

Chemical Analysis Report

SO-DIST-2017-05-17-01

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

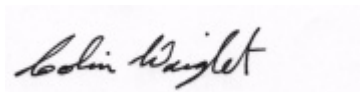
Event Description: **SMP: Wilderness WW**
Request ID: **RQ-2017-05-15-05**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901
Attn: Ben Paswater

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Colin Wright, Program Administrator

Date Certified: 12-JUN-2017 11:43



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: ENRE11 AT DADS BAY

Collection Date/Time: 05/16/2017 12:05

Field ID: G5SD051617-1

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1899736	EPA 180.1 Rev. 2.0	Turbidity	0.65		NTU	P325444	
	SM 2320 B-97	Total Alkalinity	179		mg CaCO3/L	P325701	
	SM 2540 D-97	TSS	3	U	mg/L	P325962	
	SM 4500 F-C-97	Fluoride	0.72		mg F/L	P325704	
1899741	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P325660	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P325541	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P325488	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P325566	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P326160	
1899746	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P325448	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: ENRE11 AT ALLIGATOR BAY

Collection Date/Time: 05/16/2017 12:55

Field ID: G5SD051617-2

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1899737	EPA 180.1 Rev. 2.0	Turbidity	0.95		NTU	P325444	
	SM 2320 B-97	Total Alkalinity	180		mg CaCO3/L	P325701	
	SM 2540 D-97	TSS	3	U	mg/L	P325962	
	SM 4500 F-C-97	Fluoride	0.76		mg F/L	P325704	
1899742	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P325660	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.99		mg N/L	P325541	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P325488	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P325566	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P326160	
1899747	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P325448	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: ENRE11 AT CANNON BAY

Collection Date/Time: 05/16/2017 13:15

Field ID: G5SD051617-3

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1899738	EPA 180.1 Rev. 2.0	Turbidity	2.9	A	NTU	P325444	
	SM 2320 B-97	Total Alkalinity	173		mg CaCO3/L	P325737	
	SM 2540 D-97	TSS	4	I	mg/L	P325962	
	SM 4500 F-C-97	Fluoride	0.91		mg F/L	P325738	MS, RPD
1899743	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P325660	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P325541	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P325488	
	EPA 365.1 Rev. 2.0	Total-P	0.041		mg P/L	P325566	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P326160	

Field ID: G5SD051617-3

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1899748	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P325448	

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: ENRE11 AT CHEVELIER BAY

Collection Date/Time: 05/16/2017 13:30

Field ID: G5SD051617-4

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1899739	EPA 180.1 Rev. 2.0	Turbidity	8.7		NTU	P325444	
	SM 2320 B-97	Total Alkalinity	151		mg CaCO3/L	P325737	
	SM 2540 D-97	TSS	8	I	mg/L	P325962	
	SM 4500 F-C-97	Fluoride	0.93		mg F/L	P325738	MS, RPD
1899744	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P325660	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.78		mg N/L	P325541	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	U	mg N/L	P325490	
	EPA 365.1 Rev. 2.0	Total-P	0.035		mg P/L	P325571	MS
	SM 5310 B-00	Organic Carbon	8.5		mg C/L	P326160	
1899749	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P325448	

Ref. Method and Comment:

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

EPA 353.2 Rev. 2.0: NO2NO3-N: The MDL was elevated due to sample matrix interference.

Sample Location: ENER11 AT HUSTON

Collection Date/Time: 05/16/2017 13:45

Field ID: G5SD051617-6

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1899740	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P325444	
	SM 2320 B-97	Total Alkalinity	150		mg CaCO3/L	P325737	
	SM 2540 D-97	TSS	4	IA	mg/L	P325962	
	SM 4500 F-C-97	Fluoride	0.92		mg F/L	P325738	MS, RPD
1899745	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	Y	mg N/L	P325660	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.72	Y	mg N/L	P325541	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	UY	mg N/L	P325820	
	EPA 365.1 Rev. 2.0	Total-P	0.027	YJ	mg P/L	P325571	MS
	SM 5310 B-00	Organic Carbon	7.2	Y	mg C/L	P326161	
1899750	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P325448	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 351.2 Rev. 2.0: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 353.2 Rev. 2.0: NO2NO3-N: The MDL was elevated due to sample matrix interference. The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 365.1 Rev. 2.0: Total-P: The sample was received unpreserved: pH > 2. Sample preserved in laboratory. Refer to the narrative for an explanation of QC Codes.

SM 5310 B-00: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

Non-Conformance Report

Non-Conformance Report

NCR ID: 6435

Event(s)

SO-DIST-2017-05-17-01

Job(s)

TLH-2017-05-17-10

Sample(s)

1899745

Test(s)

NCR Type: SHIPPING/RECEIVING

NCR Category: Preservation Not Intact

Observation: Sample(s) not preserved to pH<2.

Resolution: Sample preserved in lab on 4-17-17 at 11:57 with Sulfuric Acid

Authorized by/Date: Ramsey K. White 5/23/2017

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: P325444

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P325660

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P325541

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

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P325488

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

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P325490

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

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P325820

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325566

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325571

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325448

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

Reference Method: SM 2320 B-97
Batch ID: P325701

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

Reference Method: SM 2320 B-97
Batch ID: P325737

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

Reference Method: SM 2540 D-97
Batch ID: P325962

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P325704

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P325738

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P326160

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
 Batch ID: P326161

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P325660

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P325541

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P325488

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P325490

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	94.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P325820

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

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P325566

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

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P325571

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P325448

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
-----------	---------	---------	-----------	----------------

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325448

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

Reference Method: SM 2320 B-97
Batch ID: P325701

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

Reference Method: SM 2320 B-97
Batch ID: P325737

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

Reference Method: SM 4500 F-C-97
Batch ID: P325704

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.1		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P325738

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.4		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P326160

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.2		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P326161

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.7		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P325660

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1899744	Ammonia-N	104	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325541

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
---------------	-----------	---------	---------	-----------	----------------

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325541

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1899688	Kjeldahl Nitrogen	101	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325488

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1899687	NO2NO3-N	103	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325490

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898672	NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325820

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900748	NO2NO3-N	106	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325566

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1899742	Total-P	96.8	96.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325571

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1899745	Total-P	89.6	91.8	F/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325448

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1899746	O-Phosphate-P	106	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P325738

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900022	Fluoride	100	110	P/F	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P326160

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1899517	Organic Carbon	90.0	90.0	P/P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P326161

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900003	Organic Carbon	93.8	95.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P325444

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899738	Turbidity	0.697	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P325660

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899744	Ammonia-N	0.0426	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325541

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899688	Kjeldahl Nitrogen	1.51	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325488

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899687	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325490

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898672	NO2NO3-N	0.990	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325820

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900748	NO2NO3-N	0.377	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325566

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899742	Total-P	0.285	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325571

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899745	Total-P	2.33	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325448

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899746	O-Phosphate-P	1.43	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P325701

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899343	Total Alkalinity	0.355	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P325737

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900022	Total Alkalinity	0.0422	Sample	P	0 - 4.8

Reference Method: SM 4500 F-C-97
Batch ID: P325704

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899343	Fluoride	1.48	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P325738

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900022	Fluoride	7.63	Spike	F	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P326160

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899517	Organic Carbon	0.0	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P326161

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900003	Organic Carbon	1.18	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: A76492
Included Lab Sample IDs: 1899736, 1899737, 1899738, 1899739, 1899740

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	102	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A76494
Included Lab Sample IDs: 1899746, 1899747, 1899748, 1899749, 1899750

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	102	103	P/P	90 - 110
O-Phosphate-P	99.3	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A76509
Included Lab Sample IDs: 1899741, 1899742, 1899743, 1899744

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.5	100	P/P	90 - 110
NO2NO3-N	99.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A76587
Included Lab Sample IDs: 1899741, 1899742, 1899743, 1899744, 1899745

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	96.5	98.5	P/P	90 - 110
Total-P	98.5	98.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A76600
Included Lab Sample IDs: 1899741, 1899742, 1899743, 1899744, 1899745

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A76617

Included Lab Sample IDs: 1899736, 1899737

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	105	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A76617

Included Lab Sample IDs: 1899736, 1899737

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A76624

Included Lab Sample IDs: 1899741, 1899742, 1899743, 1899744, 1899745

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	93.7	94.0	P/P	90 - 110
Kjeldahl Nitrogen	94.0	95.8	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A76633

Included Lab Sample IDs: 1899738, 1899739, 1899740

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

Reference Method: SM 4500 F-C-97

Run ID: A76633

Included Lab Sample IDs: 1899738, 1899739, 1899740

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.0	99.1	P/P	90 - 110
Fluoride	99.1	98.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A76667

Included Lab Sample IDs: 1899745

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

Reference Method: SM 5310 B-00

Run ID: A76825

Included Lab Sample IDs: 1899741, 1899742, 1899743, 1899744

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.4	97.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A76826
Included Lab Sample IDs: 1899745

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.2	97.0	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	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				0.697	
EPA 350.1 Rev. 2.0	Ammonia-N	98.4	104 104			0.0426
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	101 103			1.51
EPA 353.2 Rev. 2.0	NO2NO3-N	102	103 103			0.0
	NO2NO3-N	94.0	100 102			0.990
	NO2NO3-N	102	106 105			0.377
EPA 365.1 Rev. 2.0	Total-P	100	96.8 96.5			0.285
	Total-P	104	89.6 91.8			2.33
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	106	106 104			1.43
SM 2320 B-97	Total Alkalinity	104			0.355	
	Total Alkalinity	103			0.0422	
SM 4500 F-C-97	Fluoride	99.1				1.48
	Fluoride	96.4	100 110			7.63
SM 5310 B-00	Organic Carbon	94.2	90.0 90.0			0.0
	Organic Carbon	94.7	93.8 95.1			1.18

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1899736, 1899737, 1899738, 1899739, 1899740
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1899741, 1899742, 1899743, 1899744, 1899745
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1899741, 1899742, 1899743, 1899744, 1899745
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1899741, 1899742, 1899743, 1899744, 1899745
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1899741, 1899742, 1899743, 1899744, 1899745
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1899746, 1899747, 1899748, 1899749, 1899750
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1899736, 1899737, 1899738, 1899739, 1899740
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1899736, 1899737, 1899738, 1899739, 1899740
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1899736, 1899737, 1899738, 1899739, 1899740
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1899741, 1899742, 1899743, 1899744, 1899745

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	05/17/2017			05/17/2017 15:07	Sima Feizi	1899736, 1899737, 1899738, 1899739, 1899740
EPA 350.1 Rev. 2.0	05/17/2017			05/22/2017	Julia Storbeck	1899741, 1899742, 1899743, 1899744, 1899745
EPA 351.2 Rev. 2.0	05/17/2017	05/19/2017	Adrian Shelby	05/23/2017	Joseph Suarez	1899741, 1899742, 1899743, 1899744, 1899745
EPA 353.2 Rev. 2.0	05/17/2017			05/18/2017	Beverly Y. Sanders	1899741, 1899742, 1899743, 1899744
	05/17/2017			05/25/2017	Beverly Y. Sanders	1899745
EPA 365.1 Rev. 2.0	05/17/2017	05/19/2017	Vijayalakshmi Reddy	05/22/2017	Lipi Saha	1899741, 1899742, 1899743, 1899744, 1899745
EPA 365.1 Rev. 2.0 dissolved	05/17/2017			05/17/2017 18:44	Lipi Saha	1899746
	05/17/2017			05/17/2017 18:56	Lipi Saha	1899747
	05/17/2017			05/17/2017 18:57	Lipi Saha	1899748
	05/17/2017			05/17/2017 18:58	Lipi Saha	1899749
	05/17/2017			05/17/2017 18:59	Lipi Saha	1899750
SM 2320 B-97	05/17/2017			05/23/2017	Dale L. Simmons	1899736, 1899737, 1899738, 1899739, 1899740
SM 2540 D-97	05/17/2017			05/19/2017	Yijie Li	1899736, 1899737, 1899738, 1899739, 1899740
SM 4500 F-C-97	05/17/2017			05/23/2017	Dale L. Simmons	1899736, 1899737, 1899738, 1899739, 1899740
SM 5310 B-00	05/17/2017			06/01/2017	Julie Michelle Frank	1899745
	05/17/2017			06/02/2017	Julie Michelle Frank	1899741, 1899742, 1899743, 1899744