

Chemical Analysis Report

TLH-ROC-2022-11-03-04

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Run 5**
Request ID: **RQ-2022-10-17-41**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 30-NOV-2022 16:49

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored background.

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: Indian Springs

Collection Date/Time: 11/03/2022 09:05

Field ID: G1TLHR0154

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2367499	DEP SOP: NU-094-1	Color (true)	2.5	U	PCU	P421995	
	EPA 180.1 Rev. 2.0	Turbidity	0.25	I	NTU	P421960	
	EPA 300.0 Rev. 2.1	Chloride	7.5		mg Cl/L	P422648	
		Sulfate	8.2		mg SO4/L	P422651	
	SM 2320 B-2011	Total Alkalinity	137		mg CaCO3/L	P422256	
	SM 2540 C-2015	TDS	173		mg/L	P422521	
	SM 2540 D-2015	TSS	2	U	mg/L	P422339	
	SM 4500-F- C-2011	Fluoride	0.14		mg F/L	P422896	
2367500	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P422336	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.098	I	mg N/L	P422243	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.36		mg N/L	P422142	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P422113	
	SM 5310 B-2011	Organic Carbon	0.70	I	mg C/L	P422603	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P421995

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P421960

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422648

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422651

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P422336

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P422243

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P422142

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P422113

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

Reference Method: SM 2320 B-2011
Batch ID: P422256

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-2015
Batch ID: P422521

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P422339

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P422896

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P422603

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P421995

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P421960

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422648

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	95.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422651

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P422336

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P422243

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P422142

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	105		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P422113

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

Reference Method: SM 2320 B-2011
Batch ID: P422256

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	96.2		P	94 - 106

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2540 C-2015
Batch ID: P422521

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

Reference Method: SM 2540 D-2015
Batch ID: P422339

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	98.1		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P422896

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P422603

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422648

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2367774	Chloride	92.7		P	90 - 110
2367995	Chloride	95.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422651

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2367774	Sulfate	93.8		P	90 - 110
2367995	Sulfate	97.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P422336

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2367475	Ammonia-N	104	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P422243

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2367676	Kjeldahl Nitrogen	99.0	95.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P422142

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2367500	NO2NO3-N	97.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P422113

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2367359	Total-P	105	103	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P422896

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2367774	Fluoride	101	102	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P422603

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2368438	Organic Carbon	96.0	97.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P421995

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367474	Color (true)	3.78	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P421960

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367474	Turbidity	4.66	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422648

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367774	Chloride	0.383	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422651

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367774	Sulfate	0.654	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P422336

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367475	Ammonia-N	1.60	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P422243

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367676	Kjeldahl Nitrogen	2.41	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P422142

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367500	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P422113

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367359	Total-P	1.09	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P422256

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367355	Total Alkalinity	0.815	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2015
Batch ID: P422521

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367474	TDS	6.61	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P422896

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367774	Fluoride	0.972	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P422603

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2368438	Organic Carbon	0.551	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A115758

Included Lab Sample IDs: 2367499

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

Reference Method: DEP SOP: NU-094-1

Run ID: A115772

Included Lab Sample IDs: 2367499

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	105	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A115831

Included Lab Sample IDs: 2367500

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	105	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A115885

Included Lab Sample IDs: 2367499

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.4	98.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A115897

Included Lab Sample IDs: 2367500

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A115935

Included Lab Sample IDs: 2367500

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.9	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A115939

Included Lab Sample IDs: 2367499

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	95.6	96.8	P/P	90 - 110
Sulfate	96.8	97.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A115958

Included Lab Sample IDs: 2367500

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

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-2011

Run ID: A116039

Included Lab Sample IDs: 2367500

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

Reference Method: SM 4500-F- C-2011

Run ID: A116180

Included Lab Sample IDs: 2367499

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	103	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	
DEP SOP: NU-094-1	Color (true)	101				3.78	
EPA 180.1 Rev. 2.0	Turbidity	101				4.66	
EPA 300.0 Rev. 2.1	Chloride	95.5	92.7	95.4		0.383	
	Sulfate	97.1	93.8	97.1		0.654	
EPA 350.1 Rev. 2.0	Ammonia-N	99.2	104	101			1.60
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	99.0	95.3			2.41
EPA 353.2 Rev. 2.0	NO2NO3-N	105	97.5				0.0
EPA 365.1 Rev. 2.0	Total-P	102	105	103			1.09
SM 2320 B-2011	Total Alkalinity	96.2				0.815	
SM 2540 C-2015	TDS	104				6.61	
SM 2540 D-2015	TSS	98.1					
SM 4500-F- C-2011	Fluoride	100	101	102			0.972
SM 5310 B-2011	Organic Carbon	96.2	96.0	97.0			0.551

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2367499
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2367499
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2367499
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2367499
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2367500
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2367500
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2367500
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2367500
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2367499
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2367499
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2367499
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2367499
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2367500

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	11/03/2022			11/04/2022 14:22	Chandler E Cox	2367499
EPA 180.1 Rev. 2.0	11/03/2022			11/04/2022 10:26	Khloe J Berg	2367499
EPA 300.0 Rev. 2.1	11/03/2022			11/18/2022 16:53	Anna M. Plaviak	2367499
EPA 350.1 Rev. 2.0	11/03/2022			11/15/2022 13:15	Ping Hua	2367500
EPA 351.2 Rev. 2.0	11/03/2022	11/14/2022 12:45	Alexandra J Mattheus	11/16/2022 12:10	Samantha L Bates	2367500
EPA 353.2 Rev. 2.0	11/03/2022			11/09/2022 10:19	Beverly Y. Sanders	2367500
EPA 365.1 Rev. 2.0	11/03/2022	11/09/2022 13:55	Simonne.V. Calhoun	11/14/2022 14:30	James L Waggerby	2367500
SM 2320 B-2011	11/03/2022			11/10/2022 11:07	Adam P Silver	2367499
SM 2540 C-2015	11/03/2022			11/09/2022 16:35	Yijie Li	2367499
SM 2540 D-2015	11/03/2022			11/09/2022 16:35	Yijie Li	2367499
SM 4500-F- C-2011	11/03/2022			11/30/2022 06:59	Dale L. Simmons	2367499
SM 5310 B-2011	11/03/2022			11/17/2022 21:47	Khloe J Berg	2367500