Chemical Analysis Report

CEN-DIST-2020-10-16-01

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

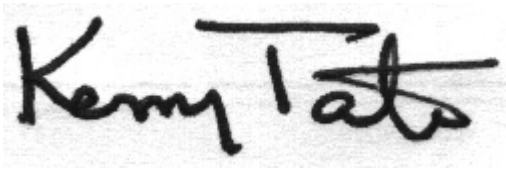
Event Description: **Mills Creek**
Request ID: **RQ-2020-10-12-36**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Kalina Warren

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 06-NOV-2020 11:33



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: 10/15/2020 11:50**

Field ID: G2CE0233 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2202979	EPA 180.1 Rev. 2.0	Turbidity	4.2		NTU	P388815	
	EPA 300.0 Rev. 2.1	Chloride	74		mg Cl/L	P389372	
		Sulfate	22		mg SO4/L	P389375	
	SM 2120 B-2011	Color (true)	74	A	PCU	P388818	
	SM 2320 B-2011	Total Alkalinity	134		mg CaCO3/L	P389112	
	SM 2540 C-2011	TDS	311		mg/L	P389380	
	SM 2540 D-2011	TSS	2	I	mg/L	P389308	
	SM 4500 F-C-2011	Fluoride	0.36		mg F/L	P389117	
2202980	EPA 350.1 Rev. 2.0	Ammonia-N	0.053		mg N/L	P388849	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.76		mg N/L	P389091	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.17		mg N/L	P389015	
	EPA 365.1 Rev. 2.0	Total-P	0.31		mg P/L	P389173	
	SM 5310 B-2011	Organic Carbon	12		mg C/L	P388948	
2202981	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.23		mg P/L	P388821	
2202990	EPA 200.7 Rev. 4.4	Barium	19.4		ug/L	P388938	
		Calcium	55.4		mg/L	P388938	
		Iron	730		ug/L	P388938	
		Magnesium	6.54		mg/L	P388938	
		Potassium	5.5		mg/L	P388938	
		Sodium	49.5		mg/L	P388938	
		Zinc	5.1	I	ug/L	P388938	
	EPA 200.8 Rev. 5.4	Aluminum	60		ug/L	P388938	
		Antimony	0.28		ug/L	P388938	
		Arsenic	1.93		ug/L	P388938	
		Beryllium	0.012	I	ug/L	P388938	
		Boron**	93.4		ug/L	P388938	
		Cadmium	0.020	U	ug/L	P388938	
		Chromium	0.67	I	ug/L	P388938	
		Copper	0.92		ug/L	P388938	
		Lead	0.26	I	ug/L	P388938	
		Nickel	1.1	I	ug/L	P388938	
		Selenium	0.27	I	ug/L	P388938	
		Silver	0.010	U	ug/L	P388938	
		Thallium	0.10	U	ug/L	P388938	
	SM 2340B	Hardness	165		mg/L	P388938	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P388815

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P388938

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: P388938

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: P389372

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389375

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P388849

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: P389091

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389015

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389173

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P388821

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

Reference Method: SM 2120 B-2011
Batch ID: P388818

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P389112

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

Reference Method: SM 2540 C-2011
Batch ID: P389380

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P389308

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P389117

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: P388948

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: P388938

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	102		P	85 - 115
Calcium	103		P	85 - 115
Iron	106		P	85 - 115
Magnesium	107		P	85 - 115
Potassium	102		P	85 - 115
Sodium	99.3		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P388938

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.1		P	85 - 115
Antimony	97.7		P	85 - 115
Arsenic	99.1		P	85 - 115
Beryllium	94.3		P	85 - 115
Boron	97.9		P	85 - 115
Cadmium	97.4		P	85 - 115
Chromium	95.3		P	85 - 115
Copper	97.7		P	85 - 115
Lead	94.2		P	85 - 115
Nickel	96.6		P	85 - 115
Selenium	96.5		P	85 - 115
Silver	97.2		P	85 - 115
Thallium	97.6		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389372

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389375

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P388849

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389091

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389015

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389173

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: P388821

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.6		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P388818

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

Reference Method: SM 2320 B-2011
Batch ID: P389112

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.7		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P389117

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

Reference Method: SM 5310 B-2011
Batch ID: P388948

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.8		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P388938

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2202972	Barium	105	101	P/P	80 - 120
2202972	Calcium	102		P	80 - 120
2202972	Iron	108	103	P/P	80 - 120
2202972	Magnesium	108	100	P/P	80 - 120
2202972	Potassium	103	97.8	P/P	80 - 120
2202972	Sodium	98.8		P	80 - 120
2202972	Zinc	104	98.3	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P388938

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2202972	Aluminum	99.3	99.3	P/P	80 - 120
2202972	Antimony	100	100	P/P	80 - 120
2202972	Arsenic	102	102	P/P	80 - 120
2202972	Beryllium	98.3	98.2	P/P	80 - 120
2202972	Boron	101	100	P/P	80 - 120
2202972	Cadmium	99.3	103	P/P	80 - 120
2202972	Chromium	98.7	98.6	P/P	80 - 120
2202972	Copper	100	99.9	P/P	80 - 120
2202972	Lead	96.1	95.5	P/P	80 - 120
2202972	Nickel	99.8	99.5	P/P	80 - 120
2202972	Selenium	98.8	98.2	P/P	80 - 120
2202972	Silver	97.0	98.0	P/P	80 - 120
2202972	Thallium	99.4	99.7	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389372

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2202993	Chloride	102		P	90 - 110
2203190	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389375

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2202993	Sulfate	102		P	90 - 110
2203190	Sulfate	99.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P388849

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2202962	Ammonia-N	100	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389091

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2202962	Kjeldahl Nitrogen	107	108	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389015

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2202928	NO2NO3-N	99.0	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389173

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2202980	Total-P	107	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P388821

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2202796	O-Phosphate-P	97.9	97.4	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P389117

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2202774	Fluoride	99.1	103	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P388948

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2202890	Organic Carbon	94.1	95.3	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P388815

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2202900	Turbidity	14.7	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P388938

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2202972	Barium	4.21	Spike	P	0 - 20
2202972	Calcium	3.12	Spike	P	0 - 20
2202972	Iron	3.93	Spike	P	0 - 20
2202972	Magnesium	4.46	Spike	P	0 - 20
2202972	Potassium	3.95	Spike	P	0 - 20
2202972	Sodium	3.19	Spike	P	0 - 20
2202972	Zinc	5.43	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P388938

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2202972	Aluminum	0.0358	Spike	P	0 - 20
2202972	Antimony	0.00951	Spike	P	0 - 20
2202972	Arsenic	0.361	Spike	P	0 - 20
2202972	Beryllium	0.103	Spike	P	0 - 20
2202972	Boron	0.966	Spike	P	0 - 20
2202972	Cadmium	3.29	Spike	P	0 - 20
2202972	Chromium	0.0942	Spike	P	0 - 20
2202972	Copper	0.113	Spike	P	0 - 20
2202972	Lead	0.608	Spike	P	0 - 20
2202972	Nickel	0.316	Spike	P	0 - 20
2202972	Selenium	0.627	Spike	P	0 - 20
2202972	Silver	1.00	Spike	P	0 - 20
2202972	Thallium	0.304	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389372

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2203190	Chloride	0.0490	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389375

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2203190	Sulfate	0.404	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P388849

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2202962	Ammonia-N	0.124	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389091

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2202962	Kjeldahl Nitrogen	1.07	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389015

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2202928	NO2NO3-N	0.398	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389173

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2202980	Total-P	0.516	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P388821

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2202796	O-Phosphate-P	0.466	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P388818

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2202979	Color (true)	0.556	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P389112

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2202774	Total Alkalinity	0.527	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P389380

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2202900	TDS	3.79	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 2540 D-2011
Batch ID: P389308

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2202900	TSS	3.77	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P389117

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2202774	Fluoride	0.928	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P388948

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2202890	Organic Carbon	1.07	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: A101567
Included Lab Sample IDs: 2202979

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

Reference Method: SM 2120 B-2011
Run ID: A101568
Included Lab Sample IDs: 2202979

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	102	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A101569
Included Lab Sample IDs: 2202981

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	98.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A101575
Included Lab Sample IDs: 2202980

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

Reference Method: SM 5310 B-2011
Run ID: A101631
Included Lab Sample IDs: 2202980

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.7	96.3	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A101646
Included Lab Sample IDs: 2202990

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	102	P/P	90 - 110
Calcium	103	103	P/P	90 - 110
Iron	103	102	P/P	90 - 110
Magnesium	103	102	P/P	90 - 110
Potassium	101	99.1	P/P	90 - 110
Sodium	101	100	P/P	90 - 110
Zinc	102	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A101657
Included Lab Sample IDs: 2202980

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A101667
Included Lab Sample IDs: 2202990

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.6	97.9	P/P	90 - 110
Antimony	97.4	96.5	P/P	90 - 110
Arsenic	100	98.7	P/P	90 - 110
Boron	101	100	P/P	90 - 110
Cadmium	98.6	97.1	P/P	90 - 110
Chromium	94.3	92.0	P/P	90 - 110
Copper	96.5	94.9	P/P	90 - 110
Lead	96.7	96.2	P/P	90 - 110
Nickel	96.1	95.3	P/P	90 - 110
Selenium	97.4	96.6	P/P	90 - 110
Silver	101	99.3	P/P	90 - 110
Thallium	93.7	94.3	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A101694
Included Lab Sample IDs: 2202979

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.7	96.5	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A101694
Included Lab Sample IDs: 2202979

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A101699
Included Lab Sample IDs: 2202990

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A101723
Included Lab Sample IDs: 2202980

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A101775
Included Lab Sample IDs: 2202980

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.9	97.3	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A101798
Included Lab Sample IDs: 2202979

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Sulfate	101	101	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					14.7	
EPA 200.7 Rev. 4.4	Barium	102	105	101			4.21
	Calcium	103	102				3.12
	Iron	106	108	103			3.93
	Magnesium	107	108	100			4.46
	Potassium	102	103	97.8			3.95
	Sodium	99.3	98.8				3.19
	Zinc	101	104	98.3			5.43
EPA 200.8 Rev. 5.4	Aluminum	99.1	99.3	99.3			0.0358
	Antimony	97.7	100	100			0.0095
	Arsenic	99.1	102	102			0.361
	Beryllium	94.3	98.3	98.2			0.103
	Boron	97.9	101	100			0.966
	Cadmium	97.4	99.3	103			3.29
	Chromium	95.3	98.7	98.6			0.0942
	Copper	97.7	100	99.9			0.113
	Lead	94.2	96.1	95.5			0.608
	Nickel	96.6	99.8	99.5			0.316
	Selenium	96.5	98.8	98.2			0.627
	Silver	97.2	97.0	98.0			1.00
	Thallium	97.6	99.4	99.7			0.304
EPA 300.0 Rev. 2.1	Chloride	102	100	102		0.0490	
	Sulfate	102	99.9	102		0.404	
EPA 350.1 Rev. 2.0	Ammonia-N	101	100	100			0.124
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	107	108			1.07
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	99.0	98.5			0.398
EPA 365.1 Rev. 2.0	Total-P	103	107	106			0.516
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.6	97.9	97.4			0.466
SM 2120 B-2011	Color (true)	100				0.556	
SM 2320 B-2011	Total Alkalinity	99.7				0.527	
SM 2540 C-2011	TDS					3.79	
SM 2540 D-2011	TSS					3.77	
SM 4500 F-C-2011	Fluoride	98.3	99.1	103			0.928
SM 5310 B-2011	Organic Carbon	94.8	94.1	95.3			1.07

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2202979
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2202990
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2202990
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2202979
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2202979
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2202980
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2202980
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2202980
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2202980
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2202981
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2202979
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2202979

Reference Method Descriptions

Method	Description	Associated Samples
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2202990
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2202979
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2202979
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2202979
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2202980

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	10/16/2020			10/16/2020 15:33	Yen Ta	2202979
EPA 200.7 Rev. 4.4	10/16/2020	10/20/2020 12:25	Elliott D. Healy	10/20/2020 21:46	Betina Topolski	2202990
EPA 200.8 Rev. 5.4	10/16/2020	10/20/2020 12:25	Elliott D. Healy	10/21/2020 14:19	Alexander Thompson	2202990
	10/16/2020	10/20/2020 12:25	Elliott D. Healy	10/22/2020 15:56	Alexander Thompson	2202990
EPA 300.0 Rev. 2.1	10/16/2020			10/27/2020 17:06	Lipi Saha	2202979
EPA 350.1 Rev. 2.0	10/16/2020			10/18/2020 14:08	Ping Hua	2202980
EPA 351.2 Rev. 2.0	10/16/2020	10/22/2020 13:36	David Boose	10/23/2020 12:47	Elliott Rodriguez	2202980
EPA 353.2 Rev. 2.0	10/16/2020			10/21/2020 09:45	Beverly Y. Sanders	2202980
EPA 365.1 Rev. 2.0	10/16/2020	10/23/2020 15:15	Shengyu Wang	10/26/2020 11:24	Lipi Saha	2202980
EPA 365.1 Rev. 2.0 dissolved	10/16/2020			10/16/2020 16:29	Samantha Davila	2202981
SM 2120 B-2011	10/16/2020			10/16/2020 15:49	Blanca Fach	2202979
SM 2320 B-2011	10/16/2020			10/22/2020 06:03	Samantha Davila	2202979
SM 2340B	10/16/2020			10/20/2020 21:46	Betina Topolski	2202990
SM 2540 C-2011	10/16/2020			10/21/2020 15:19	Yijie Li	2202979
SM 2540 D-2011	10/16/2020			10/21/2020 15:19	Yijie Li	2202979
SM 4500 F-C-2011	10/16/2020			10/22/2020 06:03	Samantha Davila	2202979
SM 5310 B-2011	10/16/2020			10/20/2020 09:25	Lauren Lees	2202980