Chemical Analysis Report

NW-DIST-2021-06-17-01

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

Event Description: **REFERENCE LAKE Dunford**
Request ID: **RQ-2021-06-14-53**
Customer: **NW-DIST**
Project ID: **LAKESREF**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
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Certified by: Colin Wright, Program Administrator

Date Certified: 13-JUL-2021 10:38

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: Dunford Lake W of SR 279 / S of Vernon **Collection Date/Time: 06/16/2021 13:06**

Field ID: 320100145 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2255621	EPA 180.1 Rev. 2.0	Turbidity	0.45		NTU	P399896	
	EPA 300.0 Rev. 2.1	Chloride	2.4		mg Cl/L	P399977	
		Sulfate	0.57		mg SO4/L	P399980	
	SM 2120 B-2011	Color (true)	18	A	PCU	P399894	
	SM 2320 B-2011	Total Alkalinity	1.0	I	mg CaCO3/L	P400271	
	SM 2540 C-2011	TDS	19	I	mg/L	P400343	
	SM 2540 D-2011	TSS	2	U	mg/L	P400170	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P400621	
2255622	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P400333	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.48		mg N/L	P400319	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P399925	
	EPA 365.1 Rev. 2.0	Total-P	0.005	I	mg P/L	P400216	
	SM 5310 B-2011	Organic Carbon	5.8		mg C/L	P400360	
2255623	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P399886	
2255626	EPA 200.7 Rev. 4.4	Barium	1.6	I	ug/L	P399987	
		Calcium	0.56		mg/L	P399987	
		Iron	110	I	ug/L	P399987	
		Magnesium	0.35		mg/L	P399987	
		Manganese	7.9		ug/L	P399987	
		Potassium	0.30	U	mg/L	P399987	
		Sodium	1.2	I	mg/L	P399987	
		Zinc	5.0	U	ug/L	P399987	
	EPA 200.8 Rev. 5.4	Aluminum	28		ug/L	P399987	
		Antimony	0.050	U	ug/L	P399987	
		Arsenic	0.61		ug/L	P399987	
		Beryllium	0.010	U	ug/L	P399987	
		Boron**	10.4		ug/L	P399987	
		Cadmium	0.020	U	ug/L	P399987	
		Chromium	0.40	U	ug/L	P399987	
		Copper	0.40	U	ug/L	P399987	
		Lead	0.20	U	ug/L	P399987	
		Nickel	0.50	U	ug/L	P399987	
		Selenium	0.20	U	ug/L	P399987	
		Silver	0.010	U	ug/L	P399987	
		Thallium	0.10	U	ug/L	P399987	
	SM 2340B	Hardness	2.8		mg/L	P399987	

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: P399896

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P399987

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: P399987

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	2.00		ug/L
Lead	0.20	U	ug/L
Nickel	0.77	I	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: P399977

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P399980

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400333

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: P400319

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P399925

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400216

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P399886

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

Reference Method: SM 2120 B-2011
Batch ID: P399894

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P400271

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

Reference Method: SM 2540 C-2011
Batch ID: P400343

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P400170

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P400621

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: P400360

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: P399987

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	102		P	85 - 115
Calcium	109		P	85 - 115
Iron	110		P	85 - 115
Magnesium	111		P	85 - 115
Manganese	104		P	85 - 115
Potassium	103		P	85 - 115
Sodium	103		P	85 - 115
Zinc	98.5		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P399987

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Antimony	102		P	85 - 115
Arsenic	105		P	85 - 115
Beryllium	104		P	85 - 115
Boron	106		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	99.9		P	85 - 115
Copper	101		P	85 - 115
Lead	114		P	85 - 115
Nickel	103		P	85 - 115
Selenium	103		P	85 - 115
Silver	99.6		P	85 - 115
Thallium	103		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P399977

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P399980

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400333

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400319

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: P399925

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: P400216

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P399886

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

Reference Method: SM 2120 B-2011
Batch ID: P399894

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

Reference Method: SM 2320 B-2011
Batch ID: P400271

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P400621

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P400360

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.1		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P399987

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2255313	Barium	101		P	80 - 120
2255313	Calcium	104		P	80 - 120
2255313	Iron	108		P	80 - 120
2255313	Magnesium	107		P	80 - 120
2255313	Manganese	102		P	80 - 120
2255313	Potassium	107		P	80 - 120
2255313	Sodium	100		P	80 - 120
2255313	Zinc	97.8		P	80 - 120
2255626	Barium	103	104	P/P	80 - 120
2255626	Calcium	111	111	P/P	80 - 120
2255626	Iron	112	112	P/P	80 - 120
2255626	Magnesium	113	112	P/P	80 - 120
2255626	Manganese	105	105	P/P	80 - 120
2255626	Potassium	109	108	P/P	80 - 120
2255626	Sodium	110	107	P/P	80 - 120
2255626	Zinc	98.4	99.6	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P399987

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2255313	Aluminum	104		P	80 - 120
2255313	Antimony	102		P	80 - 120
2255313	Arsenic	103		P	80 - 120
2255313	Beryllium	102		P	80 - 120
2255313	Boron	109		P	80 - 120
2255313	Cadmium	100		P	80 - 120
2255313	Chromium	99.5		P	80 - 120
2255313	Copper	104		P	80 - 120
2255313	Lead	118		P	80 - 120
2255313	Nickel	102		P	80 - 120
2255313	Selenium	102		P	80 - 120
2255313	Silver	100		P	80 - 120
2255313	Thallium	105		P	80 - 120
2255626	Aluminum	102	102	P/P	80 - 120
2255626	Antimony	102	101	P/P	80 - 120
2255626	Arsenic	104	102	P/P	80 - 120
2255626	Beryllium	103	104	P/P	80 - 120
2255626	Boron	105	106	P/P	80 - 120
2255626	Cadmium	99.0	98.8	P/P	80 - 120
2255626	Chromium	99.8	98.8	P/P	80 - 120
2255626	Copper	103	101	P/P	80 - 120
2255626	Lead	116	115	P/P	80 - 120
2255626	Nickel	101	101	P/P	80 - 120
2255626	Selenium	102	101	P/P	80 - 120
2255626	Silver	101	100	P/P	80 - 120
2255626	Thallium	105	104	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P399977

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: P399977

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2255490	Chloride	97.6		P	90 - 110
2255621	Chloride	98.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P399980

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2255490	Sulfate	94.8		P	90 - 110
2255621	Sulfate	99.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400333

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2255622	Ammonia-N	98.8	95.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400319

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2255498	Kjeldahl Nitrogen	109	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P399925

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2255515	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400216

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2255650	Total-P	106	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P399886

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2255607	O-Phosphate-P	96.7	97.6	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P400621

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257021	Fluoride	103	103	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P400360

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2255650	Organic Carbon	100	100	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P399896

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255780	Turbidity	2.51	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P399987

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255626	Barium	0.818	Spike	P	0 - 20
2255626	Calcium	0.0361	Spike	P	0 - 20
2255626	Iron	0.0727	Spike	P	0 - 20
2255626	Magnesium	0.296	Spike	P	0 - 20
2255626	Manganese	0.738	Spike	P	0 - 20
2255626	Potassium	1.28	Spike	P	0 - 20
2255626	Sodium	2.36	Spike	P	0 - 20
2255626	Zinc	1.20	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P399987

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255626	Aluminum	0.0119	Spike	P	0 - 20
2255626	Antimony	1.45	Spike	P	0 - 20
2255626	Arsenic	1.74	Spike	P	0 - 20
2255626	Beryllium	0.853	Spike	P	0 - 20
2255626	Boron	0.622	Spike	P	0 - 20
2255626	Cadmium	0.112	Spike	P	0 - 20
2255626	Chromium	1.00	Spike	P	0 - 20
2255626	Copper	1.55	Spike	P	0 - 20
2255626	Lead	1.23	Spike	P	0 - 20
2255626	Nickel	0.737	Spike	P	0 - 20
2255626	Selenium	0.706	Spike	P	0 - 20
2255626	Silver	0.321	Spike	P	0 - 20
2255626	Thallium	1.00	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P399977

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255490	Chloride	1.13	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P399980

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255490	Sulfate	1.29	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400333

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255622	Ammonia-N	2.89	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400319

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255498	Kjeldahl Nitrogen	5.09	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P399925

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255515	NO2NO3-N	0.499	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400216

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255650	Total-P	0.785	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P399886

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255607	O-Phosphate-P	0.561	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P399894

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255621	Color (true)	2.33	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P400271

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255467	Total Alkalinity	0.681	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P400343

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255527	TDS	2.99	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P400621

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257021	Fluoride	0.469	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P400360

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255650	Organic Carbon	0.186	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A106105
Included Lab Sample IDs: 2255621

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A106148
Included Lab Sample IDs: 2255623

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	91.6	96.6	P/P	90 - 110

Reference Method: SM 2120 B-2011
Run ID: A106149
Included Lab Sample IDs: 2255621

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: A106150
Included Lab Sample IDs: 2255621

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A106169
Included Lab Sample IDs: 2255622

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A106231
Included Lab Sample IDs: 2255626

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	97.2	96.3	P/P	90 - 110
Calcium	101	99.5	P/P	90 - 110
Iron	101	99.5	P/P	90 - 110
Magnesium	99.6	98.6	P/P	90 - 110
Manganese	101	100	P/P	90 - 110
Potassium	98.9	97.3	P/P	90 - 110
Sodium	99.9	98.0	P/P	90 - 110
Zinc	97.2	97.3	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A106318
Included Lab Sample IDs: 2255621

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	104	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A106346
Included Lab Sample IDs: 2255622

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.2	99.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A106355
Included Lab Sample IDs: 2255622

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A106356
Included Lab Sample IDs: 2255626

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	95.3	94.8	P/P	90 - 110
Antimony	97.2	98.1	P/P	90 - 110
Arsenic	99.1	99.2	P/P	90 - 110
Beryllium	92.4	93.7	P/P	90 - 110
Boron	96.9	97.0	P/P	90 - 110
Cadmium	96.1	96.2	P/P	90 - 110
Chromium	94.1	95.0	P/P	90 - 110
Copper	97.3	96.8	P/P	90 - 110
Nickel	97.8	97.8	P/P	90 - 110
Selenium	96.7	98.0	P/P	90 - 110
Silver	97.2	97.4	P/P	90 - 110
Thallium	94.4	94.0	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A106360
Included Lab Sample IDs: 2255622

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.1	96.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A106377
Included Lab Sample IDs: 2255626

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A106443
Included Lab Sample IDs: 2255622

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.4	108	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-2011
Run ID: A106477
Included Lab Sample IDs: 2255621

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	103	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						2.51	
EPA 200.7 Rev. 4.4	Barium	102	101	103	104			0.818
	Calcium	109	104	111	111			0.0361
	Iron	110	108	112	112			0.0727
	Magnesium	111	107	113	112			0.296
	Manganese	104	102	105	105			0.738
	Potassium	103	107	109	108			1.28
	Sodium	103	100	110	107			2.36
	Zinc	98.5	97.8	98.4	99.6			1.20
EPA 200.8 Rev. 5.4	Aluminum	102	102	102	104			0.0119
	Antimony	102	102	101	102			1.45
	Arsenic	105	104	102	103			1.74
	Beryllium	104	103	104	102			0.853
	Boron	106	105	106	109			0.622
	Cadmium	101	99.0	98.8	100			0.112
	Chromium	99.9	99.8	98.8	99.5			1.00
	Copper	101	103	101	104			1.55
	Lead	114	116	115	118			1.23
	Nickel	103	101	101	102			0.737
	Selenium	103	102	101	102			0.706
	Silver	99.6	101	100	100			0.321
	Thallium	103	105	104	105			1.00
EPA 300.0 Rev. 2.1	Chloride	99.5	97.6	98.7			1.13	
	Sulfate	97.7	94.8	99.2			1.29	
EPA 350.1 Rev. 2.0	Ammonia-N	98.0	98.8	95.6				2.89
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	109	101				5.09
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	100	100				0.499
EPA 365.1 Rev. 2.0	Total-P	104	106	107				0.785
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	96.7	97.6				0.561
SM 2120 B-2011	Color (true)	101					2.33	
SM 2320 B-2011	Total Alkalinity	103					0.681	
SM 2540 C-2011	TDS						2.99	
SM 4500 F-C-2011	Fluoride	101	103	103				0.469
SM 5310 B-2011	Organic Carbon	95.1	100	100				0.186

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2255621
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2255626
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2255626
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2255621
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2255621
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2255622
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2255622
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2255622
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2255622
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2255623
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2255621
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2255621

Reference Method Descriptions

Method	Description	Associated Samples
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2255626
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2255621
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2255621
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2255621
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2255622

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	06/17/2021			06/17/2021 15:59	Sarah A Nixon	2255621
EPA 200.7 Rev. 4.4	06/17/2021	06/21/2021 13:15	Elliott D. Healy	06/22/2021 16:36	Josef B Mick	2255626
EPA 200.8 Rev. 5.4	06/17/2021	06/21/2021 13:15	Elliott D. Healy	06/29/2021 14:23	Alexander Thompson	2255626
	06/17/2021	06/21/2021 13:15	Elliott D. Healy	06/30/2021 13:12	Alexander Thompson	2255626
EPA 300.0 Rev. 2.1	06/17/2021			06/18/2021 20:31	Lipi Saha	2255621
EPA 350.1 Rev. 2.0	06/17/2021			06/29/2021 12:11	Roberta Tatti	2255622
EPA 351.2 Rev. 2.0	06/17/2021	06/29/2021 12:54	Benjamin T. Nordmann	07/02/2021 19:53	Letuzia M De Oliveira	2255622
EPA 353.2 Rev. 2.0	06/17/2021			06/18/2021 10:24	Beverly Y. Sanders	2255622
EPA 365.1 Rev. 2.0	06/17/2021	06/25/2021 12:24	Madeline Gruver	06/29/2021 16:22	Shengyu Ding	2255622
EPA 365.1 Rev. 2.0 dissolved	06/17/2021			06/17/2021 15:26	Ping Hua	2255623
SM 2120 B-2011	06/17/2021			06/17/2021 17:06	Sarah A Nixon	2255621
SM 2320 B-2011	06/17/2021			06/26/2021 01:21	Patrick M. Roche	2255621
SM 2340B	06/17/2021			06/22/2021 16:36	Josef B Mick	2255626
SM 2540 C-2011	06/17/2021			06/22/2021 14:06	Yijie Li	2255621
SM 2540 D-2011	06/17/2021			06/22/2021 14:15	Yijie Li	2255621
SM 4500 F-C-2011	06/17/2021			07/07/2021 07:59	Patrick M. Roche	2255621
SM 5310 B-2011	06/17/2021			06/29/2021 02:45	Madeline Gruver	2255622