIST-2019-12-12-02

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

Event Description: **Spring Garden Creek + D&B**
Request ID: **RQ-2019-12-09-50**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Colin Wright, Program Administrator

Date Certified: 06-JAN-2020 11:26

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light gray rectangular background.

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: Spring Garden Creek @ 200m US of Lake Woodruff

Collection Date/Time: 12/11/2019 12:41

Field ID: G2CE0081

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2143435	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P375816	
	EPA 300.0 Rev. 2.1	Chloride	190		mg Cl/L	P376425	
		Sulfate	23		mg SO4/L	P376427	
	SM 2120 B	Color (true)	280		PCU	P375753	
	SM 2320 B-97	Total Alkalinity	66		mg CaCO3/L	P376251	
	SM 2540 C-97	TDS	452		mg/L	P376417	
	SM 2540 D-97	TSS	3	I	mg/L	P376357	
	SM 4500 F-C-97	Fluoride	0.072	I	mg F/L	P376254	
2143436	EPA 350.1 Rev. 2.0	Ammonia-N	0.11		mg N/L	P376275	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P376127	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.017		mg N/L	P375894	
	EPA 365.1 Rev. 2.0	Total-P	0.077		mg P/L	P375924	
	SM 5310 B-00	Organic Carbon	27		mg C/L	P375978	
2143437	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.041		mg P/L	P375765	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: 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: P375816

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P376425

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P376427

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P376275

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P376127

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P375894

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P375924

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375765

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

Reference Method: SM 2120 B
Batch ID: P375753

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P376251

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P376417

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P376357

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P376254

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P375978

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: P376425

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P376427

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P376275

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.7		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P376127

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	93.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P375894

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: P375924

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375765

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.6		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P375753

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	97.9		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P376251

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P376254

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.5		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P375978

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.9		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P376425

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2143399	Chloride	98.1		P	90 - 110
2143669	Chloride	98.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P376427

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2143399	Sulfate	98.6		P	90 - 110
2143669	Sulfate	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P376275

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2143352	Ammonia-N	98.6	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P376127

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2143454	Kjeldahl Nitrogen	114	107	F/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P375894

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2143371	NO2NO3-N	96.0	95.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375765

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2143319	O-Phosphate-P	94.2	96.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P376254

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2143445	Fluoride	101	100	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P375978

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2143453	Organic Carbon	97.0	93.7	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P375816

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2143402	Turbidity	1.37	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P376425

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2143399	Chloride	0.308	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P376427

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2143399	Sulfate	0.403	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P376275

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2143352	Ammonia-N	0.765	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P376127

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2143454	Kjeldahl Nitrogen	5.61	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P375894

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2143371	NO2NO3-N	0.434	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P375924

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2143403	Total-P	0.735	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375765

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2143319	O-Phosphate-P	2.20	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P375753

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2143402	Color (true)	1.05	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P376251

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2143445	Total Alkalinity	0.0509	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P376417

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2143349	TDS	4.20	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P376254

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2143445	Fluoride	0.979	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P375978

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2143453	Organic Carbon	2.96	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B
Run ID: A96307
Included Lab Sample IDs: 2143435

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: A96310
Included Lab Sample IDs: 2143437

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.6	96.4	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A96325
Included Lab Sample IDs: 2143435

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A96357
Included Lab Sample IDs: 2143436

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

Reference Method: SM 5310 B-00
Run ID: A96393
Included Lab Sample IDs: 2143436

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.9	97.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A96431
Included Lab Sample IDs: 2143436

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A96505
Included Lab Sample IDs: 2143436

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.7	97.9	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A96509
Included Lab Sample IDs: 2143435

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

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A96509

Included Lab Sample IDs: 2143435

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A96515

Included Lab Sample IDs: 2143436

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A96574

Included Lab Sample IDs: 2143435

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.5	99.8	P/P	90 - 110
Sulfate	99.9	100	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	MS
EPA 180.1 Rev. 2.0	Turbidity				1.37	
EPA 300.0 Rev. 2.1	Chloride	97.7	98.1	98.6	0.308	
	Sulfate	97.8	98.6	98.2	0.403	
EPA 350.1 Rev. 2.0	Ammonia-N	97.7	98.6	99.4		0.765
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	93.0	114	107		5.61
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	96.0	95.6		0.434
EPA 365.1 Rev. 2.0	Total-P	106				0.735
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.6	94.2	96.3		2.20
SM 2120 B	Color (true)	97.9			1.05	
SM 2320 B-97	Total Alkalinity	103			0.0509	
SM 2540 C-97	TDS				4.20	
SM 4500 F-C-97	Fluoride	97.5	101	100		0.979
SM 5310 B-00	Organic Carbon	94.9	97.0	93.7		2.96

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2143435
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2143435
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2143435
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2143436
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2143436
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2143436
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2143436
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2143437
SM 2120 B / E31780	True Color measured at 450 nm	2143435
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2143435
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2143435
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2143435
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2143435
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2143436

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	12/12/2019			12/12/2019 17:19	Yen Ta	2143435
EPA 300.0 Rev. 2.1	12/12/2019			12/24/2019 02:44	Jhamieka S. Greenwood	2143435
EPA 350.1 Rev. 2.0	12/12/2019			12/18/2019 11:27	Ping Hua	2143436
EPA 351.2 Rev. 2.0	12/12/2019	12/19/2019 12:05	Sima Feizi	12/20/2019 13:01	Jhamieka S. Greenwood	2143436
EPA 353.2 Rev. 2.0	12/12/2019			12/13/2019 11:29	Beverly Y. Sanders	2143436
EPA 365.1 Rev. 2.0	12/12/2019	12/16/2019 14:17	Yen Ta	12/17/2019 14:18	Benjamin T. Nordmann	2143436
EPA 365.1 Rev. 2.0 dissolved	12/12/2019			12/12/2019 16:51	Samantha Davila	2143437
SM 2120 B	12/12/2019			12/12/2019 17:28	Madeline Funaro	2143435
SM 2320 B-97	12/12/2019			12/17/2019 20:31	Dale L. Simmons	2143435
SM 2540 C-97	12/12/2019			12/17/2019 16:36	Yijie Li	2143435
SM 2540 D-97	12/12/2019			12/17/2019 16:36	Yijie Li	2143435
SM 4500 F-C-97	12/12/2019			12/17/2019 20:31	Dale L. Simmons	2143435
SM 5310 B-00	12/12/2019			12/16/2019 11:28	Madeline Funaro	2143436