Chemical Analysis Report

NE-DIST-2022-03-17-01

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

Event Description: **Nassau North 2022**
Request ID: **RQ-2022-03-14-20**
Customer: **NE-DIST**
Project ID: **SMP**

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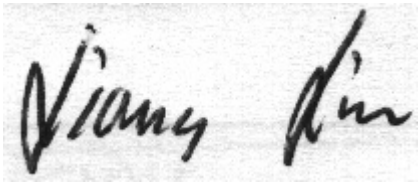
Date Certified: 05-APR-2022 13:48



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: Egan creek at Atlantic **Collection Date/Time: 03/16/2022 12:20**

Field ID: G4NE0285 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2313199	EPA 180.1 Rev. 2.0	Turbidity	9.0		NTU	P411247	
	SM 2320 B-2011	Total Alkalinity	112		mg CaCO3/L	P411447	
	SM 2540 D-2011	TSS	12		mg/L	P411432	
	SM 4500 F-C-2011	Fluoride	0.76		mg F/L	P411455	
2313201	EPA 350.1 Rev. 2.0	Ammonia-N	0.13		mg N/L	P411701	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.73		mg N/L	P411467	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.043		mg N/L	P411280	
	EPA 365.1 Rev. 2.0	Total-P	0.30		mg P/L	P411459	
	SM 5310 B-2011	Organic Carbon	11		mg C/L	P411596	

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: Escambia Slough at Escambia st. **Collection Date/Time: 03/16/2022 11:55**

Field ID: G4NE0287 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2313197	EPA 180.1 Rev. 2.0	Turbidity	8.3		NTU	P411247	
	SM 2320 B-2011	Total Alkalinity	113		mg CaCO3/L	P411447	
	SM 2540 D-2011	TSS	9	I A	mg/L	P411432	
	SM 4500 F-C-2011	Fluoride	0.58		mg F/L	P411455	
2313198	EPA 350.1 Rev. 2.0	Ammonia-N	0.061		mg N/L	P411701	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.55		mg N/L	P411467	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.039		mg N/L	P411280	
	EPA 365.1 Rev. 2.0	Total-P	0.16		mg P/L	P411459	
	SM 5310 B-2011	Organic Carbon	9.8		mg C/L	P411596	
2313210	EPA 200.7 Rev. 4.4	Calcium	182		mg/L	P411446	
		Iron	260	I	ug/L	P411446	
		Magnesium	510		mg/L	P411446	
		Strontium	2.91E+03		ug/L	P411446	
		Tin	60	U	ug/L	P411446	
		Titanium	8.6	I	ug/L	P411446	
		Vanadium	6.0	U	ug/L	P411446	
		Zinc	15	U	ug/L	P411446	
	EPA 200.8 Rev. 5.4	Aluminum	202		ug/L	P411446	
		Antimony	0.20	U	ug/L	P411446	
		Arsenic	1.44		ug/L	P411446	
		Beryllium	0.040	U	ug/L	P411446	
		Cadmium	0.080	U	ug/L	P411446	
		Chromium	1.6	U	ug/L	P411446	
		Cobalt	0.12	I	ug/L	P411446	
		Copper	1.6	U	ug/L	P411446	
		Lead	0.90	I	ug/L	P411446	
		Manganese	26.2		ug/L	P411446	
		Molybdenum	4.9		ug/L	P411446	
		Nickel	2.0	U	ug/L	P411446	
		Selenium	0.80	U	ug/L	P411446	
		Silver	0.040	U	ug/L	P411446	
		Thallium	0.40	U	ug/L	P411446	

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: Little St. Mary's River at White Oak Rd. **Collection Date/Time: 03/16/2022 14:50**

Field ID: G4NE0289 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2313211	EPA 200.7 Rev. 4.4	Calcium	6.91		mg/L	P411324	
		Iron	600		ug/L	P411324	
		Magnesium	3.20		mg/L	P411324	
		Potassium	1.3		mg/L	P411324	
		Sodium	9.6		mg/L	P411324	
		Strontium	34.3		ug/L	P411324	
		Tin	3.0	U	ug/L	P411324	
		Titanium	4.7		ug/L	P411324	
		Vanadium	2.0	U	ug/L	P411324	
		Zinc	5.0	U	ug/L	P411324	
	EPA 200.8 Rev. 5.4	Aluminum	561		ug/L	P411324	
		Antimony	0.051	I	ug/L	P411324	
		Arsenic	0.42		ug/L	P411324	
		Barium	17.0		ug/L	P411324	
		Beryllium	0.046		ug/L	P411324	
		Boron**	22.2		ug/L	P411324	
		Cadmium	0.020	U	ug/L	P411324	
		Chromium	0.74	I	ug/L	P411324	
		Cobalt	0.181		ug/L	P411324	
		Copper	0.43	I	ug/L	P411324	
		Lead	0.44		ug/L	P411324	
		Manganese	13.5		ug/L	P411324	
		Molybdenum	0.15	U	ug/L	P411324	
		Nickel	0.54	I	ug/L	P411324	
		Selenium	0.20	U	ug/L	P411324	
		Silver	0.010	U	ug/L	P411324	
		Thallium	0.10	U	ug/L	P411324	
	SM 2340B	Hardness	30.4		mg/L	P411324	

Ref. Method and Comment:
EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for manganese are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Sample Location: Egans Creek at Jasmine st. **Collection Date/Time: 03/16/2022 12:50**

Field ID: G4NE0305 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2313200	EPA 180.1 Rev. 2.0	Turbidity	5.5		NTU	P411247	
	SM 2320 B-2011	Total Alkalinity	123		mg CaCO3/L	P411445	
	SM 2540 D-2011	TSS	6	I	mg/L	P411431	
	SM 4500 F-C-2011	Fluoride	0.49		mg F/L	P411454	
2313202	EPA 350.1 Rev. 2.0	Ammonia-N	0.19		mg N/L	P411487	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P411468	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.10		mg N/L	P411736	
	EPA 365.1 Rev. 2.0	Total-P	0.78		mg P/L	P411460	
	SM 5310 B-2011	Organic Carbon	19		mg C/L	P411474	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries 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: P411247

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P411324

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 200.7 Rev. 4.4
Batch ID: P411446

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: P411324

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P411446

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: P411487

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P411701

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P411467

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P411468

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P411280

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P411736

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P411459

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P411460

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

Reference Method: SM 2320 B-2011
Batch ID: P411445

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

Reference Method: SM 2320 B-2011
Batch ID: P411447

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

Reference Method: SM 2540 D-2011
Batch ID: P411431

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P411432

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P411454

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P411455

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P411474

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P411596

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: P411247

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	97.5		P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P411324

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	106		P	85 - 115
Magnesium	107		P	85 - 115
Potassium	105		P	85 - 115
Sodium	107		P	85 - 115
Strontium	100		P	85 - 115
Tin	100		P	85 - 115
Titanium	99.9		P	85 - 115
Vanadium	93.7		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P411446

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	105		P	85 - 115
Iron	106		P	85 - 115
Magnesium	105		P	85 - 115
Strontium	103		P	85 - 115
Tin	104		P	85 - 115
Titanium	103		P	85 - 115
Vanadium	95.7		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P411324

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.6		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	101		P	85 - 115
Barium	106		P	85 - 115
Beryllium	92.3		P	85 - 115
Boron	104		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	95.9		P	85 - 115
Cobalt	98.2		P	85 - 115
Copper	95.1		P	85 - 115
Lead	98.3		P	85 - 115
Manganese	95.8		P	85 - 115
Molybdenum	99.6		P	85 - 115
Nickel	95.7		P	85 - 115
Selenium	99.8		P	85 - 115
Silver	100		P	85 - 115
Thallium	99.5		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P411446

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	98.2		P	85 - 115
Antimony	98.2		P	85 - 115
Arsenic	96.6		P	85 - 115
Beryllium	92.4		P	85 - 115
Cadmium	97.0		P	85 - 115
Chromium	95.1		P	85 - 115
Cobalt	96.7		P	85 - 115
Copper	93.7		P	85 - 115
Lead	95.0		P	85 - 115
Manganese	96.2		P	85 - 115
Molybdenum	96.8		P	85 - 115
Nickel	95.7		P	85 - 115
Selenium	97.0		P	85 - 115
Silver	97.8		P	85 - 115
Thallium	97.2		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P411487

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P411701

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P411467

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P411468

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P411280

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P411736

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.0		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P411459

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P411460

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

Reference Method: SM 2320 B-2011
Batch ID: P411445

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.4		P	94 - 106

Reference Method: SM 2320 B-2011
Batch ID: P411447

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	96.9		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P411454

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P411455

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P411474

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P411596

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: P411324

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313175	Calcium	99.7		P	80 - 120
2313175	Iron	106	104	P/P	80 - 120
2313175	Magnesium	106	106	P/P	80 - 120
2313175	Potassium	103	102	P/P	80 - 120
2313175	Sodium	102	97.7	P/P	80 - 120
2313175	Strontium	102	99.4	P/P	80 - 120
2313175	Tin	103	103	P/P	80 - 120
2313175	Titanium	102	98.7	P/P	80 - 120
2313175	Vanadium	98.0	95.0	P/P	80 - 120
2313175	Zinc	104	101	P/P	80 - 120
2313176	Calcium	98.3		P	80 - 120
2313176	Iron	102		P	80 - 120
2313176	Magnesium	103		P	80 - 120
2313176	Potassium	101		P	80 - 120
2313176	Sodium	99.6		P	80 - 120
2313176	Strontium	98.3		P	80 - 120
2313176	Tin	99.4		P	80 - 120
2313176	Titanium	97.8		P	80 - 120
2313176	Vanadium	93.4		P	80 - 120
2313176	Zinc	98.3		P	80 - 120

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P411446

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313210	Iron	97.8	101	P/P	70 - 130
2313210	Tin	71.8	81.7	P/P	70 - 130
2313210	Titanium	94.5	96.5	P/P	70 - 130
2313210	Vanadium	95.7	95.4	P/P	70 - 130
2313210	Zinc	93.2	94.8	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P411324

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313175	Aluminum	115	119	P/P	80 - 120
2313175	Antimony	98.7	101	P/P	80 - 120
2313175	Arsenic	99.0	100	P/P	80 - 120
2313175	Barium	106	108	P/P	80 - 120
2313175	Beryllium	95.3	92.1	P/P	80 - 120
2313175	Boron	106	106	P/P	80 - 120
2313175	Cadmium	99.3	103	P/P	80 - 120
2313175	Chromium	96.3	100	P/P	80 - 120
2313175	Cobalt	96.1	98.4	P/P	80 - 120
2313175	Copper	95.1	97.2	P/P	80 - 120
2313175	Lead	98.4	100	P/P	80 - 120
2313175	Molybdenum	98.1	99.4	P/P	80 - 120
2313175	Nickel	95.1	97.1	P/P	80 - 120
2313175	Selenium	97.2	97.6	P/P	80 - 120
2313175	Silver	99.2	102	P/P	80 - 120
2313175	Thallium	101	105	P/P	80 - 120
2313176	Aluminum	110		P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P411324

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313176	Antimony	101		P	80 - 120
2313176	Arsenic	98.5		P	80 - 120
2313176	Barium	107		P	80 - 120
2313176	Beryllium	94.2		P	80 - 120
2313176	Boron	106		P	80 - 120
2313176	Cadmium	102		P	80 - 120
2313176	Chromium	98.2		P	80 - 120
2313176	Cobalt	95.4		P	80 - 120
2313176	Copper	93.9		P	80 - 120
2313176	Lead	98.6		P	80 - 120
2313176	Manganese	96.3		P	80 - 120
2313176	Molybdenum	99.6		P	80 - 120
2313176	Nickel	93.3		P	80 - 120
2313176	Selenium	98.9		P	80 - 120
2313176	Silver	101		P	80 - 120
2313176	Thallium	102		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P411446

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313210	Aluminum	103	107	P/P	70 - 130
2313210	Antimony	98.6	100	P/P	70 - 130
2313210	Arsenic	109	110	P/P	70 - 130
2313210	Beryllium	106	106	P/P	70 - 130
2313210	Cadmium	89.8	94.2	P/P	70 - 130
2313210	Chromium	97.5	98.2	P/P	70 - 130
2313210	Cobalt	112	113	P/P	70 - 130
2313210	Copper	102	103	P/P	70 - 130
2313210	Lead	101	102	P/P	70 - 130
2313210	Manganese	95.1	96.2	P/P	70 - 130
2313210	Molybdenum	110	113	P/P	70 - 130
2313210	Nickel	108	111	P/P	70 - 130
2313210	Selenium	96.2	99.2	P/P	70 - 130
2313210	Silver	86.1	88.2	P/P	70 - 130
2313210	Thallium	103	106	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P411487

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2312570	Ammonia-N	97.8	98.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P411701

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313106	Ammonia-N	98.0	98.8	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P411467

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2312936	Kjeldahl Nitrogen	107	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P411468

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313001	Kjeldahl Nitrogen	100	91.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P411280

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2312936	NO2NO3-N	95.1	94.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P411736

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2314875	NO2NO3-N	99.0	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P411459

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313105	Total-P	96.5	93.2	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P411454

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313039	Fluoride	99.3	99.3	P/P	92 - 107

Reference Method: SM 4500 F-C-2011
Batch ID: P411455

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313102	Fluoride	98.8	100	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P411474

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313160	Organic Carbon	95.3	98.3	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P411596

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313198	Organic Carbon	93.4	95.1	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P411247

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313155	Turbidity	6.35	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P411324

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313175	Calcium	1.72	Spike	P	0 - 20
2313175	Iron	1.42	Spike	P	0 - 20
2313175	Magnesium	0.550	Spike	P	0 - 20
2313175	Potassium	0.994	Spike	P	0 - 20
2313175	Sodium	2.40	Spike	P	0 - 20
2313175	Strontium	2.71	Spike	P	0 - 20
2313175	Tin	0.371	Spike	P	0 - 20
2313175	Titanium	2.82	Spike	P	0 - 20
2313175	Vanadium	3.15	Spike	P	0 - 20
2313175	Zinc	2.70	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P411446

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313210	Calcium	2.92	Spike	P	0 - 20
2313210	Iron	3.07	Spike	P	0 - 20
2313210	Magnesium	2.54	Spike	P	0 - 20
2313210	Strontium	2.43	Spike	P	0 - 20
2313210	Tin	12.9	Spike	P	0 - 20
2313210	Titanium	1.74	Spike	P	0 - 20
2313210	Vanadium	0.333	Spike	P	0 - 20
2313210	Zinc	1.72	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P411324

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313175	Aluminum	3.34	Spike	P	0 - 20
2313175	Antimony	2.00	Spike	P	0 - 20
2313175	Arsenic	1.37	Spike	P	0 - 20
2313175	Barium	2.01	Spike	P	0 - 20
2313175	Beryllium	3.14	Spike	P	0 - 20
2313175	Boron	0.359	Spike	P	0 - 20
2313175	Cadmium	3.69	Spike	P	0 - 20
2313175	Chromium	3.65	Spike	P	0 - 20
2313175	Cobalt	2.34	Spike	P	0 - 20
2313175	Copper	2.18	Spike	P	0 - 20
2313175	Lead	1.75	Spike	P	0 - 20
2313175	Manganese	2.67	Spike	P	0 - 20
2313175	Molybdenum	1.30	Spike	P	0 - 20
2313175	Nickel	2.09	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P411324

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313175	Selenium	0.336	Spike	P	0 - 20
2313175	Silver	2.36	Spike	P	0 - 20
2313175	Thallium	3.20	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P411446

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313210	Aluminum	3.50	Spike	P	0 - 20
2313210	Antimony	1.69	Spike	P	0 - 20
2313210	Arsenic	1.44	Spike	P	0 - 20
2313210	Beryllium	0.197	Spike	P	0 - 20
2313210	Cadmium	4.82	Spike	P	0 - 20
2313210	Chromium	0.735	Spike	P	0 - 20
2313210	Cobalt	1.20	Spike	P	0 - 20
2313210	Copper	0.935	Spike	P	0 - 20
2313210	Lead	1.61	Spike	P	0 - 20
2313210	Manganese	0.861	Spike	P	0 - 20
2313210	Molybdenum	1.95	Spike	P	0 - 20
2313210	Nickel	2.32	Spike	P	0 - 20
2313210	Selenium	3.11	Spike	P	0 - 20
2313210	Silver	2.46	Spike	P	0 - 20
2313210	Thallium	3.35	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P411487

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2312570	Ammonia-N	0.345	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P411701

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313106	Ammonia-N	0.528	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P411467

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2312936	Kjeldahl Nitrogen	2.38	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P411468

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P411468

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313001	Kjeldahl Nitrogen	5.37	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P411280

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2312936	NO2NO3-N	0.504	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P411736

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2314875	NO2NO3-N	2.04	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P411459

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313105	Total-P	2.94	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P411460

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313202	Total-P	0.925	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P411445

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313039	Total Alkalinity	1.78	Sample	P	0 - 5.2

Reference Method: SM 2320 B-2011
Batch ID: P411447

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313102	Total Alkalinity	0.690	Sample	P	0 - 5.2

Reference Method: SM 4500 F-C-2011
Batch ID: P411454

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313039	Fluoride	0.0	Spike	P	0 - 2.1

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P411455

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313102	Fluoride	0.986	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P411474

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313160	Organic Carbon	2.51	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P411596

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313198	Organic Carbon	1.43	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: A111005
Included Lab Sample IDs: 2313197, 2313199, 2313200

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A111021
Included Lab Sample IDs: 2313198, 2313201

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	98.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A111067
Included Lab Sample IDs: 2313211

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.1	98.0	P/P	90 - 110
Antimony	96.1	97.3	P/P	90 - 110
Arsenic	99.1	97.5	P/P	90 - 110
Beryllium	94.4	93.9	P/P	90 - 110
Boron	102	104	P/P	90 - 110
Cadmium	99.5	99.8	P/P	90 - 110
Chromium	96.2	97.0	P/P	90 - 110
Cobalt	95.8	93.9	P/P	90 - 110
Copper	95.5	93.3	P/P	90 - 110
Lead	97.1	97.5	P/P	90 - 110
Manganese	95.6	95.8	P/P	90 - 110
Molybdenum	98.3	98.2	P/P	90 - 110
Nickel	94.8	92.3	P/P	90 - 110
Selenium	98.5	98.5	P/P	90 - 110
Silver	98.5	98.2	P/P	90 - 110
Thallium	100	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A111091
Included Lab Sample IDs: 2313211

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

Reference Method: SM 2320 B-2011
Run ID: A111098
Included Lab Sample IDs: 2313197, 2313199, 2313200

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.7	95.7	P/P	90 - 110
Total Alkalinity	98.3	96.1	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A111098
Included Lab Sample IDs: 2313197, 2313199, 2313200

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-2011
Run ID: A111098
Included Lab Sample IDs: 2313197, 2313199, 2313200

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

Reference Method: SM 5310 B-2011
Run ID: A111102
Included Lab Sample IDs: 2313202

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.0	95.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A111108
Included Lab Sample IDs: 2313202

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.5	97.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A111122
Included Lab Sample IDs: 2313210

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.9	103	P/P	90 - 110
Antimony	97.0	98.7	P/P	90 - 110
Arsenic	101	102	P/P	90 - 110
Beryllium	97.4	102	P/P	90 - 110
Cadmium	98.6	99.7	P/P	90 - 110
Chromium	97.3	99.2	P/P	90 - 110
Cobalt	103	102	P/P	90 - 110
Copper	101	101	P/P	90 - 110
Lead	96.5	95.9	P/P	90 - 110
Manganese	98.9	99.4	P/P	90 - 110
Molybdenum	99.7	99.8	P/P	90 - 110
Nickel	102	101	P/P	90 - 110
Selenium	101	102	P/P	90 - 110
Silver	96.6	96.3	P/P	90 - 110
Thallium	99.8	98.5	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A111123
Included Lab Sample IDs: 2313210, 2313211

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	100	98.5	P/P	90 - 110
Calcium	99.2	101	P/P	90 - 110
Iron	100	102	P/P	90 - 110
Iron	101	99.8	P/P	90 - 110
Magnesium	101	99.6	P/P	90 - 110
Magnesium	99.7	101	P/P	90 - 110
Potassium	103	102	P/P	90 - 110
Sodium	99.9	99.5	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A111123
Included Lab Sample IDs: 2313210, 2313211

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Strontium	94.8	93.7	P/P	90 - 110
Strontium	95.9	93.4	P/P	90 - 110
Tin	95.6	95.2	P/P	90 - 110
Tin	98.4	94.5	P/P	90 - 110
Titanium	94.8	94.4	P/P	90 - 110
Titanium	96.3	93.5	P/P	90 - 110
Vanadium	94.8	94.3	P/P	90 - 110
Vanadium	96.6	93.7	P/P	90 - 110
Zinc	101	96.5	P/P	90 - 110
Zinc	96.7	97.2	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A111155
Included Lab Sample IDs: 2313198, 2313201

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.0	95.8	P/P	90 - 110
Organic Carbon	97.2	93.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A111157
Included Lab Sample IDs: 2313198, 2313201, 2313202

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A111178
Included Lab Sample IDs: 2313198, 2313201, 2313202

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	99.3	P/P	90 - 110
Kjeldahl Nitrogen	104	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A111210
Included Lab Sample IDs: 2313198, 2313201

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	99.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A111226
Included Lab Sample IDs: 2313202

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	99.5	P/P	90 - 110

Quality Assurance Report
Calibration Verification

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

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity	97.5					6.35	
EPA 200.7 Rev. 4.4	Calcium	103	99.7	98.3				1.72
	Calcium	105						2.92
	Iron	106	106	104	102			1.42
	Iron	106	97.8	101				3.07
	Magnesium	107	106	106	103			0.550
	Magnesium	105						2.54
	Potassium	105	103	102	101			0.994
	Sodium	107	102	97.7	99.6			2.40
	Strontium	100	102	99.4	98.3			2.71
	Strontium	103						2.43
	Tin	100	103	103	99.4			0.371
	Tin	104	71.8	81.7				12.9
	Titanium	99.9	102	98.7	97.8			2.82
	Titanium	103	94.5	96.5				1.74
	Vanadium	93.7	98.0	95.0	93.4			3.15
	Vanadium	95.7	95.7	95.4				0.333
	Zinc	101	104	101	98.3			2.70
	Zinc	102	93.2	94.8				1.72
EPA 200.8 Rev. 5.4	Aluminum	99.6	115	119	110			3.34
	Aluminum	98.2	103	107				3.50
	Antimony	101	98.7	101	101			2.00
	Antimony	98.2	98.6	100				1.69
	Arsenic	101	99.0	100	98.5			1.37
	Arsenic	96.6	109	110				1.44
	Barium	106	106	108	107			2.01
	Beryllium	92.3	95.3	92.1	94.2			3.14
	Beryllium	92.4	106	106				0.197
	Boron	104	106	106	106			0.359
	Cadmium	101	99.3	103	102			3.69
	Cadmium	97.0	89.8	94.2				4.82
	Chromium	95.9	96.3	100	98.2			3.65
	Chromium	95.1	97.5	98.2				0.735
	Cobalt	98.2	96.1	98.4	95.4			2.34
	Cobalt	96.7	112	113				1.20
	Copper	95.1	95.1	97.2	93.9			2.18
	Copper	93.7	102	103				0.935
	Lead	98.3	98.4	100	98.6			1.75
	Lead	95.0	101	102				1.61
	Manganese	95.8	96.3					2.67
	Manganese	96.2	95.1	96.2				0.861
	Molybdenum	99.6	98.1	99.4	99.6			1.30
	Molybdenum	96.8	110	113				1.95
	Nickel	95.7	95.1	97.1	93.3			2.09
	Nickel	95.7	108	111				2.32
	Selenium	99.8	97.2	97.6	98.9			0.336
	Selenium	97.0	96.2	99.2				3.11
	Silver	100	99.2	102	101			2.36
	Silver	97.8	86.1	88.2				2.46
	Thallium	99.5	101	105	102			3.20
	Thallium	97.2	103	106				3.35
EPA 350.1 Rev. 2.0	Ammonia-N	95.2	97.8	98.4				0.345
	Ammonia-N	100	98.0	98.8				0.528
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	107	104				2.38

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	100	91.0			5.37
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	95.1	94.6			0.504
	NO2NO3-N	98.0	99.0	97.0			2.04
EPA 365.1 Rev. 2.0	Total-P	102	96.5	93.2			2.94
	Total-P	104					0.925
SM 2320 B-2011	Total Alkalinity	97.4				1.78	
	Total Alkalinity	96.9				0.690	
SM 4500 F-C-2011	Fluoride	101	99.3	99.3			0.0
	Fluoride	101	98.8	100			0.986
SM 5310 B-2011	Organic Carbon	96.0	95.3	98.3			2.51
	Organic Carbon	97.2	93.4	95.1			1.43

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2313197, 2313199, 2313200
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2313210, 2313211
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2313210, 2313211
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2313198, 2313201, 2313202
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2313198, 2313201, 2313202
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2313198, 2313201, 2313202
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2313198, 2313201, 2313202
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2313197, 2313199, 2313200
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2313211
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2313197, 2313199, 2313200
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2313197, 2313199, 2313200
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2313198, 2313201, 2313202

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	03/17/2022			03/17/2022 15:51	Khloe J Berg	2313197
	03/17/2022			03/17/2022 15:53	Khloe J Berg	2313199
	03/17/2022			03/17/2022 15:55	Khloe J Berg	2313200
EPA 200.7 Rev. 4.4	03/17/2022	03/21/2022 10:26	Megan Whitefoot	03/23/2022 20:25	Josef B Mick	2313211
	03/17/2022	03/23/2022 10:20	Megan Whitefoot	03/24/2022 01:31	Josef B Mick	2313210
	03/17/2022	03/23/2022 10:20	Megan Whitefoot	03/24/2022 02:03	Josef B Mick	2313210
EPA 200.8 Rev. 5.4	03/17/2022	03/21/2022 10:26	Megan Whitefoot	03/22/2022 03:35	Emily M Philpot	2313211
	03/17/2022	03/21/2022 10:26	Megan Whitefoot	03/22/2022 13:45	Alexander Thompson	2313211
	03/17/2022	03/23/2022 10:20	Megan Whitefoot	03/23/2022 19:37	Alexander Thompson	2313210
EPA 350.1 Rev. 2.0	03/17/2022			03/23/2022 11:49	Judith K. Clark	2313202
	03/17/2022			03/29/2022 10:41	Ping Hua	2313198
	03/17/2022			03/29/2022 10:43	Ping Hua	2313201
EPA 351.2 Rev. 2.0	03/17/2022	03/24/2022 16:17	Samantha L Bates	03/25/2022 17:13	Alexandra J Mattheus	2313198
	03/17/2022	03/24/2022 16:17	Samantha L Bates	03/25/2022 17:14	Alexandra J Mattheus	2313201
	03/17/2022	03/24/2022 16:17	Samantha L Bates	03/25/2022 17:49	Alexandra J Mattheus	2313202
EPA 353.2 Rev. 2.0	03/17/2022			03/18/2022 11:04	Beverly Y. Sanders	2313198
	03/17/2022			03/18/2022 11:05	Beverly Y. Sanders	2313201
	03/17/2022			03/30/2022 09:31	Beverly Y. Sanders	2313202
EPA 365.1 Rev. 2.0	03/17/2022	03/23/2022 17:20	Simonne.V. Calhoun	03/25/2022 12:19	Sarah A Nixon	2313198
	03/17/2022	03/23/2022 17:20	Simonne.V. Calhoun	03/25/2022 12:20	Sarah A Nixon	2313201
	03/17/2022	03/23/2022 17:20	Simonne.V. Calhoun	03/25/2022 12:31	Sarah A Nixon	2313202
SM 2320 B-2011	03/17/2022			03/22/2022 18:39	Dale L. Simmons	2313200
	03/17/2022			03/23/2022 00:09	Dale L. Simmons	2313197
	03/17/2022			03/23/2022 00:23	Dale L. Simmons	2313199
SM 2340B	03/17/2022			03/23/2022 20:25	Josef B Mick	2313211
SM 2540 D-2011	03/17/2022			03/18/2022 16:00	Simonne.V. Calhoun	2313197, 2313199, 2313200
SM 4500 F-C-2011	03/17/2022			03/22/2022 18:39	Dale L. Simmons	2313200
	03/17/2022			03/22/2022 22:47	Dale L. Simmons	2313197
	03/17/2022			03/22/2022 22:52	Dale L. Simmons	2313199
SM 5310 B-2011	03/17/2022			03/22/2022 21:00	Khloe J Berg	2313202
	03/17/2022			03/24/2022 23:20	Khloe J Berg	2313198
	03/17/2022			03/25/2022 02:36	Khloe J Berg	2313201