Chemical Analysis Report

SW-DIST-2020-10-02-01

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

Event Description: **Lakes; Run 9 Dan Williams**
Request ID: **RQ-2020-09-28-06**
Customer: **SW-DIST**
Project ID: **SMP**

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 26-OCT-2020 10:53

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 group are included in this report: 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 Wastena Center **Collection Date/Time: 10/01/2020 14:20**

Field ID: G1SW0020 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2199669	EPA 180.1 Rev. 2.0	Turbidity	6.1		NTU	P388163	
	EPA 300.0 Rev. 2.1	Chloride	28		mg Cl/L	P388514	
	SM 2120 B-2011	Color (true)	34	A	PCU	P388260	
	SM 2320 B-2011	Total Alkalinity	22		mg CaCO3/L	P388248	
	SM 2540 C-2011	TDS	95		mg/L	P388622	
	SM 2540 D-2011	TSS	4	I	mg/L	P388617	
	SM 4500 F-C-2011	Fluoride	0.061	I	mg F/L	P388252	
2199673	EPA 350.1 Rev. 2.0	Ammonia-N	0.055		mg N/L	P388182	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P388753	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P388217	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P388228	
	SM 5310 B-2011	Organic Carbon	11		mg C/L	P388300	
2199677	EPA 300.0 Rev. 2.1 dissolved	Sulfate	5.6		mg SO4/L	P388635	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P388167	

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 Dan @ Center **Collection Date/Time: 10/01/2020 12:20**

Field ID: G5SW0161 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2199670	EPA 180.1 Rev. 2.0	Turbidity	3.3		NTU	P388163	
	EPA 300.0 Rev. 2.1	Chloride	6.5		mg Cl/L	P388514	
	SM 2120 B-2011	Color (true)	36		PCU	P388260	
	SM 2320 B-2011	Total Alkalinity	67		mg CaCO3/L	P388248	
	SM 2540 C-2011	TDS	101		mg/L	P388622	
	SM 2540 D-2011	TSS	4	I	mg/L	P388617	
	SM 4500 F-C-2011	Fluoride	0.063	I	mg F/L	P388252	
2199674	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P388182	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P388753	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P388217	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P388228	
	SM 5310 B-2011	Organic Carbon	9.5		mg C/L	P388300	
2199678	EPA 300.0 Rev. 2.1 dissolved	Sulfate	1.8		mg SO4/L	P388635	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P388167	

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: Williams Lake **Collection Date/Time: 10/01/2020 11:10**

Field ID: G1SW0071 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2199671	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P388164	
	EPA 300.0 Rev. 2.1	Chloride	39		mg Cl/L	P388514	
	SM 2120 B-2011	Color (true)	22		PCU	P388260	
	SM 2320 B-2011	Total Alkalinity	17		mg CaCO3/L	P388522	
	SM 2540 C-2011	TDS	114		mg/L	P388622	
	SM 2540 D-2011	TSS	2	I	mg/L	P388617	
	SM 4500 F-C-2011	Fluoride	0.075	I	mg F/L	P388253	
2199675	EPA 350.1 Rev. 2.0	Ammonia-N	0.050		mg N/L	P388182	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P388333	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P388218	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P388228	
	SM 5310 B-2011	Organic Carbon	9.5		mg C/L	P388300	
2199679	EPA 300.0 Rev. 2.1 dissolved	Sulfate	8.4		mg SO4/L	P388635	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P388167	

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: Klosterman Canal South **Collection Date/Time: 10/01/2020 13:05**

Field ID: G5SW0040 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2199672	EPA 180.1 Rev. 2.0	Turbidity	3.5		NTU	P388164	
	EPA 300.0 Rev. 2.1	Chloride	94		mg Cl/L	P388514	
	SM 2120 B-2011	Color (true)	100		PCU	P388260	
	SM 2320 B-2011	Total Alkalinity	100	A	mg CaCO3/L	P388522	
	SM 2540 C-2011	TDS	332	A	mg/L	P388622	
	SM 2540 D-2011	TSS	5	I A	mg/L	P388617	
	SM 4500 F-C-2011	Fluoride	0.27		mg F/L	P388253	
2199676	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P388182	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P388333	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P388218	
	EPA 365.1 Rev. 2.0	Total-P	0.41		mg P/L	P388228	
	SM 5310 B-2011	Organic Carbon	20		mg C/L	P388300	
2199680	EPA 300.0 Rev. 2.1 dissolved	Sulfate	18		mg SO4/L	P388635	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.28		mg P/L	P388167	

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: P388163

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P388164

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388514

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1 dissolved
Batch ID: P388635

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P388182

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P388333

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P388753

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P388217

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P388218

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P388228

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P388167

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

Reference Method: SM 2120 B-2011
Batch ID: P388260

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P388248

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

Reference Method: SM 2320 B-2011
Batch ID: P388522

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

Reference Method: SM 2540 C-2011
Batch ID: P388622

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P388617

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P388252

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P388253

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: P388300

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388514

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

Reference Method: EPA 300.0 Rev. 2.1 dissolved
Batch ID: P388635

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P388182

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P388333

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P388753

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P388217

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P388218

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: P388228

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P388167

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2120 B-2011
Batch ID: P388260

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	96.5		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P388248

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	93 - 104

Reference Method: SM 2320 B-2011
Batch ID: P388522

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P388252

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.8		P	90 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P388253

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.3		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P388300

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.2		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388514

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2199572	Chloride	104		P	90 - 110
2199602	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1 dissolved
Batch ID: P388635

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2200313	Sulfate	103		P	90 - 110
2200498	Sulfate	97.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P388182

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2199694	Ammonia-N	99.8	96.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P388333

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2199693	Kjeldahl Nitrogen	95.1	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P388753

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2199597	Kjeldahl Nitrogen	103	91.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P388217

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2199596	NO2NO3-N	96.5	96.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P388218

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2199675	NO2NO3-N	99.9	98.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P388228

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2199603	Total-P	109	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P388167

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2199599	O-Phosphate-P	97.1	96.3	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P388252

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2199690	Fluoride	98.6	98.6	P/P	94 - 107

Reference Method: SM 4500 F-C-2011
Batch ID: P388253

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2199671	Fluoride	99.2	98.6	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P388300

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2199722	Organic Carbon	101		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P388163

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199595	Turbidity	0.976	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P388164

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199721	Turbidity	6.45	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P388514

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199572	Chloride	0.0611	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1 dissolved
Batch ID: P388635

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2200313	Sulfate	1.01	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P388182

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199694	Ammonia-N	2.79	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P388333

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199693	Kjeldahl Nitrogen	4.94	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P388753

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199597	Kjeldahl Nitrogen	6.47	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P388217

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199596	NO2NO3-N	0.0	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P388218

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199675	NO2NO3-N	0.976	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P388228

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199603	Total-P	0.573	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P388167

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199599	O-Phosphate-P	0.720	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P388260

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199669	Color (true)	0.300	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P388248

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199690	Total Alkalinity	0.418	Sample	P	0 - 8.1

Reference Method: SM 2320 B-2011
Batch ID: P388522

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199672	Total Alkalinity	0.875	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P388622

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199672	TDS	2.11	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P388252

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199690	Fluoride	0.0	Spike	P	0 - 2.8

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P388253

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199671	Fluoride	0.472	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P388300

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2199722	Organic Carbon	1.96	Sample	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: A101339
Included Lab Sample IDs: 2199669, 2199670, 2199671, 2199672

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A101341
Included Lab Sample IDs: 2199677, 2199678, 2199679, 2199680

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.1	99.7	P/P	90 - 110
O-Phosphate-P	99.4	99.4	P/P	90 - 110
O-Phosphate-P	99.7	99.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A101344
Included Lab Sample IDs: 2199673, 2199674, 2199675, 2199676

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	99.5	P/P	90 - 110
Ammonia-N	99.5	98.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A101362
Included Lab Sample IDs: 2199673, 2199674, 2199675, 2199676

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	99.5	P/P	90 - 110
NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A101373
Included Lab Sample IDs: 2199669, 2199670

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

Reference Method: SM 4500 F-C-2011
Run ID: A101373
Included Lab Sample IDs: 2199669, 2199670, 2199671, 2199672

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	101	P/P	90 - 110
Fluoride	102	100	P/P	90 - 110

Reference Method: SM 2120 B-2011
Run ID: A101377
Included Lab Sample IDs: 2199669, 2199670, 2199671, 2199672

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.4	98.7	P/P	90 - 115

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-2011
Run ID: A101393
Included Lab Sample IDs: 2199673, 2199674, 2199675, 2199676

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.4	96.8	P/P	90 - 110
Organic Carbon	96.8	97.4	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A101398
Included Lab Sample IDs: 2199669, 2199670, 2199671, 2199672

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.8	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A101406
Included Lab Sample IDs: 2199673, 2199674, 2199675

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	96.0	96.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A101412
Included Lab Sample IDs: 2199676

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A101441
Included Lab Sample IDs: 2199675, 2199676

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	92.3	101	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A101469
Included Lab Sample IDs: 2199671, 2199672

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	101	P/P	90 - 110
Total Alkalinity	101	99.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1 dissolved
Run ID: A101493
Included Lab Sample IDs: 2199677, 2199678, 2199679, 2199680

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A101659
Included Lab Sample IDs: 2199673, 2199674

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A101659
Included Lab Sample IDs: 2199673, 2199674

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.6	101	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					0.976	
	Turbidity					6.45	
EPA 300.0 Rev. 2.1	Chloride	102	104	102		0.0611	
EPA 300.0 Rev. 2.1 dissolved	Sulfate	103	103	97.4		1.01	
EPA 350.1 Rev. 2.0	Ammonia-N	100	99.8	96.8			2.79
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	109	95.1	105			4.94
	Kjeldahl Nitrogen	107	103	91.4			6.47
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	96.5	96.5			0.0
	NO2NO3-N	100	99.9	98.9			0.976
EPA 365.1 Rev. 2.0	Total-P	108	109	108			0.573
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.3	97.1	96.3			0.720
SM 2120 B-2011	Color (true)	96.5				0.300	
SM 2320 B-2011	Total Alkalinity	103				0.418	
	Total Alkalinity	103				0.875	
SM 2540 C-2011	TDS					2.11	
SM 4500 F-C-2011	Fluoride	99.8	98.6	98.6			0.0
	Fluoride	99.3	99.2	98.6			0.472
SM 5310 B-2011	Organic Carbon	99.2	101			1.96	

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2199669, 2199670, 2199671, 2199672
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2199669, 2199670, 2199671, 2199672
EPA 300.0 Rev. 2.1 dissolved	Sulfate, dissolved, in filtered, aqueous matrices	2199677, 2199678, 2199679, 2199680
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2199673, 2199674, 2199675, 2199676
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2199673, 2199674, 2199675, 2199676
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2199673, 2199674, 2199675, 2199676
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2199673, 2199674, 2199675, 2199676
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2199677, 2199678, 2199679, 2199680
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2199669, 2199670, 2199671, 2199672
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2199669, 2199670, 2199671, 2199672
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2199669, 2199670, 2199671, 2199672
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2199669, 2199670, 2199671, 2199672
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2199669, 2199670, 2199671, 2199672
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2199673, 2199674, 2199675, 2199676

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	10/02/2020			10/02/2020 15:55	Yen Ta	2199669, 2199670, 2199671, 2199672
EPA 300.0 Rev. 2.1	10/02/2020			10/10/2020 04:46	Lipi Saha	2199669
	10/02/2020			10/10/2020 04:59	Lipi Saha	2199670
	10/02/2020			10/10/2020 05:12	Lipi Saha	2199671
	10/02/2020			10/10/2020 05:25	Lipi Saha	2199672
EPA 300.0 Rev. 2.1 dissolved	10/02/2020			10/14/2020 10:14	Elliott Rodriguez	2199677
	10/02/2020			10/14/2020 10:27	Elliott Rodriguez	2199678
	10/02/2020			10/14/2020 10:40	Elliott Rodriguez	2199679
	10/02/2020			10/14/2020 10:54	Elliott Rodriguez	2199680
EPA 350.1 Rev. 2.0	10/02/2020			10/04/2020 12:38	Ping Hua	2199673
	10/02/2020			10/04/2020 12:39	Ping Hua	2199674
	10/02/2020			10/04/2020 12:41	Ping Hua	2199675
	10/02/2020			10/04/2020 12:50	Ping Hua	2199676
EPA 351.2 Rev. 2.0	10/02/2020	10/07/2020 13:24	David Boose	10/08/2020 16:58	Elliott Rodriguez	2199675
	10/02/2020	10/07/2020 13:24	David Boose	10/08/2020 16:59	Elliott Rodriguez	2199676
	10/02/2020	10/15/2020 13:30	David Boose	10/20/2020 20:17	Julia Storbeck	2199673
	10/02/2020	10/15/2020 13:30	David Boose	10/20/2020 20:19	Julia Storbeck	2199674
EPA 353.2 Rev. 2.0	10/02/2020			10/05/2020 11:47	Beverly Y. Sanders	2199673
	10/02/2020			10/05/2020 11:48	Beverly Y. Sanders	2199674
	10/02/2020			10/05/2020 11:55	Beverly Y. Sanders	2199675
	10/02/2020			10/05/2020 12:01	Beverly Y. Sanders	2199676
EPA 365.1 Rev. 2.0	10/02/2020	10/05/2020 12:59	Yen Ta	10/07/2020 11:26	Lipi Saha	2199673
	10/02/2020	10/05/2020 12:59	Yen Ta	10/07/2020 11:27	Lipi Saha	2199674
	10/02/2020	10/05/2020 12:59	Yen Ta	10/07/2020 11:28	Lipi Saha	2199675
	10/02/2020	10/05/2020 12:59	Yen Ta	10/07/2020 13:33	Benjamin T. Nordmann	2199676
EPA 365.1 Rev. 2.0 dissolved	10/02/2020			10/02/2020 15:39	Blanca Fach	2199677
	10/02/2020			10/02/2020 15:40	Blanca Fach	2199678
	10/02/2020			10/02/2020 15:46	Blanca Fach	2199679
	10/02/2020			10/02/2020 16:06	Blanca Fach	2199680
SM 2120 B-2011	10/02/2020			10/02/2020 17:36	Benjamin T. Nordmann	2199669
	10/02/2020			10/02/2020 17:37	Benjamin T. Nordmann	2199670, 2199671
	10/02/2020			10/02/2020 17:38	Benjamin T. Nordmann	2199672
SM 2320 B-2011	10/02/2020			10/06/2020 01:06	Dale L. Simmons	2199669
	10/02/2020			10/06/2020 01:19	Dale L. Simmons	2199670
	10/02/2020			10/09/2020 22:53	Lauren Lees	2199672
	10/02/2020			10/09/2020 23:27	Lauren Lees	2199671
SM 2540 C-2011	10/02/2020			10/06/2020 13:14	Yijie Li	2199669, 2199670, 2199671, 2199672
SM 2540 D-2011	10/02/2020			10/06/2020 13:14	Yijie Li	2199669, 2199670, 2199671, 2199672
SM 4500 F-C-2011	10/02/2020			10/06/2020 01:06	Dale L. Simmons	2199669
	10/02/2020			10/06/2020 01:19	Dale L. Simmons	2199670

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-2011	10/02/2020			10/06/2020 03:11	Dale L. Simmons	2199671
	10/02/2020			10/06/2020 03:43	Dale L. Simmons	2199672
SM 5310 B-2011	10/02/2020			10/07/2020 05:27	Madeline Gruver	2199673
	10/02/2020			10/07/2020 05:41	Madeline Gruver	2199674
	10/02/2020			10/07/2020 05:52	Madeline Gruver	2199675
	10/02/2020			10/07/2020 06:26	Madeline Gruver	2199676