

Chemical Analysis Report

SO-DIST-2018-08-21-01

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

Event Description: **Charlotte Gators**
Request ID: **RQ-2018-08-27-07**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Nicole Reistad

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 12-SEP-2018 14:05



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: Alligator @ Burnt Store

Collection Date/Time: 08/20/2018 10:00

Field ID: G2SD0016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018523	EPA 180.1 Rev. 2.0	Turbidity	6.9		NTU	P350633	
	EPA 300.0 Rev. 2.1	Chloride	15	J	mg Cl/L	P350843	
		Sulfate	3.1	J	mg SO4/L	P350846	
	SM 2120 B	Color (true)	160		PCU	P350541	
	SM 2320 B-97	Total Alkalinity	80	AJ	mg CaCO3/L	P350792	
	SM 2540 C-97	TDS	148	J	mg/L	P350818	
	SM 2540 D-97	TSS	9	IJ	mg/L	P350809	
	SM 4500 F-C-97	Fluoride	0.066	IJ	mg F/L	P350795	
2018526	EPA 350.1 Rev. 2.0	Ammonia-N	0.030		mg N/L	P350662	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.94		mg N/L	P350686	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.032		mg N/L	P350667	
	EPA 365.1 Rev. 2.0	Total-P	0.086		mg P/L	P350710	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P350673	
2018529	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.014		mg P/L	P350533	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Chloride: Loss of volume during sample handling. Sample integrity may be compromised.

EPA 300.0 Rev. 2.1: Sulfate: Loss of volume during sample handling. Sample integrity may be compromised.

SM 2320 B-97: Loss of volume during sample handling. Sample integrity may be compromised.

SM 2540 C-97: Loss of volume during sample handling. Sample integrity may be compromised.

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample. Loss of volume during sample handling. Sample integrity may be compromised.

SM 4500 F-C-97: Loss of volume during sample handling. Sample integrity may be compromised.

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Alligator S@JonesLoopRd

Collection Date/Time: 08/20/2018 10:30

Field ID: G2SD0033

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018524	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P350633	
	EPA 300.0 Rev. 2.1	Chloride	7.9		mg Cl/L	P350844	
		Sulfate	0.88		mg SO4/L	P350847	
	SM 2120 B	Color (true)	99		PCU	P350541	
	SM 2320 B-97	Total Alkalinity	24		mg CaCO3/L	P350792	
	SM 2540 C-97	TDS	78		mg/L	P350818	
	SM 2540 D-97	TSS	3	I	mg/L	P350809	
	SM 4500 F-C-97	Fluoride	0.037	I	mg F/L	P350795	
2018527	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P350662	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.89		mg N/L	P350686	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.023		mg N/L	P350667	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P350710	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P350673	
2018530	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P350533	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Alligator N@JonesLoopRd

Collection Date/Time: 08/20/2018 11:00

Field ID: G2SD0032

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018525	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P350633	
	EPA 300.0 Rev. 2.1	Chloride	15	A	mg Cl/L	P350844	
		Sulfate	10	A	mg SO4/L	P350847	
	SM 2120 B	Color (true)	85		PCU	P350541	
	SM 2320 B-97	Total Alkalinity	48		mg CaCO3/L	P350792	
	SM 2540 C-97	TDS	124		mg/L	P350818	
	SM 2540 D-97	TSS	4	I	mg/L	P350809	
	SM 4500 F-C-97	Fluoride	0.058	I	mg F/L	P350795	
2018528	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P350661	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.91		mg N/L	P350686	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.016		mg N/L	P350668	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P350710	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P350673	
2018531	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P350533	

Ref. Method and Comment:

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

Sample Location: ClevelandCemeteryDitch

Collection Date/Time: 08/20/2018 12:40

Field ID: G3SD0076

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018532	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P350633	
	SM 2320 B-97	Total Alkalinity	152		mg CaCO3/L	P350903	
	SM 2540 D-97	TSS	3	U	mg/L	P350813	
	SM 4500 F-C-97	Fluoride	0.56		mg F/L	P351145	
2018533	EPA 350.1 Rev. 2.0	Ammonia-N	0.028		mg N/L	P350660	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.73		mg N/L	P350703	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.23		mg N/L	P350590	
	EPA 365.1 Rev. 2.0	Total-P	0.39		mg P/L	P350614	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P350837	
2018534	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.30		mg P/L	P350535	
2018556	EPA 200.7 Rev. 4.4	Iron	290		ug/L	P350547	
	EPA 200.8 Rev. 5.4	Arsenic	3.24		ug/L	P350547	
		Cadmium	0.060	U	ug/L	P350547	
		Chromium	1.2	U	ug/L	P350547	
		Copper	0.70	I	ug/L	P350547	
		Lead	0.15	U	ug/L	P350547	
		Nickel	0.96	I	ug/L	P350547	
		Silver	0.030	U	ug/L	P350547	
		Zinc	6.0	U	ug/L	P350547	

Ref. Method and Comment:

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

EPA 200.8 Rev. 5.4: The sample required dilution due to matrix interference.

Sample Location: Cleveland Cemetery Ditch

Collection Date/Time: 08/20/2018 12:45

Field ID: BLANK_08202018

Matrix: W-EQPMT-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018535	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P350633	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P350792	
	SM 2540 D-97	TSS	2	U	mg/L	P350810	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P350795	
2018536	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P350661	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P350686	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P350668	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P350714	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P350673	
2018537	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P350533	
2018557	EPA 200.7 Rev. 4.4	Iron	30	U	ug/L	P350621	
		Zinc	5.0	U	ug/L	P350621	
	EPA 200.8 Rev. 5.4	Arsenic	0.050	U	ug/L	P350621	
		Cadmium	0.020	U	ug/L	P350621	
		Chromium	0.40	U	ug/L	P350621	
		Copper	0.20	U	ug/L	P350621	
		Lead	0.050	U	ug/L	P350621	
		Nickel	0.20	U	ug/L	P350621	
		Silver	0.010	U	ug/L	P350621	

Ref. Method and Comment:

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 dissolved: O-Phosphate-P: The result was confirmed on 08/21/2018.

Non-Conformance Report

NCR ID: 7186

Event(s)

SO-DIST-2018-08-21-01

Job(s)

TLH-2018-08-21-44

Sample(s)

2018523

Test(s)

NCR Type: SHIPPING/RECEIVING

NCR Category: Sample Integrity

Observation: Sample was returned with a loose cap, sample volume was lost while re-shelving in the receiving room on 08/22/2018 at 10:00.

Resolution: The appropriate supervisor, Joshua Ayres was notified. Cap re-tightened, sample will be qualified appropriately.

Authorized by/Date: Peter D. Kaus 9/12/2018

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: P350633

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P350547

Component	Result	Code	Units
Iron	30	U	ug/L

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P350621

Component	Result	Code	Units
Iron	30	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350547

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L
Zinc	2.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350621

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350843

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350844

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: P350846

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350847

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350660

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350661

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350662

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350686

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350703

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350590

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350667

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350668

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350614

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350710

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350714

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350533

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350535

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

Reference Method: SM 2120 B
Batch ID: P350541

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P350792

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

Reference Method: SM 2320 B-97
Batch ID: P350903

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P350818

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P350809

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P350810

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P350813

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P350795

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P351145

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P350673

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Reference Method: SM 5310 B-00
Batch ID: P350837

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: P350547

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	105		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P350621

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	104		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350547

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	101		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	104		P	85 - 115
Copper	99.3		P	85 - 115
Lead	97.6		P	85 - 115
Nickel	100		P	85 - 115
Silver	107		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350621

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	102		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	98.0		P	85 - 115
Copper	99.3		P	85 - 115
Lead	99.6		P	85 - 115
Nickel	101		P	85 - 115
Silver	98.3		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350843

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350844

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350846

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350847

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350660

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350661

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: P350662

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350686

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350703

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350590

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350667

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350668

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350614

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.1		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350710

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350714

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.1		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350533

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.3		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350535

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

Reference Method: SM 2120 B
Batch ID: P350541

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P350792

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Reference Method: SM 2320 B-97
Batch ID: P350903

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

Reference Method: SM 4500 F-C-97
Batch ID: P350795

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.6		P	91 - 105

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P351145

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.5		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P350673

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.4		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P350837

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P350547

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018094	Iron	101	105	P/P	70 - 130

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P350621

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018787	Iron	107		P	80 - 120
2018787	Zinc	106		P	80 - 120
2019049	Iron	104	101	P/P	80 - 120
2019049	Zinc	105	101	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350547

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018094	Arsenic	107	108	P/P	70 - 130
2018094	Cadmium	95.9	94.0	P/P	70 - 130
2018094	Chromium	91.7	91.3	P/P	80 - 120
2018094	Copper	93.5	94.0	P/P	70 - 130
2018094	Lead	106	107	P/P	70 - 130
2018094	Nickel	93.1	93.4	P/P	70 - 130
2018094	Silver	96.7	98.3	P/P	80 - 120
2018094	Zinc	94.2	94.8	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350621

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018787	Arsenic	102		P	80 - 120
2018787	Cadmium	105		P	80 - 120
2018787	Chromium	99.4		P	80 - 120
2018787	Copper	99.5		P	80 - 120
2018787	Lead	101		P	80 - 120
2018787	Nickel	101		P	80 - 120
2018787	Silver	100		P	80 - 120
2019049	Arsenic	102	106	P/P	80 - 120
2019049	Cadmium	100	105	P/P	80 - 120
2019049	Chromium	92.5	94.9	P/P	80 - 120
2019049	Copper	94.6	97.7	P/P	80 - 120
2019049	Lead	99.3	103	P/P	80 - 120
2019049	Nickel	97.1	101	P/P	80 - 120
2019049	Silver	96.9	99.2	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350843

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018025	Chloride	94.4		P	90 - 110
2018329	Chloride	99.2		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350844

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018525	Chloride	92.1		P	90 - 110
2018769	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350846

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018025	Sulfate	98.4		P	90 - 110
2018329	Sulfate	99.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350847

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018525	Sulfate	94.3		P	90 - 110
2018769	Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350660

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018470	Ammonia-N	98.7	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350661

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018605	Ammonia-N	98.0	99.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350686

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018546	Kjeldahl Nitrogen	108	108	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350703

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018703	Kjeldahl Nitrogen	95.5	98.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350590

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018608	NO2NO3-N	99.5	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350667

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018510	NO2NO3-N	98.8		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350668

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018546	NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350614

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018470	Total-P	98.4	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350710

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018510	Total-P	97.8	98.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350714

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018602	Total-P	99.2	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350533

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018320	O-Phosphate-P	98.5	97.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350535

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018534	O-Phosphate-P	96.9	98.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P350795

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018523	Fluoride	99.1	98.6	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P351145

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019575	Fluoride	104	104	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P350673

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018333	Organic Carbon	96.0	97.8	P/P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P350837

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018533	Organic Carbon	97.3	97.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P350633

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018508	Turbidity	2.33	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P350547

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018094	Iron	3.49	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P350621

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019049	Iron	2.40	Spike	P	0 - 20
2019049	Zinc	3.76	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350547

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018094	Arsenic	1.50	Spike	P	0 - 20
2018094	Cadmium	2.03	Spike	P	0 - 20
2018094	Chromium	0.420	Spike	P	0 - 20
2018094	Copper	0.503	Spike	P	0 - 20
2018094	Lead	0.986	Spike	P	0 - 20
2018094	Nickel	0.296	Spike	P	0 - 20
2018094	Silver	1.69	Spike	P	0 - 20
2018094	Zinc	0.675	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350621

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019049	Arsenic	3.07	Spike	P	0 - 20
2019049	Cadmium	4.07	Spike	P	0 - 20
2019049	Chromium	2.52	Spike	P	0 - 20
2019049	Copper	3.14	Spike	P	0 - 20
2019049	Lead	3.87	Spike	P	0 - 20
2019049	Nickel	3.50	Spike	P	0 - 20
2019049	Silver	2.35	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350843

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018025	Chloride	2.49	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350844

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018525	Chloride	1.04	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350846

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018025	Sulfate	2.75	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350847

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018525	Sulfate	1.50	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350660

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018470	Ammonia-N	1.96	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350661

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018605	Ammonia-N	1.04	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350662

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018412	Ammonia-N	3.10	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350686

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018546	Kjeldahl Nitrogen	0.356	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350703

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018703	Kjeldahl Nitrogen	2.32	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350590

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018608	NO2NO3-N	1.35	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350667

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018510	NO2NO3-N	0.667	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350668

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018546	NO2NO3-N	2.47	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350614

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018470	Total-P	1.49	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350710

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018510	Total-P	0.348	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350714

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018602	Total-P	1.46	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350533

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018320	O-Phosphate-P	0.488	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350535

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018534	O-Phosphate-P	1.01	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P350541

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018508	Color (true)	0.540	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P350792

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018523	Total Alkalinity	0.207	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P350903

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019401	Total Alkalinity	0.264	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P350818

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018411	TDS	2.82	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P350795

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018523	Fluoride	0.484	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
Batch ID: P351145

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019575	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P350673

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018333	Organic Carbon	1.16	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P350837

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018533	Organic Carbon	0.459	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: EPA 365.1 Rev. 2.0 dissolved

Run ID: A86033

Included Lab Sample IDs: 2018529, 2018530, 2018531, 2018534, 2018537

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.2	P/P	90 - 110
O-Phosphate-P	100	100	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A86034

Included Lab Sample IDs: 2018523, 2018524, 2018525

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	101	P/P	90 - 115
Color (true)	99.9	101	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A86035

Included Lab Sample IDs: 2018523, 2018524, 2018525, 2018532, 2018535

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	103	102	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A86049

Included Lab Sample IDs: 2018523, 2018524, 2018525

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	100	P/P	90 - 110
Chloride	103	102	P/P	90 - 110
Sulfate	102	99.7	P/P	90 - 110
Sulfate	103	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A86060

Included Lab Sample IDs: 2018533

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A86062

Included Lab Sample IDs: 2018556

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	100	99.4	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86076

Included Lab Sample IDs: 2018533

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A86083

Included Lab Sample IDs: 2018526, 2018527, 2018528, 2018533, 2018536

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.2	99.3	P/P	90 - 110
Ammonia-N	99.3	100	P/P	90 - 110
Ammonia-N	99.5	97.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A86085

Included Lab Sample IDs: 2018526, 2018527, 2018528, 2018536

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

Reference Method: SM 5310 B-00

Run ID: A86088

Included Lab Sample IDs: 2018526, 2018527, 2018528, 2018536

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.4	96.3	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A86093

Included Lab Sample IDs: 2018557

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	99.7	103	P/P	90 - 110
Zinc	101	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86117

Included Lab Sample IDs: 2018526

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86122

Included Lab Sample IDs: 2018527, 2018528, 2018536

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	99.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86124

Included Lab Sample IDs: 2018526, 2018527, 2018528, 2018536

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	107	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86126

Included Lab Sample IDs: 2018533

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	99.1	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A86129

Included Lab Sample IDs: 2018523, 2018524, 2018525, 2018535

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110
Total Alkalinity	103	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A86129

Included Lab Sample IDs: 2018523, 2018524, 2018525, 2018535

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	99.0	P/P	90 - 110
Fluoride	99.0	101	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A86150

Included Lab Sample IDs: 2018533

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.8	96.6	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A86159

Included Lab Sample IDs: 2018557

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	98.1	98.2	P/P	90 - 110
Cadmium	95.7	95.4	P/P	90 - 110
Chromium	93.6	95.1	P/P	90 - 110
Copper	96.6	97.5	P/P	90 - 110
Lead	102	101	P/P	90 - 110
Nickel	96.4	96.8	P/P	90 - 110
Silver	95.8	96.4	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A86172

Included Lab Sample IDs: 2018532

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A86210

Included Lab Sample IDs: 2018556

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	96.9	96.3	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A86210

Included Lab Sample IDs: 2018556

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cadmium	93.7	94.0	P/P	90 - 110
Lead	99.9	99.4	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A86221

Included Lab Sample IDs: 2018556

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	99.3	101	P/P	90 - 110
Copper	96.1	99.1	P/P	90 - 110
Nickel	96.8	98.5	P/P	90 - 110
Silver	102	105	P/P	90 - 110
Zinc	96.5	99.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A86303

Included Lab Sample IDs: 2018532

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.1	99.5	P/P	90 - 110

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

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						2.33	
EPA 200.7 Rev. 4.4	Iron	105	101	105				3.49
	Iron	104	107	104	101			2.40
	Zinc	102	106	105	101			3.76
EPA 200.8 Rev. 5.4	Arsenic	101	107	108				1.50
	Arsenic	102	102	102	106			3.07
	Cadmium	100	95.9	94.0				2.03
	Cadmium	100	105	100	105			4.07
	Chromium	104	91.7	91.3				0.420
	Chromium	98.0	99.4	92.5	94.9			2.52
	Copper	99.3	93.5	94.0				0.503
	Copper	99.3	99.5	94.6	97.7			3.14
	Lead	97.6	106	107				0.986
	Lead	99.6	101	99.3	103			3.87
	Nickel	100	93.1	93.4				0.296
	Nickel	101	101	97.1	101			3.50
	Silver	107	96.7	98.3				1.69
	Silver	98.3	100	96.9	99.2			2.35
	Zinc	102	94.2	94.8				0.675
EPA 300.0 Rev. 2.1	Chloride	101	94.4	99.2			2.49	
	Chloride	102	92.1	102			1.04	
	Sulfate	99.4	98.4	99.3			2.75	
	Sulfate	101	94.3	103			1.50	
EPA 350.1 Rev. 2.0	Ammonia-N	98.5	98.7	101				1.96
	Ammonia-N	101	98.0	99.6				1.04
	Ammonia-N	100						3.10
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108	108	108				0.356
	Kjeldahl Nitrogen	108	95.5	98.1				2.32
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	99.5	101				1.35
	NO2NO3-N	100	98.8					0.667
	NO2NO3-N	100	100	102				2.47
EPA 365.1 Rev. 2.0	Total-P	96.1	98.4	99.8				1.49
	Total-P	97.9	97.8	98.2				0.348
	Total-P	98.1	99.2	101				1.46
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.3	98.5	97.7				0.488
	O-Phosphate-P	99.3	96.9	98.5				1.01
SM 2120 B	Color (true)	101					0.540	
SM 2320 B-97	Total Alkalinity	103					0.207	
	Total Alkalinity	102					0.264	
SM 2540 C-97	TDS						2.82	
SM 4500 F-C-97	Fluoride	99.6	99.1	98.6				0.484
	Fluoride	98.5	104	104				0.0
SM 5310 B-00	Organic Carbon	96.4	96.0	97.8				1.16
	Organic Carbon	98.4	97.3	97.9				0.459

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2018523, 2018524, 2018525, 2018532, 2018535
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2018556, 2018557

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2018556, 2018557
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2018523, 2018524, 2018525
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2018523, 2018524, 2018525
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2018526, 2018527, 2018528, 2018533, 2018536
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2018526, 2018527, 2018528, 2018533, 2018536
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2018526, 2018527, 2018528, 2018533, 2018536
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2018526, 2018527, 2018528, 2018533, 2018536
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2018529, 2018530, 2018531, 2018534, 2018537
SM 2120 B / E31780	True Color measured at 450 nm	2018523, 2018524, 2018525
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2018523, 2018524, 2018525, 2018532, 2018535
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2018523, 2018524, 2018525
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2018523, 2018524, 2018525, 2018532, 2018535
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2018523, 2018524, 2018525, 2018532, 2018535
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2018526, 2018527, 2018528, 2018533, 2018536

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	08/21/2018			08/21/2018 16:11	Megan Treadwell	2018523, 2018524, 2018525, 2018532, 2018535
EPA 200.7 Rev. 4.4	08/21/2018	08/21/2018 17:45	Elliott D. Healy	08/22/2018 13:14	Martin Acosta	2018556
	08/21/2018	08/22/2018 18:00	Elliott D. Healy	08/23/2018 15:46	Betina Topolski	2018557
EPA 200.8 Rev. 5.4	08/21/2018	08/21/2018 17:45	Elliott D. Healy	08/30/2018 00:48	Robert K Palmer	2018556
	08/21/2018	08/21/2018 17:45	Elliott D. Healy	08/30/2018 19:01	Robert K Palmer	2018556
	08/21/2018	08/22/2018 18:00	Elliott D. Healy	08/28/2018 19:29	Allison Taylor	2018557
EPA 300.0 Rev. 2.1	08/21/2018			08/23/2018 19:59	Lipi Saha	2018523
	08/21/2018			08/23/2018 21:10	Lipi Saha	2018525
	08/21/2018			08/23/2018 21:58	Lipi Saha	2018524
EPA 350.1 Rev. 2.0	08/21/2018			08/23/2018 11:39	Adrian Shelby	2018533
	08/21/2018			08/23/2018 11:59	Adrian Shelby	2018528
	08/21/2018			08/23/2018 12:01	Adrian Shelby	2018536
	08/21/2018			08/23/2018 12:53	Adrian Shelby	2018526
	08/21/2018			08/23/2018 12:55	Adrian Shelby	2018527
EPA 351.2 Rev. 2.0	08/21/2018	08/24/2018 11:15	Adrian Shelby	08/27/2018 12:13	Joseph Suarez	2018526
	08/21/2018	08/24/2018 11:15	Adrian Shelby	08/27/2018 12:15	Joseph Suarez	2018527
	08/21/2018	08/24/2018 11:15	Adrian Shelby	08/27/2018 12:16	Joseph Suarez	2018528
	08/21/2018	08/24/2018 11:15	Adrian Shelby	08/27/2018 12:18	Joseph Suarez	2018536
	08/21/2018	08/24/2018 11:15	Adrian Shelby	08/27/2018 14:06	Joseph Suarez	2018533
EPA 353.2 Rev. 2.0	08/21/2018			08/22/2018 12:26	Lauren Bottorf	2018533
	08/21/2018			08/23/2018 13:15	Lauren Bottorf	2018526
	08/21/2018			08/23/2018 13:16	Lauren Bottorf	2018527
	08/21/2018			08/23/2018 13:29	Lauren Bottorf	2018536
	08/21/2018			08/23/2018 13:30	Lauren Bottorf	2018528
EPA 365.1 Rev. 2.0	08/21/2018	08/22/2018 13:40	Sima Feizi	08/23/2018 11:32	Beverly Y. Sanders	2018533
	08/21/2018	08/24/2018 12:31	Sima Feizi	08/27/2018 08:35	Beverly Y. Sanders	2018526
	08/21/2018	08/24/2018 12:31	Sima Feizi	08/27/2018 11:51	Beverly Y. Sanders	2018527
	08/21/2018	08/24/2018 12:31	Sima Feizi	08/27/2018 11:52	Beverly Y. Sanders	2018528
	08/21/2018	08/24/2018 12:31	Sima Feizi	08/27/2018 11:54	Beverly Y. Sanders	2018536
EPA 365.1 Rev. 2.0 dissolved	08/21/2018			08/21/2018 15:10	Virginia P. Brown	2018529
	08/21/2018			08/21/2018 15:11	Virginia P. Brown	2018530
	08/21/2018			08/21/2018 15:12	Virginia P. Brown	2018531
	08/21/2018			08/21/2018 15:13	Virginia P. Brown	2018537
	08/21/2018			08/21/2018 15:25	Virginia P. Brown	2018534
SM 2120 B	08/21/2018			08/21/2018 16:29	William L. Brown IV	2018524
	08/21/2018			08/21/2018 16:30	William L. Brown IV	2018525
	08/21/2018			08/21/2018 16:48	William L. Brown IV	2018523
SM 2320 B-97	08/21/2018			08/25/2018 02:27	Dale L. Simmons	2018523
	08/21/2018			08/25/2018 03:37	Dale L. Simmons	2018524

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	08/21/2018			08/25/2018 03:47	Dale L. Simmons	2018525
	08/21/2018			08/25/2018 04:00	Dale L. Simmons	2018535
	08/21/2018			08/29/2018 01:46	Dale L. Simmons	2018532
SM 2540 C-97	08/21/2018			08/22/2018 15:33	Yijie Li	2018523, 2018524, 2018525
SM 2540 D-97	08/21/2018			08/22/2018 15:33	Yijie Li	2018523, 2018524, 2018525, 2018532, 2018535
SM 4500 F-C-97	08/21/2018			08/25/2018 02:19	Dale L. Simmons	2018523
	08/21/2018			08/25/2018 03:37	Dale L. Simmons	2018524
	08/21/2018			08/25/2018 03:47	Dale L. Simmons	2018525
	08/21/2018			08/25/2018 04:00	Dale L. Simmons	2018535
	08/21/2018			09/05/2018 17:53	Dale L. Simmons	2018532
SM 5310 B-00	08/21/2018			08/23/2018 02:41	Megan Treadwell	2018526
	08/21/2018			08/23/2018 02:54	Megan Treadwell	2018527
	08/21/2018			08/23/2018 03:10	Megan Treadwell	2018528
	08/21/2018			08/23/2018 03:25	Megan Treadwell	2018536
	08/21/2018			08/28/2018 06:08	Megan Treadwell	2018533