Chemical Analysis Report

NE-DIST-2022-01-20-02

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

Event Description: **Vilano Boat**
Request ID: **RQ-2022-01-17-34**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
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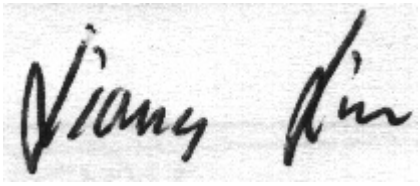
Certified by: Liang Lin, Environmental Administrator

Date Certified: 17-FEB-2022 09:45



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: Sombrero Creek @ 1st North Bend Above the ICW **Collection Date/Time: 01/19/2022 10:50**

Field ID: 27010010 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2300725	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P408768	
	SM 2320 B-2011	Total Alkalinity	120		mg CaCO3/L	P408902	
	SM 2540 D-2011	TSS	5	I	mg/L	P409315	
	SM 4500 F-C-2011	Fluoride	1.2		mg F/L	P408905	
2300729	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P409351	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.24	I	mg N/L	P409066	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P408860	
	EPA 365.1 Rev. 2.0	Total-P	0.030		mg P/L	P408938	
	SM 5310 B-2011	Organic Carbon	2.5	J	mg C/L	P409916	CCV
2300733	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.015		mg P/L	P408742	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 5310 B-2011: Refer to the Lab Analysis Report for an explanation of QC Codes.

Sample Location: Ximanies CR ~ 1mi Upstream of Mouth **Collection Date/Time: 01/19/2022 11:25**

Field ID: 27010968 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2300726	EPA 180.1 Rev. 2.0	Turbidity	3.3		NTU	P408769	
	SM 2320 B-2011	Total Alkalinity	122		mg CaCO3/L	P408902	
	SM 2540 D-2011	TSS	5	I	mg/L	P409315	
	SM 4500 F-C-2011	Fluoride	1.2		mg F/L	P408905	
2300730	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P409351	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29	I	mg N/L	P409066	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P408860	
	EPA 365.1 Rev. 2.0	Total-P	0.036		mg P/L	P408938	
	SM 5310 B-2011	Organic Carbon	2.8		mg C/L	P409300	
2300734	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.016		mg P/L	P408742	

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: Salt Run Offshore From Lighthouse **Collection Date/Time: 01/19/2022 12:05**

Field ID: 27010138 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2300727	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P408769	
	SM 2320 B-2011	Total Alkalinity	128		mg CaCO3/L	P408902	
	SM 2540 D-2011	TSS	9	I	mg/L	P409315	
	SM 4500 F-C-2011	Fluoride	1.2		mg F/L	P408905	
2300731	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P409351	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28	I	mg N/L	P409066	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.015		mg N/L	P408860	
	EPA 365.1 Rev. 2.0	Total-P	0.050		mg P/L	P408938	
	SM 5310 B-2011	Organic Carbon	2.6		mg C/L	P409300	
2300735	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.031		mg P/L	P408742	

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: St. Augustine Inlet SE of Vilano Bt. Rmp. **Collection Date/Time: 01/19/2022 12:30**

Field ID: G5NE0587 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2300728	EPA 180.1 Rev. 2.0	Turbidity	1.9	A	NTU	P408769	
	SM 2320 B-2011	Total Alkalinity	117	A	mg CaCO3/L	P408902	
	SM 2540 D-2011	TSS	7	I	mg/L	P409315	
	SM 4500 F-C-2011	Fluoride	1.2		mg F/L	P408905	
2300732	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P409351	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.24	I	mg N/L	P409069	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P408860	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P408938	
	SM 5310 B-2011	Organic Carbon	1.8	I	mg C/L	P409300	
2300736	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P408742	
2300753	EPA 200.7 Rev. 4.4	Calcium	369		mg/L	P408834	
		Iron	120	U	ug/L	P408834	
		Magnesium	1.19E+03		mg/L	P408834	
		Strontium	7.42E+03		ug/L	P408834	
		Tin	150	U	ug/L	P408834	
		Vanadium	8.0	U	ug/L	P408834	
		Zinc	20	U	ug/L	P408834	
	EPA 200.8 Rev. 5.4	Aluminum	75	I	ug/L	P408834	
		Antimony	0.20	U	ug/L	P408834	
		Arsenic	1.98		ug/L	P408834	
		Beryllium	0.040	U	ug/L	P408834	
		Cadmium	0.080	U	ug/L	P408834	
		Chromium	1.6	U	ug/L	P408834	
		Cobalt	0.080	U	ug/L	P408834	
		Copper	1.6	U	ug/L	P408834	
		Lead	2.0	U	ug/L	P408834	
		Manganese	3.2		ug/L	P408834	
		Molybdenum	12.3		ug/L	P408834	
		Nickel	2.0	U	ug/L	P408834	
		Selenium	0.80	U	ug/L	P408834	
		Silver	0.040	U	ug/L	P408834	

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.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P408768

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P408769

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P408834

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
Vanadium	2.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P408834

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P409351

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409066

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409069

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P408860

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P408938

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P408742

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

Reference Method: SM 2320 B-2011
Batch ID: P408902

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

Reference Method: SM 2540 D-2011
Batch ID: P409315

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P408905

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P409300

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

Reference Method: SM 5310 B-2011
Batch ID: P409916

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P408834

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	102		P	85 - 115
Iron	109		P	85 - 115
Magnesium	102		P	85 - 115
Strontium	106		P	85 - 115
Tin	107		P	85 - 115
Vanadium	106		P	85 - 115
Zinc	106		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P408834

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	101		P	85 - 115
Beryllium	97.1		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	102		P	85 - 115
Cobalt	103		P	85 - 115
Copper	101		P	85 - 115
Lead	100		P	85 - 115
Manganese	100		P	85 - 115
Molybdenum	102		P	85 - 115
Nickel	102		P	85 - 115
Selenium	98.8		P	85 - 115
Silver	105		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P409351

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409066

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409069

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P408860

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P408938

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P408742

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

Reference Method: SM 2320 B-2011
Batch ID: P408902

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.2		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P408905

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.5		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P409300

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.8		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P409916

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.1		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P408834

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2299892	Iron	104	107	P/P	70 - 130
2299892	Tin	89.2	84.4	P/P	70 - 130
2299892	Vanadium	112	109	P/P	70 - 130
2299892	Zinc	103	102	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P408834

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2299892	Aluminum	96.0	108	P/P	70 - 130
2299892	Antimony	96.8	89.4	P/P	70 - 130
2299892	Arsenic	104	95.7	P/P	70 - 130
2299892	Beryllium	102	94.1	P/P	70 - 130
2299892	Cadmium	91.1	84.2	P/P	70 - 130
2299892	Chromium	95.6	88.3	P/P	70 - 130
2299892	Cobalt	107	97.5	P/P	70 - 130
2299892	Copper	98.4	91.4	P/P	70 - 130
2299892	Lead	98.9	89.6	P/P	70 - 130
2299892	Manganese	90.0	80.0	P/P	70 - 130
2299892	Molybdenum	104	94.5	P/P	70 - 130
2299892	Nickel	104	96.5	P/P	70 - 130
2299892	Selenium	97.5	88.4	P/P	70 - 130
2299892	Silver	88.7	81.3	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P409351

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2300729	Ammonia-N	104	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409066

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2300729	Kjeldahl Nitrogen	99.5	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409069

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2300732	Kjeldahl Nitrogen	94.2	90.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P408860

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2300112	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P408938

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P408938

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2300731	Total-P	95.5	95.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P408742

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2300734	O-Phosphate-P	98.8	100	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P408905

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2300728	Fluoride	96.9	97.6	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P409300

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2300730	Organic Carbon	90.0	90.4	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P409916

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2302142	Organic Carbon	89.8	90.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P408768

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2300659	Turbidity	0.366	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P408769

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2300728	Turbidity	4.26	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P408834

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2299892	Calcium	4.16	Spike	P	0 - 20
2299892	Iron	2.74	Spike	P	0 - 20
2299892	Magnesium	1.49	Spike	P	0 - 20
2299892	Strontium	3.81	Spike	P	0 - 20
2299892	Tin	5.56	Spike	P	0 - 20
2299892	Vanadium	3.00	Spike	P	0 - 20
2299892	Zinc	0.885	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P408834

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2299892	Aluminum	11.0	Spike	P	0 - 20
2299892	Antimony	7.93	Spike	P	0 - 20
2299892	Arsenic	8.22	Spike	P	0 - 20
2299892	Beryllium	7.99	Spike	P	0 - 20
2299892	Cadmium	7.98	Spike	P	0 - 20
2299892	Chromium	7.95	Spike	P	0 - 20
2299892	Cobalt	9.10	Spike	P	0 - 20
2299892	Copper	7.44	Spike	P	0 - 20
2299892	Lead	9.78	Spike	P	0 - 20
2299892	Manganese	8.24	Spike	P	0 - 20
2299892	Molybdenum	8.15	Spike	P	0 - 20
2299892	Nickel	7.53	Spike	P	0 - 20
2299892	Selenium	9.69	Spike	P	0 - 20
2299892	Silver	8.75	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P409351

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2300729	Ammonia-N	0.168	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409066

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2300729	Kjeldahl Nitrogen	1.54	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409069

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2300732	Kjeldahl Nitrogen	3.61	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P408860

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2300112	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P408938

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2300731	Total-P	0.248	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P408742

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2300734	O-Phosphate-P	1.04	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P408902

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2300728	Total Alkalinity	0.0105	Sample	P	0 - 5.2

Reference Method: SM 4500 F-C-2011
Batch ID: P408905

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2300728	Fluoride	0.487	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P409300

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2300730	Organic Carbon	0.463	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 5310 B-2011
Batch ID: P409916

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2302142	Organic Carbon	0.953	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A109950
Included Lab Sample IDs: 2300733, 2300734, 2300735, 2300736

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A109963
Included Lab Sample IDs: 2300725, 2300726, 2300727, 2300728

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.0	98.5	P/P	95 - 105
Turbidity	98.5	98.5	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A110002
Included Lab Sample IDs: 2300729, 2300730, 2300731, 2300732

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

Reference Method: SM 2320 B-2011
Run ID: A110022
Included Lab Sample IDs: 2300725, 2300726, 2300727, 2300728

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.9	98.2	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A110022
Included Lab Sample IDs: 2300725, 2300726, 2300727, 2300728

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	103	104	P/P	90 - 110
Fluoride	103	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A110039
Included Lab Sample IDs: 2300753

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	100	103	P/P	90 - 110
Antimony	99.4	102	P/P	90 - 110
Arsenic	101	102	P/P	90 - 110
Beryllium	104	109	P/P	90 - 110
Cadmium	97.6	98.5	P/P	90 - 110
Chromium	98.3	101	P/P	90 - 110
Cobalt	103	105	P/P	90 - 110
Copper	102	104	P/P	90 - 110
Lead	94.7	93.5	P/P	90 - 110
Manganese	99.3	102	P/P	90 - 110
Molybdenum	97.8	98.1	P/P	90 - 110
Nickel	104	106	P/P	90 - 110
Selenium	99.0	101	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A110039
Included Lab Sample IDs: 2300753

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A110045
Included Lab Sample IDs: 2300753

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	98.4	96.5	P/P	90 - 110
Iron	99.9	97.8	P/P	90 - 110
Magnesium	99.2	96.7	P/P	90 - 110
Strontium	104	105	P/P	90 - 110
Tin	102	103	P/P	90 - 110
Vanadium	102	102	P/P	90 - 110
Zinc	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A110109
Included Lab Sample IDs: 2300729, 2300730, 2300731, 2300732

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	104	99.5	P/P	90 - 110
Total-P	99.5	99.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A110137
Included Lab Sample IDs: 2300732

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A110152
Included Lab Sample IDs: 2300729, 2300730, 2300731

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	96.9	P/P	90 - 110
Kjeldahl Nitrogen	101	101	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A110168
Included Lab Sample IDs: 2300730, 2300731, 2300732

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.4	95.4	P/P	90 - 110
Organic Carbon	95.6	90.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A110182
Included Lab Sample IDs: 2300729, 2300730, 2300731, 2300732

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A110182
Included Lab Sample IDs: 2300729, 2300730, 2300731, 2300732

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.6	100	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A110436
Included Lab Sample IDs: 2300729

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.4	89.4*	P/F	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					0.366	
	Turbidity					4.26	
EPA 200.7 Rev. 4.4	Calcium	102					4.16
	Iron	109	104	107			2.74
	Magnesium	102					1.49
	Strontium	106					3.81
	Tin	107	89.2	84.4			5.56
	Vanadium	106	112	109			3.00
	Zinc	106	103	102			0.885
EPA 200.8 Rev. 5.4	Aluminum	102	96.0	108			11.0
	Antimony	101	96.8	89.4			7.93
	Arsenic	101	104	95.7			8.22
	Beryllium	97.1	102	94.1			7.99
	Cadmium	102	91.1	84.2			7.98
	Chromium	102	95.6	88.3			7.95
	Cobalt	103	107	97.5			9.10
	Copper	101	98.4	91.4			7.44
	Lead	100	98.9	89.6			9.78
	Manganese	100	90.0	80.0			8.24
	Molybdenum	102	104	94.5			8.15
	Nickel	102	104	96.5			7.53
	Selenium	98.8	97.5	88.4			9.69
	Silver	105	88.7	81.3			8.75
EPA 350.1 Rev. 2.0	Ammonia-N	99.4	104	104			0.168
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	94.0	99.5	97.8			1.54
	Kjeldahl Nitrogen	100	94.2	90.5			3.61
EPA 353.2 Rev. 2.0	NO2NO3-N	104	104	104			0.0
EPA 365.1 Rev. 2.0	Total-P	105	95.5	95.2			0.248
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	98.8	100			1.04
SM 2320 B-2011	Total Alkalinity	98.2				0.0105	
SM 4500 F-C-2011	Fluoride	99.5	96.9	97.6			0.487
SM 5310 B-2011	Organic Carbon	93.8	90.0	90.4			0.463
	Organic Carbon	95.1	89.8	90.8			0.953

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2300725, 2300726, 2300727, 2300728
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2300753
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2300753
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2300729, 2300730, 2300731, 2300732
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2300729, 2300730, 2300731, 2300732
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2300729, 2300730, 2300731, 2300732
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2300729, 2300730, 2300731, 2300732
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2300733, 2300734, 2300735, 2300736
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2300725, 2300726, 2300727, 2300728
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2300725, 2300726, 2300727, 2300728
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2300725, 2300726, 2300727, 2300728
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2300729, 2300730, 2300731, 2300732

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	01/20/2022			01/20/2022 17:34	Sarah A Nixon	2300725, 2300726, 2300727, 2300728
EPA 200.7 Rev. 4.4	01/20/2022	01/24/2022 09:56	Emily M Philpot	01/25/2022 22:57	Josef B Mick	2300753
	01/20/2022	01/24/2022 09:56	Emily M Philpot	01/25/2022 23:05	Josef B Mick	2300753
EPA 200.8 Rev. 5.4	01/20/2022	01/24/2022 09:56	Emily M Philpot	01/25/2022 20:27	McKinley C Carter	2300753
	01/20/2022	01/24/2022 09:56	Emily M Philpot	01/25/2022 22:40	McKinley C Carter	2300753
EPA 350.1 Rev. 2.0	01/20/2022			02/02/2022 14:36	Ping Hua	2300729
	01/20/2022			02/02/2022 14:40	Ping Hua	2300730
	01/20/2022			02/02/2022 14:41	Ping Hua	2300731
	01/20/2022			02/02/2022 14:42	Ping Hua	2300732
EPA 351.2 Rev. 2.0	01/20/2022	01/28/2022 11:05	Samantha L Bates	02/01/2022 14:08	Virginia P. Brown	2300729
	01/20/2022	01/28/2022 11:05	Samantha L Bates	02/01/2022 14:13	Virginia P. Brown	2300730
	01/20/2022	01/28/2022 11:05	Samantha L Bates	02/01/2022 14:18	Virginia P. Brown	2300731
	01/20/2022	01/28/2022 12:21	Samantha L Bates	01/31/2022 11:58	Alexandra J Mattheus	2300732
EPA 353.2 Rev. 2.0	01/20/2022			01/24/2022 10:42	Beverly Y. Sanders	2300729
	01/20/2022			01/24/2022 10:43	Beverly Y. Sanders	2300730
	01/20/2022			01/24/2022 10:44	Beverly Y. Sanders	2300731
	01/20/2022			01/24/2022 10:45	Beverly Y. Sanders	2300732
EPA 365.1 Rev. 2.0	01/20/2022	01/26/2022 17:15	Simonne.V. Calhoun	01/28/2022 15:29	Shengyu Ding	2300731
	01/20/2022	01/26/2022 17:15	Simonne.V. Calhoun	01/28/2022 15:30	Shengyu Ding	2300729
	01/20/2022	01/26/2022 17:15	Simonne.V. Calhoun	01/28/2022 15:31	Shengyu Ding	2300730
	01/20/2022	01/26/2022 17:15	Simonne.V. Calhoun	01/28/2022 15:39	Shengyu Ding	2300732
EPA 365.1 Rev. 2.0 dissolved	01/20/2022			01/20/2022 15:33	James L Waggerby	2300734
	01/20/2022			01/20/2022 15:41	James L Waggerby	2300733
	01/20/2022			01/20/2022 15:42	James L Waggerby	2300735
	01/20/2022			01/20/2022 15:43	James L Waggerby	2300736
SM 2320 B-2011	01/20/2022			01/22/2022 06:10	Dale L. Simmons	2300728
	01/20/2022			01/22/2022 06:49	Dale L. Simmons	2300725
	01/20/2022			01/22/2022 07:02	Dale L. Simmons	2300726
	01/20/2022			01/22/2022 07:15	Dale L. Simmons	2300727
SM 2540 D-2011	01/20/2022			01/25/2022 16:02	Yijie Li	2300725, 2300726, 2300727, 2300728
SM 4500 F-C-2011	01/20/2022			01/22/2022 04:27	Dale L. Simmons	2300728
	01/20/2022			01/22/2022 04:58	Dale L. Simmons	2300725
	01/20/2022			01/22/2022 05:03	Dale L. Simmons	2300726
	01/20/2022			01/22/2022 05:48	Dale L. Simmons	2300727
SM 5310 B-2011	01/20/2022			02/01/2022 07:32	Nathaniel J Jones	2300730
	01/20/2022			02/01/2022 12:42	Nathaniel J Jones	2300731
	01/20/2022			02/01/2022 13:42	Nathaniel J Jones	2300732
	01/20/2022			02/15/2022 10:19	Khloe J Berg	2300729