

Chemical Analysis Report

WAS-SECT-2018-06-13-01

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

Event Description: **SMP LVIs**
Request ID: **RQ-2018-06-11-29**
Customer: **WAS-SECT**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
Attn: Curtis Musson

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 02-JUL-2018 11:41



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: Lower Dianne Lake Middle

Collection Date/Time: 06/12/2018 09:30

Field ID: G1WA0040

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1999988	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P346786	
	EPA 300.0 Rev. 2.1	Chloride	7.9		mg Cl/L	P347315	
		Sulfate	0.96		mg SO4/L	P347317	
	SM 2120 B	Color (true)	8.0		PCU	P346779	
	SM 2320 B-97	Total Alkalinity	27		mg CaCO3/L	P347157	RPD
	SM 2540 C-97	TDS	44		mg/L	P347408	
	SM 2540 D-97	TSS	6	I	mg/L	P347416	
	SM 4500 F-C-97	Fluoride	0.069	I	mg F/L	P347159	
1999989	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P347164	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.54		mg N/L	P347435	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P347298	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P347116	
	SM 5310 B-00	Organic Carbon	5.0		mg C/L	P347066	
1999990	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	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: P346786

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 SO ₄ /L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347164

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347435

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347298

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: P347116

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: P346779

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P347157

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /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: P347159

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P347066

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: P347164

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	104		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P347435

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: P347298

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: P347116

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.2		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: P347157

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

Reference Method: SM 4500 F-C-97
 Batch ID: P347159

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.5		P	91 - 105

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P347066

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: P347164

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999746	Ammonia-N	99.6	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P347435

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999989	Kjeldahl Nitrogen	104	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P347298

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999864	NO2NO3-N	98.6	98.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P347116

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999989	Total-P	92.0	92.1	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: P347159

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000937	Fluoride	94.7	95.8	P/P	91 - 105

Reference Method: SM 5310 B-00
 Batch ID: P347066

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999907	Organic Carbon	101	102	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P346786

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999903	Turbidity	4.14	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: P347164

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999746	Ammonia-N	2.83	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347435

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999989	Kjeldahl Nitrogen	2.03	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347298

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999864	NO2NO3-N	0.354	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347116

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999989	Total-P	0.0768	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: P346779

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999792	Color (true)	1.39	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P347157

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000937	Total Alkalinity	4.35	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: P347159

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000937	Fluoride	0.943	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P347066

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999907	Organic Carbon	0.341	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: 1999988

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.2	99.7	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A84528
Included Lab Sample IDs: 1999990

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.6	99.5	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A84529
Included Lab Sample IDs: 1999988

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

Reference Method: SM 5310 B-00
Run ID: A84659
Included Lab Sample IDs: 1999989

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

Reference Method: SM 2320 B-97
Run ID: A84691
Included Lab Sample IDs: 1999988

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A84691
Included Lab Sample IDs: 1999988

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A84693
Included Lab Sample IDs: 1999989

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	104	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A84739
Included Lab Sample IDs: 1999989

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A84742

Included Lab Sample IDs: 1999988

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: 1999989

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: A84849

Included Lab Sample IDs: 1999989

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		LCS	Precision	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					4.14	
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	104	99.6	103			2.83
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	104	101			2.03
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	98.6	98.2			0.354
EPA 365.1 Rev. 2.0	Total-P	94.2	92.0	92.1			0.0768
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.1	97.0	98.0			0.727
SM 2120 B	Color (true)					1.39	
SM 2320 B-97	Total Alkalinity	100				4.35	
SM 2540 C-97	TDS					5.95	
SM 4500 F-C-97	Fluoride	96.5	94.7	95.8			0.943
SM 5310 B-00	Organic Carbon	102	101	102			0.341

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1999988
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1999988
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1999988
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1999989
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1999989
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1999989
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1999989
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1999990
SM 2120 B / E31780	True Color measured at 450 nm	1999988
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1999988
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1999988
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	1999988
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1999988
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1999989

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	1999988
EPA 300.0 Rev. 2.1	06/12/2018			06/21/2018 15:01	Irina Carbone	1999988
EPA 350.1 Rev. 2.0	06/12/2018			06/19/2018 11:32	Ping Hua	1999989
EPA 351.2 Rev. 2.0	06/12/2018	06/25/2018 11:10	Adrian Shelby	06/26/2018 13:35	Joseph Suarez	1999989
EPA 353.2 Rev. 2.0	06/12/2018			06/20/2018 10:25	Beverly Y. Sanders	1999989
EPA 365.1 Rev. 2.0	06/12/2018	06/19/2018 11:10	Sima Feizi	06/21/2018 09:43	Lipi Saha	1999989
EPA 365.1 Rev. 2.0 dissolved	06/12/2018			06/12/2018 15:18	Megan Treadwell	1999990
SM 2120 B	06/12/2018			06/12/2018 15:16	Tanya Welborn	1999988
SM 2320 B-97	06/12/2018			06/19/2018 23:54	Lauren Bottorf	1999988
SM 2540 C-97	06/12/2018			06/15/2018 16:52	Yijie Li	1999988
SM 2540 D-97	06/12/2018			06/15/2018 16:52	Yijie Li	1999988
SM 4500 F-C-97	06/12/2018			06/19/2018 23:54	Lauren Bottorf	1999988
SM 5310 B-00	06/12/2018			06/16/2018 02:03	Blanca Fach	1999989