

Chemical Analysis Report

SE-DIST-2022-10-27-02

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

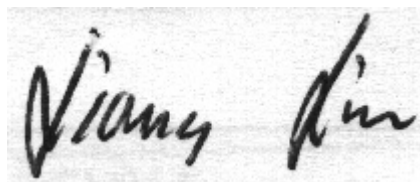
Event Description: **Six-Mile SJRWMD (G3SE0055)**
Request ID: **RQ-2022-10-24-38**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Jordan Skaggs

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: Liang Lin, Environmental Administrator

Date Certified: 18-NOV-2022 10:46

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored 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 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: C-40 Six Mile Marsh

Collection Date/Time: 10/26/2022 10:00

Field ID: G3SE0055

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2365809	DEP SOP: NU-094-1	Color (true)	310		PCU	P421560	
	EPA 180.1 Rev. 2.0	Turbidity	2.6	A	NTU	P421567	
	EPA 300.0 Rev. 2.1	Chloride	31		mg Cl/L	P422245	
		Sulfate	1.9		mg SO4/L	P422248	
	SM 2320 B-2011	Total Alkalinity	34		mg CaCO3/L	P422005	
	SM 2540 C-2015	TDS	191		mg/L	P422070	
	SM 2540 D-2015	TSS	3	I	mg/L	P421783	
	SM 4500-F- C-2011	Fluoride	0.080	I	mg F/L	P422019	
2365810	EPA 350.1 Rev. 2.0	Ammonia-N	0.061		mg N/L	P421959	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.7		mg N/L	P421700	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P421837	
	EPA 365.1 Rev. 2.0	Total-P	0.32		mg P/L	P421774	
	SM 5310 B-2011	Organic Carbon	36		mg C/L	P421795	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P421560

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P421567

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422245

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422248

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421959

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421700

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P421837

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421774

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

Reference Method: SM 2320 B-2011
Batch ID: P422005

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-2015
Batch ID: P422070

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P421783

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P422019

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P421795

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P421560

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	91.7		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P421567

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422245

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422248

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421959

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421700

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P421837

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	96.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421774

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

Reference Method: SM 2320 B-2011
Batch ID: P422005

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.3		P	94 - 106

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2540 C-2015
Batch ID: P422070

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	97.2		P	90 - 110

Reference Method: SM 2540 D-2015
Batch ID: P421783

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	94.8		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P422019

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.8		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P421795

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2365882	Chloride	106		P	90 - 110
2365886	Chloride	105		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422248

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2365882	Sulfate	108		P	90 - 110
2365886	Sulfate	108		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421959

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2365661	Ammonia-N	96.4	97.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421700

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2365697	Kjeldahl Nitrogen	101	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P421837

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2365661	NO2NO3-N	98.5	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421774

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2365697	Total-P	104	106	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P422019

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2365899	Fluoride	101	100	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P421795

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2365977	Organic Carbon	99.3		P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P421560

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2365886	Color (true)	1.21	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P421567

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2365809	Turbidity	8.46	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2365882	Chloride	0.845	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422248

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2365882	Sulfate	0.967	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421959

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2365661	Ammonia-N	0.734	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421700

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2365697	Kjeldahl Nitrogen	0.839	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P421837

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2365661	NO2NO3-N	0.509	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421774

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2365697	Total-P	2.02	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P422005

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2365899	Total Alkalinity	1.16	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2015
Batch ID: P422070

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2365627	TDS	2.83	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P422019

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2365899	Fluoride	0.463	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P421795

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2365977	Organic Carbon	0.0888	Sample	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: DEP SOP: NU-094-1
Run ID: A115576
Included Lab Sample IDs: 2365809

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	92.8	92.6	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A115579
Included Lab Sample IDs: 2365809

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	98.5	P/P	95 - 105

Reference Method: SM 5310 B-2011
Run ID: A115691
Included Lab Sample IDs: 2365810

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.6	96.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A115713
Included Lab Sample IDs: 2365810

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	95.0	94.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A115715
Included Lab Sample IDs: 2365810

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.9	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A115722
Included Lab Sample IDs: 2365810

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.6	98.7	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A115748
Included Lab Sample IDs: 2365810

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.3	99.4	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A115774
Included Lab Sample IDs: 2365809

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	95.4	97.1	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500-F- C-2011

Run ID: A115774

Included Lab Sample IDs: 2365809

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	102	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A115800

Included Lab Sample IDs: 2365809

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	96.0	99.4	P/P	90 - 110
Sulfate	98.3	102	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
DEP SOP: NU-094-1	Color (true)	91.7			1.21	
EPA 180.1 Rev. 2.0	Turbidity	100			8.46	
EPA 300.0 Rev. 2.1	Chloride	99.5	106	105	0.845	
	Sulfate	102	108	108	0.967	
EPA 350.1 Rev. 2.0	Ammonia-N	96.2	96.4	97.2		0.734
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	101	100		0.839
EPA 353.2 Rev. 2.0	NO2NO3-N	96.5	98.5	98.0		0.509
EPA 365.1 Rev. 2.0	Total-P	104	104	106		2.02
SM 2320 B-2011	Total Alkalinity	97.3			1.16	
SM 2540 C-2015	TDS	97.2			2.83	
SM 2540 D-2015	TSS	94.8				
SM 4500-F- C-2011	Fluoride	99.8	101	100		0.463
SM 5310 B-2011	Organic Carbon	97.4	99.3		0.0888	

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2365809
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2365809
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2365809
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2365809
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2365810
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2365810
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2365810
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2365810
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2365809
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2365809
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2365809
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2365809
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2365810

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	10/27/2022			10/27/2022 15:27	Chandler E Cox	2365809
EPA 180.1 Rev. 2.0	10/27/2022			10/27/2022 14:12	Anna M. Plaviak	2365809
EPA 300.0 Rev. 2.1	10/27/2022			11/10/2022 16:31	Anna M. Plaviak	2365809
EPA 350.1 Rev. 2.0	10/27/2022			11/04/2022 15:58	Ping Hua	2365810
EPA 351.2 Rev. 2.0	10/27/2022	11/01/2022 12:07	Alexandra J Mattheus	11/03/2022 13:00	Samantha L Bates	2365810
EPA 353.2 Rev. 2.0	10/27/2022			11/03/2022 10:39	Beverly Y. Sanders	2365810
EPA 365.1 Rev. 2.0	10/27/2022	11/02/2022 17:10	Adam P Silver	11/03/2022 12:17	James L Waggerby	2365810
SM 2320 B-2011	10/27/2022			11/05/2022 10:16	Dale L. Simmons	2365809
SM 2540 C-2015	10/27/2022			10/28/2022 15:58	Yijie Li	2365809
SM 2540 D-2015	10/27/2022			10/28/2022 15:58	Yijie Li	2365809
SM 4500-F- C-2011	10/27/2022			11/05/2022 10:16	Dale L. Simmons	2365809
SM 5310 B-2011	10/27/2022			11/02/2022 05:09	Khloe J Berg	2365810