Chemical Analysis Report

WQAP-2017-07-20-02

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

Event Description: **Estes LVI**
Request ID: **RQ-2017-07-17-76**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
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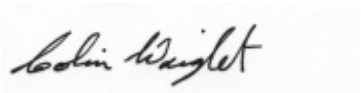
Certified by: Colin Wright, Program Administrator

Date Certified: 07-AUG-2017 10:24



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 Estes LV1 **Collection Date/Time: 07/19/2017 11:15**

Field ID: G1SW0027 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1914797	EPA 180.1 Rev. 2.0	Turbidity	4.0		NTU	P328872	
	EPA 300.0 Rev. 2.1	Chloride	34		mg Cl/L	P328910	
		Sulfate	14		mg SO4/L	P328913	
	SM 2120 B	Color (true)	40		PCU	P328856	
	SM 2320 B-97	Total Alkalinity	46		mg CaCO3/L	P328972	
	SM 2540 C-97	TDS	143		mg/L	P329303	
	SM 2540 D-97	TSS	6	IA	mg/L	P329314	
	SM 4500 F-C-97	Fluoride	0.065	I	mg F/L	P329086	
1914798	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P328958	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P328964	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P329049	
	EPA 365.1 Rev. 2.0	Total-P	0.038		mg P/L	P328930	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P329478	
1914799	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P328841	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P328872

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328910

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328913

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P328958

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328964

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: P329049

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P328930

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P328841

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

Reference Method: SM 2120 B
Batch ID: P328856

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P328972

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

Reference Method: SM 2540 C-97
Batch ID: P329303

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P329314

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P329086

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P329478

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: P328910

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328913

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P328958

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: P328964

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329049

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P328930

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P328841

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: P328972

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P329086

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.3		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P329478

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.9		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328910

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1914809	Chloride	103		P	90 - 110
1914939	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328913

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1914809	Sulfate	101		P	90 - 110
1914939	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P328958

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1914798	Ammonia-N	97.2	95.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328964

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1914798	Kjeldahl Nitrogen	96.1	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329049

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1914775	NO2NO3-N	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P328930

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1914775	Total-P	104	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P328841

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1914782	O-Phosphate-P	94.0	96.4	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P329086

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1915059	Fluoride	98.9	100	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P329478

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1914798	Organic Carbon	98.7	97.2	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P328872

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1914739	Turbidity	1.87	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328910

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1914809	Chloride	1.17	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328913

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1914809	Sulfate	1.48	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P328958

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1914798	Ammonia-N	1.60	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328964

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1914798	Kjeldahl Nitrogen	1.23	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329049

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: P329049

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1914775	NO2NO3-N	0.213	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P328930

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1914775	Total-P	3.79	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P328841

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1914782	O-Phosphate-P	2.30	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P328856

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1914739	Color (true)	0.663	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P328972

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1915059	Total Alkalinity	0.209	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P329303

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1915060	TDS	3.22	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P329086

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1915059	Fluoride	1.05	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P329478

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1914798	Organic Carbon	0.884	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 300.0 Rev. 2.1
Run ID: A77800
Included Lab Sample IDs: 1914797

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A77845
Included Lab Sample IDs: 1914799

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.3	97.2	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A77847
Included Lab Sample IDs: 1914797

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.7	102	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A77849
Included Lab Sample IDs: 1914797

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	99.5	P/P	95 - 105

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A77874
Included Lab Sample IDs: 1914798

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

Reference Method: SM 2320 B-97
Run ID: A77884
Included Lab Sample IDs: 1914797

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A77900
Included Lab Sample IDs: 1914798

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	96.8	97.0	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A77923
Included Lab Sample IDs: 1914798

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A77941
Included Lab Sample IDs: 1914797

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A77987
Included Lab Sample IDs: 1914798

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.9	106	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A78087
Included Lab Sample IDs: 1914798

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.2	97.2	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					1.87	
EPA 300.0 Rev. 2.1	Chloride	103	103	103		1.17	
	Sulfate	103	101	101		1.48	
EPA 350.1 Rev. 2.0	Ammonia-N	102	97.2	95.5			1.60
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	96.1	98.5			1.23
EPA 353.2 Rev. 2.0	NO2NO3-N	106	106				0.213
EPA 365.1 Rev. 2.0	Total-P	98.9	104	99.8			3.79
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.0	94.0	96.4			2.30
SM 2120 B	Color (true)					0.663	
SM 2320 B-97	Total Alkalinity	103				0.209	
SM 2540 C-97	TDS					3.22	
SM 4500 F-C-97	Fluoride	98.3	98.9	100			1.05
SM 5310 B-00	Organic Carbon	96.9	98.7	97.2			0.884

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	1914797
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1914797
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1914797
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1914798
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1914798
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1914798
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1914798
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1914799
SM 2120 B / E31780	True Color measured at 450 nm	1914797
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1914797
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1914797
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1914797
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1914797
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1914798

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	07/20/2017			07/20/2017 15:32	DeAsia Armster	1914797
EPA 300.0 Rev. 2.1	07/20/2017			07/21/2017	Julia Storbeck	1914797
EPA 350.1 Rev. 2.0	07/20/2017			07/21/2017	Sofia Elnemr	1914798
EPA 351.2 Rev. 2.0	07/20/2017	07/24/2017	Adrian Shelby	07/27/2017	Joseph Suarez	1914798
EPA 353.2 Rev. 2.0	07/20/2017			07/25/2017	Beverly Y. Sanders	1914798
EPA 365.1 Rev. 2.0	07/20/2017	07/21/2017	Vijayalakshmi Reddy	07/24/2017	Lipi Saha	1914798
EPA 365.1 Rev. 2.0 dissolved	07/20/2017			07/20/2017 11:55	Ping Hua	1914799
SM 2120 B	07/20/2017			07/20/2017 14:55	Tanya Welborn	1914797
SM 2320 B-97	07/20/2017			07/22/2017	Dale L. Simmons	1914797
SM 2540 C-97	07/20/2017			07/24/2017	DeAsia Armster	1914797
SM 2540 D-97	07/20/2017			07/24/2017	DeAsia Armster	1914797
SM 4500 F-C-97	07/20/2017			07/26/2017	Dale L. Simmons	1914797
SM 5310 B-00	07/20/2017			07/31/2017	Sofia Elnemr	1914798