Chemical Analysis Report

SW-DIST-2018-08-01-01

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

Event Description: **Reference Lake LVI-Clear Lake**
Request ID: **RQ-2018-07-30-13**
Customer: **SW-DIST**
Project ID: **LAKESREF**

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 16-AUG-2018 16:45

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Metals and Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited 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: CLEAR LAKE-REF. LAKE **Collection Date/Time: 07/31/2018 11:05**

Field ID: 23010401 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2012286	EPA 300.0	Bromide	0.021	I	mg Br/L	P349705	
	EPA 300.0 Rev. 2.1	Chloride	16		mg Cl/L	P349624	
		Sulfate	9.7		mg SO4/L	P349627	
	SM 2120 B	Color (true)	16		PCU	P349505	
	SM 2320 B-97	Total Alkalinity	45		mg CaCO3/L	P349653	
	SM 4500 F-C-97	Fluoride	0.20		mg F/L	P349656	
2012287	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P349686	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.70		mg N/L	P349662	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P349550	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P349564	
2012288	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P349503	
2012307	EPA 200.7 Rev. 4.4	Calcium	17.5		mg/L	P349576	
		Iron	30	U	ug/L	P349576	
		Magnesium	4.85		mg/L	P349576	
		Potassium	4.9		mg/L	P349576	
		Sodium	7.0		mg/L	P349576	
		Zinc	5.0	U	ug/L	P349576	
	EPA 200.8 Rev. 5.4	Arsenic	2.28		ug/L	P349576	
		Cadmium	0.020	U	ug/L	P349576	
		Chromium	0.40	U	ug/L	P349576	
		Copper	0.32	I	ug/L	P349576	
		Lead	0.050	U	ug/L	P349576	
		Nickel	0.20	U	ug/L	P349576	
		Silver	0.010	U	ug/L	P349576	

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: P349576

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: P349576

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: P349705

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349624

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349627

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349686

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349662

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: P349550

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349564

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349503

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

Reference Method: SM 2120 B
Batch ID: P349505

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P349653

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

Reference Method: SM 4500 F-C-97
Batch ID: P349656

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: P349576

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	102		P	85 - 115
Iron	105		P	85 - 115
Magnesium	110		P	85 - 115
Potassium	103		P	85 - 115
Sodium	97.6		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P349576

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	99.3		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	93.5		P	85 - 115
Copper	96.3		P	85 - 115
Lead	95.3		P	85 - 115
Nickel	98.2		P	85 - 115
Silver	97.6		P	85 - 115

Reference Method: EPA 300.0
Batch ID: P349705

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349624

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349627

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	106		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349686

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: P349662

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.6		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349550

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349564

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349503

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

Reference Method: SM 2120 B
Batch ID: P349505

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P349653

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P349656

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.2		P	91 - 105

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P349576

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012229	Calcium	106		P	80 - 120
2012229	Iron	107		P	80 - 120
2012229	Magnesium	111		P	80 - 120
2012229	Potassium	105		P	80 - 120
2012229	Sodium	101		P	80 - 120
2012229	Zinc	105		P	80 - 120
2012690	Calcium	105		P	80 - 120
2012690	Iron	110	109	P/P	80 - 120
2012690	Magnesium	114	114	P/P	80 - 120
2012690	Potassium	106	106	P/P	80 - 120
2012690	Sodium	101		P	80 - 120
2012690	Zinc	107	108	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P349576

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012229	Arsenic	102		P	80 - 120
2012229	Cadmium	103		P	80 - 120
2012229	Chromium	95.7		P	80 - 120
2012229	Copper	98.8		P	80 - 120
2012229	Lead	98.2		P	80 - 120
2012229	Nickel	101		P	80 - 120
2012229	Silver	99.0		P	80 - 120
2012690	Arsenic	99.4	104	P/P	80 - 120
2012690	Cadmium	98.8	102	P/P	80 - 120
2012690	Chromium	94.1	97.1	P/P	80 - 120
2012690	Copper	93.8	98.4	P/P	80 - 120
2012690	Lead	94.3	97.8	P/P	80 - 120
2012690	Nickel	96.1	100	P/P	80 - 120
2012690	Silver	96.2	98.8	P/P	80 - 120

Reference Method: EPA 300.0
Batch ID: P349705

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012286	Bromide	98.2	96.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349624

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012260	Chloride	105		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349627

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012179	Sulfate	110		P	90 - 110
2012260	Sulfate	102		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349686

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012287	Ammonia-N	100	99.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349662

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012287	Kjeldahl Nitrogen	95.7	95.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349550

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012287	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349564

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012287	Total-P	100	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349503

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012288	O-Phosphate-P	95.7	96.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P349656

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012216	Fluoride	97.1	97.7	P/P	91 - 105

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P349576

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012690	Calcium	0.100	Spike	P	0 - 20
2012690	Iron	0.552	Spike	P	0 - 20
2012690	Magnesium	0.277	Spike	P	0 - 20
2012690	Potassium	0.331	Spike	P	0 - 20
2012690	Sodium	0.689	Spike	P	0 - 20
2012690	Zinc	0.608	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P349576

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012690	Arsenic	4.00	Spike	P	0 - 20
2012690	Cadmium	3.50	Spike	P	0 - 20
2012690	Chromium	3.10	Spike	P	0 - 20
2012690	Copper	4.68	Spike	P	0 - 20
2012690	Lead	3.61	Spike	P	0 - 20
2012690	Nickel	3.90	Spike	P	0 - 20
2012690	Silver	2.68	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P349705

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012286	Bromide	1.42	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349624

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012179	Chloride	7.23	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349627

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012179	Sulfate	8.04	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349686

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012287	Ammonia-N	0.710	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349662

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012287	Kjeldahl Nitrogen	0.211	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349550

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012287	NO2NO3-N	0.482	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349564

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012287	Total-P	0.432	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349503

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012288	O-Phosphate-P	0.729	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P349505

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012261	Color (true)	2.84	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P349653

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012216	Total Alkalinity	0.170	Sample	P	0 - 1.6

Reference Method: SM 4500 F-C-97
Batch ID: P349656

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012216	Fluoride	0.476	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: EPA 300.0 Rev. 2.1
Run ID: A85560
Included Lab Sample IDs: 2012286

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	104	P/P	90 - 110
Sulfate	105	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A85616
Included Lab Sample IDs: 2012288

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.5	98.9	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A85617
Included Lab Sample IDs: 2012286

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A85640
Included Lab Sample IDs: 2012287

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.5	101	P/P	90 - 110

Reference Method: EPA 300.0
Run ID: A85655
Included Lab Sample IDs: 2012286

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A85668
Included Lab Sample IDs: 2012287

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

Reference Method: SM 2320 B-97
Run ID: A85692
Included Lab Sample IDs: 2012286

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

Reference Method: SM 4500 F-C-97
Run ID: A85692
Included Lab Sample IDs: 2012286

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A85703
Included Lab Sample IDs: 2012287

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.6	103	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A85708
Included Lab Sample IDs: 2012307

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	104	P/P	90 - 110
Iron	102	103	P/P	90 - 110
Magnesium	103	104	P/P	90 - 110
Potassium	102	103	P/P	90 - 110
Sodium	98.3	100	P/P	90 - 110
Zinc	106	106	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A85716
Included Lab Sample IDs: 2012307

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	98.3	101	P/P	90 - 110
Cadmium	99.2	100	P/P	90 - 110
Copper	96.6	100	P/P	90 - 110
Lead	97.3	98.5	P/P	90 - 110
Nickel	96.2	100	P/P	90 - 110
Silver	93.8	95.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A85727
Included Lab Sample IDs: 2012287

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.7	98.2	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A85738
Included Lab Sample IDs: 2012307

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	97.4	97.3	P/P	90 - 110

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

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision		
						LCS	SMP	MS
EPA 200.7 Rev. 4.4	Calcium	102	106	105				0.100
	Iron	105	107	110	109			0.552
	Magnesium	110	111	114	114			0.277
	Potassium	103	105	106	106			0.331
	Sodium	97.6	101	101				0.689
	Zinc	103	105	107	108			0.608
EPA 200.8 Rev. 5.4	Arsenic	99.3	102	99.4	104			4.00
	Cadmium	101	103	98.8	102			3.50
	Chromium	93.5	95.7	94.1	97.1			3.10
	Copper	96.3	98.8	93.8	98.4			4.68
	Lead	95.3	98.2	94.3	97.8			3.61
	Nickel	98.2	101	96.1	100			3.90
	Silver	97.6	99.0	96.2	98.8			2.68
EPA 300.0	Bromide	98.5	98.2	96.8				1.42
EPA 300.0 Rev. 2.1	Chloride	107	105				7.23	
	Sulfate	106	110	102			8.04	
EPA 350.1 Rev. 2.0	Ammonia-N	104	100	99.6				0.710
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	94.6	95.7	95.4				0.211
EPA 353.2 Rev. 2.0	NO2NO3-N	103	104	104				0.482
EPA 365.1 Rev. 2.0	Total-P	98.4	100	99.8				0.432
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.5	95.7	96.4				0.729
SM 2120 B	Color (true)	101					2.84	
SM 2320 B-97	Total Alkalinity	104					0.170	
SM 4500 F-C-97	Fluoride	99.2	97.1	97.7				0.476

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	2012307
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2012307
EPA 300.0 / E31780	Bromide in aqueous matrices	2012286
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2012286
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2012286
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2012287
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2012287
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2012287
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2012287
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2012288
SM 2120 B / E31780	True Color measured at 450 nm	2012286
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2012286
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2012286

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	08/01/2018	08/02/2018 15:20	Elliott D. Healy	08/03/2018 18:25	Betina Topolski	2012307
EPA 200.8 Rev. 5.4	08/01/2018	08/02/2018 15:20	Elliott D. Healy	08/06/2018 20:06	Allison Taylor	2012307
	08/01/2018	08/02/2018 15:20	Elliott D. Healy	08/07/2018 20:02	Allison Taylor	2012307
EPA 300.0	08/01/2018			08/03/2018 09:15	Lipi Saha	2012286
EPA 300.0 Rev. 2.1	08/01/2018			08/03/2018 21:55	Lipi Saha	2012286
EPA 350.1 Rev. 2.0	08/01/2018			08/06/2018 14:39	Julia Storbeck	2012287
EPA 351.2 Rev. 2.0	08/01/2018	08/06/2018 15:40	Adrian Shelby	08/07/2018 10:41	Joseph Suarez	2012287
EPA 353.2 Rev. 2.0	08/01/2018			08/02/2018 11:43	Lauren Bottorf	2012287
EPA 365.1 Rev. 2.0	08/01/2018	08/02/2018 11:50	Sima Feizi	08/03/2018 11:29	Beverly Y. Sanders	2012287
EPA 365.1 Rev. 2.0 dissolved	08/01/2018			08/01/2018 15:08	Julia Storbeck	2012288
SM 2120 B	08/01/2018			08/01/2018 16:45	Tanya Welborn	2012286
SM 2320 B-97	08/01/2018			08/03/2018 08:22	Dale L. Simmons	2012286
SM 4500 F-C-97	08/01/2018			08/03/2018 08:22	Dale L. Simmons	2012286