

Chemical Analysis Report

CEN-DIST-2017-01-26-03

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

Event Description: **Lk Ellen/Lk Concord**
Request ID: **RQ-2017-01-23-65**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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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 Concord @ Center

Collection Date/Time: 01/25/2017 10:33

Field ID: G2CE0059

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1866900	EPA 180.1 Rev. 2.0	Turbidity	3.4		NTU	P318846	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P319155	
		Sulfate	7.0		mg SO4/L	P319157	
	SM 2120 B	Color (true)	12		PCU	P318813	
	SM 2320 B-97	Total Alkalinity	79	A	mg CaCO3/L	P318980	
	SM 2540 C-97	TDS	119	A	mg/L	P319524	
	SM 2540 D-97	TSS	7	I	mg/L	P319305	
	SM 4500 F-C-97	Fluoride	0.067	I	mg F/L	P318985	
1866901	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P319337	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.65		mg N/L	P318917	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P319079	
	EPA 365.1 Rev. 2.0	Total-P	0.039		mg P/L	P318956	
	SM 5310 B-00	Organic Carbon	5.1		mg C/L	P318897	
1866902	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P318806	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P318846

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P319155

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P319157

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P319337

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P318917

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: P319079

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318956

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318806

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

Reference Method: SM 2120 B
Batch ID: P318813

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P318980

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

Reference Method: SM 2540 C-97
Batch ID: P319524

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P319305

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P318985

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P318897

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: P319155

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319157

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P319337

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	108		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318917

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P319079

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318956

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318806

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

Reference Method: SM 2320 B-97
Batch ID: P318980

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

Reference Method: SM 4500 F-C-97
Batch ID: P318985

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.0		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P318897

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	102		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319155

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866900	Chloride	102		P	90 - 110
1867038	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319157

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866900	Sulfate	99.5		P	90 - 110
1867038	Sulfate	96.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P319337

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1868015	Ammonia-N	109	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P319079

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866800	NO2NO3-N	102	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318956

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866901	Total-P	103	96.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318806

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866834	O-Phosphate-P	97.8	97.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P318985

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866900	Fluoride	97.4	96.3	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
 Batch ID: P318897

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866625	Organic Carbon	97.3	99.7	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P318846

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866874	Turbidity	3.26	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P319155

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1867038	Chloride	0.309	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P319337

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868015	Ammonia-N	3.46	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P318917

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866831	Kjeldahl Nitrogen	13.2	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P319079

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866800	NO2NO3-N	2.27	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P318956

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866901	Total-P	5.75	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318806

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866834	O-Phosphate-P	0.381	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P318813

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866824	Color (true)	0.105	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P318980

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866900	Total Alkalinity	0.732	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P319524

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866900	TDS	1.68	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P318985

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866900	Fluoride	0.996	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P318897

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866625	Organic Carbon	1.91	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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A74133
Included Lab Sample IDs: 1866902

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.5	99.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B
Run ID: A74134
Included Lab Sample IDs: 1866900

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	101	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A74142
Included Lab Sample IDs: 1866900

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

Reference Method: SM 5310 B-00
Run ID: A74153
Included Lab Sample IDs: 1866901

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

Reference Method: SM 2320 B-97
Run ID: A74180
Included Lab Sample IDs: 1866900

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A74180
Included Lab Sample IDs: 1866900

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: A74188
Included Lab Sample IDs: 1866901

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A74196
Included Lab Sample IDs: 1866901

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	98.4	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A74206
Included Lab Sample IDs: 1866900

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.0	101	P/P	90 - 110
Sulfate	93.7	96.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A74209

Included Lab Sample IDs: 1866901

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A74289

Included Lab Sample IDs: 1866901

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	101	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	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				3.26	
EPA 300.0 Rev. 2.1	Chloride	101	102 102		0.309	
	Sulfate	96.3	96.7 99.5			
EPA 350.1 Rev. 2.0	Ammonia-N	108	109 103			3.46
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102				13.2
EPA 353.2 Rev. 2.0	NO2NO3-N	104	102 105			2.27
EPA 365.1 Rev. 2.0	Total-P	97.0	103 96.6			5.75
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.8	97.8 97.4			0.381
SM 2120 B	Color (true)				0.105	
SM 2320 B-97	Total Alkalinity	103			0.732	
SM 2540 C-97	TDS				1.68	
SM 4500 F-C-97	Fluoride	99.0	97.4 96.3			0.996
SM 5310 B-00	Organic Carbon	102	97.3 99.7			1.91

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1866900
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1866900
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1866900
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1866901
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1866901
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1866901
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1866901
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1866902

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SM 2120 B / E31780	True Color measured at 450 nm	1866900
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1866900
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1866900
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1866900
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1866900
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1866901

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	01/26/2017			01/26/2017 15:52	Sima Feizi	1866900
EPA 300.0 Rev. 2.1	01/26/2017			02/01/2017	Ping Hua	1866900
EPA 350.1 Rev. 2.0	01/26/2017			02/02/2017	Sofia Elnemr	1866901
EPA 351.2 Rev. 2.0	01/26/2017	01/30/2017	Adrian Shelby	01/31/2017	Joseph Suarez	1866901
EPA 353.2 Rev. 2.0	01/26/2017			02/01/2017	Beverly Y. Sanders	1866901
EPA 365.1 Rev. 2.0	01/26/2017	01/30/2017	Vijayalakshmi Reddy	01/31/2017	Lipi Saha	1866901
EPA 365.1 Rev. 2.0 dissolved	01/26/2017			01/26/2017 16:04	Julie Michelle Frank	1866902
SM 2120 B	01/26/2017			01/26/2017 17:43	Jared I. Manley	1866900
SM 2320 B-97	01/26/2017			01/30/2017	Dale L. Simmons	1866900
SM 2540 C-97	01/26/2017			01/30/2017	Sima Feizi	1866900
SM 2540 D-97	01/26/2017			01/30/2017	Sima Feizi	1866900
SM 4500 F-C-97	01/26/2017			01/30/2017	Dale L. Simmons	1866900
SM 5310 B-00	01/26/2017			01/26/2017	Jared I. Manley	1866901