Chemical Analysis Report

CEN-DIST-2020-11-06-01

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

Event Description: **Lake Hatchineha Drain/Unnamed Ditches (x2)**
Request ID: **RQ-2020-11-09-38**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 01-DEC-2020 10:57

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: Lake Hatchineha Drain Downstream Of Drainage Field

Collection Date/Time: 11/05/2020 11:49

Field ID: G4CE0168

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2206977	EPA 180.1 Rev. 2.0	Turbidity	5.1	A	NTU	P389883	
	EPA 300.0 Rev. 2.1	Chloride	12	A	mg Cl/L	P390002	
		Sulfate	12	A	mg SO4/L	P390004	
	SM 2120 B-2011	Color (true)	110		PCU	P389878	
	SM 2320 B-2011	Total Alkalinity	29		mg CaCO3/L	P389994	
	SM 2540 C-2011	TDS	110		mg/L	P390170	
	SM 2540 D-2011	TSS	7	I	mg/L	P390147	
	SM 4500 F-C-2011	Fluoride	0.070	I	mg F/L	P389995	
2206978	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P389899	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P389953	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P389917	
	EPA 365.1 Rev. 2.0	Total-P	0.046		mg P/L	P389933	
	SM 5310 B-2011	Organic Carbon	16		mg C/L	P390046	
2206979	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P389888	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P389883

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P390002

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P390004

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389899

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389953

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389917

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389933

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P389888

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

Reference Method: SM 2120 B-2011
Batch ID: P389878

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P389994

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

Reference Method: SM 2540 C-2011
Batch ID: P390170

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P390147

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P389995

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P390046

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: P390002

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P390004

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389899

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: P389953

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389917

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389933

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P389888

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

Reference Method: SM 2120 B-2011
Batch ID: P389878

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	103		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P389994

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	93 - 104

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P389995

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.5		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P390046

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	102		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P390002

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2206977	Chloride	98.9		P	90 - 110
2207145	Chloride	98.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P390004

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2206977	Sulfate	98.3		P	90 - 110
2207145	Sulfate	98.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389899

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2206701	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389917

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2206701	NO2NO3-N	98.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389933

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205417	Total-P	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P389888

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2207124	O-Phosphate-P	101	102	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P389995

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2207003	Fluoride	99.5	99.5	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P390046

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2206978	Organic Carbon	102	105	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P389883

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2206977	Turbidity	1.96	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P390002

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2206977	Chloride	0.887	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P390004

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2206977	Sulfate	0.575	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389899

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2206701	Ammonia-N	1.08	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389953

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2206978	Kjeldahl Nitrogen	1.55	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389917

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2206701	NO2NO3-N	0.506	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205417	Total-P	1.45	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P389888

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2207124	O-Phosphate-P	0.494	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B-2011
Batch ID: P389878

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2207003	Color (true)	0.726	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P389994

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2207003	Total Alkalinity	0.553	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P390170

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2206981	TDS	4.95	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P389995

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2207003	Fluoride	0.0	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P390046

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2206978	Organic Carbon	1.87	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: A102020
Included Lab Sample IDs: 2206977

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	104	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A102023
Included Lab Sample IDs: 2206977

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.0	98.5	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A102024
Included Lab Sample IDs: 2206979

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A102031
Included Lab Sample IDs: 2206978

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	93.4	91.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A102043
Included Lab Sample IDs: 2206978

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.5	99.0	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A102065
Included Lab Sample IDs: 2206977

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.5	99.7	P/P	90 - 110
Sulfate	99.5	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A102073
Included Lab Sample IDs: 2206978

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	105	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A102094
Included Lab Sample IDs: 2206977

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.9	99.1	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-2011
Run ID: A102094
Included Lab Sample IDs: 2206977

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

Reference Method: SM 5310 B-2011
Run ID: A102121
Included Lab Sample IDs: 2206978

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	102	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A102136
Included Lab Sample IDs: 2206978

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	100	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
EPA 180.1 Rev. 2.0	Turbidity					1.96	
EPA 300.0 Rev. 2.1	Chloride	99.4	98.9	98.1		0.887	
	Sulfate	99.8	98.3	98.4		0.575	
EPA 350.1 Rev. 2.0	Ammonia-N	101	101	102			1.08
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	110					1.55
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	98.5	99.0			0.506
EPA 365.1 Rev. 2.0	Total-P	105	102	103			1.45
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.5	101	102			0.494
SM 2120 B-2011	Color (true)	103				0.726	
SM 2320 B-2011	Total Alkalinity	102				0.553	
SM 2540 C-2011	TDS					4.95	
SM 4500 F-C-2011	Fluoride	99.5	99.5	99.5			0.0
SM 5310 B-2011	Organic Carbon	102	102	105			1.87

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2206977
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2206977
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2206977
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2206978
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2206978
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2206978
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2206978
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2206979
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2206977
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2206977
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2206977
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2206977
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2206977
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2206978

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	11/06/2020			11/06/2020 15:46	Yen Ta	2206977
EPA 300.0 Rev. 2.1	11/06/2020			11/10/2020 21:20	Lipi Saha	2206977
EPA 350.1 Rev. 2.0	11/06/2020			11/08/2020 12:40	Ping Hua	2206978
EPA 351.2 Rev. 2.0	11/06/2020	11/09/2020 13:30	David Boose	11/10/2020 12:04	Elliott Rodriguez	2206978
EPA 353.2 Rev. 2.0	11/06/2020			11/09/2020 09:38	Beverly Y. Sanders	2206978
EPA 365.1 Rev. 2.0	11/06/2020	11/09/2020 12:24	Yen Ta	11/13/2020 13:49	Shengyu Wang	2206978
EPA 365.1 Rev. 2.0 dissolved	11/06/2020			11/06/2020 17:06	Ping Hua	2206979
SM 2120 B-2011	11/06/2020			11/06/2020 15:46	Benjamin T. Nordmann	2206977
SM 2320 B-2011	11/06/2020			11/09/2020 17:03	Dale L. Simmons	2206977
SM 2540 C-2011	11/06/2020			11/09/2020 13:51	Yijie Li	2206977
SM 2540 D-2011	11/06/2020			11/09/2020 13:51	Yijie Li	2206977
SM 4500 F-C-2011	11/06/2020			11/09/2020 17:03	Dale L. Simmons	2206977
SM 5310 B-2011	11/06/2020			11/12/2020 14:40	Touraj Touran	2206978