

Chemical Analysis Report

SW-DIST-2016-02-17-01

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

Event Description: **1463D,1463R,1502C,1502A**

Request ID: **RQ-2016-02-15-44**

Customer: **SW-DIST**

Project ID: **SMP**

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Date Certified: 08-MAR-2016 13:44



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: G1SW0001

Collection Date/Time: 02/16/2016 10:20

Field ID: G1SW0001

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1771612	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P298790	
	EPA 300.0 Rev. 2.1	Chloride	23		mg Cl/L	P298902	
		Sulfate	4.1		mg SO4/L	P298904	
	SM 2120 B	Color (true)	87		PCU	P298750	
	SM 2320 B-97	Total Alkalinity	25	AJ	mg CaCO3/L	P299387	RPD
	SM 2540 C-97	TDS	99		mg/L	P299452	
	SM 2540 D-97	TSS	3	I	mg/L	P299283	
	SM 4500 F-C-97	Fluoride	0.066	I	mg F/L	P299044	
1771617	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P299252	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.84		mg N/L	P299001	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.042		mg N/L	P299062	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P298897	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P299138	
1771622	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298745	

Ref. Method and Comment:

SM 2320 B-97: Refer to the narrative for an explanation of QC Codes.

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

Sample Location: Duplicate

Collection Date/Time: 02/16/2016 10:20

Field ID: Duplicate

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1771613	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P298790	
	EPA 300.0 Rev. 2.1	Chloride	23		mg Cl/L	P298902	
		Sulfate	4.1		mg SO4/L	P298904	
	SM 2120 B	Color (true)	86		PCU	P298750	
	SM 2320 B-97	Total Alkalinity	24	A	mg CaCO3/L	P299344	
	SM 2540 C-97	TDS	94		mg/L	P299452	
	SM 2540 D-97	TSS	2	U	mg/L	P299283	
	SM 4500 F-C-97	Fluoride	0.067	I	mg F/L	P299044	
1771618	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P299252	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.79		mg N/L	P299001	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.043		mg N/L	P299062	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P298897	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P299138	
1771623	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298745	

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: G1SW0027

Collection Date/Time: 02/16/2016 12:45

Field ID: G1SW0027

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1771614	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P298790	
	EPA 300.0 Rev. 2.1	Chloride	37		mg Cl/L	P298902	

Field ID: G1SW0027

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1771614	EPA 300.0 Rev. 2.1	Sulfate	9.5		mg SO4/L	P298904	
	SM 2120 B	Color (true)	35	A	PCU	P298750	
	SM 2320 B-97	Total Alkalinity	56		mg CaCO3/L	P299387	RPD
	SM 2540 C-97	TDS	158		mg/L	P299452	
	SM 2540 D-97	TSS	5	I	mg/L	P299283	
	SM 4500 F-C-97	Fluoride	0.068	I	mg F/L	P299044	
1771619	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P299252	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.79		mg N/L	P299001	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P299063	
	EPA 365.1 Rev. 2.0	Total-P	0.029		mg P/L	P298897	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P299138	
1771624	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298745	

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: G1SW0028

Collection Date/Time: 02/16/2016 12:10

Field ID: G1SW0028

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1771615	EPA 180.1 Rev. 2.0	Turbidity	24		NTU	P298790	
	EPA 300.0 Rev. 2.1	Chloride	53		mg Cl/L	P298902	
		Sulfate	16		mg SO4/L	P298904	
	SM 2120 B	Color (true)	74		PCU	P298750	
	SM 2320 B-97	Total Alkalinity	79		mg CaCO3/L	P299387	RPD
	SM 2540 C-97	TDS	205		mg/L	P299452	
	SM 2540 D-97	TSS	14		mg/L	P299283	
1771620	SM 4500 F-C-97	Fluoride	0.076	I	mg F/L	P299044	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P299252	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.3		mg N/L	P299001	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P299063	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P298995	
1771625	SM 5310 B-00	Organic Carbon	15		mg C/L	P299138	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298745	

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: G1SW0010

Collection Date/Time: 02/16/2016 13:35

Field ID: G1SW0010

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1771616	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P298790	
	EPA 300.0 Rev. 2.1	Chloride	36		mg Cl/L	P298902	
		Sulfate	7.3		mg SO4/L	P298904	
	SM 2120 B	Color (true)	130		PCU	P298750	
	SM 2320 B-97	Total Alkalinity	26		mg CaCO3/L	P299387	RPD
	SM 2540 C-97	TDS	116	A	mg/L	P299453	

Field ID: G1SW0010

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1771616	SM 2540 D-97	TSS	2	I	mg/L	P299284	
	SM 4500 F-C-97	Fluoride	0.097	I	mg F/L	P299044	
1771621	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P299252	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P298951	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P299063	
	EPA 365.1 Rev. 2.0	Total-P	0.037		mg P/L	P298995	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P299138	
1771626	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298745	

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: P298790

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P298902

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P298904

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P299252

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P298951

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P299001

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299062

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: P299063

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: P298897

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298995

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298745

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

Reference Method: SM 2120 B
Batch ID: P298750

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P299344

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

Reference Method: SM 2320 B-97
Batch ID: P299387

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

Reference Method: SM 2540 C-97
Batch ID: P299452

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P299453

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P299283

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P299284

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P299044

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P299138

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: P298902

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298904

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299252

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.7		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298951

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: P298951

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299001

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.2		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299062

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299063

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298897

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298995

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298745

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

Reference Method: SM 2320 B-97
Batch ID: P299344

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

Reference Method: SM 2320 B-97
Batch ID: P299387

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P299044

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.0		P	94 - 108

Reference Method: SM 5310 B-00
Batch ID: P299138

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298902

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771406	Chloride	102		P	90 - 110
1771612	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298904

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771406	Sulfate	98.8		P	90 - 110
1771612	Sulfate	99.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299252

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771618	Ammonia-N	97.6	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298951

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771621	Kjeldahl Nitrogen	104	107	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299001

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771549	Kjeldahl Nitrogen	96.7	94.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299062

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771550	NO2NO3-N	96.8		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299063

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771645	NO2NO3-N	98.5	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298897

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771548	Total-P	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298995

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771620	Total-P	107	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298745

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771622	O-Phosphate-P	102	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P299044

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771613	Fluoride	98.8	98.3	P/P	94 - 107

Reference Method: SM 5310 B-00
Batch ID: P299138

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771547	Organic Carbon	92.8	93.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P298790

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771581	Turbidity	10.9	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298902

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771406	Chloride	0.0473	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298904

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771406	Sulfate	0.124	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299252

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771618	Ammonia-N	0.0901	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298951

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771621	Kjeldahl Nitrogen	1.58	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299001

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771549	Kjeldahl Nitrogen	2.05	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299062

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771550	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299063

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771645	NO2NO3-N	1.02	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298897

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771548	Total-P	0.288	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298995

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771620	Total-P	1.56	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298745

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771622	O-Phosphate-P	0.293	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P298750

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771614	Color (true)	0.232	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P299344

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771613	Total Alkalinity	4.67	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P299387

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771612	Total Alkalinity	5.00	Sample	F	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P299452

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771578	TDS	1.03	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P299453

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771616	TDS	3.45	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P299044

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771613	Fluoride	0.487	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P299138

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771547	Organic Carbon	0.173	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 300.0 Rev. 2.1

Run ID: A67638

Included Lab Sample IDs: 1771612, 1771613, 1771614, 1771615, 1771616

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Chloride	100	101	P/P	90 - 110
Chloride	101	100	P/P	90 - 110
Sulfate	95.6	98.5	P/P	90 - 110
Sulfate	97.6	99.0	P/P	90 - 110
Sulfate	99.0	95.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A67652

Included Lab Sample IDs: 1771622, 1771623, 1771624, 1771625, 1771626

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.2	99.5	P/P	90 - 110
O-Phosphate-P	99.3	99.4	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A67654

Included Lab Sample IDs: 1771612, 1771613, 1771614, 1771615, 1771616

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.5	99.0	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A67661

Included Lab Sample IDs: 1771612, 1771613, 1771614, 1771615, 1771616

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A67737

Included Lab Sample IDs: 1771620

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

Reference Method: SM 4500 F-C-97

Run ID: A67743

Included Lab Sample IDs: 1771612, 1771613, 1771614, 1771615, 1771616

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	99.5	P/P	90 - 110
Fluoride	99.5	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A67744

Included Lab Sample IDs: 1771617, 1771618, 1771619

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A67750

Included Lab Sample IDs: 1771621

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	95.2	95.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A67752

Included Lab Sample IDs: 1771617, 1771618, 1771619, 1771620, 1771621

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A67757

Included Lab Sample IDs: 1771617, 1771618, 1771619, 1771620

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A67771

Included Lab Sample IDs: 1771621

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	104	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A67778

Included Lab Sample IDs: 1771617, 1771618, 1771619, 1771620, 1771621

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.0	94.0	P/P	90 - 110
Organic Carbon	94.9	94.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A67833

Included Lab Sample IDs: 1771617, 1771618, 1771619, 1771620, 1771621

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.7	98.7	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A67858

Included Lab Sample IDs: 1771613

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A67858
Included Lab Sample IDs: 1771613

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

Reference Method: SM 2320 B-97
Run ID: A67871
Included Lab Sample IDs: 1771612, 1771614, 1771615, 1771616

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	100	P/P	90 - 110
Total Alkalinity	99.5	104	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				10.9	
EPA 300.0 Rev. 2.1	Chloride	104	102 102		0.0473	
	Sulfate	100	98.8 99.4		0.124	
EPA 350.1 Rev. 2.0	Ammonia-N	97.7	97.6 97.8			0.0901
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.1	104 107			1.58
	Kjeldahl Nitrogen	97.2	96.7 94.6			2.05
EPA 353.2 Rev. 2.0	NO2NO3-N	100	96.8			0.0
	NO2NO3-N	102	98.5 97.5			1.02
EPA 365.1 Rev. 2.0	Total-P	99.2	102 102			0.288
	Total-P	99.3	107 105			1.56
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	102 102			0.293
SM 2120 B	Color (true)				0.232	
SM 2320 B-97	Total Alkalinity	104			4.67	
	Total Alkalinity	105			5.00	
SM 2540 C-97	TDS				1.03	
	TDS				3.45	
SM 4500 F-C-97	Fluoride	98.0	98.8 98.3			0.487
SM 5310 B-00	Organic Carbon	97.4	92.8 93.0			0.173

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1771612, 1771613, 1771614, 1771615, 1771616
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1771612, 1771613, 1771614, 1771615, 1771616
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1771612, 1771613, 1771614, 1771615, 1771616
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1771617, 1771618, 1771619, 1771620, 1771621

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1771617, 1771618, 1771619, 1771620, 1771621
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1771617, 1771618, 1771619, 1771620, 1771621
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1771617, 1771618, 1771619, 1771620, 1771621
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1771622, 1771623, 1771624, 1771625, 1771626
SM 2120 B / E31780	True Color measured at 450 nm	1771612, 1771613, 1771614, 1771615, 1771616
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1771612, 1771613, 1771614, 1771615, 1771616
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1771612, 1771613, 1771614, 1771615, 1771616
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1771612, 1771613, 1771614, 1771615, 1771616
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1771612, 1771613, 1771614, 1771615, 1771616
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1771617, 1771618, 1771619, 1771620, 1771621

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	02/17/2016			02/17/2016 16:45	Sima Feizi	1771612, 1771613, 1771614, 1771615, 1771616
EPA 300.0 Rev. 2.1	02/17/2016			02/18/2016	Ping Hua	1771612, 1771613, 1771614, 1771615, 1771616
EPA 350.1 Rev. 2.0	02/17/2016			02/24/2016	Diana M. Turner	1771617, 1771618, 1771619, 1771620, 1771621
EPA 351.2 Rev. 2.0	02/17/2016	02/22/2016	Christopher Armour	02/23/2016	Bryan A. Werth	1771617, 1771618, 1771619, 1771620, 1771621
EPA 353.2 Rev. 2.0	02/17/2016			02/22/2016	Diana M. Turner	1771617, 1771618, 1771619, 1771620, 1771621
EPA 365.1 Rev. 2.0	02/17/2016	02/19/2016	Christopher Armour	02/22/2016	Lipi Saha	1771617, 1771618, 1771619
	02/17/2016	02/22/2016	Christopher Armour	02/22/2016	Lipi Saha	1771620
	02/17/2016	02/22/2016	Christopher Armour	02/23/2016	Lipi Saha	1771621
EPA 365.1 Rev. 2.0 dissolved	02/17/2016			02/17/2016 14:21	Bryan A. Werth	1771622
	02/17/2016			02/17/2016 14:48	Bryan A. Werth	1771623
	02/17/2016			02/17/2016 14:49	Bryan A. Werth	1771624, 1771625
	02/17/2016			02/17/2016 14:50	Bryan A. Werth	1771626
SM 2120 B	02/17/2016			02/17/2016 14:55	Rochelle Y Jackson	1771612
	02/17/2016			02/17/2016 14:56	Rochelle Y Jackson	1771613
	02/17/2016			02/17/2016 14:57	Rochelle Y Jackson	1771614
	02/17/2016			02/17/2016 14:58	Rochelle Y Jackson	1771615
	02/17/2016			02/17/2016 14:59	Rochelle Y Jackson	1771616
SM 2320 B-97	02/17/2016			02/24/2016	Dale L. Simmons	1771613
	02/17/2016			02/27/2016	Dale L. Simmons	1771612, 1771614, 1771615, 1771616
SM 2540 C-97	02/17/2016			02/19/2016	Yijie Li	1771612, 1771613, 1771614, 1771615, 1771616
SM 2540 D-97	02/17/2016			02/19/2016	Yijie Li	1771612, 1771613, 1771614, 1771615, 1771616
SM 4500 F-C-97	02/17/2016			02/22/2016	Dale L. Simmons	1771613
	02/17/2016			02/23/2016	Dale L. Simmons	1771612, 1771614, 1771615, 1771616
SM 5310 B-00	02/17/2016			02/23/2016	Sofia Elnemr	1771617, 1771618, 1771619, 1771620, 1771621