

Chemical Analysis Report

SW-DIST-2018-12-07-01

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

Event Description: **Rocky Creek**
Request ID: **RQ-2018-12-10-17**
Customer: **SW-DIST**
Project ID: **SMP**

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Date Certified: 27-DEC-2018 14:38



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: ROCKY CREEK

Collection Date/Time: 12/06/2018 10:25

Field ID: G1SW0053

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2047281	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P355844	
	EPA 300.0 Rev. 2.1	Chloride	39	A	mg Cl/L	P356210	
		Sulfate	15	A	mg SO4/L	P356212	
	SM 2120 B	Color (true)	60	A	PCU	P355850	
	SM 2320 B-97	Total Alkalinity	60		mg CaCO3/L	P356044	
	SM 2540 C-97	TDS	198	A	mg/L	P356304	
	SM 2540 D-97	TSS	2	IA	mg/L	P356082	
	SM 4500 F-C-97	Fluoride	0.078	I	mg F/L	P356047	
2047282	EPA 350.1 Rev. 2.0	Ammonia-N	0.093		mg N/L	P355971	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.67		mg N/L	P356226	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.30		mg N/L	P355928	
	EPA 365.1 Rev. 2.0	Total-P	0.038		mg P/L	P355995	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P355980	
2047283	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.018		mg P/L	P355847	

Ref. Method and Comment:

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

SM 4500 F-C-97: 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: P355844

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356210

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356212

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355971

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P356226

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355928

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355995

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355847

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

Reference Method: SM 2120 B
Batch ID: P355850

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P356044

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

Reference Method: SM 2540 C-97
Batch ID: P356304

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P356082

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P356047

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P355980

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: P356210

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356212

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355971

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P356226

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	109		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355928

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: P355995

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: P355847

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

Reference Method: SM 2120 B
Batch ID: P355850

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.7		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P356044

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.3		P	98 - 107

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P356047

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.4		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P355980

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	92.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356210

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047281	Chloride	93.9		P	90 - 110
2047629	Chloride	97.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356212

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047281	Sulfate	93.5		P	90 - 110
2047629	Sulfate	95.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355971

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047241	Ammonia-N	99.6	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P356226

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047268	Kjeldahl Nitrogen	106	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355928

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047249	NO2NO3-N	103	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355995

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047218	Total-P	107	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355847

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047250	O-Phosphate-P	93.6	95.0	P/P	90 - 110

Reference Method: SM 5310 B-00
Batch ID: P355980

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047218	Organic Carbon	93.8	92.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P355844

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047267	Turbidity	0.452	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356210

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047281	Chloride	1.40	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356212

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047281	Sulfate	2.08	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355971

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047241	Ammonia-N	0.542	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P356226

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047268	Kjeldahl Nitrogen	0.720	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355928

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047249	NO2NO3-N	0.377	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355995

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047218	Total-P	4.62	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355847

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047250	O-Phosphate-P	1.16	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P355850

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047281	Color (true)	0.280	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P356044

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046603	Total Alkalinity	0.767	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P356304

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047281	TDS	5.05	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P356047

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046603	Fluoride	0.472	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P355980

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047218	Organic Carbon	0.667	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 180.1 Rev. 2.0

Run ID: A88234

Included Lab Sample IDs: 2047281

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A88235

Included Lab Sample IDs: 2047283

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.7	97.8	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A88236

Included Lab Sample IDs: 2047281

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.9	100	P/P	85 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A88269

Included Lab Sample IDs: 2047282

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: A88285

Included Lab Sample IDs: 2047282

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

Reference Method: SM 5310 B-00

Run ID: A88287

Included Lab Sample IDs: 2047282

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.7	92.6	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A88305

Included Lab Sample IDs: 2047281

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	99.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A88305

Included Lab Sample IDs: 2047281

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A88324

Included Lab Sample IDs: 2047281

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.3	99.0	P/P	90 - 110
Sulfate	98.8	98.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A88362

Included Lab Sample IDs: 2047282

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A88403

Included Lab Sample IDs: 2047282

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	108	103	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				0.452	
EPA 300.0 Rev. 2.1	Chloride	97.6	93.9	97.5	1.40	
	Sulfate	96.1	93.5	95.8	2.08	
EPA 350.1 Rev. 2.0	Ammonia-N	98.1	99.6	98.6		0.542
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	109	106	107		0.720
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	103	103		0.377
EPA 365.1 Rev. 2.0	Total-P	106	107	100		4.62
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.8	93.6	95.0		1.16
SM 2120 B	Color (true)	99.7			0.280	
SM 2320 B-97	Total Alkalinity	99.3			0.767	
SM 2540 C-97	TDS				5.05	
SM 4500 F-C-97	Fluoride	99.4				0.472
SM 5310 B-00	Organic Carbon	92.0	93.8	92.6		0.667

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2047281
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2047281
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2047281
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2047282
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2047282
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2047282
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2047282
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2047283
SM 2120 B / E31780	True Color measured at 450 nm	2047281
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2047281
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2047281
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2047281
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2047281
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2047282

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	12/07/2018			12/07/2018 16:13	Megan Treadwell	2047281
EPA 300.0 Rev. 2.1	12/07/2018			12/14/2018 16:03	Lipi Saha	2047281
EPA 350.1 Rev. 2.0	12/07/2018			12/11/2018 13:18	Ping Hua	2047282
EPA 351.2 Rev. 2.0	12/07/2018	12/14/2018 12:30	Adrian Shelby	12/17/2018 16:44	Chelsea Hernandez	2047282
EPA 353.2 Rev. 2.0	12/07/2018			12/11/2018 11:24	Beverly Y. Sanders	2047282
EPA 365.1 Rev. 2.0	12/07/2018	12/12/2018 11:00	Sima Feizi	12/14/2018 15:18	Beverly Y. Sanders	2047282
EPA 365.1 Rev. 2.0 dissolved	12/07/2018			12/07/2018 15:57	Jhamieka S. Greenwood	2047283
SM 2120 B	12/07/2018			12/07/2018 16:13	Chelsea Hernandez	2047281
SM 2320 B-97	12/07/2018			12/12/2018 01:11	Lauren Bottorf	2047281
SM 2540 C-97	12/07/2018			12/11/2018 16:05	Yijie Li	2047281
SM 2540 D-97	12/07/2018			12/11/2018 16:05	Yijie Li	2047281
SM 4500 F-C-97	12/07/2018			12/12/2018 01:11	Lauren Bottorf	2047281
SM 5310 B-00	12/07/2018			12/11/2018 23:56	Megan Treadwell	2047282