

Chemical Analysis Report

CEN-DIST-2019-09-20-02

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

Event Description: **Volusia County 1 (2x Kit A)**
Request ID: **RQ-2019-08-05-58**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Date Certified: 07-OCT-2019 11:11



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: Spring Garden Creek @ 200m US of Lake Woodruff

Collection Date/Time: 09/19/2019 11:47

Field ID: G2CE0081

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2121437	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P371075	
	EPA 300.0 Rev. 2.1	Chloride	180		mg Cl/L	P371224	
		Sulfate	26		mg SO4/L	P371227	
	SM 2120 B	Color (true)	310		PCU	P371078	
	SM 2320 B-97	Total Alkalinity	65		mg CaCO3/L	P371527	
	SM 2540 C-97	TDS	470		mg/L	P371615	
	SM 2540 D-97	TSS	3	I	mg/L	P371582	
	SM 4500 F-C-97	Fluoride	0.085	I	mg F/L	P371531	
2121438	EPA 350.1 Rev. 2.0	Ammonia-N	0.043		mg N/L	P371597	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P371212	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P371295	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P371315	
	SM 5310 B-00	Organic Carbon	29		mg C/L	P371371	
2121439	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.085		mg P/L	P371085	

Ref. Method and Comment:

SM 2540 D-97: 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: P371075

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371224

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371227

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371597

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P371212

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P371295

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P371315

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P371085

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

Reference Method: SM 2120 B
Batch ID: P371078

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P371527

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

Reference Method: SM 2540 C-97
Batch ID: P371615

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P371582

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P371531

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: P371224

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371227

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371597

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.3		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P371212

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.9		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P371295

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P371315

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P371085

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

Reference Method: SM 2120 B
Batch ID: P371078

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.9		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P371527

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 106

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P371531

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.4		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: P371224

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121188	Chloride	101		P	90 - 110
2121278	Chloride	99.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371227

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121188	Sulfate	101		P	90 - 110
2121278	Sulfate	97.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371597

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121455	Ammonia-N	96.1	96.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P371212

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121427	Kjeldahl Nitrogen	102	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P371295

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121391	NO2NO3-N	97.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P371315

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121427	Total-P	98.1	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P371085

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121456	O-Phosphate-P	98.2	99.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P371531

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121189	Fluoride	97.1	96.5	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: P371075

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121355	Turbidity	0.350	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371224

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121188	Chloride	0.356	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371227

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121188	Sulfate	0.278	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371597

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121455	Ammonia-N	0.107	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P371212

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121427	Kjeldahl Nitrogen	1.12	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P371295

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121391	NO2NO3-N	0.724	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P371315

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121427	Total-P	1.73	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P371085

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121456	O-Phosphate-P	1.32	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P371078

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121287	Color (true)	0.487	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P371527

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121189	Total Alkalinity	0.487	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P371615

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121426	TDS	2.91	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P371531

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121189	Fluoride	0.487	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 180.1 Rev. 2.0

Run ID: A94382

Included Lab Sample IDs: 2121437

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

Reference Method: SM 2120 B

Run ID: A94384

Included Lab Sample IDs: 2121437

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	102	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A94385

Included Lab Sample IDs: 2121439

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.0	97.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A94452

Included Lab Sample IDs: 2121437

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A94489

Included Lab Sample IDs: 2121438

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

Reference Method: SM 5310 B-00

Run ID: A94516

Included Lab Sample IDs: 2121438

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.2	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A94517

Included Lab Sample IDs: 2121438

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.3	98.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A94536

Included Lab Sample IDs: 2121438

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A94582
Included Lab Sample IDs: 2121437

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

Reference Method: SM 4500 F-C-97
Run ID: A94582
Included Lab Sample IDs: 2121437

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A94610
Included Lab Sample IDs: 2121438

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.1	97.2	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	MS
EPA 180.1 Rev. 2.0	Turbidity				0.350	
EPA 300.0 Rev. 2.1	Chloride	99.3	101	99.4	0.356	
	Sulfate	100	101	97.3	0.278	
EPA 350.1 Rev. 2.0	Ammonia-N	95.3	96.1	96.2		0.107
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.9	102	100		1.12
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	97.5			0.724
EPA 365.1 Rev. 2.0	Total-P	101	98.1	99.9		1.73
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	98.2	99.5		1.32
SM 2120 B	Color (true)	98.9			0.487	
SM 2320 B-97	Total Alkalinity	102			0.487	
SM 2540 C-97	TDS				2.91	
SM 4500 F-C-97	Fluoride	97.4	97.1	96.5		0.487
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	2121437
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2121437
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2121437
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2121438
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2121438
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2121438
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2121438
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2121439
SM 2120 B / E31780	True Color measured at 450 nm	2121437
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2121437
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2121437
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2121437
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2121437
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2121438

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	09/20/2019			09/20/2019 16:56	Samantha Davila	2121437
EPA 300.0 Rev. 2.1	09/20/2019			09/24/2019 06:39	Jhamieka S. Greenwood	2121437
EPA 350.1 Rev. 2.0	09/20/2019			09/27/2019 15:06	Ping Hua	2121438
EPA 351.2 Rev. 2.0	09/20/2019	09/24/2019 12:39	Sima Feizi	09/25/2019 17:44	Julia Storbeck	2121438
EPA 353.2 Rev. 2.0	09/20/2019			09/25/2019 11:26	Beverly Y. Sanders	2121438
EPA 365.1 Rev. 2.0	09/20/2019	09/25/2019 14:00	Lipi Saha	09/26/2019 12:01	Lipi Saha	2121438
EPA 365.1 Rev. 2.0 dissolved	09/20/2019			09/20/2019 18:19	Jhamieka S. Greenwood	2121439
SM 2120 B	09/20/2019			09/20/2019 17:20	Madeline Funaro	2121437
SM 2320 B-97	09/20/2019			09/28/2019 10:10	Dale L. Simmons	2121437
SM 2540 C-97	09/20/2019			09/25/2019 14:25	Yijie Li	2121437
SM 2540 D-97	09/20/2019			09/25/2019 14:25	Yijie Li	2121437
SM 4500 F-C-97	09/20/2019			09/28/2019 10:10	Dale L. Simmons	2121437
SM 5310 B-00	09/20/2019			09/25/2019 17:19	Madeline Funaro	2121438