Chemical Analysis Report

CEN-DIST-2021-10-21-01

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

Event Description: **Lake Lotta**
Request ID: **RQ-2021-10-04-08**
Customer: **CEN-DIST**
Project ID: **SMP**

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3319 Maguire Blvd., Suite 232
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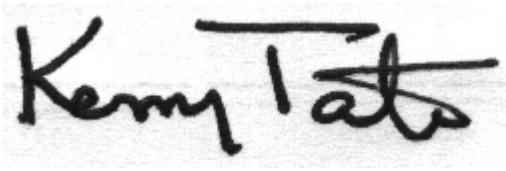
Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 15-NOV-2021 09:51



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: Lake Lotta at Center of Southern Lobe **Collection Date/Time: 10/20/2021 11:45**

Field ID: G2CE0093 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2285261	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P405445	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P405510	
		Sulfate	9.9		mg SO4/L	P405512	
	SM 2120 B-2011	Color (true)	73		PCU	P405425	
	SM 2320 B-2011	Total Alkalinity	55		mg CaCO3/L	P405813	
	SM 2540 C-2011	TDS	133		mg/L	P406104	
	SM 2540 D-2011	TSS	4	I	mg/L	P406098	
	SM 4500 F-C-2011	Fluoride	0.14		mg F/L	P405815	
2285262	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P405839	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P405933	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P405583	
	EPA 365.1 Rev. 2.0	Total-P	0.050		mg P/L	P405618	
	SM 5310 B-2011	Organic Carbon	13		mg C/L	P405737	
2285263	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P405416	
2285271	EPA 200.7 Rev. 4.4	Barium	28.9		ug/L	P405435	
		Calcium	23.0		mg/L	P405435	
		Iron	31	I	ug/L	P405435	
		Magnesium	3.53		mg/L	P405435	
		Manganese	28.9		ug/L	P405435	
		Potassium	3.5		mg/L	P405435	
		Sodium	7.4		mg/L	P405435	
		Zinc	5.0	U	ug/L	P405435	
	EPA 200.8 Rev. 5.4	Aluminum	11	I	ug/L	P405435	
		Antimony	0.11	I	ug/L	P405435	
		Arsenic	0.54		ug/L	P405435	
		Beryllium	0.010	U	ug/L	P405435	
		Boron**	34.4		ug/L	P405435	
		Cadmium	0.020	U	ug/L	P405435	
		Chromium	0.40	U	ug/L	P405435	
		Copper	0.40	U	ug/L	P405435	
		Lead	0.20	U	ug/L	P405435	
		Nickel	0.50	U	ug/L	P405435	
		Selenium	0.20	U	ug/L	P405435	
		Silver	0.010	U	ug/L	P405435	
		Thallium	0.10	U	ug/L	P405435	
	SM 2340B	Hardness	72.0		mg/L	P405435	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable 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: P405445

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P405435

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: P405435

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: P405510

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P405512

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P405839

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: P405933

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405583

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405618

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405416

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

Reference Method: SM 2120 B-2011
Batch ID: P405425

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P405813

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

Reference Method: SM 2540 C-2011
Batch ID: P406104

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P406098

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P405815

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: P405737

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: P405435

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	101		P	85 - 115
Calcium	105		P	85 - 115
Iron	105		P	85 - 115
Magnesium	107		P	85 - 115
Manganese	102		P	85 - 115
Potassium	102		P	85 - 115
Sodium	104		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P405435

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	105		P	85 - 115
Antimony	107		P	85 - 115
Arsenic	105		P	85 - 115
Beryllium	103		P	85 - 115
Boron	104		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	99.5		P	85 - 115
Copper	105		P	85 - 115
Lead	98.9		P	85 - 115
Nickel	106		P	85 - 115
Selenium	104		P	85 - 115
Silver	103		P	85 - 115
Thallium	106		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P405510

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P405512

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P405839

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P405933

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.9		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405583

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405618

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405416

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.2		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P405425

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	97.9		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P405813

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.5		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P405815

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

Reference Method: SM 5310 B-2011
Batch ID: P405737

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P405435

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285073	Barium	107		P	80 - 120
2285073	Calcium	99.0		P	80 - 120
2285073	Iron	109		P	80 - 120
2285073	Magnesium	108		P	80 - 120
2285073	Manganese	106		P	80 - 120
2285073	Potassium	106		P	80 - 120
2285073	Sodium	109		P	80 - 120
2285073	Zinc	103		P	80 - 120
2285119	Barium	112	109	P/P	80 - 120
2285119	Calcium	109	106	P/P	80 - 120
2285119	Iron	109	108	P/P	80 - 120
2285119	Magnesium	111	109	P/P	80 - 120
2285119	Manganese	107	105	P/P	80 - 120
2285119	Potassium	105	102	P/P	80 - 120
2285119	Sodium	108	104	P/P	80 - 120
2285119	Zinc	104	103	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P405435

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285073	Aluminum	102		P	80 - 120
2285073	Antimony	110		P	80 - 120
2285073	Arsenic	102		P	80 - 120
2285073	Beryllium	100		P	80 - 120
2285073	Boron	103		P	80 - 120
2285073	Cadmium	105		P	80 - 120
2285073	Chromium	99.1		P	80 - 120
2285073	Copper	84.4		P	80 - 120
2285073	Lead	99.7		P	80 - 120
2285073	Nickel	97.7		P	80 - 120
2285073	Selenium	101		P	80 - 120
2285073	Silver	104		P	80 - 120
2285073	Thallium	110		P	80 - 120
2285119	Aluminum	103	102	P/P	80 - 120
2285119	Antimony	105	105	P/P	80 - 120
2285119	Arsenic	101	101	P/P	80 - 120
2285119	Beryllium	102	101	P/P	80 - 120
2285119	Boron	102	99.6	P/P	80 - 120
2285119	Cadmium	100	101	P/P	80 - 120
2285119	Chromium	99.5	99.1	P/P	80 - 120
2285119	Copper	105	104	P/P	80 - 120
2285119	Lead	98.1	97.9	P/P	80 - 120
2285119	Nickel	105	105	P/P	80 - 120
2285119	Selenium	99.9	101	P/P	80 - 120
2285119	Silver	101	99.5	P/P	80 - 120
2285119	Thallium	107	107	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P405510

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: P405510

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285141	Chloride	101		P	90 - 110
2285227	Chloride	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P405512

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285141	Sulfate	101		P	90 - 110
2285227	Sulfate	104		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P405839

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285206	Ammonia-N	96.2	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P405933

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285228	Kjeldahl Nitrogen	95.7	96.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405583

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285206	NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405416

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285263	O-Phosphate-P	96.6	97.5	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P405815

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285338	Fluoride	97.5	96.4	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P405737

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285085	Organic Carbon	98.9	100	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P405445

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285227	Turbidity	3.02	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P405435

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285119	Barium	2.06	Spike	P	0 - 20
2285119	Calcium	2.17	Spike	P	0 - 20
2285119	Iron	1.76	Spike	P	0 - 20
2285119	Magnesium	1.63	Spike	P	0 - 20
2285119	Manganese	1.66	Spike	P	0 - 20
2285119	Potassium	2.32	Spike	P	0 - 20
2285119	Sodium	1.94	Spike	P	0 - 20
2285119	Zinc	1.19	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P405435

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285119	Aluminum	0.815	Spike	P	0 - 20
2285119	Antimony	0.383	Spike	P	0 - 20
2285119	Arsenic	0.350	Spike	P	0 - 20
2285119	Beryllium	0.715	Spike	P	0 - 20
2285119	Boron	1.95	Spike	P	0 - 20
2285119	Cadmium	0.484	Spike	P	0 - 20
2285119	Chromium	0.434	Spike	P	0 - 20
2285119	Copper	1.39	Spike	P	0 - 20
2285119	Lead	0.268	Spike	P	0 - 20
2285119	Nickel	0.374	Spike	P	0 - 20
2285119	Selenium	1.50	Spike	P	0 - 20
2285119	Silver	1.86	Spike	P	0 - 20
2285119	Thallium	0.00832	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P405510

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285141	Chloride	0.764	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P405512

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285141	Sulfate	1.55	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P405839

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285206	Ammonia-N	1.49	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P405933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285228	Kjeldahl Nitrogen	0.216	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405583

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285206	NO2NO3-N	0.487	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405618

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285231	Total-P	1.76	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405416

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285263	O-Phosphate-P	0.927	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P405425

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285290	Color (true)	3.49	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P405813

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285338	Total Alkalinity	0.361	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P406104

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285227	TDS	7.46	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P405815

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285338	Fluoride	0.513	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P405737

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285085	Organic Carbon	0.728	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: A108426
Included Lab Sample IDs: 2285261

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A108469
Included Lab Sample IDs: 2285263

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.6	98.1	P/P	90 - 110

Reference Method: SM 2120 B-2011
Run ID: A108472
Included Lab Sample IDs: 2285261

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.6	101	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A108477
Included Lab Sample IDs: 2285261

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A108518
Included Lab Sample IDs: 2285271

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	100	104	P/P	90 - 110
Antimony	104	105	P/P	90 - 110
Beryllium	95.9	99.5	P/P	90 - 110
Boron	99.1	103	P/P	90 - 110
Cadmium	101	101	P/P	90 - 110
Chromium	96.0	98.3	P/P	90 - 110
Copper	97.9	99.8	P/P	90 - 110
Lead	93.0	94.1	P/P	90 - 110
Nickel	97.5	99.7	P/P	90 - 110
Selenium	99.4	101	P/P	90 - 110
Silver	98.0	99.1	P/P	90 - 110
Thallium	102	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A108532
Included Lab Sample IDs: 2285262

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A108555
Included Lab Sample IDs: 2285262

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A108570
Included Lab Sample IDs: 2285271

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	97.2	97.1	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A108603
Included Lab Sample IDs: 2285262

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.7	96.6	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A108604
Included Lab Sample IDs: 2285271

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	107	109	P/P	90 - 110
Calcium	103	103	P/P	90 - 110
Iron	104	104	P/P	90 - 110
Magnesium	106	106	P/P	90 - 110
Manganese	105	107	P/P	90 - 110
Potassium	100	101	P/P	90 - 110
Sodium	104	104	P/P	90 - 110
Zinc	102	103	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A108640
Included Lab Sample IDs: 2285261

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	97.4	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A108640
Included Lab Sample IDs: 2285261

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	103	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A108657
Included Lab Sample IDs: 2285262

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.1	99.3	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A108713
Included Lab Sample IDs: 2285262

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	99.4	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						3.02	
EPA 200.7 Rev. 4.4	Barium	101	107	112	109			2.06
	Calcium	105	99.0	109	106			2.17
	Iron	105	109	109	108			1.76
	Magnesium	107	108	111	109			1.63
	Manganese	102	106	107	105			1.66
	Potassium	102	106	105	102			2.32
	Sodium	104	109	108	104			1.94
	Zinc	102	103	104	103			1.19
EPA 200.8 Rev. 5.4	Aluminum	105	103	102	102			0.815
	Antimony	107	105	105	110			0.383
	Arsenic	105	101	101	102			0.350
	Beryllium	103	102	101	100			0.715
	Boron	104	102	99.6	103			1.95
	Cadmium	103	100	101	105			0.484
	Chromium	99.5	99.5	99.1	99.1			0.434
	Copper	105	105	104	84.4			1.39
	Lead	98.9	98.1	97.9	99.7			0.268
	Nickel	106	105	105	97.7			0.374
	Selenium	104	99.9	101	101			1.50
	Silver	103	101	99.5	104			1.86
	Thallium	106	107	107	110			0.0083
EPA 300.0 Rev. 2.1	Chloride	101	101	104			0.764	
	Sulfate	102	101	104			1.55	
EPA 350.1 Rev. 2.0	Ammonia-N	96.2	96.2	97.8				1.49
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.9	95.7	96.1				0.216
EPA 353.2 Rev. 2.0	NO2NO3-N	100	102	103				0.487
EPA 365.1 Rev. 2.0	Total-P	106						1.76
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.2	96.6	97.5				0.927
SM 2120 B-2011	Color (true)	97.9					3.49	
SM 2320 B-2011	Total Alkalinity	98.5					0.361	
SM 2540 C-2011	TDS						7.46	
SM 4500 F-C-2011	Fluoride	100	97.5	96.4				0.513
SM 5310 B-2011	Organic Carbon	100	98.9	100				0.728

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2285261
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2285271
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2285271
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2285261
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2285261
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2285262
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2285262
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2285262
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2285262
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2285263
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2285261
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2285261

Reference Method Descriptions

Method	Description	Associated Samples
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2285271
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2285261
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2285261
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2285261
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2285262

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	10/21/2021			10/21/2021 16:03	Khloe J Berg	2285261
EPA 200.7 Rev. 4.4	10/21/2021	10/22/2021 09:30	Emily M Philpot	10/28/2021 19:59	Josef B Mick	2285271
EPA 200.8 Rev. 5.4	10/21/2021	10/22/2021 09:30	Emily M Philpot	10/26/2021 00:15	Alexander Thompson	2285271
	10/21/2021	10/22/2021 09:30	Emily M Philpot	10/27/2021 14:52	Alexander Thompson	2285271
EPA 300.0 Rev. 2.1	10/21/2021			10/22/2021 21:08	Roberta Tatti	2285261
EPA 350.1 Rev. 2.0	10/21/2021			11/01/2021 12:42	Ping Hua	2285262
EPA 351.2 Rev. 2.0	10/21/2021	11/03/2021 12:43	Benjamin T. Nordmann	11/04/2021 11:09	Alexandra J Mattheus	2285262
EPA 353.2 Rev. 2.0	10/21/2021			10/26/2021 11:09	Virginia P. Brown	2285262
EPA 365.1 Rev. 2.0	10/21/2021	10/26/2021 17:15	Simonne.V. Calhoun	10/27/2021 10:25	Lipi Saha	2285262
EPA 365.1 Rev. 2.0 dissolved	10/21/2021			10/21/2021 14:42	James L Waggerby	2285263
SM 2120 B-2011	10/21/2021			10/21/2021 15:53	Benjamin T. Nordmann	2285261
SM 2320 B-2011	10/21/2021			10/27/2021 19:24	Dale L. Simmons	2285261
SM 2340B	10/21/2021			10/28/2021 19:59	Josef B Mick	2285271
SM 2540 C-2011	10/21/2021			10/26/2021 15:36	Yijie Li	2285261
SM 2540 D-2011	10/21/2021			10/26/2021 15:36	Yijie Li	2285261
SM 4500 F-C-2011	10/21/2021			10/27/2021 19:24	Dale L. Simmons	2285261
SM 5310 B-2011	10/21/2021			10/28/2021 03:54	Khloe J Berg	2285262