Chemical Analysis Report

CEN-DIST-2021-03-30-01

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

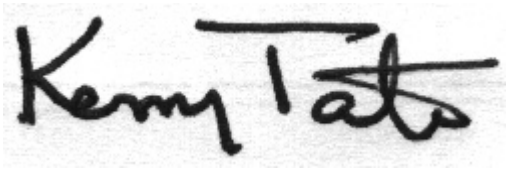
Event Description: **Silver River/ Half Mile Creek**
Request ID: **RQ-2021-03-29-80**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Kalina Warren

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 19-APR-2021 11:48



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: Silver River 0.6 miles upstream of boat canal **Collection Date/Time: 03/29/2021 12:00**

Field ID: G1CE0059 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2234518	EPA 180.1 Rev. 2.0	Turbidity	0.45		NTU	P395695	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P395935	
		Sulfate	48		mg SO4/L	P395939	
	SM 2120 B-2011	Color (true)	2.5	UA	PCU	P395687	
	SM 2320 B-2011	Total Alkalinity	181	A	mg CaCO3/L	P395786	
	SM 2540 C-2011	TDS	289		mg/L	P396193	
	SM 2540 D-2011	TSS	2	U	mg/L	P396185	
	SM 4500 F-C-2011	Fluoride	0.16		mg F/L	P396094	
2234519	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P395919	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.13	I	mg N/L	P395967	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.2		mg N/L	P395707	
	EPA 365.1 Rev. 2.0	Total-P	0.041		mg P/L	P395734	
	SM 5310 B-2011	Organic Carbon	0.57	I	mg C/L	P395843	
2234520	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.039		mg P/L	P395680	

Ref. Method and Comment:
SM 2120 B-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries and relative percent difference are unavailable because of analytical difficulties.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P395695

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395935

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395939

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P395919

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P395967

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P395707

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P395734

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P395680

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

Reference Method: SM 2120 B-2011
Batch ID: P395687

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P395786

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

Reference Method: SM 2540 C-2011
Batch ID: P396193

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P396185

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P396094

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P395843

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: P395935

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395939

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P395919

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P395967

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	103		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P395707

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P395734

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: P395680

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.1		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P395687

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.0		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P395786

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.7		P	93 - 104

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P396094

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.3		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P395843

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.1		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395935

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2234461	Chloride	101		P	90 - 110
2234562	Chloride	98.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395939

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2234461	Sulfate	99.6		P	90 - 110
2234562	Sulfate	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P395919

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2234532	Ammonia-N	97.6	99.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P395707

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2234499	NO2NO3-N	95.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P395734

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2234498	Total-P	104	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P395680

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2234464	O-Phosphate-P	99.7	99.3	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P396094

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2235473	Fluoride	98.0	99.1	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P395843

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2233860	Organic Carbon	95.3	94.3	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P395695

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234553	Turbidity	2.70	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395935

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234461	Chloride	0.196	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395939

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234461	Sulfate	0.191	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P395919

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234532	Ammonia-N	1.93	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P395707

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234499	NO2NO3-N	0.525	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P395734

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234498	Total-P	1.02	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P395680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234464	O-Phosphate-P	0.300	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P395786

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234518	Total Alkalinity	1.47	Sample	P	0 - 8.1

Quality Assurance Report
Precision

Reference Method: SM 2540 C-2011
Batch ID: P396193

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2234477	TDS	2.30	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P396094

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2235473	Fluoride	0.943	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P395843

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2233860	Organic Carbon	0.760	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A104369
Included Lab Sample IDs: 2234520

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.2	99.5	P/P	90 - 110

Reference Method: SM 2120 B-2011
Run ID: A104373
Included Lab Sample IDs: 2234518

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.9	101	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A104374
Included Lab Sample IDs: 2234518

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A104384
Included Lab Sample IDs: 2234519

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A104389
Included Lab Sample IDs: 2234518

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.6	98.3	P/P	90 - 110
Sulfate	96.8	97.4	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A104421
Included Lab Sample IDs: 2234518

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.7	97.5	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A104442
Included Lab Sample IDs: 2234519

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.6	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A104454
Included Lab Sample IDs: 2234519

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A104467
Included Lab Sample IDs: 2234519

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.7	98.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A104509
Included Lab Sample IDs: 2234519

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	107	104	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A104549
Included Lab Sample IDs: 2234518

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	101	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					2.70	
EPA 300.0 Rev. 2.1	Chloride	100	101	98.6		0.196	
	Sulfate	99.5	99.6	98.2		0.191	
EPA 350.1 Rev. 2.0	Ammonia-N	101	97.6	99.6			1.93
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103					
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	95.5				0.525
EPA 365.1 Rev. 2.0	Total-P	106	104	103			1.02
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.1	99.7	99.3			0.300
SM 2120 B-2011	Color (true)	99.0					
SM 2320 B-2011	Total Alkalinity	99.7				1.47	
SM 2540 C-2011	TDS					2.30	
SM 4500 F-C-2011	Fluoride	99.3	98.0	99.1			0.943
SM 5310 B-2011	Organic Carbon	96.1	95.3	94.3			0.760

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2234518
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2234518
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2234518
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2234519
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2234519
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2234519
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2234519
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2234520
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2234518
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2234518
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2234518
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2234518
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2234518
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2234519

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	03/30/2021			03/30/2021 15:20	Yen Ta	2234518
EPA 300.0 Rev. 2.1	03/30/2021			04/02/2021 14:43	Lipi Saha	2234518
EPA 350.1 Rev. 2.0	03/30/2021			04/04/2021 11:59	Ping Hua	2234519
EPA 351.2 Rev. 2.0	03/30/2021	04/05/2021 09:18	Yen Ta	04/06/2021 12:39	Virginia P. Brown	2234519
EPA 353.2 Rev. 2.0	03/30/2021			03/31/2021 09:38	Beverly Y. Sanders	2234519
EPA 365.1 Rev. 2.0	03/30/2021	03/31/2021 13:21	Yen Ta	04/02/2021 14:12	Shengyu Ding	2234519
EPA 365.1 Rev. 2.0 dissolved	03/30/2021			03/30/2021 13:51	Lipi Saha	2234520
SM 2120 B-2011	03/30/2021			03/30/2021 15:49	Benjamin T. Nordmann	2234518
SM 2320 B-2011	03/30/2021			03/31/2021 16:48	Dale L. Simmons	2234518
SM 2540 C-2011	03/30/2021			04/02/2021 15:25	Yijie Li	2234518
SM 2540 D-2011	03/30/2021			04/02/2021 15:25	Yijie Li	2234518
SM 4500 F-C-2011	03/30/2021			04/07/2021 12:02	Dale L. Simmons	2234518
SM 5310 B-2011	03/30/2021			03/31/2021 21:12	Madeline Gruver	2234519