Chemical Analysis Report

NE-DIST-2022-08-26-01

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **LSJR Main**
Request ID: **RQ-2022-08-08-36**
Customer: **NE-DIST**
Project ID: **SMP**

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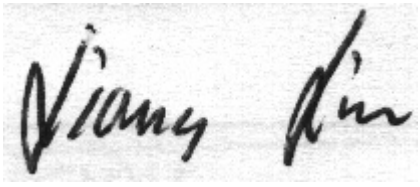
Date Certified: 19-SEP-2022 15:10



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: Miller Creek at Atlantic Blvd. **Collection Date/Time: 08/25/2022 14:30**

Field ID: G2NE0005 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2352587	EPA 180.1 Rev. 2.0	Turbidity	8.0		NTU	P418764	
	SM 2320 B-2011	Total Alkalinity	130	A	mg CaCO3/L	P419276	
	SM 2540 D-2011	TSS	4	I A	mg/L	P419202	
	SM 4500-F- C-2011	Fluoride	0.20		mg F/L	P419623	
2352588	EPA 350.1 Rev. 2.0	Ammonia-N	0.20		mg N/L	P418992	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.89		mg N/L	P418960	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.38		mg N/L	P418994	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P418916	
	SM 5310 B-2011	Organic Carbon	9.5		mg C/L	P419161	

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: LITTLE POTTSBURG CREEK AT EMERSON **Collection Date/Time: 08/25/2022 14:00**

Field ID: 20030070 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2352589	DEP SOP: NU-094-1	Color (true)	37	A	PCU	P418765	
	EPA 180.1 Rev. 2.0	Turbidity	5.5		NTU	P418764	
	EPA 300.0 Rev. 2.1	Chloride	26		mg Cl/L	P419468	
		Sulfate	41		mg SO4/L	P419471	
	SM 2320 B-2011	Total Alkalinity	147	J	mg CaCO3/L	P419033	LCS
	SM 2540 C-2011	TDS	320		mg/L	P419261	
	SM 2540 D-2011	TSS	4	I	mg/L	P419200	
	SM 4500-F- C-2011	Fluoride	0.21		mg F/L	P419279	
2352590	EPA 350.1 Rev. 2.0	Ammonia-N	0.12		mg N/L	P418887	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.67		mg N/L	P418910	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.31		mg N/L	P419051	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P418983	
	SM 5310 B-2011	Organic Carbon	8.3		mg C/L	P419161	
2352593	EPA 200.7 Rev. 4.4	Calcium	69.6		mg/L	P418827	
		Iron	1.27E+03		ug/L	P418827	
		Magnesium	10.1		mg/L	P418827	
		Potassium	2.2		mg/L	P418827	
		Sodium	18.7		mg/L	P418827	
		Strontium	794		ug/L	P418827	
		Tin	6.6	I	ug/L	P418827	
		Titanium	0.90	I	ug/L	P418827	
		Vanadium	2.0	U	ug/L	P418827	
		Zinc	9.0	I	ug/L	P418827	
	EPA 200.8 Rev. 5.4	Aluminum	26		ug/L	P418827	
		Antimony	0.20		ug/L	P418827	
		Arsenic	1.25		ug/L	P418827	
		Barium	41.3		ug/L	P418827	
		Beryllium	0.010	U	ug/L	P418827	
		Boron	45.4		ug/L	P418827	
		Cadmium	0.020	U	ug/L	P418827	
		Chromium	0.40	U	ug/L	P418827	
		Cobalt	0.097		ug/L	P418827	
		Copper	1.81		ug/L	P418827	
		Lead	0.32	I	ug/L	P418827	
		Manganese	33.8		ug/L	P418827	
		Molybdenum	1.05		ug/L	P418827	
		Nickel	0.73	I	ug/L	P418827	
		Selenium	0.20	U	ug/L	P418827	
		Silver	0.010	U	ug/L	P418827	
		Thallium	0.10	U	ug/L	P418827	
	SM 2340 B-2011	Hardness	216		mg/L	P418827	

Ref. Method and Comment:
SM 2320 B-2011: Refer to the Lab Analysis Report for an explanation of QC Codes.
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: DEP SOP: NU-094-1
Batch ID: P418765

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P418764

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P418827

Component	Result	Code	Units
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
Strontium	2.0	U	ug/L
Tin	3.0	U	ug/L
Titanium	0.75	U	ug/L
Vanadium	2.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P418827

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Barium	0.20	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
Cobalt	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Manganese	0.10	U	ug/L
Molybdenum	0.15	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: P419468

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P419471

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418887

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418992

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418910

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418960

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418994

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P419051

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418916

Component	Result	Code	Units
Total-P	0.010	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418983

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P419033

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

Reference Method: SM 2320 B-2011
Batch ID: P419276

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

Reference Method: SM 2540 C-2011
Batch ID: P419261

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P419200

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P419202

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P419279

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500-F- C-2011
Batch ID: P419623

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P419161

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P418765

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.7		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P418764

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	96.9		P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P418827

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	106		P	85 - 115
Iron	111		P	85 - 115
Magnesium	103		P	85 - 115
Potassium	107		P	85 - 115
Sodium	102		P	85 - 115
Strontium	105		P	85 - 115
Tin	110		P	85 - 115
Titanium	108		P	85 - 115
Vanadium	107		P	85 - 115
Zinc	109		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P418827

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	98.6		P	85 - 115
Antimony	102		P	85 - 115
Arsenic	99.9		P	85 - 115
Barium	103		P	85 - 115
Beryllium	100		P	85 - 115
Boron	101		P	85 - 115
Cadmium	97.5		P	85 - 115
Chromium	98.3		P	85 - 115
Cobalt	97.0		P	85 - 115
Copper	95.4		P	85 - 115
Lead	98.4		P	85 - 115
Manganese	98.3		P	85 - 115
Molybdenum	102		P	85 - 115
Nickel	98.6		P	85 - 115
Selenium	95.5		P	85 - 115
Silver	97.0		P	85 - 115
Thallium	100		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P419468

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.2		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P419471

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418887

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418992

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418910

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418960

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.2		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418994

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	106		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P419051

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	103		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418916

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418983

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-2011
Batch ID: P419033

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

Reference Method: SM 2320 B-2011
Batch ID: P419276

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	94 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P419279

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	94 - 104

Reference Method: SM 4500-F- C-2011
Batch ID: P419623

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.0		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P419161

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P418827

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2351697	Calcium	105		P	80 - 120
2351697	Iron	112	115	P/P	80 - 120
2351697	Magnesium	105		P	80 - 120
2351697	Potassium	108	110	P/P	80 - 120
2351697	Sodium	103		P	80 - 120
2351697	Strontium	106	103	P/P	80 - 120
2351697	Tin	113	109	P/P	80 - 120
2351697	Titanium	108	107	P/P	80 - 120
2351697	Vanadium	110	108	P/P	80 - 120
2351697	Zinc	110	109	P/P	80 - 120
2351698	Calcium	116		P	80 - 120
2351698	Iron	116		P	80 - 120
2351698	Magnesium	112		P	80 - 120
2351698	Potassium	113		P	80 - 120
2351698	Sodium	110		P	80 - 120
2351698	Strontium	108		P	80 - 120
2351698	Tin	113		P	80 - 120
2351698	Titanium	112		P	80 - 120
2351698	Vanadium	112		P	80 - 120
2351698	Zinc	112		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P418827

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2351697	Aluminum	101	99.7	P/P	80 - 120
2351697	Antimony	105	104	P/P	80 - 120
2351697	Arsenic	104	101	P/P	80 - 120
2351697	Barium	103	101	P/P	80 - 120
2351697	Beryllium	100	103	P/P	80 - 120
2351697	Boron	100	99.8	P/P	80 - 120
2351697	Cadmium	101	100	P/P	80 - 120
2351697	Chromium	102	101	P/P	80 - 120
2351697	Cobalt	99.6	98.5	P/P	80 - 120
2351697	Copper	97.5	96.5	P/P	80 - 120
2351697	Lead	102	100	P/P	80 - 120
2351697	Manganese	99.8	97.3	P/P	80 - 120
2351697	Molybdenum	109	107	P/P	80 - 120
2351697	Nickel	99.8	98.6	P/P	80 - 120
2351697	Selenium	99.4	97.6	P/P	80 - 120
2351697	Silver	96.8	95.7	P/P	80 - 120
2351697	Thallium	105	103	P/P	80 - 120
2351698	Aluminum	104		P	80 - 120
2351698	Antimony	108		P	80 - 120
2351698	Arsenic	107		P	80 - 120
2351698	Barium	109		P	80 - 120
2351698	Beryllium	107		P	80 - 120
2351698	Boron	114		P	80 - 120
2351698	Cadmium	104		P	80 - 120
2351698	Chromium	105		P	80 - 120
2351698	Cobalt	101		P	80 - 120
2351698	Copper	98.8		P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P418827

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2351698	Lead	107		P	80 - 120
2351698	Manganese	107		P	80 - 120
2351698	Molybdenum	113		P	80 - 120
2351698	Nickel	102		P	80 - 120
2351698	Selenium	98.9		P	80 - 120
2351698	Silver	100		P	80 - 120
2351698	Thallium	108		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P419468

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352704	Chloride	96.6		P	90 - 110
2352758	Chloride	97.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P419471

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352704	Sulfate	93.3		P	90 - 110
2352758	Sulfate	95.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418887

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352508	Ammonia-N	99.4	98.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418992

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352460	Ammonia-N	98.8	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418910

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352499	Kjeldahl Nitrogen	105	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418960

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2351885	Kjeldahl Nitrogen	103	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418994

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352460	NO2NO3-N	98.4	99.4	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P419051

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352572	NO2NO3-N	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418916

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352653	Total-P	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418983

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352599	Total-P	105	103	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P419279

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352597	Fluoride	102	101	P/P	94 - 104

Reference Method: SM 4500-F- C-2011
Batch ID: P419623

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2353393	Fluoride	98.2	97.5	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P419161

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352547	Organic Carbon	95.2	95.6	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P418765

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352589	Color (true)	1.23	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P418764

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352678	Turbidity	14.3	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P418827

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2351697	Calcium	4.94	Spike	P	0 - 20
2351697	Iron	1.99	Spike	P	0 - 20
2351697	Magnesium	0.545	Spike	P	0 - 20
2351697	Potassium	0.862	Spike	P	0 - 20
2351697	Sodium	3.79	Spike	P	0 - 20
2351697	Strontium	2.42	Spike	P	0 - 20
2351697	Tin	3.64	Spike	P	0 - 20
2351697	Titanium	1.18	Spike	P	0 - 20
2351697	Vanadium	2.02	Spike	P	0 - 20
2351697	Zinc	1.63	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P418827

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2351697	Aluminum	0.899	Spike	P	0 - 20
2351697	Antimony	1.25	Spike	P	0 - 20
2351697	Arsenic	2.31	Spike	P	0 - 20
2351697	Barium	1.48	Spike	P	0 - 20
2351697	Beryllium	2.58	Spike	P	0 - 20
2351697	Boron	0.182	Spike	P	0 - 20
2351697	Cadmium	0.673	Spike	P	0 - 20
2351697	Chromium	1.61	Spike	P	0 - 20
2351697	Cobalt	1.13	Spike	P	0 - 20
2351697	Copper	1.00	Spike	P	0 - 20
2351697	Lead	1.61	Spike	P	0 - 20
2351697	Manganese	1.51	Spike	P	0 - 20
2351697	Molybdenum	1.87	Spike	P	0 - 20
2351697	Nickel	1.22	Spike	P	0 - 20
2351697	Selenium	1.80	Spike	P	0 - 20
2351697	Silver	1.19	Spike	P	0 - 20
2351697	Thallium	1.19	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P419468

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352704	Chloride	0.0217	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P419471

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352704	Sulfate	0.0618	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418887

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352508	Ammonia-N	0.491	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418992

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352460	Ammonia-N	0.158	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418910

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352499	Kjeldahl Nitrogen	0.867	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418960

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2351885	Kjeldahl Nitrogen	3.23	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418994

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352460	NO2NO3-N	1.01	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P419051

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352572	NO2NO3-N	1.11	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418916

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352653	Total-P	0.580	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418983

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352599	Total-P	1.75	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P419033

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352596	Total Alkalinity	0.0670	Sample	P	0 - 3.8

Reference Method: SM 2320 B-2011
Batch ID: P419276

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352587	Total Alkalinity	0.722	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2011
Batch ID: P419261

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352507	TDS	3.15	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P419279

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352597	Fluoride	0.487	Spike	P	0 - 1.6

Reference Method: SM 4500-F- C-2011
Batch ID: P419623

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2353393	Fluoride	0.476	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P419161

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352547	Organic Carbon	0.285	Spike	P	0 - 20

Quality Assurance Report
Precision

* 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: A114382
Included Lab Sample IDs: 2352587, 2352589

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

Reference Method: DEP SOP: NU-094-1
Run ID: A114383
Included Lab Sample IDs: 2352589

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A114437
Included Lab Sample IDs: 2352590

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	96.1	96.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A114480
Included Lab Sample IDs: 2352588

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.5	99.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A114483
Included Lab Sample IDs: 2352588

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	105	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A114486
Included Lab Sample IDs: 2352588

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A114500
Included Lab Sample IDs: 2352590

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	99.0	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A114506
Included Lab Sample IDs: 2352589

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	105	102	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A114510
Included Lab Sample IDs: 2352590

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A114544
Included Lab Sample IDs: 2352590

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A114547
Included Lab Sample IDs: 2352588

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.6	98.3	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A114555
Included Lab Sample IDs: 2352588, 2352590

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.3	95.6	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A114566
Included Lab Sample IDs: 2352593

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	95.0	96.0	P/P	90 - 110
Antimony	98.2	99.7	P/P	90 - 110
Arsenic	98.2	99.6	P/P	90 - 110
Barium	96.0	95.4	P/P	90 - 110
Boron	95.0	96.9	P/P	90 - 110
Cadmium	101	102	P/P	90 - 110
Chromium	97.1	98.1	P/P	90 - 110
Cobalt	95.2	95.4	P/P	90 - 110
Manganese	97.7	98.0	P/P	90 - 110
Nickel	96.0	96.2	P/P	90 - 110
Selenium	96.3	96.7	P/P	90 - 110
Silver	95.1	95.2	P/P	90 - 110
Thallium	100	99.3	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A114593
Included Lab Sample IDs: 2352593

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Beryllium	99.6	96.4	P/P	90 - 110
Copper	105	102	P/P	90 - 110
Lead	94.4	94.3	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-2011
Run ID: A114599
Included Lab Sample IDs: 2352587

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	95.6	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A114599
Included Lab Sample IDs: 2352589

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A114600
Included Lab Sample IDs: 2352589

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.7	100	P/P	90 - 110
Sulfate	99.9	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A114659
Included Lab Sample IDs: 2352593

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Molybdenum	96.4	96.9	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A114713
Included Lab Sample IDs: 2352593

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	106	107	P/P	90 - 110
Iron	107	109	P/P	90 - 110
Magnesium	107	109	P/P	90 - 110
Potassium	104	105	P/P	90 - 110
Sodium	103	103	P/P	90 - 110
Strontium	100	99.6	P/P	90 - 110
Tin	107	104	P/P	90 - 110
Titanium	103	101	P/P	90 - 110
Vanadium	103	102	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A114728
Included Lab Sample IDs: 2352593

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Zinc	98.0	99.1	P/P	95 - 105

Reference Method: SM 4500-F- C-2011
Run ID: A114739
Included Lab Sample IDs: 2352587

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500-F- C-2011
Run ID: A114739
Included Lab Sample IDs: 2352587

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	100	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
DEP SOP: NU-094-1	Color (true)	99.7					1.23	
EPA 180.1 Rev. 2.0	Turbidity	96.9					14.3	
EPA 200.7 Rev. 4.4	Calcium	106	105	116				4.94
	Iron	111	112	115	116			1.99
	Magnesium	103	105	112				0.545
	Potassium	107	108	110	113			0.862
	Sodium	102	103	110				3.79
	Strontium	105	106	103	108			2.42
	Tin	110	113	109	113			3.64
	Titanium	108	108	107	112			1.18
	Vanadium	107	110	108	112			2.02
	Zinc	109	110	109	112			1.63
EPA 200.8 Rev. 5.4	Aluminum	98.6	101	99.7	104			0.899
	Antimony	102	105	104	108			1.25
	Arsenic	99.9	104	101	107			2.31
	Barium	103	103	101	109			1.48
	Beryllium	100	100	103	107			2.58
	Boron	101	100	99.8	114			0.182
	Cadmium	97.5	101	100	104			0.673
	Chromium	98.3	102	101	105			1.61
	Cobalt	97.0	99.6	98.5	101			1.13
	Copper	95.4	97.5	96.5	98.8			1.00
	Lead	98.4	102	100	107			1.61
	Manganese	98.3	99.8	97.3	107			1.51
	Molybdenum	102	109	107	113			1.87
	Nickel	98.6	99.8	98.6	102			1.22
	Selenium	95.5	99.4	97.6	98.9			1.80
	Silver	97.0	96.8	95.7	100			1.19
	Thallium	100	105	103	108			1.19
EPA 300.0 Rev. 2.1	Chloride	99.2	96.6	97.6			0.0217	
	Sulfate	97.8	93.3	95.6			0.0618	
EPA 350.1 Rev. 2.0	Ammonia-N	94.6	99.4	98.8				0.491
	Ammonia-N	101	98.8	99.0				0.158
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	105	106				0.867
	Kjeldahl Nitrogen	95.2	103	98.8				3.23
EPA 353.2 Rev. 2.0	NO2NO3-N	106	98.4	99.4				1.01
	NO2NO3-N	103	102	104				1.11
EPA 365.1 Rev. 2.0	Total-P	104	102	101				0.580
	Total-P	105	105	103				1.75
SM 2320 B-2011	Total Alkalinity	106					0.0670	
	Total Alkalinity	100					0.722	
SM 2540 C-2011	TDS						3.15	
SM 4500-F- C-2011	Fluoride	101	102	101				0.487
	Fluoride	99.0	98.2	97.5				0.476
SM 5310 B-2011	Organic Carbon	97.0	95.2	95.6				0.285

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2352589
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2352587, 2352589
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2352593

Reference Method Descriptions

Method	Description	Associated Samples
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2352593
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2352589
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2352589
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2352588, 2352590
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2352588, 2352590
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2352588, 2352590
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2352588, 2352590
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2352587, 2352589
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2352593
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2352589
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2352587, 2352589
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2352587, 2352589
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2352588, 2352590

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	08/26/2022			08/26/2022 14:51	Blanca Fach	2352589
EPA 180.1 Rev. 2.0	08/26/2022			08/26/2022 13:26	Chandler E Cox	2352587
	08/26/2022			08/26/2022 13:27	Chandler E Cox	2352589
EPA 200.7 Rev. 4.4	08/26/2022	08/30/2022 10:20	Megan Whitefoot	09/14/2022 04:01	McKinley C Carter	2352593
	08/26/2022	08/30/2022 10:20	Megan Whitefoot	09/14/2022 18:29	McKinley C Carter	2352593
EPA 200.8 Rev. 5.4	08/26/2022	08/30/2022 10:20	Megan Whitefoot	09/06/2022 19:39	Emily M Philpot	2352593
	08/26/2022	08/30/2022 10:20	Megan Whitefoot	09/08/2022 01:33	Megan Whitefoot	2352593
	08/26/2022	08/30/2022 10:20	Megan Whitefoot	09/09/2022 20:16	Emily M Philpot	2352593
EPA 300.0 Rev. 2.1	08/26/2022			09/09/2022 19:09	Anna M. Plaviak	2352589
EPA 350.1 Rev. 2.0	08/26/2022			08/30/2022 15:22	Judith K. Clark	2352590
	08/26/2022			09/01/2022 11:04	Ping Hua	2352588
EPA 351.2 Rev. 2.0	08/26/2022	08/31/2022 14:32	Samantha L Bates	09/01/2022 14:33	Alexandra J Mattheus	2352590
	08/26/2022	09/02/2022 08:53	Samantha L Bates	09/06/2022 11:25	Samantha L Bates	2352588
EPA 353.2 Rev. 2.0	08/26/2022			09/01/2022 12:22	Judith K. Clark	2352588
	08/26/2022			09/02/2022 09:51	Judith K. Clark	2352590
EPA 365.1 Rev. 2.0	08/26/2022	08/31/2022 13:30	Adam P Silver	09/01/2022 12:49	James L Waggerby	2352588
	08/26/2022	09/01/2022 15:55	Simonne.V. Calhoun	09/06/2022 11:35	James L Waggerby	2352590
SM 2320 B-2011	08/26/2022			09/01/2022 21:05	Dale L. Simmons	2352589
	08/26/2022			09/08/2022 02:10	Adam P Silver	2352587
SM 2340 B-2011	08/26/2022			09/14/2022 04:01	McKinley C Carter	2352593
SM 2540 C-2011	08/26/2022			08/30/2022 14:29	Yijie Li	2352589
SM 2540 D-2011	08/26/2022			08/30/2022 14:29	Yijie Li	2352587, 2352589
SM 4500-F- C-2011	08/26/2022			09/07/2022 21:31	Adam P Silver	2352589
	08/26/2022			09/15/2022 05:10	Dale L. Simmons	2352587
SM 5310 B-2011	08/26/2022			09/02/2022 21:27	Khloe J Berg	2352588
	08/26/2022			09/02/2022 21:41	Khloe J Berg	2352590