

Chemical Analysis Report

NE-DIST-2022-12-28-03

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

Event Description: **Nassau makeup**
Request ID: **RQ-2022-12-26-26**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256
Attn: Jeremy Parrish

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Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant

Date Certified: 23-JAN-2023 12:21



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: St. Marys R @ Stokes Rd.

Collection Date/Time: 12/27/2022 10:00

Field ID: 19010093

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2377579	DEP SOP: NU-094-1	Color (true)	210		PCU	P423992	
	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P423995	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P424401	
		Sulfate	2.2		mg SO4/L	P424404	
	SM 2320 B-2011	Total Alkalinity	15		mg CaCO3/L	P424167	
	SM 2540 C-2015	TDS	103		mg/L	P424308	
	SM 2540 D-2015	TSS	2	U	mg/L	P424147	
2377580	SM 4500-F- C-2011	Fluoride	0.055	I	mg F/L	P424515	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P424560	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P424194	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.20		mg N/L	P424289	
	EPA 365.1 Rev. 2.0	Total-P	0.053		mg P/L	P424187	
2377583	SM 5310 B-2011	Organic Carbon	19		mg C/L	P424183	
	EPA 200.7 Rev. 4.4	Calcium	6.01		mg/L	P424053	
		Iron	460		ug/L	P424053	
		Magnesium	2.81		mg/L	P424053	
		Potassium	0.84	I	mg/L	P424053	
		Sodium	6.7		mg/L	P424053	
		Strontium	33.7		ug/L	P424053	
		Tin	3.0	U	ug/L	P424053	
		Titanium	2.0	I	ug/L	P424053	
		Vanadium	2.0	U	ug/L	P424053	
		Zinc	5.0	U	ug/L	P424053	
	EPA 200.8 Rev. 5.4	Aluminum	190		ug/L	P424053	
		Antimony	0.050	U	ug/L	P424053	
		Arsenic	0.25		ug/L	P424053	
		Barium	19.4		ug/L	P424053	
		Beryllium	0.023	I	ug/L	P424053	
		Boron	18.6		ug/L	P424053	
		Cadmium	0.020	U	ug/L	P424053	
		Chromium	0.40	U	ug/L	P424053	
		Cobalt	0.101		ug/L	P424053	
		Copper	0.40	U	ug/L	P424053	
		Lead	0.22	I	ug/L	P424053	
		Manganese	4.86		ug/L	P424053	
		Molybdenum	0.48	I	ug/L	P424053	
		Nickel	0.50	U	ug/L	P424053	
		Selenium	0.20	U	ug/L	P424053	
		Silver	0.010	U	ug/L	P424053	
		Thallium	0.10	U	ug/L	P424053	
	SM 2340 B-2011	Hardness	26.6		mg/L	P424053	

Ref. Method and Comment:

SM 2540 D-2015: 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: P423992

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P423995

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P424053

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: P424053

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: P424401

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: P424404

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P424560

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424194

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P424289

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424187

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

Reference Method: SM 2320 B-2011
Batch ID: P424167

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

Reference Method: SM 2540 C-2015
Batch ID: P424308

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P424147

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P424515

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P424183

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: P423992

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	91.0		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P423995

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P424053

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	98.7		P	85 - 115
Iron	102		P	85 - 115
Magnesium	101		P	85 - 115
Potassium	100		P	85 - 115
Sodium	105		P	85 - 115
Strontium	103		P	85 - 115
Tin	95.9		P	85 - 115
Titanium	103		P	85 - 115
Vanadium	101		P	85 - 115
Zinc	89.4		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P424053

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	98.7		P	85 - 115
Antimony	99.1		P	85 - 115
Arsenic	100		P	85 - 115
Barium	101		P	85 - 115
Beryllium	96.9		P	85 - 115
Boron	98.2		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	96.7		P	85 - 115
Cobalt	99.8		P	85 - 115
Copper	99.6		P	85 - 115
Lead	91.6		P	85 - 115
Manganese	96.9		P	85 - 115
Molybdenum	97.3		P	85 - 115
Nickel	101		P	85 - 115
Selenium	101		P	85 - 115
Silver	100		P	85 - 115
Thallium	98.9		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P424401

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P424404

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P424560

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: P424194

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P424289

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424187

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

Reference Method: SM 2320 B-2011
Batch ID: P424167

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	95.0		P	94 - 106

Reference Method: SM 2540 C-2015
Batch ID: P424308

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

Reference Method: SM 2540 D-2015
Batch ID: P424147

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	96.9		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P424515

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.9		P	96 - 104

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P424183

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P424053

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2377419	Calcium	98.7	97.7	P/P	80 - 120
2377419	Iron	101	100	P/P	80 - 120
2377419	Magnesium	103	102	P/P	80 - 120
2377419	Potassium	100	98.3	P/P	80 - 120
2377419	Sodium	102	100	P/P	80 - 120
2377419	Strontium	103	102	P/P	80 - 120
2377419	Tin	96.4	97.3	P/P	80 - 120
2377419	Titanium	90.0	89.2	P/P	80 - 120
2377419	Vanadium	105	104	P/P	80 - 120
2377419	Zinc	93.3	96.5	P/P	80 - 120
2377433	Calcium	95.5		P	80 - 120
2377433	Iron	96.8		P	80 - 120
2377433	Magnesium	95.5		P	80 - 120
2377433	Potassium	96.5		P	80 - 120
2377433	Sodium	97.4		P	80 - 120
2377433	Strontium	98.7		P	80 - 120
2377433	Tin	96.1		P	80 - 120
2377433	Titanium	92.8		P	80 - 120
2377433	Vanadium	100		P	80 - 120
2377433	Zinc	91.6		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P424053

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2377419	Aluminum	89.8	95.5	P/P	80 - 120
2377419	Antimony	96.9	96.9	P/P	80 - 120
2377419	Arsenic	101	102	P/P	80 - 120
2377419	Barium	101	102	P/P	80 - 120
2377419	Beryllium	93.9	93.9	P/P	80 - 120
2377419	Boron	97.1	96.9	P/P	80 - 120
2377419	Cadmium	99.0	99.8	P/P	80 - 120
2377419	Chromium	95.8	96.8	P/P	80 - 120
2377419	Cobalt	99.2	101	P/P	80 - 120
2377419	Copper	100	102	P/P	80 - 120
2377419	Lead	92.0	93.3	P/P	80 - 120
2377419	Manganese	96.4	99.2	P/P	80 - 120
2377419	Molybdenum	96.9	97.4	P/P	80 - 120
2377419	Nickel	102	103	P/P	80 - 120
2377419	Selenium	101	102	P/P	80 - 120
2377419	Silver	99.2	100	P/P	80 - 120
2377419	Thallium	100	101	P/P	80 - 120
2377433	Aluminum	100		P	80 - 120
2377433	Antimony	101		P	80 - 120
2377433	Arsenic	101		P	80 - 120
2377433	Barium	100		P	80 - 120
2377433	Beryllium	96.4		P	80 - 120
2377433	Boron	99.2		P	80 - 120
2377433	Cadmium	103		P	80 - 120
2377433	Chromium	98.2		P	80 - 120
2377433	Cobalt	98.6		P	80 - 120
2377433	Copper	99.1		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P424053

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2377433	Lead	93.0		P	80 - 120
2377433	Manganese	98.6		P	80 - 120
2377433	Molybdenum	99.5		P	80 - 120
2377433	Nickel	99.5		P	80 - 120
2377433	Selenium	103		P	80 - 120
2377433	Silver	100		P	80 - 120
2377433	Thallium	102		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P424401

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2377710	Chloride	98.4		P	90 - 110
2377892	Chloride	98.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P424404

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2377710	Sulfate	101		P	90 - 110
2377892	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P424560

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2377546	Ammonia-N	98.0	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424194

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2377715	Kjeldahl Nitrogen	104	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P424289

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2377716	NO2NO3-N	98.6	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424187

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2377719	Total-P	110	107	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P424515

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2377253	Fluoride	95.1	97.3	P/P	94 - 104

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P424183

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2377719	Organic Carbon	94.8	94.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P423992

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2377545	Color (true)	1.48	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P423995

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2377426	Turbidity	12.9	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P424053

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2377419	Calcium	0.858	Spike	P	0 - 20
2377419	Iron	0.969	Spike	P	0 - 20
2377419	Magnesium	0.724	Spike	P	0 - 20
2377419	Potassium	1.72	Spike	P	0 - 20
2377419	Sodium	1.49	Spike	P	0 - 20
2377419	Strontium	1.26	Spike	P	0 - 20
2377419	Tin	0.952	Spike	P	0 - 20
2377419	Titanium	0.801	Spike	P	0 - 20
2377419	Vanadium	0.406	Spike	P	0 - 20
2377419	Zinc	3.36	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P424053

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2377419	Aluminum	4.08	Spike	P	0 - 20
2377419	Antimony	0.0589	Spike	P	0 - 20
2377419	Arsenic	0.929	Spike	P	0 - 20
2377419	Barium	0.979	Spike	P	0 - 20
2377419	Beryllium	0.0229	Spike	P	0 - 20
2377419	Boron	0.210	Spike	P	0 - 20
2377419	Cadmium	0.776	Spike	P	0 - 20
2377419	Chromium	1.02	Spike	P	0 - 20
2377419	Cobalt	1.61	Spike	P	0 - 20
2377419	Copper	1.22	Spike	P	0 - 20
2377419	Lead	1.30	Spike	P	0 - 20
2377419	Manganese	1.85	Spike	P	0 - 20
2377419	Molybdenum	0.514	Spike	P	0 - 20
2377419	Nickel	0.553	Spike	P	0 - 20
2377419	Selenium	1.48	Spike	P	0 - 20
2377419	Silver	0.798	Spike	P	0 - 20
2377419	Thallium	1.40	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P424401

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2377710	Chloride	0.152	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P424404

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2377710	Sulfate	0.790	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P424560

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2377546	Ammonia-N	0.0	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424194

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2377715	Kjeldahl Nitrogen	0.921	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P424289

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2377716	NO2NO3-N	0.425	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424187

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2377719	Total-P	1.88	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P424167

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2377457	Total Alkalinity	0.646	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2015
Batch ID: P424308

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2377457	TDS	7.06	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500-F- C-2011
Batch ID: P424515

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2377253	Fluoride	1.42	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P424183

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2377719	Organic Carbon	0.0633	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: A116669
Included Lab Sample IDs: 2377579

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	91.9	92.3	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A116670
Included Lab Sample IDs: 2377579

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	101	P/P	95 - 105

Reference Method: SM 2320 B-2011
Run ID: A116751
Included Lab Sample IDs: 2377579

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	95.9	96.7	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A116757
Included Lab Sample IDs: 2377580

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.6	98.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A116803
Included Lab Sample IDs: 2377580

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A116804
Included Lab Sample IDs: 2377580

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	92.0	97.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A116808
Included Lab Sample IDs: 2377580

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	97.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A116833
Included Lab Sample IDs: 2377579

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

Quality Assurance Report Calibration Verification

Reference Method: SM 4500-F- C-2011

Run ID: A116886

Included Lab Sample IDs: 2377579

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	99.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A116902

Included Lab Sample IDs: 2377580

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.2	99.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A116968

Included Lab Sample IDs: 2377583

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	100	100	P/P	90 - 110
Antimony	101	101	P/P	90 - 110
Arsenic	102	102	P/P	90 - 110
Barium	101	101	P/P	90 - 110
Beryllium	99.4	100	P/P	90 - 110
Boron	98.0	97.6	P/P	90 - 110
Cadmium	101	102	P/P	90 - 110
Chromium	97.9	98.4	P/P	90 - 110
Cobalt	98.6	100	P/P	90 - 110
Copper	99.6	101	P/P	90 - 110
Lead	93.2	92.8	P/P	90 - 110
Manganese	100	99.7	P/P	90 - 110
Molybdenum	98.1	99.6	P/P	90 - 110
Nickel	99.6	101	P/P	90 - 110
Selenium	104	104	P/P	90 - 110
Silver	101	102	P/P	90 - 110
Thallium	100	100	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A116978

Included Lab Sample IDs: 2377583

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	97.1	97.6	P/P	90 - 110
Iron	99.0	101	P/P	90 - 110
Magnesium	98.6	101	P/P	90 - 110
Potassium	101	103	P/P	90 - 110
Sodium	103	103	P/P	90 - 110
Strontium	102	102	P/P	90 - 110
Tin	95.1	95.9	P/P	90 - 110
Titanium	102	103	P/P	90 - 110
Vanadium	102	103	P/P	90 - 110

Quality Assurance Report

Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A116990

Included Lab Sample IDs: 2377583

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Zinc	97.5	92.6	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)	91.0				1.48	
EPA 180.1 Rev. 2.0	Turbidity	102				12.9	
EPA 200.7 Rev. 4.4	Calcium	98.7	98.7	97.7	95.5		0.858
	Iron	102	101	100	96.8		0.969
	Magnesium	101	103	102	95.5		0.724
	Potassium	100	100	98.3	96.5		1.72
	Sodium	105	102	100	97.4		1.49
	Strontium	103	103	102	98.7		1.26
	Tin	95.9	96.4	97.3	96.1		0.952
	Titanium	103	90.0	89.2	92.8		0.801
	Vanadium	101	105	104	100		0.406
	Zinc	89.4	93.3	96.5	91.6		3.36
EPA 200.8 Rev. 5.4	Aluminum	98.7	89.8	95.5	100		4.08
	Antimony	99.1	96.9	96.9	101		0.0589
	Arsenic	100	101	102	101		0.929
	Barium	101	101	102	100		0.979
	Beryllium	96.9	93.9	93.9	96.4		0.0229
	Boron	98.2	97.1	96.9	99.2		0.210
	Cadmium	101	99.0	99.8	103		0.776
	Chromium	96.7	95.8	96.8	98.2		1.02
	Cobalt	99.8	99.2	101	98.6		1.61
	Copper	99.6	100	102	99.1		1.22
	Lead	91.6	92.0	93.3	93.0		1.30
	Manganese	96.9	96.4	99.2	98.6		1.85
	Molybdenum	97.3	96.9	97.4	99.5		0.514
	Nickel	101	102	103	99.5		0.553
	Selenium	101	101	102	103		1.48
	Silver	100	99.2	100	100		0.798
	Thallium	98.9	100	101	102		1.40
EPA 300.0 Rev. 2.1	Chloride	102	98.4	98.2		0.152	
	Sulfate	103	101	101		0.790	
EPA 350.1 Rev. 2.0	Ammonia-N	101	98.0	98.0			0.0
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.6	104	103			0.921
EPA 353.2 Rev. 2.0	NO2NO3-N	104	98.6	99.0			0.425
EPA 365.1 Rev. 2.0	Total-P	103	110	107			1.88
SM 2320 B-2011	Total Alkalinity	95.0				0.646	
SM 2540 C-2015	TDS	101				7.06	
SM 2540 D-2015	TSS	96.9					
SM 4500-F- C-2011	Fluoride	98.9	95.1	97.3			1.42
SM 5310 B-2011	Organic Carbon	97.6	94.8	94.8			0.0633

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2377579
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2377579
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2377583
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2377583
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2377579
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2377579
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2377580

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2377580
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2377580
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2377580
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2377579
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2377583
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2377579
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2377579
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2377579
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2377580

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	12/28/2022			12/28/2022 14:44	Alexis Price	2377579
EPA 180.1 Rev. 2.0	12/28/2022			12/28/2022 14:14	Anna M. Plaviak	2377579
EPA 200.7 Rev. 4.4	12/28/2022	01/03/2023 11:50	George D Taylor	01/18/2023 21:44	McKinley C Carter	2377583
	12/28/2022	01/03/2023 11:50	George D Taylor	01/20/2023 00:14	McKinley C Carter	2377583
EPA 200.8 Rev. 5.4	12/28/2022	01/03/2023 11:50	George D Taylor	01/19/2023 04:47	Emily M Philpot	2377583
EPA 300.0 Rev. 2.1	12/28/2022			01/10/2023 22:33	Anna M. Plaviak	2377579
EPA 350.1 Rev. 2.0	12/28/2022			01/13/2023 11:37	Ping Hua	2377580
EPA 351.2 Rev. 2.0	12/28/2022	01/06/2023 12:30	Simonne.V. Calhoun	01/09/2023 10:02	Samantha L Bates	2377580
EPA 353.2 Rev. 2.0	12/28/2022			01/09/2023 11:39	Beverly Y. Sanders	2377580
EPA 365.1 Rev. 2.0	12/28/2022	01/06/2023 13:35	Adam P Silver	01/09/2023 13:48	James L Waggeberby	2377580
SM 2320 B-2011	12/28/2022			01/05/2023 10:40	Dale L. Simmons	2377579
SM 2340 B-2011	12/28/2022			01/18/2023 21:44	McKinley C Carter	2377583
SM 2540 C-2015	12/28/2022			12/29/2022 13:42	Yijie Li	2377579
SM 2540 D-2015	12/28/2022			12/29/2022 13:42	Yijie Li	2377579
SM 4500-F- C-2011	12/28/2022			01/12/2023 19:00	Dale L. Simmons	2377579
SM 5310 B-2011	12/28/2022			01/06/2023 02:32	Khloe J Berg	2377580