Chemical Analysis Report

NE-DIST-2021-05-21-01

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

Event Description: **Callahan Boat**
Request ID: **RQ-2021-05-17-17**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256
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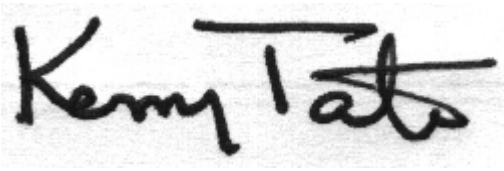
Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 11-JUN-2021 08:42



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: Thomas Creek 5 miles Down from Ethel **Collection Date/Time: 05/20/2021 10:25**

Field ID: G4NE0298 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2249249	EPA 200.7 Rev. 4.4	Calcium	12.1		mg/L	P398817	
		Iron	770		ug/L	P398817	
		Magnesium	11.8		mg/L	P398817	
		Manganese	16.2		ug/L	P398817	
		Zinc	5.2	I	ug/L	P398817	
	EPA 200.8 Rev. 5.4	Aluminum	377		ug/L	P398817	
		Antimony	0.050	U	ug/L	P399110	
		Arsenic	0.91		ug/L	P399110	
		Beryllium	0.048		ug/L	P398817	
		Cadmium	0.020	U	ug/L	P399110	
		Chromium	0.83	I	ug/L	P398817	
		Copper	0.49	I	ug/L	P398817	
		Lead	0.59		ug/L	P399110	
		Nickel	0.83	I	ug/L	P398817	
		Selenium	0.20	U	ug/L	P398817	
		Silver	0.010	U	ug/L	P398817	
		Thallium	0.10	U	ug/L	P399110	

Sample Location: Cushing Creek at Lem Turner Rd. **Collection Date/Time: 05/20/2021 12:30**

Field ID: G4NE0306 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2249229	EPA 180.1 Rev. 2.0	Turbidity	4.2		NTU	P398601	
	EPA 300.0 Rev. 2.1	Chloride	19	A	mg Cl/L	P399193	
		Sulfate	31	A	mg SO4/L	P399195	
	SM 2120 B-2011	Color (true)	250		PCU	P398619	
	SM 2320 B-2011	Total Alkalinity	90		mg CaCO3/L	P398904	
	SM 2540 C-2011	TDS	218		mg/L	P399051	
	SM 2540 D-2011	TSS	3	I	mg/L	P398841	
	SM 4500 F-C-2011	Fluoride	0.21		mg F/L	P398906	
2249230	EPA 350.1 Rev. 2.0	Ammonia-N	0.10		mg N/L	P399167	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.66		mg N/L	P398718	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.10		mg N/L	P398655	
	EPA 365.1 Rev. 2.0	Total-P	0.093		mg P/L	P398798	
	SM 5310 B-2011	Organic Carbon	22		mg C/L	P398925	
2249231	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.059		mg P/L	P398701	

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: Thomas CR 4 Mil Below City Prison **Collection Date/Time: 05/20/2021 10:45**

Field ID: 19020033 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2249226	EPA 180.1 Rev. 2.0	Turbidity	4.1		NTU	P398601	
	SM 2320 B-2011	Total Alkalinity	21		mg CaCO3/L	P398904	
	SM 2540 D-2011	TSS	6	I	mg/L	P398843	
	SM 4500 F-C-2011	Fluoride	0.067	I	mg F/L	P398906	
2249227	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P399167	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.95		mg N/L	P398718	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.025		mg N/L	P398655	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P398798	
	SM 5310 B-2011	Organic Carbon	29		mg C/L	P398925	
2249228	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.087		mg P/L	P398701	

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: P398601

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P398817

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Manganese	1.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398817

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Beryllium	0.010	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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P399110

Component	Result	Code	Units
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Lead	0.20	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: P399167

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: P398718

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398655

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398798

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398701

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

Reference Method: SM 2120 B-2011
Batch ID: P398619

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 2540 C-2011
Batch ID: P399051

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P398841

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P398843

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

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

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: P398817

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	107		P	85 - 115
Iron	103		P	85 - 115
Magnesium	104		P	85 - 115
Manganese	99.1		P	85 - 115
Zinc	95.5		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398817

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	96.3		P	80 - 120
Beryllium	93.1		P	80 - 120
Chromium	95.2		P	80 - 120
Copper	97.1		P	80 - 120
Nickel	97.8		P	80 - 120
Selenium	97.1		P	80 - 120
Silver	98.8		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P399110

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Antimony	103		P	85 - 115
Arsenic	100		P	85 - 115
Cadmium	102		P	85 - 115
Lead	112		P	85 - 115
Thallium	102		P	85 - 115

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: P399167

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398718

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.6		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398655

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: P398798

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: P398701

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.8		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P398619

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	97.4		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 4500 F-C-2011
Batch ID: P398906

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.8		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: P398817

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249623	Calcium	103		P	80 - 120
2249623	Iron	107		P	80 - 120
2249623	Magnesium	101		P	80 - 120
2249623	Manganese	100		P	80 - 120
2249623	Zinc	99.1		P	80 - 120
2249798	Calcium	110	110	P/P	80 - 120
2249798	Iron	105	105	P/P	80 - 120
2249798	Magnesium	106	105	P/P	80 - 120
2249798	Manganese	102	102	P/P	80 - 120
2249798	Zinc	102	102	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398817

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249623	Aluminum	119		P	80 - 120
2249623	Beryllium	111		P	80 - 120
2249623	Chromium	118		P	80 - 120
2249623	Copper	119		P	80 - 120
2249623	Nickel	120		P	80 - 120
2249623	Selenium	119		P	80 - 120
2249623	Silver	97.8		P	80 - 120
2249798	Aluminum	95.5	95.0	P/P	80 - 120
2249798	Beryllium	95.9	90.0	P/P	80 - 120
2249798	Chromium	95.9	96.5	P/P	80 - 120
2249798	Copper	97.6	97.9	P/P	80 - 120
2249798	Nickel	95.7	94.3	P/P	80 - 120
2249798	Selenium	96.1	95.2	P/P	80 - 120
2249798	Silver	98.7	98.5	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P399110

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249624	Antimony	101	100	P/P	80 - 120
2249624	Arsenic	100	98.4	P/P	80 - 120
2249624	Cadmium	102	102	P/P	80 - 120
2249624	Lead	113	111	P/P	80 - 120
2249624	Thallium	104	104	P/P	80 - 120
2249920	Antimony	103		P	80 - 120
2249920	Arsenic	102		P	80 - 120
2249920	Cadmium	102		P	80 - 120
2249920	Lead	114		P	80 - 120
2249920	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
2249229	Chloride	98.6		P	90 - 110
2249553	Chloride	98.8		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

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: P399167

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2248924	Ammonia-N	91.4	95.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398718

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249136	Kjeldahl Nitrogen	101	99.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398655

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249124	NO2NO3-N	101	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398798

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249138	Total-P	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398701

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249141	O-Phosphate-P	96.1	97.1	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 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: P398601

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249095	Turbidity	4.69	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P398817

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249798	Calcium	0.0379	Spike	P	0 - 20
2249798	Iron	0.252	Spike	P	0 - 20
2249798	Magnesium	1.24	Spike	P	0 - 20
2249798	Manganese	0.0800	Spike	P	0 - 20
2249798	Zinc	0.627	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398817

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249798	Aluminum	0.509	Spike	P	0 - 20
2249798	Beryllium	6.05	Spike	P	0 - 20
2249798	Chromium	0.625	Spike	P	0 - 20
2249798	Copper	0.342	Spike	P	0 - 20
2249798	Nickel	1.41	Spike	P	0 - 20
2249798	Selenium	0.886	Spike	P	0 - 20
2249798	Silver	0.249	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P399110

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249624	Antimony	1.45	Spike	P	0 - 20
2249624	Arsenic	1.89	Spike	P	0 - 20
2249624	Cadmium	0.00947	Spike	P	0 - 20
2249624	Lead	1.94	Spike	P	0 - 20
2249624	Thallium	0.216	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: P399167

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248924	Ammonia-N	3.64	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398718

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249136	Kjeldahl Nitrogen	0.965	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398655

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249124	NO2NO3-N	0.496	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398798

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249138	Total-P	0.0416	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398701

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249141	O-Phosphate-P	0.935	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P398619

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249095	Color (true)	1.75	Sample	P	0 - 20

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 2540 C-2011
Batch ID: P399051

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248946	TDS	4.19	Sample	P	0 - 10

Quality Assurance Report
Precision

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 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: 2249226, 2249229

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	99.0	P/P	95 - 105

Reference Method: SM 2120 B-2011
Run ID: A105603
Included Lab Sample IDs: 2249229

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.9	101	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A105611
Included Lab Sample IDs: 2249227, 2249230

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: 2249228, 2249231

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

Reference Method: SM 2320 B-2011
Run ID: A105721
Included Lab Sample IDs: 2249226, 2249229

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	98.2	P/P	90 - 110
Total Alkalinity	98.2	102	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A105721
Included Lab Sample IDs: 2249226, 2249229

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

Reference Method: SM 5310 B-2011
Run ID: A105730
Included Lab Sample IDs: 2249227, 2249230

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.0	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A105734
Included Lab Sample IDs: 2249227, 2249230

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A105734
Included Lab Sample IDs: 2249227, 2249230

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A105746
Included Lab Sample IDs: 2249249

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.1	98.2	P/P	90 - 110
Beryllium	98.5	98.9	P/P	90 - 110
Chromium	95.0	94.5	P/P	90 - 110
Copper	96.7	94.6	P/P	90 - 110
Nickel	96.9	96.4	P/P	90 - 110
Selenium	98.6	99.8	P/P	90 - 110
Silver	96.9	96.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A105791
Included Lab Sample IDs: 2249227, 2249230

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.3	95.7	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A105834
Included Lab Sample IDs: 2249229

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 350.1 Rev. 2.0
Run ID: A105849
Included Lab Sample IDs: 2249227, 2249230

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	98.5	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A105861
Included Lab Sample IDs: 2249249

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	102	P/P	95 - 105
Iron	102	103	P/P	95 - 105
Magnesium	102	103	P/P	95 - 105
Manganese	102	102	P/P	95 - 105
Zinc	100	103	P/P	95 - 105

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A105950
Included Lab Sample IDs: 2249249

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	102	104	P/P	90 - 110
Arsenic	99.2	101	P/P	90 - 110
Cadmium	101	102	P/P	90 - 110
Thallium	95.0	97.4	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A105975
Included Lab Sample IDs: 2249249

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	106	108	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						4.69	
EPA 200.7 Rev. 4.4	Calcium	107	103	110	110			0.0379
	Iron	103	107	105	105			0.252
	Magnesium	104	101	106	105			1.24
	Manganese	99.1	100	102	102			0.0800
	Zinc	95.5	99.1	102	102			0.627
EPA 200.8 Rev. 5.4	Aluminum	96.3	95.5	95.0	119			0.509
	Antimony	103	101	100	103			1.45
	Arsenic	100	100	98.4	102			1.89
	Beryllium	93.1	95.9	90.0	111			6.05
	Cadmium	102	102	102	102			0.0094
	Chromium	95.2	95.9	96.5	118			0.625
	Copper	97.1	97.6	97.9	119			0.342
	Lead	112	113	111	114			1.94
	Nickel	97.8	95.7	94.3	120			1.41
	Selenium	97.1	96.1	95.2	119			0.886
	Silver	98.8	98.7	98.5	97.8			0.249
	Thallium	102	104	104	106			0.216
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	100	91.4	95.8				3.64
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	94.6	101	99.3				0.965
EPA 353.2 Rev. 2.0	NO2NO3-N	102	101	100				0.496
EPA 365.1 Rev. 2.0	Total-P	104	104	104				0.0416
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.8	96.1	97.1				0.935
SM 2120 B-2011	Color (true)	97.4					1.75	
SM 2320 B-2011	Total Alkalinity	99.6					1.13	
SM 2540 C-2011	TDS						4.19	
SM 4500 F-C-2011	Fluoride	99.8	98.6	97.4				0.921
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	2249226, 2249229
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2249249
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2249249
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2249229
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2249229
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2249227, 2249230
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2249227, 2249230
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2249227, 2249230
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2249227, 2249230
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2249228, 2249231
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2249229
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2249226, 2249229
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2249229
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2249226, 2249229
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2249226, 2249229
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2249227, 2249230

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	2249226, 2249229
EPA 200.7 Rev. 4.4	05/21/2021	05/26/2021 15:10	Elliott D. Healy	06/03/2021 14:21	Betina Topolski	2249249
EPA 200.8 Rev. 5.4	05/21/2021	05/26/2021 15:10	Elliott D. Healy	05/28/2021 00:02	McKinley C Carter	2249249
	05/21/2021	06/02/2021 16:20	Elliott D. Healy	06/08/2021 23:05	Alexander Thompson	2249249
	05/21/2021	06/02/2021 16:20	Elliott D. Healy	06/09/2021 15:24	Alexander Thompson	2249249
EPA 300.0 Rev. 2.1	05/21/2021			06/03/2021 14:51	Lipi Saha	2249229
EPA 350.1 Rev. 2.0	05/21/2021			06/03/2021 12:26	Roberta Tatti	2249227
	05/21/2021			06/03/2021 12:27	Roberta Tatti	2249230
EPA 351.2 Rev. 2.0	05/21/2021	05/25/2021 12:46	Benjamin T. Nordmann	05/27/2021 17:07	Virginia P. Brown	2249227
	05/21/2021	05/25/2021 12:46	Benjamin T. Nordmann	05/27/2021 17:09	Virginia P. Brown	2249230
EPA 353.2 Rev. 2.0	05/21/2021			05/24/2021 11:14	Beverly Y. Sanders	2249227
	05/21/2021			05/24/2021 11:15	Beverly Y. Sanders	2249230
EPA 365.1 Rev. 2.0	05/21/2021	05/26/2021 13:31	Yen Ta	05/27/2021 12:14	Shengyu Ding	2249227
	05/21/2021	05/26/2021 13:31	Yen Ta	05/27/2021 12:15	Shengyu Ding	2249230
EPA 365.1 Rev. 2.0 dissolved	05/21/2021			05/21/2021 14:45	Blanca Fach	2249228
	05/21/2021			05/21/2021 14:46	Blanca Fach	2249231
SM 2120 B-2011	05/21/2021			05/21/2021 16:48	Madeline Gruver	2249229
SM 2320 B-2011	05/21/2021			05/26/2021 21:57	Dale L. Simmons	2249226
	05/21/2021			05/26/2021 22:41	Dale L. Simmons	2249229
SM 2540 C-2011	05/21/2021			05/25/2021 15:06	Yijie Li	2249229
SM 2540 D-2011	05/21/2021			05/25/2021 15:06	Yijie Li	2249226, 2249229
SM 4500 F-C-2011	05/21/2021			05/26/2021 21:57	Dale L. Simmons	2249226
	05/21/2021			05/26/2021 22:41	Dale L. Simmons	2249229
SM 5310 B-2011	05/21/2021			05/27/2021 00:36	Madeline Gruver	2249227
	05/21/2021			05/27/2021 00:49	Madeline Gruver	2249230