Chemical Analysis Report

SO-DIST-2020-12-11-01

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

Event Description: **2020 SMP : Fisheating Creek, Fence Line Drain**
Request ID: **RQ-2020-12-07-63**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Nicole Reistad

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 05-JAN-2021 14:52

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: Fenceline Drain **Collection Date/Time: 12/10/2020 10:15**

Field ID: G4SD0193 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2212623	EPA 180.1 Rev. 2.0	Turbidity	3.3		NTU	P391054	
	EPA 300.0 Rev. 2.1	Chloride	27		mg Cl/L	P391258	
		Sulfate	1.8		mg SO4/L	P391259	
	SM 2120 B-2011	Color (true)	380		PCU	P391048	
	SM 2320 B-2011	Total Alkalinity	11		mg CaCO3/L	P391136	
	SM 2540 C-2011	TDS	126		mg/L	P391522	
	SM 2540 D-2011	TSS	2	I	mg/L	P391526	
	SM 4500 F-C-2011	Fluoride	0.074	I	mg F/L	P391138	
2212624	EPA 350.1 Rev. 2.0	Ammonia-N	0.037		mg N/L	P391485	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P391506	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.017		mg N/L	P391254	
	EPA 365.1 Rev. 2.0	Total-P	0.052		mg P/L	P391159	
	SM 5310 B-2011	Organic Carbon	32		mg C/L	P391280	
2212625	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.021		mg P/L	P391052	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 2120 B-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
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: P391054

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P391258

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P391259

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P391485

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P391506

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P391254

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P391159

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P391052

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

Reference Method: SM 2120 B-2011
Batch ID: P391048

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P391136

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

Reference Method: SM 2540 C-2011
Batch ID: P391522

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P391526

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P391138

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P391280

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: P391258

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P391259

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P391485

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P391506

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.4		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P391254

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P391159

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P391052

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

Reference Method: SM 2120 B-2011
Batch ID: P391048

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P391136

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	93 - 104

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P391138

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.8		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P391280

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P391258

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2212333	Chloride	100		P	90 - 110
2212500	Chloride	99.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P391259

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2212333	Sulfate	101		P	90 - 110
2212500	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P391485

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2213007	Ammonia-N	97.8	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P391506

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2212524	Kjeldahl Nitrogen	96.4	97.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P391254

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2212492	NO2NO3-N	96.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P391159

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2212597	Total-P	105	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P391052

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2212625	O-Phosphate-P	96.6	96.2	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P391138

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2212431	Fluoride	98.4	98.4	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P391280

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2212504	Organic Carbon	99.4		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P391054

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2212496	Turbidity	1.41	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P391258

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2212333	Chloride	0.930	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P391485

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2213007	Ammonia-N	1.62	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P391506

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2212524	Kjeldahl Nitrogen	0.775	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P391254

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2212492	NO2NO3-N	0.236	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P391159

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2212597	Total-P	1.06	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P391052

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2212625	O-Phosphate-P	0.341	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P391136

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2212431	Total Alkalinity	1.03	Sample	P	0 - 8.1

Quality Assurance Report
Precision

Reference Method: SM 2540 C-2011
Batch ID: P391522

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2212500	TDS	1.37	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P391138

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2212431	Fluoride	0.0	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P391280

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2212504	Organic Carbon	0.651	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report
Calibration Verification

Reference Method: SM 2120 B-2011
Run ID: A102543
Included Lab Sample IDs: 2212623

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A102545
Included Lab Sample IDs: 2212623

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A102546
Included Lab Sample IDs: 2212625

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	98.5	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A102580
Included Lab Sample IDs: 2212623

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	99.9	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A102580
Included Lab Sample IDs: 2212623

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A102615
Included Lab Sample IDs: 2212624

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.5	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A102617
Included Lab Sample IDs: 2212623

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.3	99.6	P/P	90 - 110
Sulfate	99.3	99.6	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A102621
Included Lab Sample IDs: 2212624

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.1	96.8	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A102686
Included Lab Sample IDs: 2212624

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.6	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A102694
Included Lab Sample IDs: 2212624

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A102722
Included Lab Sample IDs: 2212624

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.6	99.5	P/P	85 - 115

* 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					1.41	
EPA 300.0 Rev. 2.1	Chloride	102	100	99.7		0.930	
	Sulfate	102	101	101			
EPA 350.1 Rev. 2.0	Ammonia-N	96.6	97.8	99.4			1.62
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.4	96.4	97.2			0.775
EPA 353.2 Rev. 2.0	NO2NO3-N	98.0	96.8				0.236
EPA 365.1 Rev. 2.0	Total-P	104	105	104			1.06
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	104	96.6	96.2			0.341
SM 2120 B-2011	Color (true)	102					
SM 2320 B-2011	Total Alkalinity	103				1.03	
SM 2540 C-2011	TDS					1.37	
SM 4500 F-C-2011	Fluoride	98.8	98.4	98.4			0.0
SM 5310 B-2011	Organic Carbon	96.0	99.4				0.651

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2212623
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2212623
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2212623
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2212624
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2212624
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2212624
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2212624
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2212625
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2212623
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2212623
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2212623
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2212623
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2212623
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2212624

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	12/11/2020			12/11/2020 14:53	Yen Ta	2212623
EPA 300.0 Rev. 2.1	12/11/2020			12/16/2020 02:01	Lipi Saha	2212623
EPA 350.1 Rev. 2.0	12/11/2020			12/20/2020 17:03	Ping Hua	2212624
EPA 351.2 Rev. 2.0	12/11/2020	12/18/2020 14:40	David Boose	12/20/2020 20:11	Julia Storbeck	2212624
EPA 353.2 Rev. 2.0	12/11/2020			12/16/2020 09:00	Beverly Y. Sanders	2212624
EPA 365.1 Rev. 2.0	12/11/2020	12/15/2020 12:45	Yen Ta	12/21/2020 15:36	Benjamin T. Nordmann	2212624
EPA 365.1 Rev. 2.0 dissolved	12/11/2020			12/11/2020 16:12	Ping Hua	2212625
SM 2120 B-2011	12/11/2020			12/11/2020 16:02	Benjamin T. Nordmann	2212623
SM 2320 B-2011	12/11/2020			12/14/2020 19:31	Dale L. Simmons	2212623
SM 2540 C-2011	12/11/2020			12/14/2020 14:56	Yijie Li	2212623
SM 2540 D-2011	12/11/2020			12/14/2020 15:56	Yijie Li	2212623
SM 4500 F-C-2011	12/11/2020			12/14/2020 19:31	Dale L. Simmons	2212623
SM 5310 B-2011	12/11/2020			12/15/2020 07:54	Touraj Touran	2212624