Chemical Analysis Report

NE-DIST-2021-08-18-01

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

Event Description: **LSJR West Boat 2021**
Request ID: **RQ-2021-08-02-29**
Customer: **NE-DIST**
Project ID: **SMP**

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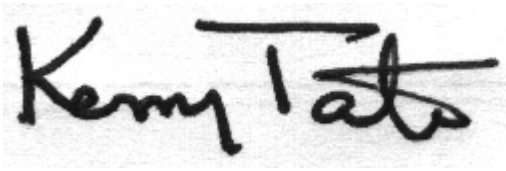
Date Certified: 14-SEP-2021 11:46



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: Yellow Water CR at SR 228 **Collection Date/Time: 08/17/2021 09:00**

Field ID: 20030549 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2270146	EPA 200.7 Rev. 4.4	Barium	15.9		ug/L	P402644	
		Calcium	6.39		mg/L	P402644	
		Iron	2.08E+03		ug/L	P402644	
		Magnesium	1.24		mg/L	P402644	
		Manganese	13.5		ug/L	P402644	
		Potassium	0.39	I	mg/L	P402644	
		Sodium	4.9		mg/L	P402644	
		Zinc	10	I	ug/L	P402644	
	EPA 200.8 Rev. 5.4	Aluminum	495		ug/L	P402644	
		Antimony	0.060	I	ug/L	P402644	
		Arsenic	0.60		ug/L	P402644	
		Beryllium	0.047		ug/L	P402644	
		Boron**	17.9		ug/L	P402644	
		Cadmium	0.020	U	ug/L	P402644	
		Chromium	0.98	I	ug/L	P402644	
		Copper	1.46		ug/L	P402644	
		Lead	1.69		ug/L	P402644	
		Nickel	1.1	I	ug/L	P402644	
		Selenium	0.20	U	ug/L	P402644	
		Silver	0.010	U	ug/L	P402644	
		Thallium	0.10	U	ug/L	P402644	
	SM 2340B	Hardness	21.0		mg/L	P402644	

Ref. Method and Comment:
EPA 200.8 Rev. 5.4: The lead result was confirmed in undigested sample on 08/23/2021.

Sample Location: Wills BR at Watergate Rd. **Collection Date/Time: 08/17/2021 09:40**

Field ID: G2NE1183 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2270130	EPA 180.1 Rev. 2.0	Turbidity	5.7		NTU	P402658	
	EPA 300.0 Rev. 2.1	Chloride	15	A	mg Cl/L	P402997	
		Sulfate	14	A	mg SO4/L	P403000	
	SM 2120 B-2011	Color (true)	65		PCU	P402655	
	SM 2320 B-2011	Total Alkalinity	64	A	mg CaCO3/L	P402803	
	SM 2540 C-2011	TDS	128	A	mg/L	P403216	
	SM 2540 D-2011	TSS	5	I	mg/L	P403195	
	SM 4500 F-C-2011	Fluoride	0.075	I	mg F/L	P402805	
2270131	EPA 350.1 Rev. 2.0	Ammonia-N	0.084		mg N/L	P403033	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.65		mg N/L	P403179	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.35		mg N/L	P402812	
	EPA 365.1 Rev. 2.0	Total-P	0.096		mg P/L	P402818	
	SM 5310 B-2011	Organic Carbon	9.7		mg C/L	P403117	
2270132	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.046		mg P/L	P402650	

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: Cedar CR Blanding Blvd. BR RT 21 **Collection Date/Time: 08/17/2021 10:20**

Field ID: 20030083 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2270133	EPA 180.1 Rev. 2.0	Turbidity	7.3		NTU	P402659	
	SM 2320 B-2011	Total Alkalinity	93		mg CaCO3/L	P402803	
	SM 2540 D-2011	TSS	8	I	mg/L	P403197	
	SM 4500 F-C-2011	Fluoride	0.12		mg F/L	P402805	
2270134	EPA 350.1 Rev. 2.0	Ammonia-N	0.085		mg N/L	P403033	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.89		mg N/L	P403178	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.23		mg N/L	P402812	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P402818	
	SM 5310 B-2011	Organic Carbon	9.9		mg C/L	P403117	
2270135	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.055		mg P/L	P402650	
2270145	EPA 200.7 Rev. 4.4	Calcium	35.8		mg/L	P402644	
		Iron	450		ug/L	P402644	
		Magnesium	4.93		mg/L	P402644	
		Manganese	24.8		ug/L	P402644	
		Zinc	8.5	I	ug/L	P402644	
	EPA 200.8 Rev. 5.4	Aluminum	197		ug/L	P402644	
		Antimony	0.29		ug/L	P402644	
		Arsenic	2.06		ug/L	P402644	
		Beryllium	0.016	I	ug/L	P402644	
		Cadmium	0.020	U	ug/L	P402644	
		Chromium	0.65	I	ug/L	P402644	
		Copper	2.04		ug/L	P402644	
		Lead	1.83		ug/L	P402644	
		Nickel	0.74	I	ug/L	P402644	
		Selenium	0.20	U	ug/L	P402644	
		Silver	0.010	U	ug/L	P402644	
		Thallium	0.10	U	ug/L	P402644	

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P402658

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P402659

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P402644

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: P402644

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: P402997

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P403000

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403033

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403178

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403179

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P402812

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P402818

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P402650

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

Reference Method: SM 2120 B-2011
Batch ID: P402655

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P402803

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

Reference Method: SM 2540 C-2011
Batch ID: P403216

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 D-2011
Batch ID: P403195

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P403197

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P402805

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P403117

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: P402644

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	108		P	85 - 115
Calcium	107		P	85 - 115
Iron	109		P	85 - 115
Magnesium	109		P	85 - 115
Manganese	104		P	85 - 115
Potassium	105		P	85 - 115
Sodium	104		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P402644

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	100		P	85 - 115
Antimony	102		P	85 - 115
Arsenic	98.3		P	85 - 115
Beryllium	96.2		P	85 - 115
Boron	103		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	97.2		P	85 - 115
Copper	97.2		P	85 - 115
Lead	101		P	85 - 115
Nickel	97.1		P	85 - 115
Selenium	97.3		P	85 - 115
Silver	104		P	85 - 115
Thallium	103		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P402997

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P403000

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403033

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403178

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 351.2 Rev. 2.0
Batch ID: P403179

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P402812

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P402818

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P402650

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

Reference Method: SM 2120 B-2011
Batch ID: P402655

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	103		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P402803

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

Reference Method: SM 4500 F-C-2011
Batch ID: P402805

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

Reference Method: SM 5310 B-2011
Batch ID: P403117

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P402644

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2269481	Barium	110	109	P/P	80 - 120
2269481	Calcium	107	109	P/P	80 - 120
2269481	Iron	110	110	P/P	80 - 120
2269481	Magnesium	110	111	P/P	80 - 120
2269481	Manganese	106	106	P/P	80 - 120
2269481	Potassium	105	108	P/P	80 - 120
2269481	Sodium	103		P	80 - 120
2269481	Zinc	107	106	P/P	80 - 120
2269912	Barium	107		P	80 - 120
2269912	Calcium	100		P	80 - 120
2269912	Iron	109		P	80 - 120
2269912	Magnesium	106		P	80 - 120
2269912	Manganese	104		P	80 - 120
2269912	Potassium	105		P	80 - 120
2269912	Sodium	102		P	80 - 120
2269912	Zinc	106		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P402644

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2269481	Aluminum	101	102	P/P	80 - 120
2269481	Antimony	102	105	P/P	80 - 120
2269481	Arsenic	99.2	99.6	P/P	80 - 120
2269481	Beryllium	99.8	99.8	P/P	80 - 120
2269481	Boron	106	106	P/P	80 - 120
2269481	Cadmium	102	103	P/P	80 - 120
2269481	Chromium	98.4	100	P/P	80 - 120
2269481	Copper	97.3	99.0	P/P	80 - 120
2269481	Lead	103	104	P/P	80 - 120
2269481	Nickel	96.9	97.9	P/P	80 - 120
2269481	Selenium	96.7	98.1	P/P	80 - 120
2269481	Silver	103	105	P/P	80 - 120
2269481	Thallium	105	107	P/P	80 - 120
2269912	Aluminum	102		P	80 - 120
2269912	Antimony	104		P	80 - 120
2269912	Arsenic	99.3		P	80 - 120
2269912	Beryllium	95.5		P	80 - 120
2269912	Boron	110		P	80 - 120
2269912	Cadmium	103		P	80 - 120
2269912	Chromium	101		P	80 - 120
2269912	Copper	98.0		P	80 - 120
2269912	Lead	103		P	80 - 120
2269912	Nickel	99.8		P	80 - 120
2269912	Selenium	96.8		P	80 - 120
2269912	Silver	104		P	80 - 120
2269912	Thallium	108		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P402997

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P402997

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2269888	Chloride	98.3		P	90 - 110
2270130	Chloride	99.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P403000

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2269888	Sulfate	99.0		P	90 - 110
2270130	Sulfate	99.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403033

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2270110	Ammonia-N	95.6	96.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403178

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2270389	Kjeldahl Nitrogen	100	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403179

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2270005	Kjeldahl Nitrogen	102	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P402812

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2270006	NO2NO3-N	98.3	98.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P402818

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2270131	Total-P	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P402650

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2270008	O-Phosphate-P	101	102	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P402805

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2270130	Fluoride	100	99.9	P/P	92 - 107

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P403117

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2270134	Organic Carbon	96.6	96.3	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P402658

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2269942	Turbidity	7.71	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P402659

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270171	Turbidity	2.46	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P402644

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2269481	Barium	0.228	Spike	P	0 - 20
2269481	Calcium	1.14	Spike	P	0 - 20
2269481	Iron	0.616	Spike	P	0 - 20
2269481	Magnesium	1.02	Spike	P	0 - 20
2269481	Manganese	0.0902	Spike	P	0 - 20
2269481	Potassium	1.79	Spike	P	0 - 20
2269481	Sodium	1.15	Spike	P	0 - 20
2269481	Zinc	0.492	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P402644

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2269481	Aluminum	0.889	Spike	P	0 - 20
2269481	Antimony	2.64	Spike	P	0 - 20
2269481	Arsenic	0.369	Spike	P	0 - 20
2269481	Beryllium	0.000884	Spike	P	0 - 20
2269481	Boron	0.0757	Spike	P	0 - 20
2269481	Cadmium	1.54	Spike	P	0 - 20
2269481	Chromium	2.08	Spike	P	0 - 20
2269481	Copper	1.73	Spike	P	0 - 20
2269481	Lead	1.08	Spike	P	0 - 20
2269481	Nickel	0.989	Spike	P	0 - 20
2269481	Selenium	1.40	Spike	P	0 - 20
2269481	Silver	2.46	Spike	P	0 - 20
2269481	Thallium	1.80	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P402997

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270130	Chloride	0.571	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P403000

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270130	Sulfate	0.707	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403033

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270110	Ammonia-N	0.528	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403178

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270389	Kjeldahl Nitrogen	1.99	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403179

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270005	Kjeldahl Nitrogen	0.824	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P402812

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270006	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P402818

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270131	Total-P	1.32	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P402650

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270008	O-Phosphate-P	0.0986	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P402655

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2269996	Color (true)	0.227	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2320 B-2011
Batch ID: P402803

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270130	Total Alkalinity	0.888	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P403216

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270130	TDS	0.0	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P402805

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270130	Fluoride	0.469	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P403117

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270134	Organic Carbon	0.205	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: A107319
Included Lab Sample IDs: 2270132, 2270135

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.7	97.2	P/P	90 - 110

Reference Method: SM 2120 B-2011
Run ID: A107322
Included Lab Sample IDs: 2270130

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	104	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A107323
Included Lab Sample IDs: 2270130, 2270133

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	101	P/P	95 - 105
Turbidity	102	101	P/P	95 - 105

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A107373
Included Lab Sample IDs: 2270145, 2270146

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	102	100	P/P	90 - 110
Antimony	100	101	P/P	90 - 110
Arsenic	96.3	94.1	P/P	90 - 110
Beryllium	92.8	92.0	P/P	90 - 110
Boron	108	107	P/P	90 - 110
Cadmium	100	101	P/P	90 - 110
Chromium	96.3	94.7	P/P	90 - 110
Copper	94.5	92.0	P/P	90 - 110
Lead	98.9	98.6	P/P	90 - 110
Nickel	94.3	91.3	P/P	90 - 110
Selenium	99.1	97.5	P/P	90 - 110
Silver	97.8	97.9	P/P	90 - 110
Thallium	102	100	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A107380
Included Lab Sample IDs: 2270130, 2270133

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

Reference Method: SM 4500 F-C-2011
Run ID: A107380
Included Lab Sample IDs: 2270130, 2270133

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A107385
Included Lab Sample IDs: 2270131, 2270134

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A107416
Included Lab Sample IDs: 2270145, 2270146

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	100	98.1	P/P	90 - 110
Calcium	100	97.4	P/P	90 - 110
Iron	101	98.3	P/P	90 - 110
Magnesium	100	97.3	P/P	90 - 110
Manganese	98.8	98.3	P/P	90 - 110
Potassium	102	99.3	P/P	90 - 110
Sodium	101	98.2	P/P	90 - 110
Zinc	97.2	95.3	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A107449
Included Lab Sample IDs: 2270130

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.2	98.9	P/P	90 - 110
Sulfate	99.3	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A107480
Included Lab Sample IDs: 2270131, 2270134

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A107482
Included Lab Sample IDs: 2270131, 2270134

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.5	99.1	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A107529
Included Lab Sample IDs: 2270131, 2270134

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.4	97.6	P/P	90 - 110
Organic Carbon	96.8	98.0	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A107598
Included Lab Sample IDs: 2270131, 2270134

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	104	P/P	90 - 110
Kjeldahl Nitrogen	106	101	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						7.71	
	Turbidity						2.46	
EPA 200.7 Rev. 4.4	Barium	108	110	109	107			0.228
	Calcium	107	107	109	100			1.14
	Iron	109	110	110	109			0.616
	Magnesium	109	110	111	106			1.02
	Manganese	104	106	106	104			0.0902
	Potassium	105	105	108	105			1.79
	Sodium	104	103	102				1.15
	Zinc	104	107	106	106			0.492
EPA 200.8 Rev. 5.4	Aluminum	100	102	102	101			0.889
	Antimony	102	102	105	104			2.64
	Arsenic	98.3	99.2	99.6	99.3			0.369
	Beryllium	96.2	99.8	99.8	95.5			0.0008
	Boron	103	106	106	110			0.0757
	Cadmium	101	102	103	103			1.54
	Chromium	97.2	98.4	100	101			2.08
	Copper	97.2	97.3	99.0	98.0			1.73
	Lead	101	103	104	103			1.08
	Nickel	97.1	96.9	97.9	99.8			0.989
	Selenium	97.3	96.7	98.1	96.8			1.40
	Silver	104	103	105	104			2.46
	Thallium	103	105	107	108			1.80
EPA 300.0 Rev. 2.1	Chloride	100	99.2	98.3			0.571	
	Sulfate	100	99.2	99.0			0.707	
EPA 350.1 Rev. 2.0	Ammonia-N	97.6	95.6	96.2				0.528
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	100	104				1.99
	Kjeldahl Nitrogen	105	102	103				0.824
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	98.3	98.3				0.0
EPA 365.1 Rev. 2.0	Total-P	105	103	102				1.32
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.9	101	102				0.0986
SM 2120 B-2011	Color (true)	103					0.227	
SM 2320 B-2011	Total Alkalinity	102					0.888	
SM 2540 C-2011	TDS						0.0	
SM 4500 F-C-2011	Fluoride	101	100	99.9				0.469
SM 5310 B-2011	Organic Carbon	95.0	96.6	96.3				0.205

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2270130, 2270133
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2270145, 2270146
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2270145, 2270146
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2270130
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2270130
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2270131, 2270134
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2270131, 2270134
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2270131, 2270134
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2270131, 2270134
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2270132, 2270135

Reference Method Descriptions

Method	Description	Associated Samples
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2270130
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2270130, 2270133
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2270146
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2270130
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2270130, 2270133
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2270130, 2270133
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2270131, 2270134

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	08/18/2021			08/18/2021 15:34	Sarah A Nixon	2270130, 2270133
EPA 200.7 Rev. 4.4	08/18/2021	08/18/2021 15:35	Elliott D. Healy	08/24/2021 03:20	Josef B Mick	2270145
	08/18/2021	08/18/2021 15:35	Elliott D. Healy	08/24/2021 03:28	Josef B Mick	2270146
EPA 200.8 Rev. 5.4	08/18/2021	08/18/2021 15:35	Elliott D. Healy	08/20/2021 17:20	Alexander Thompson	2270145
	08/18/2021	08/18/2021 15:35	Elliott D. Healy	08/20/2021 17:29	Alexander Thompson	2270146
EPA 300.0 Rev. 2.1	08/18/2021			08/25/2021 20:12	Lipi Saha	2270130
EPA 350.1 Rev. 2.0	08/18/2021			08/26/2021 13:15	Ping Hua	2270131
	08/18/2021			08/26/2021 13:16	Ping Hua	2270134
EPA 351.2 Rev. 2.0	08/18/2021	08/31/2021 10:12	Benjamin T. Nordmann	09/01/2021 11:27	Alexandra J Mattheus	2270134
	08/18/2021	08/31/2021 10:12	Benjamin T. Nordmann	09/01/2021 12:15	Alexandra J Mattheus	2270131
EPA 353.2 Rev. 2.0	08/18/2021			08/23/2021 10:15	Beverly Y. Sanders	2270131
	08/18/2021			08/23/2021 10:16	Beverly Y. Sanders	2270134
EPA 365.1 Rev. 2.0	08/18/2021	08/23/2021 13:48	Simonne.V. Calhoun	08/25/2021 16:33	Shengyu Ding	2270131
	08/18/2021	08/23/2021 13:48	Simonne.V. Calhoun	08/25/2021 16:38	Shengyu Ding	2270134
EPA 365.1 Rev. 2.0 dissolved	08/18/2021			08/18/2021 15:37	James L Waggerby	2270132, 2270135
SM 2120 B-2011	08/18/2021			08/18/2021 16:23	Sarah A Nixon	2270130
SM 2320 B-2011	08/18/2021			08/19/2021 21:33	Dale L. Simmons	2270130
	08/18/2021			08/19/2021 23:19	Dale L. Simmons	2270133
SM 2340B	08/18/2021			08/24/2021 03:28	Josef B Mick	2270146
SM 2540 C-2011	08/18/2021			08/23/2021 15:36	Yijie Li	2270130
SM 2540 D-2011	08/18/2021			08/23/2021 15:36	Yijie Li	2270130, 2270133
SM 4500 F-C-2011	08/18/2021			08/19/2021 21:21	Dale L. Simmons	2270130
	08/18/2021			08/19/2021 23:19	Dale L. Simmons	2270133
SM 5310 B-2011	08/18/2021			08/28/2021 02:32	Madeline Gruver	2270134
	08/18/2021			08/28/2021 07:44	Madeline Gruver	2270131