Chemical Analysis Report

CEN-DIST-2016-02-04-01

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

Event Description: **Hart Branch**
Request ID: **RQ-2016-02-01-67**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
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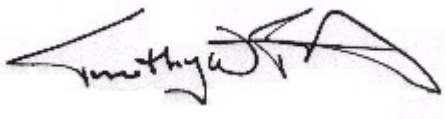
Certified by: Timothy Fitzpatrick, Program Administrator

Date Certified: 22-FEB-2016 15:20



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: HART BRANCH @ RR BRIDGE N OF MOSS PARK RD. **Collection Date/Time: 02/03/2016 12:30**

Field ID: G4CE0092 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1769158	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P298093	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P298294	
		Sulfate	1.1		mg SO4/L	P298297	
	SM 2120 B	Color (true)	320		PCU	P298075	
	SM 2320 B-97	Total Alkalinity	5.9		mg CaCO3/L	P298483	
	SM 2540 C-97	TDS	110		mg/L	P298690	
	SM 2540 D-97	TSS	2	U	mg/L	P298507	
	SM 4500 F-C-97	Fluoride	0.052	I	mg F/L	P298366	
1769159	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P298701	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P298383	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P298455	
	EPA 365.1 Rev. 2.0	Total-P	0.048		mg P/L	P298304	
	SM 5310 B-00	Organic Carbon	38		mg C/L	P298389	
1769160	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.026		mg P/L	P298078	

Ref. Method and Comment:
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: P298093

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298294

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298297

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298701

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298383

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: P298455

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298304

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298078

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

Reference Method: SM 2120 B
Batch ID: P298075

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P298483

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

Reference Method: SM 2540 C-97
Batch ID: P298690

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P298507

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P298366

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P298389

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: P298294

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	107		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298297

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298701

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298383

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298455

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: P298304

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298078

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

Reference Method: SM 2320 B-97
Batch ID: P298483

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P298366

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.2		P	94 - 108

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P298389

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.6		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298294

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768968	Chloride	106		P	90 - 110
1769067	Chloride	107		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298297

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768968	Sulfate	102		P	90 - 110
1769067	Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298701

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1769120	Ammonia-N	96.7	96.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298383

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1769124	Kjeldahl Nitrogen	98.8	93.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298455

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1769076	NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298304

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1769122	Total-P	106	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298078

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1769080	O-Phosphate-P	99.6	99.6	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P298366

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1769006	Fluoride	97.3	98.0	P/P	94 - 107

Reference Method: SM 5310 B-00
Batch ID: P298389

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1769121	Organic Carbon	95.4		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P298093

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769117	Turbidity	8.16	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298294

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768968	Chloride	0.116	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298297

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768968	Sulfate	0.353	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298701

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769120	Ammonia-N	0.449	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298383

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769124	Kjeldahl Nitrogen	2.57	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298455

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: P298455

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769076	NO2NO3-N	1.49	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298304

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769122	Total-P	1.01	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298078

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769080	O-Phosphate-P	0.0	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P298075

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769165	Color (true)	2.85	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P298483

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769006	Total Alkalinity	0.768	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P298690

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769101	TDS	0.372	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P298366

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769006	Fluoride	0.467	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P298389

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769121	Organic Carbon	0.516	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: SM 2120 B
Run ID: A67454
Included Lab Sample IDs: 1769158

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.3	97.0	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A67455
Included Lab Sample IDs: 1769160

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.5	99.1	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A67458
Included Lab Sample IDs: 1769158

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A67468
Included Lab Sample IDs: 1769158

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	104	P/P	90 - 110
Sulfate	94.2	99.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A67543
Included Lab Sample IDs: 1769158

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	99.1	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A67546
Included Lab Sample IDs: 1769159

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.5	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A67552
Included Lab Sample IDs: 1769159

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A67571
Included Lab Sample IDs: 1769159

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A67572
Included Lab Sample IDs: 1769159

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.3	95.5	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A67579
Included Lab Sample IDs: 1769158

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A67634
Included Lab Sample IDs: 1769159

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.5	99.1	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					8.16	
EPA 300.0 Rev. 2.1	Chloride	107	106	107		0.116	
	Sulfate	103	102	103		0.353	
EPA 350.1 Rev. 2.0	Ammonia-N	97.8	96.7	96.2			0.449
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	92.2	98.8	93.9			2.57
EPA 353.2 Rev. 2.0	NO2NO3-N	102	100	102			1.49
EPA 365.1 Rev. 2.0	Total-P	104	106	104			1.01
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	99.6	99.6			0.0
SM 2120 B	Color (true)					2.85	
SM 2320 B-97	Total Alkalinity	103				0.768	
SM 2540 C-97	TDS					0.372	
SM 4500 F-C-97	Fluoride	98.2	97.3	98.0			0.467
SM 5310 B-00	Organic Carbon	98.6	95.4				0.516

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1769158
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1769158
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1769158
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1769159
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1769159
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1769159
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1769159
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1769160
SM 2120 B / E31780	True Color measured at 450 nm	1769158
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1769158
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1769158
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1769158
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1769158
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1769159

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	02/04/2016			02/04/2016 16:09	Sima Feizi	1769158
EPA 300.0 Rev. 2.1	02/04/2016			02/07/2016	Ping Hua	1769158
EPA 350.1 Rev. 2.0	02/04/2016			02/16/2016	Diana M. Turner	1769159
EPA 351.2 Rev. 2.0	02/04/2016	02/10/2016	Christopher Armour	02/11/2016	Rochelle Y Jackson	1769159
EPA 353.2 Rev. 2.0	02/04/2016			02/11/2016	Peter D. Kaus	1769159
EPA 365.1 Rev. 2.0	02/04/2016	02/09/2016	Christopher Armour	02/10/2016	Lipi Saha	1769159
EPA 365.1 Rev. 2.0 dissolved	02/04/2016			02/04/2016 14:18	Bryan A. Werth	1769160
SM 2120 B	02/04/2016			02/04/2016 14:59	Rochelle Y Jackson	1769158
SM 2320 B-97	02/04/2016			02/11/2016	Dale L. Simmons	1769158
SM 2540 C-97	02/04/2016			02/08/2016	Sima Feizi	1769158
SM 2540 D-97	02/04/2016			02/08/2016	Sima Feizi	1769158
SM 4500 F-C-97	02/04/2016			02/09/2016	Dale L. Simmons	1769158
SM 5310 B-00	02/04/2016			02/09/2016	Sofia Elnemr	1769159