Chemical Analysis Report

BSSP-2017-07-20-01

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

Event Description: **Reference Lake Sampling 2 Lakes**
Request ID: **RQ-2017-07-17-39**
Customer: **BSSP**
Project ID: **LAKESREF**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd.
Tallahassee, FL 32399-2400
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 11-AUG-2017 12:07

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: MOORE LAKE **Collection Date/Time: 07/20/2017 12:10**

Field ID: MOORE LAKE Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1915311	EPA 300.0	Bromide**	0.016	U	mg Br/L	P329150	
	EPA 300.0 Rev. 2.1	Chloride	2.6		mg Cl/L	P328910	
		Sulfate	0.66		mg SO4/L	P328913	
	SM 2120 B	Color (true)	31		PCU	P328858	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P329037	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P329039	
1915312	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P329097	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.35	J	mg N/L	P329331	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P329127	
	EPA 365.1 Rev. 2.0	Total-P	0.006		mg P/L	P329042	
1915313	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P328948	
1915316	EPA 200.7 Rev. 4.4	Calcium	0.34		mg/L	P328878	
		Iron	61	I	ug/L	P328878	
		Magnesium	0.41		mg/L	P328878	
		Potassium	0.30	U	mg/L	P328878	
		Sodium	1.4	I	mg/L	P328878	
		Zinc	5.0	U	ug/L	P328878	
	EPA 200.8 Rev. 5.4	Arsenic	0.16	I	ug/L	P328878	
		Cadmium	0.020	U	ug/L	P328878	
		Chromium	0.40	U	ug/L	P328878	
		Copper	0.23	I	ug/L	P328878	
		Lead	0.15	I	ug/L	P328878	
		Nickel	0.20	U	ug/L	P328878	
		Silver	0.010	U	ug/L	P328878	

Ref. Method and Comment:
EPA 351.2 Rev. 2.0: Refer to the narrative for an explanation of QC Codes.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P328878

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: P328878

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P328878

Component	Result	Code	Units
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: P329150

Component	Result	Code	Units
Bromide	0.016	U	mg Br/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328910

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328913

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329097

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329331

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329127

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329042

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P328948

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 2120 B
Batch ID: P328858

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P329037

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

Reference Method: SM 4500 F-C-97
Batch ID: P329039

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: P328878

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	110		P	85 - 115
Iron	111		P	85 - 115
Magnesium	109		P	85 - 115
Potassium	101		P	85 - 115
Sodium	105		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P328878

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	101		P	85 - 115
Cadmium	99.9		P	85 - 115
Chromium	98.1		P	85 - 115
Copper	98.3		P	85 - 115
Lead	95.7		P	85 - 115
Nickel	99.6		P	85 - 115
Silver	99.2		P	85 - 115

Reference Method: EPA 300.0
Batch ID: P329150

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Bromide	94.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328910

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328913

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329097

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329331

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329127

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: P329042

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P328948

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

Reference Method: SM 2320 B-97
Batch ID: P329037

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P329039

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.0		P	92 - 103

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P328878

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P328878

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1914325	Calcium	112		P	80 - 120
1914325	Iron	113		P	80 - 120
1914325	Magnesium	115		P	80 - 120
1914325	Potassium	102		P	80 - 120
1914325	Sodium	108		P	80 - 120
1914325	Zinc	108		P	80 - 120
1914474	Calcium	106		P	80 - 120
1914474	Iron	113	111	P/P	80 - 120
1914474	Magnesium	106		P	80 - 120
1914474	Potassium	98.5		P	80 - 120
1914474	Sodium	103		P	80 - 120
1914474	Zinc	106	105	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P328878

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1914325	Arsenic	101		P	80 - 120
1914325	Cadmium	102		P	80 - 120
1914325	Chromium	100		P	80 - 120
1914325	Copper	98.9		P	80 - 120
1914325	Lead	96.2		P	80 - 120
1914325	Nickel	99.6		P	80 - 120
1914325	Silver	97.8		P	80 - 120
1914474	Arsenic	104	105	P/P	80 - 120
1914474	Cadmium	102	105	P/P	80 - 120
1914474	Chromium	97.7	98.8	P/P	80 - 120
1914474	Copper	100	101	P/P	80 - 120
1914474	Lead	98.0	98.9	P/P	80 - 120
1914474	Nickel	101	102	P/P	80 - 120
1914474	Silver	99.0	101	P/P	80 - 120

Reference Method: EPA 300.0
Batch ID: P329150

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1915311	Bromide	101	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328910

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1914809	Chloride	103		P	90 - 110
1914939	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328913

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1914809	Sulfate	101		P	90 - 110
1914939	Sulfate	101		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329097

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1915372	Ammonia-N	108	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329331

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1915312	Kjeldahl Nitrogen	108	114	P/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329127

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1914485	NO2NO3-N	100		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329042

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1915503	Total-P	102	96.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P328948

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1915313	O-Phosphate-P	95.4	96.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P329039

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1915780	Fluoride	98.0	99.2	P/P	91 - 105

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P328878

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1914474	Calcium	1.44	Spike	P	0 - 20
1914474	Iron	2.46	Spike	P	0 - 20
1914474	Magnesium	2.47	Spike	P	0 - 20
1914474	Potassium	0.903	Spike	P	0 - 20
1914474	Sodium	1.07	Spike	P	0 - 20
1914474	Zinc	0.955	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P328878

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1914474	Arsenic	0.894	Spike	P	0 - 20
1914474	Cadmium	2.60	Spike	P	0 - 20
1914474	Chromium	1.16	Spike	P	0 - 20
1914474	Copper	0.664	Spike	P	0 - 20
1914474	Lead	0.873	Spike	P	0 - 20
1914474	Nickel	1.55	Spike	P	0 - 20
1914474	Silver	1.63	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P329150

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1915311	Bromide	0.929	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328910

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1914809	Chloride	1.17	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328913

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1914809	Sulfate	1.48	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1915372	Ammonia-N	1.89	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329331

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1915312	Kjeldahl Nitrogen	3.71	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329127

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1914485	NO2NO3-N	0.214	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329042

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1915503	Total-P	4.47	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P328948

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1915313	O-Phosphate-P	1.56	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P328858

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1915170	Color (true)	2.35	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P329037

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1915780	Total Alkalinity	0.146	Sample	P	0 - 4.8

Reference Method: SM 4500 F-C-97
Batch ID: P329039

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1915780	Fluoride	0.927	Spike	P	0 - 3.0

* 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: A77800
Included Lab Sample IDs: 1915311

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

Reference Method: SM 2120 B
Run ID: A77847
Included Lab Sample IDs: 1915311

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	85 - 115

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A77873
Included Lab Sample IDs: 1915313

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.4	98.2	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A77875
Included Lab Sample IDs: 1915316

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	103	102	P/P	90 - 110
Cadmium	102	102	P/P	90 - 110
Chromium	100	101	P/P	90 - 110
Copper	102	102	P/P	90 - 110
Lead	96.3	96.9	P/P	90 - 110
Nickel	102	101	P/P	90 - 110
Silver	97.6	98.0	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A77918
Included Lab Sample IDs: 1915316

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	98.2	P/P	90 - 110
Iron	103	99.5	P/P	90 - 110
Magnesium	102	98.8	P/P	90 - 110
Potassium	96.8	93.9	P/P	90 - 110
Sodium	99.5	96.7	P/P	90 - 110
Zinc	100	97.0	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A77919
Included Lab Sample IDs: 1915311

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

Reference Method: SM 4500 F-C-97
Run ID: A77919
Included Lab Sample IDs: 1915311

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	96.5	97.7	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A77945
Included Lab Sample IDs: 1915312

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A77954
Included Lab Sample IDs: 1915312

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

Reference Method: EPA 300.0
Run ID: A77965
Included Lab Sample IDs: 1915311

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A77990
Included Lab Sample IDs: 1915312

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.5	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A78054
Included Lab Sample IDs: 1915312

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	105	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	110	112	106				1.44
	Iron	111	113	113	111			2.46
	Magnesium	109	115	106				2.47
	Potassium	101	102	98.5				0.903
	Sodium	105	108	103				1.07
	Zinc	104	108	106	105			0.955
EPA 200.8 Rev. 5.4	Arsenic	101	101	104	105			0.894
	Cadmium	99.9	102	102	105			2.60
	Chromium	98.1	100	97.7	98.8			1.16
	Copper	98.3	98.9	100	101			0.664
	Lead	95.7	96.2	98.0	98.9			0.873
	Nickel	99.6	99.6	101	102			1.55
	Silver	99.2	97.8	99.0	101			1.63
EPA 300.0	Bromide	94.8	101	100				0.929
EPA 300.0 Rev. 2.1	Chloride	103	103	103			1.17	
	Sulfate	103	101	101			1.48	
EPA 350.1 Rev. 2.0	Ammonia-N	102	108	104				1.89
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	108	114				3.71

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 353.2 Rev. 2.0	NO2NO3-N	102	100				0.214
EPA 365.1 Rev. 2.0	Total-P	101	102	96.4			4.47
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.6	95.4	96.9			1.56
SM 2120 B	Color (true)					2.35	
SM 2320 B-97	Total Alkalinity	102				0.146	
SM 4500 F-C-97	Fluoride	95.0	98.0	99.2			0.927

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	1915316
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1915316
EPA 300.0 / E31780	Bromide in aqueous matrices	1915311
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1915311
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1915311
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1915312
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1915312
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1915312
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1915312
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1915313
SM 2120 B / E31780	True Color measured at 450 nm	1915311
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1915311
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1915311

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	07/20/2017	07/20/2017	Elliott D. Healy	07/24/2017	Betina Topolski	1915316
EPA 200.8 Rev. 5.4	07/20/2017	07/20/2017	Elliott D. Healy	07/21/2017	Nadine Brooks	1915316
EPA 300.0	07/20/2017			07/27/2017	Julia Storbeck	1915311
EPA 300.0 Rev. 2.1	07/20/2017			07/21/2017	Julia Storbeck	1915311
EPA 350.1 Rev. 2.0	07/20/2017			07/25/2017	Sofia Elnemr	1915312
EPA 351.2 Rev. 2.0	07/20/2017	07/28/2017	Adrian Shelby	07/31/2017	Joseph Suarez	1915312
EPA 353.2 Rev. 2.0	07/20/2017			07/26/2017	Beverly Y. Sanders	1915312
EPA 365.1 Rev. 2.0	07/20/2017	07/25/2017	Vijayalakshmi Reddy	07/27/2017	Lipi Saha	1915312
EPA 365.1 Rev. 2.0 dissolved	07/20/2017			07/21/2017 14:46	Ping Hua	1915313
SM 2120 B	07/20/2017			07/20/2017 15:23	Tanya Welborn	1915311
SM 2320 B-97	07/20/2017			07/24/2017	Dale L. Simmons	1915311
SM 4500 F-C-97	07/20/2017			07/24/2017	Dale L. Simmons	1915311