Chemical Analysis Report

SO-DIST-2018-06-20-02

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

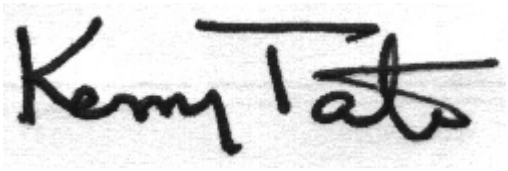
Event Description: **Biology: SMP Somewhere**
Request ID: **RQ-2018-07-02-38**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901
Attn: Maryann Dugan

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: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 13-JUL-2018 10:59



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: Imperial River @ Bonita **Collection Date/Time: 06/19/2018 13:05**

Field ID: G1SD0063 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2002368	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P347227	
	EPA 300.0 Rev. 2.1	Chloride	25		mg Cl/L	P347539	
		Sulfate	8.4		mg SO4/L	P347543	
	SM 2120 B	Color (true)	99	A	PCU	P347207	
	SM 2320 B-97	Total Alkalinity	206		mg CaCO3/L	P347375	RPD
	SM 2540 C-97	TDS	342	A	mg/L	P347758	
	SM 2540 D-97	TSS	3	IA	mg/L	P347732	
	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P347379	
2002369	EPA 350.1 Rev. 2.0	Ammonia-N	0.097		mg N/L	P347352	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.70		mg N/L	P348068	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.064		mg N/L	P347512	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P347426	
	SM 5310 B-00	Organic Carbon	9.3		mg C/L	P347697	
2002370	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.11		mg P/L	P347269	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P347227

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347539

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347543

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347352

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348068

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347512

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347426

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347269

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

Reference Method: SM 2120 B
Batch ID: P347207

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P347375

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

Reference Method: SM 2540 C-97
Batch ID: P347758

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P347732

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P347379

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P347697

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: P347539

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347543

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347352

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: P348068

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347512

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: P347426

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347269

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

Reference Method: SM 2320 B-97
Batch ID: P347375

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

Reference Method: SM 4500 F-C-97
Batch ID: P347379

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.9		P	91 - 105

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P347697

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347539

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002065	Chloride	101		P	90 - 110
2002171	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347543

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002065	Sulfate	101		P	90 - 110
2002171	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347352

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002230	Ammonia-N	101	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348068

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002423	Kjeldahl Nitrogen	97.6	92.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347512

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002248	NO2NO3-N	101	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347426

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002230	Total-P	95.4	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P347379

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002011	Fluoride	98.3	97.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P347697

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002390	Organic Carbon	94.6	95.6	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P347227

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002067	Turbidity	2.87	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347539

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002065	Chloride	2.62	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347543

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002065	Sulfate	0.864	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347352

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002230	Ammonia-N	0.0562	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348068

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002423	Kjeldahl Nitrogen	5.35	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347512

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002248	NO2NO3-N	0.496	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347426

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002230	Total-P	3.52	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347269

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002370	O-Phosphate-P	0.447	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P347207

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002368	Color (true)	0.631	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P347375

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002011	Total Alkalinity	6.11	Sample	F	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P347758

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002368	TDS	4.39	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P347379

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002011	Fluoride	0.940	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P347697

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002390	Organic Carbon	0.958	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: A84722
Included Lab Sample IDs: 2002368

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A84731
Included Lab Sample IDs: 2002368

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	98.0	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A84753
Included Lab Sample IDs: 2002370

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.8	97.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A84777
Included Lab Sample IDs: 2002369

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

Reference Method: SM 2320 B-97
Run ID: A84785
Included Lab Sample IDs: 2002368

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	99.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A84785
Included Lab Sample IDs: 2002368

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A84842
Included Lab Sample IDs: 2002369

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A84847
Included Lab Sample IDs: 2002368

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.6	99.8	P/P	90 - 110
Sulfate	97.9	100	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A84896
Included Lab Sample IDs: 2002369

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.4	97.2	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A84915
Included Lab Sample IDs: 2002369

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.4	96.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A85111
Included Lab Sample IDs: 2002369

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	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					2.87	
EPA 300.0 Rev. 2.1	Chloride	98.7	101	101		2.62	
	Sulfate	98.2	101	101		0.864	
EPA 350.1 Rev. 2.0	Ammonia-N	101	101	101			0.0562
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	97.6	92.2			5.35
EPA 353.2 Rev. 2.0	NO2NO3-N	102	101	100			0.496
EPA 365.1 Rev. 2.0	Total-P	96.4	95.4	101			3.52
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	95.8					0.447
SM 2120 B	Color (true)					0.631	
SM 2320 B-97	Total Alkalinity	100				6.11	
SM 2540 C-97	TDS					4.39	
SM 4500 F-C-97	Fluoride	97.9	98.3	97.1			0.940
SM 5310 B-00	Organic Carbon	99.2	94.6	95.6			0.958

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2002368
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2002368
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2002368
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2002369
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2002369
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2002369
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2002369
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2002370
SM 2120 B / E31780	True Color measured at 450 nm	2002368
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2002368
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2002368
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2002368
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2002368
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2002369

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	06/20/2018			06/20/2018 16:21	William L. Brown IV	2002368
EPA 300.0 Rev. 2.1	06/20/2018			06/25/2018 23:14	Lipi Saha	2002368
EPA 350.1 Rev. 2.0	06/20/2018			06/22/2018 12:28	Ping Hua	2002369
EPA 351.2 Rev. 2.0	06/20/2018	07/09/2018 10:25	Tanya Welborn	07/10/2018 09:40	Joseph Suarez	2002369
EPA 353.2 Rev. 2.0	06/20/2018			06/26/2018 13:11	Lauren Bottorf	2002369
EPA 365.1 Rev. 2.0	06/20/2018	06/25/2018 09:50	Sima Feizi	06/28/2018 09:29	Beverly Y. Sanders	2002369
EPA 365.1 Rev. 2.0 dissolved	06/20/2018			06/20/2018 16:11	Megan Treadwell	2002370
SM 2120 B	06/20/2018			06/20/2018 14:30	Blanca Fach	2002368
SM 2320 B-97	06/20/2018			06/22/2018 09:25	Lauren Bottorf	2002368
SM 2540 C-97	06/20/2018			06/22/2018 15:45	Yijie Li	2002368
SM 2540 D-97	06/20/2018			06/22/2018 15:45	Yijie Li	2002368
SM 4500 F-C-97	06/20/2018			06/22/2018 09:25	Lauren Bottorf	2002368
SM 5310 B-00	06/20/2018			06/27/2018 21:00	Julia Storbeck	2002369