

Chemical Analysis Report

SW-DIST-2016-02-18-01

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

Event Description: **1535,1440A**
Request ID: **RQ-2016-02-15-45**
Customer: **SW-DIST**
Project ID: **SMP**

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 09-MAR-2016 14:16



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: G5SW0042

Collection Date/Time: 02/17/2016 10:35

Field ID: G5SW0042

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1772594	EPA 180.1 Rev. 2.0	Turbidity	2.3	A	NTU	P298861	
	SM 2320 B-97	Total Alkalinity	135		mg CaCO3/L	P298966	
	SM 2540 D-97	TSS	3	U	mg/L	P299450	
	SM 4500 F-C-97	Fluoride	0.74		mg F/L	P298957	
1772598	EPA 350.1 Rev. 2.0	Ammonia-N	0.073		mg N/L	P299319	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.72		mg N/L	P299144	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P299100	
	EPA 365.1 Rev. 2.0	Total-P	0.052		mg P/L	P299160	
	SM 5310 B-00	Organic Carbon	8.1		mg C/L	P299306	
1772602	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.017		mg P/L	P298854	

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.

SM 5310 B-00: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: G5SW0078

Collection Date/Time: 02/17/2016 12:30

Field ID: G5SW0078

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1772595	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P298861	
	SM 2320 B-97	Total Alkalinity	106		mg CaCO3/L	P298966	
	SM 2540 D-97	TSS	3	U	mg/L	P299450	
	SM 4500 F-C-97	Fluoride	0.57		mg F/L	P298957	
1772599	EPA 350.1 Rev. 2.0	Ammonia-N	0.056		mg N/L	P299319	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P299144	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.038		mg N/L	P299100	
	EPA 365.1 Rev. 2.0	Total-P	0.031		mg P/L	P299160	
	SM 5310 B-00	Organic Carbon	8.6		mg C/L	P299306	
1772603	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P298854	

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.

SM 5310 B-00: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: G5SW0078 DUPLICATE

Collection Date/Time: 02/17/2016 12:35

Field ID: G5SW0078 DUPLICATE

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1772596	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P298861	
	SM 2320 B-97	Total Alkalinity	108		mg CaCO3/L	P298966	
	SM 2540 D-97	TSS	4	I	mg/L	P299450	
	SM 4500 F-C-97	Fluoride	0.57		mg F/L	P298957	
1772600	EPA 350.1 Rev. 2.0	Ammonia-N	0.050		mg N/L	P299319	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.65		mg N/L	P299144	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.038		mg N/L	P299100	
	EPA 365.1 Rev. 2.0	Total-P	0.031		mg P/L	P299160	

Field ID: G5SW0078 DUPLICATE

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1772600	SM 5310 B-00	Organic Carbon	8.6		mg C/L	P299306	
1772604	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P298854	

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.

SM 5310 B-00: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: BLANK

Collection Date/Time: 02/17/2016 13:00

Field ID: BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1772597	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P298861	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P299410	RPD
	SM 2540 D-97	TSS	2	U	mg/L	P299447	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P299322	
1772601	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P299315	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P299208	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P299442	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P299158	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P299304	
1772605	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298851	

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: P298861

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P299315

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P299319

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P299144

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: P299208

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299100

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299442

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299158

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299160

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298851

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298854

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

Reference Method: SM 2320 B-97
Batch ID: P298966

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

Reference Method: SM 2320 B-97
Batch ID: P299410

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P299447

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P299450

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P298957

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P299322

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P299304

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

Reference Method: SM 5310 B-00
Batch ID: P299306

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: P299315

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: P299319

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.3		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299144

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299144

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.5		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299208

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.3		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299100

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	92.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299442

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299158

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	93.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299160

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298851

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298854

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

Reference Method: SM 2320 B-97
Batch ID: P298966

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P299410

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P298957

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.9		P	94 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P299322

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.6		P	94 - 108

Reference Method: SM 5310 B-00
Batch ID: P299304

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.2		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P299306

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	102		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299315

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772548	Ammonia-N	98.6	99.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299144

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772504	Kjeldahl Nitrogen	93.5	96.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299208

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772550	Kjeldahl Nitrogen	98.6	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299100

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299100

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772525	NO2NO3-N	96.1	97.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299442

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772650	NO2NO3-N	98.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299158

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772550	Total-P	100	99.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299160

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772525	Total-P	98.5	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298851

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772691	O-Phosphate-P	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298854

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772602	O-Phosphate-P	99.9	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P298957

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771810	Fluoride	97.7	100	P/P	94 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P299322

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772627	Fluoride	96.6	98.3	P/P	94 - 107

Reference Method: SM 5310 B-00
Batch ID: P299304

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772215	Organic Carbon	98.5	99.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P298861

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772594	Turbidity	0.434	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299315

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772548	Ammonia-N	0.387	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299319

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772599	Ammonia-N	0.687	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299144

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772504	Kjeldahl Nitrogen	2.20	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299208

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772550	Kjeldahl Nitrogen	2.01	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299100

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772525	NO2NO3-N	1.04	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299442

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772650	NO2NO3-N	0.506	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299158

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772550	Total-P	0.574	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299160

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772525	Total-P	1.44	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298851

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772691	O-Phosphate-P	1.65	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298854

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772602	O-Phosphate-P	0.933	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P298966

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771810	Total Alkalinity	1.29	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P299410

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772627	Total Alkalinity	8.88	Sample	F	0 - 4.8

Reference Method: SM 4500 F-C-97
Batch ID: P298957

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771810	Fluoride	0.987	Spike	P	0 - 3.7

Reference Method: SM 4500 F-C-97
Batch ID: P299322

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772627	Fluoride	0.940	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P299304

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772215	Organic Carbon	1.14	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P299306

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772525	Organic Carbon	0.714	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: A67674
Included Lab Sample IDs: 1772602, 1772603, 1772604, 1772605

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.3	99.9	P/P	90 - 110
O-Phosphate-P	99.4	99.3	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A67676
Included Lab Sample IDs: 1772594, 1772595, 1772596, 1772597

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

Reference Method: SM 4500 F-C-97
Run ID: A67712
Included Lab Sample IDs: 1772594, 1772595, 1772596

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

Reference Method: SM 2320 B-97
Run ID: A67716
Included Lab Sample IDs: 1772594, 1772595, 1772596

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A67764
Included Lab Sample IDs: 1772598, 1772599, 1772600

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A67829
Included Lab Sample IDs: 1772598, 1772599, 1772600, 1772601

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A67829

Included Lab Sample IDs: 1772598, 1772599, 1772600, 1772601

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	98.8	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A67848

Included Lab Sample IDs: 1772598, 1772599, 1772600, 1772601

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.2	100	P/P	90 - 110
Organic Carbon	99.4	94.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A67850

Included Lab Sample IDs: 1772598, 1772599, 1772600, 1772601

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	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A67851

Included Lab Sample IDs: 1772598, 1772599, 1772600

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.4	97.6	P/P	90 - 110
Kjeldahl Nitrogen	99.6	96.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A67854

Included Lab Sample IDs: 1772597

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A67889

Included Lab Sample IDs: 1772601

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A67892

Included Lab Sample IDs: 1772601

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.4	94.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A67974
Included Lab Sample IDs: 1772597

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

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				0.434	
EPA 350.1 Rev. 2.0	Ammonia-N	99.0	98.6 99.1			0.387
	Ammonia-N	99.3				0.687
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	95.5	93.5 96.2			2.20
	Kjeldahl Nitrogen	99.3	98.6 101			2.01
EPA 353.2 Rev. 2.0	NO2NO3-N	92.0	96.1 97.1			1.04
	NO2NO3-N	98.5	98.5 99.0			0.506
EPA 365.1 Rev. 2.0	Total-P	93.8	100 99.3			0.574
	Total-P	103	98.5 97.0			1.44
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	102 104			1.65
	O-Phosphate-P	104	99.9 101			0.933
SM 2320 B-97	Total Alkalinity	101			1.29	
	Total Alkalinity	104			8.88	
SM 4500 F-C-97	Fluoride	97.9	97.7 100			0.987
	Fluoride	97.6	96.6 98.3			0.940
SM 5310 B-00	Organic Carbon	99.2	98.5 99.8			1.14
	Organic Carbon	102				0.714

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1772594, 1772595, 1772596, 1772597
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1772598, 1772599, 1772600, 1772601
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1772598, 1772599, 1772600, 1772601
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1772598, 1772599, 1772600, 1772601
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1772598, 1772599, 1772600, 1772601
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1772602, 1772603, 1772604, 1772605
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1772594, 1772595, 1772596, 1772597
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1772594, 1772595, 1772596, 1772597
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1772594, 1772595, 1772596, 1772597
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1772598, 1772599, 1772600, 1772601

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	02/18/2016			02/18/2016 15:08	Sima Feizi	1772594, 1772595, 1772596, 1772597
EPA 350.1 Rev. 2.0	02/18/2016			02/25/2016	Diana M. Turner	1772598, 1772599, 1772600, 1772601
EPA 351.2 Rev. 2.0	02/18/2016	02/24/2016	Christopher Armour	02/25/2016	Bryan A. Werth	1772598, 1772599, 1772600
	02/18/2016	02/25/2016	Christopher Armour	02/26/2016	Rochelle Y Jackson	1772601
EPA 353.2 Rev. 2.0	02/18/2016			02/23/2016	Peter D. Kaus	1772598, 1772599, 1772600
	02/18/2016			02/26/2016	Diana M. Turner	1772601
EPA 365.1 Rev. 2.0	02/18/2016	02/24/2016	Christopher Armour	02/25/2016	Lipi Saha	1772598, 1772599, 1772600, 1772601
EPA 365.1 Rev. 2.0 dissolved	02/18/2016			02/18/2016 13:28	Bryan A. Werth	1772605
	02/18/2016			02/18/2016 13:50	Bryan A. Werth	1772602
	02/18/2016			02/18/2016 13:52	Bryan A. Werth	1772603
	02/18/2016			02/18/2016 13:53	Bryan A. Werth	1772604
SM 2320 B-97	02/18/2016			02/21/2016	Dale L. Simmons	1772594, 1772595, 1772596
	02/18/2016			02/28/2016	Dale L. Simmons	1772597
SM 2540 D-97	02/18/2016			02/22/2016	Sima Feizi	1772594, 1772595, 1772596, 1772597
SM 4500 F-C-97	02/18/2016			02/19/2016	Dale L. Simmons	1772594, 1772595, 1772596
	02/18/2016			02/23/2016	Dale L. Simmons	1772597
SM 5310 B-00	02/18/2016			02/24/2016	Sofia Elnemr	1772601
	02/18/2016			02/25/2016	Sofia Elnemr	1772598, 1772599, 1772600