Chemical Analysis Report

CEN-DIST-2021-10-22-03

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

Event Description: **Lake Ingram**
Request ID: **RQ-2021-10-18-29**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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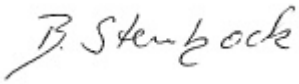
Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 17-NOV-2021 11:46



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 Ingram East **Collection Date/Time: 10/21/2021 13:44**

Field ID: G4CE0155 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2285725	EPA 180.1 Rev. 2.0	Turbidity	0.95		NTU	P405496	
	EPA 300.0 Rev. 2.1	Chloride	9.3		mg Cl/L	P405665	
		Sulfate	3.5		mg SO4/L	P405668	
	SM 2120 B-2011	Color (true)	28		PCU	P405488	
	SM 2320 B-2011	Total Alkalinity	9.3		mg CaCO3/L	P405793	
	SM 2540 C-2011	TDS	52		mg/L	P405681	
	SM 2540 D-2011	TSS	2	U	mg/L	P405634	
	SM 4500 F-C-2011	Fluoride	0.035	I	mg F/L	P405795	
2285726	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P405857	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.70		mg N/L	P406007	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P405708	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P405627	
	SM 5310 B-2011	Organic Carbon	9.1		mg C/L	P405771	
2285727	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P405493	

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: P405496

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P405665

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P405668

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P405857

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406007

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405708

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405627

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405493

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

Reference Method: SM 2120 B-2011
Batch ID: P405488

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P405793

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

Reference Method: SM 2540 C-2011
Batch ID: P405681

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P405634

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P405795

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P405771

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: P405665

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P405668

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P405857

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406007

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405708

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	101		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405627

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405493

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.3		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P405488

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	96.0		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P405793

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.4		P	94 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P405795

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.8		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P405771

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: P405665

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285734	Chloride	101	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P405668

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285734	Sulfate	104	106	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P405857

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285269	Ammonia-N	95.4	93.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406007

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285726	Kjeldahl Nitrogen	94.3	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405708

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285578	NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405627

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285718	Total-P	104	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405493

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285658	O-Phosphate-P	96.8	97.4	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P405795

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285786	Fluoride	100	101	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P405771

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285750	Organic Carbon	102		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P405496

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285669	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P405665

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285734	Chloride	0.332	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P405668

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285734	Sulfate	1.36	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P405857

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285269	Ammonia-N	1.41	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406007

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285726	Kjeldahl Nitrogen	6.85	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405708

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285578	NO2NO3-N	0.510	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405627

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285718	Total-P	1.80	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405493

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285658	O-Phosphate-P	0.618	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B-2011
Batch ID: P405488

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285656	Color (true)	0.566	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P405793

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285786	Total Alkalinity	1.63	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P405681

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285666	TDS	5.22	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P405795

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285786	Fluoride	0.492	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P405771

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285750	Organic Carbon	0.801	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: A108493
Included Lab Sample IDs: 2285725

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	101	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A108496
Included Lab Sample IDs: 2285727

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.5	98.4	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A108498
Included Lab Sample IDs: 2285725

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A108559
Included Lab Sample IDs: 2285725

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A108587
Included Lab Sample IDs: 2285726

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A108605
Included Lab Sample IDs: 2285726

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

Reference Method: SM 5310 B-2011
Run ID: A108621
Included Lab Sample IDs: 2285726

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.4	95.0	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A108642
Included Lab Sample IDs: 2285725

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	94.9	96.8	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-2011
Run ID: A108642
Included Lab Sample IDs: 2285725

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A108662
Included Lab Sample IDs: 2285726

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.8	97.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A108742
Included Lab Sample IDs: 2285726

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	95.3	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	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					0.0	
EPA 300.0 Rev. 2.1	Chloride	100	101	101			0.332
	Sulfate	101	104	106			1.36
EPA 350.1 Rev. 2.0	Ammonia-N	97.8	95.4	93.6			1.41
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	94.3	105			6.85
EPA 353.2 Rev. 2.0	NO2NO3-N	101	99.5	100			0.510
EPA 365.1 Rev. 2.0	Total-P	104	104	106			1.80
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.3	96.8	97.4			0.618
SM 2120 B-2011	Color (true)	96.0				0.566	
SM 2320 B-2011	Total Alkalinity	98.4				1.63	
SM 2540 C-2011	TDS					5.22	
SM 4500 F-C-2011	Fluoride	99.8	100	101			0.492
SM 5310 B-2011	Organic Carbon	96.0	102				0.801

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2285725
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2285725
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2285725
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2285726
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2285726
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2285726
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2285726
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2285727
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2285725
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2285725
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2285725
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2285725
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2285725
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2285726

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	10/22/2021			10/22/2021 16:47	Khloe J Berg	2285725
EPA 300.0 Rev. 2.1	10/22/2021			10/27/2021 01:21	Roberta Tatti	2285725
EPA 350.1 Rev. 2.0	10/22/2021			11/02/2021 13:20	Ping Hua	2285726
EPA 351.2 Rev. 2.0	10/22/2021	11/04/2021 12:43	Benjamin T. Nordmann	11/05/2021 10:27	Alexandra J Mattheus	2285726
EPA 353.2 Rev. 2.0	10/22/2021			10/28/2021 11:35	Beverly Y. Sanders	2285726
EPA 365.1 Rev. 2.0	10/22/2021	10/27/2021 15:15	Simonne.V. Calhoun	10/28/2021 11:45	Lipi Saha	2285726
EPA 365.1 Rev. 2.0 dissolved	10/22/2021			10/22/2021 15:13	James L Waggerby	2285727
SM 2120 B-2011	10/22/2021			10/22/2021 14:41	Blanca Fach	2285725
SM 2320 B-2011	10/22/2021			10/28/2021 20:10	Dale L. Simmons	2285725
SM 2540 C-2011	10/22/2021			10/25/2021 17:00	Simonne.V. Calhoun	2285725
SM 2540 D-2011	10/22/2021			10/25/2021 17:00	Simonne.V. Calhoun	2285725
SM 4500 F-C-2011	10/22/2021			10/28/2021 20:10	Dale L. Simmons	2285725
SM 5310 B-2011	10/22/2021			10/28/2021 05:20	Khloe J Berg	2285726