Chemical Analysis Report

NW-DIST-2022-11-17-01

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

Event Description: **Reference Stream SCI**
Request ID: **RQ-2022-11-21-04**
Customer: **NW-DIST**
Project ID: **SCIREF**

Send Reports to:
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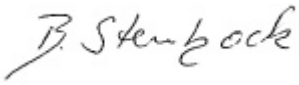
Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 08-DEC-2022 16:48



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: Direct Runoff to Choctawhatchee Bay below Oregon Drive **Collection Date/Time: 11/16/2022 10:50**

Field ID: G3NW0001 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2370191	DEP SOP: NU-094-1	Color (true)	67		PCU	P422529	
	EPA 180.1 Rev. 2.0	Turbidity	9.4		NTU	P422518	
	EPA 300.0 Rev. 2.1	Chloride	140		mg Cl/L	P423092	
		Sulfate	26		mg SO4/L	P423095	
	SM 2320 B-2011	Total Alkalinity	50		mg CaCO3/L	P422779	
	SM 2540 C-2015	TDS	314		mg/L	P422852	
	SM 2540 D-2015	TSS	9	I	mg/L	P422705	
	SM 4500-F- C-2011	Fluoride	0.062	I	mg F/L	P422783	
2370192	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P423041	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.56		mg N/L	P422890	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.068		mg N/L	P422668	
	EPA 365.1 Rev. 2.0	Total-P	0.059		mg P/L	P422850	
	SM 5310 B-2011	Organic Carbon	8.9		mg C/L	P422788	

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: P422529

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P422518

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423092

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423095

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P423041

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P422890

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P422668

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P422850

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

Reference Method: SM 2320 B-2011
Batch ID: P422779

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: P422852

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P422705

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P422783

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P422788

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: P422529

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.8		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P422518

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	99.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423092

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423095

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P423041

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: P422890

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	93.7		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P422668

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P422850

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

Reference Method: SM 2320 B-2011
Batch ID: P422779

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.6		P	94 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2540 C-2015
Batch ID: P422852

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	99.3		P	90 - 110

Reference Method: SM 2540 D-2015
Batch ID: P422705

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	91.5		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P422783

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P422788

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	100		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423092

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2370113	Chloride	106		P	90 - 110
2370213	Chloride	107		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423095

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2370113	Sulfate	103		P	90 - 110
2370213	Sulfate	106		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P423041

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2369872	Ammonia-N	97.8	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P422890

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2370121	Kjeldahl Nitrogen	91.6	95.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P422668

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2370210	NO2NO3-N	105	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P422850

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2370877	Total-P	104	103	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P422783

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2370209	Fluoride	100	99.3	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P422788

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2370067	Organic Carbon	98.9	98.9	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P422529

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2370114	Color (true)	15.2	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P422518

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2370113	Turbidity	0.491	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2370113	Chloride	0.128	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423095

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2370113	Sulfate	0.121	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P423041

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2369872	Ammonia-N	0.938	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P422890

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2370121	Kjeldahl Nitrogen	3.39	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P422668

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2370210	NO2NO3-N	0.475	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P422850

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2370877	Total-P	1.04	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2320 B-2011
Batch ID: P422779

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2370209	Total Alkalinity	0.105	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2015
Batch ID: P422852

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2369236	TDS	6.84	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P422783

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2370209	Fluoride	0.516	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P422788

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2370067	Organic Carbon	0.0363	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A116002
Included Lab Sample IDs: 2370191

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	97.5	97.5	P/P	95 - 105

Reference Method: DEP SOP: NU-094-1
Run ID: A116006
Included Lab Sample IDs: 2370191

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.8	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A116065
Included Lab Sample IDs: 2370192

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

Reference Method: SM 2320 B-2011
Run ID: A116138
Included Lab Sample IDs: 2370191

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.6	97.4	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A116138
Included Lab Sample IDs: 2370191

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

Reference Method: SM 5310 B-2011
Run ID: A116142
Included Lab Sample IDs: 2370192

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.6	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A116184
Included Lab Sample IDs: 2370192

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A116198
Included Lab Sample IDs: 2370192

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.1	96.2	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A116231
Included Lab Sample IDs: 2370192

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.1	99.2	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A116259
Included Lab Sample IDs: 2370191

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	107	P/P	90 - 110
Sulfate	103	107	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
DEP SOP: NU-094-1	Color (true)	99.8				15.2	
EPA 180.1 Rev. 2.0	Turbidity	99.2				0.491	
EPA 300.0 Rev. 2.1	Chloride	107	106	107		0.128	
	Sulfate	107	103	106		0.121	
EPA 350.1 Rev. 2.0	Ammonia-N	101	97.8	99.0			0.938
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	93.7	91.6	95.0			3.39
EPA 353.2 Rev. 2.0	NO2NO3-N	104	105	106			0.475
EPA 365.1 Rev. 2.0	Total-P	102	104	103			1.04
SM 2320 B-2011	Total Alkalinity	98.6				0.105	
SM 2540 C-2015	TDS	99.3				6.84	
SM 2540 D-2015	TSS	91.5					
SM 4500-F- C-2011	Fluoride	100	100	99.3			0.516
SM 5310 B-2011	Organic Carbon	100	98.9	98.9			0.0363

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2370191
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2370191
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2370191
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2370191
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2370192
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2370192
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2370192
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2370192
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2370191
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2370191
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2370191
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2370191
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2370192

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	11/17/2022			11/17/2022 15:01	Chandler E Cox	2370191
EPA 180.1 Rev. 2.0	11/17/2022			11/17/2022 13:50	Anna M. Plaviak	2370191
EPA 300.0 Rev. 2.1	11/17/2022			12/02/2022 04:50	James L Waggerby	2370191
EPA 350.1 Rev. 2.0	11/17/2022			12/02/2022 11:21	Ping Hua	2370192
EPA 351.2 Rev. 2.0	11/17/2022	11/21/2022 13:35	Alexandra J Mattheus	11/30/2022 15:13	Judith K. Clark	2370192
EPA 353.2 Rev. 2.0	11/17/2022			11/21/2022 11:45	Beverly Y. Sanders	2370192
EPA 365.1 Rev. 2.0	11/17/2022	11/29/2022 14:43	Adam P Silver	11/30/2022 09:55	James L Waggerby	2370192
SM 2320 B-2011	11/17/2022			11/23/2022 03:23	Dale L. Simmons	2370191
SM 2540 C-2015	11/17/2022			11/18/2022 16:39	Yijie Li	2370191
SM 2540 D-2015	11/17/2022			11/18/2022 16:39	Yijie Li	2370191
SM 4500-F- C-2011	11/17/2022			11/23/2022 03:23	Dale L. Simmons	2370191
SM 5310 B-2011	11/17/2022			11/22/2022 21:41	Touraj Touran	2370192