

Chemical Analysis Report

NW-DIST-2021-07-21-01

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

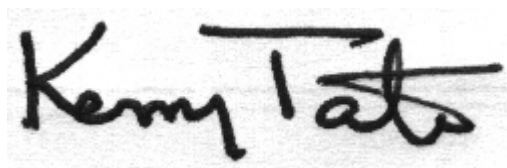
Event Description: **Eastern Lakes**
Request ID: **RQ-2021-07-19-20**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 208
Pensacola, FL 32502-5794
Attn: Myranda Butler

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: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 17-AUG-2021 14:49

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

NON-CONFORMANCE REPORT INCLUDED

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: Cassidy Lake Center

Collection Date/Time: 07/19/2021 11:18

Field ID: G3NW0183

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2263834	EPA 300.0 Rev. 2.1	Chloride	2.9		mg Cl/L	P401681	
		Sulfate	0.83		mg SO4/L	P401684	
	SM 2320 B-2011	Total Alkalinity	1.1	I	mg CaCO3/L	P401515	
	SM 2540 C-2011	TDS	18	I	mg/L	P401797	
	SM 2540 D-2011	TSS	2	U	mg/L	P401802	
2263835	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P401519	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P401766	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.20		mg N/L	P401926	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P401381	
	EPA 365.1 Rev. 2.0	Total-P	0.003	I	mg P/L	P401589	
	SM 5310 B-2011	Organic Carbon	2.3		mg C/L	P401867	

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: Lake Karick (Center)

Collection Date/Time: 07/19/2021 13:55

Field ID: G4NW0274

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2263832	EPA 300.0 Rev. 2.1	Chloride	2.5		mg Cl/L	P401681	
		Sulfate	0.54		mg SO4/L	P401684	
	SM 2320 B-2011	Total Alkalinity	2.7		mg CaCO3/L	P401515	
	SM 2540 C-2011	TDS	21	I	mg/L	P401797	
	SM 2540 D-2011	TSS	2	I	mg/L	P401802	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P401519	
2263833	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P401766	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.22		mg N/L	P401926	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P401381	
	EPA 365.1 Rev. 2.0	Total-P	0.007		mg P/L	P401589	
	SM 5310 B-2011	Organic Carbon	3.0		mg C/L	P401867	
2263836	EPA 200.7 Rev. 4.4	Barium	2.9	I	ug/L	P401538	
		Calcium	1.02		mg/L	P401538	
		Iron	450		ug/L	P401538	
		Magnesium	0.45		mg/L	P401538	
		Manganese	6.5		ug/L	P401538	
		Potassium	0.30	U	mg/L	P401538	
		Sodium	1.5	I	mg/L	P401538	
		Zinc	5.0	U	ug/L	P401538	
	EPA 200.8 Rev. 5.4	Aluminum	47		ug/L	P401538	
		Antimony	0.050	U	ug/L	P401538	
		Arsenic	0.59		ug/L	P401538	
		Beryllium	0.014	I	ug/L	P401538	
		Boron**	9.1		ug/L	P401538	
		Cadmium	0.020	U	ug/L	P401538	
		Chromium	0.40	U	ug/L	P401538	
		Copper	0.40	U	ug/L	P401538	
		Lead	0.20	U	ug/L	P401538	
		Nickel	0.50	U	ug/L	P401538	
		Selenium	0.20	U	ug/L	P401538	
		Silver	0.010	U	ug/L	P401538	
		Thallium	0.10	U	ug/L	P401538	
	SM 2340B	Hardness	4.4		mg/L	P401538	

Ref. Method and Comment:

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

Non-Conformance Report

NCR ID: 8949

Event(s)

NW-DIST-2021-07-21-01

Job(s)

Sample(s)

Test(s)

NCR Type: SHIPPING/RECEIVING

NCR Category: Samples arrived late

Observation: Samples arrived late, samples received within the acceptable temperature range.

Resolution: Logged in according to SMP protocol
Customer contacted, email correspondence attached to sample submittal forms.
Samples will be qualified as appropriate.

Authorized by/Date: Joshua Ayres 8/2/2021

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P401538

Component	Result	Code	Units
Barium	1.0	U	ug/L
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Manganese	1.0	U	ug/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P401538

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
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401681

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401684

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P401766

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P401926

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P401381

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P401589

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

Reference Method: SM 2320 B-2011
Batch ID: P401515

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

Reference Method: SM 2540 C-2011
Batch ID: P401797

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P401802

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P401519

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P401867

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: P401538

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	102		P	85 - 115
Calcium	109		P	85 - 115
Iron	108		P	85 - 115
Magnesium	111		P	85 - 115
Manganese	101		P	85 - 115
Potassium	103		P	85 - 115
Sodium	107		P	85 - 115
Zinc	96.3		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P401538

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	115		P	80 - 120
Antimony	117		P	80 - 120
Arsenic	115		P	80 - 120
Beryllium	111		P	80 - 120
Boron	111		P	80 - 120
Cadmium	113		P	80 - 120
Chromium	111		P	80 - 120
Copper	114		P	80 - 120
Lead	114		P	80 - 120
Nickel	114		P	80 - 120
Selenium	114		P	80 - 120
Silver	114		P	80 - 120
Thallium	107		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401681

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401684

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P401766

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P401926

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P401381

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P401589

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

Reference Method: SM 2320 B-2011
Batch ID: P401515

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P401519

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.5		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P401867

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.1		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P401538

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2263583	Barium	102		P	80 - 120
2263583	Calcium	111		P	80 - 120
2263583	Iron	111		P	80 - 120
2263583	Magnesium	108		P	80 - 120
2263583	Manganese	101		P	80 - 120
2263583	Potassium	104		P	80 - 120
2263583	Sodium	109		P	80 - 120
2263583	Zinc	95.1		P	80 - 120
2263836	Barium	103	101	P/P	80 - 120
2263836	Calcium	110	109	P/P	80 - 120
2263836	Iron	108	109	P/P	80 - 120
2263836	Magnesium	111	111	P/P	80 - 120
2263836	Manganese	101	99.8	P/P	80 - 120
2263836	Potassium	107	106	P/P	80 - 120
2263836	Sodium	108	108	P/P	80 - 120
2263836	Zinc	96.7	95.6	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P401538

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2263583	Aluminum	107		P	80 - 120
2263583	Antimony	114		P	80 - 120
2263583	Arsenic	107		P	80 - 120
2263583	Beryllium	111		P	80 - 120
2263583	Boron	105		P	80 - 120
2263583	Cadmium	109		P	80 - 120
2263583	Chromium	108		P	80 - 120
2263583	Copper	103		P	80 - 120
2263583	Lead	109		P	80 - 120
2263583	Nickel	103		P	80 - 120
2263583	Selenium	103		P	80 - 120
2263583	Silver	111		P	80 - 120
2263583	Thallium	107		P	80 - 120
2263836	Aluminum	104	105	P/P	80 - 120
2263836	Antimony	110	109	P/P	80 - 120
2263836	Arsenic	103	105	P/P	80 - 120
2263836	Beryllium	107	108	P/P	80 - 120
2263836	Boron	104	102	P/P	80 - 120
2263836	Cadmium	106	103	P/P	80 - 120
2263836	Chromium	103	102	P/P	80 - 120
2263836	Copper	104	105	P/P	80 - 120
2263836	Lead	107	108	P/P	80 - 120
2263836	Nickel	102	103	P/P	80 - 120
2263836	Selenium	102	101	P/P	80 - 120
2263836	Silver	106	105	P/P	80 - 120
2263836	Thallium	106	107	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P401681

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401681

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2263312	Chloride	101		P	90 - 110
2263599	Chloride	98.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401684

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2263312	Sulfate	95.3		P	90 - 110
2263599	Sulfate	96.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P401766

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2263835	Ammonia-N	94.4	94.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P401926

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2263634	Kjeldahl Nitrogen	98.8	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P401381

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2263633	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P401589

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2263848	Total-P	101	109	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P401519

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2264187	Fluoride	98.6	99.3	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P401867

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2263621	Organic Carbon	95.4	95.7	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P401538

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2263836	Barium	1.47	Spike	P	0 - 20
2263836	Calcium	0.420	Spike	P	0 - 20
2263836	Iron	0.638	Spike	P	0 - 20
2263836	Magnesium	0.00299	Spike	P	0 - 20
2263836	Manganese	1.44	Spike	P	0 - 20
2263836	Potassium	0.761	Spike	P	0 - 20
2263836	Sodium	0.195	Spike	P	0 - 20
2263836	Zinc	1.17	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P401538

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2263836	Aluminum	0.906	Spike	P	0 - 20
2263836	Antimony	0.681	Spike	P	0 - 20
2263836	Arsenic	1.24	Spike	P	0 - 20
2263836	Beryllium	0.661	Spike	P	0 - 20
2263836	Boron	1.86	Spike	P	0 - 20
2263836	Cadmium	2.27	Spike	P	0 - 20
2263836	Chromium	0.275	Spike	P	0 - 20
2263836	Copper	0.739	Spike	P	0 - 20
2263836	Lead	0.505	Spike	P	0 - 20
2263836	Nickel	0.389	Spike	P	0 - 20
2263836	Selenium	0.856	Spike	P	0 - 20
2263836	Silver	0.193	Spike	P	0 - 20
2263836	Thallium	1.45	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P401681

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2263599	Chloride	0.490	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P401684

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2263599	Sulfate	1.08	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P401766

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2263835	Ammonia-N	0.0	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P401926

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2263634	Kjeldahl Nitrogen	5.09	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P401381

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2263633	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P401589

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2263848	Total-P	5.46	Spike	P	0 - 20

Reference Method: SM 2320 B-2011

Batch ID: P401515

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2264187	Total Alkalinity	1.40	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011

Batch ID: P401797

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2263593	TDS	3.97	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011

Batch ID: P401519

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2264187	Fluoride	0.457	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011

Batch ID: P401867

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2263621	Organic Carbon	0.219	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A106766

Included Lab Sample IDs: 2263833, 2263835

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	103	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A106814

Included Lab Sample IDs: 2263832, 2263834

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	99.6	P/P	90 - 110
Total Alkalinity	99.6	104	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A106814

Included Lab Sample IDs: 2263832, 2263834

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A106876

Included Lab Sample IDs: 2263833, 2263835

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	98.2	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A106905

Included Lab Sample IDs: 2263832, 2263834

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A106929

Included Lab Sample IDs: 2263836

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	102	105	P/P	90 - 110
Antimony	107	107	P/P	90 - 110
Arsenic	104	103	P/P	90 - 110
Beryllium	100	101	P/P	90 - 110
Boron	98.3	104	P/P	90 - 110
Cadmium	103	104	P/P	90 - 110
Chromium	100	102	P/P	90 - 110
Copper	104	102	P/P	90 - 110
Lead	102	104	P/P	90 - 110
Nickel	103	100	P/P	90 - 110
Selenium	103	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A106946

Included Lab Sample IDs: 2263833, 2263835

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.7	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A106958

Included Lab Sample IDs: 2263836

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	102	P/P	90 - 110
Calcium	105	101	P/P	90 - 110
Iron	104	99.9	P/P	90 - 110
Magnesium	104	99.9	P/P	90 - 110
Manganese	101	102	P/P	90 - 110
Potassium	102	100	P/P	90 - 110
Sodium	104	102	P/P	90 - 110
Zinc	101	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A106989

Included Lab Sample IDs: 2263836

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	101	105	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A106995

Included Lab Sample IDs: 2263833, 2263835

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A107016

Included Lab Sample IDs: 2263836

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Thallium	107	108	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A107051

Included Lab Sample IDs: 2263833, 2263835

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.2	100	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 200.7 Rev. 4.4	Barium	102	102	103	101		1.47
	Calcium	109	111	110	109		0.420
	Iron	108	111	108	109		0.638
	Magnesium	111	108	111	111		0.0029
	Manganese	101	101	101	99.8		1.44
	Potassium	103	104	107	106		0.761
	Sodium	107	109	108	108		0.195
	Zinc	96.3	95.1	96.7	95.6		1.17
EPA 200.8 Rev. 5.4	Aluminum	115	104	105	107		0.906
	Antimony	117	110	109	114		0.681
	Arsenic	115	103	105	107		1.24
	Beryllium	111	107	108	111		0.661
	Boron	111	104	102	105		1.86
	Cadmium	113	106	103	109		2.27
	Chromium	111	103	102	108		0.275
	Copper	114	104	105	103		0.739
	Lead	114	107	108	109		0.505
	Nickel	114	102	103	103		0.389
	Selenium	114	102	101	103		0.856
	Silver	114	106	105	111		0.193
	Thallium	107	106	107	107		1.45
	Chloride	101	98.9	101		0.490	
	Sulfate	98.1	96.2	95.3		1.08	
EPA 350.1 Rev. 2.0	Ammonia-N	97.2	94.4	94.4			0.0
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	98.8	108			5.09
EPA 353.2 Rev. 2.0	NO2NO3-N	102	101	101			0.0
EPA 365.1 Rev. 2.0	Total-P	104	101	109			5.46
SM 2320 B-2011	Total Alkalinity	101				1.40	
SM 2540 C-2011	TDS					3.97	
SM 4500 F-C-2011	Fluoride	99.5	98.6	99.3			0.457
SM 5310 B-2011	Organic Carbon	95.1	95.4	95.7			0.219

Reference Method Descriptions

Method	Description	Associated Samples
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2263836
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2263836
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2263832, 2263834
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2263832, 2263834
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2263833, 2263835
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2263833, 2263835
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2263833, 2263835
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2263833, 2263835
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2263832, 2263834
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2263836
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2263832, 2263834
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2263832, 2263834
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2263832, 2263834
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2263833, 2263835

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 200.7 Rev. 4.4	07/21/2021	07/26/2021 14:45	Elliott D. Healy	07/30/2021 15:06	Betina Topolski	2263836
EPA 200.8 Rev. 5.4	07/21/2021	07/26/2021 14:45	Elliott D. Healy	07/29/2021 17:15	McKinley C Carter	2263836
	07/21/2021	07/26/2021 14:45	Elliott D. Healy	08/02/2021 18:30	McKinley C Carter	2263836
	07/21/2021	07/26/2021 14:45	Elliott D. Healy	08/04/2021 02:51	Alexander Thompson	2263836
EPA 300.0 Rev. 2.1	07/21/2021			07/29/2021 06:24	Lipi Saha	2263832
	07/21/2021			07/29/2021 06:36	Lipi Saha	2263834
EPA 350.1 Rev. 2.0	07/21/2021			07/30/2021 13:52	Roberta Tatti	2263835
	07/21/2021			07/30/2021 13:58	Roberta Tatti	2263833
EPA 351.2 Rev. 2.0	07/21/2021	08/03/2021 18:20	Benjamin T. Nordmann	08/04/2021 14:54	Virginia P. Brown	2263833
	07/21/2021	08/03/2021 18:20	Benjamin T. Nordmann	08/04/2021 14:55	Virginia P. Brown	2263835
EPA 353.2 Rev. 2.0	07/21/2021			07/22/2021 10:43	Beverly Y. Sanders	2263833
	07/21/2021			07/22/2021 10:44	Beverly Y. Sanders	2263835
EPA 365.1 Rev. 2.0	07/21/2021	07/27/2021 15:15	Simonne.V. Calhoun	07/28/2021 11:22	Shengyu Ding	2263833
	07/21/2021	07/27/2021 15:15	Simonne.V. Calhoun	07/28/2021 11:23	Shengyu Ding	2263835
SM 2320 B-2011	07/21/2021			07/23/2021 21:37	Dale L. Simmons	2263832
	07/21/2021			07/23/2021 22:23	Dale L. Simmons	2263834
SM 2340B	07/21/2021			07/30/2021 15:06	Betina Topolski	2263836
SM 2540 C-2011	07/21/2021			07/23/2021 15:22	Yijie Li	2263832, 2263834
SM 2540 D-2011	07/21/2021			07/23/2021 15:22	Yijie Li	2263832, 2263834
SM 4500 F-C-2011	07/21/2021			07/23/2021 21:37	Dale L. Simmons	2263832
	07/21/2021			07/23/2021 22:23	Dale L. Simmons	2263834
SM 5310 B-2011	07/21/2021			08/02/2021 14:45	Madeline Gruver	2263833
	07/21/2021			08/02/2021 15:02	Madeline Gruver	2263835