Chemical Analysis Report

CEN-DIST-2016-03-02-01

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

Event Description: **Lk Blue Cove/Sumter+DO**
Request ID: **RQ-2016-02-29-47**
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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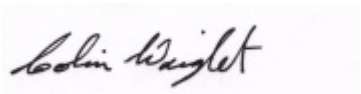
Certified by: Colin Wright, Environmental Administrator

Date Certified: 21-MAR-2016 13:31



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: SHADY BROOK 500M US OF CR 35 **Collection Date/Time: 03/01/2016 11:50**

Field ID: G1CE0015 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1776003	EPA 180.1 Rev. 2.0	Turbidity	0.75		NTU	P299614	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P299818	
		Sulfate	3.1		mg SO4/L	P299820	
	SM 2120 B	Color (true)	120		PCU	P299604	
	SM 2320 B-97	Total Alkalinity	127		mg CaCO3/L	P300124	
	SM 2540 C-97	TDS	200		mg/L	P300120	
	SM 2540 D-97	TSS	2	I	mg/L	P300000	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P300257	
1776004	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P300153	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.75		mg N/L	P299900	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.014		mg N/L	P299802	
	EPA 365.1 Rev. 2.0	Total-P	0.040		mg P/L	P299997	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P299915	
1776005	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.023		mg P/L	P299608	

Ref. Method and Comment:
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: 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: P299614

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299818

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299820

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300153

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299900

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: P299802

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299997

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299608

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

Reference Method: SM 2120 B
Batch ID: P299604

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P300124

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

Reference Method: SM 2540 C-97
Batch ID: P300120

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P300000

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P300257

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P299915

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: P299818

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	106		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299820

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300153

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299900

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	90.9		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299802

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: P299997

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299608

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

Reference Method: SM 2320 B-97
Batch ID: P300124

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

Reference Method: SM 4500 F-C-97
Batch ID: P300257

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	94 - 108

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P299915

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.4		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299818

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1775930	Chloride	106		P	90 - 110
1775934	Chloride	105		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299820

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1775930	Sulfate	104		P	90 - 110
1775934	Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300153

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1775939	Ammonia-N	97.4	98.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299802

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776004	NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299997

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776004	Total-P	103	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299608

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776107	O-Phosphate-P	99.7	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P300257

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776099	Fluoride	96.6	99.8	P/P	94 - 107

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P299915

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1775903	Organic Carbon	97.3	91.3	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P299614

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1775931	Turbidity	1.83	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299818

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1775930	Chloride	0.381	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299820

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1775930	Sulfate	3.10	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300153

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1775939	Ammonia-N	0.546	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299900

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1775938	Kjeldahl Nitrogen	3.07	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299802

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776004	NO2NO3-N	0.922	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299997

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776004	Total-P	4.29	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299608

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776107	O-Phosphate-P	0.944	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P299604

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1775902	Color (true)	1.20	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P300124

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776099	Total Alkalinity	0.212	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P300120

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1775933	TDS	3.72	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P300257

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776099	Fluoride	2.28	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P299915

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1775903	Organic Carbon	5.15	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 300.0 Rev. 2.1
Run ID: A67933
Included Lab Sample IDs: 1776003

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	101	P/P	90 - 110
Sulfate	101	97.5	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A67948
Included Lab Sample IDs: 1776003

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.7	98.4	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A67950
Included Lab Sample IDs: 1776005

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A67951
Included Lab Sample IDs: 1776003

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A68011
Included Lab Sample IDs: 1776004

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	102	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A68073
Included Lab Sample IDs: 1776004

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.6	94.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A68119
Included Lab Sample IDs: 1776004

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.1	97.0	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A68136
Included Lab Sample IDs: 1776003

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.2	102	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A68144
Included Lab Sample IDs: 1776004

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.8	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A68166
Included Lab Sample IDs: 1776004

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	98.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A68180
Included Lab Sample IDs: 1776003

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	102	99.6	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					1.83	
EPA 300.0 Rev. 2.1	Chloride	106	106	105		0.381	
	Sulfate	104	104	103		3.10	
EPA 350.1 Rev. 2.0	Ammonia-N	98.8	97.4	98.0			0.546
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	90.9					3.07
EPA 353.2 Rev. 2.0	NO2NO3-N	102	101	102			0.922
EPA 365.1 Rev. 2.0	Total-P	97.7	103	98.0			4.29
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	99.7	101			0.944
SM 2120 B	Color (true)					1.20	
SM 2320 B-97	Total Alkalinity	101				0.212	
SM 2540 C-97	TDS					3.72	
SM 4500 F-C-97	Fluoride	100	96.6	99.8			2.28
SM 5310 B-00	Organic Carbon	94.4	97.3	91.3			5.15

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1776003
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1776003
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1776003
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1776004

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1776004
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1776004
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1776004
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1776005
SM 2120 B / E31780	True Color measured at 450 nm	1776003
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1776003
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1776003
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1776003
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1776003
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1776004

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	03/02/2016			03/02/2016 15:05	Sima Feizi	1776003
EPA 300.0 Rev. 2.1	03/02/2016			03/04/2016	Ping Hua	1776003
EPA 350.1 Rev. 2.0	03/02/2016			03/10/2016	Diana M. Turner	1776004
EPA 351.2 Rev. 2.0	03/02/2016	03/08/2016	Sofia Elnemr	03/09/2016	Rochelle Y Jackson	1776004
EPA 353.2 Rev. 2.0	03/02/2016			03/04/2016	Virginia P. Brown	1776004
EPA 365.1 Rev. 2.0	03/02/2016	03/09/2016	Christopher Armour	03/10/2016	Lipi Saha	1776004
EPA 365.1 Rev. 2.0 dissolved	03/02/2016			03/02/2016 14:46	Julia Storbeck	1776005
SM 2120 B	03/02/2016			03/02/2016 14:39	Rochelle Y Jackson	1776003
SM 2320 B-97	03/02/2016			03/08/2016	Dale L. Simmons	1776003
SM 2540 C-97	03/02/2016			03/04/2016	Yijie Li	1776003
SM 2540 D-97	03/02/2016			03/04/2016	Yijie Li	1776003
SM 4500 F-C-97	03/02/2016			03/11/2016	Dale L. Simmons	1776003
SM 5310 B-00	03/02/2016			03/04/2016	Sofia Elnemr	1776004