

Chemical Analysis Report

SW-DIST-2016-05-12-02

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

Event Description: **8043, 1382I**
Request ID: **RQ-2016-05-02-75**
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: Matt Bearden

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: 03-JUN-2016 09:36

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: G5SW0017

Collection Date/Time: 05/11/2016 10:55

Field ID: G5SW0017

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1798231	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P304188	
	SM 2320 B-97	Total Alkalinity	143	A	mg CaCO3/L	P304842	
	SM 2540 D-97	TSS	4	I	mg/L	P304865	
	SM 4500 F-C-97	Fluoride	0.24		mg F/L	P305057	
1798236	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P304940	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	U	mg N/L	P304901	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.31		mg N/L	P304429	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P304973	
	SM 5310 B-00	Organic Carbon	1.8	I	mg C/L	P304965	
1798241	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P304185	

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: G5SW0020

Collection Date/Time: 05/11/2016 10:35

Field ID: G5SW0020

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1798232	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P304188	
	SM 2320 B-97	Total Alkalinity	147		mg CaCO3/L	P304842	
	SM 2540 D-97	TSS	4	I	mg/L	P304864	
	SM 4500 F-C-97	Fluoride	0.23		mg F/L	P305057	
1798237	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P304941	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.25	I	mg N/L	P304901	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.33		mg N/L	P304429	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P304973	
	SM 5310 B-00	Organic Carbon	2.2		mg C/L	P304965	
1798242	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P304185	

Sample Location: DUPLICATE

Collection Date/Time: 05/11/2016 10:40

Field ID: G5SW0020

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1798233	EPA 180.1 Rev. 2.0	Turbidity	0.85		NTU	P304188	
	SM 2320 B-97	Total Alkalinity	150		mg CaCO3/L	P304842	
	SM 2540 D-97	TSS	4	I	mg/L	P304864	
	SM 4500 F-C-97	Fluoride	0.23		mg F/L	P305057	
1798238	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P304941	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.17	I	mg N/L	P304901	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.35		mg N/L	P304429	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P304973	
	SM 5310 B-00	Organic Carbon	2.0		mg C/L	P304965	
1798243	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P304185	

Sample Location: BLANK

Collection Date/Time: 05/11/2016 11:25

Field ID: BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1798234	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P304188	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P304847	
	SM 2540 D-97	TSS	2	U	mg/L	P304864	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P305055	
1798239	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P304552	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P304905	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P304654	
	EPA 365.1 Rev. 2.0	Total-P	0.002	I	mg P/L	P304976	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P305284	
1798244	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P304183	

Ref. Method and Comment:
 EPA 365.1 Rev. 2.0: Total-P: The result was confirmed on 06/01/2016.

Sample Location: G5SW0120

Collection Date/Time: 05/11/2016 12:45

Field ID: G5SW0120

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1798235	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P304188	
	SM 2320 B-97	Total Alkalinity	159		mg CaCO3/L	P304842	
	SM 2540 D-97	TSS	3	I	mg/L	P304865	
	SM 4500 F-C-97	Fluoride	0.55		mg F/L	P305057	
1798240	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P304941	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.56		mg N/L	P304966	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P304429	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P304973	
	SM 5310 B-00	Organic Carbon	5.4		mg C/L	P304965	
1798245	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P304185	

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P304188

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P304552

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P304940

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304940

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304941

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304901

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304905

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304966

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304429

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304654

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304973

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304976

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: P304183

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304185

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

Reference Method: SM 2320 B-97
Batch ID: P304842

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

Reference Method: SM 2320 B-97
Batch ID: P304847

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

Reference Method: SM 2540 D-97
Batch ID: P304864

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P304865

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P305055

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P305057

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P304965

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

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P305284

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304552

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304940

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304941

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304901

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304905

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304966

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: P304429

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	102		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304654

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304654

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304973

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304976

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304183

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304185

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

Reference Method: SM 2320 B-97
Batch ID: P304842

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	95 - 105

Reference Method: SM 2320 B-97
Batch ID: P304847

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P305055

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.5		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P305057

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.5		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P304965

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.0		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P305284

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304552

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1798269	Ammonia-N	100	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304940

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1798236	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304941

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1798237	Ammonia-N	101	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304901

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1797875	Kjeldahl Nitrogen	98.7	96.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304905

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1798171	Kjeldahl Nitrogen	105	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304966

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1798240	Kjeldahl Nitrogen	95.3	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304429

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304429

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1797883	NO2NO3-N	99.0	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304654

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1798172	NO2NO3-N	101	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304973

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1797883	Total-P	99.4	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304976

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1798171	Total-P	99.3	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304183

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1798272	O-Phosphate-P	99.5	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304185

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1798245	O-Phosphate-P	96.5	97.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P305055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1799332	Fluoride	98.7	99.3	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P305057

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1798231	Fluoride	98.7	99.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P304965

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1798236	Organic Carbon	93.0	93.9	P/P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P305284

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1799734	Organic Carbon	94.3	95.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P304188

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1798182	Turbidity	0.622	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304552

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1798269	Ammonia-N	0.612	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304940

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1798236	Ammonia-N	1.24	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304941

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1798237	Ammonia-N	1.27	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304901

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1797875	Kjeldahl Nitrogen	1.96	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304905

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1798171	Kjeldahl Nitrogen	0.457	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304966

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1798240	Kjeldahl Nitrogen	8.95	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304429

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1797883	NO2NO3-N	1.41	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304654

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1798172	NO2NO3-N	1.96	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304973

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1797883	Total-P	1.89	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304976

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1798171	Total-P	6.57	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304183

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1798272	O-Phosphate-P	1.99	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304185

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1798245	O-Phosphate-P	1.24	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P304842

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1798231	Total Alkalinity	0.358	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
 Batch ID: P304847

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1799332	Total Alkalinity	0.569	Sample	P	0 - 4.8

Reference Method: SM 2540 D-97
 Batch ID: P304864

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1798533	TSS	6.74	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P305055

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1799332	Fluoride	0.473	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
 Batch ID: P305057

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1798231	Fluoride	0.473	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
 Batch ID: P304965

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1798236	Organic Carbon	0.920	Spike	P	0 - 20

Reference Method: SM 5310 B-00
 Batch ID: P305284

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1799734	Organic Carbon	0.928	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Run ID: A69449
 Included Lab Sample IDs: 1798241, 1798242, 1798243, 1798244, 1798245

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A69450

Included Lab Sample IDs: 1798231, 1798232, 1798233, 1798234, 1798235

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A69515

Included Lab Sample IDs: 1798236, 1798237, 1798238, 1798240

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A69554

Included Lab Sample IDs: 1798239

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A69587

Included Lab Sample IDs: 1798239

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

Reference Method: SM 2320 B-97

Run ID: A69640

Included Lab Sample IDs: 1798231, 1798232, 1798233, 1798235

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.2	101	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A69641

Included Lab Sample IDs: 1798234

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	98.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A69674

Included Lab Sample IDs: 1798236, 1798237, 1798238, 1798240

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	100	P/P	90 - 110
Ammonia-N	99.9	100	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A69677

Included Lab Sample IDs: 1798236, 1798237, 1798238, 1798240

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	101	96.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A69701

Included Lab Sample IDs: 1798231, 1798232, 1798233, 1798234, 1798235

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.1	98.5	P/P	90 - 110
Fluoride	99.5	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69705

Included Lab Sample IDs: 1798236, 1798237, 1798238

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	107	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69708

Included Lab Sample IDs: 1798239

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	106	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69710

Included Lab Sample IDs: 1798240

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.5	99.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A69725

Included Lab Sample IDs: 1798239

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A69756

Included Lab Sample IDs: 1798236, 1798237, 1798238, 1798240

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

Reference Method: SM 5310 B-00

Run ID: A69764

Included Lab Sample IDs: 1798239

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.4	97.1	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	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					0.622	
EPA 350.1 Rev. 2.0	Ammonia-N	98.9	100	101			0.612
	Ammonia-N	99.1	101	102			1.24
	Ammonia-N	98.2	101	103			1.27
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	98.7	96.6			1.96
	Kjeldahl Nitrogen	104	105	104			0.457
	Kjeldahl Nitrogen	102	95.3	106			8.95
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	99.0	101			1.41
	NO ₂ NO ₃ -N	103	101	103			1.96
EPA 365.1 Rev. 2.0	Total-P	100	99.4	97.5			1.89
	Total-P	98.1	99.3	106			6.57
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.6	99.5	102			1.99
	O-Phosphate-P	101	96.5	97.7			1.24
SM 2320 B-97	Total Alkalinity	100				0.358	
	Total Alkalinity	101				0.569	
SM 2540 D-97	TSS					6.74	
SM 4500 F-C-97	Fluoride	96.5	98.7	99.3			0.473
	Fluoride	97.5	98.7	99.4			0.473
SM 5310 B-00	Organic Carbon	98.0	93.0	93.9			0.920
	Organic Carbon	97.6	94.3	95.6			0.928

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1798231, 1798232, 1798233, 1798234, 1798235
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1798236, 1798237, 1798238, 1798239, 1798240
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1798236, 1798237, 1798238, 1798239, 1798240
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1798236, 1798237, 1798238, 1798239, 1798240
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1798236, 1798237, 1798238, 1798239, 1798240
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1798241, 1798242, 1798243, 1798244, 1798245
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1798231, 1798232, 1798233, 1798234, 1798235
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1798231, 1798232, 1798233, 1798234, 1798235
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1798231, 1798232, 1798233, 1798234, 1798235
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1798236, 1798237, 1798238, 1798239, 1798240

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	05/12/2016			05/12/2016 15:28	Sima Feizi	1798231, 1798232, 1798233, 1798234, 1798235
EPA 350.1 Rev. 2.0	05/12/2016			05/18/2016	Diana M. Turner	1798239
	05/12/2016			05/24/2016	Diana M. Turner	1798236, 1798237, 1798238, 1798240
EPA 351.2 Rev. 2.0	05/12/2016	05/24/2016	Sofia Elnemr	05/25/2016	Christopher Armour	1798236, 1798237, 1798238
	05/12/2016	05/24/2016	Sofia Elnemr	05/26/2016	Christopher Armour	1798239
	05/12/2016	05/25/2016	Sofia Elnemr	05/26/2016	Christopher Armour	1798240
EPA 353.2 Rev. 2.0	05/12/2016			05/17/2016	Peter D. Kaus	1798236, 1798237, 1798238, 1798240
	05/12/2016			05/19/2016	Peter D. Kaus	1798239
EPA 365.1 Rev. 2.0	05/12/2016	05/25/2016	Vijayalakshmi Reddy	05/26/2016	Rochelle Y Jackson	1798239
	05/12/2016	05/25/2016	Vijayalakshmi Reddy	05/27/2016	Rochelle Y Jackson	1798236, 1798237, 1798238, 1798240
EPA 365.1 Rev. 2.0 dissolved	05/12/2016			05/12/2016 15:14	Julia Storbeck	1798245
	05/12/2016			05/12/2016 15:17	Julia Storbeck	1798244
	05/12/2016			05/12/2016 15:18	Julia Storbeck	1798242
	05/12/2016			05/12/2016 15:19	Julia Storbeck	1798243
	05/12/2016			05/12/2016 15:38	Julia Storbeck	1798241
SM 2320 B-97	05/12/2016			05/21/2016	Dale L. Simmons	1798231, 1798232, 1798233, 1798235
	05/12/2016			05/22/2016	Dale L. Simmons	1798234
SM 2540 D-97	05/12/2016			05/16/2016	Sima Feizi	1798231, 1798232, 1798233, 1798234, 1798235
SM 4500 F-C-97	05/12/2016			05/25/2016	Dale L. Simmons	1798234
	05/12/2016			05/26/2016	Dale L. Simmons	1798231, 1798232, 1798233, 1798235
SM 5310 B-00	05/12/2016			05/25/2016	Rochelle Y Jackson	1798236, 1798237, 1798238, 1798240
	05/12/2016			05/27/2016	Diana M. Turner	1798239