

Chemical Analysis Report

NE-DIST-2022-11-03-01

Florida DEP Laboratory
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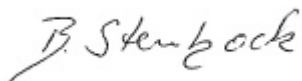
Event Description: **LSJR West Boat 2022**
Request ID: **RQ-2022-11-14-20**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
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Date Certified: 28-NOV-2022 12:48



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: BUTCHER PEN CR @ CONFEDERATE PT ROAD

Collection Date/Time: 11/02/2022 11:15

Field ID: 20030082

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2367291	DEP SOP: NU-094-1	Color (true)	81		PCU	P421922	
	EPA 180.1 Rev. 2.0	Turbidity	5.3		NTU	P421855	
	EPA 300.0 Rev. 2.1	Chloride	360		mg Cl/L	P422462	
		Sulfate	64		mg SO4/L	P422466	
	SM 2320 B-2011	Total Alkalinity	101		mg CaCO3/L	P422256	
	SM 2540 C-2015	TDS	766		mg/L	P422532	
	SM 2540 D-2015	TSS	7	I	mg/L	P422507	
	SM 4500-F- C-2011	Fluoride	0.16		mg F/L	P422379	RPD
2367292	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P422277	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.99		mg N/L	P422047	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.020		mg N/L	P422064	
	EPA 365.1 Rev. 2.0	Total-P	0.23		mg P/L	P422112	
	SM 5310 B-2011	Organic Carbon	14		mg C/L	P422360	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Black CR South Fork @ CR218

Collection Date/Time: 11/02/2022 13:10

Field ID: 20030244

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2367289	DEP SOP: NU-094-1	Color (true)	140		PCU	P421922	
	EPA 180.1 Rev. 2.0	Turbidity	3.4		NTU	P421855	
	EPA 300.0 Rev. 2.1	Chloride	8.4		mg Cl/L	P422462	
		Sulfate	3.5		mg SO4/L	P422466	
	SM 2320 B-2011	Total Alkalinity	8.1		mg CaCO3/L	P422256	
	SM 2540 C-2015	TDS	60		mg/L	P422532	
	SM 2540 D-2015	TSS	3	I	mg/L	P422507	
	SM 4500-F- C-2011	Fluoride	0.062	I	mg F/L	P422379	RPD
2367290	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P422277	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44		mg N/L	P422287	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.037		mg N/L	P422064	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P422112	
	SM 5310 B-2011	Organic Carbon	11		mg C/L	P422360	
2367298	EPA 200.7 Rev. 4.4	Calcium	4.95		mg/L	P421909	
		Iron	450		ug/L	P421909	
		Magnesium	1.45		mg/L	P421909	
		Potassium	0.32	I	mg/L	P421909	
		Sodium	4.8		mg/L	P421909	
		Strontium	19.9		ug/L	P421909	
		Tin	3.0	U	ug/L	P421909	
		Titanium	9.7		ug/L	P421909	
	EPA 200.8 Rev. 5.4	Vanadium	2.0	U	ug/L	P421909	
		Zinc	5.0	U	ug/L	P421909	
		Aluminum	313		ug/L	P421909	
		Antimony	0.050	U	ug/L	P421909	
		Arsenic	0.44		ug/L	P421909	
		Barium	6.97		ug/L	P421909	
		Beryllium	0.025	I	ug/L	P421909	
		Boron	14.9		ug/L	P421909	
		Cadmium	0.020	U	ug/L	P421909	
		Chromium	0.44	I	ug/L	P421909	
		Cobalt	0.090		ug/L	P421909	
		Copper	0.40	U	ug/L	P421909	
		Lead	0.31	I	ug/L	P421909	
		Manganese	3.26		ug/L	P421909	
		Molybdenum	0.15	U	ug/L	P421909	
		Nickel	0.50	U	ug/L	P421909	
		Selenium	0.20	U	ug/L	P421909	
		Silver	0.010	U	ug/L	P421909	
		Thallium	0.10	U	ug/L	P421909	
	SM 2340 B-2011	Hardness	18.3		mg/L	P421909	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: FB

Collection Date/Time: 11/02/2022 13:15

Field ID: FB_11022022

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2367293	DEP SOP: NU-094-1	Color (true)	2.5	U	PCU	P421922	RPD
	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P421855	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P422648	
		Sulfate	0.20	U	mg SO4/L	P422651	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P422256	
	SM 2540 C-2015	TDS	15	U	mg/L	P422532	
	SM 2540 D-2015	TSS	2	U	mg/L	P422507	
	SM 4500-F- C-2011	Fluoride	0.025	U	mg F/L	P422379	
2367294	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P422277	RPD
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P422287	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P422064	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P422112	
	SM 5310 B-2011	Organic Carbon	0.50	U	mg C/L	P422360	
2367299	EPA 200.7 Rev. 4.4	Calcium	0.075	U	mg/L	P421909	RPD
		Iron	30	U	ug/L	P421909	
		Magnesium	0.040	U	mg/L	P421909	
		Potassium	0.30	U	mg/L	P421909	
		Sodium	0.50	U	mg/L	P421909	
		Strontium	2.0	U	ug/L	P421909	
		Tin	3.0	U	ug/L	P421909	
		Titanium	0.75	U	ug/L	P421909	
	EPA 200.8 Rev. 5.4	Vanadium	2.0	U	ug/L	P421909	
		Zinc	5.0	U	ug/L	P421909	
		Aluminum	5.0	U	ug/L	P421909	
		Antimony	0.050	U	ug/L	P421909	
		Arsenic	0.050	U	ug/L	P421909	
		Barium	0.20	U	ug/L	P421909	
		Beryllium	0.010	U	ug/L	P421909	
		Boron	2.0	U	ug/L	P421909	
		Cadmium	0.020	U	ug/L	P421909	
		Chromium	0.40	U	ug/L	P421909	
		Cobalt	0.020	U	ug/L	P421909	
		Copper	0.40	U	ug/L	P421909	
		Lead	0.20	U	ug/L	P421909	
		Manganese	0.10	U	ug/L	P421909	
		Molybdenum	0.15	U	ug/L	P421909	
		Nickel	0.50	U	ug/L	P421909	
		Selenium	0.20	U	ug/L	P421909	
		Silver	0.010	U	ug/L	P421909	
		Thallium	0.10	U	ug/L	P421909	
	SM 2340 B-2011	Hardness	0.35	U	mg/L	P421909	

Ref. Method and Comment:

SM 2540 D-2015: 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: P421922

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P421855

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P421909

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: P421909

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: P422462

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: P422466

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422648

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422651

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P422277

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P422047

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P422287

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P422064

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P422112

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

Reference Method: SM 2320 B-2011
Batch ID: P422256

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-2015
Batch ID: P422532

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P422507

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P422379

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P422360

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: P421922

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.9		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P421855

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	99.6		P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P421909

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	102		P	85 - 115
Iron	106		P	85 - 115
Magnesium	100		P	85 - 115
Potassium	104		P	85 - 115
Sodium	106		P	85 - 115
Strontium	108		P	85 - 115
Tin	99.9		P	85 - 115
Titanium	99.8		P	85 - 115
Vanadium	99.4		P	85 - 115
Zinc	95.9		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P421909

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.5		P	85 - 115
Antimony	102		P	85 - 115
Arsenic	102		P	85 - 115
Barium	103		P	85 - 115
Beryllium	96.2		P	85 - 115
Boron	104		P	85 - 115
Cadmium	98.7		P	85 - 115
Chromium	98.8		P	85 - 115
Cobalt	97.4		P	85 - 115
Copper	97.9		P	85 - 115
Lead	93.8		P	85 - 115
Manganese	100		P	85 - 115
Molybdenum	98.3		P	85 - 115
Nickel	98.2		P	85 - 115
Selenium	99.4		P	85 - 115
Silver	99.4		P	85 - 115
Thallium	96.8		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422462

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422466

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422648

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	95.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422651

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P422277

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	93.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P422047

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	92.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P422287

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P422064

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	108		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P422112

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	105		P	90 - 110

Reference Method: SM 2320 B-2011
Batch ID: P422256

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2540 C-2015
Batch ID: P422532

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

Reference Method: SM 2540 D-2015
Batch ID: P422507

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	94.8		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P422379

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	103		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P422360

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P421909

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2367365	Calcium	103		P	80 - 120
2367365	Iron	107	106	P/P	80 - 120
2367365	Magnesium	102		P	80 - 120
2367365	Potassium	105	103	P/P	80 - 120
2367365	Sodium	107	104	P/P	80 - 120
2367365	Strontium	108	106	P/P	80 - 120
2367365	Tin	102	99.7	P/P	80 - 120
2367365	Titanium	104	101	P/P	80 - 120
2367365	Vanadium	104	101	P/P	80 - 120
2367365	Zinc	98.8	96.3	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P421909

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2367365	Aluminum	103	102	P/P	80 - 120
2367365	Antimony	103	104	P/P	80 - 120
2367365	Arsenic	101	101	P/P	80 - 120
2367365	Barium	103	103	P/P	80 - 120
2367365	Beryllium	95.2	96.9	P/P	80 - 120
2367365	Boron	108	109	P/P	80 - 120
2367365	Cadmium	100	101	P/P	80 - 120
2367365	Chromium	99.1	99.5	P/P	80 - 120
2367365	Cobalt	96.5	96.6	P/P	80 - 120
2367365	Copper	95.9	95.7	P/P	80 - 120
2367365	Lead	93.9	93.3	P/P	80 - 120
2367365	Manganese	102	102	P/P	80 - 120
2367365	Molybdenum	99.7	99.7	P/P	80 - 120
2367365	Nickel	96.5	96.2	P/P	80 - 120
2367365	Selenium	97.9	99.5	P/P	80 - 120
2367365	Silver	100	100	P/P	80 - 120
2367365	Thallium	98.7	99.2	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P422462

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2367144	Chloride	102		P	90 - 110
2367195	Chloride	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P422466

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2367144	Sulfate	103		P	90 - 110
2367195	Sulfate	107		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P422648

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2367774	Chloride	92.7		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422648

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2367995	Chloride	95.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422651

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2367774	Sulfate	93.8		P	90 - 110
2367995	Sulfate	97.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P422277

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2367290	Ammonia-N	93.4	92.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P422047

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2367082	Kjeldahl Nitrogen	97.6	92.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P422287

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2367049	Kjeldahl Nitrogen	107	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P422064

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2367290	NO2NO3-N	107	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P422112

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2367292	Total-P	102	104	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P422379

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2367310	Fluoride	102	98.4	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P422360

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2367070	Organic Carbon	98.1	98.7	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P421922

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367309	Color (true)	0.145	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P421855

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367244	Turbidity	5.10	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P421909

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367365	Calcium	1.97	Spike	P	0 - 20
2367365	Iron	0.658	Spike	P	0 - 20
2367365	Magnesium	1.46	Spike	P	0 - 20
2367365	Potassium	1.70	Spike	P	0 - 20
2367365	Sodium	1.29	Spike	P	0 - 20
2367365	Strontium	1.23	Spike	P	0 - 20
2367365	Tin	2.58	Spike	P	0 - 20
2367365	Titanium	2.75	Spike	P	0 - 20
2367365	Vanadium	2.52	Spike	P	0 - 20
2367365	Zinc	2.57	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P421909

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367365	Aluminum	1.03	Spike	P	0 - 20
2367365	Antimony	1.02	Spike	P	0 - 20
2367365	Arsenic	0.310	Spike	P	0 - 20
2367365	Barium	0.161	Spike	P	0 - 20
2367365	Beryllium	1.70	Spike	P	0 - 20
2367365	Boron	0.642	Spike	P	0 - 20
2367365	Cadmium	0.705	Spike	P	0 - 20
2367365	Chromium	0.317	Spike	P	0 - 20
2367365	Cobalt	0.0746	Spike	P	0 - 20
2367365	Copper	0.128	Spike	P	0 - 20
2367365	Lead	0.614	Spike	P	0 - 20
2367365	Manganese	0.0296	Spike	P	0 - 20
2367365	Molybdenum	0.0139	Spike	P	0 - 20
2367365	Nickel	0.305	Spike	P	0 - 20
2367365	Selenium	1.63	Spike	P	0 - 20
2367365	Silver	0.245	Spike	P	0 - 20
2367365	Thallium	0.534	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422462

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367144	Chloride	0.249	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422466

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367144	Sulfate	0.0266	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422648

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367774	Chloride	0.383	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422651

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367774	Sulfate	0.654	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P422277

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367290	Ammonia-N	0.985	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P422047

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367082	Kjeldahl Nitrogen	4.16	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P422287

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367049	Kjeldahl Nitrogen	1.64	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P422064

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367290	NO2NO3-N	0.398	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P422112

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367292	Total-P	1.47	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P422256

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367355	Total Alkalinity	0.815	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2015
Batch ID: P422532

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2366364	TDS	1.02	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P422379

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367310	Fluoride	2.41	Spike	F	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P422360

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2367070	Organic Carbon	0.595	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: A115725

Included Lab Sample IDs: 2367289, 2367291, 2367293

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

Reference Method: DEP SOP: NU-094-1

Run ID: A115749

Included Lab Sample IDs: 2367289, 2367291, 2367293

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	107	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A115799

Included Lab Sample IDs: 2367298, 2367299

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	100	99.9	P/P	90 - 110
Antimony	99.9	100	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Barium	99.8	99.8	P/P	90 - 110
Barium	99.8	99.4	P/P	90 - 110
Beryllium	98.9	97.6	P/P	90 - 110
Beryllium	99.1	98.9	P/P	90 - 110
Boron	101	103	P/P	90 - 110
Boron	103	106	P/P	90 - 110
Cadmium	101	102	P/P	90 - 110
Cadmium	102	101	P/P	90 - 110
Chromium	96.5	98.4	P/P	90 - 110
Chromium	98.4	97.3	P/P	90 - 110
Cobalt	95.8	96.7	P/P	90 - 110
Cobalt	96.7	96.2	P/P	90 - 110
Copper	96.8	97.8	P/P	90 - 110
Copper	97.8	96.7	P/P	90 - 110
Lead	93.0	94.1	P/P	90 - 110
Lead	94.1	94.1	P/P	90 - 110
Manganese	101	101	P/P	90 - 110
Manganese	98.7	101	P/P	90 - 110
Molybdenum	99.5	99.5	P/P	90 - 110
Molybdenum	99.5	99.4	P/P	90 - 110
Nickel	97.2	97.7	P/P	90 - 110
Nickel	97.7	96.9	P/P	90 - 110
Selenium	101	101	P/P	90 - 110
Selenium	99.7	101	P/P	90 - 110
Silver	99.3	99.4	P/P	90 - 110
Silver	99.4	99.8	P/P	90 - 110
Thallium	96.9	99.4	P/P	90 - 110
Thallium	99.4	97.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A115805

Included Lab Sample IDs: 2367290, 2367292, 2367294

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	107	108	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A115819

Included Lab Sample IDs: 2367298, 2367299

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	102	P/P	90 - 110
Aluminum	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A115858

Included Lab Sample IDs: 2367290, 2367292

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.6	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A115859

Included Lab Sample IDs: 2367292

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.9	97.3	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A115885

Included Lab Sample IDs: 2367289, 2367291, 2367293

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.4	98.3	P/P	90 - 110
Total Alkalinity	98.3	95.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A115897

Included Lab Sample IDs: 2367294

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A115898

Included Lab Sample IDs: 2367290, 2367292, 2367294

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.0	98.4	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A115939

Included Lab Sample IDs: 2367289, 2367291, 2367293

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A115939

Included Lab Sample IDs: 2367289, 2367291, 2367293

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	101	P/P	90 - 110
Chloride	95.6	96.8	P/P	90 - 110
Sulfate	104	103	P/P	90 - 110
Sulfate	96.8	97.6	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A115948

Included Lab Sample IDs: 2367290, 2367292, 2367294

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

Reference Method: SM 4500-F- C-2011

Run ID: A115952

Included Lab Sample IDs: 2367289, 2367291, 2367293

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A115968

Included Lab Sample IDs: 2367290, 2367294

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	104	P/P	90 - 110
Kjeldahl Nitrogen	104	98.9	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A115992

Included Lab Sample IDs: 2367298, 2367299

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	102	P/P	90 - 110
Iron	105	104	P/P	90 - 110
Magnesium	104	103	P/P	90 - 110
Potassium	105	104	P/P	90 - 110
Sodium	104	103	P/P	90 - 110
Strontium	108	108	P/P	90 - 110
Tin	97.9	101	P/P	90 - 110
Titanium	102	102	P/P	90 - 110
Vanadium	101	102	P/P	90 - 110
Zinc	98.6	99.1	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		LCS	Precision SMP	MS
DEP SOP: NU-094-1	Color (true)	98.9				0.145	
EPA 180.1 Rev. 2.0	Turbidity	99.6				5.10	
EPA 200.7 Rev. 4.4	Calcium	102		103			1.97
	Iron	106		107	106		0.658
	Magnesium	100		102			1.46
	Potassium	104		105	103		1.70
	Sodium	106		107	104		1.29
	Strontium	108		108	106		1.23
	Tin	99.9		102	99.7		2.58
	Titanium	99.8		104	101		2.75
	Vanadium	99.4		104	101		2.52
	Zinc	95.9		98.8	96.3		2.57
EPA 200.8 Rev. 5.4	Aluminum	99.5		103	102		1.03
	Antimony	102		103	104		1.02
	Arsenic	102		101	101		0.310
	Barium	103		103	103		0.161
	Beryllium	96.2		95.2	96.9		1.70
	Boron	104		108	109		0.642
	Cadmium	98.7		100	101		0.705
	Chromium	98.8		99.1	99.5		0.317
	Cobalt	97.4		96.5	96.6		0.0746
	Copper	97.9		95.9	95.7		0.128
	Lead	93.8		93.9	93.3		0.614
	Manganese	100		102	102		0.0296
	Molybdenum	98.3		99.7	99.7		0.0139
	Nickel	98.2		96.5	96.2		0.305
	Selenium	99.4		97.9	99.5		1.63
	Silver	99.4		100	100		0.245
	Thallium	96.8		98.7	99.2		0.534
EPA 300.0 Rev. 2.1	Chloride	103		102	104	0.249	
	Chloride	95.5		92.7	95.4	0.383	
	Sulfate	104		103	107	0.0266	
	Sulfate	97.1		93.8	97.1	0.654	
EPA 350.1 Rev. 2.0	Ammonia-N	93.6		93.4	92.2		0.985
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	92.6		97.6	92.0		4.16
	Kjeldahl Nitrogen	102		107	105		1.64
EPA 353.2 Rev. 2.0	NO2NO3-N	108		107	107		0.398
EPA 365.1 Rev. 2.0	Total-P	105		102	104		1.47
SM 2320 B-2011	Total Alkalinity	96.2				0.815	
SM 2540 C-2015	TDS	96.7				1.02	
SM 2540 D-2015	TSS	94.8					
SM 4500-F- C-2011	Fluoride	103		102	98.4		2.41
SM 5310 B-2011	Organic Carbon	98.4		98.1	98.7		0.595

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2367289, 2367291, 2367293
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2367289, 2367291, 2367293
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2367298, 2367299
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2367298, 2367299

Reference Method Descriptions

Method	Description	Associated Samples
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2367289, 2367291, 2367293
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2367289, 2367291, 2367293
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2367290, 2367292, 2367294
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2367290, 2367292, 2367294
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2367290, 2367292, 2367294
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2367290, 2367292, 2367294
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2367289, 2367291, 2367293
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2367298, 2367299
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2367289, 2367291, 2367293
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2367289, 2367291, 2367293
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2367289, 2367291, 2367293
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2367290, 2367292, 2367294

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	11/03/2022			11/03/2022 15:17	Anna M. Plaviak	2367289
	11/03/2022			11/03/2022 15:18	Anna M. Plaviak	2367291
	11/03/2022			11/03/2022 15:19	Anna M. Plaviak	2367293
EPA 180.1 Rev. 2.0	11/03/2022			11/03/2022 14:10	Chandler E Cox	2367289
	11/03/2022			11/03/2022 14:11	Chandler E Cox	2367291
	11/03/2022			11/03/2022 14:13	Chandler E Cox	2367293
EPA 200.7 Rev. 4.4	11/03/2022	11/04/2022 12:40	George D Taylor	11/17/2022 16:28	Betina Topolski	2367299
	11/03/2022	11/04/2022 12:40	George D Taylor	11/17/2022 17:20	Betina Topolski	2367298
EPA 200.8 Rev. 5.4	11/03/2022	11/04/2022 12:40	George D Taylor	11/07/2022 19:13	Megan Whitefoot	2367299
	11/03/2022	11/04/2022 12:40	George D Taylor	11/07/2022 21:10	Megan Whitefoot	2367298
	11/03/2022	11/04/2022 12:40	George D Taylor	11/08/2022 13:17	Megan Whitefoot	2367299
	11/03/2022	11/04/2022 12:40	George D Taylor	11/08/2022 15:18	Megan Whitefoot	2367298
EPA 300.0 Rev. 2.1	11/03/2022			11/16/2022 10:19	Anna M. Plaviak	2367289
	11/03/2022			11/16/2022 10:34	Anna M. Plaviak	2367291
	11/03/2022			11/18/2022 16:08	Anna M. Plaviak	2367293
EPA 350.1 Rev. 2.0	11/03/2022			11/14/2022 14:01	Ping Hua	2367290
	11/03/2022			11/14/2022 14:05	Ping Hua	2367292
	11/03/2022			11/14/2022 14:08	Ping Hua	2367294
EPA 351.2 Rev. 2.0	11/03/2022	11/08/2022 11:47	Alexandra J Mattheus	11/10/2022 10:01	Alexandra J Mattheus	2367292
	11/03/2022	11/15/2022 12:41	Samantha L Bates	11/16/2022 17:58	Samantha L Bates	2367290
	11/03/2022	11/15/2022 12:41	Samantha L Bates	11/16/2022 18:03	Samantha L Bates	2367294
EPA 353.2 Rev. 2.0	11/03/2022			11/08/2022 11:32	Beverly Y. Sanders	2367290
	11/03/2022			11/08/2022 11:33	Beverly Y. Sanders	2367292
	11/03/2022			11/08/2022 11:34	Beverly Y. Sanders	2367294
EPA 365.1 Rev. 2.0	11/03/2022	11/09/2022 13:55	Simonne.V. Calhoun	11/10/2022 11:08	James L Waggeberby	2367292
	11/03/2022	11/09/2022 13:55	Simonne.V. Calhoun	11/10/2022 11:13	James L Waggeberby	2367290
	11/03/2022	11/09/2022 13:55	Simonne.V. Calhoun	11/14/2022 14:13	James L Waggeberby	2367294
SM 2320 B-2011	11/03/2022			11/10/2022 09:45	Adam P Silver	2367289
	11/03/2022			11/10/2022 09:54	Adam P Silver	2367293
	11/03/2022			11/10/2022 13:37	Adam P Silver	2367291
SM 2340 B-2011	11/03/2022			11/17/2022 16:28	Betina Topolski	2367299
	11/03/2022			11/17/2022 17:20	Betina Topolski	2367298
SM 2540 C-2015	11/03/2022			11/07/2022 15:45	Yijie Li	2367289, 2367291, 2367293
SM 2540 D-2015	11/03/2022			11/07/2022 15:45	Yijie Li	2367289, 2367291, 2367293
SM 4500-F- C-2011	11/03/2022			11/15/2022 20:46	Adam P Silver	2367289
	11/03/2022			11/15/2022 21:00	Adam P Silver	2367291
	11/03/2022			11/15/2022 21:10	Adam P Silver	2367293
SM 5310 B-2011	11/03/2022			11/15/2022 20:10	Khloe J Berg	2367292
	11/03/2022			11/15/2022 22:38	Khloe J Berg	2367290
	11/03/2022			11/15/2022 22:54	Khloe J Berg	2367294