Chemical Analysis Report

CEN-DIST-2020-07-29-02

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

Event Description: **Ellen/Searcy/Ann**
Request ID: **RQ-2020-07-20-49**
Customer: **CEN-DIST**
Project ID: **SMP**

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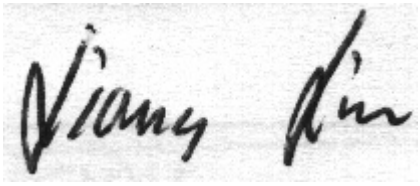
Certified by: Liang Lin, Environmental Administrator

Date Certified: 17-AUG-2020 11:52



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: Lake Ellen @ Center **Collection Date/Time: 07/28/2020 11:20**

Field ID: G2CE0060 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2186888	EPA 180.1 Rev. 2.0	Turbidity	3.4		NTU	P385366	
	EPA 300.0 Rev. 2.1	Chloride	15		mg Cl/L	P385626	
		Sulfate	13		mg SO4/L	P385630	
	SM 2120 B-2011	Color (true)	27		PCU	P385355	
	SM 2320 B-2011	Total Alkalinity	4.2		mg CaCO3/L	P385441	
	SM 2540 C-2011	TDS	59		mg/L	P385783	
	SM 2540 D-2011	TSS	6	I	mg/L	P385785	
	SM 4500 F-C-2011	Fluoride	0.053	I	mg F/L	P385444	
2186889	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P385490	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.68		mg N/L	P385420	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P385369	
	EPA 365.1 Rev. 2.0	Total-P	0.027		mg P/L	P385868	
	SM 5310 B-2011	Organic Carbon	7.8		mg C/L	P385450	
2186890	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P385327	
2186892	EPA 200.7 Rev. 4.4	Barium	7.4		ug/L	P385397	
		Calcium	3.24		mg/L	P385397	
		Iron	30	U	ug/L	P385397	
		Magnesium	2.46		mg/L	P385397	
		Potassium	2.9		mg/L	P385397	
		Sodium	10.2		mg/L	P385397	
		Zinc	5.0	U	ug/L	P385397	
	EPA 200.8 Rev. 5.4	Aluminum	20		ug/L	P385397	
		Antimony	0.072	I	ug/L	P385397	
		Arsenic	1.39		ug/L	P385397	
		Boron**	46.4		ug/L	P385397	
		Cadmium	0.020	U	ug/L	P385397	
		Chromium	0.40	U	ug/L	P385397	
		Copper	0.42	I	ug/L	P385397	
		Lead	0.20	U	ug/L	P385397	
		Nickel	0.50	U	ug/L	P385397	
		Selenium	0.20	U	ug/L	P385397	
		Silver	0.010	U	ug/L	P385397	
		Thallium	0.10	U	ug/L	P385397	
	SM 2340B	Hardness	18.2		mg/L	P385397	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-P: 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: P385366

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P385397

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: P385397

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	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: P385626

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385630

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385490

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: P385420

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385369

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385868

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385327

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

Reference Method: SM 2120 B-2011
Batch ID: P385355

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P385441

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

Reference Method: SM 2540 C-2011
Batch ID: P385783

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P385785

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P385444

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: P385450

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: P385397

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	98.0		P	85 - 115
Calcium	101		P	85 - 115
Iron	103		P	85 - 115
Magnesium	103		P	85 - 115
Potassium	101		P	85 - 115
Sodium	101		P	85 - 115
Zinc	98.9		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P385397

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	91.5		P	85 - 115
Antimony	93.9		P	85 - 115
Arsenic	95.0		P	85 - 115
Boron	99.9		P	85 - 115
Cadmium	93.0		P	85 - 115
Chromium	95.2		P	85 - 115
Copper	102		P	85 - 115
Lead	96.2		P	85 - 115
Nickel	101		P	85 - 115
Selenium	89.7		P	85 - 115
Silver	106		P	85 - 115
Thallium	95.6		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385626

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385630

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385490

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385420

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385369

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: P385868

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385327

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

Reference Method: SM 2120 B-2011
Batch ID: P385355

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P385441

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.6		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P385444

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.5		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P385450

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.8		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P385397

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2186892	Barium	96.8	102	P/P	80 - 120
2186892	Calcium	102	102	P/P	80 - 120
2186892	Iron	106	106	P/P	80 - 120
2186892	Magnesium	104	103	P/P	80 - 120
2186892	Potassium	102	103	P/P	80 - 120
2186892	Sodium	99.9		P	80 - 120
2186892	Zinc	100	105	P/P	80 - 120
2187196	Barium	103		P	80 - 120
2187196	Calcium	99.0		P	80 - 120
2187196	Iron	105		P	80 - 120
2187196	Magnesium	103		P	80 - 120
2187196	Potassium	102		P	80 - 120
2187196	Sodium	99.7		P	80 - 120
2187196	Zinc	107		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P385397

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2186892	Aluminum	91.9	91.3	P/P	80 - 120
2186892	Antimony	96.4	95.0	P/P	80 - 120
2186892	Arsenic	95.6	94.1	P/P	80 - 120
2186892	Boron	101	102	P/P	80 - 120
2186892	Cadmium	92.7	91.5	P/P	80 - 120
2186892	Chromium	98.3	98.2	P/P	80 - 120
2186892	Copper	102	102	P/P	80 - 120
2186892	Lead	100	99.2	P/P	80 - 120
2186892	Nickel	100	99.6	P/P	80 - 120
2186892	Selenium	87.9	86.8	P/P	80 - 120
2186892	Silver	106	105	P/P	80 - 120
2186892	Thallium	99.9	100	P/P	80 - 120
2187196	Aluminum	92.8		P	80 - 120
2187196	Antimony	97.6		P	80 - 120
2187196	Arsenic	96.8		P	80 - 120
2187196	Boron	105		P	80 - 120
2187196	Cadmium	96.7		P	80 - 120
2187196	Chromium	100		P	80 - 120
2187196	Copper	103		P	80 - 120
2187196	Lead	100		P	80 - 120
2187196	Nickel	102		P	80 - 120
2187196	Selenium	86.6		P	80 - 120
2187196	Silver	105		P	80 - 120
2187196	Thallium	103		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385626

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2186495	Chloride	103		P	90 - 110
2186871	Chloride	104		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385630

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2186495	Sulfate	103		P	90 - 110
2186871	Sulfate	104		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385490

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2186997	Ammonia-N	99.0	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385420

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2186904	Kjeldahl Nitrogen	106	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385369

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2186809	NO2NO3-N	97.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385327

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2186879	O-Phosphate-P	98.7	98.9	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P385444

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2186828	Fluoride	100	101	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P385450

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2186874	Organic Carbon	93.2	87.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P385366

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186877	Turbidity	3.93	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P385397

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186892	Barium	4.73	Spike	P	0 - 20
2186892	Calcium	0.266	Spike	P	0 - 20
2186892	Iron	0.0716	Spike	P	0 - 20
2186892	Magnesium	0.865	Spike	P	0 - 20
2186892	Potassium	0.343	Spike	P	0 - 20
2186892	Sodium	0.864	Spike	P	0 - 20
2186892	Zinc	5.15	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P385397

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186892	Aluminum	0.632	Spike	P	0 - 20
2186892	Antimony	1.48	Spike	P	0 - 20
2186892	Arsenic	1.50	Spike	P	0 - 20
2186892	Boron	0.883	Spike	P	0 - 20
2186892	Cadmium	1.35	Spike	P	0 - 20
2186892	Chromium	0.0570	Spike	P	0 - 20
2186892	Copper	0.0412	Spike	P	0 - 20
2186892	Lead	1.10	Spike	P	0 - 20
2186892	Nickel	0.601	Spike	P	0 - 20
2186892	Selenium	1.18	Spike	P	0 - 20
2186892	Silver	1.14	Spike	P	0 - 20
2186892	Thallium	0.550	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385626

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186495	Chloride	0.543	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385630

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186495	Sulfate	0.959	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385490

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186997	Ammonia-N	0.477	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385420

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186904	Kjeldahl Nitrogen	0.0290	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385369

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186809	NO2NO3-N	0.745	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385868

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189028	Total-P	0.671	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385327

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186879	O-Phosphate-P	0.119	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P385355

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186808	Color (true)	1.72	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P385441

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186828	Total Alkalinity	0.282	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P385783

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186902	TDS	5.96	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P385444

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186828	Fluoride	0.454	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P385450

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186874	Organic Carbon	3.70	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: A100153
Included Lab Sample IDs: 2186890

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.0	99.1	P/P	90 - 110

Reference Method: SM 2120 B-2011
Run ID: A100169
Included Lab Sample IDs: 2186888

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A100175
Included Lab Sample IDs: 2186889

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	100	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A100176
Included Lab Sample IDs: 2186888

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

Reference Method: SM 2320 B-2011
Run ID: A100200
Included Lab Sample IDs: 2186888

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.8	101	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A100200
Included Lab Sample IDs: 2186888

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

Reference Method: SM 5310 B-2011
Run ID: A100203
Included Lab Sample IDs: 2186889

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.8	96.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A100214
Included Lab Sample IDs: 2186889

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.9	100	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A100216
Included Lab Sample IDs: 2186892

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	98.2	100	P/P	90 - 110
Calcium	101	102	P/P	90 - 110
Iron	104	104	P/P	90 - 110
Magnesium	103	104	P/P	90 - 110
Potassium	100	102	P/P	90 - 110
Sodium	102	103	P/P	90 - 110
Zinc	98.3	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A100234
Included Lab Sample IDs: 2186889

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.8	103	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A100267
Included Lab Sample IDs: 2186888

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A100326
Included Lab Sample IDs: 2186892

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	93.7	93.1	P/P	90 - 110
Antimony	95.3	94.6	P/P	90 - 110
Arsenic	95.9	93.9	P/P	90 - 110
Boron	97.9	101	P/P	90 - 110
Cadmium	92.5	93.2	P/P	90 - 110
Chromium	95.8	96.3	P/P	90 - 110
Lead	96.2	95.9	P/P	90 - 110
Selenium	92.5	91.5	P/P	90 - 110
Silver	104	103	P/P	90 - 110
Thallium	94.6	94.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A100356
Included Lab Sample IDs: 2186892

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	102	101	P/P	90 - 110
Nickel	104	101	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A100427
Included Lab Sample IDs: 2186889

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.5	98.0	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						3.93	
EPA 200.7 Rev. 4.4	Barium	98.0	96.8	102	103			4.73
	Calcium	101	102	102	99.0			0.266
	Iron	103	106	106	105			0.0716
	Magnesium	103	104	103	103			0.865
	Potassium	101	102	103	102			0.343
	Sodium	101	99.9	99.7				0.864
	Zinc	98.9	100	105	107			5.15
EPA 200.8 Rev. 5.4	Aluminum	91.5	91.9	91.3	92.8			0.632
	Antimony	93.9	96.4	95.0	97.6			1.48
	Arsenic	95.0	96.8	95.6	94.1			1.50
	Boron	99.9	101	102	105			0.883
	Cadmium	93.0	92.7	91.5	96.7			1.35
	Chromium	95.2	98.3	98.2	100			0.0570
	Copper	102	102	102	103			0.0412
	Lead	96.2	100	99.2	100			1.10
	Nickel	101	100	99.6	102			0.601
	Selenium	89.7	87.9	86.8	86.6			1.18
	Silver	106	106	105	105			1.14
	Thallium	95.6	99.9	100	103			0.550
EPA 300.0 Rev. 2.1	Chloride	105	103	104			0.543	
	Sulfate	105	103	104			0.959	
EPA 350.1 Rev. 2.0	Ammonia-N	100	99.0	98.2				0.477
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108	106	106				0.0290
EPA 353.2 Rev. 2.0	NO2NO3-N	100	97.2					0.745
EPA 365.1 Rev. 2.0	Total-P	101						0.671
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	98.7	98.9				0.119
SM 2120 B-2011	Color (true)	102					1.72	
SM 2320 B-2011	Total Alkalinity	98.6					0.282	
SM 2540 C-2011	TDS						5.96	
SM 4500 F-C-2011	Fluoride	99.5	100	101				0.454
SM 5310 B-2011	Organic Carbon	97.8	93.2	87.8				3.70

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2186888
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2186892
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2186892
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2186888
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2186888
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2186889
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2186889
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2186889
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2186889
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2186890
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2186888
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2186888
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2186892
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2186888

Reference Method Descriptions

Method	Description	Associated Samples
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2186888
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2186888
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2186889

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	07/29/2020			07/29/2020 16:15	Blanca Fach	2186888
EPA 200.7 Rev. 4.4	07/29/2020	07/30/2020 16:00	Elliott D. Healy	07/31/2020 15:19	Betina Topolski	2186892
EPA 200.8 Rev. 5.4	07/29/2020	07/30/2020 16:00	Elliott D. Healy	08/06/2020 20:26	Alexander Thompson	2186892
	07/29/2020	07/30/2020 16:00	Elliott D. Healy	08/07/2020 18:04	Alexander Thompson	2186892
EPA 300.0 Rev. 2.1	07/29/2020			08/01/2020 12:19	Julia Storbeck	2186888
EPA 350.1 Rev. 2.0	07/29/2020			08/02/2020 16:46	Ping Hua	2186889
EPA 351.2 Rev. 2.0	07/29/2020	07/31/2020 10:40	Jhamieka S. Greenwood	08/03/2020 15:43	Julia Storbeck	2186889
EPA 353.2 Rev. 2.0	07/29/2020			07/30/2020 08:48	Beverly Y. Sanders	2186889
EPA 365.1 Rev. 2.0	07/29/2020	08/11/2020 11:28	Yen Ta	08/13/2020 08:12	Lipi Saha	2186889
EPA 365.1 Rev. 2.0 dissolved	07/29/2020			07/29/2020 15:29	Virginia P. Brown	2186890
SM 2120 B-2011	07/29/2020			07/29/2020 15:26	Madeline Gruver	2186888
SM 2320 B-2011	07/29/2020			07/30/2020 20:14	Dale L. Simmons	2186888
SM 2340B	07/29/2020			07/31/2020 15:19	Betina Topolski	2186892
SM 2540 C-2011	07/29/2020			08/03/2020 15:02	Yijie Li	2186888
SM 2540 D-2011	07/29/2020			08/03/2020 15:02	Yijie Li	2186888
SM 4500 F-C-2011	07/29/2020			07/30/2020 20:14	Dale L. Simmons	2186888
SM 5310 B-2011	07/29/2020			07/31/2020 06:23	David Boose	2186889