Chemical Analysis Report

CEN-DIST-2017-09-06-02

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

Event Description: **Spring Garden Lk / Little Haw**
Request ID: **RQ-2017-09-04-66**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
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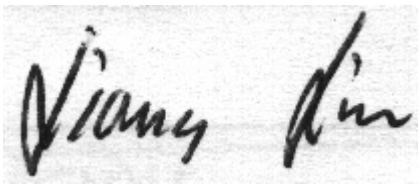
Certified by: Liang Lin, Environmental Administrator

Date Certified: 29-SEP-2017 14:26



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 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: LITTLE HAW CREEK @ 25M DS OF SR40 **Collection Date/Time: 09/05/2017 12:44**

Field ID: G2CE0128 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1927588	EPA 180.1 Rev. 2.0	Turbidity	0.65		NTU	P331386	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P331706	
		Sulfate	0.20	I	mg SO4/L	P331708	
	SM 2120 B	Color (true)	1.1E+03		PCU	P331377	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P331729	
	SM 2540 C-97	TDS	170		mg/L	P331698	
	SM 2540 D-97	TSS	2	U	mg/L	P331825	
	SM 4500 F-C-97	Fluoride	0.043	I	mg F/L	P331735	
1927589	EPA 350.1 Rev. 2.0	Ammonia-N	0.093		mg N/L	P331515	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.5		mg N/L	P331864	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P331545	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P331464	
	SM 5310 B-00	Organic Carbon	71		mg C/L	P331894	
1927590	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P331473	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-P: 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: P331386

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331706

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331708

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P331515

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P331864

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P331545

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331464

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331473

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

Reference Method: SM 2120 B
Batch ID: P331377

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P331729

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

Reference Method: SM 2540 C-97
Batch ID: P331698

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P331825

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P331735

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P331894

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: P331706

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	96.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331708

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	92.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P331515

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P331864

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P331545

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331464

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331473

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

Reference Method: SM 2320 B-97
Batch ID: P331729

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P331735

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.4		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P331894

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.8		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1927535	Chloride	95.8		P	90 - 110
1927536	Chloride	95.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331708

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1927535	Sulfate	93.4		P	90 - 110
1927536	Sulfate	93.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P331515

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1927548	Ammonia-N	99.4	99.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P331864

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1929012	Kjeldahl Nitrogen	101	98.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P331545

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1927599	NO2NO3-N	103		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331473

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1927871	O-Phosphate-P	95.7	96.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P331735

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1928613	Fluoride	98.1	97.4	P/P	91 - 105

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P331894

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1927934	Organic Carbon	93.6	95.0	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P331386

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1927536	Turbidity	4.43	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1927535	Chloride	1.48	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P331515

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1927548	Ammonia-N	0.0676	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P331864

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1929012	Kjeldahl Nitrogen	1.96	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P331545

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1927599	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331464

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1927597	Total-P	3.04	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331473

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1927871	O-Phosphate-P	0.832	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P331377

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1927538	Color (true)	3.49	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P331729

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1928613	Total Alkalinity	0.249	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P331698

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1927906	TDS	2.29	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P331735

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1928613	Fluoride	0.473	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P331894

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1927934	Organic Carbon	1.33	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report
Calibration Verification

Reference Method: SM 2120 B
Run ID: A78828
Included Lab Sample IDs: 1927588

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	104	P/P	85 - 115

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A78829
Included Lab Sample IDs: 1927588

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A78860
Included Lab Sample IDs: 1927590

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A78868
Included Lab Sample IDs: 1927589

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A78876
Included Lab Sample IDs: 1927589

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A78910
Included Lab Sample IDs: 1927589

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A78948
Included Lab Sample IDs: 1927588

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.0	98.4	P/P	90 - 110
Sulfate	96.4	96.5	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A78958
Included Lab Sample IDs: 1927588

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.1	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A78958
Included Lab Sample IDs: 1927588

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.6	98.5	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A79031
Included Lab Sample IDs: 1927589

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.5	95.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A79085
Included Lab Sample IDs: 1927589

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.6	101	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					4.43	
EPA 300.0 Rev. 2.1	Chloride	96.4	95.8	95.5		1.48	
	Sulfate	92.5	93.4	93.1			
EPA 350.1 Rev. 2.0	Ammonia-N	102	99.4	99.3			0.0676
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	101	98.3			1.96
EPA 353.2 Rev. 2.0	NO2NO3-N	106	103				0.0
EPA 365.1 Rev. 2.0	Total-P	94.2					3.04
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	95.7	96.5			0.832
SM 2120 B	Color (true)					3.49	
SM 2320 B-97	Total Alkalinity	101				0.249	
SM 2540 C-97	TDS					2.29	
SM 4500 F-C-97	Fluoride	95.4	98.1	97.4			0.473
SM 5310 B-00	Organic Carbon	95.8	93.6	95.0			1.33

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1927588
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1927588
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1927588
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1927589
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1927589
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1927589
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1927589
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1927590

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2120 B / E31780	True Color measured at 450 nm	1927588
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1927588
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1927588
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1927588
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1927588
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1927589

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	09/06/2017			09/06/2017 17:24	DeAsia Armster	1927588
EPA 300.0 Rev. 2.1	09/06/2017			09/15/2017	Julia Storbeck	1927588
EPA 350.1 Rev. 2.0	09/06/2017			09/07/2017	Sofia Elnemr	1927589
EPA 351.2 Rev. 2.0	09/06/2017	09/20/2017	Adrian Shelby	09/21/2017	Tanya Welborn	1927589
EPA 353.2 Rev. 2.0	09/06/2017			09/13/2017	Beverly Y. Sanders	1927589
EPA 365.1 Rev. 2.0	09/06/2017	09/07/2017	Sima Feizi	09/14/2017	Lipi Saha	1927589
EPA 365.1 Rev. 2.0 dissolved	09/06/2017			09/06/2017 14:43	Megan Treadwell	1927590
SM 2120 B	09/06/2017			09/06/2017 16:22	Tanya Welborn	1927588
SM 2320 B-97	09/06/2017			09/15/2017	Dale L. Simmons	1927588
SM 2540 C-97	09/06/2017			09/08/2017	Yijie Li	1927588
SM 2540 D-97	09/06/2017			09/08/2017	Yijie Li	1927588
SM 4500 F-C-97	09/06/2017			09/15/2017	Dale L. Simmons	1927588
SM 5310 B-00	09/06/2017			09/19/2017	Ping Hua	1927589