

Chemical Analysis Report

CEN-DIST-2018-05-18-01

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

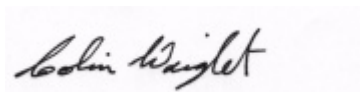
Event Description: **Tilden X4 + D&B / Starke**
Request ID: **RQ-2018-05-07-63**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Colin Wright, Program Administrator

Date Certified: 15-JUN-2018 12:48

A handwritten signature in black ink, appearing to read "Colin Wright", is placed over a light gray rectangular background.

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: Lake Tilden @ 140m NW of Center (2875B)

Collection Date/Time: 05/17/2018 12:25

Field ID: G1CE0087

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1993895	EPA 180.1 Rev. 2.0	Turbidity	4.7	A	NTU	P345596	
	EPA 300.0 Rev. 2.1	Chloride	33		mg Cl/L	P345930	
		Sulfate	13		mg SO4/L	P345933	
	SM 2120 B	Color (true)	310		PCU	P345592	
	SM 2320 B-97	Total Alkalinity	34		mg CaCO3/L	P345913	
	SM 2540 C-97	TDS	155		mg/L	P346045	
	SM 2540 D-97	TSS	4	I	mg/L	P346051	
	SM 4500 F-C-97	Fluoride	0.097	I	mg F/L	P345916	
1993899	EPA 350.1 Rev. 2.0	Ammonia-N	0.044		mg N/L	P345859	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P345877	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.038		mg N/L	P345738	
	EPA 365.1 Rev. 2.0	Total-P	0.074		mg P/L	P345775	
	SM 5310 B-00	Organic Carbon	23		mg C/L	P345778	
1993903	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.032		mg P/L	P345599	
1993953	EPA 200.7 Rev. 4.4	Calcium	13.4		mg/L	P345772	
		Iron	210		ug/L	P345772	
		Magnesium	5.13		mg/L	P345772	
		Potassium	6.9		mg/L	P345772	
		Sodium	20.9		mg/L	P345772	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P345772	
		Arsenic	1.10		ug/L	P345772	
		Cadmium	0.028	I	ug/L	P345772	
		Chromium	0.45	I	ug/L	P345772	
		Copper	1.42		ug/L	P346470	
		Lead	0.25		ug/L	P345772	
		Nickel	0.43	I	ug/L	P345772	
		Silver	0.010	U	ug/L	P345772	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lake Tilden @ 165m NE of Center (2875B)

Collection Date/Time: 05/17/2018 12:33

Field ID: G1CE0088

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1993896	EPA 180.1 Rev. 2.0	Turbidity	5.3		NTU	P345596	
	EPA 300.0 Rev. 2.1	Chloride	34		mg Cl/L	P345930	
		Sulfate	13		mg SO4/L	P345933	
	SM 2120 B	Color (true)	310		PCU	P345592	
	SM 2320 B-97	Total Alkalinity	34		mg CaCO3/L	P345913	
	SM 2540 C-97	TDS	151		mg/L	P346045	
	SM 2540 D-97	TSS	4	I	mg/L	P346051	
	SM 4500 F-C-97	Fluoride	0.099	I	mg F/L	P345916	
1993900	EPA 350.1 Rev. 2.0	Ammonia-N	0.037		mg N/L	P345859	

Field ID: G1CE0088

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1993900	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P345877	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.037		mg N/L	P345738	
	EPA 365.1 Rev. 2.0	Total-P	0.072		mg P/L	P345775	
	SM 5310 B-00	Organic Carbon	23		mg C/L	P345778	
1993904	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.033		mg P/L	P345599	
1993954	EPA 200.7 Rev. 4.4	Calcium	13.4		mg/L	P345772	
		Iron	220		ug/L	P345772	
		Magnesium	5.15		mg/L	P345772	
		Potassium	6.8		mg/L	P345772	
		Sodium	21.0		mg/L	P345772	
		Zinc	5.0	U	ug/L	P345772	
	EPA 200.8 Rev. 5.4	Arsenic	1.10		ug/L	P345772	
		Cadmium	0.020	U	ug/L	P345772	
		Chromium	0.45	I	ug/L	P345772	
		Copper	1.35		ug/L	P346470	
		Lead	0.25		ug/L	P345772	
		Nickel	0.41	I	ug/L	P345772	
		Silver	0.010	U	ug/L	P345772	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lake Tilden @ 150m SE of Center (2875B)

Collection Date/Time: 05/17/2018 12:39

Field ID: G1CE0089

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1993897	EPA 180.1 Rev. 2.0	Turbidity	5.2		NTU	P345596	
	EPA 300.0 Rev. 2.1	Chloride	34		mg Cl/L	P345792	
		Sulfate	13		mg SO4/L	P345794	
	SM 2120 B	Color (true)	310		PCU	P345592	
	SM 2320 B-97	Total Alkalinity	34		mg CaCO3/L	P345913	
	SM 2540 C-97	TDS	138		mg/L	P346045	
	SM 2540 D-97	TSS	4	I	mg/L	P346051	
	SM 4500 F-C-97	Fluoride	0.098	I	mg F/L	P345916	
1993901	EPA 350.1 Rev. 2.0	Ammonia-N	0.042		mg N/L	P345859	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P345877	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.036		mg N/L	P345738	
	EPA 365.1 Rev. 2.0	Total-P	0.068		mg P/L	P345775	
	SM 5310 B-00	Organic Carbon	22		mg C/L	P345778	
1993905	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.032		mg P/L	P345599	
1993955	EPA 200.7 Rev. 4.4	Calcium	13.2		mg/L	P345772	
		Iron	220		ug/L	P345772	
		Magnesium	5.02		mg/L	P345772	
		Potassium	6.7		mg/L	P345772	
		Sodium	20.4		mg/L	P345772	

Field ID: G1CE0089

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1993955	EPA 200.7 Rev. 4.4	Zinc	5.0	U	ug/L	P345772	
	EPA 200.8 Rev. 5.4	Arsenic	1.08		ug/L	P345772	
		Cadmium	0.020	U	ug/L	P345772	
		Chromium	0.46	I	ug/L	P345772	
		Copper	1.54		ug/L	P346470	
		Lead	0.27		ug/L	P345772	
		Nickel	0.45	I	ug/L	P345772	
		Silver	0.010	U	ug/L	P345772	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lake Tilden @ 225m S of Center (2875B)

Collection Date/Time: 05/17/2018 12:46

Field ID: G1CE0090

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1993898	EPA 180.1 Rev. 2.0	Turbidity	4.0		NTU	P345596	
	EPA 300.0 Rev. 2.1	Chloride	33		mg Cl/L	P345792	
		Sulfate	13		mg SO4/L	P345794	
	SM 2120 B	Color (true)	310		PCU	P345592	
	SM 2320 B-97	Total Alkalinity	33		mg CaCO3/L	P345948	
	SM 2540 C-97	TDS	147		mg/L	P346045	
	SM 2540 D-97	TSS	3	I	mg/L	P346051	
	SM 4500 F-C-97	Fluoride	0.10	I	mg F/L	P345951	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.050		mg N/L	P345859	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P345877	
1993902	EPA 353.2 Rev. 2.0	NO2NO3-N	0.032		mg N/L	P345738	
	EPA 365.1 Rev. 2.0	Total-P	0.066		mg P/L	P345775	
	SM 5310 B-00	Organic Carbon	23		mg C/L	P345778	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.034		mg P/L	P345601	
	EPA 200.7 Rev. 4.4	Calcium	13.1		mg/L	P345772	
1993906		Iron	210		ug/L	P345772	
		Magnesium	5.13		mg/L	P345772	
		Potassium	6.8		mg/L	P345772	
		Sodium	20.8		mg/L	P345772	
		Zinc	5.0	U	ug/L	P345772	
	EPA 200.8 Rev. 5.4	Arsenic	1.06		ug/L	P345772	
		Cadmium	0.020	U	ug/L	P345772	
		Chromium	0.43	I	ug/L	P345772	
		Copper	1.28		ug/L	P346470	
		Lead	0.25		ug/L	P345772	
		Nickel	0.40	I	ug/L	P345772	
		Silver	0.010	U	ug/L	P345772	

Field ID: G1CE0090

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
Ref. Method and Comment:							
EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.							
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.							

Sample Location: Lake Tilden @ 225m S of Center (2875B)

Collection Date/Time: 05/17/2018 12:50

Field ID: G1CE0090_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1993907	EPA 180.1 Rev. 2.0	Turbidity	4.1		NTU	P345596	
	EPA 300.0 Rev. 2.1	Chloride	34		mg Cl/L	P345792	
		Sulfate	13		mg SO4/L	P345794	
	SM 2120 B	Color (true)	310		PCU	P345592	
	SM 2320 B-97	Total Alkalinity	33		mg CaCO3/L	P345948	
	SM 2540 C-97	TDS	145		mg/L	P346045	
	SM 2540 D-97	TSS	4	I	mg/L	P346051	
1993908	SM 4500 F-C-97	Fluoride	0.10	I	mg F/L	P345951	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.053		mg N/L	P345859	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P345877	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.033		mg N/L	P345738	
	EPA 365.1 Rev. 2.0	Total-P	0.069		mg P/L	P345775	
1993909	SM 5310 B-00	Organic Carbon	23		mg C/L	P345778	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.035		mg P/L	P345601	
1993957	EPA 200.7 Rev. 4.4	Calcium	13.2		mg/L	P345773	
		Iron	220		ug/L	P345773	
		Magnesium	5.25		mg/L	P345773	
		Potassium	6.7		mg/L	P345773	
		Sodium	20.6		mg/L	P345773	
		Zinc	5.0	U	ug/L	P345773	
	EPA 200.8 Rev. 5.4	Arsenic	1.11		ug/L	P345773	
		Cadmium	0.020	U	ug/L	P345773	
		Chromium	0.49	I	ug/L	P345773	
		Copper	1.45		ug/L	P345773	
		Lead	0.27		ug/L	P345773	
		Nickel	0.44	I	ug/L	P345773	
		Silver	0.010	U	ug/L	P345773	

Ref. Method and Comment:
 EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
 SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Field Blank

Collection Date/Time: 05/17/2018 13:00

Field ID: BLANK_05102018

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1993910	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P345596	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P345792	
		Sulfate	0.20	U	mg SO4/L	P345794	

Field ID: BLANK_05102018

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1993910	SM 2120 B	Color (true)	2.5	U	PCU	P345592	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P345948	
	SM 2540 C-97	TDS	15	U	mg/L	P346044	
	SM 2540 D-97	TSS	2	U	mg/L	P346050	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P345951	
1993911	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P345859	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P345877	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P345739	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P345812	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P345778	
1993912	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P345601	
1993958	EPA 200.7 Rev. 4.4	Calcium	0.075	U	mg/L	P345773	
		Iron	30	U	ug/L	P345773	
		Magnesium	0.040	U	mg/L	P345773	
		Potassium	0.30	U	mg/L	P345773	
		Sodium	0.50	U	mg/L	P345773	
		Zinc	5.0	U	ug/L	P345773	
	EPA 200.8 Rev. 5.4	Arsenic	0.050	U	ug/L	P345773	
		Cadmium	0.020	U	ug/L	P345773	
		Chromium	0.40	U	ug/L	P345773	
		Copper	0.80	I	ug/L	P345773	
		Lead	0.050	U	ug/L	P345773	
		Nickel	0.20	U	ug/L	P345773	
		Silver	0.010	U	ug/L	P345773	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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

EPA 200.8 Rev. 5.4: The copper result was confirmed in the undigested sample on 05/24/2018.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P345596

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P345772

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P345773

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: P345772

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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P345773

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 200.8 Rev. 5.4
Batch ID: P346470

Component	Result	Code	Units
Copper	0.20	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345792

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345794

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345930

Component	Result	Code	Units
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Quality Assurance Report

Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345930

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345933

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345859

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345877

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345738

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345739

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345775

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345812

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345599

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345601

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

Reference Method: SM 2120 B
Batch ID: P345592

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P345913

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

Reference Method: SM 2320 B-97
Batch ID: P345948

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

Reference Method: SM 2540 C-97
Batch ID: P346044

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P346045

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P346050

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P346051

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P345916

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
 Batch ID: P345951

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
 Batch ID: P345778

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: P345772

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	85 - 115
Iron	101		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	102		P	85 - 115
Sodium	103		P	85 - 115
Zinc	95.7		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P345773

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	85 - 115
Iron	101		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	98.3		P	85 - 115
Sodium	101		P	85 - 115
Zinc	94.3		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P345772

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	98.4		P	85 - 115
Cadmium	96.7		P	85 - 115
Chromium	93.3		P	85 - 115
Lead	92.7		P	85 - 115
Nickel	96.7		P	85 - 115
Silver	97.6		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P345773

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	102		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	100		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P345773

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Copper	99.1		P	85 - 115
Lead	97.9		P	85 - 115
Nickel	102		P	85 - 115
Silver	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P346470

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Copper	93.5		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345792

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345794

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345930

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345933

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345859

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345877

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.7		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345738

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345739

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345775

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345812

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345599

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345601

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.8		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P345913

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Reference Method: SM 2320 B-97
Batch ID: P345948

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P345916

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.4		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P345951

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.2		P	91 - 105

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
 Batch ID: P345778

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.9		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P345772

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993861	Calcium	99.0		P	80 - 120
1993861	Iron	104	100	P/P	80 - 120
1993861	Magnesium	105	98.3	P/P	80 - 120
1993861	Potassium	106	101	P/P	80 - 120
1993861	Sodium	104		P	80 - 120
1993861	Zinc	97.3	95.9	P/P	80 - 120
1993884	Calcium	102		P	80 - 120
1993884	Iron	101		P	80 - 120
1993884	Magnesium	100		P	80 - 120
1993884	Potassium	106		P	80 - 120
1993884	Sodium	105		P	80 - 120
1993884	Zinc	94.4		P	80 - 120

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P345773

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993980	Calcium	103		P	80 - 120
1993980	Iron	104	102	P/P	80 - 120
1993980	Magnesium	106	104	P/P	80 - 120
1993980	Potassium	98.6		P	80 - 120
1993980	Sodium	101		P	80 - 120
1993980	Zinc	101	101	P/P	80 - 120
1994611	Calcium	103		P	80 - 120
1994611	Iron	104		P	80 - 120
1994611	Magnesium	107		P	80 - 120
1994611	Potassium	96.9		P	80 - 120
1994611	Sodium	95.6		P	80 - 120
1994611	Zinc	101		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P345772

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993861	Arsenic	99.9	98.7	P/P	80 - 120
1993861	Cadmium	98.5	97.3	P/P	80 - 120
1993861	Chromium	95.1	95.0	P/P	80 - 120
1993861	Lead	94.0	93.6	P/P	80 - 120
1993861	Nickel	96.0	95.5	P/P	80 - 120
1993861	Silver	97.3	98.7	P/P	80 - 120
1993884	Arsenic	101		P	80 - 120
1993884	Cadmium	99.0		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P345772

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993884	Chromium	92.5		P	80 - 120
1993884	Lead	95.1		P	80 - 120
1993884	Nickel	96.2		P	80 - 120
1993884	Silver	104		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P345773

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993980	Arsenic	103	102	P/P	80 - 120
1993980	Cadmium	101	98.4	P/P	80 - 120
1993980	Chromium	98.0	97.7	P/P	80 - 120
1993980	Copper	97.3	96.9	P/P	80 - 120
1993980	Lead	99.4	97.4	P/P	80 - 120
1993980	Nickel	101	99.7	P/P	80 - 120
1993980	Silver	100	99.5	P/P	80 - 120
1994611	Arsenic	102		P	80 - 120
1994611	Cadmium	98.5		P	80 - 120
1994611	Chromium	95.5		P	80 - 120
1994611	Copper	99.1		P	80 - 120
1994611	Lead	98.2		P	80 - 120
1994611	Nickel	103		P	80 - 120
1994611	Silver	101		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P346470

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993371	Copper	95.4		P	80 - 120
1994932	Copper	93.4	98.1	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345792

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993938	Chloride	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345794

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993897	Sulfate	96.7		P	90 - 110
1993938	Sulfate	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345930

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993809	Chloride	99.7		P	90 - 110
1993872	Chloride	97.8		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345933

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993809	Sulfate	101		P	90 - 110
1993872	Sulfate	98.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345859

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993899	Ammonia-N	97.6	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345877

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993875	Kjeldahl Nitrogen	102	95.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345738

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993856	NO2NO3-N	102	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345739

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993914	NO2NO3-N	99.7	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345775

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993924	Total-P	96.6	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345812

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993930	Total-P	97.1	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345599

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993859	O-Phosphate-P	96.1	96.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345601

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993906	O-Phosphate-P	96.4	97.2	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P345951

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993923	Fluoride	100	100	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P345778

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993817	Organic Carbon	94.8	95.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P345596

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993895	Turbidity	1.91	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P345772

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993861	Calcium	2.38	Spike	P	0 - 20
1993861	Iron	2.65	Spike	P	0 - 20
1993861	Magnesium	3.57	Spike	P	0 - 20
1993861	Potassium	3.56	Spike	P	0 - 20
1993861	Sodium	3.52	Spike	P	0 - 20
1993861	Zinc	1.40	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P345773

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993980	Calcium	0.800	Spike	P	0 - 20
1993980	Iron	1.63	Spike	P	0 - 20
1993980	Magnesium	1.11	Spike	P	0 - 20
1993980	Potassium	0.436	Spike	P	0 - 20
1993980	Sodium	0.484	Spike	P	0 - 20
1993980	Zinc	0.826	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P345772

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993861	Arsenic	1.16	Spike	P	0 - 20
1993861	Cadmium	1.22	Spike	P	0 - 20
1993861	Chromium	0.0405	Spike	P	0 - 20
1993861	Lead	0.486	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P345772

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993861	Nickel	0.510	Spike	P	0 - 20
1993861	Silver	1.37	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P345773

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993980	Arsenic	1.35	Spike	P	0 - 20
1993980	Cadmium	2.65	Spike	P	0 - 20
1993980	Chromium	0.331	Spike	P	0 - 20
1993980	Copper	0.390	Spike	P	0 - 20
1993980	Lead	1.99	Spike	P	0 - 20
1993980	Nickel	1.24	Spike	P	0 - 20
1993980	Silver	0.930	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P346470

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994932	Copper	4.93	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345792

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993938	Chloride	0.609	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345794

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993938	Sulfate	2.37	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345930

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993809	Chloride	2.06	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993809	Sulfate	1.35	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345859

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993899	Ammonia-N	0.483	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345877

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993875	Kjeldahl Nitrogen	5.57	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345738

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993856	NO2NO3-N	0.971	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345739

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993914	NO2NO3-N	0.454	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345775

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993924	Total-P	1.17	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345812

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993930	Total-P	4.43	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345599

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993859	O-Phosphate-P	0.194	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345601

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993906	O-Phosphate-P	0.610	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P345592

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993872	Color (true)	1.64	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P345913

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993851	Total Alkalinity	1.14	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P345948

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993923	Total Alkalinity	0.823	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P346044

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993853	TDS	4.79	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P346045

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993872	TDS	3.55	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P345916

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993851	Fluoride	0.469	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
Batch ID: P345951

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993923	Fluoride	0.477	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P345778

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993817	Organic Carbon	0.713	Spike	P	0 - 20

Quality Assurance Report Precision

* 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: SM 2120 B

Run ID: A84019

Included Lab Sample IDs: 1993895, 1993896, 1993897, 1993898, 1993907, 1993910

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	101	P/P	90 - 115
Color (true)	101	103	P/P	90 - 115
Color (true)	103	102	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A84020

Included Lab Sample IDs: 1993895, 1993896, 1993897, 1993898, 1993907, 1993910

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A84023

Included Lab Sample IDs: 1993903, 1993904, 1993905, 1993906, 1993909, 1993912

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.5	P/P	90 - 110
O-Phosphate-P	100	99.9	P/P	90 - 110
O-Phosphate-P	99.9	99.1	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A84061

Included Lab Sample IDs: 1993895, 1993896, 1993897, 1993898, 1993907, 1993910

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	102	P/P	90 - 110
Chloride	98.6	102	P/P	90 - 110
Sulfate	104	102	P/P	90 - 110
Sulfate	99.3	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A84080

Included Lab Sample IDs: 1993899, 1993900, 1993901, 1993902, 1993908, 1993911

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	102	P/P	90 - 110
NO2NO3-N	102	102	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A84096

Included Lab Sample IDs: 1993899, 1993900, 1993901, 1993902, 1993908, 1993911

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.6	96.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A84129

Included Lab Sample IDs: 1993899, 1993900, 1993901, 1993902, 1993908, 1993911

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	99.2	P/P	90 - 110
Ammonia-N	99.2	98.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A84136

Included Lab Sample IDs: 1993899, 1993900, 1993901, 1993902, 1993908

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	103	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A84146

Included Lab Sample IDs: 1993895, 1993896, 1993897

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A84146

Included Lab Sample IDs: 1993895, 1993896, 1993897

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A84148

Included Lab Sample IDs: 1993957, 1993958

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	101	99.5	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Cadmium	97.8	97.4	P/P	90 - 110
Cadmium	98.9	98.8	P/P	90 - 110
Chromium	102	98.2	P/P	90 - 110
Chromium	99.1	101	P/P	90 - 110
Copper	102	101	P/P	90 - 110
Copper	102	99.6	P/P	90 - 110
Lead	98.0	96.6	P/P	90 - 110
Lead	99.1	98.5	P/P	90 - 110
Nickel	101	99.7	P/P	90 - 110
Nickel	102	99.3	P/P	90 - 110
Silver	99.1	99.0	P/P	90 - 110
Silver	99.6	100	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A84156

Included Lab Sample IDs: 1993898, 1993907, 1993910

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	99.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A84156

Included Lab Sample IDs: 1993898, 1993907, 1993910

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A84158

Included Lab Sample IDs: 1993911

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A84166

Included Lab Sample IDs: 1993899, 1993900, 1993901, 1993902, 1993908, 1993911

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	97.9	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A84216

Included Lab Sample IDs: 1993953, 1993954, 1993955, 1993956, 1993957, 1993958

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	99.4	P/P	90 - 110
Calcium	102	102	P/P	95 - 105
Calcium	99.3	98.3	P/P	90 - 110
Iron	102	99.1	P/P	90 - 110
Iron	102	102	P/P	95 - 105
Iron	99.4	97.3	P/P	90 - 110
Magnesium	100	97.5	P/P	90 - 110
Magnesium	102	100	P/P	90 - 110
Magnesium	102	102	P/P	95 - 105
Potassium	101	99.1	P/P	90 - 110
Potassium	103	101	P/P	90 - 110
Potassium	100	101	P/P	95 - 105
Sodium	102	102	P/P	90 - 110
Sodium	102	102	P/P	95 - 105
Sodium	103	102	P/P	90 - 110
Zinc	100	97.5	P/P	95 - 105
Zinc	97.5	98.3	P/P	90 - 110
Zinc	98.0	96.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A84247

Included Lab Sample IDs: 1993953, 1993954, 1993955, 1993956

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	98.9	98.3	P/P	90 - 110
Cadmium	96.0	96.3	P/P	90 - 110
Chromium	97.0	94.9	P/P	90 - 110
Lead	95.5	94.2	P/P	90 - 110
Nickel	97.6	96.4	P/P	90 - 110
Silver	96.6	96.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A84470

Included Lab Sample IDs: 1993953, 1993954, 1993955, 1993956

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	96.1	92.8	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		LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					1.91	
EPA 200.7 Rev. 4.4	Calcium	101	99.0	102			2.38
	Calcium	101	103	103			0.800
	Iron	101	104	100	101		2.65
	Iron	101	104	102	104		1.63
	Magnesium	104	105	98.3	100		3.57
	Magnesium	104	106	104	107		1.11
	Potassium	102	106	101	106		3.56
	Potassium	98.3	98.6	96.9			0.436
	Sodium	103	104	105			3.52
	Sodium	101	101	95.6			0.484
	Zinc	95.7	97.3	95.9	94.4		1.40
	Zinc	94.3	101	101	101		0.826
EPA 200.8 Rev. 5.4	Arsenic	98.4	99.9	98.7	101		1.16
	Arsenic	102	103	102	102		1.35
	Cadmium	96.7	98.5	97.3	99.0		1.22
	Cadmium	100	101	98.4	98.5		2.65
	Chromium	93.3	95.1	95.0	92.5		0.0405
	Chromium	100	98.0	97.7	95.5		0.331
	Copper	99.1	97.3	96.9	99.1		0.390
	Copper	93.5	95.4	93.4	98.1		4.93
	Lead	92.7	94.0	93.6	95.1		0.486
	Lead	97.9	99.4	97.4	98.2		1.99
	Nickel	96.7	96.0	95.5	96.2		0.510
	Nickel	102	101	99.7	103		1.24
	Silver	97.6	97.3	98.7	104		1.37
	Silver	101	100	99.5	101		0.930
EPA 300.0 Rev. 2.1	Chloride	100	104			0.609	
	Chloride	99.9	99.7	97.8		2.06	
	Sulfate	99.6	103	96.7		2.37	
	Sulfate	100	101	98.9		1.35	
EPA 350.1 Rev. 2.0	Ammonia-N	101	97.6	98.5			0.483
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.7	102	95.0			5.57
EPA 353.2 Rev. 2.0	NO2NO3-N	100	102	104			0.971
	NO2NO3-N	101	99.7	100			0.454
EPA 365.1 Rev. 2.0	Total-P	96.8	96.6	97.8			1.17
	Total-P	100	97.1	102			4.43
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.0	96.1	96.3			0.194
	O-Phosphate-P	97.8	96.4	97.2			0.610

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision		
				LCS	SMP	MS
SM 2120 B	Color (true)				1.64	
SM 2320 B-97	Total Alkalinity	102			1.14	
	Total Alkalinity	102			0.823	
SM 2540 C-97	TDS				4.79	
	TDS				3.55	
SM 4500 F-C-97	Fluoride	96.4				0.469
	Fluoride	96.2	100 100			0.477
SM 5310 B-00	Organic Carbon	94.9	94.8 95.6			0.713

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1993895, 1993896, 1993897, 1993898, 1993907, 1993910
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1993953, 1993954, 1993955, 1993956, 1993957, 1993958
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1993953, 1993954, 1993955, 1993956, 1993957, 1993958
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1993895, 1993896, 1993897, 1993898, 1993907, 1993910
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1993895, 1993896, 1993897, 1993898, 1993907, 1993910
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1993899, 1993900, 1993901, 1993902, 1993908, 1993911
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1993899, 1993900, 1993901, 1993902, 1993908, 1993911
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1993899, 1993900, 1993901, 1993902, 1993908, 1993911
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1993899, 1993900, 1993901, 1993902, 1993908, 1993911
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1993903, 1993904, 1993905, 1993906, 1993909, 1993912
SM 2120 B / E31780	True Color measured at 450 nm	1993895, 1993896, 1993897, 1993898, 1993907, 1993910
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1993895, 1993896, 1993897, 1993898, 1993907, 1993910
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1993895, 1993896, 1993897, 1993898, 1993907, 1993910
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	1993895, 1993896, 1993897, 1993898, 1993907, 1993910
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1993895, 1993896, 1993897, 1993898, 1993907, 1993910
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1993899, 1993900, 1993901, 1993902, 1993908, 1993911

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	05/18/2018			05/18/2018 14:20	DeAsia Armster	1993895, 1993896, 1993897, 1993898, 1993907, 1993910
EPA 200.7 Rev. 4.4	05/18/2018	05/23/2018 14:33	Allison Taylor	05/29/2018 16:54	Betina Topolski	1993958
	05/18/2018	05/23/2018 14:33	Allison Taylor	05/29/2018 18:19	Betina Topolski	1993957
	05/18/2018	05/23/2018 14:47	Allison Taylor	05/30/2018 01:16	Betina Topolski	1993953
	05/18/2018	05/23/2018 14:47	Allison Taylor	05/30/2018 01:24	Betina Topolski	1993954
	05/18/2018	05/23/2018 14:47	Allison Taylor	05/30/2018 01:31	Betina Topolski	1993955
	05/18/2018	05/23/2018 14:47	Allison Taylor	05/30/2018 01:38	Betina Topolski	1993956
EPA 200.8 Rev. 5.4	05/18/2018	05/23/2018 14:33	Allison Taylor	05/24/2018 14:43	Nadine Brooks	1993958
	05/18/2018	05/23/2018 14:33	Allison Taylor	05/24/2018 18:15	Nadine Brooks	1993957
	05/18/2018	05/23/2018 14:47	Allison Taylor	05/25/2018 18:13	Nadine Brooks	1993953
	05/18/2018	05/23/2018 14:47	Allison Taylor	05/25/2018 18:23	Nadine Brooks	1993954
	05/18/2018	05/23/2018 14:47	Allison Taylor	05/25/2018 18:32	Nadine Brooks	1993955
	05/18/2018	05/23/2018 14:47	Allison Taylor	05/25/2018 18:42	Nadine Brooks	1993956
	05/18/2018	06/06/2018 14:40	Elliott D. Healy	06/08/2018 14:42	Nadine Brooks	1993953
	05/18/2018	06/06/2018 14:40	Elliott D. Healy	06/08/2018 14:49	Nadine Brooks	1993954
	05/18/2018	06/06/2018 14:40	Elliott D. Healy	06/08/2018 14:55	Nadine Brooks	1993955
	05/18/2018	06/06/2018 14:40	Elliott D. Healy	06/08/2018 15:02	Nadine Brooks	1993956
EPA 300.0 Rev. 2.1	05/18/2018			05/22/2018 22:56	Lipi Saha	1993897
	05/18/2018			05/22/2018 23:20	Lipi Saha	1993898
	05/18/2018			05/22/2018 23:32	Lipi Saha	1993907
	05/18/2018			05/22/2018 23:44	Lipi Saha	1993910
	05/18/2018			05/23/2018 23:53	Lipi Saha	1993895
	05/18/2018			05/24/2018 00:05	Lipi Saha	1993896
EPA 350.1 Rev. 2.0	05/18/2018			05/22/2018 12:13	Ping Hua	1993899
	05/18/2018			05/22/2018 12:18	Ping Hua	1993900
	05/18/2018			05/22/2018 12:19	Ping Hua	1993901
	05/18/2018			05/22/2018 12:21	Ping Hua	1993911
	05/18/2018			05/22/2018 12:28	Ping Hua	1993902
	05/18/2018			05/22/2018 12:30	Ping Hua	1993908
EPA 351.2 Rev. 2.0	05/18/2018	05/24/2018 13:00	Adrian Shelby	05/25/2018 14:49	Joseph Suarez	1993899
	05/18/2018	05/24/2018 13:00	Adrian Shelby	05/25/2018 14:50	Joseph Suarez	1993900
	05/18/2018	05/24/2018 13:00	Adrian Shelby	05/25/2018 14:52	Joseph Suarez	1993901
	05/18/2018	05/24/2018 13:00	Adrian Shelby	05/25/2018 14:54	Joseph Suarez	1993902
	05/18/2018	05/24/2018 13:00	Adrian Shelby	05/25/2018 14:55	Joseph Suarez	1993908
	05/18/2018	05/24/2018 13:00	Adrian Shelby	05/25/2018 14:57	Joseph Suarez	1993911
EPA 353.2 Rev. 2.0	05/18/2018			05/22/2018 13:02	Lauren Bottorf	1993902
	05/18/2018			05/22/2018 13:03	Lauren Bottorf	1993908
	05/18/2018			05/22/2018 13:08	Lauren Bottorf	1993899
	05/18/2018			05/22/2018 13:09	Lauren Bottorf	1993900

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 353.2 Rev. 2.0	05/18/2018			05/22/2018 13:10	Lauren Bottorf	1993901
	05/18/2018			05/22/2018 13:23	Lauren Bottorf	1993911
EPA 365.1 Rev. 2.0	05/18/2018	05/23/2018 13:05	Sima Feizi	05/24/2018 10:16	Beverly Y. Sanders	1993899
	05/18/2018	05/23/2018 13:05	Sima Feizi	05/24/2018 10:17	Beverly Y. Sanders	1993900
	05/18/2018	05/23/2018 13:05	Sima Feizi	05/24/2018 10:18	Beverly Y. Sanders	1993901
	05/18/2018	05/23/2018 13:05	Sima Feizi	05/24/2018 10:19	Beverly Y. Sanders	1993902
	05/18/2018	05/23/2018 13:05	Sima Feizi	05/24/2018 10:20	Beverly Y. Sanders	1993908
	05/18/2018	05/23/2018 13:05	Sima Feizi	05/25/2018 09:32	Beverly Y. Sanders	1993911
EPA 365.1 Rev. 2.0 dissolved	05/18/2018			05/18/2018 14:59	Megan Treadwell	1993906
	05/18/2018			05/18/2018 15:29	Megan Treadwell	1993903
	05/18/2018			05/18/2018 15:30	Megan Treadwell	1993904
	05/18/2018			05/18/2018 15:31	Megan Treadwell	1993905
	05/18/2018			05/18/2018 15:36	Megan Treadwell	1993909
	05/18/2018			05/18/2018 15:37	Megan Treadwell	1993912
SM 2120 B	05/18/2018			05/18/2018 15:44	Tanya Welborn	1993910
	05/18/2018			05/18/2018 16:03	Tanya Welborn	1993895
	05/18/2018			05/18/2018 16:04	Tanya Welborn	1993896
	05/18/2018			05/18/2018 16:05	Tanya Welborn	1993897, 1993898
	05/18/2018			05/18/2018 16:10	Tanya Welborn	1993907
	05/18/2018			05/24/2018 08:20	Dale L. Simmons	1993895
SM 2320 B-97	05/18/2018			05/24/2018 08:30	Dale L. Simmons	1993896
	05/18/2018			05/24/2018 08:40	Dale L. Simmons	1993897
	05/18/2018			05/25/2018 04:12	Dale L. Simmons	1993898
	05/18/2018			05/25/2018 04:22	Dale L. Simmons	1993907
	05/18/2018			05/25/2018 04:35	Dale L. Simmons	1993910
	05/18/2018			05/23/2018 10:15	Yijie Li	1993895, 1993896, 1993897, 1993898, 1993907, 1993910
SM 2540 C-97						
SM 2540 D-97	05/18/2018			05/23/2018 10:15	Yijie Li	1993895, 1993896, 1993897, 1993898, 1993907, 1993910
SM 4500 F-C-97	05/18/2018			05/24/2018 08:20	Dale L. Simmons	1993895
	05/18/2018			05/24/2018 08:30	Dale L. Simmons	1993896
	05/18/2018			05/24/2018 08:40	Dale L. Simmons	1993897
	05/18/2018			05/25/2018 04:12	Dale L. Simmons	1993898
	05/18/2018			05/25/2018 04:22	Dale L. Simmons	1993907
	05/18/2018			05/25/2018 04:35	Dale L. Simmons	1993910
SM 5310 B-00	05/18/2018			05/22/2018 04:18	Megan Treadwell	1993899
	05/18/2018			05/22/2018 04:33	Megan Treadwell	1993900
	05/18/2018			05/22/2018 04:48	Megan Treadwell	1993901
	05/18/2018			05/22/2018 05:03	Megan Treadwell	1993902
	05/18/2018			05/22/2018 05:18	Megan Treadwell	1993908

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	05/18/2018			05/22/2018 05:32	Megan Treadwell	1993911