

Chemical Analysis Report

NE-DIST-2021-11-16-01

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

Event Description: **Nassau North West Make up and West 1**
Request ID: **RQ-2021-11-15-49**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256
Attn: Jeremy Parrish

For additional information please contact
Colin Wright, Ph.D.
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Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
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Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant

Date Certified: 08-DEC-2021 10:31



NON-CONFORMANCE REPORT INCLUDED

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: Calkins CR @ CR 127

Collection Date/Time: 11/15/2021 10:35

Field ID: 19010105

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2289686	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P406389	
	EPA 300.0 Rev. 2.1	Chloride	6.7		mg Cl/L	P406523	
		Sulfate	0.20	U	mg SO4/L	P406525	
	SM 2120 B-2011	Color (true)	290		PCU	P406378	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P406488	
	SM 2540 C-2011	TDS	88		mg/L	P406775	
	SM 2540 D-2011	TSS	2	I	mg/L	P406734	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P406490	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P406714	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.84		mg N/L	P406791	
2289688	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P406417	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P406542	
	SM 5310 B-2011	Organic Carbon	36		mg C/L	P406871	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P406382	
	dissolved						

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high 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.

Sample Location: Deep CR @ Hamp Hicks Rd.

Collection Date/Time: 11/15/2021 12:05

Field ID: 19010084

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2289687	EPA 180.1 Rev. 2.0	Turbidity	0.70		NTU	P406389	
	EPA 300.0 Rev. 2.1	Chloride	7.6		mg Cl/L	P406523	
		Sulfate	1.3		mg SO4/L	P406525	
	SM 2120 B-2011	Color (true)	290		PCU	P406378	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P406488	
	SM 2540 C-2011	TDS	94		mg/L	P406776	
	SM 2540 D-2011	TSS	2	U	mg/L	P406735	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P406490	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	J	mg N/L	P406714	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.77	J	mg N/L	P406791	
2289689	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P406417	
	EPA 365.1 Rev. 2.0	Total-P	0.010	J	mg P/L	P406542	
	SM 5310 B-2011	Organic Carbon	34	J	mg C/L	P406871	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P406382	

Ref. Method and Comment:

EPA 350.1 Rev. 2.0: Sample integrity may be compromised because of improper sample container handling.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample. Sample integrity may be compromised because of improper sample container handling.

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample. Sample integrity may be compromised because of improper sample container handling.

SM 5310 B-2011: Sample integrity may be compromised because of improper sample container handling.

Sample Location: Unnamed Drain to Brandy Branch at US301

Collection Date/Time: 11/15/2021 12:55

Field ID: G4NE0302

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2289692	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P406390	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P406523	
		Sulfate	1.7		mg SO4/L	P406525	
		Color (true)	300		PCU	P406378	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P406488	
	SM 2540 C-2011	TDS	91		mg/L	P406776	
	SM 2540 D-2011	TSS	2	I	mg/L	P406735	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P406490	
2289694	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P406714	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.80		mg N/L	P406791	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P406417	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P406542	
	SM 5310 B-2011	Organic Carbon	35		mg C/L	P406871	
2289696	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P406382	
2289710	EPA 200.7 Rev. 4.4	Barium	12.9		ug/L	P406404	
		Calcium	2.76		mg/L	P406404	
		Iron	1.19E+03		ug/L	P406404	
		Magnesium	1.10		mg/L	P406404	
		Manganese	14.4		ug/L	P406404	
		Potassium	0.30	U	mg/L	P406404	
		Sodium	5.9		mg/L	P406404	
	EPA 200.8 Rev. 5.4	Zinc	5.5	I	ug/L	P406404	
		Aluminum	557		ug/L	P406404	
		Antimony	0.050	U	ug/L	P406404	
		Arsenic	0.37		ug/L	P406404	
		Beryllium	0.053		ug/L	P406404	
		Boron**	16.7		ug/L	P406404	
		Cadmium	0.020	U	ug/L	P406404	
		Chromium	0.69	I	ug/L	P406404	
		Copper	0.40	U	ug/L	P406404	
		Lead	0.40		ug/L	P406404	
		Nickel	0.82	I	ug/L	P406404	
		Selenium	0.20	U	ug/L	P406404	
		Silver	0.010	U	ug/L	P406404	
		Thallium	0.10	U	ug/L	P406404	
		Hardness	11.4		mg/L	P406404	

Ref. Method and Comment:

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high 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.

Sample Location: Deep CR @ US 90

Collection Date/Time: 11/15/2021 13:25

Field ID: 19010085

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2289693	EPA 180.1 Rev. 2.0	Turbidity	3.6	A	NTU	P406390	
	EPA 300.0 Rev. 2.1	Chloride	15		mg Cl/L	P406523	
		Sulfate	12		mg SO4/L	P406525	
		Color (true)	260		PCU	P406378	
	SM 2320 B-2011	Total Alkalinity	15		mg CaCO3/L	P406488	
	SM 2540 C-2011	TDS	120		mg/L	P406776	
	SM 2540 D-2011	TSS	2	I	mg/L	P406735	
	SM 4500 F-C-2011	Fluoride	0.046	I	mg F/L	P406490	
2289695	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P406715	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.82		mg N/L	P406791	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P406417	
	EPA 365.1 Rev. 2.0	Total-P	0.054		mg P/L	P406543	
	SM 5310 B-2011	Organic Carbon	27		mg C/L	P406871	
2289697	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.029		mg P/L	P406382	
2289711	EPA 200.7 Rev. 4.4	Barium	20.3		ug/L	P406404	
		Calcium	10.7		mg/L	P406404	
		Iron	790		ug/L	P406404	
		Magnesium	2.65		mg/L	P406404	
		Manganese	10.8		ug/L	P406404	
		Potassium	2.1		mg/L	P406404	
		Sodium	11.5		mg/L	P406404	
	EPA 200.8 Rev. 5.4	Zinc	15	I	ug/L	P406404	
		Aluminum	418		ug/L	P406404	
		Antimony	0.14	I	ug/L	P406404	
		Arsenic	0.52		ug/L	P406404	
		Beryllium	0.031	I	ug/L	P406404	
		Boron**	40.2		ug/L	P406404	
		Cadmium	0.020	U	ug/L	P406404	
		Chromium	1.1	I	ug/L	P406404	
		Copper	1.66		ug/L	P406404	
		Lead	0.56		ug/L	P406404	
		Nickel	1.0	I	ug/L	P406404	
		Selenium	0.20	U	ug/L	P406404	
		Silver	0.010	U	ug/L	P406404	
		Thallium	0.10	U	ug/L	P406404	
	SM 2340B	Hardness	37.5		mg/L	P406404	

Ref. Method and Comment:

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: FB_11152021

Collection Date/Time: 11/15/2021 13:35

Field ID: FB_11152021

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2289698	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P406386	
	EPA 300.0 Rev. 2.1	Sulfate	0.20	U	mg SO4/L	P406750	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P406488	
	SM 2540 C-2011	TDS	15	U	mg/L	P406775	
	SM 2540 D-2011	TSS	2	U	mg/L	P406734	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P406490	
2289699	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P406714	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P406792	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P406417	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P406543	
	SM 5310 B-2011	Organic Carbon	0.50	U	mg C/L	P406871	
2289700	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P406382	
2289712	EPA 200.7 Rev. 4.4	Calcium	0.075	U	mg/L	P406404	
		Iron	30	U	ug/L	P406404	
		Magnesium	0.040	U	mg/L	P406404	
		Potassium	0.30	U	mg/L	P406404	
		Sodium	0.50	U	mg/L	P406404	
		Strontium	2.0	U	ug/L	P406404	
		Tin	3.0	U	ug/L	P406404	
		Titanium	0.75	U	ug/L	P406404	
		Vanadium	2.0	U	ug/L	P406404	
		Zinc	5.0	U	ug/L	P406404	
		Aluminum	5.0	U	ug/L	P406404	
		Antimony	0.050	U	ug/L	P406404	
	EPA 200.8 Rev. 5.4	Arsenic	0.050	U	ug/L	P406404	
		Barium	0.20	U	ug/L	P406404	
		Beryllium	0.010	U	ug/L	P406404	
		Boron**	2.0	U	ug/L	P406404	
		Cadmium	0.020	U	ug/L	P406404	
		Chromium	0.40	U	ug/L	P406404	
		Cobalt	0.020	U	ug/L	P406404	
		Copper	0.40	U	ug/L	P406404	
		Lead	0.20	U	ug/L	P406404	
		Manganese	0.10	U	ug/L	P406404	
		Molybdenum	0.15	U	ug/L	P406404	
		Nickel	0.50	U	ug/L	P406404	
		Selenium	0.20	U	ug/L	P406404	
		Silver	0.010	U	ug/L	P406404	
		Thallium	0.10	U	ug/L	P406404	

Ref. Method and Comment:

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

Non-Conformance Report

NCR ID: 9144

Event(s)

NE-DIST-2021-11-16-01

Job(s)

TLH-2021-11-16-41

Sample(s)

2289689

Test(s)

NCR Type: PREPARATION

NCR Category: Sample Homogeneity and Integrity

Observation: Sample container was dropped into a water bath. Partial sample loss or contamination possible. Sample integrity may be compromised. The incident occurred on 11/19/2021 around 8 AM.

Resolution: Results of preparations and analyses started after the incident will be qualified as appropriate.

Authorized by/Date: Irina Carbone 12/3/2021

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P406386

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P406389

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P406390

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P406404

Component	Result	Code	Units
Barium	1.0	U	ug/L
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Manganese	1.0	U	ug/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Strontium	2.0	U	ug/L
Tin	3.0	U	ug/L
Titanium	0.75	U	ug/L
Vanadium	2.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P406404

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 300.0 Rev. 2.1
Batch ID: P406523

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P406525

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P406750

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406714

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406715

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406791

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406792

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406417

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406542

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406543

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406382

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

Reference Method: SM 2120 B-2011
Batch ID: P406378

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P406488

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-2011
Batch ID: P406775

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-2011
Batch ID: P406776

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P406734

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P406735

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P406490

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P406871

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: P406404

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	104		P	85 - 115
Calcium	111		P	85 - 115
Iron	110		P	85 - 115
Magnesium	113		P	85 - 115
Manganese	106		P	85 - 115
Potassium	103		P	85 - 115
Sodium	107		P	85 - 115
Strontium	103		P	85 - 115
Tin	109		P	85 - 115
Titanium	106		P	85 - 115
Vanadium	104		P	85 - 115
Zinc	110		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P406404

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	106		P	85 - 115
Antimony	107		P	85 - 115
Arsenic	106		P	85 - 115
Barium	107		P	85 - 115
Beryllium	103		P	85 - 115
Boron	105		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	101		P	85 - 115
Cobalt	104		P	85 - 115
Copper	105		P	85 - 115
Lead	101		P	85 - 115
Manganese	98.2		P	85 - 115
Molybdenum	105		P	85 - 115
Nickel	105		P	85 - 115
Selenium	103		P	85 - 115
Silver	102		P	85 - 115
Thallium	106		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P406523

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P406525

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P406750

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406714

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406715

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406791

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406792

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: P406417

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406542

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: P406543

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406382

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.6		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P406378

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-2011
Batch ID: P406488

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

Reference Method: SM 4500 F-C-2011
Batch ID: P406490

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.9		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P406871

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.3		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P406404

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289351	Barium	102		P	80 - 120
2289351	Calcium	105		P	80 - 120
2289351	Iron	111		P	80 - 120
2289351	Magnesium	112		P	80 - 120
2289351	Manganese	106		P	80 - 120
2289351	Potassium	107		P	80 - 120
2289351	Sodium	105		P	80 - 120
2289351	Strontium	101		P	80 - 120
2289351	Tin	111		P	80 - 120
2289351	Titanium	108		P	80 - 120
2289351	Vanadium	107		P	80 - 120
2289351	Zinc	112		P	80 - 120
2289558	Iron	113	113	P/P	80 - 120
2289558	Magnesium	115	115	P/P	80 - 120
2289558	Manganese	106	108	P/P	80 - 120
2289558	Potassium	102	102	P/P	80 - 120
2289558	Sodium	107	105	P/P	80 - 120
2289558	Strontium	102	102	P/P	80 - 120
2289558	Tin	110	111	P/P	80 - 120
2289558	Titanium	106	108	P/P	80 - 120
2289558	Vanadium	104	107	P/P	80 - 120
2289558	Zinc	110	112	P/P	80 - 120
3389558	Barium	104	106	P/P	80 - 120
3389558	Calcium	112	111	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P406404

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289351	Aluminum	103		P	80 - 120
2289351	Antimony	110		P	80 - 120
2289351	Arsenic	105		P	80 - 120
2289351	Barium	109		P	80 - 120
2289351	Beryllium	108		P	80 - 120
2289351	Boron	99.8		P	80 - 120
2289351	Cadmium	105		P	80 - 120
2289351	Chromium	104		P	80 - 120
2289351	Cobalt	102		P	80 - 120
2289351	Copper	101		P	80 - 120
2289351	Lead	100		P	80 - 120
2289351	Manganese	102		P	80 - 120
2289351	Molybdenum	108		P	80 - 120
2289351	Nickel	103		P	80 - 120
2289351	Selenium	102		P	80 - 120
2289351	Silver	101		P	80 - 120
2289351	Thallium	106		P	80 - 120
2289558	Aluminum	105	105	P/P	80 - 120
2289558	Antimony	108	109	P/P	80 - 120
2289558	Arsenic	105	105	P/P	80 - 120
2289558	Barium	107	108	P/P	80 - 120
2289558	Beryllium	104	103	P/P	80 - 120
2289558	Boron	104	105	P/P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P406404

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289558	Cadmium	102	104	P/P	80 - 120
2289558	Chromium	103	102	P/P	80 - 120
2289558	Cobalt	102	102	P/P	80 - 120
2289558	Copper	103	103	P/P	80 - 120
2289558	Lead	101	101	P/P	80 - 120
2289558	Manganese	100	99.8	P/P	80 - 120
2289558	Molybdenum	107	106	P/P	80 - 120
2289558	Nickel	104	103	P/P	80 - 120
2289558	Selenium	103	102	P/P	80 - 120
2289558	Silver	102	101	P/P	80 - 120
2289558	Thallium	107	108	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P406523

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289658	Chloride	99.3		P	90 - 110
2289677	Chloride	99.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P406525

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289658	Sulfate	103		P	90 - 110
2289677	Sulfate	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P406750

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2290197	Sulfate	100		P	90 - 110
2290373	Sulfate	97.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P406714

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289057	Ammonia-N	96.4	97.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P406715

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289695	Ammonia-N	96.4	94.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P406792

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289708	Kjeldahl Nitrogen	110	103	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406417

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289660	NO2NO3-N	99.2	93.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406543

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289866	Total-P	103	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406382

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289709	O-Phosphate-P	96.2	94.3	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P406490

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289608	Fluoride	100	100	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P406871

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289729	Organic Carbon	95.7	95.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P406386

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289624	Turbidity	0.286	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P406389

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289648	Turbidity	0.840	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P406390

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289693	Turbidity	3.62	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P406404

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289558	Iron	0.257	Spike	P	0 - 20
2289558	Magnesium	0.198	Spike	P	0 - 20
2289558	Manganese	2.06	Spike	P	0 - 20
2289558	Potassium	0.458	Spike	P	0 - 20
2289558	Sodium	1.26	Spike	P	0 - 20
2289558	Strontium	0.314	Spike	P	0 - 20
2289558	Tin	1.39	Spike	P	0 - 20
2289558	Titanium	1.95	Spike	P	0 - 20
2289558	Vanadium	2.29	Spike	P	0 - 20
2289558	Zinc	2.27	Spike	P	0 - 20
3389558	Barium	1.99	Spike	P	0 - 20
3389558	Calcium	0.632	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P406404

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289558	Aluminum	0.0162	Spike	P	0 - 20
2289558	Antimony	1.35	Spike	P	0 - 20
2289558	Arsenic	0.0307	Spike	P	0 - 20
2289558	Barium	1.00	Spike	P	0 - 20
2289558	Beryllium	0.961	Spike	P	0 - 20
2289558	Boron	0.897	Spike	P	0 - 20
2289558	Cadmium	1.63	Spike	P	0 - 20
2289558	Chromium	0.214	Spike	P	0 - 20
2289558	Cobalt	0.0569	Spike	P	0 - 20
2289558	Copper	0.509	Spike	P	0 - 20
2289558	Lead	0.0702	Spike	P	0 - 20
2289558	Manganese	0.483	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P406404

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289558	Molybdenum	0.655	Spike	P	0 - 20
2289558	Nickel	0.717	Spike	P	0 - 20
2289558	Selenium	1.02	Spike	P	0 - 20
2289558	Silver	0.564	Spike	P	0 - 20
2289558	Thallium	0.686	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P406523

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289658	Chloride	0.656	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P406525

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289658	Sulfate	0.981	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P406750

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2290197	Sulfate	4.78	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P406714

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289057	Ammonia-N	1.31	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P406715

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289695	Ammonia-N	1.91	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P406791

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289463	Kjeldahl Nitrogen	6.53	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406792

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289708	Kjeldahl Nitrogen	3.89	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406417

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289660	NO2NO3-N	5.41	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406542

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289660	Total-P	0.945	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406543

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289866	Total-P	0.341	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406382

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289709	O-Phosphate-P	1.99	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P406378

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289648	Color (true)	17.7	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P406488

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289608	Total Alkalinity	1.59	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P406775

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289514	TDS	3.42	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 C-2011
Batch ID: P406776

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289658	TDS	1.92	Sample	P	0 - 10

Reference Method: SM 2540 D-2011
Batch ID: P406735

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289658	TSS	7.69	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P406490

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289608	Fluoride	0.0	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P406871

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289729	Organic Carbon	0.163	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B-2011

Run ID: A108924

Included Lab Sample IDs: 2289686, 2289687, 2289692, 2289693

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	102	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A108925

Included Lab Sample IDs: 2289690, 2289691, 2289696, 2289697, 2289700

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.3	98.6	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A108927

Included Lab Sample IDs: 2289686, 2289687, 2289692, 2289693, 2289698

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105
Turbidity	101	101	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108938

Included Lab Sample IDs: 2289688, 2289689, 2289694, 2289695, 2289699

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	102	P/P	90 - 110
NO2NO3-N	97.5	103	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A108970

Included Lab Sample IDs: 2289686, 2289687, 2289692, 2289693, 2289698

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.9	99.5	P/P	90 - 110
Total Alkalinity	99.5	97.8	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A108970

Included Lab Sample IDs: 2289686, 2289687, 2289692, 2289693, 2289698

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A108975

Included Lab Sample IDs: 2289686, 2289687, 2289692, 2289693

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.3	99.9	P/P	90 - 110
Chloride	99.9	97.7	P/P	90 - 110
Sulfate	101	97.8	P/P	90 - 110
Sulfate	99.5	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A109018

Included Lab Sample IDs: 2289710, 2289711, 2289712

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	101	P/P	90 - 110
Aluminum	103	101	P/P	90 - 110
Antimony	102	101	P/P	90 - 110
Antimony	99.5	102	P/P	90 - 110
Arsenic	100	101	P/P	90 - 110
Arsenic	103	102	P/P	90 - 110
Barium	101	102	P/P	90 - 110
Beryllium	100	101	P/P	90 - 110
Boron	100	103	P/P	90 - 110
Boron	101	100	P/P	90 - 110
Cadmium	101	99.7	P/P	90 - 110
Cadmium	98.1	101	P/P	90 - 110
Chromium	95.6	98.0	P/P	90 - 110
Chromium	98.4	97.2	P/P	90 - 110
Cobalt	99.0	97.6	P/P	90 - 110
Copper	101	99.3	P/P	90 - 110
Copper	97.5	99.0	P/P	90 - 110
Lead	94.4	95.2	P/P	90 - 110
Lead	94.9	95.5	P/P	90 - 110
Manganese	94.7	97.0	P/P	90 - 110
Molybdenum	101	102	P/P	90 - 110
Nickel	100	99.3	P/P	90 - 110
Nickel	97.2	98.2	P/P	90 - 110
Selenium	100	100	P/P	90 - 110
Selenium	99.7	99.5	P/P	90 - 110
Silver	96.9	96.7	P/P	90 - 110
Silver	97.2	97.5	P/P	90 - 110
Thallium	97.8	98.0	P/P	90 - 110
Thallium	98.8	100	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A109034

Included Lab Sample IDs: 2289710, 2289711, 2289712

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	102	P/P	90 - 110
Calcium	103	104	P/P	95 - 105
Calcium	104	104	P/P	90 - 110
Iron	104	105	P/P	95 - 105
Iron	106	106	P/P	90 - 110
Magnesium	104	106	P/P	95 - 105
Magnesium	107	106	P/P	90 - 110
Manganese	104	104	P/P	90 - 110
Potassium	97.4	98.1	P/P	95 - 105
Potassium	98.0	98.2	P/P	90 - 110
Sodium	102	102	P/P	95 - 105
Sodium	102	102	P/P	90 - 110
Strontium	101	102	P/P	95 - 105
Tin	103	106	P/P	95 - 105
Titanium	100	101	P/P	95 - 105
Vanadium	101	102	P/P	95 - 105

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A109034

Included Lab Sample IDs: 2289710, 2289711, 2289712

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Zinc	104	108	P/P	95 - 105
Zinc	106	106	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A109059

Included Lab Sample IDs: 2289688, 2289689, 2289694, 2289695, 2289699

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	93.6	94.1	P/P	90 - 110
Ammonia-N	98.6	97.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A109062

Included Lab Sample IDs: 2289695

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A109063

Included Lab Sample IDs: 2289688, 2289689, 2289694, 2289699

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A109104

Included Lab Sample IDs: 2289698

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	99.4	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A109126

Included Lab Sample IDs: 2289688, 2289689, 2289694, 2289695

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.9	99.8	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A109140

Included Lab Sample IDs: 2289689

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.6	98.4	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A109141

Included Lab Sample IDs: 2289688, 2289694, 2289695, 2289699

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

Reference Method: SM 5310 B-2011

Run ID: A109141

Included Lab Sample IDs: 2289688, 2289694, 2289695, 2289699

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.6	98.4	P/P	90 - 110
Organic Carbon	98.4	96.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A109155

Included Lab Sample IDs: 2289699

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	98.4	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A109183

Included Lab Sample IDs: 2289712

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Beryllium	95.2	94.0	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						0.286	
	Turbidity						0.840	
	Turbidity						3.62	
EPA 200.7 Rev. 4.4	Barium	104	102	104	106			1.99
	Calcium	111	105	112	111			0.632
	Iron	110	111	113	113			0.257
	Magnesium	113	112	115	115			0.198
	Manganese	106	106	106	108			2.06
	Potassium	103	107	102	102			0.458
	Sodium	107	105	107	105			1.26
	Strontium	103	101	102	102			0.314
	Tin	109	111	110	111			1.39
	Titanium	106	108	106	108			1.95
	Vanadium	104	107	104	107			2.29
	Zinc	110	112	110	112			2.27
	Aluminum	106	105	105	103			0.0162
	Antimony	107	108	109	110			1.35
EPA 200.8 Rev. 5.4	Arsenic	106	105	105	105			0.0307
	Barium	107	107	108	109			1.00
	Beryllium	103	104	103	108			0.961
	Boron	105	104	105	99.8			0.897
	Cadmium	102	102	104	105			1.63
	Chromium	101	103	102	104			0.214
	Cobalt	104	102	102	102			0.0569
	Copper	105	103	103	101			0.509
	Lead	101	101	101	100			0.0702
	Manganese	98.2	100	99.8	102			0.483
	Molybdenum	105	107	106	108			0.655
	Nickel	105	104	103	103			0.717
	Selenium	103	103	102	102			1.02
	Silver	102	102	101	101			0.564
	Thallium	106	107	108	106			0.686
EPA 300.0 Rev. 2.1	Chloride	100	99.3	99.8			0.656	
	Sulfate	101	103	104			0.981	
	Sulfate	102	100	97.2			4.78	
EPA 350.1 Rev. 2.0	Ammonia-N	97.2	96.4	97.8				1.31
	Ammonia-N	93.6	96.4	94.2				1.91
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102						6.53
	Kjeldahl Nitrogen	105	110	103				3.89
EPA 353.2 Rev. 2.0	NO2NO3-N	102	99.2	93.8				5.41
EPA 365.1 Rev. 2.0	Total-P	102						0.945
	Total-P	103	103	103				0.341
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.6	96.2	94.3				1.99
SM 2120 B-2011	Color (true)	100					17.7	
SM 2320 B-2011	Total Alkalinity	101					1.59	
SM 2540 C-2011	TDS						3.42	
	TDS						1.92	
SM 2540 D-2011	TSS						7.69	
SM 4500 F-C-2011	Fluoride	99.9	100	100				0.0
SM 5310 B-2011	Organic Carbon	96.3	95.7	95.9				0.163

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2289686, 2289687, 2289692, 2289693, 2289698
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2289710, 2289711, 2289712
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2289710, 2289711, 2289712
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2289686, 2289687, 2289692, 2289693
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2289686, 2289687, 2289692, 2289693, 2289698
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2289688, 2289689, 2289694, 2289695, 2289699
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2289688, 2289689, 2289694, 2289695, 2289699
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2289688, 2289689, 2289694, 2289695, 2289699
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2289688, 2289689, 2289694, 2289695, 2289699
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2289690, 2289691, 2289696, 2289697, 2289700
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2289686, 2289687, 2289692, 2289693
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2289686, 2289687, 2289692, 2289693, 2289698
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2289710, 2289711
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2289686, 2289687, 2289692, 2289693, 2289698
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2289686, 2289687, 2289692, 2289693, 2289698
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2289686, 2289687, 2289692, 2289693, 2289698
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2289688, 2289689, 2289694, 2289695, 2289699

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	11/16/2021			11/16/2021 16:53	Khloe J Berg	2289686, 2289687, 2289692, 2289693, 2289698
EPA 200.7 Rev. 4.4	11/16/2021	11/17/2021 10:15	Emily M Philpot	11/19/2021 12:42	Josef B Mick	2289712
	11/16/2021	11/17/2021 10:15	Emily M Philpot	11/19/2021 16:56	Josef B Mick	2289710
	11/16/2021	11/17/2021 10:15	Emily M Philpot	11/19/2021 17:03	Josef B Mick	2289711
EPA 200.8 Rev. 5.4	11/16/2021	11/17/2021 10:15	Emily M Philpot	11/19/2021 18:48	Alexander Thompson	2289712
	11/16/2021	11/17/2021 10:15	Emily M Philpot	11/19/2021 23:17	Alexander Thompson	2289710
	11/16/2021	11/17/2021 10:15	Emily M Philpot	11/19/2021 23:27	Alexander Thompson	2289711
	11/16/2021	11/17/2021 10:15	Emily M Philpot	12/02/2021 13:16	Alexander Thompson	2289712
EPA 300.0 Rev. 2.1	11/16/2021			11/17/2021 21:15	Roberta Tatti	2289686
	11/16/2021			11/17/2021 21:27	Roberta Tatti	2289687
	11/16/2021			11/17/2021 22:03	Roberta Tatti	2289692
	11/16/2021			11/17/2021 22:15	Roberta Tatti	2289693
	11/16/2021			11/23/2021 05:56	James L Waggeberby	2289698
EPA 350.1 Rev. 2.0	11/16/2021			11/23/2021 12:33	Roberta Tatti	2289688
	11/16/2021			11/23/2021 12:35	Roberta Tatti	2289689
	11/16/2021			11/23/2021 12:36	Roberta Tatti	2289694
	11/16/2021			11/23/2021 12:37	Roberta Tatti	2289699
	11/16/2021			11/23/2021 14:35	Roberta Tatti	2289695
EPA 351.2 Rev. 2.0	11/16/2021	11/29/2021 13:13	Benjamin T. Nordmann	11/30/2021 10:18	Alexandra J Mattheus	2289688
	11/16/2021	11/29/2021 13:13	Benjamin T. Nordmann	11/30/2021 10:20	Alexandra J Mattheus	2289689
	11/16/2021	11/29/2021 13:13	Benjamin T. Nordmann	11/30/2021 10:22	Alexandra J Mattheus	2289694
	11/16/2021	11/29/2021 13:13	Benjamin T. Nordmann	11/30/2021 10:23	Alexandra J Mattheus	2289695
	11/16/2021	11/29/2021 13:13	Benjamin T. Nordmann	11/30/2021 14:02	Alexandra J Mattheus	2289699
EPA 353.2 Rev. 2.0	11/16/2021			11/17/2021 09:48	Beverly Y. Sanders	2289689
	11/16/2021			11/17/2021 09:49	Beverly Y. Sanders	2289694
	11/16/2021			11/17/2021 09:50	Beverly Y. Sanders	2289695
	11/16/2021			11/17/2021 09:51	Beverly Y. Sanders	2289699
	11/16/2021			11/17/2021 10:28	Beverly Y. Sanders	2289688
EPA 365.1 Rev. 2.0	11/16/2021	11/19/2021 14:45	Madeline Gruver	11/22/2021 13:29	Sarah A Nixon	2289695
	11/16/2021	11/19/2021 14:45	Madeline Gruver	11/22/2021 16:56	Sarah A Nixon	2289688
	11/16/2021	11/19/2021 14:45	Madeline Gruver	11/22/2021 16:57	Sarah A Nixon	2289689
	11/16/2021	11/19/2021 14:45	Madeline Gruver	11/22/2021 16:58	Sarah A Nixon	2289694
	11/16/2021	11/19/2021 14:45	Madeline Gruver	11/22/2021 17:02	Sarah A Nixon	2289699
EPA 365.1 Rev. 2.0 dissolved	11/16/2021			11/16/2021 15:18	James L Waggeberby	2289690
	11/16/2021			11/16/2021 15:19	James L Waggeberby	2289691
	11/16/2021			11/16/2021 15:20	James L Waggeberby	2289696, 2289697
	11/16/2021			11/16/2021 15:21	James L Waggeberby	2289700
SM 2120 B-2011	11/16/2021			11/16/2021 15:23	Blanca Fach	2289686
	11/16/2021			11/16/2021 15:24	Blanca Fach	2289687

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2120 B-2011	11/16/2021			11/16/2021 15:25	Blanca Fach	2289692
	11/16/2021			11/16/2021 15:26	Blanca Fach	2289693
SM 2320 B-2011	11/16/2021			11/17/2021 20:41	Dale L. Simmons	2289686
	11/16/2021			11/17/2021 20:47	Dale L. Simmons	2289687
	11/16/2021			11/17/2021 21:27	Dale L. Simmons	2289692
	11/16/2021			11/17/2021 21:39	Dale L. Simmons	2289693
	11/16/2021			11/17/2021 21:47	Dale L. Simmons	2289698
SM 2340B	11/16/2021			11/19/2021 16:56	Josef B Mick	2289710
	11/16/2021			11/19/2021 17:03	Josef B Mick	2289711
SM 2540 C-2011	11/16/2021			11/18/2021 15:56	Yijie Li	2289686, 2289687, 2289692, 2289693, 2289698
SM 2540 D-2011	11/16/2021			11/18/2021 15:56	Yijie Li	2289686, 2289687, 2289692, 2289693, 2289698
SM 4500 F-C-2011	11/16/2021			11/17/2021 20:41	Dale L. Simmons	2289686
	11/16/2021			11/17/2021 20:47	Dale L. Simmons	2289687
	11/16/2021			11/17/2021 21:27	Dale L. Simmons	2289692
	11/16/2021			11/17/2021 21:39	Dale L. Simmons	2289693
	11/16/2021			11/17/2021 21:47	Dale L. Simmons	2289698
SM 5310 B-2011	11/16/2021			11/30/2021 01:15	Khloe J Berg	2289688
	11/16/2021			11/30/2021 01:26	Khloe J Berg	2289689
	11/16/2021			11/30/2021 01:56	Khloe J Berg	2289694
	11/16/2021			11/30/2021 02:07	Khloe J Berg	2289695
	11/16/2021			11/30/2021 02:17	Khloe J Berg	2289699