

Chemical Analysis Report

NE-DIST-2022-04-14-01

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

Event Description: **LSJR West Boat 2022**

Request ID: **RQ-2022-04-11-52**

Customer: **NE-DIST**

Project ID: **SMP**

Send Reports to:
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8800 Baymeadows Way West
Suite 100
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 04-MAY-2022 13:50

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored 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: Black CR South Fork @ CR218

Collection Date/Time: 04/13/2022 12:55

Field ID: 20030244

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2319240	DEP SOP: NU-094-1	Color (true)**	190		PCU	P412388	
	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P412384	
	EPA 300.0 Rev. 2.1	Chloride	8.4		mg Cl/L	P412821	
		Sulfate	2.7		mg SO4/L	P412823	
	SM 2320 B-2011	Total Alkalinity	5.5		mg CaCO3/L	P412680	
	SM 2540 C-2011	TDS	65		mg/L	P412851	
	SM 2540 D-2011	TSS	3	I	mg/L	P412855	
	SM 4500-F- C-2011	Fluoride	0.066	I	mg F/L	P412684	
2319241	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P412545	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.42		mg N/L	P412768	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.033		mg N/L	P412502	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P412666	
	SM 5310 B-2011	Organic Carbon	16		mg C/L	P412782	
2319245	EPA 200.7 Rev. 4.4	Calcium	4.67		mg/L	P412467	
		Iron	500		ug/L	P412467	
		Magnesium	1.34		mg/L	P412467	
		Potassium	0.30	U	mg/L	P412467	
		Sodium	5.0		mg/L	P412467	
		Strontium	17.3		ug/L	P412467	
		Tin	3.0	U	ug/L	P412467	
		Titanium	1.4	I	ug/L	P412467	
	EPA 200.8 Rev. 5.4	Vanadium	2.0	U	ug/L	P412467	
		Zinc	5.0	U	ug/L	P412467	
		Aluminum	368		ug/L	P412467	
		Antimony	0.050	U	ug/L	P412467	
		Arsenic	0.40		ug/L	P412467	
		Barium	6.74		ug/L	P412467	
		Beryllium	0.031	I	ug/L	P412467	
		Boron**	13.1		ug/L	P412467	
		Cadmium	0.020	U	ug/L	P412467	
		Chromium	0.49	I	ug/L	P412467	
		Cobalt	0.134		ug/L	P412467	
		Copper	0.40	U	ug/L	P412467	
		Lead	0.29	I	ug/L	P412467	
		Manganese	4.93		ug/L	P412467	
		Molybdenum	0.15	U	ug/L	P412467	
		Nickel	0.50	U	ug/L	P412467	
		Selenium	0.20	U	ug/L	P412467	
		Silver	0.010	U	ug/L	P412467	
		Thallium	0.10	U	ug/L	P412467	
	SM 2340 B-2011	Hardness	17.2		mg/L	P412467	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P412388

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P412384

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P412467

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: P412467

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: P412821

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: P412823

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P412545

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P412768

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P412502

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P412666

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

Reference Method: SM 2320 B-2011
Batch ID: P412680

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

Reference Method: SM 2540 C-2011
Batch ID: P412851

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P412855

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P412684

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P412782

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: P412388

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P412384

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	95.7		P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P412467

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	104		P	85 - 115
Iron	110		P	85 - 115
Magnesium	110		P	85 - 115
Potassium	105		P	85 - 115
Sodium	102		P	85 - 115
Strontium	102		P	85 - 115
Tin	103		P	85 - 115
Titanium	104		P	85 - 115
Vanadium	97.7		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P412467

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.0		P	85 - 115
Antimony	98.1		P	85 - 115
Arsenic	99.0		P	85 - 115
Barium	103		P	85 - 115
Beryllium	94.6		P	85 - 115
Boron	101		P	85 - 115
Cadmium	98.7		P	85 - 115
Chromium	96.6		P	85 - 115
Cobalt	97.1		P	85 - 115
Copper	96.3		P	85 - 115
Lead	94.2		P	85 - 115
Manganese	98.2		P	85 - 115
Molybdenum	98.5		P	85 - 115
Nickel	97.1		P	85 - 115
Selenium	95.3		P	85 - 115
Silver	99.0		P	85 - 115
Thallium	101		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P412821

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P412823

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P412545

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P412768

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P412502

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P412666

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

Reference Method: SM 2320 B-2011
Batch ID: P412680

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.8		P	94 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P412684

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.5		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P412782

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P412467

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2319008	Calcium	104		P	80 - 120
2319008	Iron	109		P	80 - 120
2319008	Magnesium	108		P	80 - 120
2319008	Potassium	105		P	80 - 120
2319008	Sodium	108		P	80 - 120
2319008	Strontium	104		P	80 - 120
2319008	Tin	108		P	80 - 120
2319008	Titanium	106		P	80 - 120
2319008	Vanadium	101		P	80 - 120
2319008	Zinc	106		P	80 - 120
2319245	Calcium	106		P	80 - 120
2319245	Iron	111	110	P/P	80 - 120
2319245	Magnesium	111	111	P/P	80 - 120
2319245	Potassium	112	112	P/P	80 - 120
2319245	Sodium	104		P	80 - 120
2319245	Strontium	104	103	P/P	80 - 120
2319245	Tin	105	102	P/P	80 - 120
2319245	Titanium	105	104	P/P	80 - 120
2319245	Vanadium	99.8	99.1	P/P	80 - 120
2319245	Zinc	105	104	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P412467

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2319008	Aluminum	97.1		P	80 - 120
2319008	Antimony	99.3		P	80 - 120
2319008	Arsenic	96.1		P	80 - 120
2319008	Barium	101		P	80 - 120
2319008	Beryllium	93.8		P	80 - 120
2319008	Boron	104		P	80 - 120
2319008	Cadmium	99.2		P	80 - 120
2319008	Chromium	98.2		P	80 - 120
2319008	Cobalt	96.4		P	80 - 120
2319008	Copper	94.6		P	80 - 120
2319008	Lead	93.9		P	80 - 120
2319008	Manganese	100		P	80 - 120
2319008	Molybdenum	99.3		P	80 - 120
2319008	Nickel	96.8		P	80 - 120
2319008	Selenium	92.8		P	80 - 120
2319008	Silver	98.3		P	80 - 120
2319008	Thallium	101		P	80 - 120
2319245	Aluminum	102	102	P/P	80 - 120
2319245	Antimony	97.7	97.4	P/P	80 - 120
2319245	Arsenic	98.4	98.0	P/P	80 - 120
2319245	Barium	102	102	P/P	80 - 120
2319245	Beryllium	90.4	90.8	P/P	80 - 120
2319245	Boron	101	99.7	P/P	80 - 120
2319245	Cadmium	97.9	97.9	P/P	80 - 120
2319245	Chromium	96.4	96.1	P/P	80 - 120
2319245	Cobalt	96.5	97.1	P/P	80 - 120
2319245	Copper	97.7	97.8	P/P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P412467

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2319245	Lead	94.0	93.6	P/P	80 - 120
2319245	Manganese	97.3	97.7	P/P	80 - 120
2319245	Molybdenum	99.0	98.3	P/P	80 - 120
2319245	Nickel	97.4	98.3	P/P	80 - 120
2319245	Selenium	95.7	96.9	P/P	80 - 120
2319245	Silver	97.4	97.3	P/P	80 - 120
2319245	Thallium	102	103	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P412821

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2319204	Chloride	96.9		P	90 - 110
2319259	Chloride	96.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P412823

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2319204	Sulfate	97.6		P	90 - 110
2319259	Sulfate	97.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P412545

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2319207	Ammonia-N	97.8	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P412768

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2319058	Kjeldahl Nitrogen	106	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P412502

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2319207	NO2NO3-N	96.8	97.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P412666

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2319227	Total-P	108	103	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P412684

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2318994	Fluoride	98.2	98.2	P/P	92 - 107

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P412782

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2319373	Organic Carbon	103		P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P412388

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2319359	Color (true)	7.54	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P412384

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2319225	Turbidity	4.53	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P412467

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2319245	Calcium	1.61	Spike	P	0 - 20
2319245	Iron	0.252	Spike	P	0 - 20
2319245	Magnesium	0.326	Spike	P	0 - 20
2319245	Potassium	0.330	Spike	P	0 - 20
2319245	Sodium	2.54	Spike	P	0 - 20
2319245	Strontium	1.59	Spike	P	0 - 20
2319245	Tin	2.33	Spike	P	0 - 20
2319245	Titanium	0.956	Spike	P	0 - 20
2319245	Vanadium	0.672	Spike	P	0 - 20
2319245	Zinc	0.732	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P412467

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2319245	Aluminum	0.316	Spike	P	0 - 20
2319245	Antimony	0.399	Spike	P	0 - 20
2319245	Arsenic	0.342	Spike	P	0 - 20
2319245	Barium	0.138	Spike	P	0 - 20
2319245	Beryllium	0.394	Spike	P	0 - 20
2319245	Boron	1.11	Spike	P	0 - 20
2319245	Cadmium	0.0310	Spike	P	0 - 20
2319245	Chromium	0.308	Spike	P	0 - 20
2319245	Cobalt	0.618	Spike	P	0 - 20
2319245	Copper	0.0385	Spike	P	0 - 20
2319245	Lead	0.438	Spike	P	0 - 20
2319245	Manganese	0.361	Spike	P	0 - 20
2319245	Molybdenum	0.752	Spike	P	0 - 20
2319245	Nickel	0.905	Spike	P	0 - 20
2319245	Selenium	1.23	Spike	P	0 - 20
2319245	Silver	0.145	Spike	P	0 - 20
2319245	Thallium	0.427	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P412821

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2319204	Chloride	0.138	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P412545

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2319207	Ammonia-N	0.563	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P412768

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2319058	Kjeldahl Nitrogen	1.25	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P412502

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2319207	NO2NO3-N	0.491	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P412666

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2319227	Total-P	3.89	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P412680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318994	Total Alkalinity	0.105	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P412851

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318860	TDS	7.87	Sample	P	0 - 10

Reference Method: SM 2540 D-2011
Batch ID: P412855

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318860	TSS	3.39	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500-F- C-2011
Batch ID: P412684

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318994	Fluoride	0.0	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P412782

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2319373	Organic Carbon	0.0916	Spike	P	0 - 20

* 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: A111479

Included Lab Sample IDs: 2319240

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.0	P/P	95 - 105

Reference Method: DEP SOP: NU-094-1

Run ID: A111480

Included Lab Sample IDs: 2319240

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	101	P/P	85 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A111531

Included Lab Sample IDs: 2319241

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A111541

Included Lab Sample IDs: 2319245

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.0	97.7	P/P	90 - 110
Antimony	98.7	99.6	P/P	90 - 110
Arsenic	99.8	99.9	P/P	90 - 110
Barium	98.1	99.4	P/P	90 - 110
Beryllium	93.6	95.5	P/P	90 - 110
Boron	97.8	97.1	P/P	90 - 110
Cadmium	97.4	99.1	P/P	90 - 110
Chromium	96.0	98.5	P/P	90 - 110
Cobalt	96.6	98.9	P/P	90 - 110
Copper	97.8	98.2	P/P	90 - 110
Lead	92.8	93.4	P/P	90 - 110
Manganese	96.4	99.5	P/P	90 - 110
Molybdenum	97.8	97.9	P/P	90 - 110
Nickel	97.9	99.2	P/P	90 - 110
Selenium	97.2	99.5	P/P	90 - 110
Silver	99.0	99.8	P/P	90 - 110
Thallium	97.7	98.7	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A111551

Included Lab Sample IDs: 2319241

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.4	98.3	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A111591

Included Lab Sample IDs: 2319240

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

Reference Method: SM 2320 B-2011
Run ID: A111591
Included Lab Sample IDs: 2319240

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.4	96.3	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A111591
Included Lab Sample IDs: 2319240

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	102	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A111644
Included Lab Sample IDs: 2319241

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.2	97.6	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A111657
Included Lab Sample IDs: 2319245

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	99.3	101	P/P	90 - 110
Iron	102	104	P/P	90 - 110
Magnesium	102	104	P/P	90 - 110
Potassium	101	103	P/P	90 - 110
Strontium	99.1	99.3	P/P	90 - 110
Tin	99.5	103	P/P	90 - 110
Titanium	99.7	101	P/P	90 - 110
Vanadium	100	101	P/P	90 - 110
Zinc	99.8	103	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A111664
Included Lab Sample IDs: 2319240

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.7	99.6	P/P	90 - 110
Sulfate	99.6	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A111672
Included Lab Sample IDs: 2319241

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A111695
Included Lab Sample IDs: 2319241

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A111695

Included Lab Sample IDs: 2319241

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.6	98.0	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A111741

Included Lab Sample IDs: 2319245

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sodium	100	102	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 SMP	MS
			LCS				
DEP SOP: NU-094-1	Color (true)	100				7.54	
EPA 180.1 Rev. 2.0	Turbidity	95.7				4.53	
EPA 200.7 Rev. 4.4	Calcium	104	104	106			1.61
	Iron	110	109	111	110		0.252
	Magnesium	110	108	111	111		0.326
	Potassium	105	105	112	112		0.330
	Sodium	102	104	108			2.54
	Strontium	102	104	104	103		1.59
	Tin	103	108	105	102		2.33
	Titanium	104	106	105	104		0.956
	Vanadium	97.7	101	99.8	99.1		0.672
	Zinc	103	106	105	104		0.732
EPA 200.8 Rev. 5.4	Aluminum	99.0	102	102	97.1		0.316
	Antimony	98.1	97.7	97.4	99.3		0.399
	Arsenic	99.0	98.4	98.0	96.1		0.342
	Barium	103	102	102	101		0.138
	Beryllium	94.6	90.4	90.8	93.8		0.394
	Boron	101	101	99.7	104		1.11
	Cadmium	98.7	97.9	97.9	99.2		0.0310
	Chromium	96.6	96.4	96.1	98.2		0.308
	Cobalt	97.1	96.5	97.1	96.4		0.618
	Copper	96.3	97.7	97.8	94.6		0.0385
	Lead	94.2	94.0	93.6	93.9		0.438
	Manganese	98.2	97.3	97.7	100		0.361
	Molybdenum	98.5	99.0	98.3	99.3		0.752
	Nickel	97.1	97.4	98.3	96.8		0.905
	Selenium	95.3	95.7	96.9	92.8		1.23
	Silver	99.0	97.4	97.3	98.3		0.145
	Thallium	101	102	103	101		0.427
EPA 300.0 Rev. 2.1	Chloride	100	96.9	96.4		0.138	
	Sulfate	98.9	97.6	97.2			
EPA 350.1 Rev. 2.0	Ammonia-N	96.0	97.8	98.6			0.563
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	106	104			1.25
EPA 353.2 Rev. 2.0	NO2NO3-N	100	96.8	97.3			0.491
EPA 365.1 Rev. 2.0	Total-P	106	108	103			3.89
SM 2320 B-2011	Total Alkalinity	97.8				0.105	
SM 2540 C-2011	TDS					7.87	
SM 2540 D-2011	TSS					3.39	
SM 4500-F- C-2011	Fluoride	98.5	98.2	98.2			0.0
SM 5310 B-2011	Organic Carbon	95.2	103				0.0916

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2319240
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2319240
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2319245
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2319245
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2319240
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2319240
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2319241

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2319241
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2319241
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2319241
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2319240
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2319245
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2319240
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2319240
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2319240
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2319241

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	04/14/2022			04/14/2022 16:47	Anna M. Plaviak	2319240
EPA 180.1 Rev. 2.0	04/14/2022			04/14/2022 14:10	Khloe J Berg	2319240
EPA 200.7 Rev. 4.4	04/14/2022	04/18/2022 10:25	Megan Whitefoot	04/22/2022 22:20	Josef B Mick	2319245
	04/14/2022	04/18/2022 10:25	Megan Whitefoot	04/27/2022 13:56	Josef B Mick	2319245
EPA 200.8 Rev. 5.4	04/14/2022	04/18/2022 10:25	Megan Whitefoot	04/19/2022 01:11	Emily M Philpot	2319245
EPA 300.0 Rev. 2.1	04/14/2022			04/22/2022 21:00	Anna M. Plaviak	2319240
EPA 350.1 Rev. 2.0	04/14/2022			04/19/2022 12:27	Ping Hua	2319241
EPA 351.2 Rev. 2.0	04/14/2022	04/25/2022 12:07	Alexandra J Mattheus	04/26/2022 14:15	Alexandra J Mattheus	2319241
EPA 353.2 Rev. 2.0	04/14/2022			04/18/2022 17:29	Nathaniel J Jones	2319241
EPA 365.1 Rev. 2.0	04/14/2022	04/22/2022 16:40	Simonne.V. Calhoun	04/25/2022 13:48	Sarah A Nixon	2319241
SM 2320 B-2011	04/14/2022			04/20/2022 14:55	Dale L. Simmons	2319240
SM 2340 B-2011	04/14/2022			04/22/2022 22:20	Josef B Mick	2319245
SM 2540 C-2011	04/14/2022			04/18/2022 15:45	Yijie Li	2319240
SM 2540 D-2011	04/14/2022			04/18/2022 15:45	Yijie Li	2319240
SM 4500-F- C-2011	04/14/2022			04/20/2022 14:55	Dale L. Simmons	2319240
SM 5310 B-2011	04/14/2022			04/20/2022 22:44	Judith K. Clark	2319241