

Chemical Analysis Report

NE-DIST-2022-10-13-01

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

Event Description: **Nassau North 2**
Request ID: **RQ-2022-10-10-11**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
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Certified by: Colin Wright, Program Administrator

Date Certified: 02-NOV-2022 12:02

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light pink rectangular background.

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: PIGEON CREEK AT US 1

Collection Date/Time: 10/12/2022 10:25

Field ID: 19010099

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2362303	DEP SOP: NU-094-1	Color (true)	150		PCU	P420899	
	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P420896	
	EPA 300.0 Rev. 2.1	Chloride	10		mg Cl/L	P421514	
		Sulfate	2.9		mg SO4/L	P421519	
	SM 2320 B-2011	Total Alkalinity	9.6		mg CaCO3/L	P421003	
	SM 2540 C-2015	TDS	61		mg/L	P421409	
	SM 2540 D-2015	TSS	2	I	mg/L	P421413	
	SM 4500-F- C-2011	Fluoride	0.035	U	mg F/L	P421005	MS
2362304	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P421251	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.46		mg N/L	P421224	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.084		mg N/L	P421075	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P421050	
	SM 5310 B-2011	Organic Carbon	12		mg C/L	P420996	
2362308	EPA 200.7 Rev. 4.4	Calcium	5.56		mg/L	P420914	
		Iron	980		ug/L	P420914	
		Magnesium	1.22		mg/L	P420914	
		Potassium	1.1	I	mg/L	P420914	
		Sodium	6.1		mg/L	P420914	
		Strontium	20.8		ug/L	P420914	
		Tin	3.0	U	ug/L	P420914	
		Titanium	1.0	I	ug/L	P420914	
	EPA 200.8 Rev. 5.4	Vanadium	2.0	U	ug/L	P420914	
		Zinc	5.0	U	ug/L	P420914	
		Aluminum	198		ug/L	P420914	
		Antimony	0.050	U	ug/L	P420914	
		Arsenic	0.47		ug/L	P420914	
		Barium	20.1		ug/L	P420914	
		Beryllium	0.016	I	ug/L	P420914	
		Boron	18.5		ug/L	P420914	
		Cadmium	0.020	U	ug/L	P420914	
		Chromium	0.40	U	ug/L	P420914	
		Cobalt	0.087		ug/L	P420914	
		Copper	0.40	U	ug/L	P420914	
		Lead	0.36	I	ug/L	P420914	
		Manganese	6.08		ug/L	P420914	
		Molybdenum	0.15	U	ug/L	P420914	
		Nickel	0.50	U	ug/L	P420914	
		Selenium	0.20	U	ug/L	P420914	
		Silver	0.010	U	ug/L	P420914	
		Thallium	0.10	U	ug/L	P420914	
	SM 2340 B-2011	Hardness	18.9		mg/L	P420914	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: PIGEON CREEK @ ANDREWS RD

Collection Date/Time: 10/12/2022 10:50

Field ID: 19010098

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2362309	EPA 200.7 Rev. 4.4	Calcium	2.13		mg/L	P420914	
		Iron	2.47E+03		ug/L	P420914	
		Magnesium	0.70		mg/L	P420914	
		Potassium	0.73	I	mg/L	P420914	
		Sodium	6.9		mg/L	P420914	
		Strontium	13.5		ug/L	P420914	
		Tin	3.0	U	ug/L	P420914	
		Titanium	0.90	I	ug/L	P420914	
		Vanadium	2.0	U	ug/L	P420914	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P420914	
		Aluminum	372		ug/L	P420914	
		Antimony	0.050	U	ug/L	P420914	
		Arsenic	0.58		ug/L	P420914	
		Barium	12.7		ug/L	P420914	
		Beryllium	0.019	I	ug/L	P420914	
		Boron	17.4		ug/L	P420914	
		Cadmium	0.020	U	ug/L	P420914	
		Chromium	0.48	I	ug/L	P420914	
		Cobalt	0.202		ug/L	P420914	
		Copper	0.40	U	ug/L	P420914	
		Lead	0.49		ug/L	P420914	
		Manganese	11.6		ug/L	P420914	
		Molybdenum	0.15	U	ug/L	P420914	
		Nickel	0.53	I	ug/L	P420914	
		Selenium	0.20	U	ug/L	P420914	
		Silver	0.010	U	ug/L	P420914	
		Thallium	0.10	U	ug/L	P420914	
	SM 2340 B-2011	Hardness	8.2		mg/L	P420914	

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P420899

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P420896

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P420914

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: P420914

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: P421514

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: P421519

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421251

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421224

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P421075

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421050

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

Reference Method: SM 2320 B-2011
Batch ID: P421003

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

Reference Method: SM 2540 C-2015
Batch ID: P421409

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P421413

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P421005

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P420996

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: P420899

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	94.6		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P420896

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P420914

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	100		P	85 - 115
Iron	106		P	85 - 115
Magnesium	107		P	85 - 115
Potassium	104		P	85 - 115
Sodium	100		P	85 - 115
Strontium	105		P	85 - 115
Tin	104		P	85 - 115
Titanium	103		P	85 - 115
Vanadium	103		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P420914

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.5		P	85 - 115
Antimony	104		P	85 - 115
Arsenic	100		P	85 - 115
Barium	104		P	85 - 115
Beryllium	94.2		P	85 - 115
Boron	105		P	85 - 115
Cadmium	98.7		P	85 - 115
Chromium	101		P	85 - 115
Cobalt	96.9		P	85 - 115
Copper	98.0		P	85 - 115
Lead	94.8		P	85 - 115
Manganese	101		P	85 - 115
Molybdenum	97.0		P	85 - 115
Nickel	97.8		P	85 - 115
Selenium	97.6		P	85 - 115
Silver	101		P	85 - 115
Thallium	90.3		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421514

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.3		P	90 - 110

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421519

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421251

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	93.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421224

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P421075

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421050

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

Reference Method: SM 2320 B-2011
Batch ID: P421003

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.2		P	94 - 106

Reference Method: SM 2540 C-2015
Batch ID: P421409

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

Reference Method: SM 2540 D-2015
Batch ID: P421413

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	101		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P421005

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P420996

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: P420914

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362199	Calcium	100		P	80 - 120
2362199	Iron	105	112	P/P	80 - 120
2362199	Magnesium	103	114	P/P	80 - 120
2362199	Potassium	104	109	P/P	80 - 120
2362199	Sodium	102		P	80 - 120
2362199	Strontium	105	108	P/P	80 - 120
2362199	Tin	104	103	P/P	80 - 120
2362199	Titanium	105	106	P/P	80 - 120
2362199	Vanadium	104	105	P/P	80 - 120
2362199	Zinc	102	104	P/P	80 - 120
2362445	Calcium	100		P	80 - 120
2362445	Iron	102		P	80 - 120
2362445	Magnesium	97.4		P	80 - 120
2362445	Potassium	102		P	80 - 120
2362445	Sodium	102		P	80 - 120
2362445	Strontium	99.6		P	80 - 120
2362445	Tin	101		P	80 - 120
2362445	Titanium	105		P	80 - 120
2362445	Vanadium	106		P	80 - 120
2362445	Zinc	101		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P420914

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362199	Aluminum	97.3	101	P/P	80 - 120
2362199	Antimony	103	104	P/P	80 - 120
2362199	Arsenic	100	102	P/P	80 - 120
2362199	Barium	103	105	P/P	80 - 120
2362199	Beryllium	93.1	95.9	P/P	80 - 120
2362199	Boron	101	103	P/P	80 - 120
2362199	Cadmium	98.9	98.7	P/P	80 - 120
2362199	Chromium	100	103	P/P	80 - 120
2362199	Cobalt	96.2	98.0	P/P	80 - 120
2362199	Copper	98.2	99.9	P/P	80 - 120
2362199	Lead	94.1	96.2	P/P	80 - 120
2362199	Manganese	99.1	101	P/P	80 - 120
2362199	Molybdenum	96.8	98.5	P/P	80 - 120
2362199	Nickel	98.2	99.5	P/P	80 - 120
2362199	Selenium	97.5	98.5	P/P	80 - 120
2362199	Silver	99.2	101	P/P	80 - 120
2362199	Thallium	92.5	96.7	P/P	80 - 120
2362445	Aluminum	98.2		P	80 - 120
2362445	Antimony	107		P	80 - 120
2362445	Arsenic	103		P	80 - 120
2362445	Barium	106		P	80 - 120
2362445	Beryllium	93.1		P	80 - 120
2362445	Boron	101		P	80 - 120
2362445	Cadmium	101		P	80 - 120
2362445	Chromium	102		P	80 - 120
2362445	Cobalt	97.9		P	80 - 120
2362445	Copper	97.2		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P420914

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362445	Lead	95.0		P	80 - 120
2362445	Manganese	102		P	80 - 120
2362445	Molybdenum	99.8		P	80 - 120
2362445	Nickel	98.5		P	80 - 120
2362445	Selenium	101		P	80 - 120
2362445	Silver	101		P	80 - 120
2362445	Thallium	93.3		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421514

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362241	Chloride	91.1		P	90 - 110
2362258	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421519

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362241	Sulfate	95.3		P	90 - 110
2362258	Sulfate	104		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421251

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362261	Ammonia-N	101	94.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421224

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362242	Kjeldahl Nitrogen	107	98.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P421075

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362259	NO2NO3-N	96.8	96.8	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P421005

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362193	Fluoride	107	108	F/F	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P420996

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362180	Organic Carbon	98.8	99.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P420899

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362241	Color (true)	6.98	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P420896

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362233	Turbidity	2.11	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P420914

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362199	Calcium	3.30	Spike	P	0 - 20
2362199	Iron	6.04	Spike	P	0 - 20
2362199	Magnesium	6.13	Spike	P	0 - 20
2362199	Potassium	3.12	Spike	P	0 - 20
2362199	Sodium	4.14	Spike	P	0 - 20
2362199	Strontium	3.24	Spike	P	0 - 20
2362199	Tin	0.217	Spike	P	0 - 20
2362199	Titanium	1.24	Spike	P	0 - 20
2362199	Vanadium	1.19	Spike	P	0 - 20
2362199	Zinc	1.61	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P420914

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362199	Aluminum	3.29	Spike	P	0 - 20
2362199	Antimony	0.836	Spike	P	0 - 20
2362199	Arsenic	1.89	Spike	P	0 - 20
2362199	Barium	1.16	Spike	P	0 - 20
2362199	Beryllium	2.99	Spike	P	0 - 20
2362199	Boron	1.87	Spike	P	0 - 20
2362199	Cadmium	0.212	Spike	P	0 - 20
2362199	Chromium	2.07	Spike	P	0 - 20
2362199	Cobalt	1.88	Spike	P	0 - 20
2362199	Copper	1.70	Spike	P	0 - 20
2362199	Lead	2.19	Spike	P	0 - 20
2362199	Manganese	1.58	Spike	P	0 - 20
2362199	Molybdenum	1.69	Spike	P	0 - 20
2362199	Nickel	1.29	Spike	P	0 - 20
2362199	Selenium	1.05	Spike	P	0 - 20
2362199	Silver	1.53	Spike	P	0 - 20
2362199	Thallium	4.42	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421514

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362241	Chloride	1.34	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421519

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362241	Sulfate	1.78	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421251

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362261	Ammonia-N	5.50	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421224

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362242	Kjeldahl Nitrogen	4.75	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P421075

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362259	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421050

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362407	Total-P	2.15	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P421003

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362193	Total Alkalinity	0.902	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2015
Batch ID: P421409

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362320	TDS	4.99	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500-F- C-2011
Batch ID: P421005

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362193	Fluoride	0.474	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P420996

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362180	Organic Carbon	0.536	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: A115295

Included Lab Sample IDs: 2362303

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

Reference Method: DEP SOP: NU-094-1

Run ID: A115297

Included Lab Sample IDs: 2362303

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.6	97.2	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A115346

Included Lab Sample IDs: 2362308, 2362309

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	98.4	96.6	P/P	90 - 110
Iron	99.8	98.5	P/P	90 - 110
Magnesium	99.0	97.2	P/P	90 - 110
Potassium	99.1	98.1	P/P	90 - 110
Sodium	101	99.7	P/P	90 - 110
Strontium	100	102	P/P	90 - 110
Tin	102	102	P/P	90 - 110
Titanium	103	103	P/P	90 - 110
Vanadium	103	103	P/P	90 - 110
Zinc	102	101	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A115351

Included Lab Sample IDs: 2362304

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.4	99.8	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A115356

Included Lab Sample IDs: 2362303

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	96.2	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A115356

Included Lab Sample IDs: 2362303

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A115378

Included Lab Sample IDs: 2362308, 2362309

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A115378

Included Lab Sample IDs: 2362308, 2362309

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	102	P/P	90 - 110
Antimony	103	103	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Barium	101	102	P/P	90 - 110
Beryllium	99.4	99.4	P/P	90 - 110
Boron	99.4	101	P/P	90 - 110
Cadmium	102	101	P/P	90 - 110
Chromium	99.4	100	P/P	90 - 110
Cobalt	96.3	96.6	P/P	90 - 110
Copper	98.1	97.9	P/P	90 - 110
Lead	93.3	93.4	P/P	90 - 110
Manganese	99.1	100	P/P	90 - 110
Molybdenum	99.0	99.4	P/P	90 - 110
Nickel	98.3	98.4	P/P	90 - 110
Selenium	101	103	P/P	90 - 110
Silver	98.7	99.4	P/P	90 - 110
Thallium	96.3	96.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A115384

Included Lab Sample IDs: 2362304

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A115435

Included Lab Sample IDs: 2362304

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A115454

Included Lab Sample IDs: 2362304

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.1	97.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A115481

Included Lab Sample IDs: 2362304

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.3	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A115558

Included Lab Sample IDs: 2362303

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A115558

Included Lab Sample IDs: 2362303

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	100	P/P	90 - 110
Sulfate	102	101	P/P	90 - 110

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

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

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
DEP SOP: NU-094-1	Color (true)	94.6				6.98	
EPA 180.1 Rev. 2.0	Turbidity	100				2.11	
EPA 200.7 Rev. 4.4	Calcium	100	100	100			3.30
	Iron	106	105	112	102		6.04
	Magnesium	107	103	114	97.4		6.13
	Potassium	104	104	109	102		3.12
	Sodium	100	102	102			4.14
	Strontium	105	105	108	99.6		3.24
	Tin	104	104	103	101		0.217
	Titanium	103	105	106	105		1.24
	Vanadium	103	104	105	106		1.19
	Zinc	103	102	104	101		1.61
EPA 200.8 Rev. 5.4	Aluminum	99.5	97.3	101	98.2		3.29
	Antimony	104	103	104	107		0.836
	Arsenic	100	100	102	103		1.89
	Barium	104	103	105	106		1.16
	Beryllium	94.2	93.1	95.9	93.1		2.99
	Boron	105	101	103	101		1.87
	Cadmium	98.7	98.9	98.7	101		0.212
	Chromium	101	100	103	102		2.07
	Cobalt	96.9	96.2	98.0	97.9		1.88
	Copper	98.0	98.2	99.9	97.2		1.70
	Lead	94.8	94.1	96.2	95.0		2.19
	Manganese	101	99.1	101	102		1.58
	Molybdenum	97.0	96.8	98.5	99.8		1.69
	Nickel	97.8	98.2	99.5	98.5		1.29
	Selenium	97.6	97.5	98.5	101		1.05
	Silver	101	99.2	101	101		1.53
	Thallium	90.3	92.5	96.7	93.3		4.42
EPA 300.0 Rev. 2.1	Chloride	98.3	91.1	103		1.34	
	Sulfate	98.5	95.3	104		1.78	
EPA 350.1 Rev. 2.0	Ammonia-N	93.0	101	94.0			5.50
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	107	98.3			4.75
EPA 353.2 Rev. 2.0	NO2NO3-N	100	96.8	96.8			0.0
EPA 365.1 Rev. 2.0	Total-P	103					2.15
SM 2320 B-2011	Total Alkalinity	98.2				0.902	
SM 2540 C-2015	TDS	98.0				4.99	
SM 2540 D-2015	TSS	101					
SM 4500-F- C-2011	Fluoride	101	107	108			0.474
SM 5310 B-2011	Organic Carbon	97.8	98.8	99.8			0.536

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2362303
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2362303
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2362308, 2362309
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2362308, 2362309
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2362303
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2362303
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2362304

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2362304
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2362304
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2362304
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2362303
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2362308, 2362309
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2362303
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2362303
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2362303
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2362304

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	10/13/2022			10/13/2022 16:05	Anna M. Plaviak	2362303
EPA 180.1 Rev. 2.0	10/13/2022			10/13/2022 15:02	Khloe J Berg	2362303
EPA 200.7 Rev. 4.4	10/13/2022	10/14/2022 11:20	George D Taylor	10/17/2022 18:12	McKinley C Carter	2362308
	10/13/2022	10/14/2022 11:20	George D Taylor	10/17/2022 18:20	McKinley C Carter	2362309
EPA 200.8 Rev. 5.4	10/13/2022	10/14/2022 11:20	George D Taylor	10/18/2022 19:17	Emily M Philpot	2362308
	10/13/2022	10/14/2022 11:20	George D Taylor	10/18/2022 19:27	Emily M Philpot	2362309
EPA 300.0 Rev. 2.1	10/13/2022			10/25/2022 20:19	Anna M. Plaviak	2362303
EPA 350.1 Rev. 2.0	10/13/2022			10/21/2022 10:35	Judith K. Clark	2362304
EPA 351.2 Rev. 2.0	10/13/2022	10/21/2022 11:19	Simonne.V. Calhoun	10/24/2022 12:18	Alexandra J Mattheus	2362304
EPA 353.2 Rev. 2.0	10/13/2022			10/19/2022 09:44	Beverly Y. Sanders	2362304
EPA 365.1 Rev. 2.0	10/13/2022	10/19/2022 14:47	Adam P Silver	10/20/2022 14:58	Simonne.V. Calhoun	2362304
SM 2320 B-2011	10/13/2022			10/15/2022 02:09	Dale L. Simmons	2362303
SM 2340 B-2011	10/13/2022			10/17/2022 18:12	McKinley C Carter	2362308
	10/13/2022			10/17/2022 18:20	McKinley C Carter	2362309
SM 2540 C-2015	10/13/2022			10/18/2022 15:43	Yijie Li	2362303
SM 2540 D-2015	10/13/2022			10/18/2022 15:43	Yijie Li	2362303
SM 4500-F- C-2011	10/13/2022			10/15/2022 02:09	Dale L. Simmons	2362303
SM 5310 B-2011	10/13/2022			10/18/2022 01:56	Khloe J Berg	2362304