Chemical Analysis Report

NE-DIST-2018-07-27-01

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

Event Description: **Melrose lakes**
Request ID: **RQ-2018-07-09-13**
Customer: **NE-DIST**
Project ID: **SMP**

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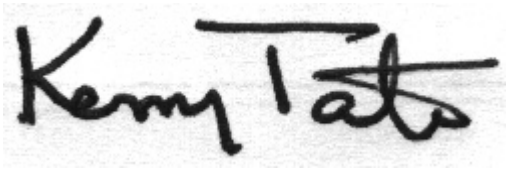
Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 15-AUG-2018 10:17



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 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: Ross Lake Center **Collection Date/Time: 07/26/2018 11:30**

Field ID: 20030454 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2011594	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P349327	
	EPA 300.0 Rev. 2.1	Chloride	6.9		mg Cl/L	P349592	
		Sulfate	0.36	I	mg SO4/L	P349595	
	SM 2120 B	Color (true)	670		PCU	P349313	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P349484	
	SM 2540 C-97	TDS	116		mg/L	P349675	
	SM 2540 D-97	TSS	2	I	mg/L	P349368	
	SM 4500 F-C-97	Fluoride	0.049	I	mg F/L	P349488	
2011595	EPA 350.1 Rev. 2.0	Ammonia-N	0.56		mg N/L	P349572	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.1		mg N/L	P349446	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P349406	
	EPA 365.1 Rev. 2.0	Total-P	0.27		mg P/L	P349514	
	SM 5310 B-00	Organic Carbon	42		mg C/L	P349690	
2011596	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.20		mg P/L	P349304	
2011606	EPA 200.7 Rev. 4.4	Calcium	2.20		mg/L	P349462	
		Iron	840		ug/L	P349462	
		Magnesium	1.29		mg/L	P349462	
		Potassium	1.8		mg/L	P349462	
		Sodium	4.3		mg/L	P349462	
		Zinc	5.0	U	ug/L	P349462	
	EPA 200.8 Rev. 5.4	Arsenic	1.12		ug/L	P349462	
		Cadmium	0.020	U	ug/L	P349462	
		Chromium	0.72	I	ug/L	P349462	
		Copper	0.32	I	ug/L	P349462	
		Lead	0.43		ug/L	P349462	
		Nickel	0.65	I	ug/L	P349462	
		Silver	0.010	U	ug/L	P349462	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Goose Lake **Collection Date/Time: 07/26/2018 10:45**

Field ID: 20030980 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2011591	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P349327	
	EPA 300.0 Rev. 2.1	Chloride	7.0		mg Cl/L	P349592	
		Sulfate	0.27	I	mg SO4/L	P349595	
	SM 2120 B	Color (true)	570		PCU	P349313	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P349484	
	SM 2540 C-97	TDS	101		mg/L	P349675	
	SM 2540 D-97	TSS	2	I	mg/L	P349368	
	SM 4500 F-C-97	Fluoride	0.045	I	mg F/L	P349488	
2011592	EPA 350.1 Rev. 2.0	Ammonia-N	0.30		mg N/L	P349572	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P349446	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P349406	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P349514	
	SM 5310 B-00	Organic Carbon	35		mg C/L	P349690	
2011593	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.10		mg P/L	P349304	

Ref. Method and Comment:
SM 2540 D-97: 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: P349327

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P349462

Component	Result	Code	Units
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: P349462

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349592

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349595

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349572

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349446

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349406

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349514

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349304

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

Reference Method: SM 2120 B
Batch ID: P349313

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P349484

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

Reference Method: SM 2540 C-97
Batch ID: P349675

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P349368

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P349488

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P349690

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: P349462

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	106		P	85 - 115
Iron	106		P	85 - 115
Magnesium	110		P	85 - 115
Potassium	103		P	85 - 115
Sodium	105		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P349462

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	101		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	93.7		P	85 - 115
Copper	95.9		P	85 - 115
Lead	97.2		P	85 - 115
Nickel	98.7		P	85 - 115
Silver	98.4		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349592

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349595

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349572

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349446

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349406

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349514

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349304

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.2		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P349313

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.6		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P349484

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P349488

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.6		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P349690

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.9		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P349462

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011598	Calcium	94.0		P	80 - 120
2011598	Iron	106		P	80 - 120
2011598	Magnesium	107		P	80 - 120
2011598	Potassium	101		P	80 - 120
2011598	Sodium	89.3		P	80 - 120
2011598	Zinc	106		P	80 - 120
2011701	Calcium	104		P	80 - 120
2011701	Iron	107	105	P/P	80 - 120
2011701	Magnesium	110	107	P/P	80 - 120
2011701	Potassium	105	103	P/P	80 - 120
2011701	Sodium	106	103	P/P	80 - 120
2011701	Zinc	103	102	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P349462

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011598	Arsenic	105		P	80 - 120
2011598	Cadmium	105		P	80 - 120
2011598	Chromium	94.9		P	80 - 120
2011598	Copper	97.1		P	80 - 120
2011598	Lead	100		P	80 - 120
2011598	Nickel	98.7		P	80 - 120
2011598	Silver	98.0		P	80 - 120
2011701	Arsenic	104	102	P/P	80 - 120
2011701	Cadmium	105	104	P/P	80 - 120
2011701	Chromium	97.5	95.8	P/P	80 - 120
2011701	Copper	98.8	96.6	P/P	80 - 120
2011701	Lead	98.3	97.9	P/P	80 - 120
2011701	Nickel	101	99.0	P/P	80 - 120
2011701	Silver	100	98.6	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349592

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011483	Chloride	102		P	90 - 110
2011594	Chloride	108		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349595

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011483	Sulfate	99.8		P	90 - 110
2011594	Sulfate	104		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349572

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011650	Ammonia-N	97.1	98.0	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349446

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011557	Kjeldahl Nitrogen	100	97.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349406

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011650	NO2NO3-N	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349514

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011557	Total-P	101	92.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349304

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011658	O-Phosphate-P	93.1	94.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P349488

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011556	Fluoride	96.9	97.7	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P349690

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011652	Organic Carbon	96.0	95.3	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P349327

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011578	Turbidity	2.37	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P349462

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011701	Calcium	1.75	Spike	P	0 - 20
2011701	Iron	1.91	Spike	P	0 - 20
2011701	Magnesium	2.84	Spike	P	0 - 20
2011701	Potassium	2.50	Spike	P	0 - 20
2011701	Sodium	1.88	Spike	P	0 - 20
2011701	Zinc	1.52	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P349462

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011701	Arsenic	2.04	Spike	P	0 - 20
2011701	Cadmium	0.923	Spike	P	0 - 20
2011701	Chromium	1.82	Spike	P	0 - 20
2011701	Copper	2.21	Spike	P	0 - 20
2011701	Lead	0.389	Spike	P	0 - 20
2011701	Nickel	1.94	Spike	P	0 - 20
2011701	Silver	1.73	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349592

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011483	Chloride	4.04	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349595

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011483	Sulfate	3.88	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349572

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011650	Ammonia-N	0.859	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349446

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011557	Kjeldahl Nitrogen	1.91	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349406

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011650	NO2NO3-N	0.971	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349514

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011557	Total-P	7.70	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349304

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011658	O-Phosphate-P	1.38	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P349313

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011572	Color (true)	0.0298	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P349484

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011556	Total Alkalinity	0.661	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P349675

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2010788	TDS	7.23	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P349488

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011556	Fluoride	0.520	Spike	P	0 - 3.5

Quality Assurance Report
Precision

Reference Method: SM 5310 B-00
Batch ID: P349690

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011652	Organic Carbon	0.565	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A85530
Included Lab Sample IDs: 2011593, 2011596

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.8	99.0	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A85532
Included Lab Sample IDs: 2011591, 2011594

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	103	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A85537
Included Lab Sample IDs: 2011591, 2011594

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	102	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A85559
Included Lab Sample IDs: 2011592, 2011595

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A85560
Included Lab Sample IDs: 2011591, 2011594

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	106	99.9	P/P	90 - 110
Chloride	99.9	102	P/P	90 - 110
Sulfate	100	103	P/P	90 - 110
Sulfate	107	100	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A85607
Included Lab Sample IDs: 2011591, 2011594

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A85607
Included Lab Sample IDs: 2011591, 2011594

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.1	99.5	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A85619
Included Lab Sample IDs: 2011606

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	102	P/P	90 - 110
Iron	103	102	P/P	90 - 110
Magnesium	104	103	P/P	90 - 110
Potassium	100	97.9	P/P	90 - 110
Sodium	99.9	100	P/P	90 - 110
Zinc	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A85630
Included Lab Sample IDs: 2011592, 2011595

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	95.2	96.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A85647
Included Lab Sample IDs: 2011592, 2011595

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.6	99.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A85648
Included Lab Sample IDs: 2011592, 2011595

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	99.6	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A85689
Included Lab Sample IDs: 2011606

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	101	103	P/P	90 - 110
Cadmium	100	102	P/P	90 - 110
Chromium	94.2	96.2	P/P	90 - 110
Copper	98.0	98.5	P/P	90 - 110
Lead	99.1	98.1	P/P	90 - 110
Nickel	98.2	99.2	P/P	90 - 110
Silver	95.8	96.7	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A85704
Included Lab Sample IDs: 2011592, 2011595

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.1	98.5	P/P	90 - 110

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

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						2.37	
EPA 200.7 Rev. 4.4	Calcium	106	94.0	104				1.75
	Iron	106	106	107	105			1.91
	Magnesium	110	107	110	107			2.84
	Potassium	103	101	105	103			2.50
	Sodium	105	89.3	106	103			1.88
	Zinc	103	106	103	102			1.52
EPA 200.8 Rev. 5.4	Arsenic	101	105	104	102			2.04
	Cadmium	103	105	105	104			0.923
	Chromium	93.7	94.9	97.5	95.8			1.82
	Copper	95.9	97.1	98.8	96.6			2.21
	Lead	97.2	100	98.3	97.9			0.389
	Nickel	98.7	98.7	101	99.0			1.94
	Silver	98.4	98.0	100	98.6			1.73
EPA 300.0 Rev. 2.1	Chloride	97.1	102	108			4.04	
	Sulfate	97.2	99.8	104			3.88	
EPA 350.1 Rev. 2.0	Ammonia-N	98.8	97.1	98.0				0.859
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.1	100	97.4				1.91
EPA 353.2 Rev. 2.0	NO2NO3-N	103	102	104				0.971
EPA 365.1 Rev. 2.0	Total-P	95.8	101	92.0				7.70
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.2	93.1	94.5				1.38
SM 2120 B	Color (true)	99.6					0.0298	
SM 2320 B-97	Total Alkalinity	104					0.661	
SM 2540 C-97	TDS						7.23	
SM 4500 F-C-97	Fluoride	97.6	96.9	97.7				0.520
SM 5310 B-00	Organic Carbon	93.9	96.0	95.3				0.565

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2011591, 2011594
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2011606
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2011606
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2011591, 2011594
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2011591, 2011594
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2011592, 2011595
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2011592, 2011595
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2011592, 2011595
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2011592, 2011595
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2011593, 2011596
SM 2120 B / E31780	True Color measured at 450 nm	2011591, 2011594
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2011591, 2011594
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2011591, 2011594
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2011591, 2011594
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2011591, 2011594

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2011592, 2011595

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	07/27/2018			07/27/2018 16:39	Tanya Welborn	2011591, 2011594
EPA 200.7 Rev. 4.4	07/27/2018	07/31/2018 17:45	Elliott D. Healy	08/01/2018 16:22	Betina Topolski	2011606
EPA 200.8 Rev. 5.4	07/27/2018	07/31/2018 17:45	Elliott D. Healy	08/03/2018 19:43	Allison Taylor	2011606
EPA 300.0 Rev. 2.1	07/27/2018			08/02/2018 18:18	Lipi Saha	2011594
	07/27/2018			08/02/2018 20:42	Lipi Saha	2011591
EPA 350.1 Rev. 2.0	07/27/2018			08/02/2018 13:23	Ping Hua	2011595
	07/27/2018			08/02/2018 13:25	Ping Hua	2011592
EPA 351.2 Rev. 2.0	07/27/2018	07/31/2018 11:15	Adrian Shelby	08/02/2018 13:21	Joseph Suarez	2011592
	07/27/2018	07/31/2018 11:15	Adrian Shelby	08/02/2018 13:23	Joseph Suarez	2011595
EPA 353.2 Rev. 2.0	07/27/2018			07/30/2018 13:47	Lauren Bottorf	2011592
	07/27/2018			07/30/2018 13:48	Lauren Bottorf	2011595
EPA 365.1 Rev. 2.0	07/27/2018	08/01/2018 12:35	Sima Feizi	08/02/2018 09:39	Beverly Y. Sanders	2011592
	07/27/2018	08/01/2018 12:35	Sima Feizi	08/02/2018 09:40	Beverly Y. Sanders	2011595
EPA 365.1 Rev. 2.0 dissolved	07/27/2018			07/27/2018 13:34	Julia Storbeck	2011593
	07/27/2018			07/27/2018 13:35	Julia Storbeck	2011596
SM 2120 B	07/27/2018			07/27/2018 14:35	Tanya Welborn	2011591
	07/27/2018			07/27/2018 14:36	Tanya Welborn	2011594
SM 2320 B-97	07/27/2018			08/01/2018 03:55	Dale L. Simmons	2011591
	07/27/2018			08/01/2018 04:03	Dale L. Simmons	2011594
SM 2540 C-97	07/27/2018			07/28/2018 20:08	Yijie Li	2011591, 2011594
SM 2540 D-97	07/27/2018			07/28/2018 23:02	Yijie Li	2011591, 2011594
SM 4500 F-C-97	07/27/2018			08/01/2018 03:55	Dale L. Simmons	2011591
	07/27/2018			08/01/2018 04:03	Dale L. Simmons	2011594
SM 5310 B-00	07/27/2018			08/04/2018 00:05	Julia Storbeck	2011592
	07/27/2018			08/04/2018 00:21	Julia Storbeck	2011595