Chemical Analysis Report

CEN-DIST-2023-01-27-01

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

Event Description: **Run 14**
Request ID: **RQ-2023-01-23-25**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
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Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant Date Certified: 15-FEB-2023 11:35

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: Bugg Spring @ vent **Collection Date/Time: 01/26/2023 11:37**

Field ID: G1CE0109 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2383760	DEP SOP: NU-094-1	Color (true)	3.7	I	PCU	P425108	
	EPA 180.1 Rev. 2.0	Turbidity	0.60	I	NTU	P425105	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P425682	
		Sulfate	10		mg SO4/L	P425686	
	SM 2320 B-2011	Total Alkalinity	136		mg CaCO3/L	P425387	
	SM 2540 C-2015	TDS	191		mg/L	P425736	
	SM 2540 D-2015	TSS	2	I	mg/L	P425433	
	SM 4500-F- C-2011	Fluoride	0.044	I	mg F/L	P425509	
2383761	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P425730	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P425241	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.92		mg N/L	P425304	
	EPA 365.1 Rev. 2.0	Total-P	0.081		mg P/L	P425269	
	SM 5310 B-2011	Organic Carbon	1.2		mg C/L	P425292	

Quality Assurance Report
Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P425108

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P425105

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P425682

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P425686

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425730

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P425241

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P425304

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P425269

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

Reference Method: SM 2320 B-2011
Batch ID: P425387

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: P425736

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P425433

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P425509

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P425292

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: P425108

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P425105

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P425682

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P425686

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425730

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P425241

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P425304

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: P425269

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

Reference Method: SM 2320 B-2011
Batch ID: P425387

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	96.9		P	94 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2540 C-2015
Batch ID: P425736

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	98.5		P	90 - 110

Reference Method: SM 2540 D-2015
Batch ID: P425433

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	97.3		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P425509

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.0		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P425292

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.8		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P425682

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2383769	Chloride	96.9		P	90 - 110
2383778	Chloride	96.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P425686

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2383769	Sulfate	94.7		P	90 - 110
2383778	Sulfate	91.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425730

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2383761	Ammonia-N	98.0	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P425241

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2383761	Kjeldahl Nitrogen	95.2	96.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P425304

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2383648	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P425269

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2383761	Total-P	107	105	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P425509

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2383443	Fluoride	101	101	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P425292

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2383773	Organic Carbon	96.7	97.3	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P425108

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2383770	Color (true)	2.30	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P425105

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2383586	Turbidity	0.803	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P425682

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2383769	Chloride	3.00	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P425686

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2383769	Sulfate	5.81	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425730

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2383761	Ammonia-N	1.05	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P425241

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2383761	Kjeldahl Nitrogen	1.24	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P425304

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2383648	NO2NO3-N	0.289	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P425269

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2383761	Total-P	1.51	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2320 B-2011
Batch ID: P425387

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2383443	Total Alkalinity	1.29	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2015
Batch ID: P425736

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2383583	TDS	3.10	Sample	P	0 - 10

Reference Method: SM 2540 D-2015
Batch ID: P425433

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2383583	TSS	5.04	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P425509

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2383443	Fluoride	0.0	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P425292

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2383773	Organic Carbon	0.435	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: A117142
Included Lab Sample IDs: 2383760

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

Reference Method: DEP SOP: NU-094-1
Run ID: A117143
Included Lab Sample IDs: 2383760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	101	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A117216
Included Lab Sample IDs: 2383761

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.8	99.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A117222
Included Lab Sample IDs: 2383761

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	106	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A117226
Included Lab Sample IDs: 2383761

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.6	97.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A117263
Included Lab Sample IDs: 2383761

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.8	97.1	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A117269
Included Lab Sample IDs: 2383760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	95.1	99.0	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A117311
Included Lab Sample IDs: 2383760

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A117317
Included Lab Sample IDs: 2383760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.6	96.1	P/P	90 - 110
Sulfate	97.0	94.7	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A117409
Included Lab Sample IDs: 2383761

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.0	98.6	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)	101				2.30	
EPA 180.1 Rev. 2.0	Turbidity	101				0.803	
EPA 300.0 Rev. 2.1	Chloride	99.7	96.9	96.5		3.00	
	Sulfate	98.3	94.7	91.1		5.81	
EPA 350.1 Rev. 2.0	Ammonia-N	97.8	98.0	99.2			1.05
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	94.0	95.2	96.5			1.24
EPA 353.2 Rev. 2.0	NO2NO3-N	104	102	102			0.289
EPA 365.1 Rev. 2.0	Total-P	103	107	105			1.51
SM 2320 B-2011	Total Alkalinity	96.9				1.29	
SM 2540 C-2015	TDS	98.5				3.10	
SM 2540 D-2015	TSS	97.3				5.04	
SM 4500-F- C-2011	Fluoride	98.0	101	101			0.0
SM 5310 B-2011	Organic Carbon	96.8	96.7	97.3			0.435

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2383760
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2383760
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2383760
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2383760
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2383761
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2383761
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2383761
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2383761
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2383760
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2383760
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2383760
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2383760
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2383761

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	01/27/2023			01/27/2023 15:01	Samantha L Bates	2383760
EPA 180.1 Rev. 2.0	01/27/2023			01/27/2023 14:36	Anna M. Plaviak	2383760
EPA 300.0 Rev. 2.1	01/27/2023			02/10/2023 17:35	Anna M. Plaviak	2383760
EPA 350.1 Rev. 2.0	01/27/2023			02/13/2023 12:00	Ping Hua	2383761
EPA 351.2 Rev. 2.0	01/27/2023	01/31/2023 12:30	Simonne.V. Calhoun	02/03/2023 16:21	Samantha L Bates	2383761
EPA 353.2 Rev. 2.0	01/27/2023			02/02/2023 11:28	Beverly Y. Sanders	2383761
EPA 365.1 Rev. 2.0	01/27/2023	02/01/2023 14:40	Adam P Silver	02/02/2023 10:28	Simonne.V. Calhoun	2383761
SM 2320 B-2011	01/27/2023			02/04/2023 04:20	Dale L. Simmons	2383760
SM 2540 C-2015	01/27/2023			02/01/2023 14:18	Yijie Li	2383760
SM 2540 D-2015	01/27/2023			02/01/2023 14:18	Yijie Li	2383760
SM 4500-F- C-2011	01/27/2023			02/08/2023 00:39	Dale L. Simmons	2383760
SM 5310 B-2011	01/27/2023			02/02/2023 01:00	Elise M. Gillis	2383761