

Chemical Analysis Report

TLH-ROC-2022-05-26-01

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Run 9**
Request ID: **RQ-2022-05-02-73**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
Attn: Michael Eckles

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Certified by: Colin Wright, Program Administrator

Date Certified: 20-JUN-2022 09:15

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light gray rectangular background.

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: East Bay ENCOC FCOLI

Collection Date/Time: 05/26/2022 10:10

Field ID: G2TLHR0051

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2330275	EPA 180.1 Rev. 2.0	Turbidity	8.8		NTU	P414469	
	SM 2320 B-2011	Total Alkalinity	60		mg CaCO3/L	P414793	
	SM 2540 D-2011	TSS	9	I	mg/L	P414967	
	SM 4500-F- C-2011	Fluoride	0.23		mg F/L	P414800	
2330277	EPA 350.1 Rev. 2.0	Ammonia-N	0.062		mg N/L	P415076	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P414952	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.090		mg N/L	P415033	
	EPA 365.1 Rev. 2.0	Total-P	0.040		mg P/L	P414554	
	SM 5310 B-2011	Organic Carbon	4.2		mg C/L	P414682	
2330285	EPA 200.7 Rev. 4.4	Calcium	76.7		mg/L	P414615	
		Iron	250	I	ug/L	P414615	
		Magnesium	197		mg/L	P414615	
		Strontium	1.14E+03		ug/L	P414615	
		Tin	9.0	U	ug/L	P414615	
		Titanium	4.7	I	ug/L	P414615	
		Vanadium	6.0	U	ug/L	P414615	
		Zinc	15	U	ug/L	P414615	
	EPA 200.8 Rev. 5.4	Aluminum	130	I	ug/L	P414615	
		Antimony	0.20	U	ug/L	P414615	
		Arsenic	0.86		ug/L	P414615	
		Beryllium	0.10	U	ug/L	P414615	
		Cadmium	0.080	U	ug/L	P414615	
		Chromium	1.6	U	ug/L	P414615	
		Cobalt	0.18	I	ug/L	P414615	
		Copper	1.6	U	ug/L	P414615	
		Lead	0.80	U	ug/L	P414615	
		Manganese	65.9		ug/L	P414615	
		Molybdenum	1.9	I	ug/L	P414615	
		Nickel	2.0	U	ug/L	P414615	
		Selenium	0.80	U	ug/L	P414615	
		Silver	0.040	U	ug/L	P414615	
		Thallium	0.40	U	ug/L	P414615	

Ref. Method and Comment:

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for magnesium are unavailable because of high analyte concentration in the QC sample.

Sample Location: East Bay (Apalachicola)

Collection Date/Time: 05/26/2022 10:15

Field ID: G2TLHR0027

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2330276	EPA 180.1 Rev. 2.0	Turbidity	7.0		NTU	P414469	
	SM 2320 B-2011	Total Alkalinity	64		mg CaCO3/L	P414794	
	SM 2540 D-2011	TSS	6	I	mg/L	P414967	
	SM 4500-F- C-2011	Fluoride	0.26		mg F/L	P414801	
2330278	EPA 350.1 Rev. 2.0	Ammonia-N	0.060		mg N/L	P415076	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44		mg N/L	P414952	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.078		mg N/L	P415033	
	EPA 365.1 Rev. 2.0	Total-P	0.031		mg P/L	P414554	
	SM 5310 B-2011	Organic Carbon	3.5		mg C/L	P414682	
2330286	EPA 200.7 Rev. 4.4	Calcium	86.3		mg/L	P414615	
		Iron	220	I	ug/L	P414615	
		Magnesium	226		mg/L	P414615	
		Strontium	1.31E+03		ug/L	P414615	
		Tin	9.0	U	ug/L	P414615	
		Titanium	5.6	I	ug/L	P414615	
		Vanadium	6.0	U	ug/L	P414615	
		Zinc	15	U	ug/L	P414615	
	EPA 200.8 Rev. 5.4	Aluminum	190	I	ug/L	P414615	
		Antimony	0.20	U	ug/L	P414615	
		Arsenic	0.89		ug/L	P414615	
		Beryllium	0.10	U	ug/L	P414615	
		Cadmium	0.080	U	ug/L	P414615	
		Chromium	1.6	U	ug/L	P414615	
		Cobalt	0.44		ug/L	P414615	
		Copper	1.6	U	ug/L	P414615	
		Lead	0.80	U	ug/L	P414615	
		Manganese	52.1		ug/L	P414615	
		Molybdenum	2.4	I	ug/L	P414615	
		Nickel	2.0	U	ug/L	P414615	
		Selenium	0.80	U	ug/L	P414615	
		Silver	0.040	U	ug/L	P414615	
		Thallium	0.40	U	ug/L	P414615	

Ref. Method and Comment:

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for magnesium are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P414469

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P414615

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Strontium	3.0	U	ug/L
Tin	25	U	ug/L
Titanium	1.0	U	ug/L
Vanadium	2.0	U	ug/L
Zinc	20	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P414615

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Beryllium	0.010	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 350.1 Rev. 2.0
Batch ID: P415076

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414952

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P415033

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414554

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

Reference Method: SM 2320 B-2011
Batch ID: P414793

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

Reference Method: SM 2320 B-2011
Batch ID: P414794

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

Reference Method: SM 2540 D-2011
Batch ID: P414967

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P414800

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500-F- C-2011
Batch ID: P414801

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P414682

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P414469

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	97.0		P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P414615

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	108		P	85 - 115
Iron	105		P	85 - 115
Magnesium	107		P	85 - 115
Strontium	103		P	85 - 115
Tin	104		P	85 - 115
Titanium	101		P	85 - 115
Vanadium	94.5		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P414615

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.9		P	85 - 115
Antimony	98.1		P	85 - 115
Arsenic	97.5		P	85 - 115
Beryllium	90.6		P	85 - 115
Cadmium	96.7		P	85 - 115
Chromium	95.3		P	85 - 115
Cobalt	97.2		P	85 - 115
Copper	94.9		P	85 - 115
Lead	98.9		P	85 - 115
Manganese	96.8		P	85 - 115
Molybdenum	97.7		P	85 - 115
Nickel	96.5		P	85 - 115
Selenium	96.2		P	85 - 115
Silver	97.8		P	85 - 115
Thallium	101		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P415076

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P414952

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: P415033

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414554

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

Reference Method: SM 2320 B-2011
Batch ID: P414793

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.3		P	94 - 106

Reference Method: SM 2320 B-2011
Batch ID: P414794

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	94 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P414800

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.4		P	96 - 104

Reference Method: SM 4500-F- C-2011
Batch ID: P414801

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.9		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P414682

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P414615

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330285	Calcium	111		P	70 - 130
2330285	Iron	107	106	P/P	70 - 130
2330285	Strontium	93.3	101	P/P	70 - 130
2330285	Tin	76.2	83.1	P/P	70 - 130
2330285	Titanium	96.4	100	P/P	70 - 130
2330285	Vanadium	90.5	93.6	P/P	70 - 130
2330285	Zinc	94.9	98.8	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P414615

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330285	Aluminum	112	114	P/P	70 - 130
2330285	Antimony	97.7	98.6	P/P	70 - 130
2330285	Arsenic	109	111	P/P	70 - 130
2330285	Beryllium	109	101	P/P	70 - 130
2330285	Cadmium	96.0	95.8	P/P	70 - 130
2330285	Chromium	96.1	96.9	P/P	70 - 130
2330285	Cobalt	109	109	P/P	70 - 130
2330285	Copper	105	103	P/P	70 - 130
2330285	Lead	102	104	P/P	70 - 130
2330285	Manganese	94.9	96.5	P/P	70 - 130
2330285	Molybdenum	110	110	P/P	70 - 130
2330285	Nickel	108	109	P/P	70 - 130
2330285	Selenium	102	103	P/P	70 - 130
2330285	Silver	90.3	91.4	P/P	70 - 130
2330285	Thallium	104	106	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P415076

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2329993	Ammonia-N	97.8	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P414952

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2329808	Kjeldahl Nitrogen	90.0	105	F/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P415033

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2329806	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P414554

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330410	Total-P	94.6	97.5	P/P	90 - 110

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 4500-F- C-2011
Batch ID: P414800

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330291	Fluoride	98.1	98.7	P/P	94 - 104

Reference Method: SM 4500-F- C-2011
Batch ID: P414801

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330519	Fluoride	98.2	98.9	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P414682

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330318	Organic Carbon	95.8	94.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P414469

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330225	Turbidity	2.30	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P414615

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330285	Calcium	1.46	Spike	P	0 - 20
2330285	Iron	0.722	Spike	P	0 - 20
2330285	Magnesium	1.33	Spike	P	0 - 20
2330285	Strontium	4.81	Spike	P	0 - 20
2330285	Tin	8.57	Spike	P	0 - 20
2330285	Titanium	3.29	Spike	P	0 - 20
2330285	Vanadium	3.36	Spike	P	0 - 20
2330285	Zinc	4.11	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P414615

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330285	Aluminum	1.83	Spike	P	0 - 20
2330285	Antimony	0.950	Spike	P	0 - 20
2330285	Arsenic	1.80	Spike	P	0 - 20
2330285	Beryllium	6.84	Spike	P	0 - 20
2330285	Cadmium	0.190	Spike	P	0 - 20
2330285	Chromium	0.773	Spike	P	0 - 20
2330285	Cobalt	0.217	Spike	P	0 - 20
2330285	Copper	1.10	Spike	P	0 - 20
2330285	Lead	1.38	Spike	P	0 - 20
2330285	Manganese	0.889	Spike	P	0 - 20
2330285	Molybdenum	0.774	Spike	P	0 - 20
2330285	Nickel	0.186	Spike	P	0 - 20
2330285	Selenium	1.16	Spike	P	0 - 20
2330285	Silver	1.20	Spike	P	0 - 20
2330285	Thallium	1.91	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P415076

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2329993	Ammonia-N	0.152	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P414952

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2329808	Kjeldahl Nitrogen	13.9	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P415033

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2329806	NO2NO3-N	0.491	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414554

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330410	Total-P	2.78	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P414793

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330291	Total Alkalinity	0.629	Sample	P	0 - 3.8

Reference Method: SM 2320 B-2011
Batch ID: P414794

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330519	Total Alkalinity	2.60	Sample	P	0 - 3.8

Reference Method: SM 2540 D-2011
Batch ID: P414967

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330382	TSS	7.63	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P414800

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330291	Fluoride	0.489	Spike	P	0 - 1.6

Reference Method: SM 4500-F- C-2011
Batch ID: P414801

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330519	Fluoride	0.520	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P414682

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330318	Organic Carbon	0.879	Spike	P	0 - 20

Quality Assurance Report Precision

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A112445

Included Lab Sample IDs: 2330275, 2330276

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A112574

Included Lab Sample IDs: 2330277, 2330278

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

Reference Method: SM 5310 B-2011

Run ID: A112583

Included Lab Sample IDs: 2330277, 2330278

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.4	94.6	P/P	90 - 110
Organic Carbon	96.4	96.4	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A112611

Included Lab Sample IDs: 2330285, 2330286

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	102	101	P/P	90 - 110
Antimony	97.4	97.1	P/P	90 - 110
Arsenic	100	101	P/P	90 - 110
Beryllium	97.0	97.8	P/P	90 - 110
Cadmium	96.8	97.8	P/P	90 - 110
Chromium	96.1	95.4	P/P	90 - 110
Cobalt	101	101	P/P	90 - 110
Copper	102	102	P/P	90 - 110
Lead	98.4	97.6	P/P	90 - 110
Manganese	97.8	98.0	P/P	90 - 110
Molybdenum	98.6	99.3	P/P	90 - 110
Nickel	102	102	P/P	90 - 110
Selenium	98.1	99.9	P/P	90 - 110
Silver	99.8	99.9	P/P	90 - 110
Thallium	98.2	97.1	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A112633

Included Lab Sample IDs: 2330275, 2330276

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.3	98.7	P/P	90 - 110
Total Alkalinity	98.7	96.8	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A112633

Included Lab Sample IDs: 2330275, 2330276

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: SM 4500-F- C-2011

Run ID: A112633

Included Lab Sample IDs: 2330275, 2330276

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	99.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A112634

Included Lab Sample IDs: 2330285

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.4	99.3	P/P	90 - 110
Beryllium	96.8	97.9	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A112677

Included Lab Sample IDs: 2330285, 2330286

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Strontium	100	96.3	P/P	90 - 110
Strontium	101	100	P/P	90 - 110
Tin	102	104	P/P	90 - 110
Tin	104	99.7	P/P	90 - 110
Titanium	101	96.2	P/P	90 - 110
Titanium	96.2	95.7	P/P	90 - 110
Vanadium	100	96.8	P/P	90 - 110
Vanadium	99.8	100	P/P	90 - 110
Zinc	104	100	P/P	90 - 110
Zinc	100	99.2	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A112695

Included Lab Sample IDs: 2330285, 2330286

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	104	104	P/P	95 - 105
Calcium	104	104	P/P	90 - 110
Iron	103	104	P/P	95 - 105
Iron	104	104	P/P	90 - 110
Magnesium	103	103	P/P	95 - 105
Magnesium	103	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A112733

Included Lab Sample IDs: 2330277, 2330278

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A112754

Included Lab Sample IDs: 2330277, 2330278

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.8	97.6	P/P	90 - 110

Quality Assurance Report

Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A112803

Included Lab Sample IDs: 2330277, 2330278

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.4	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
EPA 180.1 Rev. 2.0	Turbidity	97.0				2.30
EPA 200.7 Rev. 4.4	Calcium	108	111			1.46
	Iron	105	107	106		0.722
	Magnesium	107				1.33
	Strontium	103	93.3	101		4.81
	Tin	104	76.2	83.1		8.57
	Titanium	101	96.4	100		3.29
	Vanadium	94.5	90.5	93.6		3.36
	Zinc	104	94.9	98.8		4.11
EPA 200.8 Rev. 5.4	Aluminum	99.9	112	114		1.83
	Antimony	98.1	97.7	98.6		0.950
	Arsenic	97.5	109	111		1.80
	Beryllium	90.6	109	101		6.84
	Cadmium	96.7	96.0	95.8		0.190
	Chromium	95.3	96.1	96.9		0.773
	Cobalt	97.2	109	109		0.217
	Copper	94.9	105	103		1.10
	Lead	98.9	102	104		1.38
	Manganese	96.8	94.9	96.5		0.889
	Molybdenum	97.7	110	110		0.774
	Nickel	96.5	108	109		0.186
	Selenium	96.2	102	103		1.16
	Silver	97.8	90.3	91.4		1.20
	Thallium	101	104	106		1.91
EPA 350.1 Rev. 2.0	Ammonia-N	98.8	97.8	98.0		0.152
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	90.0	105		13.9
EPA 353.2 Rev. 2.0	NO2NO3-N	100	102	102		0.491
EPA 365.1 Rev. 2.0	Total-P	103	94.6	97.5		2.78
SM 2320 B-2011	Total Alkalinity	98.3				0.629
	Total Alkalinity	102				2.60
SM 2540 D-2011	TSS					7.63
SM 4500-F- C-2011	Fluoride	98.4	98.1	98.7		0.489
	Fluoride	97.9	98.2	98.9		0.520
SM 5310 B-2011	Organic Carbon	96.4	95.8	94.4		0.879

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2330275, 2330276
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2330285, 2330286
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2330285, 2330286
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2330277, 2330278
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2330277, 2330278
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2330277, 2330278
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2330277, 2330278
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2330275, 2330276
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2330275, 2330276
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2330275, 2330276
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2330277, 2330278

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	05/26/2022			05/26/2022 15:13	Sarah A Nixon	2330275
	05/26/2022			05/26/2022 15:15	Sarah A Nixon	2330276
EPA 200.7 Rev. 4.4	05/26/2022	06/02/2022 09:40	Megan Whitefoot	06/08/2022 05:09	McKinley C Carter	2330285
	05/26/2022	06/02/2022 09:40	Megan Whitefoot	06/08/2022 06:41	McKinley C Carter	2330286
	05/26/2022	06/02/2022 09:40	Megan Whitefoot	06/08/2022 18:35	McKinley C Carter	2330285
	05/26/2022	06/02/2022 09:40	Megan Whitefoot	06/08/2022 19:29	McKinley C Carter	2330286
EPA 200.8 Rev. 5.4	05/26/2022	06/02/2022 09:40	Megan Whitefoot	06/03/2022 14:56	Alexander Thompson	2330286
	05/26/2022	06/02/2022 09:40	Megan Whitefoot	06/03/2022 17:11	Alexander Thompson	2330286
	05/26/2022	06/02/2022 09:40	Megan Whitefoot	06/03/2022 17:20	Alexander Thompson	2330285
	05/26/2022	06/02/2022 09:40	Megan Whitefoot	06/06/2022 16:46	Alexander Thompson	2330285
EPA 350.1 Rev. 2.0	05/26/2022			06/10/2022 14:14	Ping Hua	2330278
	05/26/2022			06/10/2022 14:22	Ping Hua	2330277
EPA 351.2 Rev. 2.0	05/26/2022	06/10/2022 11:23	Samantha L Bates	06/13/2022 18:41	Alexandra J Mattheus	2330277
	05/26/2022	06/10/2022 11:23	Samantha L Bates	06/13/2022 18:42	Alexandra J Mattheus	2330278
EPA 353.2 Rev. 2.0	05/26/2022			06/09/2022 15:39	Nathaniel J Jones	2330277
	05/26/2022			06/09/2022 15:40	Nathaniel J Jones	2330278
EPA 365.1 Rev. 2.0	05/26/2022	06/01/2022 16:00	Adam P Silver	06/02/2022 14:26	James L Waggeberby	2330277
	05/26/2022	06/01/2022 16:00	Adam P Silver	06/02/2022 14:27	James L Waggeberby	2330278
SM 2320 B-2011	05/26/2022			06/03/2022 07:53	Dale L. Simmons	2330275
	05/26/2022			06/03/2022 10:47	Dale L. Simmons	2330276
SM 2540 D-2011	05/26/2022			06/01/2022 14:08	Yijie Li	2330275, 2330276
SM 4500-F- C-2011	05/26/2022			06/03/2022 07:53	Dale L. Simmons	2330275
	05/26/2022			06/03/2022 09:01	Dale L. Simmons	2330276
SM 5310 B-2011	05/26/2022			06/02/2022 19:34	Judith K. Clark	2330278
	05/26/2022			06/02/2022 22:11	Judith K. Clark	2330277