

Chemical Analysis Report

NE-DIST-2022-01-07-01

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

Event Description: **Biven Arm**
Request ID: **RQ-2022-01-03-61**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
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8800 Baymeadows Way West
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 01-FEB-2022 15:12

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: Bivens Arm Lake

Collection Date/Time: 01/06/2022 12:50

Field ID: 20020097

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2298140	EPA 180.1 Rev. 2.0	Turbidity	28		NTU	P408256	
	EPA 300.0 Rev. 2.1	Chloride	10		mg Cl/L	P409037	
		Sulfate	12		mg SO4/L	P409040	
	SM 2120 B-2011	Color (true)**	74	J	PCU	P408262	
	SM 2320 B-2011	Total Alkalinity	88		mg CaCO3/L	P408387	
	SM 2540 C-2011	TDS	159		mg/L	P408559	
	SM 2540 D-2011	TSS	29		mg/L	P408345	
	SM 4500 F-C-2011	Fluoride	0.15		mg F/L	P408390	
2298141	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P408558	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	5.1		mg N/L	P408393	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P408420	
	EPA 365.1 Rev. 2.0	Total-P	0.27		mg P/L	P408477	MS
	SM 5310 B-2011	Organic Carbon	17		mg C/L	P408312	
2298142	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P408246	

Ref. Method and Comment:

SM 2120 B-2011: The result may be biased high because of matrix interference.

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: P408256

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P409037

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P409040

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P408558

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P408393

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P408420

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P408477

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P408246

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

Reference Method: SM 2120 B-2011
Batch ID: P408262

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P408387

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

Reference Method: SM 2540 C-2011
Batch ID: P408559

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P408345

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P408390

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P408312

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: P409037

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: P409040

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P408558

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P408393

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P408420

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	96.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P408477

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P408246

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

Reference Method: SM 2120 B-2011
Batch ID: P408262

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

Reference Method: SM 2320 B-2011
Batch ID: P408387

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.8		P	94 - 106

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P408390

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.2		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P408312

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P409037

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2298065	Chloride	100		P	90 - 110
2298146	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P409040

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2298065	Sulfate	96.0		P	90 - 110
2298146	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P408558

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2298112	Ammonia-N	93.2	93.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P408393

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2298032	Kjeldahl Nitrogen	104	99.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P408420

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2298151	NO2NO3-N	95.5	94.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P408477

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2298112	Total-P	112	112	F/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P408246

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2298142	O-Phosphate-P	102	104	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P408390

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2298252	Fluoride	98.5	98.0	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P408312

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2298034	Organic Carbon	98.4	96.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P408256

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2298147	Turbidity	8.23	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P409037

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2298065	Chloride	0.248	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P409040

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2298065	Sulfate	0.312	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P408558

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2298112	Ammonia-N	0.145	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P408393

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2298032	Kjeldahl Nitrogen	3.75	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P408420

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2298151	NO2NO3-N	1.05	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P408477

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2298112	Total-P	0.0604	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P408246

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2298142	O-Phosphate-P	2.42	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B-2011
Batch ID: P408262

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2298147	Color (true)	2.15	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P408387

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2298252	Total Alkalinity	1.21	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P408559

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2298030	TDS	0.318	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P408390

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2298252	Fluoride	0.495	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P408312

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2298034	Organic Carbon	1.06	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: A109743

Included Lab Sample IDs: 2298142

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: A109749

Included Lab Sample IDs: 2298140

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

Reference Method: SM 2120 B-2011

Run ID: A109752

Included Lab Sample IDs: 2298140

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	95.0	99.9	P/P	85 - 115

Reference Method: SM 5310 B-2011

Run ID: A109779

Included Lab Sample IDs: 2298141

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.5	97.2	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A109802

Included Lab Sample IDs: 2298140

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.6	96.7	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A109802

Included Lab Sample IDs: 2298140

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A109817

Included Lab Sample IDs: 2298141

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.0	97.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A109887

Included Lab Sample IDs: 2298141

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	96.9	94.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A109900

Included Lab Sample IDs: 2298141

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	93.5	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A109984

Included Lab Sample IDs: 2298141

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A110040

Included Lab Sample IDs: 2298140

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	103	P/P	90 - 110
Sulfate	99.7	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				8.23	
EPA 300.0 Rev. 2.1	Chloride	98.5	100	103	0.248	
	Sulfate	96.6	96.0	100	0.312	
EPA 350.1 Rev. 2.0	Ammonia-N	97.2	93.2	93.0		0.145
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	104	99.0		3.75
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	96.5	95.5	94.5		1.05
EPA 365.1 Rev. 2.0	Total-P	110	112	112		0.0604
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	102	104		2.42
SM 2120 B-2011	Color (true)	99.7			2.15	
SM 2320 B-2011	Total Alkalinity	99.8			1.21	
SM 2540 C-2011	TDS				0.318	
SM 4500 F-C-2011	Fluoride	97.2	98.5	98.0		0.495
SM 5310 B-2011	Organic Carbon	95.4	98.4	96.8		1.06

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2298140
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2298140
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2298140
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2298141
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2298141
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2298141
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2298141
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2298142
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2298140
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2298140
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2298140
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2298140
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2298140
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2298141

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	01/07/2022			01/07/2022 16:33	Khloe J Berg	2298140
EPA 300.0 Rev. 2.1	01/07/2022			01/26/2022 15:24	James L Waggeberby	2298140
EPA 350.1 Rev. 2.0	01/07/2022			01/14/2022 15:56	Roberta Tatti	2298141
EPA 351.2 Rev. 2.0	01/07/2022	01/14/2022 10:30	Alexandra J Mattheus	01/14/2022 18:51	Alexandra J Mattheus	2298141
EPA 353.2 Rev. 2.0	01/07/2022			01/12/2022 09:55	Beverly Y. Sanders	2298141
EPA 365.1 Rev. 2.0	01/07/2022	01/14/2022 16:50	Simonne.V. Calhoun	01/21/2022 15:56	Shengyu Ding	2298141
EPA 365.1 Rev. 2.0 dissolved	01/07/2022			01/07/2022 15:04	James L Waggeberby	2298142
SM 2120 B-2011	01/07/2022			01/07/2022 17:03	Sarah A Nixon	2298140
SM 2320 B-2011	01/07/2022			01/12/2022 00:29	Dale L. Simmons	2298140
SM 2540 C-2011	01/07/2022			01/10/2022 15:00	Simonne.V. Calhoun	2298140
SM 2540 D-2011	01/07/2022			01/10/2022 15:00	Simonne.V. Calhoun	2298140
SM 4500 F-C-2011	01/07/2022			01/12/2022 00:29	Dale L. Simmons	2298140
SM 5310 B-2011	01/07/2022			01/11/2022 01:08	Khloe J Berg	2298141