

Chemical Analysis Report

NE-DIST-2024-03-22-01

Florida DEP Laboratory
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DOH Accreditation E31780

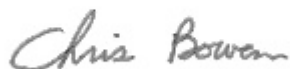
Event Description: **Callahan**
Request ID: **RQ-2024-03-25-33**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Chris Bowen, Environmental Administrator

Date Certified: 10-APR-2024 08:44



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: THOMAS CR 60 MI BELOW CITY PRISON

Collection Date/Time: 03/21/2024 10:30

Field ID: G4NE0008

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2477233	DEP SOP: NU-094-1	Color (true)	390		PCU	P443212	
	EPA 180.1 Rev. 2.0	Turbidity	7.2		NTU	P443218	
	EPA 300.0 Rev. 2.1	Chloride	39		mg Cl/L	P443536	
		Sulfate	4.6		mg SO4/L	P443539	
	SM 2320 B-2011	Total Alkalinity	22		mg CaCO3/L	P443339	
	SM 2540 C-2015	TDS	191		mg/L	P443620	
	SM 2540 D-2015	TSS	10		mg/L	P443726	
2477234	SM 4500-F- C-2011	Fluoride	0.066	I	mg F/L	P443341	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.036		mg N/L	P443281	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P443237	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P443413	
	EPA 365.1 Rev. 2.0	Total-P	0.25		mg P/L	P443307	
2477246	SM 5310 B-2014	Organic Carbon	33		mg C/L	P443430	
	EPA 200.7 Rev. 4.4	Calcium	8.57		mg/L	P443265	
		Iron	930		ug/L	P443265	
		Magnesium	4.61		mg/L	P443265	
		Potassium	1.5		mg/L	P443265	
		Sodium	26.3		mg/L	P443265	
		Strontium	45.1		ug/L	P443265	
		Tin	3.0	U	ug/L	P443265	
		Titanium	4.7		ug/L	P443265	
		Vanadium	2.0	U	ug/L	P443265	
		Zinc	5.0	U	ug/L	P443265	
	EPA 200.8 Rev. 5.4	Aluminum	554		ug/L	P443265	
		Antimony	0.052	I	ug/L	P443265	
		Arsenic	0.77		ug/L	P443265	
		Barium	13.1		ug/L	P443265	
		Beryllium	0.048		ug/L	P443265	
		Boron	32.1		ug/L	P443265	
		Cadmium	0.020	U	ug/L	P443265	
		Chromium	1.1	I	ug/L	P443265	
		Cobalt	0.244		ug/L	P443265	
		Copper	0.66	I	ug/L	P443265	
		Lead	0.59		ug/L	P443265	
		Manganese	17.8		ug/L	P443265	
		Molybdenum	0.15	U	ug/L	P443265	
		Nickel	0.79	I	ug/L	P443265	
		Selenium	0.20	U	ug/L	P443265	
		Silver	0.010	U	ug/L	P443265	
		Thallium	0.10	U	ug/L	P443265	
		Hardness	40.4		mg/L	P443265	

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: CREEK DRAINING FORMER HAMPTON LAKE Collection Date/Time: 03/21/2024 11:50
100M ABOVE RD

Field ID: G4NE0292 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2477248	EPA 200.7 Rev. 4.4	Calcium	4.56		mg/L	P443265	
		Iron	1.17E+03		ug/L	P443265	
		Magnesium	1.09		mg/L	P443265	
		Potassium	0.48	I	mg/L	P443265	
		Sodium	6.3		mg/L	P443265	
		Strontium	16.3		ug/L	P443265	
		Tin	3.0	U	ug/L	P443265	
		Titanium	1.6	I	ug/L	P443265	
		Vanadium	2.0	U	ug/L	P443265	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P443265	
		Aluminum	386		ug/L	P443265	
		Antimony	0.050	U	ug/L	P443265	
		Arsenic	0.44		ug/L	P443265	
		Barium	18.2		ug/L	P443265	
		Beryllium	0.026	I	ug/L	P443265	
		Boron	17.9		ug/L	P443265	
		Cadmium	0.020	U	ug/L	P443265	
		Chromium	0.73	I	ug/L	P443265	
		Cobalt	0.157		ug/L	P443265	
		Copper	0.44	I	ug/L	P443265	
		Lead	0.53		ug/L	P443265	
		Manganese	10.9		ug/L	P443265	
		Molybdenum	0.15	U	ug/L	P443265	
		Nickel	0.50	U	ug/L	P443265	
		Selenium	0.20	U	ug/L	P443265	
		Silver	0.010	U	ug/L	P443265	
		Thallium	0.10	U	ug/L	P443265	
	SM 2340 B-2011	Hardness	15.9		mg/L	P443265	

Ref. Method and Comment:
EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 03/28/2024.

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

Sample Location: UNNMAED BRANCH ABOVE ALLIGATOR CR Collection Date/Time: 03/21/2024 12:40

Field ID: G4NE0288

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2477247	EPA 200.7 Rev. 4.4	Calcium	26.5		mg/L	P443265	
		Iron	1.38E+03		ug/L	P443265	
		Magnesium	11.8		mg/L	P443265	
		Potassium	4.2		mg/L	P443265	
		Sodium	18.2		mg/L	P443265	
		Strontium	107		ug/L	P443265	
		Tin	3.0	U	ug/L	P443265	
		Titanium	2.1	I	ug/L	P443265	
		Vanadium	2.0	U	ug/L	P443265	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P443265	
		Aluminum	346		ug/L	P443265	
		Antimony	0.053	I	ug/L	P443265	
		Arsenic	0.88		ug/L	P443265	
		Barium	28.0		ug/L	P443265	
		Beryllium	0.029	I	ug/L	P443265	
		Boron	25.0		ug/L	P443265	
		Cadmium	0.020	U	ug/L	P443265	
		Chromium	0.93	I	ug/L	P443265	
		Cobalt	0.548		ug/L	P443265	
		Copper	0.67	I	ug/L	P443265	
		Lead	0.42		ug/L	P443265	
		Manganese	148		ug/L	P443265	
		Molybdenum	0.31	I	ug/L	P443265	
		Nickel	1.0	I	ug/L	P443265	
		Selenium	0.22	I	ug/L	P443265	
		Silver	0.010	U	ug/L	P443265	
		Thallium	0.10	U	ug/L	P443265	
	SM 2340 B-2011	Hardness	115		mg/L	P443265	

Quality Assurance Report
Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P443212

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P443218

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P443265

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: P443265

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: P443536

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: P443539

Component	Result	Code	Units
Sulfate	0.20	U	mg SO ₄ /L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P443281

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P443237

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P443413

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P443307

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

Reference Method: SM 2320 B-2011
Batch ID: P443339

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-2015
Batch ID: P443620

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P443726

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P443341

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 5310 B-2014
Batch ID: P443430

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: P443212

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	95.4		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P443218

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P443265

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	80 - 120
Iron	111		P	80 - 120
Magnesium	112		P	80 - 120
Potassium	103		P	80 - 120
Sodium	95.9		P	80 - 120
Strontium	98.0		P	80 - 120
Tin	102		P	80 - 120
Titanium	104		P	80 - 120
Vanadium	102		P	80 - 120
Zinc	101		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P443265

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	98.9		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	102		P	85 - 115
Barium	101		P	85 - 115
Beryllium	92.9		P	85 - 115
Boron	102		P	85 - 115
Cadmium	99.1		P	85 - 115
Chromium	100		P	85 - 115
Cobalt	102		P	85 - 115
Copper	99.9		P	85 - 115
Lead	92.6		P	85 - 115
Manganese	98.3		P	85 - 115
Molybdenum	98.3		P	85 - 115
Nickel	100		P	85 - 115
Selenium	101		P	85 - 115
Silver	99.3		P	85 - 115
Thallium	93.4		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P443536

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P443539

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P443281

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	92.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P443237

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P443413

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P443307

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

Reference Method: SM 2320 B-2011
Batch ID: P443339

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.7		P	92 - 105

Reference Method: SM 2540 C-2015
Batch ID: P443620

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	103		P	85 - 115

Reference Method: SM 2540 D-2015
Batch ID: P443726

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	87.2		P	85 - 115

Reference Method: SM 4500-F- C-2011
Batch ID: P443341

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2014
Batch ID: P443430

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.5		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P443265

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2477248	Calcium	101		P	80 - 120
2477248	Iron	106	105	P/P	80 - 120
2477248	Magnesium	107	107	P/P	80 - 120
2477248	Potassium	99.7	98.1	P/P	80 - 120
2477248	Sodium	96.4		P	80 - 120
2477248	Strontium	97.8	98.6	P/P	80 - 120
2477248	Tin	97.6	99.0	P/P	80 - 120
2477248	Titanium	103	104	P/P	80 - 120
2477248	Vanadium	101	102	P/P	80 - 120
2477248	Zinc	100	100	P/P	80 - 120
2477432	Calcium	95.7		P	80 - 120
2477432	Iron	104		P	80 - 120
2477432	Magnesium	97.9		P	80 - 120
2477432	Potassium	98.9		P	80 - 120
2477432	Sodium	96.7		P	80 - 120
2477432	Strontium	94.8		P	80 - 120
2477432	Tin	99.4		P	80 - 120
2477432	Titanium	102		P	80 - 120
2477432	Vanadium	99.3		P	80 - 120
2477432	Zinc	96.9		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P443265

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2477248	Aluminum	99.6	98.7	P/P	80 - 120
2477248	Antimony	103	101	P/P	80 - 120
2477248	Arsenic	103	101	P/P	80 - 120
2477248	Barium	103	101	P/P	80 - 120
2477248	Beryllium	98.5	93.7	P/P	80 - 120
2477248	Boron	103	103	P/P	80 - 120
2477248	Cadmium	102	101	P/P	80 - 120
2477248	Chromium	102	99.9	P/P	80 - 120
2477248	Cobalt	102	98.8	P/P	80 - 120
2477248	Copper	101	98.7	P/P	80 - 120
2477248	Lead	96.0	94.2	P/P	80 - 120
2477248	Manganese	101	97.7	P/P	80 - 120
2477248	Molybdenum	101	98.3	P/P	80 - 120
2477248	Nickel	103	99.5	P/P	80 - 120
2477248	Selenium	102	101	P/P	80 - 120
2477248	Silver	96.8	96.5	P/P	80 - 120
2477248	Thallium	101	99.2	P/P	80 - 120
2477432	Aluminum	101		P	80 - 120
2477432	Antimony	105		P	80 - 120
2477432	Arsenic	101		P	80 - 120
2477432	Barium	104		P	80 - 120
2477432	Beryllium	98.7		P	80 - 120
2477432	Boron	107		P	80 - 120
2477432	Cadmium	104		P	80 - 120
2477432	Chromium	103		P	80 - 120
2477432	Cobalt	101		P	80 - 120
2477432	Copper	98.8		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P443265

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2477432	Lead	95.2		P	80 - 120
2477432	Manganese	102		P	80 - 120
2477432	Molybdenum	101		P	80 - 120
2477432	Nickel	97.6		P	80 - 120
2477432	Selenium	99.6		P	80 - 120
2477432	Silver	100		P	80 - 120
2477432	Thallium	98.9		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P443536

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2477134	Chloride	99.9		P	90 - 110
2477233	Chloride	99.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P443539

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2477134	Sulfate	101		P	90 - 110
2477233	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P443281

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2477234	Ammonia-N	97.8	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P443237

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2477291	Kjeldahl Nitrogen	102	110	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P443413

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2477196	NO2NO3-N	95.2	95.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P443307

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2477205	Total-P	103	104	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P443341

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2477423	Fluoride	99.0	98.4	P/P	94 - 106

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 5310 B-2014
Batch ID: P443430

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2477179	Organic Carbon	96.9	98.7	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P443212

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2477204	Color (true)	0.0421	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P443218

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2477134	Turbidity	2.57	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P443265

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2477248	Calcium	0.547	Spike	P	0 - 20
2477248	Iron	0.234	Spike	P	0 - 20
2477248	Magnesium	0.349	Spike	P	0 - 20
2477248	Potassium	1.39	Spike	P	0 - 20
2477248	Sodium	0.599	Spike	P	0 - 20
2477248	Strontium	0.799	Spike	P	0 - 20
2477248	Tin	1.43	Spike	P	0 - 20
2477248	Titanium	0.701	Spike	P	0 - 20
2477248	Vanadium	0.912	Spike	P	0 - 20
2477248	Zinc	0.203	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P443265

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2477248	Aluminum	0.576	Spike	P	0 - 20
2477248	Antimony	1.95	Spike	P	0 - 20
2477248	Arsenic	1.97	Spike	P	0 - 20
2477248	Barium	1.97	Spike	P	0 - 20
2477248	Beryllium	4.73	Spike	P	0 - 20
2477248	Boron	0.381	Spike	P	0 - 20
2477248	Cadmium	1.50	Spike	P	0 - 20
2477248	Chromium	1.65	Spike	P	0 - 20
2477248	Cobalt	3.61	Spike	P	0 - 20
2477248	Copper	2.22	Spike	P	0 - 20
2477248	Lead	1.85	Spike	P	0 - 20
2477248	Manganese	2.21	Spike	P	0 - 20
2477248	Molybdenum	2.76	Spike	P	0 - 20
2477248	Nickel	3.08	Spike	P	0 - 20
2477248	Selenium	0.474	Spike	P	0 - 20
2477248	Silver	0.311	Spike	P	0 - 20
2477248	Thallium	1.33	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P443536

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2477134	Chloride	0.311	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P443539

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2477134	Sulfate	2.02	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P443281

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2477234	Ammonia-N	0.234	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P443237

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2477291	Kjeldahl Nitrogen	6.10	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P443413

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2477196	NO2NO3-N	0.496	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P443307

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2477205	Total-P	0.876	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P443339

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2477423	Total Alkalinity	1.55	Sample	P	0 - 3.9

Reference Method: SM 2540 C-2015
Batch ID: P443620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2476858	TDS	4.30	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500-F- C-2011
Batch ID: P443341

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2477423	Fluoride	0.495	Spike	P	0 - 1.9

Reference Method: SM 5310 B-2014
Batch ID: P443430

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2477179	Organic Carbon	1.71	Spike	P	0 - 15

* 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: A124937
Included Lab Sample IDs: 2477233, 2477235

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.0	94.3	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A124941
Included Lab Sample IDs: 2477233, 2477235

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A124969
Included Lab Sample IDs: 2477234, 2477236

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.6	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A124998
Included Lab Sample IDs: 2477234, 2477236

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A125001
Included Lab Sample IDs: 2477234, 2477236

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

Reference Method: SM 2320 B-2011
Run ID: A125005
Included Lab Sample IDs: 2477233, 2477235

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	94.3	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A125005
Included Lab Sample IDs: 2477233, 2477235

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A125013
Included Lab Sample IDs: 2477246, 2477247, 2477248

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.1	98.7	P/P	90 - 110
Aluminum	98.7	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A125013

Included Lab Sample IDs: 2477246, 2477247, 2477248

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	98.3	99.2	P/P	90 - 110
Antimony	99.1	98.3	P/P	90 - 110
Arsenic	102	99.6	P/P	90 - 110
Arsenic	99.6	98.6	P/P	90 - 110
Barium	98.8	100	P/P	90 - 110
Barium	99.7	98.8	P/P	90 - 110
Beryllium	93.3	94.5	P/P	90 - 110
Beryllium	94.5	96.6	P/P	90 - 110
Boron	100	103	P/P	90 - 110
Boron	95.8	100	P/P	90 - 110
Cadmium	97.4	100	P/P	90 - 110
Cadmium	98.7	97.4	P/P	90 - 110
Chromium	95.7	97.7	P/P	90 - 110
Chromium	96.7	95.7	P/P	90 - 110
Cobalt	100	97.3	P/P	90 - 110
Cobalt	97.3	97.4	P/P	90 - 110
Copper	101	96.8	P/P	90 - 110
Copper	96.8	96.9	P/P	90 - 110
Lead	92.9	94.0	P/P	90 - 110
Lead	93.8	92.9	P/P	90 - 110
Manganese	95.3	96.9	P/P	90 - 110
Manganese	95.9	95.3	P/P	90 - 110
Molybdenum	97.8	98.3	P/P	90 - 110
Molybdenum	99.1	97.8	P/P	90 - 110
Nickel	96.4	95.5	P/P	90 - 110
Nickel	99.5	96.4	P/P	90 - 110
Selenium	99.5	100	P/P	90 - 110
Selenium	99.7	99.5	P/P	90 - 110
Silver	97.2	98.2	P/P	90 - 110
Silver	98.5	97.2	P/P	90 - 110
Thallium	98.7	99.7	P/P	90 - 110
Thallium	99.7	98.7	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A125018

Included Lab Sample IDs: 2477233, 2477235

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.2	101	P/P	90 - 110
Chloride	100	97.2	P/P	90 - 110
Sulfate	101	98.4	P/P	90 - 110
Sulfate	98.4	102	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A125033

Included Lab Sample IDs: 2477246, 2477247, 2477248

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	98.6	P/P	90 - 110
Calcium	102	101	P/P	90 - 110
Iron	101	99.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A125033

Included Lab Sample IDs: 2477246, 2477247, 2477248

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	99.4	97.5	P/P	90 - 110
Magnesium	102	99.6	P/P	90 - 110
Magnesium	99.6	98.1	P/P	90 - 110
Potassium	101	99.5	P/P	90 - 110
Potassium	99.5	98.6	P/P	90 - 110
Sodium	96.9	95.6	P/P	90 - 110
Sodium	97.9	96.9	P/P	90 - 110
Strontium	97.1	97.5	P/P	90 - 110
Strontium	97.5	96.3	P/P	90 - 110
Tin	101	101	P/P	90 - 110
Tin	102	101	P/P	90 - 110
Titanium	101	100	P/P	90 - 110
Titanium	101	101	P/P	90 - 110
Vanadium	101	99.7	P/P	90 - 110
Vanadium	99.7	98.6	P/P	90 - 110
Zinc	101	99.5	P/P	90 - 110
Zinc	99.5	97.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A125035

Included Lab Sample IDs: 2477234, 2477236

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	99.5	P/P	90 - 110

Reference Method: SM 5310 B-2014

Run ID: A125038

Included Lab Sample IDs: 2477234, 2477236

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.1	99.2	P/P	85 - 115

* 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	MS
			LCS	SMP	MS		
DEP SOP: NU-094-1	Color (true)	95.4				0.0421	
EPA 180.1 Rev. 2.0	Turbidity	104				2.57	
EPA 200.7 Rev. 4.4	Calcium	101	101	95.7			0.547
	Iron	111	104	106	105		0.234
	Magnesium	112	107	107	97.9		0.349
	Potassium	103	99.7	98.1	98.9		1.39
	Sodium	95.9	96.4	96.7			0.599
	Strontium	98.0	97.8	98.6	94.8		0.799
	Tin	102	97.6	99.0	99.4		1.43
	Titanium	104	103	104	102		0.701
	Vanadium	102	101	102	99.3		0.912
	Zinc	101	100	100	96.9		0.203
EPA 200.8 Rev. 5.4	Aluminum	98.9	99.6	98.7	101		0.576
	Antimony	101	103	101	105		1.95
	Arsenic	102	103	101	101		1.97
	Barium	101	103	101	104		1.97
	Beryllium	92.9	98.5	93.7	98.7		4.73
	Boron	102	103	103	107		0.381
	Cadmium	99.1	102	101	104		1.50
	Chromium	100	102	99.9	103		1.65
	Cobalt	102	102	98.8	101		3.61
	Copper	99.9	101	98.7	98.8		2.22
	Lead	92.6	96.0	94.2	95.2		1.85
	Manganese	98.3	101	97.7	102		2.21
	Molybdenum	98.3	101	98.3	101		2.76
	Nickel	100	103	99.5	97.6		3.08
	Selenium	101	102	101	99.6		0.474
	Silver	99.3	96.8	96.5	100		0.311
	Thallium	93.4	101	99.2	98.9		1.33
EPA 300.0 Rev. 2.1	Chloride	100	99.9	99.2		0.311	
	Sulfate	101	101	100		2.02	
EPA 350.1 Rev. 2.0	Ammonia-N	92.2	97.8	98.2			0.234
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	102	110			6.10
EPA 353.2 Rev. 2.0	NO2NO3-N	98.0	95.2	95.7			0.496
EPA 365.1 Rev. 2.0	Total-P	102	103	104			0.876
SM 2320 B-2011	Total Alkalinity	98.7				1.55	
SM 2540 C-2015	TDS	103				4.30	
SM 2540 D-2015	TSS	87.2					
SM 4500-F- C-2011	Fluoride	98.2	99.0	98.4			0.495
SM 5310 B-2014	Organic Carbon	98.5	96.9	98.7			1.71

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2477233, 2477235
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2477233, 2477235
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2477246, 2477247, 2477248
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2477246, 2477247, 2477248
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2477233, 2477235
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2477233, 2477235
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2477234, 2477236

Reference Method Descriptions

Method	Description	Associated Samples
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2477234, 2477236
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2477234, 2477236
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2477234, 2477236
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2477233, 2477235
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2477246, 2477247, 2477248
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2477233, 2477235
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2477233, 2477235
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2477233, 2477235
SM 5310 B-2014	Nonpurgeable Organic Carbon in aqueous matrices	2477234, 2477236

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	03/22/2024			03/22/2024 15:27	Samantha L Bates	2477233
	03/22/2024			03/22/2024 15:28	Samantha L Bates	2477235
EPA 180.1 Rev. 2.0	03/22/2024			03/22/2024 14:26	Khloe J Berg	2477233
	03/22/2024			03/22/2024 14:28	Khloe J Berg	2477235
EPA 200.7 Rev. 4.4	03/22/2024	03/25/2024 13:25	George D Taylor	03/27/2024 14:22	Conrad Hartmann	2477248
	03/22/2024	03/25/2024 13:25	George D Taylor	03/27/2024 15:21	Conrad Hartmann	2477246
	03/22/2024	03/25/2024 13:25	George D Taylor	03/27/2024 15:51	Conrad Hartmann	2477247
EPA 200.8 Rev. 5.4	03/22/2024	03/25/2024 13:25	George D Taylor	03/26/2024 15:58	McKinley C Carter	2477248
	03/22/2024	03/25/2024 13:25	George D Taylor	03/26/2024 17:42	McKinley C Carter	2477246
	03/22/2024	03/25/2024 13:25	George D Taylor	03/26/2024 17:51	McKinley C Carter	2477247
EPA 300.0 Rev. 2.1	03/22/2024			03/29/2024 16:21	James L Waggeberby	2477233
	03/22/2024			03/29/2024 20:53	James L Waggeberby	2477235
EPA 350.1 Rev. 2.0	03/22/2024			03/25/2024 13:41	Kenneth H Lee	2477234
	03/22/2024			03/25/2024 13:45	Kenneth H Lee	2477236
EPA 351.2 Rev. 2.0	03/22/2024	03/25/2024 14:44	Simonne.V. Calhoun	03/26/2024 14:15	Robyn Blevins	2477234
	03/22/2024	03/25/2024 14:44	Simonne.V. Calhoun	03/26/2024 14:17	Robyn Blevins	2477236
EPA 353.2 Rev. 2.0	03/22/2024			03/27/2024 12:53	Fadila Guebre	2477234
	03/22/2024			03/27/2024 12:54	Fadila Guebre	2477236
EPA 365.1 Rev. 2.0	03/22/2024	03/26/2024 14:29	Josephine W Gitau	03/26/2024 17:19	Simonne.V. Calhoun	2477234
	03/22/2024	03/26/2024 14:29	Josephine W Gitau	03/26/2024 17:20	Simonne.V. Calhoun	2477236
SM 2320 B-2011	03/22/2024			03/26/2024 18:30	Chandler E Cox	2477233
	03/22/2024			03/26/2024 18:42	Chandler E Cox	2477235
SM 2340 B-2011	03/22/2024			03/27/2024 14:22	Conrad Hartmann	2477248
	03/22/2024			03/27/2024 15:21	Conrad Hartmann	2477246
	03/22/2024			03/27/2024 15:51	Conrad Hartmann	2477247
SM 2540 C-2015	03/22/2024			03/26/2024 13:50	Yijie Li	2477233, 2477235
SM 2540 D-2015	03/22/2024			03/26/2024 13:50	Yijie Li	2477233, 2477235
SM 4500-F- C-2011	03/22/2024			03/26/2024 18:30	Chandler E Cox	2477233
	03/22/2024			03/26/2024 18:42	Chandler E Cox	2477235
SM 5310 B-2014	03/22/2024			03/28/2024 05:22	Khloe J Berg	2477234
	03/22/2024			03/28/2024 05:37	Khloe J Berg	2477236