Chemical Analysis Report

SE-DIST-2016-03-10-02

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

Event Description: **SMP_2016 Taylor Creek + Popash + 1dup1blank**
Request ID: **RQ-2016-03-07-25**
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

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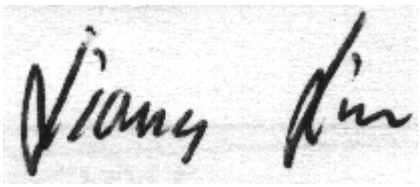
Certified by: Liang Lin, Environmental Administrator

Date Certified: 06-APR-2016 11:49



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: Popash Slough @ SR 70 **Collection Date/Time: 03/09/2016 11:55**

Field ID: GISE0017_03092016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1778951	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P300666	
	EPA 300.0 Rev. 2.1	Chloride	86		mg Cl/L	P300295	
		Sulfate	15		mg SO4/L	P300297	
	SM 2120 B	Color (true)	380		PCU	P300177	
	SM 2320 B-97	Total Alkalinity	45		mg CaCO3/L	P300587	
	SM 2540 C-97	TDS	306	A	mg/L	P300639	
	SM 2540 D-97	TSS	4	I	mg/L	P300408	
	SM 4500 F-C-97	Fluoride	0.098	I	mg F/L	P300590	
1778956	EPA 350.1 Rev. 2.0	Ammonia-N	0.028		mg N/L	P300851	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P300727	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.019		mg N/L	P300385	
	EPA 365.1 Rev. 2.0	Total-P	0.55		mg P/L	P300694	
	SM 5310 B-00	Organic Carbon	33		mg C/L	P300650	
1778961	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.48		mg P/L	P300172	
1778981	EPA 200.7 Rev. 4.4	Calcium	21.1		mg/L	P300378	
		Iron	970		ug/L	P300378	
		Magnesium	8.90		mg/L	P300378	
		Potassium	7.2		mg/L	P300378	
		Sodium	45.7		mg/L	P300378	
		Zinc	5.0	U	ug/L	P300378	
	EPA 200.8 Rev. 5.4	Arsenic	0.76		ug/L	P300378	
		Cadmium	0.020	U	ug/L	P300378	
		Chromium	0.50		ug/L	P300378	
		Copper	0.23	I	ug/L	P300378	
		Lead	0.15	I	ug/L	P300822	
		Nickel	0.21		ug/L	P300378	
		Silver	0.0050	U	ug/L	P300378	

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: Taylor Creek @ SR70 **Collection Date/Time: 03/09/2016 11:15**

Field ID: G1SE0011_03092016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1778952	EPA 180.1 Rev. 2.0	Turbidity	3.4	A	NTU	P300667	
	EPA 300.0 Rev. 2.1	Chloride	67		mg Cl/L	P300295	
		Sulfate	47		mg SO4/L	P300297	
	SM 2120 B	Color (true)	140	A	PCU	P300177	
	SM 2320 B-97	Total Alkalinity	171		mg CaCO3/L	P300587	
	SM 2540 C-97	TDS	424		mg/L	P300639	
	SM 2540 D-97	TSS	4	I	mg/L	P300408	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P300590	
1778957	EPA 350.1 Rev. 2.0	Ammonia-N	0.18		mg N/L	P300851	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.0		mg N/L	P300727	

Field ID: G1SE0011_03092016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1778957	EPA 353.2 Rev. 2.0	NO2NO3-N	0.63		mg N/L	P300386	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P300694	
	SM 5310 B-00	Organic Carbon	29		mg C/L	P300650	
1778962	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.051		mg P/L	P300172	
1778982	EPA 200.7 Rev. 4.4	Calcium	84.1		mg/L	P300378	
		Iron	640		ug/L	P300378	
		Magnesium	7.46		mg/L	P300378	
		Potassium	4.6		mg/L	P300378	
		Sodium	44.1		mg/L	P300378	
		Zinc	5.0	U	ug/L	P300378	
	EPA 200.8 Rev. 5.4	Arsenic	1.13		ug/L	P300378	
		Cadmium	0.020	U	ug/L	P300378	
		Chromium	0.75		ug/L	P300378	
		Copper	0.59		ug/L	P300378	
		Lead	0.19	I	ug/L	P300822	
		Nickel	0.88		ug/L	P300378	
		Silver	0.0050	U	ug/L	P300378	

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: Taylor Creek @ SR70 **Collection Date/Time: 03/09/2016 11:10**

Field ID: Blank_03092016 Matrix: W-EQPMT-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1778966	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P300667	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P300481	
		Sulfate	0.20	U	mg SO4/L	P300484	
	SM 2120 B	Color (true)	2.5	U	PCU	P300177	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P300587	
	SM 2540 C-97	TDS	15	U	mg/L	P300639	
	SM 2540 D-97	TSS	2	U	mg/L	P300408	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P300590	
1778967	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P300851	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P300742	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P300386	
	EPA 365.1 Rev. 2.0	Total-P	0.002	I	mg P/L	P300696	
	SM 5310 B-00	Organic Carbon	0.5	U	mg C/L	P300650	
1778968	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P300173	

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: The result was confirmed on 03/29/2016.

Sample Location: Taylor Creek Mid City **Collection Date/Time: 03/09/2016 15:20**

Field ID: GISE0009_03092016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1778953	EPA 180.1 Rev. 2.0	Turbidity	5.5		NTU	P300667	
	EPA 300.0 Rev. 2.1	Chloride	57		mg Cl/L	P300481	
		Sulfate	42		mg SO4/L	P300484	
	SM 2120 B	Color (true)	120		PCU	P300177	
	SM 2320 B-97	Total Alkalinity	169		mg CaCO3/L	P300587	
	SM 2540 C-97	TDS	394		mg/L	P300639	
	SM 2540 D-97	TSS	9	I	mg/L	P300408	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P300590	
1778958	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P300851	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.2		mg N/L	P300742	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.14		mg N/L	P300386	
	EPA 365.1 Rev. 2.0	Total-P	0.16		mg P/L	P300696	
	SM 5310 B-00	Organic Carbon	27		mg C/L	P300650	
1778963	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.071		mg P/L	P300172	
1778983	EPA 200.7 Rev. 4.4	Calcium	81.0		mg/L	P300378	
		Iron	190		ug/L	P300378	
		Magnesium	7.48		mg/L	P300378	
		Potassium	4.1		mg/L	P300378	
		Sodium	37.7		mg/L	P300378	
		Zinc	5.0	U	ug/L	P300378	
	EPA 200.8 Rev. 5.4	Arsenic	1.54		ug/L	P300378	
		Cadmium	0.020	U	ug/L	P300378	
		Chromium	0.66		ug/L	P300378	
		Copper	1.02		ug/L	P300378	
		Lead	0.17	I	ug/L	P300822	
		Nickel	0.84		ug/L	P300378	
		Silver	0.0050	U	ug/L	P300378	

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.

Sample Location: Taylor Creek 0.5 Miles S. City Stp **Collection Date/Time: 03/09/2016 15:50**

Field ID: G1SE0010_03092016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1778954	EPA 180.1 Rev. 2.0	Turbidity	6.2		NTU	P300667	
	EPA 300.0 Rev. 2.1	Chloride	61		mg Cl/L	P300481	
		Sulfate	45		mg SO4/L	P300484	
	SM 2120 B	Color (true)	130		PCU	P300177	
	SM 2320 B-97	Total Alkalinity	168		mg CaCO3/L	P300587	
	SM 2540 C-97	TDS	414		mg/L	P300639	
	SM 2540 D-97	TSS	13		mg/L	P300408	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P300590	
1778959	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P300854	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.3		mg N/L	P300742	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.27		mg N/L	P300386	

Field ID: G1SE0010_03092016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1778959	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P300696	
	SM 5310 B-00	Organic Carbon	27		mg C/L	P300650	
1778964	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.026		mg P/L	P300172	
1778984	EPA 200.7 Rev. 4.4	Calcium	78.5		mg/L	P300378	
		Iron	330		ug/L	P300378	
		Magnesium	6.92		mg/L	P300378	
		Potassium	4.0		mg/L	P300378	
		Sodium	38.2		mg/L	P300378	
		Zinc	5.0	U	ug/L	P300378	
	EPA 200.8 Rev. 5.4	Arsenic	1.34		ug/L	P300378	
		Cadmium	0.020	U	ug/L	P300378	
		Chromium	0.70		ug/L	P300378	
		Copper	1.09		ug/L	P300378	
		Lead	0.21		ug/L	P300822	
		Nickel	0.83		ug/L	P300378	
		Silver	0.0050	U	ug/L	P300378	

Ref. Method and Comment:
EPA 180.1 Rev. 2.0: The result was confirmed on 03/18//2016.
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.

Sample Location: Taylor Creek 0.5 Miles S. City Stp **Collection Date/Time: 03/09/2016 15:55**

Field ID: Dupe_03092016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1778955	EPA 180.1 Rev. 2.0	Turbidity	7.7		NTU	P300667	
	EPA 300.0 Rev. 2.1	Chloride	60		mg Cl/L	P300481	
		Sulfate	44		mg SO4/L	P300484	
	SM 2120 B	Color (true)	130		PCU	P300177	
	SM 2320 B-97	Total Alkalinity	168		mg CaCO3/L	P300587	
	SM 2540 C-97	TDS	414		mg/L	P300639	
	SM 2540 D-97	TSS	14		mg/L	P300408	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P300590	
1778960	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P300854	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.5		mg N/L	P300742	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.28		mg N/L	P300386	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P301325	
	SM 5310 B-00	Organic Carbon	27		mg C/L	P300650	
1778965	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.025		mg P/L	P300173	
1778985	EPA 200.7 Rev. 4.4	Calcium	82.0		mg/L	P300378	
		Iron	360		ug/L	P300378	
		Magnesium	7.28		mg/L	P300378	
		Potassium	4.1		mg/L	P300378	
		Sodium	39.6		mg/L	P300378	
		Zinc	5.0	U	ug/L	P300378	
	EPA 200.8 Rev. 5.4	Arsenic	1.35		ug/L	P300378	

Field ID: Dupe_03092016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1778985	EPA 200.8 Rev. 5.4	Cadmium	0.020	U	ug/L	P300378	
		Chromium	0.73		ug/L	P300378	
		Copper	1.11		ug/L	P300378	
		Lead	0.22		ug/L	P300822	
		Nickel	0.86		ug/L	P300378	
		Silver	0.0050	U	ug/L	P300378	

Ref. Method and Comment:
EPA 180.1 Rev. 2.0: The result was confirmed on 03/18//2016.
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.

Sample Location: Taylor Creek @ SR70 **Collection Date/Time: 03/09/2016 11:10**

Field ID: Blank_03092016 Matrix: W-EQPMT-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1779025	EPA 200.7 Rev. 4.4	Calcium	0.075	U	mg/L	P300499	
		Iron	30	U	ug/L	P300499	
		Magnesium	0.040	U	mg/L	P300499	
		Potassium	0.30	U	mg/L	P300499	
		Sodium	0.50	U	mg/L	P300499	
		Zinc	5.0	U	ug/L	P300499	
	EPA 200.8 Rev. 5.4	Arsenic	0.050	U	ug/L	P300499	
		Cadmium	0.020	U	ug/L	P300499	
		Chromium	0.050	U	ug/L	P300499	
		Copper	0.10	U	ug/L	P300499	
		Lead	0.050	U	ug/L	P300499	
		Nickel	0.050	U	ug/L	P300499	
		Silver	0.0050	U	ug/L	P300499	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P300666

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P300667

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P300378

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P300378

Component	Result	Code	Units
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: P300499

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: P300378

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
Nickel	0.050	U	ug/L
Silver	0.0050	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P300499

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: P300822

Component	Result	Code	Units
Lead	0.050	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300295

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300297

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300481

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300484

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300851

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300854

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P300727

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P300742

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300385

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300386

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: P300694

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300696

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301325

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300172

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300173

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

Reference Method: SM 2120 B
Batch ID: P300177

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P300587

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

Reference Method: SM 2540 C-97
Batch ID: P300639

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P300408

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P300590

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P300650

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: P300378

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	105		P	85 - 115
Iron	102		P	85 - 115
Magnesium	107		P	85 - 115
Potassium	101		P	85 - 115
Sodium	103		P	85 - 115
Zinc	97.2		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P300499

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	106		P	85 - 115
Iron	107		P	85 - 115
Magnesium	103		P	85 - 115
Potassium	103		P	85 - 115
Sodium	103		P	85 - 115
Zinc	99.3		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P300378

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	95.4		P	85 - 115
Cadmium	95.5		P	85 - 115
Chromium	92.5		P	85 - 115
Copper	91.6		P	85 - 115
Nickel	93.1		P	85 - 115
Silver	91.2		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P300499

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	97.5		P	85 - 115
Cadmium	96.0		P	85 - 115
Chromium	95.8		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P300499

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Copper	92.2		P	85 - 115
Lead	88.7		P	85 - 115
Nickel	95.5		P	85 - 115
Silver	92.4		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P300822

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Lead	93.2		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300295

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300297

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300481

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300484

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300851

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300854

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.3		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P300727

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P300742

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300385

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300386

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300694

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300696

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301325

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300172

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300173

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

Reference Method: SM 2320 B-97
Batch ID: P300587

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P300590

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.4		P	94 - 108

Reference Method: SM 5310 B-00
Batch ID: P300650

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P300378

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778828	Calcium	108		P	80 - 120
1778828	Iron	104	103	P/P	80 - 120
1778828	Magnesium	106	105	P/P	80 - 120
1778828	Potassium	101	102	P/P	80 - 120
1778828	Sodium	106		P	80 - 120
1778828	Zinc	99.1	96.6	P/P	80 - 120
1778945	Calcium	110		P	80 - 120
1778945	Iron	106		P	80 - 120
1778945	Magnesium	106		P	80 - 120
1778945	Potassium	100		P	80 - 120
1778945	Sodium	106		P	80 - 120
1778945	Zinc	101		P	80 - 120

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P300499

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1779198	Calcium	103		P	80 - 120
1779198	Iron	106	106	P/P	80 - 120
1779198	Magnesium	102		P	80 - 120
1779198	Potassium	102		P	80 - 120
1779198	Sodium	102		P	80 - 120
1779198	Zinc	99.2	100	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P300378

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778828	Arsenic	97.3	99.6	P/P	80 - 120
1778828	Cadmium	95.7	97.2	P/P	80 - 120
1778828	Chromium	91.5	92.3	P/P	80 - 120
1778828	Copper	89.1	90.3	P/P	80 - 120
1778828	Nickel	91.8	92.2	P/P	80 - 120
1778828	Silver	91.4	92.1	P/P	80 - 120
1778945	Arsenic	101		P	80 - 120
1778945	Cadmium	99.4		P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P300378

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778945	Chromium	94.6		P	80 - 120
1778945	Copper	93.4		P	80 - 120
1778945	Nickel	94.0		P	80 - 120
1778945	Silver	93.8		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P300499

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1779198	Arsenic	100	99.5	P/P	80 - 120
1779198	Cadmium	98.8	97.5	P/P	80 - 120
1779198	Chromium	94.7	94.6	P/P	80 - 120
1779198	Copper	90.1	88.9	P/P	80 - 120
1779198	Lead	90.6	90.8	P/P	80 - 120
1779198	Nickel	92.7	91.5	P/P	80 - 120
1779198	Silver	92.6	92.4	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P300822

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778937	Lead	92.4	93.7	P/P	80 - 120
1781012	Lead	95.7		P	75 - 125

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300295

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778832	Chloride	104		P	90 - 110
1778834	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300297

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778832	Sulfate	101		P	90 - 110
1778834	Sulfate	99.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300481

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1779117	Chloride	100	101	P/P	90 - 110
1779155	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300484

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1779117	Sulfate	99.9	99.8	P/P	90 - 110
1779155	Sulfate	97.4		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300851

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778876	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300854

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1779620	Ammonia-N	103	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P300727

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778860	Kjeldahl Nitrogen	94.3	96.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300385

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778859	NO2NO3-N	99.5	97.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300386

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778958	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300694

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778860	Total-P	98.2	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300696

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778958	Total-P	99.2	99.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301325

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1783054	Total-P	96.4	96.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300172

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778863	O-Phosphate-P	95.8	96.9	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300173

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778965	O-Phosphate-P	95.5	97.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P300590

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1779161	Fluoride	100	101	P/P	94 - 107

Reference Method: SM 5310 B-00
Batch ID: P300650

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778926	Organic Carbon	93.4	93.4	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P300666

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778854	Turbidity	2.31	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P300667

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778952	Turbidity	2.33	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P300378

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778828	Calcium	0.998	Spike	P	0 - 20
1778828	Iron	0.455	Spike	P	0 - 20
1778828	Magnesium	0.478	Spike	P	0 - 20
1778828	Potassium	0.268	Spike	P	0 - 20
1778828	Sodium	0.385	Spike	P	0 - 20
1778828	Zinc	2.58	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P300499

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1779198	Calcium	2.59	Spike	P	0 - 20
1779198	Iron	0.197	Spike	P	0 - 20
1779198	Magnesium	0.735	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P300499

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1779198	Potassium	1.10	Spike	P	0 - 20
1779198	Sodium	2.79	Spike	P	0 - 20
1779198	Zinc	0.813	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P300378

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778828	Arsenic	2.37	Spike	P	0 - 20
1778828	Cadmium	1.49	Spike	P	0 - 20
1778828	Chromium	0.890	Spike	P	0 - 20
1778828	Copper	0.893	Spike	P	0 - 20
1778828	Nickel	0.446	Spike	P	0 - 20
1778828	Silver	0.822	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P300499

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1779198	Arsenic	0.928	Spike	P	0 - 20
1779198	Cadmium	1.37	Spike	P	0 - 20
1779198	Chromium	0.126	Spike	P	0 - 20
1779198	Copper	1.36	Spike	P	0 - 20
1779198	Lead	0.273	Spike	P	0 - 20
1779198	Nickel	1.28	Spike	P	0 - 20
1779198	Silver	0.223	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P300822

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778937	Lead	1.39	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300295

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778832	Chloride	4.36	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300297

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778832	Sulfate	4.50	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300481

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1779117	Chloride	0.396	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300484

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1779117	Sulfate	0.0735	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300851

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778876	Ammonia-N	0.660	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300854

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1779620	Ammonia-N	0.798	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P300727

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778860	Kjeldahl Nitrogen	1.30	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P300742

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778958	Kjeldahl Nitrogen	5.52	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300385

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778859	NO2NO3-N	1.31	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300386

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778958	NO2NO3-N	0.289	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300694

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778860	Total-P	0.401	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300696

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778958	Total-P	0.323	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301325

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1783054	Total-P	0.531	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300172

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778863	O-Phosphate-P	0.914	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300173

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778965	O-Phosphate-P	1.32	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P300177

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778952	Color (true)	0.877	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P300587

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1779161	Total Alkalinity	0.262	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P300639

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778951	TDS	2.29	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P300590

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1779161	Fluoride	0.470	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P300650

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778926	Organic Carbon	0.0556	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A68089
Included Lab Sample IDs: 1778951, 1778952

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	99.7	P/P	90 - 110
Sulfate	99.5	98.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A68147
Included Lab Sample IDs: 1778961, 1778962, 1778963, 1778964, 1778965, 1778968

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.2	97.5	P/P	90 - 110
O-Phosphate-P	98.7	98.5	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A68148
Included Lab Sample IDs: 1778951, 1778952, 1778953, 1778954, 1778955, 1778966

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.5	98.7	P/P	90 - 115
Color (true)	98.7	97.3	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A68152
Included Lab Sample IDs: 1778951, 1778952, 1778953, 1778954, 1778955, 1778966

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.5	P/P	95 - 105
Turbidity	99.5	100	P/P	95 - 105

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A68232
Included Lab Sample IDs: 1778956, 1778957, 1778958, 1778959, 1778960, 1778967

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	104	P/P	90 - 110
NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A68261
Included Lab Sample IDs: 1778953, 1778954, 1778955, 1778966

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.4	101	P/P	90 - 110
Chloride	99.9	99.4	P/P	90 - 110
Sulfate	96.6	99.1	P/P	90 - 110
Sulfate	98.5	96.6	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A68276
Included Lab Sample IDs: 1778981, 1778982, 1778983, 1778984, 1778985

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	97.0	96.9	P/P	90 - 110
Cadmium	98.4	99.3	P/P	90 - 110
Chromium	96.2	97.9	P/P	90 - 110
Copper	93.0	93.6	P/P	90 - 110
Nickel	93.3	93.4	P/P	90 - 110
Silver	92.8	93.2	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A68295
Included Lab Sample IDs: 1778951, 1778952, 1778953, 1778954, 1778955, 1778966

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	103	P/P	90 - 110
Total Alkalinity	102	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A68295
Included Lab Sample IDs: 1778951, 1778952, 1778953, 1778954, 1778955, 1778966

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A68306
Included Lab Sample IDs: 1779025

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	98.9	98.6	P/P	90 - 110
Cadmium	98.8	99.4	P/P	90 - 110
Chromium	97.2	97.7	P/P	90 - 110
Copper	95.0	95.1	P/P	90 - 110
Lead	97.3	96.6	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A68306
Included Lab Sample IDs: 1779025

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Nickel	96.1	95.8	P/P	90 - 110
Silver	92.8	92.9	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A68315
Included Lab Sample IDs: 1778956, 1778957, 1778958, 1778959, 1778960, 1778967

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.8	96.8	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A68346
Included Lab Sample IDs: 1778981, 1778982, 1778983, 1778984, 1778985, 1779025

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	103	P/P	90 - 110
Calcium	102	101	P/P	90 - 110
Iron	100	101	P/P	90 - 110
Iron	101	100	P/P	90 - 110
Magnesium	101	99.6	P/P	90 - 110
Magnesium	99.6	100	P/P	90 - 110
Potassium	101	99.1	P/P	90 - 110
Potassium	99.2	101	P/P	90 - 110
Sodium	99.9	100	P/P	90 - 110
Sodium	100	101	P/P	90 - 110
Zinc	99.2	99.5	P/P	90 - 110
Zinc	99.8	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A68371
Included Lab Sample IDs: 1778956, 1778957, 1778958, 1778959

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A68381
Included Lab Sample IDs: 1778956, 1778957

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.1	98.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A68389
Included Lab Sample IDs: 1778956, 1778957, 1778958, 1778959, 1778960, 1778967

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	101	P/P	90 - 110
Ammonia-N	101	102	P/P	90 - 110
Ammonia-N	99.8	101	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A68399
Included Lab Sample IDs: 1778958, 1778959, 1778960, 1778967

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A68404
Included Lab Sample IDs: 1778967

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A68420
Included Lab Sample IDs: 1778981, 1778982, 1778983, 1778984, 1778985

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	97.4	98.7	P/P	90 - 110
Lead	97.5	97.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A68588
Included Lab Sample IDs: 1778960

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

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

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						2.31	
	Turbidity						2.33	
EPA 200.7 Rev. 4.4	Calcium	105	108	110				0.998
	Calcium	106	103					2.59
	Iron	102	104	103	106			0.455
	Iron	107	106	106				0.197
	Magnesium	107	106	105	106			0.478
	Magnesium	103	102					0.735
	Potassium	101	101	102	100			0.268
	Potassium	103	102					1.10
	Sodium	103	106	106				0.385
	Sodium	103	102					2.79
	Zinc	97.2	99.1	96.6	101			2.58
	Zinc	99.3	99.2	100				0.813
EPA 200.8 Rev. 5.4	Arsenic	95.4	97.3	99.6	101			2.37
	Arsenic	97.5	100	99.5				0.928
	Cadmium	95.5	95.7	97.2	99.4			1.49

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision		
						LCS	SMP	MS
EPA 200.8 Rev. 5.4	Cadmium	96.0	98.8	97.5				1.37
	Chromium	92.5	91.5	92.3	94.6			0.890
	Chromium	95.8	94.7	94.6				0.126
	Copper	91.6	89.1	90.3	93.4			0.893
	Copper	92.2	90.1	88.9				1.36
	Lead	88.7	90.6	90.8				0.273
	Lead	93.2	95.7	92.4	93.7			1.39
	Nickel	93.1	91.8	92.2	94.0			0.446
	Nickel	95.5	92.7	91.5				1.28
	Silver	91.2	91.4	92.1	93.8			0.822
	Silver	92.4	92.6	92.4				0.223
EPA 300.0 Rev. 2.1	Chloride	104	104	103			4.36	
	Chloride	99.9	100	101	100			0.396
	Sulfate	102	101	99.9			4.50	
	Sulfate	99.8	99.9	99.8	97.4			0.0735
EPA 350.1 Rev. 2.0	Ammonia-N	101	101	102				0.660
	Ammonia-N	99.3	103	103				0.798
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.1	94.3	96.1				1.30
	Kjeldahl Nitrogen	99.4						5.52
EPA 353.2 Rev. 2.0	NO2NO3-N	101	99.5	97.5				1.31
	NO2NO3-N	102	102	102				0.289
EPA 365.1 Rev. 2.0	Total-P	100	98.2	97.8				0.401
	Total-P	99.0	99.2	99.6				0.323
	Total-P	96.0	96.4	96.9				0.531
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	95.8	96.9				0.914
	O-Phosphate-P	99.4	95.5	97.1				1.32
SM 2120 B	Color (true)						0.877	
SM 2320 B-97	Total Alkalinity	102					0.262	
SM 2540 C-97	TDS						2.29	
SM 4500 F-C-97	Fluoride	99.4	100	101				0.470
SM 5310 B-00	Organic Carbon	95.0	93.4	93.4				0.0556

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1778951, 1778952, 1778953, 1778954, 1778955, 1778966
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1778981, 1778982, 1778983, 1778984, 1778985, 1779025
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1778981, 1778982, 1778983, 1778984, 1778985, 1779025
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1778951, 1778952, 1778953, 1778954, 1778955, 1778966
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1778951, 1778952, 1778953, 1778954, 1778955, 1778966
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1778956, 1778957, 1778958, 1778959, 1778960, 1778967
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1778956, 1778957, 1778958, 1778959, 1778960, 1778967
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1778956, 1778957, 1778958, 1778959, 1778960, 1778967
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1778956, 1778957, 1778958, 1778959, 1778960, 1778967
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1778961, 1778962, 1778963, 1778964, 1778965, 1778968

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2120 B / E31780	True Color measured at 450 nm	1778951, 1778952, 1778953, 1778954, 1778955, 1778966
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1778951, 1778952, 1778953, 1778954, 1778955, 1778966
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1778951, 1778952, 1778953, 1778954, 1778955, 1778966
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1778951, 1778952, 1778953, 1778954, 1778955, 1778966
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1778951, 1778952, 1778953, 1778954, 1778955, 1778966
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1778956, 1778957, 1778958, 1778959, 1778960, 1778967

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	03/10/2016			03/10/2016 13:49	Sima Feizi	1778951, 1778952, 1778953, 1778954, 1778955, 1778966
EPA 200.7 Rev. 4.4	03/10/2016	03/15/2016	Elliott D. Healy	03/21/2016	Joshua Ayres	1778981, 1778982, 1778983, 1778984, 1778985
	03/10/2016	03/16/2016	Elliott D. Healy	03/21/2016	Joshua Ayres	1779025
EPA 200.8 Rev. 5.4	03/10/2016	03/15/2016	Elliott D. Healy	03/16/2016	Charles J. Peterson	1778981, 1778982, 1778983, 1778984, 1778985
	03/10/2016	03/16/2016	Elliott D. Healy	03/18/2016	Charles J. Peterson	1779025
	03/10/2016	03/22/2016	Elliott D. Healy	03/23/2016	Charles J. Peterson	1778981, 1778982, 1778983, 1778984, 1778985
EPA 300.0 Rev. 2.1	03/10/2016			03/12/2016	Julia Storbeck	1778951, 1778952
	03/10/2016			03/15/2016	Ping Hua	1778953, 1778954, 1778955
	03/10/2016			03/16/2016	Ping Hua	1778966
EPA 350.1 Rev. 2.0	03/10/2016			03/22/2016	Diana M. Turner	1778956, 1778957, 1778958, 1778959, 1778960, 1778967
EPA 351.2 Rev. 2.0	03/10/2016	03/21/2016	Sofia Elnemr	03/22/2016	Christopher Armour	1778956, 1778957
	03/10/2016	03/22/2016	Sofia Elnemr	03/23/2016	Rochelle Y Jackson	1778958, 1778959, 1778960, 1778967
EPA 353.2 Rev. 2.0	03/10/2016			03/15/2016	Peter D. Kaus	1778956, 1778957, 1778958, 1778959, 1778960, 1778967
EPA 365.1 Rev. 2.0	03/10/2016	03/21/2016	Christopher Armour	03/22/2016	Lipi Saha	1778956, 1778957, 1778958, 1778959
	03/10/2016	03/21/2016	Christopher Armour	03/23/2016	Lipi Saha	1778967
	03/10/2016	03/31/2016	Christopher Armour	04/01/2016	Lipi Saha	1778960
EPA 365.1 Rev. 2.0 dissolved	03/10/2016			03/10/2016 14:02	Ping Hua	1778965
	03/10/2016			03/10/2016 14:29	Ping Hua	1778961
	03/10/2016			03/10/2016 14:30	Ping Hua	1778962
	03/10/2016			03/10/2016 14:31	Ping Hua	1778963
	03/10/2016			03/10/2016 14:32	Ping Hua	1778964
	03/10/2016			03/10/2016 14:33	Ping Hua	1778968
SM 2120 B	03/10/2016			03/10/2016 14:39	Rochelle Y Jackson	1778952
	03/10/2016			03/10/2016 14:40	Rochelle Y Jackson	1778953
	03/10/2016			03/10/2016 14:41	Rochelle Y Jackson	1778954
	03/10/2016			03/10/2016 14:42	Rochelle Y Jackson	1778955, 1778966
	03/10/2016			03/10/2016 14:49	Rochelle Y Jackson	1778951
SM 2320 B-97	03/10/2016			03/16/2016	Dale L. Simmons	1778951, 1778952, 1778953, 1778954, 1778955
	03/10/2016			03/17/2016	Dale L. Simmons	1778966
SM 2540 C-97	03/10/2016			03/14/2016	Christopher Armour	1778951, 1778952, 1778953, 1778954, 1778955, 1778966
SM 2540 D-97	03/10/2016			03/14/2016	Christopher Armour	1778951, 1778952, 1778953, 1778954, 1778955, 1778966
SM 4500 F-C-97	03/10/2016			03/16/2016	Dale L. Simmons	1778951, 1778952, 1778953, 1778954, 1778955

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-97	03/10/2016			03/17/2016	Dale L. Simmons	1778966
SM 5310 B-00	03/10/2016			03/17/2016	Sofia Elnemr	1778956, 1778957, 1778958, 1778959, 1778960, 1778967