Chemical Analysis Report

TLH-ROC-2021-06-23-04

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

Event Description: **Run 7**
Request ID: **RQ-2021-03-01-18**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
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2600 Blair Stone Rd
Tallahassee, FL 32399
Attn: Michael Eckles

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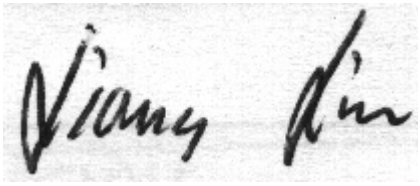
Certified by: Liang Lin, Environmental Administrator

Date Certified: 19-JUL-2021 10:23



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: Tributary South Mosquito Creek **Collection Date/Time: 06/23/2021 10:55**

Field ID: G2TLHR0008 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2256775	EPA 180.1 Rev. 2.0	Turbidity	23		NTU	P400136	
	EPA 300.0 Rev. 2.1	Chloride	4.7		mg Cl/L	P400552	
		Sulfate	0.98		mg SO4/L	P400555	
	SM 2120 B-2011	Color (true)	68	J	PCU	P400133	
	SM 2320 B-2011	Total Alkalinity	43		mg CaCO3/L	P400616	
	SM 2540 D-2011	TSS	21		mg/L	P400609	
	SM 4500 F-C-2011	Fluoride	0.077	I	mg F/L	P400620	
2256776	EPA 350.1 Rev. 2.0	Ammonia-N	0.029		mg N/L	P400461	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37		mg N/L	P400473	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.23		mg N/L	P400234	
	EPA 365.1 Rev. 2.0	Total-P	0.045		mg P/L	P400336	
	SM 5310 B-2011	Organic Carbon	5.6		mg C/L	P400533	
2256777	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P400131	
2256780	EPA 200.7 Rev. 4.4	Barium	24.9		ug/L	P400161	
		Calcium	12.6		mg/L	P400161	
		Iron	1.44E+03		ug/L	P400161	
		Magnesium	4.80		mg/L	P400161	
		Manganese	75.1		ug/L	P400161	
		Potassium	0.98	I	mg/L	P400161	
		Sodium	2.7		mg/L	P400161	
		Zinc	5.5	I	ug/L	P400161	
	EPA 200.8 Rev. 5.4	Aluminum	824		ug/L	P400161	
		Antimony	0.050	U	ug/L	P400161	
		Arsenic	0.59		ug/L	P400161	
		Beryllium	0.060		ug/L	P400161	
		Boron**	13.7		ug/L	P400161	
		Cadmium	0.020	U	ug/L	P400161	
		Chromium	1.3	I	ug/L	P400161	
		Copper	0.54	I	ug/L	P400161	
		Lead	0.69		ug/L	P400161	
		Nickel	0.52	I	ug/L	P400161	
		Selenium	0.24	I	ug/L	P400161	
		Silver	0.010	U	ug/L	P400161	
		Thallium	0.10	U	ug/L	P400161	
	SM 2340B	Hardness	51.2		mg/L	P400161	

Ref. Method and Comment:
SM 2120 B-2011: The result may be biased high because of matrix interference.
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: P400136

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P400161

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
Manganese	1.0	U	ug/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: P400161

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: P400552

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400555

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400461

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: P400473

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400234

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400336

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P400131

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

Reference Method: SM 2120 B-2011
Batch ID: P400133

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P400616

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

Reference Method: SM 2540 D-2011
Batch ID: P400609

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P400620

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P400533

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: P400161

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	105		P	85 - 115
Calcium	110		P	85 - 115
Iron	109		P	85 - 115
Magnesium	112		P	85 - 115
Manganese	104		P	85 - 115
Potassium	107		P	85 - 115
Sodium	106		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P400161

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	101		P	80 - 120
Antimony	104		P	80 - 120
Arsenic	102		P	80 - 120
Beryllium	109		P	80 - 120
Boron	103		P	80 - 120
Cadmium	99.0		P	80 - 120
Chromium	97.1		P	80 - 120
Copper	98.9		P	80 - 120
Lead	100		P	80 - 120
Nickel	98.0		P	80 - 120
Selenium	114		P	80 - 120
Silver	106		P	80 - 120
Thallium	104		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400552

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400555

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400461

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400473

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400234

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400336

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: P400131

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

Reference Method: SM 2120 B-2011
Batch ID: P400133

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P400616

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P400620

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.5		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P400533

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.9		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P400161

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2256658	Barium	104	103	P/P	80 - 120
2256658	Calcium	108	108	P/P	80 - 120
2256658	Iron	108	107	P/P	80 - 120
2256658	Magnesium	110	109	P/P	80 - 120
2256658	Manganese	102	101	P/P	80 - 120
2256658	Potassium	110	109	P/P	80 - 120
2256658	Sodium	102	101	P/P	80 - 120
2256658	Zinc	101	100	P/P	80 - 120
2256898	Barium	106		P	80 - 120
2256898	Calcium	92.7		P	80 - 120
2256898	Iron	111		P	80 - 120
2256898	Magnesium	91.4		P	80 - 120
2256898	Manganese	105		P	80 - 120
2256898	Potassium	90.7		P	80 - 120
2256898	Sodium	92.8		P	80 - 120
2256898	Zinc	104		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P400161

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2256658	Aluminum	101	99.8	P/P	80 - 120
2256658	Antimony	103	103	P/P	80 - 120
2256658	Arsenic	101	100	P/P	80 - 120
2256658	Beryllium	106	107	P/P	80 - 120
2256658	Boron	101	99.8	P/P	80 - 120
2256658	Cadmium	99.6	100	P/P	80 - 120
2256658	Chromium	98.5	99.1	P/P	80 - 120
2256658	Copper	102	102	P/P	80 - 120
2256658	Lead	101	101	P/P	80 - 120
2256658	Nickel	97.9	99.4	P/P	80 - 120
2256658	Selenium	112	112	P/P	80 - 120
2256658	Silver	105	105	P/P	80 - 120
2256658	Thallium	105	104	P/P	80 - 120
2256898	Aluminum	99.0		P	80 - 120
2256898	Antimony	104		P	80 - 120
2256898	Arsenic	103		P	80 - 120
2256898	Beryllium	111		P	80 - 120
2256898	Boron	99.3		P	80 - 120
2256898	Cadmium	99.9		P	80 - 120
2256898	Chromium	99.7		P	80 - 120
2256898	Copper	101		P	80 - 120
2256898	Lead	101		P	80 - 120
2256898	Nickel	100		P	80 - 120
2256898	Selenium	112		P	80 - 120
2256898	Silver	103		P	80 - 120
2256898	Thallium	106		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400552

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400552

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2256665	Chloride	99.6		P	90 - 110
2256775	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400555

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2256665	Sulfate	99.6		P	90 - 110
2256775	Sulfate	98.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400461

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2256766	Ammonia-N	94.8	96.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400473

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2256744	Kjeldahl Nitrogen	109	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400234

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2256756	NO2NO3-N	94.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400336

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2256776	Total-P	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P400131

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2256704	O-Phosphate-P	92.0	97.0	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P400620

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2256854	Fluoride	101	101	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P400533

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2256776	Organic Carbon	95.9	95.5	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P400136

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256755	Turbidity	0.826	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P400161

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256658	Barium	1.42	Spike	P	0 - 20
2256658	Calcium	0.438	Spike	P	0 - 20
2256658	Iron	1.04	Spike	P	0 - 20
2256658	Magnesium	0.878	Spike	P	0 - 20
2256658	Manganese	1.39	Spike	P	0 - 20
2256658	Potassium	0.237	Spike	P	0 - 20
2256658	Sodium	0.809	Spike	P	0 - 20
2256658	Zinc	1.16	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P400161

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256658	Aluminum	1.42	Spike	P	0 - 20
2256658	Antimony	0.352	Spike	P	0 - 20
2256658	Arsenic	0.637	Spike	P	0 - 20
2256658	Beryllium	0.810	Spike	P	0 - 20
2256658	Boron	1.33	Spike	P	0 - 20
2256658	Cadmium	0.599	Spike	P	0 - 20
2256658	Chromium	0.617	Spike	P	0 - 20
2256658	Copper	0.348	Spike	P	0 - 20
2256658	Lead	0.412	Spike	P	0 - 20
2256658	Nickel	1.53	Spike	P	0 - 20
2256658	Selenium	0.320	Spike	P	0 - 20
2256658	Silver	0.280	Spike	P	0 - 20
2256658	Thallium	0.531	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400552

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256665	Chloride	0.827	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400555

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256665	Sulfate	1.15	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400461

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256766	Ammonia-N	1.29	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400473

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256744	Kjeldahl Nitrogen	1.51	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400234

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256756	NO2NO3-N	0.193	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400336

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256776	Total-P	1.61	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P400131

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256704	O-Phosphate-P	5.29	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P400133

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256701	Color (true)	0.210	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P400616

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256854	Total Alkalinity	3.03	Sample	P	0 - 5.2

Reference Method: SM 4500 F-C-2011
Batch ID: P400620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256854	Fluoride	0.0	Spike	P	0 - 2.1

Quality Assurance Report
Precision

Reference Method: SM 5310 B-2011
Batch ID: P400533

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256776	Organic Carbon	0.323	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A106235
Included Lab Sample IDs: 2256777

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

Reference Method: SM 2120 B-2011
Run ID: A106236
Included Lab Sample IDs: 2256775

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A106237
Included Lab Sample IDs: 2256775

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A106296
Included Lab Sample IDs: 2256776

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A106370
Included Lab Sample IDs: 2256776

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.5	97.0	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A106380
Included Lab Sample IDs: 2256780

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	100	100	P/P	90 - 110
Calcium	102	102	P/P	90 - 110
Iron	101	101	P/P	90 - 110
Magnesium	101	101	P/P	90 - 110
Manganese	101	101	P/P	90 - 110
Potassium	102	102	P/P	90 - 110
Sodium	98.7	98.8	P/P	90 - 110
Zinc	99.8	99.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A106396
Included Lab Sample IDs: 2256776

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	96.4	96.5	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A106417
Included Lab Sample IDs: 2256780

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.4	96.6	P/P	90 - 110
Antimony	104	102	P/P	90 - 110
Arsenic	101	98.8	P/P	90 - 110
Boron	98.4	95.6	P/P	90 - 110
Cadmium	100	98.3	P/P	90 - 110
Chromium	98.9	96.2	P/P	90 - 110
Copper	99.1	97.4	P/P	90 - 110
Lead	98.7	96.7	P/P	90 - 110
Nickel	99.4	97.0	P/P	90 - 110
Selenium	99.0	96.9	P/P	90 - 110
Silver	104	103	P/P	90 - 110
Thallium	100	96.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A106423
Included Lab Sample IDs: 2256775

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Sulfate	99.6	101	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A106432
Included Lab Sample IDs: 2256776

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.8	96.6	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A106462
Included Lab Sample IDs: 2256780

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Beryllium	96.7	97.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A106468
Included Lab Sample IDs: 2256776

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	93.3	100	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A106477
Included Lab Sample IDs: 2256775

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	95.5	102	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-2011
Run ID: A106477
Included Lab Sample IDs: 2256775

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	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						0.826	
EPA 200.7 Rev. 4.4	Barium	105	106	104	103			1.42
	Calcium	110	108	108	92.7			0.438
	Iron	109	108	107	111			1.04
	Magnesium	112	110	109	91.4			0.878
	Manganese	104	102	101	105			1.39
	Potassium	107	110	109	90.7			0.237
	Sodium	106	102	101	92.8			0.809
	Zinc	101	101	100	104			1.16
EPA 200.8 Rev. 5.4	Aluminum	101	101	99.8	99.0			1.42
	Antimony	104	103	103	104			0.352
	Arsenic	102	101	100	103			0.637
	Beryllium	109	106	107	111			0.810
	Boron	103	101	99.8	99.3			1.33
	Cadmium	99.0	99.6	100	99.9			0.599
	Chromium	97.1	98.5	99.1	99.7			0.617
	Copper	98.9	102	102	101			0.348
	Lead	100	101	101	101			0.412
	Nickel	98.0	97.9	99.4	100			1.53
	Selenium	114	112	112	112			0.320
	Silver	106	105	105	103			0.280
	Thallium	104	105	104	106			0.531
EPA 300.0 Rev. 2.1	Chloride	102	99.6	100			0.827	
	Sulfate	100	99.6	98.0			1.15	
EPA 350.1 Rev. 2.0	Ammonia-N	97.2	94.8	96.6				1.29
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.9	109	107				1.51
EPA 353.2 Rev. 2.0	NO2NO3-N	99.0	94.0					0.193
EPA 365.1 Rev. 2.0	Total-P	103	104	105				1.61
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	92.0	97.0				5.29
SM 2120 B-2011	Color (true)	101					0.210	
SM 2320 B-2011	Total Alkalinity	102					3.03	
SM 4500 F-C-2011	Fluoride	98.5	101	101				0.0
SM 5310 B-2011	Organic Carbon	95.9	95.9	95.5				0.323

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2256775
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2256780
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2256780
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2256775
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2256775
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2256776
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2256776
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2256776
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2256776
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2256777
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2256775
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2256775
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2256780

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	2256775
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2256775
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2256776

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	06/23/2021			06/23/2021 15:19	Sarah A Nixon	2256775
EPA 200.7 Rev. 4.4	06/23/2021	06/24/2021 13:35	Elliott D. Healy	06/30/2021 16:54	Josef B Mick	2256780
EPA 200.8 Rev. 5.4	06/23/2021	06/24/2021 13:35	Elliott D. Healy	07/01/2021 19:27	McKinley C Carter	2256780
	06/23/2021	06/24/2021 13:35	Elliott D. Healy	07/06/2021 16:48	Alexander Thompson	2256780
EPA 300.0 Rev. 2.1	06/23/2021			07/02/2021 20:48	Lipi Saha	2256775
EPA 350.1 Rev. 2.0	06/23/2021			07/01/2021 14:17	Roberta Tatti	2256776
EPA 351.2 Rev. 2.0	06/23/2021	07/01/2021 14:00	Benjamin T. Nordmann	07/06/2021 18:55	Letuzia M De Oliveira	2256776
EPA 353.2 Rev. 2.0	06/23/2021			06/25/2021 09:09	Beverly Y. Sanders	2256776
EPA 365.1 Rev. 2.0	06/23/2021	06/29/2021 13:16	Madeline Gruver	06/30/2021 12:39	Shengyu Ding	2256776
EPA 365.1 Rev. 2.0 dissolved	06/23/2021			06/23/2021 15:21	Ping Hua	2256777
SM 2120 B-2011	06/23/2021			06/23/2021 16:07	Benjamin T. Nordmann	2256775
SM 2320 B-2011	06/23/2021			07/06/2021 23:42	Patrick M. Roche	2256775
SM 2340B	06/23/2021			06/30/2021 16:54	Josef B Mick	2256780
SM 2540 D-2011	06/23/2021			06/28/2021 14:25	Yijie Li	2256775
SM 4500 F-C-2011	06/23/2021			07/06/2021 23:42	Patrick M. Roche	2256775
SM 5310 B-2011	06/23/2021			07/01/2021 02:12	Madeline Gruver	2256776