

Chemical Analysis Report

NE-DIST-2020-10-23-01

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

Event Description: **Nassau West 1**
Request ID: **RQ-2020-10-19-34**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256
Attn: Jeremy Parrish

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: 19-NOV-2020 12:01



NON-CONFORMANCE REPORT INCLUDED

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Metals and Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited 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: Unnamed Drain to Brandy branch at US301

Collection Date/Time: 10/21/2020 10:00

Field ID: G4NE0302

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2204453	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P389214	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P389550	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P389305	
	EPA 365.1 Rev. 2.0	Total-P	0.029		mg P/L	P389675	
	SM 5310 B-2011	Organic Carbon	47		mg C/L	P389296	

Sample Location: St Marys R Sr 2 East

Collection Date/Time: 10/21/2020 11:10

Field ID: 19010027

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2204451	EPA 180.1 Rev. 2.0	Turbidity	3.5	A	NTU	P389192	
	EPA 300.0 Rev. 2.1	Chloride	9.2		mg Cl/L	P389474	
		Sulfate	1.0		mg SO4/L	P389477	
		Color (true)	490	A	PCU	P389143	
	SM 2320 B-2011	Total Alkalinity	1.6	I	mg CaCO3/L	P389451	
	SM 2540 C-2011	TDS	90		mg/L	P389661	
	SM 2540 D-2011	TSS	4	I	mg/L	P389609	
	SM 4500 F-C-2011	Fluoride	0.041	I	mg F/L	P389455	
2204452	EPA 350.1 Rev. 2.0	Ammonia-N	0.029		mg N/L	P389213	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1	J	mg N/L	P389550	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.043		mg N/L	P389304	
	EPA 365.1 Rev. 2.0	Total-P	0.053		mg P/L	P389403	
	SM 5310 B-2011	Organic Carbon	42		mg C/L	P389296	
2204457	EPA 200.7 Rev. 4.4	Barium	18.2		ug/L	P389277	
		Calcium	4.00		mg/L	P389277	
		Iron	1.60E+03		ug/L	P389277	
		Magnesium	1.60		mg/L	P389277	
		Potassium	0.63	I	mg/L	P389277	
		Sodium	4.9		mg/L	P389277	
		Zinc	5.0	U	ug/L	P389277	
	EPA 200.8 Rev. 5.4	Aluminum	604		ug/L	P389277	
		Antimony	0.050	U	ug/L	P389277	
		Arsenic	0.57		ug/L	P389277	
		Beryllium	0.049		ug/L	P389277	
		Boron**	17.8		ug/L	P389277	
		Cadmium	0.020	U	ug/L	P389277	
		Chromium	0.83	I	ug/L	P389277	
		Copper	0.40	U	ug/L	P389277	
		Lead	0.82		ug/L	P389277	
		Nickel	0.86	I	ug/L	P389277	
		Selenium	0.20	U	ug/L	P389277	
		Silver	0.010	U	ug/L	P389277	
		Thallium	0.10	U	ug/L	P389277	
	SM 2340B	Hardness	16.6		mg/L	P389277	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Refer to the Lab Analysis Report for an explanation of QC Codes.

EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 10/30/2020.

Non-Conformance Report

NCR ID: 8480

Event(s)

NE-DIST-2020-10-23-01

Job(s)

Sample(s)

Test(s)

NCR Type: SHIPPING/RECEIVING

NCR Category: Samples arrived late

Observation: Samples arrived one day late by FedEx, samples received within the acceptable temperature range.

Due to a login error the following tests were not logged in and discarded for Field ID G4NE0302: Alkalinity, W-CL-IC, W-F, W-SO4-IC, W-TDS, W-TSS.

Resolution: Sample logged in using the SMP login protocol.

Expired short-hold samples not logged in.

Customer contacted, email correspondence about samples late arrival and login error attached to sample submittal forms.

Biology and Chemistry supervisors were notified by email.

Samples will be qualified as appropriate.

Authorized by/Date: Joshua Ayres 11/19/2020

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.

Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P389192

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P389277

Component	Result	Code	Units
Barium	1.0	U	ug/L
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: P389277

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Beryllium	0.010	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	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: P389474

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389477

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389213

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: P389214

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389550

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389304

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389305

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389403

Component	Result	Code	Units
Total-P	0.005	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389675

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

Reference Method: SM 2120 B-2011
Batch ID: P389143

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P389451

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

Reference Method: SM 2540 C-2011
Batch ID: P389661

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-2011
Batch ID: P389609

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P389455

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P389296

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: P389277

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	93.0		P	80 - 120
Calcium	97.1		P	80 - 120
Iron	95.7		P	80 - 120
Magnesium	95.1		P	80 - 120
Potassium	93.0		P	80 - 120
Sodium	91.1		P	80 - 120
Zinc	92.2		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P389277

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.2		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	100		P	85 - 115
Beryllium	99.3		P	85 - 115
Boron	96.4		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	101		P	85 - 115
Copper	99.6		P	85 - 115
Lead	94.5		P	85 - 115
Nickel	101		P	85 - 115
Selenium	98.3		P	85 - 115
Silver	96.7		P	85 - 115
Thallium	102		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389474

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389477

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389213

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389214

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.7		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389550

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: P389304

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: P389305

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389403

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389675

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	109		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P389143

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P389451

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.3		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P389455

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P389296

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: P389277

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204127	Barium	100	99.1	P/P	80 - 120
2204127	Calcium	98.9	102	P/P	80 - 120
2204127	Iron	102	104	P/P	80 - 120
2204127	Magnesium	100	103	P/P	80 - 120
2204127	Potassium	97.9	98.9	P/P	80 - 120
2204127	Sodium	100	98.7	P/P	80 - 120
2204127	Zinc	97.7	96.6	P/P	80 - 120
2204636	Barium	98.9		P	80 - 120
2204636	Calcium	100		P	80 - 120
2204636	Iron	98.2		P	80 - 120
2204636	Magnesium	102		P	80 - 120
2204636	Potassium	104		P	80 - 120
2204636	Sodium	101		P	80 - 120
2204636	Zinc	93.5		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P389277

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204127	Aluminum	96.2	96.0	P/P	80 - 120
2204127	Antimony	98.4	97.9	P/P	80 - 120
2204127	Arsenic	96.7	97.4	P/P	80 - 120
2204127	Beryllium	90.5	95.1	P/P	80 - 120
2204127	Boron	94.7	93.7	P/P	80 - 120
2204127	Cadmium	97.1	98.9	P/P	80 - 120
2204127	Chromium	98.2	98.5	P/P	80 - 120
2204127	Copper	98.5	98.7	P/P	80 - 120
2204127	Lead	93.9	93.9	P/P	80 - 120
2204127	Nickel	101	100	P/P	80 - 120
2204127	Selenium	96.0	96.5	P/P	80 - 120
2204127	Silver	95.3	95.3	P/P	80 - 120
2204127	Thallium	101	101	P/P	80 - 120
2204636	Aluminum	95.5		P	80 - 120
2204636	Antimony	99.8		P	80 - 120
2204636	Arsenic	97.1		P	80 - 120
2204636	Beryllium	96.3		P	80 - 120
2204636	Boron	93.1		P	80 - 120
2204636	Cadmium	100		P	80 - 120
2204636	Chromium	99.2		P	80 - 120
2204636	Copper	97.4		P	80 - 120
2204636	Lead	95.0		P	80 - 120
2204636	Nickel	97.4		P	80 - 120
2204636	Selenium	93.1		P	80 - 120
2204636	Silver	94.9		P	80 - 120
2204636	Thallium	102		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389474

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204421	Chloride	102		P	90 - 110
2204498	Chloride	103		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389477

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204421	Sulfate	103		P	90 - 110
2204498	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389213

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204422	Ammonia-N	98.1	98.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389214

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204503	Ammonia-N	90.8	91.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389550

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204452	Kjeldahl Nitrogen	111	110	F/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389304

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2203947	NO2NO3-N	98.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389305

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204490	NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389403

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204422	Total-P	109	110	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389675

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204422	Total-P	109	110	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P389455

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204444	Fluoride	105	105	P/P	94 - 107

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P389296

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204495	Organic Carbon	106		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P389192

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204451	Turbidity	3.67	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P389277

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204127	Barium	0.976	Spike	P	0 - 20
2204127	Calcium	2.59	Spike	P	0 - 20
2204127	Iron	2.37	Spike	P	0 - 20
2204127	Magnesium	2.07	Spike	P	0 - 20
2204127	Potassium	0.944	Spike	P	0 - 20
2204127	Sodium	0.828	Spike	P	0 - 20
2204127	Zinc	1.12	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P389277

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204127	Aluminum	0.159	Spike	P	0 - 20
2204127	Antimony	0.564	Spike	P	0 - 20
2204127	Arsenic	0.803	Spike	P	0 - 20
2204127	Beryllium	4.57	Spike	P	0 - 20
2204127	Boron	0.934	Spike	P	0 - 20
2204127	Cadmium	1.79	Spike	P	0 - 20
2204127	Chromium	0.266	Spike	P	0 - 20
2204127	Copper	0.203	Spike	P	0 - 20
2204127	Lead	0.0170	Spike	P	0 - 20
2204127	Nickel	0.802	Spike	P	0 - 20
2204127	Selenium	0.558	Spike	P	0 - 20
2204127	Silver	0.00448	Spike	P	0 - 20
2204127	Thallium	0.306	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389474

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204498	Chloride	0.530	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389477

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204498	Sulfate	0.369	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389213

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204422	Ammonia-N	0.275	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389214

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204503	Ammonia-N	0.803	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389550

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204452	Kjeldahl Nitrogen	0.799	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389304

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2203947	NO2NO3-N	0.180	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389305

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204490	NO2NO3-N	0.990	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389403

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204422	Total-P	0.206	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389675

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204422	Total-P	0.320	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P389143

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204451	Color (true)	5.81	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P389451

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204444	Total Alkalinity	1.90	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P389661

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2203944	TDS	3.92	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P389455

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204444	Fluoride	0.0	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P389296

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204495	Organic Carbon	1.42	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B-2011

Run ID: A101715

Included Lab Sample IDs: 2204451

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	101	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A101733

Included Lab Sample IDs: 2204451

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	98.5	P/P	95 - 105

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A101740

Included Lab Sample IDs: 2204452, 2204453

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.5	97.1	P/P	90 - 110
Ammonia-N	98.2	97.5	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A101781

Included Lab Sample IDs: 2204452, 2204453

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A101784

Included Lab Sample IDs: 2204452, 2204453

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110
NO2NO3-N	102	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A101798

Included Lab Sample IDs: 2204451

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A101807

Included Lab Sample IDs: 2204457

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	96.3	97.8	P/P	90 - 110
Calcium	96.7	98.1	P/P	90 - 110
Iron	98.1	99.7	P/P	90 - 110
Magnesium	96.3	97.5	P/P	90 - 110
Potassium	95.9	97.1	P/P	90 - 110
Sodium	96.4	96.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A101807

Included Lab Sample IDs: 2204457

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Zinc	95.4	96.4	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A101852

Included Lab Sample IDs: 2204451

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.6	101	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A101852

Included Lab Sample IDs: 2204451

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A101871

Included Lab Sample IDs: 2204457

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	95.4	94.5	P/P	90 - 110
Antimony	98.4	99.0	P/P	90 - 110
Arsenic	96.7	96.6	P/P	90 - 110
Boron	97.4	95.5	P/P	90 - 110
Cadmium	99.5	99.6	P/P	90 - 110
Chromium	96.4	95.8	P/P	90 - 110
Copper	96.9	94.9	P/P	90 - 110
Lead	94.5	96.7	P/P	90 - 110
Nickel	96.3	95.1	P/P	90 - 110
Selenium	96.4	95.4	P/P	90 - 110
Silver	99.8	99.6	P/P	90 - 110
Thallium	97.7	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A101879

Included Lab Sample IDs: 2204452

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A101891

Included Lab Sample IDs: 2204457

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Beryllium	100	99.7	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A101913

Included Lab Sample IDs: 2204452, 2204453

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A101996

Included Lab Sample IDs: 2204453

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

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

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					3.67	
EPA 200.7 Rev. 4.4	Barium	93.0	100	99.1	98.9		0.976
	Calcium	97.1	98.9	102	100		2.59
	Iron	95.7	102	104	98.2		2.37
	Magnesium	95.1	100	103	102		2.07
	Potassium	93.0	97.9	98.9	104		0.944
	Sodium	91.1	100	98.7	101		0.828
	Zinc	92.2	97.7	96.6	93.5		1.12
EPA 200.8 Rev. 5.4	Aluminum	99.2	96.2	96.0	95.5		0.159
	Antimony	101	98.4	97.9	99.8		0.564
	Arsenic	100	96.7	97.4	97.1		0.803
	Beryllium	99.3	90.5	95.1	96.3		4.57
	Boron	96.4	94.7	93.7	93.1		0.934
	Cadmium	101	97.1	98.9	100		1.79
	Chromium	101	98.2	98.5	99.2		0.266
	Copper	99.6	98.5	98.7	97.4		0.203
	Lead	94.5	93.9	93.9	95.0		0.0170
	Nickel	101	101	100	97.4		0.802
	Selenium	98.3	96.0	96.5	93.1		0.558
	Silver	96.7	95.3	95.3	94.9		0.0044
	Thallium	102	101	101	102		0.306
EPA 300.0 Rev. 2.1	Chloride	102	103	102		0.530	
	Sulfate	101	102	103		0.369	
EPA 350.1 Rev. 2.0	Ammonia-N	97.7	98.1	98.4			0.275
	Ammonia-N	97.7	90.8	91.7			0.803
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	111	110			0.799
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	98.0				0.180
	NO ₂ NO ₃ -N	102	100	102			0.990
EPA 365.1 Rev. 2.0	Total-P	105	109	110			0.206
	Total-P	109	109	110			0.320
SM 2120 B-2011	Color (true)	100				5.81	
SM 2320 B-2011	Total Alkalinity	99.3				1.90	
SM 2540 C-2011	TDS					3.92	
SM 4500 F-C-2011	Fluoride	102	105	105			0.0
SM 5310 B-2011	Organic Carbon	100	106				1.42

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2204451
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2204457
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2204457
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2204451
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2204451
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2204452, 2204453
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2204452, 2204453
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2204452, 2204453
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2204452, 2204453
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2204451
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2204451
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2204457

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2204451
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2204451
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2204451
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2204452, 2204453

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	10/23/2020			10/23/2020 10:20	Samantha Davila	2204451
EPA 200.7 Rev. 4.4	10/23/2020	10/26/2020 17:00	Elliott D. Healy	10/27/2020 19:41	Betina Topolski	2204457
EPA 200.8 Rev. 5.4	10/23/2020	10/26/2020 17:00	Elliott D. Healy	10/29/2020 17:34	Alexander Thompson	2204457
	10/23/2020	10/26/2020 17:00	Elliott D. Healy	10/30/2020 11:52	Alexander Thompson	2204457
EPA 300.0 Rev. 2.1	10/23/2020			10/28/2020 23:46	Lipi Saha	2204451
EPA 350.1 Rev. 2.0	10/23/2020			10/25/2020 13:21	Ping Hua	2204452
	10/23/2020			10/25/2020 13:42	Ping Hua	2204453
EPA 351.2 Rev. 2.0	10/23/2020	10/30/2020 15:06	David Boose	11/02/2020 13:30	Elliott Rodriguez	2204452
	10/23/2020	10/30/2020 15:06	David Boose	11/02/2020 13:37	Elliott Rodriguez	2204453
EPA 353.2 Rev. 2.0	10/23/2020			10/27/2020 08:56	Beverly Y. Sanders	2204452
	10/23/2020			10/27/2020 09:09	Beverly Y. Sanders	2204453
EPA 365.1 Rev. 2.0	10/23/2020	10/28/2020 13:34	Yen Ta	10/30/2020 12:58	Benjamin T. Nordmann	2204452
	10/23/2020	11/03/2020 12:37	Yen Ta	11/05/2020 14:59	Shengyu Wang	2204453
SM 2120 B-2011	10/23/2020			10/23/2020 10:49	Blanca Fach	2204451
SM 2320 B-2011	10/23/2020			10/29/2020 01:25	Samantha Davila	2204451
SM 2340B	10/23/2020			10/27/2020 19:41	Betina Topolski	2204457
SM 2540 C-2011	10/23/2020			10/26/2020 15:36	Yijie Li	2204451
SM 2540 D-2011	10/23/2020			10/26/2020 15:36	Yijie Li	2204451
SM 4500 F-C-2011	10/23/2020			10/29/2020 01:25	Samantha Davila	2204451
SM 5310 B-2011	10/23/2020			10/26/2020 20:09	Lauren Lees	2204452
	10/23/2020			10/26/2020 20:21	Lauren Lees	2204453