Chemical Analysis Report

SE-DIST-2023-04-21-01

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

Event Description: **Additional Broward Sites**
Request ID: **RQ-2023-04-17-16**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
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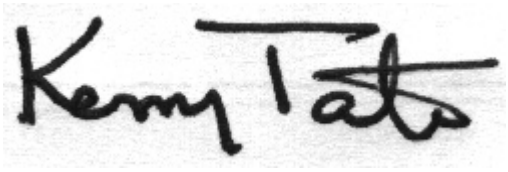
Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 15-MAY-2023 09:47



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: HOLLOWAY AT PETERS **Collection Date/Time: 04/20/2023 10:50**

Field ID: G4SE0107 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2402166	DEP SOP: NU-094-1	Color (true)	34	A	PCU	P428841	
	EPA 180.1 Rev. 2.0	Turbidity	0.95	I	NTU	P428852	
	EPA 300.0 Rev. 2.1	Chloride	42		mg Cl/L	P429143	
		Sulfate	3.1		mg SO4/L	P429146	
	SM 2320 B-2011	Total Alkalinity	129		mg CaCO3/L	P429189	
	SM 2540 C-2015	TDS	231		mg/L	P429500	
	SM 2540 D-2015	TSS	2	U	mg/L	P429317	
	SM 4500-F- C-2011	Fluoride	0.18		mg F/L	P429282	
2402167	EPA 350.1 Rev. 2.0	Ammonia-N	0.026		mg N/L	P429138	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.75		mg N/L	P428998	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.068		mg N/L	P429245	
	EPA 365.1 Rev. 2.0	Total-P	0.038		mg P/L	P428902	
	SM 5310 B-2011	Organic Carbon	9.6		mg C/L	P429041	
2402177	EPA 200.7 Rev. 4.4	Calcium	45.9		mg/L	P428881	
		Iron	74	I	ug/L	P428881	
		Magnesium	6.81		mg/L	P428881	
		Potassium	2.5		mg/L	P428881	
		Sodium	28.3		mg/L	P428881	
		Strontium	581		ug/L	P428881	
		Tin	3.0	U	ug/L	P428881	
		Titanium	0.75	U	ug/L	P428881	
		Vanadium	2.0	U	ug/L	P428881	
		Zinc	5.0	U	ug/L	P428881	
	EPA 200.8 Rev. 5.4	Aluminum	5.8	I	ug/L	P428881	
		Antimony	0.14	I	ug/L	P428881	
		Arsenic	1.37		ug/L	P428881	
		Barium	17.2		ug/L	P428881	
		Beryllium	0.010	U	ug/L	P428881	
		Boron	32.8		ug/L	P428881	
		Cadmium	0.020	U	ug/L	P428881	
		Chromium	0.40	U	ug/L	P428881	
		Cobalt	0.026	I	ug/L	P428881	
		Copper	4.34		ug/L	P428881	
		Lead	0.20	U	ug/L	P428881	
		Manganese	4.42		ug/L	P428881	
		Molybdenum	0.45	I	ug/L	P428881	
		Nickel	0.50	U	ug/L	P428881	
		Selenium	0.20	U	ug/L	P428881	
		Silver	0.010	U	ug/L	P428881	
		Thallium	0.10	U	ug/L	P428881	
	SM 2340 B-2011	Hardness	143		mg/L	P428881	

Ref. Method and Comment:
SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for iron are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Sample Location: HOLLOWAY CANAL EAST AT NW 74TH AVE **Collection Date/Time: 04/20/2023 11:20**

Field ID: G4SE0184 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2402178	EPA 200.7 Rev. 4.4	Calcium	48.4		mg/L	P428881	
		Iron	130		ug/L	P428881	
		Magnesium	4.27		mg/L	P428881	
		Potassium	2.0		mg/L	P428881	
		Sodium	21.0		mg/L	P428881	
		Strontium	503		ug/L	P428881	
		Tin	3.0	U	ug/L	P428881	
		Titanium	0.75	U	ug/L	P428881	
		Vanadium	2.0	U	ug/L	P428881	
		Zinc	6.2	I	ug/L	P428881	
	EPA 200.8 Rev. 5.4	Aluminum	8.8	I	ug/L	P428881	
		Antimony	0.15	I	ug/L	P428881	
		Arsenic	0.89		ug/L	P428881	
		Barium	14.5		ug/L	P428881	
		Beryllium	0.010	U	ug/L	P428881	
		Boron	30.1		ug/L	P428881	
		Cadmium	0.020	U	ug/L	P428881	
		Chromium	0.40	U	ug/L	P428881	
		Cobalt	0.026	I	ug/L	P428881	
		Copper	2.89		ug/L	P428881	
		Lead	0.20	U	ug/L	P428881	
		Manganese	7.53		ug/L	P428881	
		Molybdenum	0.68		ug/L	P428881	
		Nickel	0.50	U	ug/L	P428881	
		Selenium	0.20	U	ug/L	P428881	
		Silver	0.010	U	ug/L	P428881	
		Thallium	0.10	U	ug/L	P428881	
	SM 2340 B-2011	Hardness	138		mg/L	P428881	

Ref. Method and Comment:
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for iron are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P428841

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P428852

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P428881

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: P428881

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: P429143

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: P429146

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P429138

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P428998

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P429245

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P428902

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

Reference Method: SM 2320 B-2011
Batch ID: P429189

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

Reference Method: SM 2540 C-2015
Batch ID: P429500

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P429317

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P429282

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P429041

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: P428841

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

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P428852

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P428881

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	98.2		P	80 - 120
Iron	99.7		P	80 - 120
Magnesium	98.9		P	80 - 120
Potassium	101		P	80 - 120
Sodium	101		P	80 - 120
Strontium	98.6		P	80 - 120
Tin	96.2		P	80 - 120
Titanium	96.7		P	80 - 120
Vanadium	97.7		P	80 - 120
Zinc	99.7		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P428881

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	101		P	80 - 120
Antimony	101		P	80 - 120
Arsenic	101		P	80 - 120
Barium	104		P	80 - 120
Beryllium	93.6		P	80 - 120
Boron	101		P	80 - 120
Cadmium	103		P	80 - 120
Chromium	97.8		P	80 - 120
Cobalt	101		P	80 - 120
Copper	103		P	80 - 120
Lead	96.7		P	80 - 120
Manganese	101		P	80 - 120
Molybdenum	101		P	80 - 120
Nickel	103		P	80 - 120
Selenium	99.1		P	80 - 120
Silver	103		P	80 - 120
Thallium	102		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P429143

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.2		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P429146

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P429138

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P428998

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P429245

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P428902

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

Reference Method: SM 2320 B-2011
Batch ID: P429189

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	96.2		P	94 - 106

Reference Method: SM 2540 C-2015
Batch ID: P429500

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	95.4		P	90 - 110

Reference Method: SM 2540 D-2015
Batch ID: P429317

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	95.3		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P429282

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.8		P	96 - 104

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P429041

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.1		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P428881

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2402003	Calcium	98.1		P	80 - 120
2402003	Iron	98.7	101	P/P	80 - 120
2402003	Magnesium	98.3		P	80 - 120
2402003	Potassium	98.1	99.5	P/P	80 - 120
2402003	Sodium	102		P	80 - 120
2402003	Strontium	97.2	97.7	P/P	80 - 120
2402003	Tin	96.5	95.3	P/P	80 - 120
2402003	Titanium	97.3	96.7	P/P	80 - 120
2402003	Vanadium	97.0	96.4	P/P	80 - 120
2402003	Zinc	94.9	95.0	P/P	80 - 120
2402328	Calcium	97.4		P	80 - 120
2402328	Magnesium	97.2		P	80 - 120
2402328	Potassium	101		P	80 - 120
2402328	Sodium	99.2		P	80 - 120
2402328	Strontium	97.3		P	80 - 120
2402328	Tin	90.6		P	80 - 120
2402328	Titanium	96.2		P	80 - 120
2402328	Vanadium	96.8		P	80 - 120
2402328	Zinc	95.8		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P428881

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2402003	Aluminum	102	101	P/P	80 - 120
2402003	Antimony	102	103	P/P	80 - 120
2402003	Arsenic	102	102	P/P	80 - 120
2402003	Barium	104	104	P/P	80 - 120
2402003	Beryllium	94.9	93.3	P/P	80 - 120
2402003	Boron	102	102	P/P	80 - 120
2402003	Cadmium	103	103	P/P	80 - 120
2402003	Chromium	97.0	97.2	P/P	80 - 120
2402003	Cobalt	98.3	97.5	P/P	80 - 120
2402003	Copper	101	100	P/P	80 - 120
2402003	Lead	97.7	96.6	P/P	80 - 120
2402003	Manganese	102	102	P/P	80 - 120
2402003	Molybdenum	104	105	P/P	80 - 120
2402003	Nickel	99.5	98.5	P/P	80 - 120
2402003	Selenium	99.8	99.5	P/P	80 - 120
2402003	Silver	103	103	P/P	80 - 120
2402003	Thallium	105	105	P/P	80 - 120
2402328	Aluminum	99.5		P	75 - 125
2402328	Antimony	102		P	75 - 125
2402328	Arsenic	104		P	75 - 125
2402328	Barium	104		P	75 - 125
2402328	Beryllium	82.5		P	75 - 125
2402328	Boron	103		P	75 - 125
2402328	Cadmium	103		P	75 - 125
2402328	Chromium	94.2		P	75 - 125
2402328	Cobalt	102		P	75 - 125
2402328	Copper	102		P	75 - 125
2402328	Lead	98.7		P	75 - 125

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P428881

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2402328	Manganese	100		P	75 - 125
2402328	Molybdenum	106		P	75 - 125
2402328	Nickel	101		P	75 - 125
2402328	Selenium	99.5		P	75 - 125
2402328	Silver	101		P	75 - 125
2402328	Thallium	105		P	75 - 125

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P429143

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2402187	Chloride	101		P	90 - 110
2402529	Chloride	98.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P429146

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2402187	Sulfate	101		P	90 - 110
2402529	Sulfate	98.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P429138

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2402161	Ammonia-N	99.0	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P428998

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2402262	Kjeldahl Nitrogen	97.8	95.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P429245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2402185	NO2NO3-N	105	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P428902

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2402161	Total-P	101	98.6	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P429282

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2402166	Fluoride	101	101	P/P	94 - 104

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P429041

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2402010	Organic Carbon	95.6	95.4	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P428841

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2402166	Color (true)	0.139	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P428852

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2401974	Turbidity	5.57	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P428881

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2402003	Calcium	2.54	Spike	P	0 - 20
2402003	Iron	1.92	Spike	P	0 - 20
2402003	Magnesium	2.46	Spike	P	0 - 20
2402003	Potassium	1.24	Spike	P	0 - 20
2402003	Sodium	0.684	Spike	P	0 - 20
2402003	Strontium	0.496	Spike	P	0 - 20
2402003	Tin	1.28	Spike	P	0 - 20
2402003	Titanium	0.592	Spike	P	0 - 20
2402003	Vanadium	0.563	Spike	P	0 - 20
2402003	Zinc	0.104	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P428881

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2402003	Aluminum	0.663	Spike	P	0 - 20
2402003	Antimony	0.799	Spike	P	0 - 20
2402003	Arsenic	0.188	Spike	P	0 - 20
2402003	Barium	0.196	Spike	P	0 - 20
2402003	Beryllium	1.61	Spike	P	0 - 20
2402003	Boron	0.403	Spike	P	0 - 20
2402003	Cadmium	0.163	Spike	P	0 - 20
2402003	Chromium	0.194	Spike	P	0 - 20
2402003	Cobalt	0.796	Spike	P	0 - 20
2402003	Copper	0.429	Spike	P	0 - 20
2402003	Lead	1.11	Spike	P	0 - 20
2402003	Manganese	0.539	Spike	P	0 - 20
2402003	Molybdenum	0.597	Spike	P	0 - 20
2402003	Nickel	1.05	Spike	P	0 - 20
2402003	Selenium	0.330	Spike	P	0 - 20
2402003	Silver	0.254	Spike	P	0 - 20
2402003	Thallium	0.211	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P429143

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2402187	Chloride	0.683	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P429146

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2402187	Sulfate	0.147	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P429138

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2402161	Ammonia-N	1.12	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P428998

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2402262	Kjeldahl Nitrogen	1.82	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P429245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2402185	NO2NO3-N	0.935	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P428902

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2402161	Total-P	1.86	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P429189

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2403072	Total Alkalinity	0.185	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2015
Batch ID: P429500

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2401995	TDS	5.85	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500-F- C-2011
Batch ID: P429282

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2402166	Fluoride	0.0	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P429041

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2402010	Organic Carbon	0.136	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: A118714
Included Lab Sample IDs: 2402166

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	99.3	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A118720
Included Lab Sample IDs: 2402166

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	97.5	98.5	P/P	95 - 105

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A118745
Included Lab Sample IDs: 2402177, 2402178

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	103	P/P	90 - 110
Antimony	100	100	P/P	90 - 110
Arsenic	103	102	P/P	90 - 110
Barium	101	101	P/P	90 - 110
Beryllium	92.7	94.2	P/P	90 - 110
Boron	98.9	103	P/P	90 - 110
Cadmium	100	100	P/P	90 - 110
Chromium	97.2	97.5	P/P	90 - 110
Cobalt	104	103	P/P	90 - 110
Copper	104	103	P/P	90 - 110
Lead	98.1	96.9	P/P	90 - 110
Manganese	97.8	100	P/P	90 - 110
Molybdenum	102	100	P/P	90 - 110
Nickel	105	103	P/P	90 - 110
Selenium	97.1	99.4	P/P	90 - 110
Silver	101	101	P/P	90 - 110
Thallium	104	104	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A118755
Included Lab Sample IDs: 2402166

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	96.7	97.7	P/P	90 - 110
Sulfate	97.4	98.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A118791
Included Lab Sample IDs: 2402167

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	104	101	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-2011
Run ID: A118810
Included Lab Sample IDs: 2402167

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.6	98.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A118833
Included Lab Sample IDs: 2402167

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.1	93.6	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A118847
Included Lab Sample IDs: 2402177, 2402178

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	100	P/P	90 - 110
Iron	103	102	P/P	90 - 110
Magnesium	102	102	P/P	90 - 110
Potassium	102	102	P/P	90 - 110
Sodium	104	104	P/P	90 - 110
Strontium	102	100	P/P	90 - 110
Tin	99.2	97.5	P/P	90 - 110
Titanium	98.1	98.0	P/P	90 - 110
Vanadium	100	99.4	P/P	90 - 110
Zinc	101	99.7	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A118854
Included Lab Sample IDs: 2402167

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.3	99.4	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A118869
Included Lab Sample IDs: 2402166

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	93.2	95.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A118899
Included Lab Sample IDs: 2402167

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	106	106	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A118916
Included Lab Sample IDs: 2402166

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500-F- C-2011
Run ID: A118916
Included Lab Sample IDs: 2402166

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	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)	99.6					0.139	
EPA 180.1 Rev. 2.0	Turbidity	97.5					5.57	
EPA 200.7 Rev. 4.4	Calcium	98.2	98.1	97.4				2.54
	Iron	99.7	98.7	101				1.92
	Magnesium	98.9	98.3	97.2				2.46
	Potassium	101	98.1	99.5	101			1.24
	Sodium	101	102	99.2				0.684
	Strontium	98.6	97.2	97.7	97.3			0.496
	Tin	96.2	96.5	95.3	90.6			1.28
	Titanium	96.7	97.3	96.7	96.2			0.592
	Vanadium	97.7	97.0	96.4	96.8			0.563
	Zinc	99.7	94.9	95.0	95.8			0.104
EPA 200.8 Rev. 5.4	Aluminum	101	102	101	99.5			0.663
	Antimony	101	102	103	102			0.799
	Arsenic	101	102	102	104			0.188
	Barium	104	104	104	104			0.196
	Beryllium	93.6	94.9	93.3	82.5			1.61
	Boron	101	102	102	103			0.403
	Cadmium	103	103	103	103			0.163
	Chromium	97.8	97.0	97.2	94.2			0.194
	Cobalt	101	98.3	97.5	102			0.796
	Copper	103	101	100	102			0.429
	Lead	96.7	97.7	96.6	98.7			1.11
	Manganese	101	102	102	100			0.539
	Molybdenum	101	104	105	106			0.597
	Nickel	103	99.5	98.5	101			1.05
	Selenium	99.1	99.8	99.5	99.5			0.330
	Silver	103	103	103	101			0.254
	Thallium	102	105	105	105			0.211
EPA 300.0 Rev. 2.1	Chloride	99.2	101	98.3			0.683	
	Sulfate	100	101	98.1			0.147	
EPA 350.1 Rev. 2.0	Ammonia-N	98.4	99.0	97.8				1.12
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	93.0	97.8	95.3				1.82
EPA 353.2 Rev. 2.0	NO2NO3-N	104	105	104				0.935
EPA 365.1 Rev. 2.0	Total-P	101	101	98.6				1.86
SM 2320 B-2011	Total Alkalinity	96.2					0.185	
SM 2540 C-2015	TDS	95.4					5.85	
SM 2540 D-2015	TSS	95.3						
SM 4500-F- C-2011	Fluoride	98.8	101	101				0.0
SM 5310 B-2011	Organic Carbon	98.1	95.6	95.4				0.136

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2402166
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2402166
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2402177, 2402178
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2402177, 2402178
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2402166
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2402166
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2402167

Reference Method Descriptions

Method	Description	Associated Samples
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2402167
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2402167
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2402167
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2402166
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2402177, 2402178
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2402166
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2402166
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2402166
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2402167

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	04/21/2023			04/21/2023 14:40	Alexis Price	2402166
EPA 180.1 Rev. 2.0	04/21/2023			04/21/2023 13:45	Khloe J Berg	2402166
EPA 200.7 Rev. 4.4	04/21/2023	04/24/2023 10:55	George D Taylor	04/27/2023 18:43	McKinley C Carter	2402177
	04/21/2023	04/24/2023 10:55	George D Taylor	04/27/2023 18:51	McKinley C Carter	2402178
EPA 200.8 Rev. 5.4	04/21/2023	04/24/2023 10:55	George D Taylor	04/24/2023 22:05	Emily M Philpot	2402177
	04/21/2023	04/24/2023 10:55	George D Taylor	04/24/2023 22:15	Emily M Philpot	2402178
EPA 300.0 Rev. 2.1	04/21/2023			04/27/2023 16:48	James L Waggerby	2402166
EPA 350.1 Rev. 2.0	04/21/2023			04/28/2023 12:47	Ping Hua	2402167
EPA 351.2 Rev. 2.0	04/21/2023	04/26/2023 12:25	Dana G. Hughes	04/27/2023 15:31	Ping Hua	2402167
EPA 353.2 Rev. 2.0	04/21/2023			05/02/2023 11:00	Beverly Y. Sanders	2402167
EPA 365.1 Rev. 2.0	04/21/2023	04/24/2023 14:38	Adam P Silver	04/26/2023 13:42	Simonne.V. Calhoun	2402167
SM 2320 B-2011	04/21/2023			04/28/2023 04:26	Dale L. Simmons	2402166
SM 2340 B-2011	04/21/2023			04/27/2023 18:43	McKinley C Carter	2402177
	04/21/2023			04/27/2023 18:51	McKinley C Carter	2402178
SM 2540 C-2015	04/21/2023			04/26/2023 15:12	Yijie Li	2402166
SM 2540 D-2015	04/21/2023			04/26/2023 15:12	Yijie Li	2402166
SM 4500-F- C-2011	04/21/2023			05/02/2023 15:56	Dale L. Simmons	2402166
SM 5310 B-2011	04/21/2023			04/27/2023 02:28	Elise M. Gillis	2402167