Chemical Analysis Report

SO-DIST-2022-02-09-01

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

Event Description: **2022 SMP : Everglades**
Request ID: **RQ-2022-01-10-43**
Customer: **SO-DIST**
Project ID: **SMP**

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FLDEP South District Office
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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: 8069 - ENRE5 **Collection Date/Time: 02/08/2022 11:35**

Field ID: G5SD0036 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2304527	EPA 180.1 Rev. 2.0	Turbidity	3.5		NTU	P409640	
	SM 2320 B-2011	Total Alkalinity	149		mg CaCO3/L	P410035	RPD
	SM 2540 D-2011	TSS	4	I	mg/L	P409984	
	SM 4500 F-C-2011	Fluoride	1.1		mg F/L	P409907	
2304529	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P409952	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39	I	mg N/L	P409729	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P410050	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P409720	
	SM 5310 B-2011	Organic Carbon	4.6		mg C/L	P410520	
2304531	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P409627	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: 8067 ENRE 9 Near First Bay **Collection Date/Time: 02/08/2022 12:20**

Field ID: G5SD0107 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2304528	EPA 180.1 Rev. 2.0	Turbidity	0.90	I	NTU	P409640	
	SM 2320 B-2011	Total Alkalinity	132		mg CaCO3/L	P410035	RPD
	SM 2540 D-2011	TSS	4	I	mg/L	P409984	
	SM 4500 F-C-2011	Fluoride	1.1		mg F/L	P409907	
2304530	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P409952	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.31	I	mg N/L	P409729	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P410050	
	EPA 365.1 Rev. 2.0	Total-P	0.010		mg P/L	P409720	
	SM 5310 B-2011	Organic Carbon	3.4		mg C/L	P410520	
2304532	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P409627	

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: P409640

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P409952

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409729

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P410050

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P409720

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P409627

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

Reference Method: SM 2320 B-2011
Batch ID: P410035

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

Reference Method: SM 2540 D-2011
Batch ID: P409984

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P409907

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P410520

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P409640

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	96.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P409952

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409729

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P410050

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P409720

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: P409627

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

Reference Method: SM 2320 B-2011
Batch ID: P410035

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	96.5		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P409907

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.9		P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P410520

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.2		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P409952

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2303923	Ammonia-N	98.6	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409729

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2304478	Kjeldahl Nitrogen	106	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P410050

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2304523	NO2NO3-N	94.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P409720

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2304529	Total-P	96.6	94.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P409627

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2304531	O-Phosphate-P	94.1	94.6	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P409907

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2305354	Fluoride	97.0	97.8	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P410520

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2306636	Organic Carbon	92.3	93.5	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P409640

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2304485	Turbidity	1.76	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P409952

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2303923	Ammonia-N	0.941	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409729

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2304478	Kjeldahl Nitrogen	2.31	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P410050

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2304523	NO2NO3-N	1.78	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P409720

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2304529	Total-P	2.29	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P409627

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2304531	O-Phosphate-P	0.504	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P410035

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2306102	Total Alkalinity	6.63	Sample	F	0 - 5.2

Reference Method: SM 4500 F-C-2011
Batch ID: P409907

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2305354	Fluoride	0.470	Spike	P	0 - 2.1

Quality Assurance Report
Precision

Reference Method: SM 5310 B-2011
Batch ID: P410520

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2306636	Organic Carbon	1.24	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: A110311
Included Lab Sample IDs: 2304531, 2304532

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.0	99.9	P/P	90 - 110
O-Phosphate-P	99.9	98.9	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A110314
Included Lab Sample IDs: 2304527, 2304528

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	98.5	P/P	95 - 105

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A110427
Included Lab Sample IDs: 2304529, 2304530

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.2	98.1	P/P	90 - 110
Kjeldahl Nitrogen	98.1	102	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A110433
Included Lab Sample IDs: 2304527, 2304528

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A110454
Included Lab Sample IDs: 2304529, 2304530

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.3	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A110461
Included Lab Sample IDs: 2304529, 2304530

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	101	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A110482
Included Lab Sample IDs: 2304527, 2304528

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	93.9	96.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A110486
Included Lab Sample IDs: 2304529, 2304530

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A110486
Included Lab Sample IDs: 2304529, 2304530

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

Reference Method: SM 5310 B-2011
Run ID: A110694
Included Lab Sample IDs: 2304529, 2304530

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.2	97.1	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	96.2				1.76	
EPA 350.1 Rev. 2.0	Ammonia-N	100	98.6	100			0.941
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.8	106	103			2.31
EPA 353.2 Rev. 2.0	NO2NO3-N	99.0	94.0				1.78
EPA 365.1 Rev. 2.0	Total-P	103	96.6	94.4			2.29
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	94.1	94.6			0.504
SM 2320 B-2011	Total Alkalinity	96.5				6.63	
SM 4500 F-C-2011	Fluoride	97.9	97.0	97.8			0.470
SM 5310 B-2011	Organic Carbon	95.2	92.3	93.5			1.24

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2304527, 2304528
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2304529, 2304530
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2304529, 2304530
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2304529, 2304530
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2304529, 2304530
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2304531, 2304532
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2304527, 2304528
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2304527, 2304528
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2304527, 2304528
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2304529, 2304530

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	02/09/2022			02/09/2022 15:02	Khloe J Berg	2304527
	02/09/2022			02/09/2022 15:03	Khloe J Berg	2304528
EPA 350.1 Rev. 2.0	02/09/2022			02/16/2022 13:41	Ping Hua	2304529
	02/09/2022			02/16/2022 13:42	Ping Hua	2304530
EPA 351.2 Rev. 2.0	02/09/2022	02/14/2022 16:13	Samantha L Bates	02/15/2022 15:09	Alexandra J Mattheus	2304529
	02/09/2022	02/14/2022 16:13	Samantha L Bates	02/15/2022 15:14	Alexandra J Mattheus	2304530
EPA 353.2 Rev. 2.0	02/09/2022			02/17/2022 17:25	Nathaniel J Jones	2304529
	02/09/2022			02/17/2022 17:26	Nathaniel J Jones	2304530
EPA 365.1 Rev. 2.0	02/09/2022	02/14/2022 14:35	Simonne.V. Calhoun	02/16/2022 12:13	Shengyu Ding	2304529
	02/09/2022	02/14/2022 14:35	Simonne.V. Calhoun	02/16/2022 12:14	Shengyu Ding	2304530
EPA 365.1 Rev. 2.0 dissolved	02/09/2022			02/09/2022 14:24	James L Waggerby	2304531
	02/09/2022			02/09/2022 14:33	James L Waggerby	2304532
SM 2320 B-2011	02/09/2022			02/18/2022 02:17	Dale L. Simmons	2304527
	02/09/2022			02/18/2022 02:27	Dale L. Simmons	2304528
SM 2540 D-2011	02/09/2022			02/11/2022 14:02	Yijie Li	2304527, 2304528
SM 4500 F-C-2011	02/09/2022			02/16/2022 03:17	Dale L. Simmons	2304527
	02/09/2022			02/16/2022 03:22	Dale L. Simmons	2304528
SM 5310 B-2011	02/09/2022			02/28/2022 11:02	Touraj Touran	2304529
	02/09/2022			02/28/2022 12:01	Touraj Touran	2304530