

Chemical Analysis Report

WQAP-2019-02-08-01

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

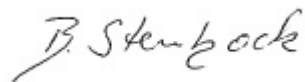
Event Description: **Grassy Creek HA**
Request ID: **RQ-2019-02-04-78**
Customer: **WQAP**
Project ID: **SMP**

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Date Certified: 28-FEB-2019 16:20



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: Grassy Creek @CR621E

Collection Date/Time: 02/07/2019 12:00

Field ID: G4SD0165

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2061149	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P358623	
	EPA 300.0 Rev. 2.1	Chloride	20	A	mg Cl/L	P359447	
		Sulfate	24	A	mg SO4/L	P359452	
	SM 2120 B	Color (true)	17		PCU	P358606	
	SM 2320 B-97	Total Alkalinity	11		mg CaCO3/L	P359115	
	SM 2540 C-97	TDS	86		mg/L	P359128	
	SM 2540 D-97	TSS	4	I	mg/L	P359149	
	SM 4500 F-C-97	Fluoride	0.045	I	mg F/L	P359120	
2061150	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P358910	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.54		mg N/L	P358992	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.018		mg N/L	P358939	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P358844	
	SM 5310 B-00	Organic Carbon	7.6		mg C/L	P359417	
2061151	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P358620	

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: P358623

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359447

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359452

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358910

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358992

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358939

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358844

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358620

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

Reference Method: SM 2120 B
Batch ID: P358606

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P359115

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

Reference Method: SM 2540 C-97
Batch ID: P359128

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P359149

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P359120

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P359417

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: P359447

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359452

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358910

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358992

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	109		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358939

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358844

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358620

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

Reference Method: SM 2120 B
Batch ID: P358606

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

Reference Method: SM 2320 B-97
Batch ID: P359115

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: P359120

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.0		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P359417

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: P359447

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061149	Chloride	97.4		P	90 - 110
2061384	Chloride	96.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359452

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061149	Sulfate	96.7		P	90 - 110
2061384	Sulfate	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358910

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061150	Ammonia-N	100	97.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358992

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061111	Kjeldahl Nitrogen	101	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358939

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061043	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358844

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061150	Total-P	103	95.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358620

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061112	O-Phosphate-P	94.7	95.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P359120

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061983	Fluoride	97.0	97.0	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P359417

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061196	Organic Carbon	96.3	94.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P358623

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061193	Turbidity	1.77	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359447

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061149	Chloride	0.0772	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359452

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061149	Sulfate	0.0441	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358910

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061150	Ammonia-N	2.38	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358992

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061111	Kjeldahl Nitrogen	2.61	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358939

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061043	NO2NO3-N	0.499	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358844

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061150	Total-P	7.62	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061112	O-Phosphate-P	0.836	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P358606

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061110	Color (true)	2.44	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P359115

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061983	Total Alkalinity	0.0959	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P359128

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061110	TDS	4.29	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P359120

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061983	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P359417

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061196	Organic Carbon	1.32	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: A89300
Included Lab Sample IDs: 2061149

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.2	100	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A89302
Included Lab Sample IDs: 2061151

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.4	97.8	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A89303
Included Lab Sample IDs: 2061149

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A89413
Included Lab Sample IDs: 2061150

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A89420
Included Lab Sample IDs: 2061150

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.5	99.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A89422
Included Lab Sample IDs: 2061150

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	99.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A89481
Included Lab Sample IDs: 2061150

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	98.7	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A89490
Included Lab Sample IDs: 2061149

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.3	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A89490

Included Lab Sample IDs: 2061149

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.6	95.8	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A89603

Included Lab Sample IDs: 2061150

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.4	93.7	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A89617

Included Lab Sample IDs: 2061149

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	102	P/P	90 - 110
Sulfate	101	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		LCS	Precision	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					1.77	
EPA 300.0 Rev. 2.1	Chloride	100	97.4	96.3		0.0772	
	Sulfate	101	96.7	98.2		0.0441	
EPA 350.1 Rev. 2.0	Ammonia-N	96.1	100	97.1			2.38
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	109	101	105			2.61
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.5	100	100			0.499
EPA 365.1 Rev. 2.0	Total-P	99.6	103	95.5			7.62
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	94.7	95.9			0.836
SM 2120 B	Color (true)	100				2.44	
SM 2320 B-97	Total Alkalinity	102				0.0959	
SM 2540 C-97	TDS					4.29	
SM 4500 F-C-97	Fluoride	94.0	97.0	97.0			0.0
SM 5310 B-00	Organic Carbon	95.8	96.3	94.6			1.32

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2061149
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2061149
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2061149
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2061150
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2061150
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2061150
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2061150
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2061151
SM 2120 B / E31780	True Color measured at 450 nm	2061149
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2061149
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2061149
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2061149
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2061149
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2061150

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	02/08/2019			02/08/2019 17:16	Adrian Shelby	2061149
EPA 300.0 Rev. 2.1	02/08/2019			02/22/2019 17:30	Lipi Saha	2061149
EPA 350.1 Rev. 2.0	02/08/2019			02/13/2019 13:06	Ping Hua	2061150
EPA 351.2 Rev. 2.0	02/08/2019	02/15/2019 12:45	Adrian Shelby	02/18/2019 11:57	Joseph Suarez	2061150
EPA 353.2 Rev. 2.0	02/08/2019			02/14/2019 11:27	Beverly Y. Sanders	2061150
EPA 365.1 Rev. 2.0	02/08/2019	02/13/2019 12:40	Sima Feizi	02/14/2019 12:48	Rosalyn Ballman	2061150
EPA 365.1 Rev. 2.0 dissolved	02/08/2019			02/08/2019 16:29	Lipi Saha	2061151
SM 2120 B	02/08/2019			02/08/2019 15:56	Chelsea Hernandez	2061149
SM 2320 B-97	02/08/2019			02/16/2019 10:15	Dale L. Simmons	2061149
SM 2540 C-97	02/08/2019			02/13/2019 15:22	Yijie Li	2061149
SM 2540 D-97	02/08/2019			02/13/2019 15:22	Yijie Li	2061149
SM 4500 F-C-97	02/08/2019			02/16/2019 10:15	Dale L. Simmons	2061149
SM 5310 B-00	02/08/2019			02/24/2019 06:55	Julia Storbeck	2061150