

Chemical Analysis Report

CEN-DIST-2021-10-29-01

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

Event Description: **Lake Florence**
Request ID: **RQ-2021-09-27-35**
Customer: **CEN-DIST**
Project ID: **SMP**

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Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant

Date Certified: 19-NOV-2021 15:13



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: Florence Lake @ Center

Collection Date/Time: 10/28/2021 10:32

Field ID: G3CE0012

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2286716	EPA 180.1 Rev. 2.0	Turbidity	6.1		NTU	P405776	
	EPA 300.0 Rev. 2.1	Chloride	270		mg Cl/L	P406038	
		Sulfate	68		mg SO ₄ /L	P406041	
		Color (true)	290		PCU	P405767	
	SM 2320 B-2011	Total Alkalinity	108		mg CaCO ₃ /L	P406012	
	SM 2540 C-2011	TDS	696		mg/L	P406285	
	SM 2540 D-2011	TSS	8	I	mg/L	P406279	
2286717	SM 4500 F-C-2011	Fluoride	0.15		mg F/L	P406014	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.20		mg N/L	P406066	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.0		mg N/L	P406121	
	EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	0.060		mg N/L	P405846	
	EPA 365.1 Rev. 2.0	Total-P	0.073		mg P/L	P406138	
2286718	SM 5310 B-2011	Organic Carbon	31		mg C/L	P405838	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.036		mg P/L	P405768	
2286720	EPA 200.7 Rev. 4.4	Barium	40.3		ug/L	P405786	
		Calcium	65.2		mg/L	P405786	
		Iron	950		ug/L	P405786	
		Magnesium	21.7		mg/L	P405786	
		Manganese	14.4		ug/L	P405786	
		Potassium	3.6		mg/L	P405786	
		Sodium	124		mg/L	P405786	
	EPA 200.8 Rev. 5.4	Zinc	8.2	I	ug/L	P405786	
		Aluminum	155		ug/L	P405786	
		Antimony	0.17	I	ug/L	P405786	
		Arsenic	1.77		ug/L	P405786	
		Beryllium	0.010	U	ug/L	P405786	
		Boron**	47.3		ug/L	P405786	
		Cadmium	0.020	U	ug/L	P405786	
		Chromium	0.90	I	ug/L	P405786	
		Copper	0.53	I	ug/L	P405786	
		Lead	1.38		ug/L	P405786	
		Nickel	0.52	I	ug/L	P405786	
		Selenium	0.23	I	ug/L	P405786	
		Silver	0.010	U	ug/L	P405786	
		Thallium	0.10	U	ug/L	P405786	
		Hardness	252		mg/L	P405786	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for sodium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for boron are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P405776

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P405786

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: P405786

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: P406038

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P406041

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406066

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: P406121

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405846

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406138

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405768

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

Reference Method: SM 2120 B-2011
Batch ID: P405767

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P406012

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

Reference Method: SM 2540 C-2011
Batch ID: P406285

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P406279

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P406014

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: P405838

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: P405786

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	101		P	85 - 115
Calcium	111		P	85 - 115
Iron	108		P	85 - 115
Magnesium	111		P	85 - 115
Manganese	106		P	85 - 115
Potassium	103		P	85 - 115
Sodium	102		P	85 - 115
Zinc	109		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P405786

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	105		P	85 - 115
Antimony	110		P	85 - 115
Arsenic	104		P	85 - 115
Beryllium	96.8		P	85 - 115
Boron	106		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	105		P	85 - 115
Copper	99.9		P	85 - 115
Lead	96.5		P	85 - 115
Nickel	102		P	85 - 115
Selenium	101		P	85 - 115
Silver	100		P	85 - 115
Thallium	108		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P406038

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P406041

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406066

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406121

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	106		P	90 - 110

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405846

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: P406138

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405768

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.3		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P405767

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

Reference Method: SM 2320 B-2011
Batch ID: P406012

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P406014

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P405838

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P405786

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286611	Barium	102	101	P/P	80 - 120
2286611	Calcium	109	110	P/P	80 - 120
2286611	Iron	109	109	P/P	80 - 120
2286611	Magnesium	111	111	P/P	80 - 120
2286611	Manganese	107	108	P/P	80 - 120
2286611	Potassium	109	108	P/P	80 - 120
2286611	Sodium	102		P	80 - 120
2286611	Zinc	113	115	P/P	80 - 120
2287005	Calcium	115		P	80 - 120
2287005	Iron	108		P	80 - 120
2287005	Magnesium	110		P	80 - 120
2287005	Manganese	106		P	80 - 120
2287005	Potassium	101		P	80 - 120
2287005	Zinc	108		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P405786

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286611	Aluminum	105	106	P/P	80 - 120
2286611	Antimony	112	114	P/P	80 - 120
2286611	Arsenic	105	105	P/P	80 - 120
2286611	Beryllium	97.9	94.3	P/P	80 - 120
2286611	Boron	109	109	P/P	80 - 120
2286611	Cadmium	105	104	P/P	80 - 120
2286611	Chromium	105	105	P/P	80 - 120
2286611	Copper	102	102	P/P	80 - 120
2286611	Lead	97.5	98.7	P/P	80 - 120
2286611	Nickel	104	104	P/P	80 - 120
2286611	Selenium	100	101	P/P	80 - 120
2286611	Silver	102	102	P/P	80 - 120
2286611	Thallium	109	111	P/P	80 - 120
2287005	Aluminum	104		P	80 - 120
2287005	Antimony	116		P	80 - 120
2287005	Arsenic	108		P	80 - 120
2287005	Beryllium	92.7		P	80 - 120
2287005	Cadmium	106		P	80 - 120
2287005	Chromium	102		P	80 - 120
2287005	Copper	101		P	80 - 120
2287005	Lead	100		P	80 - 120
2287005	Nickel	103		P	80 - 120
2287005	Selenium	92.7		P	80 - 120
2287005	Silver	98.0		P	80 - 120
2287005	Thallium	112		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P406038

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286577	Chloride	99.9		P	90 - 110
2286670	Chloride	100		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P406041

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286577	Sulfate	101		P	90 - 110
2286670	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406066

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286609	Ammonia-N	95.2	97.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406121

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286698	Kjeldahl Nitrogen	101	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405846

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286578	NO2NO3-N	99.0	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406138

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2288211	Total-P	102	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405768

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286699	O-Phosphate-P	97.7	97.6	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P406014

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286492	Fluoride	99.9	101	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P405838

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286687	Organic Carbon	99.6	98.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P405776

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286670	Turbidity	0.686	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P405786

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286611	Barium	1.20	Spike	P	0 - 20
2286611	Calcium	0.352	Spike	P	0 - 20
2286611	Iron	0.294	Spike	P	0 - 20
2286611	Magnesium	0.312	Spike	P	0 - 20
2286611	Manganese	0.498	Spike	P	0 - 20
2286611	Potassium	1.20	Spike	P	0 - 20
2286611	Sodium	1.41	Spike	P	0 - 20
2286611	Zinc	2.17	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P405786

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286611	Aluminum	1.01	Spike	P	0 - 20
2286611	Antimony	1.20	Spike	P	0 - 20
2286611	Arsenic	0.145	Spike	P	0 - 20
2286611	Beryllium	3.38	Spike	P	0 - 20
2286611	Boron	0.216	Spike	P	0 - 20
2286611	Cadmium	1.09	Spike	P	0 - 20
2286611	Chromium	0.246	Spike	P	0 - 20
2286611	Copper	0.195	Spike	P	0 - 20
2286611	Lead	1.27	Spike	P	0 - 20
2286611	Nickel	0.0596	Spike	P	0 - 20
2286611	Selenium	0.811	Spike	P	0 - 20
2286611	Silver	0.378	Spike	P	0 - 20
2286611	Thallium	1.38	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P406038

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286577	Chloride	3.30	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P406066

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286609	Ammonia-N	1.87	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406121

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286698	Kjeldahl Nitrogen	0.413	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405846

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286578	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406138

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2288211	Total-P	2.82	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405768

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286699	O-Phosphate-P	0.102	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P405767

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286675	Color (true)	0.982	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P406012

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286492	Total Alkalinity	2.24	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P406285

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286686	TDS	2.81	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P406014

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286492	Fluoride	0.483	Spike	P	0 - 2.1

Quality Assurance Report Precision

Reference Method: SM 5310 B-2011
Batch ID: P405838

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286687	Organic Carbon	0.367	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: A108619

Included Lab Sample IDs: 2286716

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A108620

Included Lab Sample IDs: 2286718

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.9	98.7	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A108623

Included Lab Sample IDs: 2286716

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105

Reference Method: SM 5310 B-2011

Run ID: A108656

Included Lab Sample IDs: 2286717

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.9	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108660

Included Lab Sample IDs: 2286717

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A108702

Included Lab Sample IDs: 2286720

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	99.5	97.1	P/P	90 - 110
Calcium	105	105	P/P	90 - 110
Iron	104	103	P/P	90 - 110
Magnesium	104	105	P/P	90 - 110
Manganese	105	104	P/P	90 - 110
Potassium	99.5	96.7	P/P	90 - 110
Sodium	103	100	P/P	90 - 110
Zinc	105	105	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A108714

Included Lab Sample IDs: 2286716

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	97.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-2011

Run ID: A108714

Included Lab Sample IDs: 2286716

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A108733

Included Lab Sample IDs: 2286716

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A108743

Included Lab Sample IDs: 2286717

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.0	96.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A108800

Included Lab Sample IDs: 2286717

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108882

Included Lab Sample IDs: 2286717

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.1	99.6	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A108884

Included Lab Sample IDs: 2286720

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	104	103	P/P	90 - 110
Arsenic	102	100	P/P	90 - 110
Beryllium	92.1	91.9	P/P	90 - 110
Cadmium	101	102	P/P	90 - 110
Chromium	100	102	P/P	90 - 110
Copper	95.5	95.4	P/P	90 - 110
Lead	93.6	92.8	P/P	90 - 110
Nickel	97.3	97.3	P/P	90 - 110
Selenium	104	101	P/P	90 - 110
Silver	91.9	91.9	P/P	90 - 110
Thallium	102	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A108912

Included Lab Sample IDs: 2286720

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	103	105	P/P	90 - 110
Boron	104	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 SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					0.686	
EPA 200.7 Rev. 4.4	Barium	101	102	101			1.20
	Calcium	111	109	110	115		0.352
	Iron	108	109	109	108		0.294
	Magnesium	111	111	111	110		0.312
	Manganese	106	107	108	106		0.498
	Potassium	103	109	108	101		1.20
	Sodium	102	102				1.41
	Zinc	109	108	113	115		2.17
EPA 200.8 Rev. 5.4	Aluminum	105	105	106	104		1.01
	Antimony	110	112	114	116		1.20
	Arsenic	104	105	105	108		0.145
	Beryllium	96.8	97.9	94.3	92.7		3.38
	Boron	106	109	109			0.216
	Cadmium	102	105	104	106		1.09
	Chromium	105	105	105	102		0.246
	Copper	99.9	102	102	101		0.195
	Lead	96.5	97.5	98.7	100		1.27
	Nickel	102	104	104	103		0.0596
	Selenium	101	100	101	92.7		0.811
	Silver	100	102	102	98.0		0.378
	Thallium	108	109	111	112		1.38
EPA 300.0 Rev. 2.1	Chloride	99.4	99.9	100		3.30	
	Sulfate	101	101	102			
EPA 350.1 Rev. 2.0	Ammonia-N	95.0	95.2	97.0			1.87
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	101	102			0.413
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.5	99.0	99.0			0.0
EPA 365.1 Rev. 2.0	Total-P	102	102	106			2.82
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.3	97.7	97.6			0.102
SM 2120 B-2011	Color (true)	102				0.982	
SM 2320 B-2011	Total Alkalinity	101				2.24	
SM 2540 C-2011	TDS					2.81	
SM 4500 F-C-2011	Fluoride	100	99.9	101			0.483
SM 5310 B-2011	Organic Carbon	99.4	99.6	98.8			0.367

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2286716
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2286720
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2286720
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2286716
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2286716
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2286717
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2286717
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2286717
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2286717
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2286718
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2286716
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2286716

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2286720
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2286716
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2286716
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2286716
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2286717

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	10/29/2021			10/29/2021 15:26	Khloe J Berg	2286716
EPA 200.7 Rev. 4.4	10/29/2021	11/01/2021 11:00	Emily M Philpot	11/03/2021 16:39	Josef B Mick	2286720
EPA 200.8 Rev. 5.4	10/29/2021	11/01/2021 11:00	Emily M Philpot	11/12/2021 18:53	Alexander Thompson	2286720
	10/29/2021	11/01/2021 11:00	Emily M Philpot	11/15/2021 16:47	Alexander Thompson	2286720
EPA 300.0 Rev. 2.1	10/29/2021			11/04/2021 02:02	Roberta Tatti	2286716
EPA 350.1 Rev. 2.0	10/29/2021			11/04/2021 13:25	Ping Hua	2286717
EPA 351.2 Rev. 2.0	10/29/2021	11/08/2021 13:15	Benjamin T. Nordmann	11/09/2021 10:31	Alexandra J Mattheus	2286717
EPA 353.2 Rev. 2.0	10/29/2021			11/02/2021 10:15	Beverly Y. Sanders	2286717
EPA 365.1 Rev. 2.0	10/29/2021	11/08/2021 16:19	Simonne.V. Calhoun	11/09/2021 17:16	Sarah A Nixon	2286717
EPA 365.1 Rev. 2.0 dissolved	10/29/2021			10/29/2021 14:55	James L Waggeberby	2286718
SM 2120 B-2011	10/29/2021			10/29/2021 15:25	Benjamin T. Nordmann	2286716
SM 2320 B-2011	10/29/2021			11/02/2021 21:14	Dale L. Simmons	2286716
SM 2340B	10/29/2021			11/03/2021 16:39	Josef B Mick	2286720
SM 2540 C-2011	10/29/2021			11/01/2021 14:21	Yijie Li	2286716
SM 2540 D-2011	10/29/2021			11/01/2021 14:21	Yijie Li	2286716
SM 4500 F-C-2011	10/29/2021			11/02/2021 21:14	Dale L. Simmons	2286716
SM 5310 B-2011	10/29/2021			11/02/2021 03:55	Khloe J Berg	2286717