

Chemical Analysis Report

SW-DIST-2020-07-21-02

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

Event Description: **Run 14 North Pinellas**
Request ID: **RQ-2020-07-13-11**
Customer: **SW-DIST**
Project ID: **SMP**

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

Date Certified: 10-AUG-2020 18:06



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 by the Florida Department of Health Environmental Laboratory Certification Program 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: Moccasin Creek Tidal

Collection Date/Time: 07/20/2020 10:00

Field ID: G1SW0051

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184367	EPA 180.1 Rev. 2.0	Turbidity	4.2	A	NTU	P384972	
	EPA 300.0 Rev. 2.1	Bromide	12		mg Br/L	P385583	MS
	SM 2320 B-2011	Total Alkalinity	120		mg CaCO3/L	P385067	
	SM 2540 D-2011	TSS	3	U	mg/L	P385468	
	SM 4500 F-C-2011	Fluoride	0.40		mg F/L	P385071	
2184368	EPA 350.1 Rev. 2.0	Ammonia-N	0.097		mg N/L	P385144	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P385055	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P385227	
	EPA 365.1 Rev. 2.0	Total-P	0.39		mg P/L	P385232	
	SM 5310 B-2011	Organic Carbon	14		mg C/L	P385192	
2184369	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.31		mg P/L	P384959	
2184386	EPA 200.7 Rev. 4.4	Chromium	3.6	I	ug/L	P385019	
		Iron	150	I	ug/L	P385019	
		Manganese	89		ug/L	P385019	
		Zinc	15	U	ug/L	P385019	
	EPA 200.8 Rev. 5.4	Aluminum	37	I	ug/L	P385019	
		Antimony	0.31	I	ug/L	P385019	
		Arsenic	3.23		ug/L	P385019	
		Barium	24.5		ug/L	P385019	
		Beryllium	0.040	U	ug/L	P385019	
		Boron**	808		ug/L	P385019	
		Cadmium	0.080	U	ug/L	P385019	
		Cobalt	0.086	I	ug/L	P385019	
		Copper	1.6	U	ug/L	P385019	
		Lead	0.80	U	ug/L	P385019	
		Molybdenum	1.9	I	ug/L	P385019	
		Nickel	2.0	U	ug/L	P385019	
		Selenium	0.80	U	ug/L	P385019	
		Silver	0.040	U	ug/L	P385019	
		Thallium	0.40	U	ug/L	P385019	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for boron are unavailable because of high analyte concentration in the QC sample.

Sample Location: Stevenson Creek Tidal @ Overlea St

Collection Date/Time: 07/20/2020 12:05

Field ID: G5SW0164

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184417	EPA 180.1 Rev. 2.0	Turbidity	3.1		NTU	P384972	
	EPA 300.0 Rev. 2.1	Bromide	22		mg Br/L	P385583	MS
	SM 2320 B-2011	Total Alkalinity	111		mg CaCO3/L	P385068	
	SM 2540 D-2011	TSS	3	U	mg/L	P385468	
	SM 4500 F-C-2011	Fluoride	0.61		mg F/L	P385071	
2184419	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P385144	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.87		mg N/L	P385055	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.028		mg N/L	P385227	
	EPA 365.1 Rev. 2.0	Total-P	0.21		mg P/L	P385232	
	SM 5310 B-2011	Organic Carbon	8.6		mg C/L	P385192	
2184421	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.13		mg P/L	P384959	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Curlew Creek Tidal @ Pirates Cove

Collection Date/Time: 07/20/2020 11:25

Field ID: G5SW0162

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184418	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P384972	
	EPA 300.0 Rev. 2.1	Bromide	9.3		mg Br/L	P385583	MS
	SM 2320 B-2011	Total Alkalinity	89		mg CaCO3/L	P385067	
	SM 2540 D-2011	TSS	3	U	mg/L	P385468	
	SM 4500 F-C-2011	Fluoride	0.34		mg F/L	P385069	
2184420	EPA 350.1 Rev. 2.0	Ammonia-N	0.070		mg N/L	P385144	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.81		mg N/L	P385055	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.26		mg N/L	P385227	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P385232	
	SM 5310 B-2011	Organic Carbon	10		mg C/L	P385192	
2184422	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.098		mg P/L	P384959	

Ref. Method and Comment:

SM 2540 D-2011: 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: P384972

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P385019

Component	Result	Code	Units
Chromium	1.0	U	ug/L
Iron	30	U	ug/L
Manganese	1.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P385019

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Barium	0.20	U	ug/L
Beryllium	0.010	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Cobalt	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Molybdenum	0.15	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385583

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385144

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385055

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385227

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385232

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P384959

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

Reference Method: SM 2320 B-2011
Batch ID: P385067

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

Reference Method: SM 2320 B-2011
Batch ID: P385068

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

Reference Method: SM 2540 D-2011
Batch ID: P385468

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P385069

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P385071

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P385192

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: P385019

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chromium	101		P	85 - 115
Iron	106		P	85 - 115
Manganese	102		P	85 - 115
Zinc	106		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P385019

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	100		P	85 - 115
Antimony	102		P	85 - 115
Arsenic	104		P	85 - 115
Barium	104		P	85 - 115
Beryllium	102		P	85 - 115
Boron	101		P	85 - 115
Cadmium	104		P	85 - 115
Cobalt	106		P	85 - 115
Copper	103		P	85 - 115
Lead	106		P	85 - 115
Molybdenum	105		P	85 - 115
Nickel	103		P	85 - 115
Selenium	101		P	85 - 115
Silver	108		P	85 - 115
Thallium	105		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385583

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Bromide	95.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385144

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: P385055

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385227

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: P385232

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P384959

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

Reference Method: SM 2320 B-2011
Batch ID: P385067

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.6		P	93 - 104

Reference Method: SM 2320 B-2011
Batch ID: P385068

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P385069

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	90 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P385071

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P385192

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P385019

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184386	Chromium	98.2	99.3	P/P	70 - 130
2184386	Iron	101	101	P/P	70 - 130
2184386	Manganese	98.5	101	P/P	70 - 130
2184386	Zinc	104	105	P/P	70 - 130
2184819	Chromium	97.8		P	70 - 130
2184819	Iron	107		P	70 - 130
2184819	Manganese	98.3		P	70 - 130
2184819	Zinc	105		P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P385019

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184386	Aluminum	101	101	P/P	80 - 120
2184386	Antimony	104	105	P/P	80 - 120
2184386	Arsenic	111	110	P/P	80 - 120
2184386	Barium	106	106	P/P	80 - 120
2184386	Beryllium	107	104	P/P	80 - 120
2184386	Cadmium	99.2	103	P/P	80 - 120
2184386	Cobalt	107	108	P/P	80 - 120
2184386	Copper	107	108	P/P	80 - 120
2184386	Lead	111	110	P/P	80 - 120
2184386	Molybdenum	107	108	P/P	70 - 130
2184386	Nickel	101	103	P/P	80 - 120
2184386	Selenium	101	103	P/P	80 - 120
2184386	Silver	102	104	P/P	80 - 120
2184386	Thallium	109	109	P/P	80 - 120
2184819	Aluminum	103		P	80 - 120
2184819	Antimony	105		P	80 - 120
2184819	Arsenic	110		P	80 - 120
2184819	Barium	105		P	80 - 120
2184819	Beryllium	105		P	80 - 120
2184819	Cadmium	101		P	80 - 120
2184819	Cobalt	108		P	80 - 120
2184819	Copper	109		P	80 - 120
2184819	Lead	112		P	80 - 120
2184819	Molybdenum	110		P	70 - 130
2184819	Nickel	102		P	80 - 120
2184819	Selenium	104		P	80 - 120
2184819	Silver	102		P	80 - 120
2184819	Thallium	110		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385583

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2183463	Bromide	90.8		P	90 - 110
2184296	Bromide	90.0	90.6	F/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385144

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184419	Ammonia-N	100	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184338	Kjeldahl Nitrogen	101	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385227

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184258	NO2NO3-N	97.8	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385232

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184338	Total-P	97.4	94.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P384959

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184259	O-Phosphate-P	101	101	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P385069

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184402	Fluoride	99.7	99.7	P/P	94 - 107

Reference Method: SM 4500 F-C-2011
Batch ID: P385071

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184274	Fluoride	99.9	101	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P385192

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184275	Organic Carbon	93.1	92.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P384972

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184367	Turbidity	2.39	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P385019

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184386	Chromium	1.10	Spike	P	0 - 20
2184386	Iron	0.328	Spike	P	0 - 20
2184386	Manganese	1.89	Spike	P	0 - 20
2184386	Zinc	1.80	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P385019

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184386	Aluminum	0.0111	Spike	P	0 - 20
2184386	Antimony	1.10	Spike	P	0 - 20
2184386	Arsenic	0.301	Spike	P	0 - 20
2184386	Barium	0.306	Spike	P	0 - 20
2184386	Beryllium	3.18	Spike	P	0 - 20
2184386	Boron	0.477	Spike	P	0 - 20
2184386	Cadmium	3.51	Spike	P	0 - 20
2184386	Cobalt	1.27	Spike	P	0 - 20
2184386	Copper	1.58	Spike	P	0 - 20
2184386	Lead	0.772	Spike	P	0 - 20
2184386	Molybdenum	0.640	Spike	P	0 - 20
2184386	Nickel	2.00	Spike	P	0 - 20
2184386	Selenium	2.24	Spike	P	0 - 20
2184386	Silver	2.01	Spike	P	0 - 20
2184386	Thallium	0.0250	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385583

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184296	Bromide	0.600	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385144

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184419	Ammonia-N	0.687	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385055

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184338	Kjeldahl Nitrogen	2.06	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385227

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184258	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385232

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184338	Total-P	2.90	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P384959

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184259	O-Phosphate-P	0.168	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P385067

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184402	Total Alkalinity	3.11	Sample	P	0 - 8.1

Reference Method: SM 2320 B-2011
Batch ID: P385068

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184274	Total Alkalinity	0.0992	Sample	P	0 - 8.1

Reference Method: SM 4500 F-C-2011
Batch ID: P385069

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184402	Fluoride	0.0	Spike	P	0 - 2.8

Reference Method: SM 4500 F-C-2011
Batch ID: P385071

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184274	Fluoride	0.946	Spike	P	0 - 2.8

Quality Assurance Report Precision

Reference Method: SM 5310 B-2011
Batch ID: P385192

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184275	Organic Carbon	0.202	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-2011

Run ID: A100041

Included Lab Sample IDs: 2184367, 2184417, 2184418

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.2	102	P/P	90 - 110
Total Alkalinity	99.1	96.2	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A100041

Included Lab Sample IDs: 2184367, 2184417, 2184418

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A100051

Included Lab Sample IDs: 2184386

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	102	101	P/P	90 - 110
Iron	102	103	P/P	90 - 110
Manganese	103	103	P/P	90 - 110
Zinc	107	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A100064

Included Lab Sample IDs: 2184368, 2184419, 2184420

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	98.0	P/P	90 - 110
Kjeldahl Nitrogen	105	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A100073

Included Lab Sample IDs: 2184368, 2184419, 2184420

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

Reference Method: SM 5310 B-2011

Run ID: A100098

Included Lab Sample IDs: 2184368, 2184419, 2184420

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.8	94.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A100111

Included Lab Sample IDs: 2184386

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.7	100	P/P	90 - 110
Arsenic	99.9	99.7	P/P	90 - 110
Barium	102	101	P/P	90 - 110
Beryllium	105	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A100111

Included Lab Sample IDs: 2184386

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Boron	97.6	98.8	P/P	90 - 110
Cadmium	99.3	100	P/P	90 - 110
Cobalt	99.0	99.2	P/P	90 - 110
Copper	99.3	97.9	P/P	90 - 110
Lead	101	101	P/P	90 - 110
Nickel	97.6	97.7	P/P	90 - 110
Selenium	102	101	P/P	90 - 110
Silver	102	103	P/P	90 - 110
Thallium	95.1	95.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A100117

Included Lab Sample IDs: 2184368, 2184419, 2184420

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A100135

Included Lab Sample IDs: 2184386

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	99.6	101	P/P	90 - 110
Molybdenum	98.4	96.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A100162

Included Lab Sample IDs: 2184368, 2184419, 2184420

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A100250

Included Lab Sample IDs: 2184367, 2184417, 2184418

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	97.6	97.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A99994

Included Lab Sample IDs: 2184369, 2184421, 2184422

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.4	99.9	P/P	90 - 110
O-Phosphate-P	99.9	97.7	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A99997

Included Lab Sample IDs: 2184367, 2184417, 2184418

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

* 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					2.39	
EPA 200.7 Rev. 4.4	Chromium	101	98.2	99.3	97.8		1.10
	Iron	106	101	101	107		0.328
	Manganese	102	98.5	101	98.3		1.89
	Zinc	106	104	105	105		1.80
EPA 200.8 Rev. 5.4	Aluminum	100	101	101	103		0.0111
	Antimony	102	104	105	105		1.10
	Arsenic	104	111	110	110		0.301
	Barium	104	105	106	106		0.306
	Beryllium	102	107	104	105		3.18
	Boron	101					0.477
	Cadmium	104	99.2	103	101		3.51
	Cobalt	106	107	108	108		1.27
	Copper	103	107	108	109		1.58
	Lead	106	111	110	112		0.772
	Molybdenum	105	110	107	108		0.640
	Nickel	103	101	103	102		2.00
	Selenium	101	101	103	104		2.24
	Silver	108	102	104	102		2.01
	Thallium	105	109	109	110		0.0250
EPA 300.0 Rev. 2.1	Bromide	95.0	90.0	90.6	90.8		0.600
EPA 350.1 Rev. 2.0	Ammonia-N	99.0	100	99.2			0.687
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.5	101	104			2.06
EPA 353.2 Rev. 2.0	NO2NO3-N	100	97.8	97.8			0.0
EPA 365.1 Rev. 2.0	Total-P	106	97.4	94.5			2.90
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.1	101	101			0.168
SM 2320 B-2011	Total Alkalinity	99.6				3.11	
	Total Alkalinity	101				0.0992	
SM 4500 F-C-2011	Fluoride	100	99.7	99.7			0.0
	Fluoride	100	99.9	101			0.946
SM 5310 B-2011	Organic Carbon	94.0	93.1	92.9			0.202

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2184367, 2184417, 2184418
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2184386
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2184386
EPA 300.0 Rev. 2.1	Bromide in aqueous matrices	2184367, 2184417, 2184418
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2184368, 2184419, 2184420
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2184368, 2184419, 2184420
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2184368, 2184419, 2184420
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2184368, 2184419, 2184420
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2184369, 2184421, 2184422
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2184367, 2184417, 2184418
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2184367, 2184417, 2184418
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2184367, 2184417, 2184418
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2184368, 2184419, 2184420

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	07/21/2020			07/21/2020 16:20	Blanca Fach	2184367, 2184417, 2184418
EPA 200.7 Rev. 4.4	07/21/2020	07/22/2020 16:25	Elliott D. Healy	07/23/2020 21:49	Betina Topolski	2184386
EPA 200.8 Rev. 5.4	07/21/2020	07/22/2020 16:25	Elliott D. Healy	07/27/2020 19:12	Alexander Thompson	2184386
	07/21/2020	07/22/2020 16:25	Elliott D. Healy	07/28/2020 15:48	Alexander Thompson	2184386
EPA 300.0 Rev. 2.1	07/21/2020			07/29/2020 03:59	Julia Storbeck	2184367
	07/21/2020			07/29/2020 04:35	Julia Storbeck	2184417
	07/21/2020			07/29/2020 04:54	Julia Storbeck	2184418
EPA 350.1 Rev. 2.0	07/21/2020			07/25/2020 13:04	Ping Hua	2184419
	07/21/2020			07/25/2020 13:11	Ping Hua	2184368
	07/21/2020			07/25/2020 13:12	Ping Hua	2184420
EPA 351.2 Rev. 2.0	07/21/2020	07/23/2020 10:10	Sima Feizi	07/24/2020 13:03	Jhamieka S. Greenwood	2184368
	07/21/2020	07/23/2020 10:10	Sima Feizi	07/24/2020 13:05	Jhamieka S. Greenwood	2184419
	07/21/2020	07/23/2020 10:10	Sima Feizi	07/24/2020 13:10	Jhamieka S. Greenwood	2184420
EPA 353.2 Rev. 2.0	07/21/2020			07/28/2020 08:33	Beverly Y. Sanders	2184368
	07/21/2020			07/28/2020 08:34	Beverly Y. Sanders	2184419
	07/21/2020			07/28/2020 08:35	Beverly Y. Sanders	2184420
EPA 365.1 Rev. 2.0	07/21/2020	07/28/2020 10:00	Lipi Saha	07/29/2020 14:01	Benjamin T. Nordmann	2184368
	07/21/2020	07/28/2020 10:00	Lipi Saha	07/29/2020 14:02	Benjamin T. Nordmann	2184419
	07/21/2020	07/28/2020 10:00	Lipi Saha	07/29/2020 14:03	Benjamin T. Nordmann	2184420
EPA 365.1 Rev. 2.0 dissolved	07/21/2020			07/21/2020 16:05	Samantha Davila	2184369
	07/21/2020			07/21/2020 16:07	Samantha Davila	2184422
	07/21/2020			07/21/2020 16:20	Samantha Davila	2184421
SM 2320 B-2011	07/21/2020			07/23/2020 01:25	Dale L. Simmons	2184367
	07/21/2020			07/23/2020 01:57	Dale L. Simmons	2184418
	07/21/2020			07/23/2020 04:13	Dale L. Simmons	2184417
SM 2540 D-2011	07/21/2020			07/22/2020 14:56	Yijie Li	2184367, 2184417, 2184418
SM 4500 F-C-2011	07/21/2020			07/23/2020 01:57	Dale L. Simmons	2184418
	07/21/2020			07/23/2020 02:58	Dale L. Simmons	2184367
	07/21/2020			07/23/2020 03:04	Dale L. Simmons	2184417
SM 5310 B-2011	07/21/2020			07/25/2020 04:36	David Boose	2184368
	07/21/2020			07/25/2020 04:49	David Boose	2184419
	07/21/2020			07/25/2020 05:01	David Boose	2184420