

Chemical Analysis Report

SO-DIST-2018-08-23-01

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

Event Description: **Biology: SMP Somewhere**
Request ID: **RQ-2018-07-02-39**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
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FLDEP South District Office
2295 Victoria Ave. Suite 364
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Certified by: Colin Wright, Program Administrator

Date Certified: 11-SEP-2018 14:48

A handwritten signature in black ink, appearing to read "Colin Wright", is written on a light-colored rectangular 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 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: Powell Creek

Collection Date/Time: 08/22/2018 11:45

Field ID: G3SD0144

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2019545	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P350784	
	EPA 300.0 Rev. 2.1	Chloride	28		mg Cl/L	P350986	
		Sulfate	3.0		mg SO4/L	P350989	
	SM 2120 B	Color (true)	130		PCU	P350677	
	SM 2320 B-97	Total Alkalinity	74		mg CaCO3/L	P350902	
	SM 2540 C-97	TDS	162		mg/L	P351066	
	SM 2540 D-97	TSS	3	I	mg/L	P351028	
	SM 4500 F-C-97	Fluoride	0.072	I	mg F/L	P350904	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.051		mg N/L	P350915	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P350753	
2019546	EPA 353.2 Rev. 2.0	NO2NO3-N	0.031		mg N/L	P350856	
	EPA 365.1 Rev. 2.0	Total-P	0.058		mg P/L	P350767	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P350876	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.032		mg P/L	P350696	
	dissolved						

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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: P350784

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350986

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350989

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350915

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350753

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350856

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350767

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350696

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

Reference Method: SM 2120 B
Batch ID: P350677

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P350902

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

Reference Method: SM 2540 C-97
Batch ID: P351066

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P351028

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P350904

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P350876

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: P350986

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350989

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350915

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350753

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350856

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350767

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350696

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.6		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P350677

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.3		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P350902

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 107

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P350904

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.6		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P350876

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350986

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019112	Chloride	101		P	90 - 110
2019302	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350989

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019112	Sulfate	98.6		P	90 - 110
2019302	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350915

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019397	Ammonia-N	95.6	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350753

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019397	Kjeldahl Nitrogen	105	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350856

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019398	NO2NO3-N	97.0	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350767

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019632	Total-P	96.4	94.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350696

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019399	O-Phosphate-P	96.6	96.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P350904

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019112	Fluoride	98.4	98.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P350876

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019393	Organic Carbon	99.6	99.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P350986

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019112	Chloride	0.922	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P350989

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019112	Sulfate	0.483	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P350915

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019397	Ammonia-N	1.70	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P350753

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019397	Kjeldahl Nitrogen	0.555	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P350856

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019398	NO2NO3-N	1.03	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P350767

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019632	Total-P	1.62	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P350696

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019399	O-Phosphate-P	0.341	Spike	P	0 - 20

Reference Method: SM 2120 B
 Batch ID: P350677

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019392	Color (true)	2.17	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P350902

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019112	Total Alkalinity	0.187	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P351066

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019392	TDS	1.76	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P350904

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019112	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P350876

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019393	Organic Carbon	0.111	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B
Run ID: A86089
Included Lab Sample IDs: 2019545

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.5	99.7	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A86099
Included Lab Sample IDs: 2019547

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.9	98.2	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A86127
Included Lab Sample IDs: 2019545

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A86146
Included Lab Sample IDs: 2019546

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	103	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A86155
Included Lab Sample IDs: 2019546

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A86157
Included Lab Sample IDs: 2019546

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	106	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A86162
Included Lab Sample IDs: 2019546

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.4	96.1	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A86172
Included Lab Sample IDs: 2019545

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A86172

Included Lab Sample IDs: 2019545

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A86185

Included Lab Sample IDs: 2019546

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A86194

Included Lab Sample IDs: 2019545

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	104	P/P	90 - 110
Sulfate	101	103	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	
EPA 300.0 Rev. 2.1	Chloride	105	101	100		0.922	
	Sulfate	104	98.6	102		0.483	
EPA 350.1 Rev. 2.0	Ammonia-N	99.1	95.6	98.5			1.70
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	105	106			0.555
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.5	97.0	99.0			1.03
EPA 365.1 Rev. 2.0	Total-P	98.3	96.4	94.8			1.62
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.6	96.6	96.1			0.341
SM 2120 B	Color (true)	98.3				2.17	
SM 2320 B-97	Total Alkalinity	104				0.187	
SM 2540 C-97	TDS					1.76	
SM 4500 F-C-97	Fluoride	96.6	98.4	98.4			0.0
SM 5310 B-00	Organic Carbon	96.4	99.6	99.4			0.111

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2019545
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2019545
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2019545
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2019546
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2019546
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2019546
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2019546
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2019547
SM 2120 B / E31780	True Color measured at 450 nm	2019545
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2019545
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2019545
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2019545
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2019545
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2019546

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	08/23/2018			08/23/2018 17:10	Megan Treadwell	2019545
EPA 300.0 Rev. 2.1	08/23/2018			08/30/2018 17:07	Lipi Saha	2019545
EPA 350.1 Rev. 2.0	08/23/2018			08/29/2018 12:18	Ping Hua	2019546
EPA 351.2 Rev. 2.0	08/23/2018	08/27/2018 11:00	Adrian Shelby	08/28/2018 15:45	Joseph Suarez	2019546
EPA 353.2 Rev. 2.0	08/23/2018			08/28/2018 12:58	Lauren Bottorf	2019546
EPA 365.1 Rev. 2.0	08/23/2018	08/27/2018 12:15	Sima Feizi	08/28/2018 13:15	Beverly Y. Sanders	2019546
EPA 365.1 Rev. 2.0 dissolved	08/23/2018			08/23/2018 14:22	Julia Storbeck	2019547
SM 2120 B	08/23/2018			08/23/2018 15:56	William L. Brown IV	2019545
SM 2320 B-97	08/23/2018			08/28/2018 21:53	Dale L. Simmons	2019545
SM 2540 C-97	08/23/2018			08/28/2018 15:02	Yijie Li	2019545
SM 2540 D-97	08/23/2018			08/28/2018 15:02	Yijie Li	2019545
SM 4500 F-C-97	08/23/2018			08/28/2018 21:53	Dale L. Simmons	2019545
SM 5310 B-00	08/23/2018			08/28/2018 21:05	Megan Treadwell	2019546