Chemical Analysis Report

TLH-ROC-2021-03-18-01

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

Event Description: **Run 13**
Request ID: **RQ-2021-03-15-34**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
Attn: Michael Eckles

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: Thekkekalathil Chandrasekhar, Environmental Consultant Date Certified: 08-APR-2021 10:51

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: Russ Mill Creek @ Union Rd **Collection Date/Time: 03/18/2021 10:30**

Field ID: G2TLHR0037 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2232566	EPA 180.1 Rev. 2.0	Turbidity	12		NTU	P395169	
	EPA 300.0 Rev. 2.1	Chloride	4.6		mg Cl/L	P395465	
		Sulfate	1.8		mg SO4/L	P395467	
	SM 2120 B-2011	Color (true)	31		PCU	P395173	
	SM 2320 B-2011	Total Alkalinity	105		mg CaCO3/L	P395361	
	SM 2540 C-2011	TDS	140		mg/L	P395619	
	SM 2540 D-2011	TSS	16		mg/L	P395623	
	SM 4500 F-C-2011	Fluoride	0.058	I	mg F/L	P395362	
2232567	EPA 350.1 Rev. 2.0	Ammonia-N	0.060		mg N/L	P395766	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P395533	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.1		mg N/L	P395336	
	EPA 365.1 Rev. 2.0	Total-P	0.076		mg P/L	P395325	
	SM 5310 B-2011	Organic Carbon	5.3		mg C/L	P395581	
2232568	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.023		mg P/L	P395167	

Ref. Method and Comment:
SM 2540 D-2011: 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: P395169

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395465

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395467

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P395766

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P395533

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P395336

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P395325

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P395167

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

Reference Method: SM 2120 B-2011
Batch ID: P395173

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P395361

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

Reference Method: SM 2540 C-2011
Batch ID: P395619

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P395623

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P395362

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P395581

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: P395465

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395467

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P395766

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P395533

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	108		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P395336

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: P395325

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	105		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P395167

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

Reference Method: SM 2120 B-2011
Batch ID: P395173

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.2		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P395361

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.8		P	93 - 104

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P395362

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P395581

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: P395465

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2232292	Chloride	101		P	90 - 110
2232383	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395467

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2232292	Sulfate	100		P	90 - 110
2232383	Sulfate	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P395766

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2232421	Ammonia-N	97.8	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P395533

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2232384	Kjeldahl Nitrogen	113	112	F/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P395336

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2232641	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P395325

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2232400	Total-P	108	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P395167

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2232419	O-Phosphate-P	99.3	98.6	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P395362

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2232503	Fluoride	101	98.8	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P395581

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2232673	Organic Carbon	95.6	95.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P395169

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232420	Turbidity	3.51	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395465

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232292	Chloride	0.346	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395467

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232292	Sulfate	1.50	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P395766

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232421	Ammonia-N	1.52	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P395533

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232384	Kjeldahl Nitrogen	1.39	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P395336

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232641	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P395325

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232400	Total-P	1.46	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P395167

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232419	O-Phosphate-P	0.707	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B-2011
Batch ID: P395173

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232420	Color (true)	0.708	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P395361

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232503	Total Alkalinity	0.780	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P395619

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232437	TDS	1.37	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P395362

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232503	Fluoride	1.88	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P395581

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232673	Organic Carbon	0.0820	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: A104138
Included Lab Sample IDs: 2232568

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.1	98.3	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A104139
Included Lab Sample IDs: 2232566

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

Reference Method: SM 2120 B-2011
Run ID: A104141
Included Lab Sample IDs: 2232566

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	99.0	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A104215
Included Lab Sample IDs: 2232567

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A104216
Included Lab Sample IDs: 2232566

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.9	99.5	P/P	90 - 110
Sulfate	99.6	99.4	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A104224
Included Lab Sample IDs: 2232566

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.9	98.3	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A104224
Included Lab Sample IDs: 2232566

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A104248
Included Lab Sample IDs: 2232567

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	105	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-2011
Run ID: A104316
Included Lab Sample IDs: 2232567

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.6	97.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A104367
Included Lab Sample IDs: 2232567

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.5	94.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A104401
Included Lab Sample IDs: 2232567

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.7	98.4	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					3.51	
EPA 300.0 Rev. 2.1	Chloride	101	101	101		0.346	
	Sulfate	100	100	98.2		1.50	
EPA 350.1 Rev. 2.0	Ammonia-N	100	97.8	99.4			1.52
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108	113	112			1.39
EPA 353.2 Rev. 2.0	NO2NO3-N	100	102	102			0.0
EPA 365.1 Rev. 2.0	Total-P	105	108	106			1.46
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.9	99.3	98.6			0.707
SM 2120 B-2011	Color (true)	99.2				0.708	
SM 2320 B-2011	Total Alkalinity	99.8				0.780	
SM 2540 C-2011	TDS					1.37	
SM 4500 F-C-2011	Fluoride	100	101	98.8			1.88
SM 5310 B-2011	Organic Carbon	95.0	95.6	95.8			0.0820

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2232566
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2232566
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2232566
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2232567
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2232567
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2232567
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2232567
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2232568
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2232566
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2232566
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2232566
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2232566
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2232566
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2232567

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	03/18/2021			03/18/2021 15:47	Yen Ta	2232566
EPA 300.0 Rev. 2.1	03/18/2021			03/24/2021 19:22	Lipi Saha	2232566
EPA 350.1 Rev. 2.0	03/18/2021			03/31/2021 19:00	Ping Hua	2232567
EPA 351.2 Rev. 2.0	03/18/2021	03/26/2021 13:02	Benjamin T. Nordmann	03/30/2021 11:06	Virginia P. Brown	2232567
EPA 353.2 Rev. 2.0	03/18/2021			03/23/2021 10:21	Beverly Y. Sanders	2232567
EPA 365.1 Rev. 2.0	03/18/2021	03/23/2021 09:29	Yen Ta	03/24/2021 12:20	Shengyu Ding	2232567
EPA 365.1 Rev. 2.0 dissolved	03/18/2021			03/18/2021 15:32	Patrick M. Roche	2232568
SM 2120 B-2011	03/18/2021			03/18/2021 17:08	Benjamin T. Nordmann	2232566
SM 2320 B-2011	03/18/2021			03/19/2021 23:55	Dale L. Simmons	2232566
SM 2540 C-2011	03/18/2021			03/22/2021 14:26	Yijie Li	2232566
SM 2540 D-2011	03/18/2021			03/22/2021 14:26	Yijie Li	2232566
SM 4500 F-C-2011	03/18/2021			03/19/2021 23:55	Dale L. Simmons	2232566
SM 5310 B-2011	03/18/2021			03/27/2021 04:43	Madeline Gruver	2232567