

Chemical Analysis Report

CEN-DIST-2021-08-12-02

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

Event Description: **Three Forks Marsh**
Request ID: **RQ-2021-08-02-25**
Customer: **CEN-DIST**
Project ID: **SMP**

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Date Certified: 07-SEP-2021 09:31



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: SJR Upstream of Lake Hellen Blazes

Collection Date/Time: 08/11/2021 12:00

Field ID: G3CE0018

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2269186	EPA 180.1 Rev. 2.0	Turbidity	4.0		NTU	P402421	
	EPA 300.0 Rev. 2.1	Chloride	100		mg Cl/L	P402926	
		Sulfate	18		mg SO4/L	P402927	
		Color (true)	250		PCU	P402424	
	SM 2320 B-2011	Total Alkalinity	100		mg CaCO3/L	P402617	
	SM 2540 C-2011	TDS	384		mg/L	P402860	
	SM 2540 D-2011	TSS	5	I	mg/L	P402751	
	SM 4500 F-C-2011	Fluoride	0.24		mg F/L	P402621	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.057		mg N/L	P402706	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.1		mg N/L	P402968	
2269187	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P402505	
	EPA 365.1 Rev. 2.0	Total-P	0.22		mg P/L	P402514	MS
	SM 5310 B-2011	Organic Carbon	31		mg C/L	P403055	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.13		mg P/L	P402400	
2269188	EPA 365.1 Rev. 2.0 dissolved						

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: P402421

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P402926

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P402927

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P402706

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P402968

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P402505

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P402514

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P402400

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

Reference Method: SM 2120 B-2011
Batch ID: P402424

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P402617

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

Reference Method: SM 2540 C-2011
Batch ID: P402860

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P402751

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P402621

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P403055

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: P402926

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P402927

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P402706

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P402968

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P402505

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	103		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P402514

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P402400

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

Reference Method: SM 2120 B-2011
Batch ID: P402424

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.6		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P402617

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	94 - 106

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P402621

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.9		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P403055

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P402926

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2269094	Chloride	98.3		P	90 - 110
2269240	Chloride	98.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P402927

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2269094	Sulfate	101		P	90 - 110
2269240	Sulfate	96.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P402706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2269095	Ammonia-N	97.4	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P402968

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2269166	Kjeldahl Nitrogen	98.0	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P402505

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2269095	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P402514

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2268990	Total-P	113	111	F/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P402400

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2269210	O-Phosphate-P	96.8	97.8	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P402621

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2268971	Fluoride	101	101	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P403055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2269122	Organic Carbon	95.0	96.3	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P402421

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2269103	Turbidity	8.11	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P402926

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2269240	Chloride	0.198	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P402927

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2269240	Sulfate	0.446	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P402706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2269095	Ammonia-N	0.748	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P402968

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2269166	Kjeldahl Nitrogen	0.158	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P402505

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2269095	NO2NO3-N	0.411	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P402514

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2268990	Total-P	1.53	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P402400

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2269210	O-Phosphate-P	0.708	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B-2011
Batch ID: P402424

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2269121	Color (true)	1.82	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P402617

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2268971	Total Alkalinity	0.0120	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P402860

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2268968	TDS	0.741	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P402621

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2268971	Fluoride	0.0	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P403055

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2269122	Organic Carbon	0.819	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A107220

Included Lab Sample IDs: 2269188

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.5	98.3	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A107230

Included Lab Sample IDs: 2269186

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

Reference Method: SM 2120 B-2011

Run ID: A107231

Included Lab Sample IDs: 2269186

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A107268

Included Lab Sample IDs: 2269187

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	104	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A107310

Included Lab Sample IDs: 2269186

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.5	104	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A107310

Included Lab Sample IDs: 2269186

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A107342

Included Lab Sample IDs: 2269187

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.8	98.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A107424

Included Lab Sample IDs: 2269187

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	107	103	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A107449

Included Lab Sample IDs: 2269186

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A107494

Included Lab Sample IDs: 2269187

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	102	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A107501

Included Lab Sample IDs: 2269187

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.4	97.0	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 180.1 Rev. 2.0	Turbidity					8.11	
EPA 300.0 Rev. 2.1	Chloride	101	98.8	98.3		0.198	
	Sulfate	102	96.1	101		0.446	
EPA 350.1 Rev. 2.0	Ammonia-N	101	97.4	98.2			0.748
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	98.0	98.2			0.158
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	103	102	102			0.411
EPA 365.1 Rev. 2.0	Total-P	110	113	111			1.53
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	96.8	97.8			0.708
SM 2120 B-2011	Color (true)	99.6				1.82	
SM 2320 B-2011	Total Alkalinity	102				0.0120	
SM 2540 C-2011	TDS					0.741	
SM 4500 F-C-2011	Fluoride	99.9	101	101			0.0
SM 5310 B-2011	Organic Carbon	95.0	95.0	96.3			0.819

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2269186
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2269186
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2269186
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2269187
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2269187
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2269187
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2269187
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2269188
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2269186
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2269186
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2269186
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2269186
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2269186
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2269187

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	08/12/2021			08/12/2021 16:06	Sarah A Nixon	2269186
EPA 300.0 Rev. 2.1	08/12/2021			08/24/2021 02:25	Lipi Saha	2269186
EPA 350.1 Rev. 2.0	08/12/2021			08/19/2021 13:09	Roberta Tatti	2269187
EPA 351.2 Rev. 2.0	08/12/2021	08/25/2021 13:58	Benjamin T. Nordmann	08/26/2021 13:14	Virginia P. Brown	2269187
EPA 353.2 Rev. 2.0	08/12/2021			08/16/2021 11:13	Beverly Y. Sanders	2269187
EPA 365.1 Rev. 2.0	08/12/2021	08/17/2021 14:55	Simonne.V. Calhoun	08/24/2021 10:44	Lipi Saha	2269187
EPA 365.1 Rev. 2.0 dissolved	08/12/2021			08/12/2021 15:14	Blanca Fach	2269188
SM 2120 B-2011	08/12/2021			08/12/2021 17:04	Sarah A Nixon	2269186
SM 2320 B-2011	08/12/2021			08/17/2021 19:07	Dale L. Simmons	2269186
SM 2540 C-2011	08/12/2021			08/16/2021 15:36	Yijie Li	2269186
SM 2540 D-2011	08/12/2021			08/16/2021 15:36	Yijie Li	2269186
SM 4500 F-C-2011	08/12/2021			08/17/2021 19:07	Dale L. Simmons	2269186
SM 5310 B-2011	08/12/2021			08/26/2021 00:38	Madeline Gruver	2269187