

Chemical Analysis Report

CEN-DIST-2020-10-30-02

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

Event Description: **SJR above Puzzle**
Request ID: **RQ-2020-09-14-35**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 24-NOV-2020 10:47

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored background.

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: Sjr @ Power Line Crossing

Collection Date/Time: 10/29/2020 10:32

Field ID: G3CE0015

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2205515	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P389574	
	EPA 300.0 Rev. 2.1	Chloride	89		mg Cl/L	P389805	
		Sulfate	12		mg SO4/L	P389808	
		Color (true)	300		PCU	P389562	
	SM 2320 B-2011	Total Alkalinity	60		mg CaCO3/L	P389776	
	SM 2540 C-2011	TDS	320		mg/L	P390015	
	SM 2540 D-2011	TSS	4	I	mg/L	P389998	
	SM 4500 F-C-2011	Fluoride	0.095	I	mg F/L	P389778	
2205517	EPA 350.1 Rev. 2.0	Ammonia-N	0.039		mg N/L	P389589	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P389731	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.019		mg N/L	P389735	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P389638	
	SM 5310 B-2011	Organic Carbon	29		mg C/L	P389772	
2205519	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.11		mg P/L	P389564	
2205530	EPA 200.7 Rev. 4.4	Barium	21.4		ug/L	P389618	
		Calcium	33.1		mg/L	P389618	
		Iron	660		ug/L	P389618	
		Magnesium	7.94		mg/L	P389618	
		Potassium	2.6		mg/L	P389618	
		Sodium	50.7		mg/L	P389618	
		Zinc	5.0	U	ug/L	P389618	
	EPA 200.8 Rev. 5.4	Aluminum	64		ug/L	P389618	
		Antimony	0.050	U	ug/L	P389618	
		Arsenic	0.70		ug/L	P389618	
		Beryllium	0.019	I	ug/L	P389618	
		Boron**	34.9		ug/L	P389618	
		Cadmium	0.020	U	ug/L	P389618	
		Chromium	0.40	U	ug/L	P389618	
		Copper	0.40	U	ug/L	P389618	
		Lead	0.20	U	ug/L	P389618	
		Nickel	0.50	U	ug/L	P389618	
		Selenium	0.25	I	ug/L	P390040	
		Silver	0.010	U	ug/L	P389618	
		Thallium	0.10	U	ug/L	P389618	
		Hardness	115		mg/L	P389618	

Ref. Method and Comment:

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

SM 4500 F-C-2011: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Sjr @ 250m Nnw of Power Line Crossing

Collection Date/Time: 10/29/2020 10:42

Field ID: G3CE0031

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2205516	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P389574	
	EPA 300.0 Rev. 2.1	Chloride	85		mg Cl/L	P389805	
		Sulfate	10		mg SO4/L	P389808	
		Color (true)	310		PCU	P389562	
	SM 2320 B-2011	Total Alkalinity	59		mg CaCO3/L	P389776	
	SM 2540 C-2011	TDS	299		mg/L	P390015	
	SM 2540 D-2011	TSS	3	I	mg/L	P389998	
	SM 4500 F-C-2011	Fluoride	0.095	I	mg F/L	P389778	
2205518	EPA 350.1 Rev. 2.0	Ammonia-N	0.035		mg N/L	P389589	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P389731	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.014		mg N/L	P389735	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P389638	
	SM 5310 B-2011	Organic Carbon	29		mg C/L	P389772	
2205520	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.12		mg P/L	P389564	
2205531	EPA 200.7 Rev. 4.4	Barium	21.5		ug/L	P389618	
		Calcium	31.8		mg/L	P389618	
		Iron	630		ug/L	P389618	
		Magnesium	7.22		mg/L	P389618	
		Potassium	2.5		mg/L	P389618	
		Sodium	45.0		mg/L	P389618	
		Zinc	5.0	U	ug/L	P389618	
	EPA 200.8 Rev. 5.4	Aluminum	69		ug/L	P389618	
		Antimony	0.050	U	ug/L	P389618	
		Arsenic	0.68		ug/L	P389618	
		Beryllium	0.019	I	ug/L	P389618	
		Boron**	33.5		ug/L	P389618	
		Cadmium	0.020	U	ug/L	P389618	
		Chromium	0.40	U	ug/L	P389618	
		Copper	0.40	U	ug/L	P389618	
		Lead	0.20	U	ug/L	P389618	
		Nickel	0.50	U	ug/L	P389618	
		Selenium	0.20	I	ug/L	P390040	
		Silver	0.010	U	ug/L	P389618	
		Thallium	0.10	U	ug/L	P389618	
	SM 2340B	Hardness	109		mg/L	P389618	

Ref. Method and Comment:

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

SM 4500 F-C-2011: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P389574

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P389618

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
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: P389618

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
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P390040

Component	Result	Code	Units
Selenium	0.20	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389805

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389808

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: P389589

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389731

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389735

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389638

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P389564

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

Reference Method: SM 2120 B-2011
Batch ID: P389562

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P389776

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

Reference Method: SM 2540 C-2011
Batch ID: P390015

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P389998

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 4500 F-C-2011
Batch ID: P389778

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P389772

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: P389618

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	100		P	85 - 115
Calcium	99.2		P	85 - 115
Iron	105		P	85 - 115
Magnesium	105		P	85 - 115
Potassium	102		P	85 - 115
Sodium	95.7		P	85 - 115
Zinc	99.3		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P389618

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	106		P	85 - 115
Antimony	103		P	85 - 115
Arsenic	105		P	85 - 115
Beryllium	102		P	85 - 115
Boron	107		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	104		P	85 - 115
Copper	105		P	85 - 115
Lead	93.9		P	85 - 115
Nickel	106		P	85 - 115
Silver	102		P	85 - 115
Thallium	96.7		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P390040

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Selenium	90.0		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389805

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389808

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389589

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389731

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389735

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: P389638

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P389564

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

Reference Method: SM 2120 B-2011
Batch ID: P389562

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P389776

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.2		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P389778

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	93.6		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P389772

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	102		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P389618

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205399	Barium	104	103	P/P	80 - 120
2205399	Calcium	103		P	80 - 120
2205399	Iron	106	106	P/P	80 - 120
2205399	Magnesium	107	107	P/P	80 - 120
2205399	Potassium	102	101	P/P	80 - 120
2205399	Sodium	99.6		P	80 - 120
2205399	Zinc	103	102	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P389618

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205399	Aluminum	101	101	P/P	80 - 120
2205399	Antimony	102	103	P/P	80 - 120
2205399	Arsenic	103	104	P/P	80 - 120
2205399	Beryllium	103	105	P/P	80 - 120
2205399	Boron	104	104	P/P	80 - 120
2205399	Cadmium	102	102	P/P	80 - 120
2205399	Chromium	101	101	P/P	80 - 120
2205399	Copper	103	103	P/P	80 - 120
2205399	Lead	92.9	93.3	P/P	80 - 120
2205399	Nickel	102	103	P/P	80 - 120
2205399	Silver	101	102	P/P	80 - 120
2205399	Thallium	97.9	97.9	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P390040

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205536	Selenium	93.4	93.2	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389805

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205393	Chloride	101		P	90 - 110
2205515	Chloride	97.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389808

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205393	Sulfate	100		P	90 - 110
2205515	Sulfate	98.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389589

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205513	Ammonia-N	97.5	99.7	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389731

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205513	Kjeldahl Nitrogen	100	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389735

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205491	NO2NO3-N	98.5	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389638

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205510	Total-P	102	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P389564

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205511	O-Phosphate-P	99.5	99.5	P/P	90 - 110

Reference Method: SM 5310 B-2011
Batch ID: P389772

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205510	Organic Carbon	103	103	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P389574

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205478	Turbidity	7.82	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P389618

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205399	Barium	0.942	Spike	P	0 - 20
2205399	Calcium	0.687	Spike	P	0 - 20
2205399	Iron	0.329	Spike	P	0 - 20
2205399	Magnesium	0.321	Spike	P	0 - 20
2205399	Potassium	0.654	Spike	P	0 - 20
2205399	Sodium	2.31	Spike	P	0 - 20
2205399	Zinc	1.33	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P389618

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205399	Aluminum	0.0240	Spike	P	0 - 20
2205399	Antimony	0.526	Spike	P	0 - 20
2205399	Arsenic	0.764	Spike	P	0 - 20
2205399	Beryllium	1.94	Spike	P	0 - 20
2205399	Boron	0.236	Spike	P	0 - 20
2205399	Cadmium	0.0364	Spike	P	0 - 20
2205399	Chromium	0.455	Spike	P	0 - 20
2205399	Copper	0.621	Spike	P	0 - 20
2205399	Lead	0.431	Spike	P	0 - 20
2205399	Nickel	0.150	Spike	P	0 - 20
2205399	Silver	0.635	Spike	P	0 - 20
2205399	Thallium	0.0453	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P390040

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205536	Selenium	0.228	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389805

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205393	Chloride	0.213	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389808

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205393	Sulfate	0.724	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389589

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205513	Ammonia-N	2.05	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389731

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205513	Kjeldahl Nitrogen	2.60	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389735

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205491	NO2NO3-N	0.897	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389638

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205510	Total-P	2.73	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P389564

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205511	O-Phosphate-P	0.0	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P389562

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205509	Color (true)	1.11	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P389776

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205414	Total Alkalinity	1.15	Sample	P	0 - 8.1

Quality Assurance Report Precision

Reference Method: SM 2540 C-2011
Batch ID: P390015

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205509	TDS	0.889	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P389778

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205414	Fluoride	0.469	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P389772

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205510	Organic Carbon	0.180	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B-2011

Run ID: A101884

Included Lab Sample IDs: 2205515, 2205516

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A101885

Included Lab Sample IDs: 2205519, 2205520

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.9	99.1	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A101889

Included Lab Sample IDs: 2205515, 2205516

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	99.0	P/P	95 - 105

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A101893

Included Lab Sample IDs: 2205517, 2205518

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A101935

Included Lab Sample IDs: 2205517, 2205518

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A101944

Included Lab Sample IDs: 2205530, 2205531

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	101	P/P	90 - 110
Calcium	102	102	P/P	90 - 110
Iron	102	102	P/P	90 - 110
Magnesium	101	101	P/P	90 - 110
Potassium	99.5	99.3	P/P	90 - 110
Sodium	100	99.9	P/P	90 - 110
Zinc	102	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A101949

Included Lab Sample IDs: 2205515, 2205516

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.5	99.4	P/P	90 - 110
Chloride	99.6	99.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A101949

Included Lab Sample IDs: 2205515, 2205516

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	97.6	97.6	P/P	90 - 110
Sulfate	98.3	97.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A101952

Included Lab Sample IDs: 2205517, 2205518

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	99.5	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A101967

Included Lab Sample IDs: 2205517, 2205518

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	104	105	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A101970

Included Lab Sample IDs: 2205515, 2205516

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.1	101	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A101970

Included Lab Sample IDs: 2205515, 2205516

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.0	95.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A102025

Included Lab Sample IDs: 2205517, 2205518

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.3	102	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A102090

Included Lab Sample IDs: 2205530, 2205531

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	101	P/P	90 - 110
Antimony	102	101	P/P	90 - 110
Arsenic	103	103	P/P	90 - 110
Beryllium	109	109	P/P	90 - 110
Boron	106	106	P/P	90 - 110
Cadmium	101	100	P/P	90 - 110
Chromium	98.2	98.3	P/P	90 - 110
Copper	102	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A102090

Included Lab Sample IDs: 2205530, 2205531

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	94.5	93.7	P/P	90 - 110
Nickel	101	100	P/P	90 - 110
Silver	107	106	P/P	90 - 110
Thallium	93.3	91.4	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A102151

Included Lab Sample IDs: 2205530, 2205531

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Selenium	99.6	105	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		LCS	Precision	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					7.82	
EPA 200.7 Rev. 4.4	Barium	100	104	103			0.942
	Calcium	99.2	103				0.687
	Iron	105	106	106			0.329
	Magnesium	105	107	107			0.321
	Potassium	102	102	101			0.654
	Sodium	95.7	99.6				2.31
	Zinc	99.3	103	102			1.33
EPA 200.8 Rev. 5.4	Aluminum	106	101	101			0.0240
	Antimony	103	102	103			0.526
	Arsenic	105	103	104			0.764
	Beryllium	102	103	105			1.94
	Boron	107	104	104			0.236
	Cadmium	102	102	102			0.0364
	Chromium	104	101	101			0.455
	Copper	105	103	103			0.621
	Lead	93.9	92.9	93.3			0.431
	Nickel	106	102	103			0.150
	Selenium	90.0	93.4	93.2			0.228
	Silver	102	101	102			0.635
	Thallium	96.7	97.9	97.9			0.0453
EPA 300.0 Rev. 2.1	Chloride	99.6	101	97.7		0.213	
	Sulfate	98.8	100	98.7		0.724	
EPA 350.1 Rev. 2.0	Ammonia-N	97.0	97.5	99.7			2.05
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	100	105			2.60
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	98.5	97.0			0.897
EPA 365.1 Rev. 2.0	Total-P	103	102	105			2.73
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.7	99.5	99.5			0.0
SM 2120 B-2011	Color (true)	100				1.11	
SM 2320 B-2011	Total Alkalinity	99.2				1.15	
SM 2540 C-2011	TDS					0.889	
SM 4500 F-C-2011	Fluoride	93.6					0.469
SM 5310 B-2011	Organic Carbon	102	103	103			0.180

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2205515, 2205516
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2205530, 2205531
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2205530, 2205531
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2205515, 2205516
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2205515, 2205516
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2205517, 2205518
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2205517, 2205518
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2205517, 2205518
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2205517, 2205518
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2205519, 2205520
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2205515, 2205516
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2205515, 2205516
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2205530, 2205531

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2205515, 2205516
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2205515, 2205516
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2205515, 2205516
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2205517, 2205518

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	10/30/2020			10/30/2020 14:42	Yen Ta	2205515, 2205516
EPA 200.7 Rev. 4.4	10/30/2020	11/02/2020 13:15	Elliott D. Healy	11/03/2020 19:15	Betina Topolski	2205530
	10/30/2020	11/02/2020 13:15	Elliott D. Healy	11/03/2020 19:22	Betina Topolski	2205531
EPA 200.8 Rev. 5.4	10/30/2020	11/02/2020 13:15	Elliott D. Healy	11/10/2020 18:24	Alexander Thompson	2205530
	10/30/2020	11/02/2020 13:15	Elliott D. Healy	11/10/2020 18:32	Alexander Thompson	2205531
	10/30/2020	11/13/2020 09:57	Alexander Thompson	11/16/2020 16:03	Alexander Thompson	2205530
	10/30/2020	11/13/2020 09:57	Alexander Thompson	11/16/2020 16:08	Alexander Thompson	2205531
EPA 300.0 Rev. 2.1	10/30/2020			11/05/2020 04:06	Lipi Saha	2205515
	10/30/2020			11/05/2020 06:57	Lipi Saha	2205516
EPA 350.1 Rev. 2.0	10/30/2020			11/01/2020 11:46	Ping Hua	2205517
	10/30/2020			11/01/2020 11:47	Ping Hua	2205518
EPA 351.2 Rev. 2.0	10/30/2020	11/04/2020 15:00	David Boose	11/05/2020 12:20	Elliott Rodriguez	2205517
	10/30/2020	11/04/2020 15:00	David Boose	11/05/2020 12:22	Elliott Rodriguez	2205518
EPA 353.2 Rev. 2.0	10/30/2020			11/04/2020 11:06	Beverly Y. Sanders	2205517
	10/30/2020			11/04/2020 11:08	Beverly Y. Sanders	2205518
EPA 365.1 Rev. 2.0	10/30/2020	11/02/2020 10:01	Yen Ta	11/03/2020 14:00	Benjamin T. Nordmann	2205517
	10/30/2020	11/02/2020 10:01	Yen Ta	11/03/2020 14:03	Benjamin T. Nordmann	2205518
EPA 365.1 Rev. 2.0 dissolved	10/30/2020			10/30/2020 15:17	Blanca Fach	2205519
	10/30/2020			10/30/2020 15:18	Blanca Fach	2205520
SM 2120 B-2011	10/30/2020			10/30/2020 15:41	Benjamin T. Nordmann	2205515
	10/30/2020			10/30/2020 15:42	Benjamin T. Nordmann	2205516
SM 2320 B-2011	10/30/2020			11/04/2020 21:17	Samantha Davila	2205515
	10/30/2020			11/04/2020 21:29	Samantha Davila	2205516
SM 2340B	10/30/2020			11/03/2020 19:15	Betina Topolski	2205530
	10/30/2020			11/03/2020 19:22	Betina Topolski	2205531
SM 2540 C-2011	10/30/2020			11/04/2020 14:21	Yijie Li	2205515, 2205516
SM 2540 D-2011	10/30/2020			11/04/2020 14:21	Yijie Li	2205515, 2205516
SM 4500 F-C-2011	10/30/2020			11/04/2020 21:17	Samantha Davila	2205515
	10/30/2020			11/04/2020 21:29	Samantha Davila	2205516
SM 5310 B-2011	10/30/2020			11/04/2020 18:15	Lauren Lees	2205517
	10/30/2020			11/04/2020 18:27	Lauren Lees	2205518