Chemical Analysis Report

SE-DIST-2018-10-25-01

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

Event Description: **SMP- Boca E-Canals**
Request ID: **RQ-2018-10-22-20**
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: Colin Wright, Program Administrator

Date Certified: 16-NOV-2018 14:08

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: E-3 @ Palmetto Park **Collection Date/Time: 10/24/2018 12:35**

Field ID: G3SE0034 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2036109	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P353684	
	EPA 300.0 Rev. 2.1	Chloride	47		mg Cl/L	P353978	
		Sulfate	32		mg SO4/L	P353980	
	SM 2120 B	Color (true)	35		PCU	P353678	
	SM 2320 B-97	Total Alkalinity	181		mg CaCO3/L	P353899	
	SM 2540 C-97	TDS	301		mg/L	P354163	
	SM 2540 D-97	TSS	3	I	mg/L	P354032	
	SM 4500 F-C-97	Fluoride	0.24		mg F/L	P353904	
2036111	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P354194	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.90		mg N/L	P354147	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P353967	
	EPA 365.1 Rev. 2.0	Total-P	0.036		mg P/L	P354028	
	SM 5310 B-00	Organic Carbon	9.5		mg C/L	P354198	
2036113	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P353692	
2036133	EPA 200.7 Rev. 4.4	Calcium	80.7		mg/L	P353717	
		Iron	30	U	ug/L	P353717	
		Magnesium	4.54		mg/L	P353717	
		Potassium	5.5		mg/L	P353717	
		Sodium	31.2		mg/L	P353717	
		Zinc	5.0	U	ug/L	P353717	
	EPA 200.8 Rev. 5.4	Arsenic	1.45		ug/L	P353717	
		Cadmium	0.020	U	ug/L	P353717	
		Chromium	0.40	U	ug/L	P353717	
		Copper	1.41		ug/L	P353717	
		Lead	0.050	U	ug/L	P353717	
		Nickel	0.31	I	ug/L	P353717	
		Silver	0.010	U	ug/L	P353717	

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: ICW @ Palmetto Park Boca **Collection Date/Time: 10/24/2018 13:10**

Field ID: G3SE0020 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2036115	EPA 180.1 Rev. 2.0	Turbidity	0.70		NTU	P353684	
	EPA 300.0 Rev. 2.1	Sulfate	2.8E+03		mg SO4/L	P353981	
	SM 2320 B-97	Total Alkalinity	125	A	mg CaCO3/L	P354098	
	SM 2540 C-97	TDS	3.37E+04		mg/L	P354164	
	SM 2540 D-97	TSS	3	U	mg/L	P354035	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P354101	
2036116	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P354092	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	U	mg N/L	P354058	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.036		mg N/L	P353830	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P354027	
	SM 5310 B-00	Organic Carbon	1.4	I	mg C/L	P354155	
2036117	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P353694	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
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: 10/24/2018 13:30**

Field ID: G3SE0010 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2036110	EPA 180.1 Rev. 2.0	Turbidity	3.7		NTU	P353684	
	EPA 300.0 Rev. 2.1	Chloride	49		mg Cl/L	P353978	
		Sulfate	28		mg SO4/L	P353980	
	SM 2120 B	Color (true)	51	A	PCU	P353678	
	SM 2320 B-97	Total Alkalinity	150		mg CaCO3/L	P353899	
	SM 2540 C-97	TDS	284		mg/L	P354163	
	SM 2540 D-97	TSS	6	I	mg/L	P354032	
	SM 4500 F-C-97	Fluoride	0.19		mg F/L	P353904	
2036112	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P354194	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P354147	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.012		mg N/L	P353967	
	EPA 365.1 Rev. 2.0	Total-P	0.078		mg P/L	P354028	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P354198	
2036114	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.013		mg P/L	P353692	
2036134	EPA 200.7 Rev. 4.4	Calcium	66.5		mg/L	P353717	
		Iron	40	I	ug/L	P353717	
		Magnesium	4.16		mg/L	P353717	
		Potassium	5.5		mg/L	P353717	
		Sodium	31.9		mg/L	P353717	
		Zinc	8.9	I	ug/L	P353717	
	EPA 200.8 Rev. 5.4	Arsenic	2.65		ug/L	P353717	
		Cadmium	0.020	U	ug/L	P353717	
		Chromium	0.65	I	ug/L	P353717	
		Copper	3.42		ug/L	P353717	
		Lead	0.26		ug/L	P353717	
		Nickel	0.49	I	ug/L	P353717	
		Silver	0.010	U	ug/L	P353717	

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: 10/24/2018 14:20**

Field ID: G3SE0006 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2036103	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P353684	
	EPA 300.0 Rev. 2.1	Chloride	43		mg Cl/L	P353978	
		Sulfate	18		mg SO4/L	P353980	
	SM 2120 B	Color (true)	52		PCU	P353678	
	SM 2320 B-97	Total Alkalinity	155		mg CaCO3/L	P353899	
	SM 2540 C-97	TDS	278		mg/L	P354163	
	SM 2540 D-97	TSS	4	I	mg/L	P354032	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P353904	
2036105	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P354194	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.82		mg N/L	P354147	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.10		mg N/L	P353967	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P354028	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P354154	
2036107	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.062		mg P/L	P353692	
2036131	EPA 200.7 Rev. 4.4	Calcium	71.9		mg/L	P353717	
		Iron	30	U	ug/L	P353717	
		Magnesium	3.32		mg/L	P353717	
		Potassium	4.2		mg/L	P353717	
		Sodium	28.3		mg/L	P353717	
		Zinc	5.0	U	ug/L	P353717	
	EPA 200.8 Rev. 5.4	Arsenic	1.93		ug/L	P353717	
		Cadmium	0.020	U	ug/L	P353717	
		Chromium	0.89	I	ug/L	P353717	
		Copper	1.55		ug/L	P353717	
		Lead	0.050	U	ug/L	P353717	
		Nickel	0.36	I	ug/L	P353717	
		Silver	0.010	U	ug/L	P353717	

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: 10/24/2018 15:00**

Field ID: G3SE0005 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2036104	EPA 180.1 Rev. 2.0	Turbidity	0.85		NTU	P353684	
	EPA 300.0 Rev. 2.1	Chloride	29		mg Cl/L	P353978	
		Sulfate	19		mg SO4/L	P353980	
	SM 2120 B	Color (true)	35		PCU	P353678	
	SM 2320 B-97	Total Alkalinity	103		mg CaCO3/L	P353899	
	SM 2540 C-97	TDS	185		mg/L	P354163	
	SM 2540 D-97	TSS	2	U	mg/L	P354032	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P353904	
2036106	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P354194	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.69		mg N/L	P354147	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P353967	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P354028	
	SM 5310 B-00	Organic Carbon	9.6		mg C/L	P354154	
2036108	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P353692	
2036132	EPA 200.7 Rev. 4.4	Calcium	45.3		mg/L	P353717	
		Iron	30	U	ug/L	P353717	
		Magnesium	3.18		mg/L	P353717	
		Potassium	3.8		mg/L	P353717	
		Sodium	19.3		mg/L	P353717	
		Zinc	5.0	U	ug/L	P353717	
	EPA 200.8 Rev. 5.4	Arsenic	2.98		ug/L	P353717	
		Cadmium	0.020	U	ug/L	P353717	
		Chromium	1.3	I	ug/L	P353717	
		Copper	3.44		ug/L	P353717	
		Lead	0.050	U	ug/L	P353717	
		Nickel	0.31	I	ug/L	P353717	
		Silver	0.010	U	ug/L	P353717	

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P353684

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353717

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: P353717

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: P353978

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353980

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353981

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354092

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: P354194

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354058

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354147

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353830

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353967

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354027

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354028

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353692

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353694

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 2120 B
Batch ID: P353678

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P353899

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

Reference Method: SM 2320 B-97
Batch ID: P354098

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

Reference Method: SM 2540 C-97
Batch ID: P354163

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P354164

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P354032

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P354035

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P353904

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P354101

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P354154

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

Reference Method: SM 5310 B-00
Batch ID: P354155

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

Reference Method: SM 5310 B-00
Batch ID: P354198

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: P353717

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	107		P	85 - 115
Magnesium	99.6		P	85 - 115
Potassium	103		P	85 - 115
Sodium	112		P	85 - 115
Zinc	99.3		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353717

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	104		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	103		P	85 - 115
Copper	106		P	85 - 115
Lead	103		P	85 - 115
Nickel	102		P	85 - 115
Silver	103		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353978

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353980

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353981

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354092

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	105		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354194

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354058

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354147

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353830

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: P353967

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354027

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: P354028

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353692

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353694

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

Reference Method: SM 2120 B
Batch ID: P353678

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P353899

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

Reference Method: SM 2320 B-97
Batch ID: P354098

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

Reference Method: SM 4500 F-C-97
Batch ID: P353904

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P354101

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.0		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P354154

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

Reference Method: SM 5310 B-00
Batch ID: P354155

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

Reference Method: SM 5310 B-00
Batch ID: P354198

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.8		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353717

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035813	Calcium	100		P	80 - 120
2035813	Iron	105	106	P/P	80 - 120
2035813	Magnesium	98.1		P	80 - 120
2035813	Potassium	103	103	P/P	80 - 120
2035813	Sodium	106	105	P/P	80 - 120
2035813	Zinc	99.7	100	P/P	80 - 120
2036099	Calcium	106		P	80 - 120
2036099	Iron	105		P	80 - 120
2036099	Magnesium	106		P	80 - 120
2036099	Potassium	102		P	80 - 120
2036099	Sodium	104		P	80 - 120
2036099	Zinc	102		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353717

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035813	Arsenic	103	102	P/P	80 - 120
2035813	Cadmium	103	102	P/P	80 - 120
2035813	Chromium	102	101	P/P	80 - 120
2035813	Copper	103	101	P/P	80 - 120
2035813	Lead	103	103	P/P	80 - 120
2035813	Nickel	98.2	97.1	P/P	80 - 120
2035813	Silver	101	99.1	P/P	80 - 120
2036099	Arsenic	102		P	80 - 120
2036099	Cadmium	102		P	80 - 120
2036099	Chromium	98.6		P	80 - 120
2036099	Copper	104		P	80 - 120
2036099	Lead	104		P	80 - 120
2036099	Nickel	97.6		P	80 - 120
2036099	Silver	98.9		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353978

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035872	Chloride	98.6		P	90 - 110
2036085	Chloride	98.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353980

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035872	Sulfate	97.8		P	90 - 110
2036085	Sulfate	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353981

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036179	Sulfate	98.0		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354092

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035964	Ammonia-N	106	106	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354194

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036105	Ammonia-N	97.8	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354058

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036143	Kjeldahl Nitrogen	97.0	97.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354147

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036032	Kjeldahl Nitrogen	91.2	91.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353830

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035964	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353967

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036105	NO2NO3-N	105	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354027

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036241	Total-P	93.2	93.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354028

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036181	Total-P	97.7	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353692

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036038	O-Phosphate-P	97.0	98.5	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353694

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036052	O-Phosphate-P	98.7	98.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P353904

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036282	Fluoride	99.5	100	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P354101

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036115	Fluoride	94.0	94.7	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P354154

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036106	Organic Carbon	97.2	96.5	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P354155

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036116	Organic Carbon	95.9	96.5	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P354198

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036111	Organic Carbon	102	98.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P353684

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036142	Turbidity	3.23	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353717

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035813	Calcium	0.862	Spike	P	0 - 20
2035813	Iron	0.509	Spike	P	0 - 20
2035813	Magnesium	0.161	Spike	P	0 - 20
2035813	Potassium	0.128	Spike	P	0 - 20
2035813	Sodium	0.468	Spike	P	0 - 20
2035813	Zinc	0.547	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353717

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035813	Arsenic	1.02	Spike	P	0 - 20
2035813	Cadmium	1.68	Spike	P	0 - 20
2035813	Chromium	0.881	Spike	P	0 - 20
2035813	Copper	1.41	Spike	P	0 - 20
2035813	Lead	0.448	Spike	P	0 - 20
2035813	Nickel	1.09	Spike	P	0 - 20
2035813	Silver	2.02	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353978

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035872	Chloride	1.52	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353980

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035872	Sulfate	1.49	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353981

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036179	Sulfate	0.644	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035964	Ammonia-N	0.0820	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354194

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036105	Ammonia-N	1.92	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354058

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036143	Kjeldahl Nitrogen	0.0860	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354147

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036032	Kjeldahl Nitrogen	0.220	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353830

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035964	NO2NO3-N	0.464	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353967

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036105	NO2NO3-N	0.322	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354027

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036241	Total-P	0.180	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354028

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036181	Total-P	1.39	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353692

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036038	O-Phosphate-P	0.885	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353694

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036052	O-Phosphate-P	0.0722	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P353678

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036110	Color (true)	2.17	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P353899

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036282	Total Alkalinity	0.276	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P354098

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036115	Total Alkalinity	0.0661	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P354163

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035913	TDS	2.83	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P354164

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036248	TDS	0.0	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P353904

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036282	Fluoride	0.470	Spike	P	0 - 3.5

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P354101

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036115	Fluoride	0.470	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P354154

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036106	Organic Carbon	0.449	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P354155

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036116	Organic Carbon	0.601	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P354198

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036111	Organic Carbon	2.23	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2120 B
Run ID: A87286
Included Lab Sample IDs: 2036103, 2036104, 2036109, 2036110

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A87287
Included Lab Sample IDs: 2036107, 2036108, 2036113, 2036114, 2036117

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A87288
Included Lab Sample IDs: 2036103, 2036104, 2036109, 2036110, 2036115

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A87354
Included Lab Sample IDs: 2036116

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A87368
Included Lab Sample IDs: 2036103, 2036104, 2036109, 2036110

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	103	P/P	90 - 110
Sulfate	101	101	P/P	90 - 110
Sulfate	103	101	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A87382
Included Lab Sample IDs: 2036103, 2036104, 2036109, 2036110

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.5	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A87382
Included Lab Sample IDs: 2036103, 2036104, 2036109, 2036110

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A87399
Included Lab Sample IDs: 2036131, 2036132, 2036133, 2036134

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A87399
Included Lab Sample IDs: 2036131, 2036132, 2036133, 2036134

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	102	P/P	90 - 110
Iron	101	101	P/P	90 - 110
Magnesium	101	100	P/P	90 - 110
Potassium	105	104	P/P	90 - 110
Sodium	107	107	P/P	90 - 110
Zinc	97.8	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A87412
Included Lab Sample IDs: 2036105, 2036106, 2036111, 2036112

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A87437
Included Lab Sample IDs: 2036105, 2036112

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A87465
Included Lab Sample IDs: 2036116

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

Reference Method: SM 2320 B-97
Run ID: A87470
Included Lab Sample IDs: 2036115

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

Reference Method: SM 4500 F-C-97
Run ID: A87470
Included Lab Sample IDs: 2036115

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A87487
Included Lab Sample IDs: 2036106, 2036111, 2036116

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A87488
Included Lab Sample IDs: 2036116

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.4	98.5	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A87498
Included Lab Sample IDs: 2036105, 2036106, 2036116

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	100	P/P	90 - 110
Organic Carbon	98.2	99.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A87519
Included Lab Sample IDs: 2036105, 2036106, 2036111, 2036112

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

Reference Method: SM 5310 B-00
Run ID: A87522
Included Lab Sample IDs: 2036111, 2036112

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.2	97.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A87524
Included Lab Sample IDs: 2036105, 2036106, 2036111, 2036112

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.9	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A87658
Included Lab Sample IDs: 2036131, 2036132, 2036133, 2036134

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	101	100	P/P	90 - 110
Cadmium	101	101	P/P	90 - 110
Chromium	102	103	P/P	90 - 110
Copper	105	104	P/P	90 - 110
Lead	103	103	P/P	90 - 110
Nickel	101	99.6	P/P	90 - 110
Silver	101	101	P/P	90 - 110

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

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						3.23	
EPA 200.7 Rev. 4.4	Calcium	103	100	106				0.862
	Iron	107	105	106	105			0.509
	Magnesium	99.6	98.1	106				0.161
	Potassium	103	103	103	102			0.128
	Sodium	112	106	105	104			0.468
	Zinc	99.3	99.7	100	102			0.547
EPA 200.8 Rev. 5.4	Arsenic	104	103	102	102			1.02
	Cadmium	103	103	102	102			1.68
	Chromium	103	102	101	98.6			0.881
	Copper	106	103	101	104			1.41
	Lead	103	103	103	104			0.448
	Nickel	102	98.2	97.1	97.6			1.09
	Silver	103	101	99.1	98.9			2.02
EPA 300.0 Rev. 2.1	Chloride	99.9	98.6	98.0			1.52	
	Sulfate	98.5	97.8	100			1.49	
	Sulfate	98.7	98.0				0.644	
EPA 350.1 Rev. 2.0	Ammonia-N	105	106	106				0.0820
	Ammonia-N	99.2	97.8	100				1.92
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.8	97.0	97.1				0.0860
	Kjeldahl Nitrogen	105	91.2	91.6				0.220
EPA 353.2 Rev. 2.0	NO2NO3-N	100	101	101				0.464
	NO2NO3-N	104	105	104				0.322
EPA 365.1 Rev. 2.0	Total-P	103	93.2	93.1				0.180
	Total-P	99.6	97.7	99.2				1.39
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.8	97.0	98.5				0.885
	O-Phosphate-P	102	98.7	98.8				0.0722
SM 2120 B	Color (true)	102					2.17	
SM 2320 B-97	Total Alkalinity	103					0.276	
	Total Alkalinity	102					0.0661	
SM 2540 C-97	TDS						2.83	
	TDS						0.0	
SM 4500 F-C-97	Fluoride	101	99.5	100				0.470
	Fluoride	98.0	94.0	94.7				0.470
SM 5310 B-00	Organic Carbon	97.9	97.2	96.5				0.449
	Organic Carbon	95.9	95.9	96.5				0.601
	Organic Carbon	98.8	102	98.8				2.23

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2036103, 2036104, 2036109, 2036110, 2036115
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2036131, 2036132, 2036133, 2036134
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2036131, 2036132, 2036133, 2036134
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2036103, 2036104, 2036109, 2036110
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2036103, 2036104, 2036109, 2036110, 2036115
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2036105, 2036106, 2036111, 2036112, 2036116

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2036105, 2036106, 2036111, 2036112, 2036116
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2036105, 2036106, 2036111, 2036112, 2036116
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2036105, 2036106, 2036111, 2036112, 2036116
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2036107, 2036108, 2036113, 2036114, 2036117
SM 2120 B / E31780	True Color measured at 450 nm	2036103, 2036104, 2036109, 2036110
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2036103, 2036104, 2036109, 2036110, 2036115
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2036103, 2036104, 2036109, 2036110, 2036115
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2036103, 2036104, 2036109, 2036110, 2036115
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2036103, 2036104, 2036109, 2036110, 2036115
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2036105, 2036106, 2036111, 2036112, 2036116

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	10/25/2018			10/25/2018 17:19	Julia Storbeck	2036103, 2036104, 2036109, 2036110, 2036115
EPA 200.7 Rev. 4.4	10/25/2018	10/26/2018 11:37	Devin Thornton	10/31/2018 03:26	Betina Topolski	2036131
	10/25/2018	10/26/2018 11:37	Devin Thornton	10/31/2018 03:33	Betina Topolski	2036132
	10/25/2018	10/26/2018 11:37	Devin Thornton	10/31/2018 03:40	Betina Topolski	2036133
	10/25/2018	10/26/2018 11:37	Devin Thornton	10/31/2018 03:48	Betina Topolski	2036134
EPA 200.8 Rev. 5.4	10/25/2018	10/26/2018 11:37	Devin Thornton	11/08/2018 22:21	Allison Taylor	2036131
	10/25/2018	10/26/2018 11:37	Devin Thornton	11/08/2018 22:31	Allison Taylor	2036132
	10/25/2018	10/26/2018 11:37	Devin Thornton	11/08/2018 22:40	Allison Taylor	2036133
	10/25/2018	10/26/2018 11:37	Devin Thornton	11/08/2018 22:50	Allison Taylor	2036134
EPA 300.0 Rev. 2.1	10/25/2018			10/30/2018 18:57	Lipi Saha	2036103
	10/25/2018			10/30/2018 19:09	Lipi Saha	2036104
	10/25/2018			10/30/2018 19:21	Lipi Saha	2036109
	10/25/2018			10/30/2018 19:33	Lipi Saha	2036110
	10/25/2018			10/31/2018 03:00	Lipi Saha	2036115
EPA 350.1 Rev. 2.0	10/25/2018			11/01/2018 14:05	Ping Hua	2036116
	10/25/2018			11/02/2018 13:01	Ping Hua	2036105
	10/25/2018			11/02/2018 13:13	Ping Hua	2036106
	10/25/2018			11/02/2018 13:14	Ping Hua	2036111
	10/25/2018			11/02/2018 13:16	Ping Hua	2036112
EPA 351.2 Rev. 2.0	10/25/2018	11/01/2018 17:00	Adrian Shelby	11/02/2018 12:45	Virginia P. Brown	2036116
	10/25/2018	11/02/2018 12:30	Adrian Shelby	11/05/2018 10:45	Joseph Suarez	2036105
	10/25/2018	11/02/2018 12:30	Adrian Shelby	11/05/2018 10:47	Joseph Suarez	2036106
	10/25/2018	11/02/2018 12:30	Adrian Shelby	11/05/2018 10:48	Joseph Suarez	2036111
	10/25/2018	11/02/2018 12:30	Adrian Shelby	11/05/2018 10:50	Joseph Suarez	2036112
EPA 353.2 Rev. 2.0	10/25/2018			10/29/2018 11:47	Beverly Y. Sanders	2036116
	10/25/2018			10/31/2018 11:14	Beverly Y. Sanders	2036105
	10/25/2018			10/31/2018 11:21	Beverly Y. Sanders	2036106
	10/25/2018			10/31/2018 11:23	Beverly Y. Sanders	2036111
	10/25/2018			10/31/2018 11:24	Beverly Y. Sanders	2036112
EPA 365.1 Rev. 2.0	10/25/2018	10/31/2018 16:00	Adrian Shelby	11/01/2018 09:45	Beverly Y. Sanders	2036105
	10/25/2018	10/31/2018 16:00	Adrian Shelby	11/01/2018 09:49	Beverly Y. Sanders	2036112
	10/25/2018	10/31/2018 16:00	Adrian Shelby	11/02/2018 09:55	Beverly Y. Sanders	2036116
	10/25/2018	10/31/2018 16:00	Adrian Shelby	11/02/2018 10:00	Beverly Y. Sanders	2036106
	10/25/2018	10/31/2018 16:00	Adrian Shelby	11/02/2018 10:01	Beverly Y. Sanders	2036111
EPA 365.1 Rev. 2.0 dissolved	10/25/2018			10/25/2018 15:36	Lipi Saha	2036107
	10/25/2018			10/25/2018 15:37	Lipi Saha	2036108
	10/25/2018			10/25/2018 15:38	Lipi Saha	2036113, 2036114
	10/25/2018			10/25/2018 15:39	Lipi Saha	2036117
SM 2120 B	10/25/2018			10/25/2018 15:46	Chelsea Hernandez	2036103

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2120 B	10/25/2018			10/25/2018 15:47	Chelsea Hernandez	2036104
	10/25/2018			10/25/2018 15:48	Chelsea Hernandez	2036109
	10/25/2018			10/25/2018 15:49	Chelsea Hernandez	2036110
SM 2320 B-97	10/25/2018			10/29/2018 09:29	Dale L. Simmons	2036103
	10/25/2018			10/29/2018 09:40	Dale L. Simmons	2036104
	10/25/2018			10/29/2018 09:52	Dale L. Simmons	2036109
	10/25/2018			10/29/2018 10:02	Dale L. Simmons	2036110
	10/25/2018			10/31/2018 04:53	Dale L. Simmons	2036115
SM 2540 C-97	10/25/2018			10/26/2018 14:25	Yijie Li	2036103, 2036104, 2036109, 2036110, 2036115
SM 2540 D-97	10/25/2018			10/26/2018 14:25	Yijie Li	2036103, 2036104, 2036109, 2036110, 2036115
SM 4500 F-C-97	10/25/2018			10/29/2018 09:29	Dale L. Simmons	2036103
	10/25/2018			10/29/2018 09:40	Dale L. Simmons	2036104
	10/25/2018			10/29/2018 09:52	Dale L. Simmons	2036109
	10/25/2018			10/29/2018 10:02	Dale L. Simmons	2036110
	10/25/2018			10/31/2018 04:16	Dale L. Simmons	2036115
SM 5310 B-00	10/25/2018			11/02/2018 06:19	Megan Treadwell	2036105
	10/25/2018			11/02/2018 06:51	Megan Treadwell	2036111
	10/25/2018			11/02/2018 07:12	Megan Treadwell	2036116
	10/25/2018			11/02/2018 07:40	Megan Treadwell	2036112
	10/25/2018			11/02/2018 12:24	Megan Treadwell	2036106