

Chemical Analysis Report

SE-DIST-2016-03-22-01

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

Event Description: **SMP_Orange-3/21**

Request ID: **RQ-2016-03-21-54**

Customer: **SE-DIST**

Project ID: **SMP**

Send Reports to:

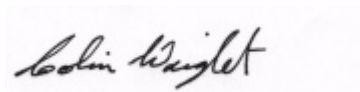
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Jordan Skaggs

For additional information please contact

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Certified by: Colin Wright, Environmental Administrator

Date Certified: 12-APR-2016 14:08

A handwritten signature in black ink, appearing to read "Colin Wright", is written on a light-colored 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: C-102 N @ SW 248th St

Collection Date/Time: 03/21/2016 11:45

Field ID: G4SE0077_03212016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1782086	EPA 180.1 Rev. 2.0	Turbidity	0.40		NTU	P300843	
	EPA 300.0 Rev. 2.1	Chloride	32		mg Cl/L	P300933	
		Sulfate	40		mg SO4/L	P300935	
		Color (true)	2.9	I	PCU	P300820	
	SM 2320 B-97	Total Alkalinity	226		mg CaCO3/L	P301028	
	SM 2540 C-97	TDS	350		mg/L	P301223	
	SM 2540 D-97	TSS	2	I	mg/L	P301151	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P301032	
1782093	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P301268	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.27		mg N/L	P301326	
	EPA 353.2 Rev. 2.0	NO2NO3-N	3.7		mg N/L	P301004	
	EPA 365.1 Rev. 2.0	Total-P	0.006		mg P/L	P301255	
	SM 5310 B-00	Organic Carbon	1.6		mg C/L	P301141	
1782100	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P300813	
1782125	EPA 200.7 Rev. 4.4	Calcium	101		mg/L	P300898	
		Iron	30	U	ug/L	P300898	
		Magnesium	5.52		mg/L	P300898	
		Potassium	11.9		mg/L	P300898	
		Sodium	19.4		mg/L	P300898	
		Zinc	5.6	I	ug/L	P300898	
	EPA 200.8 Rev. 5.4	Arsenic	0.56		ug/L	P301173	
		Cadmium	0.020	U	ug/L	P301173	
		Chromium	0.068	I	ug/L	P301173	
		Copper	1.19		ug/L	P301415	
		Lead	0.050	U	ug/L	P301173	
		Nickel	1.16		ug/L	P301173	
		Silver	0.0050	U	ug/L	P301173	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Chloride: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

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

Sample Location: C-102 @ SW 248th St

Collection Date/Time: 03/21/2016 12:00

Field ID: G4SE0064_03212016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1782087	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P300843	
	EPA 300.0 Rev. 2.1	Chloride	63		mg Cl/L	P300933	
		Sulfate	9.6		mg SO4/L	P300935	
		Color (true)	46		PCU	P300820	
	SM 2320 B-97	Total Alkalinity	192		mg CaCO3/L	P301028	
	SM 2540 C-97	TDS	312		mg/L	P301223	
	SM 2540 D-97	TSS	4	I	mg/L	P301151	
	SM 4500 F-C-97	Fluoride	0.24		mg F/L	P301032	
1782094	EPA 350.1 Rev. 2.0	Ammonia-N	0.14		mg N/L	P301268	

Field ID: G4SE0064_03212016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1782094	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P301326	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.24		mg N/L	P301004	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P301255	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P301141	
1782101	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P300813	
1782126	EPA 200.7 Rev. 4.4	Calcium	65.8		mg/L	P300898	
		Iron	230		ug/L	P300898	
		Magnesium	10.2		mg/L	P300898	
		Potassium	3.5		mg/L	P300898	
		Sodium	40.3		mg/L	P300898	
		Zinc	5.0	U	ug/L	P300898	
	EPA 200.8 Rev. 5.4	Arsenic	0.86		ug/L	P301173	
		Cadmium	0.020	U	ug/L	P301173	
		Chromium	0.097	I	ug/L	P301173	
		Copper	0.10	U	ug/L	P301173	
		Lead	0.11	I	ug/L	P301415	
		Nickel	0.12	I	ug/L	P301173	
		Silver	0.0050	U	ug/L	P301173	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Chloride: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

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

Sample Location: C-102 " Olgfield "

Collection Date/Time: 03/21/2016 12:15

Field ID: G4SE0073_03212016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1782088	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P300843	
	EPA 300.0 Rev. 2.1	Chloride	62		mg Cl/L	P300933	
		Sulfate	9.6		mg SO4/L	P300935	
		Color (true)	45		PCU	P300820	
	SM 2320 B-97	Total Alkalinity	192		mg CaCO3/L	P301028	
	SM 2540 C-97	TDS	322		mg/L	P301223	
	SM 2540 D-97	TSS	3	I	mg/L	P301151	
	SM 4500 F-C-97	Fluoride	0.24		mg F/L	P301032	
1782095	EPA 350.1 Rev. 2.0	Ammonia-N	0.14		mg N/L	P301268	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P301272	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.27		mg N/L	P301004	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P301255	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P301141	
1782102	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P300814	
1782127	EPA 200.7 Rev. 4.4	Calcium	67.3		mg/L	P300898	
		Iron	230		ug/L	P300898	
		Magnesium	10.1		mg/L	P300898	
		Potassium	3.5		mg/L	P300898	
		Sodium	40.6		mg/L	P300898	

Field ID: G4SE0073_03212016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1782127	EPA 200.7 Rev. 4.4	Zinc	5.0	U	ug/L	P300898	
	EPA 200.8 Rev. 5.4	Arsenic	0.84		ug/L	P301173	
		Cadmium	0.020	U	ug/L	P301173	
		Chromium	0.10	I	ug/L	P301173	
		Copper	0.10	U	ug/L	P301173	
		Lead	0.10	I	ug/L	P301415	
		Nickel	0.13	I	ug/L	P301173	
		Silver	0.0050	U	ug/L	P301173	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Chloride: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

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

Sample Location: C-100_Cotter Drain (CD-06)

Collection Date/Time: 03/21/2016 13:05

Field ID: G4SECD06_03212016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1782089	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P300843	
	EPA 300.0 Rev. 2.1	Chloride	50		mg Cl/L	P300933	
		Sulfate	8.1		mg SO4/L	P300935	
	SM 2120 B	Color (true)	24		PCU	P300820	
	SM 2320 B-97	Total Alkalinity	203		mg CaCO3/L	P301028	
	SM 2540 C-97	TDS	294		mg/L	P301223	
	SM 2540 D-97	TSS	3	I	mg/L	P301151	
	SM 4500 F-C-97	Fluoride	0.19		mg F/L	P301032	
1782096	EPA 350.1 Rev. 2.0	Ammonia-N	0.039		mg N/L	P301268	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.97	J	mg N/L	P301272	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P301004	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P301255	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P301141	
1782103	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P300814	
1782128	EPA 200.7 Rev. 4.4	Calcium	75.4		mg/L	P300898	
		Iron	200		ug/L	P300898	
		Magnesium	6.19		mg/L	P300898	
		Potassium	2.7		mg/L	P300898	
		Sodium	31.7		mg/L	P300898	
		Zinc	5.0	U	ug/L	P300898	
	EPA 200.8 Rev. 5.4	Arsenic	1.22		ug/L	P301173	
		Cadmium	0.020	U	ug/L	P301173	
		Chromium	0.072	I	ug/L	P301173	
		Copper	0.63		ug/L	P301415	
		Lead	0.084	I	ug/L	P301415	
		Nickel	0.26		ug/L	P301173	
		Silver	0.0050	U	ug/L	P301173	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Chloride: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

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: Refer to the narrative for an explanation of QC Codes.

Sample Location: C-100_Cotter Drain CD-02

Collection Date/Time: 03/21/2016 13:30

Field ID: G4SECD02_03212016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1782090	EPA 180.1 Rev. 2.0	Turbidity	0.40		NTU	P300843	
	EPA 300.0 Rev. 2.1	Chloride	71		mg Cl/L	P300933	
		Sulfate	25		mg SO4/L	P300935	
	SM 2120 B	Color (true)	7.0		PCU	P300820	
	SM 2320 B-97	Total Alkalinity	190		mg CaCO3/L	P301028	
	SM 2540 C-97	TDS	327		mg/L	P301223	
	SM 2540 D-97	TSS	2	U	mg/L	P301151	
	SM 4500 F-C-97	Fluoride	0.17		mg F/L	P301032	
1782097	EPA 350.1 Rev. 2.0	Ammonia-N	0.046		mg N/L	P301268	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.50		mg N/L	P301272	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P301004	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P301255	
	SM 5310 B-00	Organic Carbon	3.4		mg C/L	P301141	
1782104	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P300814	
1782129	EPA 200.7 Rev. 4.4	Calcium	79.3		mg/L	P300967	
		Iron	30	U	ug/L	P300967	
		Magnesium	5.54		mg/L	P300967	
		Potassium	3.5		mg/L	P300967	
		Sodium	41.7		mg/L	P300967	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P300967	
		Arsenic	1.07		ug/L	P300967	
		Cadmium	0.050	U	ug/L	P300967	
		Chromium	0.30	U	ug/L	P300967	
		Copper	0.96	I	ug/L	P300967	
		Lead	0.20	U	ug/L	P300967	
		Nickel	0.57	I	ug/L	P300967	
		Silver	0.025	U	ug/L	P300967	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Chloride: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

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

Sample Location: SP04-C-2/Snapper Creek

Collection Date/Time: 03/21/2016 14:00

Field ID: G4SE0079_03212016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1782091	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P300843	
	EPA 300.0 Rev. 2.1	Chloride	52		mg Cl/L	P300933	
		Sulfate	1.9		mg SO4/L	P300935	
	SM 2120 B	Color (true)	42	A	PCU	P300800	
	SM 2320 B-97	Total Alkalinity	209		mg CaCO3/L	P301028	
	SM 2540 C-97	TDS	306		mg/L	P301223	
	SM 2540 D-97	TSS	2	I	mg/L	P301151	
	SM 4500 F-C-97	Fluoride	0.19		mg F/L	P301032	
1782098	EPA 350.1 Rev. 2.0	Ammonia-N	0.28		mg N/L	P301268	

Field ID: G4SE0079_03212016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1782098	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P301272	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.084		mg N/L	P301004	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P301255	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P301141	
1782105	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P300814	
1782130	EPA 200.7 Rev. 4.4	Calcium	72.9		mg/L	P300967	
		Iron	310		ug/L	P300967	
		Magnesium	7.82		mg/L	P300967	
		Potassium	2.2		mg/L	P300967	
		Sodium	32.6		mg/L	P300967	
		Zinc	5.0	U	ug/L	P300967	
	EPA 200.8 Rev. 5.4	Arsenic	0.96		ug/L	P300967	
		Cadmium	0.050	U	ug/L	P300967	
		Chromium	0.30	U	ug/L	P300967	
		Copper	0.50	U	ug/L	P300967	
		Lead	0.20	U	ug/L	P300967	
		Nickel	0.26	I	ug/L	P300967	
		Silver	0.025	U	ug/L	P300967	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Chloride: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

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

Sample Location: C-2 Canal @ Red Road Bridge

Collection Date/Time: 03/21/2016 14:15

Field ID: G4SE0048_03212016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1782092	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P300843	
	EPA 300.0 Rev. 2.1	Chloride	52		mg Cl/L	P300933	
		Sulfate	2.1		mg SO4/L	P300935	
		Color (true)	42		PCU	P300800	
	SM 2320 B-97	Total Alkalinity	210		mg CaCO3/L	P301028	
	SM 2540 C-97	TDS	324	A	mg/L	P301224	
	SM 2540 D-97	TSS	5	I	mg/L	P301152	
	SM 4500 F-C-97	Fluoride	0.19		mg F/L	P301032	
1782099	EPA 350.1 Rev. 2.0	Ammonia-N	0.30		mg N/L	P301268	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P301272	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.064		mg N/L	P301004	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P301255	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P301141	
1782106	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P300814	
1782131	EPA 200.7 Rev. 4.4	Calcium	74.7		mg/L	P300967	
		Iron	340		ug/L	P300967	
		Magnesium	8.01		mg/L	P300967	
		Potassium	2.3		mg/L	P300967	
		Sodium	33.1		mg/L	P300967	

Field ID: G4SE0048_03212016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1782131	EPA 200.7 Rev. 4.4	Zinc	5.0	U	ug/L	P300967	
	EPA 200.8 Rev. 5.4	Arsenic	0.94		ug/L	P300967	
		Cadmium	0.050	U	ug/L	P300967	
		Chromium	0.30	U	ug/L	P300967	
		Copper	0.50	U	ug/L	P300967	
		Lead	0.20	U	ug/L	P300967	
		Nickel	0.25	U	ug/L	P300967	
		Silver	0.025	U	ug/L	P300967	

Ref. Method and Comment:
 EPA 300.0 Rev. 2.1: Chloride: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.
 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: P300843

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P300898

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 200.7 Rev. 4.4
 Batch ID: P300967

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: P300967

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.050	U	ug/L
Chromium	0.30	U	ug/L
Copper	0.50	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.25	U	ug/L
Silver	0.025	U	ug/L

Quality Assurance Report Method Blank Results

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

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.050	U	ug/L
Copper	0.15	I	ug/L
Lead	0.78		ug/L
Nickel	0.050	U	ug/L
Silver	0.0050	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P301415

Component	Result	Code	Units
Copper	0.10	U	ug/L
Lead	0.050	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300933

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300935

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301268

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301272

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301326

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P301004

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301255

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300813

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300814

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

Reference Method: SM 2120 B
Batch ID: P300800

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P300820

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P301028

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

Reference Method: SM 2540 C-97
Batch ID: P301223

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P301224

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P301151

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P301152

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P301032

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P301141

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: P300898

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	105		P	85 - 115
Iron	104		P	85 - 115
Magnesium	109		P	85 - 115
Potassium	103		P	85 - 115
Sodium	108		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P300967

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	106		P	85 - 115
Iron	108		P	85 - 115
Magnesium	107		P	85 - 115
Potassium	104		P	85 - 115
Sodium	104		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P300967

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	95.0		P	85 - 115
Cadmium	96.2		P	85 - 115
Chromium	95.9		P	85 - 115
Copper	95.3		P	85 - 115
Lead	92.6		P	85 - 115
Nickel	94.1		P	85 - 115
Silver	98.3		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

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

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	91.3		P	85 - 115
Cadmium	92.9		P	85 - 115
Chromium	94.7		P	85 - 115
Copper	86.1		P	85 - 115
Lead	89.1		P	85 - 115
Nickel	90.0		P	85 - 115
Silver	92.4		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P301415

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Copper	92.6		P	85 - 115
Lead	95.3		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300933

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300935

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301268

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: P301272

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301326

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P301004

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P301255

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P300813

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P300814

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

Reference Method: SM 2320 B-97

Batch ID: P301028

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

Reference Method: SM 4500 F-C-97

Batch ID: P301032

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.0		P	94 - 108

Reference Method: SM 5310 B-00

Batch ID: P301141

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: P300898

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1781183	Calcium	105	105	P/P	80 - 120
1781183	Iron	104	104	P/P	80 - 120
1781183	Magnesium	108	108	P/P	80 - 120
1781183	Potassium	107	107	P/P	80 - 120
1781183	Sodium	98.5	99.8	P/P	80 - 120
1781183	Zinc	101	103	P/P	80 - 120
1782126	Calcium	102		P	80 - 120
1782126	Iron	105		P	80 - 120
1782126	Magnesium	102		P	80 - 120
1782126	Potassium	105		P	80 - 120
1782126	Sodium	103		P	80 - 120
1782126	Zinc	103		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P300967

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1782130	Calcium	108		P	80 - 120
1782130	Iron	105	106	P/P	80 - 120
1782130	Magnesium	108		P	80 - 120
1782130	Potassium	100	102	P/P	80 - 120
1782130	Sodium	106		P	80 - 120
1782130	Zinc	101	101	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P300967

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1782130	Arsenic	98.9	99.2	P/P	80 - 120
1782130	Cadmium	97.6	96.8	P/P	80 - 120
1782130	Chromium	95.0	94.1	P/P	80 - 120
1782130	Copper	92.4	95.0	P/P	80 - 120
1782130	Lead	94.8	95.0	P/P	80 - 120
1782130	Nickel	94.1	91.5	P/P	80 - 120
1782130	Silver	98.5	96.5	P/P	80 - 120

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

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1781712	Arsenic	90.1		P	80 - 120
1781712	Cadmium	91.9		P	80 - 120
1781712	Chromium	93.6		P	80 - 120
1781712	Copper	86.6		P	80 - 120
1781712	Lead	87.7		P	80 - 120
1781712	Nickel	89.5		P	80 - 120
1781712	Silver	90.0		P	80 - 120
1782128	Arsenic	94.1	93.0	P/P	80 - 120
1782128	Cadmium	95.1	93.1	P/P	80 - 120
1782128	Chromium	93.8	93.1	P/P	80 - 120
1782128	Copper	85.7	85.2	P/P	80 - 120
1782128	Lead	91.1	89.5	P/P	80 - 120
1782128	Nickel	88.6	87.5	P/P	80 - 120
1782128	Silver	92.0	90.2	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P301415

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780390	Copper	88.5	89.9	P/P	80 - 120
1780390	Lead	93.7	94.4	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300933

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1782004	Chloride	102		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300935

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1782004	Sulfate	97.7		P	90 - 110
1782114	Sulfate	97.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301268

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1782076	Ammonia-N	100	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301272

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1782096	Kjeldahl Nitrogen	81.2	76.8	F/F	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301326

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1782060	Kjeldahl Nitrogen	95.0	90.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P301004

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1782094	NO2NO3-N	102		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301255

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1782064	Total-P	96.2	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300813

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1782009	O-Phosphate-P	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300814

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1782102	O-Phosphate-P	96.4	99.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P301032

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1782005	Fluoride	95.8	97.5	P/P	94 - 107

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P301141

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1782040	Organic Carbon	98.7		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P300843

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1782075	Turbidity	0.509	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P300898

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1781183	Calcium	0.190	Spike	P	0 - 20
1781183	Iron	0.332	Spike	P	0 - 20
1781183	Magnesium	0.210	Spike	P	0 - 20
1781183	Potassium	0.0787	Spike	P	0 - 20
1781183	Sodium	0.805	Spike	P	0 - 20
1781183	Zinc	2.18	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P300967

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1782130	Calcium	0.467	Spike	P	0 - 20
1782130	Iron	1.02	Spike	P	0 - 20
1782130	Magnesium	0.532	Spike	P	0 - 20
1782130	Potassium	1.06	Spike	P	0 - 20
1782130	Sodium	0.415	Spike	P	0 - 20
1782130	Zinc	0.0332	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P300967

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1782130	Arsenic	0.256	Spike	P	0 - 20
1782130	Cadmium	0.829	Spike	P	0 - 20
1782130	Chromium	0.903	Spike	P	0 - 20
1782130	Copper	2.70	Spike	P	0 - 20
1782130	Lead	0.194	Spike	P	0 - 20
1782130	Nickel	2.73	Spike	P	0 - 20
1782130	Silver	2.03	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	Arsenic	1.14	Spike	P	0 - 20
1782128	Cadmium	2.09	Spike	P	0 - 20
1782128	Chromium	0.729	Spike	P	0 - 20
1782128	Copper	0.639	Spike	P	0 - 20
1782128	Lead	1.75	Spike	P	0 - 20
1782128	Nickel	1.20	Spike	P	0 - 20
1782128	Silver	1.93	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P301415

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780390	Copper	1.60	Spike	P	0 - 20
1780390	Lead	0.749	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1782004	Chloride	0.334	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300935

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1782004	Sulfate	1.75	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301268

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1782076	Ammonia-N	0.882	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301272

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1782096	Kjeldahl Nitrogen	2.73	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301326

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1782060	Kjeldahl Nitrogen	2.58	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P301004

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1782094	NO2NO3-N	0.902	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301255

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1782064	Total-P	2.24	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300813

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1782009	O-Phosphate-P	0.200	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300814

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1782102	O-Phosphate-P	2.96	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P300800

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1782091	Color (true)	2.63	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P300820

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1782058	Color (true)	1.29	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P301028

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1782005	Total Alkalinity	0.385	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P301223

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1782044	TDS	7.44	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P301224

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1782092	TDS	4.01	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P301032

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1782005	Fluoride	1.49	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P301141

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1782040	Organic Carbon	2.28	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B
Run ID: A68373
Included Lab Sample IDs: 1782091, 1782092

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	93.4	96.1	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A68375
Included Lab Sample IDs: 1782100, 1782101, 1782102, 1782103, 1782104, 1782105, 1782106

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.1	98.0	P/P	90 - 110
O-Phosphate-P	97.4	96.7	P/P	90 - 110
O-Phosphate-P	97.7	99.0	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A68378
Included Lab Sample IDs: 1782086, 1782087, 1782088, 1782089, 1782090

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.4	96.1	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A68388
Included Lab Sample IDs: 1782086, 1782087, 1782088, 1782089, 1782090, 1782091, 1782092

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A68388

Included Lab Sample IDs: 1782086, 1782087, 1782088, 1782089, 1782090, 1782091, 1782092

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	99.0	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A68401

Included Lab Sample IDs: 1782086, 1782087, 1782088, 1782089, 1782090, 1782091, 1782092

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.1	100	P/P	90 - 110
Chloride	99.6	99.1	P/P	90 - 110
Sulfate	96.5	98.7	P/P	90 - 110
Sulfate	98.3	96.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A68424

Included Lab Sample IDs: 1782093, 1782094, 1782095, 1782096, 1782097, 1782098, 1782099

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110
NO2NO3-N	102	102	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A68432

Included Lab Sample IDs: 1782086, 1782087, 1782088, 1782089, 1782090, 1782091, 1782092

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110
Total Alkalinity	104	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A68432

Included Lab Sample IDs: 1782086, 1782087, 1782088, 1782089, 1782090, 1782091, 1782092

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A68436

Included Lab Sample IDs: 1782125, 1782126, 1782127, 1782128

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	101	P/P	90 - 110
Calcium	101	102	P/P	90 - 110
Iron	101	100	P/P	90 - 110
Iron	99.1	101	P/P	90 - 110
Magnesium	102	101	P/P	90 - 110
Magnesium	99.8	102	P/P	90 - 110
Potassium	100	101	P/P	90 - 110
Potassium	101	102	P/P	90 - 110
Sodium	102	102	P/P	90 - 110
Sodium	104	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A68436

Included Lab Sample IDs: 1782125, 1782126, 1782127, 1782128

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Zinc	101	99.0	P/P	90 - 110
Zinc	97.5	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A68474

Included Lab Sample IDs: 1782129, 1782130, 1782131

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	99.8	96.8	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A68477

Included Lab Sample IDs: 1782093, 1782094, 1782095, 1782096, 1782097, 1782098, 1782099

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.6	100	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A68498

Included Lab Sample IDs: 1782129, 1782130, 1782131

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	98.7	98.7	P/P	95 - 105
Calcium	98.7	99.8	P/P	90 - 110
Iron	103	104	P/P	90 - 110
Iron	104	103	P/P	95 - 105
Magnesium	102	104	P/P	90 - 110
Magnesium	104	102	P/P	95 - 105
Potassium	98.3	98.2	P/P	90 - 110
Potassium	98.5	98.3	P/P	95 - 105
Sodium	96.6	97.5	P/P	95 - 105
Sodium	97.5	96.9	P/P	90 - 110
Zinc	101	101	P/P	95 - 105
Zinc	101	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A68504

Included Lab Sample IDs: 1782129, 1782130, 1782131

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cadmium	97.4	99.7	P/P	90 - 110
Chromium	94.0	97.6	P/P	90 - 110
Copper	97.2	98.4	P/P	90 - 110
Lead	97.0	99.7	P/P	90 - 110
Nickel	95.3	97.9	P/P	90 - 110
Silver	97.8	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A68526

Included Lab Sample IDs: 1782093, 1782094, 1782095, 1782096, 1782097, 1782098, 1782099

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A68529

Included Lab Sample IDs: 1782125, 1782126, 1782127, 1782128

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	93.6	93.6	P/P	90 - 110
Cadmium	93.4	94.1	P/P	90 - 110
Chromium	96.8	96.3	P/P	90 - 110
Copper	90.3	90.1	P/P	90 - 110
Lead	93.1	92.8	P/P	90 - 110
Nickel	92.2	90.7	P/P	90 - 110
Silver	91.6	91.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A68570

Included Lab Sample IDs: 1782095, 1782096, 1782097, 1782098, 1782099

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	106	102	P/P	90 - 110
Kjeldahl Nitrogen	97.6	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A68579

Included Lab Sample IDs: 1782093, 1782094

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.6	96.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A68591

Included Lab Sample IDs: 1782093, 1782094, 1782095, 1782096, 1782097, 1782098, 1782099

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.8	99.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A68646

Included Lab Sample IDs: 1782125, 1782126, 1782127, 1782128

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	96.3	96.9	P/P	90 - 110
Lead	98.6	97.4	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						0.509	
EPA 200.7 Rev. 4.4	Calcium	105	105	105	102			0.190
	Calcium	106	108					0.467
	Iron	104	104	104	105			0.332
	Iron	108	105	106				1.02
	Magnesium	109	108	108	102			0.210
	Magnesium	107	108					0.532
	Potassium	103	107	107	105			0.0787
	Potassium	104	100	102				1.06
	Sodium	108	98.5	99.8	103			0.805
	Sodium	104	106					0.415
	Zinc	102	101	103	103			2.18
	Zinc	102	101	101				0.0332
EPA 200.8 Rev. 5.4	Arsenic	95.0	98.9	99.2				0.256
	Arsenic	91.3	90.1	94.1	93.0			1.14
	Cadmium	96.2	97.6	96.8				0.829
	Cadmium	92.9	91.9	95.1	93.1			2.09
	Chromium	95.9	95.0	94.1				0.903
	Chromium	94.7	93.6	93.8	93.1			0.729
	Copper	95.3	92.4	95.0				2.70
	Copper	86.1	86.6	85.7	85.2			0.639
	Copper	92.6	88.5	89.9				1.60
	Lead	92.6	94.8	95.0				0.194
	Lead	89.1	87.7	91.1	89.5			1.75
	Lead	95.3	93.7	94.4				0.749
	Nickel	94.1	94.1	91.5				2.73
	Nickel	90.0	89.5	88.6	87.5			1.20
	Silver	98.3	98.5	96.5				2.03
	Silver	92.4	90.0	92.0	90.2			1.93
EPA 300.0 Rev. 2.1	Chloride	101	102				0.334	
	Sulfate	98.9	97.7	97.6			1.75	
EPA 350.1 Rev. 2.0	Ammonia-N	101	100	99.0				0.882
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	95.8	81.2	76.8				2.73
	Kjeldahl Nitrogen	98.4	95.0	90.1				2.58
EPA 353.2 Rev. 2.0	NO2NO3-N	104	102					0.902
EPA 365.1 Rev. 2.0	Total-P	102	96.2	98.5				2.24
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.5	100	100				0.200
	O-Phosphate-P	101	96.4	99.3				2.96
SM 2120 B	Color (true)						2.63	
	Color (true)						1.29	
SM 2320 B-97	Total Alkalinity	103					0.385	
SM 2540 C-97	TDS						7.44	
	TDS						4.01	
SM 4500 F-C-97	Fluoride	98.0	95.8	97.5				1.49
SM 5310 B-00	Organic Carbon	101	98.7					2.28

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1782086, 1782087, 1782088, 1782089, 1782090, 1782091, 1782092
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1782125, 1782126, 1782127, 1782128, 1782129, 1782130, 1782131

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1782125, 1782126, 1782127, 1782128, 1782129, 1782130, 1782131
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1782086, 1782087, 1782088, 1782089, 1782090, 1782091, 1782092
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1782086, 1782087, 1782088, 1782089, 1782090, 1782091, 1782092
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1782093, 1782094, 1782095, 1782096, 1782097, 1782098, 1782099
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1782093, 1782094, 1782095, 1782096, 1782097, 1782098, 1782099
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1782093, 1782094, 1782095, 1782096, 1782097, 1782098, 1782099
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1782093, 1782094, 1782095, 1782096, 1782097, 1782098, 1782099
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1782100, 1782101, 1782102, 1782103, 1782104, 1782105, 1782106
SM 2120 B / E31780	True Color measured at 450 nm	1782086, 1782087, 1782088, 1782089, 1782090, 1782091, 1782092
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1782086, 1782087, 1782088, 1782089, 1782090, 1782091, 1782092
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1782086, 1782087, 1782088, 1782089, 1782090, 1782091, 1782092
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1782086, 1782087, 1782088, 1782089, 1782090, 1782091, 1782092
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1782086, 1782087, 1782088, 1782089, 1782090, 1782091, 1782092
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1782093, 1782094, 1782095, 1782096, 1782097, 1782098, 1782099

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	03/22/2016			03/22/2016 15:57	Blanca Fach	1782086, 1782087, 1782088, 1782089, 1782090, 1782091, 1782092
EPA 200.7 Rev. 4.4	03/22/2016	03/23/2016	Elliott D. Healy	03/24/2016	Joshua Ayres	1782125, 1782126, 1782127, 1782128
	03/22/2016	03/24/2016	Elliott D. Healy	03/28/2016	Joshua Ayres	1782129, 1782130, 1782131
EPA 200.8 Rev. 5.4	03/22/2016	03/24/2016	Elliott D. Healy	03/25/2016	Charles J. Peterson	1782129, 1782130, 1782131
	03/22/2016	03/24/2016	Elliott D. Healy	03/28/2016	Charles J. Peterson	1782129, 1782130, 1782131
	03/22/2016	03/28/2016	Elliott D. Healy	03/30/2016	Charles J. Peterson	1782125, 1782126, 1782127, 1782128
	03/22/2016	04/01/2016	Elliott D. Healy	04/04/2016	Charles J. Peterson	1782125, 1782126, 1782127, 1782128
EPA 300.0 Rev. 2.1	03/22/2016			03/23/2016	Julia Storbeck	1782086, 1782087, 1782088, 1782089, 1782090, 1782091, 1782092
EPA 350.1 Rev. 2.0	03/22/2016			03/29/2016	Diana M. Turner	1782093, 1782094, 1782095, 1782096, 1782097, 1782098, 1782099
EPA 351.2 Rev. 2.0	03/22/2016	03/30/2016	Sofia Elnemr	03/31/2016	Christopher Armour	1782095, 1782096, 1782097, 1782098, 1782099
	03/22/2016	03/31/2016	Sofia Elnemr	04/01/2016	Christopher Armour	1782093, 1782094
EPA 353.2 Rev. 2.0	03/22/2016			03/24/2016	Peter D. Kaus	1782093, 1782094, 1782095, 1782096, 1782097, 1782098, 1782099
EPA 365.1 Rev. 2.0	03/22/2016	03/30/2016	Christopher Armour	04/01/2016	Lipi Saha	1782093, 1782094, 1782095, 1782096, 1782097, 1782098, 1782099
EPA 365.1 Rev. 2.0 dissolved	03/22/2016			03/22/2016 14:20	Ping Hua	1782102
	03/22/2016			03/22/2016 14:42	Ping Hua	1782101
	03/22/2016			03/22/2016 14:43	Ping Hua	1782103
	03/22/2016			03/22/2016 14:44	Ping Hua	1782104, 1782105
	03/22/2016			03/22/2016 14:45	Ping Hua	1782106
	03/22/2016			03/22/2016 15:18	Ping Hua	1782100
SM 2120 B	03/22/2016			03/22/2016 14:21	Rochelle Y Jackson	1782091
	03/22/2016			03/22/2016 14:22	Rochelle Y Jackson	1782092
	03/22/2016			03/22/2016 15:33	Rochelle Y Jackson	1782086
	03/22/2016			03/22/2016 15:34	Rochelle Y Jackson	1782087
	03/22/2016			03/22/2016 15:35	Rochelle Y Jackson	1782088
	03/22/2016			03/22/2016 15:36	Rochelle Y Jackson	1782089, 1782090
SM 2320 B-97	03/22/2016			03/24/2016	Dale L. Simmons	1782086, 1782087, 1782088, 1782089, 1782090, 1782091, 1782092
SM 2540 C-97	03/22/2016			03/24/2016	Yijie Li	1782086, 1782087, 1782088, 1782089, 1782090, 1782091, 1782092
SM 2540 D-97	03/22/2016			03/24/2016	Yijie Li	1782086, 1782087, 1782088, 1782089, 1782090, 1782091, 1782092
SM 4500 F-C-97	03/22/2016			03/24/2016	Dale L. Simmons	1782086, 1782087, 1782088, 1782089, 1782090, 1782091, 1782092
SM 5310 B-00	03/22/2016			03/25/2016	Sofia Elnemr	1782093, 1782094, 1782095, 1782096, 1782097, 1782098, 1782099