

Chemical Analysis Report

CEN-DIST-2020-08-05-03

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

Event Description: **Lake Adelaide**
Request ID: **RQ-2020-08-03-64**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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3319 Maguire Blvd., Suite 232
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 26-AUG-2020 14:10

A handwritten signature in black ink, appearing to read "Liang Lin", is shown 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 by the Florida Department of Health Environmental Laboratory Certification Program 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 Adelaide @ Center

Collection Date/Time: 08/04/2020 12:20

Field ID: G2CE0151

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2188684	EPA 180.1 Rev. 2.0	Turbidity	4.5	A	NTU	P385692	
	EPA 300.0 Rev. 2.1	Chloride	21		mg Cl/L	P385890	
		Sulfate	8.9		mg SO4/L	P385895	
	SM 2120 B-2011	Color (true)	51		PCU	P385688	
	SM 2320 B-2011	Total Alkalinity	42		mg CaCO3/L	P385770	
	SM 2540 C-2011	TDS	117		mg/L	P386160	
	SM 2540 D-2011	TSS	4	I	mg/L	P386005	
	SM 4500 F-C-2011	Fluoride	0.075	I	mg F/L	P385773	
2188685	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P385803	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P385879	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P385764	
	EPA 365.1 Rev. 2.0	Total-P	0.040		mg P/L	P385824	
	SM 5310 B-2011	Organic Carbon	11		mg C/L	P385776	
2188686	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P385697	

Ref. Method and Comment:

SM 2540 D-2011: 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: P385692

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385890

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385895

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385803

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385879

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385764

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385824

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385697

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

Reference Method: SM 2120 B-2011
Batch ID: P385688

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P385770

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

Reference Method: SM 2540 C-2011
Batch ID: P386160

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P386005

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P385773

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P385776

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: P385890

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385895

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385803

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385879

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: P385764

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: P385824

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385697

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

Reference Method: SM 2120 B-2011
Batch ID: P385688

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

Reference Method: SM 2320 B-2011
Batch ID: P385770

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	93 - 104

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P385773

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P385776

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385890

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2188563	Chloride	101		P	90 - 110
2188897	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385895

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2188563	Sulfate	102		P	90 - 110
2188897	Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385803

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2188772	Ammonia-N	97.4	96.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385879

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2188772	Kjeldahl Nitrogen	103	99.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385764

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2188685	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385824

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2188589	Total-P	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385697

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2188686	O-Phosphate-P	97.6	97.1	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P385773

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2188548	Fluoride	102	101	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P385776

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2188635	Organic Carbon	99.8	102	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P385692

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188684	Turbidity	2.89	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385890

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188563	Chloride	0.540	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385895

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188563	Sulfate	0.438	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385803

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188772	Ammonia-N	0.684	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385879

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188772	Kjeldahl Nitrogen	1.52	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385764

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188685	NO2NO3-N	0.482	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385824

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188589	Total-P	0.0337	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385697

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188686	O-Phosphate-P	0.514	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B-2011
 Batch ID: P385688

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188563	Color (true)	1.41	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
 Batch ID: P385770

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188548	Total Alkalinity	2.08	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
 Batch ID: P386160

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188548	TDS	7.11	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
 Batch ID: P385773

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188548	Fluoride	0.902	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
 Batch ID: P385776

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188635	Organic Carbon	1.37	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B-2011

Run ID: A100296

Included Lab Sample IDs: 2188684

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	103	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A100297

Included Lab Sample IDs: 2188684

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A100298

Included Lab Sample IDs: 2188686

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A100340

Included Lab Sample IDs: 2188685

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	102	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A100341

Included Lab Sample IDs: 2188684

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.2	99.5	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A100341

Included Lab Sample IDs: 2188684

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

Reference Method: SM 5310 B-2011

Run ID: A100342

Included Lab Sample IDs: 2188685

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	103	99.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A100352

Included Lab Sample IDs: 2188685

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.8	99.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A100386

Included Lab Sample IDs: 2188684

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A100400

Included Lab Sample IDs: 2188685

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.2	95.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A100416

Included Lab Sample IDs: 2188685

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	92.6	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	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					2.89	
EPA 300.0 Rev. 2.1	Chloride	102	101	103		0.540	
	Sulfate	104	102	103		0.438	
EPA 350.1 Rev. 2.0	Ammonia-N	98.4	97.4	96.4			0.684
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	103	99.9			1.52
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	104	104			0.482
EPA 365.1 Rev. 2.0	Total-P	99.9	102	102			0.0337
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	97.6	97.1			0.514
SM 2120 B-2011	Color (true)	102				1.41	
SM 2320 B-2011	Total Alkalinity	103				2.08	
SM 2540 C-2011	TDS					7.11	
SM 4500 F-C-2011	Fluoride	102	102	101			0.902
SM 5310 B-2011	Organic Carbon	95.6	99.8	102			1.37

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2188684
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2188684
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2188684
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2188685
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2188685
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2188685
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2188685
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2188686
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2188684
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2188684
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2188684
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2188684
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2188684
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2188685

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	08/05/2020			08/05/2020 15:58	Blanca Fach	2188684
EPA 300.0 Rev. 2.1	08/05/2020			08/08/2020 14:09	Julia Storbeck	2188684
EPA 350.1 Rev. 2.0	08/05/2020			08/08/2020 14:22	Ping Hua	2188685
EPA 351.2 Rev. 2.0	08/05/2020	08/11/2020 09:50	Sima Feizi	08/12/2020 13:12	Jhamieka S. Greenwood	2188685
EPA 353.2 Rev. 2.0	08/05/2020			08/07/2020 09:26	Beverly Y. Sanders	2188685
EPA 365.1 Rev. 2.0	08/05/2020	08/10/2020 11:00	Shengyu Wang	08/12/2020 08:00	Lipi Saha	2188685
EPA 365.1 Rev. 2.0 dissolved	08/05/2020			08/05/2020 16:10	Virginia P. Brown	2188686
SM 2120 B-2011	08/05/2020			08/05/2020 15:55	Benjamin T. Nordmann	2188684
SM 2320 B-2011	08/05/2020			08/06/2020 20:59	Dale L. Simmons	2188684
SM 2540 C-2011	08/05/2020			08/10/2020 13:50	Yijie Li	2188684
SM 2540 D-2011	08/05/2020			08/10/2020 13:50	Yijie Li	2188684
SM 4500 F-C-2011	08/05/2020			08/06/2020 20:59	Dale L. Simmons	2188684
SM 5310 B-2011	08/05/2020			08/07/2020 02:07	David Boose	2188685