

Chemical Analysis Report

CEN-DIST-2018-07-13-01

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

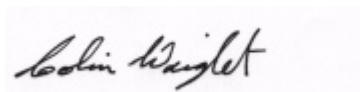
Event Description: **S Grasshopper Lake**
Request ID: **RQ-2018-06-25-18**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Date Certified: 30-JUL-2018 13:48



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: Grasshopper Lake South @ 325 M SE of Boat Ramp **Collection Date/Time: 07/12/2018 13:37**

Field ID: G2CE0070

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2007526	EPA 180.1 Rev. 2.0	Turbidity	0.65		NTU	P348434	
	EPA 300.0 Rev. 2.1	Chloride	8.3		mg Cl/L	P348906	
		Sulfate	2.6		mg SO4/L	P348914	
	SM 2120 B	Color (true)	84		PCU	P348424	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P348680	
	SM 2540 C-97	TDS	35		mg/L	P348938	
	SM 2540 D-97	TSS	2	I	mg/L	P349043	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P348684	
2007527	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P348995	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.54		mg N/L	P348639	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P348665	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P349048	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P348822	
2007528	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P348427	

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: P348434

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P348906

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P348914

Component	Result	Code	Units
Sulfate	0.20	U	mg SO ₄ /L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P348995

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348639

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348665

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349048

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348427

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

Reference Method: SM 2120 B
Batch ID: P348424

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P348680

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P348938

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P349043

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P348684

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P348822

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: P348906

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P348914

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P348995

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348639

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348665

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	100		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349048

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348427

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

Reference Method: SM 2120 B
Batch ID: P348424

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.0		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P348680

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P348684

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.6		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P348822

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.5		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P348906

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2005281	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P348914

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2005281	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P348995

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007435	Ammonia-N	99.1	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348639

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007573	Kjeldahl Nitrogen	99.4	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348665

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007454	NO2NO3-N	98.6	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349048

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007573	Total-P	97.7	95.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348427

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007544	O-Phosphate-P	92.9	92.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P348684

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007096	Fluoride	96.6	97.2	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P348822

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007448	Organic Carbon	96.2	95.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P348434

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007445	Turbidity	0.338	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P348906

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2005281	Chloride	4.75	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P348914

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2005281	Sulfate	2.32	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P348995

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007435	Ammonia-N	0.0279	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348639

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007573	Kjeldahl Nitrogen	5.42	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348665

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007454	NO2NO3-N	1.63	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349048

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007573	Total-P	1.85	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348427

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007544	O-Phosphate-P	0.108	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P348424

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007445	Color (true)	0.848	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P348680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007096	Total Alkalinity	0.457	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P348938

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007428	TDS	3.11	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P348684

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007096	Fluoride	0.516	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P348822

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007448	Organic Carbon	0.779	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: A85221
Included Lab Sample IDs: 2007526

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A85222
Included Lab Sample IDs: 2007528

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.1	94.2	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A85224
Included Lab Sample IDs: 2007526

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	99.0	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A85308
Included Lab Sample IDs: 2007527

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A85314
Included Lab Sample IDs: 2007526

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A85314
Included Lab Sample IDs: 2007526

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A85337
Included Lab Sample IDs: 2007526

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	96.5	P/P	90 - 110
Sulfate	103	97.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A85351
Included Lab Sample IDs: 2007527

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.2	94.1	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A85362
Included Lab Sample IDs: 2007527

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.0	95.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A85415
Included Lab Sample IDs: 2007527

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A85469
Included Lab Sample IDs: 2007527

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	102	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				0.338	
EPA 300.0 Rev. 2.1	Chloride	101	102		4.75	
	Sulfate	99.5	101		2.32	
EPA 350.1 Rev. 2.0	Ammonia-N	103	99.1 99.0			0.0279
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	99.4 107			5.42
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	98.6 101			1.63
EPA 365.1 Rev. 2.0	Total-P	94.6	97.7 95.8			1.85
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	95.4	92.9 92.8			0.108
SM 2120 B	Color (true)	98.0			0.848	
SM 2320 B-97	Total Alkalinity	102			0.457	
SM 2540 C-97	TDS				3.11	
SM 4500 F-C-97	Fluoride	98.6	96.6 97.2			0.516
SM 5310 B-00	Organic Carbon	97.5	96.2 95.1			0.779

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2007526
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2007526
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2007526
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2007527
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2007527
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2007527
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2007527
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2007528
SM 2120 B / E31780	True Color measured at 450 nm	2007526
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2007526
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2007526
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2007526
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2007526
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2007527

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	07/13/2018			07/13/2018 16:55	Tanya Welborn	2007526
EPA 300.0 Rev. 2.1	07/13/2018			07/21/2018 03:13	Lipi Saha	2007526
EPA 350.1 Rev. 2.0	07/13/2018			07/23/2018 11:33	Ping Hua	2007527
EPA 351.2 Rev. 2.0	07/13/2018	07/18/2018 15:30	Adrian Shelby	07/19/2018 15:23	Joseph Suarez	2007527
EPA 353.2 Rev. 2.0	07/13/2018			07/18/2018 11:28	Lauren Bottorf	2007527
EPA 365.1 Rev. 2.0	07/13/2018	07/24/2018 13:05	Sima Feizi	07/25/2018 13:56	Beverly Y. Sanders	2007527
EPA 365.1 Rev. 2.0 dissolved	07/13/2018			07/13/2018 16:34	Julia Storbeck	2007528
SM 2120 B	07/13/2018			07/13/2018 16:30	Tanya Welborn	2007526
SM 2320 B-97	07/13/2018			07/18/2018 05:35	Dale L. Simmons	2007526
SM 2540 C-97	07/13/2018			07/18/2018 16:21	Yijie Li	2007526
SM 2540 D-97	07/13/2018			07/18/2018 16:21	Yijie Li	2007526
SM 4500 F-C-97	07/13/2018			07/18/2018 05:35	Dale L. Simmons	2007526
SM 5310 B-00	07/13/2018			07/18/2018 19:47	Megan Treadwell	2007527