Chemical Analysis Report

SW-DIST-2020-06-17-01

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

Event Description: **LVI_Henderson**
Request ID: **RQ-2020-06-22-19**
Customer: **SW-DIST**
Project ID: **SMP**

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B. Steinbock

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: Henderson Lake @ Center **Collection Date/Time: 06/16/2020 12:30**

Field ID: G4SW0109 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2177257	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P383350	
	EPA 300.0 Rev. 2.1	Chloride	15	A	mg Cl/L	P383736	
		Sulfate	2.0	A	mg SO4/L	P383739	
	SM 2120 B-2011	Color (true)	25		PCU	P383355	
	SM 2320 B-2011	Total Alkalinity	48		mg CaCO3/L	P383534	
	SM 2540 C-2011	TDS	92		mg/L	P383664	
	SM 2540 D-2011	TSS	3	I	mg/L	P383600	
	SM 4500 F-C-2011	Fluoride	0.075	I	mg F/L	P383537	
2177258	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P383469	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.80		mg N/L	P383482	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P383374	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P383415	
	SM 5310 B-2011	Organic Carbon	13		mg C/L	P383530	
2177259	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P383342	

Ref. Method and Comment:
SM 2540 D-2011: 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: P383350

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383736

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383739

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P383469

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383482

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P383374

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P383415

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P383342

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

Reference Method: SM 2120 B-2011
Batch ID: P383355

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P383534

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

Reference Method: SM 2540 C-2011
Batch ID: P383664

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P383600

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P383537

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P383530

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: P383736

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383739

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P383469

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383482

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P383374

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: P383415

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	107		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P383342

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

Reference Method: SM 2120 B-2011
Batch ID: P383355

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

Reference Method: SM 2320 B-2011
Batch ID: P383534

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.4		P	93 - 104

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P383537

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.2		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P383530

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	107		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383736

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2177257	Chloride	104		P	90 - 110
2177365	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383739

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2177257	Sulfate	101		P	90 - 110
2177365	Sulfate	99.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P383469

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2177319	Ammonia-N	102	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383482

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2177308	Kjeldahl Nitrogen	96.7	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P383374

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2177165	NO2NO3-N	99.0	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P383415

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2177220	Total-P	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P383342

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2177259	O-Phosphate-P	97.0	98.2	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P383537

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2177365	Fluoride	99.9	98.2	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P383530

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2177324	Organic Carbon	104	108	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P383350

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2177194	Turbidity	0.257	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383736

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2177257	Chloride	1.71	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383739

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2177257	Sulfate	1.93	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P383469

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2177319	Ammonia-N	0.438	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383482

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2177308	Kjeldahl Nitrogen	3.35	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P383374

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2177165	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P383415

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2177220	Total-P	0.169	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P383342

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2177259	O-Phosphate-P	1.23	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B-2011
Batch ID: P383355

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2177218	Color (true)	0.141	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P383534

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2177365	Total Alkalinity	4.34	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P383664

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2177194	TDS	2.97	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P383537

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2177365	Fluoride	1.45	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P383530

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2177324	Organic Carbon	3.27	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: A99385
Included Lab Sample IDs: 2177259

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	99.2	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A99386
Included Lab Sample IDs: 2177257

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	102	P/P	95 - 105

Reference Method: SM 2120 B-2011
Run ID: A99388
Included Lab Sample IDs: 2177257

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	100	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A99398
Included Lab Sample IDs: 2177258

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A99434
Included Lab Sample IDs: 2177258

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A99446
Included Lab Sample IDs: 2177258

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	101	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A99455
Included Lab Sample IDs: 2177257

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.0	99.7	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A99455
Included Lab Sample IDs: 2177257

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-2011
Run ID: A99456
Included Lab Sample IDs: 2177258

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	106	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A99458
Included Lab Sample IDs: 2177258

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	96.8	97.0	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A99546
Included Lab Sample IDs: 2177257

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	96.9	98.3	P/P	90 - 110
Sulfate	97.9	99.2	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					0.257	
EPA 300.0 Rev. 2.1	Chloride	100	104	102		1.71	
	Sulfate	101	101	99.9		1.93	
EPA 350.1 Rev. 2.0	Ammonia-N	100	102	102			0.438
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	96.7	102			3.35
EPA 353.2 Rev. 2.0	NO2NO3-N	100	99.0	99.0			0.0
EPA 365.1 Rev. 2.0	Total-P	107	103	102			0.169
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	97.0	98.2			1.23
SM 2120 B-2011	Color (true)	101				0.141	
SM 2320 B-2011	Total Alkalinity	99.4				4.34	
SM 2540 C-2011	TDS					2.97	
SM 4500 F-C-2011	Fluoride	99.2	99.9	98.2			1.45
SM 5310 B-2011	Organic Carbon	107	104	108			3.27

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2177257
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2177257
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2177257
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2177258
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2177258
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2177258
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2177258
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2177259
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2177257
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2177257
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2177257
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2177257
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2177257
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2177258

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	06/17/2020			06/17/2020 15:47	Yen Ta	2177257
EPA 300.0 Rev. 2.1	06/17/2020			06/23/2020 16:02	Elliott Rodriguez	2177257
EPA 350.1 Rev. 2.0	06/17/2020			06/20/2020 12:53	Ping Hua	2177258
EPA 351.2 Rev. 2.0	06/17/2020	06/19/2020 10:40	Elliott Rodriguez	06/22/2020 12:54	Jhamieka S. Greenwood	2177258
EPA 353.2 Rev. 2.0	06/17/2020			06/18/2020 09:09	Beverly Y. Sanders	2177258
EPA 365.1 Rev. 2.0	06/17/2020	06/18/2020 12:09	Yen Ta	06/23/2020 10:19	Lipi Saha	2177258
EPA 365.1 Rev. 2.0 dissolved	06/17/2020			06/17/2020 15:42	Carlos Miranda	2177259
SM 2120 B-2011	06/17/2020			06/17/2020 16:45	Benjamin T. Nordmann	2177257
SM 2320 B-2011	06/17/2020			06/18/2020 20:32	Dale L. Simmons	2177257
SM 2540 C-2011	06/17/2020			06/18/2020 14:01	Yijie Li	2177257
SM 2540 D-2011	06/17/2020			06/18/2020 14:01	Yijie Li	2177257
SM 4500 F-C-2011	06/17/2020			06/18/2020 20:32	Dale L. Simmons	2177257
SM 5310 B-2011	06/17/2020			06/22/2020 16:55	David Boose	2177258