

Chemical Analysis Report

SO-DIST-2020-06-16-01

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

Event Description: **2020 SMP : Charlotte Harbor**

Request ID: **RQ-2020-06-15-55**

Customer: **SO-DIST**

Project ID: **SMP**

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FLDEP South District Office
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Date Certified: 08-JUL-2020 16:05



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: Whidden Creek South Pt

Collection Date/Time: 06/15/2020 10:10

Field ID: G2SD0029

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2176942	EPA 180.1 Rev. 2.0	Turbidity	7.9		NTU	P383294	
	EPA 300.0 Rev. 2.1	Bromide	54		mg Br/L	P384096	
	SM 2320 B-2011	Total Alkalinity	152	A	mg CaCO3/L	P383403	
	SM 2540 D-2011	TSS	4	I	mg/L	P383603	
	SM 4500 F-C-2011	Fluoride	1.2		mg F/L	P383406	
2176943	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P383474	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P383429	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P383527	
	EPA 365.1 Rev. 2.0	Total-P	0.064		mg P/L	P383347	
	SM 5310 B-2011	Organic Carbon	13		mg C/L	P383367	
2176944	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P383298	

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: Coral Creek (East)

Collection Date/Time: 06/15/2020 10:50

Field ID: G2SD0039

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2176939	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P383294	
	EPA 300.0 Rev. 2.1	Bromide	33		mg Br/L	P384096	
	SM 2320 B-2011	Total Alkalinity	111		mg CaCO3/L	P383403	
	SM 2540 D-2011	TSS	5	I	mg/L	P383603	
	SM 4500 F-C-2011	Fluoride	0.82		mg F/L	P383406	
2176940	EPA 350.1 Rev. 2.0	Ammonia-N	0.068		mg N/L	P383474	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P383429	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P383527	
	EPA 365.1 Rev. 2.0	Total-P	0.049		mg P/L	P383347	
	SM 5310 B-2011	Organic Carbon	17		mg C/L	P383367	
2176941	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P383298	
2176953	EPA 200.7 Rev. 4.4	Iron	170	I	ug/L	P383628	
		Manganese	11	I	ug/L	P383628	
		Zinc	15	U	ug/L	P383628	
	EPA 200.8 Rev. 5.4	Aluminum	70	I	ug/L	P383628	
		Antimony	0.20	U	ug/L	P383628	
		Arsenic	2.8		ug/L	P383628	
		Boron**	2.67E+03		ug/L	P383628	
		Cadmium	0.20	U	ug/L	P383843	
		Chromium	4.0	U	ug/L	P383628	
		Copper	1.6	U	ug/L	P383628	
		Lead	2.0	U	ug/L	P383843	
		Nickel	2.0	U	ug/L	P383628	
		Selenium	2.0	U	ug/L	P383628	
		Silver	0.040	U	ug/L	P383628	
		Thallium	0.40	U	ug/L	P383628	

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: P383294

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P383628

Component	Result	Code	Units
Iron	30	U	ug/L
Manganese	1.0	U	ug/L
Zinc	12	I	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P383628

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Boron	2.0	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	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 200.8 Rev. 5.4
Batch ID: P383843

Component	Result	Code	Units
Cadmium	0.020	U	ug/L
Lead	0.20	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P384096

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P383474

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383429

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: P383527

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P383347

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P383298

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

Reference Method: SM 2320 B-2011
Batch ID: P383403

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

Reference Method: SM 2540 D-2011
Batch ID: P383603

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P383406

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P383367

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: P383628

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	103		P	85 - 115
Manganese	103		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P383628

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.8		P	85 - 115
Antimony	98.9		P	85 - 115
Arsenic	102		P	85 - 115
Boron	102		P	85 - 115
Chromium	108		P	85 - 115
Copper	103		P	85 - 115
Nickel	103		P	85 - 115
Selenium	99.2		P	85 - 115
Silver	105		P	85 - 115
Thallium	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P383843

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cadmium	101		P	85 - 115
Lead	99.2		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P384096

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Bromide	96.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P383474

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383429

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P383527

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: P383347

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P383298

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

Reference Method: SM 2320 B-2011
Batch ID: P383403

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.9		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P383406

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

Reference Method: SM 5310 B-2011
Batch ID: P383367

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	100		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P383628

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2177280	Iron	103	104	P/P	70 - 130
2177280	Manganese	99.8	100	P/P	70 - 130
2177280	Zinc	102	103	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P383628

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2177280	Aluminum	125	128	P/P	70 - 130
2177280	Antimony	107	104	P/P	70 - 130
2177280	Arsenic	122	124	P/P	70 - 130
2177280	Boron	109	102	P/P	70 - 130
2177280	Chromium	108	108	P/P	70 - 130
2177280	Copper	116	111	P/P	70 - 130
2177280	Nickel	114	109	P/P	70 - 130
2177280	Selenium	116	117	P/P	70 - 130
2177280	Silver	102	99.9	P/P	70 - 130
2177280	Thallium	109	108	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P383843

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2177279	Cadmium	96.6	95.6	P/P	70 - 130
2177279	Lead	106	104	P/P	70 - 130

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P384096

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2177963	Bromide	96.2	96.7	P/P	90 - 110
2178150	Bromide	97.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P383474

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2176943	Ammonia-N	109	107	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383429

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2177266	Kjeldahl Nitrogen	103	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P383527

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2176940	NO2NO3-N	98.3	98.8	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P383347

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2176208	Total-P	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P383298

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2176941	O-Phosphate-P	97.4	98.5	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P383406

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2176942	Fluoride	104	105	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P383367

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2176940	Organic Carbon	100	98.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P383294

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2176893	Turbidity	6.29	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P383628

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2177280	Iron	0.542	Spike	P	0 - 20
2177280	Manganese	0.406	Spike	P	0 - 20
2177280	Zinc	1.06	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P383628

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2177280	Aluminum	2.10	Spike	P	0 - 20
2177280	Antimony	2.71	Spike	P	0 - 20
2177280	Arsenic	1.84	Spike	P	0 - 20
2177280	Boron	1.30	Spike	P	0 - 20
2177280	Chromium	0.126	Spike	P	0 - 20
2177280	Copper	3.67	Spike	P	0 - 20
2177280	Nickel	3.80	Spike	P	0 - 20
2177280	Selenium	1.33	Spike	P	0 - 20
2177280	Silver	1.66	Spike	P	0 - 20
2177280	Thallium	1.24	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P383843

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2177279	Cadmium	1.08	Spike	P	0 - 20
2177279	Lead	1.37	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P384096

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2177963	Bromide	0.391	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P383474

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2176943	Ammonia-N	1.23	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P383429

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2177266	Kjeldahl Nitrogen	0.0301	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P383527

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2176940	NO2NO3-N	0.497	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P383347

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2176208	Total-P	0.379	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P383298

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2176941	O-Phosphate-P	1.12	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
 Batch ID: P383403

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2176942	Total Alkalinity	1.20	Sample	P	0 - 8.1

Reference Method: SM 4500 F-C-2011
 Batch ID: P383406

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2176942	Fluoride	0.463	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
 Batch ID: P383367

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2176940	Organic Carbon	1.62	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A99351

Included Lab Sample IDs: 2176939, 2176942

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A99352

Included Lab Sample IDs: 2176941, 2176944

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.6	101	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A99393

Included Lab Sample IDs: 2176940, 2176943

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

Reference Method: SM 2320 B-2011

Run ID: A99406

Included Lab Sample IDs: 2176939, 2176942

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.0	99.5	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A99406

Included Lab Sample IDs: 2176939, 2176942

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A99413

Included Lab Sample IDs: 2176940, 2176943

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	99.5	P/P	90 - 110
Total-P	99.5	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A99434

Included Lab Sample IDs: 2176940, 2176943

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A99446

Included Lab Sample IDs: 2176940, 2176943

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A99446

Included Lab Sample IDs: 2176940, 2176943

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	102	P/P	90 - 110
Kjeldahl Nitrogen	100	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A99454

Included Lab Sample IDs: 2176940, 2176943

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A99524

Included Lab Sample IDs: 2176953

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	101	101	P/P	90 - 110
Manganese	103	102	P/P	90 - 110
Zinc	99.1	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A99583

Included Lab Sample IDs: 2176953

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	97.8	99.2	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Copper	102	107	P/P	90 - 110
Nickel	101	105	P/P	90 - 110
Selenium	100	99.5	P/P	90 - 110
Silver	102	102	P/P	90 - 110
Thallium	97.4	97.2	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A99637

Included Lab Sample IDs: 2176953

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	106	P/P	90 - 110
Boron	101	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A99665

Included Lab Sample IDs: 2176953

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A99686

Included Lab Sample IDs: 2176953

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cadmium	101	101	P/P	90 - 110
Lead	100	99.9	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A99696

Included Lab Sample IDs: 2176939, 2176942

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	90.4	96.0	P/P	90 - 110

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

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					6.29	
EPA 200.7 Rev. 4.4	Iron	103	103	104			0.542
	Manganese	103	99.8	100			0.406
	Zinc	103	102	103			1.06
EPA 200.8 Rev. 5.4	Aluminum	99.8	125	128			2.10
	Antimony	98.9	107	104			2.71
	Arsenic	102	122	124			1.84
	Boron	102	109	102			1.30
	Cadmium	101	96.6	95.6			1.08
	Chromium	108	108	108			0.126
	Copper	103	116	111			3.67
	Lead	99.2	106	104			1.37
	Nickel	103	114	109			3.80
	Selenium	99.2	116	117			1.33
	Silver	105	102	99.9			1.66
	Thallium	104	109	108			1.24
EPA 300.0 Rev. 2.1	Bromide	96.0	96.2	96.7	97.2		0.391
EPA 350.1 Rev. 2.0	Ammonia-N	103	109	107			1.23
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	103	103			0.0301
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	98.3	98.8			0.497
EPA 365.1 Rev. 2.0	Total-P	108	102	102			0.379
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	97.4	98.5			1.12
SM 2320 B-2011	Total Alkalinity	98.9				1.20	
SM 4500 F-C-2011	Fluoride	100	104	105			0.463
SM 5310 B-2011	Organic Carbon	100	100	98.1			1.62

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2176939, 2176942
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2176953
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2176953
EPA 300.0 Rev. 2.1	Bromide in aqueous matrices	2176939, 2176942
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2176940, 2176943
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2176940, 2176943
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2176940, 2176943
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2176940, 2176943
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2176941, 2176944
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2176939, 2176942
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2176939, 2176942
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2176939, 2176942
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2176940, 2176943

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	06/16/2020			06/16/2020 15:55	Yen Ta	2176939, 2176942
EPA 200.7 Rev. 4.4	06/16/2020	06/24/2020 16:15	Elliott D. Healy	06/25/2020 13:12	Betina Topolski	2176953
EPA 200.8 Rev. 5.4	06/16/2020	06/24/2020 16:15	Elliott D. Healy	06/29/2020 15:10	Alexander Thompson	2176953
	06/16/2020	06/24/2020 16:15	Elliott D. Healy	06/29/2020 16:42	Alexander Thompson	2176953
	06/16/2020	06/24/2020 16:15	Elliott D. Healy	07/01/2020 14:56	Alexander Thompson	2176953
	06/16/2020	06/24/2020 16:15	Elliott D. Healy	07/01/2020 16:08	Alexander Thompson	2176953
	06/16/2020	06/24/2020 16:15	Elliott D. Healy	07/02/2020 12:12	Alexander Thompson	2176953
	06/16/2020	06/30/2020 12:15	Alexander Thompson	07/06/2020 11:35	Alexander Thompson	2176953
EPA 300.0 Rev. 2.1	06/16/2020			07/01/2020 20:30	Jhamieka S. Greenwood	2176939
	06/16/2020			07/01/2020 20:47	Jhamieka S. Greenwood	2176942
EPA 350.1 Rev. 2.0	06/16/2020			06/20/2020 15:19	Ping Hua	2176943
	06/16/2020			06/20/2020 15:31	Ping Hua	2176940
EPA 351.2 Rev. 2.0	06/16/2020	06/19/2020 10:40	Elliott Rodriguez	06/22/2020 12:23	Jhamieka S. Greenwood	2176940
	06/16/2020	06/19/2020 10:40	Elliott Rodriguez	06/22/2020 12:28	Jhamieka S. Greenwood	2176943
EPA 353.2 Rev. 2.0	06/16/2020			06/23/2020 08:20	Beverly Y. Sanders	2176940
	06/16/2020			06/23/2020 08:27	Beverly Y. Sanders	2176943
EPA 365.1 Rev. 2.0	06/16/2020	06/17/2020 12:24	Yen Ta	06/19/2020 08:37	Lipi Saha	2176940
	06/16/2020	06/17/2020 12:24	Yen Ta	06/19/2020 08:45	Lipi Saha	2176943
EPA 365.1 Rev. 2.0 dissolved	06/16/2020			06/16/2020 16:04	Jhamieka S. Greenwood	2176941
	06/16/2020			06/16/2020 16:07	Jhamieka S. Greenwood	2176944
SM 2320 B-2011	06/16/2020			06/18/2020 00:52	Dale L. Simmons	2176942
	06/16/2020			06/18/2020 01:04	Dale L. Simmons	2176939
SM 2540 D-2011	06/16/2020			06/18/2020 14:01	Yijie Li	2176939, 2176942
SM 4500 F-C-2011	06/16/2020			06/18/2020 00:17	Dale L. Simmons	2176942
	06/16/2020			06/18/2020 00:30	Dale L. Simmons	2176939
SM 5310 B-2011	06/16/2020			06/18/2020 00:03	David Boose	2176940
	06/16/2020			06/18/2020 00:42	David Boose	2176943