

Chemical Analysis Report

SW-DIST-2017-02-10-01

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

Event Description: **SMP RUN 8**
Request ID: **RQ-2017-02-06-29**
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
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 06-MAR-2017 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: KLOSTERMAN RUN-INNISBROOK

Collection Date/Time: 02/09/2017 09:50

Field ID: G1SW0039

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1871966	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P319699	
	EPA 300.0 Rev. 2.1	Chloride	6.5E+03		mg Cl/L	P320634	
		Sulfate	900		mg SO4/L	P320633	
	SM 2120 B	Color (true)	47		PCU	P319706	
	SM 2320 B-97	Total Alkalinity	138		mg CaCO3/L	P320107	
	SM 2540 C-97	TDS	9.66E+03	Q	mg/L	P320459	
	SM 2540 D-97	TSS	15		mg/L	P319852	
	SM 4500 F-C-97	Fluoride	0.59		mg F/L	P320247	
1871972	EPA 350.1 Rev. 2.0	Ammonia-N	0.059		mg N/L	P320245	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P319766	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.045		mg N/L	P320168	
	EPA 365.1 Rev. 2.0	Total-P	0.27		mg P/L	P319897	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P319723	
1871978	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.20		mg P/L	P319703	

Ref. Method and Comment:

SM 2540 C-97: Sample reanalyzed out of holding time due to an incorrectly reported field conductivity.

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: CHAPMAN LAKE

Collection Date/Time: 02/09/2017 11:55

Field ID: G1SW0028

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1871967	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P319699	
	EPA 300.0 Rev. 2.1	Chloride	60		mg Cl/L	P320634	
		Sulfate	20		mg SO4/L	P320633	
	SM 2120 B	Color (true)	32	A	PCU	P319706	
	SM 2320 B-97	Total Alkalinity	68		mg CaCO3/L	P320107	
	SM 2540 C-97	TDS	213		mg/L	P320164	
	SM 2540 D-97	TSS	2	I	mg/L	P319852	
	SM 4500 F-C-97	Fluoride	0.085	I	mg F/L	P320247	
1871973	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P320015	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.96		mg N/L	P319766	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P320168	
	EPA 365.1 Rev. 2.0	Total-P	0.036		mg P/L	P319897	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P319723	
1871979	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P319703	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: LAKE ESTES

Collection Date/Time: 02/09/2017 12:20

Field ID: G1SW0027

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1871968	EPA 180.1 Rev. 2.0	Turbidity	4.5		NTU	P319699	
	EPA 300.0 Rev. 2.1	Chloride	36		mg Cl/L	P320128	

Field ID: G1SW0027

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1871968	EPA 300.0 Rev. 2.1	Sulfate	11		mg SO4/L	P320124	
	SM 2120 B	Color (true)	29		PCU	P319706	
	SM 2320 B-97	Total Alkalinity	50	A	mg CaCO3/L	P320107	
	SM 2540 C-97	TDS	135		mg/L	P320164	
	SM 2540 D-97	TSS	9	I	mg/L	P319852	
	SM 4500 F-C-97	Fluoride	0.064	I	mg F/L	P320247	
1871974	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P320015	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.95		mg N/L	P319766	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P320168	
	EPA 365.1 Rev. 2.0	Total-P	0.052		mg P/L	P319897	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P319723	
1871980	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P319703	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: ROCK LAKE

Collection Date/Time: 02/09/2017 13:10

Field ID: G1SW0010

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1871969	EPA 180.1 Rev. 2.0	Turbidity	1.5	A	NTU	P319699	
	EPA 300.0 Rev. 2.1	Chloride	35		mg Cl/L	P320128	
		Sulfate	7.6		mg SO4/L	P320124	
	SM 2120 B	Color (true)	88		PCU	P319706	
	SM 2320 B-97	Total Alkalinity	29		mg CaCO3/L	P320107	
	SM 2540 C-97	TDS	138		mg/L	P320164	
	SM 2540 D-97	TSS	2	I	mg/L	P319852	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P320247	
1871975	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P320015	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.67		mg N/L	P319766	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P320168	
	EPA 365.1 Rev. 2.0	Total-P	0.030		mg P/L	P319897	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P319723	
1871981	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P319703	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: HIAWATHA LAKE

Collection Date/Time: 02/09/2017 14:00

Field ID: G1SW0017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1871970	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P319699	
	EPA 300.0 Rev. 2.1	Chloride	29		mg Cl/L	P320128	
		Sulfate	6.5		mg SO4/L	P320124	
	SM 2120 B	Color (true)	32		PCU	P319706	
	SM 2320 B-97	Total Alkalinity	3.1		mg CaCO3/L	P320107	
	SM 2540 C-97	TDS	91		mg/L	P320164	

Field ID: G1SW0017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1871970	SM 2540 D-97	TSS	2	U	mg/L	P319852	
	SM 4500 F-C-97	Fluoride	0.073	I	mg F/L	P320247	
1871976	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P320015	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.57		mg N/L	P319847	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P320168	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P319897	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P319723	
1871982	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P319703	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: LAKE JUANITA

Collection Date/Time: 02/09/2017 14:30

Field ID: G1SW0019

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1871971	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P319699	
	EPA 300.0 Rev. 2.1	Chloride	26		mg Cl/L	P320128	
		Sulfate	3.9		mg SO4/L	P320124	
	SM 2120 B	Color (true)	57		PCU	P319706	
	SM 2320 B-97	Total Alkalinity	16		mg CaCO3/L	P320108	
	SM 2540 C-97	TDS	98		mg/L	P320164	
	SM 2540 D-97	TSS	2	I	mg/L	P319852	
	SM 4500 F-C-97	Fluoride	0.054	I	mg F/L	P320111	
1871977	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P320015	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.78		mg N/L	P319847	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P320168	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P319897	
	SM 5310 B-00	Organic Carbon	8.7		mg C/L	P319723	
1871983	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P319703	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P319699

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P320124

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320128

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320633

Component	Result	Code	Units
Sulfate	0.2	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320634

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P320015

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P320245

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319766

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319847

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320168

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319897

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: P319703

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

Reference Method: SM 2120 B
Batch ID: P319706

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P320107

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

Reference Method: SM 2320 B-97
Batch ID: P320108

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

Reference Method: SM 2540 C-97
Batch ID: P320164

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P320459

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P319852

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P320111

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P320247

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P319723

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: P320124

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320128

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320633

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320634

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P320015

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P320245

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319766

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319847

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: P319847

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320168

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	105		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319897

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319703

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

Reference Method: SM 2320 B-97
Batch ID: P320107

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P320108

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P320111

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.4		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P320247

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.6		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P319723

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320124

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1871894	Sulfate	103		P	90 - 110
1871970	Sulfate	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320128

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1871894	Chloride	107		P	90 - 110
1871970	Chloride	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320633

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1872392	Sulfate	96.4		P	90 - 110
1872393	Sulfate	95.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320634

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1872392	Chloride	100		P	90 - 110
1872393	Chloride	99.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P320015

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1871973	Ammonia-N	91.8	93.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P320245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1873091	Ammonia-N	99.1	95.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319766

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1871973	Kjeldahl Nitrogen	102	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319847

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1871976	Kjeldahl Nitrogen	98.7	93.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320168

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: P320168

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1871897	NO2NO3-N	103	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319897

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1872369	Total-P	96.1	96.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319703

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1871980	O-Phosphate-P	99.9	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P320111

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1872640	Fluoride	101	101	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P320247

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1871968	Fluoride	98.5	99.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P319723

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1871801	Organic Carbon	93.2	94.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P319699

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871969	Turbidity	8.75	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320124

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871894	Sulfate	0.0866	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320128

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871894	Chloride	0.0880	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320633

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872393	Sulfate	0.393	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320634

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872393	Chloride	0.106	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P320015

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871973	Ammonia-N	1.59	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P320245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1873091	Ammonia-N	2.73	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319766

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871973	Kjeldahl Nitrogen	0.404	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319847

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871976	Kjeldahl Nitrogen	3.84	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320168

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871897	NO2NO3-N	0.438	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319897

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872369	Total-P	0.237	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319703

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871980	O-Phosphate-P	1.10	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P319706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871967	Color (true)	0.534	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P320107

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871968	Total Alkalinity	0.306	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P320108

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872640	Total Alkalinity	0.161	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P320164

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871894	TDS	4.21	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P320459

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872812	TDS	4.44	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P320111

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872640	Fluoride	0.0	Spike	P	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P320247

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871968	Fluoride	0.506	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P319723

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871801	Organic Carbon	0.548	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 180.1 Rev. 2.0
Run ID: A74414
Included Lab Sample IDs: 1871966, 1871967, 1871968, 1871969, 1871970, 1871971

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A74416
Included Lab Sample IDs: 1871978, 1871979, 1871980, 1871981, 1871982, 1871983

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.0	99.3	P/P	90 - 110
O-Phosphate-P	99.4	99.4	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A74417
Included Lab Sample IDs: 1871966, 1871967, 1871968, 1871969, 1871970, 1871971

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.6	102	P/P	85 - 115

Reference Method: SM 5310 B-00
Run ID: A74422
Included Lab Sample IDs: 1871972, 1871973, 1871974, 1871975, 1871976, 1871977

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.8	96.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A74496
Included Lab Sample IDs: 1871972, 1871973, 1871974, 1871975

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	99.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A74496

Included Lab Sample IDs: 1871972, 1871973, 1871974, 1871975

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A74519

Included Lab Sample IDs: 1871976, 1871977

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.6	94.7	P/P	90 - 110
Kjeldahl Nitrogen	94.7	94.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A74527

Included Lab Sample IDs: 1871968, 1871969, 1871970, 1871971

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	105	P/P	90 - 110
Chloride	107	105	P/P	90 - 110
Sulfate	95.4	101	P/P	90 - 110
Sulfate	98.2	92.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A74529

Included Lab Sample IDs: 1871972

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.5	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A74531

Included Lab Sample IDs: 1871973, 1871974, 1871975, 1871976, 1871977

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A74538

Included Lab Sample IDs: 1871973, 1871974, 1871975, 1871976, 1871977

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	96.7	96.9	P/P	90 - 110
Ammonia-N	97.4	97.8	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A74571

Included Lab Sample IDs: 1871966, 1871967, 1871968, 1871969, 1871970, 1871971

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

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A74571

Included Lab Sample IDs: 1871971

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.0	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A74601

Included Lab Sample IDs: 1871972, 1871973, 1871974, 1871975, 1871976, 1871977

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

Reference Method: SM 4500 F-C-97

Run ID: A74626

Included Lab Sample IDs: 1871966, 1871967, 1871968, 1871969, 1871970

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.5	97.6	P/P	90 - 110
Fluoride	97.6	98.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A74627

Included Lab Sample IDs: 1871972

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.9	99.7	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A74765

Included Lab Sample IDs: 1871966, 1871967

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	104	P/P	90 - 110
Chloride	105	104	P/P	90 - 110
Sulfate	96.2	101	P/P	90 - 110
Sulfate	97.0	91.8	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery		Precision	
						SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					8.75	
EPA 300.0 Rev. 2.1	Chloride	108		107	104	0.0880	
	Chloride	100		99.7	100	0.106	
	Sulfate	103		103	103	0.0866	
	Sulfate	94.6		95.1	96.4	0.393	
EPA 350.1 Rev. 2.0	Ammonia-N	98.7		91.8	93.5		1.59
	Ammonia-N	99.4		99.1	95.6		2.73

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	102	101		0.404
	Kjeldahl Nitrogen	99.2	98.7	93.2		3.84
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	105	103	104		0.438
EPA 365.1 Rev. 2.0	Total-P	98.0	96.1	96.4		0.237
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	99.9	101		1.10
SM 2120 B	Color (true)				0.534	
SM 2320 B-97	Total Alkalinity	103			0.306	
	Total Alkalinity	103			0.161	
SM 2540 C-97	TDS				4.21	
	TDS				4.44	
SM 4500 F-C-97	Fluoride	98.4	101	101		0.0
	Fluoride	96.6	98.5	99.1		0.506
SM 5310 B-00	Organic Carbon	96.0	93.2	94.0		0.548

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1871966, 1871967, 1871968, 1871969, 1871970, 1871971
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1871966, 1871967, 1871968, 1871969, 1871970, 1871971
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1871966, 1871967, 1871968, 1871969, 1871970, 1871971
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1871972, 1871973, 1871974, 1871975, 1871976, 1871977
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1871972, 1871973, 1871974, 1871975, 1871976, 1871977
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1871972, 1871973, 1871974, 1871975, 1871976, 1871977
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1871972, 1871973, 1871974, 1871975, 1871976, 1871977
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1871978, 1871979, 1871980, 1871981, 1871982, 1871983
SM 2120 B / E31780	True Color measured at 450 nm	1871966, 1871967, 1871968, 1871969, 1871970, 1871971
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1871966, 1871967, 1871968, 1871969, 1871970, 1871971
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1871966, 1871967, 1871968, 1871969, 1871970, 1871971
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1871966, 1871967, 1871968, 1871969, 1871970, 1871971
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1871966, 1871967, 1871968, 1871969, 1871970, 1871971
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1871972, 1871973, 1871974, 1871975, 1871976, 1871977

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	02/10/2017			02/10/2017 16:18	Julie Michelle Frank	1871966, 1871967, 1871968, 1871969, 1871970, 1871971
EPA 300.0 Rev. 2.1	02/10/2017			02/16/2017	Ping Hua	1871970
	02/10/2017			02/17/2017	Ping Hua	1871968, 1871969, 1871971
	02/10/2017			02/27/2017	Ping Hua	1871967
	02/10/2017			02/28/2017	Ping Hua	1871966
EPA 350.1 Rev. 2.0	02/10/2017			02/16/2017	Sofia Elnemr	1871973, 1871974, 1871975, 1871976, 1871977
	02/10/2017			02/21/2017	Sofia Elnemr	1871972
EPA 351.2 Rev. 2.0	02/10/2017	02/14/2017	Adrian Shelby	02/15/2017	Joseph Suarez	1871972, 1871973, 1871974, 1871975
	02/10/2017	02/15/2017	Adrian Shelby	02/16/2017	Joseph Suarez	1871976, 1871977
EPA 353.2 Rev. 2.0	02/10/2017			02/21/2017	Beverly Y. Sanders	1871972, 1871973, 1871974, 1871975, 1871976, 1871977
EPA 365.1 Rev. 2.0	02/10/2017	02/15/2017	Vijayalakshmi Reddy	02/16/2017	Lipi Saha	1871972, 1871973, 1871974, 1871975, 1871976, 1871977
EPA 365.1 Rev. 2.0 dissolved	02/10/2017			02/10/2017 16:43	Julia Storbeck	1871980
	02/10/2017			02/10/2017 17:03	Julia Storbeck	1871978
	02/10/2017			02/10/2017 17:06	Julia Storbeck	1871979
	02/10/2017			02/10/2017 17:07	Julia Storbeck	1871981, 1871982
	02/10/2017			02/10/2017 17:08	Julia Storbeck	1871983
SM 2120 B	02/10/2017			02/10/2017 17:38	Julie Michelle Frank	1871966
	02/10/2017			02/10/2017 17:40	Julie Michelle Frank	1871967, 1871968
	02/10/2017			02/10/2017 17:41	Julie Michelle Frank	1871969
	02/10/2017			02/10/2017 17:42	Julie Michelle Frank	1871970
	02/10/2017			02/10/2017 17:43	Julie Michelle Frank	1871971
SM 2320 B-97	02/10/2017			02/19/2017	Dale L. Simmons	1871966, 1871967, 1871968, 1871969, 1871970, 1871971
SM 2540 C-97	02/10/2017			02/13/2017	Christopher Armour	1871967, 1871968, 1871969, 1871970, 1871971
	02/10/2017			02/17/2017	Yijie Li	1871966
SM 2540 D-97	02/10/2017			02/13/2017	Christopher Armour	1871966, 1871967, 1871968, 1871969, 1871970, 1871971
SM 4500 F-C-97	02/10/2017			02/19/2017	Dale L. Simmons	1871971
	02/10/2017			02/22/2017	Dale L. Simmons	1871966, 1871967, 1871968, 1871969, 1871970
SM 5310 B-00	02/10/2017			02/11/2017	Julie Michelle Frank	1871972, 1871973, 1871974, 1871975, 1871976, 1871977