

Chemical Analysis Report

CEN-DIST-2021-09-17-04

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

Event Description: **Okahumpka/Deaton/Hidden**
Request ID: **RQ-2021-05-31-03**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Date Certified: 11-OCT-2021 14:04



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 Okahumpka at Center

Collection Date/Time: 09/16/2021 11:00

Field ID: G4CE0159

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2276523	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P403901	
	EPA 300.0 Rev. 2.1	Chloride	24		mg Cl/L	P404086	
		Sulfate	0.20	U	mg SO4/L	P404089	
	SM 2120 B-2011	Color (true)	23		PCU	P403896	
	SM 2320 B-2011	Total Alkalinity	84	A	mg CaCO3/L	P404044	
	SM 2540 C-2011	TDS	153		mg/L	P404322	
	SM 2540 D-2011	TSS	3	I	mg/L	P404315	
	SM 4500 F-C-2011	Fluoride	0.28		mg F/L	P404045	
2276524	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P404119	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.63		mg N/L	P403965	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P404039	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P403930	
	SM 5310 B-2011	Organic Carbon	11		mg C/L	P404088	
2276525	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P403891	

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: P403901

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P404086

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P404089

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404119

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403965

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404039

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403930

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403891

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

Reference Method: SM 2120 B-2011
Batch ID: P403896

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P404044

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

Reference Method: SM 2540 C-2011
Batch ID: P404322

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P404315

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P404045

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P404088

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: P404086

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: P404089

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: P404119

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403965

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.1		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404039

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403930

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403891

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

Reference Method: SM 2120 B-2011
Batch ID: P403896

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.2		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P404044

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	94 - 106

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P404045

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.6		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P404088

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P404086

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2276465	Chloride	98.7		P	90 - 110
2276741	Chloride	96.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P404089

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2276465	Sulfate	98.4		P	90 - 110
2276741	Sulfate	97.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404119

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2276524	Ammonia-N	96.8	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403965

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2276330	Kjeldahl Nitrogen	105	94.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404039

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2276466	NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403930

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2276590	Total-P	105	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403891

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2276525	O-Phosphate-P	99.4	99.5	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P404045

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2276523	Fluoride	100	98.4	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P404088

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2276463	Organic Carbon	98.2	97.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P403901

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276329	Turbidity	1.96	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P404086

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276465	Chloride	0.574	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P404089

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276465	Sulfate	1.07	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404119

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276524	Ammonia-N	0.884	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403965

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276330	Kjeldahl Nitrogen	8.21	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404039

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276466	NO2NO3-N	0.348	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403930

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276590	Total-P	2.51	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403891

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276525	O-Phosphate-P	0.101	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B-2011
Batch ID: P403896

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276465	Color (true)	1.79	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P404044

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276523	Total Alkalinity	0.236	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P404322

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276465	TDS	5.88	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P404045

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276523	Fluoride	0.953	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P404088

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276463	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: EPA 365.1 Rev. 2.0 dissolved

Run ID: A107860

Included Lab Sample IDs: 2276525

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

Reference Method: SM 2120 B-2011

Run ID: A107862

Included Lab Sample IDs: 2276523

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.0	101	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A107865

Included Lab Sample IDs: 2276523

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	100	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A107927

Included Lab Sample IDs: 2276524

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	104	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A107928

Included Lab Sample IDs: 2276523

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	101	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A107928

Included Lab Sample IDs: 2276523

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A107942

Included Lab Sample IDs: 2276524

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	102	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A107953

Included Lab Sample IDs: 2276523

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

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-2011

Run ID: A107954

Included Lab Sample IDs: 2276524

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.0	97.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A107960

Included Lab Sample IDs: 2276524

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	97.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A107961

Included Lab Sample IDs: 2276524

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.7	99.2	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		LCS	Precision	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					1.96	
EPA 300.0 Rev. 2.1	Chloride	98.5	98.7	96.9		0.574	
	Sulfate	99.0	98.4	97.3		1.07	
EPA 350.1 Rev. 2.0	Ammonia-N	98.2	96.8	97.8			0.884
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.1	105	94.6			8.21
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	104	101	102			0.348
EPA 365.1 Rev. 2.0	Total-P	101	105	102			2.51
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	99.4	99.5			0.101
SM 2120 B-2011	Color (true)	99.2				1.79	
SM 2320 B-2011	Total Alkalinity	103				0.236	
SM 2540 C-2011	TDS					5.88	
SM 4500 F-C-2011	Fluoride	97.6	100	98.4			0.953
SM 5310 B-2011	Organic Carbon	96.6	98.2	97.8			0.259

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2276523
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2276523
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2276523
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2276524
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2276524
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2276524
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2276524
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2276525
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2276523
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2276523
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2276523
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2276523
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2276523
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2276524

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	09/17/2021			09/17/2021 14:36	Khloe J Berg	2276523
EPA 300.0 Rev. 2.1	09/17/2021			09/22/2021 19:15	Roberta Tatti	2276523
EPA 350.1 Rev. 2.0	09/17/2021			09/23/2021 12:05	Ping Hua	2276524
EPA 351.2 Rev. 2.0	09/17/2021	09/21/2021 10:48	Benjamin T. Nordmann	09/23/2021 10:23	Alexandra J Mattheus	2276524
EPA 353.2 Rev. 2.0	09/17/2021			09/22/2021 09:29	Beverly Y. Sanders	2276524
EPA 365.1 Rev. 2.0	09/17/2021	09/20/2021 15:50	Simonne.V. Calhoun	09/22/2021 11:59	Virginia P. Brown	2276524
EPA 365.1 Rev. 2.0 dissolved	09/17/2021			09/17/2021 13:40	James L Waggerby	2276525
SM 2120 B-2011	09/17/2021			09/17/2021 16:06	Benjamin T. Nordmann	2276523
SM 2320 B-2011	09/17/2021			09/21/2021 15:12	Dale L. Simmons	2276523
SM 2540 C-2011	09/17/2021			09/21/2021 13:36	Yijie Li	2276523
SM 2540 D-2011	09/17/2021			09/21/2021 13:36	Yijie Li	2276523
SM 4500 F-C-2011	09/17/2021			09/21/2021 15:00	Dale L. Simmons	2276523
SM 5310 B-2011	09/17/2021			09/22/2021 17:46	Madeline Gruver	2276524