

Chemical Analysis Report

SW-DIST-2017-03-02-02

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

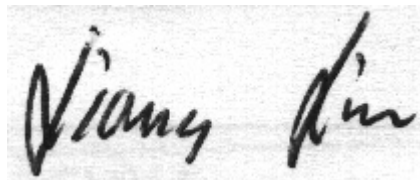
Event Description: **SMP RUN 15**
Request ID: **RQ-2017-02-27-22**
Customer: **SW-DIST**
Project ID: **SMP**

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
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 30-MAR-2017 11:25

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored background.

NON-CONFORMANCE REPORT INCLUDED

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: SKINNER

Collection Date/Time: 03/01/2017 10:10

Field ID: G5SW0043

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1877352	EPA 180.1 Rev. 2.0	Turbidity	0.60		NTU	P320871	
	EPA 300.0 Rev. 2.1	Chloride	2.5		mg Cl/L	P321677	
		Sulfate	0.20	U	mg SO4/L	P321680	
	SM 2120 B	Color (true)	18	A	PCU	P320878	
	SM 2320 B-97	Total Alkalinity	60		mg CaCO3/L	P321423	
	SM 2540 C-97	TDS	74		mg/L	P321772	
	SM 2540 D-97	TSS	2	U	mg/L	P321558	
	SM 4500 F-C-97	Fluoride	0.097	I	mg F/L	P321427	
1877356	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P321292	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.76		mg N/L	P320985	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P321352	
	EPA 365.1 Rev. 2.0	Total-P	0.054		mg P/L	P321069	
	SM 5310 B-00	Organic Carbon	6.2		mg C/L	P320953	
1877360	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.022		mg P/L	P320860	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: TOOKE

Collection Date/Time: 03/01/2017 11:10

Field ID: G5SW0121

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1877353	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P320871	
	EPA 300.0 Rev. 2.1	Chloride	8.2		mg Cl/L	P321677	
		Sulfate	4.9		mg SO4/L	P321680	
	SM 2120 B	Color (true)	13		PCU	P320878	
	SM 2320 B-97	Total Alkalinity	7.0		mg CaCO3/L	P321423	
	SM 2540 C-97	TDS	44		mg/L	P321772	
	SM 2540 D-97	TSS	3	I	mg/L	P321558	
	SM 4500 F-C-97	Fluoride	0.047	I	mg F/L	P321427	
1877357	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P321292	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.91		mg N/L	P320986	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P321352	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P321069	
	SM 5310 B-00	Organic Carbon	8.6		mg C/L	P320953	
1877361	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P320860	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: NEFF

Collection Date/Time: 03/01/2017 12:20

Field ID: G5SW0087

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1877354	EPA 180.1 Rev. 2.0	Turbidity	30		NTU	P320871	

Field ID: G5SW0087

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1877354	EPA 300.0 Rev. 2.1	Chloride	14	A	mg Cl/L	P321616	
		Sulfate	3.8	A	mg SO4/L	P321620	
	SM 2120 B	Color (true)	130		PCU	P320873	
	SM 2320 B-97	Total Alkalinity	9.8		mg CaCO3/L	P321423	
	SM 2540 C-97	TDS	73		mg/L	P321772	
	SM 2540 D-97	TSS	41		mg/L	P321558	
	SM 4500 F-C-97	Fluoride	0.082	I	mg F/L	P321427	
1877358	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P321292	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P320986	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P321352	
	EPA 365.1 Rev. 2.0	Total-P	0.26		mg P/L	P321069	
	SM 5310 B-00	Organic Carbon	21		mg C/L	P320953	
1877362	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P320860	

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: IOLA-WEST

Collection Date/Time: 03/01/2017 13:10

Field ID: G5SW0018

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1877355	EPA 180.1 Rev. 2.0	Turbidity	0.50		NTU	P320871	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P321677	
		Sulfate	6.2		mg SO4/L	P321680	
	SM 2120 B	Color (true)	7.4		PCU	P320878	
	SM 2320 B-97	Total Alkalinity	35		mg CaCO3/L	P321423	
	SM 2540 C-97	TDS	87		mg/L	P321772	
	SM 2540 D-97	TSS	2	U	mg/L	P321558	
1877359	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P321427	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P321292	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P320986	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P321352	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P321069	
	SM 5310 B-00	Organic Carbon	5.4		mg C/L	P320953	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Non-Conformance Report

NCR ID: 6282

Event(s)

SW-DIST-2017-03-02-02

Job(s)

TLH-2017-03-02-84

Sample(s)

1877363

Test(s)

W-PO4-F

NCR Type: SHIPPING/RECEIVING

NCR Category: Receiving

Observation: Sample ID:1877363 W-PO4-F Location:IOLA-WEST collected at 13:10 was not received.

Non-Conformance Report

NCR ID: 6282

Event(s)

Job(s)

Sample(s)

Test(s)

Resolution: Customer (Judy Ashton) was notified by email and phone.

Authorised by/Date: Ramsey K. White 3/7/2017

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry Colin Wright (850) 245-8085
Biology Cheryl Swanson (850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P320871

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P321616

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P321620

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P321677

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P321680

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P321292

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P320985

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P320986

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321352

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321069

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P320860

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

Reference Method: SM 2120 B
Batch ID: P320873

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P320878

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P321423

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

Reference Method: SM 2540 C-97
Batch ID: P321772

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P321558

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P321427

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P320953

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: P321616

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321620

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: P321677

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321680

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321292

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P320985

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P320986

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: P320986

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321352

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: P321069

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P320860

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: P321423

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

Reference Method: SM 4500 F-C-97
Batch ID: P321427

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.0		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P320953

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321616

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1877354	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321620

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: P321620

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1877354	Sulfate	99.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321677

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1877352	Chloride	104		P	90 - 110
1877490	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321680

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1877352	Sulfate	101		P	90 - 110
1877490	Sulfate	92.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321292

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1877309	Ammonia-N	103	99.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P320985

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1877240	Kjeldahl Nitrogen	105	99.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P320986

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1877357	Kjeldahl Nitrogen	98.4	99.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321352

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1877317	NO2NO3-N	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321069

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1877356	Total-P	101	99.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P320860

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1877312	O-Phosphate-P	93.3	96.5	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P321427

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1877670	Fluoride	100	100	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P320953

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1877214	Organic Carbon	96.6	98.3	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P320871

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1877316	Turbidity	4.15	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321616

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1877354	Chloride	0.416	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1877354	Sulfate	2.88	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321677

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1877490	Chloride	1.24	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321292

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1877309	Ammonia-N	2.60	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P320985

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P320985

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1877240	Kjeldahl Nitrogen	3.60	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P320986

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1877357	Kjeldahl Nitrogen	0.557	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321352

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1877317	NO2NO3-N	0.957	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321069

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1877356	Total-P	0.956	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P320860

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1877312	O-Phosphate-P	3.37	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P320873

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1876711	Color (true)	4.51	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P320878

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1877352	Color (true)	9.61	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P321423

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1877670	Total Alkalinity	0.0681	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P321772

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1877316	TDS	1.98	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P321427

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1877670	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P320953

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1877214	Organic Carbon	0.985	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: A74855
Included Lab Sample IDs: 1877360, 1877361, 1877362

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.4	96.5	P/P	90 - 110
O-Phosphate-P	98.4	98.4	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A74856
Included Lab Sample IDs: 1877352, 1877353, 1877354, 1877355

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

Reference Method: SM 2120 B
Run ID: A74857
Included Lab Sample IDs: 1877352, 1877353, 1877354, 1877355

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	94.5	95.2	P/P	85 - 115
Color (true)	94.8	95.0	P/P	85 - 115

Reference Method: SM 5310 B-00
Run ID: A74891
Included Lab Sample IDs: 1877356, 1877357, 1877358, 1877359

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

Reference Method: SM 5310 B-00

Run ID: A74891

Included Lab Sample IDs: 1877356, 1877357, 1877358, 1877359

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A74948

Included Lab Sample IDs: 1877356, 1877357, 1877358, 1877359

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	93.3	97.4	P/P	90 - 110
Kjeldahl Nitrogen	97.9	95.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A74987

Included Lab Sample IDs: 1877356, 1877357, 1877359

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.8	98.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A74996

Included Lab Sample IDs: 1877358

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.6	97.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A74999

Included Lab Sample IDs: 1877356, 1877357, 1877358, 1877359

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A75018

Included Lab Sample IDs: 1877356, 1877357, 1877358, 1877359

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	102	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A75050

Included Lab Sample IDs: 1877352, 1877353, 1877354, 1877355

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	104	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A75050

Included Lab Sample IDs: 1877352, 1877353, 1877354, 1877355

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	103	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A75123

Included Lab Sample IDs: 1877352, 1877353, 1877354, 1877355

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	104	P/P	90 - 110
Chloride	104	103	P/P	90 - 110
Chloride	106	101	P/P	90 - 110
Sulfate	100	102	P/P	90 - 110
Sulfate	102	100	P/P	90 - 110
Sulfate	108	99.8	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	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				4.15	
EPA 300.0 Rev. 2.1	Chloride	102	102		0.416	
	Chloride	104	100	104	1.24	
	Sulfate	99.7	99.7		2.88	
	Sulfate	102	92.9	101		
EPA 350.1 Rev. 2.0	Ammonia-N	100	103	99.3		2.60
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	105	99.1		3.60
	Kjeldahl Nitrogen	107	98.4	99.4		0.557
EPA 353.2 Rev. 2.0	NO2NO3-N	105	104	105		0.957
EPA 365.1 Rev. 2.0	Total-P	103	101	99.7		0.956
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.1	93.3	96.5		3.37
SM 2120 B	Color (true)				4.51	
	Color (true)				9.61	
SM 2320 B-97	Total Alkalinity	104			0.0681	
SM 2540 C-97	TDS				1.98	
SM 4500 F-C-97	Fluoride	99.0	100	100		0.0
SM 5310 B-00	Organic Carbon	102	96.6	98.3		0.985

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1877352, 1877353, 1877354, 1877355
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1877352, 1877353, 1877354, 1877355
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1877352, 1877353, 1877354, 1877355

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1877356, 1877357, 1877358, 1877359
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1877356, 1877357, 1877358, 1877359
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1877356, 1877357, 1877358, 1877359
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1877356, 1877357, 1877358, 1877359
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1877360, 1877361, 1877362
SM 2120 B / E31780	True Color measured at 450 nm	1877352, 1877353, 1877354, 1877355
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1877352, 1877353, 1877354, 1877355
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1877352, 1877353, 1877354, 1877355
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1877352, 1877353, 1877354, 1877355
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1877352, 1877353, 1877354, 1877355
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1877356, 1877357, 1877358, 1877359

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	03/02/2017			03/02/2017 15:50	Sima Feizi	1877352, 1877353, 1877354, 1877355
EPA 300.0 Rev. 2.1	03/02/2017			03/14/2017	Elisa J Lutz	1877354
	03/02/2017			03/16/2017	Elisa J Lutz	1877352, 1877353, 1877355
EPA 350.1 Rev. 2.0	03/02/2017			03/09/2017	Sofia Elnemr	1877356, 1877357, 1877358, 1877359
EPA 351.2 Rev. 2.0	03/02/2017	03/06/2017	Adrian Shelby	03/07/2017	Joseph Suarez	1877356, 1877357, 1877358, 1877359
EPA 353.2 Rev. 2.0	03/02/2017			03/10/2017	Beverly Y. Sanders	1877356, 1877357, 1877358, 1877359
EPA 365.1 Rev. 2.0	03/02/2017	03/07/2017	Adrian Shelby	03/08/2017	Lipi Saha	1877358
	03/02/2017	03/07/2017	Adrian Shelby	03/09/2017	Lipi Saha	1877356, 1877357, 1877359
EPA 365.1 Rev. 2.0 dissolved	03/02/2017			03/02/2017 15:28	Julia Storbeck	1877360
	03/02/2017			03/02/2017 15:33	Julia Storbeck	1877361
	03/02/2017			03/02/2017 15:34	Julia Storbeck	1877362
SM 2120 B	03/02/2017			03/02/2017 16:56	Julie Michelle Frank	1877354
	03/02/2017			03/02/2017 17:43	Julie Michelle Frank	1877352
	03/02/2017			03/02/2017 17:44	Julie Michelle Frank	1877353
	03/02/2017			03/02/2017 17:46	Julie Michelle Frank	1877355
SM 2320 B-97	03/02/2017			03/11/2017	Dale L. Simmons	1877352, 1877353, 1877354, 1877355
SM 2540 C-97	03/02/2017			03/07/2017	Sima Feizi	1877352, 1877353, 1877354, 1877355
SM 2540 D-97	03/02/2017			03/07/2017	Sima Feizi	1877352, 1877353, 1877354, 1877355
SM 4500 F-C-97	03/02/2017			03/11/2017	Dale L. Simmons	1877352, 1877353, 1877354, 1877355
SM 5310 B-00	03/02/2017			03/03/2017	Julie Michelle Frank	1877356, 1877357, 1877358, 1877359