

Chemical Analysis Report

SE-DIST-2017-03-10-02

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

Event Description: **SMP-G5 Everglades Run (2/5)**

Request ID: **RQ-2017-02-20-12**

Customer: **SE-DIST**

Project ID: **SMP**

Send Reports to:

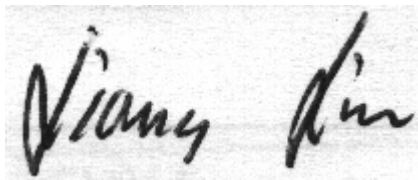
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Matthew Sewell

For additional information please contact

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

Certified by: Liang Lin, Environmental Administrator

Date Certified: 10-APR-2017 09:37

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored background.

NON-CONFORMANCE REPORT INCLUDED

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: WCA 1 SOUTH

Collection Date/Time: 03/08/2017 11:35

Field ID: G5SE0047

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1879362	EPA 180.1 Rev. 2.0	Turbidity	1.1	Q	NTU	P321398	
	EPA 300.0 Rev. 2.1	Chloride	130		mg Cl/L	P321810	
		Sulfate	34		mg SO4/L	P321814	
	SM 2120 B	Color (true)	60	AQ	PCU	P321366	
	SM 2320 B-97	Total Alkalinity	128		mg CaCO3/L	P321702	
	SM 2540 C-97	TDS	397		mg/L	P321889	
	SM 2540 D-97	TSS	2	I	mg/L	P321821	
	SM 4500 F-C-97	Fluoride	0.20		mg F/L	P321707	
1879364	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P321470	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P321585	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P321834	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P321489	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P321416	
1879366	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	UQ	mg P/L	P321403	
1879404	EPA 200.7 Rev. 4.4	Calcium	46.5		mg/L	P321847	
		Iron	30	U	ug/L	P321847	
		Magnesium	12.3		mg/L	P321847	
		Potassium	5.7		mg/L	P321847	
		Sodium	76.1		mg/L	P321847	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P321847	
		Arsenic	0.84		ug/L	P321847	
		Cadmium	0.020	U	ug/L	P321847	
		Chromium	0.40	U	ug/L	P321847	
		Copper	0.21	I	ug/L	P321847	
		Lead	0.050	U	ug/L	P321847	
		Nickel	0.20	U	ug/L	P321847	
		Silver	0.010	U	ug/L	P321847	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The sample expired upon receipt.

SM 2120 B: The sample expired prior upon receipt.

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

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

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample expired upon receipt.

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for potassium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Sample Location: WCA3 L-67

Collection Date/Time: 03/08/2017 12:40

Field ID: G5SE0041

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1879356	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P321398	
	EPA 300.0 Rev. 2.1	Chloride	110		mg Cl/L	P321810	
		Sulfate	26		mg SO4/L	P321814	
	SM 2120 B	Color (true)	65	Q	PCU	P321366	
	SM 2320 B-97	Total Alkalinity	222		mg CaCO3/L	P321702	
	SM 2540 C-97	TDS	447		mg/L	P321888	

Field ID: G5SE0041

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1879356	SM 2540 D-97	TSS	4	I	mg/L	P321820	
	SM 4500 F-C-97	Fluoride	0.40		mg F/L	P321707	
1879358	EPA 350.1 Rev. 2.0	Ammonia-N	0.069		mg N/L	P321470	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P321585	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P321834	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P321489	
	SM 5310 B-00	Organic Carbon	24		mg C/L	P321416	
1879360	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	UQ	mg P/L	P321403	

Ref. Method and Comment:

SM 2120 B: The sample expired prior upon receipt.

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

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

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample expired upon receipt.

Sample Location: WCA 2B @ S-141

Collection Date/Time: 03/08/2017 13:15

Field ID: G5SE0040

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1879357	EPA 180.1 Rev. 2.0	Turbidity	1.2	Q	NTU	P321399	
	EPA 300.0 Rev. 2.1	Chloride	140		mg Cl/L	P322122	
		Sulfate	50		mg SO4/L	P321814	
	SM 2120 B	Color (true)	64		PCU	P321368	
	SM 2320 B-97	Total Alkalinity	199		mg CaCO3/L	P321765	
	SM 2540 C-97	TDS	567		mg/L	P321889	
	SM 2540 D-97	TSS	4		mg/L	P321821	
	SM 4500 F-C-97	Fluoride	0.59	I	mg F/L	P321768	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P321470	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.1		mg N/L	P321585	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P321834	
	EPA 365.1 Rev. 2.0	Total-P	0.010		mg P/L	P321489	
	SM 5310 B-00	Organic Carbon	33		mg C/L	P321416	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.080		mg P/L	P321403	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The sample expired upon receipt.

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

EPA 365.1 Rev. 2.0: Total-P: The result was confirmed on 03/23/2017.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample expired upon receipt. The result was confirmed on 03/22/2017.

Sample Location: WCA1 WEST

Collection Date/Time: 03/08/2017 14:15

Field ID: G5SE0019

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1879363	EPA 180.1 Rev. 2.0	Turbidity	0.95		NTU	P321398	
	EPA 300.0 Rev. 2.1	Chloride	160		mg Cl/L	P321810	
		Sulfate	63		mg SO4/L	P321814	
	SM 2120 B	Color (true)	60		PCU	P321366	
	SM 2320 B-97	Total Alkalinity	166		mg CaCO3/L	P321702	
	SM 2540 C-97	TDS	532		mg/L	P321889	

Field ID: G5SE0019

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1879363	SM 2540 D-97	TSS	4	I	mg/L	P321821	
	SM 4500 F-C-97	Fluoride	0.36		mg F/L	P321707	
1879365	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P321470	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P321585	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.010		mg N/L	P321663	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P321489	
	SM 5310 B-00	Organic Carbon	25		mg C/L	P321416	
1879367	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	IQ	mg P/L	P321403	
1879405	EPA 200.7 Rev. 4.4	Calcium	53.6		mg/L	P321847	
		Iron	30	U	ug/L	P321847	
		Magnesium	21.7		mg/L	P321847	
		Potassium	7.8		mg/L	P321847	
		Sodium	99.7		mg/L	P321847	
		Zinc	5.0	U	ug/L	P321847	
	EPA 200.8 Rev. 5.4	Arsenic	1.32		ug/L	P321847	
		Cadmium	0.020	U	ug/L	P321847	
		Chromium	0.40	U	ug/L	P321847	
		Copper	0.28	I	ug/L	P321847	
		Lead	0.050	U	ug/L	P321847	
		Nickel	0.20	U	ug/L	P321847	
		Silver	0.010	U	ug/L	P321847	

Ref. Method and Comment:

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

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

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample expired upon receipt.

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for potassium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Sample Location: HILLSBORO CANAL

Collection Date/Time: 03/08/2017 14:30

Field ID: 28010643

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1879368	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P321398	
	EPA 300.0 Rev. 2.1	Chloride	140		mg Cl/L	P321810	
		Sulfate	47		mg SO4/L	P321814	
	SM 2120 B	Color (true)	85		PCU	P321366	
	SM 2320 B-97	Total Alkalinity	256		mg CaCO3/L	P321702	
	SM 2540 C-97	TDS	525		mg/L	P321889	
	SM 2540 D-97	TSS	3	I	mg/L	P321821	
	SM 4500 F-C-97	Fluoride	0.54		mg F/L	P321707	
1879369	EPA 350.1 Rev. 2.0	Ammonia-N	0.11		mg N/L	P321470	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P321585	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.26		mg N/L	P321663	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P321489	
	SM 5310 B-00	Organic Carbon	25		mg C/L	P321416	
1879370	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	IQ	mg P/L	P321403	

Field ID: 28010643

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
Ref. Method and Comment:							
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.							
SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.							
EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample expired upon receipt.							

Sample Location: WCA1 N@ G-301

Collection Date/Time: 03/09/2017 13:00

Field ID: G5SE0046

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1879371	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P321399	
	EPA 300.0 Rev. 2.1	Chloride	220		mg Cl/L	P322122	
		Sulfate	65		mg SO4/L	P321814	
	SM 2120 B	Color (true)	75		PCU	P321368	
	SM 2320 B-97	Total Alkalinity	227		mg CaCO3/L	P321925	
	SM 2540 C-97	TDS	700		mg/L	P321889	
	SM 2540 D-97	TSS	3	I	mg/L	P321821	
	SM 4500 F-C-97	Fluoride	0.28		mg F/L	P321768	
1879373	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P321470	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P321585	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.095		mg N/L	P321663	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P321489	
	SM 5310 B-00	Organic Carbon	26		mg C/L	P321416	
1879375	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P321403	
1879406	EPA 200.7 Rev. 4.4	Calcium	79.0		mg/L	P321847	
		Iron	30	U	ug/L	P321847	
		Magnesium	21.0		mg/L	P321847	
		Potassium	9.9		mg/L	P321847	
		Sodium	143		mg/L	P321847	
		Zinc	5.0	U	ug/L	P321847	
	EPA 200.8 Rev. 5.4	Arsenic	1.43		ug/L	P321847	
		Beryllium	0.010	U	ug/L	P321847	
		Cadmium	0.020	U	ug/L	P321847	
		Chromium	0.40	U	ug/L	P321847	
		Copper	0.39	I	ug/L	P321847	
		Lead	0.050	U	ug/L	P321847	
		Nickel	0.20	U	ug/L	P321847	
		Silver	0.010	U	ug/L	P321847	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for potassium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Sample Location: WCA7N @ G-251

Collection Date/Time: 03/09/2017 13:15

Field ID: G5SE0061

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1879372	EPA 180.1 Rev. 2.0	Turbidity	15		NTU	P321398	
	EPA 300.0 Rev. 2.1	Chloride	97		mg Cl/L	P321810	

Field ID: G5SE0061

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1879372	EPA 300.0 Rev. 2.1	Sulfate	44		mg SO4/L	P321814	
	SM 2120 B	Color (true)	67	A	PCU	P321367	
	SM 2320 B-97	Total Alkalinity	194		mg CaCO3/L	P321702	
	SM 2540 C-97	TDS	441		mg/L	P321888	
	SM 2540 D-97	TSS	18		mg/L	P321820	
	SM 4500 F-C-97	Fluoride	0.27		mg F/L	P321707	
1879374	EPA 350.1 Rev. 2.0	Ammonia-N	0.25		mg N/L	P321470	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P321585	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.076		mg N/L	P321663	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P321489	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P321416	
1879376	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P321403	
1879407	EPA 200.7 Rev. 4.4	Calcium	66.3		mg/L	P321847	
		Iron	500		ug/L	P321847	
		Magnesium	15.3		mg/L	P321847	
		Potassium	6.8		mg/L	P321847	
		Sodium	55.7		mg/L	P321847	
		Zinc	5.0	U	ug/L	P321847	
	EPA 200.8 Rev. 5.4	Arsenic	1.57		ug/L	P321847	
		Beryllium	0.027	I	ug/L	P321847	
		Cadmium	0.020	U	ug/L	P321847	
		Chromium	0.95	I	ug/L	P321847	
		Copper	0.83		ug/L	P321847	
		Lead	0.38		ug/L	P321847	
		Nickel	0.82		ug/L	P321847	
		Silver	0.010	U	ug/L	P321847	

Ref. Method and Comment:

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

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

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for potassium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Non-Conformance Report

NCR ID: 6301

Event(s)

SE-DIST-2017-03-10-02

Job(s)

NCR Type: SHIPPING/RECEIVING

Sample(s)

NCR Category: Receiving

Test(s)

Observation: The following site locations were collected on 3/8/17 but were not shipped by the customer until 3/9/17 and were received at the DEP laboratory on 3/10/17.

Locations: WCA 1 SOUTH, WCA3 L-67, WCA 2B @ S-141, WCA1 WEST, HILLSBORO CANAL.

Resolution: Biology and Chemistry supervisors were notified by phone and email.
Customer (Matt Sewell) was notified via email.

Customer requested that the samples be analyzed. Analyses analyzed outside hold time are Q qualified.

Authorised by/Date: Colin Wright 4/7/2017

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry Colin Wright (850) 245-8085
Biology Cheryl Swanson (850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P321398

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P321399

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P321847

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: P321847

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321810

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321814

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322122

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321470

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321585

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321663

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321834

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321489

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P321403

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

Reference Method: SM 2120 B
Batch ID: P321366

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P321367

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report Method Blank Results

Reference Method: SM 2120 B
Batch ID: P321368

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P321702

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

Reference Method: SM 2320 B-97
Batch ID: P321765

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

Reference Method: SM 2320 B-97
Batch ID: P321925

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

Reference Method: SM 2540 C-97
Batch ID: P321888

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P321889

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P321820

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P321821

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P321707

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P321768

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P321416

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: P321847

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	85 - 115
Iron	106		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	102		P	85 - 115
Sodium	103		P	85 - 115
Zinc	100		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P321847

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	101		P	85 - 115
Beryllium	88.3		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	101		P	85 - 115
Copper	99.6		P	85 - 115
Lead	101		P	85 - 115
Nickel	101		P	85 - 115
Silver	104		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321810

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	107		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321814

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322122

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322122

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321470

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321585

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321663

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321834

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: P321489

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P321403

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

Reference Method: SM 2320 B-97
Batch ID: P321702

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P321765

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P321925

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P321707

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.1		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P321768

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	93.5		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P321416

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.1		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P321847

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879078	Calcium	99.7		P	80 - 120
1879078	Iron	104		P	80 - 120
1879078	Magnesium	98.7		P	80 - 120
1879078	Sodium	98.8		P	80 - 120
1879078	Zinc	98.8		P	80 - 120
1879619	Calcium	99.0		P	80 - 120
1879619	Iron	106	105	P/P	80 - 120
1879619	Magnesium	102	104	P/P	80 - 120
1879619	Potassium	100	102	P/P	80 - 120
1879619	Sodium	103	102	P/P	80 - 120
1879619	Zinc	97.9	98.6	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P321847

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879078	Arsenic	103		P	80 - 120
1879078	Beryllium	91.6		P	80 - 120
1879078	Cadmium	99.6		P	80 - 120
1879078	Chromium	100		P	80 - 120
1879078	Copper	100		P	80 - 120
1879078	Lead	101		P	80 - 120
1879078	Nickel	99.3		P	80 - 120
1879078	Silver	102		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P321847

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879619	Arsenic	102	100	P/P	80 - 120
1879619	Beryllium	95.4	92.9	P/P	80 - 120
1879619	Cadmium	100	103	P/P	80 - 120
1879619	Chromium	101	100	P/P	80 - 120
1879619	Copper	99.3	98.3	P/P	80 - 120
1879619	Lead	99.9	99.5	P/P	80 - 120
1879619	Nickel	101	99.6	P/P	80 - 120
1879619	Silver	103	101	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321810

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879237	Chloride	107		P	90 - 110
1879239	Chloride	105		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321814

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879237	Sulfate	100		P	90 - 110
1879239	Sulfate	98.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322122

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1880009	Chloride	99.2		P	90 - 110
1880022	Chloride	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321470

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879326	Ammonia-N	97.5	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321585

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879364	Kjeldahl Nitrogen	99.7	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321663

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879365	NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321834

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321834

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879327	NO2NO3-N	100	99.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321489

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879358	Total-P	104	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P321403

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879329	O-Phosphate-P	93.3	92.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P321768

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879911	Fluoride	98.6	99.2	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P321416

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879264	Organic Carbon	96.0	95.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P321398

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879317	Turbidity	2.44	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P321399

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879333	Turbidity	8.00	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P321847

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879619	Calcium	0.319	Spike	P	0 - 20
1879619	Iron	0.745	Spike	P	0 - 20
1879619	Magnesium	1.11	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P321847

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879619	Potassium	1.75	Spike	P	0 - 20
1879619	Sodium	0.820	Spike	P	0 - 20
1879619	Zinc	0.715	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P321847

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879619	Arsenic	1.19	Spike	P	0 - 20
1879619	Beryllium	2.65	Spike	P	0 - 20
1879619	Cadmium	2.05	Spike	P	0 - 20
1879619	Chromium	1.21	Spike	P	0 - 20
1879619	Copper	1.08	Spike	P	0 - 20
1879619	Lead	0.406	Spike	P	0 - 20
1879619	Nickel	1.02	Spike	P	0 - 20
1879619	Silver	2.40	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321810

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879239	Chloride	1.21	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321814

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879239	Sulfate	1.40	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322122

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1880022	Chloride	0.125	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321470

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879326	Ammonia-N	0.176	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321585

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321585

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879364	Kjeldahl Nitrogen	1.05	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321663

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879365	NO2NO3-N	1.41	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321834

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879327	NO2NO3-N	0.966	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321489

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879358	Total-P	3.70	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P321403

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879329	O-Phosphate-P	0.914	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P321366

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879362	Color (true)	0.221	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P321367

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879372	Color (true)	0.924	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P321368

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879324	Color (true)	5.30	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P321702

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879317	Total Alkalinity	0.0669	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P321765

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879911	Total Alkalinity	0.468	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P321925

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1880062	Total Alkalinity	0.327	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P321888

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879263	TDS	4.08	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P321889

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879363	TDS	6.59	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P321707

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879317	Fluoride	0.470	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P321768

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879911	Fluoride	0.480	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P321416

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879264	Organic Carbon	0.0939	Spike	P	0 - 20

Quality Assurance Report Precision

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B

Run ID: A75024

Included Lab Sample IDs: 1879356, 1879357, 1879362, 1879363, 1879368, 1879371, 1879372

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	94.1	97.2	P/P	85 - 115
Color (true)	97.2	97.6	P/P	85 - 115
Color (true)	97.6	99.0	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A75034

Included Lab Sample IDs: 1879356, 1879357, 1879362, 1879363, 1879368, 1879371, 1879372

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A75035

Included Lab Sample IDs: 1879360, 1879361, 1879366, 1879367, 1879370, 1879375, 1879376

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.7	96.1	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A75042

Included Lab Sample IDs: 1879358, 1879359, 1879364, 1879365, 1879369, 1879373, 1879374

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.8	95.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A75062

Included Lab Sample IDs: 1879358, 1879359, 1879364, 1879365, 1879369, 1879373, 1879374

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	103	P/P	90 - 110
Ammonia-N	103	103	P/P	90 - 110
Ammonia-N	104	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A75140

Included Lab Sample IDs: 1879365, 1879369, 1879373, 1879374

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A75144

Included Lab Sample IDs: 1879374

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	105	109	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A75152

Included Lab Sample IDs: 1879356, 1879362, 1879363, 1879368, 1879372

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	105	P/P	90 - 110
Total Alkalinity	104	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A75152

Included Lab Sample IDs: 1879356, 1879362, 1879363, 1879368, 1879372

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A75169

Included Lab Sample IDs: 1879358, 1879359, 1879364, 1879365, 1879369, 1879373

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

Reference Method: SM 2320 B-97

Run ID: A75182

Included Lab Sample IDs: 1879357

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

Reference Method: SM 4500 F-C-97

Run ID: A75182

Included Lab Sample IDs: 1879357, 1879371

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	103	99.5	P/P	90 - 110
Fluoride	98.5	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A75185

Included Lab Sample IDs: 1879358, 1879359, 1879364, 1879365, 1879369, 1879373, 1879374

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.3	101	P/P	90 - 110
Kjeldahl Nitrogen	98.4	103	P/P	90 - 110
Kjeldahl Nitrogen	99.1	97.3	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A75193

Included Lab Sample IDs: 1879356, 1879362, 1879363, 1879368, 1879372

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	108	109	P/P	90 - 110
Sulfate	106	109	P/P	90 - 110
Sulfate	107	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A75199

Included Lab Sample IDs: 1879358, 1879359, 1879364

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A75210

Included Lab Sample IDs: 1879404, 1879405, 1879406, 1879407

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	100	98.2	P/P	90 - 110
Iron	101	101	P/P	90 - 110
Magnesium	101	100	P/P	90 - 110
Potassium	101	101	P/P	90 - 110
Sodium	99.7	100	P/P	90 - 110
Zinc	101	99.6	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A75247

Included Lab Sample IDs: 1879404, 1879405, 1879406, 1879407

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	99.6	98.1	P/P	90 - 110
Silver	102	101	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A75249

Included Lab Sample IDs: 1879371

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	105	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A75280

Included Lab Sample IDs: 1879404, 1879405, 1879406, 1879407

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	99.7	99.8	P/P	90 - 110
Arsenic	99.8	99.7	P/P	90 - 110
Beryllium	92.7	93.1	P/P	90 - 110
Cadmium	97.4	97.7	P/P	90 - 110
Cadmium	98.9	97.4	P/P	90 - 110
Chromium	98.9	98.9	P/P	90 - 110
Chromium	99.8	98.9	P/P	90 - 110
Copper	100	99.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A75280

Included Lab Sample IDs: 1879404, 1879405, 1879406, 1879407

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	99.9	99.6	P/P	90 - 110
Nickel	100	99.5	P/P	90 - 110
Nickel	100	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A75326

Included Lab Sample IDs: 1879357, 1879371

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A75478

Included Lab Sample IDs: 1879407

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Beryllium	100	97.8	P/P	90 - 110

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

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

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS	MS	MS		
EPA 180.1 Rev. 2.0	Turbidity					2.44	
	Turbidity					8.00	
EPA 200.7 Rev. 4.4	Calcium	101	99.7	99.0			0.319
	Iron	106	104	106	105		0.745
	Magnesium	104	98.7	102	104		1.11
	Potassium	102	100	102			1.75
	Sodium	103	98.8	103	102		0.820
	Zinc	100	98.8	97.9	98.6		0.715
EPA 200.8 Rev. 5.4	Arsenic	101	103	102	100		1.19
	Beryllium	88.3	91.6	95.4	92.9		2.65
	Cadmium	100	99.6	100	103		2.05
	Chromium	101	100	101	100		1.21
	Copper	99.6	100	99.3	98.3		1.08
	Lead	101	101	99.9	99.5		0.406
	Nickel	101	99.3	101	99.6		1.02
	Silver	104	102	103	101		2.40
EPA 300.0 Rev. 2.1	Chloride	107	105	107		1.21	
	Chloride	101	99.2	101		0.125	
	Sulfate	102	98.5	100		1.40	
EPA 350.1 Rev. 2.0	Ammonia-N	97.2	97.5	97.8			0.176
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	99.7	102			1.05
EPA 353.2 Rev. 2.0	NO2NO3-N	102	100	102			1.41
	NO2NO3-N	102	100	99.4			0.966

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 365.1 Rev. 2.0	Total-P	104	104	108		3.70
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	93.3	92.4		0.914
SM 2120 B	Color (true)				0.221	
	Color (true)				0.924	
	Color (true)				5.30	
SM 2320 B-97	Total Alkalinity	104			0.0669	
	Total Alkalinity	104			0.468	
	Total Alkalinity	104			0.327	
SM 2540 C-97	TDS				4.08	
	TDS				6.59	
SM 4500 F-C-97	Fluoride	98.1				0.470
	Fluoride	93.5	98.6	99.2		0.480
SM 5310 B-00	Organic Carbon	97.1	96.0	95.9		0.0939

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1879356, 1879357, 1879362, 1879363, 1879368, 1879371, 1879372
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1879404, 1879405, 1879406, 1879407
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1879404, 1879405, 1879406, 1879407
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1879356, 1879357, 1879362, 1879363, 1879368, 1879371, 1879372
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1879356, 1879357, 1879362, 1879363, 1879368, 1879371, 1879372
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1879358, 1879359, 1879364, 1879365, 1879369, 1879373, 1879374
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1879358, 1879359, 1879364, 1879365, 1879369, 1879373, 1879374
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1879358, 1879359, 1879364, 1879365, 1879369, 1879373, 1879374
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1879358, 1879359, 1879364, 1879365, 1879369, 1879373, 1879374
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1879360, 1879361, 1879366, 1879367, 1879370, 1879375, 1879376
SM 2120 B / E31780	True Color measured at 450 nm	1879356, 1879357, 1879362, 1879363, 1879368, 1879371, 1879372
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1879356, 1879357, 1879362, 1879363, 1879368, 1879371, 1879372
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1879356, 1879357, 1879362, 1879363, 1879368, 1879371, 1879372
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1879356, 1879357, 1879362, 1879363, 1879368, 1879371, 1879372
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1879356, 1879357, 1879362, 1879363, 1879368, 1879371, 1879372
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1879358, 1879359, 1879364, 1879365, 1879369, 1879373, 1879374

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	03/10/2017			03/10/2017 12:39	Sima Feizi	1879356
	03/10/2017			03/10/2017 12:41	Sima Feizi	1879372
	03/10/2017			03/10/2017 12:43	Sima Feizi	1879362
	03/10/2017			03/10/2017 12:45	Sima Feizi	1879363
	03/10/2017			03/10/2017 12:47	Sima Feizi	1879368
	03/10/2017			03/10/2017 13:37	Sima Feizi	1879357, 1879371
EPA 200.7 Rev. 4.4	03/10/2017	03/15/2017	Elliott D. Healy	03/17/2017	Martin Acosta	1879404, 1879405, 1879406, 1879407
EPA 200.8 Rev. 5.4	03/10/2017	03/15/2017	Elliott D. Healy	03/21/2017	Betina Topolski	1879404, 1879405, 1879406, 1879407
	03/10/2017	03/15/2017	Elliott D. Healy	03/22/2017	Betina Topolski	1879404, 1879405, 1879406, 1879407
	03/10/2017	03/15/2017	Elliott D. Healy	03/30/2017	Betina Topolski	1879407
EPA 300.0 Rev. 2.1	03/10/2017			03/18/2017	Elisa J Lutz	1879356, 1879362, 1879363, 1879368, 1879372
	03/10/2017			03/24/2017	Ping Hua	1879357, 1879371
EPA 350.1 Rev. 2.0	03/10/2017			03/13/2017	Julie Michelle Frank	1879358, 1879359, 1879364, 1879365, 1879369, 1879373, 1879374
EPA 351.2 Rev. 2.0	03/10/2017	03/15/2017	Adrian Shelby	03/17/2017	Joseph Suarez	1879358, 1879359, 1879364, 1879365, 1879369, 1879373, 1879374
EPA 353.2 Rev. 2.0	03/10/2017			03/16/2017	Beverly Y. Sanders	1879365, 1879369, 1879373, 1879374
	03/10/2017			03/20/2017	Beverly Y. Sanders	1879358, 1879359, 1879364
EPA 365.1 Rev. 2.0	03/10/2017	03/14/2017	Adrian Shelby	03/16/2017	Lipi Saha	1879374
	03/10/2017	03/14/2017	Adrian Shelby	03/17/2017	Lipi Saha	1879358, 1879359, 1879364, 1879365, 1879369, 1879373
EPA 365.1 Rev. 2.0 dissolved	03/10/2017			03/10/2017 18:08	Virginia P. Brown	1879360
	03/10/2017			03/10/2017 18:09	Virginia P. Brown	1879361
	03/10/2017			03/10/2017 18:10	Virginia P. Brown	1879366, 1879367
	03/10/2017			03/10/2017 18:11	Virginia P. Brown	1879370
	03/10/2017			03/10/2017 18:12	Virginia P. Brown	1879375
	03/10/2017			03/10/2017 18:13	Virginia P. Brown	1879376
SM 2120 B	03/10/2017			03/10/2017 12:55	Julia Storbeck	1879356
	03/10/2017			03/10/2017 12:58	Julia Storbeck	1879362, 1879363
	03/10/2017			03/10/2017 12:59	Julia Storbeck	1879368
	03/10/2017			03/10/2017 13:07	Julia Storbeck	1879372
	03/10/2017			03/10/2017 13:14	Julia Storbeck	1879371
	03/10/2017			03/10/2017 13:15	Julia Storbeck	1879357
SM 2320 B-97	03/10/2017			03/16/2017	Dale L. Simmons	1879356, 1879357, 1879362, 1879363, 1879368, 1879372
	03/10/2017			03/21/2017	Dale L. Simmons	1879371
SM 2540 C-97	03/10/2017			03/10/2017	Yijie Li	1879356, 1879357, 1879362, 1879363, 1879368, 1879371, 1879372
SM 2540 D-97	03/10/2017			03/10/2017	Yijie Li	1879356, 1879357, 1879362, 1879363, 1879368, 1879371, 1879372

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	03/10/2017			03/16/2017	Dale L. Simmons	1879356, 1879357, 1879362, 1879363, 1879368, 1879372
	03/10/2017			03/17/2017	Dale L. Simmons	1879371
SM 5310 B-00	03/10/2017			03/10/2017	Julie Michelle Frank	1879358, 1879359, 1879364, 1879365, 1879369, 1879373, 1879374