

Chemical Analysis Report

CEN-DIST-2022-03-24-02

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

Event Description: **Lake Dias**
Request ID: **RQ-2022-03-21-22**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Matthew Bearden

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant

Date Certified: 12-APR-2022 10:18



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 Dias @ Center

Collection Date/Time: 03/23/2022 12:35

Field ID: G2CE0235

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2314429	DEP SOP: NU-094-1	Color (true)**	86		PCU	P411559	
	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P411562	
	EPA 300.0 Rev. 2.1	Chloride	17		mg Cl/L	P411779	
		Sulfate	4.5		mg SO4/L	P411782	
	SM 2320 B-2011	Total Alkalinity	17		mg CaCO3/L	P411966	
	SM 2540 C-2011	TDS	90	A	mg/L	P411766	
	SM 2540 D-2011	TSS	3	IA	mg/L	P411667	
	SM 4500 F-C-2011	Fluoride	0.041	I	mg F/L	P411970	
2314430	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P411704	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.75		mg N/L	P441164	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P411591	
	EPA 365.1 Rev. 2.0	Total-P	0.027		mg P/L	P411684	
	SM 5310 B-2011	Organic Carbon	14		mg C/L	P411677	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries and relative percent difference are unavailable due to analytical difficulties.

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P411559

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P411562

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P411779

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P411782

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P411704

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P4411640

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P411591

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P411684

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

Reference Method: SM 2320 B-2011
Batch ID: P411966

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-2011
Batch ID: P411766

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P411667

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P411970

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P411677

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P411559

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.7		P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P411562

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P411779

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P411782

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P411704

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P4411640

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: P411591

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: P411684

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

Reference Method: SM 2320 B-2011
Batch ID: P411966

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.0		P	94 - 106

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P411970

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P411677

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P411779

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2314351	Chloride	98.7		P	90 - 110
2314429	Chloride	97.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P411782

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2314351	Sulfate	99.1		P	90 - 110
2314429	Sulfate	97.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P411704

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2314430	Ammonia-N	98.4	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P4411640

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2314204	Kjeldahl Nitrogen	113	105	F/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P411591

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2314377	NO2NO3-N	97.5	97.5	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P411970

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2315428	Fluoride	98.3	98.9	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P411677

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2314331	Organic Carbon	97.6	98.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P411559

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2314326	Color (true)	6.63	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P411562

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2314500	Turbidity	4.36	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P411779

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2314351	Chloride	0.00997	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P411782

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2314351	Sulfate	0.244	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P411704

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2314430	Ammonia-N	0.368	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P4411640

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2314204	Kjeldahl Nitrogen	7.56	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P411591

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2314377	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P411966

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2315428	Total Alkalinity	1.92	Sample	P	0 - 5.2

Quality Assurance Report Precision

Reference Method: SM 2540 C-2011
Batch ID: P411766

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2314429	TDS	1.10	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P411970

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2315428	Fluoride	0.490	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P411677

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2314331	Organic Carbon	0.259	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: DEP SOP: NU-094-1

Run ID: A111138

Included Lab Sample IDs: 2314429

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	101	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A111140

Included Lab Sample IDs: 2314429

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A111149

Included Lab Sample IDs: 2314430

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	99.0	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A111201

Included Lab Sample IDs: 2314430

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A111208

Included Lab Sample IDs: 2314429

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.8	102	P/P	90 - 110
Sulfate	99.4	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A111210

Included Lab Sample IDs: 2314430

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.8	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A111251

Included Lab Sample IDs: 2314430

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

Reference Method: SM 2320 B-2011

Run ID: A111305

Included Lab Sample IDs: 2314429

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.2	96.7	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-2011

Run ID: A111305

Included Lab Sample IDs: 2314429

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A111324

Included Lab Sample IDs: 2314430

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	103	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
DEP SOP: NU-094-1	Color (true)	99.7			6.63	
EPA 180.1 Rev. 2.0	Turbidity	97.0			4.36	
EPA 300.0 Rev. 2.1	Chloride	98.1	98.7	97.2	0.0099	
	Sulfate	99.0	99.1	97.9	0.244	
EPA 350.1 Rev. 2.0	Ammonia-N	99.0	98.4	98.0		0.368
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	113	105		7.56
EPA 353.2 Rev. 2.0	NO2NO3-N	99.0	97.5	97.5		0.0
EPA 365.1 Rev. 2.0	Total-P	101				
SM 2320 B-2011	Total Alkalinity	98.0			1.92	
SM 2540 C-2011	TDS				1.10	
SM 4500 F-C-2011	Fluoride	101	98.3	98.9		0.490
SM 5310 B-2011	Organic Carbon	99.4	97.6	98.2		0.259

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2314429
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2314429
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2314429
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2314429
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2314430
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2314430
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2314430
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2314430
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2314429
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2314429
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2314429
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2314429
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2314430

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	03/24/2022			03/24/2022 15:59	Anna M. Plaviak	2314429
EPA 180.1 Rev. 2.0	03/24/2022			03/24/2022 14:33	Khloe J Berg	2314429
EPA 300.0 Rev. 2.1	03/24/2022			03/29/2022 18:18	Anna M. Plaviak	2314429
EPA 350.1 Rev. 2.0	03/24/2022			03/29/2022 11:57	Ping Hua	2314430
EPA 351.2 Rev. 2.0	03/24/2022	03/29/2022 09:23	Samantha L Bates	04/05/2022 16:03	Alexandra J Mattheus	2314430
EPA 353.2 Rev. 2.0	03/24/2022			03/25/2022 11:53	Beverly Y. Sanders	2314430
EPA 365.1 Rev. 2.0	03/24/2022	03/29/2022 16:02	Simonne.V. Calhoun	03/31/2022 12:57	James L Waggerby	2314430
SM 2320 B-2011	03/24/2022			04/02/2022 02:23	Dale L. Simmons	2314429
SM 2540 C-2011	03/24/2022			03/25/2022 16:20	Simonne.V. Calhoun	2314429
SM 2540 D-2011	03/24/2022			03/25/2022 16:20	Simonne.V. Calhoun	2314429
SM 4500 F-C-2011	03/24/2022			04/02/2022 02:23	Dale L. Simmons	2314429
SM 5310 B-2011	03/24/2022			03/26/2022 06:08	Khloe J Berg	2314430