Chemical Analysis Report

SW-DIST-2016-04-07-01

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

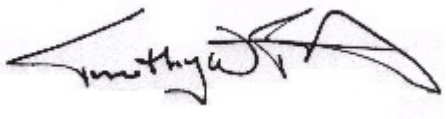
Event Description: **WBID: 1329G**
Request ID: **RQ-2016-04-04-06**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Stephen Clingerman

For additional information please contact
Timothy W. Fitzpatrick
Liang-Tsair Lin, Ph.D.
Colin Wright, Ph.D.
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8085

Certified by: Timothy Fitzpatrick, Program Administrator

Date Certified: 03-MAY-2016 16:30



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: G4SW0099 **Collection Date/Time: 04/06/2016 12:51**

Field ID: G4SW0099 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1787486	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P301857	
	EPA 300.0 Rev. 2.1	Chloride	17		mg Cl/L	P302028	
		Sulfate	0.24	I	mg SO4/L	P302026	
	SM 2120 B	Color (true)	550		PCU	P302066	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P302191	
	SM 2540 C-97	TDS	87		mg/L	P302607	
	SM 2540 D-97	TSS	2	I	mg/L	P302327	
	SM 4500 F-C-97	Fluoride	0.079	I	mg F/L	P302194	
1787487	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P302173	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P302674	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P302088	
	EPA 365.1 Rev. 2.0	Total-P	0.031		mg P/L	P302351	
	SM 5310 B-00	Organic Carbon	55		mg C/L	P302248	
1787488	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.009	I	mg P/L	P301830	

Ref. Method and Comment:
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
SM 5310 B-00: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P301857

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302026

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302028

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302173

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P302674

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302088

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302351

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301830

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

Reference Method: SM 2120 B
Batch ID: P302066

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P302191

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

Reference Method: SM 2540 C-97
Batch ID: P302607

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P302327

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P302194

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P302248

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: P302026

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302028

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302173

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: P302674

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.2		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302088

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: P302351

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301830

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.9		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P302191

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

Reference Method: SM 4500 F-C-97
Batch ID: P302194

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.7		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P302248

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302026

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787480	Sulfate	93.8		P	90 - 110
1787486	Sulfate	96.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302028

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787480	Chloride	98.2		P	90 - 110
1787486	Chloride	96.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302173

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787474	Ammonia-N	105	107	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P302674

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787406	Kjeldahl Nitrogen	89.5	92.6	F/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302088

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787458	NO2NO3-N	94.2	95.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302351

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787407	Total-P	103	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301830

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787482	O-Phosphate-P	98.2	99.5	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P302194

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787570	Fluoride	96.9	96.9	P/P	91 - 105

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P301857

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787455	Turbidity	1.98	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302026

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787480	Sulfate	0.410	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302028

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787480	Chloride	0.694	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302173

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787474	Ammonia-N	1.95	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P302674

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787406	Kjeldahl Nitrogen	1.85	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302088

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787458	NO2NO3-N	0.976	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302351

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787407	Total-P	1.45	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301830

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787482	O-Phosphate-P	1.02	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P302066

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787492	Color (true)	0.227	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P302191

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787570	Total Alkalinity	0.214	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P302607

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787530	TDS	0.889	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P302194

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787570	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P302248

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787457	Organic Carbon	0.342	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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A68729
Included Lab Sample IDs: 1787488

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.2	97.5	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A68738
Included Lab Sample IDs: 1787486

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.0	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A68804
Included Lab Sample IDs: 1787486

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Sulfate	99.9	96.4	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A68821
Included Lab Sample IDs: 1787486

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	106	P/P	85 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A68825
Included Lab Sample IDs: 1787487

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.5	98.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A68853
Included Lab Sample IDs: 1787487

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

Reference Method: SM 2320 B-97
Run ID: A68859
Included Lab Sample IDs: 1787486

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.8	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A68859
Included Lab Sample IDs: 1787486

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A68878
Included Lab Sample IDs: 1787487

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.0	95.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A68978
Included Lab Sample IDs: 1787487

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A69032
Included Lab Sample IDs: 1787487

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.3	105	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					1.98	
EPA 300.0 Rev. 2.1	Chloride	98.7	98.2	96.9		0.694	
	Sulfate	97.2	93.8	96.4		0.410	
EPA 350.1 Rev. 2.0	Ammonia-N	102	105	107			1.95
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.2	89.5	92.6			1.85
EPA 353.2 Rev. 2.0	NO2NO3-N	100	94.2	95.2			0.976
EPA 365.1 Rev. 2.0	Total-P	101	103	101			1.45
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.9	98.2	99.5			1.02
SM 2120 B	Color (true)					0.227	
SM 2320 B-97	Total Alkalinity	101				0.214	
SM 2540 C-97	TDS					0.889	
SM 4500 F-C-97	Fluoride	98.7	96.9	96.9			0.0
SM 5310 B-00	Organic Carbon	96.0					0.342

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1787486
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1787486
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1787486
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1787487

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1787487
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1787487
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1787487
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1787488
SM 2120 B / E31780	True Color measured at 450 nm	1787486
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1787486
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1787486
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1787486
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1787486
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1787487

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	04/07/2016			04/07/2016 17:11	Sima Feizi	1787486
EPA 300.0 Rev. 2.1	04/07/2016			04/12/2016	Ping Hua	1787486
EPA 350.1 Rev. 2.0	04/07/2016			04/13/2016	Diana M. Turner	1787487
EPA 351.2 Rev. 2.0	04/07/2016	04/21/2016	Sofia Elnemr	04/22/2016	Rochelle Y Jackson	1787487
EPA 353.2 Rev. 2.0	04/07/2016			04/12/2016	Peter D. Kaus	1787487
EPA 365.1 Rev. 2.0	04/07/2016	04/15/2016	Lipi Saha	04/18/2016	Lipi Saha	1787487
EPA 365.1 Rev. 2.0 dissolved	04/07/2016			04/07/2016 14:47	Ping Hua	1787488
SM 2120 B	04/07/2016			04/07/2016 14:52	Blanca Fach	1787486
SM 2320 B-97	04/07/2016			04/13/2016	Dale L. Simmons	1787486
SM 2540 C-97	04/07/2016			04/11/2016	Sima Feizi	1787486
SM 2540 D-97	04/07/2016			04/11/2016	Sima Feizi	1787486
SM 4500 F-C-97	04/07/2016			04/13/2016	Dale L. Simmons	1787486
SM 5310 B-00	04/07/2016			04/13/2016	Sofia Elnemr	1787487