Chemical Analysis Report

SW-DIST-2023-06-06-01

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

Event Description: **Run 1**
Request ID: **RQ-2023-06-05-33**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
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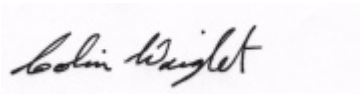
Certified by: Colin Wright, Program Administrator

Date Certified: 27-JUN-2023 11:47



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: HOMOSASSA RIVER DOWNRIVER STREAM OF BOAT RAMP **Collection Date/Time: 06/05/2023 11:30**

Field ID: G5SW0189 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2414949	DEP SOP: NU-094-1	Color (true)	21	A	PCU	P430877	
	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P430870	
	EPA 300.0 Rev. 2.1	Chloride	3.1E+03		mg Cl/L	P431031	
		Sulfate	430		mg SO4/L	P431033	
	SM 2320 B-2011	Total Alkalinity	127		mg CaCO3/L	P431144	
	SM 2540 C-2015	TDS	5.31E+03		mg/L	P431306	
	SM 2540 D-2015	TSS	2	I	mg/L	P431089	
	SM 4500-F- C-2011	Fluoride	0.22		mg F/L	P431430	
2414950	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P430927	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37	I	mg N/L	P431117	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.16		mg N/L	P431177	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P431001	
	SM 5310 B-2011	Organic Carbon	3.6		mg C/L	P431040	
2414961	EPA 200.7 Rev. 4.4	Calcium	114		mg/L	P431440	
		Iron	110	I	ug/L	P431440	
		Magnesium	213		mg/L	P431440	
		Potassium	61		mg/L	P431440	
		Sodium	1.62E+03		mg/L	P431440	
		Strontium	1.47E+03		ug/L	P431440	
		Tin	9.0	U	ug/L	P431440	
		Titanium	2.2	U	ug/L	P431440	
		Vanadium	6.0	U	ug/L	P431440	
		Zinc	15	U	ug/L	P431440	
	EPA 200.8 Rev. 5.4	Aluminum	34	I	ug/L	P431440	
		Antimony	0.20	U	ug/L	P431440	
		Arsenic	0.98		ug/L	P431440	
		Barium	7.6		ug/L	P431440	
		Beryllium	0.040	U	ug/L	P431440	
		Boron	682		ug/L	P431440	
		Cadmium	0.080	U	ug/L	P431440	
		Chromium	4.0	U	ug/L	P431440	
		Cobalt	0.080	U	ug/L	P431440	
		Copper	1.6	U	ug/L	P431440	
		Lead	0.80	U	ug/L	P431440	
		Manganese	11.0		ug/L	P431440	
		Molybdenum	1.8	I	ug/L	P431440	
		Nickel	2.0	U	ug/L	P431440	
		Selenium	0.80	U	ug/L	P431440	
		Silver	0.040	U	ug/L	P431440	
		Thallium	0.40	U	ug/L	P431440	

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 magnesium, potassium and sodium are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P430877

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P430870

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P431440

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: P431440

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: P431031

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: P431033

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430927

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P431117

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P431177

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P431001

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

Reference Method: SM 2320 B-2011
Batch ID: P431144

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

Reference Method: SM 2540 C-2015
Batch ID: P431306

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P431089

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P431430

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: P431040

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: P430877

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

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P430870

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	98.5		P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P431440

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	102		P	85 - 115
Iron	105		P	85 - 115
Magnesium	102		P	85 - 115
Potassium	101		P	85 - 115
Sodium	96.7		P	85 - 115
Strontium	101		P	85 - 115
Tin	103		P	85 - 115
Titanium	101		P	85 - 115
Vanadium	100		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P431440

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	100		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	102		P	85 - 115
Barium	102		P	85 - 115
Beryllium	95.6		P	85 - 115
Boron	105		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	101		P	85 - 115
Cobalt	99.7		P	85 - 115
Copper	99.2		P	85 - 115
Lead	94.6		P	85 - 115
Manganese	99.9		P	85 - 115
Molybdenum	100		P	85 - 115
Nickel	100		P	85 - 115
Selenium	100		P	85 - 115
Silver	105		P	85 - 115
Thallium	98.8		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P431031

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.3		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P431033

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430927

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P431117

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.7		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P431177

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P431001

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

Reference Method: SM 2320 B-2011
Batch ID: P431144

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	92 - 105

Reference Method: SM 2540 C-2015
Batch ID: P431306

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	94.5		P	90 - 110

Reference Method: SM 2540 D-2015
Batch ID: P431089

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	95.9		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P431430

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.3		P	94 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P431040

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P431440

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2417073	Calcium	105		P	70 - 130
2417073	Iron	106	106	P/P	70 - 130
2417073	Strontium	103	104	P/P	70 - 130
2417073	Tin	94.9	96.7	P/P	70 - 130
2417073	Titanium	103	106	P/P	70 - 130
2417073	Vanadium	101	103	P/P	70 - 130
2417073	Zinc	103	103	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P431440

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2417073	Aluminum	96.7	97.3	P/P	70 - 130
2417073	Antimony	101	102	P/P	70 - 130
2417073	Arsenic	104	105	P/P	70 - 130
2417073	Barium	101	98.7	P/P	70 - 130
2417073	Beryllium	102	104	P/P	70 - 130
2417073	Boron	103	104	P/P	70 - 130
2417073	Cadmium	99.2	100	P/P	70 - 130
2417073	Chromium	98.0	95.9	P/P	70 - 130
2417073	Cobalt	96.8	97.4	P/P	70 - 130
2417073	Copper	98.9	95.5	P/P	70 - 130
2417073	Lead	94.4	94.4	P/P	70 - 130
2417073	Manganese	94.4	92.8	P/P	70 - 130
2417073	Molybdenum	102	103	P/P	70 - 130
2417073	Nickel	96.3	95.4	P/P	70 - 130
2417073	Selenium	100	97.8	P/P	70 - 130
2417073	Silver	96.0	98.4	P/P	70 - 130
2417073	Thallium	94.2	97.2	P/P	70 - 130

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P431031

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2415070	Chloride	101		P	90 - 110
2415114	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P431033

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2415070	Sulfate	90.7		P	90 - 110
2415114	Sulfate	91.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430927

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2414748	Ammonia-N	97.8	98.4	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P431117

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2415816	Kjeldahl Nitrogen	85.1	102	F/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P431177

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2414809	NO2NO3-N	103	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P431001

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2414950	Total-P	103	103	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P431430

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2414949	Fluoride	105	104	P/P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P431040

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2414863	Organic Carbon	96.2	98.2	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P430877

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2414949	Color (true)	0.726	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P430870

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2414780	Turbidity	16.6	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P431440

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2417073	Calcium	0.420	Spike	P	0 - 20
2417073	Iron	0.0474	Spike	P	0 - 20
2417073	Magnesium	0.629	Spike	P	0 - 20
2417073	Potassium	0.539	Spike	P	0 - 20
2417073	Sodium	13.2	Spike	P	0 - 20
2417073	Strontium	0.969	Spike	P	0 - 20
2417073	Tin	1.91	Spike	P	0 - 20
2417073	Titanium	2.93	Spike	P	0 - 20
2417073	Vanadium	1.68	Spike	P	0 - 20
2417073	Zinc	0.481	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P431440

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2417073	Aluminum	0.667	Spike	P	0 - 20
2417073	Antimony	0.895	Spike	P	0 - 20
2417073	Arsenic	1.14	Spike	P	0 - 20
2417073	Barium	1.90	Spike	P	0 - 20
2417073	Beryllium	2.41	Spike	P	0 - 20
2417073	Boron	0.526	Spike	P	0 - 20
2417073	Cadmium	1.17	Spike	P	0 - 20
2417073	Chromium	2.18	Spike	P	0 - 20
2417073	Cobalt	0.582	Spike	P	0 - 20
2417073	Copper	3.50	Spike	P	0 - 20
2417073	Lead	0.0583	Spike	P	0 - 20
2417073	Manganese	1.60	Spike	P	0 - 20
2417073	Molybdenum	1.28	Spike	P	0 - 20
2417073	Nickel	1.01	Spike	P	0 - 20
2417073	Selenium	2.20	Spike	P	0 - 20
2417073	Silver	2.46	Spike	P	0 - 20
2417073	Thallium	3.13	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P431031

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2415070	Chloride	2.51	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P431033

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2415070	Sulfate	2.30	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430927

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2414748	Ammonia-N	0.495	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P431117

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2415816	Kjeldahl Nitrogen	16.2	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P431177

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2414809	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P431001

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2414950	Total-P	0.0235	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P431144

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2415722	Total Alkalinity	2.63	Sample	P	0 - 3.9

Reference Method: SM 2540 C-2015
Batch ID: P431306

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2414566	TDS	5.76	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500-F- C-2011
Batch ID: P431430

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2414949	Fluoride	0.480	Spike	P	0 - 1.9

Reference Method: SM 5310 B-2011
Batch ID: P431040

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2414863	Organic Carbon	1.02	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A119605
Included Lab Sample IDs: 2414949

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	95.6	95.7	P/P	90 - 110
Sulfate	97.8	97.6	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A119614
Included Lab Sample IDs: 2414949

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Reference Method: DEP SOP: NU-094-1
Run ID: A119616
Included Lab Sample IDs: 2414949

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A119634
Included Lab Sample IDs: 2414950

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.3	98.3	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A119681
Included Lab Sample IDs: 2414950

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	101	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A119703
Included Lab Sample IDs: 2414950

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

Reference Method: SM 2320 B-2011
Run ID: A119730
Included Lab Sample IDs: 2414949

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	95.9	94.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A119754
Included Lab Sample IDs: 2414950

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A119809
Included Lab Sample IDs: 2414950

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	96.5	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A119876
Included Lab Sample IDs: 2414949

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	102	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A119931
Included Lab Sample IDs: 2414961

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.7	99.4	P/P	90 - 110
Antimony	98.3	100	P/P	90 - 110
Arsenic	99.2	101	P/P	90 - 110
Barium	97.7	98.2	P/P	90 - 110
Beryllium	99.1	101	P/P	90 - 110
Boron	99.4	99.5	P/P	90 - 110
Cadmium	99.1	101	P/P	90 - 110
Chromium	102	102	P/P	90 - 110
Cobalt	99.0	100	P/P	90 - 110
Copper	97.7	99.0	P/P	90 - 110
Lead	92.9	93.7	P/P	90 - 110
Manganese	102	101	P/P	90 - 110
Molybdenum	98.0	98.6	P/P	90 - 110
Nickel	98.9	100	P/P	90 - 110
Selenium	98.6	101	P/P	90 - 110
Silver	101	101	P/P	90 - 110
Thallium	103	103	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A119954
Included Lab Sample IDs: 2414961

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	102	P/P	90 - 110
Iron	101	102	P/P	90 - 110
Magnesium	101	101	P/P	90 - 110
Potassium	98.4	98.5	P/P	90 - 110
Sodium	96.7	95.5	P/P	90 - 110
Strontium	101	101	P/P	90 - 110
Tin	103	102	P/P	90 - 110
Titanium	101	101	P/P	90 - 110
Vanadium	100	100	P/P	90 - 110
Zinc	103	103	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
DEP SOP: NU-094-1	Color (true)	102				0.726	
EPA 180.1 Rev. 2.0	Turbidity	98.5				16.6	
EPA 200.7 Rev. 4.4	Calcium	102	105				0.420
	Iron	105	106	106			0.0474
	Magnesium	102					0.629
	Potassium	101					0.539
	Sodium	96.7					13.2
	Strontium	101	103	104			0.969
	Tin	103	94.9	96.7			1.91
	Titanium	101	106	103			2.93
	Vanadium	100	101	103			1.68
	Zinc	104	103	103			0.481
EPA 200.8 Rev. 5.4	Aluminum	100	96.7	97.3			0.667
	Antimony	101	101	102			0.895
	Arsenic	102	104	105			1.14
	Barium	102	101	98.7			1.90
	Beryllium	95.6	102	104			2.41
	Boron	105	103	104			0.526
	Cadmium	102	99.2	100			1.17
	Chromium	101	98.0	95.9			2.18
	Cobalt	99.7	96.8	97.4			0.582
	Copper	99.2	98.9	95.5			3.50
	Lead	94.6	94.4	94.4			0.0583
	Manganese	99.9	94.4	92.8			1.60
	Molybdenum	100	102	103			1.28
	Nickel	100	96.3	95.4			1.01
	Selenium	100	100	97.8			2.20
	Silver	105	96.0	98.4			2.46
	Thallium	98.8	94.2	97.2			3.13
EPA 300.0 Rev. 2.1	Chloride	98.3	101	101		2.51	
	Sulfate	96.6	90.7	91.6		2.30	
EPA 350.1 Rev. 2.0	Ammonia-N	95.8	97.8	98.4			0.495
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.7	85.1	102			16.2
EPA 353.2 Rev. 2.0	NO2NO3-N	102	103	103			0.0
EPA 365.1 Rev. 2.0	Total-P	101	103	103			0.0235
SM 2320 B-2011	Total Alkalinity	100				2.63	
SM 2540 C-2015	TDS	94.5				5.76	
SM 2540 D-2015	TSS	95.9					
SM 4500-F- C-2011	Fluoride	99.3	105	104			0.480
SM 5310 B-2011	Organic Carbon	95.6	96.2	98.2			1.02

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2414949
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2414949
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2414961
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2414961
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2414949
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2414949
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2414950

Reference Method Descriptions

Method	Description	Associated Samples
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2414950
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2414950
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2414950
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2414949
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2414949
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2414949
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2414949
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2414950

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	06/06/2023			06/06/2023 15:58	Alexis Price	2414949
EPA 180.1 Rev. 2.0	06/06/2023			06/06/2023 14:56	Anna M. Plaviak	2414949
EPA 200.7 Rev. 4.4	06/06/2023	06/19/2023 12:45	George D Taylor	06/21/2023 19:58	McKinley C Carter	2414961
	06/06/2023	06/19/2023 12:45	George D Taylor	06/21/2023 20:09	McKinley C Carter	2414961
EPA 200.8 Rev. 5.4	06/06/2023	06/19/2023 12:45	George D Taylor	06/20/2023 17:26	Emily M Philpot	2414961
	06/06/2023	06/19/2023 12:45	George D Taylor	06/20/2023 19:31	Emily M Philpot	2414961
EPA 300.0 Rev. 2.1	06/06/2023			06/08/2023 12:28	James L Waggerby	2414949
EPA 350.1 Rev. 2.0	06/06/2023			06/07/2023 14:08	Khloe J Berg	2414950
EPA 351.2 Rev. 2.0	06/06/2023	06/12/2023 12:30	Simonne.V. Calhoun	06/14/2023 15:30	Samantha L Bates	2414950
EPA 353.2 Rev. 2.0	06/06/2023			06/13/2023 10:50	Beverly Y. Sanders	2414950
EPA 365.1 Rev. 2.0	06/06/2023	06/08/2023 14:40	Alexis Price	06/09/2023 14:42	Chandler E Cox	2414950
SM 2320 B-2011	06/06/2023			06/11/2023 03:21	Dale L. Simmons	2414949
SM 2540 C-2015	06/06/2023			06/08/2023 15:07	Yijie Li	2414949
SM 2540 D-2015	06/06/2023			06/08/2023 15:07	Yijie Li	2414949
SM 4500-F- C-2011	06/06/2023			06/16/2023 21:39	Adam P Silver	2414949
SM 5310 B-2011	06/06/2023			06/08/2023 19:56	Elise M. Gillis	2414950