

Chemical Analysis Report

NE-DIST-2023-10-26-01

Florida DEP Laboratory
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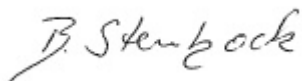
Event Description: **Nassau North**
Request ID: **RQ-2023-10-30-18**
Customer: **NE-DIST**
Project ID: **SMP**

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Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 13-NOV-2023 13:47



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 ANDREWS RD

Collection Date/Time: 10/25/2023 11:30

Field ID: 19010098

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2447372	EPA 200.7 Rev. 4.4	Calcium	2.71		mg/L	P437091	
		Iron	2.44E+03		ug/L	P437091	
		Magnesium	0.88		mg/L	P437091	
		Potassium	0.57	I	mg/L	P437091	
		Sodium	6.7		mg/L	P437091	
		Strontium	13.0		ug/L	P437091	
		Tin	3.0	U	ug/L	P437091	
		Titanium	3.5		ug/L	P437091	
		Vanadium	2.0	U	ug/L	P437091	
	EPA 200.8 Rev. 5.4	Zinc	21		ug/L	P437091	
		Aluminum	482		ug/L	P437091	
		Antimony	0.050	U	ug/L	P437091	
		Arsenic	0.66		ug/L	P437091	
		Barium	16.2		ug/L	P437091	
		Beryllium	0.030	I	ug/L	P437091	
		Boron	18.8		ug/L	P437091	
		Cadmium	0.020	U	ug/L	P437091	
		Chromium	0.56	I	ug/L	P437091	
		Cobalt	0.221		ug/L	P437091	
		Copper	0.40	U	ug/L	P437091	
		Lead	0.68		ug/L	P437091	
		Manganese	16.9		ug/L	P437091	
		Molybdenum	0.15	U	ug/L	P437091	
		Nickel	0.51	I	ug/L	P437091	
		Selenium	0.20	U	ug/L	P437091	
		Silver	0.010	U	ug/L	P437091	
		Thallium	0.10	U	ug/L	P437091	
	SM 2340 B-2011	Hardness	10.4		mg/L	P437091	

Ref. Method and Comment:
EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 11/01/2023.

Sample Location: ALLIGATOR CR AT SR200

Collection Date/Time: 10/25/2023 12:05

Field ID: 19021007

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2447360	DEP SOP: NU-094-1	Color (true)	260		PCU	P437053	
	EPA 180.1 Rev. 2.0	Turbidity	1.8	A	NTU	P437060	
	EPA 300.0 Rev. 2.1	Chloride	30		mg Cl/L	P437503	
		Sulfate	34		mg SO4/L	P437507	
	SM 2320 B-2011	Total Alkalinity	45		mg CaCO3/L	P437159	
	SM 2540 C-2015	TDS	184		mg/L	P437565	
	SM 2540 D-2015	TSS	2	I	mg/L	P437416	
	SM 4500-F- C-2011	Fluoride	0.12		mg F/L	P437162	
2447361	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P437142	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P437065	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.099		mg N/L	P437365	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P437069	
	SM 5310 B-2011	Organic Carbon	28		mg C/L	P437266	

Ref. Method and Comment:

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

Sample Location: UNNAMED BRANCH ABOVE ALLIGATOR CR Collection Date/Time: 10/25/2023 12:30

Field ID: G4NE0288

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2447358	DEP SOP: NU-094-1	Color (true)	290		PCU	P437053	
	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P437059	
	EPA 300.0 Rev. 2.1	Chloride	25		mg Cl/L	P437503	
		Sulfate	22		mg SO4/L	P437507	
	SM 2320 B-2011	Total Alkalinity	41		mg CaCO3/L	P437159	
	SM 2540 C-2015	TDS	174		mg/L	P437565	
	SM 2540 D-2015	TSS	2	U	mg/L	P437416	
	SM 4500-F- C-2011	Fluoride	0.10		mg F/L	P437162	
2447359	EPA 350.1 Rev. 2.0	Ammonia-N	0.027		mg N/L	P437142	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P437065	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.080		mg N/L	P437365	
	EPA 365.1 Rev. 2.0	Total-P	0.18		mg P/L	P437069	
	SM 5310 B-2011	Organic Carbon	31		mg C/L	P437266	
2447371	EPA 200.7 Rev. 4.4	Calcium	20.4		mg/L	P437091	
		Iron	830		ug/L	P437091	
		Magnesium	7.26		mg/L	P437091	
		Potassium	4.7		mg/L	P437091	
		Sodium	15.8		mg/L	P437091	
		Strontium	89.4		ug/L	P437091	
		Tin	3.0	U	ug/L	P437091	
		Titanium	3.3		ug/L	P437091	
	EPA 200.8 Rev. 5.4	Vanadium	2.0	U	ug/L	P437091	
		Zinc	22		ug/L	P437091	
		Aluminum	216		ug/L	P437091	
		Antimony	0.090	I	ug/L	P437091	
		Arsenic	0.50		ug/L	P437091	
		Barium	25.9		ug/L	P437091	
		Beryllium	0.022	I	ug/L	P437091	
		Boron	41.2		ug/L	P437091	
		Cadmium	0.020	U	ug/L	P437091	
		Chromium	0.53	I	ug/L	P437091	
		Cobalt	0.206		ug/L	P437091	
		Copper	0.49	I	ug/L	P437091	
		Lead	0.27	I	ug/L	P437091	
		Manganese	48.0		ug/L	P437091	
		Molybdenum	0.15	U	ug/L	P437091	
		Nickel	0.55	I	ug/L	P437091	
		Selenium	0.20	U	ug/L	P437091	
		Silver	0.010	U	ug/L	P437091	
		Thallium	0.10	U	ug/L	P437091	
	SM 2340 B-2011	Hardness	81.0		mg/L	P437091	

Ref. Method and Comment:

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

Sample Location: PLUMMER CR AT WILDWOOD RD (FKA YULEE RD) **Collection Date/Time: 10/25/2023 13:40**

Field ID: 19020063

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2447362	DEP SOP: NU-094-1	Color (true)	290		PCU	P437053	
	EPA 180.1 Rev. 2.0	Turbidity	9.6		NTU	P437060	
	EPA 300.0 Rev. 2.1	Chloride	44		mg Cl/L	P437503	
		Sulfate	8.8		mg SO4/L	P437507	
	SM 2320 B-2011	Total Alkalinity	31		mg CaCO3/L	P437159	
	SM 2540 C-2015	TDS	179		mg/L	P437565	
	SM 2540 D-2015	TSS	7	I	mg/L	P437416	
	SM 4500-F- C-2011	Fluoride	0.060	I	mg F/L	P437162	
2447363	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P437142	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P437065	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P437365	
	EPA 365.1 Rev. 2.0	Total-P	0.050		mg P/L	P437069	
	SM 5310 B-2011	Organic Carbon	34		mg C/L	P437266	

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: P437053

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P437059

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P437060

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P437091

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: P437091

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P437503

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P437507

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P437142

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P437065

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P437365

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P437069

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

Reference Method: SM 2320 B-2011
Batch ID: P437159

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

Reference Method: SM 2540 C-2015
Batch ID: P437565

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P437416

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 4500-F- C-2011
Batch ID: P437162

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P437266

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: P437053

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

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P437059

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

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P437060

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P437091

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	106		P	85 - 115
Iron	112		P	85 - 115
Magnesium	105		P	85 - 115
Potassium	103		P	85 - 115
Sodium	107		P	85 - 115
Strontium	99.9		P	85 - 115
Tin	98.7		P	85 - 115
Titanium	102		P	85 - 115
Vanadium	101		P	85 - 115
Zinc	98.2		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P437091

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.3		P	85 - 115
Antimony	97.3		P	85 - 115
Arsenic	97.1		P	85 - 115
Barium	101		P	85 - 115
Beryllium	93.8		P	85 - 115
Boron	102		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	98.9		P	85 - 115
Cobalt	95.2		P	85 - 115
Copper	93.9		P	85 - 115
Lead	91.9		P	85 - 115
Manganese	98.8		P	85 - 115
Molybdenum	96.9		P	85 - 115
Nickel	93.6		P	85 - 115
Selenium	99.2		P	85 - 115
Silver	105		P	85 - 115
Thallium	96.1		P	85 - 115

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P437503

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P437507

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P437142

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P437065

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P437365

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: P437069

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

Reference Method: SM 2320 B-2011
Batch ID: P437159

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.8		P	92 - 105

Reference Method: SM 2540 C-2015
Batch ID: P437565

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	94.8		P	85 - 115

Reference Method: SM 2540 D-2015
Batch ID: P437416

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	109		P	85 - 115

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500-F- C-2011
Batch ID: P437162

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	103		P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P437266

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P437091

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2446928	Calcium	102		P	80 - 120
2446928	Iron	110	109	P/P	80 - 120
2446928	Magnesium	103		P	80 - 120
2446928	Potassium	102	101	P/P	80 - 120
2446928	Sodium	106	105	P/P	80 - 120
2446928	Strontium	98.2	97.4	P/P	80 - 120
2446928	Tin	95.5	95.4	P/P	80 - 120
2446928	Titanium	101	101	P/P	80 - 120
2446928	Vanadium	99.5	99.5	P/P	80 - 120
2446928	Zinc	94.0	94.0	P/P	80 - 120
2447188	Calcium	98.7		P	80 - 120
2447188	Iron	109		P	80 - 120
2447188	Magnesium	103		P	80 - 120
2447188	Potassium	102		P	80 - 120
2447188	Sodium	106		P	80 - 120
2447188	Strontium	98.0		P	80 - 120
2447188	Tin	95.2		P	80 - 120
2447188	Titanium	101		P	80 - 120
2447188	Vanadium	100		P	80 - 120
2447188	Zinc	97.5		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P437091

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2446928	Aluminum	96.6	97.7	P/P	80 - 120
2446928	Antimony	98.0	99.5	P/P	80 - 120
2446928	Arsenic	96.3	98.9	P/P	80 - 120
2446928	Barium	100	101	P/P	80 - 120
2446928	Beryllium	94.0	93.9	P/P	80 - 120
2446928	Boron	101	104	P/P	80 - 120
2446928	Cadmium	99.7	101	P/P	80 - 120
2446928	Chromium	99.2	100	P/P	80 - 120
2446928	Cobalt	91.3	93.1	P/P	80 - 120
2446928	Copper	91.4	92.3	P/P	80 - 120
2446928	Lead	90.6	92.8	P/P	80 - 120
2446928	Manganese	97.7	99.6	P/P	80 - 120
2446928	Molybdenum	97.2	100	P/P	80 - 120
2446928	Nickel	89.7	91.2	P/P	80 - 120
2446928	Selenium	97.3	98.0	P/P	80 - 120
2446928	Silver	105	106	P/P	80 - 120
2446928	Thallium	97.4	100	P/P	80 - 120
2447188	Aluminum	96.7		P	80 - 120
2447188	Antimony	99.5		P	80 - 120
2447188	Arsenic	95.8		P	80 - 120
2447188	Barium	99.7		P	80 - 120
2447188	Beryllium	94.9		P	80 - 120
2447188	Boron	105		P	80 - 120
2447188	Cadmium	101		P	80 - 120
2447188	Chromium	98.8		P	80 - 120
2447188	Cobalt	92.4		P	80 - 120
2447188	Copper	89.0		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P437091

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2447188	Lead	93.2		P	80 - 120
2447188	Manganese	96.1		P	80 - 120
2447188	Molybdenum	98.8		P	80 - 120
2447188	Nickel	90.4		P	80 - 120
2447188	Selenium	96.5		P	80 - 120
2447188	Silver	105		P	80 - 120
2447188	Thallium	100		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P437503

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2447305	Chloride	103		P	90 - 110
2447362	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P437507

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2447305	Sulfate	103		P	90 - 110
2447362	Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P437142

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2447283	Ammonia-N	101	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P437065

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2447193	Kjeldahl Nitrogen	95.7	99.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P437365

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2447341	NO2NO3-N	94.5	94.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P437069

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2447415	Total-P	104	98.3	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P437162

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2447414	Fluoride	103	102	P/P	94 - 106

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P437266

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2447283	Organic Carbon	93.7	95.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P437053

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2447309	Color (true)	2.77	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P437059

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2447192	Turbidity	4.13	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P437060

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2447360	Turbidity	4.35	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P437091

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446928	Calcium	0.333	Spike	P	0 - 20
2446928	Iron	0.731	Spike	P	0 - 20
2446928	Magnesium	0.573	Spike	P	0 - 20
2446928	Potassium	0.824	Spike	P	0 - 20
2446928	Sodium	0.284	Spike	P	0 - 20
2446928	Strontium	0.749	Spike	P	0 - 20
2446928	Tin	0.0875	Spike	P	0 - 20
2446928	Titanium	0.0360	Spike	P	0 - 20
2446928	Vanadium	0.0142	Spike	P	0 - 20
2446928	Zinc	0.00372	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P437091

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446928	Aluminum	1.12	Spike	P	0 - 20
2446928	Antimony	1.42	Spike	P	0 - 20
2446928	Arsenic	2.62	Spike	P	0 - 20
2446928	Barium	0.792	Spike	P	0 - 20
2446928	Beryllium	0.176	Spike	P	0 - 20
2446928	Boron	2.46	Spike	P	0 - 20
2446928	Cadmium	1.48	Spike	P	0 - 20
2446928	Chromium	1.02	Spike	P	0 - 20
2446928	Cobalt	2.00	Spike	P	0 - 20
2446928	Copper	1.02	Spike	P	0 - 20
2446928	Lead	2.41	Spike	P	0 - 20
2446928	Manganese	1.91	Spike	P	0 - 20
2446928	Molybdenum	2.64	Spike	P	0 - 20
2446928	Nickel	1.68	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P437091

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446928	Selenium	0.691	Spike	P	0 - 20
2446928	Silver	1.23	Spike	P	0 - 20
2446928	Thallium	2.80	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P437503

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2447305	Chloride	0.800	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P437507

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2447305	Sulfate	0.628	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P437142

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2447283	Ammonia-N	0.396	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P437065

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2447193	Kjeldahl Nitrogen	2.93	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P437365

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2447341	NO2NO3-N	0.531	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P437069

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2447415	Total-P	5.43	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P437159

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P437159

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2447414	Total Alkalinity	2.91	Sample	P	0 - 3.9

Reference Method: SM 2540 C-2015
Batch ID: P437565

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2447397	TDS	1.70	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P437162

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2447414	Fluoride	0.467	Spike	P	0 - 1.9

Reference Method: SM 5310 B-2011
Batch ID: P437266

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2447283	Organic Carbon	1.86	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: A122390

Included Lab Sample IDs: 2447358, 2447360, 2447362

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.7	102	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A122392

Included Lab Sample IDs: 2447358, 2447360, 2447362

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A122432

Included Lab Sample IDs: 2447359, 2447361, 2447363

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	106	P/P	90 - 110
Kjeldahl Nitrogen	106	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A122434

Included Lab Sample IDs: 2447359, 2447361, 2447363

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.9	97.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A122439

Included Lab Sample IDs: 2447359, 2447361, 2447363

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.7	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A122444

Included Lab Sample IDs: 2447358, 2447360, 2447362

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	95.8	97.8	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A122444

Included Lab Sample IDs: 2447358, 2447360, 2447362

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A122477

Included Lab Sample IDs: 2447371, 2447372

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A122477

Included Lab Sample IDs: 2447371, 2447372

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	102	101	P/P	90 - 110
Magnesium	102	101	P/P	90 - 110
Potassium	99.5	100	P/P	90 - 110
Sodium	101	101	P/P	90 - 110
Strontium	98.7	98.4	P/P	90 - 110
Tin	100	100	P/P	90 - 110
Titanium	101	101	P/P	90 - 110
Vanadium	99.9	99.9	P/P	90 - 110
Zinc	99.5	99.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A122498

Included Lab Sample IDs: 2447371, 2447372

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	102	97.9	P/P	90 - 110
Antimony	98.7	97.7	P/P	90 - 110
Arsenic	96.0	95.7	P/P	90 - 110
Barium	98.8	99.2	P/P	90 - 110
Beryllium	99.1	96.8	P/P	90 - 110
Boron	104	102	P/P	90 - 110
Cadmium	102	101	P/P	90 - 110
Chromium	102	102	P/P	90 - 110
Cobalt	94.6	94.4	P/P	90 - 110
Copper	93.1	92.6	P/P	90 - 110
Lead	94.2	94.4	P/P	90 - 110
Manganese	102	102	P/P	90 - 110
Molybdenum	98.2	97.5	P/P	90 - 110
Nickel	93.6	93.1	P/P	90 - 110
Selenium	98.7	99.7	P/P	90 - 110
Silver	99.5	99.4	P/P	90 - 110
Thallium	98.4	99.0	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A122507

Included Lab Sample IDs: 2447359, 2447361, 2447363

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.6	96.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A122558

Included Lab Sample IDs: 2447359, 2447361, 2447363

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

Quality Assurance Report

Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A122610

Included Lab Sample IDs: 2447358, 2447360, 2447362

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	103	P/P	90 - 110
Chloride	101	101	P/P	90 - 110
Sulfate	101	103	P/P	90 - 110
Sulfate	101	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		
						LCS	SMP	MS
DEP SOP: NU-094-1	Color (true)	101				2.77		
EPA 180.1 Rev. 2.0	Turbidity	104				4.13		
	Turbidity	104				4.35		
EPA 200.7 Rev. 4.4	Calcium	106	102	98.7			0.333	
	Iron	112	110	109	109		0.731	
	Magnesium	105	103	103			0.573	
	Potassium	103	102	101	102		0.824	
	Sodium	107	106	105	106		0.284	
	Strontium	99.9	98.2	97.4	98.0		0.749	
	Tin	98.7	95.5	95.4	95.2		0.0875	
	Titanium	102	101	101	101		0.0360	
	Vanadium	101	99.5	99.5	100		0.0142	
	Zinc	98.2	94.0	94.0	97.5		0.0037	
EPA 200.8 Rev. 5.4	Aluminum	99.3	96.7	96.6	97.7		1.12	
	Antimony	97.3	99.5	98.0	99.5		1.42	
	Arsenic	97.1	95.8	96.3	98.9		2.62	
	Barium	101	99.7	100	101		0.792	
	Beryllium	93.8	94.9	94.0	93.9		0.176	
	Boron	102	105	101	104		2.46	
	Cadmium	100	101	99.7	101		1.48	
	Chromium	98.9	98.8	99.2	100		1.02	
	Cobalt	95.2	92.4	91.3	93.1		2.00	
	Copper	93.9	89.0	91.4	92.3		1.02	
	Lead	91.9	93.2	90.6	92.8		2.41	
	Manganese	98.8	96.1	97.7	99.6		1.91	
	Molybdenum	96.9	98.8	97.2	100		2.64	
	Nickel	93.6	90.4	89.7	91.2		1.68	
	Selenium	99.2	96.5	97.3	98.0		0.691	
	Silver	105	105	105	106		1.23	
	Thallium	96.1	100	97.4	100		2.80	
EPA 300.0 Rev. 2.1	Chloride	102	103	101		0.800		
	Sulfate	101	103	103		0.628		
EPA 350.1 Rev. 2.0	Ammonia-N	99.8	101	101			0.396	
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	95.7	99.4			2.93	
EPA 353.2 Rev. 2.0	NO2NO3-N	100	94.5	94.0			0.531	
EPA 365.1 Rev. 2.0	Total-P	101	104	98.3			5.43	
SM 2320 B-2011	Total Alkalinity	97.8				2.91		
SM 2540 C-2015	TDS	94.8				1.70		
SM 2540 D-2015	TSS	109						
SM 4500-F- C-2011	Fluoride	103	103	102			0.467	
SM 5310 B-2011	Organic Carbon	94.4	93.7	95.6			1.86	

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2447358, 2447360, 2447362
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2447358, 2447360, 2447362
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2447371, 2447372
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2447371, 2447372
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2447358, 2447360, 2447362
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2447358, 2447360, 2447362

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2447359, 2447361, 2447363
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2447359, 2447361, 2447363
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2447359, 2447361, 2447363
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2447359, 2447361, 2447363
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2447358, 2447360, 2447362
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2447371, 2447372
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2447358, 2447360, 2447362
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2447358, 2447360, 2447362
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2447358, 2447360, 2447362
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2447359, 2447361, 2447363

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	10/26/2023			10/26/2023 15:50	Chandler E Cox	2447358
	10/26/2023			10/26/2023 15:51	Chandler E Cox	2447360
	10/26/2023			10/26/2023 15:52	Chandler E Cox	2447362
EPA 180.1 Rev. 2.0	10/26/2023			10/26/2023 14:38	Khloe J Berg	2447358
	10/26/2023			10/26/2023 14:45	Khloe J Berg	2447360, 2447362
EPA 200.7 Rev. 4.4	10/26/2023	10/27/2023 13:55	George D Taylor	10/31/2023 18:03	Chase Roberts	2447371
	10/26/2023	10/27/2023 13:55	George D Taylor	10/31/2023 18:09	Chase Roberts	2447372
EPA 200.8 Rev. 5.4	10/26/2023	10/27/2023 13:55	George D Taylor	11/01/2023 19:37	Conrad Hartmann	2447371
	10/26/2023	10/27/2023 13:55	George D Taylor	11/01/2023 19:47	Conrad Hartmann	2447372
EPA 300.0 Rev. 2.1	10/26/2023			11/07/2023 05:52	James L Waggeberby	2447362
	10/26/2023			11/07/2023 09:23	James L Waggeberby	2447358
	10/26/2023			11/07/2023 09:38	James L Waggeberby	2447360
EPA 350.1 Rev. 2.0	10/26/2023			10/30/2023 13:49	Ping Hua	2447359
	10/26/2023			10/30/2023 13:50	Ping Hua	2447361
	10/26/2023			10/30/2023 13:51	Ping Hua	2447363
EPA 351.2 Rev. 2.0	10/26/2023	10/27/2023 09:39	Samantha L Bates	10/30/2023 11:19	Samantha L Bates	2447359
	10/26/2023	10/27/2023 09:39	Samantha L Bates	10/30/2023 11:24	Samantha L Bates	2447361
	10/26/2023	10/27/2023 09:39	Samantha L Bates	10/30/2023 11:26	Samantha L Bates	2447363
EPA 353.2 Rev. 2.0	10/26/2023			11/02/2023 12:42	Fadila Guebre	2447359
	10/26/2023			11/02/2023 12:44	Fadila Guebre	2447361
	10/26/2023			11/02/2023 12:45	Fadila Guebre	2447363
EPA 365.1 Rev. 2.0	10/26/2023	10/27/2023 12:52	Adam P Silver	10/30/2023 11:44	Chandler E Cox	2447359
	10/26/2023	10/27/2023 12:52	Adam P Silver	10/30/2023 11:45	Chandler E Cox	2447361, 2447363
SM 2320 B-2011	10/26/2023			10/31/2023 00:25	Adam P Silver	2447358
	10/26/2023			10/31/2023 00:38	Adam P Silver	2447360
	10/26/2023			10/31/2023 00:51	Adam P Silver	2447362
SM 2340 B-2011	10/26/2023			10/31/2023 18:03	Chase Roberts	2447371
	10/26/2023			10/31/2023 18:09	Chase Roberts	2447372
SM 2540 C-2015	10/26/2023			10/31/2023 14:50	Yijie Li	2447358, 2447360, 2447362
SM 2540 D-2015	10/26/2023			10/31/2023 14:50	Yijie Li	2447358, 2447360, 2447362
SM 4500-F- C-2011	10/26/2023			10/31/2023 00:25	Adam P Silver	2447358
	10/26/2023			10/31/2023 00:38	Adam P Silver	2447360
	10/26/2023			10/31/2023 00:51	Adam P Silver	2447362
SM 5310 B-2011	10/26/2023			11/01/2023 17:04	Elise M. Gillis	2447359
	10/26/2023			11/01/2023 17:18	Elise M. Gillis	2447361
	10/26/2023			11/01/2023 17:31	Elise M. Gillis	2447363