

Chemical Analysis Report

NE-DIST-2023-05-17-02

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

Event Description: **Nassau North 2 Boat**
Request ID: **RQ-2023-05-15-16**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
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8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256
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Certified by: Chris Bowen, Environmental Administrator

Date Certified: 08-JUN-2023 10:06



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 AT GA LINE US 17

Collection Date/Time: 05/16/2023 11:35

Field ID: 19010001

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2410512	DEP SOP: NU-094-1	Color (true)	91		PCU	P430002	
	EPA 180.1 Rev. 2.0	Turbidity	4.3		NTU	P430010	
	EPA 300.0 Rev. 2.1	Chloride	7.4E+03		mg Cl/L	P430367	
		Sulfate	1.0E+03		mg SO4/L	P430370	
	SM 2320 B-2011	Total Alkalinity	51		mg CaCO3/L	P430440	
	SM 2540 C-2015	TDS	1.34E+04		mg/L	P430684	
	SM 2540 D-2015	TSS	7	I	mg/L	P430522	RPD
2410513	SM 4500-F- C-2011	Fluoride	0.50		mg F/L	P430444	MS
	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P430337	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.57		mg N/L	P430235	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.039		mg N/L	P430295	
	EPA 365.1 Rev. 2.0	Total-P	0.031		mg P/L	P430094	
2410517	SM 5310 B-2011	Organic Carbon	13		mg C/L	P430151	
	EPA 200.7 Rev. 4.4	Calcium	170		mg/L	P430250	
		Iron	230	I	ug/L	P430250	
		Magnesium	502		mg/L	P430250	
		Potassium	156		mg/L	P430250	
		Sodium	3.91E+03		mg/L	P430250	
		Strontium	2.85E+03		ug/L	P430250	
		Tin	60	U	ug/L	P430250	
		Titanium	7.3	I	ug/L	P430250	
		Vanadium	6.0	U	ug/L	P430250	
		Zinc	15	U	ug/L	P430250	
	EPA 200.8 Rev. 5.4	Aluminum	285		ug/L	P430250	
		Antimony	0.20	U	ug/L	P430250	
		Arsenic	0.89		ug/L	P430250	
		Barium	38.7		ug/L	P430250	
		Beryllium	0.10	U	ug/L	P430250	
		Boron	1.70E+03		ug/L	P430250	
		Cadmium	0.080	U	ug/L	P430250	
		Chromium	4.0	U	ug/L	P430250	
		Cobalt	0.18	I	ug/L	P430250	
		Copper	1.6	U	ug/L	P430250	
		Lead	0.80	U	ug/L	P430250	
		Manganese	20.5		ug/L	P430250	
		Molybdenum	4.3		ug/L	P430250	
		Nickel	2.0	U	ug/L	P430250	
		Selenium	0.80	U	ug/L	P430250	
		Silver	0.040	U	ug/L	P430250	
		Thallium	0.40	U	ug/L	P430250	
	SM 2340 B-2011	Hardness	2.49E+03		mg/L	P430250	

Ref. Method and Comment:

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, magnesium, potassium, sodium and strontium are unavailable because of high analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for boron are unavailable because of high analyte concentration in the QC sample.

Sample Location: NASSAU RIV US 17

Collection Date/Time: 05/16/2023 12:35

Field ID: 19020002

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2410518	EPA 200.7 Rev. 4.4	Calcium	325		mg/L	P430250	
		Iron	860		ug/L	P430250	
		Magnesium	992		mg/L	P430250	
		Potassium	310		mg/L	P430250	
		Sodium	8.11E+03		mg/L	P430250	
		Strontium	6.04E+03		ug/L	P430250	
		Tin	300	U	ug/L	P430250	
		Titanium	31		ug/L	P430250	
		Vanadium	8.0	U	ug/L	P430250	
		Zinc	20	U	ug/L	P430250	
	EPA 200.8 Rev. 5.4	Aluminum	930		ug/L	P430250	
		Antimony	0.20	U	ug/L	P430250	
		Arsenic	2.00		ug/L	P430250	
		Barium	38.5		ug/L	P430250	
		Beryllium	0.062	I	ug/L	P430250	
		Boron	3.33E+03		ug/L	P430250	
		Cadmium	0.080	U	ug/L	P430250	
		Chromium	4.0	U	ug/L	P430250	
		Cobalt	0.25	I	ug/L	P430250	
		Copper	1.6	U	ug/L	P430250	
		Lead	2.0	U	ug/L	P430250	
		Manganese	40.3		ug/L	P430250	
		Molybdenum	8.3		ug/L	P430250	
		Nickel	2.0	U	ug/L	P430250	
		Selenium	0.80	U	ug/L	P430250	
		Silver	0.040	U	ug/L	P430250	
		Thallium	1.0	U	ug/L	P430250	
	SM 2340 B-2011	Hardness	4.90E+03		mg/L	P430250	

Ref. Method and Comment:

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, magnesium, potassium, sodium and strontium are unavailable because of high analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for boron are unavailable because of high analyte concentration in the QC sample.

Sample Location: EGAN CREEK AT ATLANTIC

Collection Date/Time: 05/16/2023 10:30

Field ID: G4NE0285

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2410528	DEP SOP: NU-094-1	Color (true)	23		PCU	P430002	
	EPA 180.1 Rev. 2.0	Turbidity	11		NTU	P430010	
	EPA 300.0 Rev. 2.1	Chloride	1.8E+04		mg Cl/L	P430367	
		Sulfate	2.5E+03		mg SO4/L	P430370	
	SM 2320 B-2011	Total Alkalinity	127		mg CaCO3/L	P430440	
	SM 2540 C-2015	TDS	3.12E+04		mg/L	P430684	
	SM 2540 D-2015	TSS	19		mg/L	P430522	RPD
	SM 4500-F- C-2011	Fluoride	1.2		mg F/L	P430444	MS
		Ammonia-N	0.011		mg N/L	P430337	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P430179	
2410529	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P430296	
	EPA 365.1 Rev. 2.0	Total-P	0.16		mg P/L	P430094	
	SM 5310 B-2011	Organic Carbon	6.9		mg C/L	P430100	

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P430002

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P430010

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P430250

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: P430250

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: P430367

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: P430370

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430337

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P430179

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P430235

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P430295

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P430296

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P430094

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

Reference Method: SM 2320 B-2011
Batch ID: P430440

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

Reference Method: SM 2540 C-2015
Batch ID: P430684

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-2015
Batch ID: P430522

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P430444

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P430100

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

Reference Method: SM 5310 B-2011
Batch ID: P430151

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: P430002

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	93.4		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P430010

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P430250

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	97.9		P	85 - 115
Iron	97.8		P	85 - 115
Magnesium	94.8		P	85 - 115
Potassium	97.3		P	85 - 115
Sodium	93.3		P	85 - 115
Strontium	95.4		P	85 - 115
Tin	97.1		P	85 - 115
Titanium	98.2		P	85 - 115
Vanadium	96.6		P	85 - 115
Zinc	94.6		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P430250

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	97.9		P	85 - 115
Antimony	96.3		P	85 - 115
Arsenic	97.6		P	85 - 115
Barium	98.4		P	85 - 115
Beryllium	93.6		P	85 - 115
Boron	102		P	85 - 115
Cadmium	97.1		P	85 - 115
Chromium	95.8		P	85 - 115
Cobalt	99.0		P	85 - 115
Copper	96.1		P	85 - 115
Lead	98.6		P	85 - 115
Manganese	94.8		P	85 - 115
Molybdenum	95.9		P	85 - 115
Nickel	96.4		P	85 - 115
Selenium	97.6		P	85 - 115
Silver	100		P	85 - 115
Thallium	97.6		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P430367

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P430370

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430337

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P430179

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P430235

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P430295

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P430296

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: P430094

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

Reference Method: SM 2320 B-2011
Batch ID: P430440

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.8		P	92 - 105

Reference Method: SM 2540 C-2015
Batch ID: P430684

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2540 D-2015
Batch ID: P430522

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	92.7		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P430444

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	104		P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P430100

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.2		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P430151

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P430250

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410517	Iron	95.7	96.4	P/P	80 - 120
2410517	Tin	94.6	96.2	P/P	80 - 120
2410517	Titanium	95.8	103	P/P	80 - 120
2410517	Vanadium	96.8	95.2	P/P	80 - 120
2410517	Zinc	91.2	90.9	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P430250

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410517	Aluminum	105	109	P/P	70 - 130
2410517	Antimony	102	102	P/P	70 - 130
2410517	Arsenic	105	106	P/P	70 - 130
2410517	Barium	105	107	P/P	70 - 130
2410517	Beryllium	107	104	P/P	70 - 130
2410517	Cadmium	94.8	93.4	P/P	70 - 130
2410517	Chromium	95.7	95.0	P/P	70 - 130
2410517	Cobalt	89.4	90.2	P/P	70 - 130
2410517	Copper	90.2	90.1	P/P	70 - 130
2410517	Lead	105	105	P/P	70 - 130
2410517	Manganese	83.5	83.5	P/P	70 - 130
2410517	Molybdenum	108	109	P/P	70 - 130
2410517	Nickel	90.3	90.3	P/P	70 - 130
2410517	Selenium	101	102	P/P	70 - 130
2410517	Silver	91.5	91.9	P/P	70 - 130
2410517	Thallium	99.1	102	P/P	70 - 130

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P430367

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410488	Chloride	101		P	90 - 110
2410592	Chloride	99.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P430370

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410488	Sulfate	98.7		P	90 - 110
2410592	Sulfate	99.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430337

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410310	Ammonia-N	99.6	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P430179

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410310	Kjeldahl Nitrogen	105	101	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P430235

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410513	Kjeldahl Nitrogen	101	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P430295

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410379	NO2NO3-N	97.1	97.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P430296

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410529	NO2NO3-N	101	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P430094

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410310	Total-P	96.6	94.0	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P430444

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2408857	Fluoride	108	108	F/F	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P430100

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410138	Organic Carbon	94.2	93.1	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P430151

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410513	Organic Carbon	91.2	92.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P430002

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410488	Color (true)	0.152	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P430010

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410488	Turbidity	10.5	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P430250

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410517	Calcium	1.04	Spike	P	0 - 20
2410517	Iron	0.705	Spike	P	0 - 20
2410517	Magnesium	0.556	Spike	P	0 - 20
2410517	Potassium	0.582	Spike	P	0 - 20
2410517	Sodium	0.229	Spike	P	0 - 20
2410517	Strontium	1.23	Spike	P	0 - 20
2410517	Tin	1.71	Spike	P	0 - 20
2410517	Titanium	6.48	Spike	P	0 - 20
2410517	Vanadium	1.65	Spike	P	0 - 20
2410517	Zinc	0.326	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P430250

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410517	Aluminum	3.62	Spike	P	0 - 20
2410517	Antimony	0.128	Spike	P	0 - 20
2410517	Arsenic	0.365	Spike	P	0 - 20
2410517	Barium	0.812	Spike	P	0 - 20
2410517	Beryllium	2.28	Spike	P	0 - 20
2410517	Boron	4.52	Spike	P	0 - 20
2410517	Cadmium	1.54	Spike	P	0 - 20
2410517	Chromium	0.724	Spike	P	0 - 20
2410517	Cobalt	0.869	Spike	P	0 - 20
2410517	Copper	0.0794	Spike	P	0 - 20
2410517	Lead	0.478	Spike	P	0 - 20
2410517	Manganese	0.0420	Spike	P	0 - 20
2410517	Molybdenum	0.380	Spike	P	0 - 20
2410517	Nickel	0.0363	Spike	P	0 - 20
2410517	Selenium	0.841	Spike	P	0 - 20
2410517	Silver	0.400	Spike	P	0 - 20
2410517	Thallium	2.89	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P430367

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410488	Chloride	1.37	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P430370

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410488	Sulfate	1.71	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430337

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410310	Ammonia-N	0.822	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P430179

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410310	Kjeldahl Nitrogen	3.59	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P430235

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410513	Kjeldahl Nitrogen	4.56	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P430295

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410379	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P430296

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410529	NO2NO3-N	0.496	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P430094

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410310	Total-P	2.68	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P430440

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410185	Total Alkalinity	0.321	Sample	P	0 - 3.9

Reference Method: SM 2540 C-2015
Batch ID: P430684

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410864	TDS	2.91	Sample	P	0 - 10

Reference Method: SM 2540 D-2015
Batch ID: P430522

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410378	TSS	11.3	Sample	F	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P430444

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2408857	Fluoride	0.0	Spike	P	0 - 1.9

Reference Method: SM 5310 B-2011
Batch ID: P430100

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410138	Organic Carbon	0.956	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P430151

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410513	Organic Carbon	0.768	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: A119229

Included Lab Sample IDs: 2410512, 2410528

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.9	98.9	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A119231

Included Lab Sample IDs: 2410512, 2410528

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	97.5	97.5	P/P	95 - 105

Reference Method: SM 5310 B-2011

Run ID: A119268

Included Lab Sample IDs: 2410529

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.8	96.4	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A119300

Included Lab Sample IDs: 2410513

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.4	92.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A119315

Included Lab Sample IDs: 2410529

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A119340

Included Lab Sample IDs: 2410513

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.0	97.5	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A119351

Included Lab Sample IDs: 2410512, 2410528

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.3	98.2	P/P	90 - 110
Sulfate	97.5	96.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A119353

Included Lab Sample IDs: 2410529

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A119358

Included Lab Sample IDs: 2410517, 2410518

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	95.0	95.6	P/P	90 - 110
Calcium	96.5	95.0	P/P	90 - 110
Iron	95.4	96.6	P/P	90 - 110
Iron	97.1	95.4	P/P	90 - 110
Magnesium	93.5	94.7	P/P	90 - 110
Magnesium	95.1	93.5	P/P	90 - 110
Potassium	96.9	97.0	P/P	90 - 110
Potassium	97.0	96.2	P/P	90 - 110
Sodium	93.1	92.0	P/P	90 - 110
Strontium	95.0	96.2	P/P	90 - 110
Strontium	96.2	98.2	P/P	90 - 110
Tin	94.8	94.8	P/P	90 - 110
Tin	95.9	94.8	P/P	90 - 110
Titanium	96.5	96.6	P/P	90 - 110
Titanium	96.6	96.5	P/P	90 - 110
Vanadium	95.3	95.1	P/P	90 - 110
Vanadium	95.5	95.3	P/P	90 - 110
Zinc	91.1	91.7	P/P	90 - 110
Zinc	93.2	91.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A119364

Included Lab Sample IDs: 2410513, 2410529

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.0	95.0	P/P	90 - 110
NO2NO3-N	98.0	97.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A119376

Included Lab Sample IDs: 2410513

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.0	94.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A119381

Included Lab Sample IDs: 2410513, 2410529

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	98.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A119393

Included Lab Sample IDs: 2410517, 2410518

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.0	100	P/P	90 - 110
Antimony	97.8	99.9	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Barium	99.7	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A119393

Included Lab Sample IDs: 2410517, 2410518

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Beryllium	98.1	99.5	P/P	90 - 110
Beryllium	99.5	99.7	P/P	90 - 110
Boron	97.4	95.7	P/P	90 - 110
Cadmium	97.7	98.2	P/P	90 - 110
Chromium	98.4	98.7	P/P	90 - 110
Cobalt	100	100	P/P	90 - 110
Copper	97.7	97.3	P/P	90 - 110
Lead	100	100	P/P	90 - 110
Lead	99.5	100	P/P	90 - 110
Manganese	94.7	94.9	P/P	90 - 110
Molybdenum	98.0	98.1	P/P	90 - 110
Nickel	99.6	99.9	P/P	90 - 110
Selenium	99.8	101	P/P	90 - 110
Silver	100	99.9	P/P	90 - 110
Thallium	103	103	P/P	90 - 110
Thallium	105	103	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A119421

Included Lab Sample IDs: 2410512, 2410528

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	94.3	98.9	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A119421

Included Lab Sample IDs: 2410512, 2410528

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	107	108	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A119423

Included Lab Sample IDs: 2410517

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sodium	98.1	99.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A119428

Included Lab Sample IDs: 2410517

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.3	98.5	P/P	90 - 110
Boron	105	103	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		LCS	Precision	MS
						SMP	
DEP SOP: NU-094-1	Color (true)	93.4				0.152	
EPA 180.1 Rev. 2.0	Turbidity	97.2				10.5	
EPA 200.7 Rev. 4.4	Calcium	97.9					1.04
	Iron	97.8	95.7	96.4			0.705
	Magnesium	94.8					0.556
	Potassium	97.3					0.582
	Sodium	93.3					0.229
	Strontium	95.4					1.23
	Tin	97.1	96.2	94.6			1.71
	Titanium	98.2	95.8	103			6.48
	Vanadium	96.6	96.8	95.2			1.65
	Zinc	94.6	90.9	91.2			0.326
EPA 200.8 Rev. 5.4	Aluminum	97.9	105	109			3.62
	Antimony	96.3	102	102			0.128
	Arsenic	97.6	105	106			0.365
	Barium	98.4	105	107			0.812
	Beryllium	93.6	107	104			2.28
	Boron	102					4.52
	Cadmium	97.1	94.8	93.4			1.54
	Chromium	95.8	95.7	95.0			0.724
	Cobalt	99.0	89.4	90.2			0.869
	Copper	96.1	90.2	90.1			0.0794
	Lead	98.6	105	105			0.478
	Manganese	94.8	83.5	83.5			0.0420
	Molybdenum	95.9	108	109			0.380
	Nickel	96.4	90.3	90.3			0.0363
	Selenium	97.6	101	102			0.841
	Silver	100	91.5	91.9			0.400
	Thallium	97.6	99.1	102			2.89
EPA 300.0 Rev. 2.1	Chloride	101	101	99.0		1.37	
	Sulfate	99.9	98.7	99.1		1.71	
EPA 350.1 Rev. 2.0	Ammonia-N	98.2	99.6	98.6			0.822
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	105	101			3.59
	Kjeldahl Nitrogen	102	101	107			4.56
EPA 353.2 Rev. 2.0	NO2NO3-N	96.5	97.1	97.1			0.0
	NO2NO3-N	96.0	101	100			0.496
EPA 365.1 Rev. 2.0	Total-P	98.8	96.6	94.0			2.68
SM 2320 B-2011	Total Alkalinity	99.8				0.321	
SM 2540 C-2015	TDS	100				2.91	
SM 2540 D-2015	TSS	92.7				11.3	
SM 4500-F- C-2011	Fluoride	104	108	108			0.0
SM 5310 B-2011	Organic Carbon	98.2	94.2	93.1			0.956
	Organic Carbon	98.4	91.2	92.2			0.768

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2410512, 2410528
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2410512, 2410528
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2410517, 2410518
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2410517, 2410518

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2410512, 2410528
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2410512, 2410528
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2410513, 2410529
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2410513, 2410529
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2410513, 2410529
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2410513, 2410529
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2410512, 2410528
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2410517, 2410518
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2410512, 2410528
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2410512, 2410528
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2410512, 2410528
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2410513, 2410529

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	05/17/2023			05/17/2023 14:54	Anna M. Plaviak	2410512
	05/17/2023			05/17/2023 14:55	Anna M. Plaviak	2410528
EPA 180.1 Rev. 2.0	05/17/2023			05/17/2023 14:35	Khloe J Berg	2410512
	05/17/2023			05/17/2023 14:36	Khloe J Berg	2410528
EPA 200.7 Rev. 4.4	05/17/2023	05/23/2023 11:20	George D Taylor	05/23/2023 20:41	McKinley C Carter	2410517
	05/17/2023	05/23/2023 11:20	George D Taylor	05/23/2023 21:13	McKinley C Carter	2410517
	05/17/2023	05/23/2023 11:20	George D Taylor	05/23/2023 22:11	McKinley C Carter	2410518
	05/17/2023	05/23/2023 11:20	George D Taylor	05/23/2023 22:19	McKinley C Carter	2410518
	05/17/2023	05/23/2023 11:20	George D Taylor	05/26/2023 02:15	McKinley C Carter	2410517
EPA 200.8 Rev. 5.4	05/17/2023	05/23/2023 11:20	George D Taylor	05/25/2023 01:05	Conrad Hartmann	2410518
	05/17/2023	05/23/2023 11:20	George D Taylor	05/25/2023 01:41	Conrad Hartmann	2410517
	05/17/2023	05/23/2023 11:20	George D Taylor	05/25/2023 02:52	Conrad Hartmann	2410518
	05/17/2023	05/23/2023 11:20	George D Taylor	05/25/2023 03:28	Conrad Hartmann	2410517
	05/17/2023	05/23/2023 11:20	George D Taylor	05/25/2023 17:56	Emily M Philpot	2410517
	05/17/2023	05/23/2023 11:20	George D Taylor	05/25/2023 18:59	Emily M Philpot	2410517
EPA 300.0 Rev. 2.1	05/17/2023			05/24/2023 21:26	James L Waggeberby	2410512
	05/17/2023			05/24/2023 21:41	James L Waggeberby	2410528
EPA 350.1 Rev. 2.0	05/17/2023			05/24/2023 13:08	Khloe J Berg	2410513
	05/17/2023			05/24/2023 13:09	Khloe J Berg	2410529
EPA 351.2 Rev. 2.0	05/17/2023	05/22/2023 11:09	Dana G. Hughes	05/23/2023 14:55	Samantha L Bates	2410529
	05/17/2023	05/23/2023 11:55	Dana G. Hughes	05/24/2023 12:00	Samantha L Bates	2410513
EPA 353.2 Rev. 2.0	05/17/2023			05/24/2023 09:44	Beverly Y. Sanders	2410513
	05/17/2023			05/24/2023 09:51	Beverly Y. Sanders	2410529
EPA 365.1 Rev. 2.0	05/17/2023	05/19/2023 11:40	Adam P Silver	05/22/2023 14:34	Chandler E Cox	2410529
	05/17/2023	05/19/2023 11:40	Adam P Silver	05/23/2023 10:35	James L Waggeberby	2410513
SM 2320 B-2011	05/17/2023			05/25/2023 12:10	Dale L. Simmons	2410512
	05/17/2023			05/25/2023 12:24	Dale L. Simmons	2410528
SM 2340 B-2011	05/17/2023			05/23/2023 21:13	McKinley C Carter	2410517
	05/17/2023			05/23/2023 22:19	McKinley C Carter	2410518
SM 2540 C-2015	05/17/2023			05/19/2023 16:01	Yijie Li	2410512, 2410528
SM 2540 D-2015	05/17/2023			05/19/2023 16:01	Yijie Li	2410512, 2410528
SM 4500-F- C-2011	05/17/2023			05/25/2023 08:27	Dale L. Simmons	2410512
	05/17/2023			05/25/2023 08:33	Dale L. Simmons	2410528
SM 5310 B-2011	05/17/2023			05/19/2023 06:14	Elise M. Gillis	2410529
	05/17/2023			05/20/2023 02:40	Elise M. Gillis	2410513