

Chemical Analysis Report

SO-DIST-2017-04-26-03

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

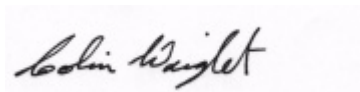
Event Description: **SMP: Highlands Canoe Lakes**
Request ID: **RQ-2017-04-24-07**
Customer: **SO-DIST**
Project ID: **SMP**

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

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Certified by: Colin Wright, Program Administrator

Date Certified: 22-MAY-2017 15:58

A handwritten signature in black ink, appearing to read "Colin Wright", is placed over a light gray rectangular 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: Blue Lake @ Center

Collection Date/Time: 04/25/2017 11:15

Field ID: G4SD0157

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1892549	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P324092	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P324661	
		Sulfate	26		mg SO4/L	P324666	
	SM 2120 B	Color (true)	12		PCU	P324067	
	SM 2320 B-97	Total Alkalinity	20		mg CaCO3/L	P324822	
	SM 2540 C-97	TDS	118		mg/L	P324737	
	SM 2540 D-97	TSS	4	I	mg/L	P324781	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P324829	
1892555	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P324250	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.65		mg N/L	P324152	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P324205	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P324198	
	SM 5310 B-00	Organic Carbon	8.6		mg C/L	P324173	
1892561	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P324088	

Ref. Method and Comment:

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

Sample Location: Blue Lake Duplicate

Collection Date/Time: 04/25/2017 11:20

Field ID: G4SD0157-D

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1892550	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P324092	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P324661	
		Sulfate	27		mg SO4/L	P324666	
	SM 2120 B	Color (true)	12		PCU	P324067	
	SM 2320 B-97	Total Alkalinity	21		mg CaCO3/L	P324822	
	SM 2540 C-97	TDS	106		mg/L	P324737	
	SM 2540 D-97	TSS	3	I	mg/L	P324781	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P325522	
1892556	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P324250	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.64		mg N/L	P324152	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P324205	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P324198	
	SM 5310 B-00	Organic Carbon	8.6		mg C/L	P324173	
1892562	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P324097	

Ref. Method and Comment:

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

Sample Location: Silver Lake @ Center

Collection Date/Time: 04/25/2017 13:00

Field ID: G4SD0159

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1892551	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P324093	
	EPA 300.0 Rev. 2.1	Chloride	7.2		mg Cl/L	P324661	
		Sulfate	5.8		mg SO4/L	P324666	

Field ID: G4SD0159

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1892551	SM 2120 B	Color (true)	8.9		PCU	P324067	
	SM 2320 B-97	Total Alkalinity	1.2	I	mg CaCO3/L	P324822	
	SM 2540 C-97	TDS	37		mg/L	P324737	
	SM 2540 D-97	TSS	3	I	mg/L	P324781	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P325522	
1892557	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P324250	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39		mg N/L	P324152	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P324205	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P324198	
	SM 5310 B-00	Organic Carbon	6.4		mg C/L	P324173	
1892563	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P324097	

Ref. Method and Comment:

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

Sample Location: Silver Lake Duplicate

Collection Date/Time: 04/25/2017 13:10

Field ID: G4SD0159-D

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1892552	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P324093	
	EPA 300.0 Rev. 2.1	Chloride	7.1		mg Cl/L	P324661	
		Sulfate	5.7		mg SO4/L	P324666	
	SM 2120 B	Color (true)	8.2		PCU	P324067	
	SM 2320 B-97	Total Alkalinity	0.91	I	mg CaCO3/L	P324822	
	SM 2540 C-97	TDS	36		mg/L	P324737	
	SM 2540 D-97	TSS	3	I	mg/L	P324781	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P325522	
1892558	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P324250	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39		mg N/L	P324152	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P324205	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P324198	
	SM 5310 B-00	Organic Carbon	6.3		mg C/L	P324173	
1892564	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P324097	

Ref. Method and Comment:

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

Sample Location: Lake Rachard @ Center

Collection Date/Time: 04/25/2017 10:10

Field ID: 26010647*

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1892553	EPA 180.1 Rev. 2.0	Turbidity	1.9	A	NTU	P324093	
	EPA 300.0 Rev. 2.1	Chloride	6.9	A	mg Cl/L	P324661	
		Sulfate	17	A	mg SO4/L	P324666	
	SM 2120 B	Color (true)	7.2		PCU	P324067	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P324822	
	SM 2540 C-97	TDS	51		mg/L	P324737	
	SM 2540 D-97	TSS	3	I	mg/L	P324781	

Field ID: 26010647*

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1892553	SM 4500 F-C-97	Fluoride	0.057	I	mg F/L	P325469	RPD
1892559	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P324250	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.53		mg N/L	P324152	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P324205	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P324198	
	SM 5310 B-00	Organic Carbon	5.4		mg C/L	P324173	
1892565	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P324097	

Ref. Method and Comment:

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

Sample Location: Buck Lake @ Middle

Collection Date/Time: 04/25/2017 09:35

Field ID: G4SD0158

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1892554	EPA 180.1 Rev. 2.0	Turbidity	0.55		NTU	P324093	
	EPA 300.0 Rev. 2.1	Chloride	23		mg Cl/L	P324661	
		Sulfate	66		mg SO4/L	P324666	
	SM 2120 B	Color (true)	4.5	I	PCU	P324067	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P324822	
	SM 2540 C-97	TDS	222	A	mg/L	P324738	
	SM 2540 D-97	TSS	2	IA	mg/L	P324782	
	SM 4500 F-C-97	Fluoride	0.083	IJ	mg F/L	P325469	RPD
1892560	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P324250	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.47		mg N/L	P324340	
	EPA 353.2 Rev. 2.0	NO2NO3-N	13		mg N/L	P324205	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P324198	
	SM 5310 B-00	Organic Carbon	4.1		mg C/L	P324173	
1892566	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P324097	

Ref. Method and Comment:

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

SM 4500 F-C-97: Refer to the narrative for an explanation of QC Codes.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P324092

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P324093

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324661

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324666

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P324250

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324152

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324340

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324205

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324198

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324088

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324097

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2120 B
Batch ID: P324067

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P324822

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P324737

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P324738

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P324781

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P324782

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P324829

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P325469

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P325522

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P324173

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: P324661

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324666

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P324250

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324152

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.5		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324340

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: P324205

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	105		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324198

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: P324088

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324088

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.3		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324097

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

Reference Method: SM 2320 B-97
Batch ID: P324822

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

Reference Method: SM 4500 F-C-97
Batch ID: P324829

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P325469

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P325522

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P324173

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	102		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324661

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892501	Chloride	98.1		P	90 - 110
1892553	Chloride	99.0		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324666

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892501	Sulfate	99.9		P	90 - 110
1892553	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P324250

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1891862	Ammonia-N	96.1	94.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324152

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892516	Kjeldahl Nitrogen	104	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324340

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1893441	Kjeldahl Nitrogen	100	96.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324205

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892495	NO2NO3-N	105	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324198

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892555	Total-P	98.3	97.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324088

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892444	O-Phosphate-P	97.3	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324097

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892562	O-Phosphate-P	97.2	98.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P324829

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1893634	Fluoride	100	100	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P325469

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892554	Fluoride	102	97.9	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P325522

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892682	Fluoride	101	102	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P324173

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892474	Organic Carbon	99.1	100	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P324092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892492	Turbidity	2.63	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P324093

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892553	Turbidity	1.60	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324661

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892553	Chloride	0.167	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324666

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892553	Sulfate	0.196	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P324250

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1891862	Ammonia-N	1.67	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324152

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892516	Kjeldahl Nitrogen	0.330	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P324340

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1893441	Kjeldahl Nitrogen	2.01	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324205

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892495	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324198

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892555	Total-P	0.905	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324088

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892444	O-Phosphate-P	1.12	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892562	O-Phosphate-P	1.13	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P324067

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892515	Color (true)	1.68	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P324822

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1893634	Total Alkalinity	0.297	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
 Batch ID: P324737

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892501	TDS	4.44	Sample	P	0 - 10

Reference Method: SM 2540 C-97
 Batch ID: P324738

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892554	TDS	4.06	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P324829

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1893634	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
 Batch ID: P325469

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892554	Fluoride	3.65	Spike	F	0 - 3.0

Reference Method: SM 4500 F-C-97
 Batch ID: P325522

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892682	Fluoride	0.473	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
 Batch ID: P324173

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892474	Organic Carbon	1.19	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: SM 2120 B
 Run ID: A76015
 Included Lab Sample IDs: 1892549, 1892550, 1892551, 1892552, 1892553, 1892554

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.1	98.9	P/P	85 - 115

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A76020

Included Lab Sample IDs: 1892561, 1892562, 1892563, 1892564, 1892565, 1892566

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.4	96.7	P/P	90 - 110
O-Phosphate-P	96.7	96.0	P/P	90 - 110
O-Phosphate-P	97.6	96.4	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A76023

Included Lab Sample IDs: 1892549, 1892550, 1892551, 1892552, 1892553, 1892554

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	100	P/P	95 - 105
Turbidity	99.0	100	P/P	95 - 105

Reference Method: SM 5310 B-00

Run ID: A76046

Included Lab Sample IDs: 1892555, 1892556, 1892557, 1892558, 1892559, 1892560

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A76056

Included Lab Sample IDs: 1892555, 1892556, 1892557, 1892558, 1892559, 1892560

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	102	P/P	90 - 110
NO2NO3-N	103	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A76070

Included Lab Sample IDs: 1892555, 1892556, 1892557, 1892558, 1892559, 1892560

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	94.7	91.7	P/P	90 - 110
Ammonia-N	94.7	94.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A76098

Included Lab Sample IDs: 1892555, 1892556, 1892557, 1892558, 1892559

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.3	99.5	P/P	90 - 110
Kjeldahl Nitrogen	99.5	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A76120

Included Lab Sample IDs: 1892555, 1892556, 1892557, 1892558, 1892559, 1892560

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	95.2	98.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A76148

Included Lab Sample IDs: 1892549, 1892550, 1892551, 1892552, 1892553, 1892554

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	104	P/P	90 - 110
Chloride	103	104	P/P	90 - 110
Chloride	104	101	P/P	90 - 110
Sulfate	100	96.1	P/P	90 - 110
Sulfate	97.0	100	P/P	90 - 110
Sulfate	99.1	97.0	P/P	90 - 110
Sulfate	99.3	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A76197

Included Lab Sample IDs: 1892560

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	108	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A76242

Included Lab Sample IDs: 1892549, 1892550, 1892551, 1892552, 1892553, 1892554

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110
Total Alkalinity	103	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A76242

Included Lab Sample IDs: 1892549

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	99.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A76498

Included Lab Sample IDs: 1892553, 1892554

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.0	104	P/P	90 - 110
Fluoride	97.1	97.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A76528

Included Lab Sample IDs: 1892550, 1892551, 1892552

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	95.5	96.2	P/P	90 - 110
Fluoride	96.2	103	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	MS
EPA 180.1 Rev. 2.0	Turbidity				2.63	
	Turbidity				1.60	
EPA 300.0 Rev. 2.1	Chloride	101	99.0	98.1	0.167	
	Sulfate	102	100	99.9	0.196	
EPA 350.1 Rev. 2.0	Ammonia-N	96.8	96.1	94.5		1.67
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.5	104	104		0.330
	Kjeldahl Nitrogen	100	100	96.0		2.01
EPA 353.2 Rev. 2.0	NO2NO3-N	105	105	105		0.0
EPA 365.1 Rev. 2.0	Total-P	103	98.3	97.4		0.905
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.3	97.3	98.4		1.12
	O-Phosphate-P	97.0	97.2	98.3		1.13
SM 2120 B	Color (true)				1.68	
SM 2320 B-97	Total Alkalinity	103			0.297	
SM 2540 C-97	TDS				4.44	
	TDS				4.06	
SM 4500 F-C-97	Fluoride	100	100	100		0.0
	Fluoride	102	102	97.9		3.65
	Fluoride	101	101	102		0.473
SM 5310 B-00	Organic Carbon	102	99.1	100		1.19

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1892549, 1892550, 1892551, 1892552, 1892553, 1892554
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1892549, 1892550, 1892551, 1892552, 1892553, 1892554
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1892549, 1892550, 1892551, 1892552, 1892553, 1892554
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1892555, 1892556, 1892557, 1892558, 1892559, 1892560
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1892555, 1892556, 1892557, 1892558, 1892559, 1892560
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1892555, 1892556, 1892557, 1892558, 1892559, 1892560
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1892555, 1892556, 1892557, 1892558, 1892559, 1892560
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1892561, 1892562, 1892563, 1892564, 1892565, 1892566
SM 2120 B / E31780	True Color measured at 450 nm	1892549, 1892550, 1892551, 1892552, 1892553, 1892554
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1892549, 1892550, 1892551, 1892552, 1892553, 1892554
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1892549, 1892550, 1892551, 1892552, 1892553, 1892554
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1892549, 1892550, 1892551, 1892552, 1892553, 1892554
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1892549, 1892550, 1892551, 1892552, 1892553, 1892554
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1892555, 1892556, 1892557, 1892558, 1892559, 1892560

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	04/26/2017			04/26/2017 16:32	Sima Feizi	1892549, 1892550, 1892551, 1892552, 1892553, 1892554
EPA 300.0 Rev. 2.1	04/26/2017			05/03/2017	Ping Hua	1892549, 1892550, 1892551, 1892552, 1892553
	04/26/2017			05/04/2017	Ping Hua	1892554
EPA 350.1 Rev. 2.0	04/26/2017			04/27/2017	Julie Michelle Frank	1892555, 1892556, 1892557, 1892558, 1892559, 1892560
EPA 351.2 Rev. 2.0	04/26/2017	04/28/2017	Adrian Shelby	05/01/2017	Joseph Suarez	1892555, 1892556, 1892557, 1892558, 1892559
	04/26/2017	05/02/2017	Adrian Shelby	05/04/2017	Joseph Suarez	1892560
EPA 353.2 Rev. 2.0	04/26/2017			04/28/2017	Beverly Y. Sanders	1892555, 1892556, 1892557, 1892558, 1892559, 1892560
EPA 365.1 Rev. 2.0	04/26/2017	04/28/2017	Vijayalakshmi Reddy	05/02/2017	Lipi Saha	1892555, 1892556, 1892557, 1892558, 1892559, 1892560
EPA 365.1 Rev. 2.0 dissolved	04/26/2017			04/26/2017 13:44	Anthony C. Onicha	1892562
	04/26/2017			04/26/2017 14:02	Anthony C. Onicha	1892561
	04/26/2017			04/26/2017 14:03	Anthony C. Onicha	1892563
	04/26/2017			04/26/2017 14:08	Anthony C. Onicha	1892564
	04/26/2017			04/26/2017 14:09	Anthony C. Onicha	1892565
	04/26/2017			04/26/2017 14:10	Anthony C. Onicha	1892566
SM 2120 B	04/26/2017			04/26/2017 15:18	Julia Storbeck	1892549
	04/26/2017			04/26/2017 15:19	Julia Storbeck	1892550
	04/26/2017			04/26/2017 15:20	Julia Storbeck	1892551, 1892552
	04/26/2017			04/26/2017 15:21	Julia Storbeck	1892553
	04/26/2017			04/26/2017 15:22	Julia Storbeck	1892554
SM 2320 B-97	04/26/2017			05/06/2017	Dale L. Simmons	1892549, 1892550, 1892551, 1892552, 1892553, 1892554
SM 2540 C-97	04/26/2017			05/01/2017	Yijie Li	1892549, 1892550, 1892551, 1892552, 1892553, 1892554
SM 2540 D-97	04/26/2017			05/01/2017	Yijie Li	1892549, 1892550, 1892551, 1892552, 1892553, 1892554
SM 4500 F-C-97	04/26/2017			05/06/2017	Dale L. Simmons	1892549
	04/26/2017			05/18/2017	Dale L. Simmons	1892553, 1892554
	04/26/2017			05/19/2017	Dale L. Simmons	1892550, 1892551, 1892552
SM 5310 B-00	04/26/2017			04/27/2017	Julie Michelle Frank	1892555, 1892556, 1892557, 1892558, 1892559, 1892560