

Chemical Analysis Report

NE-DIST-2022-08-16-01

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

Event Description: **LSJR Lake**
Request ID: **RQ-2022-07-18-21**
Customer: **NE-DIST**
Project ID: **SMP**

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Date Certified: 07-SEP-2022 12:24



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: Silver lake Center

Collection Date/Time: 08/15/2022 11:15

Field ID: G2NE1132

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2349603	DEP SOP: NU-094-1	Color (true)	280		PCU	P418176	
	EPA 180.1 Rev. 2.0	Turbidity	0.90	I	NTU	P418179	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P418361	
		Sulfate	2.8		mg SO4/L	P418363	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P418391	
	SM 2540 C-2011	TDS	76		mg/L	P418535	
	SM 2540 D-2011	TSS	2	U	mg/L	P418486	
	SM 4500-F- C-2011	Fluoride	0.035	U	mg F/L	P418401	
2349604	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P418418	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P418442	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P418306	
	EPA 365.1 Rev. 2.0	Total-P	0.030		mg P/L	P418364	
	SM 5310 B-2011	Organic Carbon	23		mg C/L	P418469	

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: LAKE BROWARD South

Collection Date/Time: 08/15/2022 13:00

Field ID: G2NE1218

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2349599	DEP SOP: NU-094-1	Color (true)	23		PCU	P418176	
	EPA 180.1 Rev. 2.0	Turbidity	0.90	I	NTU	P418179	
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P418361	
		Sulfate	7.7		mg SO4/L	P418363	
	SM 2320 B-2011	Total Alkalinity	4.2		mg CaCO3/L	P418787	
	SM 2540 C-2011	TDS	51		mg/L	P418535	
	SM 2540 D-2011	TSS	2	I	mg/L	P418486	
	SM 4500-F- C-2011	Fluoride	0.035	U	mg F/L	P418396	
2349601	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P418418	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.54		mg N/L	P418775	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P418306	
	EPA 365.1 Rev. 2.0	Total-P	0.01		mg P/L	P418364	
	SM 5310 B-2011	Organic Carbon	6.7		mg C/L	P418469	
2349618	EPA 200.7 Rev. 4.4	Calcium	4.43		mg/L	P418215	
		Iron	65	I	ug/L	P418215	
		Magnesium	1.34		mg/L	P418215	
		Potassium	0.89	I	mg/L	P418215	
		Sodium	7.8		mg/L	P418215	
		Strontium	18.3		ug/L	P418215	
		Tin	3.0	U	ug/L	P418215	
		Titanium	0.75	U	ug/L	P418215	
	EPA 200.8 Rev. 5.4	Vanadium	2.0	U	ug/L	P418215	
		Zinc	5.0	U	ug/L	P418215	
		Aluminum	33		ug/L	P418215	
		Antimony	0.051	I	ug/L	P418215	
		Arsenic	2.79		ug/L	P418215	
		Barium	8.76		ug/L	P418215	
		Beryllium	0.010	U	ug/L	P418215	
		Boron	28.5		ug/L	P418215	
		Cadmium	0.020	U	ug/L	P418215	
		Chromium	0.40	U	ug/L	P418215	
		Cobalt	0.020	U	ug/L	P418215	
		Copper	0.54	I	ug/L	P418215	
		Lead	0.20	U	ug/L	P418215	
		Manganese	5.41		ug/L	P418215	
		Molybdenum	0.15	U	ug/L	P418215	
		Nickel	0.50	U	ug/L	P418215	
		Selenium	0.20	U	ug/L	P418215	
		Silver	0.010	U	ug/L	P418215	
		Thallium	0.10	U	ug/L	P418215	
	SM 2340 B-2011	Hardness	16.6		mg/L	P418215	

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: LAKE BROWARD North

Collection Date/Time: 08/15/2022 12:40

Field ID: G2NE1219

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2349600	DEP SOP: NU-094-1	Color (true)	9.5		PCU	P418176	
	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P418179	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P418361	
		Sulfate	9.4		mg SO4/L	P418363	
	SM 2320 B-2011	Total Alkalinity	2.0	I	mg CaCO3/L	P418787	
	SM 2540 C-2011	TDS	50		mg/L	P418535	
	SM 2540 D-2011	TSS	2	I	mg/L	P418486	
2349602	SM 4500-F- C-2011	Fluoride	0.035	U	mg F/L	P418396	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P418418	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.45		mg N/L	P418775	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P418306	
	EPA 365.1 Rev. 2.0	Total-P	0.010		mg P/L	P418364	
2349619	SM 5310 B-2011	Organic Carbon	5.2		mg C/L	P418469	
	EPA 200.7 Rev. 4.4	Calcium	3.60		mg/L	P418215	
		Iron	30	U	ug/L	P418215	
		Magnesium	1.38		mg/L	P418215	
		Potassium	0.90	I	mg/L	P418215	
		Sodium	8.3		mg/L	P418215	
		Strontium	17.1		ug/L	P418215	
		Tin	3.0	U	ug/L	P418215	
		Titanium	0.75	U	ug/L	P418215	
		Vanadium	2.0	U	ug/L	P418215	
		Zinc	5.0	U	ug/L	P418215	
	EPA 200.8 Rev. 5.4	Aluminum	30		ug/L	P418215	
		Antimony	0.068	I	ug/L	P418215	
		Arsenic	2.56		ug/L	P418215	
		Barium	6.29		ug/L	P418215	
		Beryllium	0.010	U	ug/L	P418215	
		Boron	27.8		ug/L	P418215	
		Cadmium	0.020	U	ug/L	P418215	
		Chromium	0.40	U	ug/L	P418215	
		Cobalt	0.020	U	ug/L	P418215	
		Copper	0.40	U	ug/L	P418215	
		Lead	0.20	U	ug/L	P418215	
		Manganese	2.39		ug/L	P418215	
		Molybdenum	0.15	U	ug/L	P418215	
		Nickel	0.50	U	ug/L	P418215	
		Selenium	0.20	U	ug/L	P418215	
		Silver	0.010	U	ug/L	P418215	
		Thallium	0.10	U	ug/L	P418215	
	SM 2340 B-2011	Hardness	14.7		mg/L	P418215	

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: DEP SOP: NU-094-1
Batch ID: P418176

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P418179

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P418215

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: P418215

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: P418361

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: P418363

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418418

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418442

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418775

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418306

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418364

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

Reference Method: SM 2320 B-2011
Batch ID: P418391

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

Reference Method: SM 2320 B-2011
Batch ID: P418787

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

Reference Method: SM 2540 C-2011
Batch ID: P418535

Component	Result	Code	Units
TDS	15	U	mg/L

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Method Blank Results

Reference Method: SM 2540 D-2011
Batch ID: P418486

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P418396

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500-F- C-2011
Batch ID: P418401

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P418469

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: P418176

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

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P418179

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	95.6		P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P418215

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	93.0		P	80 - 120
Iron	96.7		P	80 - 120
Magnesium	95.9		P	80 - 120
Potassium	96.2		P	80 - 120
Sodium	93.3		P	80 - 120
Strontium	98.3		P	80 - 120
Tin	96.0		P	80 - 120
Titanium	97.5		P	80 - 120
Vanadium	96.8		P	80 - 120
Zinc	96.5		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P418215

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Antimony	106		P	85 - 115
Arsenic	103		P	85 - 115
Barium	108		P	85 - 115
Beryllium	97.0		P	85 - 115
Boron	98.7		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	103		P	85 - 115
Cobalt	101		P	85 - 115
Copper	99.4		P	85 - 115
Lead	97.1		P	85 - 115
Manganese	104		P	85 - 115
Molybdenum	101		P	85 - 115
Nickel	101		P	85 - 115
Selenium	103		P	85 - 115
Silver	102		P	85 - 115
Thallium	98.5		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P418361

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.2		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P418363

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418418

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418442

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418775

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418306

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	96.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418364

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

Reference Method: SM 2320 B-2011
Batch ID: P418391

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.9		P	94 - 106

Reference Method: SM 2320 B-2011
Batch ID: P418787

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	94 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P418396

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.2		P	96 - 104

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500-F- C-2011
Batch ID: P418401

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P418469

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P418215

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2349420	Calcium	98.8		P	80 - 120
2349420	Iron	104	104	P/P	80 - 120
2349420	Magnesium	104	103	P/P	80 - 120
2349420	Potassium	101	104	P/P	80 - 120
2349420	Sodium	97.4		P	80 - 120
2349420	Strontium	103	106	P/P	80 - 120
2349420	Tin	100	103	P/P	80 - 120
2349420	Titanium	101	105	P/P	80 - 120
2349420	Vanadium	102	104	P/P	80 - 120
2349420	Zinc	101	102	P/P	80 - 120
2349422	Calcium	97.7		P	80 - 120
2349422	Iron	101		P	80 - 120
2349422	Magnesium	97.8		P	80 - 120
2349422	Potassium	98.9		P	80 - 120
2349422	Sodium	96.9		P	80 - 120
2349422	Strontium	102		P	80 - 120
2349422	Tin	98.9		P	80 - 120
2349422	Titanium	100		P	80 - 120
2349422	Vanadium	102		P	80 - 120
2349422	Zinc	98.5		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P418215

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2349420	Aluminum	111	113	P/P	80 - 120
2349420	Antimony	107	105	P/P	80 - 120
2349420	Arsenic	103	102	P/P	80 - 120
2349420	Barium	110	106	P/P	80 - 120
2349420	Beryllium	98.6	96.8	P/P	80 - 120
2349420	Boron	107	105	P/P	80 - 120
2349420	Cadmium	102	99.7	P/P	80 - 120
2349420	Chromium	106	104	P/P	80 - 120
2349420	Cobalt	100	98.6	P/P	80 - 120
2349420	Copper	98.7	97.0	P/P	80 - 120
2349420	Lead	98.9	97.7	P/P	80 - 120
2349420	Manganese	117	109	P/P	80 - 120
2349420	Molybdenum	102	102	P/P	80 - 120
2349420	Nickel	101	98.9	P/P	80 - 120
2349420	Selenium	99.3	96.4	P/P	80 - 120
2349420	Silver	102	99.8	P/P	80 - 120
2349420	Thallium	102	102	P/P	80 - 120
2349422	Aluminum	104		P	80 - 120
2349422	Antimony	106		P	80 - 120
2349422	Arsenic	102		P	80 - 120
2349422	Barium	105		P	80 - 120
2349422	Beryllium	95.3		P	80 - 120
2349422	Boron	101		P	80 - 120
2349422	Cadmium	103		P	80 - 120
2349422	Chromium	104		P	80 - 120
2349422	Cobalt	99.5		P	80 - 120
2349422	Copper	94.6		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P418215

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2349422	Lead	96.9		P	80 - 120
2349422	Manganese	102		P	80 - 120
2349422	Molybdenum	102		P	80 - 120
2349422	Nickel	99.2		P	80 - 120
2349422	Selenium	99.6		P	80 - 120
2349422	Silver	102		P	80 - 120
2349422	Thallium	99.9		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P418361

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2348793	Chloride	96.0		P	90 - 110
2349378	Chloride	99.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P418363

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2348793	Sulfate	96.4		P	90 - 110
2349378	Sulfate	99.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418418

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2349601	Ammonia-N	105	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418442

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2349546	Kjeldahl Nitrogen	105	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418775

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2349404	Kjeldahl Nitrogen	95.4	97.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418306

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2349560	NO2NO3-N	93.8	93.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418364

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2346347	Total-P	108	107	P/P	90 - 110

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 4500-F- C-2011
Batch ID: P418396

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2349447	Fluoride	100	100	P/P	94 - 104

Reference Method: SM 4500-F- C-2011
Batch ID: P418401

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2349634	Fluoride	100	99.2	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P418469

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2349405	Organic Carbon	98.6	95.5	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P418176

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349545	Color (true)	0.514	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P418179

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349634	Turbidity	3.23	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P418215

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349420	Calcium	0.204	Spike	P	0 - 20
2349420	Iron	0.176	Spike	P	0 - 20
2349420	Magnesium	0.811	Spike	P	0 - 20
2349420	Potassium	2.21	Spike	P	0 - 20
2349420	Sodium	0.401	Spike	P	0 - 20
2349420	Strontium	2.13	Spike	P	0 - 20
2349420	Tin	2.26	Spike	P	0 - 20
2349420	Titanium	3.42	Spike	P	0 - 20
2349420	Vanadium	1.95	Spike	P	0 - 20
2349420	Zinc	1.36	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P418215

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349420	Aluminum	1.57	Spike	P	0 - 20
2349420	Antimony	2.43	Spike	P	0 - 20
2349420	Arsenic	1.29	Spike	P	0 - 20
2349420	Barium	2.83	Spike	P	0 - 20
2349420	Beryllium	1.80	Spike	P	0 - 20
2349420	Boron	1.21	Spike	P	0 - 20
2349420	Cadmium	2.14	Spike	P	0 - 20
2349420	Chromium	2.48	Spike	P	0 - 20
2349420	Cobalt	1.82	Spike	P	0 - 20
2349420	Copper	1.67	Spike	P	0 - 20
2349420	Lead	1.26	Spike	P	0 - 20
2349420	Manganese	2.43	Spike	P	0 - 20
2349420	Molybdenum	0.552	Spike	P	0 - 20
2349420	Nickel	2.20	Spike	P	0 - 20
2349420	Selenium	2.98	Spike	P	0 - 20
2349420	Silver	1.84	Spike	P	0 - 20
2349420	Thallium	0.0532	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P418361

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2348793	Chloride	2.28	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P418363

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2348793	Sulfate	2.62	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418418

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349601	Ammonia-N	1.15	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418442

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349546	Kjeldahl Nitrogen	3.28	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418775

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349404	Kjeldahl Nitrogen	1.94	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418306

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349560	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418364

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2346347	Total-P	1.03	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P418391

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349634	Total Alkalinity	0.781	Sample	P	0 - 3.8

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P418787

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349468	Total Alkalinity	0.0351	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2011
Batch ID: P418535

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349378	TDS	0.851	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P418396

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349447	Fluoride	0.0	Spike	P	0 - 1.6

Reference Method: SM 4500-F- C-2011
Batch ID: P418401

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349634	Fluoride	0.940	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P418469

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349405	Organic Carbon	2.56	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: DEP SOP: NU-094-1

Run ID: A114129

Included Lab Sample IDs: 2349599, 2349600, 2349603

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	102	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A114130

Included Lab Sample IDs: 2349599, 2349600, 2349603

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A114142

Included Lab Sample IDs: 2349599, 2349600, 2349603

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.8	98.1	P/P	90 - 110
Chloride	98.1	98.7	P/P	90 - 110
Sulfate	99.2	99.4	P/P	90 - 110
Sulfate	99.4	99.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A114184

Included Lab Sample IDs: 2349601, 2349602, 2349604

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	96.5	95.5	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A114212

Included Lab Sample IDs: 2349603

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.0	100	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A114212

Included Lab Sample IDs: 2349599, 2349600, 2349603

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: EPA 350.1 Rev. 2.0

Run ID: A114221

Included Lab Sample IDs: 2349601, 2349602, 2349604

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	107	106	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A114229

Included Lab Sample IDs: 2349618, 2349619

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	97.0	101	P/P	90 - 110
Antimony	100	101	P/P	90 - 110
Arsenic	101	102	P/P	90 - 110
Barium	99.9	99.8	P/P	90 - 110
Beryllium	96.2	95.8	P/P	90 - 110
Boron	94.1	98.5	P/P	90 - 110
Cadmium	103	103	P/P	90 - 110
Chromium	101	102	P/P	90 - 110
Cobalt	98.4	99.0	P/P	90 - 110
Copper	95.6	98.4	P/P	90 - 110
Lead	93.9	93.7	P/P	90 - 110
Manganese	102	103	P/P	90 - 110
Molybdenum	97.5	98.3	P/P	90 - 110
Nickel	98.0	98.0	P/P	90 - 110
Selenium	103	102	P/P	90 - 110
Silver	98.4	98.8	P/P	90 - 110
Thallium	102	102	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A114244

Included Lab Sample IDs: 2349601, 2349602, 2349604

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.5	97.0	P/P	90 - 110
Organic Carbon	96.0	95.5	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A114269

Included Lab Sample IDs: 2349618, 2349619

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	97.1	95.6	P/P	90 - 110
Iron	98.1	96.0	P/P	90 - 110
Magnesium	97.4	95.5	P/P	90 - 110
Potassium	98.0	98.0	P/P	90 - 110
Sodium	96.1	95.3	P/P	90 - 110
Strontium	97.7	98.9	P/P	90 - 110
Tin	97.9	96.0	P/P	90 - 110
Titanium	97.5	95.3	P/P	90 - 110
Vanadium	97.3	97.1	P/P	90 - 110
Zinc	97.8	95.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A114304

Included Lab Sample IDs: 2349601, 2349602, 2349604

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A114314

Included Lab Sample IDs: 2349604

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	92.3	96.1	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A114396

Included Lab Sample IDs: 2349599, 2349600

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A114444

Included Lab Sample IDs: 2349601, 2349602

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	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 SMP	MS
			LCS				
DEP SOP: NU-094-1	Color (true)	101				0.514	
EPA 180.1 Rev. 2.0	Turbidity	95.6				3.23	
EPA 200.7 Rev. 4.4	Calcium	93.0	98.8	97.7			0.204
	Iron	96.7	104	104	101		0.176
	Magnesium	95.9	104	103	97.8		0.811
	Potassium	96.2	101	104	98.9		2.21
	Sodium	93.3	97.4	96.9			0.401
	Strontium	98.3	103	106	102		2.13
	Tin	96.0	100	103	98.9		2.26
	Titanium	97.5	101	105	100		3.42
	Vanadium	96.8	102	104	102		1.95
	Zinc	96.5	101	102	98.5		1.36
EPA 200.8 Rev. 5.4	Aluminum	102	104	111	113		1.57
	Antimony	106	106	107	105		2.43
	Arsenic	103	102	103	102		1.29
	Barium	108	105	110	106		2.83
	Beryllium	97.0	95.3	98.6	96.8		1.80
	Boron	98.7	101	107	105		1.21
	Cadmium	103	103	102	99.7		2.14
	Chromium	103	104	106	104		2.48
	Cobalt	101	99.5	100	98.6		1.82
	Copper	99.4	94.6	98.7	97.0		1.67
	Lead	97.1	96.9	98.9	97.7		1.26
	Manganese	104	102	117	109		2.43
	Molybdenum	101	102	102	102		0.552
	Nickel	101	99.2	101	98.9		2.20
	Selenium	103	99.6	99.3	96.4		2.98
	Silver	102	102	102	99.8		1.84
	Thallium	98.5	99.9	102	102		0.0532
EPA 300.0 Rev. 2.1	Chloride	97.2	96.0	99.3		2.28	
	Sulfate	97.9	96.4	99.9		2.62	
EPA 350.1 Rev. 2.0	Ammonia-N	97.0	105	104			1.15
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	105	100			3.28
	Kjeldahl Nitrogen	104	95.4	97.9			1.94
EPA 353.2 Rev. 2.0	NO2NO3-N	96.0	93.8	93.8			0.0
EPA 365.1 Rev. 2.0	Total-P	107	108	107			1.03
SM 2320 B-2011	Total Alkalinity	98.9				0.781	
	Total Alkalinity	102				0.0351	
SM 2540 C-2011	TDS					0.851	
SM 4500-F- C-2011	Fluoride	99.2	100	100			0.0
	Fluoride	101	100	99.2			0.940
SM 5310 B-2011	Organic Carbon	97.8	98.6	95.5			2.56

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2349599, 2349600, 2349603
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2349599, 2349600, 2349603
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2349618, 2349619
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2349618, 2349619
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2349599, 2349600, 2349603

Reference Method Descriptions

Method	Description	Associated Samples
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2349599, 2349600, 2349603
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2349601, 2349602, 2349604
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2349601, 2349602, 2349604
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2349601, 2349602, 2349604
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2349601, 2349602, 2349604
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2349599, 2349600, 2349603
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2349618, 2349619
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2349599, 2349600, 2349603
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2349599, 2349600, 2349603
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2349599, 2349600, 2349603
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2349601, 2349602, 2349604

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	08/16/2022			08/16/2022 15:26	Samantha L Bates	2349599
	08/16/2022			08/16/2022 15:27	Samantha L Bates	2349600
	08/16/2022			08/16/2022 15:32	Samantha L Bates	2349603
EPA 180.1 Rev. 2.0	08/16/2022			08/16/2022 14:56	Khloe J Berg	2349599
	08/16/2022			08/16/2022 14:57	Khloe J Berg	2349600
	08/16/2022			08/16/2022 14:58	Khloe J Berg	2349603
EPA 200.7 Rev. 4.4	08/16/2022	08/17/2022 11:10	Megan Whitefoot	08/22/2022 22:34	Alexander Thompson	2349618
	08/16/2022	08/17/2022 11:10	Megan Whitefoot	08/22/2022 22:42	Alexander Thompson	2349619
EPA 200.8 Rev. 5.4	08/16/2022	08/17/2022 11:10	Megan Whitefoot	08/19/2022 16:03	Emily M Philpot	2349618
	08/16/2022	08/17/2022 11:10	Megan Whitefoot	08/19/2022 16:13	Emily M Philpot	2349619
EPA 300.0 Rev. 2.1	08/16/2022			08/18/2022 21:20	Anna M. Plaviak	2349599
	08/16/2022			08/18/2022 21:56	Anna M. Plaviak	2349600
	08/16/2022			08/18/2022 22:08	Anna M. Plaviak	2349603
EPA 350.1 Rev. 2.0	08/16/2022			08/19/2022 13:25	Judith K. Clark	2349601
	08/16/2022			08/19/2022 13:30	Judith K. Clark	2349602
	08/16/2022			08/19/2022 13:32	Judith K. Clark	2349604
EPA 351.2 Rev. 2.0	08/16/2022	08/22/2022 16:54	Samantha L Bates	08/24/2022 15:57	Samantha L Bates	2349604
	08/16/2022	08/30/2022 09:19	Samantha L Bates	08/30/2022 13:39	Alexandra J Mattheus	2349601
	08/16/2022	08/30/2022 09:19	Samantha L Bates	08/30/2022 13:41	Alexandra J Mattheus	2349602
EPA 353.2 Rev. 2.0	08/16/2022			08/18/2022 10:10	Beverly Y. Sanders	2349601
	08/16/2022			08/18/2022 10:11	Beverly Y. Sanders	2349602
	08/16/2022			08/18/2022 10:12	Beverly Y. Sanders	2349604
EPA 365.1 Rev. 2.0	08/16/2022	08/23/2022 18:30	Simonne.V. Calhoun	08/24/2022 15:21	James L Waggeberby	2349601
	08/16/2022	08/23/2022 18:30	Simonne.V. Calhoun	08/24/2022 15:22	James L Waggeberby	2349602
	08/16/2022	08/23/2022 18:30	Simonne.V. Calhoun	08/24/2022 15:23	James L Waggeberby	2349604
SM 2320 B-2011	08/16/2022			08/19/2022 02:44	Adam P Silver	2349603
	08/16/2022			08/27/2022 06:15	Adam P Silver	2349599
	08/16/2022			08/27/2022 06:22	Adam P Silver	2349600
SM 2340 B-2011	08/16/2022			08/22/2022 22:34	Alexander Thompson	2349618
	08/16/2022			08/22/2022 22:42	Alexander Thompson	2349619
SM 2540 C-2011	08/16/2022			08/19/2022 13:18	Ping Hua	2349599, 2349600, 2349603
SM 2540 D-2011	08/16/2022			08/19/2022 13:47	Ping Hua	2349599, 2349600, 2349603
SM 4500-F- C-2011	08/16/2022			08/18/2022 23:44	Adam P Silver	2349599
	08/16/2022			08/19/2022 00:30	Adam P Silver	2349600
	08/16/2022			08/19/2022 02:44	Adam P Silver	2349603
SM 5310 B-2011	08/16/2022			08/19/2022 16:57	Judith K. Clark	2349601
	08/16/2022			08/19/2022 17:40	Judith K. Clark	2349602
	08/16/2022			08/19/2022 17:54	Judith K. Clark	2349604