

Chemical Analysis Report

TLH-ROC-2019-09-23-01

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

Event Description: **Run 3**
Request ID: **RQ-2019-09-09-32**
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: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 10-OCT-2019 16:48



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: Mt Sanai Slough @ Weeping Willow Way

Collection Date/Time: 09/23/2019 10:05

Field ID: G1TLHR0076

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2121723	EPA 180.1 Rev. 2.0	Turbidity	5.3		NTU	P371235	
	EPA 300.0 Rev. 2.1	Chloride	5.8		mg Cl/L	P371225	
		Sulfate	0.40	I	mg SO4/L	P371228	
	SM 2120 B	Color (true)	72		PCU	P371250	
	SM 2320 B-97	Total Alkalinity	8.3		mg CaCO3/L	P371528	
	SM 2540 C-97	TDS	43		mg/L	P371616	
	SM 2540 D-97	TSS	10	I	mg/L	P371583	
	SM 4500 F-C-97	Fluoride	0.043	I	mg F/L	P371532	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P371691	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P371299	
2121724	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P371467	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P371479	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P371371	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.021		mg P/L	P371242	
	dissolved						

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample. The PQL was elevated because of sample matrix interference.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P371235

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371225

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371228

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371691

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P371299

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P371467

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P371479

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P371242

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

Reference Method: SM 2120 B
Batch ID: P371250

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P371528

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

Reference Method: SM 2540 C-97
Batch ID: P371616

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P371583

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P371532

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P371371

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: P371225

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371228

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371691

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P371299

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P371467

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P371479

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P371242

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

Reference Method: SM 2120 B
Batch ID: P371250

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

Reference Method: SM 2320 B-97
Batch ID: P371528

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P371532

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.8		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P371371

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	103		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371225

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121454	Chloride	101	102	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371228

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121454	Sulfate	101	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371691

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121637	Ammonia-N	96.9	97.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P371299

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121076	Kjeldahl Nitrogen	108	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P371467

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121663	NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P371479

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121660	Total-P	99.6	96.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P371242

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121725	O-Phosphate-P	96.0	97.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P371532

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121762	Fluoride	97.2	95.5	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P371371

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121755	Organic Carbon	102	102	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P371235

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121968	Turbidity	4.32	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371225

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121454	Chloride	0.783	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371228

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121454	Sulfate	0.892	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371691

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121637	Ammonia-N	0.474	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P371299

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121076	Kjeldahl Nitrogen	1.61	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P371467

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121663	NO2NO3-N	0.370	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P371479

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121660	Total-P	2.73	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P371242

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121725	O-Phosphate-P	0.849	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
 Batch ID: P371250

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121754	Color (true)	1.78	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P371528

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121762	Total Alkalinity	0.0776	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
 Batch ID: P371616

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121659	TDS	5.02	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P371532

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121762	Fluoride	1.45	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
 Batch ID: P371371

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121755	Organic Carbon	0.307	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A94452

Included Lab Sample IDs: 2121723

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	103	P/P	90 - 110
Sulfate	104	105	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A94462

Included Lab Sample IDs: 2121723

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A94463

Included Lab Sample IDs: 2121725

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.1	100	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A94469

Included Lab Sample IDs: 2121723

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

Reference Method: SM 5310 B-00

Run ID: A94516

Included Lab Sample IDs: 2121724

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A94525

Included Lab Sample IDs: 2121724

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A94540

Included Lab Sample IDs: 2121724

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A94578

Included Lab Sample IDs: 2121724

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A94582
Included Lab Sample IDs: 2121723

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

Reference Method: SM 4500 F-C-97
Run ID: A94582
Included Lab Sample IDs: 2121723

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A94647
Included Lab Sample IDs: 2121724

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	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		LCS	Precision	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					4.32	
EPA 300.0 Rev. 2.1	Chloride	100	101	102			0.783
	Sulfate	100	101	102			0.892
EPA 350.1 Rev. 2.0	Ammonia-N	102	96.9	97.4			0.474
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	108	105			1.61
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	103	101	102			0.370
EPA 365.1 Rev. 2.0	Total-P	94.6	99.6	96.3			2.73
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	96.0	97.0			0.849
SM 2120 B	Color (true)	101				1.78	
SM 2320 B-97	Total Alkalinity	103				0.0776	
SM 2540 C-97	TDS					5.02	
SM 4500 F-C-97	Fluoride	98.8	97.2	95.5			1.45
SM 5310 B-00	Organic Carbon	103	102	102			0.307

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2121723
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2121723
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2121723
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2121724
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2121724
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2121724
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2121724
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2121725
SM 2120 B / E31780	True Color measured at 450 nm	2121723
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2121723
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2121723
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2121723
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2121723
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2121724

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	09/23/2019			09/24/2019 16:58	Rosalyn Ballman	2121723
EPA 300.0 Rev. 2.1	09/23/2019			09/24/2019 10:42	Jhamieka S. Greenwood	2121723
EPA 350.1 Rev. 2.0	09/23/2019			10/01/2019 12:29	Ping Hua	2121724
EPA 351.2 Rev. 2.0	09/23/2019	09/25/2019 13:28	Sima Feizi	09/26/2019 15:17	Julia Storbeck	2121724
EPA 353.2 Rev. 2.0	09/23/2019			09/26/2019 10:21	Beverly Y. Sanders	2121724
EPA 365.1 Rev. 2.0	09/23/2019	09/27/2019 15:05	Lipi Saha	09/30/2019 08:26	Lipi Saha	2121724
EPA 365.1 Rev. 2.0 dissolved	09/23/2019			09/24/2019 16:17	Jhamieka S. Greenwood	2121725
SM 2120 B	09/23/2019			09/24/2019 17:27	Madeline Funaro	2121723
SM 2320 B-97	09/23/2019			09/28/2019 13:41	Dale L. Simmons	2121723
SM 2540 C-97	09/23/2019			09/25/2019 14:25	Yijie Li	2121723
SM 2540 D-97	09/23/2019			09/25/2019 14:25	Yijie Li	2121723
SM 4500 F-C-97	09/23/2019			09/28/2019 13:41	Dale L. Simmons	2121723
SM 5310 B-00	09/23/2019			09/25/2019 20:24	Madeline Funaro	2121724