Chemical Analysis Report

NE-DIST-2021-07-22-01

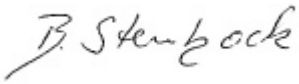
Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **St.Augustine**
Request ID: **RQ-2021-07-19-30**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256
Attn: Jeremy Parrish

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

Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 18-AUG-2021 13:36



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 groups are included in this report: Metals and 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: Moultrie CR @ US 1 **Collection Date/Time: 07/21/2021 09:20**

Field ID: 27010055 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2264393	EPA 180.1 Rev. 2.0	Turbidity	7.8		NTU	P401434	
	SM 2320 B-2011	Total Alkalinity	117		mg CaCO3/L	P401517	
	SM 2540 D-2011	TSS	20		mg/L	P401968	
	SM 4500 F-C-2011	Fluoride	1.0		mg F/L	P401521	
2264394	EPA 350.1 Rev. 2.0	Ammonia-N	0.059		mg N/L	P401846	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.77	J	mg N/L	P402351	LCS, MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.042		mg N/L	P401579	
	EPA 365.1 Rev. 2.0	Total-P	0.088		mg P/L	P401664	
	SM 5310 B-2011	Organic Carbon	9.0		mg C/L	P401869	
2264395	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.046		mg P/L	P401406	
2264409	EPA 200.7 Rev. 4.4	Calcium	325		mg/L	P401419	
		Iron	350	I	ug/L	P401419	
		Magnesium	978		mg/L	P401419	
		Manganese	27		ug/L	P401419	
		Zinc	20	U	ug/L	P401419	
	EPA 200.8 Rev. 5.4	Aluminum	430		ug/L	P401419	
		Antimony	0.25	I	ug/L	P401419	
		Arsenic	3.57		ug/L	P401419	
		Beryllium	0.040	U	ug/L	P401419	
		Cadmium	0.080	U	ug/L	P401419	
		Chromium	1.6	U	ug/L	P401419	
		Copper	1.6	U	ug/L	P401948	
		Lead	0.80	U	ug/L	P401419	
		Nickel	2.0	U	ug/L	P401419	
		Selenium	0.80	U	ug/L	P401419	
		Silver	0.040	U	ug/L	P401948	
		Thallium	0.40	U	ug/L	P401419	

Ref. Method and Comment:
EPA 351.2 Rev. 2.0: Refer to the Lab Analysis Report for an explanation of QC Codes.
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium and magnesium are unavailable because of high analyte concentration in the QC sample.

Sample Location: Field Blank **Collection Date/Time: 07/21/2021 09:35**

Field ID: FB07212021 Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2264396	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P401434	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P401516	
	SM 2540 D-2011	TSS	2	U	mg/L	P401964	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P401520	
2264397	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P401894	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P402350	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P401529	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P401697	
	SM 5310 B-2011	Organic Carbon	0.50	U	mg C/L	P402025	
2264398	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P401407	
2264410	EPA 200.7 Rev. 4.4	Calcium	0.075	U	mg/L	P401419	
		Iron	30	U	ug/L	P401419	
		Magnesium	0.040	U	mg/L	P401419	
		Manganese	1.0	U	ug/L	P401419	
		Zinc	5.0	U	ug/L	P401419	
	EPA 200.8 Rev. 5.4	Aluminum	5.0	U	ug/L	P401419	
		Antimony	0.050	U	ug/L	P401419	
		Arsenic	0.050	U	ug/L	P401419	
		Beryllium	0.010	U	ug/L	P401419	
		Cadmium	0.020	U	ug/L	P401419	
		Chromium	0.40	U	ug/L	P401419	
		Copper	0.40	U	ug/L	P401948	
		Lead	0.20	U	ug/L	P401419	
		Nickel	0.50	U	ug/L	P401419	
		Selenium	0.20	U	ug/L	P401419	
		Silver	0.010	U	ug/L	P401948	
		Thallium	0.10	U	ug/L	P401419	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium and magnesium 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: P401434

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P401419

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Manganese	1.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P401419

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Beryllium	0.010	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P401948

Component	Result	Code	Units
Copper	0.40	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P401846

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P401894

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P402350

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P402351

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P401529

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P401579

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P401664

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P401697

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P401406

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P401407

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

Reference Method: SM 2320 B-2011
Batch ID: P401516

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

Reference Method: SM 2320 B-2011
Batch ID: P401517

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 D-2011
Batch ID: P401964

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P401968

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P401520

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P401521

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P401869

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

Reference Method: SM 5310 B-2011
Batch ID: P402025

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P401419

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	98.8		P	85 - 115
Iron	101		P	85 - 115
Magnesium	99.0		P	85 - 115
Manganese	98.5		P	85 - 115
Zinc	97.6		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P401419

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	110		P	70 - 130
Antimony	110		P	85 - 115
Arsenic	99.8		P	85 - 115
Beryllium	98.9		P	85 - 115
Cadmium	105		P	85 - 115
Chromium	96.5		P	85 - 115
Lead	104		P	85 - 115
Nickel	94.0		P	85 - 115
Selenium	99.6		P	85 - 115
Thallium	107		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P401948

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Copper	101		P	85 - 115
Silver	101		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P401846

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: P401894

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	94.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P402350

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P402351

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P401529

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: P401579

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: P401664

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P401697

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: P401406

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P401407

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

Reference Method: SM 2320 B-2011
Batch ID: P401516

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	94 - 106

Reference Method: SM 2320 B-2011
Batch ID: P401517

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P401520

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P401521

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

Reference Method: SM 5310 B-2011
Batch ID: P401869

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.4		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P402025

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P401419

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2264015	Iron	94.7	100	P/P	70 - 130
2264015	Manganese	96.5	98.6	P/P	70 - 130
2264015	Zinc	95.5	97.3	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P401419

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2264015	Aluminum	99.1	105	P/P	70 - 130
2264015	Antimony	104	106	P/P	70 - 130
2264015	Arsenic	107	109	P/P	70 - 130
2264015	Beryllium	101	99.9	P/P	70 - 130
2264015	Cadmium	94.8	95.8	P/P	70 - 130
2264015	Chromium	100	102	P/P	70 - 130
2264015	Lead	110	113	P/P	70 - 130
2264015	Nickel	113	110	P/P	70 - 130
2264015	Selenium	93.6	95.2	P/P	70 - 130
2264015	Thallium	112	115	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P401948

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2262822	Copper	107	110	P/P	70 - 130
2262822	Silver	95.5	96.5	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P401846

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2264394	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P401894

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2264209	Ammonia-N	96.0	94.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P402350

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2264571	Kjeldahl Nitrogen	113	111	F/F	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P402351

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2264703	Kjeldahl Nitrogen	112	121	F/F	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P401529

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2264204	NO2NO3-N	95.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P401579

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2264394	NO2NO3-N	99.6	99.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P401664

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2264394	Total-P	102	99.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P401697

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2264238	Total-P	107	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P401406

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2264350	O-Phosphate-P	99.9	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P401407

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2264180	O-Phosphate-P	100	100	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P401520

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2263991	Fluoride	101	101	P/P	92 - 107

Reference Method: SM 4500 F-C-2011
Batch ID: P401521

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2264010	Fluoride	98.7	100	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P401869

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2264739	Organic Carbon	95.9	96.3	P/P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P402025

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2264582	Organic Carbon	95.3	96.6	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P401434

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2264187	Turbidity	2.39	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P401419

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2264015	Calcium	1.34	Spike	P	0 - 20
2264015	Iron	4.74	Spike	P	0 - 20
2264015	Magnesium	2.68	Spike	P	0 - 20
2264015	Manganese	1.71	Spike	P	0 - 20
2264015	Zinc	1.84	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P401419

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2264015	Aluminum	4.42	Spike	P	0 - 20
2264015	Antimony	1.70	Spike	P	0 - 20
2264015	Arsenic	1.86	Spike	P	0 - 20
2264015	Beryllium	0.755	Spike	P	0 - 20
2264015	Cadmium	1.08	Spike	P	0 - 20
2264015	Chromium	1.84	Spike	P	0 - 20
2264015	Lead	1.97	Spike	P	0 - 20
2264015	Nickel	2.67	Spike	P	0 - 20
2264015	Selenium	1.70	Spike	P	0 - 20
2264015	Thallium	2.37	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P401948

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2262822	Copper	2.60	Spike	P	0 - 20
2262822	Silver	1.12	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P401846

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2264394	Ammonia-N	0.454	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P401894

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2264209	Ammonia-N	0.954	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P402350

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2264571	Kjeldahl Nitrogen	1.21	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P402351

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2264703	Kjeldahl Nitrogen	5.23	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P401529

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2264204	NO2NO3-N	0.361	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P401579

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2264394	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P401664

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2264394	Total-P	2.50	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P401697

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2264238	Total-P	0.846	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P401406

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2264350	O-Phosphate-P	0.946	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P401407

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2264180	O-Phosphate-P	0.181	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2320 B-2011
Batch ID: P401516

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2263991	Total Alkalinity	2.31	Sample	P	0 - 5.2

Reference Method: SM 2320 B-2011
Batch ID: P401517

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2264010	Total Alkalinity	2.06	Sample	P	0 - 5.2

Reference Method: SM 2540 D-2011
Batch ID: P401968

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2264839	TSS	4.65	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P401520

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2263991	Fluoride	0.0	Spike	P	0 - 2.1

Reference Method: SM 4500 F-C-2011
Batch ID: P401521

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2264010	Fluoride	0.953	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P401869

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2264739	Organic Carbon	0.351	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P402025

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2264582	Organic Carbon	0.800	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: A106770
Included Lab Sample IDs: 2264395, 2264398

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.7	98.3	P/P	90 - 110
O-Phosphate-P	99.5	97.7	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A106778
Included Lab Sample IDs: 2264393, 2264396

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

Reference Method: SM 2320 B-2011
Run ID: A106814
Included Lab Sample IDs: 2264393, 2264396

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	99.9	P/P	90 - 110
Total Alkalinity	99.9	102	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A106814
Included Lab Sample IDs: 2264393, 2264396

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A106821
Included Lab Sample IDs: 2264397

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	99.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A106846
Included Lab Sample IDs: 2264394

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A106890
Included Lab Sample IDs: 2264409, 2264410

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	106	106	P/P	90 - 110
Antimony	108	107	P/P	90 - 110
Arsenic	97.6	97.1	P/P	90 - 110
Arsenic	97.9	98.6	P/P	90 - 110
Beryllium	97.4	97.0	P/P	90 - 110
Beryllium	97.6	98.3	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A106890
Included Lab Sample IDs: 2264409, 2264410

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cadmium	102	102	P/P	90 - 110
Cadmium	103	103	P/P	90 - 110
Chromium	93.5	91.1	P/P	90 - 110
Chromium	95.9	97.0	P/P	90 - 110
Lead	101	101	P/P	90 - 110
Lead	101	101	P/P	90 - 110
Nickel	94.8	97.0	P/P	90 - 110
Nickel	95.1	94.9	P/P	90 - 110
Selenium	97.4	97.5	P/P	90 - 110
Selenium	97.5	97.9	P/P	90 - 110
Thallium	101	100	P/P	90 - 110
Thallium	99.8	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A106910
Included Lab Sample IDs: 2264394

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A106976
Included Lab Sample IDs: 2264394

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	95.5	96.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A106978
Included Lab Sample IDs: 2264397

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.5	95.2	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A106989
Included Lab Sample IDs: 2264409, 2264410

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	102	P/P	90 - 110
Aluminum	102	106	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A106995
Included Lab Sample IDs: 2264394

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.4	97.0	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A107003
Included Lab Sample IDs: 2264397

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	93.8	94.2	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A107030
Included Lab Sample IDs: 2264409, 2264410

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	99.3	99.8	P/P	90 - 110
Iron	98.4	95.9	P/P	90 - 110
Iron	98.7	99.8	P/P	90 - 110
Magnesium	98.8	99.4	P/P	90 - 110
Manganese	101	103	P/P	90 - 110
Manganese	102	100	P/P	90 - 110
Zinc	101	102	P/P	90 - 110
Zinc	99.3	101	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A107056
Included Lab Sample IDs: 2264397

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.4	95.8	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A107062
Included Lab Sample IDs: 2264409

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	96.7	99.4	P/P	95 - 105
Magnesium	96.9	99.5	P/P	95 - 105

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A107070
Included Lab Sample IDs: 2264409, 2264410

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	104	104	P/P	90 - 110
Copper	104	101	P/P	90 - 110
Silver	95.5	92.5	P/P	90 - 110
Silver	96.0	95.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A107223
Included Lab Sample IDs: 2264394, 2264397

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.6	102	P/P	90 - 110
Kjeldahl Nitrogen	99.7	98.4	P/P	90 - 110

Quality Assurance Report
Calibration Verification

* 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					2.39	
EPA 200.7 Rev. 4.4	Calcium	98.8					1.34
	Iron	101	94.7	100			4.74
	Magnesium	99.0					2.68
	Manganese	98.5	96.5	98.6			1.71
	Zinc	97.6	95.5	97.3			1.84
EPA 200.8 Rev. 5.4	Aluminum	110	99.1	105			4.42
	Antimony	110	104	106			1.70
	Arsenic	99.8	107	109			1.86
	Beryllium	98.9	101	99.9			0.755
	Cadmium	105	94.8	95.8			1.08
	Chromium	96.5	100	102			1.84
	Copper	101	107	110			2.60
	Lead	104	110	113			1.97
	Nickel	94.0	113	110			2.67
	Selenium	99.6	93.6	95.2			1.70
	Silver	101	95.5	96.5			1.12
	Thallium	107	112	115			2.37
EPA 350.1 Rev. 2.0	Ammonia-N	96.4	102	103			0.454
	Ammonia-N	94.2	96.0	94.8			0.954
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	113	111			1.21
	Kjeldahl Nitrogen	111	112	121			5.23
EPA 353.2 Rev. 2.0	NO2NO3-N	100	95.5				0.361
	NO2NO3-N	100	99.6	99.6			0.0
EPA 365.1 Rev. 2.0	Total-P	102	102	99.4			2.50
	Total-P	104	107	108			0.846
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.8	99.9	101			0.946
	O-Phosphate-P	101	100	100			0.181
SM 2320 B-2011	Total Alkalinity	102				2.31	
	Total Alkalinity	102				2.06	
SM 2540 D-2011	TSS					4.65	
SM 4500 F-C-2011	Fluoride	100	101	101			0.0
	Fluoride	102	98.7	100			0.953
SM 5310 B-2011	Organic Carbon	97.4	95.9	96.3			0.351
	Organic Carbon	95.4	95.3	96.6			0.800

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2264393, 2264396
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2264409, 2264410
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2264409, 2264410
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2264394, 2264397
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2264394, 2264397
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2264394, 2264397
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2264394, 2264397
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2264395, 2264398
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2264393, 2264396
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2264393, 2264396
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2264393, 2264396

Reference Method Descriptions

Method	Description	Associated Samples
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2264394, 2264397

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	07/22/2021			07/22/2021 15:14	Sarah A Nixon	2264393, 2264396
EPA 200.7 Rev. 4.4	07/22/2021	07/22/2021 15:25	Elliott D. Healy	08/04/2021 17:56	Betina Topolski	2264410
	07/22/2021	07/22/2021 15:25	Elliott D. Healy	08/04/2021 22:23	Betina Topolski	2264409
	07/22/2021	07/22/2021 15:25	Elliott D. Healy	08/05/2021 13:30	Betina Topolski	2264409
EPA 200.8 Rev. 5.4	07/22/2021	07/22/2021 15:25	Elliott D. Healy	07/28/2021 13:10	Alexander Thompson	2264410
	07/22/2021	07/22/2021 15:25	Elliott D. Healy	07/28/2021 17:40	Alexander Thompson	2264409
	07/22/2021	07/22/2021 15:25	Elliott D. Healy	08/02/2021 21:50	McKinley C Carter	2264410
	07/22/2021	07/22/2021 15:25	Elliott D. Healy	08/02/2021 23:29	McKinley C Carter	2264409
	07/22/2021	08/04/2021 13:20	Elliott D. Healy	08/05/2021 11:45	Alexander Thompson	2264410
	07/22/2021	08/04/2021 13:20	Elliott D. Healy	08/05/2021 13:24	Alexander Thompson	2264409
EPA 350.1 Rev. 2.0	07/22/2021			08/02/2021 14:51	Roberta Tatti	2264394
	07/22/2021			08/03/2021 14:06	Roberta Tatti	2264397
EPA 351.2 Rev. 2.0	07/22/2021	08/11/2021 18:38	Madeline Gruver	08/12/2021 12:36	Virginia P. Brown	2264397
	07/22/2021	08/11/2021 18:38	Madeline Gruver	08/12/2021 13:09	Virginia P. Brown	2264394
EPA 353.2 Rev. 2.0	07/22/2021			07/26/2021 10:38	Beverly Y. Sanders	2264397
	07/22/2021			07/27/2021 10:54	Beverly Y. Sanders	2264394
EPA 365.1 Rev. 2.0	07/22/2021	07/28/2021 14:07	Simonne.V. Calhoun	07/29/2021 10:50	Shengyu Ding	2264394
	07/22/2021	07/30/2021 15:31	Simonne.V. Calhoun	08/02/2021 11:53	Shengyu Ding	2264397
EPA 365.1 Rev. 2.0 dissolved	07/22/2021			07/22/2021 13:20	Blanca Fach	2264398
	07/22/2021			07/22/2021 13:34	Blanca Fach	2264395
SM 2320 B-2011	07/22/2021			07/24/2021 03:26	Dale L. Simmons	2264396
	07/22/2021			07/24/2021 06:19	Dale L. Simmons	2264393
SM 2540 D-2011	07/22/2021			07/27/2021 14:56	Yijie Li	2264393, 2264396
SM 4500 F-C-2011	07/22/2021			07/24/2021 03:26	Dale L. Simmons	2264396
	07/22/2021			07/24/2021 05:17	Dale L. Simmons	2264393
SM 5310 B-2011	07/22/2021			08/03/2021 00:12	Madeline Gruver	2264394
	07/22/2021			08/05/2021 01:28	Madeline Gruver	2264397