

Chemical Analysis Report

SE-DIST-2021-05-21-03

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

Event Description: **SMP - Okeechobee 05/20**
Request ID: **RQ-2021-05-10-55**
Customer: **SE-DIST**
Project ID: **SMP**

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Date Certified: 11-JUN-2021 10:01



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: Gore Branch @ 724

Collection Date/Time: 05/20/2021 10:30

Field ID: G4SE0130

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2249319	EPA 180.1 Rev. 2.0	Turbidity	6.4		NTU	P398602	
	EPA 300.0 Rev. 2.1	Chloride	35		mg Cl/L	P399193	
		Sulfate	6.6		mg SO4/L	P399195	
	SM 2120 B-2011	Color (true)	64		PCU	P398620	
	SM 2320 B-2011	Total Alkalinity	117		mg CaCO3/L	P399063	
	SM 2540 C-2011	TDS	221		mg/L	P399052	
	SM 2540 D-2011	TSS	8	I	mg/L	P398842	
	SM 4500 F-C-2011	Fluoride	0.18		mg F/L	P398970	
2249320	EPA 350.1 Rev. 2.0	Ammonia-N	0.12		mg N/L	P399310	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P399035	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P398656	
	EPA 365.1 Rev. 2.0	Total-P	0.076		mg P/L	P398800	
	SM 5310 B-2011	Organic Carbon	20		mg C/L	P398925	
2249321	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.018		mg P/L	P398702	

Ref. Method and Comment:

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Oak Creek @ 68

Collection Date/Time: 05/20/2021 11:30

Field ID: G4SE0080

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2249316	EPA 180.1 Rev. 2.0	Turbidity	18		NTU	P398602	
	EPA 300.0 Rev. 2.1	Chloride	52		mg Cl/L	P399193	
		Sulfate	15		mg SO4/L	P399195	
		Color (true)	100		PCU	P398621	
	SM 2320 B-2011	Total Alkalinity	17		mg CaCO3/L	P398904	
	SM 2540 C-2011	TDS	194		mg/L	P399052	
	SM 2540 D-2011	TSS	28		mg/L	P398842	
2249317	SM 4500 F-C-2011	Fluoride	0.10		mg F/L	P398906	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.30		mg N/L	P399236	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	3.4		mg N/L	P399035	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.018		mg N/L	P398656	
	EPA 365.1 Rev. 2.0	Total-P	0.94		mg P/L	P398800	
2249318	SM 5310 B-2011	Organic Carbon	25		mg C/L	P398925	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.25		mg P/L	P398702	
2249332	EPA 200.7 Rev. 4.4	Barium	50.0		ug/L	P398729	
		Calcium	17.6		mg/L	P398729	
		Iron	4.75E+03		ug/L	P398729	
		Magnesium	4.77		mg/L	P398729	
		Manganese	95.8		ug/L	P398729	
		Potassium	7.2		mg/L	P398729	
		Sodium	26.9		mg/L	P398729	
	EPA 200.8 Rev. 5.4	Zinc	24		ug/L	P398729	
		Aluminum	1.53E+03		ug/L	P398729	
		Antimony	0.078	I	ug/L	P398729	
		Arsenic	1.60		ug/L	P398729	
		Beryllium	0.110		ug/L	P398729	
		Boron**	33.9		ug/L	P398729	
		Cadmium	0.050	I	ug/L	P398729	
		Chromium	2.4		ug/L	P398729	
		Copper	2.26		ug/L	P398729	
		Lead	2.22		ug/L	P398729	
		Nickel	0.89	I	ug/L	P398729	
		Selenium	0.24	I	ug/L	P398729	
		Silver	0.010	U	ug/L	P398729	
		Thallium	0.10	U	ug/L	P398729	
	SM 2340B	Hardness	63.6		mg/L	P398729	

Ref. Method and Comment:

EPA 365.1 Rev. 2.0: Total-P: 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: P398602

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P398729

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
Manganese	1.0	U	ug/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: P398729

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: P399193

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P399195

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P399236

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: P399310

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P399035

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398656

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398800

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398702

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

Reference Method: SM 2120 B-2011
Batch ID: P398620

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B-2011
Batch ID: P398621

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P398904

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

Reference Method: SM 2320 B-2011
Batch ID: P399063

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-2011
Batch ID: P399052

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P398842

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P398906

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P398970

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P398925

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: P398729

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	97.7		P	85 - 115
Calcium	105		P	85 - 115
Iron	103		P	85 - 115
Magnesium	101		P	85 - 115
Manganese	98.0		P	85 - 115
Potassium	98.8		P	85 - 115
Sodium	103		P	85 - 115
Zinc	97.4		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398729

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	97.3		P	80 - 120
Antimony	102		P	80 - 120
Arsenic	102		P	80 - 120
Beryllium	96.0		P	85 - 115
Boron	97.6		P	80 - 120
Cadmium	101		P	80 - 120
Chromium	98.7		P	80 - 120
Copper	98.9		P	80 - 120
Lead	110		P	85 - 115
Nickel	99.8		P	80 - 120
Selenium	101		P	80 - 120
Silver	100		P	80 - 120
Thallium	105		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P399193

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P399195

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P399236

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P399310

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P399035

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398656

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: P398800

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398702

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

Reference Method: SM 2120 B-2011
Batch ID: P398620

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.8		P	85 - 115

Reference Method: SM 2120 B-2011
Batch ID: P398621

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.8		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P398904

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.6		P	94 - 106

Reference Method: SM 2320 B-2011
Batch ID: P399063

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.8		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P398906

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.8		P	93 - 104

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P398970

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.9		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P398925

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P398729

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249046	Barium	101	98.6	P/P	80 - 120
2249046	Calcium	105		P	80 - 120
2249046	Iron	108	105	P/P	80 - 120
2249046	Magnesium	100		P	80 - 120
2249046	Manganese	101	99.1	P/P	80 - 120
2249046	Potassium	101	97.6	P/P	80 - 120
2249046	Sodium	104		P	80 - 120
2249046	Zinc	98.6	97.1	P/P	80 - 120
2249106	Barium	101		P	80 - 120
2249106	Calcium	108		P	80 - 120
2249106	Iron	105		P	80 - 120
2249106	Magnesium	103		P	80 - 120
2249106	Manganese	101		P	80 - 120
2249106	Potassium	101		P	80 - 120
2249106	Sodium	105		P	80 - 120
2249106	Zinc	99.4		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P398729

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249046	Aluminum	98.8	96.1	P/P	80 - 120
2249046	Antimony	102	102	P/P	80 - 120
2249046	Arsenic	102	101	P/P	80 - 120
2249046	Beryllium	98.8	96.8	P/P	80 - 120
2249046	Boron	103	99.9	P/P	80 - 120
2249046	Cadmium	103	102	P/P	80 - 120
2249046	Chromium	100	98.3	P/P	80 - 120
2249046	Copper	97.3	96.3	P/P	80 - 120
2249046	Lead	113	109	P/P	80 - 120
2249046	Nickel	97.9	95.9	P/P	80 - 120
2249046	Selenium	99.3	98.3	P/P	80 - 120
2249046	Silver	98.9	98.6	P/P	80 - 120
2249046	Thallium	108	107	P/P	80 - 120
2249106	Aluminum	96.1		P	80 - 120
2249106	Antimony	98.8		P	80 - 120
2249106	Arsenic	98.1		P	80 - 120
2249106	Beryllium	98.3		P	80 - 120
2249106	Boron	103		P	80 - 120
2249106	Cadmium	102		P	80 - 120
2249106	Chromium	97.2		P	80 - 120
2249106	Copper	98.5		P	80 - 120
2249106	Lead	106		P	80 - 120
2249106	Nickel	98.6		P	80 - 120
2249106	Selenium	95.1		P	80 - 120
2249106	Silver	99.5		P	80 - 120
2249106	Thallium	106		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P399193

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P399193

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249229	Chloride	98.6		P	90 - 110
2249553	Chloride	98.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P399195

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249229	Sulfate	98.6		P	90 - 110
2249553	Sulfate	99.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P399236

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2248823	Ammonia-N	94.8	95.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P399310

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2248841	Ammonia-N	93.4	96.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P399035

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249286	Kjeldahl Nitrogen	108	99.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398656

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249286	NO2NO3-N	97.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398702

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249321	O-Phosphate-P	95.3	96.3	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P398906

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249042	Fluoride	98.6	97.4	P/P	92 - 107

Reference Method: SM 4500 F-C-2011
Batch ID: P398970

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249615	Fluoride	100	99.5	P/P	92 - 107

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P398925

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249292	Organic Carbon	94.2	93.5	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P398602

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249291	Turbidity	0.797	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P398729

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249046	Barium	2.12	Spike	P	0 - 20
2249046	Calcium	1.50	Spike	P	0 - 20
2249046	Iron	2.67	Spike	P	0 - 20
2249046	Magnesium	2.47	Spike	P	0 - 20
2249046	Manganese	1.97	Spike	P	0 - 20
2249046	Potassium	2.31	Spike	P	0 - 20
2249046	Sodium	1.80	Spike	P	0 - 20
2249046	Zinc	1.56	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P398729

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249046	Aluminum	2.72	Spike	P	0 - 20
2249046	Antimony	0.0381	Spike	P	0 - 20
2249046	Arsenic	1.19	Spike	P	0 - 20
2249046	Beryllium	2.01	Spike	P	0 - 20
2249046	Boron	2.12	Spike	P	0 - 20
2249046	Cadmium	1.11	Spike	P	0 - 20
2249046	Chromium	1.76	Spike	P	0 - 20
2249046	Copper	1.04	Spike	P	0 - 20
2249046	Lead	3.09	Spike	P	0 - 20
2249046	Nickel	1.90	Spike	P	0 - 20
2249046	Selenium	0.936	Spike	P	0 - 20
2249046	Silver	0.228	Spike	P	0 - 20
2249046	Thallium	0.878	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P399193

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249229	Chloride	0.883	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P399195

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249229	Sulfate	0.856	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P399236

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248823	Ammonia-N	0.689	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P399310

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248841	Ammonia-N	3.07	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P399035

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249286	Kjeldahl Nitrogen	5.68	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P398656

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249286	NO2NO3-N	0.224	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P398800

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249317	Total-P	0.376	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P398702

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249321	O-Phosphate-P	0.875	Spike	P	0 - 20

Reference Method: SM 2120 B-2011

Batch ID: P398620

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249291	Color (true)	4.90	Sample	P	0 - 20

Reference Method: SM 2120 B-2011

Batch ID: P398621

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249096	Color (true)	7.48	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P398904

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249042	Total Alkalinity	1.13	Sample	P	0 - 5.2

Reference Method: SM 2320 B-2011
Batch ID: P399063

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2251100	Total Alkalinity	0.360	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P399052

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249291	TDS	5.78	Sample	P	0 - 10

Reference Method: SM 2540 D-2011
Batch ID: P398842

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249291	TSS	3.51	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P398906

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249042	Fluoride	0.921	Spike	P	0 - 2.1

Reference Method: SM 4500 F-C-2011
Batch ID: P398970

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249615	Fluoride	0.502	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P398925

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249292	Organic Carbon	0.502	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: A105598

Included Lab Sample IDs: 2249316, 2249319

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.5	P/P	95 - 105

Reference Method: SM 2120 B-2011

Run ID: A105603

Included Lab Sample IDs: 2249316, 2249319

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.7	99.5	P/P	90 - 115
Color (true)	99.5	99.8	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A105611

Included Lab Sample IDs: 2249317, 2249320

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A105633

Included Lab Sample IDs: 2249318, 2249321

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.4	99.5	P/P	90 - 110
O-Phosphate-P	99.5	98.6	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A105721

Included Lab Sample IDs: 2249316

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.2	102	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A105721

Included Lab Sample IDs: 2249316

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

Reference Method: SM 5310 B-2011

Run ID: A105730

Included Lab Sample IDs: 2249317, 2249320

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.8	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A105734

Included Lab Sample IDs: 2249317, 2249320

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A105734

Included Lab Sample IDs: 2249317, 2249320

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A105746

Included Lab Sample IDs: 2249332

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	100	P/P	90 - 110
Antimony	100	98.6	P/P	90 - 110
Arsenic	101	97.9	P/P	90 - 110
Boron	102	103	P/P	90 - 110
Cadmium	98.9	98.9	P/P	90 - 110
Chromium	97.5	95.3	P/P	90 - 110
Copper	97.5	95.5	P/P	90 - 110
Nickel	99.0	96.3	P/P	90 - 110
Selenium	101	101	P/P	90 - 110
Silver	96.5	97.3	P/P	90 - 110
Thallium	96.5	97.0	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A105756

Included Lab Sample IDs: 2249319

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

Reference Method: SM 2320 B-2011

Run ID: A105797

Included Lab Sample IDs: 2249319

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.5	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A105811

Included Lab Sample IDs: 2249332

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Beryllium	99.0	100	P/P	90 - 110
Lead	103	104	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A105828

Included Lab Sample IDs: 2249332

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	102	103	P/P	90 - 110
Calcium	102	103	P/P	90 - 110
Iron	101	102	P/P	90 - 110
Magnesium	100	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A105828

Included Lab Sample IDs: 2249332

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A105834

Included Lab Sample IDs: 2249316, 2249319

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A105840

Included Lab Sample IDs: 2249317, 2249320

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	99.0	P/P	90 - 110
Kjeldahl Nitrogen	99.7	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A105876

Included Lab Sample IDs: 2249317

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.6	99.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A105921

Included Lab Sample IDs: 2249320

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.9	101	P/P	90 - 110

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

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

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					0.797	
EPA 200.7 Rev. 4.4	Barium	97.7	101	98.6	101		2.12
	Calcium	105	105	108			1.50
	Iron	103	108	105	105		2.67
	Magnesium	101	100	103			2.47
	Manganese	98.0	101	99.1	101		1.97
	Potassium	98.8	101	97.6	101		2.31
	Sodium	103	104	105			1.80
	Zinc	97.4	98.6	97.1	99.4		1.56
EPA 200.8 Rev. 5.4	Aluminum	97.3	98.8	96.1	96.1		2.72
	Antimony	102	102	102	98.8		0.0381
	Arsenic	102	102	101	98.1		1.19
	Beryllium	96.0	98.8	96.8	98.3		2.01
	Boron	97.6	103	99.9	103		2.12
	Cadmium	101	103	102	102		1.11
	Chromium	98.7	100	98.3	97.2		1.76
	Copper	98.9	97.3	96.3	98.5		1.04
	Lead	110	113	109	106		3.09
	Nickel	99.8	97.9	95.9	98.6		1.90
	Selenium	101	99.3	98.3	95.1		0.936
	Silver	100	98.9	98.6	99.5		0.228
	Thallium	105	108	107	106		0.878
EPA 300.0 Rev. 2.1	Chloride	100	98.6	98.8		0.883	
	Sulfate	99.5	98.6	99.5		0.856	
EPA 350.1 Rev. 2.0	Ammonia-N	98.0	94.8	95.8			0.689
	Ammonia-N	98.2	93.4	96.8			3.07
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	108	99.2			5.68
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	97.8				0.224
EPA 365.1 Rev. 2.0	Total-P	104					0.376
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	95.3	96.3			0.875
SM 2120 B-2011	Color (true)	98.8				4.90	
	Color (true)	98.8				7.48	
SM 2320 B-2011	Total Alkalinity	99.6				1.13	
	Total Alkalinity	99.8				0.360	
SM 2540 C-2011	TDS					5.78	
SM 2540 D-2011	TSS					3.51	
SM 4500 F-C-2011	Fluoride	99.8	98.6	97.4			0.921
	Fluoride	99.9	100	99.5			0.502
SM 5310 B-2011	Organic Carbon	97.6	94.2	93.5			0.502

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2249316, 2249319
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2249332
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2249332
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2249316, 2249319
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2249316, 2249319
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2249317, 2249320
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2249317, 2249320
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2249317, 2249320

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2249317, 2249320
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2249318, 2249321
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2249316, 2249319
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2249316, 2249319
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2249332
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2249316, 2249319
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2249316, 2249319
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2249316, 2249319
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2249317, 2249320

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	05/21/2021			05/21/2021 14:32	Sarah A Nixon	2249316, 2249319
EPA 200.7 Rev. 4.4	05/21/2021	05/25/2021 15:50	Elliott D. Healy	06/02/2021 23:10	Betina Topolski	2249332
EPA 200.8 Rev. 5.4	05/21/2021	05/25/2021 15:50	Elliott D. Healy	05/27/2021 20:48	McKinley C Carter	2249332
	05/21/2021	05/25/2021 15:50	Elliott D. Healy	06/01/2021 21:56	McKinley C Carter	2249332
EPA 300.0 Rev. 2.1	05/21/2021			06/03/2021 16:16	Lipi Saha	2249316
	05/21/2021			06/03/2021 16:28	Lipi Saha	2249319
EPA 350.1 Rev. 2.0	05/21/2021			06/04/2021 13:01	Roberta Tatti	2249317
	05/21/2021			06/07/2021 12:21	Roberta Tatti	2249320
EPA 351.2 Rev. 2.0	05/21/2021	06/01/2021 13:29	Benjamin T. Nordmann	06/02/2021 15:49	Virginia P. Brown	2249317
	05/21/2021	06/01/2021 13:29	Benjamin T. Nordmann	06/02/2021 15:53	Virginia P. Brown	2249320
EPA 353.2 Rev. 2.0	05/21/2021			05/24/2021 11:38	Beverly Y. Sanders	2249317
	05/21/2021			05/24/2021 11:39	Beverly Y. Sanders	2249320
EPA 365.1 Rev. 2.0	05/21/2021	05/26/2021 13:31	Yen Ta	05/27/2021 12:41	Shengyu Ding	2249317
	05/21/2021	05/26/2021 13:31	Yen Ta	05/27/2021 12:46	Shengyu Ding	2249320
EPA 365.1 Rev. 2.0 dissolved	05/21/2021			05/21/2021 14:56	Blanca Fach	2249321
	05/21/2021			05/21/2021 15:04	Blanca Fach	2249318
SM 2120 B-2011	05/21/2021			05/21/2021 16:23	Madeline Gruver	2249319
	05/21/2021			05/21/2021 16:31	Madeline Gruver	2249316
SM 2320 B-2011	05/21/2021			05/26/2021 23:55	Dale L. Simmons	2249316
	05/21/2021			06/01/2021 20:56	Dale L. Simmons	2249319
SM 2340B	05/21/2021			06/02/2021 23:10	Betina Topolski	2249332
SM 2540 C-2011	05/21/2021			05/25/2021 15:06	Yijie Li	2249316, 2249319
SM 2540 D-2011	05/21/2021			05/25/2021 15:06	Yijie Li	2249316, 2249319
SM 4500 F-C-2011	05/21/2021			05/26/2021 23:55	Dale L. Simmons	2249316
	05/21/2021			05/27/2021 20:51	Dale L. Simmons	2249319
SM 5310 B-2011	05/21/2021			05/27/2021 02:21	Madeline Gruver	2249317
	05/21/2021			05/27/2021 02:34	Madeline Gruver	2249320