

Chemical Analysis Report

SW-DIST-2016-02-16-01

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

Event Description: **1329G, 1435, 1758F**

Request ID: **RQ-2016-02-15-43**

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: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 02-MAR-2016 15:56



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: G4SW0097

Collection Date/Time: 02/15/2016 10:15

Field ID: G4SW0097

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1771190	EPA 180.1 Rev. 2.0	Turbidity	1.8	A	NTU	P298692	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P298859	
		Sulfate	24		mg SO4/L	P298856	
	SM 2120 B	Color (true)	73	A	PCU	P298682	
	SM 2320 B-97	Total Alkalinity	6.8		mg CaCO3/L	P299109	
	SM 2540 C-97	TDS	105		mg/L	P299079	
	SM 2540 D-97	TSS	2	I	mg/L	P299017	
	SM 4500 F-C-97	Fluoride	0.085	I	mg F/L	P299043	
1771195	EPA 350.1 Rev. 2.0	Ammonia-N	0.029		mg N/L	P298873	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.84		mg N/L	P298885	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.16		mg N/L	P298976	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P298892	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P298948	
1771200	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298675	

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: G4SW0095

Collection Date/Time: 02/15/2016 10:35

Field ID: G4SW0095

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1771191	EPA 180.1 Rev. 2.0	Turbidity	0.50		NTU	P298692	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P298858	
		Sulfate	24		mg SO4/L	P298857	
	SM 2120 B	Color (true)	70		PCU	P298682	
	SM 2320 B-97	Total Alkalinity	7.4		mg CaCO3/L	P299109	
	SM 2540 C-97	TDS	91		mg/L	P299080	
	SM 2540 D-97	TSS	2	U	mg/L	P299018	
	SM 4500 F-C-97	Fluoride	0.086	I	mg F/L	P299043	
1771196	EPA 350.1 Rev. 2.0	Ammonia-N	0.031		mg N/L	P298873	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.76		mg N/L	P298885	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.14		mg N/L	P298977	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P298892	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P298948	
1771201	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298675	

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: G4SW0096

Collection Date/Time: 02/15/2016 10:45

Field ID: G4SW0096

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1771192	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P298692	
	EPA 300.0 Rev. 2.1	Chloride	19	A	mg Cl/L	P298858	
		Sulfate	24	A	mg SO4/L	P298857	

Field ID: G4SW0096

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1771192	SM 2120 B	Color (true)	72		PCU	P298682	
	SM 2320 B-97	Total Alkalinity	6.6		mg CaCO3/L	P299109	
	SM 2540 C-97	TDS	101		mg/L	P299080	
	SM 2540 D-97	TSS	2	I	mg/L	P299018	
	SM 4500 F-C-97	Fluoride	0.086	I	mg F/L	P299043	
1771197	EPA 350.1 Rev. 2.0	Ammonia-N	0.029		mg N/L	P298873	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.77		mg N/L	P298885	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.14		mg N/L	P298977	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P298892	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P298948	
1771202	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298675	

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: G4SW0098

Collection Date/Time: 02/15/2016 10:55

Field ID: G4SW0098

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1771193	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P298692	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P298858	
		Sulfate	24		mg SO4/L	P298857	
	SM 2120 B	Color (true)	72		PCU	P298682	
	SM 2320 B-97	Total Alkalinity	6.9		mg CaCO3/L	P299109	
	SM 2540 C-97	TDS	105		mg/L	P299080	
	SM 2540 D-97	TSS	2	U	mg/L	P299018	
	SM 4500 F-C-97	Fluoride	0.086	I	mg F/L	P299043	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.072		mg N/L	P298873	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.85		mg N/L	P298885	
1771198	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P298977	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P298892	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P298948	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298675	

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: G4SW0099

Collection Date/Time: 02/15/2016 13:15

Field ID: G4SW0099

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1771194	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P298692	
	EPA 300.0 Rev. 2.1	Chloride	16		mg Cl/L	P298858	
		Sulfate	0.26	I	mg SO4/L	P298857	
	SM 2120 B	Color (true)	450		PCU	P298682	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P299109	
	SM 2540 C-97	TDS	101		mg/L	P299080	
	SM 2540 D-97	TSS	2	U	mg/L	P299018	

Field ID: G4SW0099

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1771194	SM 4500 F-C-97	Fluoride	0.064	I	mg F/L	P299043	
1771199	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P298873	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P298885	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P298977	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P298892	
	SM 5310 B-00	Organic Carbon	53		mg C/L	P298948	
1771204	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P298675	

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: P298692

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P298856

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P298857

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P298858

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P298859

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P298873

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P298885

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: P298976

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: P298977

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: P298892

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298675

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

Reference Method: SM 2120 B
Batch ID: P298682

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P299109

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

Reference Method: SM 2540 C-97
Batch ID: P299079

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P299080

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P299017

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P299018

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P299043

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P298948

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: P298856

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298857

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298858

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298859

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298873

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298885

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: P298885

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P298976

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P298977

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

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P298892

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P298675

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

Reference Method: SM 2320 B-97
 Batch ID: P299109

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

Reference Method: SM 4500 F-C-97
 Batch ID: P299043

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

Reference Method: SM 5310 B-00
 Batch ID: P298948

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.1		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P298856

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298856

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770982	Sulfate	100		P	90 - 110
1770983	Sulfate	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298857

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771192	Sulfate	100		P	90 - 110
1771193	Sulfate	99.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298858

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771192	Chloride	103		P	90 - 110
1771193	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298859

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770982	Chloride	103		P	90 - 110
1770983	Chloride	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298873

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771196	Ammonia-N	96.5	98.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298885

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771053	Kjeldahl Nitrogen	105	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298976

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770984	NO2NO3-N	93.9	92.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298977

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771196	NO2NO3-N	98.0	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298892

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298892

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771195	Total-P	99.2	94.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298675

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771200	O-Phosphate-P	101	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P299043

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770959	Fluoride	97.6	98.8	P/P	94 - 107

Reference Method: SM 5310 B-00
Batch ID: P298948

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770971	Organic Carbon	92.4	92.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P298692

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771190	Turbidity	6.63	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298856

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770982	Sulfate	1.01	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298857

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771192	Sulfate	0.142	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298858

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771192	Chloride	0.699	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298859

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770982	Chloride	0.0844	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298873

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771196	Ammonia-N	1.04	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298885

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771053	Kjeldahl Nitrogen	1.90	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298976

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770984	NO2NO3-N	1.27	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298977

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771196	NO2NO3-N	0.302	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298892

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771195	Total-P	4.30	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298675

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771200	O-Phosphate-P	0.984	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P298682

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771190	Color (true)	0.252	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P299109

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770959	Total Alkalinity	0.847	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P299079

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771021	TDS	5.31	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P299080

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771220	TDS	1.70	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P299043

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770959	Fluoride	1.01	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P298948

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770971	Organic Carbon	0.307	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: A67625
Included Lab Sample IDs: 1771200, 1771201, 1771202, 1771203, 1771204

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.9	98.0	P/P	90 - 110
O-Phosphate-P	99.2	98.9	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A67630
Included Lab Sample IDs: 1771190, 1771191, 1771192, 1771193, 1771194

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.3	100	P/P	85 - 115

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A67632

Included Lab Sample IDs: 1771190, 1771191, 1771192, 1771193, 1771194

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A67638

Included Lab Sample IDs: 1771190, 1771191, 1771192, 1771193, 1771194

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	101	P/P	90 - 110
Chloride	99.7	102	P/P	90 - 110
Sulfate	94.4	99.0	P/P	90 - 110
Sulfate	99.0	94.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A67680

Included Lab Sample IDs: 1771195, 1771196, 1771197, 1771198, 1771199

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

Reference Method: SM 5310 B-00

Run ID: A67710

Included Lab Sample IDs: 1771195, 1771196, 1771197, 1771198, 1771199

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.8	94.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A67721

Included Lab Sample IDs: 1771195, 1771196, 1771197, 1771198, 1771199

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	99.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A67728

Included Lab Sample IDs: 1771195, 1771196, 1771197, 1771198, 1771199

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

Reference Method: SM 4500 F-C-97

Run ID: A67743

Included Lab Sample IDs: 1771190, 1771191, 1771192, 1771193, 1771194

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A67744

Included Lab Sample IDs: 1771195, 1771196, 1771197, 1771198, 1771199

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	99.0	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A67766

Included Lab Sample IDs: 1771190, 1771191, 1771192, 1771193, 1771194

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	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				6.63	
EPA 300.0 Rev. 2.1	Chloride	104	103 103		0.699	
	Chloride	103	103 102		0.0844	
	Sulfate	99.0	100 101		1.01	
	Sulfate	99.3	100 99.0		0.142	
EPA 350.1 Rev. 2.0	Ammonia-N	97.2	96.5 98.1			1.04
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.9	105 102			1.90
EPA 353.2 Rev. 2.0	NO2NO3-N	97.0	93.9 92.4			1.27
	NO2NO3-N	98.0	98.0 98.5			0.302
EPA 365.1 Rev. 2.0	Total-P	99.1	99.2 94.8			4.30
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	101 102			0.984
SM 2120 B	Color (true)				0.252	
SM 2320 B-97	Total Alkalinity	101			0.847	
SM 2540 C-97	TDS				5.31	
	TDS				1.70	
SM 4500 F-C-97	Fluoride	97.6	97.6 98.8			1.01
SM 5310 B-00	Organic Carbon	95.1	92.4 92.8			0.307

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1771190, 1771191, 1771192, 1771193, 1771194
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1771190, 1771191, 1771192, 1771193, 1771194
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1771190, 1771191, 1771192, 1771193, 1771194
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1771195, 1771196, 1771197, 1771198, 1771199
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1771195, 1771196, 1771197, 1771198, 1771199
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1771195, 1771196, 1771197, 1771198, 1771199

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1771195, 1771196, 1771197, 1771198, 1771199
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1771200, 1771201, 1771202, 1771203, 1771204
SM 2120 B / E31780	True Color measured at 450 nm	1771190, 1771191, 1771192, 1771193, 1771194
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1771190, 1771191, 1771192, 1771193, 1771194
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1771190, 1771191, 1771192, 1771193, 1771194
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1771190, 1771191, 1771192, 1771193, 1771194
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1771190, 1771191, 1771192, 1771193, 1771194
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1771195, 1771196, 1771197, 1771198, 1771199

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	02/16/2016			02/16/2016 15:33	Sima Feizi	1771190, 1771191, 1771192, 1771193, 1771194
EPA 300.0 Rev. 2.1	02/16/2016			02/17/2016	Julia Storbeck	1771190, 1771191, 1771192, 1771193, 1771194
EPA 350.1 Rev. 2.0	02/16/2016			02/18/2016	Diana M. Turner	1771195, 1771196, 1771197, 1771198, 1771199
EPA 351.2 Rev. 2.0	02/16/2016	02/19/2016	Christopher Armour	02/22/2016	Bryan A. Werth	1771195, 1771196, 1771197, 1771198, 1771199
EPA 353.2 Rev. 2.0	02/16/2016			02/19/2016	Virginia P. Brown	1771195, 1771196, 1771197, 1771198, 1771199
EPA 365.1 Rev. 2.0	02/16/2016	02/19/2016	Christopher Armour	02/22/2016	Lipi Saha	1771195, 1771196, 1771197, 1771198, 1771199
EPA 365.1 Rev. 2.0 dissolved	02/16/2016			02/16/2016 14:02	Bryan A. Werth	1771200
	02/16/2016			02/16/2016 14:17	Bryan A. Werth	1771201
	02/16/2016			02/16/2016 14:18	Bryan A. Werth	1771202
	02/16/2016			02/16/2016 14:19	Bryan A. Werth	1771203
	02/16/2016			02/16/2016 14:20	Bryan A. Werth	1771204
SM 2120 B	02/16/2016			02/16/2016 14:40	Blanca Fach	1771190, 1771191
	02/16/2016			02/16/2016 14:41	Blanca Fach	1771192
	02/16/2016			02/16/2016 14:42	Blanca Fach	1771193
	02/16/2016			02/16/2016 14:43	Blanca Fach	1771194
SM 2320 B-97	02/16/2016			02/23/2016	Dale L. Simmons	1771190, 1771191, 1771192, 1771193, 1771194
SM 2540 C-97	02/16/2016			02/17/2016	Yijie Li	1771190, 1771191, 1771192, 1771193, 1771194
SM 2540 D-97	02/16/2016			02/17/2016	Yijie Li	1771190, 1771191, 1771192, 1771193, 1771194
SM 4500 F-C-97	02/16/2016			02/22/2016	Dale L. Simmons	1771190, 1771191, 1771192, 1771193, 1771194
SM 5310 B-00	02/16/2016			02/20/2016	Diana M. Turner	1771195, 1771196, 1771197, 1771198, 1771199