Chemical Analysis Report

NE-DIST-2021-12-03-01

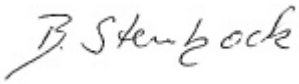
Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **LSJR North make up**
Request ID: **RQ-2021-12-06-49**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256
Attn: Jeremy Parrish

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 28-DEC-2021 12:37



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: Tributary to Trout at Bessent Rd. **Collection Date/Time: 12/02/2021 09:35**

Field ID: G2NE1207 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2293021	EPA 180.1 Rev. 2.0	Turbidity	3.0		NTU	P407019	
	SM 2320 B-2011	Total Alkalinity	80	A	mg CaCO3/L	P407162	
	SM 2540 D-2011	TSS	2	I	mg/L	P407496	
	SM 4500 F-C-2011	Fluoride	0.32		mg F/L	P407166	
2293022	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P407629	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.58		mg N/L	P407460	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.061		mg N/L	P407095	
	EPA 365.1 Rev. 2.0	Total-P	0.084		mg P/L	P407341	
	SM 5310 B-2011	Organic Carbon	14		mg C/L	P407413	
2293023	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.053		mg P/L	P407012	

Sample Location: BLOCKHOUSE CR @ DUVAL RD **Collection Date/Time: 12/02/2021 09:15**

Field ID: 20030746 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2293026	EPA 200.7 Rev. 4.4	Calcium	33.4		mg/L	P407197	
		Iron	800		ug/L	P407197	
		Magnesium	8.75		mg/L	P407197	
		Potassium	1.6		mg/L	P407197	
		Sodium	16.8		mg/L	P407197	
		Strontium	166		ug/L	P407197	
		Tin	3.0	U	ug/L	P407197	
		Titanium	1.2	I	ug/L	P407197	
		Vanadium	2.0	U	ug/L	P407197	
		Zinc	5.0	U	ug/L	P407197	
	EPA 200.8 Rev. 5.4	Aluminum	43		ug/L	P407197	
		Antimony	0.055	I	ug/L	P407197	
		Arsenic	0.39		ug/L	P407197	
		Barium	30.4		ug/L	P407197	
		Beryllium	0.021	I	ug/L	P407197	
		Boron**	27.6		ug/L	P407197	
		Cadmium	0.020	U	ug/L	P407197	
		Chromium	0.40	U	ug/L	P407197	
		Cobalt	0.111		ug/L	P407197	
		Copper	0.55	I	ug/L	P407197	
		Lead	0.20	U	ug/L	P407197	
		Manganese	35.4		ug/L	P407197	
		Molybdenum	0.15	U	ug/L	P407197	
		Nickel	0.50	U	ug/L	P407197	
		Selenium	0.20	U	ug/L	P407197	
		Silver	0.010	U	ug/L	P407197	
		Thallium	0.10	U	ug/L	P407197	
	SM 2340B	Hardness	119		mg/L	P407197	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P407019

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P407197

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: P407197

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 350.1 Rev. 2.0
Batch ID: P407629

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P407460

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P407095

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P407341

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P407012

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: SM 2320 B-2011
Batch ID: P407162

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

Reference Method: SM 2540 D-2011
Batch ID: P407496

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P407166

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P407413

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P407197

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	102		P	85 - 115
Magnesium	105		P	85 - 115
Potassium	95.8		P	85 - 115
Sodium	94.0		P	85 - 115
Strontium	95.0		P	85 - 115
Tin	97.4		P	85 - 115
Titanium	103		P	85 - 115
Vanadium	94.8		P	85 - 115
Zinc	96.5		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P407197

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Antimony	104		P	85 - 115
Arsenic	99.8		P	85 - 115
Barium	107		P	85 - 115
Beryllium	99.4		P	85 - 115
Boron	101		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	104		P	85 - 115
Cobalt	99.2		P	85 - 115
Copper	98.7		P	85 - 115
Lead	98.9		P	85 - 115
Manganese	101		P	85 - 115
Molybdenum	103		P	85 - 115
Nickel	99.1		P	85 - 115
Selenium	99.6		P	85 - 115
Silver	101		P	85 - 115
Thallium	102		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P407629

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P407460

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: P407095

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: P407341

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	108		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P407012

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.7		P	90 - 110

Reference Method: SM 2320 B-2011
Batch ID: P407162

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.1		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P407166

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P407413

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P407197

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2292157	Calcium	107	99.4	P/P	80 - 120
2292157	Iron	108	103	P/P	80 - 120
2292157	Magnesium	111	106	P/P	80 - 120
2292157	Potassium	101	95.5	P/P	80 - 120
2292157	Sodium	92.8		P	80 - 120
2292157	Strontium	99.1	93.0	P/P	80 - 120
2292157	Tin	103	97.3	P/P	80 - 120
2292157	Titanium	106	103	P/P	80 - 120
2292157	Vanadium	100	95.2	P/P	80 - 120
2292157	Zinc	103	97.7	P/P	80 - 120
2292401	Calcium	99.6		P	80 - 120
2292401	Iron	101		P	80 - 120
2292401	Magnesium	98.4		P	80 - 120
2292401	Potassium	94.4		P	80 - 120
2292401	Sodium	96.6		P	80 - 120
2292401	Strontium	94.7		P	80 - 120
2292401	Tin	99.3		P	80 - 120
2292401	Titanium	105		P	80 - 120
2292401	Vanadium	97.8		P	80 - 120
2292401	Zinc	97.1		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P407197

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2292157	Aluminum	99.4	100	P/P	80 - 120
2292157	Antimony	101	102	P/P	80 - 120
2292157	Arsenic	98.6	97.8	P/P	80 - 120
2292157	Barium	104	106	P/P	80 - 120
2292157	Beryllium	101	100	P/P	80 - 120
2292157	Boron	96.9	99.0	P/P	80 - 120
2292157	Cadmium	101	100	P/P	80 - 120
2292157	Chromium	101	101	P/P	80 - 120
2292157	Cobalt	97.9	98.6	P/P	80 - 120
2292157	Copper	99.1	98.8	P/P	80 - 120
2292157	Lead	97.7	97.5	P/P	80 - 120
2292157	Manganese	99.7	100	P/P	80 - 120
2292157	Molybdenum	102	101	P/P	80 - 120
2292157	Nickel	99.3	99.1	P/P	80 - 120
2292157	Selenium	95.4	94.8	P/P	80 - 120
2292157	Silver	99.5	99.8	P/P	80 - 120
2292157	Thallium	101	103	P/P	80 - 120
2292401	Aluminum	99.7		P	80 - 120
2292401	Antimony	102		P	80 - 120
2292401	Arsenic	98.0		P	80 - 120
2292401	Barium	103		P	80 - 120
2292401	Beryllium	104		P	80 - 120
2292401	Boron	97.7		P	80 - 120
2292401	Cadmium	101		P	80 - 120
2292401	Chromium	99.2		P	80 - 120
2292401	Cobalt	98.3		P	80 - 120
2292401	Copper	96.9		P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P407197

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2292401	Lead	97.2		P	80 - 120
2292401	Manganese	101		P	80 - 120
2292401	Molybdenum	103		P	80 - 120
2292401	Nickel	97.8		P	80 - 120
2292401	Selenium	97.3		P	80 - 120
2292401	Silver	97.7		P	80 - 120
2292401	Thallium	101		P	80 - 120

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P407629

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2293031	Ammonia-N	106	108	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P407460

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2292701	Kjeldahl Nitrogen	98.1	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P407095

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2292702	NO2NO3-N	101	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P407341

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2292762	Total-P	97.3	97.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P407012

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2293033	O-Phosphate-P	99.2	97.8	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P407166

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2293021	Fluoride	98.2	99.6	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P407413

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2293022	Organic Carbon	92.8	93.0	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P407019

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2292781	Turbidity	5.32	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P407197

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2292157	Calcium	5.89	Spike	P	0 - 20
2292157	Iron	4.71	Spike	P	0 - 20
2292157	Magnesium	4.39	Spike	P	0 - 20
2292157	Potassium	6.01	Spike	P	0 - 20
2292157	Sodium	5.50	Spike	P	0 - 20
2292157	Strontium	6.32	Spike	P	0 - 20
2292157	Tin	5.46	Spike	P	0 - 20
2292157	Titanium	2.61	Spike	P	0 - 20
2292157	Vanadium	5.13	Spike	P	0 - 20
2292157	Zinc	5.18	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P407197

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2292157	Aluminum	0.869	Spike	P	0 - 20
2292157	Antimony	0.418	Spike	P	0 - 20
2292157	Arsenic	0.827	Spike	P	0 - 20
2292157	Barium	1.58	Spike	P	0 - 20
2292157	Beryllium	0.796	Spike	P	0 - 20
2292157	Boron	1.88	Spike	P	0 - 20
2292157	Cadmium	0.430	Spike	P	0 - 20
2292157	Chromium	0.181	Spike	P	0 - 20
2292157	Cobalt	0.695	Spike	P	0 - 20
2292157	Copper	0.199	Spike	P	0 - 20
2292157	Lead	0.221	Spike	P	0 - 20
2292157	Manganese	0.306	Spike	P	0 - 20
2292157	Molybdenum	0.0378	Spike	P	0 - 20
2292157	Nickel	0.200	Spike	P	0 - 20
2292157	Selenium	0.685	Spike	P	0 - 20
2292157	Silver	0.305	Spike	P	0 - 20
2292157	Thallium	1.09	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P407629

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2293031	Ammonia-N	0.923	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P407460

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2292701	Kjeldahl Nitrogen	3.66	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P407095

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2292702	NO2NO3-N	0.271	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P407341

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2292762	Total-P	0.147	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P407012

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2293033	O-Phosphate-P	1.31	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P407162

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2293021	Total Alkalinity	0.867	Sample	P	0 - 5.2

Reference Method: SM 2540 D-2011
Batch ID: P407496

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2292694	TSS	4.65	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P407166

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2293021	Fluoride	1.01	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P407413

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2293022	Organic Carbon	0.123	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 365.1 Rev. 2.0 dissolved
Run ID: A109196
Included Lab Sample IDs: 2293023

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.2	98.8	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A109199
Included Lab Sample IDs: 2293021

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A109233
Included Lab Sample IDs: 2293022

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

Reference Method: SM 2320 B-2011
Run ID: A109252
Included Lab Sample IDs: 2293021

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	97.8	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A109252
Included Lab Sample IDs: 2293021

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A109303
Included Lab Sample IDs: 2293026

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.5	99.8	P/P	90 - 110
Antimony	94.7	95.4	P/P	90 - 110
Arsenic	96.1	94.9	P/P	90 - 110
Barium	99.5	98.1	P/P	90 - 110
Beryllium	100	94.8	P/P	90 - 110
Boron	99.5	102	P/P	90 - 110
Cadmium	98.9	99.0	P/P	90 - 110
Chromium	97.2	98.2	P/P	90 - 110
Cobalt	93.7	91.9	P/P	90 - 110
Copper	94.4	92.6	P/P	90 - 110
Lead	92.7	93.2	P/P	90 - 110
Manganese	98.3	96.5	P/P	90 - 110
Molybdenum	97.1	97.0	P/P	90 - 110
Nickel	94.4	92.8	P/P	90 - 110
Selenium	95.7	96.8	P/P	90 - 110
Silver	95.5	96.5	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A109303
Included Lab Sample IDs: 2293026

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Thallium	94.4	93.7	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A109327
Included Lab Sample IDs: 2293026

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	95.5	98.0	P/P	90 - 110
Iron	96.7	99.3	P/P	90 - 110
Magnesium	96.8	99.5	P/P	90 - 110
Potassium	93.3	93.7	P/P	90 - 110
Sodium	95.7	96.3	P/P	90 - 110
Strontium	93.4	97.7	P/P	90 - 110
Tin	93.8	96.4	P/P	90 - 110
Vanadium	91.1	92.9	P/P	90 - 110
Zinc	93.0	95.7	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A109356
Included Lab Sample IDs: 2293026

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Titanium	96.5	97.7	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A109369
Included Lab Sample IDs: 2293022

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.0	95.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A109433
Included Lab Sample IDs: 2293022

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A109450
Included Lab Sample IDs: 2293022

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.7	97.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A109464
Included Lab Sample IDs: 2293022

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.1	98.6	P/P	90 - 110

Quality Assurance Report
Calibration Verification

* 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
EPA 180.1 Rev. 2.0	Turbidity						5.32	
EPA 200.7 Rev. 4.4	Calcium	103	107	99.4	99.6			5.89
	Iron	102	108	103	101			4.71
	Magnesium	105	111	106	98.4			4.39
	Potassium	95.8	101	95.5	94.4			6.01
	Sodium	94.0	92.8	96.6				5.50
	Strontium	95.0	99.1	93.0	94.7			6.32
	Tin	97.4	103	97.3	99.3			5.46
	Titanium	103	106	103	105			2.61
	Vanadium	94.8	100	95.2	97.8			5.13
	Zinc	96.5	103	97.7	97.1			5.18
EPA 200.8 Rev. 5.4	Aluminum	102	99.4	100	99.7			0.869
	Antimony	104	101	102	102			0.418
	Arsenic	99.8	98.6	97.8	98.0			0.827
	Barium	107	104	106	103			1.58
	Beryllium	99.4	101	100	104			0.796
	Boron	101	96.9	99.0	97.7			1.88
	Cadmium	102	101	100	101			0.430
	Chromium	104	101	101	99.2			0.181
	Cobalt	99.2	97.9	98.6	98.3			0.695
	Copper	98.7	99.1	98.8	96.9			0.199
	Lead	98.9	97.7	97.5	97.2			0.221
	Manganese	101	99.7	100	101			0.306
	Molybdenum	103	102	101	103			0.0378
	Nickel	99.1	99.3	99.1	97.8			0.200
	Selenium	99.6	95.4	94.8	97.3			0.685
	Silver	101	99.5	99.8	97.7			0.305
	Thallium	102	101	103	101			1.09
EPA 350.1 Rev. 2.0	Ammonia-N	99.4	106	108				0.923
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	98.1	103				3.66
EPA 353.2 Rev. 2.0	NO2NO3-N	100	101	100				0.271
EPA 365.1 Rev. 2.0	Total-P	108	97.3	97.2				0.147
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.7	99.2	97.8				1.31
SM 2320 B-2011	Total Alkalinity	97.1					0.867	
SM 2540 D-2011	TSS						4.65	
SM 4500 F-C-2011	Fluoride	100	98.2	99.6				1.01
SM 5310 B-2011	Organic Carbon	94.4	92.8	93.0				0.123

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2293021
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2293026
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2293026
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2293022
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2293022
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2293022
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2293022
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2293023
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2293021

Reference Method Descriptions

Method	Description	Associated Samples
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2293026
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2293021
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2293021
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2293022

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	12/03/2021			12/03/2021 14:14	Khloe J Berg	2293021
EPA 200.7 Rev. 4.4	12/03/2021	12/08/2021 10:30	Vijayalakshmi Reddy	12/10/2021 18:20	Josef B Mick	2293026
	12/03/2021	12/08/2021 10:30	Vijayalakshmi Reddy	12/13/2021 16:27	Josef B Mick	2293026
EPA 200.8 Rev. 5.4	12/03/2021	12/08/2021 10:30	Vijayalakshmi Reddy	12/09/2021 21:59	Alexander Thompson	2293026
EPA 350.1 Rev. 2.0	12/03/2021			12/17/2021 12:52	Ping Hua	2293022
EPA 351.2 Rev. 2.0	12/03/2021	12/15/2021 10:04	Alexandra J Mattheus	12/16/2021 13:55	Alexandra J Mattheus	2293022
EPA 353.2 Rev. 2.0	12/03/2021			12/07/2021 10:05	Beverly Y. Sanders	2293022
EPA 365.1 Rev. 2.0	12/03/2021	12/14/2021 10:43	Simonne.V. Calhoun	12/16/2021 14:03	Shengyu Ding	2293022
EPA 365.1 Rev. 2.0 dissolved	12/03/2021			12/03/2021 14:47	James L Waggerby	2293023
SM 2320 B-2011	12/03/2021			12/08/2021 01:32	Dale L. Simmons	2293021
SM 2340B	12/03/2021			12/10/2021 18:20	Josef B Mick	2293026
SM 2540 D-2011	12/03/2021			12/07/2021 11:11	Yijie Li	2293021
SM 4500 F-C-2011	12/03/2021			12/07/2021 22:52	Dale L. Simmons	2293021
SM 5310 B-2011	12/03/2021			12/13/2021 20:35	Khloe J Berg	2293022