Chemical Analysis Report

CEN-DIST-2016-06-01-01

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

Event Description: **LVI (Kit A)**
Request ID: **RQ-2016-05-09-56**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 20-JUN-2016 14:24

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: LAKE BLUE COVE @ 150M SW OF CENTER **Collection Date/Time: 05/31/2016 12:55**

Field ID: G4CE0022 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1803326	EPA 180.1 Rev. 2.0	Turbidity	4.0		NTU	P305412	
	EPA 300.0 Rev. 2.1	Chloride	2.9		mg Cl/L	P305621	
		Sulfate	0.25	I	mg SO4/L	P305624	
	SM 2120 B	Color (true)	13		PCU	P305378	
	SM 2320 B-97	Total Alkalinity	38		mg CaCO3/L	P305750	
	SM 2540 C-97	TDS	66		mg/L	P306102	
	SM 2540 D-97	TSS	4	I	mg/L	P305838	
	SM 4500 F-C-97	Fluoride	0.31		mg F/L	P305753	
1803327	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P305665	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.82		mg N/L	P305588	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P305445	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P305792	
	SM 5310 B-00	Organic Carbon	8.1		mg C/L	P306095	
1803328	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.041		mg P/L	P305384	

Ref. Method and Comment:
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-P: 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: P305412

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305621

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305624

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305665

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305588

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: P305445

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305792

Component	Result	Code	Units
Total-P	0.005	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305384

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

Reference Method: SM 2120 B
Batch ID: P305378

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P305750

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

Reference Method: SM 2540 C-97
Batch ID: P306102

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P305838

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P305753

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P306095

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: P305621

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305624

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305665

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: P305588

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305445

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305792

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: P305384

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

Reference Method: SM 2320 B-97
Batch ID: P305750

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P305753

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.2		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P306095

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	105		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305621

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1803141	Chloride	99.1		P	90 - 110
1803326	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305624

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1803141	Sulfate	99.8		P	90 - 110
1803326	Sulfate	99.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305665

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1803142	Ammonia-N	102	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305588

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1803338	Kjeldahl Nitrogen	97.5	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305445

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1803181	NO2NO3-N	94.0	93.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305384

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1803328	O-Phosphate-P	97.7	99.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P305753

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1803462	Fluoride	98.3	97.6	P/P	91 - 105

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P306095

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1803355	Organic Carbon	103	104	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P305412

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1803136	Turbidity	0.757	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305621

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1803141	Chloride	0.180	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305624

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1803141	Sulfate	1.94	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305665

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1803142	Ammonia-N	0.254	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305588

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1803338	Kjeldahl Nitrogen	5.48	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305445

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1803181	NO2NO3-N	1.04	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305792

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1803337	Total-P	0.0490	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305384

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1803328	O-Phosphate-P	1.36	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P305378

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1803336	Color (true)	0.273	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P305750

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1803462	Total Alkalinity	0.570	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P306102

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1803150	TDS	2.82	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P305753

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1803462	Fluoride	0.480	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P306095

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1803355	Organic Carbon	0.153	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: SM 2120 B
Run ID: A69787
Included Lab Sample IDs: 1803326

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	101	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A69788
Included Lab Sample IDs: 1803328

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.6	99.8	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A69802
Included Lab Sample IDs: 1803326

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	101	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A69804
Included Lab Sample IDs: 1803327

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A69814
Included Lab Sample IDs: 1803326

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	101	P/P	90 - 110
Sulfate	99.4	99.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A69862
Included Lab Sample IDs: 1803327

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A69899
Included Lab Sample IDs: 1803327

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.8	98.1	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A69906
Included Lab Sample IDs: 1803326

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.1	103	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A69906
Included Lab Sample IDs: 1803326

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A69962
Included Lab Sample IDs: 1803327

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

Reference Method: SM 5310 B-00
Run ID: A70009
Included Lab Sample IDs: 1803327

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.8	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					0.757	
EPA 300.0 Rev. 2.1	Chloride	101	102	99.1		0.180	
	Sulfate	99.9	99.8	99.7		1.94	
EPA 350.1 Rev. 2.0	Ammonia-N	101	102	102			0.254
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	97.5	107			5.48
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	94.0	93.0			1.04
EPA 365.1 Rev. 2.0	Total-P	105					0.0490
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.0	97.7	99.6			1.36
SM 2120 B	Color (true)					0.273	
SM 2320 B-97	Total Alkalinity	102				0.570	
SM 2540 C-97	TDS					2.82	
SM 4500 F-C-97	Fluoride	97.2	98.3	97.6			0.480
SM 5310 B-00	Organic Carbon	105	103	104			0.153

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1803326
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1803326
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1803326
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1803327

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1803327
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1803327
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1803327
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1803328
SM 2120 B / E31780	True Color measured at 450 nm	1803326
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1803326
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1803326
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1803326
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1803326
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1803327

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	06/01/2016			06/01/2016 18:53	Blanca Fach	1803326
EPA 300.0 Rev. 2.1	06/01/2016			06/03/2016	Elisa J Lutz	1803326
EPA 350.1 Rev. 2.0	06/01/2016			06/06/2016	Diana M. Turner	1803327
EPA 351.2 Rev. 2.0	06/01/2016	06/06/2016	Sofia Elnemr	06/07/2016	Christopher Armour	1803327
EPA 353.2 Rev. 2.0	06/01/2016			06/02/2016	Peter D. Kaus	1803327
EPA 365.1 Rev. 2.0	06/01/2016	06/08/2016	Vijayalakshmi Reddy	06/09/2016	Peter D. Kaus	1803327
EPA 365.1 Rev. 2.0 dissolved	06/01/2016			06/01/2016 16:48	Julia Storbeck	1803328
SM 2120 B	06/01/2016			06/01/2016 17:49	Chrisoulla Rakowski	1803326
SM 2320 B-97	06/01/2016			06/07/2016	Dale L. Simmons	1803326
SM 2540 C-97	06/01/2016			06/03/2016	Yijie Li	1803326
SM 2540 D-97	06/01/2016			06/03/2016	Yijie Li	1803326
SM 4500 F-C-97	06/01/2016			06/07/2016	Dale L. Simmons	1803326
SM 5310 B-00	06/01/2016			06/11/2016	Diana M. Turner	1803327