

Chemical Analysis Report

SW-DIST-2016-08-11-01

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

Event Description: **RUN 10**
Request ID: **RQ-2016-08-08-26**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Stephen Clingerman

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Certified by: Colin Wright, Environmental Administrator

Date Certified: 31-AUG-2016 11:35

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light-colored 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: LAKE THOMAS 249P

Collection Date/Time: 08/10/2016 10:00

Field ID: G5SW0111

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1823231	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P309607	
	EPA 300.0 Rev. 2.1	Chloride	22		mg Cl/L	P309941	
		Sulfate	7.6		mg SO4/L	P309944	
	SM 2120 B	Color (true)	22		PCU	P309630	
	SM 2320 B-97	Total Alkalinity	1.1	I	mg CaCO3/L	P309876	
	SM 2540 C-97	TDS	70		mg/L	P310301	
	SM 2540 D-97	TSS	2	U	mg/L	P310133	
	SM 4500 F-C-97	Fluoride	0.078	I	mg F/L	P309878	
1823237	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P309747	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.66		mg N/L	P309862	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P309819	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P309804	
	SM 5310 B-00	Organic Carbon	7.2		mg C/L	P310260	
1823243	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P309602	

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 THOMAS west

Collection Date/Time: 08/10/2016 10:10

Field ID: G5SW0112

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1823232	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P309607	
	EPA 300.0 Rev. 2.1	Chloride	22		mg Cl/L	P309941	
		Sulfate	7.6	A	mg SO4/L	P310312	
	SM 2120 B	Color (true)	21		PCU	P309630	
	SM 2320 B-97	Total Alkalinity	1.2	I	mg CaCO3/L	P309876	
	SM 2540 C-97	TDS	70		mg/L	P310301	
	SM 2540 D-97	TSS	2	U	mg/L	P310133	
	SM 4500 F-C-97	Fluoride	0.082	I	mg F/L	P309878	
1823238	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P309747	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.73		mg N/L	P309862	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P309819	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P309804	
	SM 5310 B-00	Organic Carbon	7.3		mg C/L	P310262	
1823244	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P309602	

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: VIENNA LAKE N

Collection Date/Time: 08/10/2016 10:45

Field ID: G5SW0115

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1823233	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P309607	
	EPA 300.0 Rev. 2.1	Chloride	25		mg Cl/L	P309941	
		Sulfate	10		mg SO4/L	P310312	

Field ID: G5SW0115

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1823233	SM 2120 B	Color (true)	37		PCU	P309630	
	SM 2320 B-97	Total Alkalinity	29		mg CaCO3/L	P309876	
	SM 2540 C-97	TDS	101		mg/L	P310301	
	SM 2540 D-97	TSS	3	I	mg/L	P310133	
	SM 4500 F-C-97	Fluoride	0.077	I	mg F/L	P309878	
1823239	EPA 350.1 Rev. 2.0	Ammonia-N	0.030		mg N/L	P309747	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.70		mg N/L	P309862	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.010		mg N/L	P310020	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P309804	
	SM 5310 B-00	Organic Carbon	9.7		mg C/L	P310262	
1823245	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P309602	

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: VIENNA LAKE S

Collection Date/Time: 08/10/2016 10:55

Field ID: G5SW0116

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1823234	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P309607	
	EPA 300.0 Rev. 2.1	Chloride	25		mg Cl/L	P309941	
		Sulfate	10		mg SO4/L	P310312	
	SM 2120 B	Color (true)	38	A	PCU	P309631	
	SM 2320 B-97	Total Alkalinity	29		mg CaCO3/L	P309876	
	SM 2540 C-97	TDS	110		mg/L	P310301	
	SM 2540 D-97	TSS	2	U	mg/L	P310133	
	SM 4500 F-C-97	Fluoride	0.076	I	mg F/L	P309878	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.044		mg N/L	P309747	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.68		mg N/L	P309862	
1823240	EPA 353.2 Rev. 2.0	NO2NO3-N	0.025		mg N/L	P310020	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P309804	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P310262	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P309602	

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: BIG LAKE VIENNA S

Collection Date/Time: 08/10/2016 11:15

Field ID: G5SW0114

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1823235	EPA 180.1 Rev. 2.0	Turbidity	2.1	A	NTU	P309608	
	EPA 300.0 Rev. 2.1	Chloride	24		mg Cl/L	P309941	
		Sulfate	11		mg SO4/L	P310312	
	SM 2120 B	Color (true)	35		PCU	P309631	
	SM 2320 B-97	Total Alkalinity	25		mg CaCO3/L	P309876	
	SM 2540 C-97	TDS	98		mg/L	P310301	
	SM 2540 D-97	TSS	3	I	mg/L	P310133	

Field ID: G5SW0114

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1823235	SM 4500 F-C-97	Fluoride	0.078	I	mg F/L	P309878	
1823241	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P309747	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.77		mg N/L	P309862	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P310020	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P309805	
	SM 5310 B-00	Organic Carbon	9.6		mg C/L	P310262	
1823247	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P309602	

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: BIG LAKE VIENNA N

Collection Date/Time: 08/10/2016 11:20

Field ID: G5SW0113

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1823236	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P309608	
	EPA 300.0 Rev. 2.1	Chloride	23		mg Cl/L	P309941	
		Sulfate	11		mg SO4/L	P310312	
	SM 2120 B	Color (true)	34		PCU	P309631	
	SM 2320 B-97	Total Alkalinity	25		mg CaCO3/L	P309876	
	SM 2540 C-97	TDS	98	A	mg/L	P310302	
	SM 2540 D-97	TSS	3	I	mg/L	P310134	
	SM 4500 F-C-97	Fluoride	0.078	I	mg F/L	P309878	
1823242	EPA 350.1 Rev. 2.0	Ammonia-N	0.033		mg N/L	P309747	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.75		mg N/L	P309862	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P310020	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P309805	
	SM 5310 B-00	Organic Carbon	9.5		mg C/L	P310262	
1823248	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P309602	

Ref. Method and Comment:

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P309607

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P309608

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: P309941

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309944

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310312

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P309747

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309862

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309819

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310020

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309804

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309805

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309602

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

Reference Method: SM 2120 B
Batch ID: P309630

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P309631

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P309876

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

Reference Method: SM 2540 C-97
Batch ID: P310301

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P310302

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P310133

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P310134

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P309878

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: P310260

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Reference Method: SM 5310 B-00
Batch ID: P310262

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: P309941

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309944

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310312

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P309747

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.5		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309862

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309819

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310020

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310020

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309804

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309805

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: P309602

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.1		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P309876

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

Reference Method: SM 4500 F-C-97
Batch ID: P309878

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.7		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P310260

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

Reference Method: SM 5310 B-00
Batch ID: P310262

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.7		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309941

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309941

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823027	Chloride	99.3		P	90 - 110
1823028	Chloride	96.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309944

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823027	Sulfate	95.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310312

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823232	Sulfate	100		P	90 - 110
1823236	Sulfate	99.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P309747

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823215	Ammonia-N	99.6	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309862

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823237	Kjeldahl Nitrogen	92.8	96.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309819

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823201	NO2NO3-N	98.0	98.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310020

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823209	NO2NO3-N	96.0	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309804

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823201	Total-P	104	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309805

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823241	Total-P	101	101	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309602

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823136	O-Phosphate-P	96.5	97.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P309878

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823444	Fluoride	95.9	96.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P310260

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823135	Organic Carbon	96.4	96.6	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P310262

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823238	Organic Carbon	99.2	103	P/P	85 - 115
1823238	Organic Carbon	99.4		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P309607

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823208	Turbidity	0.930	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P309608

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823235	Turbidity	5.13	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309941

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823027	Chloride	0.266	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309944

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823027	Sulfate	8.46	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310312

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823232	Sulfate	0.713	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P309747

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823215	Ammonia-N	1.02	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309862

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823237	Kjeldahl Nitrogen	2.12	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309819

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823201	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310020

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823209	NO2NO3-N	0.608	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309804

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823201	Total-P	1.79	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309805

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823241	Total-P	0.119	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309602

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823136	O-Phosphate-P	0.373	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P309630

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823208	Color (true)	0.365	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P309631

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823234	Color (true)	0.429	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P309876

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823444	Total Alkalinity	0.0627	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P310301

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823213	TDS	1.03	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P310302

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823236	TDS	1.03	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P309878

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823444	Fluoride	0.484	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P310260

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823135	Organic Carbon	0.0627	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P310262

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823238	Organic Carbon	0.0736	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: A71083

Included Lab Sample IDs: 1823243, 1823244, 1823245, 1823246, 1823247, 1823248

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.0	99.3	P/P	90 - 110
O-Phosphate-P	99.6	99.0	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A71085

Included Lab Sample IDs: 1823231, 1823232, 1823233, 1823234, 1823235, 1823236

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.5	P/P	95 - 105
Turbidity	99.5	100	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A71092

Included Lab Sample IDs: 1823231, 1823232, 1823233, 1823234, 1823235, 1823236

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.8	97.1	P/P	90 - 115
Color (true)	99.9	97.8	P/P	90 - 115

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A71129

Included Lab Sample IDs: 1823237, 1823238, 1823239, 1823240, 1823241, 1823242

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A71156

Included Lab Sample IDs: 1823237, 1823238

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A71177

Included Lab Sample IDs: 1823231, 1823232, 1823233, 1823234, 1823235, 1823236

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Chloride	101	101	P/P	90 - 110
Sulfate	97.1	95.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A71178

Included Lab Sample IDs: 1823231, 1823232, 1823233, 1823234, 1823235, 1823236

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	103	P/P	90 - 110
Total Alkalinity	103	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A71178

Included Lab Sample IDs: 1823231, 1823232, 1823233, 1823234, 1823235, 1823236

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	99.0	P/P	90 - 110
Fluoride	99.0	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A71200

Included Lab Sample IDs: 1823237, 1823238, 1823239, 1823240, 1823241, 1823242

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	108	P/P	90 - 110
Kjeldahl Nitrogen	98.1	99.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A71229

Included Lab Sample IDs: 1823239, 1823240, 1823241, 1823242

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A71235

Included Lab Sample IDs: 1823237, 1823238, 1823239, 1823240, 1823241, 1823242

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.5	96.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A71280

Included Lab Sample IDs: 1823232, 1823233, 1823234, 1823235, 1823236

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	102	99.9	P/P	90 - 110
Sulfate	99.9	97.4	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A71301

Included Lab Sample IDs: 1823237

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.0	98.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A71302

Included Lab Sample IDs: 1823238, 1823239, 1823240, 1823241, 1823242

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.3	100	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				0.930	
	Turbidity				5.13	
EPA 300.0 Rev. 2.1	Chloride	97.9	99.3 96.9		0.266	
	Sulfate	94.0	95.8		8.46	
	Sulfate	101	100 99.6		0.713	
EPA 350.1 Rev. 2.0	Ammonia-N	96.5	99.6 98.5			1.02
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	92.8 96.0			2.12
EPA 353.2 Rev. 2.0	NO2NO3-N	104	98.0 98.0			0.0
	NO2NO3-N	101	96.0 97.0			0.608
EPA 365.1 Rev. 2.0	Total-P	94.4	104 102			1.79
	Total-P	103	101 101			0.119
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.1	96.5 97.1			0.373
SM 2120 B	Color (true)				0.365	
	Color (true)				0.429	
SM 2320 B-97	Total Alkalinity	103			0.0627	
SM 2540 C-97	TDS				1.03	
	TDS				1.03	
SM 4500 F-C-97	Fluoride	97.7	95.9 96.4			0.484
SM 5310 B-00	Organic Carbon	100	96.4 96.6			0.0627
	Organic Carbon	99.7	99.2 99.4 103			0.0736

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1823231, 1823232, 1823233, 1823234, 1823235, 1823236
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1823231, 1823232, 1823233, 1823234, 1823235, 1823236
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1823231, 1823232, 1823233, 1823234, 1823235, 1823236
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1823237, 1823238, 1823239, 1823240, 1823241, 1823242
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1823237, 1823238, 1823239, 1823240, 1823241, 1823242
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1823237, 1823238, 1823239, 1823240, 1823241, 1823242
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1823237, 1823238, 1823239, 1823240, 1823241, 1823242
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1823243, 1823244, 1823245, 1823246, 1823247, 1823248

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2120 B / E31780	True Color measured at 450 nm	1823231, 1823232, 1823233, 1823234, 1823235, 1823236
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1823231, 1823232, 1823233, 1823234, 1823235, 1823236
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1823231, 1823232, 1823233, 1823234, 1823235, 1823236
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1823231, 1823232, 1823233, 1823234, 1823235, 1823236
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1823231, 1823232, 1823233, 1823234, 1823235, 1823236
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1823237, 1823238, 1823239, 1823240, 1823241, 1823242

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	08/11/2016			08/11/2016 16:15	Sima Feizi	1823231, 1823232, 1823233, 1823234, 1823235, 1823236
EPA 300.0 Rev. 2.1	08/11/2016			08/18/2016	Ping Hua	1823231, 1823232, 1823233, 1823234, 1823235, 1823236
	08/11/2016			08/24/2016	Ping Hua	1823232, 1823233, 1823234, 1823235, 1823236
EPA 350.1 Rev. 2.0	08/11/2016			08/15/2016	Julie Michelle Frank	1823237, 1823238, 1823239, 1823240, 1823241, 1823242
EPA 351.2 Rev. 2.0	08/11/2016	08/17/2016	Sofia Elnemr	08/18/2016	Christopher Armour	1823237, 1823238, 1823239, 1823240, 1823241, 1823242
EPA 353.2 Rev. 2.0	08/11/2016			08/16/2016	Beverly Y. Sanders	1823237, 1823238
	08/11/2016			08/19/2016	Beverly Y. Sanders	1823239, 1823240, 1823241, 1823242
EPA 365.1 Rev. 2.0	08/11/2016	08/16/2016	Vijayalakshmi Reddy	08/19/2016	Lipi Saha	1823237, 1823238, 1823239, 1823240, 1823241, 1823242
EPA 365.1 Rev. 2.0 dissolved	08/11/2016			08/11/2016 15:18	Virginia P. Brown	1823243
	08/11/2016			08/11/2016 15:23	Virginia P. Brown	1823244
	08/11/2016			08/11/2016 15:24	Virginia P. Brown	1823245
	08/11/2016			08/11/2016 15:25	Virginia P. Brown	1823246
	08/11/2016			08/11/2016 15:26	Virginia P. Brown	1823247
	08/11/2016			08/11/2016 15:27	Virginia P. Brown	1823248
SM 2120 B	08/11/2016			08/11/2016 16:05	Rochelle Y Jackson	1823231, 1823232
	08/11/2016			08/11/2016 16:06	Rochelle Y Jackson	1823233
	08/11/2016			08/11/2016 16:10	Rochelle Y Jackson	1823234
	08/11/2016			08/11/2016 16:11	Rochelle Y Jackson	1823235
	08/11/2016			08/11/2016 16:12	Rochelle Y Jackson	1823236
SM 2320 B-97	08/11/2016			08/16/2016	Dale L. Simmons	1823231, 1823232, 1823233, 1823234, 1823235, 1823236
SM 2540 C-97	08/11/2016			08/15/2016	Sima Feizi	1823231, 1823232, 1823233, 1823234, 1823235, 1823236
SM 2540 D-97	08/11/2016			08/15/2016	Sima Feizi	1823231, 1823232, 1823233, 1823234, 1823235, 1823236
SM 4500 F-C-97	08/11/2016			08/16/2016	Dale L. Simmons	1823231, 1823232, 1823233, 1823234, 1823235, 1823236
SM 5310 B-00	08/11/2016			08/23/2016	Sofia Elnemr	1823238, 1823239, 1823240, 1823241, 1823242
	08/11/2016			08/24/2016	Sofia Elnemr	1823237