

Chemical Analysis Report

WQAP-2017-08-16-04

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

Event Description: **SMP 2016 Freshwater Kit A w/ SCI**
Request ID: **RQ-2017-03-20-32**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
MS #3560
Tallahassee, FL 32399-2400
Attn: Mike Eckles

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 07-SEP-2017 14:47

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored background.

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: Owl Creek @ Hwy 357

Collection Date/Time: 08/16/2017 11:10

Field ID: G1TLHR0010-2017-04

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1922010	EPA 180.1 Rev. 2.0	Turbidity	2.7	A	NTU	P330340	
	EPA 300.0 Rev. 2.1	Chloride	8.4		mg Cl/L	P330470	
	SM 2120 B	Color (true)	280		PCU	P330351	
	SM 2320 B-97	Total Alkalinity	103	A	mg CaCO3/L	P330700	
	SM 2540 C-97	TDS	180		mg/L	P330694	
	SM 2540 D-97	TSS	3	I	mg/L	P330922	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P330703	
1922011	EPA 350.1 Rev. 2.0	Ammonia-N	0.026		mg N/L	P330517	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.98		mg N/L	P330451	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.058		mg N/L	P330564	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P330420	
	SM 5310 B-00	Organic Carbon	29		mg C/L	P330661	
1922012	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.069		mg P/L	P330428	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P330340

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P330470

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P330517

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P330451

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

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P330564

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P330420

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P330428

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

Reference Method: SM 2120 B
Batch ID: P330351

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P330700

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

Reference Method: SM 2540 C-97
Batch ID: P330694

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P330922

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P330703

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P330661

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: P330470

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330470

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330517

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: P330451

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330564

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P330420

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: P330428

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

Reference Method: SM 2320 B-97
Batch ID: P330700

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P330703

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

Reference Method: SM 5310 B-00
Batch ID: P330661

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P330470

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1921834	Chloride	96.4		P	90 - 110
1921879	Chloride	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P330517

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1921997	Ammonia-N	101	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P330451

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1921883	Kjeldahl Nitrogen	94.4	91.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P330564

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1921882	NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P330428

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922041	O-Phosphate-P	93.8	96.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
 Batch ID: P330703

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922010	Fluoride	99.0	100	P/P	91 - 105

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P330340

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922010	Turbidity	3.76	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P330470

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921834	Chloride	0.0423	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330517

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921997	Ammonia-N	0.309	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330451

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921883	Kjeldahl Nitrogen	1.39	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330564

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921882	NO2NO3-N	0.393	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P330420

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921997	Total-P	3.16	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P330428

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922041	O-Phosphate-P	2.51	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P330351

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921879	Color (true)	1.70	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P330700

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922010	Total Alkalinity	0.156	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P330694

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921904	TDS	3.51	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P330703

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922010	Fluoride	0.946	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P330661

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922080	Organic Carbon	0.0973	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: A78421
Included Lab Sample IDs: 1922010

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.9	99.7	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A78439
Included Lab Sample IDs: 1922010

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

Reference Method: SM 2120 B
Run ID: A78444
Included Lab Sample IDs: 1922010

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A78481
Included Lab Sample IDs: 1922012

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.4	97.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A78513
Included Lab Sample IDs: 1922011

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A78528
Included Lab Sample IDs: 1922011

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A78550
Included Lab Sample IDs: 1922011

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.6	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A78562
Included Lab Sample IDs: 1922011

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

Reference Method: SM 5310 B-00
Run ID: A78572
Included Lab Sample IDs: 1922011

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.8	97.4	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A78580
Included Lab Sample IDs: 1922010

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

Reference Method: SM 4500 F-C-97
Run ID: A78580
Included Lab Sample IDs: 1922010

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	98.5	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				3.76	
EPA 300.0 Rev. 2.1	Chloride	97.5	96.4	98.2	0.0423	
EPA 350.1 Rev. 2.0	Ammonia-N	100	101	100		0.309
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	94.4	91.8		1.39

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		LCS	Precision	MS
						SMP	
EPA 353.2 Rev. 2.0	NO2NO3-N	104	102	101			0.393
EPA 365.1 Rev. 2.0	Total-P	97.7					3.16
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.6	93.8	96.8			2.51
SM 2120 B	Color (true)					1.70	
SM 2320 B-97	Total Alkalinity	102				0.156	
SM 2540 C-97	TDS					3.51	
SM 4500 F-C-97	Fluoride	97.2	99.0	100			0.946
SM 5310 B-00	Organic Carbon	98.4					0.0973

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1922010
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1922010
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1922011
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1922011
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1922011
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1922011
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1922012
SM 2120 B / E31780	True Color measured at 450 nm	1922010
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1922010
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1922010
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1922010
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1922010
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1922011

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	08/16/2017			08/16/2017 15:34	DeAsia Armster	1922010
EPA 300.0 Rev. 2.1	08/16/2017			08/17/2017	Julia Storbeck	1922010
EPA 350.1 Rev. 2.0	08/16/2017			08/17/2017	Sofia Elnemr	1922011
EPA 351.2 Rev. 2.0	08/16/2017	08/18/2017	Adrian Shelby	08/21/2017	Joseph Suarez	1922011
EPA 353.2 Rev. 2.0	08/16/2017			08/21/2017	Beverly Y. Sanders	1922011
EPA 365.1 Rev. 2.0	08/16/2017	08/17/2017	Sima Feizi	08/18/2017	Lipi Saha	1922011
EPA 365.1 Rev. 2.0 dissolved	08/16/2017			08/17/2017 15:03	Megan Treadwell	1922012
SM 2120 B	08/16/2017			08/16/2017 17:04	Tanya Welborn	1922010
SM 2320 B-97	08/16/2017			08/22/2017	Dale L. Simmons	1922010
SM 2540 C-97	08/16/2017			08/18/2017	Yijie Li	1922010
SM 2540 D-97	08/16/2017			08/18/2017	Yijie Li	1922010
SM 4500 F-C-97	08/16/2017			08/22/2017	Dale L. Simmons	1922010
SM 5310 B-00	08/16/2017			08/22/2017	Ping Hua	1922011