

Chemical Analysis Report

NE-DIST-2021-03-09-01

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

Event Description: **LSJR South West Boat**
Request ID: **RQ-2021-03-08-21**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
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8800 Baymeadows Way West
Suite 100
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 29-MAR-2021 11:36

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.

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: Black CR @ RR Bridge Below Millog Cr

Collection Date/Time: 03/08/2021 10:45

Field ID: 20030204

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2230009	EPA 180.1 Rev. 2.0	Turbidity	4.8		NTU	P394689	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P394884	
		Sulfate	4.6		mg SO4/L	P394886	
	SM 2120 B-2011	Color (true)	270		PCU	P394707	
	SM 2320 B-2011	Total Alkalinity	13		mg CaCO3/L	P394790	
	SM 2540 C-2011	TDS	106		mg/L	P395160	
	SM 2540 D-2011	TSS	2	I	mg/L	P395152	
	SM 4500 F-C-2011	Fluoride	0.058	I	mg F/L	P394793	
2230010	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P394925	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.72		mg N/L	P394962	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.032		mg N/L	P394715	
	EPA 365.1 Rev. 2.0	Total-P	0.068		mg P/L	P394821	
	SM 5310 B-2011	Organic Carbon	21		mg C/L	P395175	
2230011	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.043		mg P/L	P394672	

Ref. Method and Comment:

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

Sample Location: Swimming Pen CR @ SR 220

Collection Date/Time: 03/08/2021 11:40

Field ID: 20030191

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2230006	EPA 180.1 Rev. 2.0	Turbidity	3.3		NTU	P394689	
	EPA 300.0 Rev. 2.1	Chloride	220		mg Cl/L	P394884	
		Sulfate	45		mg SO4/L	P394886	
	SM 2120 B-2011	Color (true)	130		PCU	P394707	
	SM 2320 B-2011	Total Alkalinity	57		mg CaCO3/L	P394790	
	SM 2540 C-2011	TDS	532	A	mg/L	P395160	
	SM 2540 D-2011	TSS	3	IA	mg/L	P395152	
	SM 4500 F-C-2011	Fluoride	0.10		mg F/L	P394793	
2230007	EPA 350.1 Rev. 2.0	Ammonia-N	0.11		mg N/L	P394925	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.97		mg N/L	P394962	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P394715	
	EPA 365.1 Rev. 2.0	Total-P	0.072		mg P/L	P394821	
	SM 5310 B-2011	Organic Carbon	17		mg C/L	P395175	
2230008	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.037		mg P/L	P394672	
2230017	EPA 200.7 Rev. 4.4	Barium	11.5		ug/L	P394723	
		Calcium	32.9		mg/L	P394723	
		Iron	230		ug/L	P394723	
		Magnesium	18.5		mg/L	P394723	
		Manganese	6.9		ug/L	P394723	
		Potassium	5.8		mg/L	P394723	
		Sodium	133		mg/L	P394723	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P394723	
		Aluminum	84		ug/L	P394723	
		Antimony	0.097	I	ug/L	P394723	
		Arsenic	1.81		ug/L	P394723	
		Beryllium	0.018	I	ug/L	P394723	
		Boron**	78.2		ug/L	P394723	
		Cadmium	0.020	U	ug/L	P394723	
		Chromium	0.42	I	ug/L	P394723	
		Copper	1.37		ug/L	P394723	
		Lead	0.51		ug/L	P394723	
		Nickel	0.50	U	ug/L	P394723	
		Selenium	0.20	U	ug/L	P394723	
		Silver	0.010	U	ug/L	P394723	
		Thallium	0.10	U	ug/L	P394723	
		Hardness	158		mg/L	P394723	

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: Swimming Pen Creek at Eagles Creek Dr

Collection Date/Time: 03/08/2021 12:00

Field ID: G2NE1188

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2230018	EPA 200.7 Rev. 4.4	Barium	23.8		ug/L	P394723	
		Calcium	26.5		mg/L	P394723	
		Iron	970		ug/L	P394723	
		Magnesium	3.05		mg/L	P394723	
		Manganese	17.9		ug/L	P394723	
		Potassium	2.6		mg/L	P394723	
		Sodium	16.6		mg/L	P394723	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P394723	
		Aluminum	82		ug/L	P394723	
		Antimony	0.12	I	ug/L	P394723	
		Arsenic	0.67		ug/L	P394723	
		Beryllium	0.017	I	ug/L	P394723	
		Boron**	31.5		ug/L	P394723	
		Cadmium	0.020	U	ug/L	P394723	
		Chromium	0.46	I	ug/L	P394723	
		Copper	2.51		ug/L	P394723	
		Lead	0.20	U	ug/L	P394723	
		Nickel	0.50	U	ug/L	P394723	
		Selenium	0.20	U	ug/L	P394723	
		Silver	0.010	U	ug/L	P394723	
		Thallium	0.10	U	ug/L	P394723	
	SM 2340B	Hardness	78.7		mg/L	P394723	

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P394689

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P394723

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: P394723

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: P394884

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394886

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394925

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P394962

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P394715

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P394821

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

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

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

Reference Method: SM 2120 B-2011
Batch ID: P394707

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P394790

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

Reference Method: SM 2540 C-2011
Batch ID: P395160

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P395152

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P394793

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P395175

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: P394723

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	102		P	85 - 115
Calcium	106		P	85 - 115
Iron	104		P	85 - 115
Magnesium	101		P	85 - 115
Manganese	102		P	85 - 115
Potassium	98.2		P	85 - 115
Sodium	103		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P394723

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	95.7		P	85 - 115
Antimony	97.9		P	85 - 115
Arsenic	97.2		P	85 - 115
Beryllium	95.2		P	85 - 115
Boron	93.1		P	85 - 115
Cadmium	96.3		P	85 - 115
Chromium	93.8		P	85 - 115
Copper	95.9		P	85 - 115
Lead	105		P	85 - 115
Nickel	94.6		P	85 - 115
Selenium	98.8		P	85 - 115
Silver	102		P	85 - 115
Thallium	102		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P394884

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P394886

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P394925

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P394962

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P394715

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P394821

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

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

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

Reference Method: SM 2120 B-2011
Batch ID: P394707

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P394790

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.8		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P394793

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.3		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P395175

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P394723

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2229917	Barium	106	109	P/P	80 - 120
2229917	Calcium	114	116	P/P	80 - 120
2229917	Iron	114	113	P/P	80 - 120
2229917	Magnesium	111	110	P/P	80 - 120
2229917	Manganese	104	108	P/P	80 - 120
2229917	Potassium	105	107	P/P	80 - 120
2229917	Sodium	110	112	P/P	80 - 120
2229917	Zinc	105	109	P/P	80 - 120
2229936	Barium	106		P	80 - 120
2229936	Calcium	110		P	80 - 120
2229936	Iron	111		P	80 - 120
2229936	Magnesium	109		P	80 - 120
2229936	Manganese	105		P	80 - 120
2229936	Potassium	105		P	80 - 120
2229936	Sodium	107		P	80 - 120
2229936	Zinc	105		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P394723

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2229917	Aluminum	93.7	94.5	P/P	80 - 120
2229917	Antimony	97.6	97.7	P/P	80 - 120
2229917	Arsenic	96.7	96.0	P/P	80 - 120
2229917	Beryllium	91.7	89.6	P/P	80 - 120
2229917	Boron	90.4	91.8	P/P	80 - 120
2229917	Cadmium	97.6	96.0	P/P	80 - 120
2229917	Chromium	94.3	93.9	P/P	80 - 120
2229917	Copper	96.8	96.1	P/P	80 - 120
2229917	Lead	104	104	P/P	80 - 120
2229917	Nickel	94.3	94.6	P/P	80 - 120
2229917	Selenium	98.4	96.1	P/P	80 - 120
2229917	Silver	101	101	P/P	80 - 120
2229917	Thallium	104	103	P/P	80 - 120
2229936	Aluminum	95.2		P	80 - 120
2229936	Antimony	97.8		P	80 - 120
2229936	Arsenic	94.4		P	80 - 120
2229936	Beryllium	87.9		P	80 - 120
2229936	Boron	97.5		P	80 - 120
2229936	Cadmium	99.0		P	80 - 120
2229936	Chromium	93.5		P	80 - 120
2229936	Copper	93.7		P	80 - 120
2229936	Lead	104		P	80 - 120
2229936	Nickel	92.7		P	80 - 120
2229936	Selenium	93.1		P	80 - 120
2229936	Silver	101		P	80 - 120
2229936	Thallium	103		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P394884

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: P394884

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2229923	Chloride	101	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394886

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2229923	Sulfate	99.0	99.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394925

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230010	Ammonia-N	96.8	97.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P394962

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230048	Kjeldahl Nitrogen	97.9	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P394715

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2229968	NO2NO3-N	104	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P394821

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2229946	Total-P	107	107	P/P	90 - 110

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

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

Reference Method: SM 4500 F-C-2011
Batch ID: P394793

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230045	Fluoride	99.0	99.7	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P395175

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2229798	Organic Carbon	94.8	94.5	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P394689

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2229944	Turbidity	0.545	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P394723

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2229917	Barium	3.39	Spike	P	0 - 20
2229917	Calcium	1.01	Spike	P	0 - 20
2229917	Iron	1.14	Spike	P	0 - 20
2229917	Magnesium	1.04	Spike	P	0 - 20
2229917	Manganese	2.98	Spike	P	0 - 20
2229917	Potassium	0.939	Spike	P	0 - 20
2229917	Sodium	1.07	Spike	P	0 - 20
2229917	Zinc	3.48	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P394723

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2229917	Aluminum	0.695	Spike	P	0 - 20
2229917	Antimony	0.0109	Spike	P	0 - 20
2229917	Arsenic	0.776	Spike	P	0 - 20
2229917	Beryllium	2.28	Spike	P	0 - 20
2229917	Boron	1.42	Spike	P	0 - 20
2229917	Cadmium	1.55	Spike	P	0 - 20
2229917	Chromium	0.395	Spike	P	0 - 20
2229917	Copper	0.706	Spike	P	0 - 20
2229917	Lead	0.397	Spike	P	0 - 20
2229917	Nickel	0.287	Spike	P	0 - 20
2229917	Selenium	2.32	Spike	P	0 - 20
2229917	Silver	0.123	Spike	P	0 - 20
2229917	Thallium	0.594	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P394884

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2229923	Chloride	0.401	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P394886

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2229923	Sulfate	0.124	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394925

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230010	Ammonia-N	0.281	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P394962

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230048	Kjeldahl Nitrogen	5.75	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P394715

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2229968	NO2NO3-N	0.339	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P394821

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2229946	Total-P	0.0413	Spike	P	0 - 20

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

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

Reference Method: SM 2120 B-2011
Batch ID: P394707

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230045	Color (true)	3.21	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P394790

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230045	Total Alkalinity	1.35	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P395160

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230006	TDS	2.63	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P394793

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230045	Fluoride	0.457	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P395175

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2229798	Organic Carbon	0.288	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A103968

Included Lab Sample IDs: 2230008, 2230011

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.2	98.9	P/P	90 - 110
O-Phosphate-P	98.9	99.7	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A103971

Included Lab Sample IDs: 2230006, 2230009

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A103974

Included Lab Sample IDs: 2230006, 2230009

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.3	98.9	P/P	90 - 110
Sulfate	96.9	97.5	P/P	90 - 110

Reference Method: SM 2120 B-2011

Run ID: A103976

Included Lab Sample IDs: 2230006, 2230009

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	103	P/P	90 - 115
Color (true)	103	105	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A103979

Included Lab Sample IDs: 2230007, 2230010

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	106	106	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A104006

Included Lab Sample IDs: 2230006, 2230009

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.5	100	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A104006

Included Lab Sample IDs: 2230006, 2230009

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A104026

Included Lab Sample IDs: 2230017, 2230018

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	110	107	P/P	90 - 110
Calcium	108	106	P/P	90 - 110
Iron	106	104	P/P	90 - 110
Magnesium	106	104	P/P	90 - 110
Manganese	107	104	P/P	90 - 110
Potassium	103	103	P/P	90 - 110
Sodium	105	106	P/P	90 - 110
Zinc	109	106	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A104046

Included Lab Sample IDs: 2230007, 2230010

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.9	97.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A104053

Included Lab Sample IDs: 2230007, 2230010

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	103	105	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A104097

Included Lab Sample IDs: 2230017, 2230018

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.6	97.1	P/P	90 - 110
Antimony	94.3	95.1	P/P	90 - 110
Arsenic	94.4	94.8	P/P	90 - 110
Beryllium	93.9	95.5	P/P	90 - 110
Boron	102	96.4	P/P	90 - 110
Cadmium	96.2	96.7	P/P	90 - 110
Chromium	94.7	94.1	P/P	90 - 110
Copper	93.0	92.5	P/P	90 - 110
Lead	106	105	P/P	90 - 110
Nickel	93.5	92.8	P/P	90 - 110
Selenium	95.6	97.2	P/P	90 - 110
Silver	97.6	98.2	P/P	90 - 110
Thallium	101	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A104098

Included Lab Sample IDs: 2230007, 2230010

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.6	97.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-2011

Run ID: A104142

Included Lab Sample IDs: 2230007, 2230010

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.8	95.3	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					0.545	
EPA 200.7 Rev. 4.4	Barium	102	106	109	106		3.39
	Calcium	106	114	116	110		1.01
	Iron	104	114	113	111		1.14
	Magnesium	101	111	110	109		1.04
	Manganese	102	104	108	105		2.98
	Potassium	98.2	105	107	105		0.939
	Sodium	103	110	112	107		1.07
	Zinc	101	105	109	105		3.48
EPA 200.8 Rev. 5.4	Aluminum	95.7	93.7	94.5	95.2		0.695
	Antimony	97.9	97.6	97.7	97.8		0.0109
	Arsenic	97.2	96.7	96.0	94.4		0.776
	Beryllium	95.2	91.7	89.6	87.9		2.28
	Boron	93.1	90.4	91.8	97.5		1.42
	Cadmium	96.3	97.6	96.0	99.0		1.55
	Chromium	93.8	94.3	93.9	93.5		0.395
	Copper	95.9	96.8	96.1	93.7		0.706
	Lead	105	104	104	104		0.397
	Nickel	94.6	94.3	94.6	92.7		0.287
	Selenium	98.8	98.4	96.1	93.1		2.32
	Silver	102	101	101	101		0.123
	Thallium	102	104	103	103		0.594
EPA 300.0 Rev. 2.1	Chloride	98.7	101	101			0.401
	Sulfate	96.7	99.0	99.2			0.124
EPA 350.1 Rev. 2.0	Ammonia-N	96.4	96.8	97.2			0.281
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	97.9	108			5.75
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	104	104	103			0.339
EPA 365.1 Rev. 2.0	Total-P	104	107	107			0.0413
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.2	99.0	96.0			2.23
SM 2120 B-2011	Color (true)	101				3.21	
SM 2320 B-2011	Total Alkalinity	98.8				1.35	
SM 2540 C-2011	TDS					2.63	
SM 4500 F-C-2011	Fluoride	99.3	99.0	99.7			0.457
SM 5310 B-2011	Organic Carbon	94.4	94.8	94.5			0.288

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2230006, 2230009
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2230017, 2230018
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2230017, 2230018
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2230006, 2230009
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2230006, 2230009
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2230007, 2230010
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2230007, 2230010
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2230007, 2230010
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2230007, 2230010
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2230008, 2230011
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2230006, 2230009
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2230006, 2230009

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2230017, 2230018
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2230006, 2230009
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2230006, 2230009
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2230006, 2230009
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2230007, 2230010

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	03/09/2021			03/09/2021 15:16	Yen Ta	2230006, 2230009
EPA 200.7 Rev. 4.4	03/09/2021	03/10/2021 12:55	Elliott D. Healy	03/11/2021 16:47	Betina Topolski	2230017
	03/09/2021	03/10/2021 12:55	Elliott D. Healy	03/11/2021 16:55	Betina Topolski	2230018
EPA 200.8 Rev. 5.4	03/09/2021	03/10/2021 12:55	Elliott D. Healy	03/16/2021 17:22	McKinley C Carter	2230017
	03/09/2021	03/10/2021 12:55	Elliott D. Healy	03/16/2021 17:30	McKinley C Carter	2230018
EPA 300.0 Rev. 2.1	03/09/2021			03/10/2021 23:43	Lipi Saha	2230006
	03/09/2021			03/10/2021 23:55	Lipi Saha	2230009
EPA 350.1 Rev. 2.0	03/09/2021			03/12/2021 18:38	Ping Hua	2230010
	03/09/2021			03/12/2021 18:43	Ping Hua	2230007
EPA 351.2 Rev. 2.0	03/09/2021	03/15/2021 11:34	Benjamin T. Nordmann	03/16/2021 15:34	Virginia P. Brown	2230007
	03/09/2021	03/15/2021 11:34	Benjamin T. Nordmann	03/16/2021 15:35	Virginia P. Brown	2230010
EPA 353.2 Rev. 2.0	03/09/2021			03/10/2021 10:15	Beverly Y. Sanders	2230007
	03/09/2021			03/10/2021 10:16	Beverly Y. Sanders	2230010
EPA 365.1 Rev. 2.0	03/09/2021	03/11/2021 12:40	Yen Ta	03/12/2021 16:34	Shengyu Ding	2230007
	03/09/2021	03/11/2021 12:40	Yen Ta	03/12/2021 16:35	Shengyu Ding	2230010
EPA 365.1 Rev. 2.0 dissolved	03/09/2021			03/09/2021 13:49	Lipi Saha	2230008
	03/09/2021			03/09/2021 13:55	Lipi Saha	2230011
SM 2120 B-2011	03/09/2021			03/09/2021 16:25	Benjamin T. Nordmann	2230006
	03/09/2021			03/09/2021 16:36	Benjamin T. Nordmann	2230009
SM 2320 B-2011	03/09/2021			03/11/2021 00:32	Dale L. Simmons	2230006
	03/09/2021			03/11/2021 00:44	Dale L. Simmons	2230009
SM 2340B	03/09/2021			03/11/2021 16:47	Betina Topolski	2230017
	03/09/2021			03/11/2021 16:55	Betina Topolski	2230018
SM 2540 C-2011	03/09/2021			03/12/2021 14:32	Yijie Li	2230006, 2230009
SM 2540 D-2011	03/09/2021			03/12/2021 14:32	Yijie Li	2230006, 2230009
SM 4500 F-C-2011	03/09/2021			03/11/2021 00:32	Dale L. Simmons	2230006
	03/09/2021			03/11/2021 00:44	Dale L. Simmons	2230009
SM 5310 B-2011	03/09/2021			03/18/2021 04:16	Madeline Gruver	2230007
	03/09/2021			03/18/2021 04:27	Madeline Gruver	2230010