

Chemical Analysis Report

SW-DIST-2018-07-26-01

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

Event Description: **Reference Lake- Hammock**
Request ID: **RQ-2018-07-23-05**
Customer: **SW-DIST**
Project ID: **LAKESREF**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Judy Ashton

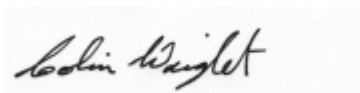
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This Report replaces the previous Report Serial Number: 0107101

Report Comment: Field ID corrected at request of customer.

Revision certified by: Colin Wright, Program Administrator

Date Certified: 27-DEC-2018 16:17



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 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: Hammock Lake

Collection Date/Time: 07/25/2018 13:10

Field ID: 23010467

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2011070	EPA 300.0	Bromide	0.10		mg Br/L	P349580	
	EPA 300.0 Rev. 2.1	Chloride	29		mg Cl/L	P349591	
		Sulfate	2.8		mg SO4/L	P349594	
		Color (true)	160		PCU	P349231	
	SM 2320 B-97	Total Alkalinity	3.9		mg CaCO3/L	P349482	
	SM 4500 F-C-97	Fluoride	0.22		mg F/L	P349486	
2011071	EPA 350.1 Rev. 2.0	Ammonia-N	0.095		mg N/L	P349525	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P349391	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.032		mg N/L	P349408	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P349483	
2011072	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.062		mg P/L	P349240	
2011075	EPA 200.7 Rev. 4.4	Calcium	2.99		mg/L	P349462	
		Iron	410		ug/L	P349462	
		Magnesium	2.68		mg/L	P349462	
		Potassium	2.6		mg/L	P349462	
		Sodium	16.0		mg/L	P349462	
		Zinc	5.0	U	ug/L	P349462	
	EPA 200.8 Rev. 5.4	Arsenic	0.72		ug/L	P349462	
		Cadmium	0.020	U	ug/L	P349462	
		Chromium	0.40	U	ug/L	P349462	
		Copper	0.64	I	ug/L	P349462	
		Lead	0.46		ug/L	P349462	
		Nickel	0.20	U	ug/L	P349462	
		Silver	0.010	U	ug/L	P349462	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P349462

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
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P349462

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 300.0
Batch ID: P349580

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349591

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349594

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349525

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349391

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349408

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349483

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349240

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

Reference Method: SM 2120 B
Batch ID: P349231

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P349482

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

Reference Method: SM 4500 F-C-97
Batch ID: P349486

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P349462

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	106		P	85 - 115
Iron	106		P	85 - 115
Magnesium	110		P	85 - 115
Potassium	103		P	85 - 115
Sodium	105		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P349462

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	101		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	93.7		P	85 - 115
Copper	95.9		P	85 - 115
Lead	97.2		P	85 - 115
Nickel	98.7		P	85 - 115
Silver	98.4		P	85 - 115

Reference Method: EPA 300.0
Batch ID: P349580

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349591

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349594

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349525

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349391

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349408

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: P349483

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.1		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349240

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.2		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P349231

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.4		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P349482

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P349486

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.8		P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P349462

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011598	Calcium	94.0		P	80 - 120
2011598	Iron	106		P	80 - 120
2011598	Magnesium	107		P	80 - 120
2011598	Potassium	101		P	80 - 120
2011598	Sodium	89.3		P	80 - 120
2011598	Zinc	106		P	80 - 120
2011701	Calcium	104		P	80 - 120
2011701	Iron	107	105	P/P	80 - 120
2011701	Magnesium	110	107	P/P	80 - 120
2011701	Potassium	105	103	P/P	80 - 120
2011701	Sodium	106	103	P/P	80 - 120
2011701	Zinc	103	102	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P349462

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011598	Arsenic	105		P	80 - 120
2011598	Cadmium	105		P	80 - 120
2011598	Chromium	94.9		P	80 - 120
2011598	Copper	97.1		P	80 - 120
2011598	Lead	100		P	80 - 120
2011598	Nickel	98.7		P	80 - 120
2011598	Silver	98.0		P	80 - 120
2011701	Arsenic	104	102	P/P	80 - 120
2011701	Cadmium	105	104	P/P	80 - 120
2011701	Chromium	97.5	95.8	P/P	80 - 120
2011701	Copper	98.8	96.6	P/P	80 - 120
2011701	Lead	98.3	97.9	P/P	80 - 120
2011701	Nickel	101	99.0	P/P	80 - 120
2011701	Silver	100	98.6	P/P	80 - 120

Reference Method: EPA 300.0
Batch ID: P349580

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009563	Bromide	100	96.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349591

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011059	Chloride	98.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349594

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011059	Sulfate	96.6		P	90 - 110
2011141	Sulfate	98.3		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349525

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011026	Ammonia-N	102	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349391

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2010996	Kjeldahl Nitrogen	90.3	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349408

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011060	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349483

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011060	Total-P	95.1	93.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349240

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011072	O-Phosphate-P	96.5	97.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P349486

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011483	Fluoride	96.8	95.4	P/P	91 - 105

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P349462

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011701	Calcium	1.75	Spike	P	0 - 20
2011701	Iron	1.91	Spike	P	0 - 20
2011701	Magnesium	2.84	Spike	P	0 - 20
2011701	Potassium	2.50	Spike	P	0 - 20
2011701	Sodium	1.88	Spike	P	0 - 20
2011701	Zinc	1.52	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P349462

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011701	Arsenic	2.04	Spike	P	0 - 20
2011701	Cadmium	0.923	Spike	P	0 - 20
2011701	Chromium	1.82	Spike	P	0 - 20
2011701	Copper	2.21	Spike	P	0 - 20
2011701	Lead	0.389	Spike	P	0 - 20
2011701	Nickel	1.94	Spike	P	0 - 20
2011701	Silver	1.73	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P349580

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009563	Bromide	3.44	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349591

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011059	Chloride	1.90	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349594

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011059	Sulfate	2.43	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349525

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011026	Ammonia-N	1.63	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349391

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2010996	Kjeldahl Nitrogen	6.79	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349408

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011060	NO2NO3-N	0.464	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349483

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011060	Total-P	2.19	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349240

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011072	O-Phosphate-P	0.504	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P349231

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2010989	Color (true)	0.591	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P349482

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011483	Total Alkalinity	0.273	Sample	P	0 - 1.6

Reference Method: SM 4500 F-C-97
Batch ID: P349486

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011483	Fluoride	0.959	Spike	P	0 - 3.5

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B
Run ID: A85507
Included Lab Sample IDs: 2011070

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	102	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A85510
Included Lab Sample IDs: 2011072

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.3	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A85559
Included Lab Sample IDs: 2011071

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A85560
Included Lab Sample IDs: 2011070

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.1	99.5	P/P	90 - 110
Sulfate	97.6	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A85594
Included Lab Sample IDs: 2011071

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	91.4	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A85607
Included Lab Sample IDs: 2011070

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

Reference Method: SM 4500 F-C-97
Run ID: A85607
Included Lab Sample IDs: 2011070

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	98.5	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A85619
Included Lab Sample IDs: 2011075

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	103	P/P	95 - 105

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A85619

Included Lab Sample IDs: 2011075

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	100	103	P/P	95 - 105
Magnesium	101	104	P/P	95 - 105
Potassium	98.9	100	P/P	95 - 105
Sodium	101	99.9	P/P	95 - 105
Zinc	102	102	P/P	95 - 105

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A85621

Included Lab Sample IDs: 2011071

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A85630

Included Lab Sample IDs: 2011071

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	94.4	95.7	P/P	90 - 110

Reference Method: EPA 300.0

Run ID: A85655

Included Lab Sample IDs: 2011070

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A85689

Included Lab Sample IDs: 2011075

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	103	101	P/P	90 - 110
Cadmium	100	100	P/P	90 - 110
Chromium	92.6	94.2	P/P	90 - 110
Copper	101	98.0	P/P	90 - 110
Lead	99.7	99.1	P/P	90 - 110
Nickel	101	98.2	P/P	90 - 110
Silver	96.6	95.8	P/P	90 - 110

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

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

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
EPA 200.7 Rev. 4.4	Calcium	106	94.0	104			1.75
	Iron	106	106	107	105		1.91
	Magnesium	110	107	110	107		2.84
	Potassium	103	101	105	103		2.50
	Sodium	105	89.3	106	103		1.88
	Zinc	103	106	103	102		1.52
EPA 200.8 Rev. 5.4	Arsenic	101	105	104	102		2.04
	Cadmium	103	105	105	104		0.923
	Chromium	93.7	94.9	97.5	95.8		1.82
	Copper	95.9	97.1	98.8	96.6		2.21
	Lead	97.2	100	98.3	97.9		0.389
	Nickel	98.7	98.7	101	99.0		1.94
	Silver	98.4	98.0	100	98.6		1.73
EPA 300.0	Bromide	107	100	96.6			3.44
EPA 300.0 Rev. 2.1	Chloride	105	98.6			1.90	
	Sulfate	105	96.6	98.3		2.43	
EPA 350.1 Rev. 2.0	Ammonia-N	104	102	100			1.63
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	90.3	101			6.79
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	102	102			0.464
EPA 365.1 Rev. 2.0	Total-P	98.1	95.1	93.0			2.19
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.2	96.5	97.3			0.504
SM 2120 B	Color (true)	98.4				0.591	
SM 2320 B-97	Total Alkalinity	103				0.273	
SM 4500 F-C-97	Fluoride	94.8	96.8	95.4			0.959

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2011075
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2011075
EPA 300.0 / E31780	Bromide in aqueous matrices	2011070
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2011070
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2011070
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2011071
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2011071
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2011071
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2011071
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2011072
SM 2120 B / E31780	True Color measured at 450 nm	2011070
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2011070
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2011070

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 200.7 Rev. 4.4	07/26/2018	07/31/2018 17:45	Elliott D. Healy	08/01/2018 15:00	Betina Topolski	2011075
EPA 200.8 Rev. 5.4	07/26/2018	07/31/2018 17:45	Elliott D. Healy	08/03/2018 17:57	Allison Taylor	2011075
EPA 300.0	07/26/2018			08/01/2018 17:53	Julia Storbeck	2011070
EPA 300.0 Rev. 2.1	07/26/2018			08/02/2018 12:31	Lipi Saha	2011070
EPA 350.1 Rev. 2.0	07/26/2018			08/01/2018 13:30	Ping Hua	2011071
EPA 351.2 Rev. 2.0	07/26/2018	07/30/2018 15:30	Adrian Shelby	07/31/2018 16:55	Joseph Suarez	2011071
EPA 353.2 Rev. 2.0	07/26/2018			07/30/2018 14:23	Lauren Bottorf	2011071
EPA 365.1 Rev. 2.0	07/26/2018	08/01/2018 12:35	Sima Feizi	08/02/2018 08:49	Beverly Y. Sanders	2011071
EPA 365.1 Rev. 2.0 dissolved	07/26/2018			07/26/2018 16:46	Julia Storbeck	2011072
SM 2120 B	07/26/2018			07/26/2018 16:17	Tanya Welborn	2011070
SM 2320 B-97	07/26/2018			07/31/2018 22:44	Dale L. Simmons	2011070
SM 4500 F-C-97	07/26/2018			07/31/2018 22:44	Dale L. Simmons	2011070