

Chemical Analysis Report

SW-DIST-2017-03-24-01

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

Event Description: **SMP RUN 16**
Request ID: **RQ-2017-03-20-12**
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: Judy Ashton

For additional information please contact
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Certified by: Colin Wright, Program Administrator

Date Certified: 20-APR-2017 09:50

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light gray rectangular background.

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: Hancock Lake

Collection Date/Time: 03/23/2017 09:10

Field ID: G5SW0046

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1883323	EPA 180.1 Rev. 2.0	Turbidity	3.8		NTU	P322152	
	EPA 300.0 Rev. 2.1	Chloride	16	A	mg Cl/L	P322656	
		Sulfate	1.6	A	mg SO4/L	P322660	
	SM 2120 B	Color (true)	37	Q	PCU	P322339	
	SM 2320 B-97	Total Alkalinity	27		mg CaCO3/L	P322802	
	SM 2540 C-97	TDS	85		mg/L	P322728	
	SM 2540 D-97	TSS	6	I	mg/L	P322712	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P323008	
1883328	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P322254	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P322271	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P322290	
	EPA 365.1 Rev. 2.0	Total-P	0.057		mg P/L	P322278	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P322211	
1883333	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P322171	

Ref. Method and Comment:

SM 2120 B: Sample reanalyzed out of holding time due to analytical difficulties.

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

Sample Location: Lake Thomas

Collection Date/Time: 03/23/2017 10:25

Field ID: G5SW0111

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1883324	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P322152	
	EPA 300.0 Rev. 2.1	Chloride	24		mg Cl/L	P322656	
		Sulfate	9.4		mg SO4/L	P322660	
	SM 2120 B	Color (true)	24	Q	PCU	P322339	
	SM 2320 B-97	Total Alkalinity	1.1	IJ	mg CaCO3/L	P322915	
	SM 2540 C-97	TDS	75		mg/L	P322728	
	SM 2540 D-97	TSS	2	I	mg/L	P322712	
	SM 4500 F-C-97	Fluoride	0.067	I	mg F/L	P323076	
1883329	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P322254	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.67		mg N/L	P322273	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P322290	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P322278	
	SM 5310 B-00	Organic Carbon	7.3		mg C/L	P322211	
1883334	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P322171	

Ref. Method and Comment:

SM 2120 B: Sample reanalyzed out of holding time due to analytical difficulties.

SM 2320 B-97: The result may be biased high due to background contamination.

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

Sample Location: Bear Crk

Collection Date/Time: 03/23/2017 11:25

Field ID: G5SW0102

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1883325	EPA 180.1 Rev. 2.0	Turbidity	2.4	A	NTU	P322153	

Field ID: G5SW0102

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1883325	EPA 300.0 Rev. 2.1	Chloride	140		mg Cl/L	P322656	
		Sulfate	36		mg SO4/L	P322660	
	SM 2120 B	Color (true)	22		PCU	P322163	
	SM 2320 B-97	Total Alkalinity	173		mg CaCO3/L	P322802	
	SM 2540 C-97	TDS	425		mg/L	P322728	
	SM 2540 D-97	TSS	6	I	mg/L	P322712	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P323008	
1883330	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P322254	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.76		mg N/L	P322273	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P322290	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P322278	
	SM 5310 B-00	Organic Carbon	6.1		mg C/L	P322211	
1883335	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.031		mg P/L	P322171	

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: Bear Crk duplicate

Collection Date/Time: 03/23/2017 11:30

Field ID: G5SW0102

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1883326	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P322153	
	EPA 300.0 Rev. 2.1	Chloride	130		mg Cl/L	P322945	
		Sulfate	36		mg SO4/L	P322660	
	SM 2120 B	Color (true)	21		PCU	P322163	
	SM 2320 B-97	Total Alkalinity	168		mg CaCO3/L	P322802	
	SM 2540 C-97	TDS	416	A	mg/L	P322728	
	SM 2540 D-97	TSS	6	I	mg/L	P322712	
1883331	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P323008	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P322254	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.70		mg N/L	P322273	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P322290	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P322278	
1883336	SM 5310 B-00	Organic Carbon	6.2		mg C/L	P322211	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.032		mg P/L	P322171	

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: Blank

Collection Date/Time: 03/23/2017 11:35

Field ID: Blank

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1883327	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P322153	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P322656	
		Sulfate	0.20	U	mg SO4/L	P322660	
	SM 2120 B	Color (true)	2.5	U	PCU	P322163	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P322802	

Field ID: Blank

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1883327	SM 2540 C-97	TDS	15	U	mg/L	P322725	
	SM 2540 D-97	TSS	2	U	mg/L	P322709	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P323008	
1883332	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P322254	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P322273	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P322290	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P322278	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P322211	
1883337	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P322171	

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: P322152

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P322153

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P322656

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P322660

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P322945

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P322254

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322271

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322273

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322290

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322278

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P322171

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

Reference Method: SM 2120 B
Batch ID: P322163

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P322339

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P322802

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

Reference Method: SM 2320 B-97
Batch ID: P322915

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
 Batch ID: P322725

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
 Batch ID: P322728

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
 Batch ID: P322709

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
 Batch ID: P322712

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
 Batch ID: P323008

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
 Batch ID: P323076

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
 Batch ID: P322211

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: P322656

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

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P322660

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322660

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322945

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P322254

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322271

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322273

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322290

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322278

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P322171

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

Reference Method: SM 2320 B-97
Batch ID: P322802

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P322915

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P323008

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.4		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P323076

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P322211

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322656

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1883144	Chloride	101		P	90 - 110
1883323	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322660

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1883144	Sulfate	99.8		P	90 - 110
1883323	Sulfate	99.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322945

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1883693	Chloride	98.9		P	90 - 110
1883694	Chloride	98.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P322254

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1883328	Ammonia-N	101	101	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322271

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1883150	Kjeldahl Nitrogen	103	99.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322273

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1883329	Kjeldahl Nitrogen	102	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322290

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1883328	NO2NO3-N	104	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322278

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1883153	Total-P	104	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P322171

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1883333	O-Phosphate-P	97.6	98.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P323008

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1883034	Fluoride	98.8	99.6	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P323076

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1883324	Fluoride	97.3	98.5	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P322211

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1882938	Organic Carbon	101	99.6	P/P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P322152

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883144	Turbidity	3.08	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P322153

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883325	Turbidity	3.33	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322656

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883323	Chloride	0.287	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322660

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883323	Sulfate	2.15	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322945

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883693	Chloride	0.683	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P322254

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883328	Ammonia-N	0.140	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322271

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883150	Kjeldahl Nitrogen	2.93	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322273

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883329	Kjeldahl Nitrogen	0.343	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322290

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883328	NO2NO3-N	0.966	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322278

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883153	Total-P	2.82	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P322171

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883333	O-Phosphate-P	0.511	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P322163

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883147	Color (true)	6.84	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P322339

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883912	Color (true)	0.599	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P322802

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883034	Total Alkalinity	3.74	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P322915

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1884162	Total Alkalinity	0.905	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P322725

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1882333	TDS	4.71	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P322728

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883326	TDS	6.50	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P323008

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883034	Fluoride	0.506	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P323076

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883324	Fluoride	1.00	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P322211

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1882938	Organic Carbon	1.00	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: A75338
Included Lab Sample IDs: 1883323, 1883324, 1883325, 1883326, 1883327

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

Reference Method: SM 2120 B
Run ID: A75344
Included Lab Sample IDs: 1883325, 1883326, 1883327

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	99.1	P/P	85 - 115
Color (true)	100	100	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A75348
Included Lab Sample IDs: 1883333, 1883334, 1883335, 1883336, 1883337

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A75348

Included Lab Sample IDs: 1883333, 1883334, 1883335, 1883336, 1883337

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.3	P/P	90 - 110
O-Phosphate-P	98.4	98.9	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A75367

Included Lab Sample IDs: 1883328, 1883329, 1883330, 1883331, 1883332

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.6	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A75380

Included Lab Sample IDs: 1883328, 1883329, 1883330, 1883331, 1883332

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A75400

Included Lab Sample IDs: 1883328, 1883329, 1883330, 1883331, 1883332

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110
NO2NO3-N	100	98.5	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A75416

Included Lab Sample IDs: 1883323, 1883324

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.8	101	P/P	85 - 115

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A75427

Included Lab Sample IDs: 1883328, 1883329, 1883330, 1883331, 1883332

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	107	P/P	90 - 110
Kjeldahl Nitrogen	104	104	P/P	90 - 110
Kjeldahl Nitrogen	105	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A75444

Included Lab Sample IDs: 1883328, 1883330, 1883331

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A75486

Included Lab Sample IDs: 1883329, 1883332

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A75488

Included Lab Sample IDs: 1883323, 1883324, 1883325, 1883327

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	101	P/P	90 - 110
Chloride	99.8	102	P/P	90 - 110
Sulfate	100	96.7	P/P	90 - 110
Sulfate	99.6	100	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A75578

Included Lab Sample IDs: 1883323, 1883325, 1883326, 1883327

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A75625

Included Lab Sample IDs: 1883324

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	105	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A75640

Included Lab Sample IDs: 1883326

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

Reference Method: SM 4500 F-C-97

Run ID: A75665

Included Lab Sample IDs: 1883323, 1883325, 1883326, 1883327

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

Reference Method: SM 4500 F-C-97

Run ID: A75710

Included Lab Sample IDs: 1883324

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.1	96.0	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		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					3.08	
	Turbidity					3.33	
EPA 300.0 Rev. 2.1	Chloride	102	100	101		0.287	
	Chloride	97.5	98.9	98.5		0.683	
	Sulfate	99.7	99.4	99.8		2.15	
EPA 350.1 Rev. 2.0	Ammonia-N	103	101	101			0.140
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	103	99.9			2.93
	Kjeldahl Nitrogen	104	102	103			0.343
EPA 353.2 Rev. 2.0	NO2NO3-N	104	104	103			0.966
EPA 365.1 Rev. 2.0	Total-P	106	104	100			2.82
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.1	97.6	98.1			0.511
SM 2120 B	Color (true)					6.84	
	Color (true)					0.599	
SM 2320 B-97	Total Alkalinity	104				3.74	
	Total Alkalinity	104				0.905	
SM 2540 C-97	TDS					4.71	
	TDS					6.50	
SM 4500 F-C-97	Fluoride	97.4	98.8	99.6			0.506
	Fluoride	94.9	97.3	98.5			1.00
SM 5310 B-00	Organic Carbon	99.2	101	99.6			1.00

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1883323, 1883324, 1883325, 1883326, 1883327
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1883323, 1883324, 1883325, 1883326, 1883327
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1883323, 1883324, 1883325, 1883326, 1883327
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1883328, 1883329, 1883330, 1883331, 1883332
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1883328, 1883329, 1883330, 1883331, 1883332
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1883328, 1883329, 1883330, 1883331, 1883332
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1883328, 1883329, 1883330, 1883331, 1883332
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1883333, 1883334, 1883335, 1883336, 1883337
SM 2120 B / E31780	True Color measured at 450 nm	1883323, 1883324, 1883325, 1883326, 1883327
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1883323, 1883324, 1883325, 1883326, 1883327
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1883323, 1883324, 1883325, 1883326, 1883327
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1883323, 1883324, 1883325, 1883326, 1883327
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1883323, 1883324, 1883325, 1883326, 1883327
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1883328, 1883329, 1883330, 1883331, 1883332

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	03/24/2017			03/24/2017 15:35	Sima Feizi	1883323, 1883324, 1883325, 1883326, 1883327
EPA 300.0 Rev. 2.1	03/24/2017			03/31/2017	Ping Hua	1883323, 1883324, 1883325, 1883327
	03/24/2017			04/07/2017	Ping Hua	1883326
EPA 350.1 Rev. 2.0	03/24/2017			03/27/2017	Julie Michelle Frank	1883328, 1883329, 1883330, 1883331, 1883332
EPA 351.2 Rev. 2.0	03/24/2017	03/28/2017	Adrian Shelby	03/29/2017	Joseph Suarez	1883328, 1883329, 1883330, 1883331, 1883332
EPA 353.2 Rev. 2.0	03/24/2017			03/28/2017	Beverly Y. Sanders	1883328, 1883329, 1883330, 1883331, 1883332
EPA 365.1 Rev. 2.0	03/24/2017	03/28/2017	Adrian Shelby	03/29/2017	Christopher Armour	1883328, 1883330, 1883331
	03/24/2017	03/28/2017	Adrian Shelby	03/30/2017	Virginia P. Brown	1883329, 1883332
EPA 365.1 Rev. 2.0 dissolved	03/24/2017			03/24/2017 16:37	Anthony C. Onicha	1883333
	03/24/2017			03/24/2017 17:01	Anthony C. Onicha	1883334
	03/24/2017			03/24/2017 17:02	Anthony C. Onicha	1883335
	03/24/2017			03/24/2017 17:03	Anthony C. Onicha	1883336, 1883337
SM 2120 B	03/24/2017			03/24/2017 16:40	Julia Storbeck	1883327
	03/24/2017			03/24/2017 16:43	Julia Storbeck	1883325, 1883326
	03/24/2017			03/28/2017 17:16	Julie Michelle Frank	1883323
	03/24/2017			03/28/2017 17:17	Julie Michelle Frank	1883324
SM 2320 B-97	03/24/2017			04/05/2017	Dale L. Simmons	1883323, 1883324, 1883325, 1883326, 1883327
SM 2540 C-97	03/24/2017			03/28/2017	Yijie Li	1883323, 1883324, 1883325, 1883326, 1883327
SM 2540 D-97	03/24/2017			03/28/2017	Yijie Li	1883323, 1883324, 1883325, 1883326, 1883327
SM 4500 F-C-97	03/24/2017			04/07/2017	Dale L. Simmons	1883323, 1883325, 1883326, 1883327
	03/24/2017			04/10/2017	Dale L. Simmons	1883324
SM 5310 B-00	03/24/2017			03/25/2017	Julie Michelle Frank	1883328, 1883329, 1883330, 1883331, 1883332