Chemical Analysis Report

CEN-DIST-2018-06-12-01

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

Event Description: **Silver Springs + HA**
Request ID: **RQ-2018-05-14-39**
Customer: **CEN-DIST**
Project ID: **SMP**

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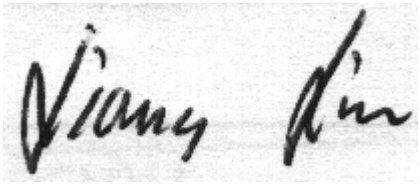
Date Certified: 28-JUN-2018 15:28



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: SILVER RIVER DOWNSTREAM OF BOIL(2772C) Collection Date/Time: 06/11/2018 12:55

Field ID: G1CE0105 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1999726	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P346785	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P347315	
		Sulfate	44		mg SO4/L	P347317	
	SM 2120 B	Color (true)	2.5	U	PCU	P346778	
	SM 2320 B-97	Total Alkalinity	186		mg CaCO3/L	P347035	RPD
	SM 2540 C-97	TDS	286	A	mg/L	P347408	
	SM 2540 D-97	TSS	3	IA	mg/L	P347416	
	SM 4500 F-C-97	Fluoride	0.18		mg F/L	P347039	
1999727	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P347162	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.26		mg N/L	P347329	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.2		mg N/L	P346922	
	EPA 365.1 Rev. 2.0	Total-P	0.042		mg P/L	P347074	
	SM 5310 B-00	Organic Carbon	0.54	I	mg C/L	P347065	
1999728	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.040		mg P/L	P346781	

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: P346785

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347315

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347317

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347162

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347329

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346922

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347074

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346781

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

Reference Method: SM 2120 B
Batch ID: P346778

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P347035

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

Reference Method: SM 2540 C-97
Batch ID: P347408

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P347416

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P347039

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P347065

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: P347315

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347317

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347162

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: P347329

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: P346922

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347074

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346781

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.1		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P347035

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P347039

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.2		P	91 - 105

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P347065

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	102		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347315

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999741	Chloride	97.0		P	90 - 110
1999988	Chloride	99.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347317

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999741	Sulfate	92.7		P	90 - 110
1999988	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347162

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1998383	Ammonia-N	98.1	98.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347329

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999690	Kjeldahl Nitrogen	93.3	94.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346922

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999742	NO2NO3-N	97.5	96.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347074

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999727	Total-P	94.8	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346781

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999728	O-Phosphate-P	97.0	98.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P347039

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999117	Fluoride	96.9	98.2	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P347065

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999150	Organic Carbon	99.2	100	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P346785

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999902	Turbidity	5.09	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347315

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999741	Chloride	1.56	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347317

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999741	Sulfate	1.68	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347162

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998383	Ammonia-N	0.600	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347329

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999690	Kjeldahl Nitrogen	0.416	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346922

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999742	NO2NO3-N	1.03	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347074

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999727	Total-P	3.37	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346781

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999728	O-Phosphate-P	0.727	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P346778

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999595	Color (true)	0.684	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P347035

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999117	Total Alkalinity	7.60	Sample	F	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P347408

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999726	TDS	5.95	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P347039

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999117	Fluoride	0.972	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P347065

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999150	Organic Carbon	0.892	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: A84527
Included Lab Sample IDs: 1999726

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.1	98.2	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A84528
Included Lab Sample IDs: 1999728

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.4	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A84529
Included Lab Sample IDs: 1999726

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A84590
Included Lab Sample IDs: 1999727

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	100	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A84646
Included Lab Sample IDs: 1999726

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

Reference Method: SM 4500 F-C-97
Run ID: A84646
Included Lab Sample IDs: 1999726

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

Reference Method: SM 5310 B-00
Run ID: A84659
Included Lab Sample IDs: 1999727

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.7	97.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A84693
Included Lab Sample IDs: 1999727

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.3	101	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A84742
Included Lab Sample IDs: 1999726

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	102	P/P	90 - 110
Sulfate	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A84743
Included Lab Sample IDs: 1999727

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A84827
Included Lab Sample IDs: 1999727

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	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					5.09	
EPA 300.0 Rev. 2.1	Chloride	97.0	97.0	99.1		1.56	
	Sulfate	97.8	92.7	101		1.68	
EPA 350.1 Rev. 2.0	Ammonia-N	102	98.1	98.7			0.600
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	93.3	94.0			0.416
EPA 353.2 Rev. 2.0	NO2NO3-N	102	97.5	96.5			1.03
EPA 365.1 Rev. 2.0	Total-P	95.8	94.8	98.4			3.37
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.1	97.0	98.0			0.727
SM 2120 B	Color (true)					0.684	
SM 2320 B-97	Total Alkalinity	100				7.60	
SM 2540 C-97	TDS					5.95	
SM 4500 F-C-97	Fluoride	96.2	96.9	98.2			0.972
SM 5310 B-00	Organic Carbon	102	99.2	100			0.892

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1999726
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1999726
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1999726
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1999727
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1999727
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1999727
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1999727
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1999728
SM 2120 B / E31780	True Color measured at 450 nm	1999726
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1999726
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1999726
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	1999726
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1999726
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1999727

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	06/12/2018			06/12/2018 16:26	William L. Brown IV	1999726
EPA 300.0 Rev. 2.1	06/12/2018			06/21/2018 15:50	Irina Carbone	1999726
EPA 350.1 Rev. 2.0	06/12/2018			06/19/2018 10:33	Ping Hua	1999727
EPA 351.2 Rev. 2.0	06/12/2018	06/22/2018 10:30	Adrian Shelby	06/26/2018 10:05	Joseph Suarez	1999727
EPA 353.2 Rev. 2.0	06/12/2018			06/14/2018 15:00	Lauren Bottorf	1999727
EPA 365.1 Rev. 2.0	06/12/2018	06/19/2018 11:10	Sima Feizi	06/21/2018 09:23	Lipi Saha	1999727
EPA 365.1 Rev. 2.0 dissolved	06/12/2018			06/12/2018 14:50	Megan Treadwell	1999728
SM 2120 B	06/12/2018			06/12/2018 15:05	Tanya Welborn	1999726
SM 2320 B-97	06/12/2018			06/16/2018 15:51	Dale L. Simmons	1999726
SM 2540 C-97	06/12/2018			06/15/2018 16:52	Yijie Li	1999726
SM 2540 D-97	06/12/2018			06/15/2018 16:52	Yijie Li	1999726
SM 4500 F-C-97	06/12/2018			06/16/2018 15:51	Dale L. Simmons	1999726
SM 5310 B-00	06/12/2018			06/15/2018 22:58	Blanca Fach	1999727