Chemical Analysis Report

TLH-ROC-2021-07-08-01

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

Event Description: **Run 10**
Request ID: **RQ-2021-05-31-18**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
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Tallahassee, FL 32399
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Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant Date Certified: 02-AUG-2021 12:59

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: Sandy Branch @ SR22 **Collection Date/Time: 07/08/2021 10:35**

Field ID: G3TLHR0027 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2260771	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P400698	
	EPA 300.0 Rev. 2.1	Chloride	2.3		mg Cl/L	P401052	
		Sulfate	0.20	U	mg SO4/L	P401055	
	SM 2120 B-2011	Color (true)	340		PCU	P400699	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P401020	
	SM 2540 C-2011	TDS	60		mg/L	P401037	
	SM 2540 D-2011	TSS	2	I	mg/L	P400858	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P401023	
2260772	EPA 350.1 Rev. 2.0	Ammonia-N	0.040		mg N/L	P401168	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.81		mg N/L	P401034	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P400727	
	EPA 365.1 Rev. 2.0	Total-P	0.010		mg P/L	P400748	
	SM 5310 B-2011	Organic Carbon	32		mg C/L	P401073	
2260773	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P400696	

Ref. Method and Comment:
SM 2120 B-2011: Batch relative percent difference is unavailable because of low 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.
SM 4500 F-C-2011: Batch matrix spike recoveries are unavailable because of high 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: P400698

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401052

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401055

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P401168

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P401034

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400727

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400748

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P400696

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

Reference Method: SM 2120 B-2011
Batch ID: P400699

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P401020

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

Reference Method: SM 2540 C-2011
Batch ID: P401037

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P400858

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P401023

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P401073

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: P401052

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401055

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P401168

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: P401034

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400727

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400748

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P400696

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	95.0		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P400699

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P401020

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	94 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P401023

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P401073

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.6		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401052

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2260771	Chloride	99.5		P	90 - 110
2261258	Chloride	98.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2260771	Sulfate	99.3		P	90 - 110
2261258	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P401168

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2260603	Ammonia-N	97.4	97.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400727

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2260649	NO2NO3-N	95.9	96.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400748

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2260604	Total-P	103	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P400696

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2260681	O-Phosphate-P	92.7	94.4	P/P	90 - 110

Reference Method: SM 5310 B-2011
Batch ID: P401073

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2260915	Organic Carbon	96.8	97.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P400698

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2260647	Turbidity	3.73	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401052

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2261258	Chloride	1.62	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401055

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2261258	Sulfate	1.45	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P401168

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2260603	Ammonia-N	0.255	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P401034

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2260885	Kjeldahl Nitrogen	1.36	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400727

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2260649	NO2NO3-N	0.499	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400748

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2260604	Total-P	1.03	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P400696

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2260681	O-Phosphate-P	1.82	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2320 B-2011
Batch ID: P401020

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2261391	Total Alkalinity	1.88	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P401037

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2260492	TDS	2.06	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P401023

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2261391	Fluoride	0.0	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P401073

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2260915	Organic Carbon	0.645	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: A106501
Included Lab Sample IDs: 2260773

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	95.4	96.7	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A106507
Included Lab Sample IDs: 2260771

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.5	P/P	95 - 105

Reference Method: SM 2120 B-2011
Run ID: A106508
Included Lab Sample IDs: 2260771

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.8	99.9	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A106525
Included Lab Sample IDs: 2260772

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A106559
Included Lab Sample IDs: 2260772

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A106591
Included Lab Sample IDs: 2260771

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	102	P/P	90 - 110
Sulfate	102	103	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A106641
Included Lab Sample IDs: 2260771

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	105	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A106641
Included Lab Sample IDs: 2260771

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-2011
Run ID: A106660
Included Lab Sample IDs: 2260772

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.6	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A106665
Included Lab Sample IDs: 2260772

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.6	99.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A106691
Included Lab Sample IDs: 2260772

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	96.8	97.1	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					3.73	
EPA 300.0 Rev. 2.1	Chloride	99.8	98.2	99.5		1.62	
	Sulfate	99.4	100	99.3		1.45	
EPA 350.1 Rev. 2.0	Ammonia-N	101	97.4	97.0			0.255
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103					1.36
EPA 353.2 Rev. 2.0	NO2NO3-N	97.5	95.9	96.4			0.499
EPA 365.1 Rev. 2.0	Total-P	106	103	105			1.03
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	95.0	92.7	94.4			1.82
SM 2120 B-2011	Color (true)	100					
SM 2320 B-2011	Total Alkalinity	104				1.88	
SM 2540 C-2011	TDS					2.06	
SM 4500 F-C-2011	Fluoride	101					0.0
SM 5310 B-2011	Organic Carbon	96.6	96.8	97.8			0.645

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2260771
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2260771
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2260771
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2260772
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2260772
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2260772
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2260772
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2260773
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2260771
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2260771
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2260771
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2260771
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2260771
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2260772

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	07/08/2021			07/08/2021 15:03	Sarah A Nixon	2260771
EPA 300.0 Rev. 2.1	07/08/2021			07/15/2021 20:10	Lipi Saha	2260771
EPA 350.1 Rev. 2.0	07/08/2021			07/19/2021 14:14	Roberta Tatti	2260772
EPA 351.2 Rev. 2.0	07/08/2021	07/15/2021 13:51	Benjamin T. Nordmann	07/16/2021 15:25	Letuzia M De Oliveira	2260772
EPA 353.2 Rev. 2.0	07/08/2021			07/09/2021 09:54	Beverly Y. Sanders	2260772
EPA 365.1 Rev. 2.0	07/08/2021	07/09/2021 14:46	Simonne.V. Calhoun	07/12/2021 14:23	Shengyu Ding	2260772
EPA 365.1 Rev. 2.0 dissolved	07/08/2021			07/08/2021 14:56	Ping Hua	2260773
SM 2120 B-2011	07/08/2021			07/08/2021 15:48	Sarah A Nixon	2260771
SM 2320 B-2011	07/08/2021			07/15/2021 02:03	Dale L. Simmons	2260771
SM 2540 C-2011	07/08/2021			07/12/2021 14:35	Yijie Li	2260771
SM 2540 D-2011	07/08/2021			07/12/2021 14:35	Yijie Li	2260771
SM 4500 F-C-2011	07/08/2021			07/15/2021 02:03	Dale L. Simmons	2260771
SM 5310 B-2011	07/08/2021			07/15/2021 14:26	Madeline Gruver	2260772