Chemical Analysis Report

TLH-ROC-2020-09-23-01

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

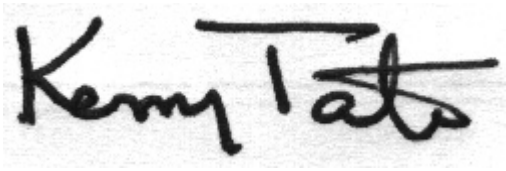
Event Description: **Run 2**
Request ID: **RQ-2020-07-13-30**
Customer: **TLH-ROC**
Project ID: **SMP**

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: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 13-OCT-2020 12:48



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: Direct Runoff Gulf @ Mouth **Collection Date/Time: 09/23/2020 11:00**

Field ID: G1TLHR0115 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2197852	EPA 180.1 Rev. 2.0	Turbidity	5.5	A	NTU	P387816	
	EPA 300.0 Rev. 2.1	Bromide	28		mg Br/L	P388433	
	SM 2320 B-2011	Total Alkalinity	122		mg CaCO3/L	P387835	
	SM 2540 D-2011	TSS	12		mg/L	P388204	
	SM 4500 F-C-2011	Fluoride	0.58		mg F/L	P387833	
2197853	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P387885	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.77		mg N/L	P387869	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.32		mg N/L	P387850	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P387921	
	SM 5310 B-2011	Organic Carbon	11		mg C/L	P388075	
2197854	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.062		mg P/L	P387760	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Bromide: Batch relative percent difference and matrix spike recoveries for one of two spiked samples are unavailable because of high 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.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P387816

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388433

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387885

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387869

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387850

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P387921

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387760

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

Reference Method: SM 2320 B-2011
Batch ID: P387835

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

Reference Method: SM 2540 D-2011
Batch ID: P388204

Component	Result	Code	Units
TSS	3	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-2011
Batch ID: P387833

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P388075

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: P388433

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387885

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: P387869

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.7		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387850

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P387921

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: P387760

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

Reference Method: SM 2320 B-2011
Batch ID: P387835

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P387833

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.2		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P388075

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.2		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388433

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198159	Bromide	94.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387885

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2197248	Ammonia-N	97.9	94.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387869

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2197611	Kjeldahl Nitrogen	96.7	97.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387850

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2197567	NO2NO3-N	97.0	96.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P387921

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2197282	Total-P	107	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387760

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2197571	O-Phosphate-P	99.0	97.9	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P387833

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2197635	Fluoride	99.0	101	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P388075

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198161	Organic Carbon	98.0	95.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P387816

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197852	Turbidity	0.725	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387885

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197248	Ammonia-N	2.57	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387869

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197611	Kjeldahl Nitrogen	0.497	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387850

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197567	NO2NO3-N	0.175	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P387921

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197282	Total-P	2.37	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387760

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197571	O-Phosphate-P	1.06	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P387835

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197635	Total Alkalinity	2.15	Sample	P	0 - 8.1

Reference Method: SM 4500 F-C-2011
Batch ID: P387833

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197635	Fluoride	1.44	Spike	P	0 - 2.8

Quality Assurance Report
Precision

Reference Method: SM 5310 B-2011
Batch ID: P388075

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198161	Organic Carbon	1.64	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: A101162
Included Lab Sample IDs: 2197854

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A101185
Included Lab Sample IDs: 2197852

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

Reference Method: SM 2320 B-2011
Run ID: A101193
Included Lab Sample IDs: 2197852

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	98.3	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A101193
Included Lab Sample IDs: 2197852

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A101196
Included Lab Sample IDs: 2197853

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A101210
Included Lab Sample IDs: 2197853

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	96.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A101228
Included Lab Sample IDs: 2197853

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.9	99.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A101274
Included Lab Sample IDs: 2197853

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-2011
Run ID: A101299
Included Lab Sample IDs: 2197853

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.8	99.4	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A101391
Included Lab Sample IDs: 2197852

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	101	107	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					0.725	
EPA 300.0 Rev. 2.1	Bromide	106	94.2				
EPA 350.1 Rev. 2.0	Ammonia-N	101	97.9	94.3			2.57
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.7	96.7	97.3			0.497
EPA 353.2 Rev. 2.0	NO2NO3-N	99.0	97.0	96.5			0.175
EPA 365.1 Rev. 2.0	Total-P	105	107	104			2.37
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	99.0	97.9			1.06
SM 2320 B-2011	Total Alkalinity	102				2.15	
SM 4500 F-C-2011	Fluoride	97.2	99.0	101			1.44
SM 5310 B-2011	Organic Carbon	99.2	98.0	95.8			1.64

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2197852
EPA 300.0 Rev. 2.1	Bromide in aqueous matrices	2197852
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2197853
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2197853
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2197853
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2197853
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2197854
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2197852
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2197852
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2197852
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2197853

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	09/23/2020			09/24/2020 14:51	Yen Ta	2197852
EPA 300.0 Rev. 2.1	09/23/2020			10/08/2020 21:41	Lipi Saha	2197852
EPA 350.1 Rev. 2.0	09/23/2020			09/26/2020 13:04	Ping Hua	2197853
EPA 351.2 Rev. 2.0	09/23/2020	09/25/2020 11:45	David Boose	09/28/2020 12:21	Elliott Rodriguez	2197853
EPA 353.2 Rev. 2.0	09/23/2020			09/25/2020 10:00	Beverly Y. Sanders	2197853
EPA 365.1 Rev. 2.0	09/23/2020	09/28/2020 12:44	Yen Ta	09/29/2020 14:02	Benjamin T. Nordmann	2197853
EPA 365.1 Rev. 2.0 dissolved	09/23/2020			09/23/2020 16:10	Virginia P. Brown	2197854
SM 2320 B-2011	09/23/2020			09/25/2020 01:01	Dale L. Simmons	2197852
SM 2540 D-2011	09/23/2020			09/28/2020 15:25	Yijie Li	2197852
SM 4500 F-C-2011	09/23/2020			09/25/2020 00:14	Dale L. Simmons	2197852
SM 5310 B-2011	09/23/2020			10/01/2020 02:55	Madeline Gruver	2197853