Chemical Analysis Report

WQAP-2017-08-03-03

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

Event Description: **RUN 6**
Request ID: **RQ-2017-07-31-24**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
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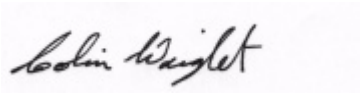
Certified by: Colin Wright, Program Administrator

Date Certified: 22-AUG-2017 12:10



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: MOON LAKE **Collection Date/Time: 08/02/2017 09:55**

Field ID: G5SW0100 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1918713	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P329651	
	EPA 300.0 Rev. 2.1	Chloride	26	A	mg Cl/L	P329710	
		Sulfate	2.1	A	mg SO4/L	P329714	
	SM 2120 B	Color (true)	27	A	PCU	P329661	
	SM 2320 B-97	Total Alkalinity	25		mg CaCO3/L	P329763	
	SM 2540 C-97	TDS	86		mg/L	P330280	
	SM 2540 D-97	TSS	2	I	mg/L	P330063	
	SM 4500 F-C-97	Fluoride	0.081	I	mg F/L	P329767	
1918717	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P329939	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.71		mg N/L	P329729	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P329822	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P329724	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P329958	
1918721	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P329646	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low 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.

Sample Location: PIERCE LAKE **Collection Date/Time: 08/02/2017 10:50**

Field ID: G5SW0105 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1918714	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P329651	
	EPA 300.0 Rev. 2.1	Chloride	5.8		mg Cl/L	P329710	
		Sulfate	1.1		mg SO4/L	P329714	
	SM 2120 B	Color (true)	45		PCU	P329661	
	SM 2320 B-97	Total Alkalinity	5.2		mg CaCO3/L	P329763	
	SM 2540 C-97	TDS	40		mg/L	P330281	
	SM 2540 D-97	TSS	2	U	mg/L	P330063	
	SM 4500 F-C-97	Fluoride	0.044	I	mg F/L	P329767	
1918718	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P329939	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P329729	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P329822	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P329724	
	SM 5310 B-00	Organic Carbon	9.2		mg C/L	P329958	
1918722	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P329646	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low 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.

Sample Location: VIENNA N **Collection Date/Time: 08/02/2017 11:30**

Field ID: G5SW0115 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1918715	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P329651	

Field ID: G5SW0115 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1918715	EPA 300.0 Rev. 2.1	Chloride	30		mg Cl/L	P329711	
		Sulfate	21		mg SO4/L	P329715	
	SM 2120 B	Color (true)	45		PCU	P329661	
	SM 2320 B-97	Total Alkalinity	29		mg CaCO3/L	P329763	
	SM 2540 C-97	TDS	122		mg/L	P330281	
	SM 2540 D-97	TSS	3	I	mg/L	P330063	
	SM 4500 F-C-97	Fluoride	0.074	I	mg F/L	P329767	
1918719	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P329803	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.71		mg N/L	P329729	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P329822	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P329724	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P329958	
1918723	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P329646	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low 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.
SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: BIG VIENNA **Collection Date/Time: 08/02/2017 11:50**

Field ID: G5SW0113 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1918716	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P329651	
	EPA 300.0 Rev. 2.1	Chloride	27		mg Cl/L	P329711	
		Sulfate	17		mg SO4/L	P329715	
	SM 2120 B	Color (true)	40		PCU	P329661	
	SM 2320 B-97	Total Alkalinity	27		mg CaCO3/L	P329763	
	SM 2540 C-97	TDS	114		mg/L	P330281	
	SM 2540 D-97	TSS	3	I	mg/L	P330063	
	SM 4500 F-C-97	Fluoride	0.082	I	mg F/L	P330093	MS, RPD
1918720	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P329803	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.60		mg N/L	P329729	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P329822	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P329724	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P329958	
1918724	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P329646	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low 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.
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: P329651

Component	Result	Code	Units

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P329651

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329710

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329711

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329714

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329715

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329803

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329939

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329729

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329822

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: P329724

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329646

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

Reference Method: SM 2120 B
Batch ID: P329661

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P329763

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

Reference Method: SM 2540 C-97
Batch ID: P330280

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P330281

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P330063

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P329767

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P330093

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: P329958

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: P329710

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329711

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329714

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329715

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329803

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329939

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329729

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329822

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329822

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: P329724

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329646

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

Reference Method: SM 2320 B-97
Batch ID: P329763

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P329767

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.3		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P330093

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P329958

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329710

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918713	Chloride	108		P	90 - 110
1918714	Chloride	99.0		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329711

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918753	Chloride	101		P	90 - 110
1918779	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329714

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918713	Sulfate	105		P	90 - 110
1918714	Sulfate	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329715

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918753	Sulfate	102		P	90 - 110
1918779	Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329803

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918586	Ammonia-N	102	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329939

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918933	Ammonia-N	101	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329729

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918717	Kjeldahl Nitrogen	100	90.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329822

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918588	NO2NO3-N	105	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329724

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918738	Total-P	97.0	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329646

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918721	O-Phosphate-P	94.7	95.2	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P329767

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918735	Fluoride	99.4	100	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P330093

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919052	Fluoride	99.4	107	P/F	91 - 105

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P329651

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918584	Turbidity	3.80	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329710

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918713	Chloride	2.94	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329711

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918753	Chloride	2.38	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329714

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918713	Sulfate	1.22	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329803

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918586	Ammonia-N	0.734	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329939

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

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329939

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918933	Ammonia-N	1.27	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329729

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918717	Kjeldahl Nitrogen	6.50	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329822

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918588	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329724

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918738	Total-P	5.03	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329646

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918721	O-Phosphate-P	0.527	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P329661

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918713	Color (true)	3.44	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P329763

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918735	Total Alkalinity	0.134	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P330280

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918525	TDS	0.0	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 2540 C-97
Batch ID: P330281

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918734	TDS	1.95	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P329767

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918735	Fluoride	0.470	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P330093

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919052	Fluoride	5.78	Spike	F	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P329958

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918710	Organic Carbon	0.289	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: A78163
Included Lab Sample IDs: 1918713, 1918714, 1918715, 1918716

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	96.8	P/P	90 - 110
Chloride	103	98.2	P/P	90 - 110
Sulfate	106	99.1	P/P	90 - 110
Sulfate	100	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A78169
Included Lab Sample IDs: 1918721, 1918722, 1918723, 1918724

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.4	96.6	P/P	90 - 110
O-Phosphate-P	96.6	95.0	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A78170
Included Lab Sample IDs: 1918713, 1918714, 1918715, 1918716

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105

Reference Method: SM 2120 B
Run ID: A78173
Included Lab Sample IDs: 1918713, 1918714, 1918715, 1918716

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	100	P/P	85 - 115

Reference Method: SM 2320 B-97
Run ID: A78219
Included Lab Sample IDs: 1918713, 1918714, 1918715, 1918716

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	103	P/P	90 - 110
Total Alkalinity	102	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A78219
Included Lab Sample IDs: 1918713, 1918714, 1918715

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A78220
Included Lab Sample IDs: 1918717, 1918718, 1918719, 1918720

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.8	99.2	P/P	90 - 110
Total-P	99.0	97.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A78241
Included Lab Sample IDs: 1918719, 1918720

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A78246
Included Lab Sample IDs: 1918717, 1918718, 1918719, 1918720

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.7	98.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A78249
Included Lab Sample IDs: 1918717, 1918718, 1918719, 1918720

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A78249
Included Lab Sample IDs: 1918717, 1918718, 1918719, 1918720

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A78297
Included Lab Sample IDs: 1918717, 1918718

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.2	98.8	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A78301
Included Lab Sample IDs: 1918717, 1918718, 1918719, 1918720

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.6	98.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A78343
Included Lab Sample IDs: 1918716

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	99.5	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		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					3.80	
EPA 300.0 Rev. 2.1	Chloride	105	99.0	108		2.94	
	Chloride	104	101	101		2.38	
	Sulfate	106	105	100		1.22	
	Sulfate	107	102	103			
EPA 350.1 Rev. 2.0	Ammonia-N	99.8	102	101			0.734
	Ammonia-N	99.5	101	100			1.27
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.5	100	90.4			6.50
EPA 353.2 Rev. 2.0	NO2NO3-N	104	105	105			0.0
EPA 365.1 Rev. 2.0	Total-P	98.8	97.0	103			5.03
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.4	94.7	95.2			0.527
SM 2120 B	Color (true)					3.44	
SM 2320 B-97	Total Alkalinity	104				0.134	
SM 2540 C-97	TDS					0.0	
	TDS					1.95	
SM 4500 F-C-97	Fluoride	95.3	99.4	100			0.470
	Fluoride	99.9	99.4	107			5.78
SM 5310 B-00	Organic Carbon	96.8					0.289

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1918713, 1918714, 1918715, 1918716
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1918713, 1918714, 1918715, 1918716
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1918713, 1918714, 1918715, 1918716
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1918717, 1918718, 1918719, 1918720
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1918717, 1918718, 1918719, 1918720
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1918717, 1918718, 1918719, 1918720
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1918717, 1918718, 1918719, 1918720
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1918721, 1918722, 1918723, 1918724
SM 2120 B / E31780	True Color measured at 450 nm	1918713, 1918714, 1918715, 1918716
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1918713, 1918714, 1918715, 1918716
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1918713, 1918714, 1918715, 1918716
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1918713, 1918714, 1918715, 1918716
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1918713, 1918714, 1918715, 1918716
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1918717, 1918718, 1918719, 1918720

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	08/03/2017			08/03/2017 16:20	DeAsia Armster	1918713, 1918714, 1918715, 1918716
EPA 300.0 Rev. 2.1	08/03/2017			08/04/2017	Julia Storbeck	1918713, 1918714, 1918715, 1918716
EPA 350.1 Rev. 2.0	08/03/2017			08/07/2017	Sofia Elnemr	1918719, 1918720
	08/03/2017			08/09/2017	Sofia Elnemr	1918717, 1918718
EPA 351.2 Rev. 2.0	08/03/2017	08/04/2017	Adrian Shelby	08/08/2017	Joseph Suarez	1918717, 1918718, 1918719, 1918720
EPA 353.2 Rev. 2.0	08/03/2017			08/08/2017	Beverly Y. Sanders	1918717, 1918718, 1918719, 1918720
EPA 365.1 Rev. 2.0	08/03/2017	08/04/2017	Sima Feizi	08/07/2017	Lipi Saha	1918717, 1918718, 1918719, 1918720
EPA 365.1 Rev. 2.0 dissolved	08/03/2017			08/03/2017 14:52	Ping Hua	1918721
	08/03/2017			08/03/2017 15:03	Ping Hua	1918722
	08/03/2017			08/03/2017 15:04	Ping Hua	1918723
	08/03/2017			08/03/2017 15:05	Ping Hua	1918724
SM 2120 B	08/03/2017			08/03/2017 15:14	Tanya Welborn	1918713
	08/03/2017			08/03/2017 15:15	Tanya Welborn	1918714
	08/03/2017			08/03/2017 15:16	Tanya Welborn	1918715
	08/03/2017			08/03/2017 15:17	Tanya Welborn	1918716
SM 2320 B-97	08/03/2017			08/05/2017	Dale L. Simmons	1918713, 1918714, 1918715, 1918716
SM 2540 C-97	08/03/2017			08/07/2017	DeAsia Armster	1918713, 1918714, 1918715, 1918716
SM 2540 D-97	08/03/2017			08/07/2017	DeAsia Armster	1918713, 1918714, 1918715, 1918716
SM 4500 F-C-97	08/03/2017			08/05/2017	Dale L. Simmons	1918713, 1918714, 1918715
	08/03/2017			08/11/2017	Dale L. Simmons	1918716
SM 5310 B-00	08/03/2017			08/08/2017	Ping Hua	1918717, 1918718, 1918719, 1918720