

Chemical Analysis Report

SO-DIST-2020-08-13-01

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

Event Description: **Wilderness Waterway**

Request ID: **RQ-2020-08-10-44**

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: Gary Snorek

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Certified by: Colin Wright, Program Administrator

Date Certified: 31-AUG-2020 11:08

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

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical group are included in this report: Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited 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: Ener11 At Huston Bay

Collection Date/Time: 08/12/2020 11:40

Field ID: G5SD0026

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2190090	EPA 180.1 Rev. 2.0	Turbidity	4.7		NTU	P386009	
	EPA 300.0 Rev. 2.1	Bromide	17		mg Br/L	P386404	MS
	SM 2320 B-2011	Total Alkalinity	147	A	mg CaCO3/L	P386119	
	SM 2540 D-2011	TSS	5	I	mg/L	P386198	
	SM 4500 F-C-2011	Fluoride	0.42		mg F/L	P386123	
2190093	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P386088	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P386232	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P386111	
	EPA 365.1 Rev. 2.0	Total-P	0.031		mg P/L	P386054	
	SM 5310 B-2011	Organic Carbon	16		mg C/L	P386260	
2190096	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P386020	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: FB081220

Collection Date/Time: 08/12/2020 12:30

Field ID: FB081220

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2190099	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P386009	
	EPA 300.0 Rev. 2.1	Bromide	0.013	U	mg Br/L	P386404	MS
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P386457	
	SM 2540 D-2011	TSS	2	U	mg/L	P386187	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P386121	
2190100	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P386087	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P386234	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P386035	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P386053	
	SM 5310 B-2011	Organic Carbon	0.50	U	mg C/L	P386258	
2190101	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P386017	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: The result was confirmed on 08/20/2020.

Sample Location: ENRE10

Collection Date/Time: 08/12/2020 10:40

Field ID: G5SD0092

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2190091	EPA 180.1 Rev. 2.0	Turbidity	5.9	A	NTU	P386009	
	EPA 300.0 Rev. 2.1	Bromide	33		mg Br/L	P386404	MS
	SM 2320 B-2011	Total Alkalinity	160		mg CaCO3/L	P386119	
	SM 2540 D-2011	TSS	5	I	mg/L	P386198	
	SM 4500 F-C-2011	Fluoride	0.79		mg F/L	P386123	
2190094	EPA 350.1 Rev. 2.0	Ammonia-N	0.051		mg N/L	P386088	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P386232	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.065		mg N/L	P386111	
	EPA 365.1 Rev. 2.0	Total-P	0.041		mg P/L	P386054	
	SM 5310 B-2011	Organic Carbon	12		mg C/L	P386260	
2190097	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.021		mg P/L	P386020	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Enre9 Lopez River

Collection Date/Time: 08/12/2020 11:00

Field ID: G5SD0093

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2190092	EPA 180.1 Rev. 2.0	Turbidity	6.8		NTU	P386009	
	EPA 300.0 Rev. 2.1	Bromide	26		mg Br/L	P386404	MS
	SM 2320 B-2011	Total Alkalinity	164		mg CaCO3/L	P386119	
	SM 2540 D-2011	TSS	4	I	mg/L	P386198	
	SM 4500 F-C-2011	Fluoride	0.68		mg F/L	P386123	
2190095	EPA 350.1 Rev. 2.0	Ammonia-N	0.058		mg N/L	P386088	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.79		mg N/L	P386307	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.070		mg N/L	P386111	
	EPA 365.1 Rev. 2.0	Total-P	0.042		mg P/L	P386054	
	SM 5310 B-2011	Organic Carbon	14		mg C/L	P386260	
2190098	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.022		mg P/L	P386020	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P386009

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P386404

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P386087

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P386088

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386232

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386234

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386307

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P386035

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P386111

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: P386053

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P386054

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P386017

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P386020

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

Reference Method: SM 2320 B-2011
Batch ID: P386119

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

Reference Method: SM 2320 B-2011
Batch ID: P386457

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

Reference Method: SM 2540 D-2011
Batch ID: P386187

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P386198

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P386121

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 4500 F-C-2011
Batch ID: P386123

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P386258

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

Reference Method: SM 5310 B-2011
Batch ID: P386260

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P386404

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P386087

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P386088

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386232

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386234

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386307

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: P386035

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: P386111

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P386053

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
Batch ID: P386054

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P386017

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P386020

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

Reference Method: SM 2320 B-2011
Batch ID: P386119

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	93 - 104

Reference Method: SM 2320 B-2011
Batch ID: P386457

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P386121

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.6		P	90 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P386123

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P386258

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.4		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P386260

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P386404

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2190112	Bromide	101	92.2	P/P	90 - 110
2190134	Bromide	88.8		F	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P386087

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2189691	Ammonia-N	98.8	97.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P386088

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2189767	Ammonia-N	102	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386232

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2190553	Kjeldahl Nitrogen	100	97.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386234

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2190051	Kjeldahl Nitrogen	96.4	99.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386307

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2190452	Kjeldahl Nitrogen	99.2	99.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P386035

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2190040	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P386111

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2190093	NO2NO3-N	95.0	95.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P386053

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2189859	Total-P	103	104	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P386054

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2189925	Total-P	93.8	94.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P386017

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2190042	O-Phosphate-P	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P386020

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2190080	O-Phosphate-P	98.8	99.1	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P386121

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2189708	Fluoride	101	99.3	P/P	94 - 107

Reference Method: SM 4500 F-C-2011
Batch ID: P386123

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2190090	Fluoride	104	105	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P386258

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2189688	Organic Carbon	98.0	100	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P386260

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2190094	Organic Carbon	96.9	96.3	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P386009

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190091	Turbidity	3.56	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P386404

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190112	Bromide	8.55	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P386087

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189691	Ammonia-N	0.892	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P386088

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189767	Ammonia-N	0.170	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386232

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190553	Kjeldahl Nitrogen	2.00	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386234

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190051	Kjeldahl Nitrogen	2.11	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386307

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190452	Kjeldahl Nitrogen	0.617	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P386035

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190040	NO2NO3-N	0.327	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P386111

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190093	NO2NO3-N	0.525	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P386053

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189859	Total-P	0.706	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P386054

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189925	Total-P	1.09	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P386017

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190042	O-Phosphate-P	0.696	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P386020

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190080	O-Phosphate-P	0.288	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P386119

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190090	Total Alkalinity	0.384	Sample	P	0 - 8.1

Reference Method: SM 2320 B-2011
Batch ID: P386457

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189856	Total Alkalinity	0.289	Sample	P	0 - 8.1

Reference Method: SM 4500 F-C-2011
Batch ID: P386121

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189708	Fluoride	0.909	Spike	P	0 - 2.8

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P386123

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190090	Fluoride	0.454	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P386258

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189688	Organic Carbon	1.83	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P386260

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2190094	Organic Carbon	0.472	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A100446

Included Lab Sample IDs: 2190090, 2190091, 2190092, 2190099

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	99.0	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A100450

Included Lab Sample IDs: 2190096, 2190097, 2190098, 2190101

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A100462

Included Lab Sample IDs: 2190100

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A100478

Included Lab Sample IDs: 2190093, 2190094, 2190095, 2190100

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.1	99.8	P/P	90 - 110
Ammonia-N	99.8	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A100490

Included Lab Sample IDs: 2190093, 2190094, 2190095

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

Reference Method: SM 2320 B-2011

Run ID: A100491

Included Lab Sample IDs: 2190090, 2190091, 2190092

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.2	100	P/P	90 - 110
Total Alkalinity	100	98.7	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A100491

Included Lab Sample IDs: 2190090, 2190091, 2190092, 2190099

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	102	104	P/P	90 - 110
Fluoride	103	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A100502

Included Lab Sample IDs: 2190093, 2190094, 2190095, 2190100

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

Reference Method: SM 5310 B-2011

Run ID: A100535

Included Lab Sample IDs: 2190093, 2190094, 2190095, 2190100

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.0	97.4	P/P	90 - 110
Organic Carbon	96.1	96.0	P/P	90 - 110
Organic Carbon	97.4	97.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A100562

Included Lab Sample IDs: 2190093, 2190094, 2190100

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	106	P/P	90 - 110
Kjeldahl Nitrogen	99.8	99.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A100589

Included Lab Sample IDs: 2190090, 2190091, 2190092, 2190099

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	102	98.0	P/P	90 - 110
Bromide	98.0	98.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A100590

Included Lab Sample IDs: 2190095

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	98.2	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A100606

Included Lab Sample IDs: 2190099

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	102	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					3.56	
EPA 300.0 Rev. 2.1	Bromide	99.8	101	92.2	88.8		8.55
EPA 350.1 Rev. 2.0	Ammonia-N	97.8	98.8	97.8			0.892
	Ammonia-N	99.2	102	102			0.170
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	100	97.6			2.00
	Kjeldahl Nitrogen	108	96.4	99.1			2.11
	Kjeldahl Nitrogen	105	99.2	99.9			0.617
EPA 353.2 Rev. 2.0	NO2NO3-N	100	100	100			0.327
	NO2NO3-N	100	95.0	95.5			0.525
EPA 365.1 Rev. 2.0	Total-P	102	103	104			0.706
	Total-P	102	93.8	94.9			1.09
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.9	100	101			0.696
	O-Phosphate-P	101	98.8	99.1			0.288
SM 2320 B-2011	Total Alkalinity	104				0.384	
	Total Alkalinity	102				0.289	
SM 4500 F-C-2011	Fluoride	99.6	101	99.3			0.909
	Fluoride	102	104	105			0.454
SM 5310 B-2011	Organic Carbon	95.4	98.0	100			1.83
	Organic Carbon	94.8	96.9	96.3			0.472

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2190090, 2190091, 2190092, 2190099
EPA 300.0 Rev. 2.1	Bromide in aqueous matrices	2190090, 2190091, 2190092, 2190099
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2190093, 2190094, 2190095, 2190100
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2190093, 2190094, 2190095, 2190100
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2190093, 2190094, 2190095, 2190100
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2190093, 2190094, 2190095, 2190100
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2190096, 2190097, 2190098, 2190101
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2190090, 2190091, 2190092, 2190099
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2190090, 2190091, 2190092, 2190099
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2190090, 2190091, 2190092, 2190099
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2190093, 2190094, 2190095, 2190100

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	08/13/2020			08/13/2020 14:55	Yen Ta	2190090, 2190091, 2190092, 2190099
EPA 300.0 Rev. 2.1	08/13/2020			08/20/2020 02:39	Julia Storbeck	2190090
	08/13/2020			08/20/2020 02:56	Julia Storbeck	2190091
	08/13/2020			08/20/2020 03:47	Julia Storbeck	2190092
	08/13/2020			08/20/2020 04:04	Julia Storbeck	2190099
EPA 350.1 Rev. 2.0	08/13/2020			08/15/2020 16:01	Ping Hua	2190100
	08/13/2020			08/15/2020 16:11	Ping Hua	2190093
	08/13/2020			08/15/2020 16:13	Ping Hua	2190094
	08/13/2020			08/15/2020 16:21	Ping Hua	2190095
EPA 351.2 Rev. 2.0	08/13/2020	08/19/2020 11:06	Sima Feizi	08/20/2020 12:55	Jhamieka S. Greenwood	2190093
	08/13/2020	08/19/2020 11:06	Sima Feizi	08/20/2020 12:57	Jhamieka S. Greenwood	2190094
	08/13/2020	08/19/2020 11:06	Sima Feizi	08/20/2020 13:39	Jhamieka S. Greenwood	2190100
	08/13/2020	08/20/2020 10:05	Sima Feizi	08/21/2020 11:01	Jhamieka S. Greenwood	2190095
EPA 353.2 Rev. 2.0	08/13/2020			08/14/2020 09:05	Beverly Y. Sanders	2190100
	08/13/2020			08/17/2020 09:43	Beverly Y. Sanders	2190093
	08/13/2020			08/17/2020 09:55	Beverly Y. Sanders	2190094
	08/13/2020			08/17/2020 09:56	Beverly Y. Sanders	2190095
EPA 365.1 Rev. 2.0	08/13/2020	08/14/2020 12:15	Shengyu Wang	08/18/2020 08:39	Lipi Saha	2190100
	08/13/2020	08/14/2020 12:15	Shengyu Wang	08/18/2020 08:44	Lipi Saha	2190093
	08/13/2020	08/14/2020 12:15	Shengyu Wang	08/18/2020 08:45	Lipi Saha	2190094
	08/13/2020	08/14/2020 12:15	Shengyu Wang	08/18/2020 08:46	Lipi Saha	2190095
EPA 365.1 Rev. 2.0 dissolved	08/13/2020			08/13/2020 15:46	Samantha Davila	2190101
	08/13/2020			08/13/2020 16:34	Samantha Davila	2190096
	08/13/2020			08/13/2020 16:35	Samantha Davila	2190097
	08/13/2020			08/13/2020 16:36	Samantha Davila	2190098
SM 2320 B-2011	08/13/2020			08/15/2020 05:04	Dale L. Simmons	2190090
	08/13/2020			08/15/2020 06:37	Dale L. Simmons	2190091
	08/13/2020			08/15/2020 06:50	Dale L. Simmons	2190092
	08/13/2020			08/22/2020 09:45	Dale L. Simmons	2190099
SM 2540 D-2011	08/13/2020			08/14/2020 17:50	Madeline Gruver	2190099
	08/13/2020			08/17/2020 15:11	Yijie Li	2190090, 2190091, 2190092
SM 4500 F-C-2011	08/13/2020			08/14/2020 19:51	Dale L. Simmons	2190099
	08/13/2020			08/15/2020 04:03	Dale L. Simmons	2190090
	08/13/2020			08/15/2020 04:37	Dale L. Simmons	2190091
	08/13/2020			08/15/2020 04:42	Dale L. Simmons	2190092
SM 5310 B-2011	08/13/2020			08/18/2020 22:31	David Boose	2190100
	08/13/2020			08/19/2020 06:27	David Boose	2190094
	08/13/2020			08/19/2020 09:01	David Boose	2190093
	08/13/2020			08/19/2020 09:26	David Boose	2190095