

Chemical Analysis Report

SW-DIST-2017-02-01-01

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

Event Description: **SMP RUN 8**
Request ID: **RQ-2017-01-30-34**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
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13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 22-FEB-2017 10:40



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: PIERCE LAKE

Collection Date/Time: 01/31/2017 11:15

Field ID: G5SW0104

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1868469	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P319112	
	EPA 300.0 Rev. 2.1	Chloride	6.4		mg Cl/L	P319383	
		Sulfate	0.83		mg SO4/L	P319385	
	SM 2120 B	Color (true)	38		PCU	P319141	
	SM 2320 B-97	Total Alkalinity	3.9		mg CaCO3/L	P319317	
	SM 2540 C-97	TDS	35		mg/L	P319879	
	SM 2540 D-97	TSS	2	U	mg/L	P319488	
	SM 4500 F-C-97	Fluoride	0.048	I	mg F/L	P319321	
1868474	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P319343	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.58		mg N/L	P319126	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P319260	
	EPA 365.1 Rev. 2.0	Total-P	0.038		mg P/L	P319129	
	SM 5310 B-00	Organic Carbon	8.6		mg C/L	P319239	
1868479	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P319105	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: MOON LAKE W

Collection Date/Time: 01/31/2017 10:20

Field ID: G5SW0100

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1868470	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P319112	
	EPA 300.0 Rev. 2.1	Chloride	25		mg Cl/L	P319383	
		Sulfate	1.7		mg SO4/L	P319385	
	SM 2120 B	Color (true)	29		PCU	P319141	
	SM 2320 B-97	Total Alkalinity	25		mg CaCO3/L	P319317	
	SM 2540 C-97	TDS	98		mg/L	P319879	
	SM 2540 D-97	TSS	2	I	mg/L	P319488	
	SM 4500 F-C-97	Fluoride	0.082	I	mg F/L	P319321	
1868475	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P319343	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.86		mg N/L	P319126	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P319260	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P319129	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P319239	
1868480	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P319105	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: GREEN LAKE

Collection Date/Time: 01/31/2017 11:45

Field ID: G5SW0107

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1868471	EPA 180.1 Rev. 2.0	Turbidity	0.75		NTU	P319112	

Field ID: G5SW0107

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1868471	EPA 300.0 Rev. 2.1	Chloride	17		mg Cl/L	P319383	
		Sulfate	0.30	I	mg SO4/L	P319385	
	SM 2120 B	Color (true)	24		PCU	P319141	
	SM 2320 B-97	Total Alkalinity	22		mg CaCO3/L	P319317	
	SM 2540 C-97	TDS	76		mg/L	P319879	
	SM 2540 D-97	TSS	2	U	mg/L	P319488	
	SM 4500 F-C-97	Fluoride	0.064	I	mg F/L	P319321	
1868476	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P319343	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P319126	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P319260	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P319129	
	SM 5310 B-00	Organic Carbon	9.7		mg C/L	P319239	
1868481	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P319105	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: VIENNA LAKE N

Collection Date/Time: 01/31/2017 13:45

Field ID: G5SW0115

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1868472	EPA 180.1 Rev. 2.0	Turbidity	2.4	A	NTU	P319112	
	EPA 300.0 Rev. 2.1	Chloride	26		mg Cl/L	P319383	
		Sulfate	13		mg SO4/L	P319385	
	SM 2120 B	Color (true)	29	A	PCU	P319141	
	SM 2320 B-97	Total Alkalinity	30		mg CaCO3/L	P319318	
	SM 2540 C-97	TDS	127		mg/L	P319879	
	SM 2540 D-97	TSS	3	I	mg/L	P319488	
1868477	SM 4500 F-C-97	Fluoride	0.077	I	mg F/L	P319322	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P319344	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.67		mg N/L	P319126	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P319261	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P319129	
1868482	SM 5310 B-00	Organic Carbon	10		mg C/L	P319239	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P319105	

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 VIENNA LAKE N

Collection Date/Time: 01/31/2017 13:00

Field ID: G5SW0113

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1868473	EPA 180.1 Rev. 2.0	Turbidity	4.8		NTU	P319112	
	EPA 300.0 Rev. 2.1	Chloride	25		mg Cl/L	P319383	
		Sulfate	14		mg SO4/L	P319385	
	SM 2120 B	Color (true)	35		PCU	P319142	

Field ID: G5SW0113

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1868473	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P319318	
	SM 2540 C-97	TDS	120	A	mg/L	P319880	
	SM 2540 D-97	TSS	3	I	mg/L	P319489	
	SM 4500 F-C-97	Fluoride	0.082	I	mg F/L	P319322	
1868478	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P319344	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.85		mg N/L	P319127	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P319261	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P319129	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P319239	
1868483	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P319106	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: 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: P319112

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P319383

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P319385

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P319343

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P319344

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P319126

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319127

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P319260

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P319261

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319129

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319105

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319106

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

Reference Method: SM 2120 B
Batch ID: P319141

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P319142

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P319317

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
 Batch ID: P319318

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

Reference Method: SM 2540 C-97
 Batch ID: P319879

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
 Batch ID: P319880

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
 Batch ID: P319488

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
 Batch ID: P319489

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
 Batch ID: P319321

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
 Batch ID: P319322

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
 Batch ID: P319239

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: P319383

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319383

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319385

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P319343

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P319344

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319126

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319127

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P319260

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P319261

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: P319129

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.2		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P319105

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P319106

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

Reference Method: SM 2320 B-97
 Batch ID: P319317

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

Reference Method: SM 2320 B-97
 Batch ID: P319318

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

Reference Method: SM 4500 F-C-97
 Batch ID: P319321

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.5		P	92 - 103

Reference Method: SM 4500 F-C-97
 Batch ID: P319322

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

Reference Method: SM 5310 B-00
 Batch ID: P319239

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P319383

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1867410	Chloride	101		P	90 - 110
1868471	Chloride	98.3		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319385

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1867410	Sulfate	98.0		P	90 - 110
1868471	Sulfate	96.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P319344

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1868477	Ammonia-N	102	96.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319126

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1868425	Kjeldahl Nitrogen	104	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P319260

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1868423	NO2NO3-N	97.2		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P319261

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1868478	NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319129

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1868474	Total-P	97.1	92.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319105

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1868479	O-Phosphate-P	98.4	97.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319106

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1868552	O-Phosphate-P	102	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P319321

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1869026	Fluoride	99.8	101	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P319322

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1868587	Fluoride	99.8	101	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P319239

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1868302	Organic Carbon	98.2	96.7	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P319112

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868472	Turbidity	5.71	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319383

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1867410	Chloride	0.180	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319385

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1867410	Sulfate	0.310	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P319343

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868423	Ammonia-N	0.230	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P319344

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868477	Ammonia-N	5.39	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319126

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319126

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868425	Kjeldahl Nitrogen	0.0961	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319127

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868510	Kjeldahl Nitrogen	0.391	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P319260

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868423	NO2NO3-N	0.240	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P319261

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868478	NO2NO3-N	0.985	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319129

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868474	Total-P	5.22	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319105

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868479	O-Phosphate-P	1.33	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319106

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868552	O-Phosphate-P	1.94	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P319141

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868472	Color (true)	2.51	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P319142

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868536	Color (true)	4.63	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P319317

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1869026	Total Alkalinity	0.352	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P319318

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868587	Total Alkalinity	0.263	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P319879

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868422	TDS	1.31	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P319880

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868473	TDS	2.51	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P319321

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1869026	Fluoride	0.513	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P319322

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868587	Fluoride	0.947	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P319239

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868302	Organic Carbon	1.54	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: A74214

Included Lab Sample IDs: 1868479, 1868480, 1868481, 1868482, 1868483

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	105	P/P	90 - 110
O-Phosphate-P	99.7	101	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A74215

Included Lab Sample IDs: 1868469, 1868470, 1868471, 1868472, 1868473

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	96.5	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A74223

Included Lab Sample IDs: 1868469, 1868470, 1868471, 1868472, 1868473

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	101	P/P	85 - 115
Color (true)	99.6	100	P/P	85 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A74255

Included Lab Sample IDs: 1868474, 1868475, 1868476, 1868477, 1868478

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.0	95.5	P/P	90 - 110
NO2NO3-N	98.0	97.0	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A74257

Included Lab Sample IDs: 1868474, 1868475, 1868476, 1868477, 1868478

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.8	98.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A74267

Included Lab Sample IDs: 1868478

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A74274

Included Lab Sample IDs: 1868474, 1868475, 1868476, 1868477

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

Reference Method: SM 2320 B-97

Run ID: A74281

Included Lab Sample IDs: 1868469, 1868470, 1868471, 1868472, 1868473

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

Reference Method: SM 4500 F-C-97

Run ID: A74281

Included Lab Sample IDs: 1868469, 1868470, 1868471, 1868472, 1868473

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	101	P/P	90 - 110
Fluoride	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A74283

Included Lab Sample IDs: 1868474, 1868475, 1868476, 1868477, 1868478

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.2	P/P	90 - 110
Total-P	99.2	99.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A74290

Included Lab Sample IDs: 1868474, 1868475, 1868476, 1868477, 1868478

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	97.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A74307

Included Lab Sample IDs: 1868469, 1868470, 1868471, 1868472, 1868473

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Chloride	100	100	P/P	90 - 110
Sulfate	94.8	97.0	P/P	90 - 110
Sulfate	97.0	92.7	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				5.71	
EPA 300.0 Rev. 2.1	Chloride	100	101	98.3	0.180	
	Sulfate	97.6	98.0	96.2	0.310	
EPA 350.1 Rev. 2.0	Ammonia-N	105				0.230
	Ammonia-N	105	102	96.2		5.39
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	104	105		0.0961
	Kjeldahl Nitrogen	102				0.391
EPA 353.2 Rev. 2.0	NO2NO3-N	102	97.2			0.240
	NO2NO3-N	101	102	101		0.985
EPA 365.1 Rev. 2.0	Total-P	98.2	97.1	92.0		5.22
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	98.4	97.1		1.33
	O-Phosphate-P	103	102	104		1.94
SM 2120 B	Color (true)				2.51	
	Color (true)				4.63	
SM 2320 B-97	Total Alkalinity	103			0.352	
	Total Alkalinity	104			0.263	
SM 2540 C-97	TDS				1.31	
	TDS				2.51	
SM 4500 F-C-97	Fluoride	99.5	99.8	101		0.513
	Fluoride	102	99.8	101		0.947
SM 5310 B-00	Organic Carbon	94.2	98.2	96.7		1.54

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1868469, 1868470, 1868471, 1868472, 1868473
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1868469, 1868470, 1868471, 1868472, 1868473
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1868469, 1868470, 1868471, 1868472, 1868473
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1868474, 1868475, 1868476, 1868477, 1868478
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1868474, 1868475, 1868476, 1868477, 1868478
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1868474, 1868475, 1868476, 1868477, 1868478
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1868474, 1868475, 1868476, 1868477, 1868478
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1868479, 1868480, 1868481, 1868482, 1868483
SM 2120 B / E31780	True Color measured at 450 nm	1868469, 1868470, 1868471, 1868472, 1868473
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1868469, 1868470, 1868471, 1868472, 1868473
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1868469, 1868470, 1868471, 1868472, 1868473
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1868469, 1868470, 1868471, 1868472, 1868473
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1868469, 1868470, 1868471, 1868472, 1868473
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1868474, 1868475, 1868476, 1868477, 1868478

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	02/01/2017			02/01/2017 16:18	Julie Michelle Frank	1868469, 1868470, 1868471, 1868472, 1868473
EPA 300.0 Rev. 2.1	02/01/2017			02/06/2017	Ping Hua	1868469, 1868470, 1868471, 1868472, 1868473
EPA 350.1 Rev. 2.0	02/01/2017			02/02/2017	Sofia Elnemr	1868474, 1868475, 1868476, 1868477, 1868478
EPA 351.2 Rev. 2.0	02/01/2017	02/02/2017	Adrian Shelby	02/03/2017	Joseph Suarez	1868474, 1868475, 1868476, 1868477, 1868478
EPA 353.2 Rev. 2.0	02/01/2017			02/03/2017	Beverly Y. Sanders	1868474, 1868475, 1868476, 1868477, 1868478
EPA 365.1 Rev. 2.0	02/01/2017	02/02/2017	Adrian Shelby	02/06/2017	Lipi Saha	1868474, 1868475, 1868476, 1868477, 1868478
EPA 365.1 Rev. 2.0 dissolved	02/01/2017			02/01/2017 14:22	Julia Storbeck	1868479
	02/01/2017			02/01/2017 15:00	Julia Storbeck	1868480
	02/01/2017			02/01/2017 15:01	Julia Storbeck	1868481
	02/01/2017			02/01/2017 15:02	Julia Storbeck	1868482, 1868483
	02/01/2017			02/01/2017 17:58	Jared I. Manley	1868472
SM 2120 B	02/01/2017			02/01/2017 18:03	Jared I. Manley	1868469
	02/01/2017			02/01/2017 18:04	Jared I. Manley	1868470
	02/01/2017			02/01/2017 18:05	Jared I. Manley	1868471
	02/01/2017			02/01/2017 18:09	Jared I. Manley	1868473
	02/01/2017			02/04/2017	Dale L. Simmons	1868469, 1868470, 1868471, 1868472, 1868473
SM 2320 B-97	02/01/2017			02/04/2017	Dale L. Simmons	1868469, 1868470, 1868471, 1868472, 1868473
SM 2540 C-97	02/01/2017			02/02/2017	Sima Feizi	1868469, 1868470, 1868471, 1868472, 1868473
SM 2540 D-97	02/01/2017			02/02/2017	Sima Feizi	1868469, 1868470, 1868471, 1868472, 1868473
SM 4500 F-C-97	02/01/2017			02/04/2017	Dale L. Simmons	1868469, 1868470, 1868471, 1868472, 1868473
SM 5310 B-00	02/01/2017			02/02/2017	Julie Michelle Frank	1868474, 1868475, 1868476, 1868477, 1868478