Chemical Analysis Report

CEN-DIST-2017-01-06-01

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

Event Description: **Tick Island Mud Lake**
Request ID: **RQ-2017-01-02-41**
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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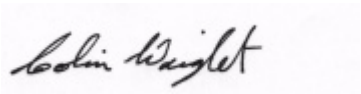
Certified by: Colin Wright, Program Administrator

Date Certified: 20-JAN-2017 10:05



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: TICK ISLAND MUD LAKE @ 350 METERS SOUTH OF CENTER **Collection Date/Time: 01/05/2017 12:25**

Field ID: G4CE0135 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1862134	EPA 180.1 Rev. 2.0	Turbidity	4.5	A	NTU	P317904	
	EPA 300.0 Rev. 2.1	Chloride	220		mg Cl/L	P318273	
		Sulfate	43		mg SO4/L	P318275	
	SM 2120 B	Color (true)	150		PCU	P317908	
	SM 2320 B-97	Total Alkalinity	75		mg CaCO3/L	P318026	
	SM 2540 C-97	TDS	556		mg/L	P318185	
	SM 2540 D-97	TSS	12		mg/L	P318313	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P318028	
1862135	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P318057	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P318008	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P318245	
	EPA 365.1 Rev. 2.0	Total-P	0.078		mg P/L	P318161	MS
	SM 5310 B-00	Organic Carbon	22		mg C/L	P318002	
1862136	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P317905	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P317904

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318273

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318275

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318057

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318008

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: P318245

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318161

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317905

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

Reference Method: SM 2120 B
Batch ID: P317908

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P318026

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

Reference Method: SM 2540 C-97
Batch ID: P318185

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P318313

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P318028

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P318002

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: P318273

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318275

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318057

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: P318008

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: P318245

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: P318161

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317905

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

Reference Method: SM 2320 B-97
Batch ID: P318026

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P318028

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.7		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P318002

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.2		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318273

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862424	Chloride	98.1		P	90 - 110
1862470	Chloride	99.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318275

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862424	Sulfate	98.1		P	90 - 110
1862470	Sulfate	96.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318057

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862135	Ammonia-N	95.1	97.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318008

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862103	Kjeldahl Nitrogen	104	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862135	NO2NO3-N	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318161

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862427	Total-P	88.9	88.6	F/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317905

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862123	O-Phosphate-P	95.4	92.2	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P318028

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862065	Fluoride	98.4	98.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P318002

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862045	Organic Carbon	91.8	92.2	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P317904

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862134	Turbidity	1.33	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318273

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862424	Chloride	0.131	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318275

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862424	Sulfate	2.31	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318057

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862135	Ammonia-N	1.73	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318008

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862103	Kjeldahl Nitrogen	0.913	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862135	NO2NO3-N	1.93	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318161

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862427	Total-P	0.376	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317905

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862123	O-Phosphate-P	2.75	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P317908

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862100	Color (true)	3.28	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P318026

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862065	Total Alkalinity	0.676	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P318185

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862044	TDS	3.86	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P318028

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862065	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P318002

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862045	Organic Carbon	0.358	Spike	P	0 - 20

Quality Assurance Report
Precision

* 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: EPA 180.1 Rev. 2.0
Run ID: A73800
Included Lab Sample IDs: 1862134

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: A73801
Included Lab Sample IDs: 1862136

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	95.7	94.9	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A73802
Included Lab Sample IDs: 1862134

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	102	P/P	85 - 115

Reference Method: SM 5310 B-00
Run ID: A73832
Included Lab Sample IDs: 1862135

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.2	95.6	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A73844
Included Lab Sample IDs: 1862134

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A73844
Included Lab Sample IDs: 1862134

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A73858
Included Lab Sample IDs: 1862135

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.7	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A73864
Included Lab Sample IDs: 1862135

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	105	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A73881
Included Lab Sample IDs: 1862134

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.6	99.6	P/P	90 - 110
Sulfate	95.9	98.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A73921
Included Lab Sample IDs: 1862135

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A73942
Included Lab Sample IDs: 1862135

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	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					1.33	
EPA 300.0 Rev. 2.1	Chloride	99.8	98.1	99.2		0.131	
	Sulfate	97.6	98.1	96.5		2.31	
EPA 350.1 Rev. 2.0	Ammonia-N	101	95.1	97.1			1.73
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	104	102			0.913
EPA 353.2 Rev. 2.0	NO2NO3-N	104	102	104			1.93
EPA 365.1 Rev. 2.0	Total-P	94.4	88.9	88.6			0.376
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	95.4	92.2			2.75
SM 2120 B	Color (true)					3.28	
SM 2320 B-97	Total Alkalinity	103				0.676	
SM 2540 C-97	TDS					3.86	
SM 4500 F-C-97	Fluoride	96.7	98.4	98.4			0.0
SM 5310 B-00	Organic Carbon	95.2	91.8	92.2			0.358

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1862134
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1862134
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1862134
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1862135
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1862135
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1862135
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1862135
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1862136
SM 2120 B / E31780	True Color measured at 450 nm	1862134
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1862134
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1862134
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1862134
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1862134
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1862135

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	01/06/2017			01/06/2017 16:33	Sima Feizi	1862134
EPA 300.0 Rev. 2.1	01/06/2017			01/13/2017	Ping Hua	1862134
EPA 350.1 Rev. 2.0	01/06/2017			01/10/2017	Sofia Elnemr	1862135
EPA 351.2 Rev. 2.0	01/06/2017	01/10/2017	Adrian Shelby	01/11/2017	Joseph Suarez	1862135
EPA 353.2 Rev. 2.0	01/06/2017			01/13/2017	Beverly Y. Sanders	1862135
EPA 365.1 Rev. 2.0	01/06/2017	01/12/2017	Vijayalakshmi Reddy	01/12/2017	Lipi Saha	1862135
EPA 365.1 Rev. 2.0 dissolved	01/06/2017			01/06/2017 16:26	Lipi Saha	1862136
SM 2120 B	01/06/2017			01/06/2017 16:40	Jared I. Manley	1862134
SM 2320 B-97	01/06/2017			01/10/2017	Dale L. Simmons	1862134
SM 2540 C-97	01/06/2017			01/10/2017	Yijie Li	1862134
SM 2540 D-97	01/06/2017			01/10/2017	Yijie Li	1862134
SM 4500 F-C-97	01/06/2017			01/10/2017	Dale L. Simmons	1862134
SM 5310 B-00	01/06/2017			01/09/2017	Julie Michelle Frank	1862135