

Chemical Analysis Report

CEN-DIST-2018-07-24-04

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

Event Description: **Lk Ashby + LVI**
Request ID: **RQ-2018-07-23-34**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 14-AUG-2018 14:39

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored background.

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 Ashby Center

Collection Date/Time: 07/23/2018 12:23

Field ID: G2CE0054

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2010033	EPA 180.1 Rev. 2.0	Turbidity	3.0		NTU	P349083	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P349410	
		Sulfate	3.1		mg SO4/L	P349412	
	SM 2120 B	Color (true)	470		PCU	P349053	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P349244	
	SM 2540 C-97	TDS	86		mg/L	P349346	
	SM 2540 D-97	TSS	3	I	mg/L	P349340	
	SM 4500 F-C-97	Fluoride	0.040	I	mg F/L	P349246	
2010034	EPA 350.1 Rev. 2.0	Ammonia-N	0.10		mg N/L	P349217	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P349186	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.036		mg N/L	P349123	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P349207	
	SM 5310 B-00	Organic Carbon	28		mg C/L	P349222	
2010035	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.10		mg P/L	P349058	

Ref. Method and Comment:

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: P349083

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349410

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349412

Component	Result	Code	Units
Sulfate	0.20	U	mg SO ₄ /L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349217

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349186

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349123

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349207

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349058

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

Reference Method: SM 2120 B
Batch ID: P349053

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P349244

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P349346

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P349340

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P349246

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P349222

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: P349410

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349412

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349217

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349186

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349123

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: P349207

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: P349058

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

Reference Method: SM 2120 B
Batch ID: P349053

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.3		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P349244

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P349246

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.2		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P349222

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349410

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2010201	Chloride	103		P	90 - 110
2010534	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349412

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2010201	Sulfate	103		P	90 - 110
2010534	Sulfate	99.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349217

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009946	Ammonia-N	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349123

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009947	NO2NO3-N	99.5	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349207

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2010004	Total-P	94.5	96.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349058

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2010006	O-Phosphate-P	98.1	99.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P349246

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2010003	Fluoride	95.4	95.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P349222

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009830	Organic Carbon	92.6	93.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P349083

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009944	Turbidity	3.25	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349410

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2010201	Chloride	3.66	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349412

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2010201	Sulfate	5.18	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349217

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009946	Ammonia-N	0.396	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349186

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2010004	Kjeldahl Nitrogen	1.13	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349123

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009947	NO2NO3-N	1.58	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349207

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2010004	Total-P	1.72	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349058

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2010006	O-Phosphate-P	1.22	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
 Batch ID: P349053

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009929	Color (true)	2.08	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P349244

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2010003	Total Alkalinity	0.639	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
 Batch ID: P349346

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2010002	TDS	3.75	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P349246

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2010003	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
 Batch ID: P349222

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009830	Organic Carbon	1.30	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: SM 2120 B
Run ID: A85440
Included Lab Sample IDs: 2010033

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	103	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A85441
Included Lab Sample IDs: 2010035

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.3	98.1	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A85446
Included Lab Sample IDs: 2010033

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	98.5	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A85471
Included Lab Sample IDs: 2010034

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A85497
Included Lab Sample IDs: 2010034

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	105	104	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A85504
Included Lab Sample IDs: 2010034

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.2	97.0	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A85509
Included Lab Sample IDs: 2010033

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

Reference Method: SM 4500 F-C-97
Run ID: A85509
Included Lab Sample IDs: 2010033

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A85518

Included Lab Sample IDs: 2010034

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.6	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A85543

Included Lab Sample IDs: 2010034

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A85560

Included Lab Sample IDs: 2010033

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.8	104	P/P	90 - 110
Sulfate	99.5	104	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	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					3.25	
EPA 300.0 Rev. 2.1	Chloride	100	103	101		3.66	
	Sulfate	99.8	103	99.5		5.18	
EPA 350.1 Rev. 2.0	Ammonia-N	103	104	104			0.396
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107					1.13
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	99.5	102			1.58
EPA 365.1 Rev. 2.0	Total-P	98.9	94.5	96.3			1.72
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.9	98.1	99.3			1.22
SM 2120 B	Color (true)	98.3				2.08	
SM 2320 B-97	Total Alkalinity	102				0.639	
SM 2540 C-97	TDS					3.75	
SM 4500 F-C-97	Fluoride	98.2	95.4	95.4			0.0
SM 5310 B-00	Organic Carbon	93.6	92.6	93.9			1.30

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2010033
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2010033
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2010033
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2010034
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2010034
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2010034
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2010034
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2010035
SM 2120 B / E31780	True Color measured at 450 nm	2010033
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2010033
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2010033
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2010033
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2010033
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2010034

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	07/24/2018			07/24/2018 15:17	Blanca Fach	2010033
EPA 300.0 Rev. 2.1	07/24/2018			07/30/2018 13:59	Lipi Saha	2010033
EPA 350.1 Rev. 2.0	07/24/2018			07/26/2018 12:50	Ping Hua	2010034
EPA 351.2 Rev. 2.0	07/24/2018	07/26/2018 11:30	Adrian Shelby	07/27/2018 16:43	Joseph Suarez	2010034
EPA 353.2 Rev. 2.0	07/24/2018			07/25/2018 13:47	Lauren Bottorf	2010034
EPA 365.1 Rev. 2.0	07/24/2018	07/26/2018 12:35	Sima Feizi	07/27/2018 09:02	Beverly Y. Sanders	2010034
EPA 365.1 Rev. 2.0 dissolved	07/24/2018			07/24/2018 16:44	Julia Storbeck	2010035
SM 2120 B	07/24/2018			07/24/2018 16:31	Tanya Welborn	2010033
SM 2320 B-97	07/24/2018			07/26/2018 03:53	Dale L. Simmons	2010033
SM 2540 C-97	07/24/2018			07/26/2018 15:35	Yijie Li	2010033
SM 2540 D-97	07/24/2018			07/26/2018 15:35	Yijie Li	2010033
SM 4500 F-C-97	07/24/2018			07/26/2018 03:53	Dale L. Simmons	2010033
SM 5310 B-00	07/24/2018			07/26/2018 05:54	Megan Treadwell	2010034