Chemical Analysis Report

CEN-DIST-2020-08-28-01

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

Event Description: **SJR Above Puzzle Lake**
Request ID: **RQ-2020-08-24-30**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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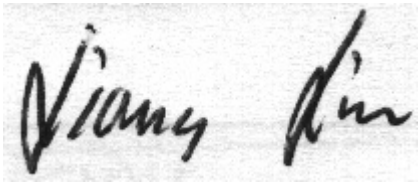
Date Certified: 17-SEP-2020 12:35



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: Lake Hatchineha Drain Downstream Of Drainage Field

Collection Date/Time: 08/27/2020 10:24

Field ID: G4CE0168

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2192959	EPA 180.1 Rev. 2.0	Turbidity	6.5		NTU	P386704	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P387061	
		Sulfate	11		mg SO4/L	P387066	
	SM 2120 B-2011	Color (true)	95		PCU	P386710	
	SM 2320 B-2011	Total Alkalinity	34		mg CaCO3/L	P386763	
	SM 2540 C-2011	TDS	99		mg/L	P387160	
	SM 2540 D-2011	TSS	12		mg/L	P387002	
	SM 4500 F-C-2011	Fluoride	0.079	I	mg F/L	P386902	
2192960	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P387023	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P386863	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P386780	
	EPA 365.1 Rev. 2.0	Total-P	0.046		mg P/L	P386757	MS
	SM 5310 B-2011	Organic Carbon	15		mg C/L	P386768	
2192961	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P386706	

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: P386704

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387061

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387066

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387023

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386863

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P386780

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P386757

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P386706

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

Reference Method: SM 2120 B-2011
Batch ID: P386710

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P386763

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

Reference Method: SM 2540 C-2011
Batch ID: P387160

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P387002

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P386902

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P386768

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: P387061

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387066

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387023

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386863

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.1		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P386780

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: P386757

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: P386706

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.3		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P386710

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	96.2		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P386763

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	93 - 104

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P386902

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P386768

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.6		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387061

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2192838	Chloride	99.8		P	90 - 110
2193005	Chloride	99.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387066

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2192838	Sulfate	98.8		P	90 - 110
2193005	Sulfate	96.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387023

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2193006	Ammonia-N	98.0	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386863

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2192836	Kjeldahl Nitrogen	95.0	99.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P386780

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2192953	NO2NO3-N	102	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P386757

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2192836	Total-P	108	111	P/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P386706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2192954	O-Phosphate-P	100	100	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P386902

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2192997	Fluoride	102	102	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P386768

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2192839	Organic Carbon	99.0	101	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P386704

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192939	Turbidity	0.422	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387061

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2193005	Chloride	0.302	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387066

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2193005	Sulfate	0.678	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387023

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2193006	Ammonia-N	1.58	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386863

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192836	Kjeldahl Nitrogen	3.45	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P386780

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192953	NO2NO3-N	2.49	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P386757

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192836	Total-P	2.36	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P386706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192954	O-Phosphate-P	0.0	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B-2011
Batch ID: P386710

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192975	Color (true)	3.46	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P386763

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192997	Total Alkalinity	0.323	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P387160

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192975	TDS	3.94	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P386902

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192997	Fluoride	0.0	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P386768

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192839	Organic Carbon	1.61	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: A100711
Included Lab Sample IDs: 2192959

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: A100712
Included Lab Sample IDs: 2192961

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

Reference Method: SM 2120 B-2011
Run ID: A100713
Included Lab Sample IDs: 2192959

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.9	98.0	P/P	90 - 115

Reference Method: SM 2320 B-2011
Run ID: A100734
Included Lab Sample IDs: 2192959

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	98.8	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A100736
Included Lab Sample IDs: 2192960

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.2	99.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A100742
Included Lab Sample IDs: 2192960

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A100778
Included Lab Sample IDs: 2192960

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	98.5	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A100801
Included Lab Sample IDs: 2192959

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A100809
Included Lab Sample IDs: 2192960

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.0	94.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A100833
Included Lab Sample IDs: 2192960

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A100843
Included Lab Sample IDs: 2192959

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Sulfate	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		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					0.422	
EPA 300.0 Rev. 2.1	Chloride	99.6	99.7	99.8		0.302	
	Sulfate	98.0	96.4	98.8		0.678	
EPA 350.1 Rev. 2.0	Ammonia-N	99.6	98.0	101			1.58
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.1	95.0	99.5			3.45
EPA 353.2 Rev. 2.0	NO2NO3-N	100	102	99.0			2.49
EPA 365.1 Rev. 2.0	Total-P	107	108	111			2.36
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.3	100	100			0.0
SM 2120 B-2011	Color (true)	96.2				3.46	
SM 2320 B-2011	Total Alkalinity	100				0.323	
SM 2540 C-2011	TDS					3.94	
SM 4500 F-C-2011	Fluoride	102	102	102			0.0
SM 5310 B-2011	Organic Carbon	99.6	99.0	101			1.61

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2192959
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2192959
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2192959
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2192960
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2192960
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2192960
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2192960
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2192961
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2192959
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2192959
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2192959
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2192959
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2192959
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2192960

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	08/28/2020			08/28/2020 14:51	Yen Ta	2192959
EPA 300.0 Rev. 2.1	08/28/2020			09/05/2020 09:54	Julia Storbeck	2192959
EPA 350.1 Rev. 2.0	08/28/2020			09/05/2020 16:46	Ping Hua	2192960
EPA 351.2 Rev. 2.0	08/28/2020	09/02/2020 12:20	David Boose	09/03/2020 15:52	Virginia P. Brown	2192960
EPA 353.2 Rev. 2.0	08/28/2020			09/01/2020 11:14	Beverly Y. Sanders	2192960
EPA 365.1 Rev. 2.0	08/28/2020	08/31/2020 15:00	Yen Ta	09/02/2020 12:12	Lipi Saha	2192960
EPA 365.1 Rev. 2.0 dissolved	08/28/2020			08/28/2020 15:20	Samantha Davila	2192961
SM 2120 B-2011	08/28/2020			08/28/2020 15:48	Benjamin T. Nordmann	2192959
SM 2320 B-2011	08/28/2020			08/31/2020 18:20	Dale L. Simmons	2192959
SM 2540 C-2011	08/28/2020			08/31/2020 14:51	Yijie Li	2192959
SM 2540 D-2011	08/28/2020			08/31/2020 14:39	Yijie Li	2192959
SM 4500 F-C-2011	08/28/2020			09/03/2020 03:47	Dale L. Simmons	2192959
SM 5310 B-2011	08/28/2020			08/31/2020 17:08	David Boose	2192960