

Chemical Analysis Report

SO-DIST-2020-07-28-01

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

Event Description: **2020 SMP : Drainage to Corkscrew**
Request ID: **RQ-2020-07-27-46**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Nicole Reistad

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 13-AUG-2020 14:18

A handwritten signature in black ink, appearing to read "Liang Lin", 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: Drainage Ditch @ CR850

Collection Date/Time: 07/27/2020 09:25

Field ID: G1SD0061

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2186357	EPA 180.1 Rev. 2.0	Turbidity	4.7		NTU	P385303	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P385625	
		Sulfate	43		mg SO4/L	P385629	
		Color (true)	120		PCU	P385277	
	SM 2320 B-2011	Total Alkalinity	163		mg CaCO3/L	P385522	
	SM 2540 C-2011	TDS	315		mg/L	P385615	
	SM 2540 D-2011	TSS	3	I	mg/L	P385653	
	SM 4500 F-C-2011	Fluoride	0.11		mg F/L	P385381	
2186358	EPA 350.1 Rev. 2.0	Ammonia-N	0.072		mg N/L	P385479	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P385373	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.2		mg N/L	P385368	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P385415	
	SM 5310 B-2011	Organic Carbon	18		mg C/L	P385449	
2186359	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.099		mg P/L	P385282	
2186365	EPA 200.7 Rev. 4.4	Barium	22.2		ug/L	P385268	
		Calcium	83.6		mg/L	P385268	
		Iron	820		ug/L	P385268	
		Magnesium	7.34		mg/L	P385268	
		Potassium	10.6		mg/L	P385268	
		Sodium	10.1		mg/L	P385268	
		Zinc	5.0	U	ug/L	P385268	
	EPA 200.8 Rev. 5.4	Aluminum	104		ug/L	P385268	
		Antimony	0.19	I	ug/L	P385268	
		Arsenic	1.02		ug/L	P385268	
		Boron**	66.6		ug/L	P385268	
		Cadmium	0.020	U	ug/L	P385268	
		Chromium	1.0	I	ug/L	P385268	
		Copper	3.31		ug/L	P385268	
		Lead	0.20	U	ug/L	P385268	
		Nickel	1.2	I	ug/L	P385268	
		Selenium	0.22	I	ug/L	P385268	
		Silver	0.010	U	ug/L	P385268	
		Thallium	0.10	U	ug/L	P385268	
		Hardness	239		mg/L	P385268	
	SM 2340B						

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: P385303

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P385268

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: P385268

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: P385625

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385629

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385479

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: P385373

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385368

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385415

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385282

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

Reference Method: SM 2120 B-2011
Batch ID: P385277

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P385522

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-2011
Batch ID: P385615

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P385653

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P385381

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: P385449

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: P385268

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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P385268

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	96.3		P	85 - 115
Antimony	99.1		P	85 - 115
Arsenic	97.8		P	85 - 115
Boron	102		P	85 - 115
Cadmium	96.2		P	85 - 115
Chromium	96.6		P	85 - 115
Copper	100		P	85 - 115
Lead	101		P	85 - 115
Nickel	97.9		P	85 - 115
Selenium	95.0		P	85 - 115
Silver	109		P	85 - 115
Thallium	99.4		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385625

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385629

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385479

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385373

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385368

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	101		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385415

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385282

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

Reference Method: SM 2120 B-2011
Batch ID: P385277

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

Reference Method: SM 2320 B-2011
Batch ID: P385522

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.5		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P385381

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.3		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P385449

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P385268

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2185215	Barium	107	106	P/P	80 - 120
2185215	Calcium	102		P	80 - 120
2185215	Iron	104	107	P/P	80 - 120
2185215	Magnesium	104		P	80 - 120
2185215	Potassium	102	107	P/P	80 - 120
2185215	Sodium	103		P	80 - 120
2185215	Zinc	108	106	P/P	80 - 120
2185566	Barium	106		P	80 - 120
2185566	Calcium	101		P	80 - 120
2185566	Iron	107		P	80 - 120
2185566	Magnesium	110		P	80 - 120
2185566	Potassium	107		P	80 - 120
2185566	Sodium	106		P	80 - 120
2185566	Zinc	106		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P385268

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2185215	Aluminum	95.5	93.9	P/P	80 - 120
2185215	Antimony	101	100	P/P	80 - 120
2185215	Arsenic	100	98.7	P/P	80 - 120
2185215	Boron	106	105	P/P	80 - 120
2185215	Cadmium	97.8	96.4	P/P	80 - 120
2185215	Chromium	101	99.6	P/P	80 - 120
2185215	Copper	99.9	98.6	P/P	80 - 120
2185215	Lead	103	102	P/P	80 - 120
2185215	Nickel	96.8	96.0	P/P	80 - 120
2185215	Selenium	94.2	92.8	P/P	80 - 120
2185215	Silver	106	107	P/P	80 - 120
2185215	Thallium	103	104	P/P	80 - 120
2185566	Aluminum	94.9		P	80 - 120
2185566	Antimony	94.8		P	80 - 120
2185566	Arsenic	96.1		P	80 - 120
2185566	Boron	106		P	80 - 120
2185566	Cadmium	97.1		P	80 - 120
2185566	Chromium	101		P	80 - 120
2185566	Copper	100		P	80 - 120
2185566	Lead	101		P	80 - 120
2185566	Nickel	95.2		P	80 - 120
2185566	Selenium	88.8		P	80 - 120
2185566	Silver	109		P	80 - 120
2185566	Thallium	101		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385625

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2185601	Chloride	102		P	90 - 110
2186402	Chloride	102		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385629

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2185601	Sulfate	102		P	90 - 110
2186402	Sulfate	104		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385479

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2186371	Ammonia-N	97.0	97.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385373

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2186338	Kjeldahl Nitrogen	113	108	F/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385368

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2186345	NO2NO3-N	98.8	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385415

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2185610	Total-P	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385282

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2186372	O-Phosphate-P	101	101	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P385381

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2186403	Fluoride	105	105	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P385449

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2186371	Organic Carbon	96.2	97.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P385303

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186285	Turbidity	1.09	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P385268

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2185215	Barium	0.412	Spike	P	0 - 20
2185215	Calcium	1.50	Spike	P	0 - 20
2185215	Iron	2.50	Spike	P	0 - 20
2185215	Magnesium	2.10	Spike	P	0 - 20
2185215	Potassium	3.06	Spike	P	0 - 20
2185215	Sodium	1.97	Spike	P	0 - 20
2185215	Zinc	1.41	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P385268

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2185215	Aluminum	1.65	Spike	P	0 - 20
2185215	Antimony	0.698	Spike	P	0 - 20
2185215	Arsenic	1.25	Spike	P	0 - 20
2185215	Boron	0.864	Spike	P	0 - 20
2185215	Cadmium	1.47	Spike	P	0 - 20
2185215	Chromium	1.54	Spike	P	0 - 20
2185215	Copper	1.21	Spike	P	0 - 20
2185215	Lead	0.361	Spike	P	0 - 20
2185215	Nickel	0.833	Spike	P	0 - 20
2185215	Selenium	1.47	Spike	P	0 - 20
2185215	Silver	0.900	Spike	P	0 - 20
2185215	Thallium	0.526	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385625

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2185601	Chloride	0.723	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385629

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2185601	Sulfate	1.16	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385479

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186371	Ammonia-N	0.0	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385373

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186338	Kjeldahl Nitrogen	2.84	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385368

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186345	NO2NO3-N	0.462	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385415

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2185610	Total-P	1.56	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385282

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186372	O-Phosphate-P	0.0992	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P385277

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186370	Color (true)	11.4	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P385522

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186403	Total Alkalinity	0.0677	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P385615

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186370	TDS	0.948	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P385381

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186403	Fluoride	0.0	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P385449

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186371	Organic Carbon	0.636	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: A100132

Included Lab Sample IDs: 2186357

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A100133

Included Lab Sample IDs: 2186359

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.4	97.7	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A100145

Included Lab Sample IDs: 2186357

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.5	P/P	95 - 105

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A100158

Included Lab Sample IDs: 2186365

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	104	104	P/P	90 - 110
Calcium	99.4	102	P/P	90 - 110
Iron	101	103	P/P	90 - 110
Magnesium	101	103	P/P	90 - 110
Potassium	98.8	102	P/P	90 - 110
Sodium	99.8	103	P/P	90 - 110
Zinc	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A100175

Included Lab Sample IDs: 2186358

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

Reference Method: SM 4500 F-C-2011

Run ID: A100179

Included Lab Sample IDs: 2186357

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

Reference Method: SM 5310 B-2011

Run ID: A100203

Included Lab Sample IDs: 2186358

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.4	97.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A100209

Included Lab Sample IDs: 2186358

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	95.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A100212

Included Lab Sample IDs: 2186358

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

Reference Method: SM 2320 B-2011

Run ID: A100227

Included Lab Sample IDs: 2186357

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	107	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A100231

Included Lab Sample IDs: 2186358

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A100267

Included Lab Sample IDs: 2186357

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	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: 2186365

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	94.6	95.1	P/P	90 - 110
Antimony	94.7	94.3	P/P	90 - 110
Arsenic	93.5	92.8	P/P	90 - 110
Boron	101	102	P/P	90 - 110
Cadmium	93.3	93.0	P/P	90 - 110
Chromium	95.4	94.6	P/P	90 - 110
Copper	96.3	95.0	P/P	90 - 110
Lead	95.6	95.7	P/P	90 - 110
Nickel	95.6	94.6	P/P	90 - 110
Selenium	92.5	91.4	P/P	90 - 110
Silver	104	103	P/P	90 - 110
Thallium	94.8	93.6	P/P	90 - 110

Quality Assurance Report

Calibration Verification

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

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					1.09	
EPA 200.7 Rev. 4.4	Barium	102	107	106	106		0.412
	Calcium	101	102	101			1.50
	Iron	106	104	107	107		2.50
	Magnesium	102	104	110			2.10
	Potassium	102	102	107	107		3.06
	Sodium	102	103	106			1.97
	Zinc	103	108	106	106		1.41
EPA 200.8 Rev. 5.4	Aluminum	96.3	95.5	93.9	94.9		1.65
	Antimony	99.1	101	100	94.8		0.698
	Arsenic	97.8	100	98.7	96.1		1.25
	Boron	102	106	105	106		0.864
	Cadmium	96.2	97.8	96.4	97.1		1.47
	Chromium	96.6	101	99.6	101		1.54
	Copper	100	99.9	98.6	100		1.21
	Lead	101	103	102	101		0.361
	Nickel	97.9	96.8	96.0	95.2		0.833
	Selenium	95.0	94.2	92.8	88.8		1.47
	Silver	109	106	107	109		0.900
	Thallium	99.4	103	104	101		0.526
EPA 300.0 Rev. 2.1	Chloride	104	102	102		0.723	
	Sulfate	104	102	104		1.16	
EPA 350.1 Rev. 2.0	Ammonia-N	99.0	97.0	97.0			0.0
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.6	113	108			2.84
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	101	98.8	98.0			0.462
EPA 365.1 Rev. 2.0	Total-P	99.4	102	104			1.56
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	101	101			0.0992
SM 2120 B-2011	Color (true)	102				11.4	
SM 2320 B-2011	Total Alkalinity	99.5				0.0677	
SM 2540 C-2011	TDS					0.948	
SM 4500 F-C-2011	Fluoride	98.3	105	105			0.0
SM 5310 B-2011	Organic Carbon	95.8	96.2	97.0			0.636

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2186357
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2186365
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2186365
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2186357
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2186357
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2186358
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2186358
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2186358
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2186358
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2186359
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2186357
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2186357
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2186365
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2186357

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2186357
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2186357
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2186358

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	07/28/2020			07/28/2020 16:10	Blanca Fach	2186357
EPA 200.7 Rev. 4.4	07/28/2020	07/28/2020 15:30	Elliott D. Healy	07/29/2020 19:55	Betina Topolski	2186365
EPA 200.8 Rev. 5.4	07/28/2020	07/28/2020 15:30	Elliott D. Healy	08/06/2020 16:47	Alexander Thompson	2186365
EPA 300.0 Rev. 2.1	07/28/2020			08/01/2020 05:29	Julia Storbeck	2186357
EPA 350.1 Rev. 2.0	07/28/2020			08/01/2020 18:20	Ping Hua	2186358
EPA 351.2 Rev. 2.0	07/28/2020	07/30/2020 12:15	Jhamieka S. Greenwood	07/31/2020 14:31	Jhamieka S. Greenwood	2186358
EPA 353.2 Rev. 2.0	07/28/2020			07/30/2020 08:21	Beverly Y. Sanders	2186358
EPA 365.1 Rev. 2.0	07/28/2020	07/31/2020 10:10	Lipi Saha	08/03/2020 09:14	Benjamin T. Nordmann	2186358
EPA 365.1 Rev. 2.0 dissolved	07/28/2020			07/28/2020 16:24	Samantha Davila	2186359
SM 2120 B-2011	07/28/2020			07/28/2020 16:10	Benjamin T. Nordmann	2186357
SM 2320 B-2011	07/28/2020			08/01/2020 04:38	Dale L. Simmons	2186357
SM 2340B	07/28/2020			07/29/2020 19:55	Betina Topolski	2186365
SM 2540 C-2011	07/28/2020			07/29/2020 15:16	Yijie Li	2186357
SM 2540 D-2011	07/28/2020			07/29/2020 15:16	Yijie Li	2186357
SM 4500 F-C-2011	07/28/2020			07/29/2020 19:50	Dale L. Simmons	2186357
SM 5310 B-2011	07/28/2020			07/30/2020 23:02	David Boose	2186358