

Chemical Analysis Report

CEN-DIST-2021-05-06-01

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

Event Description: **Lake Downey**
Request ID: **RQ-2021-05-03-16**
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-MAY-2021 12:40

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 Downey @ Center

Collection Date/Time: 05/05/2021 11:55

Field ID: G2CE0227

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2245630	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P397788	
	EPA 300.0 Rev. 2.1	Chloride	26	A	mg Cl/L	P398561	
		Sulfate	3.6	A	mg SO4/L	P398564	
	SM 2120 B-2011	Color (true)	27	A	PCU	P397805	
	SM 2320 B-2011	Total Alkalinity	10		mg CaCO3/L	P398272	
	SM 2540 C-2011	TDS	69		mg/L	P398299	RPD
	SM 2540 D-2011	TSS	2	I	mg/L	P398294	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P398695	
2245631	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P398214	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.71		mg N/L	P398107	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P397884	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P398137	
	SM 5310 B-2011	Organic Carbon	12		mg C/L	P397942	
2245632	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P397778	

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: P397788

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398561

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398564

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398214

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398107

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P397884

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398137

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P397778

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

Reference Method: SM 2120 B-2011
Batch ID: P397805

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P398272

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

Reference Method: SM 2540 C-2011
Batch ID: P398299

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P398294

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P398695

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P397942

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: P398561

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398564

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398214

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398107

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P397884

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398137

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P397778

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.0		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P397805

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	97.8		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P398272

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.3		P	93 - 104

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P398695

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.7		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P397942

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398561

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2245630	Chloride	98.6		P	90 - 110
2245939	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398564

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2245630	Sulfate	101		P	90 - 110
2245939	Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398214

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2245590	Ammonia-N	96.0	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398107

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2245619	Kjeldahl Nitrogen	102	95.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P397884

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2245593	NO2NO3-N	98.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398137

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2245614	Total-P	100	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P397778

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2245583	O-Phosphate-P	95.6	97.2	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P398695

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2245618	Fluoride	94.5	98.7	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P397942

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2245373	Organic Carbon	95.5	94.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P397788

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245586	Turbidity	2.97	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398561

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245630	Chloride	0.648	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398564

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245630	Sulfate	0.146	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398214

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245590	Ammonia-N	1.79	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398107

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245619	Kjeldahl Nitrogen	5.11	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P397884

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245593	NO2NO3-N	0.506	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398137

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245614	Total-P	3.01	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P397778

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245583	O-Phosphate-P	1.66	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B-2011
Batch ID: P397805

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245630	Color (true)	0.133	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P398272

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245618	Total Alkalinity	0.260	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P398299

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245659	TDS	10.8	Sample	F	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P398695

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245618	Fluoride	0.951	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P397942

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245373	Organic Carbon	0.809	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A105228

Included Lab Sample IDs: 2245632

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.5	99.9	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A105230

Included Lab Sample IDs: 2245630

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

Reference Method: SM 2120 B-2011

Run ID: A105236

Included Lab Sample IDs: 2245630

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.7	101	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A105281

Included Lab Sample IDs: 2245631

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	99.5	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A105310

Included Lab Sample IDs: 2245631

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.6	97.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A105413

Included Lab Sample IDs: 2245631

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	97.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A105429

Included Lab Sample IDs: 2245631

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.9	98.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A105437

Included Lab Sample IDs: 2245631

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-2011

Run ID: A105458

Included Lab Sample IDs: 2245630

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.8	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A105550

Included Lab Sample IDs: 2245630

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Sulfate	100	100	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	MS
EPA 180.1 Rev. 2.0	Turbidity				2.97	
EPA 300.0 Rev. 2.1	Chloride	102	98.6	103	0.648	
	Sulfate	101	101	103	0.146	
EPA 350.1 Rev. 2.0	Ammonia-N	99.2	96.0	98.2		1.79
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.5	102	95.7		5.11
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.0	98.5	99.0		0.506
EPA 365.1 Rev. 2.0	Total-P	103	100	104		3.01
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.0	95.6	97.2		1.66
SM 2120 B-2011	Color (true)	97.8			0.133	
SM 2320 B-2011	Total Alkalinity	98.3			0.260	
SM 2540 C-2011	TDS				10.8	
SM 4500 F-C-2011	Fluoride	94.7	94.5	98.7		0.951
SM 5310 B-2011	Organic Carbon	96.0	95.5	94.2		0.809

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2245630
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2245630
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2245630
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2245631
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2245631
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2245631
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2245631
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2245632
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2245630
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2245630
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2245630
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2245630
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2245630
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2245631

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	05/06/2021			05/06/2021 15:01	Sarah A Nixon	2245630
EPA 300.0 Rev. 2.1	05/06/2021			05/21/2021 02:50	Lipi Saha	2245630
EPA 350.1 Rev. 2.0	05/06/2021			05/14/2021 12:20	Roberta Tatti	2245631
EPA 351.2 Rev. 2.0	05/06/2021	05/12/2021 13:47	Benjamin T. Nordmann	05/13/2021 14:00	Virginia P. Brown	2245631
EPA 353.2 Rev. 2.0	05/06/2021			05/10/2021 09:47	Beverly Y. Sanders	2245631
EPA 365.1 Rev. 2.0	05/06/2021	05/13/2021 14:14	Yen Ta	05/14/2021 14:13	Shengyu Ding	2245631
EPA 365.1 Rev. 2.0 dissolved	05/06/2021			05/06/2021 14:19	Blanca Fach	2245632
SM 2120 B-2011	05/06/2021			05/06/2021 16:36	Madeline Gruver	2245630
SM 2320 B-2011	05/06/2021			05/14/2021 01:22	Dale L. Simmons	2245630
SM 2540 C-2011	05/06/2021			05/11/2021 15:02	Yijie Li	2245630
SM 2540 D-2011	05/06/2021			05/11/2021 15:02	Yijie Li	2245630
SM 4500 F-C-2011	05/06/2021			05/24/2021 14:49	Dale L. Simmons	2245630
SM 5310 B-2011	05/06/2021			05/10/2021 20:31	Madeline Gruver	2245631