Chemical Analysis Report

NE-DIST-2020-09-30-01

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

Event Description: **Melrose Lakes**
Request ID: **RQ-2020-09-21-18**
Customer: **NE-DIST**
Project ID: **SMP**

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Date Certified: 19-OCT-2020 10:09

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: Goose Lake **Collection Date/Time: 09/29/2020 09:55**

Field ID: 20030980 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2199038	EPA 180.1 Rev. 2.0	Turbidity	0.65		NTU	P388058	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P388400	
		Sulfate	0.62		mg SO4/L	P388401	
	SM 2120 B-2011	Color (true)	340		PCU	P388067	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P388139	
	SM 2540 C-2011	TDS	82		mg/L	P388479	
	SM 2540 D-2011	TSS	2	U	mg/L	P388468	
	SM 4500 F-C-2011	Fluoride	0.046	I	mg F/L	P388142	
2199040	EPA 350.1 Rev. 2.0	Ammonia-N	0.086		mg N/L	P388175	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P388118	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.092		mg N/L	P388083	
	EPA 365.1 Rev. 2.0	Total-P	0.21		mg P/L	P388101	
	SM 5310 B-2011	Organic Carbon	28		mg C/L	P388191	
2199042	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.17		mg P/L	P388069	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Ross Lake Center **Collection Date/Time: 09/29/2020 10:25**

Field ID: 20030454 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2199039	EPA 180.1 Rev. 2.0	Turbidity	0.70		NTU	P388058	
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P388400	
		Sulfate	0.53		mg SO4/L	P388401	
	SM 2120 B-2011	Color (true)	500		PCU	P388067	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P388139	
	SM 2540 C-2011	TDS	84		mg/L	P388479	
	SM 2540 D-2011	TSS	2	U	mg/L	P388468	
	SM 4500 F-C-2011	Fluoride	0.048	I	mg F/L	P388142	
2199041	EPA 350.1 Rev. 2.0	Ammonia-N	0.15		mg N/L	P388175	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.7		mg N/L	P388255	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P388083	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P388101	
	SM 5310 B-2011	Organic Carbon	36		mg C/L	P388191	
2199043	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.10		mg P/L	P388069	

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

Sample Location: Lake Suggs Ctr **Collection Date/Time: 09/29/2020 11:05**

Field ID: 20030922 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2199032	EPA 180.1 Rev. 2.0	Turbidity	0.65		NTU	P388058	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P388400	
		Sulfate	0.89		mg SO4/L	P388401	
	SM 2120 B-2011	Color (true)	400		PCU	P388067	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P388139	
	SM 2540 C-2011	TDS	76		mg/L	P388479	
	SM 2540 D-2011	TSS	2	I	mg/L	P388468	
	SM 4500 F-C-2011	Fluoride	0.049	I	mg F/L	P388142	
2199034	EPA 350.1 Rev. 2.0	Ammonia-N	0.28		mg N/L	P388178	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P388118	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.016		mg N/L	P388083	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P388101	
	SM 5310 B-2011	Organic Carbon	34		mg C/L	P388191	
2199036	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.10		mg P/L	P388069	
2199048	EPA 200.7 Rev. 4.4	Barium	11.3		ug/L	P388115	
		Calcium	2.14		mg/L	P388115	
		Iron	650		ug/L	P388115	
		Magnesium	1.66		mg/L	P388115	
		Potassium	1.9		mg/L	P388115	
		Sodium	4.9		mg/L	P388115	
		Zinc	5.0	U	ug/L	P388115	
	EPA 200.8 Rev. 5.4	Aluminum	296		ug/L	P388115	
		Antimony	0.050	U	ug/L	P388115	
		Arsenic	1.03		ug/L	P388115	
		Beryllium	0.016	I	ug/L	P388115	
		Boron**	22.3		ug/L	P388115	
		Cadmium	0.020	U	ug/L	P388115	
		Chromium	0.49	I	ug/L	P388115	
		Copper	0.40	U	ug/L	P388115	
		Lead	0.36	I	ug/L	P388115	
		Nickel	0.50	U	ug/L	P388115	
		Selenium	0.20	U	ug/L	P388115	
		Silver	0.010	U	ug/L	P388115	
		Thallium	0.10	U	ug/L	P388115	
	SM 2340B	Hardness	12.2		mg/L	P388115	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lake Rowan Ctr **Collection Date/Time: 09/29/2020 11:30**

Field ID: 20030923 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2199033	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P388058	
	EPA 300.0 Rev. 2.1	Chloride	7.1		mg Cl/L	P388400	
		Sulfate	0.48	I	mg SO4/L	P388401	
	SM 2120 B-2011	Color (true)	180		PCU	P388067	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P388139	
	SM 2540 C-2011	TDS	61		mg/L	P388479	
	SM 2540 D-2011	TSS	3	I	mg/L	P388468	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P388142	
2199035	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P388178	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.9		mg N/L	P388118	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.014		mg N/L	P388083	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P388101	
	SM 5310 B-2011	Organic Carbon	32		mg C/L	P388191	
2199037	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P388069	
2199049	EPA 200.7 Rev. 4.4	Barium	10.2		ug/L	P388115	
		Calcium	1.79		mg/L	P388115	
		Iron	290		ug/L	P388115	
		Magnesium	1.30		mg/L	P388115	
		Potassium	0.30	U	mg/L	P388115	
		Sodium	3.3		mg/L	P388115	
		Zinc	5.0	U	ug/L	P388115	
	EPA 200.8 Rev. 5.4	Aluminum	120		ug/L	P388115	
		Antimony	0.050	U	ug/L	P388115	
		Arsenic	0.64		ug/L	P388115	
		Beryllium	0.010	U	ug/L	P388115	
		Boron**	22.9		ug/L	P388115	
		Cadmium	0.020	U	ug/L	P388115	
		Chromium	0.40	U	ug/L	P388115	
		Copper	0.40	U	ug/L	P388115	
		Lead	0.30	I	ug/L	P388115	
		Nickel	0.50	U	ug/L	P388115	
		Selenium	0.20	U	ug/L	P388115	
		Silver	0.022	I	ug/L	P388115	
		Thallium	0.10	U	ug/L	P388115	
	SM 2340B	Hardness	9.8		mg/L	P388115	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: 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: P388058

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P388115

Component	Result	Code	Units
Barium	1.0	U	ug/L
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P388115

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: P388400

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388401

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P388175

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P388178

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P388118

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P388255

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P388083

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P388101

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P388069

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

Reference Method: SM 2120 B-2011
Batch ID: P388067

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P388139

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

Reference Method: SM 2540 C-2011
Batch ID: P388479

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 D-2011
Batch ID: P388468

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P388142

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P388191

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: P388115

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	102		P	85 - 115
Calcium	102		P	85 - 115
Iron	105		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	98.4		P	85 - 115
Sodium	97.5		P	85 - 115
Zinc	99.3		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P388115

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	101		P	85 - 115
Antimony	104		P	85 - 115
Arsenic	101		P	85 - 115
Beryllium	97.0		P	85 - 115
Boron	99.8		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	102		P	85 - 115
Copper	101		P	85 - 115
Lead	98.8		P	85 - 115
Nickel	102		P	85 - 115
Selenium	101		P	85 - 115
Silver	98.9		P	85 - 115
Thallium	101		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388400

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388401

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P388175

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P388178

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.1		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P388118

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P388255

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P388083

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	105		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P388101

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	109		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P388069

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

Reference Method: SM 2120 B-2011
Batch ID: P388067

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	96.1		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P388139

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.9		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P388142

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.9		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P388191

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	104		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P388115

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2199105	Barium	98.4		P	80 - 120
2199105	Calcium	102		P	80 - 120
2199105	Iron	105		P	80 - 120
2199105	Magnesium	105		P	80 - 120
2199105	Potassium	101		P	80 - 120
2199105	Sodium	98.7		P	80 - 120
2199105	Zinc	101		P	80 - 120
2199170	Barium	102	98.9	P/P	80 - 120
2199170	Calcium	90.0		P	80 - 120
2199170	Iron	110	104	P/P	80 - 120
2199170	Magnesium	109	103	P/P	80 - 120
2199170	Potassium	102	96.2	P/P	80 - 120
2199170	Sodium	87.6		P	80 - 120
2199170	Zinc	100	96.8	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P388115

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2199105	Aluminum	99.4		P	80 - 120
2199105	Antimony	104		P	80 - 120
2199105	Arsenic	100		P	80 - 120
2199105	Beryllium	98.0		P	80 - 120
2199105	Boron	98.1		P	80 - 120
2199105	Cadmium	100		P	80 - 120
2199105	Chromium	104		P	80 - 120
2199105	Copper	99.4		P	80 - 120
2199105	Lead	97.3		P	80 - 120
2199105	Nickel	101		P	80 - 120
2199105	Selenium	98.9		P	80 - 120
2199105	Silver	96.8		P	80 - 120
2199105	Thallium	104		P	80 - 120
2199170	Aluminum	102	101	P/P	80 - 120
2199170	Antimony	105	104	P/P	80 - 120
2199170	Arsenic	104	104	P/P	80 - 120
2199170	Beryllium	102	102	P/P	80 - 120
2199170	Boron	98.9	98.6	P/P	80 - 120
2199170	Cadmium	102	103	P/P	80 - 120
2199170	Chromium	103	103	P/P	80 - 120
2199170	Copper	107	107	P/P	80 - 120
2199170	Lead	98.6	100	P/P	80 - 120
2199170	Nickel	106	106	P/P	80 - 120
2199170	Selenium	103	104	P/P	80 - 120
2199170	Silver	98.6	98.4	P/P	80 - 120
2199170	Thallium	99.3	102	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388400

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198940	Chloride	102		P	90 - 110
2199038	Chloride	102		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388401

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198940	Sulfate	97.4		P	90 - 110
2199038	Sulfate	98.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P388175

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2199070	Ammonia-N	95.2	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P388178

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198968	Ammonia-N	99.2	98.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P388255

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2198685	Kjeldahl Nitrogen	107	110	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P388083

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2199056	NO2NO3-N	100		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P388101

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2199004	Total-P	108	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P388069

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2199037	O-Phosphate-P	102	102	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P388142

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2199001	Fluoride	97.4	96.7	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P388191

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2199040	Organic Carbon	106		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P388058

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199066	Turbidity	1.62	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P388115

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199170	Barium	3.08	Spike	P	0 - 20
2199170	Calcium	4.39	Spike	P	0 - 20
2199170	Iron	4.93	Spike	P	0 - 20
2199170	Magnesium	4.76	Spike	P	0 - 20
2199170	Potassium	4.35	Spike	P	0 - 20
2199170	Sodium	4.74	Spike	P	0 - 20
2199170	Zinc	3.24	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P388115

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199170	Aluminum	0.484	Spike	P	0 - 20
2199170	Antimony	0.664	Spike	P	0 - 20
2199170	Arsenic	0.604	Spike	P	0 - 20
2199170	Beryllium	0.0606	Spike	P	0 - 20
2199170	Boron	0.267	Spike	P	0 - 20
2199170	Cadmium	1.48	Spike	P	0 - 20
2199170	Chromium	0.136	Spike	P	0 - 20
2199170	Copper	0.0196	Spike	P	0 - 20
2199170	Lead	1.61	Spike	P	0 - 20
2199170	Nickel	0.0553	Spike	P	0 - 20
2199170	Selenium	0.751	Spike	P	0 - 20
2199170	Silver	0.228	Spike	P	0 - 20
2199170	Thallium	2.36	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388400

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198940	Chloride	0.00745	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388401

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198940	Sulfate	0.0100	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P388175

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199070	Ammonia-N	6.78	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P388178

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198968	Ammonia-N	0.201	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P388118

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199035	Kjeldahl Nitrogen	5.76	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P388255

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198685	Kjeldahl Nitrogen	1.65	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P388083

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199056	NO2NO3-N	0.420	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P388101

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199004	Total-P	0.393	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P388069

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199037	O-Phosphate-P	0.196	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P388067

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199055	Color (true)	1.38	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2320 B-2011
Batch ID: P388139

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199001	Total Alkalinity	0.650	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P388479

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2198939	TDS	0.276	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P388142

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199001	Fluoride	0.470	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P388191

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199040	Organic Carbon	0.349	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A101292
Included Lab Sample IDs: 2199032, 2199033, 2199038, 2199039

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

Reference Method: SM 2120 B-2011
Run ID: A101294
Included Lab Sample IDs: 2199032, 2199033, 2199038, 2199039

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.3	98.4	P/P	90 - 115
Color (true)	98.4	99.1	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A101295
Included Lab Sample IDs: 2199036, 2199037, 2199042, 2199043

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.3	96.2	P/P	90 - 110
O-Phosphate-P	99.1		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A101305
Included Lab Sample IDs: 2199034, 2199035, 2199040, 2199041

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	105	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A101330
Included Lab Sample IDs: 2199032, 2199033, 2199038, 2199039

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.9	101	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A101330
Included Lab Sample IDs: 2199032, 2199033, 2199038, 2199039

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.1	99.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A101338
Included Lab Sample IDs: 2199034, 2199035, 2199040

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.0	98.4	P/P	90 - 110
Kjeldahl Nitrogen	96.6	96.0	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A101343
Included Lab Sample IDs: 2199034, 2199035, 2199040, 2199041

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	95.0	94.7	P/P	90 - 110
Ammonia-N	99.0	97.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A101346
Included Lab Sample IDs: 2199034, 2199040, 2199041

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	103	105	P/P	90 - 110
Total-P	104	103	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A101348
Included Lab Sample IDs: 2199034, 2199035, 2199040, 2199041

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	102	104	P/P	90 - 110
Organic Carbon	104	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A101366
Included Lab Sample IDs: 2199035

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	97.5	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A101398
Included Lab Sample IDs: 2199032, 2199033, 2199038, 2199039

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Chloride	101	101	P/P	90 - 110
Sulfate	99.2	99.2	P/P	90 - 110
Sulfate	99.6	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A101403
Included Lab Sample IDs: 2199041

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A101418
Included Lab Sample IDs: 2199048, 2199049

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	97.6	96.0	P/P	90 - 110
Antimony	100	101	P/P	90 - 110
Arsenic	98.7	97.4	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A101418
Included Lab Sample IDs: 2199048, 2199049

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Beryllium	95.4	95.4	P/P	90 - 110
Boron	97.8	99.3	P/P	90 - 110
Cadmium	97.0	97.9	P/P	90 - 110
Chromium	96.9	97.7	P/P	90 - 110
Copper	99.4	96.5	P/P	90 - 110
Lead	97.1	95.3	P/P	90 - 110
Nickel	99.3	96.1	P/P	90 - 110
Selenium	98.0	95.8	P/P	90 - 110
Silver	99.4	99.0	P/P	90 - 110
Thallium	94.4	90.9	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A101438
Included Lab Sample IDs: 2199048, 2199049

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	99.9	103	P/P	90 - 110
Calcium	104	102	P/P	90 - 110
Iron	106	103	P/P	90 - 110
Magnesium	105	102	P/P	90 - 110
Potassium	101	98.6	P/P	90 - 110
Sodium	101	99.9	P/P	90 - 110
Zinc	100	103	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						1.62	
EPA 200.7 Rev. 4.4	Barium	102	98.4	102	98.9			3.08
	Calcium	102	102	90.0				4.39
	Iron	105	105	110	104			4.93
	Magnesium	104	105	109	103			4.76
	Potassium	98.4	101	102	96.2			4.35
	Sodium	97.5	98.7	87.6				4.74
	Zinc	99.3	101	100	96.8			3.24
EPA 200.8 Rev. 5.4	Aluminum	101	102	101	99.4			0.484
	Antimony	104	105	104	104			0.664
	Arsenic	101	104	104	100			0.604
	Beryllium	97.0	102	102	98.0			0.0606
	Boron	99.8	98.9	98.6	98.1			0.267
	Cadmium	102	102	103	100			1.48
	Chromium	102	103	103	104			0.136
	Copper	101	107	107	99.4			0.0196
	Lead	98.8	98.6	100	97.3			1.61
	Nickel	102	106	106	101			0.0553
	Selenium	101	103	104	98.9			0.751
	Silver	98.9	98.6	98.4	96.8			0.228
	Thallium	101	99.3	102	104			2.36
EPA 300.0 Rev. 2.1	Chloride	101	102	102			0.0074	
	Sulfate	98.3	97.4	98.4			0.0100	
EPA 350.1 Rev. 2.0	Ammonia-N	99.7	95.2	102				6.78
	Ammonia-N	96.1	98.8	99.2				0.201
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101						5.76
	Kjeldahl Nitrogen	108	107	110				1.65
EPA 353.2 Rev. 2.0	NO2NO3-N	105	100					0.420
EPA 365.1 Rev. 2.0	Total-P	109	108	108				0.393
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	102	102				0.196
SM 2120 B-2011	Color (true)	96.1					1.38	
SM 2320 B-2011	Total Alkalinity	99.9					0.650	
SM 2540 C-2011	TDS						0.276	
SM 4500 F-C-2011	Fluoride	96.9	97.4	96.7				0.470
SM 5310 B-2011	Organic Carbon	104	106					0.349

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2199032, 2199033, 2199038, 2199039
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2199048, 2199049
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2199048, 2199049
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2199032, 2199033, 2199038, 2199039
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2199032, 2199033, 2199038, 2199039
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2199034, 2199035, 2199040, 2199041
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2199034, 2199035, 2199040, 2199041
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2199034, 2199035, 2199040, 2199041
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2199034, 2199035, 2199040, 2199041
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2199036, 2199037, 2199042, 2199043
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2199032, 2199033, 2199038, 2199039

Reference Method Descriptions

Method	Description	Associated Samples
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2199032, 2199033, 2199038, 2199039
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2199048, 2199049
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2199032, 2199033, 2199038, 2199039
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2199032, 2199033, 2199038, 2199039
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2199032, 2199033, 2199038, 2199039
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2199034, 2199035, 2199040, 2199041

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	09/30/2020			09/30/2020 15:18	Yen Ta	2199032, 2199033, 2199038, 2199039
EPA 200.7 Rev. 4.4	09/30/2020	10/01/2020 15:15	Elliott D. Healy	10/08/2020 18:46	Betina Topolski	2199048
	09/30/2020	10/01/2020 15:15	Elliott D. Healy	10/08/2020 18:54	Betina Topolski	2199049
EPA 200.8 Rev. 5.4	09/30/2020	10/01/2020 15:15	Elliott D. Healy	10/07/2020 14:25	Alexander Thompson	2199048
	09/30/2020	10/01/2020 15:15	Elliott D. Healy	10/07/2020 14:33	Alexander Thompson	2199049
EPA 300.0 Rev. 2.1	09/30/2020			10/07/2020 17:24	Lipi Saha	2199038
	09/30/2020			10/07/2020 19:21	Lipi Saha	2199032
	09/30/2020			10/07/2020 20:00	Lipi Saha	2199033
	09/30/2020			10/07/2020 20:13	Lipi Saha	2199039
EPA 350.1 Rev. 2.0	09/30/2020			10/03/2020 15:03	Ping Hua	2199040
	09/30/2020			10/03/2020 15:04	Ping Hua	2199041
	09/30/2020			10/03/2020 16:48	Ping Hua	2199034
	09/30/2020			10/03/2020 16:49	Ping Hua	2199035
EPA 351.2 Rev. 2.0	09/30/2020	10/01/2020 14:05	David Boose	10/02/2020 14:05	Elliott Rodriguez	2199035
	09/30/2020	10/01/2020 14:05	David Boose	10/02/2020 14:25	Elliott Rodriguez	2199034
	09/30/2020	10/01/2020 14:05	David Boose	10/02/2020 14:26	Elliott Rodriguez	2199040
	09/30/2020	10/06/2020 11:20	David Boose	10/07/2020 11:19	Elliott Rodriguez	2199041
EPA 353.2 Rev. 2.0	09/30/2020			10/01/2020 10:18	Beverly Y. Sanders	2199034
	09/30/2020			10/01/2020 10:19	Beverly Y. Sanders	2199035
	09/30/2020			10/01/2020 10:20	Beverly Y. Sanders	2199040
	09/30/2020			10/01/2020 10:21	Beverly Y. Sanders	2199041
EPA 365.1 Rev. 2.0	09/30/2020	10/01/2020 12:32	Yen Ta	10/02/2020 15:53	Benjamin T. Nordmann	2199034
	09/30/2020	10/01/2020 12:32	Yen Ta	10/02/2020 15:58	Benjamin T. Nordmann	2199040
	09/30/2020	10/01/2020 12:32	Yen Ta	10/02/2020 15:59	Benjamin T. Nordmann	2199041
	09/30/2020	10/01/2020 12:32	Yen Ta	10/05/2020 14:25	Lipi Saha	2199035
EPA 365.1 Rev. 2.0 dissolved	09/30/2020			09/30/2020 15:51	Blanca Fach	2199037
	09/30/2020			09/30/2020 16:44	Blanca Fach	2199036
	09/30/2020			09/30/2020 16:45	Blanca Fach	2199042
	09/30/2020			09/30/2020 16:46	Blanca Fach	2199043
SM 2120 B-2011	09/30/2020			09/30/2020 16:40	Benjamin T. Nordmann	2199032
	09/30/2020			09/30/2020 16:41	Benjamin T. Nordmann	2199033
	09/30/2020			09/30/2020 16:43	Benjamin T. Nordmann	2199038
	09/30/2020			09/30/2020 16:44	Benjamin T. Nordmann	2199039
SM 2320 B-2011	09/30/2020			10/01/2020 18:26	Dale L. Simmons	2199032
	09/30/2020			10/01/2020 18:34	Dale L. Simmons	2199033
	09/30/2020			10/01/2020 18:42	Dale L. Simmons	2199038
	09/30/2020			10/01/2020 18:50	Dale L. Simmons	2199039
SM 2340B	09/30/2020			10/08/2020 18:46	Betina Topolski	2199048
	09/30/2020			10/08/2020 18:54	Betina Topolski	2199049
SM 2540 C-2011	09/30/2020			10/01/2020 15:15	Yijie Li	2199032, 2199033, 2199038, 2199039

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2540 D-2011	09/30/2020			10/01/2020 15:15	Yijie Li	2199032, 2199033, 2199038, 2199039
SM 4500 F-C-2011	09/30/2020			10/01/2020 18:26	Dale L. Simmons	2199032
	09/30/2020			10/01/2020 18:34	Dale L. Simmons	2199033
	09/30/2020			10/01/2020 18:42	Dale L. Simmons	2199038
	09/30/2020			10/01/2020 18:50	Dale L. Simmons	2199039
SM 5310 B-2011	09/30/2020			10/02/2020 20:10	Lauren Lees	2199040
	09/30/2020			10/02/2020 22:00	Lauren Lees	2199034
	09/30/2020			10/02/2020 22:12	Lauren Lees	2199035
	09/30/2020			10/02/2020 22:24	Lauren Lees	2199041