

Chemical Analysis Report

TLH-ROC-2018-11-27-02

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

Event Description: **A kits Freshwater w/bac**
Request ID: **RQ-2018-11-26-66**
Customer: **TLH-ROC**
Project ID: **SMP**

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

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

Date Certified: 14-DEC-2018 12:19

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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: Steinhatchee Spring @ SE Wolf Rd

Collection Date/Time: 11/27/2018 11:30

Field ID: G1TLHR0066

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2043828	EPA 180.1 Rev. 2.0	Turbidity	11		NTU	P355152	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P355506	
		Sulfate	58		mg SO4/L	P355508	
	SM 2120 B	Color (true)	75	A	PCU	P355251	
	SM 2320 B-97	Total Alkalinity	287		mg CaCO3/L	P355470	
	SM 2540 C-97	TDS	393		mg/L	P355530	
	SM 2540 D-97	TSS	2	I	mg/L	P355512	
	SM 4500 F-C-97	Fluoride	0.27		mg F/L	P355475	
2043829	EPA 350.1 Rev. 2.0	Ammonia-N	0.15		mg N/L	P355442	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.58		mg N/L	P355308	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P355332	
	EPA 365.1 Rev. 2.0	Total-P	0.075		mg P/L	P355276	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P355424	
2043830	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.065		mg P/L	P355293	

Ref. Method and Comment:

SM 2540 D-97: 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: P355152

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355506

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355508

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355442

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355308

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355332

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355276

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355293

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

Reference Method: SM 2120 B
Batch ID: P355251

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P355470

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

Reference Method: SM 2540 C-97
Batch ID: P355530

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P355512

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P355475

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P355424

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: P355506

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P355508

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P355442

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P355308

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: P355332

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: P355276

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P355293

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.0		P	90 - 110

Reference Method: SM 2120 B
 Batch ID: P355251

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2320 B-97
 Batch ID: P355470

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P355475

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.9		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P355424

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355506

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043583	Chloride	97.4		P	90 - 110
2043811	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355508

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043583	Sulfate	99.0		P	90 - 110
2043811	Sulfate	98.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355442

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043841	Ammonia-N	95.8	95.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355308

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043841	Kjeldahl Nitrogen	105	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355332

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043638	NO2NO3-N	100		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355276

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043844	Total-P	101	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355293

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043850	O-Phosphate-P	93.3	94.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P355475

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043583	Fluoride	98.9	98.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P355424

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043814	Organic Carbon	97.0		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P355152

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043753	Turbidity	3.37	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355506

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043583	Chloride	0.375	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355508

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043583	Sulfate	0.196	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355442

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043841	Ammonia-N	0.617	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355308

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043841	Kjeldahl Nitrogen	0.639	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355332

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043638	NO2NO3-N	0.748	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355276

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043844	Total-P	3.10	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355293

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043850	O-Phosphate-P	1.10	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
 Batch ID: P355251

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043828	Color (true)	1.90	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P355470

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043583	Total Alkalinity	1.51	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
 Batch ID: P355530

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043562	TDS	3.14	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P355475

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043583	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
 Batch ID: P355424

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043814	Organic Carbon	0.771	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: A87978

Included Lab Sample IDs: 2043828

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	100	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A88016

Included Lab Sample IDs: 2043828

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	102	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A88035

Included Lab Sample IDs: 2043830

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A88043

Included Lab Sample IDs: 2043829

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A88056

Included Lab Sample IDs: 2043829

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

Reference Method: SM 5310 B-00

Run ID: A88068

Included Lab Sample IDs: 2043829

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.2	94.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A88077

Included Lab Sample IDs: 2043829

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A88087

Included Lab Sample IDs: 2043829

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	104	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A88097
Included Lab Sample IDs: 2043828

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.3	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A88097
Included Lab Sample IDs: 2043828

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A88113
Included Lab Sample IDs: 2043828

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	103	P/P	90 - 110
Sulfate	103	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		LCS	Precision	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					3.37	
EPA 300.0 Rev. 2.1	Chloride	99.9	97.4	101		0.375	
	Sulfate	99.9	99.0	98.6		0.196	
EPA 350.1 Rev. 2.0	Ammonia-N	96.9	95.8	95.1			0.617
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108	105	104			0.639
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.5	100				0.748
EPA 365.1 Rev. 2.0	Total-P	99.9	101	104			3.10
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.0	93.3	94.7			1.10
SM 2120 B	Color (true)	101				1.90	
SM 2320 B-97	Total Alkalinity	101				1.51	
SM 2540 C-97	TDS					3.14	
SM 4500 F-C-97	Fluoride	99.9	98.9	98.9			0.0
SM 5310 B-00	Organic Carbon	94.4	97.0				0.771

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2043828
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2043828
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2043828
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2043829
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2043829
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2043829
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2043829
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2043830
SM 2120 B / E31780	True Color measured at 450 nm	2043828
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2043828
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2043828
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2043828
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2043828
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2043829

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	11/27/2018			11/27/2018 16:56	Julia Storbeck	2043828
EPA 300.0 Rev. 2.1	11/27/2018			12/04/2018 03:26	Lipi Saha	2043828
EPA 350.1 Rev. 2.0	11/27/2018			11/30/2018 13:32	Ping Hua	2043829
EPA 351.2 Rev. 2.0	11/27/2018	11/29/2018 13:00	Adrian Shelby	11/30/2018 09:07	Joseph Suarez	2043829
EPA 353.2 Rev. 2.0	11/27/2018			11/29/2018 13:15	Lauren Bottorf	2043829
EPA 365.1 Rev. 2.0	11/27/2018	11/29/2018 11:45	Sima Feizi	12/03/2018 09:18	Beverly Y. Sanders	2043829
EPA 365.1 Rev. 2.0 dissolved	11/27/2018			11/28/2018 17:29	Jhamieka S. Greenwood	2043830
SM 2120 B	11/27/2018			11/28/2018 14:01	Chelsea Hernandez	2043828
SM 2320 B-97	11/27/2018			11/30/2018 16:25	Dale L. Simmons	2043828
SM 2540 C-97	11/27/2018			11/29/2018 13:42	Yijie Li	2043828
SM 2540 D-97	11/27/2018			11/29/2018 13:42	Yijie Li	2043828
SM 4500 F-C-97	11/27/2018			11/30/2018 16:25	Dale L. Simmons	2043828
SM 5310 B-00	11/27/2018			11/30/2018 04:18	Megan Treadwell	2043829