

Chemical Analysis Report

NW-DIST-2021-12-09-01

Florida Department of Environmental Protection
Central Laboratory
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DOH Accreditation E31780

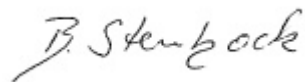
Event Description: **Twin Lakes Run**
Request ID: **RQ-2021-12-13-43**
Customer: **NW-DIST**
Project ID: **SMP**

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Date Certified: 29-DEC-2021 15:36



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: Twin Lake

Collection Date/Time: 12/08/2021 11:10

Field ID: G3NW0215

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2294304	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P407261	
	EPA 300.0 Rev. 2.1	Chloride	26	A	mg Cl/L	P407526	
		Sulfate	11	A	mg SO4/L	P407529	
	SM 2120 B-2011	Color (true)	51	A	PCU	P407264	
	SM 2320 B-2011	Total Alkalinity	60		mg CaCO3/L	P407452	
	SM 2540 C-2011	TDS	138		mg/L	P407448	RPD
	SM 2540 D-2011	TSS	3	I	mg/L	P407322	
	SM 4500 F-C-2011	Fluoride	0.14		mg F/L	P407453	
2294305	EPA 350.1 Rev. 2.0	Ammonia-N	0.028		mg N/L	P407755	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.82		mg N/L	P407650	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.018		mg N/L	P407374	
	EPA 365.1 Rev. 2.0	Total-P	0.50		mg P/L	P407343	
	SM 5310 B-2011	Organic Carbon	8.7		mg C/L	P407894	
2294306	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.41		mg P/L	P407255	

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 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: P407261

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P407526

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P407529

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P407755

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P407650

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P407374

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P407343

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P407255

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

Reference Method: SM 2120 B-2011
Batch ID: P407264

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P407452

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

Reference Method: SM 2540 C-2011
Batch ID: P407448

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P407322

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P407453

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P407894

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: P407526

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P407529

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P407755

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: P407650

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P407374

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P407343

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	108		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P407255

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

Reference Method: SM 2120 B-2011
Batch ID: P407264

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	90 - 110

Reference Method: SM 2320 B-2011
Batch ID: P407452

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	94 - 106

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P407453

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

Reference Method: SM 5310 B-2011
Batch ID: P407894

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P407526

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2294304	Chloride	96.5		P	90 - 110
2294454	Chloride	97.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P407529

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2294304	Sulfate	95.3		P	90 - 110
2294454	Sulfate	98.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P407755

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2294380	Ammonia-N	96.2	97.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P407650

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2294296	Kjeldahl Nitrogen	104	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P407374

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2294305	NO2NO3-N	99.2	99.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P407255

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2294236	O-Phosphate-P	101	99.0	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P407453

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2294582	Fluoride	100	100	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P407894

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2294456	Organic Carbon	99.4		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P407261

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294231	Turbidity	6.35	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P407526

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294304	Chloride	0.557	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P407529

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294304	Sulfate	1.37	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P407755

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294380	Ammonia-N	1.17	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P407650

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294296	Kjeldahl Nitrogen	0.977	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P407374

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294305	NO2NO3-N	0.462	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P407343

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294305	Total-P	3.19	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P407255

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294236	O-Phosphate-P	1.90	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B-2011
Batch ID: P407264

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294304	Color (true)	2.43	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P407452

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294582	Total Alkalinity	1.39	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P407448

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294323	TDS	11.4	Sample	F	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P407453

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294582	Fluoride	0.0	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P407894

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294456	Organic Carbon	0.716	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: A109298

Included Lab Sample IDs: 2294306

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.7	100	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A109300

Included Lab Sample IDs: 2294304

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

Reference Method: SM 2120 B-2011

Run ID: A109301

Included Lab Sample IDs: 2294304

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A109348

Included Lab Sample IDs: 2294305

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	100	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A109384

Included Lab Sample IDs: 2294304

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.1	102	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A109384

Included Lab Sample IDs: 2294304

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A109387

Included Lab Sample IDs: 2294304

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.0	101	P/P	90 - 110
Sulfate	98.9	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A109471

Included Lab Sample IDs: 2294305

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A109511

Included Lab Sample IDs: 2294305

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A109537

Included Lab Sample IDs: 2294305

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

Reference Method: SM 5310 B-2011

Run ID: A109567

Included Lab Sample IDs: 2294305

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.1	96.6	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				6.35	
EPA 300.0 Rev. 2.1	Chloride	98.5	96.5	97.5	0.557	
	Sulfate	97.3	95.3	98.1	1.37	
EPA 350.1 Rev. 2.0	Ammonia-N	97.8	96.2	97.4		1.17
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	104	106		0.977
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	98.5	99.2	99.6		0.462
EPA 365.1 Rev. 2.0	Total-P	108				3.19
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.9	101	99.0		1.90
SM 2120 B-2011	Color (true)	101			2.43	
SM 2320 B-2011	Total Alkalinity	101			1.39	
SM 2540 C-2011	TDS				11.4	
SM 4500 F-C-2011	Fluoride	101	100	100		0.0
SM 5310 B-2011	Organic Carbon	98.4	99.4			0.716

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2294304
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2294304
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2294304
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2294305
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2294305
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2294305
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2294305
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2294306
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2294304
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2294304
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2294304
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2294304
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2294304
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2294305

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	12/09/2021			12/09/2021 15:33	Khloe J Berg	2294304
EPA 300.0 Rev. 2.1	12/09/2021			12/15/2021 12:14	Roberta Tatti	2294304
EPA 350.1 Rev. 2.0	12/09/2021			12/21/2021 13:12	Ping Hua	2294305
EPA 351.2 Rev. 2.0	12/09/2021	12/20/2021 10:35	Samantha L Bates	12/22/2021 12:58	Alexandra J Mattheus	2294305
EPA 353.2 Rev. 2.0	12/09/2021			12/13/2021 11:44	Beverly Y. Sanders	2294305
EPA 365.1 Rev. 2.0	12/09/2021	12/14/2021 10:43	Simonne.V. Calhoun	12/17/2021 16:26	Shengyu Ding	2294305
EPA 365.1 Rev. 2.0 dissolved	12/09/2021			12/09/2021 14:36	James L Waggerby	2294306
SM 2120 B-2011	12/09/2021			12/09/2021 17:00	Samantha L Bates	2294304
SM 2320 B-2011	12/09/2021			12/14/2021 10:25	Sarah A Nixon	2294304
SM 2540 C-2011	12/09/2021			12/10/2021 13:30	Simonne.V. Calhoun	2294304
SM 2540 D-2011	12/09/2021			12/10/2021 13:30	Simonne.V. Calhoun	2294304
SM 4500 F-C-2011	12/09/2021			12/14/2021 10:25	Sarah A Nixon	2294304
SM 5310 B-2011	12/09/2021			12/26/2021 00:33	Touraj Touran	2294305