

Chemical Analysis Report

SE-DIST-2016-03-16-03

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

Event Description: **SMP_2016 Purple_1 blank**

Request ID: **RQ-2016-03-07-13**

Customer: **SE-DIST**

Project ID: **SMP**

Send Reports to:

FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Jordan Skaggs

For additional information please contact

Timothy W. Fitzpatrick
Liang-Tsair Lin, Ph.D.
Colin Wright, Ph.D.
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 07-APR-2016 13:55



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: G9 SNAKE CREEK @ NW 57TH RD.

Collection Date/Time: 03/15/2016 11:00

Field ID: G4SE0075_03152016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1780450	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P300517	
	EPA 300.0 Rev. 2.1	Chloride	72		mg Cl/L	P300654	
		Sulfate	3.5		mg SO4/L	P300656	
	SM 2120 B	Color (true)	42		PCU	P300497	
	SM 2320 B-97	Total Alkalinity	217		mg CaCO3/L	P300688	
	SM 2540 C-97	TDS	300		mg/L	P301167	
	SM 2540 D-97	TSS	4	I	mg/L	P300951	
	SM 4500 F-C-97	Fluoride	0.27		mg F/L	P300691	
1780456	EPA 350.1 Rev. 2.0	Ammonia-N	0.33		mg N/L	P301189	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	6.5		mg N/L	P301044	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.023		mg N/L	P300738	
	EPA 365.1 Rev. 2.0	Total-P	0.007		mg P/L	P300833	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P300878	
1780462	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P300490	
1780521	EPA 200.7 Rev. 4.4	Calcium	69.5		mg/L	P300731	
		Iron	240		ug/L	P300731	
		Magnesium	12.0		mg/L	P300731	
		Potassium	3.1		mg/L	P300731	
		Sodium	46.9		mg/L	P300731	
		Zinc	5.0	U	ug/L	P300731	
	EPA 200.8 Rev. 5.4	Arsenic	0.89		ug/L	P300731	
		Cadmium	0.020	U	ug/L	P300731	
		Chromium	0.11	I	ug/L	P300731	
		Copper	0.50	U	ug/L	P300731	
		Lead	0.050	U	ug/L	P300731	
		Nickel	0.14	I	ug/L	P300731	
		Silver	0.0050	U	ug/L	P300731	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: TAMIAMI @ KROME

Collection Date/Time: 03/15/2016 11:45

Field ID: G4SE0068_03152016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1780451	EPA 180.1 Rev. 2.0	Turbidity	6.5	A	NTU	P300517	
	EPA 300.0 Rev. 2.1	Chloride	45		mg Cl/L	P300654	
		Sulfate	0.67		mg SO4/L	P301040	
	SM 2120 B	Color (true)	66		PCU	P300497	
	SM 2320 B-97	Total Alkalinity	238		mg CaCO3/L	P300688	
	SM 2540 C-97	TDS	308		mg/L	P301167	
	SM 2540 D-97	TSS	2	U	mg/L	P300951	
	SM 4500 F-C-97	Fluoride	0.17		mg F/L	P300691	
1780457	EPA 350.1 Rev. 2.0	Ammonia-N	0.90		mg N/L	P301189	

Field ID: G4SE0068_03152016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1780457	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P301044	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P300738	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P300833	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P300878	
1780463	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P300490	
1780522	EPA 200.7 Rev. 4.4	Calcium	85.4		mg/L	P300731	
		Iron	1.28E+03		ug/L	P300731	
		Magnesium	7.38		mg/L	P300731	
		Potassium	1.6		mg/L	P300731	
		Sodium	28.8		mg/L	P300731	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P300731	
		Arsenic	0.74		ug/L	P300731	
		Cadmium	0.020	U	ug/L	P300731	
		Chromium	0.086	I	ug/L	P300731	
		Copper	0.50	U	ug/L	P300731	
		Lead	0.050	U	ug/L	P300731	
		Nickel	0.068	I	ug/L	P300731	
		Silver	0.0050	U	ug/L	P300731	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: C-7 1.7TLE RIVER (LR-0)

Collection Date/Time: 03/15/2016 12:30

Field ID: G4SELR10_03152016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1780452	EPA 180.1 Rev. 2.0	Turbidity	0.45		NTU	P300517	
	EPA 300.0 Rev. 2.1	Chloride	67		mg Cl/L	P300654	
		Sulfate	13		mg SO4/L	P300656	
		Color (true)	52		PCU	P300497	
	SM 2320 B-97	Total Alkalinity	196		mg CaCO3/L	P300688	
	SM 2540 C-97	TDS	328		mg/L	P301167	
	SM 2540 D-97	TSS	2	U	mg/L	P300951	
	SM 4500 F-C-97	Fluoride	0.31		mg F/L	P300691	
1780458	EPA 350.1 Rev. 2.0	Ammonia-N	2.4		mg N/L	P301189	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	3.4		mg N/L	P301273	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.014		mg N/L	P300738	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P300834	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P300878	
1780464	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P300490	
1780523	EPA 200.7 Rev. 4.4	Calcium	61.9		mg/L	P300731	
		Iron	30	U	ug/L	P300731	
		Magnesium	11.0		mg/L	P300731	
		Potassium	5.2		mg/L	P300731	
		Sodium	45.2		mg/L	P300731	

Field ID: G4SELR10_03152016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1780523	EPA 200.7 Rev. 4.4	Zinc	5.0	U	ug/L	P300731	
	EPA 200.8 Rev. 5.4	Arsenic	0.69		ug/L	P300731	
		Cadmium	0.020	U	ug/L	P300731	
		Chromium	0.25		ug/L	P300731	
		Copper	0.50	U	ug/L	P300731	
		Lead	0.050	U	ug/L	P300731	
		Nickel	0.30		ug/L	P300731	
		Silver	0.0050	U	ug/L	P300731	

Ref. Method and Comment:

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 604 umhos/cm.

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Sample Location: C-7 LR-10

Collection Date/Time: 03/15/2016 12:31

Field ID: DUPE_03152016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1780453	EPA 180.1 Rev. 2.0	Turbidity	0.45		NTU	P300517	
	EPA 300.0 Rev. 2.1	Chloride	66		mg Cl/L	P300654	
		Sulfate	13		mg SO4/L	P300656	
	SM 2120 B	Color (true)	51		PCU	P300497	
	SM 2320 B-97	Total Alkalinity	195		mg CaCO3/L	P300688	
	SM 2540 C-97	TDS	317		mg/L	P301167	
	SM 2540 D-97	TSS	2	I	mg/L	P300951	
	SM 4500 F-C-97	Fluoride	0.32		mg F/L	P300691	
1780459	EPA 350.1 Rev. 2.0	Ammonia-N	2.4		mg N/L	P301189	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	3.5		mg N/L	P301045	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.017		mg N/L	P300739	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P300834	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P300878	
1780465	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P300490	
1780524	EPA 200.7 Rev. 4.4	Calcium	61.5		mg/L	P300731	
		Iron	31	I	ug/L	P300731	
		Magnesium	11.1		mg/L	P300731	
		Potassium	5.2		mg/L	P300731	
		Sodium	45.2		mg/L	P300731	
		Zinc	5.0	U	ug/L	P300731	
	EPA 200.8 Rev. 5.4	Arsenic	0.73		ug/L	P300731	
		Cadmium	0.020	U	ug/L	P300731	
		Chromium	0.25		ug/L	P300731	
		Copper	0.50	U	ug/L	P300731	
		Lead	0.051	I	ug/L	P300731	
		Nickel	0.31		ug/L	P300731	
		Silver	0.0050	U	ug/L	P300731	

Ref. Method and Comment:

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 604 umhos/cm.

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Sample Location: C-7 LR-10

Collection Date/Time: 03/15/2016 12:35

Field ID: BLANK_03102016

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1780468	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P300517	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P300752	
		Sulfate	0.20	U	mg SO4/L	P300754	
	SM 2120 B	Color (true)	2.5	U	PCU	P300500	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P300688	
	SM 2540 C-97	TDS	15	U	mg/L	P301165	
	SM 2540 D-97	TSS	2	U	mg/L	P300949	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P300691	
1780469	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P301190	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P301045	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P300739	
	EPA 365.1 Rev. 2.0	Total-P	0.003	I	mg P/L	P300834	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P300878	
1780470	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P300490	
1780527	EPA 200.7 Rev. 4.4	Calcium	0.075	U	mg/L	P300795	
		Iron	30	U	ug/L	P300795	
		Magnesium	0.040	U	mg/L	P300795	
		Potassium	0.30	U	mg/L	P300795	
		Sodium	0.50	U	mg/L	P300795	
		Zinc	5.0	U	ug/L	P300795	
	EPA 200.8 Rev. 5.4	Arsenic	0.050	U	ug/L	P300795	
		Cadmium	0.020	U	ug/L	P300795	
		Chromium	0.050	U	ug/L	P300795	
		Copper	0.10	U	ug/L	P300795	
		Lead	0.050	U	ug/L	P300795	
		Nickel	0.12	I	ug/L	P300795	
		Silver	0.0050	U	ug/L	P300795	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: The result was confirmed on 03/30/2016.

EPA 200.8 Rev. 5.4: The nickel result was confirmed in the undigested sample on 03/29/2016.

Sample Location: SNAKE CREEK WEST

Collection Date/Time: 03/15/2016 13:30

Field ID: G4SE0019_30152016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1780454	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P300517	
	EPA 300.0 Rev. 2.1	Chloride	76		mg Cl/L	P300654	
		Sulfate	1.6		mg SO4/L	P300656	
	SM 2120 B	Color (true)	51		PCU	P300497	
	SM 2320 B-97	Total Alkalinity	227		mg CaCO3/L	P300688	
	SM 2540 C-97	TDS	367		mg/L	P301167	
	SM 2540 D-97	TSS	4	I	mg/L	P300951	
	SM 4500 F-C-97	Fluoride	0.27		mg F/L	P300691	
1780460	EPA 350.1 Rev. 2.0	Ammonia-N	0.23		mg N/L	P301190	

Field ID: G4SE0019_30152016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1780460	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P301045	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P300739	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P300834	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P300878	
1780466	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P300490	
1780525	EPA 200.7 Rev. 4.4	Calcium	72.6		mg/L	P300731	
		Iron	340		ug/L	P300731	
		Magnesium	13.4		mg/L	P300731	
		Potassium	3.3		mg/L	P300731	
		Sodium	50.1		mg/L	P300731	
		Zinc	5.0	U	ug/L	P300731	
	EPA 200.8 Rev. 5.4	Arsenic	0.72		ug/L	P300731	
		Cadmium	0.020	U	ug/L	P300731	
		Chromium	0.13	I	ug/L	P300731	
		Copper	0.50	U	ug/L	P300731	
		Lead	0.061	I	ug/L	P300731	
		Nickel	0.79		ug/L	P300731	
		Silver	0.0050	U	ug/L	P300731	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Sample Location: NEAR RIVER

Collection Date/Time: 03/15/2016 14:25

Field ID: G4SEB064_03152016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1780455	EPA 180.1 Rev. 2.0	Turbidity	5.9		NTU	P300517	
	EPA 300.0 Rev. 2.1	Chloride	85		mg Cl/L	P300752	
		Sulfate	17		mg SO4/L	P300754	
	SM 2120 B	Color (true)	34		PCU	P300497	
	SM 2320 B-97	Total Alkalinity	219		mg CaCO3/L	P300688	
	SM 2540 C-97	TDS	352		mg/L	P301167	
1780461	SM 2540 D-97	TSS	20		mg/L	P300951	
	SM 4500 F-C-97	Fluoride	0.19		mg F/L	P300691	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P301190	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.98		mg N/L	P301045	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P300739	
	EPA 365.1 Rev. 2.0	Total-P	0.078		mg P/L	P300834	
	SM 5310 B-00	Organic Carbon	9.1		mg C/L	P300878	
1780467	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P300490	
1780526	EPA 200.7 Rev. 4.4	Calcium	89.2		mg/L	P300731	
		Iron	260		ug/L	P300731	
		Magnesium	7.25		mg/L	P300731	
		Potassium	4.0		mg/L	P300731	
		Sodium	51.3		mg/L	P300731	
		Zinc	16	I	ug/L	P300731	

Field ID: G4SEB064_03152016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1780526	EPA 200.8 Rev. 5.4	Arsenic	2.31		ug/L	P300731	
		Cadmium	0.050	I	ug/L	P300731	
		Chromium	0.83		ug/L	P300731	
		Copper	4.59		ug/L	P301173	
		Lead	2.25		ug/L	P300731	
		Nickel	0.71		ug/L	P300731	
		Silver	0.047		ug/L	P300731	

Ref. Method and Comment:
 SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 700 umhos/cm.
 SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P300517

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P300731

Component	Result	Code	Units
Calcium	0.15	I	mg/L
Iron	30	U	ug/L
Magnesium	0.045	I	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P300795

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: P300731

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.050	U	ug/L
Copper	0.88	I	ug/L
Lead	0.050	U	ug/L
Nickel	0.050	U	ug/L
Silver	0.0050	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P300795

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.050	U	ug/L
Copper	0.10	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.050	U	ug/L
Silver	0.0050	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P301173

Component	Result	Code	Units
Copper	0.15	I	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300654

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300656

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300752

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300754

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P301040

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301189

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301190

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301044

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301045

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301273

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300738

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300739

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300833

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300834

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300490

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2120 B
Batch ID: P300497

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P300500

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P300688

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

Reference Method: SM 2540 C-97
Batch ID: P301165

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P301167

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P300949

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P300951

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P300691

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P300878

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: P300731

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	105		P	85 - 115
Iron	102		P	85 - 115
Magnesium	106		P	85 - 115
Potassium	103		P	85 - 115
Sodium	105		P	85 - 115
Zinc	97.0		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P300795

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	105		P	85 - 115
Iron	106		P	85 - 115
Magnesium	106		P	85 - 115
Potassium	104		P	85 - 115
Sodium	104		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P300731

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	98.2		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	95.3		P	85 - 115
Copper	96.5		P	85 - 115
Lead	89.6		P	85 - 115
Nickel	96.7		P	85 - 115
Silver	94.6		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P300795

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	97.7		P	85 - 115
Cadmium	95.2		P	85 - 115
Chromium	95.3		P	85 - 115
Copper	92.5		P	85 - 115
Lead	92.8		P	85 - 115
Nickel	95.3		P	85 - 115
Silver	96.3		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P301173

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Copper	86.1		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P300654

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300654

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300656

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300752

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300754

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P301040

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301189

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301190

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301044

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	104		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301045

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301273

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300738

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300739

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300833

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300834

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300490

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

Reference Method: SM 2320 B-97
Batch ID: P300688

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P300691

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.8		P	94 - 108

Reference Method: SM 5310 B-00
Batch ID: P300878

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P300731

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780071	Calcium	106		P	80 - 120
1780071	Iron	104	99.4	P/P	80 - 120
1780071	Magnesium	105	97.0	P/P	80 - 120
1780071	Potassium	105	98.7	P/P	80 - 120
1780071	Sodium	107	98.7	P/P	80 - 120
1780071	Zinc	101	93.2	P/P	80 - 120
1780521	Calcium	109		P	80 - 120
1780521	Iron	104		P	80 - 120
1780521	Magnesium	105		P	80 - 120
1780521	Potassium	101		P	80 - 120
1780521	Sodium	106		P	80 - 120
1780521	Zinc	98.1		P	80 - 120

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P300795

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1779801	Calcium	102		P	70 - 130
1779801	Iron	106	106	P/P	70 - 130
1779801	Magnesium	106		P	70 - 130
1779801	Potassium	105		P	70 - 130
1779801	Sodium	105		P	70 - 130
1779801	Zinc	102	101	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P300731

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780071	Arsenic	98.5	96.7	P/P	80 - 120
1780071	Cadmium	98.3	97.4	P/P	80 - 120
1780071	Chromium	93.5	93.0	P/P	80 - 120
1780071	Copper	94.6	90.0	P/P	80 - 120
1780071	Lead	90.8	89.6	P/P	80 - 120
1780071	Nickel	95.0	93.4	P/P	80 - 120
1780071	Silver	96.0	93.4	P/P	80 - 120
1780521	Arsenic	98.9		P	80 - 120
1780521	Cadmium	101		P	80 - 120
1780521	Chromium	95.8		P	80 - 120
1780521	Copper	91.9		P	80 - 120
1780521	Lead	98.1		P	80 - 120
1780521	Nickel	92.2		P	80 - 120
1780521	Silver	94.4		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P300795

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1779801	Arsenic	101	99.8	P/P	70 - 130
1779801	Cadmium	99.3	97.6	P/P	70 - 130
1779801	Chromium	92.9	92.9	P/P	70 - 130
1779801	Copper	92.8	91.6	P/P	70 - 130
1779801	Lead	95.8	95.1	P/P	70 - 130

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P300795

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1779801	Nickel	93.7	93.8	P/P	70 - 130
1779801	Silver	96.3	94.8	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P301173

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1781712	Copper	86.6		P	80 - 120
1782128	Copper	85.7	85.2	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300654

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780179	Chloride	102		P	90 - 110
1780180	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300656

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780179	Sulfate	99.6		P	90 - 110
1780180	Sulfate	99.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300752

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780610	Chloride	99.6	100	P/P	90 - 110
1780611	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300754

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780610	Sulfate	100	101	P/P	90 - 110
1780611	Sulfate	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P301040

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1782554	Sulfate	97.9		P	90 - 110
1782734	Sulfate	99.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301189

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780456	Ammonia-N	98.6	98.6	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P301190

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780461	Ammonia-N	100	98.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P301045

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780460	Kjeldahl Nitrogen	99.8	95.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P301273

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1782237	Kjeldahl Nitrogen	97.3	92.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P300738

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780456	NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P300739

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780484	NO2NO3-N	102	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P300834

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780458	Total-P	97.0	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P300490

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780467	O-Phosphate-P	97.4	98.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
 Batch ID: P300691

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780201	Fluoride	99.6	101	P/P	94 - 107

Reference Method: SM 5310 B-00
 Batch ID: P300878

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780398	Organic Carbon	97.4		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P300517

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780451	Turbidity	1.39	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P300731

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780071	Calcium	3.80	Spike	P	0 - 20
1780071	Iron	4.86	Spike	P	0 - 20
1780071	Magnesium	4.58	Spike	P	0 - 20
1780071	Potassium	5.39	Spike	P	0 - 20
1780071	Sodium	5.56	Spike	P	0 - 20
1780071	Zinc	7.65	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P300795

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1779801	Calcium	1.63	Spike	P	0 - 20
1779801	Iron	0.537	Spike	P	0 - 20
1779801	Magnesium	1.24	Spike	P	0 - 20
1779801	Potassium	0.107	Spike	P	0 - 20
1779801	Sodium	0.0265	Spike	P	0 - 20
1779801	Zinc	1.08	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P300731

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780071	Arsenic	1.84	Spike	P	0 - 20
1780071	Cadmium	0.978	Spike	P	0 - 20
1780071	Chromium	0.448	Spike	P	0 - 20
1780071	Copper	4.98	Spike	P	0 - 20
1780071	Lead	1.28	Spike	P	0 - 20
1780071	Nickel	1.62	Spike	P	0 - 20
1780071	Silver	2.78	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P300795

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1779801	Arsenic	0.889	Spike	P	0 - 20
1779801	Cadmium	1.65	Spike	P	0 - 20
1779801	Chromium	0.00281	Spike	P	0 - 20
1779801	Copper	1.21	Spike	P	0 - 20
1779801	Lead	0.677	Spike	P	0 - 20
1779801	Nickel	0.101	Spike	P	0 - 20
1779801	Silver	1.57	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P301173

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1782128	Copper	0.639	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300654

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780179	Chloride	0.0791	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300656

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780179	Sulfate	0.628	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300752

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780610	Chloride	0.289	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300754

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780610	Sulfate	0.346	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P301040

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1782554	Sulfate	0.00625	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301189

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780456	Ammonia-N	0.0231	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301190

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780461	Ammonia-N	1.89	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301044

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780457	Kjeldahl Nitrogen	4.66	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301045

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780460	Kjeldahl Nitrogen	2.40	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301273

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1782237	Kjeldahl Nitrogen	3.86	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300738

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780456	NO2NO3-N	0.442	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300739

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780484	NO2NO3-N	1.52	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300833

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780401	Total-P	1.73	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300834

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780458	Total-P	1.44	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300490

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780467	O-Phosphate-P	1.05	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P300497

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780314	Color (true)	0.886	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P300500

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780598	Color (true)	0.0452	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P300688

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780201	Total Alkalinity	0.0829	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P301165

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780181	TDS	3.64	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P301167

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780483	TDS	1.52	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P300691

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780201	Fluoride	0.979	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P300878

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780398	Organic Carbon	1.11	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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A68261

Included Lab Sample IDs: 1780450, 1780451, 1780452, 1780453, 1780454, 1780455, 1780468

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Chloride	101	101	P/P	90 - 110
Sulfate	97.7	99.6	P/P	90 - 110
Sulfate	99.8	98.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A68262

Included Lab Sample IDs: 1780462, 1780463, 1780464, 1780465, 1780466, 1780467, 1780470

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	98.9	P/P	90 - 110
O-Phosphate-P	102	98.8	P/P	90 - 110
O-Phosphate-P	98.8	98.1	P/P	90 - 110
O-Phosphate-P	99.1	102	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A68263

Included Lab Sample IDs: 1780450, 1780451, 1780452, 1780453, 1780454, 1780455, 1780468

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.1	99.5	P/P	85 - 115
Color (true)	98.5	99.4	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A68270

Included Lab Sample IDs: 1780450, 1780451, 1780452, 1780453, 1780454, 1780455, 1780468

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

Reference Method: SM 2320 B-97

Run ID: A68331

Included Lab Sample IDs: 1780450, 1780451, 1780452, 1780453, 1780454, 1780455, 1780468

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	103	P/P	90 - 110
Total Alkalinity	103	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A68331

Included Lab Sample IDs: 1780450, 1780451, 1780452, 1780453, 1780454, 1780455, 1780468

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A68345

Included Lab Sample IDs: 1780456, 1780457, 1780458, 1780459, 1780460, 1780461, 1780469

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A68345

Included Lab Sample IDs: 1780456, 1780457, 1780458, 1780459, 1780460, 1780461, 1780469

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

Reference Method: SM 5310 B-00

Run ID: A68400

Included Lab Sample IDs: 1780456, 1780457, 1780458, 1780459, 1780460, 1780461, 1780469

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	92.2	98.4	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A68401

Included Lab Sample IDs: 1780451

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	95.0	97.8	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A68410

Included Lab Sample IDs: 1780521, 1780522, 1780523, 1780524, 1780525, 1780526

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	103	P/P	90 - 110
Calcium	102	102	P/P	90 - 110
Iron	100	102	P/P	90 - 110
Iron	101	100	P/P	90 - 110
Magnesium	101	101	P/P	90 - 110
Magnesium	101	102	P/P	90 - 110
Potassium	99.5	101	P/P	90 - 110
Potassium	100	99.5	P/P	90 - 110
Sodium	101	101	P/P	90 - 110
Sodium	102	101	P/P	90 - 110
Zinc	98.9	100	P/P	90 - 110
Zinc	100	97.6	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A68420

Included Lab Sample IDs: 1780521, 1780522, 1780523, 1780524, 1780525, 1780526

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	98.8	98.9	P/P	90 - 110
Arsenic	98.9	98.0	P/P	90 - 110
Cadmium	101	100	P/P	90 - 110
Cadmium	100	101	P/P	90 - 110
Chromium	96.2	97.7	P/P	90 - 110
Chromium	97.7	98.1	P/P	90 - 110
Lead	96.8	97.6	P/P	90 - 110
Lead	97.6	95.7	P/P	90 - 110
Nickel	95.9	94.8	P/P	90 - 110
Nickel	97.2	95.9	P/P	90 - 110
Silver	94.4	95.1	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A68420

Included Lab Sample IDs: 1780521, 1780522, 1780523, 1780524, 1780525, 1780526

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	95.1	94.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A68434

Included Lab Sample IDs: 1780461

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A68436

Included Lab Sample IDs: 1780527

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	102	P/P	90 - 110
Iron	101	100	P/P	90 - 110
Magnesium	102	101	P/P	90 - 110
Potassium	101	102	P/P	90 - 110
Sodium	102	102	P/P	90 - 110
Zinc	101	99.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A68454

Included Lab Sample IDs: 1780521, 1780522, 1780523, 1780524, 1780525

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	100	97.5	P/P	90 - 110
Copper	97.5	99.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A68455

Included Lab Sample IDs: 1780456, 1780457, 1780459, 1780460, 1780461, 1780469

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	106	106	P/P	90 - 110
Kjeldahl Nitrogen	106	107	P/P	90 - 110
Kjeldahl Nitrogen	107	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A68485

Included Lab Sample IDs: 1780456, 1780457, 1780458, 1780459, 1780460, 1780469

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.0	97.2	P/P	90 - 110
Total-P	98.2	98.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A68500

Included Lab Sample IDs: 1780456, 1780457, 1780458, 1780459, 1780460, 1780461, 1780469

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A68500

Included Lab Sample IDs: 1780456, 1780457, 1780458, 1780459, 1780460, 1780461, 1780469

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.2	99.8	P/P	90 - 110
Ammonia-N	99.6	99.2	P/P	90 - 110
Ammonia-N	99.8	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A68512

Included Lab Sample IDs: 1780527

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	101	99.6	P/P	90 - 110
Cadmium	98.1	98.0	P/P	90 - 110
Chromium	97.2	97.1	P/P	90 - 110
Copper	97.3	96.2	P/P	90 - 110
Lead	96.2	96.7	P/P	90 - 110
Nickel	97.5	96.1	P/P	90 - 110
Silver	95.4	95.9	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A68529

Included Lab Sample IDs: 1780526

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	91.9	91.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A68631

Included Lab Sample IDs: 1780458

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

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				1.39	
EPA 200.7 Rev. 4.4	Calcium	105	106 109			3.80
	Calcium	105	102			1.63
	Iron	102	104 99.4 104			4.86
	Iron	106	106 106			0.537
	Magnesium	106	105 97.0 105			4.58
	Magnesium	106	106			1.24
	Potassium	103	105 98.7 101			5.39
	Potassium	104	105			0.107
	Sodium	105	107 98.7 106			5.56

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
EPA 200.7 Rev. 4.4	Sodium	104		105			0.0265
	Zinc	97.0		101	93.2	98.1	7.65
	Zinc	101		102	101		1.08
EPA 200.8 Rev. 5.4	Arsenic	98.2		98.5	96.7	98.9	1.84
	Arsenic	97.7		101	99.8		0.889
	Cadmium	100		98.3	97.4	101	0.978
	Cadmium	95.2		99.3	97.6		1.65
	Chromium	95.3		93.5	93.0	95.8	0.448
	Chromium	95.3		92.9	92.9		0.0028
	Copper	96.5		94.6	90.0	91.9	4.98
	Copper	92.5		92.8	91.6		1.21
	Copper	86.1		86.6	85.7	85.2	0.639
	Lead	89.6		90.8	89.6	98.1	1.28
	Lead	92.8		95.8	95.1		0.677
	Nickel	96.7		95.0	93.4	92.2	1.62
	Nickel	95.3		93.7	93.8		0.101
	Silver	94.6		96.0	93.4	94.4	2.78
	Silver	96.3		96.3	94.8		1.57
EPA 300.0 Rev. 2.1	Chloride	104		102	101		
	Chloride	100		99.6	100	100	0.289
	Sulfate	101		99.6	99.1		
	Sulfate	100		100	101	101	0.346
	Sulfate	99.2		97.9	99.5		
EPA 350.1 Rev. 2.0	Ammonia-N	97.5		98.6	98.6		0.0231
	Ammonia-N	97.9		100	98.3		1.89
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104					4.66
	Kjeldahl Nitrogen	103		99.8	95.1		2.40
	Kjeldahl Nitrogen	97.3		97.3	92.4		3.86
EPA 353.2 Rev. 2.0	NO2NO3-N	103		101	102		0.442
	NO2NO3-N	104		102	99.9		1.52
EPA 365.1 Rev. 2.0	Total-P	97.0					1.73
	Total-P	98.8		97.0	98.4		1.44
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101		97.4	98.5		1.05
SM 2120 B	Color (true)						0.886
	Color (true)						0.0452
SM 2320 B-97	Total Alkalinity	103					0.0829
SM 2540 C-97	TDS						3.64
	TDS						1.52
SM 4500 F-C-97	Fluoride	99.8		99.6	101		0.979
SM 5310 B-00	Organic Carbon	101		97.4			1.11

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1780450, 1780451, 1780452, 1780453, 1780454, 1780455, 1780468
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1780521, 1780522, 1780523, 1780524, 1780525, 1780526, 1780527
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1780521, 1780522, 1780523, 1780524, 1780525, 1780526, 1780527
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1780450, 1780451, 1780452, 1780453, 1780454, 1780455, 1780468
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1780450, 1780451, 1780452, 1780453, 1780454, 1780455, 1780468

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1780456, 1780457, 1780458, 1780459, 1780460, 1780461, 1780469
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1780456, 1780457, 1780458, 1780459, 1780460, 1780461, 1780469
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1780456, 1780457, 1780458, 1780459, 1780460, 1780461, 1780469
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1780456, 1780457, 1780458, 1780459, 1780460, 1780461, 1780469
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1780462, 1780463, 1780464, 1780465, 1780466, 1780467, 1780470
SM 2120 B / E31780	True Color measured at 450 nm	1780450, 1780451, 1780452, 1780453, 1780454, 1780455, 1780468
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1780450, 1780451, 1780452, 1780453, 1780454, 1780455, 1780468
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1780450, 1780451, 1780452, 1780453, 1780454, 1780455, 1780468
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1780450, 1780451, 1780452, 1780453, 1780454, 1780455, 1780468
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1780450, 1780451, 1780452, 1780453, 1780454, 1780455, 1780468
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1780456, 1780457, 1780458, 1780459, 1780460, 1780461, 1780469

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	03/16/2016			03/16/2016 16:50	Sima Feizi	1780450, 1780451, 1780452, 1780453, 1780454, 1780455, 1780468
EPA 200.7 Rev. 4.4	03/16/2016	03/21/2016	Elliott D. Healy	03/23/2016	Joshua Ayres	1780521, 1780522, 1780523, 1780524, 1780525, 1780526
	03/16/2016	03/22/2016	Elliott D. Healy	03/24/2016	Joshua Ayres	1780527
EPA 200.8 Rev. 5.4	03/16/2016	03/21/2016	Elliott D. Healy	03/23/2016	Charles J. Peterson	1780521, 1780522, 1780523, 1780524, 1780525, 1780526
	03/16/2016	03/21/2016	Elliott D. Healy	03/25/2016	Robert K Palmer	1780521, 1780522
	03/16/2016	03/21/2016	Elliott D. Healy	03/26/2016	Robert K Palmer	1780523, 1780524, 1780525
	03/16/2016	03/22/2016	Elliott D. Healy	03/29/2016	Charles J. Peterson	1780527
	03/16/2016	03/28/2016	Elliott D. Healy	03/29/2016	Charles J. Peterson	1780526
EPA 300.0 Rev. 2.1	03/16/2016			03/18/2016	Ping Hua	1780450, 1780451, 1780452, 1780453, 1780454, 1780455, 1780468
	03/16/2016			03/25/2016	Julia Storbeck	1780451
EPA 350.1 Rev. 2.0	03/16/2016			03/28/2016	Diana M. Turner	1780456, 1780457, 1780458, 1780459, 1780460, 1780461, 1780469
EPA 351.2 Rev. 2.0	03/16/2016	03/25/2016	Sofia Elnemr	03/27/2016	Rochelle Y Jackson	1780456, 1780457, 1780459, 1780460, 1780461, 1780469
	03/16/2016	03/30/2016	Sofia Elnemr	04/04/2016	Virginia P. Brown	1780458
EPA 353.2 Rev. 2.0	03/16/2016			03/21/2016	Diana M. Turner	1780456, 1780457, 1780458, 1780459, 1780460, 1780461, 1780469
EPA 365.1 Rev. 2.0	03/16/2016	03/23/2016	Christopher Armour	03/24/2016	Lipi Saha	1780461
	03/16/2016	03/23/2016	Christopher Armour	03/25/2016	Lipi Saha	1780456, 1780457, 1780458, 1780459, 1780460, 1780469
EPA 365.1 Rev. 2.0 dissolved	03/16/2016			03/16/2016 13:50	Julia Storbeck	1780467
	03/16/2016			03/16/2016 14:30	Julia Storbeck	1780470
	03/16/2016			03/16/2016 14:31	Julia Storbeck	1780464
	03/16/2016			03/16/2016 14:32	Julia Storbeck	1780465
	03/16/2016			03/16/2016 14:46	Julia Storbeck	1780462
	03/16/2016			03/16/2016 14:47	Julia Storbeck	1780463
	03/16/2016			03/16/2016 14:52	Julia Storbeck	1780466
SM 2120 B	03/16/2016			03/16/2016 15:40	Blanca Fach	1780450, 1780451
	03/16/2016			03/16/2016 15:41	Blanca Fach	1780452
	03/16/2016			03/16/2016 15:42	Blanca Fach	1780453
	03/16/2016			03/16/2016 15:43	Blanca Fach	1780454
	03/16/2016			03/16/2016 15:44	Blanca Fach	1780455
	03/16/2016			03/16/2016 15:58	Blanca Fach	1780468
SM 2320 B-97	03/16/2016			03/18/2016	Dale L. Simmons	1780450, 1780451, 1780452, 1780453, 1780454, 1780455, 1780468
SM 2540 C-97	03/16/2016			03/21/2016	Yijie Li	1780450, 1780451, 1780452, 1780453, 1780454, 1780455, 1780468

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2540 D-97	03/16/2016			03/21/2016	Yijie Li	1780450, 1780451, 1780452, 1780453, 1780454, 1780455, 1780468
SM 4500 F-C-97	03/16/2016			03/18/2016	Dale L. Simmons	1780450, 1780451, 1780452, 1780453, 1780454, 1780455, 1780468
SM 5310 B-00	03/16/2016			03/22/2016	Sofia Elnemr	1780456, 1780457, 1780458, 1780459, 1780460, 1780461, 1780469