Chemical Analysis Report

SO-DIST-2020-08-26-02

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

Event Description: **2020 SMP : Bonnet Creek**
Request ID: **RQ-2020-08-24-44**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Nicole Reistad

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: 15-SEP-2020 10:44

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: Bonnet Cr. @ Thomas Property **Collection Date/Time: 08/25/2020 13:05**

Field ID: G4SD0107 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2192202	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P386580	
	EPA 300.0 Rev. 2.1	Chloride	15		mg Cl/L	P387060	
		Sulfate	6.6		mg SO4/L	P387065	
	SM 2120 B-2011	Color (true)	460		PCU	P386583	
	SM 2320 B-2011	Total Alkalinity	24		mg CaCO3/L	P386667	
	SM 2540 C-2011	TDS	140		mg/L	P386994	
	SM 2540 D-2011	TSS	2	I	mg/L	P386987	
	SM 4500 F-C-2011	Fluoride	0.076	I	mg F/L	P386901	
2192203	EPA 350.1 Rev. 2.0	Ammonia-N	0.70		mg N/L	P387018	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.2		mg N/L	P386806	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.24		mg N/L	P386671	
	EPA 365.1 Rev. 2.0	Total-P	1.0		mg P/L	P386615	
	SM 5310 B-2011	Organic Carbon	37		mg C/L	P386725	
2192204	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.94		mg P/L	P386588	
2192210	EPA 200.7 Rev. 4.4	Barium	10.2		ug/L	P386647	
		Calcium	9.22		mg/L	P386647	
		Iron	540		ug/L	P386647	
		Magnesium	4.09		mg/L	P386647	
		Potassium	9.5		mg/L	P386647	
		Sodium	8.5		mg/L	P386647	
		Zinc	5.0	U	ug/L	P386647	
	EPA 200.8 Rev. 5.4	Aluminum	260		ug/L	P386647	
		Antimony	0.050	U	ug/L	P386647	
		Arsenic	0.83		ug/L	P386647	
		Beryllium	0.025	I	ug/L	P386647	
		Boron**	31.3		ug/L	P386647	
		Cadmium	0.020	U	ug/L	P386647	
		Chromium	0.58	I	ug/L	P386647	
		Copper	1.35		ug/L	P386647	
		Lead	0.23	I	ug/L	P386647	
		Nickel	0.55	I	ug/L	P386647	
		Selenium	0.20	U	ug/L	P386647	
		Silver	0.010	U	ug/L	P386647	
		Thallium	0.10	U	ug/L	P386647	
	SM 2340B	Hardness	39.9		mg/L	P386647	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 4500 F-C-2011: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P386580

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P386647

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: P386647

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: P387060

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387065

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387018

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386806

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P386671

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P386615

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P386588

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

Reference Method: SM 2120 B-2011
Batch ID: P386583

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P386667

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

Reference Method: SM 2540 C-2011
Batch ID: P386994

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P386987

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P386901

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P386725

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: P386647

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	102		P	85 - 115
Calcium	101		P	85 - 115
Iron	101		P	85 - 115
Magnesium	100		P	85 - 115
Potassium	98.4		P	85 - 115
Sodium	98.3		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P386647

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	96.9		P	85 - 115
Antimony	100		P	85 - 115
Arsenic	105		P	85 - 115
Beryllium	100		P	85 - 115
Boron	100		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	103		P	85 - 115
Copper	100		P	85 - 115
Lead	104		P	85 - 115
Nickel	101		P	85 - 115
Selenium	100		P	85 - 115
Silver	104		P	85 - 115
Thallium	104		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387060

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387065

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387018

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386806

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	107		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P386671

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: P386615

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: P386588

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.9		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P386583

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.0		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P386667

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P386901

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P386725

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: P386647

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2192198	Barium	101		P	80 - 120
2192198	Calcium	99.8		P	80 - 120
2192198	Iron	103		P	80 - 120
2192198	Magnesium	97.7		P	80 - 120
2192198	Potassium	97.7		P	80 - 120
2192198	Sodium	96.6		P	80 - 120
2192198	Zinc	104		P	80 - 120
2192473	Barium	100	102	P/P	80 - 120
2192473	Calcium	102	101	P/P	80 - 120
2192473	Iron	103	103	P/P	80 - 120
2192473	Magnesium	103	102	P/P	80 - 120
2192473	Potassium	104	103	P/P	80 - 120
2192473	Sodium	98.9	99.3	P/P	80 - 120
2192473	Zinc	100	102	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P386647

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2192198	Aluminum	95.6		P	80 - 120
2192198	Antimony	105		P	80 - 120
2192198	Arsenic	110		P	80 - 120
2192198	Beryllium	98.5		P	80 - 120
2192198	Boron	99.1		P	80 - 120
2192198	Cadmium	104		P	80 - 120
2192198	Chromium	104		P	80 - 120
2192198	Copper	100		P	80 - 120
2192198	Lead	109		P	80 - 120
2192198	Nickel	104		P	80 - 120
2192198	Selenium	102		P	80 - 120
2192198	Silver	103		P	80 - 120
2192198	Thallium	108		P	80 - 120
2192473	Aluminum	95.2	98.5	P/P	80 - 120
2192473	Antimony	100	101	P/P	80 - 120
2192473	Arsenic	100	102	P/P	80 - 120
2192473	Beryllium	95.9	96.0	P/P	80 - 120
2192473	Boron	98.4	102	P/P	80 - 120
2192473	Cadmium	102	104	P/P	80 - 120
2192473	Chromium	103	103	P/P	80 - 120
2192473	Copper	101	102	P/P	80 - 120
2192473	Lead	104	106	P/P	80 - 120
2192473	Nickel	100	101	P/P	80 - 120
2192473	Selenium	97.4	96.2	P/P	80 - 120
2192473	Silver	102	103	P/P	80 - 120
2192473	Thallium	103	107	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387060

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2192150	Chloride	98.2		P	90 - 110
2192431	Chloride	99.0		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387065

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2192150	Sulfate	96.8		P	90 - 110
2192431	Sulfate	96.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387018

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2192157	Ammonia-N	99.4	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386806

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2192157	Kjeldahl Nitrogen	99.7	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P386671

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2192144	NO2NO3-N	97.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P386615

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2192127	Total-P	105	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P386588

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2192209	O-Phosphate-P	91.1	91.9	P/P	90 - 110

Reference Method: SM 5310 B-2011
Batch ID: P386725

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2192127	Organic Carbon	91.6	93.4	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P386580

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192207	Turbidity	4.48	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P386647

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192473	Barium	2.02	Spike	P	0 - 20
2192473	Calcium	1.18	Spike	P	0 - 20
2192473	Iron	0.717	Spike	P	0 - 20
2192473	Magnesium	0.274	Spike	P	0 - 20
2192473	Potassium	0.726	Spike	P	0 - 20
2192473	Sodium	0.291	Spike	P	0 - 20
2192473	Zinc	2.09	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P386647

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192473	Aluminum	3.17	Spike	P	0 - 20
2192473	Antimony	1.25	Spike	P	0 - 20
2192473	Arsenic	1.54	Spike	P	0 - 20
2192473	Beryllium	0.0936	Spike	P	0 - 20
2192473	Boron	2.88	Spike	P	0 - 20
2192473	Cadmium	1.38	Spike	P	0 - 20
2192473	Chromium	0.666	Spike	P	0 - 20
2192473	Copper	1.36	Spike	P	0 - 20
2192473	Lead	1.95	Spike	P	0 - 20
2192473	Nickel	1.22	Spike	P	0 - 20
2192473	Selenium	1.28	Spike	P	0 - 20
2192473	Silver	0.911	Spike	P	0 - 20
2192473	Thallium	3.60	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387060

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192150	Chloride	0.0899	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387065

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192150	Sulfate	0.458	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387018

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192157	Ammonia-N	1.35	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386806

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192157	Kjeldahl Nitrogen	0.862	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P386671

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192144	NO2NO3-N	0.207	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P386615

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192127	Total-P	2.76	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P386588

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192209	O-Phosphate-P	0.874	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P386583

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192207	Color (true)	2.71	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P386667

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192072	Total Alkalinity	0.538	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P386994

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192073	TDS	4.83	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P386901

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192072	Fluoride	1.37	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P386725

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192127	Organic Carbon	0.891	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: A100660
Included Lab Sample IDs: 2192202

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105

Reference Method: SM 2120 B-2011
Run ID: A100661
Included Lab Sample IDs: 2192202

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A100663
Included Lab Sample IDs: 2192204

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.9	96.1	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A100697
Included Lab Sample IDs: 2192202

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.3	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A100698
Included Lab Sample IDs: 2192203

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A100710
Included Lab Sample IDs: 2192203

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

Reference Method: SM 5310 B-2011
Run ID: A100718
Included Lab Sample IDs: 2192203

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.2	93.6	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A100733
Included Lab Sample IDs: 2192210

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	103	97.8	P/P	90 - 110
Calcium	99.8	97.0	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A100733
Included Lab Sample IDs: 2192210

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	101	98.1	P/P	90 - 110
Magnesium	99.8	96.9	P/P	90 - 110
Potassium	98.5	95.7	P/P	90 - 110
Sodium	98.7	95.9	P/P	90 - 110
Zinc	102	97.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A100762
Included Lab Sample IDs: 2192210

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.9	99.2	P/P	90 - 110
Antimony	102	105	P/P	90 - 110
Arsenic	99.9	100	P/P	90 - 110
Boron	100	102	P/P	90 - 110
Cadmium	101	101	P/P	90 - 110
Chromium	101	101	P/P	90 - 110
Copper	98.2	96.2	P/P	90 - 110
Lead	105	104	P/P	90 - 110
Nickel	98.8	98.2	P/P	90 - 110
Selenium	96.9	100	P/P	90 - 110
Silver	104	104	P/P	90 - 110
Thallium	101	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A100780
Included Lab Sample IDs: 2192203

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.1	96.5	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A100801
Included Lab Sample IDs: 2192202

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A100832
Included Lab Sample IDs: 2192203

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	99.7	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A100843
Included Lab Sample IDs: 2192202

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A100843
Included Lab Sample IDs: 2192202

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A100862
Included Lab Sample IDs: 2192210

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Beryllium	98.2	95.1	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						4.48	
EPA 200.7 Rev. 4.4	Barium	102	101	100	102			2.02
	Calcium	101	99.8	102	101			1.18
	Iron	101	103	103	103			0.717
	Magnesium	100	97.7	103	102			0.274
	Potassium	98.4	97.7	104	103			0.726
	Sodium	98.3	96.6	98.9	99.3			0.291
	Zinc	102	104	100	102			2.09
EPA 200.8 Rev. 5.4	Aluminum	96.9	95.6	95.2	98.5			3.17
	Antimony	100	105	100	101			1.25
	Arsenic	105	110	100	102			1.54
	Beryllium	100	95.9	96.0	98.5			0.0936
	Boron	100	99.1	98.4	102			2.88
	Cadmium	101	104	102	104			1.38
	Chromium	103	104	103	103			0.666
	Copper	100	100	101	102			1.36
	Lead	104	109	104	106			1.95
	Nickel	101	104	100	101			1.22
	Selenium	100	102	97.4	96.2			1.28
	Silver	104	103	102	103			0.911
	Thallium	104	108	103	107			3.60
EPA 300.0 Rev. 2.1	Chloride	97.7	98.2	99.0			0.0899	
	Sulfate	96.4	96.8	96.9			0.458	
EPA 350.1 Rev. 2.0	Ammonia-N	99.9	99.4	101				1.35
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	99.7	101				0.862
EPA 353.2 Rev. 2.0	NO2NO3-N	102	97.8					0.207
EPA 365.1 Rev. 2.0	Total-P	108	105	108				2.76
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.9	91.1	91.9				0.874
SM 2120 B-2011	Color (true)	99.0					2.71	
SM 2320 B-2011	Total Alkalinity	102					0.538	
SM 2540 C-2011	TDS						4.83	
SM 4500 F-C-2011	Fluoride	101						1.37
SM 5310 B-2011	Organic Carbon	94.0	91.6	93.4				0.891

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2192202
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2192210
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2192210
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2192202
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2192202
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2192203
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2192203
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2192203
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2192203
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2192204
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2192202
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2192202
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2192210

Reference Method Descriptions

Method	Description	Associated Samples
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2192202
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2192202
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2192202
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2192203

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	08/26/2020			08/26/2020 15:10	Yen Ta	2192202
EPA 200.7 Rev. 4.4	08/26/2020	08/27/2020 17:00	Elliott D. Healy	08/31/2020 14:40	Betina Topolski	2192210
EPA 200.8 Rev. 5.4	08/26/2020	08/27/2020 17:00	Elliott D. Healy	09/01/2020 18:08	Alexander Thompson	2192210
	08/26/2020	08/27/2020 17:00	Elliott D. Healy	09/08/2020 13:04	Alexander Thompson	2192210
EPA 300.0 Rev. 2.1	08/26/2020			09/05/2020 00:49	Julia Storbeck	2192202
EPA 350.1 Rev. 2.0	08/26/2020			09/05/2020 14:05	Ping Hua	2192203
EPA 351.2 Rev. 2.0	08/26/2020	09/01/2020 11:35	Sima Feizi	09/02/2020 10:57	Virginia P. Brown	2192203
EPA 353.2 Rev. 2.0	08/26/2020			08/28/2020 09:18	Beverly Y. Sanders	2192203
EPA 365.1 Rev. 2.0	08/26/2020	08/27/2020 11:54	Yen Ta	08/28/2020 14:08	Benjamin T. Nordmann	2192203
EPA 365.1 Rev. 2.0 dissolved	08/26/2020			08/26/2020 18:57	Blanca Fach	2192204
SM 2120 B-2011	08/26/2020			08/26/2020 16:00	Benjamin T. Nordmann	2192202
SM 2320 B-2011	08/26/2020			08/27/2020 23:19	Dale L. Simmons	2192202
SM 2340B	08/26/2020			08/31/2020 14:40	Betina Topolski	2192210
SM 2540 C-2011	08/26/2020			08/27/2020 15:08	Yijie Li	2192202
SM 2540 D-2011	08/26/2020			08/27/2020 15:08	Yijie Li	2192202
SM 4500 F-C-2011	08/26/2020			09/03/2020 01:48	Dale L. Simmons	2192202
SM 5310 B-2011	08/26/2020			08/30/2020 02:37	Ping Hua	2192203