Chemical Analysis Report

CEN-DIST-2020-08-05-02

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

Event Description: **Nut/Metals/Ecoli**
Request ID: **RQ-2020-07-13-42**
Customer: **CEN-DIST**
Project ID: **SMP**

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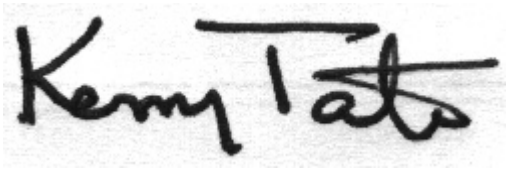
Date Certified: 26-AUG-2020 09:23



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: Mills Creek @ Park **Collection Date/Time: 08/04/2020 10:44**

Field ID: G2CE0233 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2188634	EPA 180.1 Rev. 2.0	Turbidity	4.0		NTU	P385691	
	EPA 300.0 Rev. 2.1	Chloride	70		mg Cl/L	P385890	
		Sulfate	15		mg SO4/L	P385895	
	SM 2120 B-2011	Color (true)	67		PCU	P385688	
	SM 2320 B-2011	Total Alkalinity	135		mg CaCO3/L	P385770	
	SM 2540 C-2011	TDS	294		mg/L	P386160	
	SM 2540 D-2011	TSS	3	I	mg/L	P386005	
	SM 4500 F-C-2011	Fluoride	0.29		mg F/L	P385773	
2188635	EPA 350.1 Rev. 2.0	Ammonia-N	0.029		mg N/L	P385803	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.56		mg N/L	P385879	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P385764	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P385824	
	SM 5310 B-2011	Organic Carbon	12		mg C/L	P385776	
2188636	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.083		mg P/L	P385695	
2188641	EPA 200.7 Rev. 4.4	Barium	26.7		ug/L	P385686	
		Calcium	55.7		mg/L	P385686	
		Iron	730		ug/L	P385686	
		Magnesium	6.67		mg/L	P385686	
		Potassium	3.3		mg/L	P385686	
		Sodium	44.6		mg/L	P385686	
		Zinc	5.2	I	ug/L	P385686	
	EPA 200.8 Rev. 5.4	Aluminum	48		ug/L	P385686	
		Antimony	0.25		ug/L	P385686	
		Arsenic	1.91		ug/L	P385686	
		Boron**	76.0		ug/L	P385686	
		Cadmium	0.020	U	ug/L	P385686	
		Chromium	0.69	I	ug/L	P385686	
		Copper	1.17		ug/L	P385686	
		Lead	0.28	I	ug/L	P385686	
		Nickel	0.93	I	ug/L	P385686	
		Selenium	0.20	U	ug/L	P385686	
		Silver	0.010	U	ug/L	P385686	
		Thallium	0.10	U	ug/L	P385686	
	SM 2340B	Hardness	167		mg/L	P385686	

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: P385691

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P385686

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: P385686

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: P385890

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385895

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385803

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: P385879

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385764

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385824

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385695

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

Reference Method: SM 2120 B-2011
Batch ID: P385688

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P385770

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

Reference Method: SM 2540 C-2011
Batch ID: P386160

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P386005

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P385773

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: P385776

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: P385686

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	104		P	85 - 115
Calcium	105		P	85 - 115
Iron	108		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	104		P	85 - 115
Sodium	103		P	85 - 115
Zinc	106		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P385686

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	100		P	85 - 115
Antimony	103		P	85 - 115
Arsenic	102		P	85 - 115
Boron	99.5		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	98.9		P	85 - 115
Copper	100		P	85 - 115
Lead	104		P	85 - 115
Nickel	99.4		P	85 - 115
Selenium	98.9		P	85 - 115
Silver	109		P	85 - 115
Thallium	101		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385890

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385895

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385803

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385879

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385764

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	102		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385824

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385695

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

Reference Method: SM 2120 B-2011
Batch ID: P385688

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

Reference Method: SM 2320 B-2011
Batch ID: P385770

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P385773

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P385776

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.6		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P385686

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2188557	Barium	104	104	P/P	80 - 120
2188557	Calcium	105		P	80 - 120
2188557	Iron	107	106	P/P	80 - 120
2188557	Magnesium	105		P	80 - 120
2188557	Potassium	105		P	80 - 120
2188557	Sodium	105		P	80 - 120
2188557	Zinc	107	107	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P385686

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2188557	Aluminum	98.6	101	P/P	80 - 120
2188557	Antimony	105	105	P/P	80 - 120
2188557	Arsenic	103	102	P/P	80 - 120
2188557	Boron	101	102	P/P	80 - 120
2188557	Cadmium	101	103	P/P	80 - 120
2188557	Chromium	101	101	P/P	80 - 120
2188557	Copper	100	102	P/P	80 - 120
2188557	Lead	106	106	P/P	80 - 120
2188557	Nickel	99.4	97.9	P/P	80 - 120
2188557	Selenium	97.2	98.1	P/P	80 - 120
2188557	Silver	107	107	P/P	80 - 120
2188557	Thallium	104	107	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385890

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2188563	Chloride	101		P	90 - 110
2188897	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385895

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2188563	Sulfate	102		P	90 - 110
2188897	Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385803

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2188772	Ammonia-N	97.4	96.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385879

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2188772	Kjeldahl Nitrogen	103	99.9	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385764

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2188685	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385824

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2188589	Total-P	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385695

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2188550	O-Phosphate-P	98.1	97.9	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P385773

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2188548	Fluoride	102	101	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P385776

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2188635	Organic Carbon	99.8	102	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P385691

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188545	Turbidity	2.29	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P385686

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188557	Barium	0.158	Spike	P	0 - 20
2188557	Calcium	0.418	Spike	P	0 - 20
2188557	Iron	1.57	Spike	P	0 - 20
2188557	Magnesium	1.75	Spike	P	0 - 20
2188557	Potassium	0.619	Spike	P	0 - 20
2188557	Sodium	0.405	Spike	P	0 - 20
2188557	Zinc	0.205	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P385686

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188557	Aluminum	2.36	Spike	P	0 - 20
2188557	Antimony	0.209	Spike	P	0 - 20
2188557	Arsenic	0.621	Spike	P	0 - 20
2188557	Boron	0.861	Spike	P	0 - 20
2188557	Cadmium	1.17	Spike	P	0 - 20
2188557	Chromium	0.183	Spike	P	0 - 20
2188557	Copper	2.11	Spike	P	0 - 20
2188557	Lead	0.907	Spike	P	0 - 20
2188557	Nickel	1.48	Spike	P	0 - 20
2188557	Selenium	0.962	Spike	P	0 - 20
2188557	Silver	0.498	Spike	P	0 - 20
2188557	Thallium	1.97	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385890

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188563	Chloride	0.540	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385895

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188563	Sulfate	0.438	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385803

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188772	Ammonia-N	0.684	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385879

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188772	Kjeldahl Nitrogen	1.52	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385764

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188685	NO2NO3-N	0.482	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385824

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188589	Total-P	0.0337	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385695

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188550	O-Phosphate-P	0.204	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P385688

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188563	Color (true)	1.41	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P385770

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188548	Total Alkalinity	2.08	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P386160

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188548	TDS	7.11	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P385773

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188548	Fluoride	0.902	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P385776

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188635	Organic Carbon	1.37	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: A100296
Included Lab Sample IDs: 2188634

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	103	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A100297
Included Lab Sample IDs: 2188634

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A100298
Included Lab Sample IDs: 2188636

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.9	97.8	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A100325
Included Lab Sample IDs: 2188641

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A100340
Included Lab Sample IDs: 2188635

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	102	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A100341
Included Lab Sample IDs: 2188634

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	97.2	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A100341
Included Lab Sample IDs: 2188634

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-2011
Run ID: A100342
Included Lab Sample IDs: 2188635

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A100352
Included Lab Sample IDs: 2188635

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.8	99.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A100358
Included Lab Sample IDs: 2188641

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	106	106	P/P	90 - 110
Arsenic	103	103	P/P	90 - 110
Boron	104	106	P/P	90 - 110
Cadmium	103	103	P/P	90 - 110
Chromium	102	103	P/P	90 - 110
Copper	101	102	P/P	90 - 110
Lead	105	104	P/P	90 - 110
Nickel	103	103	P/P	90 - 110
Selenium	104	104	P/P	90 - 110
Thallium	103	99.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A100376
Included Lab Sample IDs: 2188641

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.5	97.3	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A100386
Included Lab Sample IDs: 2188634

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A100396
Included Lab Sample IDs: 2188635

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A100416
Included Lab Sample IDs: 2188635

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	92.6	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A100422
Included Lab Sample IDs: 2188641

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	102	102	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					2.29	
EPA 200.7 Rev. 4.4	Barium	104	104	104			0.158
	Calcium	105	105				0.418
	Iron	108	107	106			1.57
	Magnesium	104	105				1.75
	Potassium	104	105				0.619
	Sodium	103	105				0.405
	Zinc	106	107	107			0.205
EPA 200.8 Rev. 5.4	Aluminum	100	98.6	101			2.36
	Antimony	103	105	105			0.209
	Arsenic	102	103	102			0.621
	Boron	99.5	101	102			0.861
	Cadmium	101	101	103			1.17
	Chromium	98.9	101	101			0.183
	Copper	100	100	102			2.11
	Lead	104	106	106			0.907
	Nickel	99.4	99.4	97.9			1.48
	Selenium	98.9	97.2	98.1			0.962
	Silver	109	107	107			0.498
	Thallium	101	104	107			1.97
EPA 300.0 Rev. 2.1	Chloride	102	101	103		0.540	
	Sulfate	104	102	103		0.438	
EPA 350.1 Rev. 2.0	Ammonia-N	98.4	97.4	96.4			0.684
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	103	99.9			1.52
EPA 353.2 Rev. 2.0	NO2NO3-N	102	104	104			0.482
EPA 365.1 Rev. 2.0	Total-P	99.9	102	102			0.0337
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	98.1	97.9			0.204
SM 2120 B-2011	Color (true)	102				1.41	
SM 2320 B-2011	Total Alkalinity	103				2.08	
SM 2540 C-2011	TDS					7.11	
SM 4500 F-C-2011	Fluoride	102	102	101			0.902
SM 5310 B-2011	Organic Carbon	95.6	99.8	102			1.37

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2188634
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2188641
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2188641
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2188634
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2188634
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2188635
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2188635
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2188635
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2188635
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2188636
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2188634
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2188634
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2188641
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2188634

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	2188634
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2188634
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2188635

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	08/05/2020			08/05/2020 15:58	Blanca Fach	2188634
EPA 200.7 Rev. 4.4	08/05/2020	08/05/2020 16:25	Elliott D. Healy	08/06/2020 20:53	Betina Topolski	2188641
EPA 200.8 Rev. 5.4	08/05/2020	08/05/2020 16:25	Elliott D. Healy	08/09/2020 16:33	Alexander Thompson	2188641
	08/05/2020	08/05/2020 16:25	Elliott D. Healy	08/10/2020 17:02	Alexander Thompson	2188641
	08/05/2020	08/05/2020 16:25	Elliott D. Healy	08/12/2020 18:49	Alexander Thompson	2188641
EPA 300.0 Rev. 2.1	08/05/2020			08/08/2020 13:57	Julia Storbeck	2188634
EPA 350.1 Rev. 2.0	08/05/2020			08/08/2020 14:21	Ping Hua	2188635
EPA 351.2 Rev. 2.0	08/05/2020	08/11/2020 09:50	Sima Feizi	08/12/2020 13:11	Jhamieka S. Greenwood	2188635
EPA 353.2 Rev. 2.0	08/05/2020			08/07/2020 09:32	Beverly Y. Sanders	2188635
EPA 365.1 Rev. 2.0	08/05/2020	08/10/2020 11:00	Shengyu Wang	08/11/2020 12:22	Benjamin T. Nordmann	2188635
EPA 365.1 Rev. 2.0 dissolved	08/05/2020			08/05/2020 16:25	Virginia P. Brown	2188636
SM 2120 B-2011	08/05/2020			08/05/2020 15:54	Benjamin T. Nordmann	2188634
SM 2320 B-2011	08/05/2020			08/06/2020 19:53	Dale L. Simmons	2188634
SM 2340B	08/05/2020			08/06/2020 20:53	Betina Topolski	2188641
SM 2540 C-2011	08/05/2020			08/10/2020 13:50	Yijie Li	2188634
SM 2540 D-2011	08/05/2020			08/10/2020 13:50	Yijie Li	2188634
SM 4500 F-C-2011	08/05/2020			08/06/2020 19:53	Dale L. Simmons	2188634
SM 5310 B-2011	08/05/2020			08/07/2020 00:35	David Boose	2188635