

Chemical Analysis Report

SE-DIST-2018-10-16-01

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

Event Description: **SMP- E-Canals**
Request ID: **RQ-2018-10-08-62**
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.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 07-NOV-2018 14:13



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: ICW @ Palmetto Park Boca

Collection Date/Time: 10/15/2018 11:40

Field ID: G3SE0020

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2032898	EPA 180.1 Rev. 2.0	Turbidity	1.6	A	NTU	P353457	
	EPA 300.0 Rev. 2.1	Sulfate	2.8E+03		mg SO4/L	P353567	
	SM 2320 B-97	Total Alkalinity	124		mg CaCO3/L	P353815	
	SM 2540 C-97	TDS	3.50E+04		mg/L	P353522	
	SM 2540 D-97	TSS	5	IA	mg/L	P353450	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P353818	
2032899	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P353417	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28	IY	mg N/L	P353485	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.018		mg N/L	P353193	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P353292	
	SM 5310 B-00	Organic Carbon	1.3	IY	mg C/L	P353944	
2032900	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P353161	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Sample was left out at room temperature, should be stored at 6 degC.

SM 5310 B-00: Sample was left out at room temperature, should be stored at 6 degC.

Sample Location: E-3 @ Palmetto Park

Collection Date/Time: 10/15/2018 12:40

Field ID: G3SE0034

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2032892	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P353457	
	EPA 300.0 Rev. 2.1	Chloride	42		mg Cl/L	P353564	
		Sulfate	25		mg SO4/L	P353567	
		Color (true)	40		PCU	P353174	
	SM 2320 B-97	Total Alkalinity	146		mg CaCO3/L	P353812	
	SM 2540 C-97	TDS	267		mg/L	P353521	
	SM 2540 D-97	TSS	3	I	mg/L	P353448	
	SM 4500 F-C-97	Fluoride	0.18		mg F/L	P353816	
2032894	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P353800	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.91		mg N/L	P353487	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P353219	
	EPA 365.1 Rev. 2.0	Total-P	0.044		mg P/L	P353288	
	SM 5310 B-00	Organic Carbon	9.6		mg C/L	P353536	
2032896	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P353160	
2032915	EPA 200.7 Rev. 4.4	Calcium	65.5		mg/L	P353226	
		Iron	30	U	ug/L	P353226	
		Magnesium	4.00		mg/L	P353226	
		Potassium	4.9		mg/L	P353226	
		Sodium	26.7		mg/L	P353226	
		Zinc	5.0	U	ug/L	P353226	
	EPA 200.8 Rev. 5.4	Arsenic	1.66		ug/L	P353226	
		Cadmium	0.020	U	ug/L	P353226	
		Chromium	0.41	I	ug/L	P353226	
		Copper	2.01		ug/L	P353226	
		Lead	0.050	U	ug/L	P353226	
		Nickel	0.26	I	ug/L	P353226	
		Silver	0.010	U	ug/L	P353226	

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: E-3 @ Glades

Collection Date/Time: 10/15/2018 13:05

Field ID: G3SE0010

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2032893	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P353457	
	EPA 300.0 Rev. 2.1	Chloride	45		mg Cl/L	P353564	
		Sulfate	23		mg SO4/L	P353567	
		Color (true)	59	A	PCU	P353174	
	SM 2320 B-97	Total Alkalinity	111		mg CaCO3/L	P353553	
	SM 2540 C-97	TDS	243		mg/L	P353521	
	SM 2540 D-97	TSS	4	I	mg/L	P353448	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P353558	
2032895	EPA 350.1 Rev. 2.0	Ammonia-N	0.047		mg N/L	P353800	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P353487	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.064		mg N/L	P353219	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P353289	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P353536	
2032897	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.038		mg P/L	P353160	
2032916	EPA 200.7 Rev. 4.4	Calcium	50.1		mg/L	P353226	
		Iron	78	I	ug/L	P353226	
		Magnesium	3.90		mg/L	P353226	
		Potassium	5.6		mg/L	P353226	
		Sodium	30.3		mg/L	P353226	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P353226	
		Arsenic	3.45		ug/L	P353226	
		Cadmium	0.020	U	ug/L	P353226	
		Chromium	0.79	I	ug/L	P353226	
		Copper	5.71		ug/L	P353226	
		Lead	0.15	I	ug/L	P353226	
		Nickel	0.35	I	ug/L	P353226	
		Silver	0.010	U	ug/L	P353226	

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: E-3 @ Clint Moore Boca

Collection Date/Time: 10/15/2018 13:40

Field ID: G3SE0006

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2032886	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P353456	
	EPA 300.0 Rev. 2.1	Chloride	33		mg Cl/L	P353564	
		Sulfate	14		mg SO4/L	P353567	
		Color (true)	41		PCU	P353173	
	SM 2320 B-97	Total Alkalinity	99		mg CaCO3/L	P353812	
	SM 2540 C-97	TDS	202		mg/L	P353521	
	SM 2540 D-97	TSS	4	I	mg/L	P353448	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P353816	
2032888	EPA 350.1 Rev. 2.0	Ammonia-N	0.029		mg N/L	P353800	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.85		mg N/L	P353384	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.036		mg N/L	P353219	
	EPA 365.1 Rev. 2.0	Total-P	0.098		mg P/L	P353288	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P353536	
2032890	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.047		mg P/L	P353160	
2032913	EPA 200.7 Rev. 4.4	Calcium	43.6		mg/L	P353226	
		Iron	30	U	ug/L	P353226	
		Magnesium	3.20		mg/L	P353226	
		Potassium	4.2		mg/L	P353226	
		Sodium	23.3		mg/L	P353226	
		Zinc	5.0	U	ug/L	P353226	
	EPA 200.8 Rev. 5.4	Arsenic	2.86		ug/L	P353226	
		Cadmium	0.020	U	ug/L	P353226	
		Chromium	0.41	I	ug/L	P353226	
		Copper	2.34		ug/L	P353226	
		Lead	0.050	U	ug/L	P353226	
		Nickel	0.23	I	ug/L	P353226	
		Silver	0.010	U	ug/L	P353226	

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: E-3 @ 806 Delray

Collection Date/Time: 10/15/2018 14:30

Field ID: G3SE0005

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2032887	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P353457	
	EPA 300.0 Rev. 2.1	Chloride	28		mg Cl/L	P353564	
		Sulfate	19		mg SO4/L	P353567	
		Color (true)	39		PCU	P353173	
	SM 2320 B-97	Total Alkalinity	105		mg CaCO3/L	P353812	
	SM 2540 C-97	TDS	199		mg/L	P353521	
	SM 2540 D-97	TSS	2	I	mg/L	P353448	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P353816	
2032889	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P353800	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.77		mg N/L	P353487	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P353219	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P353288	
	SM 5310 B-00	Organic Carbon	9.4		mg C/L	P353536	
2032891	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P353160	
2032914	EPA 200.7 Rev. 4.4	Calcium	47.2		mg/L	P353226	
		Iron	30	U	ug/L	P353226	
		Magnesium	3.34		mg/L	P353226	
		Potassium	4.5		mg/L	P353226	
		Sodium	18.8		mg/L	P353226	
		Zinc	5.0	U	ug/L	P353226	
	EPA 200.8 Rev. 5.4	Arsenic	3.29		ug/L	P353226	
		Cadmium	0.020	U	ug/L	P353226	
		Chromium	0.40	U	ug/L	P353226	
		Copper	4.14		ug/L	P353226	
		Lead	0.051	I	ug/L	P353226	
		Nickel	0.25	I	ug/L	P353226	
		Silver	0.010	U	ug/L	P353226	

Ref. Method and Comment:

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

Non-Conformance Report

NCR ID: 7256

Event(s)

SE-DIST-2018-10-16-01

Job(s)

TLH-2018-10-16-44

Sample(s)

2032899

Test(s)

NCR Type: SHIPPING/RECEIVING

NCR Category: Sample Integrity

Observation: Sample was left out at room temperature after being returned on 10/19/2018 at 1505.

Resolution: Sample was placed in refrigerator on 10/22/2018 at 1015. Any data generated after 10/19/2018 will need to be qualified.

Authorized by/Date: Joshua Ayres 10/23/2018

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: P353456

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P353457

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353226

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: P353226

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: P353564

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353567

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353417

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353800

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353384

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353485

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353487

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353193

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353219

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353288

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353289

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353292

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353160

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353161

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

Reference Method: SM 2120 B
Batch ID: P353173

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P353174

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P353553

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

Reference Method: SM 2320 B-97
Batch ID: P353812

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

Reference Method: SM 2320 B-97
Batch ID: P353815

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

Reference Method: SM 2540 C-97
Batch ID: P353521

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P353522

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P353448

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P353450

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P353558

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P353816

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P353818

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P353536

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

Reference Method: SM 5310 B-00
Batch ID: P353944

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: P353226

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	102		P	85 - 115
Iron	105		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	104		P	85 - 115
Sodium	102		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353226

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	101		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	98.9		P	85 - 115
Copper	99.9		P	85 - 115
Lead	96.0		P	85 - 115
Nickel	98.6		P	85 - 115
Silver	98.1		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353564

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353567

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353417

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353800

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353384

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353485

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353487

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353193

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353219

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353288

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353289

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353292

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353160

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353161

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2120 B
Batch ID: P353173

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

Reference Method: SM 2120 B
Batch ID: P353174

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P353553

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Reference Method: SM 2320 B-97
Batch ID: P353812

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Reference Method: SM 2320 B-97
Batch ID: P353815

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

Reference Method: SM 4500 F-C-97
Batch ID: P353558

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.4		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P353816

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.3		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P353818

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.8		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P353536

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.8		P	85 - 115

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P353944

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353226

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031978	Calcium	103		P	80 - 120
2031978	Iron	106		P	80 - 120
2031978	Magnesium	102		P	80 - 120
2031978	Potassium	100		P	80 - 120
2031978	Sodium	102		P	80 - 120
2031978	Zinc	100		P	80 - 120
2032011	Calcium	104		P	80 - 120
2032011	Iron	107	105	P/P	80 - 120
2032011	Magnesium	104		P	80 - 120
2032011	Potassium	106	105	P/P	80 - 120
2032011	Sodium	102		P	80 - 120
2032011	Zinc	98.3	98.9	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353226

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031978	Arsenic	103		P	80 - 120
2031978	Cadmium	106		P	80 - 120
2031978	Chromium	98.8		P	80 - 120
2031978	Copper	96.9		P	80 - 120
2031978	Lead	97.2		P	80 - 120
2031978	Nickel	96.8		P	80 - 120
2031978	Silver	99.1		P	80 - 120
2032011	Arsenic	98.3	98.4	P/P	80 - 120
2032011	Cadmium	102	105	P/P	80 - 120
2032011	Chromium	96.7	97.7	P/P	80 - 120
2032011	Copper	95.8	95.1	P/P	80 - 120
2032011	Lead	94.3	96.2	P/P	80 - 120
2032011	Nickel	94.5	96.8	P/P	80 - 120
2032011	Silver	98.2	99.3	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353564

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2033039	Chloride	98.9		P	90 - 110
2033041	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353567

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2033039	Sulfate	94.4		P	90 - 110
2033041	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353417

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031273	Ammonia-N	103	104	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353800

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032888	Ammonia-N	98.5	99.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353384

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032867	Kjeldahl Nitrogen	100	91.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353485

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032853	Kjeldahl Nitrogen	90.8	94.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353487

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032947	Kjeldahl Nitrogen	99.9	95.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353193

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031943	NO2NO3-N	100	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353219

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032864	NO2NO3-N	98.5	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353288

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032867	Total-P	100	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353289

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2033045	Total-P	105	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353292

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032861	Total-P	100	95.6	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353160

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032790	O-Phosphate-P	95.3	96.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353161

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032900	O-Phosphate-P	101	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P353558

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2033092	Fluoride	97.7	98.9	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P353816

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2033243	Fluoride	96.7	97.4	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P353818

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2034476	Fluoride	96.7	96.7	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P353536

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032810	Organic Carbon	93.9	94.8	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P353944

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2033515	Organic Carbon	93.6	94.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P353456

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032862	Turbidity	1.94	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P353457

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032898	Turbidity	10.5	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353226

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032011	Calcium	2.85	Spike	P	0 - 20
2032011	Iron	1.93	Spike	P	0 - 20
2032011	Magnesium	0.0298	Spike	P	0 - 20
2032011	Potassium	0.480	Spike	P	0 - 20
2032011	Sodium	1.52	Spike	P	0 - 20
2032011	Zinc	0.538	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353226

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032011	Arsenic	0.163	Spike	P	0 - 20
2032011	Cadmium	2.33	Spike	P	0 - 20
2032011	Chromium	1.11	Spike	P	0 - 20
2032011	Copper	0.728	Spike	P	0 - 20
2032011	Lead	2.00	Spike	P	0 - 20
2032011	Nickel	2.39	Spike	P	0 - 20
2032011	Silver	1.19	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353564

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033039	Chloride	1.41	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353567

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033039	Sulfate	0.305	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353417

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031273	Ammonia-N	1.23	Spike	P	0 - 15

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353800

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032888	Ammonia-N	0.779	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353384

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032867	Kjeldahl Nitrogen	7.94	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353485

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032853	Kjeldahl Nitrogen	3.75	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353487

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032947	Kjeldahl Nitrogen	4.03	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353193

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031943	NO2NO3-N	0.336	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353219

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032864	NO2NO3-N	0.615	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353288

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032867	Total-P	3.91	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353289

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033045	Total-P	4.80	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353292

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032861	Total-P	4.38	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353160

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032790	O-Phosphate-P	0.970	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353161

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032900	O-Phosphate-P	0.695	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P353173

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032784	Color (true)	3.10	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P353174

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032893	Color (true)	0.309	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P353553

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033092	Total Alkalinity	0.517	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P353812

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033243	Total Alkalinity	0.131	Sample	P	0 - 1.6

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P353815

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2034476	Total Alkalinity	0.598	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P353521

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032807	TDS	7.79	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P353522

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033092	TDS	2.17	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P353558

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033092	Fluoride	0.978	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
Batch ID: P353816

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033243	Fluoride	0.509	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
Batch ID: P353818

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2034476	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P353536

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032810	Organic Carbon	0.471	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P353944

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033515	Organic Carbon	1.00	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: A87080

Included Lab Sample IDs: 2032890, 2032891, 2032896, 2032897, 2032900

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.5	97.8	P/P	90 - 110
O-Phosphate-P	99.7	100	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A87084

Included Lab Sample IDs: 2032886, 2032887, 2032892, 2032893

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 115
Color (true)	102	101	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A87090

Included Lab Sample IDs: 2032899

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A87095

Included Lab Sample IDs: 2032888, 2032889, 2032894, 2032895

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A87147

Included Lab Sample IDs: 2032888, 2032895

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	103	105	P/P	90 - 110
Total-P	105	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A87180

Included Lab Sample IDs: 2032889, 2032894, 2032899

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A87188

Included Lab Sample IDs: 2032899

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A87199

Included Lab Sample IDs: 2032886, 2032887, 2032892, 2032893, 2032898

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	102	P/P	95 - 105
Turbidity	102	101	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A87212

Included Lab Sample IDs: 2032886, 2032887, 2032892, 2032893

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Sulfate	101	100	P/P	90 - 110
Sulfate	99.2	100	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A87236

Included Lab Sample IDs: 2032888, 2032889, 2032894, 2032895

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.3	96.4	P/P	90 - 110
Organic Carbon	95.6	95.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A87238

Included Lab Sample IDs: 2032888

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

Reference Method: SM 2320 B-97

Run ID: A87241

Included Lab Sample IDs: 2032893

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.0	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A87241

Included Lab Sample IDs: 2032893

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A87246

Included Lab Sample IDs: 2032889, 2032894, 2032895, 2032899

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	99.1	P/P	90 - 110
Kjeldahl Nitrogen	102	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A87292

Included Lab Sample IDs: 2032913, 2032914, 2032915, 2032916

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	101	P/P	90 - 110
Iron	101	101	P/P	90 - 110
Magnesium	103	102	P/P	90 - 110
Potassium	102	103	P/P	90 - 110
Sodium	103	103	P/P	90 - 110
Zinc	99.3	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A87340

Included Lab Sample IDs: 2032888, 2032889, 2032894, 2032895

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	100	P/P	90 - 110
Ammonia-N	100	99.9	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A87344

Included Lab Sample IDs: 2032886, 2032887, 2032892, 2032898

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	102	P/P	90 - 110
Total Alkalinity	100	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A87344

Included Lab Sample IDs: 2032886, 2032887, 2032892, 2032898

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	97.6	P/P	90 - 110
Fluoride	99.1	99.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A87372

Included Lab Sample IDs: 2032913, 2032914, 2032915, 2032916

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	94.9	95.2	P/P	90 - 110
Cadmium	99.6	97.8	P/P	90 - 110
Chromium	96.2	96.5	P/P	90 - 110
Copper	95.4	95.7	P/P	90 - 110
Lead	96.1	96.3	P/P	90 - 110
Nickel	95.8	95.8	P/P	90 - 110
Silver	95.2	94.7	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A87403

Included Lab Sample IDs: 2032899

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.0	95.2	P/P	90 - 110

Quality Assurance Report

Calibration Verification

* 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				
EPA 180.1 Rev. 2.0	Turbidity					1.94	
	Turbidity					10.5	
EPA 200.7 Rev. 4.4	Calcium	102	103	104			2.85
	Iron	105	106	107	105		1.93
	Magnesium	104	102	104			0.0298
	Potassium	104	100	106	105		0.480
	Sodium	102	102	102			1.52
	Zinc	101	100	98.3	98.9		0.538
EPA 200.8 Rev. 5.4	Arsenic	101	103	98.3	98.4		0.163
	Cadmium	101	106	102	105		2.33
	Chromium	98.9	98.8	96.7	97.7		1.11
	Copper	99.9	96.9	95.8	95.1		0.728
	Lead	96.0	97.2	94.3	96.2		2.00
	Nickel	98.6	96.8	94.5	96.8		2.39
	Silver	98.1	99.1	98.2	99.3		1.19
EPA 300.0 Rev. 2.1	Chloride	103	98.9	102		1.41	
	Sulfate	103	94.4	101		0.305	
EPA 350.1 Rev. 2.0	Ammonia-N	99.0	103	104			1.23
	Ammonia-N	99.0	98.5	99.7			0.779
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.2	100	91.2			7.94
	Kjeldahl Nitrogen	96.2	90.8	94.9			3.75
	Kjeldahl Nitrogen	99.1	99.9	95.4			4.03
EPA 353.2 Rev. 2.0	NO2NO3-N	99.0	100	101			0.336
	NO2NO3-N	100	98.5	99.5			0.615
EPA 365.1 Rev. 2.0	Total-P	103	100	96.0			3.91
	Total-P	99.0	105	99.5			4.80
	Total-P	102	100	95.6			4.38
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.2	95.3	96.4			0.970
	O-Phosphate-P	103	101	100			0.695
SM 2120 B	Color (true)	101				3.10	
	Color (true)	102				0.309	
SM 2320 B-97	Total Alkalinity	101				0.517	
	Total Alkalinity	101				0.131	
	Total Alkalinity	103				0.598	
SM 2540 C-97	TDS					7.79	
	TDS					2.17	
SM 4500 F-C-97	Fluoride	99.4	97.7	98.9			0.978
	Fluoride	96.3	96.7	97.4			0.509
	Fluoride	96.8	96.7	96.7			0.0
SM 5310 B-00	Organic Carbon	93.8	93.9	94.8			0.471
	Organic Carbon	93.2	93.6	94.6			1.00

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2032886, 2032887, 2032892, 2032893, 2032898
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2032913, 2032914, 2032915, 2032916
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2032913, 2032914, 2032915, 2032916
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2032886, 2032887, 2032892, 2032893

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2032886, 2032887, 2032892, 2032893, 2032898
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2032888, 2032889, 2032894, 2032895, 2032899
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2032888, 2032889, 2032894, 2032895, 2032899
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2032888, 2032889, 2032894, 2032895, 2032899
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2032888, 2032889, 2032894, 2032895, 2032899
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2032890, 2032891, 2032896, 2032897, 2032900
SM 2120 B / E31780	True Color measured at 450 nm	2032886, 2032887, 2032892, 2032893
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2032886, 2032887, 2032892, 2032893, 2032898
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2032886, 2032887, 2032892, 2032893, 2032898
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2032886, 2032887, 2032892, 2032893, 2032898
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2032886, 2032887, 2032892, 2032893, 2032898
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2032888, 2032889, 2032894, 2032895, 2032899

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	10/16/2018			10/16/2018 13:41	Megan Treadwell	2032886, 2032887, 2032892, 2032893, 2032898
EPA 200.7 Rev. 4.4	10/16/2018	10/17/2018 15:30	Elliott D. Healy	10/25/2018 15:52	Betina Topolski	2032913
	10/16/2018	10/17/2018 15:30	Elliott D. Healy	10/25/2018 15:55	Betina Topolski	2032914
	10/16/2018	10/17/2018 15:30	Elliott D. Healy	10/25/2018 15:58	Betina Topolski	2032915
	10/16/2018	10/17/2018 15:30	Elliott D. Healy	10/25/2018 16:02	Betina Topolski	2032916
EPA 200.8 Rev. 5.4	10/16/2018	10/17/2018 15:30	Elliott D. Healy	10/29/2018 17:33	Robert K Palmer	2032913
	10/16/2018	10/17/2018 15:30	Elliott D. Healy	10/29/2018 17:42	Robert K Palmer	2032914
	10/16/2018	10/17/2018 15:30	Elliott D. Healy	10/29/2018 17:52	Robert K Palmer	2032915
	10/16/2018	10/17/2018 15:30	Elliott D. Healy	10/29/2018 18:02	Robert K Palmer	2032916
EPA 300.0 Rev. 2.1	10/16/2018			10/23/2018 23:16	Lipi Saha	2032886
	10/16/2018			10/23/2018 23:28	Lipi Saha	2032887
	10/16/2018			10/23/2018 23:40	Lipi Saha	2032892
	10/16/2018			10/23/2018 23:52	Lipi Saha	2032893
	10/16/2018			10/24/2018 03:29	Lipi Saha	2032898
EPA 350.1 Rev. 2.0	10/16/2018			10/19/2018 13:23	Ping Hua	2032899
	10/16/2018			10/26/2018 13:05	Ping Hua	2032888
	10/16/2018			10/26/2018 13:09	Ping Hua	2032889
	10/16/2018			10/26/2018 13:11	Ping Hua	2032894
	10/16/2018			10/26/2018 13:18	Ping Hua	2032895
EPA 351.2 Rev. 2.0	10/16/2018	10/19/2018 11:30	Adrian Shelby	10/23/2018 14:30	Joseph Suarez	2032888
	10/16/2018	10/23/2018 09:00	Adrian Shelby	10/24/2018 09:42	Joseph Suarez	2032899
	10/16/2018	10/23/2018 09:00	Adrian Shelby	10/24/2018 09:54	Joseph Suarez	2032889
	10/16/2018	10/23/2018 09:00	Adrian Shelby	10/24/2018 09:56	Joseph Suarez	2032894
	10/16/2018	10/23/2018 09:00	Adrian Shelby	10/24/2018 10:01	Joseph Suarez	2032895
EPA 353.2 Rev. 2.0	10/16/2018			10/17/2018 11:11	Lauren Bottorf	2032899
	10/16/2018			10/17/2018 13:54	Lauren Bottorf	2032888
	10/16/2018			10/17/2018 13:55	Lauren Bottorf	2032889
	10/16/2018			10/17/2018 13:57	Lauren Bottorf	2032894
	10/16/2018			10/17/2018 13:58	Lauren Bottorf	2032895
EPA 365.1 Rev. 2.0	10/16/2018	10/18/2018 12:55	Sima Feizi	10/19/2018 10:11	Beverly Y. Sanders	2032888
	10/16/2018	10/18/2018 12:55	Sima Feizi	10/19/2018 10:22	Beverly Y. Sanders	2032895
	10/16/2018	10/18/2018 12:55	Sima Feizi	10/19/2018 12:29	Beverly Y. Sanders	2032889
	10/16/2018	10/18/2018 12:55	Sima Feizi	10/19/2018 12:30	Beverly Y. Sanders	2032894
	10/16/2018	10/18/2018 12:55	Sima Feizi	10/19/2018 13:20	Beverly Y. Sanders	2032899
EPA 365.1 Rev. 2.0 dissolved	10/16/2018			10/16/2018 15:02	Virginia P. Brown	2032900
	10/16/2018			10/16/2018 15:21	Virginia P. Brown	2032890
	10/16/2018			10/16/2018 15:22	Virginia P. Brown	2032891
	10/16/2018			10/16/2018 15:23	Virginia P. Brown	2032896
	10/16/2018			10/16/2018 15:24	Virginia P. Brown	2032897

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2120 B	10/16/2018			10/16/2018 16:30	Chelsea Hernandez	2032886
	10/16/2018			10/16/2018 16:31	Chelsea Hernandez	2032887
	10/16/2018			10/16/2018 16:35	Chelsea Hernandez	2032892
	10/16/2018			10/16/2018 16:36	Chelsea Hernandez	2032893
SM 2320 B-97	10/16/2018			10/20/2018 08:18	Dale L. Simmons	2032893
	10/16/2018			10/26/2018 02:04	Dale L. Simmons	2032886
	10/16/2018			10/26/2018 02:14	Dale L. Simmons	2032887
	10/16/2018			10/26/2018 02:26	Dale L. Simmons	2032892
	10/16/2018			10/26/2018 12:15	Dale L. Simmons	2032898
SM 2540 C-97	10/16/2018			10/18/2018 15:21	Yijie Li	2032886, 2032887, 2032892, 2032893, 2032898
SM 2540 D-97	10/16/2018			10/18/2018 15:21	Yijie Li	2032886, 2032887, 2032892, 2032893, 2032898
SM 4500 F-C-97	10/16/2018			10/20/2018 08:18	Dale L. Simmons	2032893
	10/16/2018			10/26/2018 02:04	Dale L. Simmons	2032886
	10/16/2018			10/26/2018 02:14	Dale L. Simmons	2032887
	10/16/2018			10/26/2018 02:26	Dale L. Simmons	2032892
	10/16/2018			10/26/2018 10:01	Dale L. Simmons	2032898
SM 5310 B-00	10/16/2018			10/22/2018 18:16	Megan Treadwell	2032888
	10/16/2018			10/22/2018 18:59	Megan Treadwell	2032889
	10/16/2018			10/22/2018 19:46	Megan Treadwell	2032894
	10/16/2018			10/22/2018 20:02	Megan Treadwell	2032895
	10/16/2018			10/30/2018 16:23	Megan Treadwell	2032899