

Chemical Analysis Report

SO-DIST-2019-06-14-01

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

Event Description: **SMP: GOM**
Request ID: **RQ-2019-05-27-10**
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 33901-3381
Attn: Maryann Dugan

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 03-JUL-2019 18:14



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 by the Florida Department of Health Environmental Laboratory Certification Program 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: ENRE 8 Off Tripod Key

Collection Date/Time: 06/13/2019 10:40

Field ID: G1SD0054

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2095620	EPA 180.1 Rev. 2.0	Turbidity	6.8	A	NTU	P365693	
	EPA 300.0	Bromide	73		mg Br/L	P365919	
	SM 2320 B-97	Total Alkalinity	134		mg CaCO3/L	P366013	
	SM 2540 D-97	TSS	8	I	mg/L	P366206	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P366015	
2095626	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P365956	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.60		mg N/L	P366187	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P365943	
	EPA 365.1 Rev. 2.0	Total-P	0.041		mg P/L	P365801	
	SM 5310 B-00	Organic Carbon	4.6		mg C/L	P365804	
2095632	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.013		mg P/L	P365698	

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: ENRE 8 Off Shell Key

Collection Date/Time: 06/13/2019 10:50

Field ID: G1SD0081

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2095621	EPA 180.1 Rev. 2.0	Turbidity	5.8		NTU	P365693	
	EPA 300.0	Bromide	72		mg Br/L	P365919	
	SM 2320 B-97	Total Alkalinity	139		mg CaCO3/L	P366013	
	SM 2540 D-97	TSS	7	I	mg/L	P366206	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P366015	
2095627	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P365956	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.54		mg N/L	P366187	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P365943	
	EPA 365.1 Rev. 2.0	Total-P	0.050		mg P/L	P365801	
	SM 5310 B-00	Organic Carbon	5.4		mg C/L	P365804	
2095633	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.023		mg P/L	P365702	

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: ENRE 6 Site 2

Collection Date/Time: 06/13/2019 11:05

Field ID: G1SD0077

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2095638	EPA 180.1 Rev. 2.0	Turbidity	5.6		NTU	P365693	
	EPA 300.0	Bromide	76		mg Br/L	P365919	
	SM 2320 B-97	Total Alkalinity	135		mg CaCO3/L	P366013	
	SM 2540 D-97	TSS	9	I	mg/L	P366206	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P366015	
2095640	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P366167	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.53		mg N/L	P366310	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P365944	
	EPA 365.1 Rev. 2.0	Total-P	0.036		mg P/L	P365915	MS
	SM 5310 B-00	Organic Carbon	4.6		mg C/L	P365804	
2095642	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P365698	

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: ENRE 6

Collection Date/Time: 06/13/2019 11:20

Field ID: G1SD0065

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2095639	EPA 180.1 Rev. 2.0	Turbidity	4.6		NTU	P365693	
	EPA 300.0	Bromide	75		mg Br/L	P365919	
	SM 2320 B-97	Total Alkalinity	134		mg CaCO3/L	P366013	
	SM 2540 D-97	TSS	7	I	mg/L	P366206	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P366015	
2095641	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P366167	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.50		mg N/L	P366310	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P365944	
	EPA 365.1 Rev. 2.0	Total-P	0.038		mg P/L	P365915	MS
	SM 5310 B-00	Organic Carbon	4.7		mg C/L	P365804	
2095643	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.009	I	mg P/L	P365698	

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: ENRE 2 Big Marco Pass

Collection Date/Time: 06/13/2019 12:10

Field ID: G1SD0078

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2095622	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P365693	
	EPA 300.0	Bromide	75		mg Br/L	P365919	
	SM 2320 B-97	Total Alkalinity	127		mg CaCO3/L	P366013	
	SM 2540 D-97	TSS	3	U	mg/L	P366206	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P366015	
2095628	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P365956	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.45		mg N/L	P366187	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P365943	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P365801	
	SM 5310 B-00	Organic Carbon	3.5		mg C/L	P365804	
2095634	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.014		mg P/L	P365698	

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: ENRE 2 North Site

Collection Date/Time: 06/13/2019 12:30

Field ID: G1SD0079

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2095623	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P365693	
	EPA 300.0	Bromide	77		mg Br/L	P365919	
	SM 2320 B-97	Total Alkalinity	128	A	mg CaCO3/L	P366013	
	SM 2540 D-97	TSS	3	U	mg/L	P366206	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P366015	
2095629	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P366167	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.42		mg N/L	P366310	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P365944	
	EPA 365.1 Rev. 2.0	Total-P	0.027		mg P/L	P365801	
	SM 5310 B-00	Organic Carbon	3.7		mg C/L	P365804	
2095635	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.011		mg P/L	P365698	

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: ENRE 2

Collection Date/Time: 06/13/2019 12:40

Field ID: G1SD0066

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2095624	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P365693	
	EPA 300.0	Bromide	75		mg Br/L	P365919	
	SM 2320 B-97	Total Alkalinity	127		mg CaCO3/L	P366013	
	SM 2540 D-97	TSS	5	I	mg/L	P366206	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P366015	
2095630	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P366167	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.42		mg N/L	P366310	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P365944	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P365801	
	SM 5310 B-00	Organic Carbon	3.4		mg C/L	P365804	
2095636	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.009	I	mg P/L	P365698	

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: ENRE 2 Site 2

Collection Date/Time: 06/13/2019 12:55

Field ID: G1SD0080

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2095625	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P365693	
	EPA 300.0	Bromide	75		mg Br/L	P365919	
	SM 2320 B-97	Total Alkalinity	127		mg CaCO3/L	P366013	
	SM 2540 D-97	TSS	5	IA	mg/L	P366206	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P366015	
2095631	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P366167	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.35	I	mg N/L	P366310	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P365944	
	EPA 365.1 Rev. 2.0	Total-P	0.029	J	mg P/L	P365915	MS
	SM 5310 B-00	Organic Carbon	3.4		mg C/L	P365804	
2095637	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.011		mg P/L	P365698	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0: Total-P: Refer to the narrative for an explanation of QC Codes.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P365693

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0
Batch ID: P365919

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365956

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366167

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366187

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366310

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365943

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365944

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P365801

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
Batch ID: P365915

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P365698

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P365702

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

Reference Method: SM 2320 B-97
Batch ID: P366013

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

Reference Method: SM 2540 D-97
Batch ID: P366206

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P366015

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P365804

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0
Batch ID: P365919

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365956

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366167

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366187

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366310

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365943

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365944

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: P365801

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P365915

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P365698

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P365702

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

Reference Method: SM 2320 B-97
Batch ID: P366013

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P366015

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P365804

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.3		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0
Batch ID: P365919

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2095753	Bromide	96.4	96.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365956

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2093106	Ammonia-N	107	109	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366167

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2095629	Ammonia-N	110	109	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366187

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2094728	Kjeldahl Nitrogen	103	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366310

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2095629	Kjeldahl Nitrogen	99.0	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365943

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2094727	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365944

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2095629	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P365801

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2094811	Total-P	92.5	90.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P365915

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2095631	Total-P	89.6	92.1	F/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P365698

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2095540	O-Phosphate-P	93.6	94.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P365702

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2095633	O-Phosphate-P	95.4	95.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P366015

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2095623	Fluoride	92.6	93.3	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P365804

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2095641	Organic Carbon	95.5	92.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P365693

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2095620	Turbidity	3.36	Sample	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P365919

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2095753	Bromide	0.0371	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365956

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2093106	Ammonia-N	1.40	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366167

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2095629	Ammonia-N	0.772	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366187

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2094728	Kjeldahl Nitrogen	0.194	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366310

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2095629	Kjeldahl Nitrogen	2.87	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365943

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2094727	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365944

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2095629	NO2NO3-N	0.0	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P365801

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2094811	Total-P	1.81	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P365915

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2095631	Total-P	2.64	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P365698

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2095540	O-Phosphate-P	0.700	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P365702

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2095633	O-Phosphate-P	0.338	Spike	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P366013

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2095623	Total Alkalinity	0.00559	Sample	P	0 - 2.8

Reference Method: SM 4500 F-C-97
 Batch ID: P366015

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2095623	Fluoride	0.473	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
 Batch ID: P365804

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2095641	Organic Carbon	2.55	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: A92117

Included Lab Sample IDs: 2095620, 2095621, 2095622, 2095623, 2095624, 2095625, 2095638, 2095639

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	98.5	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A92120

Included Lab Sample IDs: 2095632, 2095633, 2095634, 2095635, 2095636, 2095637, 2095642, 2095643

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.7	96.7	P/P	90 - 110
O-Phosphate-P	96.7	97.1	P/P	90 - 110
O-Phosphate-P	97.1	96.7	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A92166

Included Lab Sample IDs: 2095626, 2095627, 2095628, 2095629, 2095630, 2095631, 2095640, 2095641

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.7	95.8	P/P	90 - 110
Organic Carbon	95.8	96.8	P/P	90 - 110

Reference Method: EPA 300.0

Run ID: A92189

Included Lab Sample IDs: 2095620, 2095621, 2095622, 2095623, 2095624, 2095625, 2095638, 2095639

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	99.0	101	P/P	90 - 110
Bromide	99.5	99.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A92205

Included Lab Sample IDs: 2095626, 2095627, 2095628, 2095629, 2095630, 2095631, 2095640, 2095641

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110
NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A92212

Included Lab Sample IDs: 2095626, 2095627, 2095628

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	107	109	P/P	90 - 110
Ammonia-N	108	107	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A92230

Included Lab Sample IDs: 2095620, 2095621, 2095622, 2095623, 2095624, 2095625, 2095638, 2095639

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A92230

Included Lab Sample IDs: 2095620, 2095621, 2095622, 2095623, 2095624, 2095625, 2095638, 2095639

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A92231

Included Lab Sample IDs: 2095626, 2095627, 2095628, 2095629, 2095630

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A92255

Included Lab Sample IDs: 2095631, 2095640, 2095641

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	98.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A92295

Included Lab Sample IDs: 2095629, 2095630, 2095631, 2095640, 2095641

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	104	105	P/P	90 - 110
Ammonia-N	105	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A92373

Included Lab Sample IDs: 2095629, 2095630, 2095631, 2095640, 2095641

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.3	99.8	P/P	90 - 110
Kjeldahl Nitrogen	97.5	97.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A92376

Included Lab Sample IDs: 2095626, 2095627, 2095628

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	107	104	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	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					3.36	
EPA 300.0	Bromide	100	96.4	96.5			0.0371
EPA 350.1 Rev. 2.0	Ammonia-N	105	107	109			1.40
	Ammonia-N	105	110	109			0.772
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	110	103	103			0.194
	Kjeldahl Nitrogen	105	99.0	102			2.87
EPA 353.2 Rev. 2.0	NO2NO3-N	101	104	104			0.0
	NO2NO3-N	102	102	102			0.0
EPA 365.1 Rev. 2.0	Total-P	104	92.5	90.8			1.81
	Total-P	102	89.6	92.1			2.64
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.9	93.6	94.3			0.700
	O-Phosphate-P	97.6	95.4	95.8			0.338
SM 2320 B-97	Total Alkalinity	103				0.0055	
SM 4500 F-C-97	Fluoride	95.9	92.6	93.3			0.473
SM 5310 B-00	Organic Carbon	96.3	95.5	92.8			2.55

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2095620, 2095621, 2095622, 2095623, 2095624, 2095625, 2095638, 2095639
EPA 300.0 / E31780	Bromide in aqueous matrices	2095620, 2095621, 2095622, 2095623, 2095624, 2095625, 2095638, 2095639
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2095626, 2095627, 2095628, 2095629, 2095630, 2095631, 2095640, 2095641
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2095626, 2095627, 2095628, 2095629, 2095630, 2095631, 2095640, 2095641
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2095626, 2095627, 2095628, 2095629, 2095630, 2095631, 2095640, 2095641
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2095626, 2095627, 2095628, 2095629, 2095630, 2095631, 2095640, 2095641
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2095632, 2095633, 2095634, 2095635, 2095636, 2095637, 2095642, 2095643
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2095620, 2095621, 2095622, 2095623, 2095624, 2095625, 2095638, 2095639
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2095620, 2095621, 2095622, 2095623, 2095624, 2095625, 2095638, 2095639
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2095620, 2095621, 2095622, 2095623, 2095624, 2095625, 2095638, 2095639
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2095626, 2095627, 2095628, 2095629, 2095630, 2095631, 2095640, 2095641

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	06/14/2019			06/14/2019 16:39	Adrian Shelby	2095620, 2095621, 2095622, 2095623, 2095624, 2095625, 2095638, 2095639
EPA 300.0	06/14/2019			06/18/2019 14:48	Lipi Saha	2095620
	06/14/2019			06/18/2019 15:05	Lipi Saha	2095621
	06/14/2019			06/18/2019 15:22	Lipi Saha	2095622
	06/14/2019			06/18/2019 15:39	Lipi Saha	2095623
	06/14/2019			06/18/2019 15:56	Lipi Saha	2095624
	06/14/2019			06/18/2019 16:14	Lipi Saha	2095625
	06/14/2019			06/18/2019 17:05	Lipi Saha	2095638
	06/14/2019			06/18/2019 17:22	Lipi Saha	2095639
EPA 350.1 Rev. 2.0	06/14/2019			06/19/2019 13:19	Ping Hua	2095626
	06/14/2019			06/19/2019 13:21	Ping Hua	2095627
	06/14/2019			06/19/2019 13:28	Ping Hua	2095628
	06/14/2019			06/21/2019 13:45	Ping Hua	2095629
	06/14/2019			06/21/2019 13:55	Ping Hua	2095630
	06/14/2019			06/21/2019 13:57	Ping Hua	2095631
	06/14/2019			06/21/2019 13:58	Ping Hua	2095640
	06/14/2019			06/21/2019 14:00	Ping Hua	2095641
EPA 351.2 Rev. 2.0	06/14/2019	06/24/2019 10:45	Adrian Shelby	06/25/2019 15:45	Joseph Suarez	2095626
	06/14/2019	06/24/2019 10:45	Adrian Shelby	06/25/2019 15:47	Joseph Suarez	2095627
	06/14/2019	06/24/2019 10:45	Adrian Shelby	06/25/2019 15:49	Joseph Suarez	2095628
	06/14/2019	06/24/2019 12:10	Adrian Shelby	06/26/2019 12:09	Virginia P. Brown	2095629
	06/14/2019	06/24/2019 12:10	Adrian Shelby	06/26/2019 12:17	Virginia P. Brown	2095630
	06/14/2019	06/24/2019 12:10	Adrian Shelby	06/26/2019 12:18	Virginia P. Brown	2095631
	06/14/2019	06/24/2019 12:10	Adrian Shelby	06/26/2019 12:20	Virginia P. Brown	2095640
	06/14/2019	06/24/2019 12:10	Adrian Shelby	06/26/2019 12:21	Virginia P. Brown	2095641
EPA 353.2 Rev. 2.0	06/14/2019			06/19/2019 10:26	Beverly Y. Sanders	2095626
	06/14/2019			06/19/2019 10:27	Beverly Y. Sanders	2095627
	06/14/2019			06/19/2019 10:28	Beverly Y. Sanders	2095628
	06/14/2019			06/19/2019 10:36	Beverly Y. Sanders	2095629
	06/14/2019			06/19/2019 10:41	Beverly Y. Sanders	2095630
	06/14/2019			06/19/2019 10:43	Beverly Y. Sanders	2095631
	06/14/2019			06/19/2019 10:44	Beverly Y. Sanders	2095640
	06/14/2019			06/19/2019 10:45	Beverly Y. Sanders	2095641
EPA 365.1 Rev. 2.0	06/14/2019	06/18/2019 12:55	Sima Feizi	06/20/2019 11:52	Lipi Saha	2095626
	06/14/2019	06/18/2019 12:55	Sima Feizi	06/20/2019 11:53	Lipi Saha	2095627
	06/14/2019	06/18/2019 12:55	Sima Feizi	06/20/2019 11:54	Lipi Saha	2095628
	06/14/2019	06/18/2019 12:55	Sima Feizi	06/20/2019 11:55	Lipi Saha	2095629
	06/14/2019	06/18/2019 12:55	Sima Feizi	06/20/2019 11:56	Lipi Saha	2095630
	06/14/2019	06/19/2019 12:35	Sima Feizi	06/21/2019 08:34	Lipi Saha	2095631

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 365.1 Rev. 2.0	06/14/2019	06/19/2019 12:35	Sima Feizi	06/21/2019 08:35	Lipi Saha	2095640
	06/14/2019	06/19/2019 12:35	Sima Feizi	06/21/2019 08:36	Lipi Saha	2095641
EPA 365.1 Rev. 2.0 dissolved	06/14/2019			06/14/2019 16:46	Jhamieka S. Greenwood	2095633
	06/14/2019			06/14/2019 17:00	Jhamieka S. Greenwood	2095632
	06/14/2019			06/14/2019 17:06	Jhamieka S. Greenwood	2095634
	06/14/2019			06/14/2019 17:07	Jhamieka S. Greenwood	2095635
	06/14/2019			06/14/2019 17:08	Jhamieka S. Greenwood	2095636, 2095637
	06/14/2019			06/14/2019 17:09	Jhamieka S. Greenwood	2095642
	06/14/2019			06/14/2019 17:10	Jhamieka S. Greenwood	2095643
SM 2320 B-97	06/14/2019			06/19/2019 21:59	Dale L. Simmons	2095623
	06/14/2019			06/19/2019 22:12	Dale L. Simmons	2095620
	06/14/2019			06/19/2019 22:24	Dale L. Simmons	2095621
	06/14/2019			06/19/2019 22:37	Dale L. Simmons	2095622
	06/14/2019			06/19/2019 22:49	Dale L. Simmons	2095624
	06/14/2019			06/19/2019 23:01	Dale L. Simmons	2095625
	06/14/2019			06/19/2019 23:13	Dale L. Simmons	2095638
	06/14/2019			06/19/2019 23:26	Dale L. Simmons	2095639
SM 2540 D-97	06/14/2019			06/19/2019 15:22	Yijie Li	2095620, 2095621, 2095622, 2095623, 2095624, 2095625, 2095638, 2095639
SM 4500 F-C-97	06/14/2019			06/19/2019 20:02	Dale L. Simmons	2095623
	06/14/2019			06/19/2019 20:13	Dale L. Simmons	2095620
	06/14/2019			06/19/2019 20:18	Dale L. Simmons	2095621
	06/14/2019			06/19/2019 20:22	Dale L. Simmons	2095622
	06/14/2019			06/19/2019 20:26	Dale L. Simmons	2095624
	06/14/2019			06/19/2019 20:31	Dale L. Simmons	2095625
	06/14/2019			06/19/2019 20:35	Dale L. Simmons	2095638
	06/14/2019			06/19/2019 20:39	Dale L. Simmons	2095639
SM 5310 B-00	06/14/2019			06/18/2019 04:29	Madeline Funaro	2095641
	06/14/2019			06/18/2019 05:09	Madeline Funaro	2095626
	06/14/2019			06/18/2019 05:24	Madeline Funaro	2095627
	06/14/2019			06/18/2019 05:50	Madeline Funaro	2095628
	06/14/2019			06/18/2019 06:04	Madeline Funaro	2095629
	06/14/2019			06/18/2019 06:43	Madeline Funaro	2095630
	06/14/2019			06/18/2019 06:59	Madeline Funaro	2095631
	06/14/2019			06/18/2019 07:14	Madeline Funaro	2095640