Chemical Analysis Report

CEN-DIST-2016-01-14-01

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

Event Description: **RCID (Upper)+SCI**
Request ID: **RQ-2016-01-11-22**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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3319 Maguire Blvd., Suite 232
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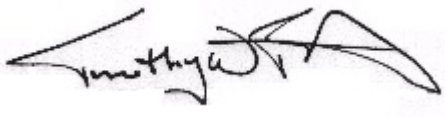
Certified by: Timothy Fitzpatrick, Program Administrator

Date Certified: 03-FEB-2016 10:13



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: Rainbow River @ 500m DS of 102nd st Rd **Collection Date/Time: 01/13/2016 13:22**

Field ID: G4CE0018_01132016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1763021	EPA 180.1 Rev. 2.0	Turbidity	0.20		NTU	P297096	
	EPA 300.0 Rev. 2.1	Chloride	6.7	A	mg Cl/L	P297434	
		Sulfate	15	A	mg SO4/L	P297439	
	SM 2120 B	Color (true)	14		PCU	P297090	
	SM 2320 B-97	Total Alkalinity	114	A	mg CaCO3/L	P297213	
	SM 2540 C-97	TDS	140	Q	mg/L	P297904	
	SM 2540 D-97	TSS	2	U	mg/L	P297505	
	SM 4500 F-C-97	Fluoride	0.094	I	mg F/L	P297207	
1763022	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P297607	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.14	I	mg N/L	P297276	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.7		mg N/L	P297372	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P297340	
	SM 5310 B-00	Organic Carbon	0.54	I	mg C/L	P297427	
1763023	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.030		mg P/L	P297075	

Ref. Method and Comment:
SM 2540 C-97: Sample reanalyzed out of holding time due to analytical difficulties.
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P297096

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297434

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297439

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P297607

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297276

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: P297372

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P297340

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P297075

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

Reference Method: SM 2120 B
Batch ID: P297090

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P297213

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

Reference Method: SM 2540 C-97
Batch ID: P297904

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P297505

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P297207

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P297427

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: P297434

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297439

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P297607

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297276

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P297372

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: P297340

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	105		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P297075

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

Reference Method: SM 2320 B-97
Batch ID: P297213

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.3		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P297207

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.0		P	94 - 108

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P297427

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.6		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297434

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1763021	Chloride	106		P	90 - 110
1763063	Chloride	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297439

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1763021	Sulfate	99.7		P	90 - 110
1763063	Sulfate	97.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P297607

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1763084	Ammonia-N	101	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297276

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1762946	Kjeldahl Nitrogen	97.3	98.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P297372

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1763082	NO2NO3-N	96.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P297340

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1762948	Total-P	105	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P297075

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1763023	O-Phosphate-P	100	101	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P297207

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1763021	Fluoride	96.5	97.1	P/P	94 - 107

Reference Method: SM 5310 B-00
Batch ID: P297427

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1763022	Organic Carbon	92.6	92.1	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P297096

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763004	Turbidity	0.854	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297434

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763021	Chloride	0.257	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297439

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763021	Sulfate	0.0141	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P297607

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763084	Ammonia-N	0.133	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297276

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762946	Kjeldahl Nitrogen	0.755	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P297372

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P297372

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763082	NO2NO3-N	1.10	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P297340

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762948	Total-P	2.83	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P297075

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763023	O-Phosphate-P	0.840	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P297090

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763004	Color (true)	0.501	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P297213

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763021	Total Alkalinity	0.0710	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P297904

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763981	TDS	2.05	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P297207

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763021	Fluoride	0.489	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P297427

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763022	Organic Carbon	0.579	Spike	P	0 - 20

Quality Assurance Report
Precision

* 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: EPA 365.1 Rev. 2.0 dissolved
Run ID: A67089
Included Lab Sample IDs: 1763023

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.0	99.0	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A67093
Included Lab Sample IDs: 1763021

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

Reference Method: SM 2120 B
Run ID: A67094
Included Lab Sample IDs: 1763021

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

Reference Method: SM 4500 F-C-97
Run ID: A67139
Included Lab Sample IDs: 1763021

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	99.5	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A67141
Included Lab Sample IDs: 1763021

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.8	97.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A67197
Included Lab Sample IDs: 1763022

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	95.5	96.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A67198
Included Lab Sample IDs: 1763022

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A67212
Included Lab Sample IDs: 1763022

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.7	96.7	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A67217
Included Lab Sample IDs: 1763021

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	104	P/P	90 - 110
Sulfate	99.7	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A67227
Included Lab Sample IDs: 1763022

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	99.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A67289
Included Lab Sample IDs: 1763022

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	104	104	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					0.854	
EPA 300.0 Rev. 2.1	Chloride	103	106	104		0.257	
	Sulfate	99.6	99.7	97.9		0.0141	
EPA 350.1 Rev. 2.0	Ammonia-N	100	101	101			0.133
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.8	97.3	98.3			0.755
EPA 353.2 Rev. 2.0	NO2NO3-N	100	96.5				1.10
EPA 365.1 Rev. 2.0	Total-P	105	105	102			2.83
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	104	100	101			0.840
SM 2120 B	Color (true)					0.501	
SM 2320 B-97	Total Alkalinity	99.3				0.0710	
SM 2540 C-97	TDS					2.05	
SM 4500 F-C-97	Fluoride	97.0	96.5	97.1			0.489
SM 5310 B-00	Organic Carbon	96.6	92.6	92.1			0.579

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1763021
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1763021
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1763021
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1763022
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1763022
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1763022
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1763022
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1763023
SM 2120 B / E31780	True Color measured at 450 nm	1763021
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1763021
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1763021
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1763021
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1763021
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1763022

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	01/14/2016			01/14/2016 15:21	Sima Feizi	1763021
EPA 300.0 Rev. 2.1	01/14/2016			01/22/2016	Ping Hua	1763021
EPA 350.1 Rev. 2.0	01/14/2016			01/26/2016	Diana M. Turner	1763022
EPA 351.2 Rev. 2.0	01/14/2016	01/20/2016	Christopher Armour	01/21/2016	Bryan A. Werth	1763022
EPA 353.2 Rev. 2.0	01/14/2016			01/21/2016	Peter D. Kaus	1763022
EPA 365.1 Rev. 2.0	01/14/2016	01/20/2016	Christopher Armour	01/22/2016	Lipi Saha	1763022
EPA 365.1 Rev. 2.0 dissolved	01/14/2016			01/14/2016 12:57	Julia Storbeck	1763023
SM 2120 B	01/14/2016			01/14/2016 15:17	Blanca Fach	1763021
SM 2320 B-97	01/14/2016			01/15/2016	Dale L. Simmons	1763021
SM 2540 C-97	01/14/2016			01/22/2016	Yijie Li	1763021
SM 2540 D-97	01/14/2016			01/19/2016	Sima Feizi	1763021
SM 4500 F-C-97	01/14/2016			01/15/2016	Dale L. Simmons	1763021
SM 5310 B-00	01/14/2016			01/21/2016	Sofia Elnemr	1763022