Chemical Analysis Report

SO-DIST-2017-10-17-01

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

Event Description: **Sanibel Dune Lakes**
Request ID: **RQ-2017-10-16-09**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901
Attn: Maryann Dugan

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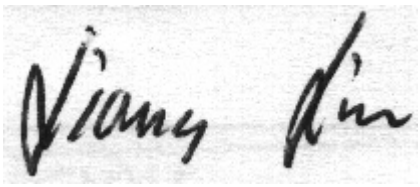
Date Certified: 13-NOV-2017 15:29



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 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: DL04WEIR DOWNSTREAM **Collection Date/Time: 10/16/2017 09:55**

Field ID: DOWNSTREAM DUNES LK4 WEIR Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1937075	EPA 180.1 Rev. 2.0	Turbidity	27		NTU	P333569	
	EPA 300.0 Rev. 2.1	Chloride	3.1E+03		mg Cl/L	P333661	
		Sulfate	410		mg SO4/L	P333663	
	SM 2120 B	Color (true)	110	A	PCU	P333513	
	SM 2320 B-97	Total Alkalinity	207	A	mg CaCO3/L	P333740	
	SM 2540 C-97	TDS	5.38E+03		mg/L	P333868	
	SM 2540 D-97	TSS	6	I	mg/L	P333939	
	SM 4500 F-C-97	Fluoride	0.59		mg F/L	P333861	
1937076	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P333616	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.3		mg N/L	P333915	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P333844	
	EPA 365.1 Rev. 2.0	Total-P	0.17		mg P/L	P333880	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P333821	
1937077	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.058		mg P/L	P333507	

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: P333569

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333661

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333663

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P333616

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P333915

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P333844

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P333880

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333507

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

Reference Method: SM 2120 B
Batch ID: P333513

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P333740

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

Reference Method: SM 2540 C-97
Batch ID: P333868

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P333939

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P333861

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P333821

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: P333661

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333663

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P333616

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P333915

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P333844

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: P333880

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333507

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

Reference Method: SM 2320 B-97
Batch ID: P333740

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P333861

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.8		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P333821

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 300.0 Rev. 2.1
Batch ID: P333661

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1936945	Chloride	103		P	90 - 110
1937081	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333663

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1936945	Sulfate	101		P	90 - 110
1937081	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P333616

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1936843	Ammonia-N	106	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P333915

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1937000	Kjeldahl Nitrogen	98.2	93.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P333844

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1936843	NO2NO3-N	104	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P333880

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1937118	Total-P	102	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333507

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1937116	O-Phosphate-P	102	102	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P333861

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1938516	Fluoride	96.7	96.2	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P333821

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1935517	Organic Carbon	90.9	90.1	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P333569

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936999	Turbidity	0.238	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333661

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936945	Chloride	0.227	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333663

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936945	Sulfate	0.323	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P333616

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936843	Ammonia-N	0.808	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P333915

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1937000	Kjeldahl Nitrogen	4.08	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P333844

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P333844

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936843	NO2NO3-N	0.598	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P333880

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1937118	Total-P	1.36	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333507

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1937116	O-Phosphate-P	0.295	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P333513

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1937075	Color (true)	2.44	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P333740

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1937075	Total Alkalinity	0.0436	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P333868

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936898	TDS	2.51	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P333861

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1938516	Fluoride	0.474	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P333821

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935517	Organic Carbon	0.568	Spike	P	0 - 20

Quality Assurance Report
Precision

* 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: A79593
Included Lab Sample IDs: 1937075

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	107	106	P/P	90 - 110
Sulfate	107	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A79608
Included Lab Sample IDs: 1937077

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.7	97.9	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A79613
Included Lab Sample IDs: 1937075

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.9	99.2	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A79632
Included Lab Sample IDs: 1937075

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A79639
Included Lab Sample IDs: 1937076

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	101	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A79678
Included Lab Sample IDs: 1937075

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	100	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A79713
Included Lab Sample IDs: 1937076

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	90.4	94.6	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A79729
Included Lab Sample IDs: 1937076

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

Reference Method: SM 4500 F-C-97
Run ID: A79730
Included Lab Sample IDs: 1937075

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A79759
Included Lab Sample IDs: 1937076

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	99.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A79845
Included Lab Sample IDs: 1937076

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.6	107	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					0.238	
EPA 300.0 Rev. 2.1	Chloride	101	103	102		0.227	
	Sulfate	101	101	101		0.323	
EPA 350.1 Rev. 2.0	Ammonia-N	104	106	105			0.808
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	98.2	93.5			4.08
EPA 353.2 Rev. 2.0	NO2NO3-N	103	104	102			0.598
EPA 365.1 Rev. 2.0	Total-P	97.7	102	100			1.36
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.2	102	102			0.295
SM 2120 B	Color (true)					2.44	
SM 2320 B-97	Total Alkalinity	103				0.0436	
SM 2540 C-97	TDS					2.51	
SM 4500 F-C-97	Fluoride	96.8	96.7	96.2			0.474
SM 5310 B-00	Organic Carbon	95.2	90.9	90.1			0.568

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1937075
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1937075
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1937075
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1937076
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1937076
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1937076
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1937076
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1937077
SM 2120 B / E31780	True Color measured at 450 nm	1937075
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1937075
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1937075
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1937075
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1937075
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1937076

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	10/17/2017			10/17/2017 15:46	DeAsia Armster	1937075
EPA 300.0 Rev. 2.1	10/17/2017			10/17/2017	Julia Storbeck	1937075
EPA 350.1 Rev. 2.0	10/17/2017			10/18/2017	Sofia Elnemr	1937076
EPA 351.2 Rev. 2.0	10/17/2017	10/24/2017	Adrian Shelby	10/25/2017	Tanya Welborn	1937076
EPA 353.2 Rev. 2.0	10/17/2017			10/23/2017	Beverly Y. Sanders	1937076
EPA 365.1 Rev. 2.0	10/17/2017	10/23/2017	Sima Feizi	10/24/2017	Lipi Saha	1937076
EPA 365.1 Rev. 2.0 dissolved	10/17/2017			10/17/2017 14:34	Megan Treadwell	1937077
SM 2120 B	10/17/2017			10/17/2017 15:26	Tanya Welborn	1937075
SM 2320 B-97	10/17/2017			10/20/2017	Dale L. Simmons	1937075
SM 2540 C-97	10/17/2017			10/18/2017	Yijie Li	1937075
SM 2540 D-97	10/17/2017			10/18/2017	Yijie Li	1937075
SM 4500 F-C-97	10/17/2017			10/21/2017	Dale L. Simmons	1937075
SM 5310 B-00	10/17/2017			10/21/2017	Ping Hua	1937076