Chemical Analysis Report

SW-DIST-2019-01-11-02

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

Event Description: **Sundance Creek**
Request ID: **RQ-2019-01-07-55**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
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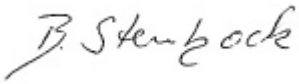
Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 30-JAN-2019 13:51



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: SUNDANCE CREEK **Collection Date/Time: 01/10/2019 10:40**

Field ID: G2SW0038 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2053712	EPA 180.1 Rev. 2.0	Turbidity	3.7		NTU	P357233	
	EPA 300.0 Rev. 2.1	Chloride	55		mg Cl/L	P357336	
		Sulfate	160		mg SO4/L	P357417	
	SM 2120 B	Color (true)	46		PCU	P357176	
	SM 2320 B-97	Total Alkalinity	120		mg CaCO3/L	P357657	
	SM 2540 C-97	TDS	465		mg/L	P357618	
	SM 2540 D-97	TSS	2	I	mg/L	P357611	
	SM 4500 F-C-97	Fluoride	0.41		mg F/L	P357661	
2053713	EPA 350.1 Rev. 2.0	Ammonia-N	0.037		mg N/L	P357366	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.61		mg N/L	P357343	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.27		mg N/L	P357211	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P357281	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P357327	
2053714	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.099		mg P/L	P357180	

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: P357233

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357336

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357417

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357366

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357343

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357211

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357281

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357180

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

Reference Method: SM 2120 B
Batch ID: P357176

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P357657

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

Reference Method: SM 2540 C-97
Batch ID: P357618

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P357611

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P357661

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P357327

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: P357336

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357417

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357366

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357343

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: P357211

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: P357281

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357180

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.5		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P357176

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

Reference Method: SM 2320 B-97
Batch ID: P357657

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P357661

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.4		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P357327

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357336

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2053641	Chloride	94.3		P	90 - 110
2053644	Chloride	93.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357417

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2054028	Sulfate	95.9		P	90 - 110
2054093	Sulfate	95.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357366

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2053713	Ammonia-N	99.4	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357343

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2053713	Kjeldahl Nitrogen	106	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357211

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2053648	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357281

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2053723	Total-P	102	99.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357180

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2053649	O-Phosphate-P	92.7	93.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P357661

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2054064	Fluoride	97.6	97.0	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P357327

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2053623	Organic Carbon	99.8	98.2	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P357233

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2053678	Turbidity	3.90	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357336

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2053641	Chloride	0.472	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357417

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2054028	Sulfate	0.862	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357366

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2053713	Ammonia-N	1.38	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357343

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2053713	Kjeldahl Nitrogen	1.37	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357211

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2053648	NO2NO3-N	0.443	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357281

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2053723	Total-P	2.38	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357180

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2053649	O-Phosphate-P	1.29	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P357176

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2053642	Color (true)	3.96	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P357657

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2054064	Total Alkalinity	0.191	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P357618

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2053643	TDS	5.13	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P357661

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2054064	Fluoride	0.477	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P357327

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2053623	Organic Carbon	1.16	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: A88775
Included Lab Sample IDs: 2053712

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.8	101	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A88776
Included Lab Sample IDs: 2053714

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.1	99.4	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A88788
Included Lab Sample IDs: 2053712

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	99.8	P/P	90 - 110
Sulfate	98.6	99.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A88791
Included Lab Sample IDs: 2053713

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A88797
Included Lab Sample IDs: 2053712

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

Reference Method: SM 5310 B-00
Run ID: A88833
Included Lab Sample IDs: 2053713

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	99.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A88851
Included Lab Sample IDs: 2053713

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A88860
Included Lab Sample IDs: 2053713

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A88871
Included Lab Sample IDs: 2053713

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	106	104	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A88947
Included Lab Sample IDs: 2053712

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	99.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A88947
Included Lab Sample IDs: 2053712

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	100	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					3.90	
EPA 300.0 Rev. 2.1	Chloride	106	94.3	93.4		0.472	
	Sulfate	96.4	95.9	95.8		0.862	
EPA 350.1 Rev. 2.0	Ammonia-N	98.8	99.4	102			1.38
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	106	108			1.37
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	102			0.443
EPA 365.1 Rev. 2.0	Total-P	102	102	99.3			2.38
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.5	92.7	93.9			1.29
SM 2120 B	Color (true)	100				3.96	
SM 2320 B-97	Total Alkalinity	101				0.191	
SM 2540 C-97	TDS					5.13	
SM 4500 F-C-97	Fluoride	96.4	97.6	97.0			0.477
SM 5310 B-00	Organic Carbon	98.0	99.8	98.2			1.16

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2053712
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2053712
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2053712
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2053713
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2053713
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2053713
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2053713
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2053714
SM 2120 B / E31780	True Color measured at 450 nm	2053712
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2053712
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2053712
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2053712
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2053712
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2053713

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	01/11/2019			01/11/2019 17:41	Megan Treadwell	2053712
EPA 300.0 Rev. 2.1	01/11/2019			01/15/2019 18:34	Lipi Saha	2053712
	01/11/2019			01/16/2019 20:48	Lipi Saha	2053712
EPA 350.1 Rev. 2.0	01/11/2019			01/16/2019 12:14	Ping Hua	2053713
EPA 351.2 Rev. 2.0	01/11/2019	01/16/2019 11:15	Adrian Shelby	01/17/2019 10:51	Joseph Suarez	2053713
EPA 353.2 Rev. 2.0	01/11/2019			01/14/2019 10:14	Beverly Y. Sanders	2053713
EPA 365.1 Rev. 2.0	01/11/2019	01/15/2019 12:00	Sima Feizi	01/16/2019 17:14	Rosalyn Ballman	2053713
EPA 365.1 Rev. 2.0 dissolved	01/11/2019			01/11/2019 15:47	Jhamieka S. Greenwood	2053714
SM 2120 B	01/11/2019			01/11/2019 15:59	Chelsea Hernandez	2053712
SM 2320 B-97	01/11/2019			01/21/2019 04:03	Dale L. Simmons	2053712
SM 2540 C-97	01/11/2019			01/14/2019 10:16	Yijie Li	2053712
SM 2540 D-97	01/11/2019			01/14/2019 10:16	Yijie Li	2053712
SM 4500 F-C-97	01/11/2019			01/21/2019 04:03	Dale L. Simmons	2053712
SM 5310 B-00	01/11/2019			01/15/2019 17:42	Megan Treadwell	2053713