

Chemical Analysis Report

TLH-ROC-2021-03-09-01

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

Event Description: **Run 7**
Request ID: **RQ-2021-03-01-18**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
Attn: Michael Eckles

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 30-MAR-2021 11:55

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored 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: Alligator Harbor near clam beds

Collection Date/Time: 03/09/2021 09:50

Field ID: G2TLHR0025

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2230129	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P394690	
	EPA 300.0 Rev. 2.1	Bromide	56		mg Br/L	P394860	
	SM 2320 B-2011	Total Alkalinity	108		mg CaCO3/L	P394944	
	SM 2540 D-2011	TSS	4	I	mg/L	P395155	
	SM 4500 F-C-2011	Fluoride	1.0		mg F/L	P395085	
2230132	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P394929	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.31	I	mg N/L	P394974	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P394780	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P394818	
	SM 5310 B-2011	Organic Carbon	3.5		mg C/L	P395398	
2230135	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P394674	

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: Oyster Bay 2

Collection Date/Time: 03/09/2021 11:10

Field ID: G1TLHR0152

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2230130	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P394690	
	EPA 300.0 Rev. 2.1	Bromide	32		mg Br/L	P394860	
	SM 2320 B-2011	Total Alkalinity	105		mg CaCO3/L	P394944	
	SM 2540 D-2011	TSS	3	I	mg/L	P395155	
	SM 4500 F-C-2011	Fluoride	0.60		mg F/L	P395085	
2230133	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P394929	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.35	I	mg N/L	P394974	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.025		mg N/L	P394780	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P394818	
	SM 5310 B-2011	Organic Carbon	7.1		mg C/L	P395502	
2230136	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P394674	

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: Oyster Bay 1

Collection Date/Time: 03/09/2021 11:25

Field ID: G1TLHR0151

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2230131	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P394690	
	EPA 300.0 Rev. 2.1	Bromide	13		mg Br/L	P394860	
	SM 2320 B-2011	Total Alkalinity	106		mg CaCO3/L	P394944	
	SM 2540 D-2011	TSS	3	I	mg/L	P395153	
	SM 4500 F-C-2011	Fluoride	0.26		mg F/L	P395085	
2230134	EPA 350.1 Rev. 2.0	Ammonia-N	0.030		mg N/L	P394929	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40	I	mg N/L	P394974	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P394780	
	EPA 365.1 Rev. 2.0	Total-P	0.041		mg P/L	P394986	
	SM 5310 B-2011	Organic Carbon	9.9		mg C/L	P395228	
2230137	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.023		mg P/L	P394674	

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: Spring Creek Springs Middle

Collection Date/Time: 03/09/2021 11:35

Field ID: G1TLHR0129

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2230138	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P394690	
	EPA 300.0 Rev. 2.1	Bromide	3.9		mg Br/L	P394860	
	SM 2320 B-2011	Total Alkalinity	103		mg CaCO3/L	P394943	
	SM 2540 D-2011	TSS	2	I	mg/L	P395154	
	SM 4500 F-C-2011	Fluoride	0.12		mg F/L	P394947	
2230140	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P394928	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29		mg N/L	P395020	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.16		mg N/L	P394889	
	EPA 365.1 Rev. 2.0	Total-P	0.029		mg P/L	P394823	
	SM 5310 B-2011	Organic Carbon	11		mg C/L	P395228	
2230142	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.023		mg P/L	P394672	

Ref. Method and Comment:

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

SM 4500 F-C-2011: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries and relative percent difference are unavailable because of analytical difficulties.

Sample Location: Spring Creek Spring

Collection Date/Time: 03/09/2021 11:45

Field ID: G1TLHR0131

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2230139	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P394690	
	EPA 300.0 Rev. 2.1	Bromide	3.8		mg Br/L	P394860	
	SM 2320 B-2011	Total Alkalinity	104		mg CaCO3/L	P394943	
	SM 2540 D-2011	TSS	2	IA	mg/L	P395154	
	SM 4500 F-C-2011	Fluoride	0.11		mg F/L	P394947	
2230141	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P394928	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.27		mg N/L	P395020	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.16		mg N/L	P394889	
	EPA 365.1 Rev. 2.0	Total-P	0.031		mg P/L	P394823	
	SM 5310 B-2011	Organic Carbon	11		mg C/L	P395228	
2230143	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.024		mg P/L	P394672	

Ref. Method and Comment:

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

SM 4500 F-C-2011: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries and relative percent difference are unavailable because of analytical difficulties.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P394690

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394860

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394928

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394929

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P394974

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P395020

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P394780

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P394889

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P394818

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: P394823

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P394986

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P394672

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P394674

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

Reference Method: SM 2320 B-2011
Batch ID: P394943

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

Reference Method: SM 2320 B-2011
Batch ID: P394944

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

Reference Method: SM 2540 D-2011
Batch ID: P395153

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P395154

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P395155

Component	Result	Code	Units
TSS	3	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 4500 F-C-2011
Batch ID: P394947

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P395085

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P395228

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

Reference Method: SM 5310 B-2011
Batch ID: P395398

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

Reference Method: SM 5310 B-2011
Batch ID: P395502

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: P394860

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394928

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394929

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P394974

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: P395020

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P394780

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: P394889

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	97.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P394818

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	109		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P394823

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P394986

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P394672

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P394674

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

Reference Method: SM 2320 B-2011
Batch ID: P394943

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	93 - 104

Reference Method: SM 2320 B-2011
Batch ID: P394944

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P394947

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.3		P	90 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P395085

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.2		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P395228

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.3		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P395398

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P395502

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.5		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394860

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2229539	Bromide	97.1	94.9	P/P	90 - 110
2229543	Bromide	95.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394928

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230048	Ammonia-N	96.0	98.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394929

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230132	Ammonia-N	101	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P394974

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230101	Kjeldahl Nitrogen	105	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P394780

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230098	NO2NO3-N	99.4	98.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P394889

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230113	NO2NO3-N	98.5	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P394818

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230098	Total-P	105	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P394823

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230049	Total-P	107	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P394986

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230134	Total-P	104	103	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P394672

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230008	O-Phosphate-P	99.0	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P394674

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230119	O-Phosphate-P	101	98.6	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P395085

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230131	Fluoride	100	99.0	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P395228

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230293	Organic Carbon	101		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P395398

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230844	Organic Carbon	91.5	91.0	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P395502

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2232839	Organic Carbon	93.4	94.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P394690

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230047	Turbidity	2.31	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394860

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2229539	Bromide	1.81	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394928

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230048	Ammonia-N	2.03	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394929

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230132	Ammonia-N	1.63	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P394974

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230101	Kjeldahl Nitrogen	0.496	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P394780

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230098	NO2NO3-N	0.445	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P394889

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230113	NO2NO3-N	0.509	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P394818

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230098	Total-P	1.12	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P394823

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230049	Total-P	0.833	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P394986

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230134	Total-P	1.04	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P394672

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230008	O-Phosphate-P	2.23	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P394674

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230119	O-Phosphate-P	1.59	Spike	P	0 - 20

Reference Method: SM 2320 B-2011

Batch ID: P394943

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230287	Total Alkalinity	0.513	Sample	P	0 - 8.1

Reference Method: SM 2320 B-2011

Batch ID: P394944

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230117	Total Alkalinity	1.33	Sample	P	0 - 8.1

Reference Method: SM 4500 F-C-2011

Batch ID: P394947

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230287	Fluoride	0.454	Spike	P	0 - 2.8

Reference Method: SM 4500 F-C-2011

Batch ID: P395085

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230131	Fluoride	0.909	Spike	P	0 - 2.8

Quality Assurance Report Precision

Reference Method: SM 5310 B-2011
Batch ID: P395228

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230293	Organic Carbon	0.735	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P395398

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230844	Organic Carbon	0.387	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P395502

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232839	Organic Carbon	0.563	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A103968

Included Lab Sample IDs: 2230135, 2230136, 2230137, 2230142, 2230143

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.9	99.5	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A103971

Included Lab Sample IDs: 2230129, 2230130, 2230131, 2230138, 2230139

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A103980

Included Lab Sample IDs: 2230129, 2230130, 2230131, 2230138, 2230139

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A104003

Included Lab Sample IDs: 2230132, 2230133, 2230134

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A104033

Included Lab Sample IDs: 2230140, 2230141

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A104047

Included Lab Sample IDs: 2230132, 2230133, 2230134, 2230140, 2230141

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.0	98.0	P/P	90 - 110
Ammonia-N	99.4	98.9	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A104052

Included Lab Sample IDs: 2230129, 2230130, 2230131, 2230138, 2230139

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	98.9	P/P	90 - 110
Total Alkalinity	98.9	99.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-2011

Run ID: A104052

Included Lab Sample IDs: 2230138, 2230139

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A104054

Included Lab Sample IDs: 2230132, 2230133, 2230140, 2230141

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	97.8	P/P	90 - 110
Total-P	99.8	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A104096

Included Lab Sample IDs: 2230132, 2230133, 2230134

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	98.3	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A104103

Included Lab Sample IDs: 2230129, 2230130, 2230131

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A104108

Included Lab Sample IDs: 2230134

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A104170

Included Lab Sample IDs: 2230140, 2230141

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	99.2	P/P	90 - 110
Kjeldahl Nitrogen	99.7	100	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A104174

Included Lab Sample IDs: 2230134, 2230140, 2230141

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.1	95.7	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A104236

Included Lab Sample IDs: 2230132

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

Reference Method: SM 5310 B-2011

Run ID: A104236

Included Lab Sample IDs: 2230132

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.0	93.4	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A104280

Included Lab Sample IDs: 2230133

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.0	96.6	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					2.31	
EPA 300.0 Rev. 2.1	Bromide	99.5	97.1	94.9	95.7		1.81
EPA 350.1 Rev. 2.0	Ammonia-N	97.2	96.0	98.2			2.03
	Ammonia-N	98.6	101	103			1.63
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	110	105	105			0.496
	Kjeldahl Nitrogen	106					
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	99.4	98.9			0.445
	NO2NO3-N	97.5	98.5	98.0			0.509
EPA 365.1 Rev. 2.0	Total-P	109	105	106			1.12
	Total-P	107	107	108			0.833
	Total-P	104	104	103			1.04
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.2	99.0	96.0			2.23
	O-Phosphate-P	100	101	98.6			1.59
SM 2320 B-2011	Total Alkalinity	100				0.513	
	Total Alkalinity	101				1.33	
SM 4500 F-C-2011	Fluoride	97.3					0.454
	Fluoride	99.2	100	99.0			0.909
SM 5310 B-2011	Organic Carbon	94.3	101				0.735
	Organic Carbon	94.7	91.5	91.0			0.387
	Organic Carbon	96.5	93.4	94.1			0.563

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2230129, 2230130, 2230131, 2230138, 2230139
EPA 300.0 Rev. 2.1	Bromide in aqueous matrices	2230129, 2230130, 2230131, 2230138, 2230139
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2230132, 2230133, 2230134, 2230140, 2230141
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2230132, 2230133, 2230134, 2230140, 2230141
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2230132, 2230133, 2230134, 2230140, 2230141
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2230132, 2230133, 2230134, 2230140, 2230141
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2230135, 2230136, 2230137, 2230142, 2230143
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2230129, 2230130, 2230131, 2230138, 2230139
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2230129, 2230130, 2230131, 2230138, 2230139
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2230129, 2230130, 2230131, 2230138, 2230139
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2230132, 2230133, 2230134, 2230140, 2230141

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	03/09/2021			03/09/2021 15:16	Yen Ta	2230129, 2230130, 2230131, 2230138, 2230139
EPA 300.0 Rev. 2.1	03/09/2021			03/10/2021 17:45	Lipi Saha	2230129
	03/09/2021			03/10/2021 18:03	Lipi Saha	2230130
	03/09/2021			03/10/2021 18:57	Lipi Saha	2230131
	03/09/2021			03/10/2021 19:15	Lipi Saha	2230138
	03/09/2021			03/10/2021 19:33	Lipi Saha	2230139
EPA 350.1 Rev. 2.0	03/09/2021			03/13/2021 16:52	Ping Hua	2230140
	03/09/2021			03/13/2021 16:53	Ping Hua	2230141
	03/09/2021			03/13/2021 17:12	Ping Hua	2230132
	03/09/2021			03/13/2021 17:17	Ping Hua	2230133
	03/09/2021			03/13/2021 17:19	Ping Hua	2230134
EPA 351.2 Rev. 2.0	03/09/2021	03/15/2021 12:24	Benjamin T. Nordmann	03/16/2021 11:30	Virginia P. Brown	2230132
	03/09/2021	03/15/2021 12:24	Benjamin T. Nordmann	03/16/2021 11:32	Virginia P. Brown	2230133
	03/09/2021	03/15/2021 12:24	Benjamin T. Nordmann	03/16/2021 11:34	Virginia P. Brown	2230134
	03/09/2021	03/16/2021 12:00	Benjamin T. Nordmann	03/19/2021 13:11	Julia Storbeck	2230140
	03/09/2021	03/16/2021 12:00	Benjamin T. Nordmann	03/19/2021 13:16	Julia Storbeck	2230141
EPA 353.2 Rev. 2.0	03/09/2021			03/11/2021 09:07	Beverly Y. Sanders	2230132
	03/09/2021			03/11/2021 09:09	Beverly Y. Sanders	2230133
	03/09/2021			03/11/2021 09:10	Beverly Y. Sanders	2230134
	03/09/2021			03/12/2021 09:05	Beverly Y. Sanders	2230140
	03/09/2021			03/12/2021 09:06	Beverly Y. Sanders	2230141
EPA 365.1 Rev. 2.0	03/09/2021	03/11/2021 12:40	Yen Ta	03/12/2021 15:14	Shengyu Ding	2230132
	03/09/2021	03/11/2021 12:40	Yen Ta	03/12/2021 15:15	Shengyu Ding	2230133
	03/09/2021	03/11/2021 12:40	Yen Ta	03/12/2021 16:05	Shengyu Ding	2230140
	03/09/2021	03/11/2021 12:40	Yen Ta	03/12/2021 16:06	Shengyu Ding	2230141
	03/09/2021	03/15/2021 13:12	Yen Ta	03/17/2021 13:23	Shengyu Ding	2230134
EPA 365.1 Rev. 2.0 dissolved	03/09/2021			03/09/2021 14:24	Lipi Saha	2230135
	03/09/2021			03/09/2021 14:25	Lipi Saha	2230136
	03/09/2021			03/09/2021 14:26	Lipi Saha	2230137
	03/09/2021			03/09/2021 14:27	Lipi Saha	2230142
	03/09/2021			03/09/2021 14:28	Lipi Saha	2230143
SM 2320 B-2011	03/09/2021			03/11/2021 20:34	Dale L. Simmons	2230139
	03/09/2021			03/11/2021 20:49	Dale L. Simmons	2230138
	03/09/2021			03/11/2021 23:28	Dale L. Simmons	2230131
	03/09/2021			03/11/2021 23:58	Dale L. Simmons	2230129
	03/09/2021			03/12/2021 00:12	Dale L. Simmons	2230130
SM 2540 D-2011	03/09/2021			03/12/2021 14:32	Yijie Li	2230129, 2230130, 2230131, 2230138, 2230139
SM 4500 F-C-2011	03/09/2021			03/11/2021 20:34	Dale L. Simmons	2230139

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-2011	03/09/2021			03/11/2021 20:49	Dale L. Simmons	2230138
	03/09/2021			03/17/2021 08:12	Dale L. Simmons	2230131
	03/09/2021			03/17/2021 08:41	Dale L. Simmons	2230129
	03/09/2021			03/17/2021 08:46	Dale L. Simmons	2230130
SM 5310 B-2011	03/09/2021			03/18/2021 23:52	Madeline Gruver	2230134
	03/09/2021			03/19/2021 00:04	Madeline Gruver	2230140
	03/09/2021			03/19/2021 00:17	Madeline Gruver	2230141
	03/09/2021			03/23/2021 10:38	Madeline Gruver	2230132
	03/09/2021			03/25/2021 07:24	Madeline Gruver	2230133