

Chemical Analysis Report

NE-DIST-2017-05-24-01

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

Event Description: **Hawthorne Lakes-5/23/17**

Request ID: **RQ-2017-05-22-10**

Customer: **NE-DIST**

Project ID: **SMP**

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Date Certified: 19-JUN-2017 14:52



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: Lake Jeffords Center

Collection Date/Time: 05/23/2017 11:45

Field ID: G1NE0041 05232017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1901162	EPA 180.1 Rev. 2.0	Turbidity	16	A	NTU	P325793	
	EPA 300.0 Rev. 2.1	Chloride	21		mg Cl/L	P326773	MS
		Sulfate	7.3		mg SO4/L	P326775	
	SM 2120 B	Color (true)	79		PCU	P325786	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P325952	
	SM 2540 C-97	TDS	70		mg/L	P326092	
	SM 2540 D-97	TSS	6	I	mg/L	P326268	
	SM 4500 F-C-97	Fluoride	0.055	I	mg F/L	P325955	RPD
1901163	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P325862	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.69		mg N/L	P325866	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.014		mg N/L	P325887	
	EPA 365.1 Rev. 2.0	Total-P	0.075		mg P/L	P325804	
	SM 5310 B-00	Organic Carbon	9.9		mg C/L	P326073	
1901164	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.030		mg P/L	P325776	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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: P325793

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P326773

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P326775

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P325862

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P325866

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: P325887

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325804

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325776

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

Reference Method: SM 2120 B
Batch ID: P325786

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P325952

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

Reference Method: SM 2540 C-97
Batch ID: P326092

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P326268

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P325955

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P326073

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: P326773

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326775

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P325862

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325866

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325887

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: P325804

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325776

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

Reference Method: SM 2320 B-97
Batch ID: P325952

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

Reference Method: SM 4500 F-C-97
Batch ID: P325955

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	92.5		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P326073

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326773

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1901061	Chloride	110		F	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326775

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900983	Sulfate	102		P	90 - 110
1901061	Sulfate	107		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P325862

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1901126	Ammonia-N	102	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325866

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1901128	Kjeldahl Nitrogen	104	97.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325887

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1901163	NO2NO3-N	96.2	98.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325804

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1901171	Total-P	101	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325776

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1901093	O-Phosphate-P	96.6	97.6	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P325955

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1901062	Fluoride	94.4	98.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P326073

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1901088	Organic Carbon	96.8	96.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P325793

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901162	Turbidity	0.643	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326773

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901061	Chloride	0.161	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326775

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901061	Sulfate	0.331	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P325862

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901126	Ammonia-N	0.444	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325866

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901128	Kjeldahl Nitrogen	5.01	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325887

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325887

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901163	NO2NO3-N	1.92	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325804

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901171	Total-P	4.30	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325776

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901093	O-Phosphate-P	1.03	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P325786

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901124	Color (true)	1.05	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P325952

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901062	Total Alkalinity	0.393	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P326092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901292	TDS	1.26	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P325955

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901062	Fluoride	3.89	Spike	F	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P326073

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901088	Organic Carbon	0.0565	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 365.1 Rev. 2.0 dissolved

Run ID: A76655

Included Lab Sample IDs: 1901164

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.1	100	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A76656

Included Lab Sample IDs: 1901162

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	103	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A76659

Included Lab Sample IDs: 1901162

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A76683

Included Lab Sample IDs: 1901163

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A76697

Included Lab Sample IDs: 1901163

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.0	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A76700

Included Lab Sample IDs: 1901163

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

Reference Method: SM 2320 B-97

Run ID: A76730

Included Lab Sample IDs: 1901162

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A76730

Included Lab Sample IDs: 1901162

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	93.9	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A76757

Included Lab Sample IDs: 1901163

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

Reference Method: SM 5310 B-00

Run ID: A76792

Included Lab Sample IDs: 1901163

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.0	94.2	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A77076

Included Lab Sample IDs: 1901162

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	98.4	P/P	90 - 110
Sulfate	101	105	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 SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				0.643	
EPA 300.0 Rev. 2.1	Chloride	107	110		0.161	
	Sulfate	106	107	102	0.331	
EPA 350.1 Rev. 2.0	Ammonia-N	103	102	102		0.444
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	104	97.4		5.01
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	96.2	98.2		1.92
EPA 365.1 Rev. 2.0	Total-P	106	101	105		4.30
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	96.6	97.6		1.03
SM 2120 B	Color (true)				1.05	
SM 2320 B-97	Total Alkalinity	103			0.393	
SM 2540 C-97	TDS				1.26	
SM 4500 F-C-97	Fluoride	92.5	94.4	98.9		3.89
SM 5310 B-00	Organic Carbon	93.5	96.8	96.8		0.0565

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1901162
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1901162
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1901162
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1901163
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1901163
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1901163
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1901163
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1901164
SM 2120 B / E31780	True Color measured at 450 nm	1901162
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1901162
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1901162
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1901162
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1901162
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1901163

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	05/24/2017			05/24/2017 16:45	Sima Feizi	1901162
EPA 300.0 Rev. 2.1	05/24/2017			06/13/2017	Julia Storbeck	1901162
EPA 350.1 Rev. 2.0	05/24/2017			05/25/2017	Julia Storbeck	1901163
EPA 351.2 Rev. 2.0	05/24/2017	05/26/2017	Adrian Shelby	05/30/2017	Joseph Suarez	1901163
EPA 353.2 Rev. 2.0	05/24/2017			05/26/2017	Beverly Y. Sanders	1901163
EPA 365.1 Rev. 2.0	05/24/2017	05/25/2017	Adrian Shelby	05/26/2017	Lipi Saha	1901163
EPA 365.1 Rev. 2.0 dissolved	05/24/2017			05/24/2017 15:25	Julia Storbeck	1901164
SM 2120 B	05/24/2017			05/24/2017 15:48	Tanya Welborn	1901162
SM 2320 B-97	05/24/2017			05/26/2017	Dale L. Simmons	1901162
SM 2540 C-97	05/24/2017			05/26/2017	Yijie Li	1901162
SM 2540 D-97	05/24/2017			05/26/2017	Yijie Li	1901162
SM 4500 F-C-97	05/24/2017			05/26/2017	Dale L. Simmons	1901162
SM 5310 B-00	05/24/2017			05/31/2017	Julie Michelle Frank	1901163