

Chemical Analysis Report

SO-DIST-2019-08-09-01

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

Event Description: **2019 SMP : Wilderness Waterway**
Request ID: **RQ-2019-07-29-46**
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
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Date Certified: 26-AUG-2019 15:18



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 10 near Boat Ramp

Collection Date/Time: 08/08/2019 10:45

Field ID: G1SD0074

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2110349	EPA 180.1 Rev. 2.0	Turbidity	5.9		NTU	P368801	
	EPA 300.0	Bromide	46		mg Br/L	P369433	
	SM 2320 B-97	Total Alkalinity	169		mg CaCO3/L	P369172	
	SM 2540 D-97	TSS	7	I	mg/L	P369354	
	SM 4500 F-C-97	Fluoride	0.91		mg F/L	P369175	
2110354	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P369245	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.67		mg N/L	P369043	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.015		mg N/L	P369112	
	EPA 365.1 Rev. 2.0	Total-P	0.037		mg P/L	P368930	
	SM 5310 B-00	Organic Carbon	9.7		mg C/L	P369229	
2110359	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.015		mg P/L	P368791	

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 10 off Chokoloskee

Collection Date/Time: 08/08/2019 11:10

Field ID: G1SD0075

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2110350	EPA 180.1 Rev. 2.0	Turbidity	3.8		NTU	P368802	
	EPA 300.0	Bromide	41		mg Br/L	P369433	
	SM 2320 B-97	Total Alkalinity	167		mg CaCO3/L	P369172	
	SM 2540 D-97	TSS	6	I	mg/L	P369354	
	SM 4500 F-C-97	Fluoride	0.81		mg F/L	P369175	
2110355	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P369245	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.72		mg N/L	P369043	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.015		mg N/L	P369113	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P368930	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P369229	
2110360	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.013		mg P/L	P368791	

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: ENRE10 Lopez River

Collection Date/Time: 08/08/2019 11:35

Field ID: G5SD0092

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2110364	EPA 180.1 Rev. 2.0	Turbidity	4.9		NTU	P368802	
	EPA 300.0	Bromide	38		mg Br/L	P369433	
	SM 2320 B-97	Total Alkalinity	166		mg CaCO3/L	P369172	
	SM 2540 D-97	TSS	10		mg/L	P369354	
	SM 4500 F-C-97	Fluoride	0.76		mg F/L	P369175	
2110365	EPA 350.1 Rev. 2.0	Ammonia-N	0.035		mg N/L	P369249	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.72		mg N/L	P369043	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.021		mg N/L	P369113	
	EPA 365.1 Rev. 2.0	Total-P	0.039		mg P/L	P368930	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P369229	
2110366	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.016		mg P/L	P368791	

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: ENRE9 @CopelandCauseway

Collection Date/Time: 08/08/2019 12:35

Field ID: G1SD0073

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2110351	EPA 180.1 Rev. 2.0	Turbidity	5.2	A	NTU	P368802	
	EPA 300.0	Bromide	34		mg Br/L	P369433	
	SM 2320 B-97	Total Alkalinity	165		mg CaCO3/L	P369172	
	SM 2540 D-97	TSS	9	I	mg/L	P369354	
	SM 4500 F-C-97	Fluoride	0.69		mg F/L	P369175	
2110356	EPA 350.1 Rev. 2.0	Ammonia-N	0.075		mg N/L	P369245	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.87		mg N/L	P369043	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.010	I	mg N/L	P369113	
	EPA 365.1 Rev. 2.0	Total-P	0.046		mg P/L	P368930	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P369229	
2110361	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.027		mg P/L	P368791	

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 9

Collection Date/Time: 08/08/2019 12:55

Field ID: G1SD0090

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2110352	EPA 180.1 Rev. 2.0	Turbidity	3.7		NTU	P368802	
	EPA 300.0	Bromide	25		mg Br/L	P369433	
	SM 2320 B-97	Total Alkalinity	165		mg CaCO3/L	P369172	
	SM 2540 D-97	TSS	9	IA	mg/L	P369354	
	SM 4500 F-C-97	Fluoride	0.51		mg F/L	P369175	
2110357	EPA 350.1 Rev. 2.0	Ammonia-N	0.048		mg N/L	P369245	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.77		mg N/L	P369043	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P369113	
	EPA 365.1 Rev. 2.0	Total-P	0.039		mg P/L	P368930	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P369229	
2110362	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.018		mg P/L	P368791	

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 9

Collection Date/Time: 08/08/2019 13:00

Field ID: FB_08082019

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2110353	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P368802	
	EPA 300.0	Bromide	0.013	U	mg Br/L	P369433	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P369171	
	SM 2540 D-97	TSS	2	U	mg/L	P369353	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P369174	
2110358	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P369246	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P369039	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P369032	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P368933	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P368983	
2110363	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P368792	

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P368801

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P368802

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0
Batch ID: P369433

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369245

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369246

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369249

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369039

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369043

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369032

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369112

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369113

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368930

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368933

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368791

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368792

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

Reference Method: SM 2320 B-97
Batch ID: P369171

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

Reference Method: SM 2320 B-97
Batch ID: P369172

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

Reference Method: SM 2540 D-97
Batch ID: P369353

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P369354

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P369174

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P369175

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P368983

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

Reference Method: SM 5310 B-00
Batch ID: P369229

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: P369433

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Bromide	96.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369245

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369246

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369249

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: P369039

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369043

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369032

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369112

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369113

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368930

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368933

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368791

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368792

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.5		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P369171

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 106

Reference Method: SM 2320 B-97
Batch ID: P369172

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

Reference Method: SM 4500 F-C-97
Batch ID: P369174

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.2		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P369175

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.2		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P368983

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.4		P	85 - 115

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P369229

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
Batch ID: P369433

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2110767	Bromide	94.6	95.4	P/P	90 - 110
2110769	Bromide	94.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2110354	Ammonia-N	101	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369246

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2110433	Ammonia-N	102	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369249

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111036	Ammonia-N	106	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369039

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2110301	Kjeldahl Nitrogen	108	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369043

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2110336	Kjeldahl Nitrogen	90.7	98.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369032

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2110155	NO2NO3-N	101	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369112

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2110073	NO2NO3-N	95.8	95.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369113

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2110355	NO2NO3-N	99.8	99.4	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368930

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2110334	Total-P	91.2	90.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368933

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2110292	Total-P	102	98.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368791

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2110362	O-Phosphate-P	94.3	94.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368792

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2110442	O-Phosphate-P	95.0	94.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P369174

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2110769	Fluoride	97.7	97.2	P/P	89 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P369175

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2108577	Fluoride	94.4	95.2	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P368983

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2110298	Organic Carbon	101	99.6	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P369229

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111170	Organic Carbon	98.2	98.5	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P368801

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110288	Turbidity	3.14	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P368802

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110351	Turbidity	0.191	Sample	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P369433

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110767	Bromide	0.763	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110354	Ammonia-N	0.915	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369246

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110433	Ammonia-N	0.655	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369249

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111036	Ammonia-N	0.541	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369039

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110301	Kjeldahl Nitrogen	1.20	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369043

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110336	Kjeldahl Nitrogen	6.78	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369032

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110155	NO2NO3-N	0.496	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369112

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110073	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369113

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110355	NO2NO3-N	0.467	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368930

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110334	Total-P	1.07	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110292	Total-P	3.77	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368791

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110362	O-Phosphate-P	0.0889	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368792

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110442	O-Phosphate-P	0.316	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P369171

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110769	Total Alkalinity	0.765	Sample	P	0 - 2.8

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
 Batch ID: P369172

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110959	Total Alkalinity	1.05	Sample	P	0 - 2.8

Reference Method: SM 2540 D-97
 Batch ID: P369353

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110952	TSS	3.28	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P369174

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110769	Fluoride	0.484	Spike	P	0 - 2.5

Reference Method: SM 4500 F-C-97
 Batch ID: P369175

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2108577	Fluoride	0.516	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
 Batch ID: P368983

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110298	Organic Carbon	0.662	Spike	P	0 - 20

Reference Method: SM 5310 B-00
 Batch ID: P369229

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111170	Organic Carbon	0.309	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: A93400

Included Lab Sample IDs: 2110359, 2110360, 2110361, 2110362, 2110363, 2110366

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.0	96.8	P/P	90 - 110
O-Phosphate-P	98.2	98.7	P/P	90 - 110
O-Phosphate-P	98.6	98.0	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A93405

Included Lab Sample IDs: 2110349, 2110350, 2110351, 2110352, 2110353, 2110364

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105
Turbidity	101	102	P/P	95 - 105

Reference Method: SM 5310 B-00

Run ID: A93485

Included Lab Sample IDs: 2110358

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A93505

Included Lab Sample IDs: 2110354, 2110355, 2110356, 2110357, 2110358, 2110365

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	99.5	P/P	90 - 110
Total-P	98.2	99.0	P/P	90 - 110
Total-P	99.5	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A93511

Included Lab Sample IDs: 2110358

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A93536

Included Lab Sample IDs: 2110354, 2110355, 2110356, 2110357, 2110365

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

Reference Method: SM 2320 B-97

Run ID: A93564

Included Lab Sample IDs: 2110349, 2110350, 2110351, 2110352, 2110353, 2110364

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110
Total Alkalinity	101	104	P/P	90 - 110
Total Alkalinity	104	103	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A93564

Included Lab Sample IDs: 2110349, 2110350, 2110351, 2110352, 2110353, 2110364

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	103	P/P	90 - 110
Fluoride	102	100	P/P	90 - 110
Fluoride	103	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A93572

Included Lab Sample IDs: 2110358

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A93579

Included Lab Sample IDs: 2110354, 2110355, 2110356, 2110357, 2110365

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

Reference Method: SM 5310 B-00

Run ID: A93585

Included Lab Sample IDs: 2110354, 2110355, 2110356, 2110357, 2110365

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A93593

Included Lab Sample IDs: 2110354, 2110355, 2110356, 2110357, 2110358, 2110365

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	102	P/P	90 - 110
Ammonia-N	102	102	P/P	90 - 110
Ammonia-N	104	104	P/P	90 - 110
Ammonia-N	105	104	P/P	90 - 110

Reference Method: EPA 300.0

Run ID: A93690

Included Lab Sample IDs: 2110349, 2110350, 2110351, 2110352, 2110353, 2110364

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

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					3.14	
	Turbidity					0.191	
EPA 300.0	Bromide	96.6	94.6	95.4	94.7		0.763
EPA 350.1 Rev. 2.0	Ammonia-N	101	101	103			0.915
	Ammonia-N	98.8	102	101			0.655
	Ammonia-N	105	106	105			0.541
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	108	106			1.20
	Kjeldahl Nitrogen	99.2	90.7	98.3			6.78
EPA 353.2 Rev. 2.0	NO2NO3-N	100	101	100			0.496
	NO2NO3-N	99.5	95.8	95.8			0.0
	NO2NO3-N	101	99.8	99.4			0.467
EPA 365.1 Rev. 2.0	Total-P	101	91.2	90.1			1.07
	Total-P	97.6	102	98.3			3.77
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.9	94.3	94.2			0.0889
	O-Phosphate-P	99.5	95.0	94.7			0.316
SM 2320 B-97	Total Alkalinity	104				0.765	
	Total Alkalinity	103				1.05	
SM 2540 D-97	TSS					3.28	
SM 4500 F-C-97	Fluoride	98.2	97.7	97.2			0.484
	Fluoride	97.2	94.4	95.2			0.516
SM 5310 B-00	Organic Carbon	99.4	101	99.6			0.662
	Organic Carbon	99.2	98.2	98.5			0.309

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2110349, 2110350, 2110351, 2110352, 2110353, 2110364
EPA 300.0 / E31780	Bromide in aqueous matrices	2110349, 2110350, 2110351, 2110352, 2110353, 2110364
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2110354, 2110355, 2110356, 2110357, 2110358, 2110365
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2110354, 2110355, 2110356, 2110357, 2110358, 2110365
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2110354, 2110355, 2110356, 2110357, 2110358, 2110365
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2110354, 2110355, 2110356, 2110357, 2110358, 2110365
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2110359, 2110360, 2110361, 2110362, 2110363, 2110366
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2110349, 2110350, 2110351, 2110352, 2110353, 2110364
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2110349, 2110350, 2110351, 2110352, 2110353, 2110364
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2110349, 2110350, 2110351, 2110352, 2110353, 2110364
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2110354, 2110355, 2110356, 2110357, 2110358, 2110365

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	08/09/2019			08/09/2019 17:04	Rosalyn Ballman	2110349, 2110350, 2110351, 2110352, 2110353, 2110364
EPA 300.0	08/09/2019			08/20/2019 03:25	Jhamieka S. Greenwood	2110349
	08/09/2019			08/20/2019 03:42	Jhamieka S. Greenwood	2110350
	08/09/2019			08/20/2019 03:59	Jhamieka S. Greenwood	2110351
	08/09/2019			08/20/2019 04:16	Jhamieka S. Greenwood	2110352
	08/09/2019			08/20/2019 04:33	Jhamieka S. Greenwood	2110353
	08/09/2019			08/20/2019 05:25	Jhamieka S. Greenwood	2110364
EPA 350.1 Rev. 2.0	08/09/2019			08/16/2019 11:04	Ping Hua	2110354
	08/09/2019			08/16/2019 11:23	Ping Hua	2110355
	08/09/2019			08/16/2019 11:25	Ping Hua	2110356
	08/09/2019			08/16/2019 11:26	Ping Hua	2110357
	08/09/2019			08/16/2019 11:59	Ping Hua	2110358
	08/09/2019			08/16/2019 13:14	Ping Hua	2110365
EPA 351.2 Rev. 2.0	08/09/2019	08/14/2019 14:55	Sima Feizi	08/15/2019 17:35	Julia Storbeck	2110358
	08/09/2019	08/14/2019 18:11	Sima Feizi	08/16/2019 19:03	Julia Storbeck	2110354
	08/09/2019	08/14/2019 18:11	Sima Feizi	08/16/2019 19:05	Julia Storbeck	2110355
	08/09/2019	08/14/2019 18:11	Sima Feizi	08/16/2019 19:06	Julia Storbeck	2110356
	08/09/2019	08/14/2019 18:11	Sima Feizi	08/16/2019 19:08	Julia Storbeck	2110357
	08/09/2019	08/14/2019 18:11	Sima Feizi	08/16/2019 19:10	Julia Storbeck	2110365
EPA 353.2 Rev. 2.0	08/09/2019			08/14/2019 12:27	Beverly Y. Sanders	2110358
	08/09/2019			08/15/2019 11:25	Beverly Y. Sanders	2110354
	08/09/2019			08/15/2019 11:32	Beverly Y. Sanders	2110355
	08/09/2019			08/15/2019 11:38	Beverly Y. Sanders	2110356
	08/09/2019			08/15/2019 11:39	Beverly Y. Sanders	2110357
	08/09/2019			08/15/2019 11:40	Beverly Y. Sanders	2110365
EPA 365.1 Rev. 2.0	08/09/2019	08/13/2019 12:35	Vijayalakshmi Reddy	08/14/2019 12:45	Lipi Saha	2110354
	08/09/2019	08/13/2019 12:35	Vijayalakshmi Reddy	08/14/2019 12:46	Lipi Saha	2110355
	08/09/2019	08/13/2019 12:35	Vijayalakshmi Reddy	08/14/2019 12:47	Lipi Saha	2110356
	08/09/2019	08/13/2019 12:35	Vijayalakshmi Reddy	08/14/2019 12:55	Lipi Saha	2110357
	08/09/2019	08/13/2019 12:35	Vijayalakshmi Reddy	08/14/2019 12:56	Lipi Saha	2110365
	08/09/2019	08/13/2019 12:35	Vijayalakshmi Reddy	08/14/2019 13:18	Lipi Saha	2110358
EPA 365.1 Rev. 2.0 dissolved	08/09/2019			08/09/2019 14:43	Jhamieka S. Greenwood	2110362
	08/09/2019			08/09/2019 15:15	Jhamieka S. Greenwood	2110359
	08/09/2019			08/09/2019 15:16	Jhamieka S. Greenwood	2110360
	08/09/2019			08/09/2019 15:17	Jhamieka S. Greenwood	2110361
	08/09/2019			08/09/2019 15:18	Jhamieka S. Greenwood	2110366
	08/09/2019			08/09/2019 15:28	Jhamieka S. Greenwood	2110363
SM 2320 B-97	08/09/2019			08/15/2019 22:54	Dale L. Simmons	2110353
	08/09/2019			08/16/2019 06:03	Dale L. Simmons	2110352

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	08/09/2019			08/16/2019 07:49	Dale L. Simmons	2110349
	08/09/2019			08/16/2019 08:01	Dale L. Simmons	2110350
	08/09/2019			08/16/2019 08:13	Dale L. Simmons	2110351
	08/09/2019			08/16/2019 08:26	Dale L. Simmons	2110364
SM 2540 D-97	08/09/2019			08/14/2019 15:01	Yijie Li	2110349, 2110350, 2110351, 2110352, 2110353, 2110364
SM 4500 F-C-97	08/09/2019			08/15/2019 22:54	Dale L. Simmons	2110353
	08/09/2019			08/16/2019 03:13	Dale L. Simmons	2110352
	08/09/2019			08/16/2019 03:29	Dale L. Simmons	2110349
	08/09/2019			08/16/2019 04:16	Dale L. Simmons	2110350
	08/09/2019			08/16/2019 04:20	Dale L. Simmons	2110351
SM 5310 B-00	08/09/2019			08/16/2019 04:25	Dale L. Simmons	2110364
	08/09/2019			08/13/2019 16:52	Madeline Funaro	2110358
	08/09/2019			08/15/2019 15:18	Madeline Funaro	2110354
	08/09/2019			08/15/2019 15:30	Madeline Funaro	2110355
	08/09/2019			08/15/2019 16:07	Madeline Funaro	2110356
	08/09/2019			08/15/2019 16:19	Madeline Funaro	2110357
	08/09/2019			08/15/2019 16:33	Madeline Funaro	2110365