Chemical Analysis Report

SO-DIST-2019-04-05-01

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

Event Description: **Caloosahatchee Above 78 HA**
Request ID: **RQ-2019-04-01-66**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
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FLDEP South District Office
2295 Victoria Ave. Suite 364
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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: 3237A Ortona Campground **Collection Date/Time: 04/04/2019 12:00**

Field ID: G3SD0150 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2076120	EPA 180.1 Rev. 2.0	Turbidity	7.8	A	NTU	P361671	
	EPA 300.0 Rev. 2.1	Chloride	49	A	mg Cl/L	P362192	
		Sulfate	28	A	mg SO4/L	P362194	
	SM 2120 B	Color (true)	42		PCU	P361674	
	SM 2320 B-97	Total Alkalinity	113		mg CaCO3/L	P361985	
	SM 2540 C-97	TDS	294	A	mg/L	P362412	
	SM 2540 D-97	TSS	9	IA	mg/L	P362139	
	SM 4500 F-C-97	Fluoride	0.18		mg F/L	P361988	
2076121	EPA 350.1 Rev. 2.0	Ammonia-N	0.045		mg N/L	P362116	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P362086	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.056		mg N/L	P362219	
	EPA 365.1 Rev. 2.0	Total-P	0.088		mg P/L	P362080	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P361779	
2076122	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.025		mg P/L	P361675	

Ref. Method and Comment:
SM 2540 D-97: 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: P361671

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362192

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362194

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362116

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362086

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362219

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362080

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P361675

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

Reference Method: SM 2120 B
Batch ID: P361674

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P361985

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

Reference Method: SM 2540 C-97
Batch ID: P362412

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P362139

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P361988

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P361779

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: P362192

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362194

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362116

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362086

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362219

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362080

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P361675

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.9		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P361674

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.3		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P361985

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.9		P	98 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P361988

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.0		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P361779

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362192

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076120	Chloride	95.7		P	90 - 110
2076145	Chloride	92.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362194

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076120	Sulfate	96.9		P	90 - 110
2076145	Sulfate	94.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362116

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076121	Ammonia-N	98.3	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362086

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2075877	Kjeldahl Nitrogen	99.2	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362219

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2075871	NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362080

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076121	Total-P	99.7	99.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P361675

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076142	O-Phosphate-P	93.1	94.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P361988

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2075689	Fluoride	97.8	97.8	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P361779

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2075757	Organic Carbon	99.4	99.6	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P361671

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076120	Turbidity	0.129	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362192

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076120	Chloride	0.227	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362194

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076120	Sulfate	0.549	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362116

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076121	Ammonia-N	2.87	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362086

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2075877	Kjeldahl Nitrogen	0.252	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362219

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2075871	NO2NO3-N	0.719	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362080

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076121	Total-P	0.0616	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P361675

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076142	O-Phosphate-P	1.43	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P361674

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076145	Color (true)	0.0627	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P361985

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2075689	Total Alkalinity	0.159	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P362412

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076120	TDS	7.13	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P361988

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2075689	Fluoride	0.0	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P361779

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2075757	Organic Carbon	0.150	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A90482
Included Lab Sample IDs: 2076120

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A90483
Included Lab Sample IDs: 2076122

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.5	96.7	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A90484
Included Lab Sample IDs: 2076120

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.2	97.2	P/P	90 - 115

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A90538
Included Lab Sample IDs: 2076120

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	99.5	P/P	90 - 110
Sulfate	102	98.9	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A90539
Included Lab Sample IDs: 2076121

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

Reference Method: SM 2320 B-97
Run ID: A90626
Included Lab Sample IDs: 2076120

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	99.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A90626
Included Lab Sample IDs: 2076120

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A90707
Included Lab Sample IDs: 2076121

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	103	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A90718
Included Lab Sample IDs: 2076121

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.2	96.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A90722
Included Lab Sample IDs: 2076121

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A90746
Included Lab Sample IDs: 2076121

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	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					0.129	
EPA 300.0 Rev. 2.1	Chloride	100	95.7	92.0		0.227	
	Sulfate	99.8	96.9	94.8		0.549	
EPA 350.1 Rev. 2.0	Ammonia-N	102	98.3	104			2.87
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	95.8	99.2	98.8			0.252
EPA 353.2 Rev. 2.0	NO2NO3-N	103	101	102			0.719
EPA 365.1 Rev. 2.0	Total-P	103	99.7	99.6			0.0616
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.9	93.1	94.5			1.43
SM 2120 B	Color (true)	99.3				0.0627	
SM 2320 B-97	Total Alkalinity	99.9				0.159	
SM 2540 C-97	TDS					7.13	
SM 4500 F-C-97	Fluoride	98.0	97.8	97.8			0.0
SM 5310 B-00	Organic Carbon	101	99.4	99.6			0.150

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2076120
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2076120
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2076120
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2076121
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2076121
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2076121
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2076121
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2076122
SM 2120 B / E31780	True Color measured at 450 nm	2076120
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2076120
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2076120
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2076120
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2076120
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2076121

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	04/05/2019			04/05/2019 15:29	Adrian Shelby	2076120
EPA 300.0 Rev. 2.1	04/05/2019			04/12/2019 22:24	Lipi Saha	2076120
EPA 350.1 Rev. 2.0	04/05/2019			04/12/2019 12:21	Ping Hua	2076121
EPA 351.2 Rev. 2.0	04/05/2019	04/12/2019 14:20	Adrian Shelby	04/15/2019 14:10	Joseph Suarez	2076121
EPA 353.2 Rev. 2.0	04/05/2019			04/16/2019 10:25	Beverly Y. Sanders	2076121
EPA 365.1 Rev. 2.0	04/05/2019	04/12/2019 15:40	Sima Feizi	04/15/2019 13:54	Rosalyn Ballman	2076121
EPA 365.1 Rev. 2.0 dissolved	04/05/2019			04/05/2019 15:00	Jhamieka S. Greenwood	2076122
SM 2120 B	04/05/2019			04/05/2019 15:21	Blanca Fach	2076120
SM 2320 B-97	04/05/2019			04/11/2019 11:51	Dale L. Simmons	2076120
SM 2540 C-97	04/05/2019			04/09/2019 15:45	Yijie Li	2076120
SM 2540 D-97	04/05/2019			04/09/2019 15:45	Yijie Li	2076120
SM 4500 F-C-97	04/05/2019			04/11/2019 11:51	Dale L. Simmons	2076120
SM 5310 B-00	04/05/2019			04/09/2019 01:05	Julia Storbeck	2076121