Chemical Analysis Report

CEN-DIST-2017-05-23-01

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

Event Description: **Ocklawaha River Above Daisy Crk+HA**
Request ID: **RQ-2017-02-06-54**
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
Attn: Mike Linger

For additional information please contact
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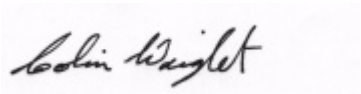
Certified by: Colin Wright, Program Administrator

Date Certified: 16-JUN-2017 13:01



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: Lake Lotus @ Center **Collection Date/Time: 05/22/2017 11:25**

Field ID: G2CE0015 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1900671	EPA 180.1 Rev. 2.0	Turbidity	8.8	A	NTU	P325721	
	EPA 300.0 Rev. 2.1	Chloride	27		mg Cl/L	P326715	
		Sulfate	9.4		mg SO4/L	P326718	
	SM 2120 B	Color (true)	35		PCU	P325711	
	SM 2320 B-97	Total Alkalinity	80		mg CaCO3/L	P325878	
	SM 2540 C-97	TDS	153		mg/L	P325989	
	SM 2540 D-97	TSS	16		mg/L	P326002	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P325880	
1900672	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P325859	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P325728	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P325755	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P325749	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P326022	
1900673	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P325742	

Ref. Method and Comment:
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: P325721

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326715

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326718

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P325859

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325728

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: P325755

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325749

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325742

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

Reference Method: SM 2120 B
Batch ID: P325711

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P325878

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

Reference Method: SM 2540 C-97
Batch ID: P325989

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P326002

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P325880

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P326022

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: P326715

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326718

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P325859

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325728

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.3		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325755

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325749

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325742

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

Reference Method: SM 2320 B-97
Batch ID: P325878

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P325880

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	93.4		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P326022

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: P326715

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900582	Chloride	108		P	90 - 110
1900712	Chloride	105		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326718

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900582	Sulfate	107		P	90 - 110
1900712	Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P325859

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900703	Ammonia-N	99.0	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325728

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900632	Kjeldahl Nitrogen	93.2	95.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325755

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900656	NO2NO3-N	106	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325742

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900639	O-Phosphate-P	101	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P325880

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900610	Fluoride	97.7	99.7	P/P	91 - 105

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P326022

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900630	Organic Carbon	96.8	97.1	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P325721

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900671	Turbidity	0.906	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326715

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900582	Chloride	1.54	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326718

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900582	Sulfate	1.67	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P325859

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900703	Ammonia-N	0.575	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325728

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900632	Kjeldahl Nitrogen	1.71	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325755

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900656	NO2NO3-N	0.475	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325749

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900656	Total-P	2.02	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325742

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900639	O-Phosphate-P	1.57	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P325711

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900707	Color (true)	0.731	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P325878

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900610	Total Alkalinity	0.174	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P325989

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900702	TDS	2.35	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P325880

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900610	Fluoride	1.45	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P326022

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900630	Organic Carbon	0.159	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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2120 B
Run ID: A76628
Included Lab Sample IDs: 1900671

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.3	99.0	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A76632
Included Lab Sample IDs: 1900671

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	99.5	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A76634
Included Lab Sample IDs: 1900673

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.4	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A76646
Included Lab Sample IDs: 1900672

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A76666
Included Lab Sample IDs: 1900672

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	109	107	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A76683
Included Lab Sample IDs: 1900672

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A76684
Included Lab Sample IDs: 1900672

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.7	102	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A76685
Included Lab Sample IDs: 1900671

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A76685
Included Lab Sample IDs: 1900671

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	96.1	95.5	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A76775
Included Lab Sample IDs: 1900672

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.2	94.4	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A77053
Included Lab Sample IDs: 1900671

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.3	98.9	P/P	90 - 110
Sulfate	103	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					0.906	
EPA 300.0 Rev. 2.1	Chloride	103	108	105		1.54	
	Sulfate	103	107	103		1.67	
EPA 350.1 Rev. 2.0	Ammonia-N	99.2	99.0	100			0.575
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.3	93.2	95.1			1.71
EPA 353.2 Rev. 2.0	NO2NO3-N	105	106	105			0.475
EPA 365.1 Rev. 2.0	Total-P	106					2.02
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.8	101	102			1.57
SM 2120 B	Color (true)					0.731	
SM 2320 B-97	Total Alkalinity	104				0.174	
SM 2540 C-97	TDS					2.35	
SM 4500 F-C-97	Fluoride	93.4	97.7	99.7			1.45
SM 5310 B-00	Organic Carbon	97.4	96.8	97.1			0.159

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1900671
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1900671
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1900671

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1900672
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1900672
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1900672
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1900672
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1900673
SM 2120 B / E31780	True Color measured at 450 nm	1900671
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1900671
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1900671
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1900671
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1900671
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1900672

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	05/23/2017			05/23/2017 15:59	Sima Feizi	1900671
EPA 300.0 Rev. 2.1	05/23/2017			06/09/2017	Julia Storbeck	1900671
EPA 350.1 Rev. 2.0	05/23/2017			05/25/2017	Julia Storbeck	1900672
EPA 351.2 Rev. 2.0	05/23/2017	05/24/2017	Adrian Shelby	05/25/2017	Joseph Suarez	1900672
EPA 353.2 Rev. 2.0	05/23/2017			05/24/2017	Beverly Y. Sanders	1900672
EPA 365.1 Rev. 2.0	05/23/2017	05/24/2017	Vijayalakshmi Reddy	05/25/2017	Lipi Saha	1900672
EPA 365.1 Rev. 2.0 dissolved	05/23/2017			05/23/2017 15:00	Anthony C. Onicha	1900673
SM 2120 B	05/23/2017			05/23/2017 14:52	Tanya Welborn	1900671
SM 2320 B-97	05/23/2017			05/25/2017	Dale L. Simmons	1900671
SM 2540 C-97	05/23/2017			05/24/2017	Yijie Li	1900671
SM 2540 D-97	05/23/2017			05/24/2017	Yijie Li	1900671
SM 4500 F-C-97	05/23/2017			05/25/2017	Dale L. Simmons	1900671
SM 5310 B-00	05/23/2017			05/30/2017	Julie Michelle Frank	1900672