Chemical Analysis Report

SO-DIST-2020-09-25-02

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

Event Description: **cow slough**
Request ID: **RQ-2020-09-21-45**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
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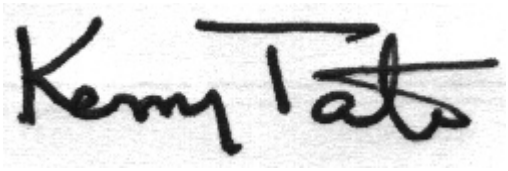
Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 14-OCT-2020 08:06



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: Cow Slough @ Farabee Rd **Collection Date/Time: 09/24/2020 10:35**

Field ID: G3SD0160 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2198252	EPA 180.1 Rev. 2.0	Turbidity	3.7		NTU	P387873	
	EPA 300.0 Rev. 2.1	Chloride	30	A	mg Cl/L	P388094	
		Sulfate	20	A	mg SO4/L	P388097	
	SM 2120 B-2011	Color (true)	380		PCU	P387875	
	SM 2320 B-2011	Total Alkalinity	38		mg CaCO3/L	P388087	
	SM 2540 C-2011	TDS	173		mg/L	P388198	
	SM 2540 D-2011	TSS	7	I	mg/L	P388201	
	SM 4500 F-C-2011	Fluoride	0.11		mg F/L	P388090	
2198253	EPA 350.1 Rev. 2.0	Ammonia-N	0.045		mg N/L	P387893	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P387980	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.019		mg N/L	P387913	
	EPA 365.1 Rev. 2.0	Total-P	0.20		mg P/L	P388276	MS
	SM 5310 B-2011	Organic Carbon	31		mg C/L	P387983	
2198254	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.13		mg P/L	P387881	
2198257	EPA 200.7 Rev. 4.4	Barium	20.3		ug/L	P387933	
		Calcium	20.7		mg/L	P387933	
		Iron	1.34E+03		ug/L	P387933	
		Magnesium	6.82		mg/L	P387933	
		Potassium	7.2		mg/L	P387933	
		Sodium	16.0		mg/L	P387933	
		Zinc	5.0	U	ug/L	P387933	
	EPA 200.8 Rev. 5.4	Aluminum	197		ug/L	P387933	
		Antimony	0.069	I	ug/L	P387933	
		Arsenic	1.04		ug/L	P387933	
		Beryllium	0.016	I	ug/L	P387933	
		Boron**	39.3		ug/L	P387933	
		Cadmium	0.020	U	ug/L	P387933	
		Chromium	0.81	I	ug/L	P387933	
		Copper	2.00		ug/L	P387933	
		Lead	0.23	I	ug/L	P387933	
		Nickel	0.78	I	ug/L	P387933	
		Selenium	0.20	U	ug/L	P387933	
		Silver	0.010	U	ug/L	P387933	
		Thallium	0.10	U	ug/L	P387933	
	SM 2340B	Hardness	79.7		mg/L	P387933	

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: P387873

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P387933

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: P387933

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: P388094

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388097

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387893

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: P387980

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387913

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P388276

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387881

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

Reference Method: SM 2120 B-2011
Batch ID: P387875

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P388087

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

Reference Method: SM 2540 C-2011
Batch ID: P388198

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P388201

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P388090

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: P387983

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: P387933

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	101		P	85 - 115
Calcium	103		P	85 - 115
Iron	103		P	85 - 115
Magnesium	100		P	85 - 115
Potassium	103		P	85 - 115
Sodium	99.5		P	85 - 115
Zinc	91.7		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P387933

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	97.4		P	85 - 115
Antimony	104		P	85 - 115
Arsenic	101		P	85 - 115
Beryllium	96.8		P	85 - 115
Boron	95.2		P	85 - 115
Cadmium	104		P	85 - 115
Chromium	100		P	85 - 115
Copper	100		P	85 - 115
Lead	99.7		P	85 - 115
Nickel	100		P	85 - 115
Selenium	103		P	85 - 115
Silver	103		P	85 - 115
Thallium	97.4		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388094

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388097

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387893

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387980

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.8		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387913

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P388276

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: P387881

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

Reference Method: SM 2120 B-2011
Batch ID: P387875

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.9		P	90 - 110

Reference Method: SM 2320 B-2011
Batch ID: P388087

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: P388090

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.3		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P387983

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P387933

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2197906	Barium	103		P	80 - 120
2197906	Calcium	105		P	80 - 120
2197906	Iron	111		P	80 - 120
2197906	Magnesium	107		P	80 - 120
2197906	Potassium	103		P	80 - 120
2197906	Sodium	107		P	80 - 120
2197906	Zinc	97.6		P	80 - 120
2198102	Barium	105	107	P/P	80 - 120
2198102	Calcium	107	110	P/P	80 - 120
2198102	Iron	109	111	P/P	80 - 120
2198102	Magnesium	106	108	P/P	80 - 120
2198102	Potassium	109	109	P/P	80 - 120
2198102	Sodium	113	113	P/P	80 - 120
2198102	Zinc	95.2	97.0	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P387933

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2197906	Aluminum	98.9		P	80 - 120
2197906	Antimony	107		P	80 - 120
2197906	Arsenic	104		P	80 - 120
2197906	Beryllium	94.3		P	80 - 120
2197906	Boron	98.9		P	80 - 120
2197906	Cadmium	105		P	80 - 120
2197906	Chromium	104		P	80 - 120
2197906	Copper	98.5		P	80 - 120
2197906	Lead	103		P	80 - 120
2197906	Nickel	100		P	80 - 120
2197906	Selenium	103		P	80 - 120
2197906	Silver	100		P	80 - 120
2197906	Thallium	102		P	80 - 120
2198102	Aluminum	101	102	P/P	80 - 120
2198102	Antimony	104	104	P/P	80 - 120
2198102	Arsenic	104	102	P/P	80 - 120
2198102	Beryllium	96.7	95.3	P/P	80 - 120
2198102	Boron	98.3	98.3	P/P	80 - 120
2198102	Cadmium	104	102	P/P	80 - 120
2198102	Chromium	102	102	P/P	80 - 120
2198102	Copper	104	103	P/P	80 - 120
2198102	Lead	102	102	P/P	80 - 120
2198102	Nickel	102	102	P/P	80 - 120
2198102	Selenium	105	104	P/P	80 - 120
2198102	Silver	103	102	P/P	80 - 120
2198102	Thallium	101	102	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388094

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198252	Chloride	105		P	90 - 110
2198715	Chloride	107		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388097

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198252	Sulfate	101		P	90 - 110
2198715	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387893

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198190	Ammonia-N	100	98.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387980

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198295	Kjeldahl Nitrogen	99.2	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387913

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198190	NO2NO3-N	99.0	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P388276

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198162	Total-P	110	109	F/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387881

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198233	O-Phosphate-P	99.7	99.6	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P388090

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198231	Fluoride	97.6	98.2	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P387983

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198168	Organic Carbon	98.4	100	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P387873

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198231	Turbidity	0.733	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P387933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198102	Barium	2.21	Spike	P	0 - 20
2198102	Calcium	1.54	Spike	P	0 - 20
2198102	Iron	1.41	Spike	P	0 - 20
2198102	Magnesium	0.982	Spike	P	0 - 20
2198102	Potassium	0.130	Spike	P	0 - 20
2198102	Sodium	0.285	Spike	P	0 - 20
2198102	Zinc	1.87	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P387933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198102	Aluminum	1.11	Spike	P	0 - 20
2198102	Antimony	0.654	Spike	P	0 - 20
2198102	Arsenic	1.19	Spike	P	0 - 20
2198102	Beryllium	1.54	Spike	P	0 - 20
2198102	Boron	0.0357	Spike	P	0 - 20
2198102	Cadmium	1.54	Spike	P	0 - 20
2198102	Chromium	0.394	Spike	P	0 - 20
2198102	Copper	0.391	Spike	P	0 - 20
2198102	Lead	0.734	Spike	P	0 - 20
2198102	Nickel	0.00777	Spike	P	0 - 20
2198102	Selenium	1.32	Spike	P	0 - 20
2198102	Silver	0.968	Spike	P	0 - 20
2198102	Thallium	0.350	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388094

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198252	Chloride	0.506	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198252	Sulfate	0.659	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387893

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198190	Ammonia-N	1.89	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387980

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198295	Kjeldahl Nitrogen	3.48	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387913

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198190	NO2NO3-N	0.506	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P388276

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198162	Total-P	0.649	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387881

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198233	O-Phosphate-P	0.100	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P387875

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198098	Color (true)	2.53	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P388087

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198231	Total Alkalinity	2.24	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P388198

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198167	TDS	1.35	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P388090

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198231	Fluoride	0.514	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P387983

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198168	Organic Carbon	0.927	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A101205
Included Lab Sample IDs: 2198252

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

Reference Method: SM 2120 B-2011
Run ID: A101207
Included Lab Sample IDs: 2198252

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.7	102	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A101209
Included Lab Sample IDs: 2198254

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A101212
Included Lab Sample IDs: 2198253

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A101223
Included Lab Sample IDs: 2198253

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.0	97.0	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A101262
Included Lab Sample IDs: 2198253

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	101	99.1	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A101267
Included Lab Sample IDs: 2198257

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	107	104	P/P	90 - 110
Calcium	104	103	P/P	90 - 110
Iron	107	105	P/P	90 - 110
Magnesium	104	102	P/P	90 - 110
Potassium	105	104	P/P	90 - 110
Sodium	109	108	P/P	90 - 110
Zinc	98.1	95.2	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A101281
Included Lab Sample IDs: 2198252

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	107	107	P/P	90 - 110
Sulfate	105	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A101288
Included Lab Sample IDs: 2198253

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.4	96.2	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A101296
Included Lab Sample IDs: 2198257

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	98.2	97.0	P/P	90 - 110
Cadmium	101	101	P/P	90 - 110
Chromium	101	100	P/P	90 - 110
Copper	95.1	93.8	P/P	90 - 110
Lead	101	99.7	P/P	90 - 110
Nickel	94.4	93.7	P/P	90 - 110
Selenium	102	101	P/P	90 - 110
Silver	102	102	P/P	90 - 110
Thallium	96.3	93.4	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A101307
Included Lab Sample IDs: 2198252

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	105	100	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A101307
Included Lab Sample IDs: 2198252

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	99.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A101328
Included Lab Sample IDs: 2198257

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	97.0	108	P/P	90 - 110
Antimony	106	106	P/P	90 - 110
Beryllium	92.3	94.6	P/P	90 - 110
Boron	96.1	94.1	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A101416
Included Lab Sample IDs: 2198253

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	104	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						0.733	
EPA 200.7 Rev. 4.4	Barium	101	103	105	107			2.21
	Calcium	103	105	107	110			1.54
	Iron	103	111	109	111			1.41
	Magnesium	100	107	106	108			0.982
	Potassium	103	103	109	109			0.130
	Sodium	99.5	107	113	113			0.285
	Zinc	91.7	97.6	95.2	97.0			1.87
EPA 200.8 Rev. 5.4	Aluminum	97.4	101	102	98.9			1.11
	Antimony	104	104	104	107			0.654
	Arsenic	101	104	102	104			1.19
	Beryllium	96.8	96.7	95.3	94.3			1.54
	Boron	95.2	98.3	98.3	98.9			0.0357
	Cadmium	104	104	102	105			1.54
	Chromium	100	102	102	104			0.394
	Copper	100	104	103	98.5			0.391
	Lead	99.7	102	102	103			0.734
	Nickel	100	102	102	100			0.0077
	Selenium	103	105	104	103			1.32
	Silver	103	103	102	100			0.968
	Thallium	97.4	101	102	102			0.350
EPA 300.0 Rev. 2.1	Chloride	104	105	107			0.506	
	Sulfate	101	101	100			0.659	
EPA 350.1 Rev. 2.0	Ammonia-N	98.8	100	98.4				1.89
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.8	99.2	105				3.48
EPA 353.2 Rev. 2.0	NO2NO3-N	98.0	99.0	98.5				0.506
EPA 365.1 Rev. 2.0	Total-P	103	110	109				0.649
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	99.7	99.6				0.100
SM 2120 B-2011	Color (true)	98.9					2.53	
SM 2320 B-2011	Total Alkalinity	99.2					2.24	
SM 2540 C-2011	TDS						1.35	
SM 4500 F-C-2011	Fluoride	97.3	97.6	98.2				0.514
SM 5310 B-2011	Organic Carbon	101	98.4	100				0.927

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2198252
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2198257
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2198257
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2198252
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2198252
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2198253
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2198253
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2198253
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2198253
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2198254
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2198252
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2198252
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2198257

Reference Method Descriptions

Method	Description	Associated Samples
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2198252
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2198252
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2198252
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2198253

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	09/25/2020			09/25/2020 14:41	Yen Ta	2198252
EPA 200.7 Rev. 4.4	09/25/2020	09/28/2020 17:30	Elliott D. Healy	09/29/2020 21:21	Betina Topolski	2198257
EPA 200.8 Rev. 5.4	09/25/2020	09/28/2020 17:30	Elliott D. Healy	10/01/2020 00:59	Alexander Thompson	2198257
	09/25/2020	09/28/2020 17:30	Elliott D. Healy	10/01/2020 17:05	Alexander Thompson	2198257
EPA 300.0 Rev. 2.1	09/25/2020			10/01/2020 01:30	Lipi Saha	2198252
EPA 350.1 Rev. 2.0	09/25/2020			09/27/2020 11:03	Ping Hua	2198253
EPA 351.2 Rev. 2.0	09/25/2020	09/29/2020 15:45	David Boose	09/30/2020 13:14	Elliott Rodriguez	2198253
EPA 353.2 Rev. 2.0	09/25/2020			09/28/2020 10:04	Beverly Y. Sanders	2198253
EPA 365.1 Rev. 2.0	09/25/2020	10/06/2020 12:50	Yen Ta	10/07/2020 14:51	Benjamin T. Nordmann	2198253
EPA 365.1 Rev. 2.0 dissolved	09/25/2020			09/25/2020 17:22	Julia Storbeck	2198254
SM 2120 B-2011	09/25/2020			09/25/2020 15:54	Benjamin T. Nordmann	2198252
SM 2320 B-2011	09/25/2020			09/30/2020 21:28	Dale L. Simmons	2198252
SM 2340B	09/25/2020			09/29/2020 21:21	Betina Topolski	2198257
SM 2540 C-2011	09/25/2020			09/28/2020 15:25	Yijie Li	2198252
SM 2540 D-2011	09/25/2020			09/28/2020 15:25	Yijie Li	2198252
SM 4500 F-C-2011	09/25/2020			09/30/2020 21:28	Dale L. Simmons	2198252
SM 5310 B-2011	09/25/2020			09/29/2020 11:34	David Boose	2198253