

Chemical Analysis Report

SW-DIST-2016-07-12-01

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

Event Description: **Lakes**
Request ID: **RQ-2016-07-11-33**
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

For additional information please contact
Timothy W. Fitzpatrick
Liang-Tsair Lin, Ph.D.
Colin Wright, Ph.D.
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8085

Certified by: Timothy Fitzpatrick, Program Administrator

Date Certified: 04-AUG-2016 10:49

A handwritten signature in black ink, appearing to read "Timothy Fitzpatrick", with a stylized flourish at the end.

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 WORRELL (C)

Collection Date/Time: 07/11/2016 10:15

Field ID: G5SW0030

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1814875	EPA 180.1 Rev. 2.0	Turbidity	3.0	A	NTU	P307791	
	EPA 300.0 Rev. 2.1	Chloride	30		mg Cl/L	P308872	
		Sulfate	2.3		mg SO4/L	P308873	
	SM 2120 B	Color (true)	170		PCU	P307747	
	SM 2320 B-97	Total Alkalinity	81		mg CaCO3/L	P308094	
	SM 2540 C-97	TDS	200		mg/L	P308582	
	SM 2540 D-97	TSS	4	I	mg/L	P308392	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P308099	
1814880	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P307940	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P307874	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P308149	
	EPA 365.1 Rev. 2.0	Total-P	0.050		mg P/L	P307798	
	SM 5310 B-00	Organic Carbon	23		mg C/L	P308329	
1814885	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P307753	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Sample Location: BEAR CREEK @ BEACON

Collection Date/Time: 07/11/2016 10:55

Field ID: G5SW0102

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1814876	EPA 180.1 Rev. 2.0	Turbidity	3.9		NTU	P307791	
	EPA 300.0 Rev. 2.1	Chloride	120		mg Cl/L	P308872	
		Sulfate	30		mg SO4/L	P308873	
	SM 2120 B	Color (true)	24	A	PCU	P307747	
	SM 2320 B-97	Total Alkalinity	155		mg CaCO3/L	P308094	
	SM 2540 C-97	TDS	411		mg/L	P308582	
	SM 2540 D-97	TSS	8	I	mg/L	P308392	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P308099	
1814881	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P307940	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.81		mg N/L	P307874	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P308149	
	EPA 365.1 Rev. 2.0	Total-P	0.062		mg P/L	P307798	
	SM 5310 B-00	Organic Carbon	5.4		mg C/L	P308329	
1814886	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P307753	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Sample Location: MOON LAKE WEST

Collection Date/Time: 07/11/2016 11:50

Field ID: G5SW0100

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1814877	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P307791	
	EPA 300.0 Rev. 2.1	Chloride	26		mg Cl/L	P308872	
		Sulfate	2.1		mg SO4/L	P308873	

Field ID: G5SW0100

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1814877	SM 2120 B	Color (true)	33		PCU	P307748	
	SM 2320 B-97	Total Alkalinity	27		mg CaCO3/L	P308094	
	SM 2540 C-97	TDS	89		mg/L	P308582	
	SM 2540 D-97	TSS	2	I	mg/L	P308392	
	SM 4500 F-C-97	Fluoride	0.082	I	mg F/L	P308099	
1814882	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P307940	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.83		mg N/L	P307874	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P308149	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P307798	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P308329	
1814887	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P307753	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Sample Location: MOON LAKE EAST

Collection Date/Time: 07/11/2016 12:00

Field ID: G5SW0101

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1814878	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P307792	
	EPA 300.0 Rev. 2.1	Chloride	26		mg Cl/L	P308872	
		Sulfate	2.1		mg SO4/L	P308873	
	SM 2120 B	Color (true)	29		PCU	P307748	
	SM 2320 B-97	Total Alkalinity	26	A	mg CaCO3/L	P308094	
	SM 2540 C-97	TDS	100	A	mg/L	P308582	
	SM 2540 D-97	TSS	2	I	mg/L	P308392	
	SM 4500 F-C-97	Fluoride	0.084	I	mg F/L	P308099	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P307940	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.83		mg N/L	P307874	
1814883	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P308149	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P307881	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P308329	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P307754	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Sample Location: PIERCE LAKE (C)

Collection Date/Time: 07/11/2016 13:13

Field ID: G5SW0104

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1814879	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P307792	
	EPA 300.0 Rev. 2.1	Chloride	5.9		mg Cl/L	P308872	
		Sulfate	0.87		mg SO4/L	P308873	
	SM 2120 B	Color (true)	35		PCU	P307748	
	SM 2320 B-97	Total Alkalinity	4.3		mg CaCO3/L	P308094	
	SM 2540 C-97	TDS	29		mg/L	P308582	
	SM 2540 D-97	TSS	2	I	mg/L	P308392	

Field ID: G5SW0104

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1814879	SM 4500 F-C-97	Fluoride	0.049	I	mg F/L	P308099	
1814884	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P307941	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.75		mg N/L	P307874	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P308149	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P307881	
	SM 5310 B-00	Organic Carbon	8.3		mg C/L	P308329	
1814889	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P307754	

Ref. Method and Comment:
 SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
 EPA 350.1 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P307791

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P307792

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P308872

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P308873

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P307940

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P307941

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P307874

Component	Result	Code	Units
-----------	--------	------	-------

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307874

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308149

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307798

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307881

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307753

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307754

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

Reference Method: SM 2120 B
Batch ID: P307747

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P307748

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P308094

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P308582

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P308392

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P308099

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P308329

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: P308872

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308873

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	95.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307940

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307941

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307874

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307874

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308149

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	97.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307798

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307881

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307753

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307754

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

Reference Method: SM 2320 B-97
Batch ID: P308094

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

Reference Method: SM 4500 F-C-97
Batch ID: P308099

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.4		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P308329

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308872

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814875	Chloride	94.9		P	90 - 110
1819272	Chloride	97.5	98.3	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308873

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814875	Sulfate	92.8		P	90 - 110
1819272	Sulfate	94.0	94.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307940

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814881	Ammonia-N	99.7	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307874

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814848	Kjeldahl Nitrogen	97.4	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308149

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814881	NO2NO3-N	92.9	93.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307798

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814824	Total-P	101	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307881

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814998	Total-P	98.8	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307753

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814887	O-Phosphate-P	98.4	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307754

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814889	O-Phosphate-P	95.2	95.3	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P308099

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814878	Fluoride	98.1	98.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P308329

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814882	Organic Carbon	93.6	93.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P307791

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814875	Turbidity	5.30	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P307792

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814939	Turbidity	4.42	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308872

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819272	Chloride	0.654	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308873

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819272	Sulfate	0.371	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307940

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814881	Ammonia-N	1.62	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307941

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: P307941

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814998	Ammonia-N	1.11	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307874

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814848	Kjeldahl Nitrogen	4.68	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308149

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814881	NO2NO3-N	1.04	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307798

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814824	Total-P	2.02	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307881

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814998	Total-P	1.13	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307753

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814887	O-Phosphate-P	2.31	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307754

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814889	O-Phosphate-P	0.105	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P307747

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814876	Color (true)	4.46	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P307748

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814990	Color (true)	1.98	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P308094

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814878	Total Alkalinity	0.511	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P308582

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814878	TDS	7.04	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P308099

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814878	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P308329

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814882	Organic Carbon	0.0328	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B
Run ID: A70507
Included Lab Sample IDs: 1814875, 1814876, 1814877, 1814878, 1814879

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	96.7	96.5	P/P	90 - 115
Color (true)	97.3	96.7	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A70508
Included Lab Sample IDs: 1814885, 1814886, 1814887, 1814888, 1814889

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.7	99.1	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A70508

Included Lab Sample IDs: 1814885, 1814886, 1814887, 1814888, 1814889

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.4	98.1	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A70517

Included Lab Sample IDs: 1814875, 1814876, 1814877, 1814878, 1814879

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A70541

Included Lab Sample IDs: 1814881

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	103	99.7	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A70556

Included Lab Sample IDs: 1814880, 1814881, 1814882, 1814883, 1814884

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	101	P/P	90 - 110
Ammonia-N	101	102	P/P	90 - 110
Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A70568

Included Lab Sample IDs: 1814880, 1814882

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A70575

Included Lab Sample IDs: 1814883, 1814884

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	96.2	96.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A70579

Included Lab Sample IDs: 1814880, 1814881, 1814882, 1814883, 1814884

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	94.5	94.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A70594

Included Lab Sample IDs: 1814875, 1814876, 1814877, 1814878, 1814879

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	104	P/P	90 - 110
Total Alkalinity	104	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A70594

Included Lab Sample IDs: 1814875, 1814876, 1814877, 1814878, 1814879

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A70600

Included Lab Sample IDs: 1814880, 1814881, 1814882, 1814883, 1814884

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.9	99.8	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A70669

Included Lab Sample IDs: 1814880, 1814881, 1814882, 1814883, 1814884

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.4	96.8	P/P	90 - 110
Organic Carbon	96.8	96.3	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A70802

Included Lab Sample IDs: 1814875, 1814876, 1814877, 1814878, 1814879

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Sulfate	98.6	99.0	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 SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					5.30	
	Turbidity					4.42	
EPA 300.0 Rev. 2.1	Chloride	99.4	97.5	98.3	94.9		0.654
	Sulfate	95.7	94.0	94.4	92.8		0.371
EPA 350.1 Rev. 2.0	Ammonia-N	99.0	99.7	101			1.62
	Ammonia-N	99.9					1.11
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108	97.4	103			4.68

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 353.2 Rev. 2.0	NO2NO3-N	97.5	92.9	93.9		1.04
EPA 365.1 Rev. 2.0	Total-P	96.0	101	98.6		2.02
	Total-P	97.4	98.8	100		1.13
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.6	98.4	101		2.31
	O-Phosphate-P	100	95.2	95.3		0.105
SM 2120 B	Color (true)				4.46	
	Color (true)				1.98	
SM 2320 B-97	Total Alkalinity	104			0.511	
SM 2540 C-97	TDS				7.04	
SM 4500 F-C-97	Fluoride	99.4	98.1	98.1		0.0
SM 5310 B-00	Organic Carbon	94.4	93.6	93.6		0.0328

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1814875, 1814876, 1814877, 1814878, 1814879
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1814875, 1814876, 1814877, 1814878, 1814879
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1814875, 1814876, 1814877, 1814878, 1814879
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1814880, 1814881, 1814882, 1814883, 1814884
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1814880, 1814881, 1814882, 1814883, 1814884
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1814880, 1814881, 1814882, 1814883, 1814884
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1814880, 1814881, 1814882, 1814883, 1814884
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1814885, 1814886, 1814887, 1814888, 1814889
SM 2120 B / E31780	True Color measured at 450 nm	1814875, 1814876, 1814877, 1814878, 1814879
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1814875, 1814876, 1814877, 1814878, 1814879
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1814875, 1814876, 1814877, 1814878, 1814879
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1814875, 1814876, 1814877, 1814878, 1814879
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1814875, 1814876, 1814877, 1814878, 1814879
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1814880, 1814881, 1814882, 1814883, 1814884

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	07/12/2016			07/12/2016 15:57	Blanca Fach	1814875, 1814876, 1814877, 1814878, 1814879
EPA 300.0 Rev. 2.1	07/12/2016			07/29/2016	Ping Hua	1814875, 1814876, 1814877, 1814878, 1814879
EPA 350.1 Rev. 2.0	07/12/2016			07/14/2016	Diana M. Turner	1814880, 1814881, 1814882, 1814883, 1814884
EPA 351.2 Rev. 2.0	07/12/2016	07/14/2016	Sofia Elnemr	07/15/2016	Christopher Armour	1814880, 1814881, 1814882, 1814883, 1814884
EPA 353.2 Rev. 2.0	07/12/2016			07/15/2016	Beverly Y. Sanders	1814880, 1814881, 1814882, 1814883, 1814884
EPA 365.1 Rev. 2.0	07/12/2016	07/13/2016	Vijayalakshmi Reddy	07/14/2016	Lipi Saha	1814880, 1814881, 1814882
	07/12/2016	07/14/2016	Vijayalakshmi Reddy	07/15/2016	Lipi Saha	1814883, 1814884
EPA 365.1 Rev. 2.0 dissolved	07/12/2016			07/12/2016 14:34	Julia Storbeck	1814887
	07/12/2016			07/12/2016 14:38	Julia Storbeck	1814889
	07/12/2016			07/12/2016 15:38	Julia Storbeck	1814885
	07/12/2016			07/12/2016 15:39	Julia Storbeck	1814886
	07/12/2016			07/12/2016 15:40	Julia Storbeck	1814888
SM 2120 B	07/12/2016			07/12/2016 14:54	Rochelle Y Jackson	1814875
	07/12/2016			07/12/2016 14:55	Rochelle Y Jackson	1814876
	07/12/2016			07/12/2016 14:58	Rochelle Y Jackson	1814877
	07/12/2016			07/12/2016 14:59	Rochelle Y Jackson	1814878
	07/12/2016			07/12/2016 15:00	Rochelle Y Jackson	1814879
SM 2320 B-97	07/12/2016			07/16/2016	Dale L. Simmons	1814875, 1814876, 1814877, 1814878, 1814879
SM 2540 C-97	07/12/2016			07/15/2016	Yijie Li	1814875, 1814876, 1814877, 1814878, 1814879
SM 2540 D-97	07/12/2016			07/15/2016	Yijie Li	1814875, 1814876, 1814877, 1814878, 1814879
SM 4500 F-C-97	07/12/2016			07/16/2016	Dale L. Simmons	1814875, 1814876, 1814877, 1814878, 1814879
SM 5310 B-00	07/12/2016			07/20/2016	Diana M. Turner	1814880, 1814881, 1814882, 1814883, 1814884