Chemical Analysis Report

TLH-ROC-2018-06-06-01

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

Event Description: **kit A w/ bacteria**
Request ID: **RQ-2018-05-14-31**
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, Chemist Administrator

Date Certified: 26-JUN-2018 16:03

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: MITCHELL CREEK @ SW 107TH BLVD **Collection Date/Time: 06/06/2018 10:25**

Field ID: G1TLHR0059 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1998030	EPA 180.1 Rev. 2.0	Turbidity	5.8		NTU	P346500	
	EPA 300.0 Rev. 2.1	Chloride	9.0		mg Cl/L	P346641	
		Sulfate	1.9		mg SO4/L	P346643	
	SM 2120 B	Color (true)	640		PCU	P346499	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P346671	
	SM 2540 C-97	TDS	143		mg/L	P347014	
	SM 2540 D-97	TSS	7	I	mg/L	P347021	
	SM 4500 F-C-97	Fluoride	0.45		mg F/L	P346674	
1998031	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P347052	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P346942	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P346684	
	EPA 365.1 Rev. 2.0	Total-P	1.4		mg P/L	P346813	
	SM 5310 B-00	Organic Carbon	48		mg C/L	P346788	
1998032	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	1.3		mg P/L	P346530	

Ref. Method and Comment:
SM 2540 D-97: 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 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: P346500

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346641

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346643

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347052

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346942

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346684

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346813

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346530

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

Reference Method: SM 2120 B
Batch ID: P346499

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P346671

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

Reference Method: SM 2540 C-97
Batch ID: P347014

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P347021

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P346674

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P346788

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: P346641

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346643

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347052

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	104		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346942

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	93.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346684

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: P346813

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346530

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

Reference Method: SM 2320 B-97
Batch ID: P346671

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P346674

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.3		P	91 - 105

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P346788

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346641

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997916	Chloride	95.5		P	90 - 110
1998030	Chloride	97.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346643

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997916	Sulfate	100		P	90 - 110
1998030	Sulfate	97.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347052

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1998031	Ammonia-N	103	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346684

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997995	NO2NO3-N	97.0	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346813

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1998114	Total-P	99.0	99.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346530

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1998119	O-Phosphate-P	97.4	97.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P346674

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997983	Fluoride	97.0	98.5	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P346788

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997811	Organic Carbon	99.2	101	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P346500

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997970	Turbidity	3.19	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346641

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997916	Chloride	3.26	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346643

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997916	Sulfate	4.09	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347052

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998031	Ammonia-N	0.462	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346942

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998066	Kjeldahl Nitrogen	2.15	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346684

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997995	NO2NO3-N	0.299	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346813

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998114	Total-P	0.527	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346530

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998119	O-Phosphate-P	0.241	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P346499

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997946	Color (true)	3.42	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P346671

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997983	Total Alkalinity	0.781	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P347014

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997985	TDS	6.09	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P346674

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997983	Fluoride	0.946	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P346788

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997811	Organic Carbon	0.927	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: SM 2120 B
Run ID: A84395
Included Lab Sample IDs: 1998030

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	96.4	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A84396
Included Lab Sample IDs: 1998030

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	99.0	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A84413
Included Lab Sample IDs: 1998032

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A84476
Included Lab Sample IDs: 1998030

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.3	101	P/P	90 - 110
Sulfate	99.8	99.3	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A84489
Included Lab Sample IDs: 1998030

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A84489
Included Lab Sample IDs: 1998030

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A84493
Included Lab Sample IDs: 1998031

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

Reference Method: SM 5310 B-00
Run ID: A84530
Included Lab Sample IDs: 1998031

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.0	95.1	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A84621
Included Lab Sample IDs: 1998031

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A84650
Included Lab Sample IDs: 1998031

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A84733
Included Lab Sample IDs: 1998031

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.8	99.8	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					3.19	
EPA 300.0 Rev. 2.1	Chloride	98.7	95.5	97.2		3.26	
	Sulfate	100	100	97.0		4.09	
EPA 350.1 Rev. 2.0	Ammonia-N	104	103	102			0.462
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	93.8					2.15
EPA 353.2 Rev. 2.0	NO2NO3-N	100	97.0	97.5			0.299
EPA 365.1 Rev. 2.0	Total-P	95.6	99.0	99.7			0.527
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	97.4	97.7			0.241
SM 2120 B	Color (true)					3.42	
SM 2320 B-97	Total Alkalinity	103				0.781	
SM 2540 C-97	TDS					6.09	
SM 4500 F-C-97	Fluoride	97.3	97.0	98.5			0.946
SM 5310 B-00	Organic Carbon	97.0	99.2	101			0.927

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1998030
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1998030
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1998030
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1998031
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1998031
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1998031
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1998031
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1998032
SM 2120 B / E31780	True Color measured at 450 nm	1998030
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1998030
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1998030
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	1998030
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1998030
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1998031

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	06/06/2018			06/06/2018 17:13	William L. Brown IV	1998030
EPA 300.0 Rev. 2.1	06/06/2018			06/08/2018 22:25	Lipi Saha	1998030
EPA 350.1 Rev. 2.0	06/06/2018			06/15/2018 11:24	Ping Hua	1998031
EPA 351.2 Rev. 2.0	06/06/2018	06/14/2018 16:00	Adrian Shelby	06/20/2018 16:12	Joseph Suarez	1998031
EPA 353.2 Rev. 2.0	06/06/2018			06/11/2018 12:35	Lauren Bottorf	1998031
EPA 365.1 Rev. 2.0	06/06/2018	06/13/2018 11:22	Sima Feizi	06/15/2018 13:53	Beverly Y. Sanders	1998031
EPA 365.1 Rev. 2.0 dissolved	06/06/2018			06/06/2018 17:46	Megan Treadwell	1998032
SM 2120 B	06/06/2018			06/06/2018 16:50	Julia Storbeck	1998030
SM 2320 B-97	06/06/2018			06/08/2018 07:10	Dale L. Simmons	1998030
SM 2540 C-97	06/06/2018			06/07/2018 17:38	Yijie Li	1998030
SM 2540 D-97	06/06/2018			06/07/2018 17:38	Yijie Li	1998030
SM 4500 F-C-97	06/06/2018			06/08/2018 07:10	Dale L. Simmons	1998030
SM 5310 B-00	06/06/2018			06/12/2018 06:02	Megan Treadwell	1998031