

Chemical Analysis Report

NE-DIST-2022-08-25-02

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

Event Description: **Vilano Boat**
Request ID: **RQ-2022-07-25-16**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
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8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256
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Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 13-SEP-2022 13:45



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: St. Augustine Inlet SE of Vilano Bt.Rmp.

Collection Date/Time: 08/24/2022 10:45

Field ID: G5NE0587

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2352338	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P418702	
	SM 2320 B-2011	Total Alkalinity	120		mg CaCO3/L	P419032	
	SM 2540 D-2011	TSS	5	IA	mg/L	P419152	
	SM 4500-F- C-2011	Fluoride	1.2		mg F/L	P418918	
2352339	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P419067	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.25	I	mg N/L	P418821	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P418993	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P418984	
	SM 5310 B-2011	Organic Carbon	2.0	U	mg C/L	P419164	
2352358	EPA 200.7 Rev. 4.4	Calcium	418		mg/L	P418831	
		Iron	120	U	ug/L	P418831	
		Magnesium	1.37E+03		mg/L	P418831	
		Strontium	7.99E+03		ug/L	P418831	
		Tin	300	U	ug/L	P418831	
		Titanium	3.0	U	ug/L	P418831	
		Vanadium	8.0	U	ug/L	P418831	
		Zinc	20	U	ug/L	P418831	
	EPA 200.8 Rev. 5.4	Aluminum	82		ug/L	P418831	
		Antimony	0.27	I	ug/L	P418831	
		Arsenic	2.40		ug/L	P418831	
		Beryllium	0.040	U	ug/L	P418831	
		Cadmium	0.080	U	ug/L	P418831	
		Chromium	4.0	U	ug/L	P418831	
		Cobalt	0.21	I	ug/L	P418831	
		Copper	1.6	U	ug/L	P418831	
		Lead	2.0	U	ug/L	P418831	
		Manganese	6.6		ug/L	P418831	
		Molybdenum	13.4		ug/L	P418831	
		Nickel	2.0	U	ug/L	P418831	
		Selenium	2.0	U	ug/L	P418831	
		Silver	0.040	U	ug/L	P418831	
		Thallium	1.0	U	ug/L	P418831	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: SALT RUN OFFSHORE FROM LIGHTHOUSE

Collection Date/Time: 08/24/2022 11:15

Field ID: 27010138

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2352340	EPA 180.1 Rev. 2.0	Turbidity	8.4		NTU	P418702	
	SM 2320 B-2011	Total Alkalinity	127		mg CaCO3/L	P419032	
	SM 2540 D-2011	TSS	18		mg/L	P419152	
	SM 4500-F- C-2011	Fluoride	1.2		mg F/L	P418918	
2352343	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P419067	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.47		mg N/L	P418821	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P418993	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P418984	
	SM 5310 B-2011	Organic Carbon	3.2	I	mg C/L	P419164	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: XIMANIES CR ~ 1 MI UPSTREAM OF MOUTH

Collection Date/Time: 08/24/2022 09:45

Field ID: 27010968

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2352341	EPA 180.1 Rev. 2.0	Turbidity	11		NTU	P418702	
	SM 2320 B-2011	Total Alkalinity	119		mg CaCO3/L	P419032	
	SM 2540 D-2011	TSS	17		mg/L	P419152	
	SM 4500-F- C-2011	Fluoride	1.1		mg F/L	P418918	
2352344	EPA 350.1 Rev. 2.0	Ammonia-N	0.087		mg N/L	P419067	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.81		mg N/L	P418819	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.013		mg N/L	P418993	
	EPA 365.1 Rev. 2.0	Total-P	0.072		mg P/L	P418984	
	SM 5310 B-2011	Organic Carbon	4.5		mg C/L	P419164	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

**Sample Location: SOMBRERO CREEK @ 1ST NORTH BEND
ABOVE THE ICW**

Collection Date/Time: 08/24/2022 10:05

Field ID: 27010010

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2352342	EPA 180.1 Rev. 2.0	Turbidity	14		NTU	P418702	
	SM 2320 B-2011	Total Alkalinity	122		mg CaCO3/L	P419032	
	SM 2540 D-2011	TSS	30		mg/L	P419152	
	SM 4500-F- C-2011	Fluoride	1.1		mg F/L	P418918	
2352345	EPA 350.1 Rev. 2.0	Ammonia-N	0.10		mg N/L	P419067	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.80		mg N/L	P418819	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.01	I	mg N/L	P418993	
	EPA 365.1 Rev. 2.0	Total-P	0.093		mg P/L	P418985	
	SM 5310 B-2011	Organic Carbon	5.4		mg C/L	P419164	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P418702

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P418831

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	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: P418831

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: P419067

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418819

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418821

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: P418993

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418984

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418985

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

Reference Method: SM 2320 B-2011
Batch ID: P419032

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

Reference Method: SM 2540 D-2011
Batch ID: P419152

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P418918

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P419164

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: P418702

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P418831

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	100		P	85 - 115
Iron	106		P	85 - 115
Magnesium	99.7		P	85 - 115
Strontium	104		P	85 - 115
Tin	107		P	85 - 115
Titanium	101		P	85 - 115
Vanadium	100		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P418831

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	101		P	85 - 115
Antimony	102		P	85 - 115
Arsenic	101		P	85 - 115
Beryllium	87.9		P	85 - 115
Cadmium	99.0		P	85 - 115
Chromium	100		P	85 - 115
Cobalt	98.9		P	85 - 115
Copper	98.2		P	85 - 115
Lead	96.6		P	85 - 115
Manganese	99.7		P	85 - 115
Molybdenum	99.4		P	85 - 115
Nickel	99.9		P	85 - 115
Selenium	99.3		P	85 - 115
Silver	99.0		P	85 - 115
Thallium	104		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P419067

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418819

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418821

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418993

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	105		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418984

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418985

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

Reference Method: SM 2320 B-2011
Batch ID: P419032

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	94 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P418918

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.0		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P419164

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P418831

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2351695	Iron	102	103	P/P	70 - 130
2351695	Tin	97.0	92.7	P/P	70 - 130
2351695	Titanium	103	105	P/P	70 - 130
2351695	Vanadium	98.2	101	P/P	70 - 130
2351695	Zinc	96.9	97.4	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P418831

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2351695	Aluminum	116	116	P/P	70 - 130
2351695	Antimony	112	110	P/P	70 - 130
2351695	Arsenic	117	116	P/P	70 - 130
2351695	Beryllium	105	106	P/P	70 - 130
2351695	Cadmium	105	104	P/P	70 - 130
2351695	Chromium	99.2	98.7	P/P	70 - 130
2351695	Cobalt	112	111	P/P	70 - 130
2351695	Copper	118	115	P/P	70 - 130
2351695	Lead	105	104	P/P	70 - 130
2351695	Manganese	102	101	P/P	70 - 130
2351695	Molybdenum	116	116	P/P	70 - 130
2351695	Nickel	113	110	P/P	70 - 130
2351695	Selenium	115	112	P/P	70 - 130
2351695	Silver	96.0	93.3	P/P	70 - 130
2351695	Thallium	111	111	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P419067

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352000	Ammonia-N	96.2	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418819

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2351887	Kjeldahl Nitrogen	108	99.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418821

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352339	Kjeldahl Nitrogen	101	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418993

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352301	NO2NO3-N	105	106	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418984

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352301	Total-P	99.8	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418985

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352345	Total-P	97.0	96.8	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P418918

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352340	Fluoride	93.7	94.4	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P419164

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352545	Organic Carbon	91.6	88.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P418702

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352318	Turbidity	8.61	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P418831

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2351695	Calcium	1.88	Spike	P	0 - 20
2351695	Iron	0.702	Spike	P	0 - 20
2351695	Magnesium	1.84	Spike	P	0 - 20
2351695	Strontium	0.104	Spike	P	0 - 20
2351695	Tin	4.19	Spike	P	0 - 20
2351695	Titanium	2.09	Spike	P	0 - 20
2351695	Vanadium	2.35	Spike	P	0 - 20
2351695	Zinc	0.579	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P418831

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2351695	Aluminum	0.0208	Spike	P	0 - 20
2351695	Antimony	1.64	Spike	P	0 - 20
2351695	Arsenic	1.42	Spike	P	0 - 20
2351695	Beryllium	1.22	Spike	P	0 - 20
2351695	Cadmium	1.23	Spike	P	0 - 20
2351695	Chromium	0.549	Spike	P	0 - 20
2351695	Cobalt	1.57	Spike	P	0 - 20
2351695	Copper	2.74	Spike	P	0 - 20
2351695	Lead	0.660	Spike	P	0 - 20
2351695	Manganese	0.758	Spike	P	0 - 20
2351695	Molybdenum	0.460	Spike	P	0 - 20
2351695	Nickel	2.34	Spike	P	0 - 20
2351695	Selenium	2.85	Spike	P	0 - 20
2351695	Silver	2.87	Spike	P	0 - 20
2351695	Thallium	0.604	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P419067

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352000	Ammonia-N	1.62	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P418819

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2351887	Kjeldahl Nitrogen	6.99	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418821

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352339	Kjeldahl Nitrogen	1.56	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418993

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352301	NO2NO3-N	0.788	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418984

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352301	Total-P	1.27	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418985

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352345	Total-P	0.116	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P419032

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352507	Total Alkalinity	1.94	Sample	P	0 - 3.8

Reference Method: SM 4500-F- C-2011
Batch ID: P418918

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352340	Fluoride	0.473	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P419164

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352545	Organic Carbon	2.83	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: A114350

Included Lab Sample IDs: 2352338, 2352340, 2352341, 2352342

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

Reference Method: SM 4500-F- C-2011

Run ID: A114445

Included Lab Sample IDs: 2352338, 2352340, 2352341, 2352342

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A114457

Included Lab Sample IDs: 2352339, 2352343

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	105	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A114463

Included Lab Sample IDs: 2352358

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	104	P/P	90 - 110
Antimony	99.8	104	P/P	90 - 110
Arsenic	103	106	P/P	90 - 110
Beryllium	93.1	98.8	P/P	90 - 110
Cadmium	102	104	P/P	90 - 110
Cobalt	104	110	P/P	90 - 110
Lead	93.4	93.5	P/P	90 - 110
Manganese	103	106	P/P	90 - 110
Molybdenum	98.5	99.2	P/P	90 - 110
Nickel	104	109	P/P	90 - 110
Selenium	100	99.6	P/P	90 - 110
Silver	97.9	96.9	P/P	90 - 110
Thallium	104	104	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A114465

Included Lab Sample IDs: 2352358

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A114469

Included Lab Sample IDs: 2352344, 2352345

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A114483

Included Lab Sample IDs: 2352339, 2352343, 2352344, 2352345

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	105	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A114506

Included Lab Sample IDs: 2352338, 2352340, 2352341, 2352342

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	105	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A114517

Included Lab Sample IDs: 2352339, 2352343, 2352344, 2352345

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	96.9	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A114523

Included Lab Sample IDs: 2352339, 2352343, 2352344, 2352345

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.0	99.8	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A114528

Included Lab Sample IDs: 2352358

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	102	P/P	90 - 110
Iron	101	100	P/P	90 - 110
Magnesium	101	100	P/P	90 - 110
Tin	95.3	101	P/P	90 - 110
Titanium	91.2	99.0	P/P	90 - 110
Vanadium	93.0	99.5	P/P	90 - 110
Zinc	96.2	103	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A114529

Included Lab Sample IDs: 2352358

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A114530

Included Lab Sample IDs: 2352358

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	102	105	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-2011

Run ID: A114556

Included Lab Sample IDs: 2352339, 2352343, 2352344, 2352345

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	90.7	94.5	P/P	90 - 110
Organic Carbon	94.5	94.3	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	MS
EPA 180.1 Rev. 2.0	Turbidity	95.8			8.61	
EPA 200.7 Rev. 4.4	Calcium	100				1.88
	Iron	106	102	103		0.702
	Magnesium	99.7				1.84
	Strontium	104				0.104
	Tin	107	97.0	92.7		4.19
	Titanium	101	103	105		2.09
	Vanadium	100	98.2	101		2.35
	Zinc	103	96.9	97.4		0.579
EPA 200.8 Rev. 5.4	Aluminum	101	116	116		0.0208
	Antimony	102	112	110		1.64
	Arsenic	101	117	116		1.42
	Beryllium	87.9	105	106		1.22
	Cadmium	99.0	105	104		1.23
	Chromium	100	99.2	98.7		0.549
	Cobalt	98.9	112	111		1.57
	Copper	98.2	118	115		2.74
	Lead	96.6	105	104		0.660
	Manganese	99.7	102	101		0.758
	Molybdenum	99.4	116	116		0.460
	Nickel	99.9	113	110		2.34
	Selenium	99.3	115	112		2.85
	Silver	99.0	96.0	93.3		2.87
	Thallium	104	111	111		0.604
EPA 350.1 Rev. 2.0	Ammonia-N	95.8	96.2	98.0		1.62
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	108	99.1		6.99
	Kjeldahl Nitrogen	107	101	98.8		1.56
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	105	105	106		0.788
EPA 365.1 Rev. 2.0	Total-P	103	99.8	98.4		1.27
	Total-P	104	97.0	96.8		0.116
SM 2320 B-2011	Total Alkalinity	101			1.94	
SM 4500-F- C-2011	Fluoride	99.0	93.7	94.4		0.473
SM 5310 B-2011	Organic Carbon	97.2	91.6	88.0		2.83

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2352338, 2352340, 2352341, 2352342
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2352358
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2352358
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2352339, 2352343, 2352344, 2352345
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2352339, 2352343, 2352344, 2352345
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2352339, 2352343, 2352344, 2352345
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2352339, 2352343, 2352344, 2352345
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2352338, 2352340, 2352341, 2352342
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2352338, 2352340, 2352341, 2352342
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2352338, 2352340, 2352341, 2352342
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2352339, 2352343, 2352344, 2352345

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	08/25/2022			08/25/2022 14:15	Chandler E Cox	2352338
	08/25/2022			08/25/2022 14:17	Chandler E Cox	2352340
	08/25/2022			08/25/2022 14:18	Chandler E Cox	2352341
	08/25/2022			08/25/2022 14:19	Chandler E Cox	2352342
EPA 200.7 Rev. 4.4	08/25/2022	08/30/2022 11:10	Megan Whitefoot	09/02/2022 19:35	McKinley C Carter	2352358
	08/25/2022	08/30/2022 11:10	Megan Whitefoot	09/02/2022 19:43	McKinley C Carter	2352358
	08/25/2022	08/30/2022 11:10	Megan Whitefoot	09/03/2022 12:50	Alexander Thompson	2352358
EPA 200.8 Rev. 5.4	08/25/2022	08/30/2022 11:10	Megan Whitefoot	08/31/2022 18:24	Alexander Thompson	2352358
	08/25/2022	08/30/2022 11:10	Megan Whitefoot	08/31/2022 18:42	Megan Whitefoot	2352358
	08/25/2022	08/30/2022 11:10	Megan Whitefoot	08/31/2022 21:06	Megan Whitefoot	2352358
	08/25/2022	08/30/2022 11:10	Megan Whitefoot	09/03/2022 14:29	Emily M Philpot	2352358
	08/25/2022			09/02/2022 11:23	Ping Hua	2352339
EPA 350.1 Rev. 2.0	08/25/2022			09/02/2022 11:24	Ping Hua	2352343
	08/25/2022			09/02/2022 11:26	Ping Hua	2352344
	08/25/2022			09/02/2022 11:27	Ping Hua	2352345
	08/25/2022	08/30/2022 14:31	Samantha L Bates	08/31/2022 12:52	Alexandra J Mattheus	2352339
EPA 351.2 Rev. 2.0	08/25/2022	08/30/2022 14:31	Samantha L Bates	08/31/2022 12:57	Alexandra J Mattheus	2352343
	08/25/2022	08/30/2022 14:31	Samantha L Bates	08/31/2022 16:38	Alexandra J Mattheus	2352344
	08/25/2022	08/30/2022 14:31	Samantha L Bates	08/31/2022 16:39	Alexandra J Mattheus	2352345
	08/25/2022			09/01/2022 11:58	Judith K. Clark	2352339
EPA 353.2 Rev. 2.0	08/25/2022			09/01/2022 11:59	Judith K. Clark	2352343
	08/25/2022			09/01/2022 12:00	Judith K. Clark	2352344
	08/25/2022			09/01/2022 12:02	Judith K. Clark	2352345
	08/25/2022	09/01/2022 15:55	Simonne.V. Calhoun	09/02/2022 14:09	James L Waggeberby	2352339
EPA 365.1 Rev. 2.0	08/25/2022	09/01/2022 15:55	Simonne.V. Calhoun	09/02/2022 14:10	James L Waggeberby	2352343
	08/25/2022	09/01/2022 15:55	Simonne.V. Calhoun	09/02/2022 14:11	James L Waggeberby	2352344
	08/25/2022	09/01/2022 15:55	Simonne.V. Calhoun	09/02/2022 14:13	James L Waggeberby	2352345
	08/25/2022			09/01/2022 19:31	Dale L. Simmons	2352338
SM 2320 B-2011	08/25/2022			09/01/2022 19:42	Dale L. Simmons	2352340
	08/25/2022			09/01/2022 19:51	Dale L. Simmons	2352341
	08/25/2022			09/01/2022 20:02	Dale L. Simmons	2352342
	08/25/2022			08/29/2022 16:08	Yijie Li	2352338, 2352340, 2352341, 2352342
SM 2540 D-2011	08/25/2022			08/30/2022 20:17	Dale L. Simmons	2352340
SM 4500-F- C-2011	08/25/2022			08/30/2022 20:41	Dale L. Simmons	2352338
	08/25/2022			08/30/2022 20:47	Dale L. Simmons	2352341
	08/25/2022			08/30/2022 20:52	Dale L. Simmons	2352342
	08/25/2022			09/02/2022 21:11	Khloe J Berg	2352339
SM 5310 B-2011	08/25/2022			09/02/2022 21:26	Khloe J Berg	2352343
	08/25/2022			09/02/2022 22:46	Khloe J Berg	2352344
	08/25/2022			09/02/2022 23:03	Khloe J Berg	2352345