Chemical Analysis Report

TLH-ROC-2022-05-03-01

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

Event Description: **Run 14**
Request ID: **RQ-2022-04-25-42**
Customer: **TLH-ROC**
Project ID: **SMP**

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Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant Date Certified: 26-MAY-2022 09:50

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: N Bay @ Hodges Bayou **Collection Date/Time: 05/03/2022 10:30**

Field ID: G3TLHR0035 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2323905	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P413367	
	SM 2320 B-2011	Total Alkalinity	55	A	mg CaCO3/L	P413854	
	SM 2540 D-2011	TSS	4	I A	mg/L	P413685	
	SM 4500-F- C-2011	Fluoride	0.35		mg F/L	P413859	
2323910	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P413626	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	UJ	mg N/L	P413793	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P413584	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P413560	
	SM 5310 B-2011	Organic Carbon	1.0	U	mg C/L	P413888	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Refer to the Lab Analysis Report for an explanation of QC Codes.

Sample Location: N Bay @ Gainer Bayou **Collection Date/Time: 05/03/2022 10:50**

Field ID: G3TLHR0036 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2323906	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P413367	
	SM 2320 B-2011	Total Alkalinity	53		mg CaCO3/L	P413854	
	SM 2540 D-2011	TSS	3	I	mg/L	P413681	
	SM 4500-F- C-2011	Fluoride	0.31		mg F/L	P413859	
2323911	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P413626	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.30	I	mg N/L	P413793	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P413585	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P413560	
	SM 5310 B-2011	Organic Carbon	4.1		mg C/L	P413751	

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: N Bay @ N Anderson Bayou **Collection Date/Time: 05/03/2022 11:30**

Field ID: G3TLHR0034 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2323907	EPA 180.1 Rev. 2.0	Turbidity	0.95	I	NTU	P413367	
	SM 2320 B-2011	Total Alkalinity	72		mg CaCO3/L	P413854	
	SM 2540 D-2011	TSS	7	I	mg/L	P413685	
	SM 4500-F- C-2011	Fluoride	0.63		mg F/L	P413859	
2323912	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P413626	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.22	I	mg N/L	P413794	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P413585	
	EPA 365.1 Rev. 2.0	Total-P	0.010		mg P/L	P413797	
	SM 5310 B-2011	Organic Carbon	1.0	U	mg C/L	P413888	

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: N Bay @ S Anderson Bayou **Collection Date/Time: 05/03/2022 11:55**

Field ID: G3TLHR0033 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2323908	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P413367	
	SM 2320 B-2011	Total Alkalinity	78		mg CaCO3/L	P413854	
	SM 2540 D-2011	TSS	4	I	mg/L	P413685	
	SM 4500-F- C-2011	Fluoride	0.69		mg F/L	P413859	
2323913	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P413626	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28	I	mg N/L	P413800	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P413585	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P413797	
	SM 5310 B-2011	Organic Carbon	4.0		mg C/L	P413888	

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: Direct Runoff to Bay Anderson Bayou **Collection Date/Time: 05/03/2022 12:20**

Field ID: G3TLHR0032 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2323909	EPA 180.1 Rev. 2.0	Turbidity	2.9	A	NTU	P413367	
	SM 2320 B-2011	Total Alkalinity	61		mg CaCO3/L	P413665	
	SM 2540 D-2011	TSS	2	I	mg/L	P413681	
	SM 4500-F- C-2011	Fluoride	0.086	I	mg F/L	P413667	
2323914	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P413625	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P413799	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P413629	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P413562	
	SM 5310 B-2011	Organic Carbon	10		mg C/L	P413655	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P413367

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P413625

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P413626

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P413793

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P413794

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P413799

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P413800

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P413584

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P413585

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: P413629

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P413560

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P413562

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P413797

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

Reference Method: SM 2320 B-2011
Batch ID: P413665

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

Reference Method: SM 2320 B-2011
Batch ID: P413854

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

Reference Method: SM 2540 D-2011
Batch ID: P413681

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P413685

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P413667

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: P413859

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P413655

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

Reference Method: SM 5310 B-2011
Batch ID: P413751

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

Reference Method: SM 5310 B-2011
Batch ID: P413888

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P413367

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	96.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P413625

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P413626

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P413793

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P413794

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P413799

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P413800

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.1		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P413584

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: P413585

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P413629

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: P413560

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P413562

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.1		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P413797

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

Reference Method: SM 2320 B-2011
Batch ID: P413665

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.5		P	94 - 106

Reference Method: SM 2320 B-2011
Batch ID: P413854

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.0		P	94 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P413667

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.2		P	93 - 104

Reference Method: SM 4500-F- C-2011
Batch ID: P413859

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.3		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P413655

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.2		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P413751

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.6		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P413888

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	92.1		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P413625

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2324065	Ammonia-N	94.4	98.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P413626

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2323128	Ammonia-N	105	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P413793

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2323910	Kjeldahl Nitrogen	111	112	F/F	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P413794

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2323912	Kjeldahl Nitrogen	102	94.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P413800

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2323913	Kjeldahl Nitrogen	97.6	93.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P413584

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2323336	NO2NO3-N	99.5	99.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P413585

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2323911	NO2NO3-N	97.4	97.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P413629

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2323914	NO2NO3-N	97.0	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P413560

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2323683	Total-P	92.0	93.5	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P413562

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2323914	Total-P	98.2	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P413797

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2323912	Total-P	97.9	100	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P413667

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2324139	Fluoride	99.9	98.7	P/P	92 - 107

Reference Method: SM 4500-F- C-2011
Batch ID: P413859

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2323905	Fluoride	98.4	98.4	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P413655

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2323811	Organic Carbon	96.7	97.6	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P413751

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2323943	Organic Carbon	96.2	96.9	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P413888

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2323910	Organic Carbon	95.0	96.3	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P413367

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2323909	Turbidity	1.03	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P413625

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2324065	Ammonia-N	3.40	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P413626

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2323128	Ammonia-N	0.504	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P413793

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2323910	Kjeldahl Nitrogen	1.18	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P413794

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2323912	Kjeldahl Nitrogen	6.51	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P413799

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2324098	Kjeldahl Nitrogen	7.73	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P413800

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2323913	Kjeldahl Nitrogen	4.00	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P413584

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2323336	NO2NO3-N	0.0	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P413585

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2323911	NO2NO3-N	0.492	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P413629

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2323914	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P413560

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2323683	Total-P	1.64	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P413562

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2323914	Total-P	0.854	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P413797

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2323912	Total-P	2.12	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P413665

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2324139	Total Alkalinity	0.0848	Sample	P	0 - 5.2

Reference Method: SM 2320 B-2011
Batch ID: P413854

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2323905	Total Alkalinity	2.60	Sample	P	0 - 3.8

Reference Method: SM 4500-F- C-2011
Batch ID: P413667

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2324139	Fluoride	1.03	Spike	P	0 - 2.1

Quality Assurance Report
Precision

Reference Method: SM 4500-F- C-2011
Batch ID: P413859

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2323905	Fluoride	0.0	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P413655

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2323811	Organic Carbon	0.619	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P413751

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2323943	Organic Carbon	0.403	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P413888

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2323910	Organic Carbon	1.36	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: A111912
Included Lab Sample IDs: 2323905, 2323906, 2323907, 2323908, 2323909

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A111998
Included Lab Sample IDs: 2323910, 2323911, 2323912, 2323913

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A112023
Included Lab Sample IDs: 2323914

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A112028
Included Lab Sample IDs: 2323910, 2323911, 2323912, 2323913, 2323914

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.6	97.6	P/P	90 - 110
Ammonia-N	97.9	97.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A112039
Included Lab Sample IDs: 2323914

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.3	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A112040
Included Lab Sample IDs: 2323910, 2323911

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	98.2	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A112045
Included Lab Sample IDs: 2323914

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.7	97.8	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A112048
Included Lab Sample IDs: 2323909

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-2011
Run ID: A112048
Included Lab Sample IDs: 2323909

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.6	99.4	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A112048
Included Lab Sample IDs: 2323909

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

Reference Method: SM 5310 B-2011
Run ID: A112089
Included Lab Sample IDs: 2323911

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.6	97.0	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A112155
Included Lab Sample IDs: 2323905, 2323906, 2323907, 2323908

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.7	96.5	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A112155
Included Lab Sample IDs: 2323905, 2323906, 2323907, 2323908

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

Reference Method: SM 5310 B-2011
Run ID: A112170
Included Lab Sample IDs: 2323910, 2323912, 2323913

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.6	95.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A112181
Included Lab Sample IDs: 2323912, 2323913

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A112237
Included Lab Sample IDs: 2323910, 2323911, 2323913, 2323914

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	96.2	P/P	90 - 110
Kjeldahl Nitrogen	94.4	99.3	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A112237
Included Lab Sample IDs: 2323910, 2323911, 2323913, 2323914

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.2	90.7	P/P	90 - 110
Kjeldahl Nitrogen	99.3	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A112291
Included Lab Sample IDs: 2323912

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	107	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		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity	96.1				1.03	
EPA 350.1 Rev. 2.0	Ammonia-N	96.4	94.4	98.0			3.40
	Ammonia-N	97.0	105	106			0.504
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.1	111	112			1.18
	Kjeldahl Nitrogen	102	102	94.6			6.51
	Kjeldahl Nitrogen	104					7.73
	Kjeldahl Nitrogen	98.1	97.6	93.4			4.00
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	99.5	99.5			0.0
	NO2NO3-N	99.5	97.4	97.0			0.492
	NO2NO3-N	100	97.0	97.0			0.0
EPA 365.1 Rev. 2.0	Total-P	98.2	92.0	93.5			1.64
	Total-P	96.1	98.2	97.0			0.854
	Total-P	102	97.9	100			2.12
SM 2320 B-2011	Total Alkalinity	99.5				0.0848	
	Total Alkalinity	98.0				2.60	
SM 4500-F- C-2011	Fluoride	98.2	99.9	98.7			1.03
	Fluoride	99.3	98.4	98.4			0.0
SM 5310 B-2011	Organic Carbon	95.2	96.7	97.6			0.619
	Organic Carbon	97.6	96.2	96.9			0.403
	Organic Carbon	92.1	95.0	96.3			1.36

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2323905, 2323906, 2323907, 2323908, 2323909
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2323910, 2323911, 2323912, 2323913, 2323914
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2323910, 2323911, 2323912, 2323913, 2323914
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2323910, 2323911, 2323912, 2323913, 2323914
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2323910, 2323911, 2323912, 2323913, 2323914
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2323905, 2323906, 2323907, 2323908, 2323909
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2323905, 2323906, 2323907, 2323908, 2323909
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2323905, 2323906, 2323907, 2323908, 2323909
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2323910, 2323911, 2323912, 2323913, 2323914

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	05/03/2022			05/04/2022 13:35	Anna M. Plaviak	2323905
	05/03/2022			05/04/2022 13:36	Anna M. Plaviak	2323906
	05/03/2022			05/04/2022 13:38	Anna M. Plaviak	2323907
	05/03/2022			05/04/2022 13:39	Anna M. Plaviak	2323908
	05/03/2022			05/04/2022 13:40	Anna M. Plaviak	2323909
EPA 350.1 Rev. 2.0	05/03/2022			05/10/2022 11:06	Ping Hua	2323914
	05/03/2022			05/10/2022 11:33	Ping Hua	2323910
	05/03/2022			05/10/2022 11:34	Ping Hua	2323911
	05/03/2022			05/10/2022 11:35	Ping Hua	2323912
	05/03/2022			05/10/2022 11:37	Ping Hua	2323913
EPA 351.2 Rev. 2.0	05/03/2022	05/16/2022 11:34	Samantha L Bates	05/18/2022 15:19	Samantha L Bates	2323910
	05/03/2022	05/16/2022 11:34	Samantha L Bates	05/18/2022 15:27	Samantha L Bates	2323911
	05/03/2022	05/16/2022 11:34	Samantha L Bates	05/20/2022 10:37	Samantha L Bates	2323912
	05/03/2022	05/16/2022 11:35	Samantha L Bates	05/18/2022 16:19	Samantha L Bates	2323914
	05/03/2022	05/16/2022 11:35	Samantha L Bates	05/18/2022 16:40	Samantha L Bates	2323913
EPA 353.2 Rev. 2.0	05/03/2022			05/09/2022 10:24	Beverly Y. Sanders	2323910
	05/03/2022			05/09/2022 10:31	Beverly Y. Sanders	2323911
	05/03/2022			05/09/2022 10:39	Beverly Y. Sanders	2323912
	05/03/2022			05/09/2022 10:40	Beverly Y. Sanders	2323913
	05/03/2022			05/10/2022 10:15	Beverly Y. Sanders	2323914
EPA 365.1 Rev. 2.0	05/03/2022	05/09/2022 09:52	Simonne.V. Calhoun	05/10/2022 15:25	Sarah A Nixon	2323914
	05/03/2022	05/09/2022 09:52	Simonne.V. Calhoun	05/10/2022 19:29	James L Waggerby	2323910
	05/03/2022	05/09/2022 09:52	Simonne.V. Calhoun	05/10/2022 19:30	James L Waggerby	2323911
	05/03/2022	05/13/2022 15:36	Adam P Silver	05/16/2022 15:25	James L Waggerby	2323912
	05/03/2022	05/13/2022 15:36	Adam P Silver	05/16/2022 15:26	James L Waggerby	2323913
SM 2320 B-2011	05/03/2022			05/11/2022 02:37	Dale L. Simmons	2323909
	05/03/2022			05/14/2022 10:44	Dale L. Simmons	2323905
	05/03/2022			05/14/2022 10:56	Dale L. Simmons	2323906
	05/03/2022			05/14/2022 11:52	Dale L. Simmons	2323907
	05/03/2022			05/14/2022 12:04	Dale L. Simmons	2323908
SM 2540 D-2011	05/03/2022			05/05/2022 14:39	Yijie Li	2323905, 2323906, 2323907, 2323908, 2323909
SM 4500-F- C-2011	05/03/2022			05/11/2022 02:37	Dale L. Simmons	2323909
	05/03/2022			05/14/2022 08:39	Dale L. Simmons	2323905
	05/03/2022			05/14/2022 08:53	Dale L. Simmons	2323906
	05/03/2022			05/14/2022 09:14	Dale L. Simmons	2323907
	05/03/2022			05/14/2022 09:20	Dale L. Simmons	2323908
SM 5310 B-2011	05/03/2022			05/11/2022 04:28	Judith K. Clark	2323914
	05/03/2022			05/11/2022 13:29	Judith K. Clark	2323910
	05/03/2022			05/11/2022 14:10	Judith K. Clark	2323912

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-2011	05/03/2022			05/11/2022 15:22	Judith K. Clark	2323913
	05/03/2022			05/11/2022 18:25	Judith K. Clark	2323911