Chemical Analysis Report

SO-DIST-2019-09-18-01

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

Event Description: **2019 SMP : Lower Myakka LVI**
Request ID: **RQ-2019-09-16-60**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
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FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
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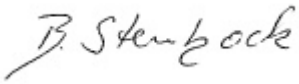
Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 01-OCT-2019 17:02



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: Little Bonnet Lake **Collection Date/Time: 09/17/2019 12:30**

Field ID: G4SD0169 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2120116	EPA 180.1 Rev. 2.0	Turbidity	13	A	NTU	P370988	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P371125	
		Sulfate	29		mg SO4/L	P371129	
	SM 2120 B	Color (true)	19		PCU	P370950	
	SM 2320 B-97	Total Alkalinity	37		mg CaCO3/L	P371114	
	SM 2540 C-97	TDS	132	A	mg/L	P371460	
	SM 2540 D-97	TSS	10	I	mg/L	P371393	
	SM 4500 F-C-97	Fluoride	0.075	I	mg F/L	P371118	
2120117	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P371193	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P370964	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.070		mg N/L	P371145	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P370984	
	SM 5310 B-00	Organic Carbon	8.8		mg C/L	P371109	
2120118	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P370901	

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: P370988

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371125

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371129

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371193

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P370964

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P371145

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P370984

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P370901

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

Reference Method: SM 2120 B
Batch ID: P370950

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P371114

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

Reference Method: SM 2540 C-97
Batch ID: P371460

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P371393

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P371118

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P371109

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: P371125

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371129

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371193

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P370964

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.7		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P371145

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P370984

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P370901

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

Reference Method: SM 2120 B
Batch ID: P370950

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P371114

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P371118

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.2		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P371109

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.7		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371125

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2120026	Chloride	99.8		P	90 - 110
2120087	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371129

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2120026	Sulfate	101		P	90 - 110
2120087	Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371193

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2120090	Ammonia-N	97.9	96.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P370964

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2120122	Kjeldahl Nitrogen	102	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P371145

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2120090	NO2NO3-N	99.0	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P370984

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2120069	Total-P	94.3	98.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P370901

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2120098	O-Phosphate-P	96.0	97.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P371118

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2120062	Fluoride	98.1	97.4	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P371109

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2120091	Organic Carbon	98.1	98.9	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P370988

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2120116	Turbidity	11.2	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371125

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2120026	Chloride	0.592	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371129

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2120026	Sulfate	0.850	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371193

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2120090	Ammonia-N	1.41	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P370964

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2120122	Kjeldahl Nitrogen	3.76	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P371145

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2120090	NO2NO3-N	0.521	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P370984

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2120069	Total-P	3.66	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P370901

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2120098	O-Phosphate-P	0.822	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P370950

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2120121	Color (true)	1.42	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P371114

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2120062	Total Alkalinity	0.468	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P371460

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2120116	TDS	8.30	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P371118

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2120062	Fluoride	0.476	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P371109

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2120091	Organic Carbon	0.717	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 300.0 Rev. 2.1
Run ID: A94268
Included Lab Sample IDs: 2120116

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A94319
Included Lab Sample IDs: 2120118

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.8	100	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A94336
Included Lab Sample IDs: 2120116

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	98.9	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A94339
Included Lab Sample IDs: 2120116

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

Reference Method: SM 2320 B-97
Run ID: A94398
Included Lab Sample IDs: 2120116

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A94398
Included Lab Sample IDs: 2120116

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.1	98.5	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A94399
Included Lab Sample IDs: 2120117

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.7	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A94408
Included Lab Sample IDs: 2120117

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	102	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A94411
Included Lab Sample IDs: 2120117

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A94415
Included Lab Sample IDs: 2120117

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A94434
Included Lab Sample IDs: 2120117

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.9	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					11.2	
EPA 300.0 Rev. 2.1	Chloride	99.2	99.8	101		0.592	
	Sulfate	101	101	103		0.850	
EPA 350.1 Rev. 2.0	Ammonia-N	98.6	97.9	96.4			1.41
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.7	102	108			3.76
EPA 353.2 Rev. 2.0	NO2NO3-N	100	99.0	98.0			0.521
EPA 365.1 Rev. 2.0	Total-P	96.5	94.3	98.2			3.66
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.8	96.0	97.0			0.822
SM 2120 B	Color (true)	101				1.42	
SM 2320 B-97	Total Alkalinity	104				0.468	
SM 2540 C-97	TDS					8.30	
SM 4500 F-C-97	Fluoride	97.2	98.1	97.4			0.476
SM 5310 B-00	Organic Carbon	98.7	98.1	98.9			0.717

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2120116
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2120116
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2120116
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2120117
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2120117
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2120117
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2120117
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2120118
SM 2120 B / E31780	True Color measured at 450 nm	2120116
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2120116
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2120116
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2120116
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2120116
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2120117

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	09/18/2019			09/18/2019 17:19	Samantha Davila	2120116
EPA 300.0 Rev. 2.1	09/18/2019			09/21/2019 03:12	Jhamieka S. Greenwood	2120116
EPA 350.1 Rev. 2.0	09/18/2019			09/23/2019 11:59	Ping Hua	2120117
EPA 351.2 Rev. 2.0	09/18/2019	09/19/2019 12:30	Sima Feizi	09/20/2019 13:28	Julia Storbeck	2120117
EPA 353.2 Rev. 2.0	09/18/2019			09/23/2019 10:28	Beverly Y. Sanders	2120117
EPA 365.1 Rev. 2.0	09/18/2019	09/19/2019 14:14	Lipi Saha	09/20/2019 17:24	Rosalyn Ballman	2120117
EPA 365.1 Rev. 2.0 dissolved	09/18/2019			09/18/2019 15:35	Jhamieka S. Greenwood	2120118
SM 2120 B	09/18/2019			09/18/2019 18:29	Madeline Funaro	2120116
SM 2320 B-97	09/18/2019			09/20/2019 15:05	Dale L. Simmons	2120116
SM 2540 C-97	09/18/2019			09/20/2019 15:02	Yijie Li	2120116
SM 2540 D-97	09/18/2019			09/20/2019 15:02	Yijie Li	2120116
SM 4500 F-C-97	09/18/2019			09/20/2019 15:05	Dale L. Simmons	2120116
SM 5310 B-00	09/18/2019			09/20/2019 22:39	Madeline Funaro	2120117